

Exhibit C
Revised TIS, MCDOT Correspondence,
And Queuing Graphics



Department of Transportation

Monroe County, New York

Maggie Brooks
County Executive

Terrence J. Rice, P.E.
Director

February 18, 2011

Ms. Dorraine Kirkmire
Sr. City Planner
City of Rochester Planning & Zoning Office
30 Church St.
Rochester, New York 14614

RE: WEGMANS – EAST AVENUE – PROPOSED NEW STORE

Dear Ms. Kirkmire,

We have completed our review of all of the traffic information provided by Wegmans and T.Y. Lin, and offer the following comments and recommendations.

1. We concur with the consultant that a traffic signal is justified at the new intersection of the Wegmans site with East Avenue and the Country Club restaurant/plaza.
2. We also concur that the existing signal at Probert St./East Ave. can be removed in conjunction with the installation of the new signal.
3. We also concur that the eastbound left turn phase should be installed up front when the signal is installed.
4. We concur with the consultant that a traffic signal is justified at the new intersection of the Wegmans site with University Avenue.
5. We concur with the generic proposed striping plan for University Avenue shown. Once 20 scale plans are prepared, we will provide detailed comments on the proposed striping.
6. As noted previously, the developer will be required to install a surface treatment on University Avenue in order to facilitate the restriping. In addition, a surface treatment may also be required on East Avenue to facilitate pavement marking changes as well.
7. With regard to the Winton Rd. access, we recommend a condition be placed on the approval of the project, that if a safety concern develops at the Winton Rd. access relative to delivery vehicles accessing Wegmans, the developer will be required to install appropriate mitigation to correct the concern.

8. As you know, Wegmans agreed to construct modifications to the McDonald's site to allow for cross access to the east. McDonalds agreed to the cross access and the modifications, however, the owner of the adjacent property was not willing to grant the cross access. We recommend that the City get a cross access agreement in place from McDonalds now. We also recommend that the City remember that if the adjacent property owner ever comes in for any approvals, that agreeing to and constructing cross access to the west will be a condition of the project approval.

We look forward to working with the City and the developer throughout the design and construction of this project. If you have any questions, or require any additional information, please call me at (585) 753-7733.

Sincerely,



for Brent H. Penwarden III, P.E.
Associate Engineer

cc: T. Rice
Dennis Kennelly, T.Y. Lin International
T. Cesario
File

G:\City - Wegmans - East Ave.doc

January 27, 2011

Monroe County Department of Transportation
50 West Main Street
Rochester, NY 14614

ATTN: Thomas J. Cesario, P.E.

RE: Wegmans East Avenue –Traffic Impact
Study Review, City of Rochester

Dear Mr. Cesario,

Thank you for reviewing our Revised Traffic Impact Study (TIS) dated November 2010 and our letter dated November 16, 2010. The following is our responses to your letter dated January 12, 2011. Changes will be made to the Traffic Impact Study based on your comments.

Comment 1: REGARDING THE CAPACITY ANALYSIS SUMMARY SHOWN ON PAGE 12 OF THE UPDATED REPORT, THE TABULAR INFORMATION IS INCOMPLETE FOR OUR COMPARISON. PLEASE ADD PROJECTED LEVELS OF SERVICE/DELAY DATA USING THE EXISTING TIMING SCHEMES TO PROVIDE COMPARISON AGAINST THE INFORMATION USING ADJUSTED TIMINGS.

Response 1: An updated LOS table, including 2012 Future with Original Timings, is attached to this letter.

Comment 2A: FOR EAST AVENUE, WE GENERALLY CONCUR WITH YOUR FINDINGS THAT A TRAFFIC SIGNAL IS JUSTIFIED AT THE PROPOSED WEGMANS/COUNTRY CLUB PLAZA INTERSECTION. WE DO REQUEST THE ANALYSIS BE RE-RUN WITH THE NON-CONFLICTING RIGHT TURN VOLUMES < 7 SECONDS REMOVED AND ALSO TO RUN A WARRANT ANALYSIS TO JUSTIFY AN EASTBOUND LEFT TURN ARROW.

Response 2A: An updated signal warrant analysis was conducted with the southbound non-conflicting right turn volumes <7 seconds removed at the proposed intersection of Wegmans Driveway and East Ave. This total number was calculated based on the 8.5 second delay per vehicle in the right-turn lane as reported in Sim Traffic for the unsignalized intersection during PM peak hour. Using a normal distribution curve, the total number of vehicles predicted to experience 7 seconds of delay or less were identified and removed from the total right turn volume. With approximately 96 vehicles removed from the approach, the intersection still meets warrants 1b, 2 and 3, and warrants a traffic signal. The updated warrant analyses are attached to this letter.

A left turn arrow warrant analysis was conducted. Though the warrant was not met, the total Annual Daily Traffic (ADT) calculated for the warrant is near the threshold of 50,000 vehicles. It is expected that the warrant would be met within 7 years. Therefore, a left turn phase is still recommended. Additionally, a left turn phase will improve the eastbound left turn level of service and reduce the eastbound queue lengths in the left-turn lane so the Probert Street

intersection will not be blocked by traffic turning into Wegmans. The left-turn warrant is attached to this letter.

Comment 2B: FOR EAST AVENUE, PLEASE CLARIFY WHETHER A TWO-PHASE SIGNAL OR THREE-PHASE SIGNAL IS PROPOSED AT WEGMANS DRIVE/EAST AVE/COUNTRY CLUB PLAZA INTERSECTION. THE UPDATED STUDY AND THE NOVEMBER 16, 2010 DATED RESPONSE LETTER DIFFER ON THE DESCRIPTION OF THE PROPOSED SIGNAL.

Response 2B: A three-phase signal is recommended. The analysis for the 'Signal @ Wegmans' has been updated with the 3-phase signal analysis as reported in the November 16, 2010 response letter. See the attached LOS table for updated levels of service.

Comment 2C: FOR EAST AVENUE, IT REMAINS UNCLEAR WHAT IMPACT EASTBOUND QUEUING AT THE PROPOSED SIGNAL LOCATION WILL HAVE ON THE PROBERT STREET INTERSECTION AND THE McDONALD'S ENTRANCE. YOUR PLAN INDICATES ANY QUEUING BEYOND 115 FEET FROM THE PROPOSED STOP BAR AT WEGMANS DR/EAST AVE/COUNTRY CLUB PLAZA INTERSECTION WILL ENCROACH INTO THE INTERSECTION, YET THE REPORT INDICATES A GREATER LENGTH OCCURS BUT DOES NOT MENTION IMPACTS.

Response 2C: With the proposed three-phase signal at Wegman's Driveway/East Ave/Country Club Plaza, the eastbound left-turn lane 95th percentile queue length is projected to be less than 115 feet for both the PM and Saturday midday peak hours. The 95th percentile queue length for the through movement is projected to be less than 115 feet for the PM peak hour and approximately 127 feet for the Saturday midday peak hour. For cases where there is more than one lane in a lane group, the 95th percentile length is reported for the highest lane. Additionally, the lane utilization factor for a through lane group movement is 0.95 which is calculated as the total number of lanes in the lane group multiplied by the highest lane volume divided into the total through movement volume. Because the reported 95th queue pertains to the highest lane within the lane group, the 95th percentile queue for the second through lane would be less than 115 feet during the Saturday midday peak hour and is therefore not anticipated to block Probert Street or the McDonald's exit. Additionally, the 95th percentile queue may never actually be experienced within the peak hour. Figure PQ-1 (attached) identifies the proposed 95th percentile traffic queuing within the vicinity of Wegmans' including the eastbound approach at the proposed signalized intersection at Wegman's Driveway/East Ave/Country Club Plaza.

Comment 2D: ALSO, REGARDING WESTBOUND TRAVEL, YOUR 11.16.10 RESPONSE TO OUR COMMENT 1A STATED A SINGLE THROUGH LANE WOULD OPERATE SUFFICIENTLY AND THE PRESENCE OF A RIGHT-TURN LANE WOULD PROVIDE A BENEFIT TO THE PROPOSED SIGNALIZED INTERSECTION. PLEASE EXPOUND UPON THE PREVIOUS REPLY BY STATING YOUR RECOMMENDATIONS FOR THE PAVEMENT MARKING SCHEME THROUGH THIS AREA.

Response 2D: Two westbound lanes are existing, and no changes are proposed or recommended. The intersection will operate significantly better if two lanes are available. The statement only implies that a majority of the curb-lane traffic will be right-turning traffic into the site. Pavement markings should indicate two through lanes.

Comment 2E: FOR EAST AVENUE, THE ANALYSIS INDICATES A SINGLE OUTBOUND LANE FOR THE COUNTRY CLUB PLAZA ENTRANCE, YET THE PLAN SHOWS TWO EXITING LANES. PLEASE REVISE THE ANALYSIS TO COINCIDE WITH THE PROPOSED PLANS. THIS MAY HELP THE QUEUING EASTBOUND.

Response 2E: The Synchro analysis at the intersection of East Avenue and Wegman's proposed driveway reflects a single northbound left/through/right lane, and a southbound left/through lane, and southbound exclusive-right lane. The proposed plans will show this layout.

Comment 3A: FOR UNIVERSITY AVENUE, PLEASE RE-RUN THE ANALYSIS FOR THE PROPOSED SIGNALIZED INTERSECTION AT WEGMANS DR/UNIVERSITY AVE TO INCLUDE A LONGER (120-SEC.) CYCLE. WE HAVE CONCERNS WITH THE PROJECTED EASTBOUND QUEUE LENGTH AND ITS IMPACT ON THE PROBERT STREET INTERSECTION. BEFORE CONSIDERING A SECOND EASTBOUND LANE, THE LONGER CYCLE LENGTH MAY PROVIDE ADEQUATE MITIGATION.

Response 3A: The Synchro analysis has been updated with 120 second cycle length at this intersection, as it decreases the weekday morning and Friday evening peak hour westbound through queue lengths. An updates LOS table is attached to this letter.

Comment 3B: FOR UNIVERSITY AVENUE, WE HAVE SOME CONCERNS WITH THE PROPOSED STRIPING PLAN FOR UNIVERSITY AVENUE BETWEEN WINTON ROAD AND PROBERT STREET. THE PROPOSED TAPER LENGTH TO MERGE 2 WESTBOUND LANES INTO ONE LANE IS ONLY 150' AS THEY LEAVE WINTON ROAD. WE FEEL THIS MAY NOT BE ENOUGH SPACE, AND MAY CAUSE SOME PROBLEMS AT THE WINTON RD/UNIVERSITY AVE SIGNAL. PLEASE INVESTIGATE OPTIONS TO CARRY TWO LANES WESTBOUND FURTHER WEST AND A LONGER TAPER INTO ONE LANE FOR THE PROPOSED SIGNALIZED INTERSECTION.

Response 3B: Wegmans has prepared revised striping layout drawings of University Avenue which lengthens the westbound 2-lane section and extends the transition to 200 feet. The western end of the transition is near to the Wegmans' driveway left-turn lane. Problems associated with the 2-lane to 1-lane transition are not anticipated, since the peak through traffic volumes are half of the single lane capacity. The revised plan that shows the proposed striping plan is attached.

Comment 3C: FOR THE WINTON ROAD ACCESS, THE REPORT DOES NOT PROVIDE DISCUSSION RELATIVE TO OUR OCTOBER 21, 2010 MEETING. AT THAT TIME, WE DISCUSSED THE ANTICIPATED TRUCK DELIVERY SCHEDULES AND THE TOPIC OF THE RAISED MEDIAN CHANGES. THE CURRENT PROPOSAL IS TO REMOVE A PORTION OF THE EXISTING RAISED MEDIAN. WE REQUEST A LIST OF MITIGATION CHOICES THAT WEGMANS CAN IMPLEMENT SHOULD A PROBLEM EVER DEVELOP WITH LEFT TURNS INTO AND OUT OF THIS ACCESS.

Response 3C: It is proposed to remove a portion of the existing raised median on Winton Road to allow for truck access. Should a problem arise with left turns into and out of this access, the following are options for mitigation:

- Educate delivery truck drivers on alternate routes to the loading area that do not include a southbound left turn on Winton Road or a left turn exit from the loading area, or access from the Culver Road direction.
- Limit delivery hours to non-peak hours.
- Add signage that restricts left turn movements in and out of the site.

Wegmans East Avenue Store
MCDOT Traffic Comments
January 11, 2011

- Reinstall the raised median island to prevent left turns.

Comment 4: PLEASE PROVIDE 20 SCALE PAVEMENT MARKING PLANS FOR THE SECTIONS OF EAST AVENUE, UNIVERSITY AVENUE AND WINTON ROAD WHERE CHANGES ARE PROPOSED.

Response 4: The recommendation sketches provided in the report were preliminary, not detailed drawings. Detailed, 20 scale pavement marking plans will be provided by Wegmans.

Comment 5: PLEASE NOTE THAT IN ORDER TO MAKE THE PROPOSED PAVEMENT MARKING CHANGES, SOME SORT OF SURFACE TREATMENT WILL BE REQUIRED. THE SPECIFICS OF THIS TREATMENT WILL BE DETERMINED BY THE CITY ENGINEER'S OFFICE.

Response 5: We acknowledge that surface treatment will be required. Wegmans will work with the City Engineer's Office to determine the proper treatment.

Sincerely,
T. Y. Lin International Engineering, Architecture and Land Surveying, P.C.



Dennis J. Kennelly, PE

[KMO/CAB]

xc: Dan Aken, Wegmans
Terry Rice, MCDOT
Dorraine Kirkmire, City of Rochester, Bureau of Planning and Zoning
Jim Pond, MCDOT
Mark Costich, Costich Engineering

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The Levels of Service determined by the analysis are shown in the following table:

Table 3 – Level of Service Summaries

East Avenue Wegman's TIS (HCM Output)																
	Existing 2009				Projected 2012 - With Original Signal Timings				Projected 2012 - Signal at East Ave/Probert				Projected 2012 - Signal at East Ave/Wegman's Driveway			
	AM	PM	Fri PM	SAT	AM	PM	Fri PM	SAT	AM	PM	Fri PM	SAT	AM	PM	Fri PM	SAT
East Ave & Probert																
EB L	A (4)	A (8)	A (6)	A (4)	A (4)	A (4)	A (4)	A (4)	A (4)	A (4)	A (4)	A (4)	A (2)	A (9)	A (2)	A (9)
EB TT	A (2)	A (5)	A (4)	A (3)	A (2)	A (2)	A (2)	A (2)	A (2)	A (2)	A (2)	A (2)	-	-	-	-
WB T TR	A (10)	B (14)	B (11)	A (7)	A (10)	A (10)	A (8)	A (8)	A (6)	A (10)	A (9)	A (6)	-	-	-	-
NB L	C (23)	B (17)	C (20)	C (21)	C (23)	C (24)	C (23)	C (23)	C (23)	C (24)	C (23)	C (23)	D (29)	F (60)	D (27)	D (35)
NB TR	C (22)	B (17)	B (20)	C (20)	C (23)	C (23)	C (23)	C (23)	C (23)	C (23)	C (23)	C (23)	B (15)	C (21)	B (14)	B (15)
SB LTR	B (20)	B (13)	C (25)	C (20)	C (22)	C (28)	D (36)	C (27)	B (20)	C (28)	C (30)	C (22)	C (17)	C (17)	B (11)	B (12)
Overall	A (8)	A (9)	A (10)	A (8)	A (8)	A (8)	A (8)	A (6)	A (6)	A (8)	A (8)	A (6)	UNSIGNALIZED			
East Ave & N Winton Rd																
EB L	C (26)	C (24)	C (24)	C (25)	C (26)	C (22)	C (25)	C (25)	C (27)	C (22)	C (29)	C (26)	C (24)	B (19)	C (23)	C (21)
EB T TR	D (38)	D (48)	D (39)	D (39)	D (40)	D (49)	D (42)	D (41)	D (41)	D (49)	D (44)	D (43)	C (33)	D (45)	D (37)	C (35)
WB L	C (29)	C (28)	C (28)	C (28)	C (30)	C (28)	C (28)	C (28)	C (33)	C (28)	C (30)	C (28)	D (42)	C (26)	C (30)	C (28)
WB T TR	C (33)	C (33)	D (36)	D (36)	C (33)	C (33)	D (36)	D (36)	C (34)	C (33)	C (35)	D (37)	D (36)	C (32)	C (35)	D (37)
NB L	D (37)	C (25)	B (20)	B (16)	D (43)	C (30)	C (23)	B (18)	D (48)	C (30)	B (19)	B (17)	D (38)	C (34)	B (20)	B (17)
NB T T	C (26)	C (29)	C (26)	C (22)	C (26)	C (29)	C (27)	C (23)	C (25)	C (29)	C (25)	C (23)	C (24)	C (31)	C (25)	C (23)
NB R	C (22)	C (25)	C (22)	C (20)	C (22)	C (26)	C (23)	C (21)	C (21)	C (26)	C (21)	C (21)	B (20)	C (27)	C (21)	C (21)
SB L	B (11)	B (14)	A (8)	B (10)	B (11)	B (14)	A (8)	B (11)	B (12)	B (14)	A (8)	B (11)	B (14)	B (15)	C (22)	B (11)
SB T TR	C (37)	C (27)	B (16)	B (16)	D (42)	C (29)	B (17)	B (17)	C (34)	C (29)	B (17)	B (17)	C (37)	C (30)	C (33)	B (20)
Overall	C (33)	C (33)	C (26)	C (25)	D (36)	C (34)	C (27)	C (27)	C (34)	C (34)	C (27)	C (27)	C (33)	C (33)	C (30)	C (26)
University Ave & N. Winton Rd																
EB L	D (41)	C (33)	E (71)	C (30)	D (38)	C (32)	F (86)	C (29)	D (38)	C (32)	E (59)	C (29)	D (38)	C (32)	E (58)	C (29)
EB T TR	C (29)	C (34)	D (43)	C (27)	C (28)	C (33)	D (43)	C (26)	C (28)	C (33)	D (48)	C (26)	C (28)	C (34)	E (52)	C (26)
WB L	C (28)	D (41)	E (57)	C (28)	C (28)	D (42)	E (58)	C (28)	C (28)	D (42)	D (46)	C (28)	C (28)	D (42)	D (46)	C (28)
WB T TR	D (37)	C (29)	D (37)	C (27)	D (38)	C (30)	D (38)	C (27)	D (38)	C (30)	D (40)	C (27)	D (38)	C (30)	D (40)	C (27)
NB L	B (19)	B (18)	C (27)	C (23)	C (20)	B (18)	C (29)	C (26)	C (26)	B (18)	D (36)	B (20)	C (33)	B (17)	D (50)	C (24)
NB T TR	B (13)	C (24)	C (34)	C (22)	B (14)	C (24)	C (35)	C (23)	B (13)	C (24)	D (39)	C (24)	B (13)	C (24)	D (47)	C (22)
SB L	C (27)	D (40)	E (64)	C (31)	C (29)	D (40)	E (66)	C (32)	C (29)	D (40)	E (68)	C (32)	C (29)	D (41)	E (68)	C (32)
SB T TR	C (30)	C (29)	D (37)	C (28)	C (31)	C (29)	D (38)	C (29)	C (31)	C (29)	D (40)	C (29)	C (31)	C (29)	D (40)	C (29)
Overall	C (28)	C (30)	D (42)	C (26)	C (29)	C (30)	D (44)	C (27)	C (29)	C (30)	D (45)	C (27)	C (30)	C (30)	D (48)	C (27)
University Ave & Probert St																
WB LT	A (1)	A (3)	A (2)	A (2)	A (1)	A (2)	A (2)	A (1)	-	-	-	-	-	-	-	-
WB L	-	-	-	-	-	-	-	-	A (8)	A (9)	A (9)	A (8)	A (8)	A (9)	A (9)	A (8)
NB LR	D (30)	E (36)	E (37)	C (19)	C (19)	C (20)	C (19)	C (15)	C (19)	C (20)	C (19)	C (15)	C (19)	C (20)	C (19)	C (15)
Overall	UNSIGNALIZED				UNSIGNALIZED				UNSIGNALIZED				UNSIGNALIZED			
East Ave & Wegman's Driveway																
EB L	-	-	-	-	A (9)	A (10)	A (10)	A (10)	A (9)	A (9)	A (10)	A (10)	A (8)	A (7)	A (10)	A (5)
EB T TR	-	-	-	-	-	-	-	-	-	-	-	-	A (8)	A (6)	A (8)	A (5)
WB L	-	-	-	-	A (9)	A (9)	A (9)	A (9)	A (9)	A (9)	A (9)	A (9)	A (5)	B (14)	B (11)	A (6)
WB T TR	-	-	-	-	-	-	-	-	-	-	-	-	A (6)	B (15)	B (12)	A (6)
NB LTR	-	-	-	-	C (22)	F (83)	F (75)	F (69)	C (22)	F (83)	F (75)	F (69)	C (33)	D (38)	C (33)	D (41)
SB LT	-	-	-	-	E (40)	F (522)	F (539)	F (397)	E (39)	F (522)	F (539)	F (398)	C (34)	D (52)	D (42)	D (53)
SB R	-	-	-	-	B (10)	B (11)	B (12)	B (12)	B (10)	B (11)	B (12)	B (12)	C (32)	D (37)	D (35)	D (42)
Overall	-	-	-	-	UNSIGNALIZED				UNSIGNALIZED				B (10)	B (17)	B (17)	B (14)
University Ave & Wegman's Driveway																
EB TR	-	-	-	-	A (2)	A (4)	A (4)	A (3)	A (2)	A (4)	A (4)	A (3)	A (2)	A (4)	A (5)	A (3)
WB L	-	-	-	-	A (1)	A (3)	A (3)	A (4)	A (1)	A (3)	A (1)	A (4)	A (1)	A (2)	A (2)	A (3)
WB T	-	-	-	-	A (2)	A (3)	A (4)	A (4)	A (2)	A (3)	A (1)	A (4)	A (2)	A (2)	A (5)	A (2)
NB L	-	-	-	-	D (54)	D (53)	D (53)	D (53)	D (54)	D (53)	D (53)	D (53)	D (54)	D (53)	C (23)	D (53)
NB R	-	-	-	-	D (51)	D (46)	D (47)	D (48)	D (51)	D (46)	D (47)	D (48)	D (51)	D (47)	C (21)	D (48)
Overall	-	-	-	-	A (6)	B (12)	B (11)	B (14)	A (6)	B (12)	A (9)	B (14)	A (6)	B (12)	A (8)	B (13)

SIGNAL WARRANT #1A & B
(Minimum Vehicular Volume & Interruption of Continuous Traffic)

EAST AVENUE AT NEW WEGMANS DRIVEWAY & COUNTRY CLUB DINER

HOUR	PROJECTED TRAFFIC				
	EAST AVE TWO-WAY VOLUME	*WEGMANS DRIVEWAY OUTBOUND VOLUME	COUNTRY CLUB DRIVEWAY OUTBOUND VOLUME	HOURS WARRANT #1A MET	HOURS WARRANT #1B MET
<u>AM</u>					
7:00-8:00	775	78	30	NO	NO
8:00-9:00	1013	85	43	NO	NO
9:00-10:00	875	100	31	NO	YES
10:00-11:00	927	117	25	NO	YES
11:00-12:00	864	131	37	NO	YES
<u>PM</u>					
12:00 - 1:00	1405	158	59	NO	YES
1:00 - 2:00	1034	150	60	NO	YES
2:00 - 3:00	1086	166	42	NO	YES
3:00 - 4:00	1141	179	37	NO	YES
4:00 - 5:00	1213	197	40	NO	YES
5:00 - 6:00	1540	202	58	YES	YES
6:00 - 7:00	1026	182	58	NO	YES
7:00 - 8:00	916	141	50	NO	YES
WARRANT MET	---	---	---	NO	YES

* Note: Right-turn movements with Delay < 7 sec. are removed from total approach volume.

VOLUME WARRANT KEY

WARRANT NUMBER	HOURLY VOLUME REQUIRED FOR 8 HOURS		
	EAST AVE TWO-WAY	*WEGMANS DRIVEWAY OUTBOUND	COUNTRY CLUB OUTBOUND
#1A	100%	100%	100%
#1B	600	200	150
#1B	900	100	75

WARRANT #1A - Minimum Vehicle Volume.

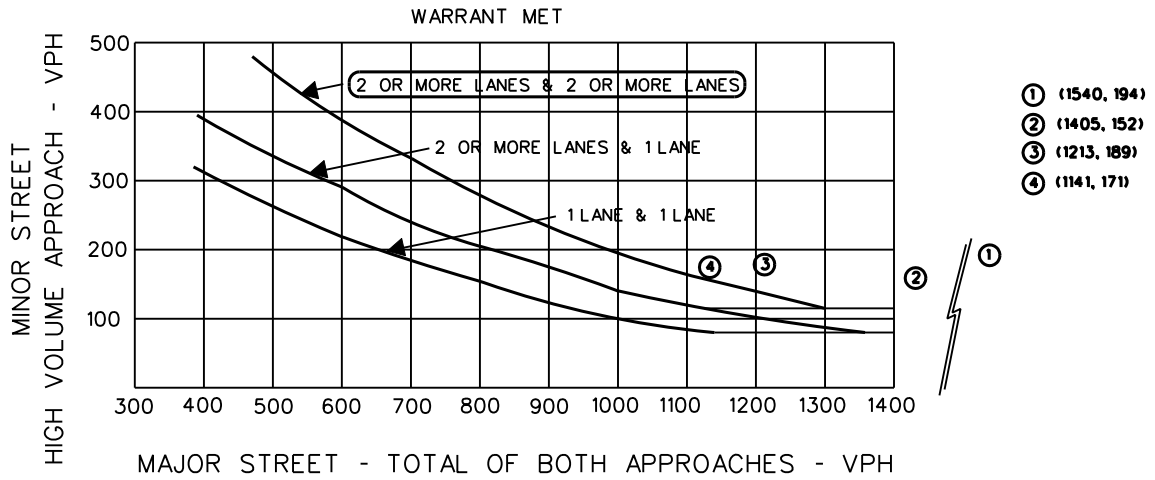
WARRANT #1B - Interruption of Continuous Traffic.

Note: * If 100% of warrants #1A or #1B are met then warrant #1 is met

If 80% of warrants #1A and #1B are met then warrant #1 is met

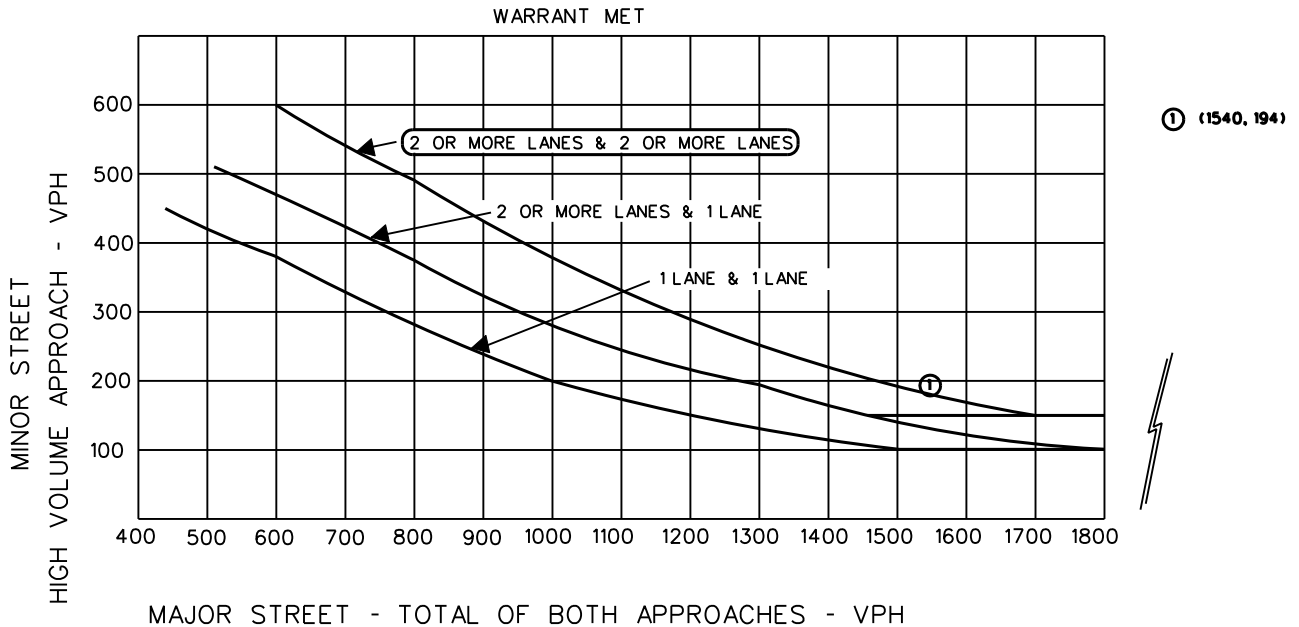
EAST AVE @ PROPOSED WEGMANS DRIVEWAY & COUNTRY CLUB DINER FUTURE TRAFFIC

WARRANT * 2 - FOUR HOUR VOLUME WARRANT



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

WARRANT * 3 - PEAK HOUR VOLUME WARRANT



* NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Summary of All Intervals

Start Time	6:57
End Time	8:00
Total Time (min)	63
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	5328
Vehs Exited	5336
Starting Vehs	127
Ending Vehs	119
Denied Entry Before	3
Denied Entry After	3
Travel Distance (mi)	1388
Travel Time (hr)	112.8
Total Delay (hr)	60.2
Total Stops	5910
Fuel Used (gal)	714.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	5328
Vehs Exited	5336
Starting Vehs	127
Ending Vehs	119
Denied Entry Before	3
Denied Entry After	3
Travel Distance (mi)	1388
Travel Time (hr)	112.8
Total Delay (hr)	60.2
Total Stops	5910
Fuel Used (gal)	714.3

5: East & Wegmans Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.4	0.2	0.0	0.1	0.3	0.1	0.1	0.0	0.1	1.3	0.0	0.4
Delay / Veh (s)	7.1	1.0	1.1	6.0	2.9	2.9	21.0	22.9	6.8	37.1	20.8	8.5
St Del/Veh (s)	5.5	0.2	0.9	2.8	0.4	0.5	21.3	22.7	7.4	37.9	20.4	9.4
Total Stops	116	3	2	21	18	13	21	1	33	105	3	148
Travel Dist (mi)	4.9	16.7	1.3	5.9	63.0	25.9	0.3	0.0	0.5	2.3	0.1	2.9
Travel Time (hr)	0.6	0.8	0.1	0.3	2.7	1.2	0.1	0.0	0.1	1.4	0.0	0.6
Avg Speed (mph)	8	22	15	20	24	21	2	2	5	2	3	5
Fuel Used (gal)	2.5	8.9	0.4	2.5	28.0	9.5	0.3	0.0	0.3	3.7	0.1	1.8
HC Emissions (g)	0	1	0	0	3	1	0	0	0	0	0	0
CO Emissions (g)	38	369	4	77	1249	357	10	0	5	26	0	21
NOx Emissions (g)	1	4	0	1	12	4	0	0	0	0	0	0
Vehicles Entered	191	657	54	40	435	178	21	1	34	124	4	158
Vehicles Exited	191	657	54	41	435	179	21	1	34	123	4	158
Hourly Exit Rate	191	657	54	41	435	179	21	1	34	123	4	158
Input Volume	176	659	58	40	449	171	26	3	32	154	3	144
% of Volume	109	100	93	102	97	105	81	33	106	80	133	110
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	1	0	0	0	0	0	0	0	0	0	0

5: East & Wegmans Drive Performance by movement

Movement	All
Total Delay (hr)	3.0
Delay / Veh (s)	5.7
St Del/Veh (s)	4.5
Total Stops	484
Travel Dist (mi)	123.9
Travel Time (hr)	8.0
Avg Speed (mph)	16
Fuel Used (gal)	57.9
HC Emissions (g)	6
CO Emissions (g)	2157
NOx Emissions (g)	22
Vehicles Entered	1897
Vehicles Exited	1898
Hourly Exit Rate	1898
Input Volume	1915
% of Volume	99
Denied Entry Before	0
Denied Entry After	1

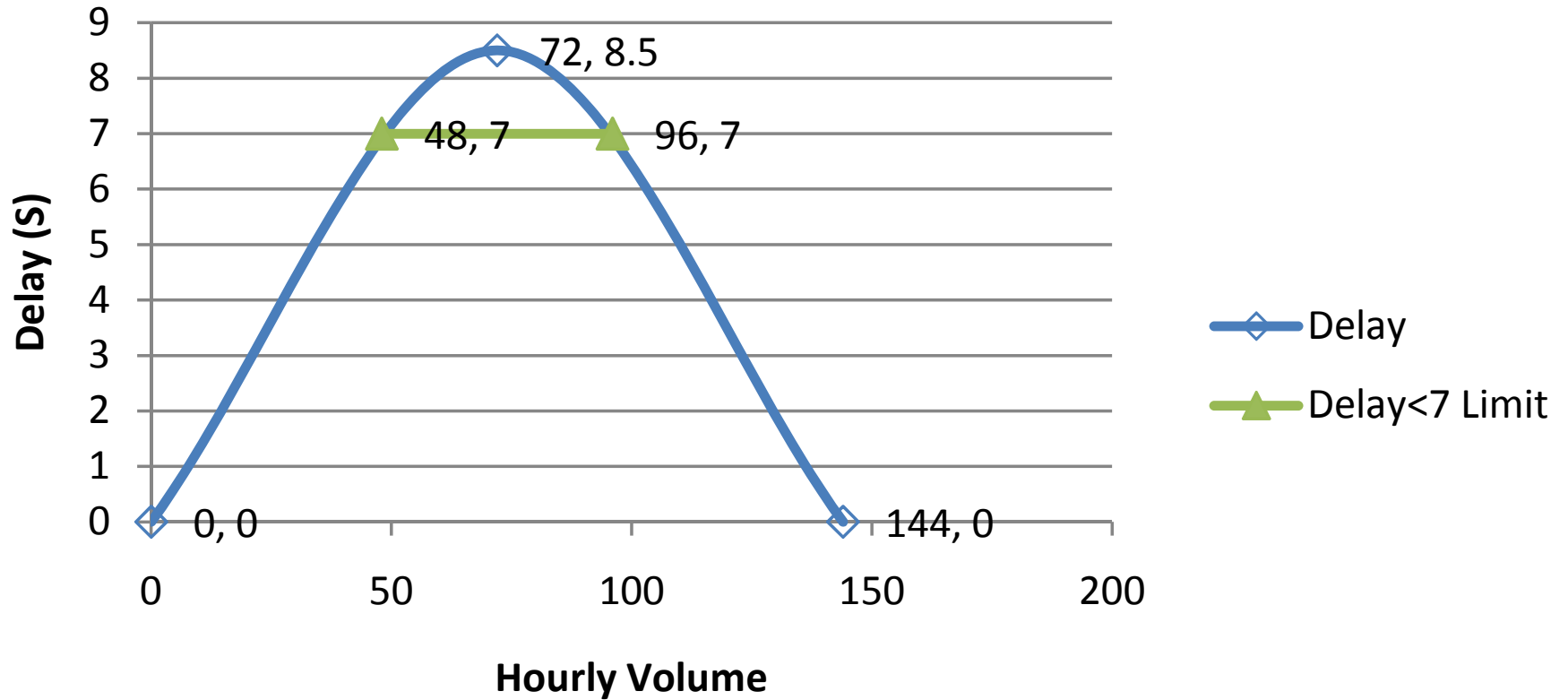
Queuing and Blocking Report
 Weekday PM Peak Hour_Signal at Probert_35%

1/19/2011

Intersection: 5: East & Wegmans Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	77	104	21	54	30	85	77	80	111	111
Average Queue (ft)	57	21	1	15	2	19	18	27	72	58
95th Queue (ft)	84	81	10	47	14	62	56	61	122	100
Link Distance (ft)		85	85		689	689	78	78	96	96
Upstream Blk Time (%)	0	1					2	0	8	2
Queuing Penalty (veh)	0	4					0	0	0	0
Storage Bay Dist (ft)	140			150						
Storage Blk Time (%)	0	1								
Queuing Penalty (veh)	1	2								

Wegmans Driveway @ East Ave.



PROJECT	East Avenue Wegmans	JOB NO.	433164.04	SHEET	OF
ITEM	Left Turn Phase Warrant	DESIGNER		DATE	1/18/11
		CHECKER		DATE	
				GRID	1/10"

Intersection of East Ave & Proposed Wegmans Driveway

"X" = Volume of Left Turn Vehicles \times $\frac{\text{Volume of Opposing Through Vehicles}}{\text{Number of Opposing Through Lanes}}$

"X" = Left Turn Conflict Factor

↳ If "x" is less than 50,000 then turn phase may not be required.

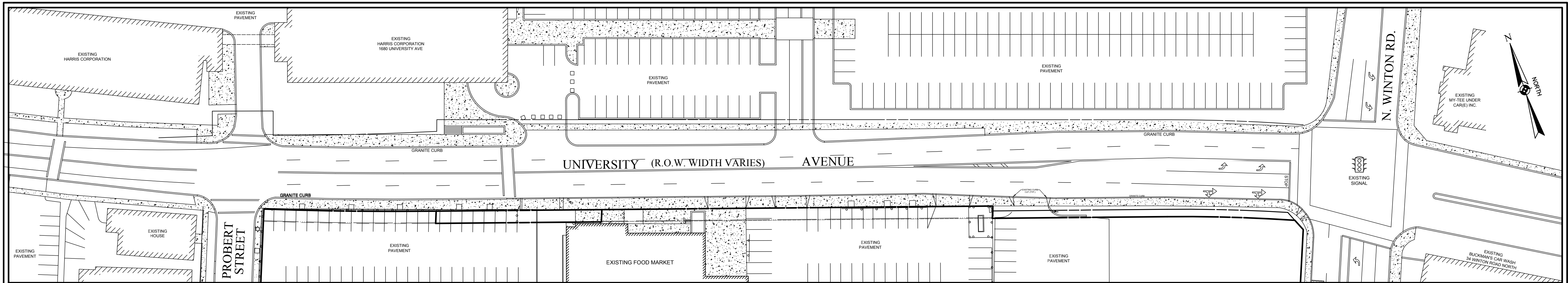
↳ If "x" is equal to or greater than 50,000 then turn phase may be required.

WEEKDAY PM PEAK

$$2012 \Rightarrow 176 \times \frac{442}{2} = 38,896$$

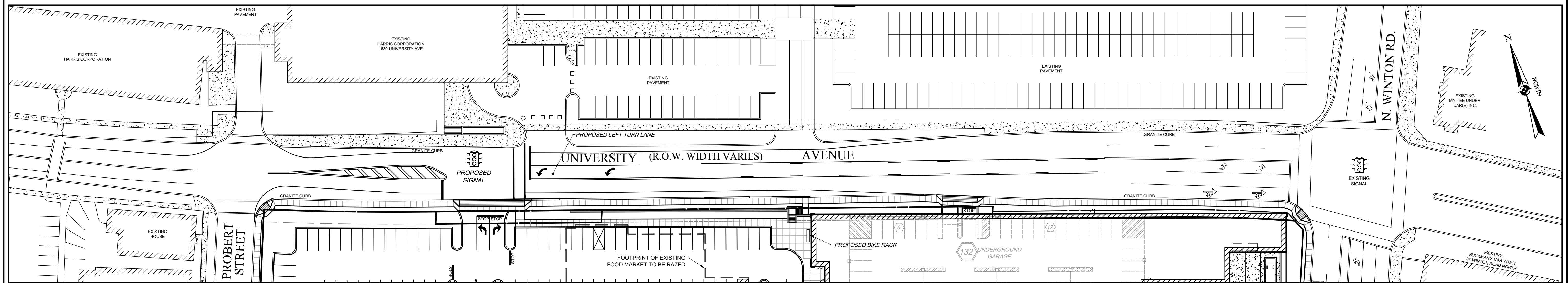
$$2017 \Rightarrow 194 \times \frac{488}{2} = 47,336 < 50,000$$

Warrant is not met.



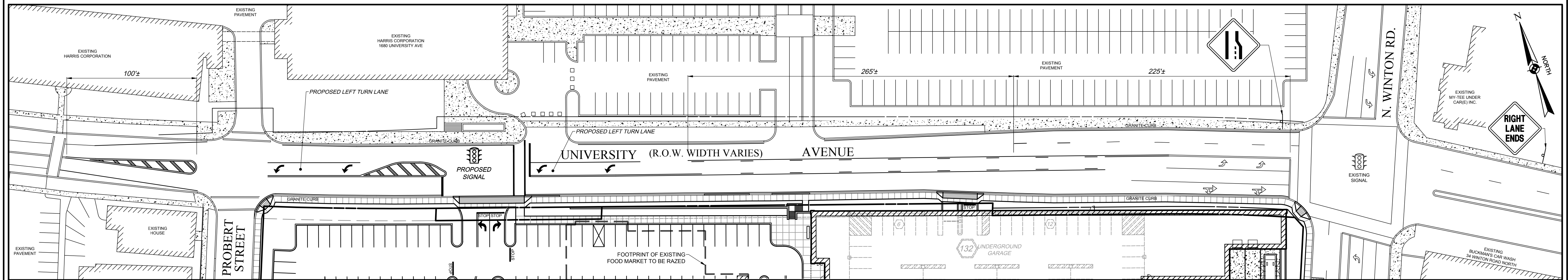
EXISTING STRIPING LAYOUT

SCALE: 1"=40'



SUBMITTED STRIPING LAYOUT

SCALE: 1"=40'

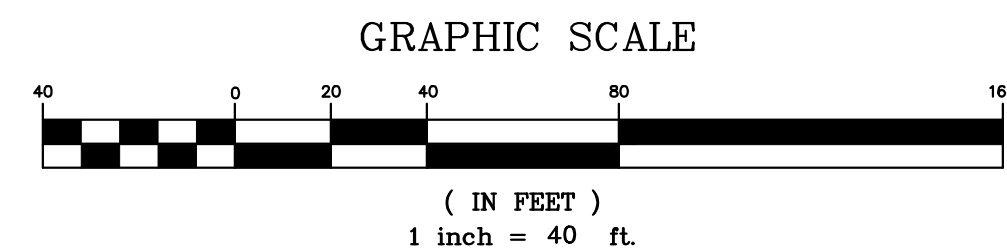


PROPOSED STRIPING LAYOUT

SCALE: 1"=40'

Dig Safely New York
 Dig Safely New York
 Call Before You Dig
 Wait The Required Time
 Confirm Utility Response
 Respect The Marks
 Dig With Care
800-962-7962
 www.digsafelynewyork.com

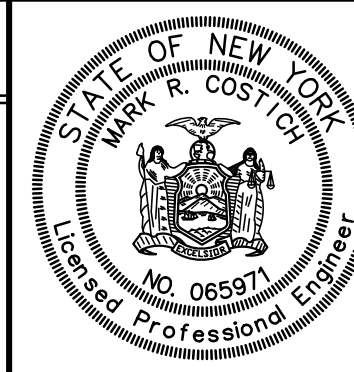
EXISTING UTILITIES (LOCATION, SIZES AND INVERTS) SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT CERTIFIED AS TO THE ACCURACY OF THEIR LOCATION OR COMPLETENESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND DEPTHS OF ALL UTILITIES AND STRUCTURES IN THE PATH OF, OR CLOSELY PARALLEL TO, OR UNDER, THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DELAYS OR DAMAGES OCCURRING AS A RESULT OF INCORRECTLY LOCATED UTILITIES. IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITY OWNERS IN AMPLE TIME FOR THEM TO LOCATE AND MARK THEIR FACILITIES. THE CONTRACTOR SHALL ALSO NOTIFY UNDERGROUND UTILITY LOCATION SERVICE AT LEAST 48 HOURS IN ADVANCE OF COMMENCING ANY WORK.



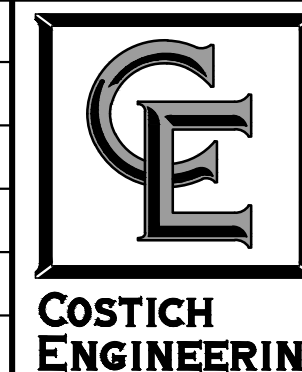
NO.	DATE	REVISION	BY	CHKD.	APVLS.

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PROJECT ENGINEER
 G.W.
 DRAWN BY
 D.E.L.
 BOUNDARY
 D.T.H.
 TOPOBASE
 D.T.H.
 DATE
 01/14/2011
 SCALE
 1"=40'



- CIVIL ENGINEERING
- LAND PLANNING
- SURVEYING

217 LAKE AVENUE
 ROCHESTER, NEW YORK
 14608
 (585) 458-3020

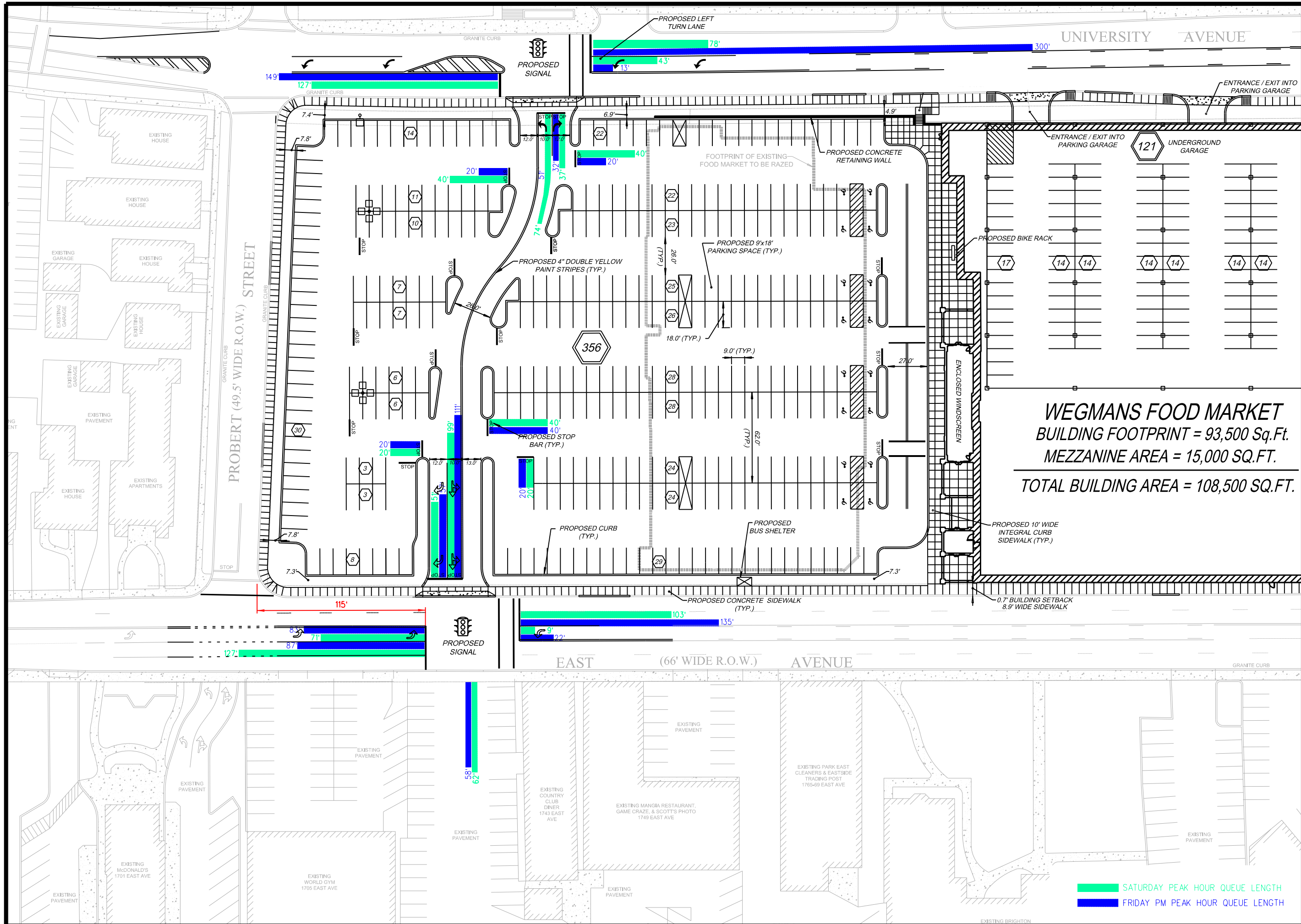
TITLE OF PROJECT
WEGMANS FOOD MARKETS, INC.
 1750 EAST AVENUE

TITLE OF DRAWING
UNIVERSITY AVENUE STRIPING LAYOUT SKETCH

LOCATION OF PROJECT
 CITY OF ROCHESTER
 COUNTY OF MONROE, STATE OF NEW YORK

CLIENT
 WEGMANS FOOD MARKETS, INC.
 100 WEGMANS MARKET STREET
 ROCHESTER, NEW YORK 14624

DWG # 2781
CS106
 SHEET 1 OF 1



WEGMANS FOOD MARKET
 BUILDING FOOTPRINT = 93,500 Sq.Ft.
 MEZZANINE AREA = 15,000 SQ.FT.
 TOTAL BUILDING AREA = 108,500 SQ.FT.

UNAUTHORIZED REPRODUCTION OR MODIFICATION TO THIS DRAWING IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 128, SECTION 1203

NO.	DATE	DESCRIPTION	REV/ISSUES
3			
2			
1			

DATE

T.Y. LIN INTERNATIONAL
 255 EAST AVENUE
 ROCHESTER, NY 14604
 (585) 512-2000

PROPOSED TRAFFIC QUEUE
 (3-PHASE SIGNAL AT WEGMANS/EAST)
 PROJECT NAME: WEGMANS EAST AVENUE
 PROJECT ADDRESS: WEGMANS FOOD MARKETS, INC.
 1500 BROOKS AVENUE, P.O. BOX 30844, ROCHESTER, NY 14603

PROJECT NO:	43.3164.04	PROJ. MGR.:	DJK
DATE:	1/21/11	DRWN. BY:	KMO
SCALE:	1"=30'	CHKD. BY:	CAB
DRAWING NO.:	PQ-1		
SHEET NO.	1 of 1		

█ SATURDAY PEAK HOUR QUEUE LENGTH
█ FRIDAY PM PEAK HOUR QUEUE LENGTH

Summary of All Intervals

Start Time	6:57
End Time	7:15
Total Time (min)	18
Time Recorded (min)	15
# of Intervals	2
# of Recorded Intvls	1
Vehs Entered	1403
Vehs Exited	1354
Starting Vehs	92
Ending Vehs	141
Denied Entry Before	14
Denied Entry After	58
Travel Distance (mi)	279
Travel Time (hr)	38.5
Total Delay (hr)	27.4
Total Stops	1726
Fuel Used (gal)	189.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factors.	
Vehs Entered	1403
Vehs Exited	1354
Starting Vehs	92
Ending Vehs	141
Denied Entry Before	14
Denied Entry After	58
Travel Distance (mi)	279
Travel Time (hr)	38.5
Total Delay (hr)	27.4
Total Stops	1726
Fuel Used (gal)	189.1

1: East & Probert Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Delay / Veh (s)	4.8	0.6	0.9	0.7	7.7	14.3	3.3	17.2	0.5	6.0	1.5
Total Stops	4	3	0	0	4	4	5	2	0	21	43
Travel Dist (mi)	0.2	5.7	3.0	0.4	0.1	0.1	0.1	0.1	0.4	1.4	11.4
Travel Time (hr)	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
Avg Speed (mph)	12	24	19	15	4	3	7	8	18	12	18
Fuel Used (gal)	0.0	2.2	2.1	0.2	0.0	0.1	0.0	0.1	0.4	0.7	5.8
HC Emissions (g)	0	0	0	0	0	0	0	0	0	0	1
CO Emissions (g)	1	120	143	4	0	0	0	2	19	27	317
NOx Emissions (g)	0	1	2	0	0	0	0	0	0	0	3
Vehicles Entered	5	156	108	12	4	4	5	2	11	22	329
Vehicles Exited	5	154	108	12	5	4	5	2	11	21	327
Hourly Exit Rate	20	616	432	48	20	16	20	8	44	84	1308
Input Volume	29	530	581	38	19	8	33	4	30	86	1358
% of Volume	69	116	74	126	105	200	61	200	147	98	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

2: East & Winton Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	0.5	1.2	0.4	0.3	0.6	0.2	0.5	0.7	0.1	0.5	1.3	0.3
Delay / Veh (s)	44.7	33.1	30.3	39.3	41.0	38.0	30.9	21.3	9.4	37.8	31.0	37.0
Total Stops	44	92	39	26	46	14	51	64	11	52	92	23
Travel Dist (mi)	5.1	16.1	6.0	2.5	5.0	1.3	2.8	5.4	1.0	3.3	9.8	2.2
Travel Time (hr)	0.7	1.8	0.7	0.4	0.8	0.2	0.6	0.9	0.1	0.6	1.7	0.4
Avg Speed (mph)	7	9	9	7	6	6	5	6	13	5	6	5
Fuel Used (gal)	2.9	8.8	3.0	1.6	3.1	0.9	2.2	3.7	0.6	2.6	7.8	1.6
HC Emissions (g)	0	1	0	0	0	0	0	0	0	0	1	0
CO Emissions (g)	60	268	104	42	83	28	55	87	31	40	220	51
NOx Emissions (g)	1	3	1	0	1	0	1	1	0	0	2	1
Vehicles Entered	43	137	51	29	59	16	58	111	21	47	153	34
Vehicles Exited	40	131	48	28	52	14	56	116	21	47	153	33
Hourly Exit Rate	160	524	192	112	208	56	224	464	84	188	612	132
Input Volume	134	426	231	124	292	72	251	515	111	193	645	134
% of Volume	119	123	83	90	71	78	89	90	76	97	95	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	1	0	0	0	0	0	0	0	0

2: East & Winton Performance by movement

Movement	All
Total Delay (hr)	6.6
Delay / Veh (s)	31.8
Total Stops	554
Travel Dist (mi)	60.5
Travel Time (hr)	9.0
Avg Speed (mph)	7
Fuel Used (gal)	38.7
HC Emissions (g)	3
CO Emissions (g)	1070
NOx Emissions (g)	11
Vehicles Entered	759
Vehicles Exited	739
Hourly Exit Rate	2956
Input Volume	3128
% of Volume	95
Denied Entry Before	0
Denied Entry After	1

3: University & Winton Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay (hr)	2.8	4.9	1.7	0.9	1.2	0.5	0.3	1.9	0.1	0.8	2.1	0.4
Delay / Veh (s)	190.9	141.6	144.9	74.3	48.1	23.6	57.8	36.5	45.2	70.9	53.9	40.3
Total Stops	53	89	31	83	99	65	26	135	7	52	111	19
Travel Dist (mi)	2.0	5.1	1.8	4.0	7.9	7.0	1.3	11.4	0.5	1.9	6.3	1.7
Travel Time (hr)	2.9	5.0	1.8	1.1	1.5	0.8	0.4	2.3	0.1	0.8	2.3	0.5
Avg Speed (mph)	2	4	4	4	6	9	4	5	5	3	3	4
Fuel Used (gal)	7.2	13.3	4.5	3.6	6.0	3.5	1.2	9.3	0.5	2.5	7.5	1.5
HC Emissions (g)	0	0	0	0	0	0	0	1	0	0	0	0
CO Emissions (g)	43	141	27	48	101	89	17	205	6	24	95	33
NOx Emissions (g)	0	1	0	0	1	1	0	2	0	0	1	0
Vehicles Entered	54	126	44	45	93	81	22	186	8	41	140	37
Vehicles Exited	52	122	43	47	84	77	17	187	8	38	139	36
Hourly Exit Rate	208	488	172	188	336	308	68	748	32	152	556	144
Input Volume	243	545	242	180	366	293	93	782	25	179	534	143
% of Volume	86	90	71	104	92	105	73	96	128	85	104	101
Denied Entry Before	2	7	0	0	0	0	0	0	0	0	0	0
Denied Entry After	9	25	7	1	0	0	0	4	0	4	3	3

3: University & Winton Performance by movement

Movement	All
Total Delay (hr)	17.6
Delay / Veh (s)	73.5
Total Stops	770
Travel Dist (mi)	51.0
Travel Time (hr)	19.7
Avg Speed (mph)	4
Fuel Used (gal)	60.5
HC Emissions (g)	2
CO Emissions (g)	827
NOx Emissions (g)	8
Vehicles Entered	877
Vehicles Exited	850
Hourly Exit Rate	3400
Input Volume	3625
% of Volume	94
Denied Entry Before	9
Denied Entry After	56

4: University & Probert Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Total Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Delay / Veh (s)	1.9	0.5	3.8	0.9	16.0	1.2	7.0	2.0
Total Stops	9	0	9	0	3	0	19	40
Travel Dist (mi)	4.6	0.5	0.7	3.4	0.2	0.2	1.1	10.5
Travel Time (hr)	0.2	0.0	0.1	0.2	0.0	0.0	0.1	0.6
Avg Speed (mph)	20	18	11	22	9	18	11	18
Fuel Used (gal)	1.7	0.1	0.3	2.1	0.1	0.1	0.5	5.0
HC Emissions (g)	0	0	0	0	0	0	0	0
CO Emissions (g)	53	4	6	95	4	8	24	193
NOx Emissions (g)	0	0	0	1	0	0	0	2
Vehicles Entered	120	12	23	121	3	4	18	301
Vehicles Exited	120	12	23	121	3	4	19	302
Hourly Exit Rate	480	48	92	484	12	16	76	1208
Input Volume	472	43	77	549	13	16	59	1229
% of Volume	102	112	119	88	92	100	129	98
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

5: East & Wegman's Drive Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Total Delay (hr)	0.2	0.3	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.7	0.1	1.8
Delay / Veh (s)	13.9	8.7	3.8	28.1	10.8	7.8	30.1	6.7	11.9	49.8	14.9	16.0
Total Stops	33	38	10	6	33	13	5	2	7	35	25	207
Travel Dist (mi)	1.2	2.9	0.6	1.0	13.3	4.3	0.1	0.0	0.1	1.6	1.0	26.1
Travel Time (hr)	0.2	0.4	0.1	0.1	0.8	0.3	0.1	0.0	0.0	0.8	0.2	2.9
Avg Speed (mph)	5	8	10	10	16	17	1	5	3	2	9	9
Fuel Used (gal)	0.7	1.5	0.2	0.5	6.5	1.9	0.2	0.0	0.1	2.4	0.8	14.9
HC Emissions (g)	0	0	0	0	1	0	0	0	0	0	0	2
CO Emissions (g)	8	42	2	18	367	93	1	0	4	21	13	568
NOx Emissions (g)	0	0	0	0	4	1	0	0	0	0	0	6
Vehicles Entered	44	106	23	7	104	30	7	2	8	50	30	411
Vehicles Exited	42	102	21	7	101	30	7	2	8	55	31	406
Hourly Exit Rate	168	408	84	28	404	120	28	8	32	220	124	1624
Input Volume	180	387	58	40	477	160	26	5	32	155	174	1699
% of Volume	93	105	145	70	85	75	108	160	100	142	71	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	4	1	5
Denied Entry After	1	0	0	0	0	0	0	0	0	0	0	1

6: University & Wegman's Drive Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Total Delay (hr)	0.1	0.0	0.1	0.2	0.1	0.0	0.6
Delay / Veh (s)	4.5	2.7	14.8	6.4	19.7	8.5	6.8
Total Stops	30	4	9	36	16	13	108
Travel Dist (mi)	3.0	0.7	1.2	10.1	0.3	0.2	15.5
Travel Time (hr)	0.3	0.1	0.1	0.6	0.1	0.0	1.2
Avg Speed (mph)	12	11	11	18	2	7	13
Fuel Used (gal)	1.7	0.3	0.4	3.2	0.4	0.2	6.1
HC Emissions (g)	0	0	0	0	0	0	1
CO Emissions (g)	63	3	4	53	3	2	127
NOx Emissions (g)	1	0	0	1	0	0	2
Vehicles Entered	114	26	14	124	21	14	313
Vehicles Exited	115	26	14	128	22	13	318
Hourly Exit Rate	460	104	56	512	88	52	1272
Input Volume	443	92	59	546	102	95	1337
% of Volume	104	113	95	94	86	55	95
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	27.4
Delay / Veh (s)	71.7
Total Stops	1726
Travel Dist (mi)	279.0
Travel Time (hr)	38.5
Avg Speed (mph)	9
Fuel Used (gal)	189.1
HC Emissions (g)	16
CO Emissions (g)	6112
NOx Emissions (g)	60
Vehicles Entered	1403
Vehicles Exited	1354
Hourly Exit Rate	5416
Input Volume	18923
% of Volume	29
Denied Entry Before	14
Denied Entry After	58

Arterial Level of Service: EB University

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Probert	4	1.9	7.1	0.0	23
Wegman's Drive	6	4.4	7.7	0.0	13
	11	2.2	12.5	0.1	24
Winton	3	141.6	146.6	0.1	6
Total		150.1	173.9	0.2	12

Arterial Level of Service: WB University

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Winton	3	48.1	59.9	0.1	6
	11	1.5	8.9	0.1	23
Wegman's Drive	6	6.4	16.1	0.1	19
Probert	4	0.9	4.3	0.0	23
Total		56.9	89.3	0.3	11

Queuing and Blocking Report
 Friday Peak_Signal at Wegmans

1/26/2011

Intersection: 1: East & Probert

Movement	EB	EB	NB	NB	SB
Directions Served	LT	T	L	TR	LR
Maximum Queue (ft)	47	45	30	52	50
Average Queue (ft)	14	6	21	23	35
95th Queue (ft)	43	33	42	59	50
Link Distance (ft)	188	188	68	68	306
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: East & Winton

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	T	R	L	T
Maximum Queue (ft)	159	270	287	89	112	235	156	219	250	49	174	291
Average Queue (ft)	88	182	205	66	61	103	83	109	133	24	108	217
95th Queue (ft)	159	288	333	100	102	197	133	212	225	52	197	317
Link Distance (ft)		676	676		448	448		250	250			285
Upstream Blk Time (%)									0			5
Queuing Penalty (veh)									0			23
Storage Bay Dist (ft)	180			140			150			150	150	
Storage Blk Time (%)		7					2	2	2		5	9
Queuing Penalty (veh)		9					6	4	2		11	17

Intersection: 2: East & Winton

Movement	SB
Directions Served	TR
Maximum Queue (ft)	308
Average Queue (ft)	233
95th Queue (ft)	311
Link Distance (ft)	285
Upstream Blk Time (%)	1
Queuing Penalty (veh)	7
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
 Friday Peak_Signal at Wegmans

1/26/2011

Intersection: 3: University & Winton

Movement	EB	EB	EB	B11	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	T	L	T	TR	L	T	TR	L	T
Maximum Queue (ft)	125	298	219	41	100	422	405	100	267	286	94	259
Average Queue (ft)	115	208	186	10	92	307	228	57	217	231	81	210
95th Queue (ft)	145	300	240	38	112	445	432	101	286	294	107	301
Link Distance (ft)		227		385		455	455		285	285		244
Upstream Blk Time (%)		4	1						0	2		13
Queuing Penalty (veh)		20	0						0	7		0
Storage Bay Dist (ft)	100		120		75			75			70	
Storage Blk Time (%)	35	31	35		27	31		1	37		28	47
Queuing Penalty (veh)	272	235	182		49	55		4	34		74	84

Intersection: 3: University & Winton

Movement	SB
Directions Served	TR
Maximum Queue (ft)	259
Average Queue (ft)	216
95th Queue (ft)	293
Link Distance (ft)	244
Upstream Blk Time (%)	22
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: University & Probert

Movement	EB	WB	NB
Directions Served	LTR	L	LR
Maximum Queue (ft)	94	28	78
Average Queue (ft)	32	19	50
95th Queue (ft)	86	39	82
Link Distance (ft)	199		306
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
 Friday Peak_Signal at Wegmans

1/26/2011

Intersection: 5: East & Wegman's Drive

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	86	94	110	31	116	139	100	179	138
Average Queue (ft)	52	42	79	26	56	83	52	134	69
95th Queue (ft)	93	81	121	43	122	145	102	175	142
Link Distance (ft)		94	94		676	676	66	164	
Upstream Blk Time (%)	0	1	4				2	8	
Queuing Penalty (veh)	0	2	12				0	0	
Storage Bay Dist (ft)	140			150					125
Storage Blk Time (%)	0	1						13	0
Queuing Penalty (veh)	0	1						23	0

Intersection: 6: University & Wegman's Drive

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	100	74	231	78	30
Average Queue (ft)	79	27	107	50	17
95th Queue (ft)	119	72	224	80	41
Link Distance (ft)	83		385	76	
Upstream Blk Time (%)	5			2	
Queuing Penalty (veh)	28			0	
Storage Bay Dist (ft)		100			50
Storage Blk Time (%)			6	9	
Queuing Penalty (veh)			3	8	

Network Summary

Network wide Queuing Penalty: 1174

Actuated Signals, Observed Splits
Friday Peak_Signal at Wegmans

1/26/2011

Intersection: 2: East & Winton

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SBL	NBTL	EBL	WBTL	NBL	SBTL	WBL	EBTL
Maximum Green (s)	12.5	44.0	6.5	34.0	14.5	42.0	10.5	30.0
Minimum Green (s)	4.0	7.0	4.0	10.0	4.0	7.0	4.0	10.0
Recall	None	C-Max	None	Min	None	C-Max	None	Min
Avg. Green (s)	12.5	51.7	6.3	34.2	11.3	45.2	8.6	33.8
g/C Ratio	0.06	0.43	0.05	0.29	0.09	0.38	0.07	0.28
Cycles Skipped (%)	43	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	57	100	88	100	43	100	43	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): 120.0

Number of Complete Cycles : 6

Intersection: 3: University & Winton

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	WBL	NBTL	SBL	EBTL	EBL	SBTL	NBL	WBTL
Maximum Green (s)	19.0	33.0	11.0	35.0	19.0	33.0	11.0	35.0
Minimum Green (s)	4.0	7.0	4.0	6.0	4.0	6.0	4.0	7.0
Recall	None	C-Max	None	Max	None	C-Max	None	Max
Avg. Green (s)	16.0	48.4	11.0	48.7	12.9	48.4	0.0	48.7
g/C Ratio	0.04	0.40	0.01	0.41	0.03	0.40	0.00	0.41
Cycles Skipped (%)	71	0	86	0	71	0	100	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	14	100	14	100	0	100	0	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): 120.0

Number of Complete Cycles : 7

Actuated Signals, Observed Splits
 Friday Peak_Signal at Wegmans

1/26/2011

Intersection: 5: East & Wegman's Drive

Phase	2	4	6	7	8
Movement(s) Served	NBTL	EBTL	SBTL	EBL	WBTL
Maximum Green (s)	30.5	78.5	30.5	31.5	43.5
Minimum Green (s)	3.0	7.0	3.0	3.0	6.0
Recall	Max	C-Max	Max	None	C-Max
Avg. Green (s)	30.5	78.5	30.5	10.4	66.6
g/C Ratio	0.25	0.65	0.25	0.07	0.55
Cycles Skipped (%)	0	0	0	14	0
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	100	100	100	0	100
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): 120.0

Number of Complete Cycles : 7

Intersection: 6: University & Wegman's Drive

Phase	2	4	8
Movement(s) Served	NBL	EBT	WBTL
Maximum Green (s)	20.0	30.0	30.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	C-Max	C-Max
Avg. Green (s)	7.9	42.3	42.3
g/C Ratio	0.13	0.70	0.70
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	7	0	0
Cycles Maxed Out (%)	0	100	100
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): 60.0

Number of Complete Cycles : 14



Department of Transportation

Monroe County, New York

Maggie Brooks
County Executive

Terrence J. Rice, P.E.
Director

TIS PRELIMINARY COMMENT MEMO

TO: T.Y. LIN INTERNATIONAL FOR WEGMANS
ATTN: DENNIS J. KENNELLY, P.E.
RE: WEGMANS EAST AVENUE – TRAFFIC IMPACT STUDY REVIEW, CITY OF ROCHESTER
DATE: 1/12/11
FROM: THOMAS J. CESARIO, P.E. – ENGINEER
OF: TRAFFIC OPERATIONS & PERMITS PHONE #: (585) 753-7711
FAX #: (585) 324-4348
EMAIL: TCESARIO@MONROECOUNTY.GOV

WE HAVE REVIEWED SEVERAL ITEMS PROVIDED OVER THE PAST SEVERAL WEEKS ON THE REFERENCED PROJECT, INCLUDING THE REVISED TRAFFIC IMPACT STUDY DATED NOVEMBER 2010 AND YOUR REPLY LETTER DATED NOVEMBER 16, 2010. THE FOLLOWING COMMENTS WILL NEED TO BE ADDRESSED IN ORDER FOR US TO RECOMMEND APPROVAL BY THE CITY:

1. REGARDING THE CAPACITY ANALYSIS SUMMARY SHOWN ON PAGE 12 OF THE UPDATED REPORT, THE TABULAR INFORMATION IS INCOMPLETE FOR OUR COMPARISON. PLEASE ADD PROJECTED LEVELS OF SERVICE/DELAY DATA USING THE EXISTING TIMING SCHEMES TO PROVIDE COMPARISON AGAINST THE INFORMATION USING ADJUSTED TIMINGS.
2. FOR EAST AVENUE,
 - A. WE GENERALLY CONCUR WITH YOUR FINDINGS THAT A TRAFFIC SIGNAL IS JUSTIFIED AT THE PROPOSED WEGMANS/COUNTRY CLUB PLAZA INTERSECTION. WE DO REQUEST THE ANALYSIS BE RE-RUN WITH THE NON-CONFLICTING RIGHT TURN VOLUMES < 7 SECONDS REMOVED AND ALSO TO RUN A WARRANT ANALYSIS TO JUSTIFY AN EASTBOUND LEFT TURN ARROW.
 - B. PLEASE CLARIFY WHETHER A TWO-PHASE SIGNAL OR THREE-PHASE SIGNAL IS PROPOSED AT WEGMANS DRIVE/EAST AVE/COUNTRY CLUB PLAZA INTERSECTION. THE UPDATED STUDY AND THE NOVEMBER 16, 2010 DATED RESPONSE LETTER DIFFER ON THE DESCRIPTION OF THE PROPOSED SIGNAL.
 - C. IT REMAINS UNCLEAR WHAT IMPACT EASTBOUND QUEUING AT THE PROPOSED SIGNAL LOCATION WILL HAVE ON THE PROBERT STREET INTERSECTION AND THE MCDONALD'S ENTRANCE. YOUR PLAN INDICATES ANY QUEUING BEYOND 115 FEET FROM THE PROPOSED STOP BAR AT WEGMANS DR/EAST AVE/COUNTRY CLUB PLAZA INTERSECTION WILL ENCROACH INTO THE INTERSECTION, YET THE REPORT INDICATES A GREATER LENGTH OCCURS BUT DOES NOT MENTION IMPACTS.

- D. ALSO, REGARDING WESTBOUND TRAVEL, YOUR 11.16.10 RESPONSE TO OUR COMMENT 1A STATED A SINGLE THROUGH LANE WOULD OPERATE SUFFICIENTLY AND THE PRESENCE OF A RIGHT-TURN LANE WOULD PROVIDE A BENEFIT TO THE PROPOSED SIGNALIZED INTERSECTION. PLEASE EXPOUND UPON THE PREVIOUS REPLY BY STATING YOUR RECOMMENDATIONS FOR THE PAVEMENT MARKING SCHEME THROUGH THIS AREA.
- E. THE ANALYSIS INDICATES A SINGLE OUTBOUND LANE FOR THE COUNTRY CLUB PLAZA ENTRANCE, YET THE PLAN SHOWS TWO EXITING LANES. PLEASE REVISE THE ANALYSIS TO COINCIDE WITH THE PROPOSED PLANS. THIS MAY HELP THE QUEUING EASTBOUND.

3. FOR UNIVERSITY AVENUE:

- A. PLEASE RE-RUN THE ANALYSIS FOR THE PROPOSED SIGNALIZED INTERSECTION AT WEGMANS DR/UNIVERSITY AVE TO INCLUDE A LONGER (120-SEC.) CYCLE. WE HAVE CONCERNS WITH THE PROJECTED EASTBOUND QUEUE LENGTH AND ITS IMPACT ON THE PROBERT STREET INTERSECTION. BEFORE CONSIDERING A SECOND EASTBOUND LANE, THE LONGER CYCLE LENGTH MAY PROVIDE ADEQUATE MITIGATION.
 - B. WE HAVE SOME CONCERNS WITH THE PROPOSED STRIPING PLAN FOR UNIVERSITY AVENUE BETWEEN WINTON ROAD AND PROBERT ST. THE PROPOSED TAPER LENGTH TO MERGE 2 WESTBOUND LANES INTO ONE LANE IS ONLY 150' AS THEY LEAVE WINTON RD. WE FEEL THIS MAY NOT BE ENOUGH SPACE, AND MAY CAUSE SOME PROBLEMS AT THE WINTON RD/UNIVERSITY AVE SIGNAL. PLEASE INVESTIGATE OPTIONS TO CARRY TWO LANES WESTBOUND FURTHER WEST AND A LONGER TAPER INTO ONE LANE FOR THE PROPOSED SIGNALIZED INTERSECTION.
 - C. FOR THE WINTON ROAD ACCESS, THE REPORT DOES NOT PROVIDE DISCUSSION RELATIVE TO OUR OCTOBER 21, 2010 MEETING. AT THAT TIME, WE DISCUSSED THE ANTICIPATED TRUCK DELIVERY SCHEDULES AND THE TOPIC OF THE RAISED MEDIAN CHANGES. THE CURRENT PROPOSAL IS TO REMOVE A PORTION OF THE EXISTING RAISED MEDIAN. WE REQUEST A LIST OF MITIGATION CHOICES THAT WEGMANS CAN IMPLEMENT SHOULD A PROBLEM EVER DEVELOP WITH LEFT TURNS INTO AND OUT OF THIS ACCESS.
4. PLEASE PROVIDE 20 SCALE PAVEMENT MARKING PLANS FOR THE SECTIONS OF EAST AVENUE, UNIVERSITY AVENUE AND WINTON ROAD WHERE CHANGES ARE PROPOSED.
 5. PLEASE NOTE THAT IN ORDER TO MAKE THE PROPOSED PAVEMENT MARKING CHANGES, SOME SORT OF SURFACE TREATMENT WILL BE REQUIRED. THE SPECIFICS OF THIS TREATMENT WILL BE DETERMINED BY THE CITY ENGINEER'S OFFICE.

IF YOU HAVE ANY QUESTIONS, OR REQUIRE ANY ADDITIONAL INFORMATION, PLEASE CONTACT ME AT 753-7711

CC: TERRY RICE - MCDOT
 DORRAINE KIRKMIRE – PLANNING/ZONING – CITY OF ROCHESTER
 J. MCINTOSH, CITY ENGINEER – CITY OF ROCHESTER
 MARK COSTICH – COSTICH ENGINEERING
 JIM POND - MCDOT
 FILE

November 22, 2010

Monroe County Department of Transportation
50 West Main Street
Rochester, New York 14614

ATTN: Thomas J. Cesario, P.E.

RE: Wegmans East Avenue
Traffic Impact Study
World Gym Driveway

Dear Mr. Cesario:

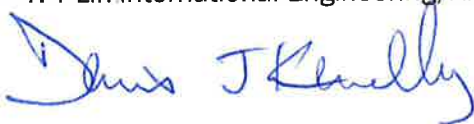
This is a follow-up to our November 18, 2010 letter to you regarding responses to the Traffic Impact Study review comments received from MC DOT.

Attached is a drawing of the proposed modifications and improvements to the World Gym driveway. This driveway forms the 4th leg of the proposed signal location for the Wegmans project. Wegmans representatives have met with the owner of the gym to review the proposed changes.

Please accept this letter and plan as part of the November 16 response letter.

Sincerely,

T. Y Lin International Engineering, Architecture and Land Surveying, P.C.

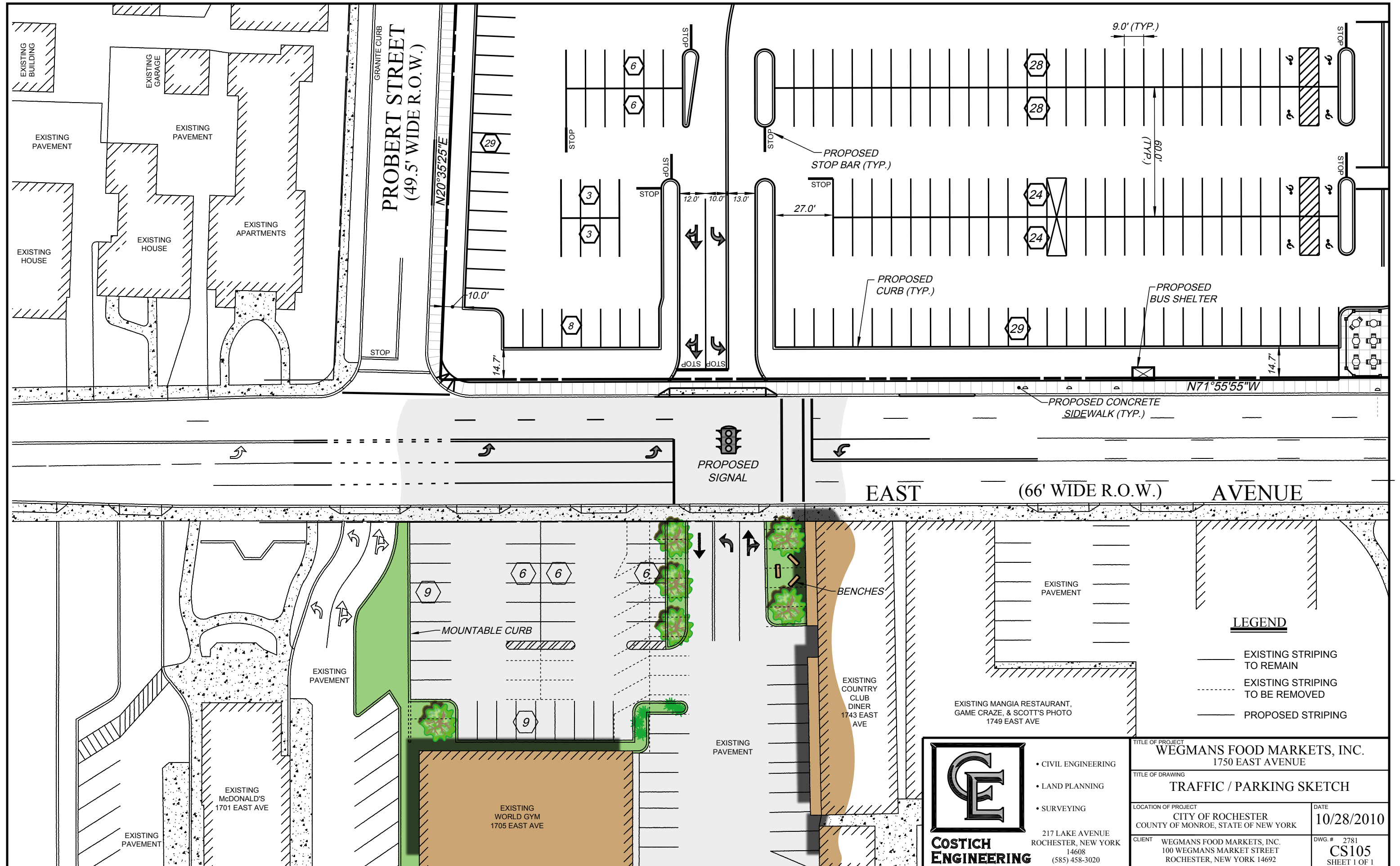


Dennis J. Kennelly, P.E.

DJK/nam

xc: Terry Rice, MCDOT
Dorraine Kirkmire, City of Rochester, Bureau of Planning and Zoning
Jim Pond, MCDOT
Mark Costich, Costich Engineering

[o/roch/projects/43-3164/corresp/out/MCDOT letter _world gym entrance_11-22-2010](o/roch/projects/43-3164/corresp/out/MCDOT%20letter_world_gym_entrance_11-22-2010)



LEGEND

- EXISTING STRIPING TO REMAIN
- - - EXISTING STRIPING TO BE REMOVED
- PROPOSED STRIPING

COSTICH ENGINEERING

CE

- CIVIL ENGINEERING
- LAND PLANNING
- SURVEYING

217 LAKE AVENUE
ROCHESTER, NEW YORK
14608
(585) 458-3020

TITLE OF PROJECT WEGMANS FOOD MARKETS, INC. 1750 EAST AVENUE	
TITLE OF DRAWING TRAFFIC / PARKING SKETCH	
LOCATION OF PROJECT CITY OF ROCHESTER COUNTY OF MONROE, STATE OF NEW YORK	DATE 10/28/2010
CLIENT WEGMANS FOOD MARKETS, INC. 100 WEGMANS MARKET STREET ROCHESTER, NEW YORK 14692	DWG. # 2781 CS105 SHEET 1 OF 1

November 16, 2010

Monroe County Department of Transportation
50 West Main Street
Rochester, NY 14614

ATTN: Thomas J. Cesario, P.E.

RE: Wegmans East Avenue -Traffic Impact
Study Review, City of Rochester

Dear Mr. Cesario,

Thank you for reviewing the updated Traffic Impact Study (TIS) and for meeting with us to discuss your comments.

Background & History

The original TIS for the project was completed in 2004. The TIS was updated to address the several changes to the proposed site plan. The following summarized the changes made and their effects on the overall traffic impact statement.

- For the original 2004 study, a 105,100 sf Wegmans Food Market with a 4,400 sf bank proposed on the southeast corner of the property. In December 2009, the TIS was updated to reflect minor changes to the plan. The current TIS, dated October 2010, reflects the current site plan which proposes a 93,500 sf Food Market; the outparcel has been eliminated. Since the total building square footage has decreased, the TIS analysis reports volumes for a building size up to 105,100 sf. Therefore, the analysis is conservative.
- The proposed site driveway configuration changed between the December 2009 and October 2010 TIS from single exiting lanes to an exclusive right and a left-through lane. This slight change improved queue delays at the intersection, reducing the 95% queue, and no longer blocking the McDonald's driveway along East Avenue.

We have made revisions to the report per your comments dated August 4, 2010 and offer the following responses:

Comment 1: THE PROJECT PROPOSES SIGNIFICANT CHANGES TO TRAFFIC CONTROL DEVICES (SIGNALS, SIGNS, MARKINGS) ALONG THE EAST-WEST ARTERIALS OF EAST AVENUE AND UNIVERSITY AVENUE.

Comment 1A: FOR EAST AVENUE, PLEASE DISCUSS MORE THOROUGHLY THE LANE USAGE REQUIREMENTS AND PARKING NEEDS. HOW MANY LANES ON EAST AVENUE ARE ACTUALLY NEEDED THROUGH THE PROJECT AREA? ARE THERE OPPORTUNITIES AND SUPPORT FOR CHANGING THE CURRENT (LIMITED) ON-STREET PARKING SITUATION?

Response 1A: There are two lanes in each direction, with a two-way left turn lane. Parking is allowed on the curb lanes. As we discussed in our August 9, 2010 meeting, the parking needs on the Wegmans side of the street were primarily needed due to the store fronts east of the existing store.

Based on projected traffic volumes for the project, acceptable levels of service could be provided with a single lane in the westbound direction. However, the second through lane will provide a de-facto right turn lane, which will result in increased efficiencies of the signal operation and reduced westbound queue lengths (which more than double without the second lane). Further, if the pavement width was narrowed for single-lane geometry, the loss of pavement width would limit options for lane configuration, if future conditions were to change.

Comment 1B: FOR UNIVERSITY AVENUE, PLEASE EXPLAIN THE LANE CHANGES PROPOSED FOR CREATING THE WESTBOUND LEFT-TURN POCKET. WHAT STORAGE IS REQUIRED AND HOW WOULD THE LANES BE CREATED? ALSO, WHEN REFERRING TO "THE" PROPOSED TRAFFIC SIGNAL, PLEASE CLARIFY IN 2010 THE COUNTY IS INITIALLY INSTALLING A TEMPORARY SIGNAL CONSTRUCTED ON SPAN WIRE, AND THAT WEGMANS NEEDS TO DESIGN AND CONSTRUCT THE PERMANENT TRAFFIC SIGNAL SYSTEM AS PART OF THIS PROJECT.

Response 1B: The TIS was revised to note the two stages of the traffic signal installation, changing the discussion to the following:

MCDOT has determined that a signalized pedestrian crossing is warranted for the crossing located adjacent to the Harris Corporation Building. This pedestrian signal will be installed prior to the construction of the proposed Wegmans. Upon project completion MCDOT will allow Wegmans to install a traffic signal at the parking lot driveway on University Avenue concurrent with the pedestrian crossing, taking the place of the new pedestrian signal. Therefore, all future analysis includes a signalized driveway on University Avenue.

University Avenue will be restriped to widen from a two lane section at Probert Street to a three lane section at the Wegmans Driveway. The three lane section will then continue to Harris Driveway located just east of the proposed store face. The center left turn lane will be split between the Wegmans Driveway (westbound) and the Harris Driveway (eastbound) providing 100'± for Wegmans and 75'± for Harris with about 50' of continuous two-way Left Turn (CTWLT) lane to allow additional capacity for each direction. The peak traffic times for the left turns should be at different times allowing this arrangement to operate satisfactorily.

The CTWLT lane will continue easterly and align with the existing left turn lane at Winton Road allowing left turn storage for vehicles accessing both Wegmans and Harris employee parking between Winton and the Harris Driveway. In the eastbound direction the single through lane will widen to two lanes just west of the Harris Driveway to accommodate the through/right lane at the intersection of South Winton Road. In the westbound direction, the two through lanes from Winton Road will narrow to one lane between Winton and the Harris Driveway.

Comment 1C: WE CONCUR THAT TWO (2) EGRESS LANES WOULD BE APPROPRIATE FOR THE PROPOSED ACCESSES AT EAST AVENUE AND UNIVERSITY AVENUE.

Response 1C: Noted.

Comment 2: WE HAVE SEVERAL QUESTIONS AND CONCERNS WHEN CONSIDERING THE RELOCATION OF THE TRAFFIC SIGNAL CURRENTLY LOCATED AT EAST AVENUE AND PROBERT STREET /MCDONALD'S RESTAURANT TO THE PROPOSED WEGMANS ENTRANCE AT EAST AVENUE OPPOSITE COUNTRY CLUB DINER:

Comment 2A: HAS MCDONALD'S BEEN MADE FULLY AWARE OF THIS PROPOSAL AND HAVE THEY AGREED TO ITS POTENTIAL IMPACT ON THEIR TWO-LANE EGRESS LOCATION?

Response 2A: Yes. Wegmans has been in communication with McDonalds and the owner of the Gym complex, and met with them on October 21, 2010. Wegmans has had discussions with McDonalds to inform them that the queue lengths at peak times do not block the driveway.

Comment 2B: TO EVALUATE THE NEED FOR A TRAFFIC SIGNAL AT THE PROPOSED LOCATION, PLEASE PROVIDE PROJECTED TRAFFIC VOLUMES FROM THE BUSINESSES ON THE SOUTH SIDE OF EAST AVENUE. HAS POTENTIAL CROSS-ACCESS WITH THE MCDONALD'S PROPERTY BEEN CONSIDERED?

Response 2B: Wegmans approached the owners of McDonalds and the Gym complex about the potential for cross access between the two properties; this item was discussed at the October 21 meeting. The Gym owner voiced his reluctance to cross access pending further detail of future expansion plans on his property. With the signal in its currently proposed location, the Gym complex would benefit by becoming the 4th leg of the new intersection. Improvements and any necessary mitigation at the Gym driveway would be completed by Wegmans.

Projected traffic volumes at the Gym complex were determined using 2004 counts grown to 2009 volumes. If necessary, updated counts will be performed to provide a basis for current traffic volumes using the Gym complex.

Comment 2C: THE PROPOSED SIGNAL HAS THREE PHASES, INCLUDING AN EASTBOUND LEFT TURN PHASE. TO JUSTIFY THE LEFT TURN PHASE, PLEASE VERIFY WHETHER THE LOCATION MEETS THE WARRANTS.

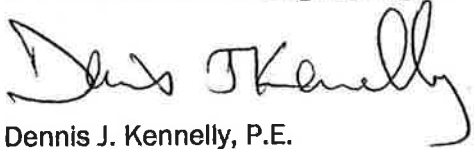
Response 2C: A SYNCHRO evaluation of the left turn operation with and without a separate left turn phase was completed. The EB left queue without the LT phase will be extended by approximately 45 feet during the Friday peak hour and approximately 30 feet during the Saturday peak hour. Though the additional queue lengths analysis did not result in the blocking the McDonalds driveway, actual conditions may differ, so the potential still exists. Therefore, it is proposed to retain the dedicated LT phase at the new signal location.

Comment 2D: THE COUNTY RECOMMENDS A MEETING BE HELD WITH ALL STAKEHOLDERS IN THE IMMEDIATE AREA AFFECTED BY THE PROPOSAL TO FURTHER DISCUSS WHAT IS PROPOSED AND ANY APPROPRIATE DESIGN ALTERNATIVES.

Wegmans East Avenue Store
MCDOT Traffic Study Comments
October 29, 2010

Response 2D: Wegmans has coordinated with affected Stakeholders throughout the process. A meeting would only be needed if written documentation of past coordination is not provided by Wegmans.

Sincerely,
T. Y Lin International Engineering, Architecture and Land Surveying, P.C.

A handwritten signature in black ink, appearing to read "Dennis J. Kennelly". The signature is fluid and cursive, with the first name "Dennis" and last name "Kennelly" clearly legible.

Dennis J. Kennelly, P.E.

xc: Terry Rice, MCDOT
Dorraine Kirkmire, City of Rochester, Bureau of Planning and Zoning
Jim Pond, MCDOT
Mark Costich, Costich Engineering

KMO/djk

o/roch/projects/43-3164/corresp/out/MCDOT Comment Responses November 2010



Department of Transportation

Monroe County, New York

Maggie Brooks
County Executive

Terrence J. Rice, P.E.
Director

TIS PRELIMINARY COMMENT MEMO

TO: T.Y. LIN - FRA ENGINEERING
ATTN: CARL W. AST, ASSOCIATE
RE: Wegmans East Avenue – Traffic Impact Study Review, City of Rochester
DATE: 8/4/10
FROM: THOMAS J. CESARIO, P.E. – ENGINEER
OF: TRAFFIC OPERATIONS & PERMITS PHONE #: (585) 753-7711
FAX #: (585) 324-4348
EMAIL: TCESARIO@MONROECOUNTY.GOV

WE HAVE REVIEWED THE TRAFFIC ANALYSIS PREPARED FOR THE SUBJECT PROJECT AND OFFER THE FOLLOWING COMMENTS:

1. THE PROJECT PROPOSES SIGNIFICANT CHANGES TO TRAFFIC CONTROL DEVICES (SIGNALS, SIGNS, MARKINGS) ALONG THE EAST-WEST ARTERIALS OF EAST AVENUE AND UNIVERSITY AVENUE.
 - A. FOR EAST AVENUE, PLEASE DISCUSS MORE THOROUGHLY THE LANE USAGE REQUIREMENTS AND PARKING NEEDS. HOW MANY LANES ON EAST AVENUE ARE ACTUALLY NEEDED THROUGH THE PROJECT AREA? ARE THERE OPPORTUNITIES AND SUPPORT FOR CHANGING THE CURRENT (LIMITED) ON-STREET PARKING SITUATION?
 - B. FOR UNIVERSITY AVENUE, PLEASE EXPLAIN THE LANE CHANGES PROPOSED FOR CREATING THE WESTBOUND LEFT-TURN POCKET. WHAT STORAGE IS REQUIRED AND HOW WOULD THE LANES BE CREATED? ALSO, WHEN REFERRING TO “THE” PROPOSED TRAFFIC SIGNAL, PLEASE CLARIFY IN 2010 THE COUNTY IS INITIALLY INSTALLING A TEMPORARY SIGNAL CONSTRUCTED ON SPAN WIRE, AND THAT WEGMANS NEEDS TO DESIGN AND CONSTRUCT THE PERMANENT TRAFFIC SIGNAL SYSTEM AS PART OF THIS PROJECT.
 - C. WE CONCUR THAT TWO (2) EGRESS LANES WOULD BE APPROPRIATE FOR THE PROPOSED ACCESSSES AT EAST AVENUE AND UNIVERSITY AVENUE.
2. WE HAVE SEVERAL QUESTIONS AND CONCERNS WHEN CONSIDERING THE RELOCATION OF THE TRAFFIC SIGNAL CURRENTLY LOCATED AT EAST AVENUE AND PROBERT STREET/MCDONALD’S RESTAURANT TO THE PROPOSED WEGMANS ENTRANCE AT EAST AVENUE OPPOSITE COUNTRY CLUB DINER:
 - A. HAS MCDONALD’S BEEN MADE FULLY AWARE OF THIS PROPOSAL AND HAVE THEY AGREED TO ITS POTENTIAL IMPACT ON THEIR TWO-LANE EGRESS LOCATION?
 - B. TO EVALUATE THE NEED FOR A TRAFFIC SIGNAL AT THE PROPOSED LOCATION, PLEASE PROVIDE PROJECTED TRAFFIC VOLUMES FROM THE BUSINESSES ON THE SOUTH SIDE OF EAST AVENUE. HAS POTENTIAL CROSS-ACCESS WITH THE MCDONALD’S PROPERTY BEEN CONSIDERED?

- C. THE PROPOSED SIGNAL HAS THREE PHASES, INCLUDING AN EASTBOUND LEFT TURN PHASE. TO JUSTIFY THE LEFT TURN PHASE, PLEASE VERIFY WHETHER THE LOCATION MEETS THE WARRANTS.
- D. THE COUNTY RECOMMENDS A MEETING BE HELD WITH ALL STAKEHOLDERS IN THE IMMEDIATE AREA AFFECTED BY THE PROPOSAL TO FURTHER DISCUSS WHAT IS PROPOSED AND ANY APPROPRIATE DESIGN ALTERNATIVES.

FOLLOWING APPROVAL OF THE TRAFFIC STUDY, WE ANTICIPATE REVIEWING FULL-SIZE HIGHWAY PLANS AND FINALIZING APPROPRIATE LOCATIONS FOR PROPOSED FEATURES.

CC: TERRY RICE - MCDOT
DORRAINE KIRKMIRE – PLANNING/ZONING – CITY OF ROCHESTER
MARK COSTICH – COSTICH ENGINEERING
JIM POND - MCDOT
FILE

H:\SHARED\SUBJECT\T\TRAFF OPS-PERMITS\PERMITS\TIR\CITY - WEGMANS EAST AVE TRAFFIC IMPACT STUDY REVISED COMMENTS.DOC

Jim, after our phone conversation, we concur with the location you propose for the temporary pedestrian signal (Harris) as long as it doesn't preclude Wegmans from modifying the location in the future to better fit the proposed Wegmans site driveway.

We also concur that we would rather not signalize our existing (driveway) onto University Avenue to accommodate the temporary pedestrian crosswalk at this time.

From: JPond@monroecounty.gov [mailto:JPond@monroecounty.gov]
Sent: Monday, November 30, 2009 4:49 PM
To: Eric Bartles
Cc: Giglio, Al; 'AJensen@monroecounty.gov'; Dan Aken; Kim Seavert; Larsen, Willy
Subject: University Ave. Temporary signal

Eric,

In developing our proposal, we had moved the crosswalk as far west as possible to get it away from your existing driveway and avoid the conflict problems you've mentioned. We are not planning on installing it as you show it on your attached plan. I've attached a modified version of it showing where our signal would go and where I understood that your driveway would go. My understanding was that you were limited on how far east you could move your future driveway, which was another reason we went this route. Maybe that's not the case?

If we leave the crosswalk where it is today, we (actually, you) would have to signalize your driveway now as well as the crosswalk. Is this what you are contemplating? If the final driveway alignment is then flipped to the other side of the crosswalk, basically you would be starting over for the permanent signal installation, so you won't gain anything by signalizing your driveway today. You have very few left turns out as it is.

Alternatively, if you want your future driveway where you have shown it and we relocate the signalized crosswalk as proposed, the crosswalk would end up on the west leg of your new driveway. I'd rather it be on the east leg, because then pedestrians coming from the north side wouldn't have to cross your driveway after crossing University Avenue. (You do show it on the east leg on your drawing, but the crosswalk has been retained in its existing location). If you were building the store right now, that would be a great solution, but we need to do something in the interim. Again, we're trying not to signalize your existing driveway, which is why we're moving the crosswalk away from it.

Call me at 753-7755 if you want to discuss this some more...

Jim

"Larsen, Willy" <Wlarsen@CityofRochester.gov>

11/30/2009 03:39 PM

To 'Eric Bartles' <eric.bartles@wegmans.com>

cc Dan Aken <dan.aken@wegmans.com>, Kim Seavert <kim.seavert@wegmans.com>, "JPond@monroecounty.gov" <JPond@monroecounty.gov>, "AJensen@monroecounty.gov" <AJensen@monroecounty.gov>, "Giglio, Al" <Agiglio@CityofRochester.gov>

Subject RE: University Ave. Temporary signal

Eric,

I like the proposal to leave the crosswalk where it currently is as shown in your attached preliminary plan. This takes a "leg" out of the potential conflicts for pedestrians. I would propose, however, to move the existing catch basin currently located along the south side of University to the west so it's not located within the crosswalk. I also propose that the catch basin currently within the crosswalk on the north side of University Avenue also be moved west. Who would ultimately move these basins and pay for their relocation would need to be agreed upon, but it seems like it would probably be a City shared expense.

I also attached a copy of the boundary survey as well for MCDOT's reference given if we leave the crosswalk where it is it won't be necessary to install new ramps. It's up to MCDOT if they still want to install a temporary pedestrian signal at the crosswalk.

Thanks.

Willy

From: Eric Bartles [<mailto:eric.bartles@wegmans.com>]
Sent: Thursday, November 19, 2009 12:06 PM
To: Larsen, Willy
Cc: Dan Aken; Kim Seavert
Subject: University Ave. Temporary signal

Willy, attached is our preliminary plan for the new parking lot. Under a temporary signal scenario, we are concerned about the potential safety of the Harris pedestrian / vehicle conflict with our left turn exits (west bound) onto University Ave.

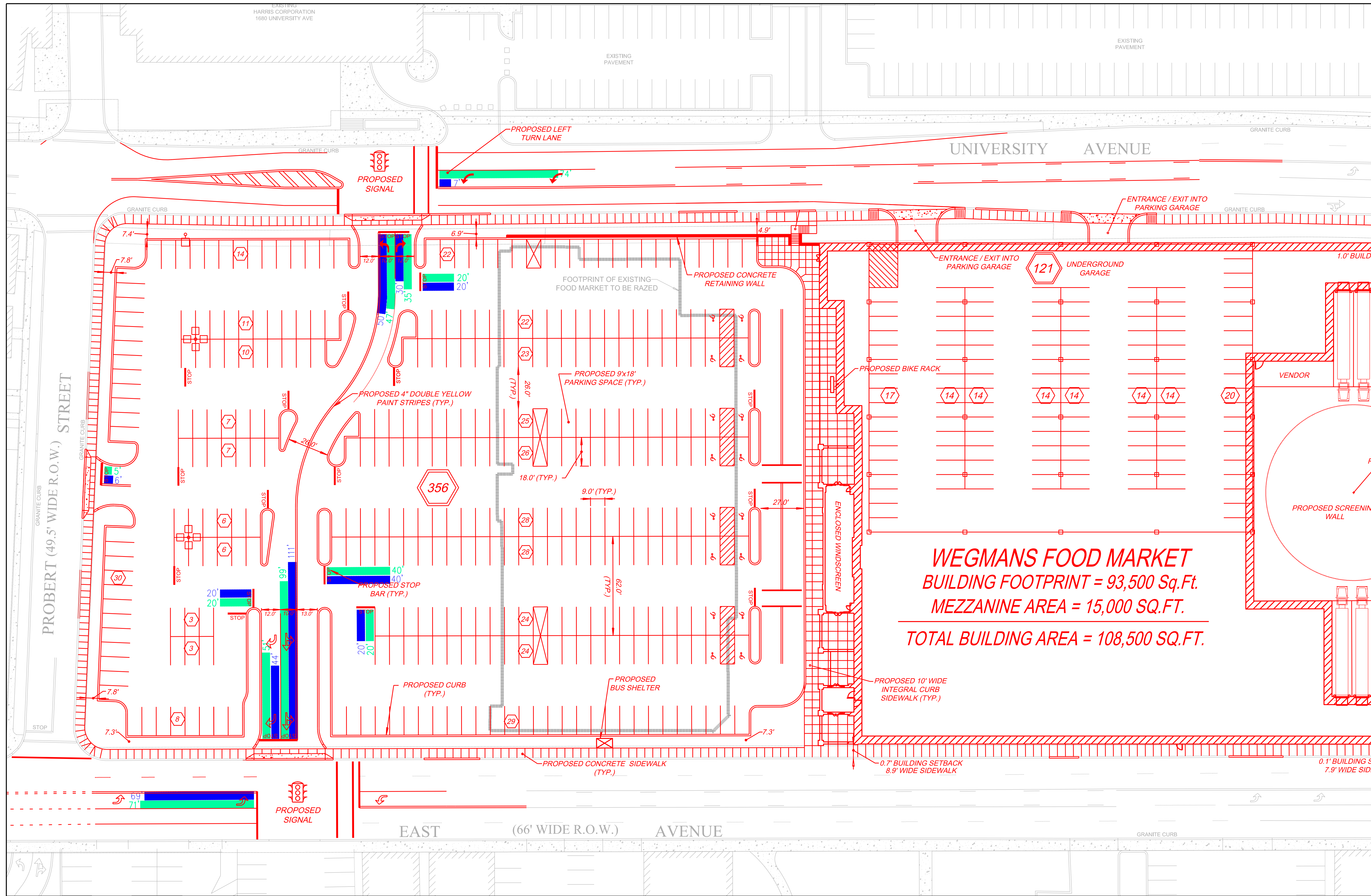
We are also concerned as to whether our west bound exiting traffic will be able to exit with vehicle stacking on University Avenue (West Bound).

Please keep us in the loop as this further develops

I'll send over the existing conditions plan under separate heading.

Thanks, looking forward to working with you on this.

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■ SATURDAY PEAK HOUR QUEUE LENGTH
■ FRIDAY PM PEAK HOUR QUEUE LENGTH

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NO.	DATE	DESCRIPTION	REVISIONS
3			
2			
1			

DATE

TYLINTERNATIONAL

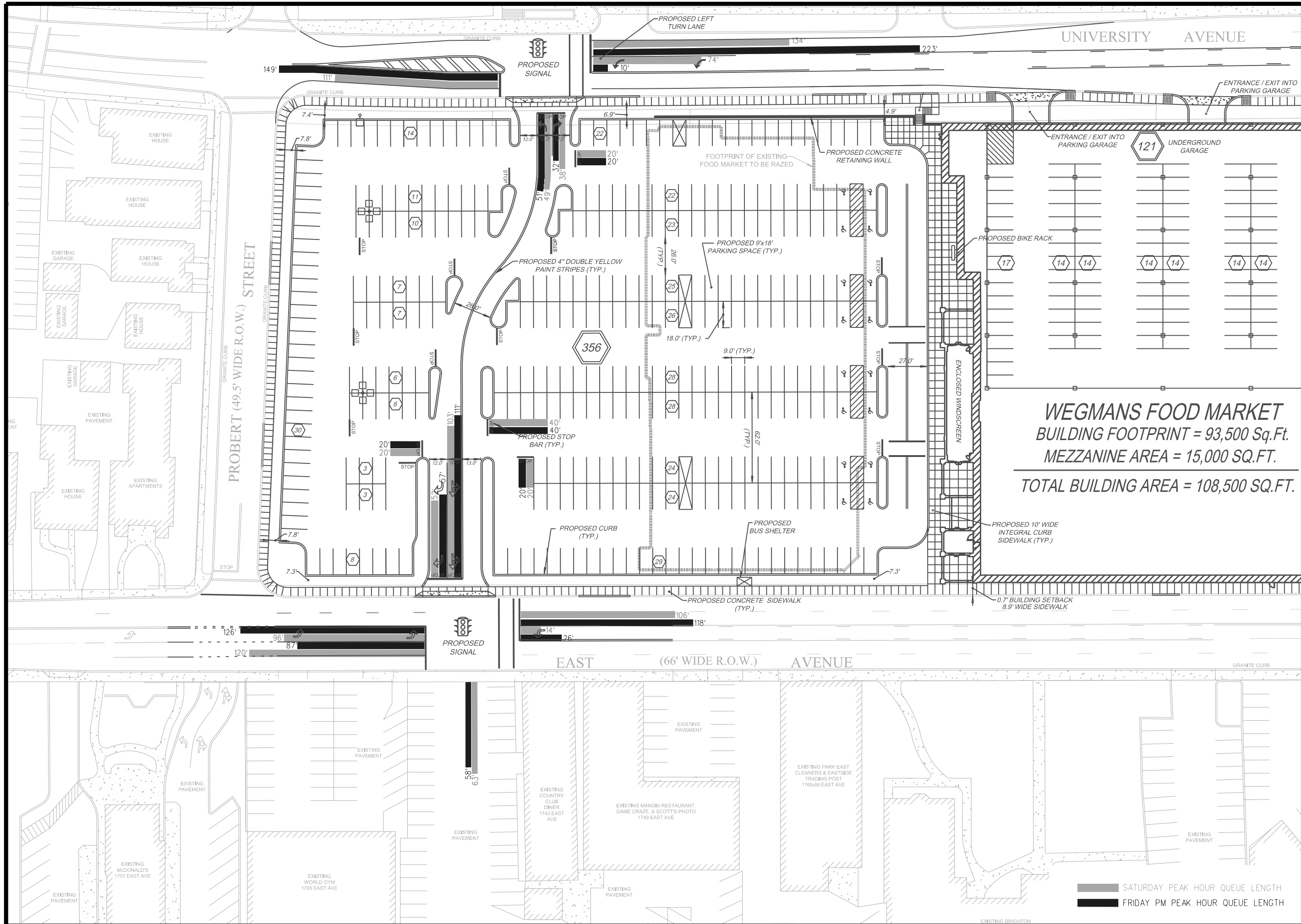
255 EAST AVENUE
ROCHESTER, NY 14604
(585) 512-2000

PROPOSED TRAFFIC MITIGATION - 2

PROJECT NAME: **WEGMANS EAST AVENUE**

PROJECT ADDRESS: **WEGMANS FOOD MARKETS, INC.**
1500 BROOKS AVENUE, P.O. BOX 30844, ROCHESTER, NY 14603

PROJECT NO.:	PROJ. MGR.
43.3164.04	CWA
DATE:	DRWN. BY:
9/28/10	NEB
SCALE:	CHKD. BY:
1"=30'	CWA
DRAWING NO.:	
PM-2	
SHEET NO.	
1 of 1	



WEGMANS FOOD MARKET
 BUILDING FOOTPRINT = 93,500 Sq.Ft.
 MEZZANINE AREA = 15,000 SQ.FT.
 TOTAL BUILDING AREA = 108,500 SQ.FT.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 128

NO.	DATE	DESCRIPTION	REV/ISSUES
3			
2			
1			

DATE

T.Y. LIN INTERNATIONAL
 255 EAST AVENUE
 ROCHESTER, NY 14604
 (585) 512-2000

PROPOSED TRAFFIC QUEUE
 PROJECT NAME: **WEGMANS EAST AVENUE**
 PROJECT ADDRESS: **WEGMANS FOOD MARKETS, INC.**
 1500 BROOKS AVENUE, P.O. BOX 30844, ROCHESTER, NY 14603

PROJECT NO:	43.3164.04	PROJ. MGR.:	CWA
DATE:	10/19/10	DRWN. BY:	NEB
SCALE:	1"=30'	CHKD. BY:	CWA
DRAWING NO.:	PQ-1		
SHEET NO.	1 of 1		

█ SATURDAY PEAK HOUR QUEUE LENGTH
 █ FRIDAY PM PEAK HOUR QUEUE LENGTH

Traffic Impact Study

Wegmans Food Market

East Avenue
Rochester, New York
Monroe County

November, 2010

PREPARED FOR:

Wegmans Food Markets, Inc.
P.O. Box 30844
Rochester, NY 14603-0844

PREPARED BY:

TY Lin International
255 East Avenue
Rochester, NY 14604
p. (585) 512-2000

CONTACT:

Dan Aken & Eric Bartles

TY·LIN INTERNATIONAL



433164.04

TRAFFIC IMPACT STUDY
Wegmans Food Market
East Avenue
City of Rochester, New York

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TRAFFIC IMPACT STUDY
WEGMANS FOOD MARKET
East Avenue
City of Rochester, New York

EXECUTIVE SUMMARY

Wegmans Food Markets, Inc. is proposing to replace the existing supermarket on the north side of East Avenue between Probert Street and North Winton Road in the City of Rochester. The existing 40,500 square foot Wegmans store will be replaced by a new 93,500 square foot store on the same site and on the adjacent land to the east. The traffic was analyzed for a building size up to 105,100 square feet.

This store location is one of the better performing stores, on a patron volume basis, and is in need of expansion to remain competitive in the marketplace. In anticipation of required site plan approval considerations, this Traffic Impact Study was conducted to assess the potential for impacts to the adjacent street network as well as investigate the interactions between the proposed site and the motor vehicles, pedestrians, and RTS buses using the public right-of-ways adjacent to the site.

Manual counts were originally conducted during the months of January and February 2004 to assess operating characteristics. To update this study, new manual counts at the intersection of East Avenue and Probert Street, and East Avenue and North Winton Road were conducted in September 2009 to analyze the change in volumes since 2004. This information was input into a computer based traffic model (Synchro 7.0) to develop a baseline scenario for comparison purposes. This information was combined with the proposed site plan from Wegmans to develop a series of models created to assess the projected future traffic conditions in the vicinity of the site. An updated pedestrian observation was conducted in October 2010, to observe pedestrian traffic along the East Avenue corridor.

Overall, the increase in traffic as a result of this application will be modest and may result in only minor increases in delay at certain locations. Further, the projected increases in delay can be mitigated by adjusting signal timings where needed.

Significant improvements are being recommended as part of this application, all of which will have a positive impact on the site and adjacent street networks. These improvements include:

- Relocating the existing Wegmans driveways on East Avenue and University Avenue as shown in the site plan (**Appendix 'A'**) and eliminating all access points to Probert Street. Resulting in a reduction of the overall number of curb cuts from 10 full access points to 2 full-access driveways and 3 limited-access driveways.

- Removal of the traffic signal at the East Avenue and Probert Street intersection and the installation of a new signal at the East Avenue and Wegmans Drive/World Gym intersection, with reconfiguration of the World Gym parking lot.
- Streetscape improvements and pedestrian accommodations along East Avenue, Probert Street, University Avenue and North Winton Road; including textured/painted crosswalks at all intersections and driveway locations within the vicinity of the project site.
- Installing a 100' westbound left-turn lane into the Wegmans Food Market site on University Avenue; affectively narrowing the travel lanes for the through movements in front of the Wegmans Food Market and the Harris Corporation buildings.

Based on the analysis conducted, which assessed the projected traffic volumes resulting from the proposed project, the proposed 93,500 SF Wegmans Food Market will not adversely impact the adjacent street network and will positively impact the pedestrian and vehicular environments on the adjacent streets.

This report has been updated based on several changes in site plan design. The following lists changes made and their effects on the overall traffic impact statement.

- *For the original 2004 study, a 105,100 sf Wegmans Food Market with a 4,400 sf bank proposed on the southeast corner of the property. This was changed to a 105,100 sf Wegmans Food Market and a 4,700 sf outparcel for future retail development as analyzed in the December 2009 TIS. As of this October 2010 study, the site plans have been changed to a 93,500 sf Wegmans Food Market and no longer include an outparcel on the southeast corner. Since the total building square footage has decreased, the TIS analysis reports volumes for a building size up to 105,100 sf. Therefore this analysis is conservative.*
- *The proposed site driveway configuration changed between the December 2009 and October 2010 TIS from single exiting lanes to an exclusive right and a left-through lane. This slight change improved queue delays at the intersection, reducing the 95% queue, and no longer blocking the McDonald's driveway along East Avenue.*

I. INTRODUCTION

Wegmans Food Markets, Inc. is proposing to replace the existing supermarket on the north side of East Avenue between Probert Street and North Winton Road in the City of Rochester. The existing 40,500 square foot Wegmans store will be replaced by a new 93,500 square foot store on the same site and on the adjacent land to the east. The total floor area of the project is approximately 28,800 SF less than the current total floor area on the subject property.

The purpose of this Traffic Impact Study is to evaluate the potential impacts that the new Wegmans will have on traffic operations on the adjacent street system. The scope and parameters used in this study have been reviewed and approved by the Monroe County Department of Transportation (MCDOT) and reviewed and discussed with the City of Rochester and the New York State Department of Transportation (NYSDOT). The following general items were included in the original study:

- An inventory of existing roadway and traffic conditions in the vicinity of the project site.
- Traffic counts at major intersections surrounding the site.
- A projection of the amount of traffic to be generated by the project and a projection of the directional distribution of site traffic on the adjacent highway system.
- A signal warrant analysis to determine whether the existing traffic signal at the intersection of East Avenue and Probert Street should be removed and replaced by a new signal on East Avenue at the new Wegmans driveway.
- A Level of Service analysis for each of the site driveway intersections and for nearby existing intersections.
- A review of the recent accident history on existing roadways surrounding the project site.
- A review of pedestrian accommodations and travel patterns along University Avenue, particularly between the Harris property and the subject site, incorporating findings by MCDOT for pedestrian accommodations.
- A review of the current RTS bus operations in the vicinity of the site, to address bus stops, staging areas, and potential conflicts with vehicles and pedestrians.
- Identification of mitigation measures to accommodate the new site-generated traffic.

This update of the study includes the following items:

- Manual turning movement counts updates for the intersections of East Avenue/Probert Street and East Avenue/ North Winton Road.
- A review of the most recent accident history and updates to the accident analysis.
- A comparison of the current data with the original June 2004 report to determine differences in trip generation numbers as well as volumes on the roadway network, and revised tables and figures.
- An update of the traffic analysis and output tables.
- Gap Study on East Ave between the existing Wegmans Driveway and N. Winton Road to determine adequate gaps are available for proposed exiting volumes.
- Pedestrian activity observation update along the East Avenue corridor.
- Identification of mitigation measures to accommodate the new site-generated traffic.

II. PROJECT DESCRIPTION

The existing Wegmans Food Market is served by one driveway to East Avenue, one driveway to University Avenue, and two driveways to Probert Street. Additionally there are four driveways behind the Wegmans Food Market (east of the existing store), two on East Avenue and two on University Avenue, that access a rear parking lot serving existing retail establishments and provides employees parking for Wegmans. All driveways are unsignalized.

Wegmans is now proposing to raze the existing store and construct a new 93,500 square foot store on the same site and on the adjacent land to the east. An enlarged parking lot with 356 spaces, versus the existing 213 spaces, will occupy the western portion of the site, while the new Wegmans building will occupy the eastern portion. Several existing buildings and a parking garage will be razed to accommodate the new Wegmans store.

The existing Wegmans driveways to East Avenue and University Avenue will each be relocated some 80 feet to the west. The driveway to East Avenue will be aligned directly opposite a driveway to the World Gym and Country Club Diner. The World Gym and Country Club Diner parking lot will be reconfigured to accommodate a shared access to the proposed signal (see **Appendix 'A'** for intersection details). All existing site access to Probert Street will be eliminated. As part of the project, Wegmans is seeking the removal of the existing traffic signal at the intersection of East Avenue and Probert Street and the installation of a new traffic signal on East Avenue at the Wegmans driveway. The warrants for these traffic signals are discussed in this report.

A new 121-space underground parking garage will be constructed directly beneath the new Wegmans building. The parking garage is intended primarily for Wegmans employees, and will not be accessible to the general public. The garage will be served by two full-access driveways on University Avenue, one of which will be a one-way entrance and the other a one-way exit.

The driveway to North Winton Road will be intended for Wegmans service and delivery vehicles accessing the rear of the Wegmans building.

An updated site plan for the proposed project is shown in **Appendix ‘A’**.

III. EXISTING HIGHWAY SYSTEM

The roadway system examined in this study consists of East Avenue from Probert Street to North Winton Road; University Avenue from Probert Street to North Winton Road; Probert Street from East Avenue to University Avenue; and North Winton Road from East Avenue to University Avenue. East Avenue and University Avenue follow a northwest/southeast orientation and are referred to as east/west streets for study purposes. Probert Street and North Winton Road follow a northeast/southwest orientation and are referred to as north/south streets.

All roadways in the study area are on the City of Rochester street system with a posted speed limit of 30 MPH. There are curbs and sidewalks on both sides of all streets. The following is a description of the individual streets and intersections in the study area:

East Avenue

East Avenue is a Principal Arterial designated N.Y. Route 96 on the State Touring Route System. The section of East Avenue from Probert Street to North Winton Road consists of two 11-foot wide traffic lanes in each direction and an 11-foot wide two-way center lane for left turning vehicles.

The intersection of East Avenue and Probert Street is signalized. Probert Street is aligned directly opposite a one-way exit from a McDonalds Restaurant. The East Avenue approaches to the intersection consist of an exclusive left turn lane and two through lanes, with right turns made from the outside through lanes. The southbound Probert Street approach provides sufficient width for one left turn lane and one right turn lane. The outbound McDonalds driveway consists of one left turn lane and one shared through/right turn lane.

East Avenue forms a four-way signalized intersection with North Winton Road. The eastbound, westbound and southbound approaches consist of an exclusive left turn lane and two through lanes, with right turns made from the outside through lane. The northbound approach consists of an exclusive left turn lane, two through lanes, and an exclusive right turn lane. The traffic signal includes green left turn arrow phases for all four approaches.

University Avenue

University Avenue in the vicinity of Probert Street consists of one variable-width traffic lane in each direction. The roadway widens to two 11-foot wide lanes in each direction about 200 feet east of Probert Street and continues to North Winton Road.

Probert Street intersects University Avenue directly opposite Joe Hue's Place. The intersection is unsignalized with stop signs for the Probert Street and Joe Hue's Place approaches.

University Avenue forms a four-way signalized intersection with North Winton Road. All four approaches consist of an exclusive left turn lane and two through lanes, with right turns made from the outside through lane. The traffic signal operation includes advance green left turn arrows for all four approaches.

Probert Street

Probert Street is a local street that extends for about 325 feet from East Avenue to University Avenue. Probert Street has a curb-to-curb width of 30 feet and consists of one traffic lane in each direction with parking permitted along the west curblin.

North Winton Road

North Winton Road between East Avenue and University Avenue consists of two 11-foot wide through lanes in each direction with exclusive left turn lanes on the respective approaches to East Avenue and University Avenue.

IV. ROADWAY ALIGNMENT AND SIGHT DISTANCES

All roadways surrounding the project site follow a nearly straight horizontal alignment. East Avenue, and Probert Street follow a near level vertical alignment; while North Winton Road drops approximately 14 feet in elevation from East Avenue to University Avenue and University Avenue drops approximately 10 feet from Probert Street to North Winton Road. All intersections in the study area form approximately 90-degree angles. The available sight distances from each of the proposed driveway locations are unrestricted. The available sight distances exceed the sight distance criteria utilized by the New York State Department of Transportation for both passenger cars and trucks.

V. EXISTING TRAFFIC VOLUMES

The Monroe County Department of Transportation (MCDOT) reported the following Average Daily Traffic (ADT) volumes on area roadways as listed below. On East Avenue west of Winton Road the ADT volumes have dropped between the years 2002 and 2006. Likewise, on Winton Road north of East Avenue the ADT volumes have dropped between the years 2001 to 2005.

<u>Location</u>	<u>Year</u>	<u>AADT</u>
East Avenue - West of Winton Road	2002	18,122
	2006	17,157
East Avenue – East of Winton Road	2001	8,765
University Avenue – East of Winton Road	2002	15,534
	2006	16,877
Winton Road – South of East Avenue	2001	16,661
Winton Road – North of East Avenue	2001	20,367
	2005	19,134

As a part of the TIS Update, TY Lin International [TYLI] (as FRA Engineering) conducted manual turning movement counts at the following intersections in September 2009:

- East Avenue at Probert Street & McDonalds Driveway (non-Friday Weekday AM, Mid-Day, PM, Friday PM and Saturday Mid-day peaks)
- East Avenue at North Winton Road (Friday PM and Saturday Mid-day peaks)

The traffic counts were taken on a weekday morning other than Friday (7:00 AM to 9:00AM), a weekday mid-day other than Friday (12:00 PM to 1:00 PM), a weekday evening other than Friday (4:00 PM to 6:00 PM), a Friday evening (4:00 PM to 6:00 PM) and a Saturday mid-day (11:00 AM to 2:00 PM). The traffic volumes recorded at each intersection during the peak hour periods are illustrated in **Figures 1 through 5** in Appendix 'B'.

These counts were compared to the original 2004 counts to determine a growth factor. In comparison, the volumes appeared to be generally consistent with the 2004 existing volumes. To determine the Existing 2009 volumes, a seasonal factor was applied to both the 2004 volumes and the 2009 volumes. These compared volumes were relatively consistent for the Weekday PM and Friday PM peak hours. However, during the Weekday AM and Saturday midday peak there was an increase of approximately 15% over the 5 year period between the 2004 and 2009 counts. A 15% adjustment factor was applied to the through volumes on East Avenue and North Winton Road, for the Weekday AM and Saturday midday peak hours for the intersections that were not counted in 2009. Additionally, a

seasonal factor was applied to all intersections. Wegmans driveway volumes were not seasonally factored as the current parking lot is operating at maximum capacity.

For the original TIS Report, TYLI (as FRA Engineering) conducted manual turning movement counts at the following intersections in February 2004:

- East Avenue at Probert Street & McDonalds Driveway.
- East Avenue at Wegmans Driveway.
- East Avenue at Driveways to Adjacent Businesses (Country Club Diner, Eastside Gymnastics, Antique Shop).
- East Avenue at Winton Road.
- Probert Street at Wegmans Driveways.
- University Avenue at Probert Street and Joe Hue’s Place.
- University Avenue at Wegmans Driveway.
- University Avenue at Driveways to Wegmans Employee Parking and Parking Garage.
- University Avenue at North Winton Road.

The original 2004 traffic counts were taken on a weekday morning (7:00 AM to 9:00 AM), a weekday afternoon other than Friday (4:00 PM to 6:00 PM), a Friday afternoon (4:00 PM to 6:00 PM) and a Saturday (11:00 AM to 2:00 PM).

At the request of MCDOT, this study examined traffic conditions during the weekday morning, weekday afternoon, Friday afternoon, and Saturday mid-day peak hours.

VI. PROJECTION OF SITE-GENERATED TRAFFIC

The standard source of trip generation data is the Institute of Transportation Engineers’ (ITE) Report Trip Generation, 8th Edition. However, the ITE Report does not provide sufficient trip data for large (80,000+ square foot) supermarkets. Consultants for Wegmans Food Markets have conducted trip generation studies at a large sample of Wegmans stores in New York State and Pennsylvania. Their studies have indicated that large Wegmans stores have different trip characteristics than smaller or mid-size stores.

If the average trip rates obtained at the large Wegmans stores were applied to the proposed 93,500 square foot store on East Avenue, the resulting traffic projections for the new store would be lower than the actual traffic volumes recorded at the existing 40,500 square foot store, which is not realistic.

Officials from Wegmans Food Markets anticipate a nominal increase in sales as a result of the new store footprint. For purposes of projecting traffic, it was estimated that the traffic generation of the new Wegmans store would be 35% higher than the existing store, which is conservative. Because of its urban location the trip rates for this store are skewed since many patrons frequent the store several times per week, often on their way home from work, versus completing one large shopping trip on the weekends, which is typical of other store locations. As a result, the calculated trip generation rate for the existing store is 2.85

times higher than that of the average Wegmans Food Market (including 15 or more stores greater than 90,000 SF in size).

The following table shows the actual trip generation of the existing Wegmans store, the projected increase in trips resulting from the new Wegmans store:

Table 1 - Trip Generation Table

Description	Weekday AM Peak Hour			Weekday PM Peak Hour			Friday PM Peak Hour			Saturday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Number of Trips Generated by Existing Wegmans Store	211	166	377	388	393	781	371	410	781	419	383	802
Projected Increase in Trips resulting from Expansion (35%)	74	58	132	136	138	274	130	144	274	147	134	281
Total Number of Trips for New Wegmans	285	224	509	524	531	1055	501	554	1055	566	517	1083

Some of the projected trips generated by the new Wegmans are expected to be drawn from the existing traffic stream passing by the site. These vehicles, referred to as ‘pass-by trips’, represent intermediate stops at the site on the way to another trip destination. Studies conducted by Wegmans Food Markets indicate that pass-by trips account for an average of 32% of their traffic during the weekday afternoon peak hour and 19% during the Saturday peak hour. In addition to these rates used for analysis, a 32% pass-by rate was also used for the Friday PM peak hour and a conservative pass-by rate of 20% was used for the weekday morning peak hour.

The following table shows the projected trip generation for the Wegmans expansion according to the number of pass-by trips and primary (new) trips:

Table 2 - Trip Generation Categorized by Trip Type

Land Use	Trip Type	Weekday AM Peak Hour			Weekday PM Peak Hour			Friday PM Peak Hour			Saturday Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Wegmans Expansion	Primary	61	45	106	92	94	186	86	100	186	120	107	227
	Pass-By	13	13	26	44	44	88	44	44	88	27	27	54
	TOTAL	74	58	132	136	138	274	130	144	274	147	134	281

VII. TRIP DISTRIBUTION

The projected traffic for the new Wegmans store was distributed to the surrounding highway system by taking into consideration the existing Wegmans directional patterns and the surrounding residential and business concentrations. Wegmans officials expect that the future Wegmans directional patterns should be similar to the existing patterns, except that a somewhat higher percentage may be anticipated from the south via Winton Road. The estimated percentage distribution of the new Wegmans expansion traffic on the highway system is shown in **Figure 6** in **Appendix ‘B’**. These percentages apply to the newly generated traffic and not pass-by traffic. The distribution of pass-by traffic was based on the directional proportions of existing traffic passing by the site driveways.

The projected traffic volume distribution of new (primary) trips for the Wegmans expansion is shown for each of the peak hours in **Figures 7 through 10** in **Appendix 'B'**. The traffic volumes in these figures do not include existing traffic or pass-by traffic. The estimated distribution of pass-by traffic is shown in **Figures 11 through 14** in **Appendix 'B'**.

An additional consideration is the redistribution of existing Wegmans traffic to the new driveways. As noted earlier, the existing driveways to Probert Street will be eliminated and the driveways to East Avenue and University Avenue will be relocated. The redistributed existing traffic volumes are shown in **Figures 15 through 18** in **Appendix 'B'**.

VIII. BACKGROUND AND COMBINED TRAFFIC

The anticipated opening of the new Wegmans store is expected to be Summer 2012. To account for expected growth in existing traffic over that time period, an annual growth rate of 0.5% was applied to the through traffic volumes in the study area. The growth rate was not applied to existing Wegmans traffic.

The resulting volumes were then added to the projected new and pass-by traffic distributions for the Wegmans. The total volumes, shown in **Figures 19 through 22** in **Appendix 'B'**, represent anticipated traffic conditions after the new Wegmans project is completed. These volumes were used to evaluate the proposed site access plan and the potential impacts of the site-generated traffic.

MCDOT has determined that a signalized pedestrian crossing is warranted for the crossing located adjacent to the Harris Corporation Building. MCDOT will allow Wegmans to install a traffic signal at the parking lot driveway on University Avenue concurrent with the pedestrian crossing. Therefore, all future analysis assumes a traffic signal at the University Avenue driveway location.

IX. LEVEL OF SERVICE ANALYSIS

The critical locations for traffic operations are normally at the intersections of major streets or driveways. Each of the proposed Wegmans driveways were evaluated for Level of Service, lane requirements, and signal warrants. In addition, a capacity analysis was conducted for the following existing intersections to determine the impact of the site-generated traffic:

- East Avenue at Probert Street & McDonalds Driveway.
- East Avenue at North Winton Road.
- University Avenue at Probert Street.
- University Avenue at North Winton Road.

A capacity analysis was conducted for each intersection by using procedures set forth in the 2000 Highway Capacity Manual, published by the Transportation Research Board. The

purpose of a capacity analysis is to determine the traffic ‘Level of Service’ for movements that may be stopped during normal intersection operation. The Highway Capacity Manual defines the intersection Level of Service in terms of average vehicle delays, ranging from ‘A’ for very short delays to ‘F’ for very long delays. Levels of Service of ‘D’ or higher are normally considered to be acceptable for the peak hour periods. The Level of Service definitions are shown in **Appendix ‘C’**.

All intersections were analyzed by using the Synchro, version 7.0 (Build 761) computer modeling software. Geometric and traffic control data were based on the Synchro model utilized by the Monroe County Department of Transportation. The Synchro outputs are provided in **Appendix ‘D’**.

The Levels of Service determined by the analysis are shown in the following table:

Table 3 – Level of Service Summaries

East Avenue Wegman's TIS (HCM Output)												
	Existing 2009				Projected 2012 - With Signal at East Ave/Probert				Projected 2012 - With Signal at East Ave/Wegman's Driveway			
	AM	PM	Fri PM	SAT	AM	PM	Fri PM	SAT	AM	PM	Fri PM	SAT
East Ave & Probert												
EB L	A (4)	B (16)	A (6)	A (4)	A (4)	A (4)	A (4)	A (4)	A (2)	A (9)	A (2)	A (9)
EB TT	A (2)	B (10)	A (4)	A (3)	A (2)	A (2)	A (2)	A (2)	-	-	-	-
WB T TR	A (10)	B (18)	B (11)	A (7)	A (6)	A (10)	A (9)	A (6)	-	-	-	-
NB L	C (23)	D (35)	C (20)	C (21)	C (23)	C (24)	C (23)	C (23)	D (30)	F (65)	D (29)	E (37)
NB TR	C (22)	C (34)	B (20)	C (20)	C (23)	C (23)	C (23)	C (23)	B (15)	C (21)	B (15)	B (15)
SB LTR	B (20)	C (33)	C (25)	C (20)	B (19)	C (21)	C (32)	C (23)	C (17)	C (18)	B (11)	B (12)
Overall	A (8)	B (18)	A (10)	A (8)	A (6)	A (8)	A (9)	A (6)	UNSIGNALIZED			
East Ave & N Winton Rd												
EB L	C (26)	C (24)	C (24)	C (25)	C (27)	C (22)	C (29)	C (26)	D (36)	C (26)	C (31)	C (32)
EB T TR	D (38)	D (48)	D (39)	D (39)	D (41)	D (49)	D (44)	D (43)	D (53)	D (51)	D (44)	D (50)
WB L	C (29)	C (28)	C (28)	C (28)	C (33)	C (28)	C (30)	C (28)	D (42)	C (26)	C (30)	C (28)
WB T TR	C (33)	C (33)	D (36)	D (36)	C (34)	C (33)	C (35)	D (37)	D (36)	C (32)	C (35)	D (37)
NB L	D (37)	C (25)	B (20)	B (16)	D (48)	C (30)	B (19)	B (17)	D (38)	C (34)	B (20)	B (17)
NB T T	C (26)	C (29)	C (26)	C (22)	C (25)	C (29)	C (25)	C (23)	C (24)	C (31)	C (25)	C (23)
NB R	C (22)	C (25)	C (22)	C (20)	C (21)	C (26)	C (21)	C (21)	B (20)	C (27)	C (21)	C (21)
SB L	B (11)	B (14)	A (8)	B (10)	B (12)	B (14)	A (8)	B (11)	B (14)	B (15)	C (22)	B (12)
SB T TR	C (37)	C (27)	B (16)	B (16)	C (34)	C (29)	B (17)	B (17)	C (37)	C (30)	C (33)	B (20)
Overall	C (33)	C (33)	C (26)	C (25)	C (34)	C (34)	C (27)	C (27)	D (37)	D (35)	C (32)	C (30)
University Ave & N. Winton Rd												
EB L	D (41)	C (33)	E (71)	C (30)	D (41)	C (34)	E (60)	C (31)	D (39)	C (33)	E (58)	C (30)
EB T TR	C (29)	C (34)	D (43)	C (27)	C (29)	C (35)	D (50)	C (28)	C (27)	C (32)	E (53)	C (32)
WB L	C (28)	D (41)	E (57)	C (28)	C (28)	D (42)	D (46)	C (28)	C (28)	D (42)	D (46)	C (28)
WB T TR	D (37)	C (29)	D (37)	C (27)	D (38)	C (30)	D (40)	C (27)	D (38)	C (30)	D (40)	C (27)
NB L	B (19)	B (18)	C (27)	C (23)	C (26)	B (18)	D (36)	B (20)	C (31)	B (17)	D (50)	C (26)
NB T TR	B (13)	C (24)	C (34)	C (22)	B (13)	C (24)	D (39)	C (24)	B (14)	C (24)	D (47)	C (23)
SB L	C (27)	D (40)	E (64)	C (31)	C (29)	D (40)	E (68)	C (32)	C (29)	D (41)	E (68)	C (32)
SB T TR	C (30)	C (29)	D (37)	C (28)	C (31)	C (29)	D (40)	C (29)	C (31)	C (29)	D (40)	C (29)
Overall	C (28)	C (30)	D (42)	C (26)	C (29)	C (31)	D (45)	C (28)	C (29)	C (30)	D (48)	C (28)
University Ave & Probert St												
EB TR	-	-	-	-	-	-	-	-	-	-	-	-
WB LT	A (1)	A (3)	A (2)	A (2)	A (1)	A (2)	A (2)	A (1)	A (1)	A (2)	A (2)	A (1)
NB LR	D (30)	E (36)	E (37)	C (19)	C (20)	C (20)	C (20)	C (15)	C (19)	C (20)	C (19)	C (15)
Overall	UNSIGNALIZED				UNSIGNALIZED				UNSIGNALIZED			
East Ave & Wegman's Driveway												
EB L	-	-	-	-	A (9)	A (1)	A (10)	A (10)	A (9)	B (11)	B (13)	A (7)
EB T TR	-	-	-	-	-	-	-	-	A (9)	A (7)	A (8)	A (5)
WB L	-	-	-	-	A (9)	A (9)	A (9)	A (9)	A (5)	A (5)	A (6)	A (4)
WB T TR	-	-	-	-	-	-	-	-	A (10)	A (7)	A (7)	A (6)
NB LTR	-	-	-	-	C (22)	F (83)	F (75)	F (69)	C (32)	D (36)	C (33)	D (41)
SB LT	-	-	-	-	D (30)	F (575)	F (616)	F (445)	C (34)	D (48)	D (42)	D (54)
SB R	-	-	-	-	-	-	-	-	C (31)	D (36)	C (35)	D (42)
Overall	-	-	-	-	UNSIGNALIZED				B (12)	B (14)	B (15)	B (14)
University Ave & Wegman's Driveway												
EB TR	-	-	-	-	A (4)	A (7)	A (6)	A (5)	A (3)	A (6)	A (5)	A (4)
WB L	-	-	-	-	A (2)	A (3)	A (3)	A (3)	A (2)	A (3)	A (2)	A (6)
WB T	-	-	-	-	A (4)	A (2)	A (7)	A (2)	A (3)	A (2)	A (4)	A (5)
NB L	-	-	-	-	C (23)	C (23)	C (23)	C (23)	C (24)	C (23)	C (23)	C (23)

Wegmans Driveway at East Avenue: A capacity analysis was conducted for the intersection of East Avenue and the new Wegmans driveway for both unsignalized and signalized control. The unsignalized analysis indicated that left turns from the new Wegmans driveway would operate at Level of Service ‘F’ during the weekday PM, Friday PM and Saturday peak hours. Delays to outbound left turns would be very long due to the relatively high outbound left turn volume, the amount of conflicting through traffic on East Avenue, and the significant number of left turns from East Avenue into the driveway (see the proposed queue diagram **PQ-1** in **Appendix ‘B’**). The left turns from East Avenue receive gap priority and utilize many of the available gaps in the East Avenue traffic stream.

A signalized capacity analysis indicates that all movements at the intersection would operate at acceptable Levels of Service with a two-phase traffic signal. Signal faces and vehicle detection should be provided for the new Wegmans driveway as well as the opposing Country Club Diner driveway. The Wegmans driveway will operate acceptably with one inbound lane and one outbound lane; however, two exiting lanes (one exclusive right-turn and one shared left-through) would reduce onsite queue lengths (see Section X – Signal Warrant Analysis).

Probert Street at East Avenue: A capacity analysis was conducted for the intersection of East Avenue and Probert Street based on a stop sign control on the Probert Street approach. The analysis for projected traffic indicates that the stop sign-controlled Probert Street approach would operate at acceptable Levels of Service during all peak hours. However, left turns from the McDonalds driveway opposite Probert Street would operate at deficient Levels of Service during the weekday PM peak hour without the existing signal. The left turn volume from the McDonalds driveway is very low at only 17 and 19 vehicles during the weekday PM and Friday PM peak hours, respectively. The delays to driveway traffic would stem from the relatively heavy through traffic volume on East Avenue and not from the minor left turn volume on the driveway. Traffic from Probert Street and from the McDonalds driveway will benefit from gaps in the East Avenue traffic stream created by the new signal at the Wegmans driveway. The analysis indicates that there will be more than sufficient gaps in the traffic stream to accommodate the outbound traffic (see Section XI – Gap Analysis). Also, under the future conditions, there would be fewer vehicles turning from Probert Street onto East Avenue, thus reducing the competition for utilizing the gaps in the East Avenue traffic flow.

A queuing analysis was conducted to determine whether eastbound queues on East Avenue would extend from the new Wegmans traffic signal into the Probert Street intersection. The Synchro analysis indicates that during the Friday PM peak hour and the Saturday midday peak hour the 95th-percentile queue length on East Avenue would be 87 feet and 127 feet respectively. The periodic queues on East Avenue are not expected to extend to the Probert Street intersection during the peak hour periods studied. See the proposed queue diagram **PQ-1** in **Appendix ‘B’** for more details.

The Synchro analysis for all other intersections in the study area indicated acceptable Levels of Service for both existing and projected conditions with the following exceptions:

University Avenue at North Winton Road: The analysis of this intersection for existing conditions indicated Level of Service ‘E’ for the eastbound left turn movement, the westbound left turn movement, and the westbound left turn movement during the Friday PM peak hour only. The impact of the site-generated traffic on this condition is projected to be minor. The Level of Service for eastbound left turns and southbound left turns will remain at ‘E’, and the westbound left turns can be improved to LOS ‘D’ with signal timing adjustments.

University Avenue at Probert Street: The analysis of this intersection for existing conditions indicated LOS ‘E’ for the northbound approach during the weekday PM and Friday PM peak hours. The shift in traffic caused by the closure of the Probert Street driveways will decrease the traffic at this intersection and improve the movement to LOS ‘C’.

Overall, the impact of the new Wegmans traffic is expected to be minor at all locations away from the site entrances. The new site traffic pattern will be dispersed more uniformly due to traffic signals at both driveways (University Avenue & East Avenue), thereby minimizing the impacts at any one location. There is a negligible (a few seconds) decrease in LOS at East Avenue at Winton Road, but the changes are not significant enough to warrant mitigation.

X. SIGNAL WARRANT ANALYSIS

The new Wegmans driveway to East Avenue will be located approximately 150 feet east of Probert Street and the parking lot for the World Gym will be reconfigured to bring their patrons in and out at a shared access point with the adjoining restaurant to utilize the signal (see **Appendix ‘A’** for intersection details). Wegmans is seeking the removal of the existing traffic signal at the intersection of East Avenue and Probert Street and the installation of a new traffic signal at the intersection of East Avenue and the Wegmans driveway. A traffic signal warrant analysis was conducted for each of these intersections to determine whether the existing and projected traffic volumes meet the signal warrants set forth in the New York State Manual of Uniform Traffic Control Devices (MUTCD). The following warrants were applied:

Warrant #1A– Minimum Vehicular Volume (Eight-Hour Vehicular Volume Warrant):

The ‘Minimum Vehicular Volume, Condition A’ warrant is satisfied where the volume of intersecting traffic is the principal reason for consideration of signal installation. The warrant is satisfied when the minimum volumes specified in the MUTCD are met or exceeded for each of any eight hours of an average day. **This warrant was met for 8 hours of an average day at the intersection of East Avenue and Wegmans driveway. It was not met for the intersection of East Avenue and Probert Street during existing or proposed conditions.**

Warrant #1B – Interruption of Continuous Traffic (Eight-Hour Vehicular Volume Warrant):

The ‘Interruption of Continuous Traffic, Condition B’ warrant is satisfied where the volume of the major street traffic is so heavy that the traffic on the intersecting minor street suffers excessive delay or conflict in entering or crossing the major roadway. The warrant is satisfied when the minimum volumes specified in the MUTCD are met or

exceeded for each of any eight hours of an average day. **This warrant was met for 8 hours of an average day at the intersection of East Avenue and Wegmans driveway. It was not met for the intersection of East Avenue and Probert Street during existing or proposed conditions.**

The ‘Combination of Conditions A & B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied, but where at least 80 percent of the stated volume values in both warrants 1A and 1B are met. **This warrant was not applicable for the intersection of East Avenue and Wegmans Driveway; however, it was met for the intersection of East Avenue and Probert Street for existing conditions only.**

Warrant #2 – Four-Hour Volume Warrant:

The ‘Four Hour Volume’ warrant is satisfied when the plotted points representing the vehicles per hour on the major street and the corresponding vehicles per hour on the higher volume minor street lie above the curves shown in the MUTCD for any four hours of an average day. **This warrant was met for four hours of an average day at the intersection of East Avenue and Wegmans driveway. It was not met for the intersection of East Avenue and Probert Street during the existing or future scenarios.**

Warrant #3 - Peak Hour Volume Warrant:

The ‘Peak Hour Volume’ warrant is satisfied when the plotted points representing the vehicles per hour on the major street and the corresponding vehicles per hour on the higher volume minor street lie above the curves shown in the MUTCD for any single hour of an average day. **This warrant was met for a single hour of an average day at the intersection of East Avenue and Wegmans driveway. It was not met for the intersection of East Avenue and Probert Street during the proposed scenarios, however the warrant was met for the existing conditions.**

The signal warrant analysis is shown in **Appendix ‘E’**. The existing traffic volumes at the intersection of East Avenue and Probert Street meet only the ‘Combination of Warrant 1A & 1B’ and ‘Peak Hour Volume’ warrants. The projected traffic volumes at this intersection would not meet any of the signal warrants. The elimination of Wegmans access to Probert Street will result in a significant reduction in traffic volume on Probert Street. Therefore, the existing traffic signal at the intersection of East Avenue and Probert Street would no longer be warranted.

The signal warrant analysis for the intersection of East Avenue and the new Wegmans driveway indicated that the projected traffic volumes would meet the ‘Eight Hour Volume’, ‘Four Hour Volume’ and ‘Peak Hour Volume’. It is expected that about half of the outbound driveway traffic will turn left and half will turn right. Therefore, a traffic signal will be warranted at the new Wegmans driveway on East Avenue.

University Avenue Driveway Signalization

MCDOT has determined that a signalized pedestrian crossing is warranted for the crossing located adjacent to the Harris Corporation Building. This pedestrian signal will be installed prior to the construction of the proposed Wegmans. Upon project completion MCDOT will allow Wegmans to install a traffic signal at the parking lot driveway on University Avenue

concurrent with the pedestrian crossing, taking the place of the new pedestrian signal. Therefore, all future analysis includes a signalized driveway on University Avenue.

University Avenue will be restriped to widen from a two lane section at Probert Street to a three lane section at the Wegmans Driveway. The three lane section will then continue to Harris Driveway located just east of the proposed store face. The center left turn lane will be split between the Wegmans Driveway (westbound) and the Harris Driveway (eastbound) providing 100'± for Wegmans and 75'± for Harris with about 50' of Continuous Two-Way Left Turn (CTWLT) lane to allow additional capacity for each direction. The peak traffic times for the left turns should be at different times allowing this arrangement to operate satisfactorily.

The CTWLT lane will continue easterly and align with the existing left turn lane at Winton Road allowing left turn storage for vehicles accessing both Wegmans and Harris employee parking between Winton and the Harris Driveway. In the eastbound direction the single through lane will widen to two lanes just west of the Harris Driveway to accommodate the through/right lane at the intersection of North Winton Road. And in the westbound direction, the two through lanes from Winton Road will narrow to one lane between Winton and the Harris Driveway.

XI. GAP ANALYSIS

A gap analysis was conducted on East Avenue between N. Winton Road and the existing Wegmans entrance on East Avenue, on October 15, 2009. Two studies were conducted, one during an off-peak hour between 2:30pm – 3:30pm and one during the weekday evening peak hour between 4:45pm – 5:45pm. The results of the gap study are shown in **Appendix 'H'**.

The Highway Capacity Manual indicates that there is a 7.0 second minimum gap required for one vehicle to turn left onto a four-lane major road from a minor street or driveway. Any subsequent vehicle attempting to gain access using the same gap requires an additional 3.4 seconds.

There were opportunities for 58 vehicles to obtain left-turn access to East Avenue during the weekday evening peak hour, according to the gap study. For the off-peak, there were opportunities for approximately 100 vehicles to obtain left-turn access to East Avenue.

Given that the exiting volume at the proposed Wegmans driveway onto East Avenue for the weekday evening peak is 298 vehicles, there will not be sufficient gaps for these exiting vehicles. The installation of a traffic signal would allow for these vehicles to exit the site.

There will be 460 opportunities for the 144 right-turning vehicles exiting Wegmans parking lot without a traffic signal, which is acceptable. The McDonald's 36 right-turning vehicles will have opportunities for 415 vehicles to exit, without a traffic signal, which is also acceptable.

XII. ACCIDENT HISTORY

An accident study was performed by TYLI (as FRA Engineering) in the “Wegmans Food Market & Bank” East Avenue TIS dated June 2004. The study analyzed the three-year period from January 1, 2001 through December 31, 2003 between 1701 East Avenue (McDonald’s Restaurant) and 1844 East Avenue (Wendy’s Restaurant). A total of 86 accidents were reported within the study area including the intersections of Probert Street and Winton Road. The intersection of East Avenue/Probert Street exceeded the Countywide Accident Rate (17 accidents) as well as the midblock area between Probert Street. Therefore, these two locations were re-investigated as a part of this study. Winton Road at East Avenue (36 accidents) was below the Countywide accident rate and was not further analyzed. Refer to **Appendix ‘I’** for the previous accident analysis.

Available accident data for the 2006 revision reported on a three-year period from March 1, 2003 through February 28, 2006 and was obtained through the City of Rochester Police Department for the study area between 1701 East Avenue (McDonald’s Restaurant) and Winton Road including the Probert Street intersection. During this three-year period, a total of 6 accidents occurred at the Probert Street intersection, 8 accidents occurred west of Probert Street, and 19 accidents occurred along East Avenue between Probert Street and Winton Road. Refer to **Appendix ‘I’** for the previous accident analysis.

An update of the accident analysis for this 2009 revision reports on a three-year period from July 1, 2006 through June 30, 2009 and was obtained through the City of Rochester Police Department for the study area between 1701 East Avenue (McDonald’s Restaurant) and Winton Road including the Probert Street intersection. During this three-year period, a total of 7 accidents occurred at the Probert Street intersection, 5 accidents occurred west of Probert Street, 26 accidents occurred along East Avenue between Probert Street and Winton Road, and 19 accidents occurred at the N. Winton Road intersection. Refer to **Appendix ‘I’** for the current accident analysis.

Table 4 summarizes the number and types of accidents that occurred within the project limits during the most recent three-year study period.

Table 4
Type of Accident by Year

<u>Location</u>	<u>Period</u>	<u>Fatality</u>	<u>Injury</u>	<u>Property Damage Only</u>
7/1/2006 – 6/30/2007				
East Avenue/Probert St.		0	0	2
Midblock (West of Probert St)		0	0	2
Midblock (Probert St. to Winton Road)		0	1	8
East Avenue/N. Winton Road		0	3	4
<i>SUBTOTAL:</i>		0	4	16
7/1/2007 – 6/30/2008				
East Avenue/Probert St.		0	0	3
Midblock (West of Probert St)		0	1	1
Midblock (Probert St. to Winton Road)		0	0	7
East Avenue/N. Winton Road		0	0	2
<i>SUBTOTAL:</i>		0	1	13
7/1/2008 – 6/30/2009				
East Avenue/Probert St.		0	0	2
Midblock (West of Probert St)		0	0	1
Midblock (Probert St. to Winton Road)		0	1	7
East Avenue/N. Winton Road		0	2	6
<i>SUBTOTAL:</i>		0	3	16
TOTAL:		0	8	45
		0%	15%	85%

As provided in the table above, which summarizes the reportable accidents that occurred within the corridor, 15 percent (8 out of 53) of the accidents resulted in injury, and 85 percent (45 out of 53) of the accidents resulted in property damage only. No fatalities were reported.

Accident rates were calculated for the intersection of East Avenue at Probert Street and the midblock area between Probert Street and Winton Road). The average accident rates were calculated and compared to the countywide rates as well as the previous study rates. A summary is provided in **Table 5**.

Table 5
Accident Rate Summary

<u>Location</u>	<u>2009 Study Calculated Rate</u>	<u>2006 Study Calculated Rate</u>	<u>2004 Study Calculated Rate</u>	<u>Countywide Average Rate</u>
<i>Intersection of East Avenue/Probert Street</i>				
	0.37 acc/mev*	0.28 acc/mev	0.69 acc/mev*	0.35 acc/mev
<i>Midblock (Probert Street to N. Winton Road)</i>				
	7.28 acc/mvm*	5.24 acc/mvm*	10.49 acc/mvm*	3.81 acc/mvm

Note: Accidents per million entering vehicles (acc/mev)

Accidents per million vehicle miles (acc/mvm)

* Exceeds Countywide Average Rate

The East Avenue/Probert Street intersection and midblock section (between Probert Street to Winton Road) exceeded the countywide average rate the 2004 accident study from January 1, 2001 through December 31. The 2006 data indicates the East Avenue/Probert Street intersection was below the average rate and the midblock section rate had been significantly reduced but still above the Countywide accident rate. The most recent 2009 data indicates the East Avenue/Probert Street intersection is slightly higher than the countywide average rate and the midblock section rate is still less than the 2004 study, however still significantly higher than the countywide average rate. Accident summary sheets and a Collision diagrams are provided in **Appendix 'I'**.

East Avenue/Probert Street

There were a total of 7 accidents that occurred during the three year time period studied at the intersection of East Avenue and Probert Street. The accidents were 4 Rear End accidents, 1 Overtaking accident, 1 Left Turn accident, and 1 Right Turn accident.

Of the 7 accidents there were no clears pattern or problems identified. Three of the Rear End accidents occurred in the westbound direction with vehicles stopped for the red light.

Midblock Between Winton Road and Probert Street

There were a total of 24 accidents that occurred during the three-year time period studied for this midblock. A majority of the accidents occurred during the day, under good weather conditions and dry pavement conditions. Of the 24 accidents, there were 9 Left-Turn accidents, 7 were Right-Angle accidents, 4 Overtaking accidents, 2 Rear End accidents, 1 Head-On accident, and a single accident involving a bicycle.

Further investigation revealed 8 of the 16 left-turn and right-angle accidents involved vehicles making a left-turn into the path of an oncoming vehicle indicating they thought the travel way was clear and their view was obstructed. Right-angle accidents often occur when a vehicle is attempting to make a left-turn out of a driveway in traffic. Five of the left-turn and right-angle accidents occurred at the Wegmans driveway. This can be mitigated with the installation of a traffic signal at the proposed Wegmans driveway.

Of the 4 Overtaking accidents, 2 were vehicles gaining access to exclusive turn lanes while operators were not paying attention. There was no other clear patterns or problems identified.

Midblock West of Probert Street

There were a total of 5 accidents at this midblock location. One accident was a Left-Turn accident into the McDonald's property, one was a Rear-End accident in the westbound direction, one was a Right-Angle accident, one was an Overtaking accident, and the remaining accident was a Side-swipe collision between a bus and a vehicle that were both attempting to occupy the center turn lane. There were no clear patterns or problems identified.

XIII. PEDESTRIAN AND RTS BUS CONSIDERATIONS

As part of the original 2004 Traffic Impact Study observations regarding pedestrian volumes, travel patterns, and interactions with motor vehicles and RTS buses were conducted.

RTS Bus Considerations – *This section is as written in the original 2004 TIS Report. Applicable updates are written in italics at the bottom of each section.*

Within the proximity of the site there are three RTS bus stop locations; one is located just east (approximately 100-feet) of the Probert Street and University Avenue intersection on the south side of University Avenue. A second bus stop is located on the west side of North Winton Road, approximately 50-feet south of the North Winton Road and University Avenue intersection; and a third bus stop is located on the north side of East Avenue, approximately 100-feet east of the existing Wegmans access drive.

The following table summarizes the posted Bus routes, bus schedules, and travel patterns for the five bus routes in the vicinity of the Wegmans Food Market site.

Table 6 – Bus Routes

Bus Route	Schedule	Travel Pattern
1 - Park	Approx. 20 min (b/w 5:24 AM and 5:57 PM)	East on East Avenue to Probert Street, Probert Street to N. Winton Road, N. Winton Road to East Avenue
17 - East	Approx. 30 Min	Bus operates along East Avenue (both directions) in front of Wegmans Food Market.
18 - University 19 - Plymouth (operate as same route)	Approx. 20 Min (b/w 5:25 AM and 5:21 PM)	Bus operates along University Avenue and N. Winton Road (both directions).
21 - Fairport	Approx. 2.0 Hrs	Bus operates along East Avenue (both directions) in front of Wegmans Food Market.
22 - Penfield	Approx. 30 Min – 1.5 Hrs.	Bus travels south along N. Winton Road to East Avenue and then west on East Avenue.

As presented in **Table 6**, buses travel in the vicinity of the site on a regular basis throughout the course of the average weekday. Currently there are no concerns with the East Avenue bus stop location or the North Winton Road bus stop location; however there has been concern expressed by MCDOT in the past regarding the bus stop at the southeast corner of University Avenue and Probert Street.

University Avenue Bus Stop: MCDOT conducted a field investigation in early 2002, related to pedestrian safety, at this location in response to a request by Harris Corporation, which was located on the north side of University Avenue between North Winton Road and Probert Street. In their review of potential pedestrian conflicts at this location, MCDOT staff noted that buses stopped at this location had a tendency to “block the visibility of the pedestrian crossing sign for eastbound traffic and create a sight distance restriction for pedestrians crossing University Avenue from the south side to the north side”.

To address this concern MCDOT requested that RTS discontinue the practice of allowing buses to layover at this bus stop, which significantly reduces the amount of time a bus is stopped at this location and thus reduces the potential for visibility constraints on motorists traveling eastbound on University Avenue. RTS has since complied with this request and currently allows vehicles to layover on East Avenue at the East Avenue bus stop location, where there are far fewer issues with visibility because of the midblock location.

There were still concerns with the bus stop location along University Avenue, primarily because of the proximity to the Probert Street intersection and the lack of a clear pull-off and loading/unloading area.

To address this concern, we recommended relocating this bus stop further east, approximately even with the front of the Wegmans Food Market building and creating a well-defined bus stop for clearer delineation for pedestrians and motorists.

As of October 2009, according to a site visit and verified by RGRTA, there is no longer a bus stop on University Avenue near the Wegmans site. Therefore there is no further concern with buses along University Avenue.

North Winton Road Bus Stop: This bus stop is located approximately 50-feet north of the North Winton Road and University Avenue intersection on the west side of the street. This bus stop is projected to operate at the same location and in the same manner as it does today. Therefore, no recommendations are provided for this location.

East Avenue Bus Stop: This bus stop is located on the north side of East Avenue, approximately 100-feet east of the Wegmans driveway onto East Avenue. This is perhaps the busiest of the three bus stops and quite frequently serves as a layover point for buses headed in the westbound direction. While there are no concerns with this location with the current Wegmans Food Market, there is potential for conflict with the proposed Wegmans Food Market.

The new Wegmans Food Market is proposing a second floor eatery, which will likely have a balcony with “open-air” seating overlooking East Avenue. The noise and fumes associated with buses laying over at this location would not be desirable or accommodating for

Wegmans patrons utilizing the eatery. In response to this concern, RTS was contacted to discuss the possibility of relocating the bus stop further west on East Avenue. RTS personnel was understanding and was agreeable to visiting the East Avenue location to identify a better location for the bus stop.

It is recommended that Wegmans contact RTS once approval of the project is apparent in order to facilitate the relocation of the bus stop.

Pedestrian Considerations

Due to the urban location, proximity to bus stops and major employers, such as Harris Corporation, there is a higher than normal volume of pedestrian traffic at this location. A majority of the pedestrian volumes are located along East Avenue and are traveling to and from the bus stop on East Avenue and between the bus stop and the Wegmans Food Market. See **Figures 23 – 26** in **Appendix 'B'** for pedestrian counts conducted in 2004 during each of the four peak hours investigated.

Despite the fact that the majority of the pedestrian volumes are located on East Avenue, there have been no concerns expressed regarding the volumes or potential for conflicts with motor vehicles. However, concerns have been identified along University Avenue, specifically related to pedestrians crossing the street between the Wegmans Food Market site and Harris Corporation.

There is an Audible Pedestrian Signal at the crossing of the west leg of the intersection of East Avenue and Probert Street. If the signal is relocated, the audible device must also be relocated.

As indicated previously, MCDOT conducted a field investigation into these concerns and provided the following five specific recommendations (See complete letter and findings in **Appendix 'F'**):

- Stripe a white edgeline as described in the MCDOT discussion.
- Remove the crosswalk on the west leg of the intersection of University Avenue and Probert Street.
- Restripe the remaining three crosswalks for use by Harris employers with “ladder” type cross hatching.
- Recommend to RTS that they discontinue using the bus stop just west of Wegmans easterly driveway on the south side of University Avenue as a layover point.
- Notify the City Engineer of the need for wheelchair ramps at the crosswalk just west of Probert Street.

Of these five recommendations, all appear to have been implemented as recommended.

As of October 2009, MCDOT has determined that a signal is warranted for pedestrian crossing of University Avenue, as there is a high pedestrian volume from Harris Corporation to Wegmans. The county has agreed to work with Wegmans to place the signal at the proposed Wegmans Driveway on University Avenue.

Additionally, the proposed Wegmans Food Market project will make pedestrian-friendly improvements to the entire site and adjacent rights-of-way including the following:

- Installing new sidewalks along the east side of Probert Street,
- Providing new sidewalks along all four streets immediately adjacent to the proposed project,
- Providing a combination of streetscape and hardscape amenities along all for streets, immediately adjacent to the proposed project, and
- Relocating the driveways on East Avenue and University Avenue further from the Wegmans Food Market entrance, in order to reduce the likelihood of vehicle/pedestrian conflicts.

TYLI conducted a pedestrian activity observation to update the pedestrian analysis at the existing East Avenue Wegmans on Friday October 15 (Figure 25-A), and Saturday October 16, 2010 (Figure 26-A) during the Friday evening and Saturday midday peak hours. The focuses of the observations were to:

- *Count the number of pedestrians crossing East Avenue at the existing Probert Street intersection.*
- *Count the number of pedestrians crossing East Avenue along midblock near the Wegmans entrance.*
- *And to observe the pedestrians using the RTS busses along East Avenue.*

*For the observation, an approximate time and the general pattern of each pedestrian or groups of pedestrians were recorded. The existing Probert Street intersection has pedestrian signals for all crosswalks, and also has an audible pedestrian signal device on its western crosswalk. Pedestrians that crossed at the Probert Street intersection generally used the crosswalks. There were approximately 10 pedestrians per hour crossing at the Probert Street intersection for both Friday evening and Saturday midday peak hours. Most of the pedestrians crossing were headed to Wegmans and most of them walked through the Wegmans parking lot to get to or from the storefront to the intersection. Moving the signal closer to the storefront will encourage pedestrians to cross safely by bringing the signaled crossing closer to the store front, while also discouraging pedestrians from walking through the parking lot. The observations are summarized in **Table 7**.*

Table – 7: Pedestrian Count Summary - East Avenue Wegmans

	West of Probert	@ Probert	Midblock Probert- Wegmans Driveway	East of Wegmans Driveway	TOTAL
FRIDAY OCTOBER 15, 2010 - EVENING PEAK HOUR					
4:15 PM - 4:30 PM	0	6	1	3	10
4:30 PM - 4:45 PM	0	2	0	0	2
4:45 PM - 5:00 PM	2	1	0	1	4
5:00 PM - 5:15 PM	0	1	0	1	2
5:15 PM - 5:30 PM	0	2	0	1	3
5:30 PM - 5:45 PM	0	3	4	2	9
SATURDAY OCTOBER 16, 2010 - SATURDAY MIDDAY PEAK HOUR					
11:45 AM - 12:00 PM	0	0	0	3	3
12:00 PM - 12:15 PM	0	6	0	2	8
12:15 PM - 12:30 PM	0	1	0	1	2
12:30 PM - 12:45 PM	1	4	0	1	6
12:45 PM - 1:00 PM	1	0	0	3	4
1:00 PM - 1:15 PM	1	4	1	0	6

The number of pedestrians crossing at the midblock between the Wegmans driveway and Probert Street as well as east of the Wegmans drive was also observed. There was only on average one pedestrian that crossed at the midblock per hour. These pedestrians usually came from or went to the east on the south side of the sidewalk. On occasion, a customer at one of the businesses to the south crossed the street, and once, a car parked on the south side of the street with the driver crossing East Avenue to go to Wegmans.

It was noted that there are three on-street parking spots to the immediate east of the existing Wegmans driveway. Observations show that these three spots are consistently occupied by customers of the Wegmans store during both the Friday evening peak hour and the Saturday midday peak hour.

During the Friday evening peak hour, the RTS bus traffic was also observed. The main bus route that is serviced by this stop is Route #1 – Park Avenue route. A majority of the people utilizing the busses at the East Avenue Wegmans stop are customers of Wegmans. On average, 2-3 passengers got off the bus and went to Wegmans from every bus that stopped. Most of the time two passengers (also Wegmans customers) got onto the bus. It was noted that often times the bus passengers bring shopping carts out to the bus shelter, and then leave them there when they get on the bus. However, sometimes the passengers getting off the bus would grab a cart and bring it back to the store with them. It was noted that Wegmans' helping hands employees did come and check for carts at regular intervals. A summary of bus passengers observed on Friday is shown in **Table 8**.

Table 8 - Bus Consumer Observations

<i>Route 1 Bus Dwell Time</i>	<i>Number of Passengers Off Bus to Wegmans</i>	<i>Number of Passengers Off Bus NOT to Wegmans</i>	<i>Number of Passengers On Bus from Wegmans</i>	<i>Number of Passengers On Bus NOT from Wegmans</i>
FRIDAY OCTOBER 15, 2010				
4:28 PM - 4:46 PM	5	0	2	0
4:45 PM - 5:01 PM	1	0	1	1
5:05 PM - 5:22 PM	2	0	5	2
5:31 PM - 5:40 PM	1	0	2	0
5:43 PM	4	0	1	0
(RTE 17) 5:45 PM	2	0	-	-

In conclusion, a majority of the pedestrians in the area that are crossing East Avenue are destined to the East Avenue Wegmans store. With the proposed signal location closer to the store front, it will provide a safe way for pedestrians to cross East Avenue encouraging the use of the sidewalk rather than the parking lot, and could reduce the number of mid-block crossings.

XIV. SUMMARY AND CONCLUSIONS

The following is a summary of recommendations to mitigate the anticipated traffic from the proposed project:

- Relocate the existing Wegmans driveways on East Avenue and University Avenue as shown in the site plan. Eliminate all access to Probert Street; reducing the overall number of curb cuts from 10 full access points to 3 full-access driveways and 3 limited-access driveways.
- Install a two-phase traffic signal at the intersection of East Avenue and the Wegmans Drive/World Gym intersection, with reconfiguration of the World Gym parking lot.
- Remove the existing traffic signal at the intersection of East Avenue and Probert Street.
- Install a westbound left-turn lane into the Wegmans Food Market site on University Avenue. And stripe University Avenue with one lane in each direction and a two-way left-turn lane from the proposed Wegmans signalized driveway to just west of the Harris Driveway.
- Providing streetscape improvements and pedestrian accommodations along East Avenue, Probert Street, University Avenue and North Winton Road;

including textured/painted crosswalks at all intersections and driveway locations within the vicinity of the project site.

Although the proposed Wegmans Driveway on East Avenue would warrant a traffic signal and the anticipated volumes would be substantially greater than the traffic at the Probert Street/McDonald's 'EXIT' Drive on East Avenue, for the future condition, relocation of the traffic signal is being discussed with the City of Rochester, MCDOT, McDonalds, and World Gym.

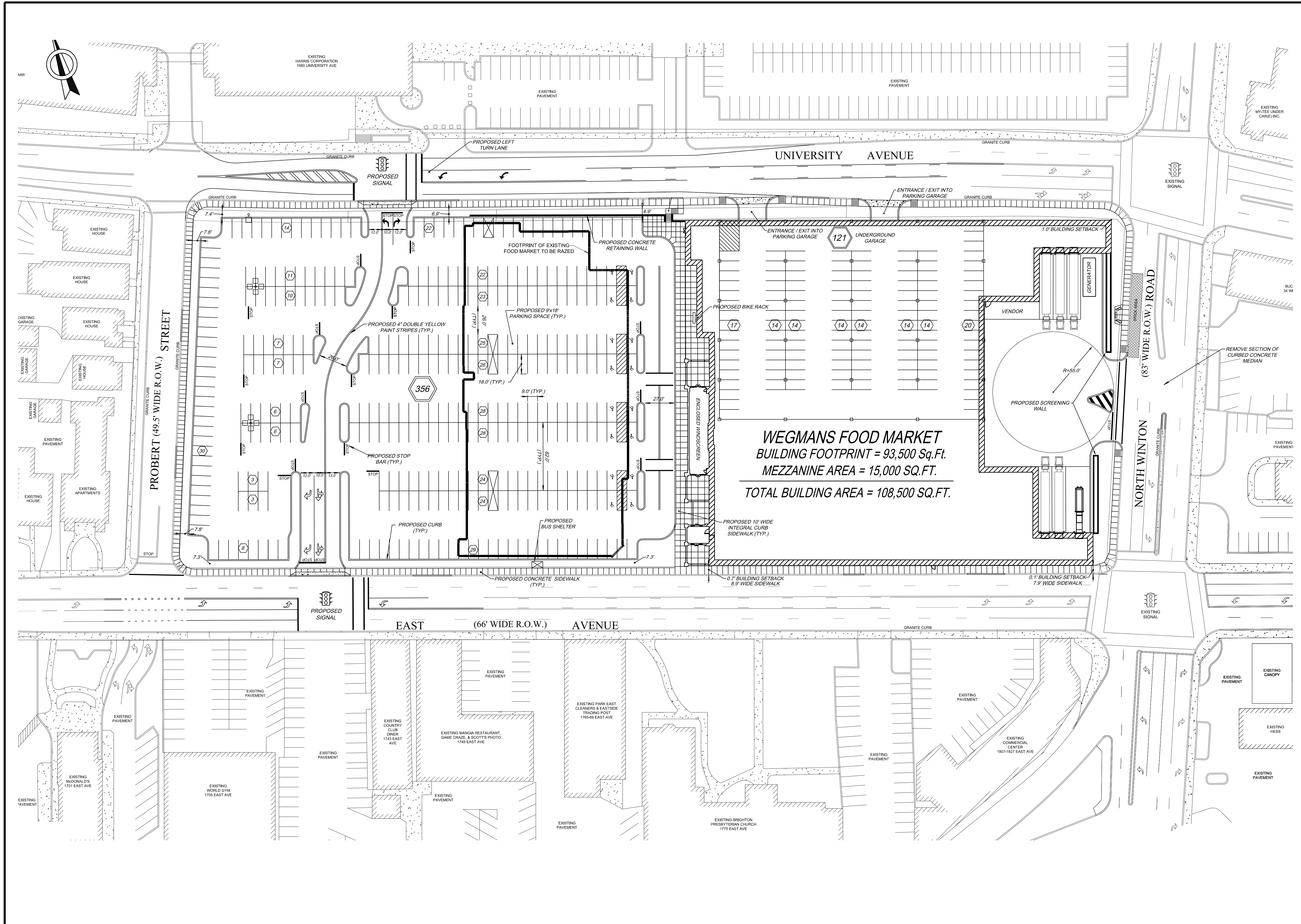
Relocating the existing traffic signal would shift the existing East Avenue eastbound queue to the new signal and allow for better access into the McDonalds entrance driveway. The gap analysis indicated that with the relocation of the traffic signal, gaps would be available a majority of the time for traffic exiting the McDonalds driveway. However, during the times of peak traffic volumes on East Avenue, the exiting traffic may not have adequate gaps. If possible, cross access for the McDonalds site to the adjacent property to the east should be a consideration in the discussion with the City of Rochester, MCDOT and McDonalds to have indirect access to the relocated traffic signal.

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2. Federal Highway Administration, Highway Capacity Manual, Special Report 209, Washington, D.C., 2000.
3. Trafficware, SYNCHRO, Version 7, Build 761, Albany, California, 2007.
4. Institute of Transportation Engineers, Trip Generation, 8th Edition, Washington, D.C., 2008.
5. New York State Department of Transportation, 2001 Highway Sufficiency Ratings, Albany, New York, 2001.
6. Monroe County Department of Transportation, 2008 Traffic Volume Report.
7. Sear Brown, “Wegmans Food Markets, Inc. Trip Generation Patterns and Travel Characteristics”, January 30, 1998.

Appendix A
Site Plan





WEGMANS FOOD MARKET
 BUILDING FOOTPRINT = 93,500 Sq.Ft.
 MEZZANINE AREA = 15,000 SQ.FT.
 TOTAL BUILDING AREA = 108,500 SQ.FT.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 16B, SECTION 1203

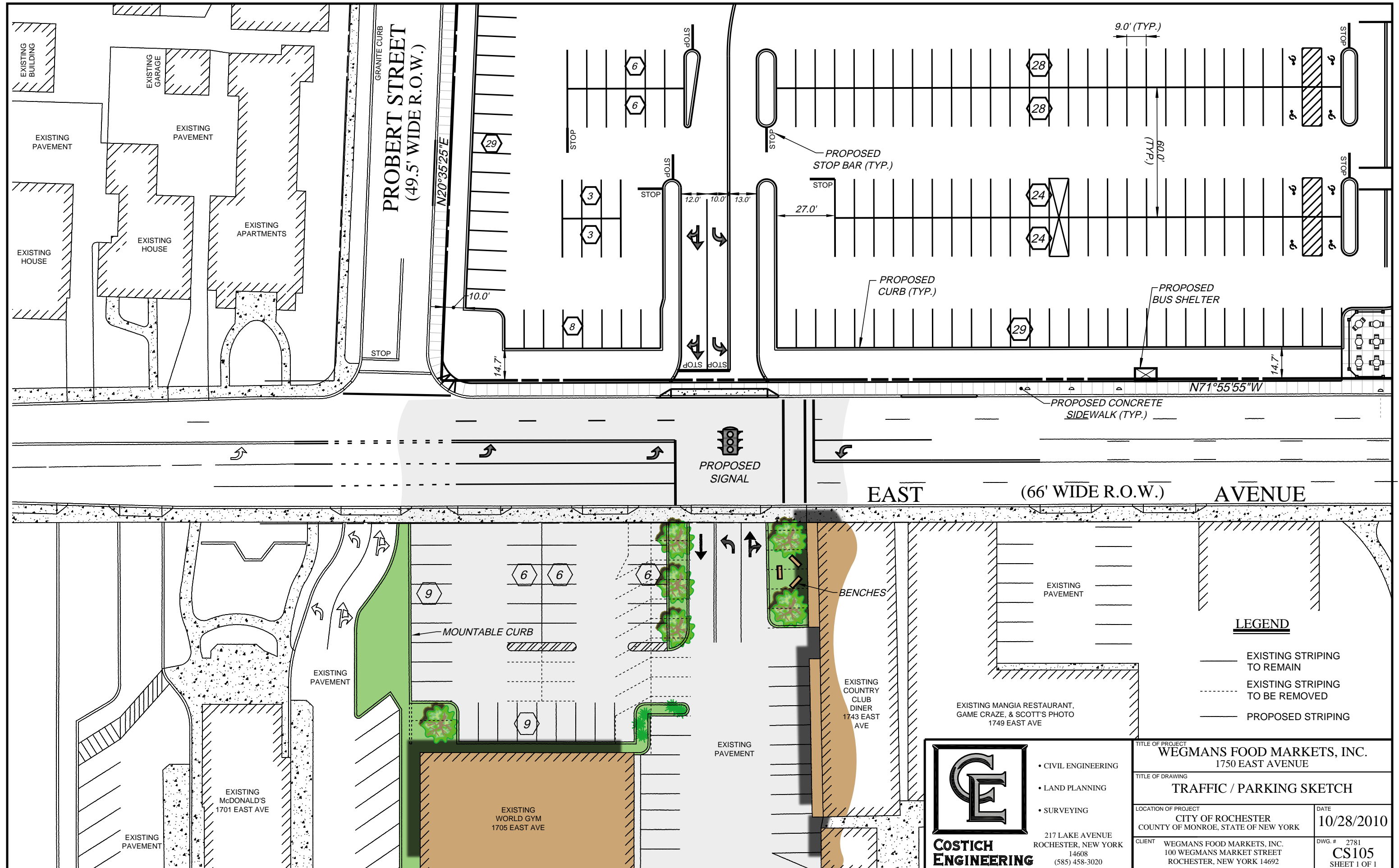
NO.	DATE	DESCRIPTION	REVISIONS
3			
2			
1			
INC.			

DATE

T.Y. LIN INTERNATIONAL
 255 EAST AVENUE
 ROCHESTER, NY 14604
 (585) 512-2000

PROPOSED TRAFFIC MITIGATION
 PROJECT NAME: WEGMANS EAST AVENUE
 PROJECT ADDRESS: WEGMANS FOOD MARKETS, INC.
 1500 BROOKS AVENUE, P.O. BOX 30844, ROCHESTER, NY 14603

PROJECT NO:	43.3164.04	PROJ. MGR.:	CWA
DATE:	9/28/10	DRWN. BY:	NEB
SCALE:	1" = 40'	CHKD. BY:	CWA
DRAWING NO:	PM-1		
SHEET NO.	1 of 1		



Appendix B
Traffic Volume Figures

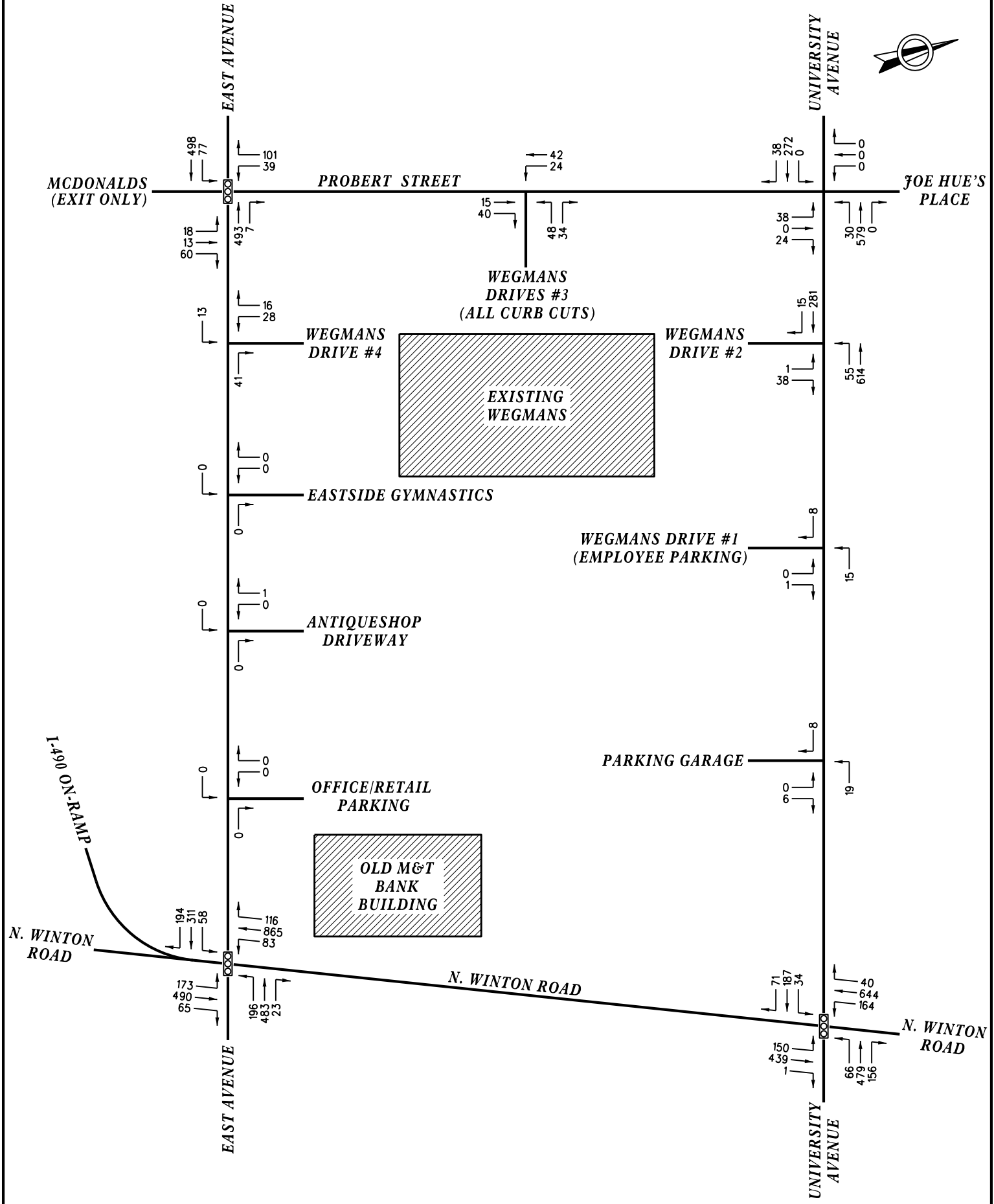


FIGURE 1

TY-LIN INTERNATIONAL <small>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</small>	EXISTING TRAFFIC VOLUMES (2009) WEEKDAY MORNING PEAK HOUR 7:45 AM - 8:45 AM

LEGEND
XX - WEEKDAY MORNING PEAK HOUR VOLUME

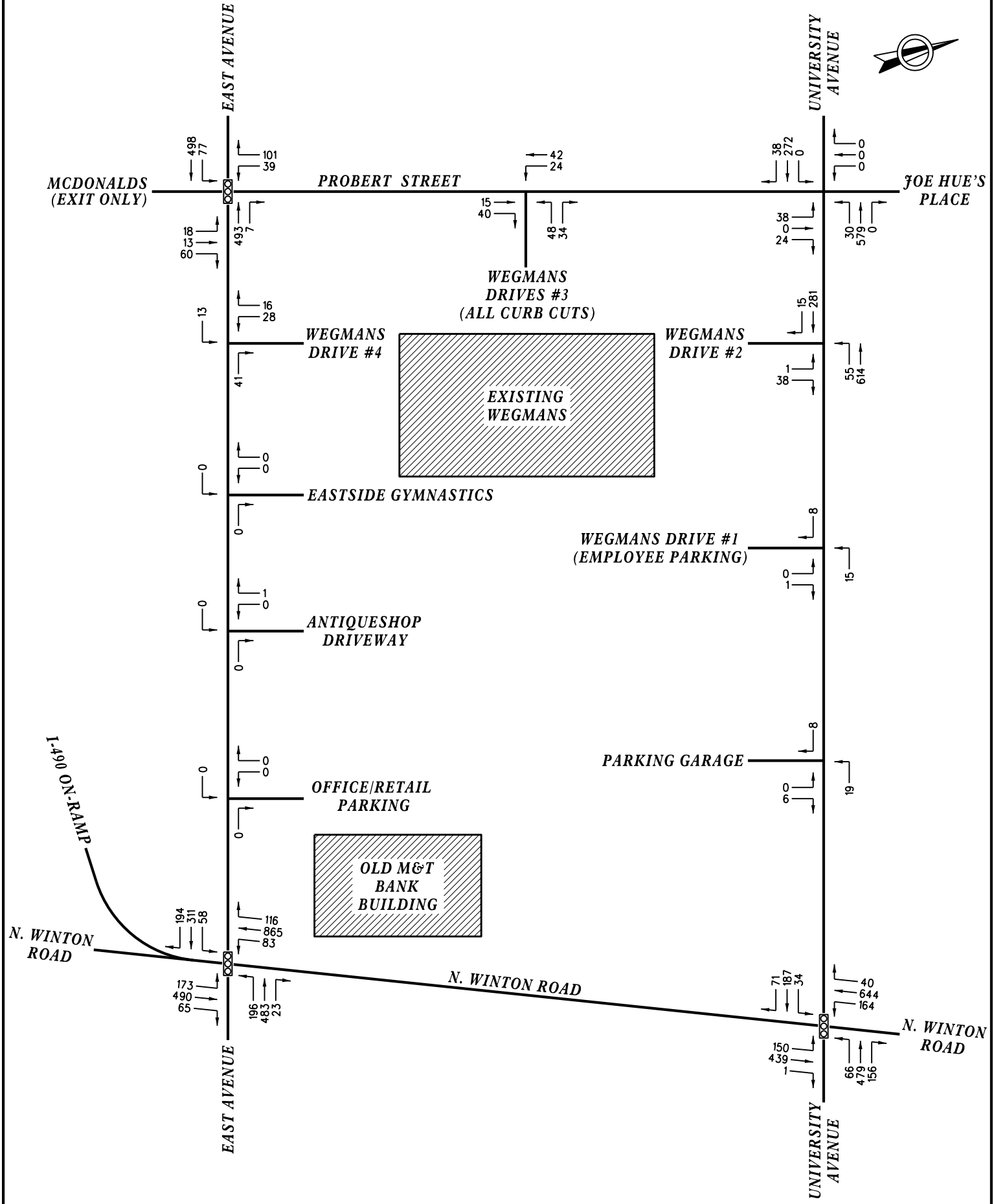


FIGURE 1

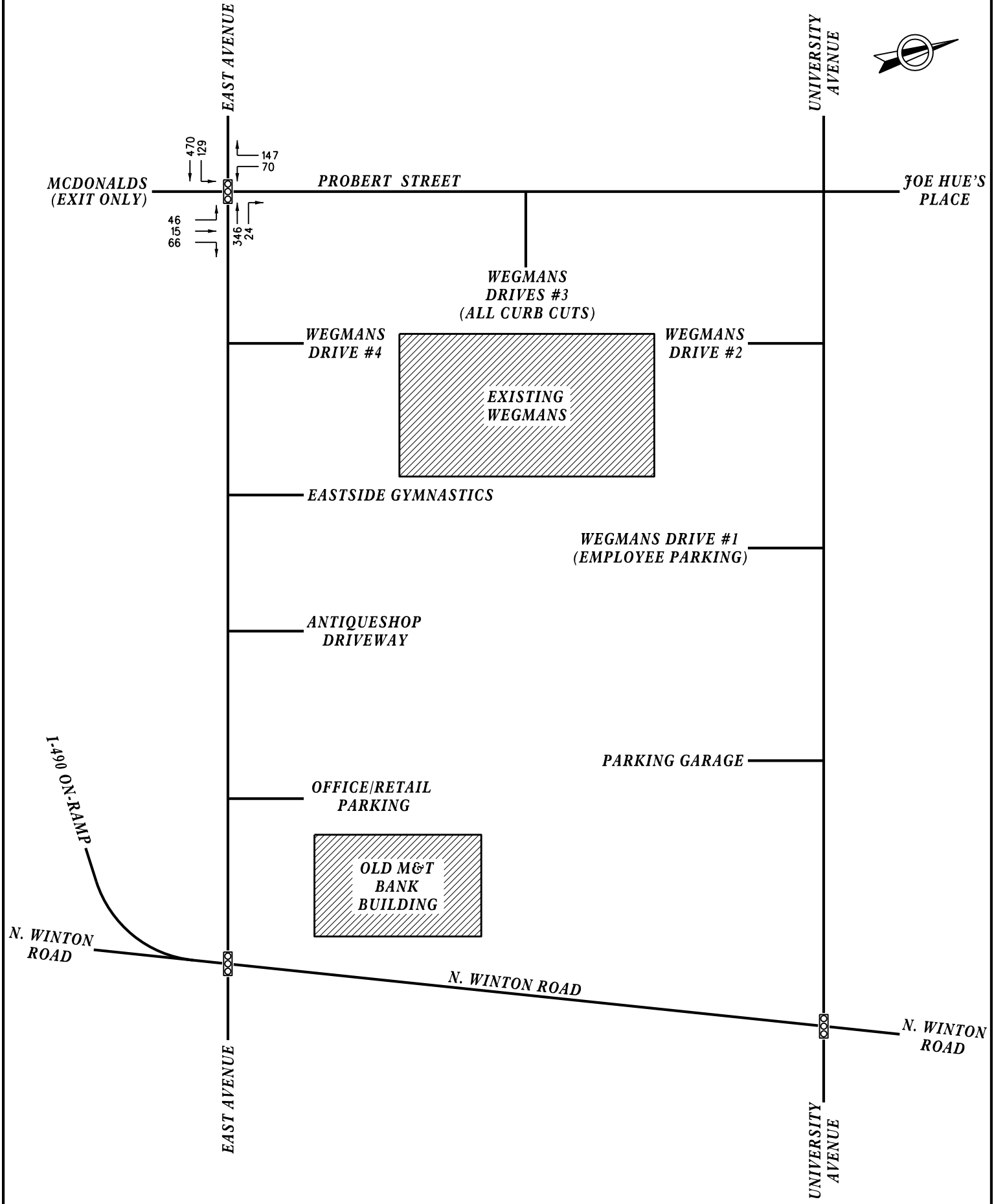
TYLIN INTERNATIONAL

255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000

**EXISTING TRAFFIC VOLUMES (2009)
WEEKDAY MORNING PEAK HOUR
7:45 AM - 8:45 AM**

LEGEND

XX - WEEKDAY MORNING PEAK HOUR VOLUME



LEGEND
 XX - WEEKDAY MIDDAY VOLUME

TY-LIN INTERNATIONAL
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FIGURE 2
EXISTING TRAFFIC VOLUMES (2009)
WEEKDAY MIDDAY PEAK HOUR
12:00 PM - 1:00 PM

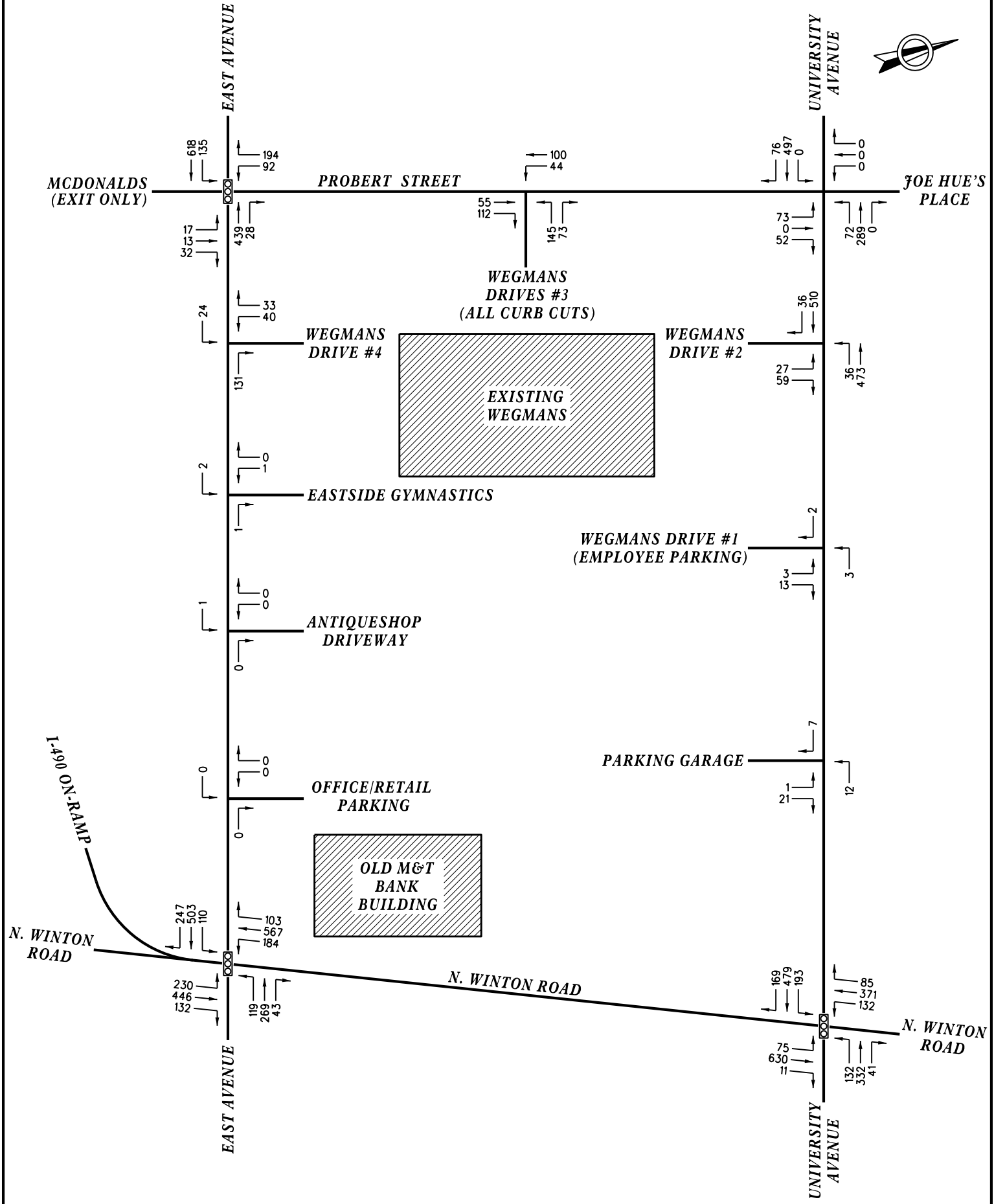


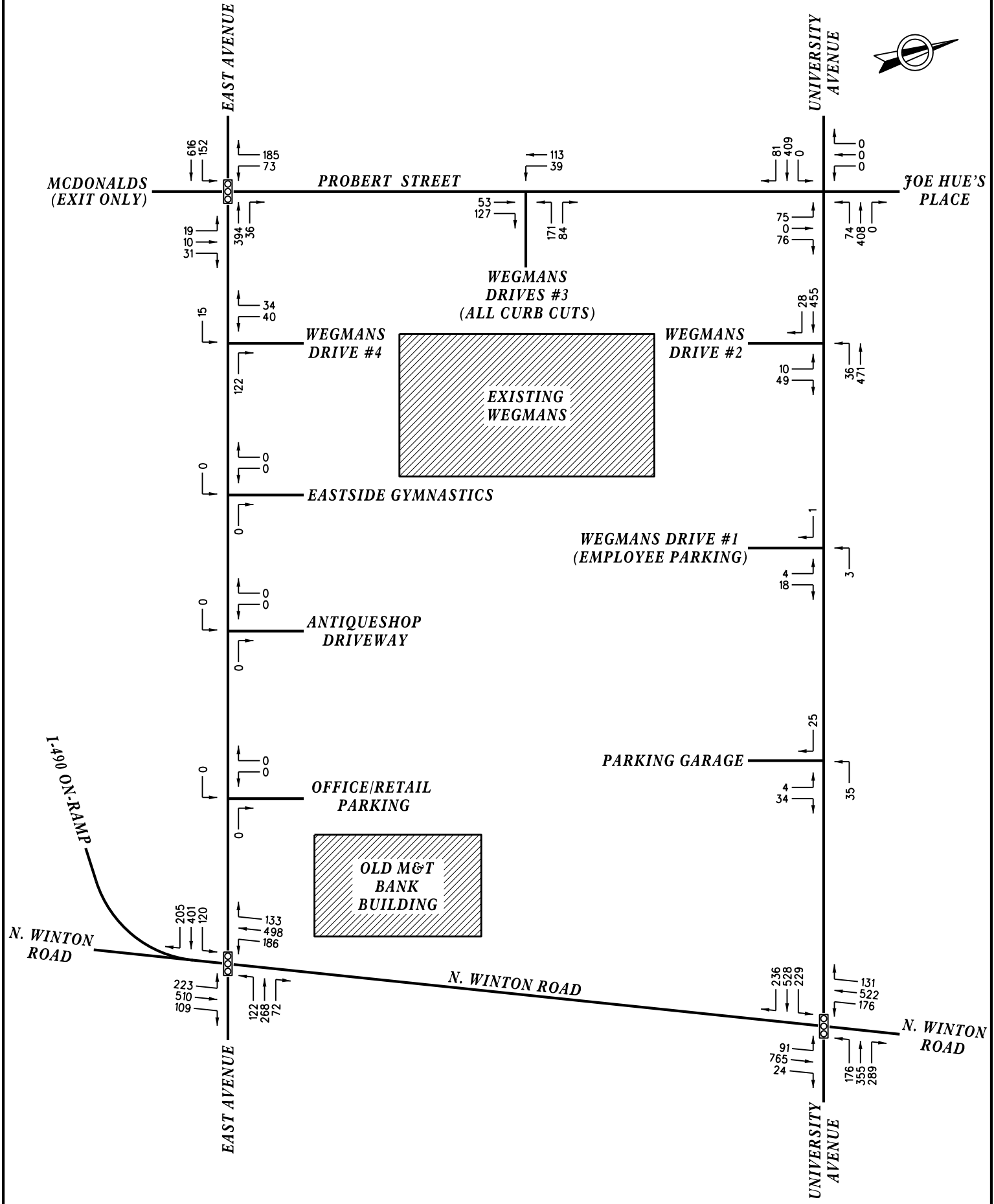
FIGURE 3

EXISTING TRAFFIC VOLUMES (2009)
WEEKDAY EVENING PEAK HOUR
5:00 PM - 6:00 PM

TYLIN INTERNATIONAL

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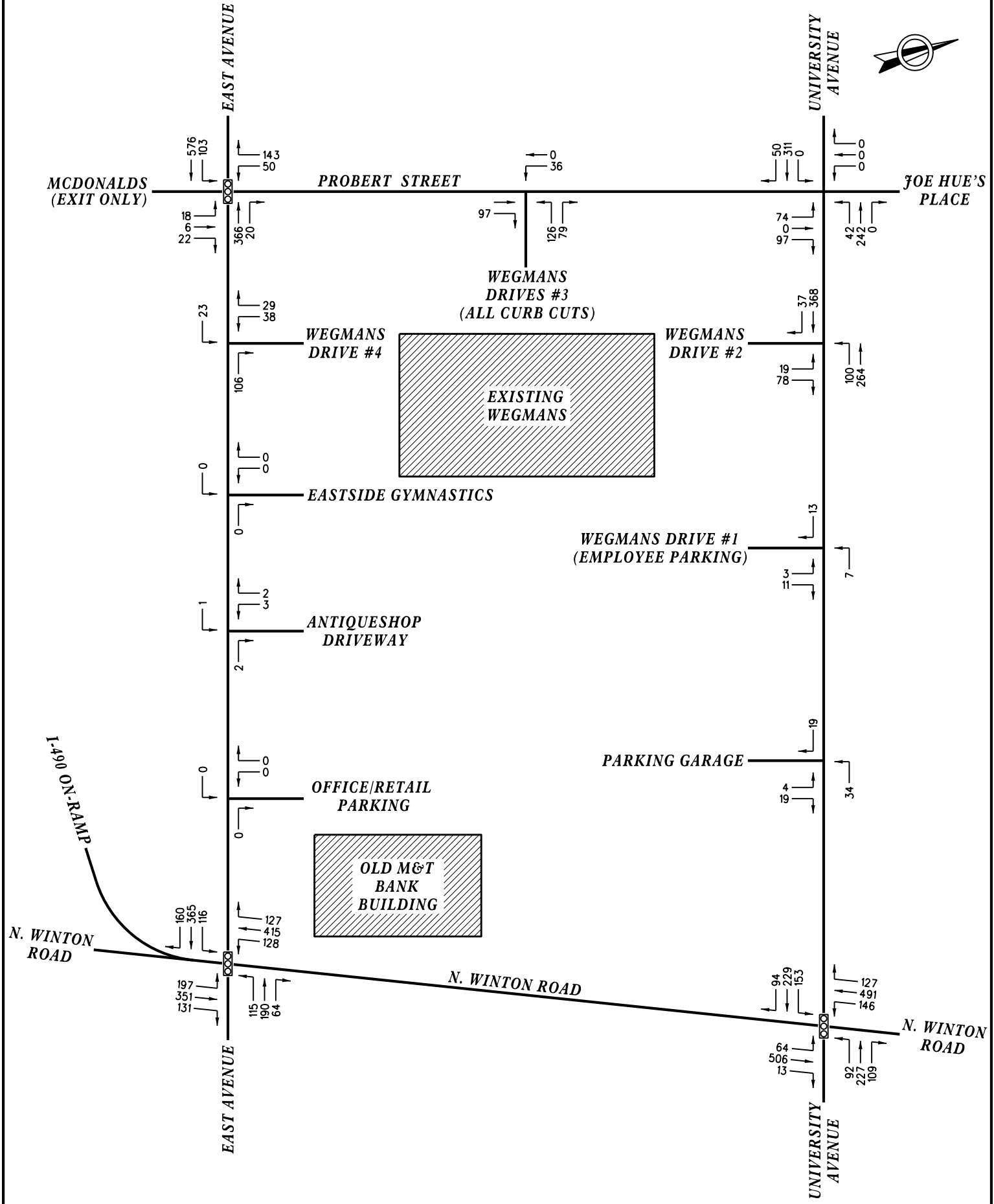
LEGEND
 XX - WEEKDAY EVENING PEAK HOUR VOLUME



TY-LIN INTERNATIONAL
 255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000

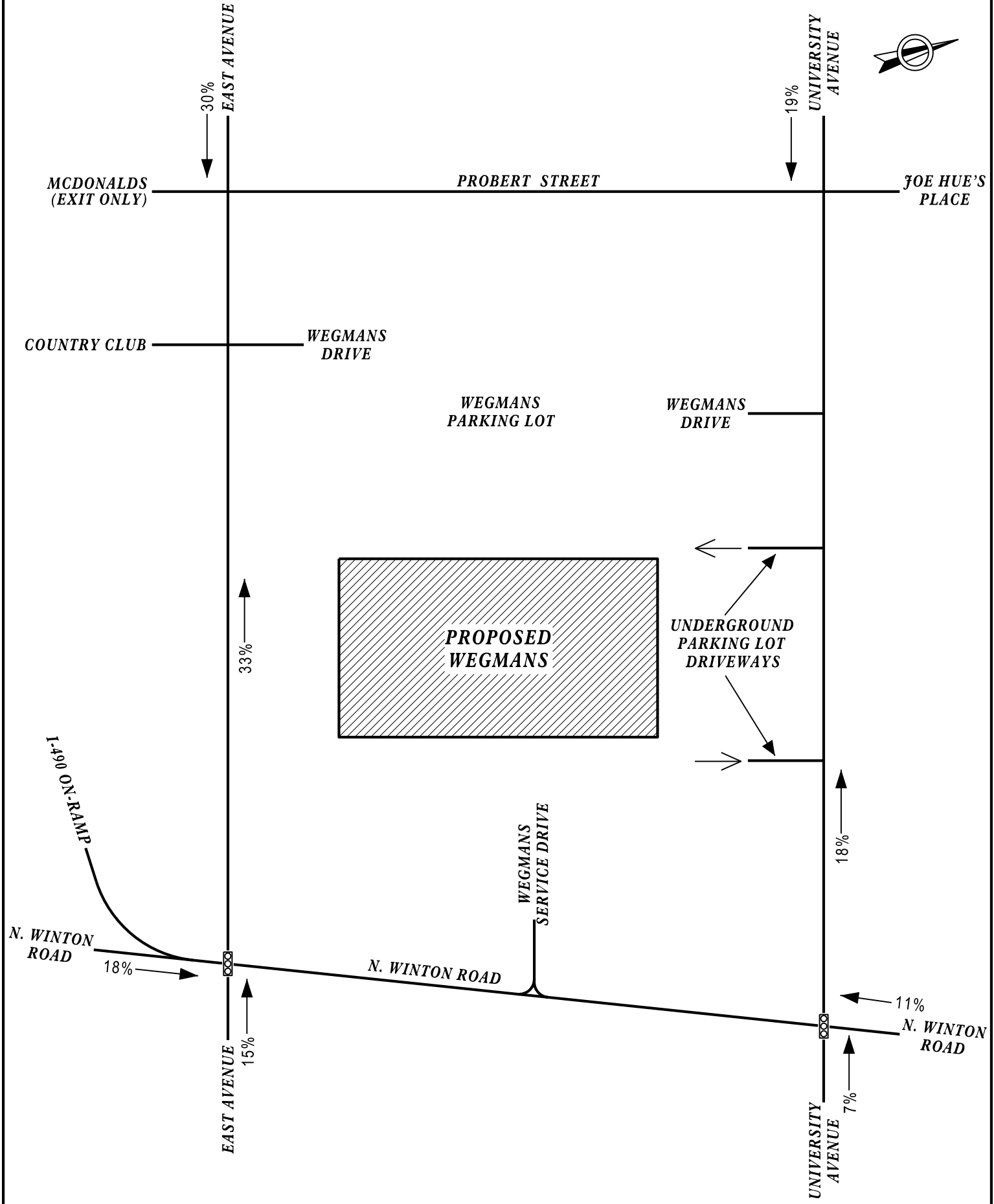
FIGURE 4
EXISTING TRAFFIC VOLUMES (2009)
FRIDAY EVENING PEAK HOUR
4:45 PM - 5:45 PM

LEGEND
 XX - FRIDAY EVENING PEAK HOUR VOLUME

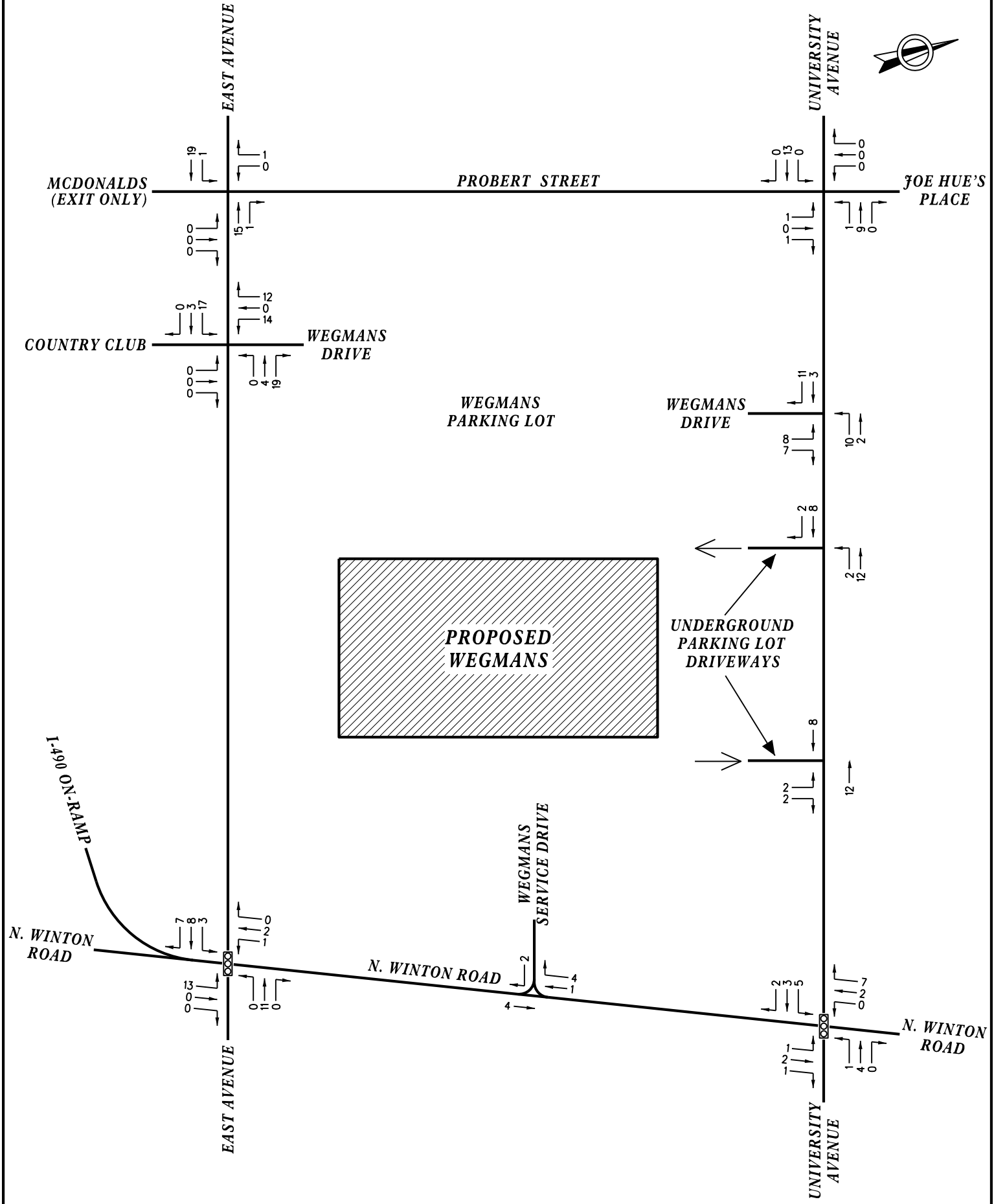


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FIGURE 5
EXISTING TRAFFIC VOLUMES (2009)
SATURDAY MIDDAY PEAK HOUR
12:00 PM - 1:00 PM

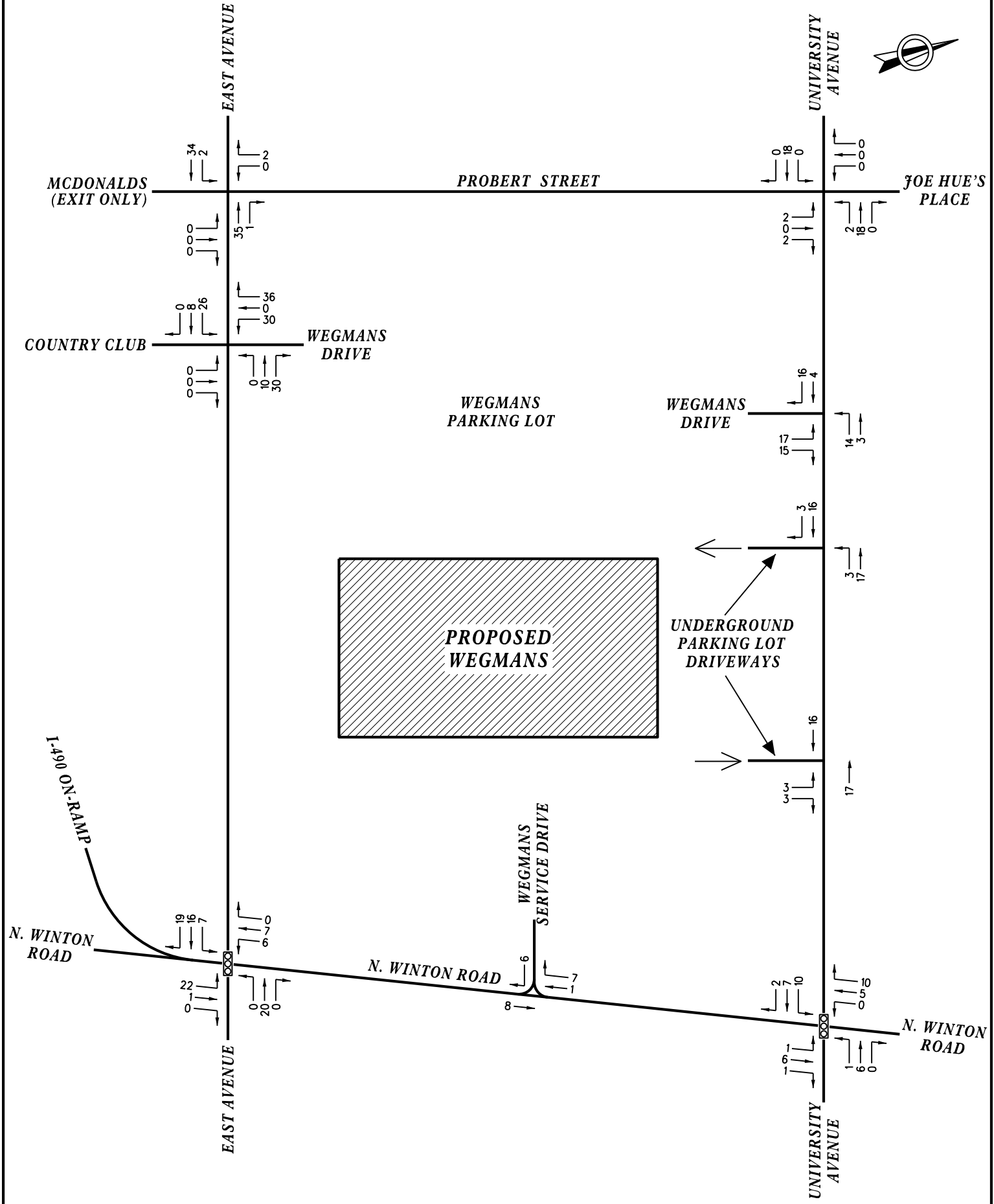


TY-LIN INTERNATIONAL <small>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</small>	FIGURE 6
	PROJECTED PERCENTAGE DISTRIBUTION OF WEGMANS EXPANSION TRAFFIC



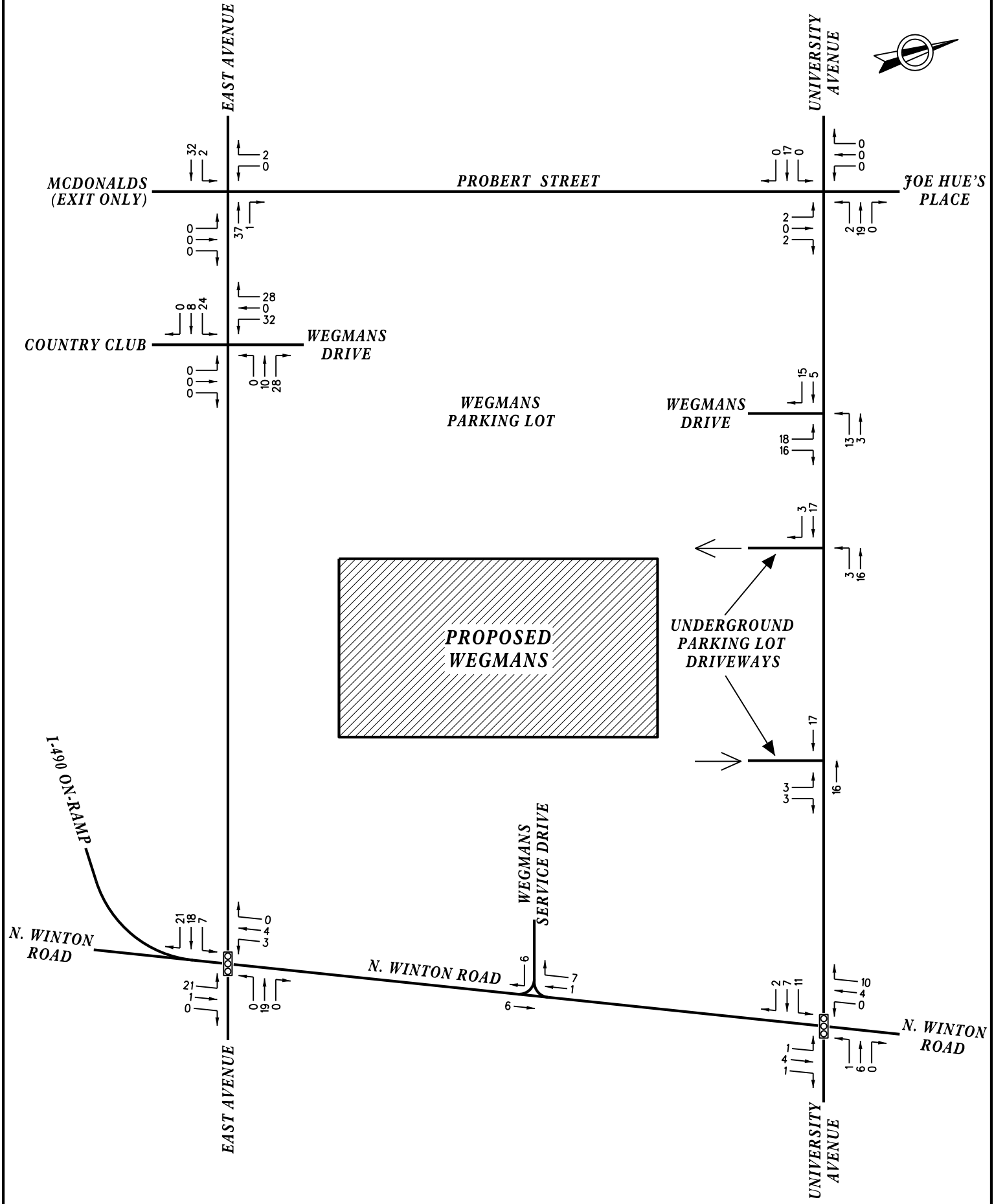
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FIGURE 7
PROJECTED TRAFFIC VOLUME DISTRIBUTION
FOR WEGMANS EXPANSION
(excluding pass-by trips)
WEEKDAY AM PEAK HOUR

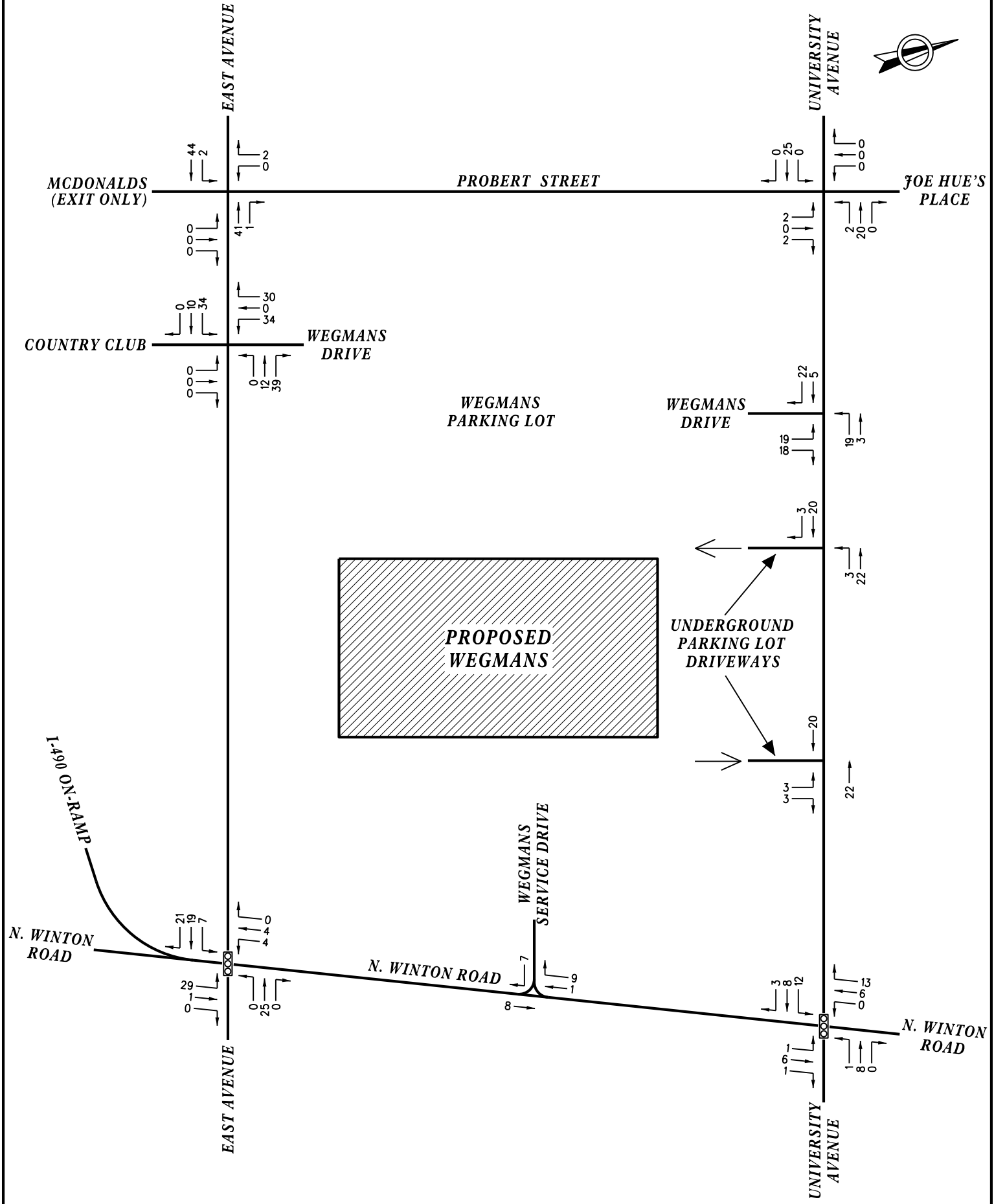


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FIGURE 8
PROJECTED TRAFFIC VOLUME DISTRIBUTION
FOR WEGMANS EXPANSION
(excluding pass-by trips)
WEEKDAY PM PEAK HOUR

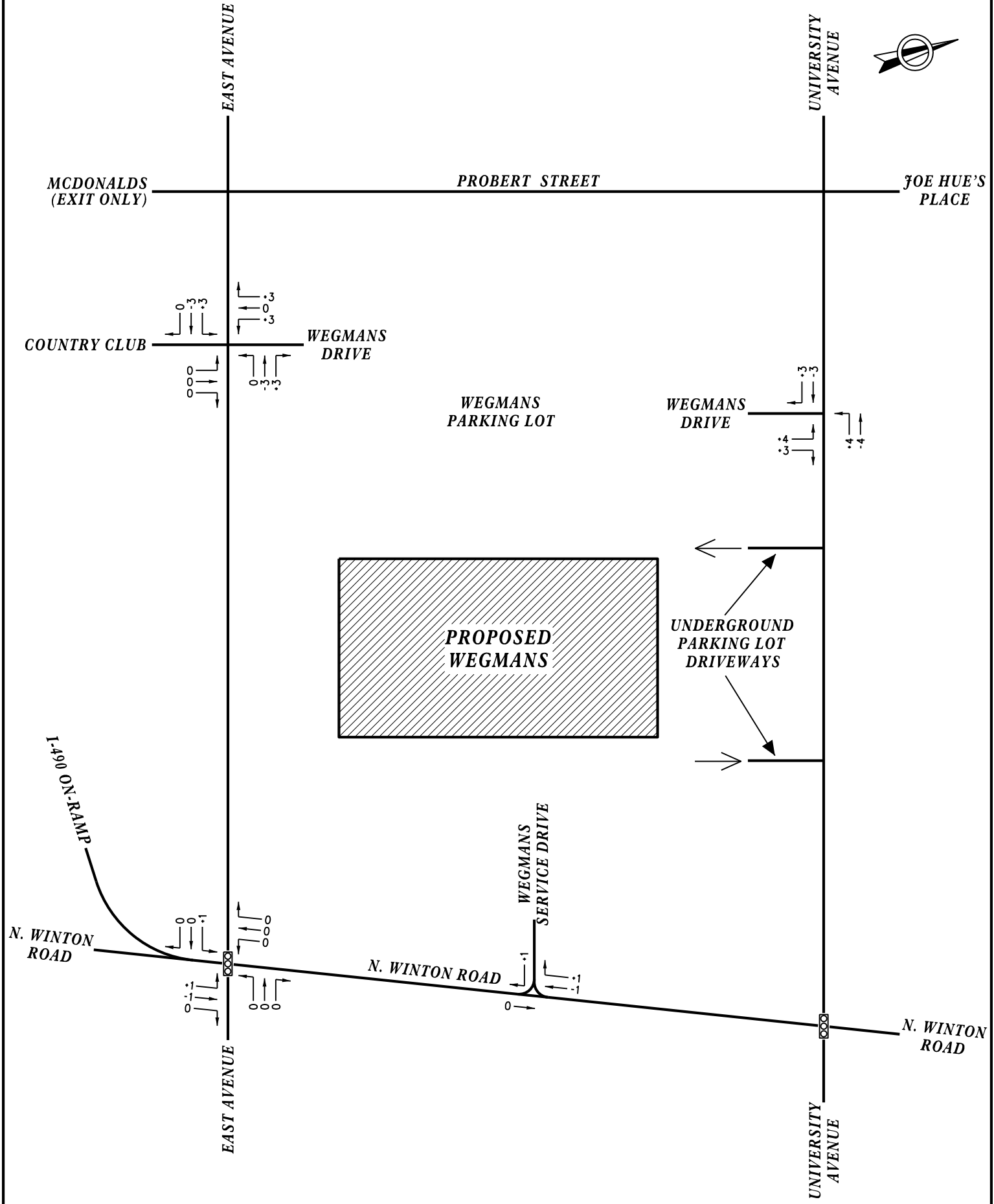


TYLIN INTERNATIONAL 255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000	FIGURE 9
	PROJECTED TRAFFIC VOLUME DISTRIBUTION FOR WEGMANS EXPANSION <i>(excluding pass-by trips)</i>
	FRIDAY PM PEAK HOUR

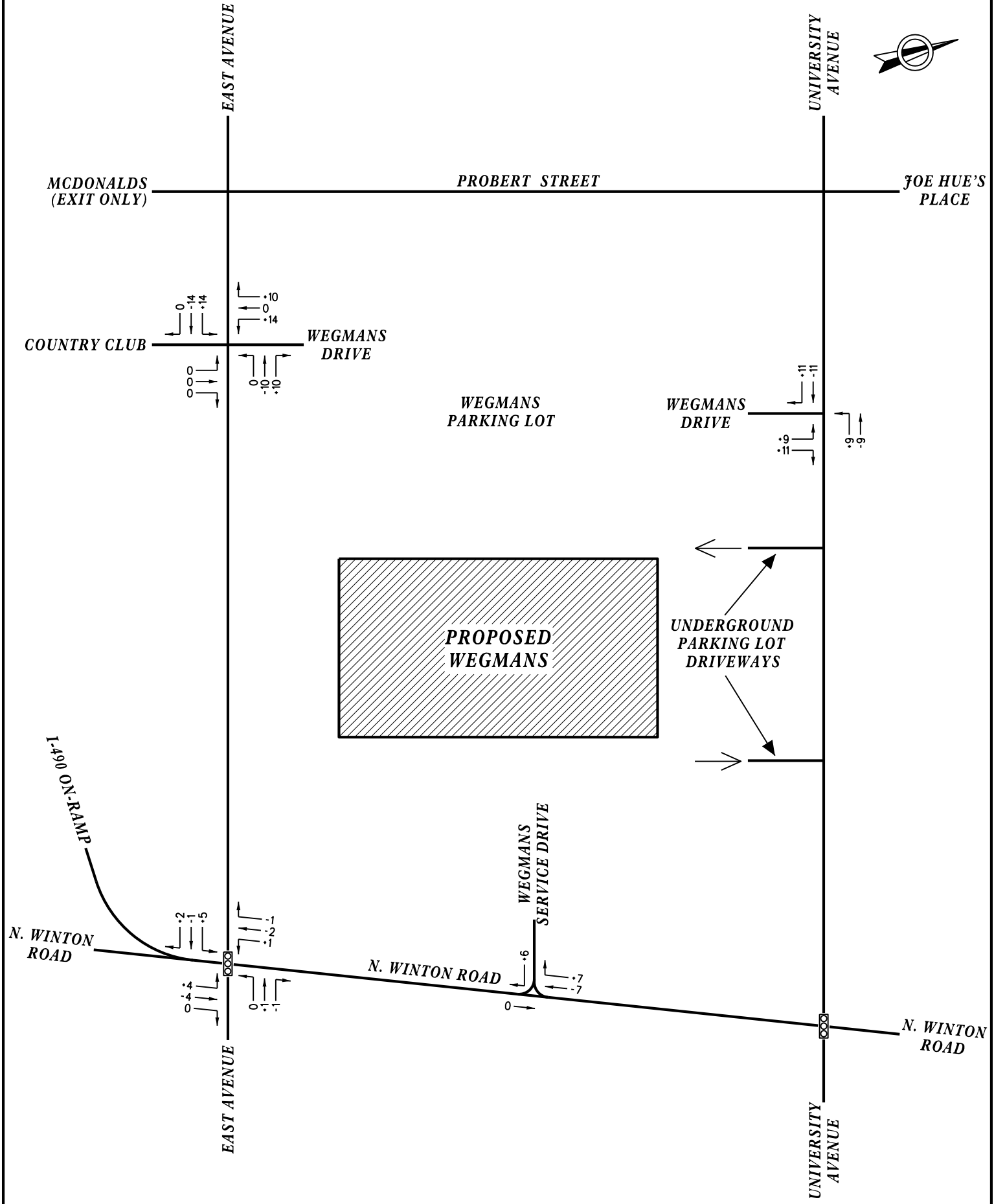


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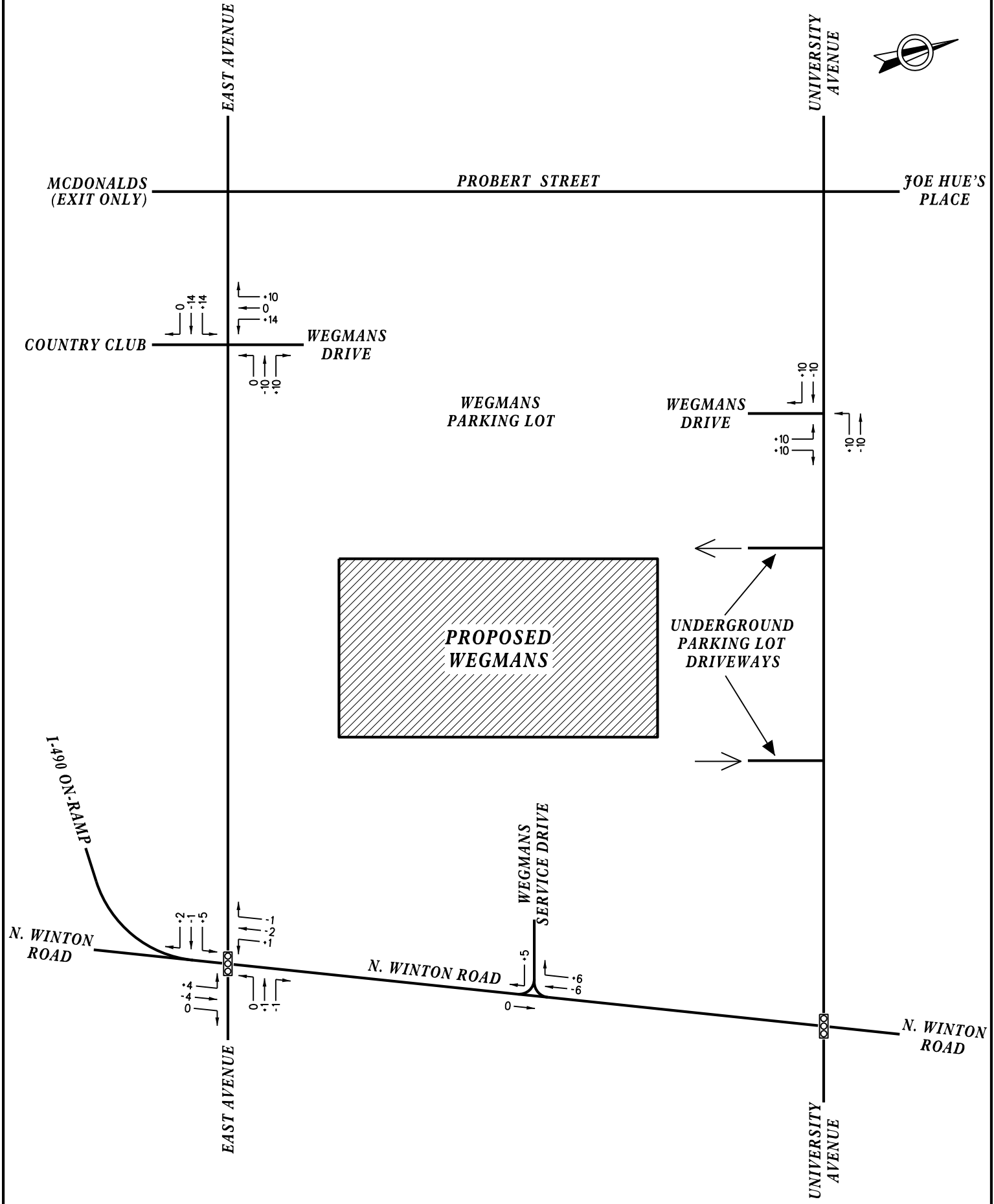
FIGURE 10
PROJECTED TRAFFIC VOLUME DISTRIBUTION
FOR WEGMANS EXPANSION
(excluding pass-by trips)
SATURDAY MIDDAY PEAK HOUR



TY-LIN INTERNATIONAL <small>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</small>	FIGURE 11
	PROJECTED PASS-BY TRAFFIC DISTRIBUTION FOR WEGMANS EXPANSION
	WEEKDAY AM PEAK HOUR

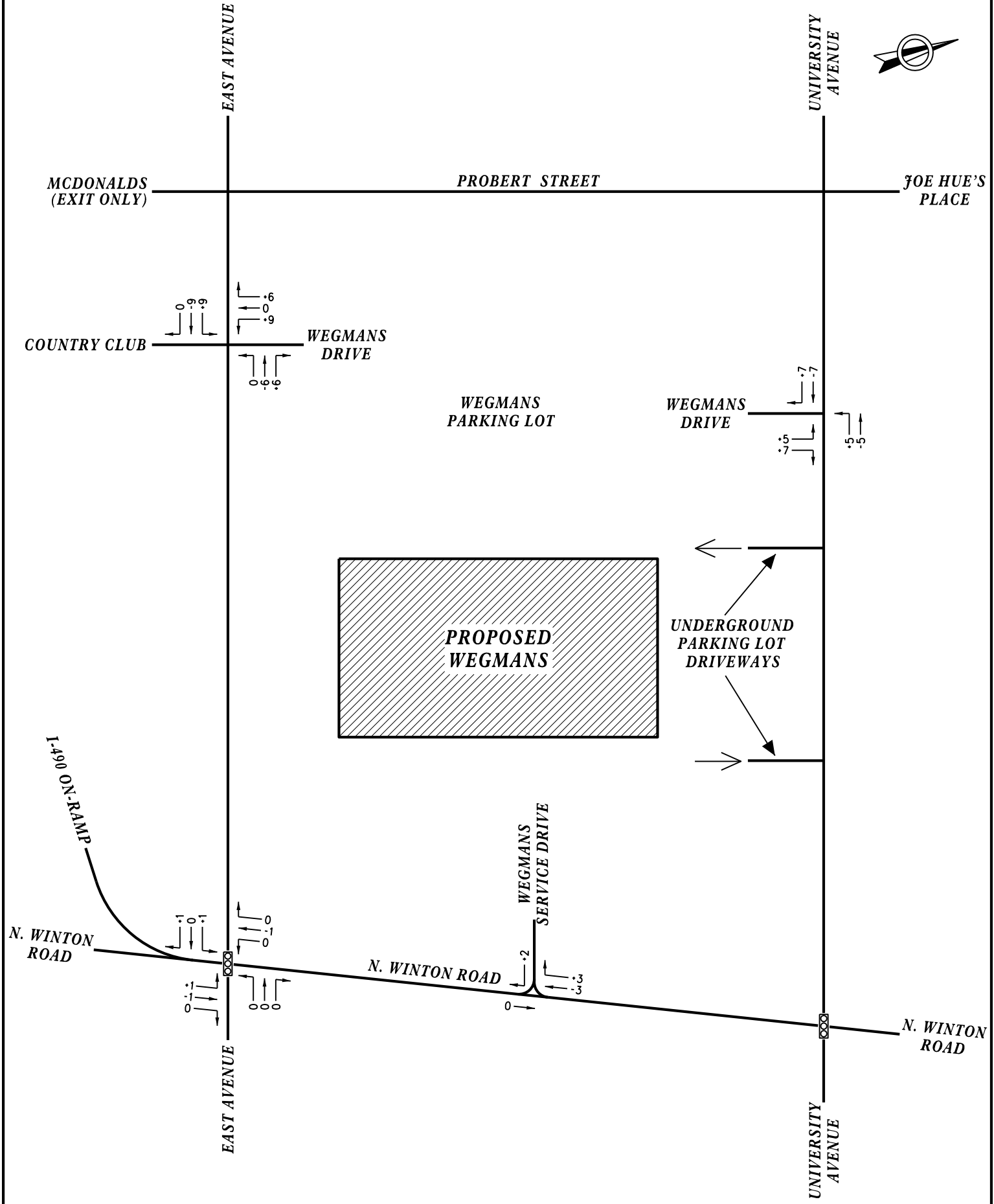


TY-LIN INTERNATIONAL <small>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</small>	FIGURE 12
	PROJECTED PASS-BY TRAFFIC DISTRIBUTION FOR WEGMANS EXPANSION
	WEEKDAY PM PEAK HOUR

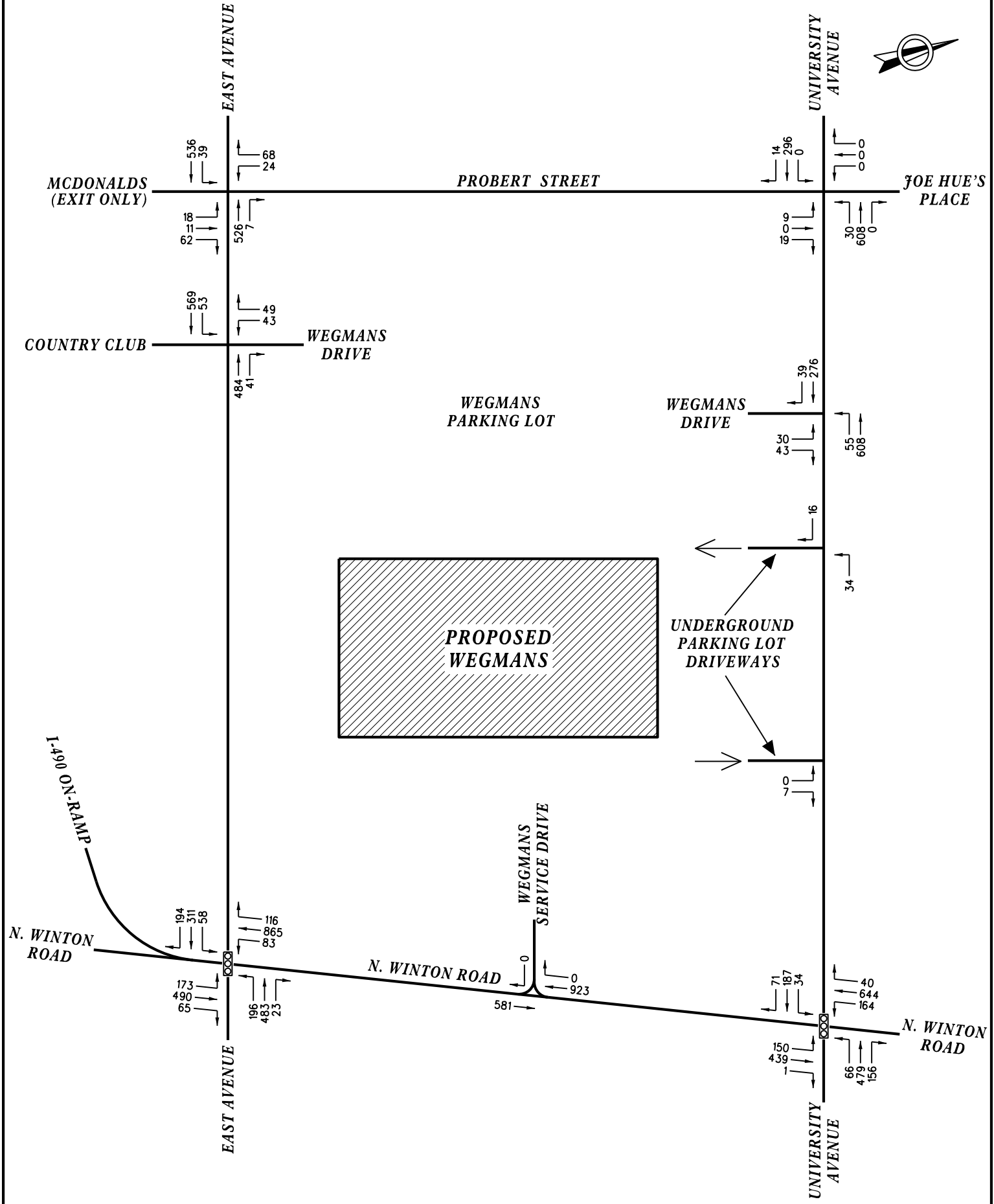


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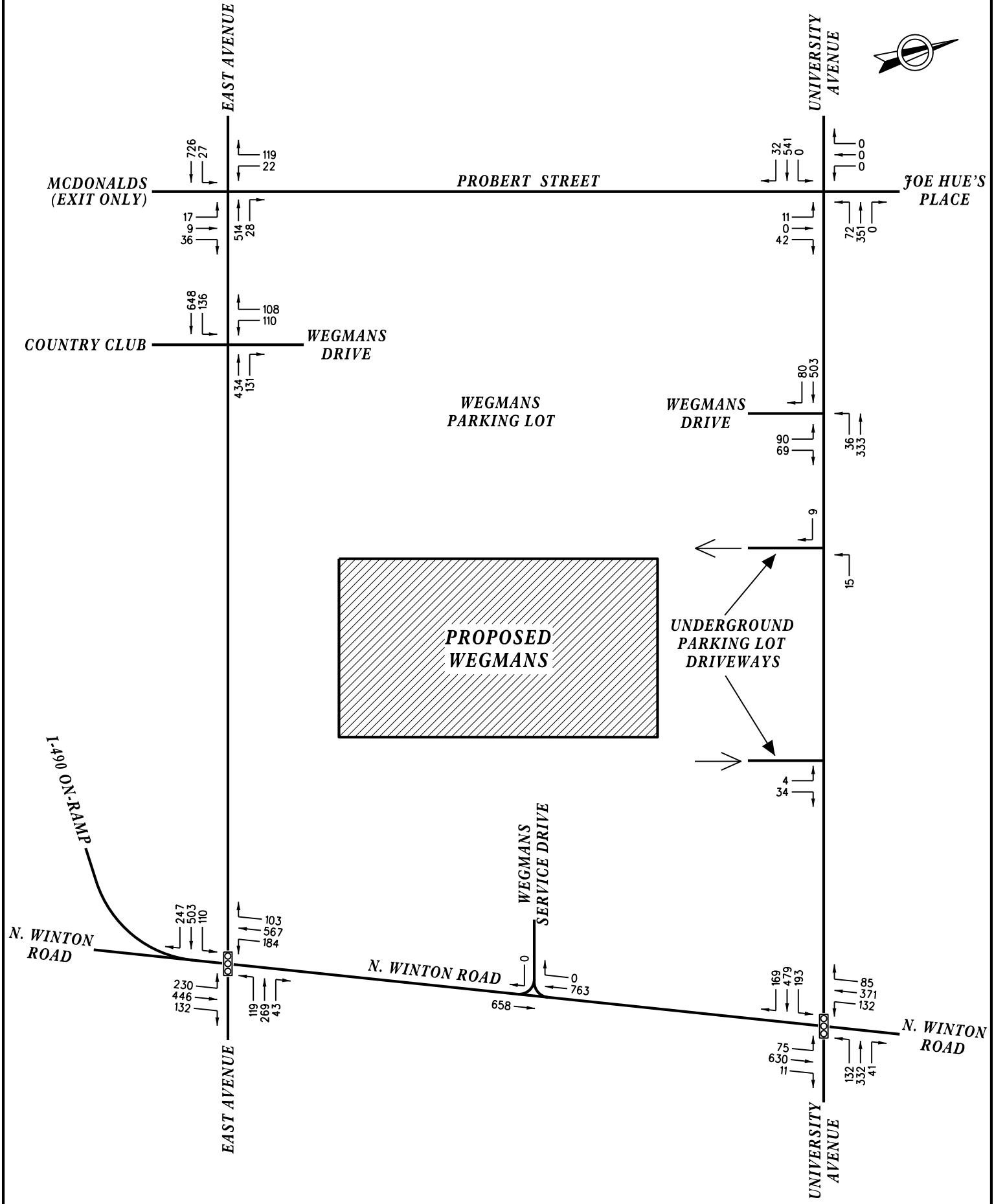
FIGURE 13
PROJECTED PASS-BY TRAFFIC DISTRIBUTION
FOR WEGMANS EXPANSION
FRIDAY PM PEAK HOUR



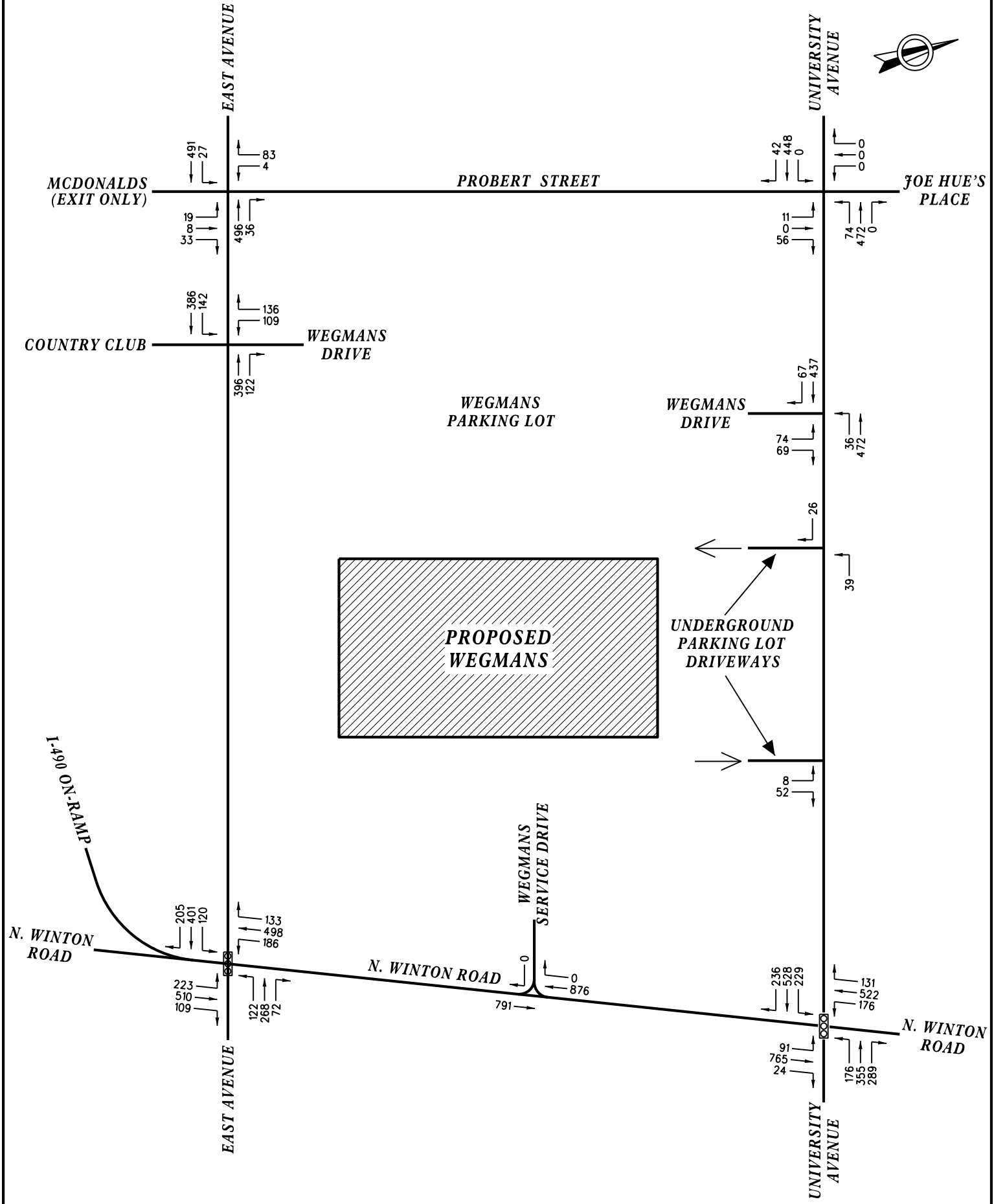
<p>TY-LIN INTERNATIONAL</p> <p>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</p>	FIGURE 14
	PROJECTED PASS-BY TRAFFIC DISTRIBUTION FOR WEGMANS EXPANSION
	SATURDAY MIDDAY PEAK HOUR



<p>TYLIN INTERNATIONAL</p> <p>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</p>	FIGURE 15
	<i>REDISTRIBUTED EXISTING TRAFFIC</i>
	<i>WEEKDAY AM PEAK HOUR</i>



<p>TYLIN INTERNATIONAL</p> <p>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</p>	<p>FIGURE 16</p>
	<p>REDISTRIBUTED EXISTING TRAFFIC</p>
	<p>WEEKDAY PM PEAK HOUR</p>

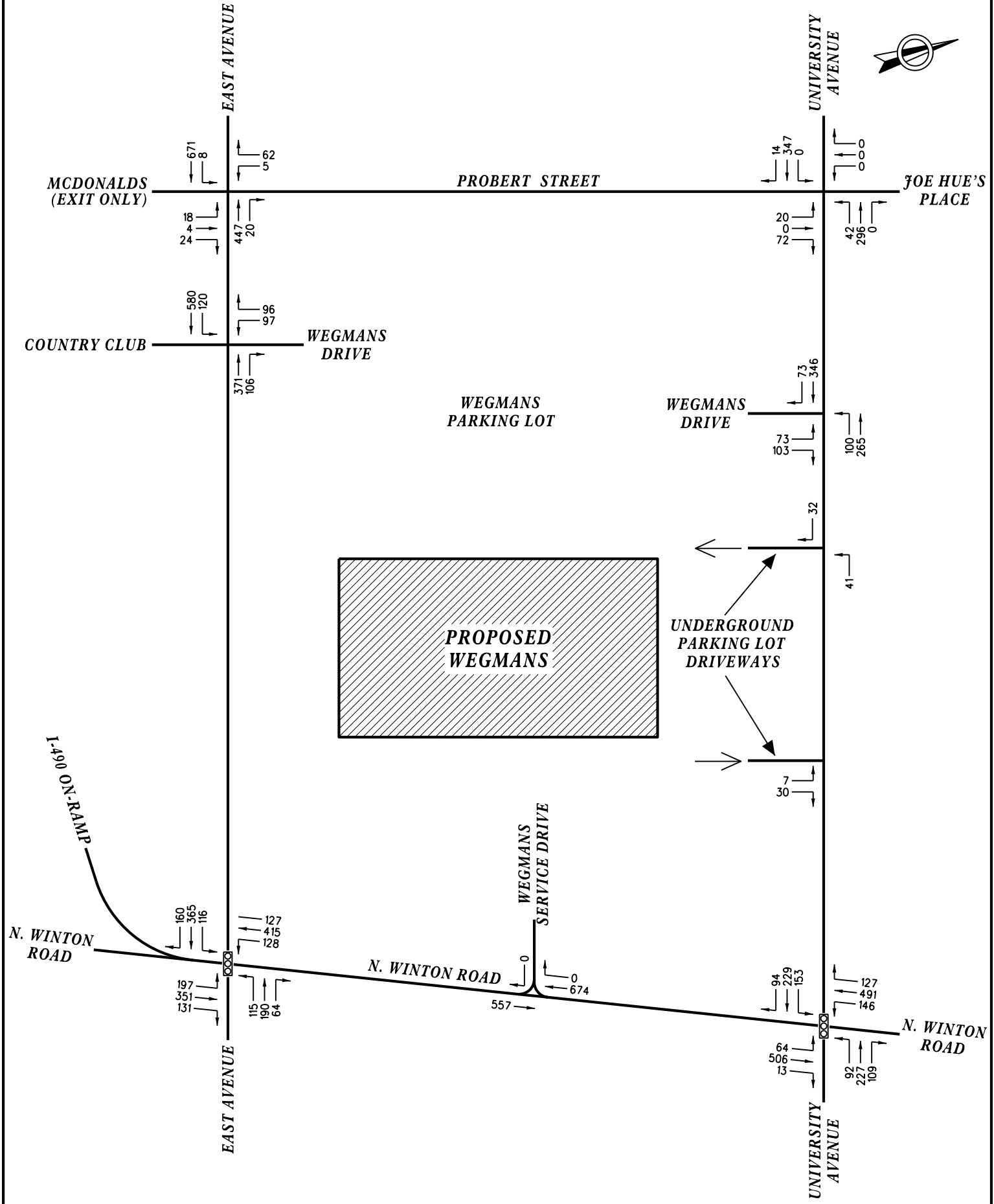


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FIGURE 17

REDISTRIBUTED EXISTING TRAFFIC

FRIDAY PM PEAK HOUR



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FIGURE 18
REDISTRIBUTED EXISTING TRAFFIC
SATURDAY MIDDAY PEAK HOUR

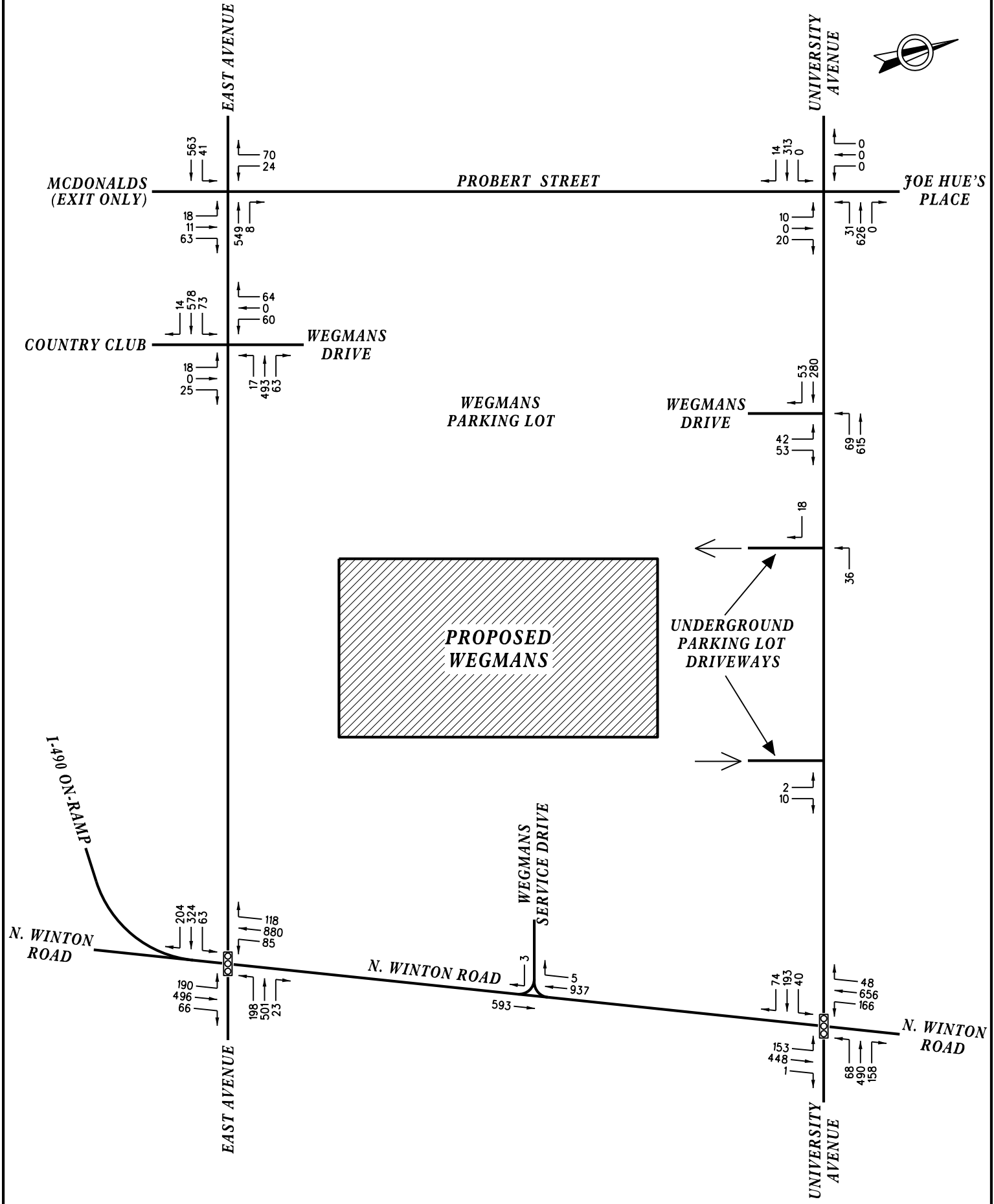


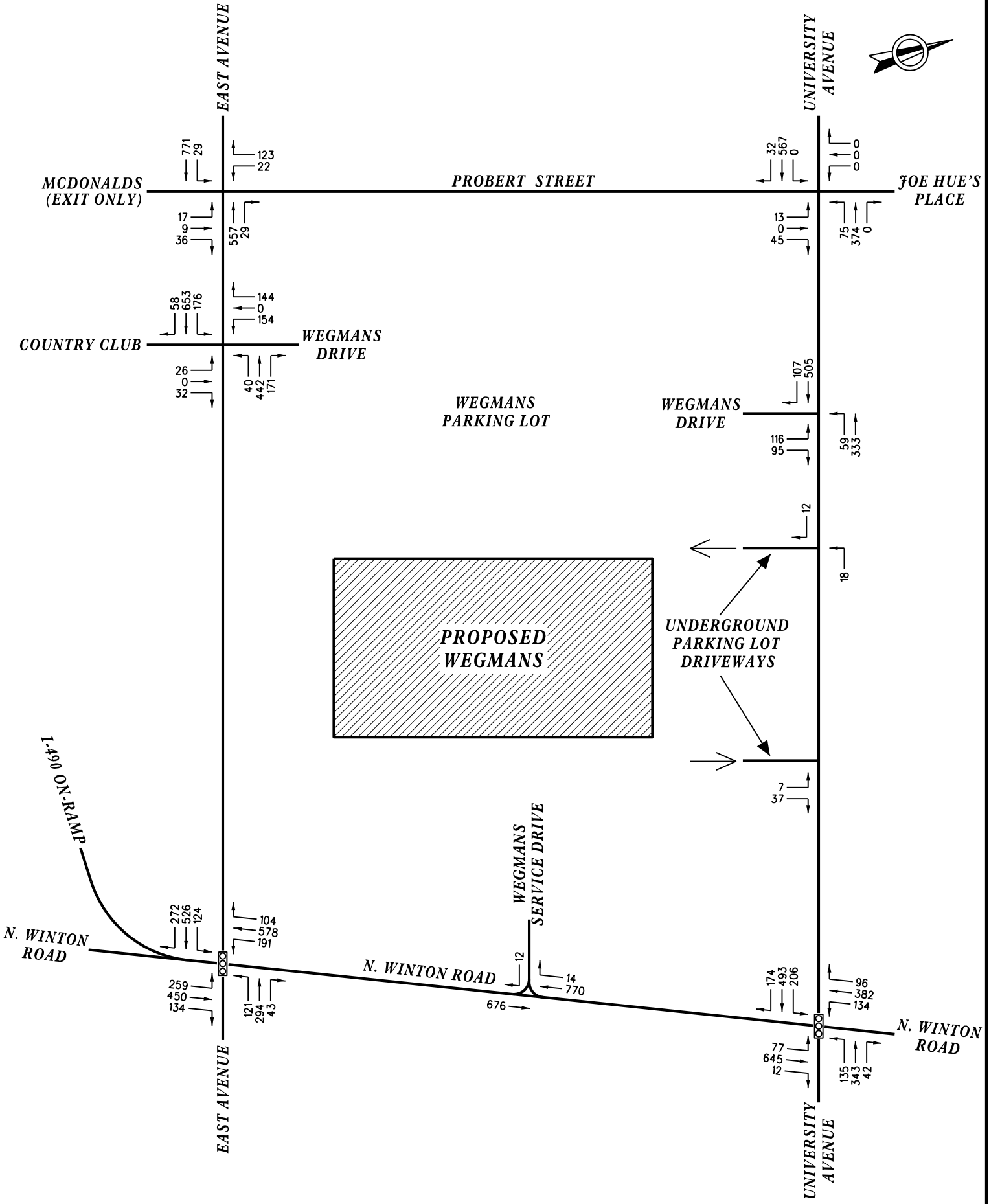
FIGURE 19

TOTAL TRAFFIC AFTER COMPLETION OF WEGMANS EXPANSION

WEEKDAY AM PEAK HOUR

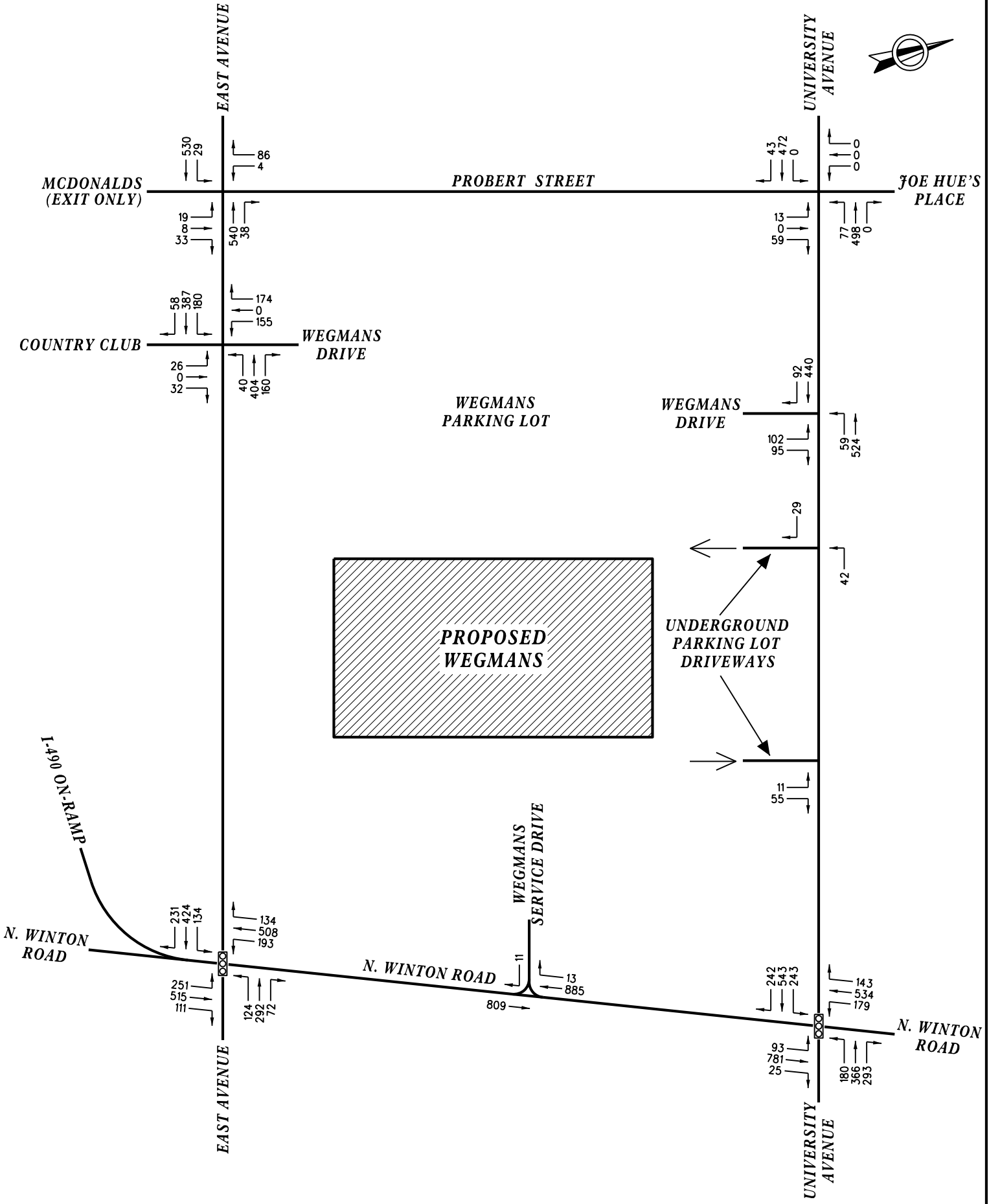
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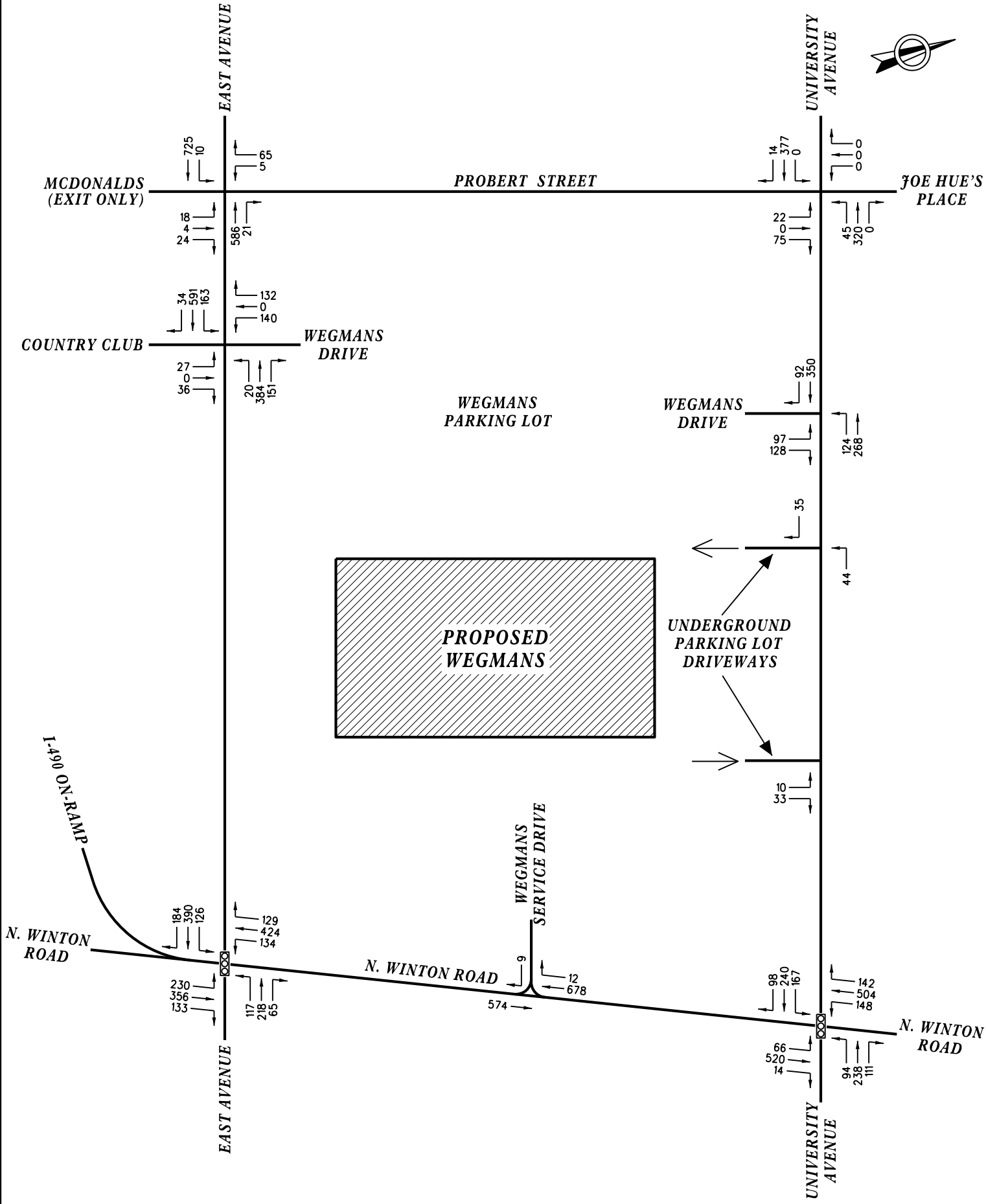
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FIGURE 20
TOTAL TRAFFIC AFTER COMPLETION OF WEGMANS EXPANSION
WEEKDAY PM PEAK HOUR



TYLIN INTERNATIONAL
255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000

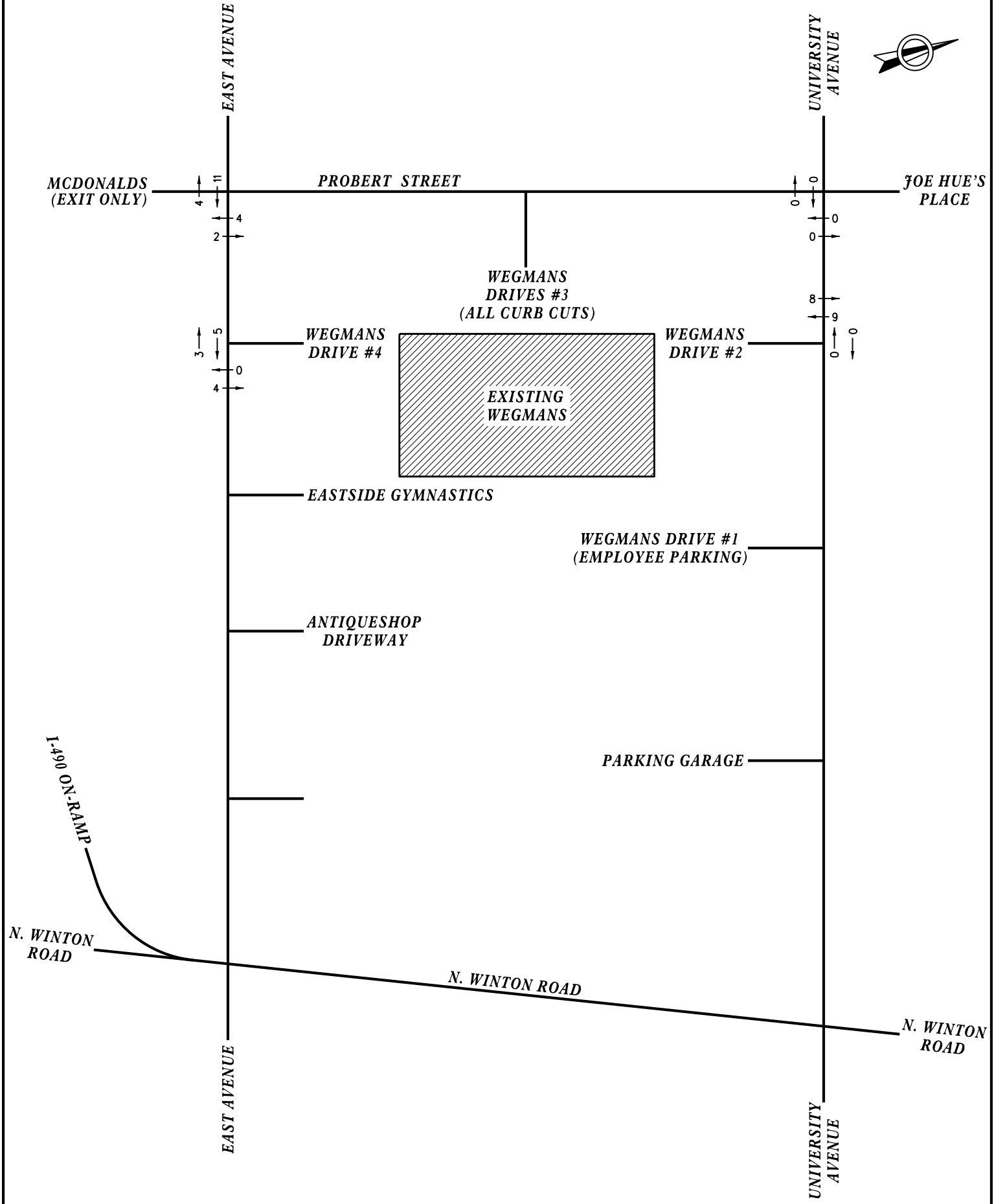
FIGURE 21
TOTAL TRAFFIC AFTER COMPLETION OF WEGMANS EXPANSION
FRIDAY PM PEAK HOUR



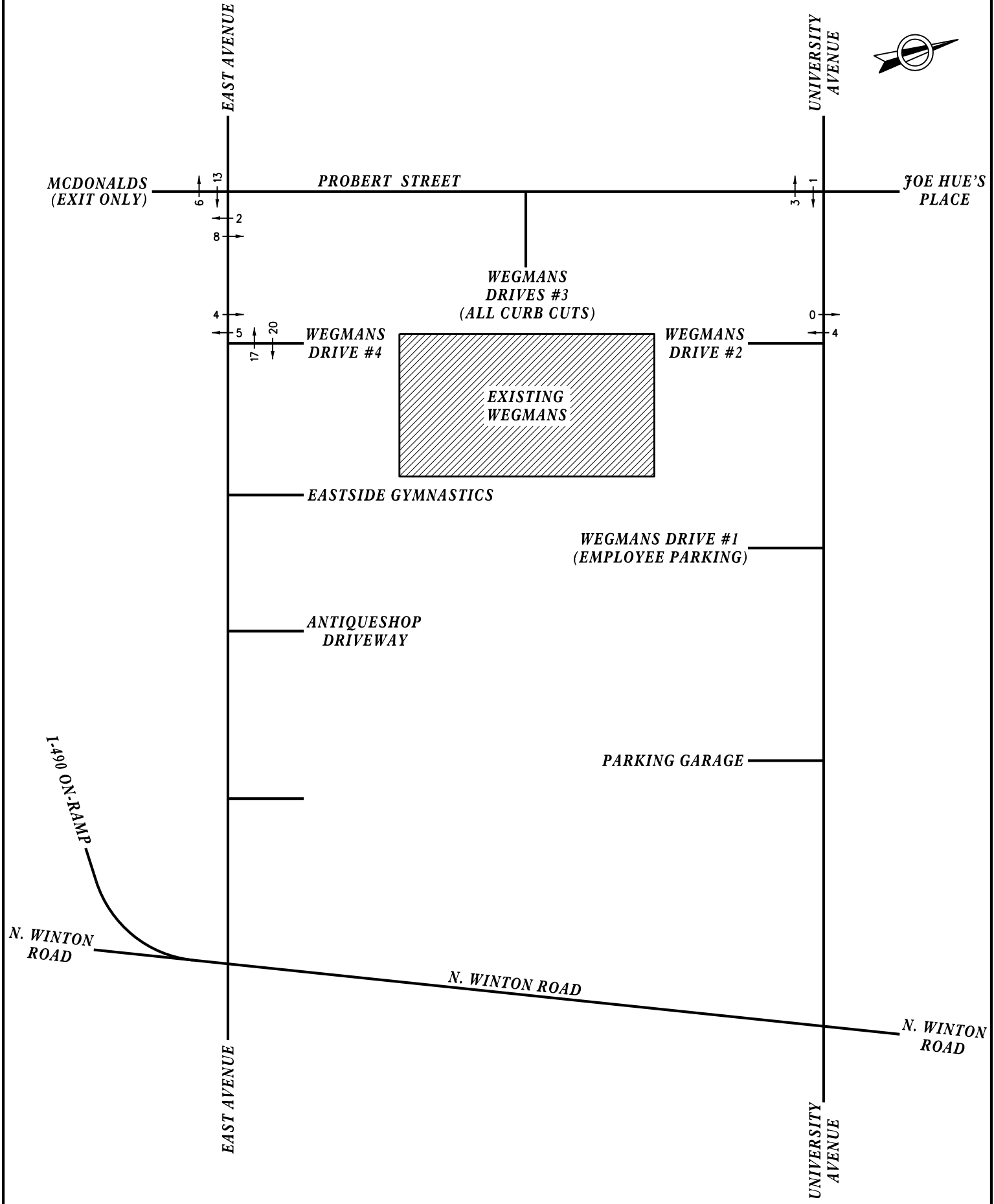
1-490 ON-RAMP
N. WINTON ROAD

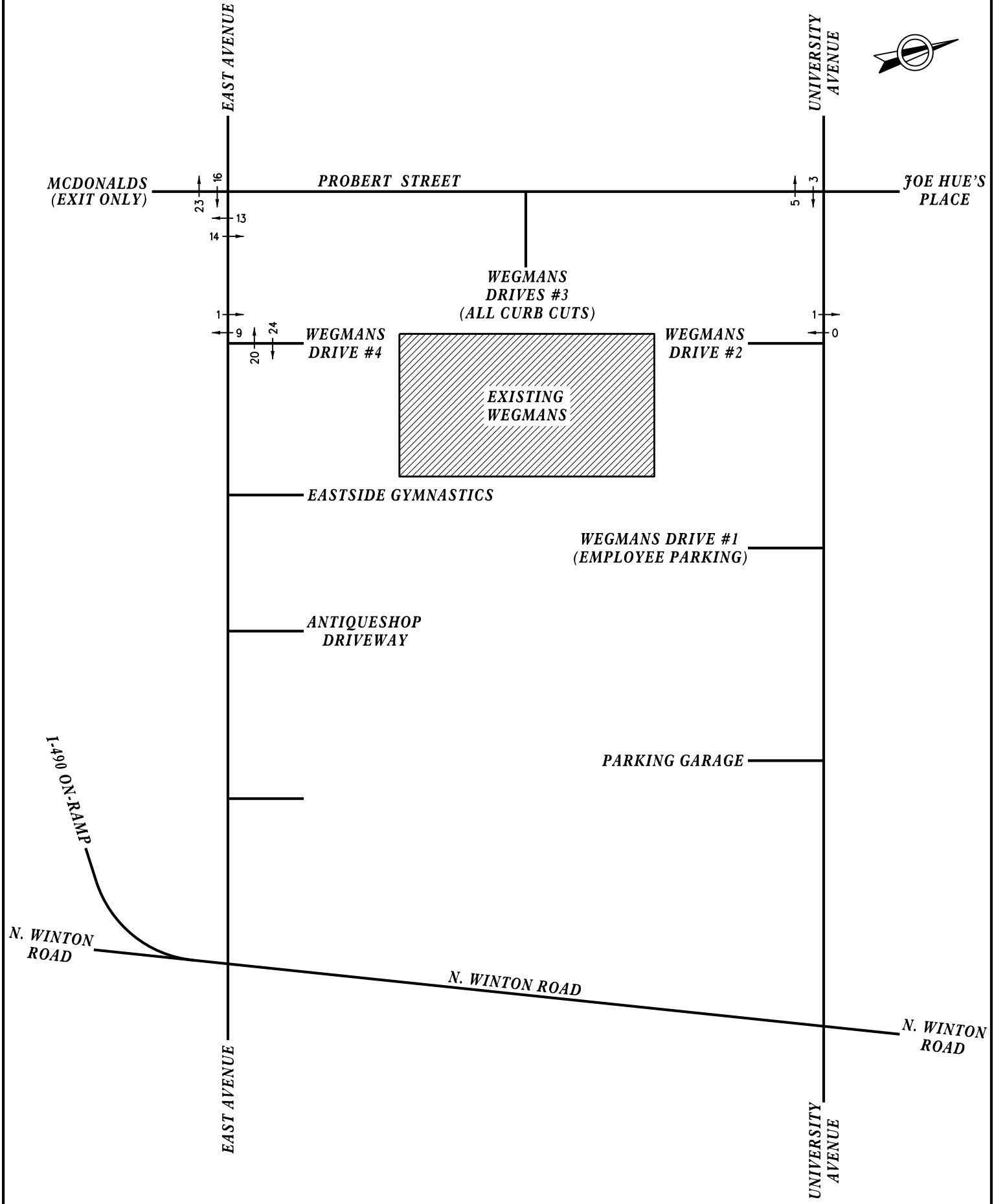
TY-LIN INTERNATIONAL
255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000

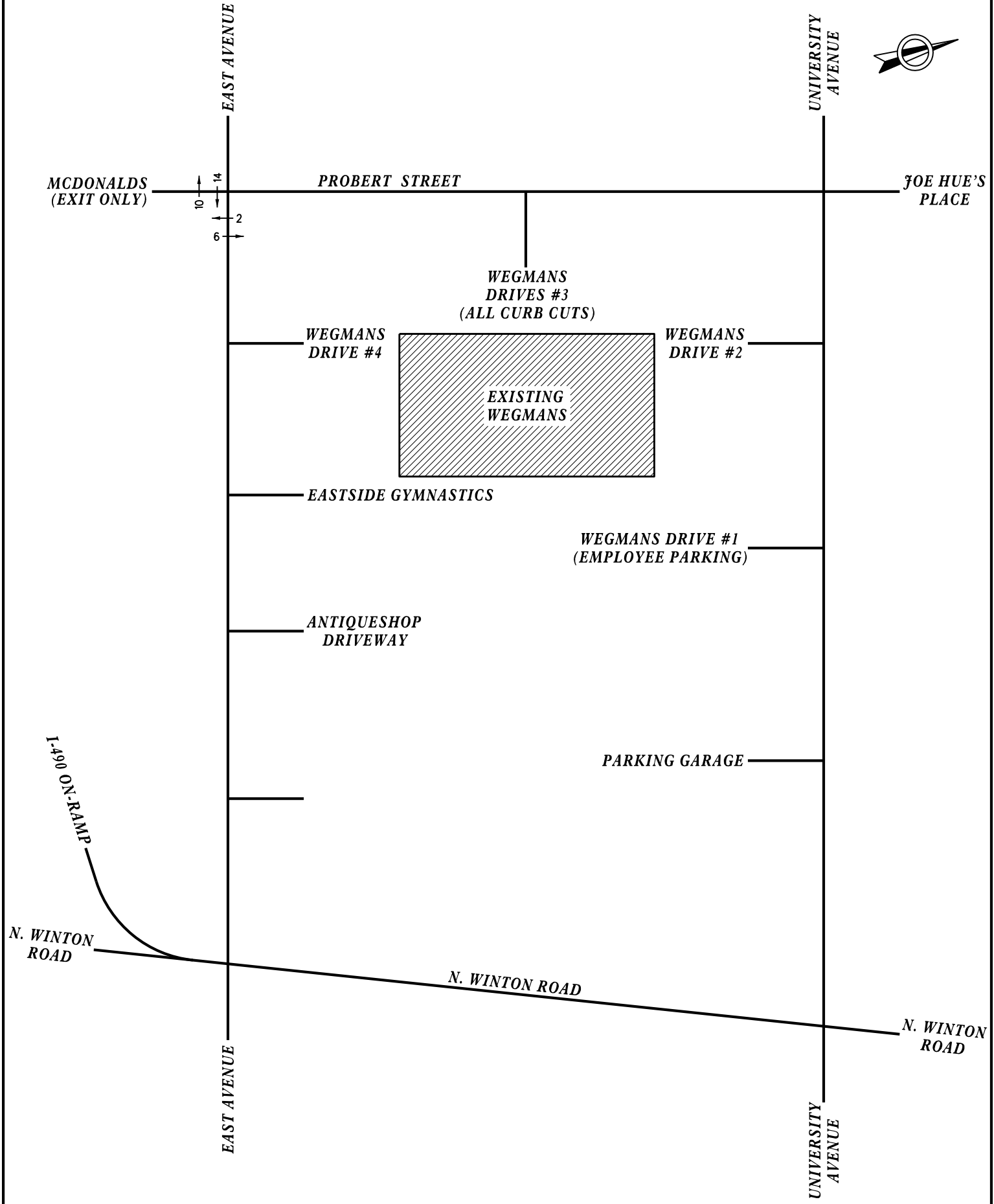
FIGURE 22
TOTAL TRAFFIC AFTER COMPLETION OF WEGMANS EXPANSION
SATURDAY MIDDAY PEAK HOUR



<p>TY-LIN INTERNATIONAL <small>255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</small></p>	<p>FIGURE 23 EXISTING PEDESTRIAN VOLUMES (2004) WEEKDAY MORNING PEAK HOUR 7:45 AM - 8:45 AM</p>
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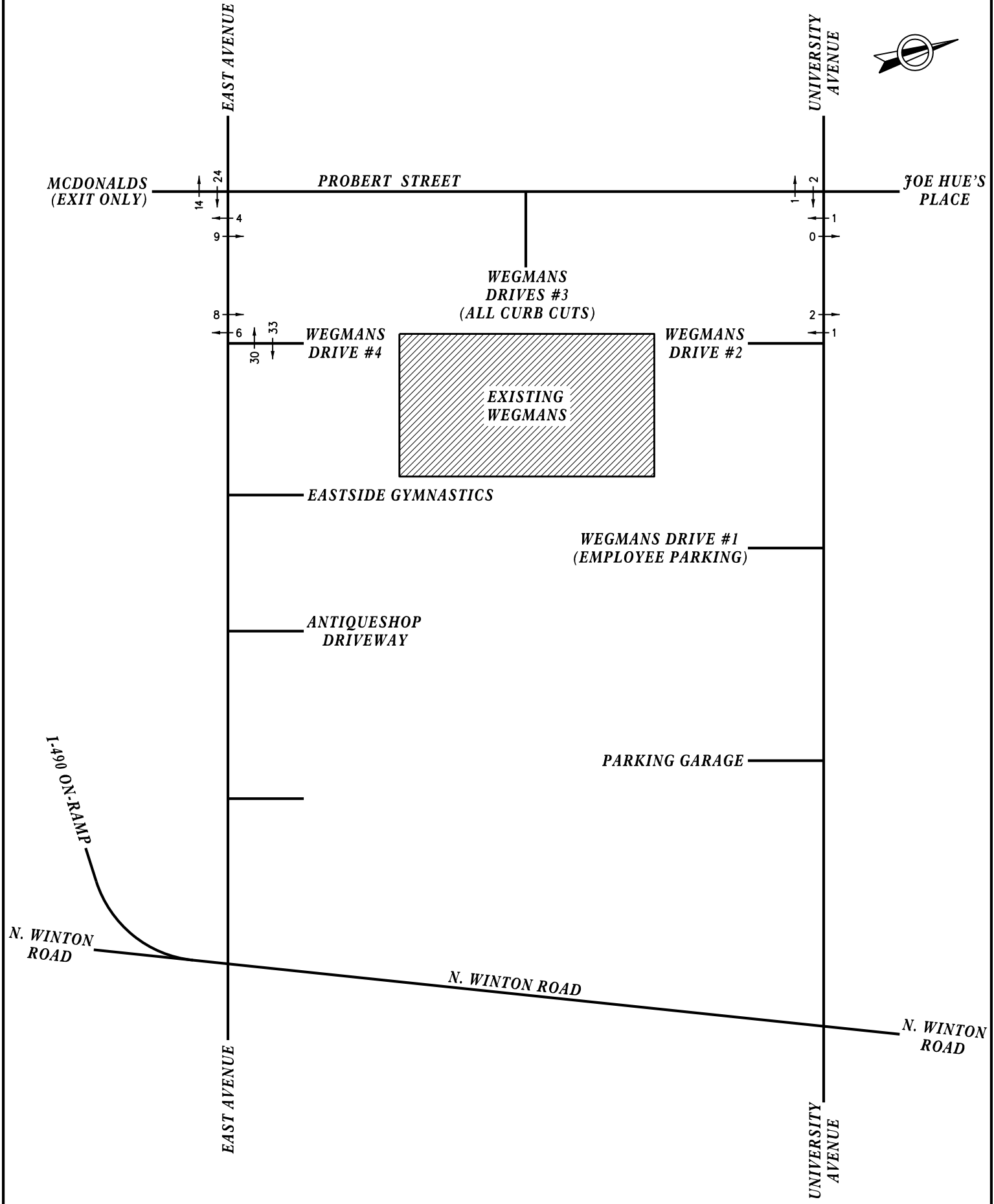


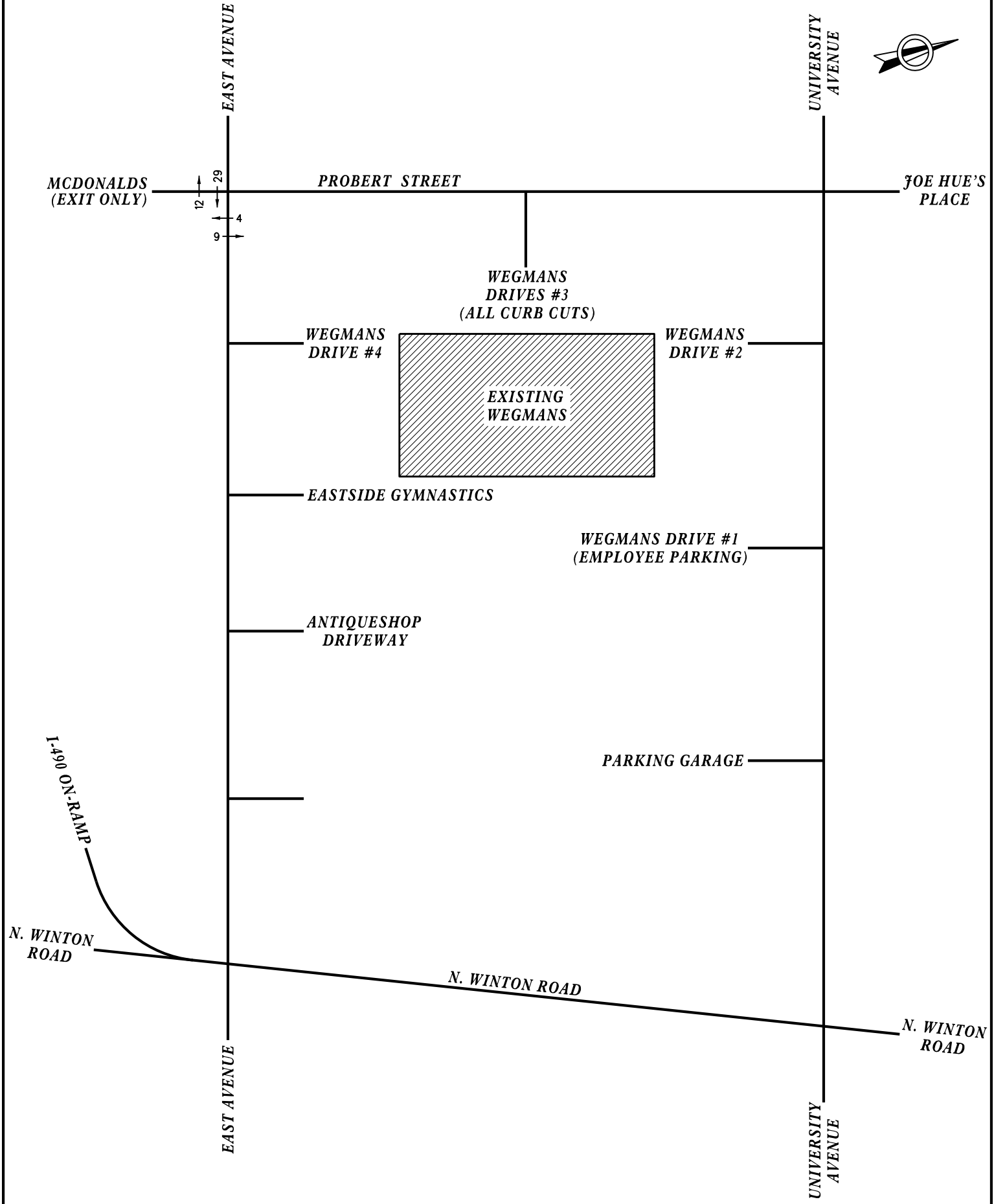




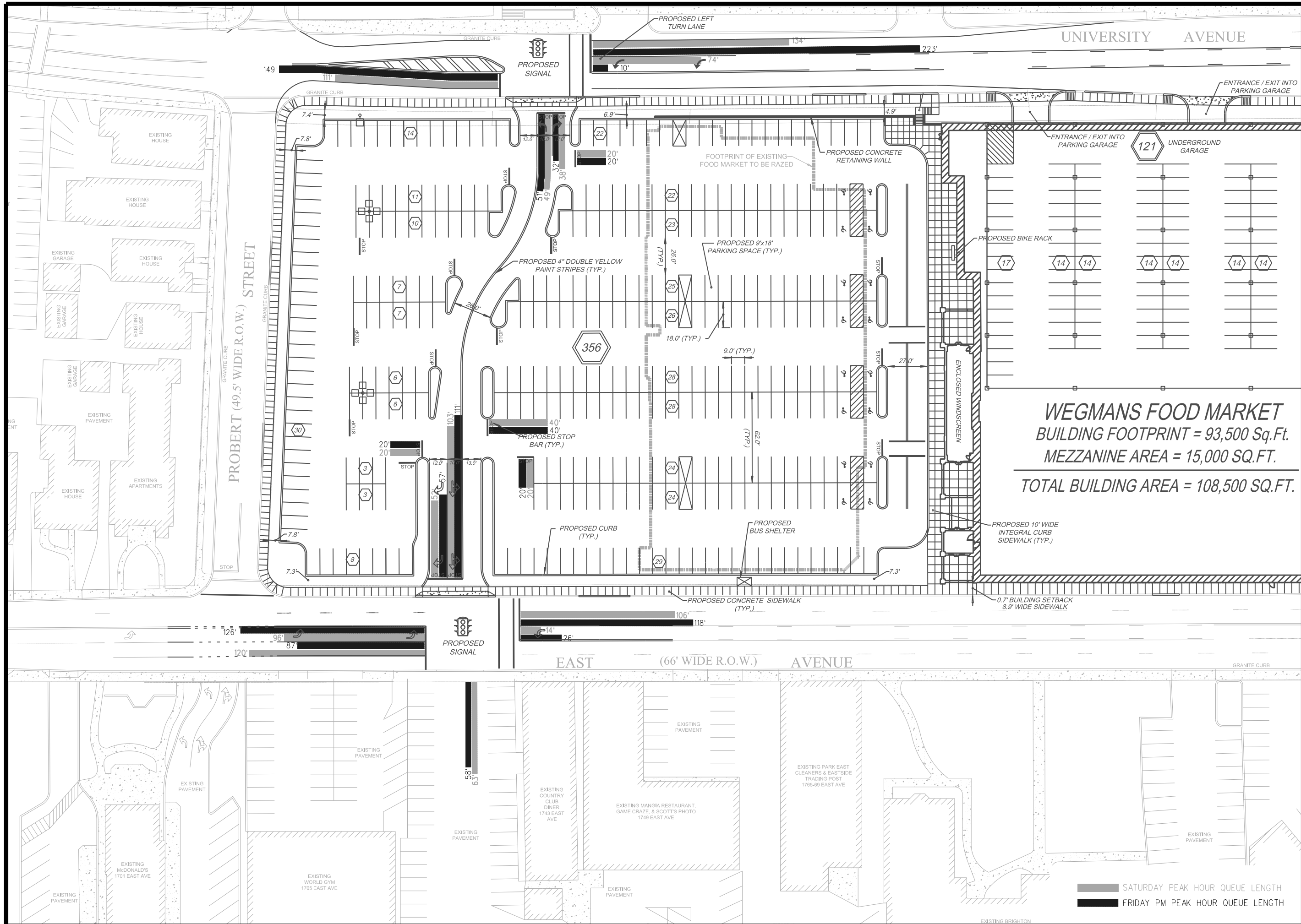
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FIGURE 25 - A
EXISTING PEDESTRIAN VOLUMES (2010)
FRIDAY EVENING
4:45 PM - 5:45 PM





<p>TY-LIN INTERNATIONAL 255 EAST AVE. ROCHESTER, NY 14604 (585)512-2000</p>	<p>FIGURE 26 - A</p>
	<p>EXISTING PEDESTRIAN VOLUMES (2010) SATURDAY MIDDAY PEAK HOUR 12:00 PM - 1:00 PM</p>



WEGMANS FOOD MARKET
 BUILDING FOOTPRINT = 93,500 Sq.Ft.
 MEZZANINE AREA = 15,000 SQ.FT.
 TOTAL BUILDING AREA = 108,500 SQ.FT.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 128

NO.	DATE	DESCRIPTION	REV/ISSUES
3			
2			
1			

DATE

T.Y. LIN INTERNATIONAL
 255 EAST AVENUE
 ROCHESTER, NY 14604
 (585) 512-2000

PROPOSED TRAFFIC QUEUE
 PROJECT NAME: **WEGMANS EAST AVENUE**
 CLIENT: **WEGMANS FOOD MARKETS, INC.**
 1500 BROOKS AVENUE, P.O. BOX 30844, ROCHESTER, NY 14603

PROJECT NO:	43.3164.04	PROJ. MGR.:	CWA
DATE:	10/19/10	DRWN. BY:	NEB
SCALE:	1"=30'	CHKD. BY:	CWA
DRAWING NO.:	PQ-1		
SHEET NO.	1 of 1		

█ SATURDAY PEAK HOUR QUEUE LENGTH
 █ FRIDAY PM PEAK HOUR QUEUE LENGTH

Appendix C
Level of Service Definitions

DEFINITIONS OF LEVEL OF SERVICE FOR TWSC UNSIGNALIZED INTERSECTIONS

<u>Level of Service</u>	<u>Average Control Delay (S/Veh)</u>
A	0 -10.0
B	>10.0 -15.0
C	>15.0 - 25.0
D	>25.0 - 35.0
E	>35.0 - 50.0
F	>50.0

Level of Service for two-way stopped-control unsignalized intersections describes the quality of traffic operation in terms of average control delay. LOS is defined for each minor movement, not for the intersection as a whole. Levels range from A to F, with A describing traffic operations with little or no delays. Level of Service analysis for TWSC unsignalized intersections considers the left-turn out of the minor road, the right-turn out of the minor road, and the left-turn entering the minor road. The average control delay is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the "last-in-queue" position to the "first-in-queue" position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation. Because different transportation facilities cause different driver perceptions, the LOS criteria for TWSC intersections are different from the criteria for signalized intersections.

DEFINITIONS OF LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service describes the quality of operation in terms of delay to the driving public. Levels range from A to F describing traffic operation with very little delay. Definitions for levels of Service follow. The Level of Service analysis provides a basis for assessing the potential impact of traffic; both in terms of how traffic conditions would change and whether the existing transportation system would be adequate for the additional traffic.

Level of Service for signalized intersections is defined in terms of control delay. Control delay is a component of delay that results when a control signal causes a lane group to reduce speed or stop. It is measured by comparison with the uncontrolled condition. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

Specifically, level-of-service criteria are stated in terms of control delay per vehicle for a 15-minute analysis period. The criteria are given in the following table:

<u>Level of Service</u>	<u>Stopped Delay Per Vehicle (seconds)</u>
A	0 - 10.0
B	>10.0 - 20.0
C	>20.0 - 35.0
D	>35.0 - 55.0
E	>55.0 - 80.0
F	>80.0

Control delay is a complex measure and is dependent on a number of variables including: the quality of traffic progression, the cycle length, and the relative amount of green time for the lane group or approach in question.

Level-of-Service A describes operations with very low control delay, i.e., less than 10.0 seconds per vehicle. This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-Service B describes operations with control delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level A, causing higher levels of average delay.

Level-of-Service C describes vehicles with control delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-Service D describes operations with control delay in the range of 35.1 to 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression or long cycle lengths. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level-of-Service E describes operations with control delay in the range of 55.1 to 80.0 per vehicle. This is considered the limit of acceptable delay. These high delay values generally indicate poor progression and long cycle lengths. Individual cycle failures are frequent occurrences.

Level-of-Service F describes operations with control delay in excess of 80.0 seconds per vehicle. This is considered unacceptable by most drivers. This condition often occurs with over-saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Appendix D
Intersection Capacity Analysis Printouts

EXISTING (2009)

Wegman's TIS
1: East & Probert

Existing Conditions - Weekday AM Peak Hour
Timings



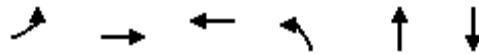
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗↗	↗↖	↖	↗		↕
Volume (vph)	77	498	493	18	13	39	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	5.0		7.0	6.0	6.0	6.0	6.0
Minimum Split (s)	13.0		22.0	25.0	25.0	25.0	25.0
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	None		C-Max	None	None	None	None
Act Effct Green (s)	42.9	46.5	34.8	10.4	10.4		10.4
Actuated g/C Ratio	0.72	0.78	0.58	0.17	0.17		0.17
v/c Ratio	0.15	0.23	0.27	0.14	0.28		0.42
Control Delay	4.0	3.0	10.3	21.7	9.9		9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	4.0	3.0	10.3	21.7	9.9		9.1
LOS	A	A	B	C	A		A
Approach Delay		3.2	10.3		12.2		9.1
Approach LOS		A	B		B		A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.42
 Intersection Signal Delay: 7.0
 Intersection LOS: A
 Intersection Capacity Utilization 43.2%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	94	607	531	22	91	162
v/c Ratio	0.15	0.23	0.27	0.14	0.28	0.42
Control Delay	4.0	3.0	10.3	21.7	9.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	3.0	10.3	21.7	9.9	9.1
Queue Length 50th (ft)	7	26	75	7	5	12
Queue Length 95th (ft)	20	50	m140	20	28	m35
Internal Link Dist (ft)		374	833		232	304
Turn Bay Length (ft)	60					
Base Capacity (vph)	681	2700	1942	343	603	682
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.22	0.27	0.06	0.15	0.24

Intersection Summary

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

Wegman's TIS
1: East & Probert

Existing Conditions - Weekday AM Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖	↗			↖↗	
Volume (vph)	77	498	0	0	493	7	18	13	60	39	0	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			1.00		1.00	0.88			0.90	
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1586	3388			3345		1685	1517			1860	
Flt Permitted	0.43	1.00			1.00		0.53	1.00			0.88	
Satd. Flow (perm)	718	3388			3345		935	1517			1657	
Peak-hour factor, PHF	0.82	0.82	0.82	0.94	0.94	0.94	0.80	0.80	0.80	0.86	0.86	0.86
Adj. Flow (vph)	94	607	0	0	524	7	22	16	75	45	0	117
RTOR Reduction (vph)	0	0	0	0	1	0	0	64	0	0	99	0
Lane Group Flow (vph)	94	607	0	0	530	0	22	28	0	0	63	0
Heavy Vehicles (%)	10%	3%	0%	0%	4%	13%	0%	0%	3%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1			3				3
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	36.8	42.3			31.2		6.7	6.7			6.7	
Effective Green, g (s)	41.8	44.8			33.7		9.2	9.2			9.2	
Actuated g/C Ratio	0.70	0.75			0.56		0.15	0.15			0.15	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.5	
Vehicle Extension (s)	2.0				2.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	617	2530			1879		143	233			254	
v/s Ratio Prot	0.02	c0.18			c0.16			0.02				
v/s Ratio Perm	0.09						0.02				c0.04	
v/c Ratio	0.15	0.24			0.28		0.15	0.12			0.25	
Uniform Delay, d1	3.8	2.3			6.8		22.0	21.9			22.4	
Progression Factor	1.00	1.00			1.36		1.00	1.00			0.86	
Incremental Delay, d2	0.0	0.0			0.3		0.5	0.2			0.5	
Delay (s)	3.9	2.4			9.6		22.5	22.1			19.8	
Level of Service	A	A			A		C	C			B	
Approach Delay (s)		2.6			9.6			22.2			19.8	
Approach LOS		A			A			C			B	

Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Wegman's TIS
2: East & Winton

Existing Conditions - Weekday AM Peak Hour

Timings

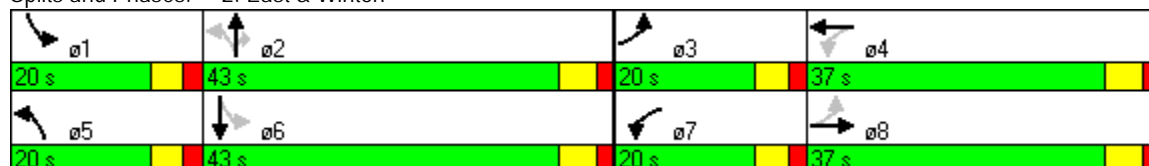


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	58	311	196	483	173	490	65	83	865
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	41.6	31.3	50.4	39.2	63.3	49.8	49.8	57.4	46.5
Actuated g/C Ratio	0.35	0.26	0.42	0.33	0.53	0.42	0.42	0.48	0.39
v/c Ratio	0.23	0.71	0.67	0.50	0.72	0.38	0.10	0.24	0.92
Control Delay	21.0	35.2	33.5	34.4	40.3	26.5	6.1	10.5	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Total Delay	21.0	35.2	33.5	34.4	40.3	26.5	6.1	10.5	37.2
LOS	C	D	C	C	D	C	A	B	D
Approach Delay		33.8		34.2		28.0			35.1
Approach LOS		C		C		C			D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.0
 Intersection LOS: C
 Intersection Capacity Utilization 76.2%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	648	215	556	190	538	71	99	1168
v/c Ratio	0.23	0.71	0.67	0.50	0.72	0.38	0.10	0.24	0.92
Control Delay	21.0	35.2	33.5	34.4	40.3	26.5	6.1	10.5	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Total Delay	21.0	35.2	33.5	34.4	40.3	26.5	6.1	10.5	37.2
Queue Length 50th (ft)	34	168	108	184	90	150	0	22	459
Queue Length 95th (ft)	53	180	159	238	174	217	31	38	#588
Internal Link Dist (ft)		833		432		405			257
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	412	987	333	1119	304	1406	727	491	1268
Starvation Cap Reductn	0	0	0	0	0	0	0	0	24
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.66	0.65	0.50	0.63	0.38	0.10	0.20	0.94

Intersection Summary

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

Wegman's TIS
2: East & Winton

Existing Conditions - Weekday AM Peak Hour
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	311	194	196	483	23	173	490	65	83	865	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.94		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3197		1745	3417		1728	3389	1652	1677	3250	
Flt Permitted	0.36	1.00		0.17	1.00		0.08	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	652	3197		308	3417		152	3389	1652	671	3250	
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84
Adj. Flow (vph)	74	399	249	215	531	25	190	538	71	99	1030	138
RTOR Reduction (vph)	0	82	0	0	3	0	0	0	42	0	8	0
Lane Group Flow (vph)	74	566	0	215	553	0	190	538	29	99	1160	0
Heavy Vehicles (%)	2%	4%	1%	0%	1%	11%	2%	4%	2%	3%	3%	15%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	36.1	29.4		48.4	36.2		57.3	45.7	45.7	50.9	42.5	
Effective Green, g (s)	41.1	32.4		50.9	39.2		62.1	48.7	48.7	55.9	45.5	
Actuated g/C Ratio	0.34	0.27		0.42	0.33		0.52	0.41	0.41	0.47	0.38	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	305	863		322	1116		264	1375	670	404	1232	
v/s Ratio Prot	0.02	0.18		c0.09	0.16		c0.08	0.16		0.02	c0.36	
v/s Ratio Perm	0.06			c0.19			0.29		0.02	0.09		
v/c Ratio	0.24	0.66		0.67	0.50		0.72	0.39	0.04	0.25	0.94	
Uniform Delay, d1	27.3	38.8		25.1	32.5		29.1	25.2	21.6	18.4	36.0	
Progression Factor	0.93	0.94		1.00	1.00		1.00	1.00	1.00	0.60	0.62	
Incremental Delay, d2	0.1	2.0		4.0	0.5		7.6	0.8	0.1	0.1	14.4	
Delay (s)	25.6	38.4		29.2	32.9		36.7	26.0	21.7	11.2	36.8	
Level of Service	C	D		C	C		D	C	C	B	D	
Approach Delay (s)		37.1			31.9			28.2			34.8	
Approach LOS		D			C			C			C	

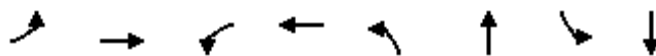
Intersection Summary

HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegman's TIS
3: University & Winton

Existing Conditions - Weekday AM Peak Hour
Timings

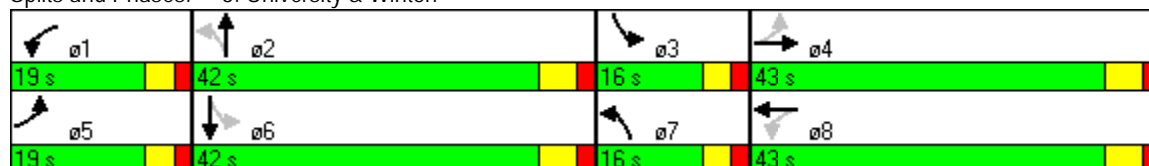


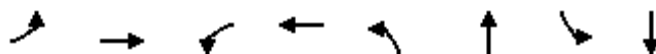
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	34	187	66	479	150	439	164	644
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	48.9	42.0	48.9	42.0	61.1	50.1	61.1	50.1
Actuated g/C Ratio	0.41	0.35	0.41	0.35	0.51	0.42	0.51	0.42
v/c Ratio	0.22	0.28	0.21	0.70	0.55	0.38	0.46	0.58
Control Delay	29.3	24.7	24.2	36.2	19.0	13.2	24.0	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.5
Total Delay	29.3	24.7	24.2	36.2	19.0	13.4	24.0	30.8
LOS	C	C	C	D	B	B	C	C
Approach Delay		25.3		35.1		14.8		29.5
Approach LOS		C		D		B		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 27.2
 Intersection LOS: C
 Intersection Capacity Utilization 62.3%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	319	86	825	181	530	186	777
v/c Ratio	0.22	0.28	0.21	0.70	0.55	0.38	0.46	0.58
Control Delay	29.3	24.7	24.2	36.2	19.0	13.2	24.0	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.5
Total Delay	29.3	24.7	24.2	36.2	19.0	13.4	24.0	30.8
Queue Length 50th (ft)	19	78	40	280	33	59	74	245
Queue Length 95th (ft)	38	103	63	287	75	68	113	302
Internal Link Dist (ft)		587		787		257		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	316	1130	532	1172	358	1389	435	1342
Starvation Cap Reductn	0	0	0	0	0	270	0	0
Spillback Cap Reductn	0	2	9	0	0	0	0	358
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.28	0.16	0.70	0.51	0.47	0.43	0.79

Intersection Summary

Wegman's TIS
3: University & Winton

Existing Conditions - Weekday AM Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	187	71	66	479	156	150	439	1	164	644	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3130		1694	3271		1728	3324		1630	3208	
Flt Permitted	0.16	1.00		0.49	1.00		0.22	1.00		0.36	1.00	
Satd. Flow (perm)	277	3130		874	3271		409	3324		618	3208	
Peak-hour factor, PHF	0.81	0.81	0.81	0.77	0.77	0.77	0.83	0.83	0.83	0.88	0.88	0.88
Adj. Flow (vph)	42	231	88	86	622	203	181	529	1	186	732	45
RTOR Reduction (vph)	0	33	0	0	26	0	0	0	0	0	3	0
Lane Group Flow (vph)	42	287	0	86	799	0	181	530	0	186	774	0
Heavy Vehicles (%)	6%	3%	17%	3%	3%	2%	2%	6%	0%	6%	7%	3%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.9	39.0		42.9	39.0		55.1	46.1		55.1	46.1	
Effective Green, g (s)	46.9	42.0		46.9	42.0		59.1	49.1		59.1	49.1	
Actuated g/C Ratio	0.39	0.35		0.39	0.35		0.49	0.41		0.49	0.41	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	176	1096		382	1145		322	1360		397	1313	
v/s Ratio Prot	c0.01	0.09		0.01	c0.24		c0.05	0.16		0.04	c0.24	
v/s Ratio Perm	0.08			0.08			0.23			0.19		
v/c Ratio	0.24	0.26		0.23	0.70		0.56	0.39		0.47	0.59	
Uniform Delay, d1	40.4	27.9		27.8	33.5		35.9	24.9		27.5	27.6	
Progression Factor	1.00	1.00		1.00	1.00		0.48	0.50		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.1	3.5		1.3	0.8		0.3	1.9	
Delay (s)	40.7	28.5		27.9	37.1		18.6	13.2		27.8	29.6	
Level of Service	D	C		C	D		B	B		C	C	
Approach Delay (s)		29.9			36.2			14.6			29.2	
Approach LOS		C			D			B			C	

















Intersection Summary

HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Wegman's TIS
4: University & Probert

Existing Conditions - Weekday AM Peak Hour
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	272	38	30	579	0	38	0	24	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.65	0.65	0.65	0.25	0.25	0.25
Hourly flow rate (vph)	0	328	46	35	681	0	58	0	37	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					913							
pX, platoon unblocked	0.75						0.75	0.75		0.75	0.75	0.75
vC, conflicting volume	681			373			1102	1102	351	1139	1125	681
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	407			373			969	969	351	1018	1000	407
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	100			97			66	100	94	100	100	100
cM capacity (veh/h)	863			1196			172	184	648	149	177	483
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	373	716	95	0								
Volume Left	0	35	58	0								
Volume Right	46	0	37	0								
cSH	863	1196	240	1700								
Volume to Capacity	0.00	0.03	0.40	0.00								
Queue Length 95th (ft)	0	2	45	0								
Control Delay (s)	0.0	0.8	29.5	0.0								
Lane LOS		A	D	A								
Approach Delay (s)	0.0	0.8	29.5	0.0								
Approach LOS			D	A								
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			62.3%		ICU Level of Service				B			
Analysis Period (min)			15									

Wegman's TIS
1: East & Probert

Existing Conditions - Weekday PM Peak Hour
Timings

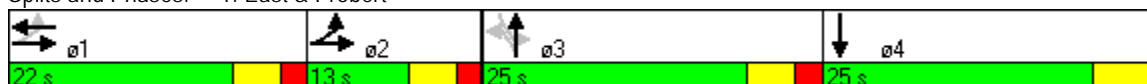


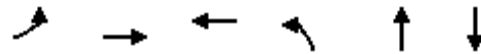
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗↗	↗↖	↖	↗		↕
Volume (vph)	135	618	439	17	13	92	0
Turn Type	pm+pt			Perm		D.Pm	
Protected Phases	2	1 2	1		3		4
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	4
Switch Phase							
Minimum Initial (s)	5.0		7.0	6.0	6.0	6.0	3.0
Minimum Split (s)	13.0		22.0	25.0	25.0	25.0	25.0
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	15.3%	41.2%	25.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	5.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.5
Lead/Lag	Lag		Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?							
Recall Mode	None		C-Max	None	None	None	None
Act Effct Green (s)	46.1	49.1	37.0	11.4	11.4		18.3
Actuated g/C Ratio	0.54	0.58	0.44	0.13	0.13		0.22
v/c Ratio	0.33	0.35	0.38	0.22	0.23		0.70
Control Delay	17.5	12.6	20.4	36.8	16.7		26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	17.5	12.6	20.4	36.8	16.7		26.3
LOS	B	B	C	D	B		C
Approach Delay		13.5	20.4		22.1		26.3
Approach LOS		B	C		C		C

Intersection Summary

Cycle Length: 85
 Actuated Cycle Length: 85
 Offset: 44 (52%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 18.2
 Intersection LOS: B
 Intersection Capacity Utilization 54.2%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	153	702	563	20	55	318
v/c Ratio	0.33	0.35	0.38	0.22	0.23	0.70
Control Delay	17.5	12.6	20.4	36.8	16.7	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	12.6	20.4	36.8	16.7	26.3
Queue Length 50th (ft)	37	101	108	10	8	96
Queue Length 95th (ft)	91	187	175	27	33	164
Internal Link Dist (ft)		374	844		232	310
Turn Bay Length (ft)	60					
Base Capacity (vph)	487	2052	1481	180	428	543
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.34	0.38	0.11	0.13	0.59
Intersection Summary						

Wegman's TIS
1: East & Probert

Existing Conditions - Weekday PM Peak Hour
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	618	0	0	439	28	17	13	32	92	0	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			2.5	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			0.99		1.00	0.89			0.91	
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1728	3490			3394		1685	1540			1868	
Flt Permitted	0.36	1.00			1.00		0.39	1.00			0.88	
Satd. Flow (perm)	652	3490			3394		695	1540			1669	
Peak-hour factor, PHF	0.88	0.88	0.88	0.83	0.83	0.83	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	153	702	0	0	529	34	20	16	39	102	0	216
RTOR Reduction (vph)	0	0	0	0	4	0	0	34	0	0	96	0
Lane Group Flow (vph)	153	702	0	0	559	0	20	21	0	0	222	0
Heavy Vehicles (%)	1%	0%	0%	0%	2%	0%	0%	5%	2%	0%	0%	0%
Turn Type	pm+pt						Perm			D.Pm		
Protected Phases	2	1 2			1			3			4	
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	40.0	45.5			33.4		7.7	7.7			15.8	
Effective Green, g (s)	45.0	48.0			35.9		10.2	10.2			18.3	
Actuated g/C Ratio	0.53	0.56			0.42		0.12	0.12			0.22	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.0	
Vehicle Extension (s)	2.0				2.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	460	1971			1433		83	185			359	
v/s Ratio Prot	0.04	c0.20			c0.16			0.01				
v/s Ratio Perm	0.14						c0.03				c0.13	
v/c Ratio	0.33	0.36			0.39		0.24	0.11			0.62	
Uniform Delay, d1	15.8	10.1			17.0		33.9	33.4			30.2	
Progression Factor	1.00	1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.2	0.0			0.8		1.5	0.3			3.2	
Delay (s)	16.0	10.1			17.8		35.4	33.6			33.4	
Level of Service	B	B			B		D	C			C	
Approach Delay (s)		11.2			17.8			34.1			33.4	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			18.1		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			85.0		Sum of lost time (s)				8.5			
Intersection Capacity Utilization			54.2%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Wegman's TIS
2: East & Winton

Existing Conditions - Weekday PM Peak Hour
Timings

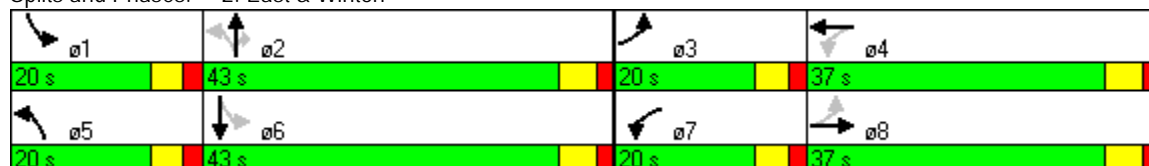


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	110	503	119	269	230	446	132	184	567
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	48.4	35.7	50.8	36.9	59.1	43.8	43.8	57.7	43.1
Actuated g/C Ratio	0.40	0.30	0.42	0.31	0.49	0.36	0.36	0.48	0.36
v/c Ratio	0.31	0.87	0.56	0.37	0.67	0.37	0.20	0.44	0.62
Control Delay	22.3	47.4	30.5	32.5	27.1	30.0	5.3	15.0	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Total Delay	22.3	47.4	30.5	32.5	27.1	30.0	5.3	15.0	28.6
LOS	C	D	C	C	C	C	A	B	C
Approach Delay		44.2		31.9		25.2			25.7
Approach LOS		D		C		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 32.2
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	131	893	147	385	242	469	139	204	744
v/c Ratio	0.31	0.87	0.56	0.37	0.67	0.37	0.20	0.44	0.62
Control Delay	22.3	47.4	30.5	32.5	27.1	30.0	5.3	15.0	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Total Delay	22.3	47.4	30.5	32.5	27.1	30.0	5.3	15.0	28.6
Queue Length 50th (ft)	59	316	67	115	106	143	0	76	280
Queue Length 95th (ft)	93	375	103	147	161	195	44	102	281
Internal Link Dist (ft)		844		429		405			257
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	470	1024	306	1045	383	1260	704	495	1206
Starvation Cap Reductn	0	0	0	0	0	0	0	0	218
Spillback Cap Reductn	0	0	0	0	0	57	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.87	0.48	0.37	0.63	0.39	0.20	0.41	0.75

Intersection Summary

Wegman's TIS
2: East & Winton

Existing Conditions - Weekday PM Peak Hour
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	503	247	119	269	43	230	446	132	184	567	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1728	3274		1745	3365		1745	3455	1686	1727	3327	
Flt Permitted	0.43	1.00		0.11	1.00		0.21	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	781	3274		202	3365		379	3455	1686	705	3327	
Peak-hour factor, PHF	0.84	0.84	0.84	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90
Adj. Flow (vph)	131	599	294	147	332	53	242	469	139	204	630	114
RTOR Reduction (vph)	0	49	0	0	10	0	0	0	88	0	12	0
Lane Group Flow (vph)	131	844	0	147	375	0	242	469	51	204	732	0
Heavy Vehicles (%)	1%	1%	2%	0%	1%	5%	1%	2%	0%	0%	1%	4%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	42.9	32.7		45.3	33.9		53.6	40.8	40.8	52.2	40.1	
Effective Green, g (s)	47.9	35.7		50.3	36.9		58.6	43.8	43.8	57.2	43.1	
Actuated g/C Ratio	0.40	0.30		0.42	0.31		0.49	0.36	0.36	0.48	0.36	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	412	974		263	1035		359	1261	615	460	1195	
v/s Ratio Prot	0.03	c0.26		c0.06	0.11		c0.09	0.14		0.05	0.22	
v/s Ratio Perm	0.09			0.17			c0.24		0.03	0.16		
v/c Ratio	0.32	0.87		0.56	0.36		0.67	0.37	0.08	0.44	0.61	
Uniform Delay, d1	23.6	39.9		26.0	32.4		20.6	28.0	24.9	19.0	31.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.72	0.80	
Incremental Delay, d2	0.2	8.4		1.5	0.3		3.9	0.8	0.3	0.2	2.2	
Delay (s)	23.8	48.3		27.5	32.7		24.5	28.8	25.2	13.9	27.4	
Level of Service	C	D		C	C		C	C	C	B	C	
Approach Delay (s)		45.2			31.2			27.0			24.5	
Approach LOS		D			C			C			C	

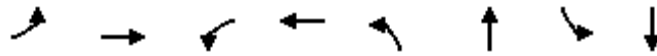
Intersection Summary

HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegman's TIS
3: University & Winton

Existing Conditions - Weekday PM Peak Hour
Timings

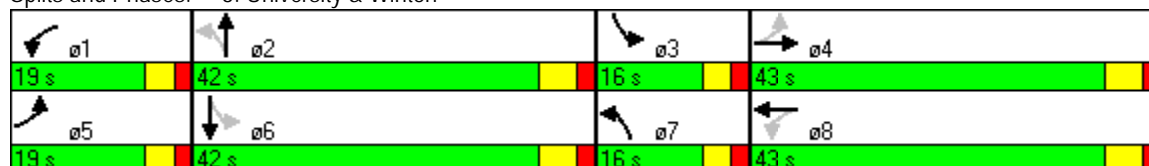


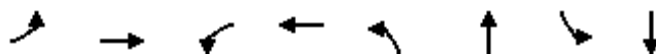
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	193	479	132	332	75	630	132	371
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	53.6	43.0	53.6	43.0	54.4	44.3	54.4	44.3
Actuated g/C Ratio	0.45	0.36	0.45	0.36	0.45	0.37	0.45	0.37
v/c Ratio	0.54	0.63	0.55	0.36	0.24	0.60	0.53	0.41
Control Delay	30.5	33.2	38.2	29.2	14.5	24.4	37.4	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Total Delay	30.5	33.2	38.2	29.2	14.5	24.8	37.4	28.8
LOS	C	C	D	C	B	C	D	C
Approach Delay		32.6		31.5		23.8		30.8
Approach LOS		C		C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 29.6
 Intersection LOS: C
 Intersection Capacity Utilization 64.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	227	763	155	439	90	772	147	506
v/c Ratio	0.54	0.63	0.55	0.36	0.24	0.60	0.53	0.41
Control Delay	30.5	33.2	38.2	29.2	14.5	24.4	37.4	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Total Delay	30.5	33.2	38.2	29.2	14.5	24.8	37.4	28.8
Queue Length 50th (ft)	106	241	69	127	23	140	62	142
Queue Length 95th (ft)	143	297	100	167	35	159	109	207
Internal Link Dist (ft)		583		792		257		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	495	1211	362	1203	423	1287	319	1236
Starvation Cap Reductn	0	0	0	0	0	163	0	0
Spillback Cap Reductn	0	2	0	0	0	0	0	230
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.63	0.43	0.36	0.21	0.69	0.46	0.50

Intersection Summary

Wegman's TIS
3: University & Winton

Existing Conditions - Weekday PM Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Volume (vph)	193	479	169	132	332	41	75	630	11	132	371	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3303		1745	3336		1711	3481		1710	3305	
Flt Permitted	0.40	1.00		0.20	1.00		0.36	1.00		0.20	1.00	
Satd. Flow (perm)	732	3303		363	3336		643	3481		362	3305	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	227	564	199	155	391	48	90	759	13	147	412	94
RTOR Reduction (vph)	0	28	0	0	8	0	0	1	0	0	15	0
Lane Group Flow (vph)	227	735	0	155	431	0	90	771	0	147	491	0
Heavy Vehicles (%)	0%	1%	3%	0%	3%	2%	3%	1%	0%	1%	2%	0%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	48.7	40.0		48.7	40.0		49.3	41.3		49.3	41.3	
Effective Green, g (s)	52.7	43.0		52.7	43.0		53.3	44.3		53.3	44.3	
Actuated g/C Ratio	0.44	0.36		0.44	0.36		0.44	0.37		0.44	0.37	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	412	1184		283	1195		375	1285		273	1220	
v/s Ratio Prot	c0.05	c0.22		0.05	0.13		0.02	c0.22		c0.04	0.15	
v/s Ratio Perm	0.19			0.19			0.09			0.19		
v/c Ratio	0.55	0.62		0.55	0.36		0.24	0.60		0.54	0.40	
Uniform Delay, d1	31.7	31.8		39.5	28.4		27.6	30.7		39.4	28.0	
Progression Factor	1.00	1.00		1.00	1.00		0.64	0.71		1.00	1.00	
Incremental Delay, d2	0.9	2.5		1.2	0.8		0.1	2.0		1.0	1.0	
Delay (s)	32.6	34.2		40.7	29.2		17.8	23.8		40.4	29.0	
Level of Service	C	C		D	C		B	C		D	C	
Approach Delay (s)		33.9			32.2			23.1			31.6	
Approach LOS		C			C			C			C	

















Intersection Summary

HCM Average Control Delay	30.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Wegman's TIS
4: University & Probert

Existing Conditions - Weekday PM Peak Hour
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	497	76	72	289	0	73	0	52	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	558	85	77	311	0	81	0	58	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					912							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	311			644			1067	1067	601	1124	1109	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	195			644			1025	1025	601	1088	1071	195
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			56	100	89	100	100	100
cM capacity (veh/h)	1267			951			184	198	504	148	186	776
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	644	388	139	0								
Volume Left	0	77	81	0								
Volume Right	85	0	58	0								
cSH	1267	951	250	1700								
Volume to Capacity	0.00	0.08	0.56	0.00								
Queue Length 95th (ft)	0	7	77	0								
Control Delay (s)	0.0	2.5	36.0	0.0								
Lane LOS		A	E	A								
Approach Delay (s)	0.0	2.5	36.0	0.0								
Approach LOS			E	A								
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			67.2%		ICU Level of Service				C			
Analysis Period (min)			15									



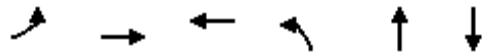
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Volume (vph)	152	616	394	19	10	73	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	5.0		7.0	6.0	6.0	6.0	6.0
Minimum Split (s)	13.0		22.0	25.0	25.0	25.0	25.0
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	None		C-Max	None	None	None	None
Act Effct Green (s)	39.1	42.1	30.1	11.9	11.9		11.9
Actuated g/C Ratio	0.65	0.70	0.50	0.20	0.20		0.20
v/c Ratio	0.30	0.33	0.29	0.15	0.14		0.56
Control Delay	6.3	4.5	11.6	20.2	9.4		11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	6.3	4.5	11.6	20.2	9.4		11.3
LOS	A	A	B	C	A		B
Approach Delay		4.8	11.6		12.8		11.3
Approach LOS		A	B		B		B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 44 (73%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 7.9
 Intersection Capacity Utilization 52.6%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	197	800	478	22	48	272
v/c Ratio	0.30	0.33	0.29	0.15	0.14	0.56
Control Delay	6.3	4.5	11.6	20.2	9.4	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	4.5	11.6	20.2	9.4	11.3
Queue Length 50th (ft)	17	41	75	7	4	26
Queue Length 95th (ft)	44	79	102	20	21	50
Internal Link Dist (ft)		374	831		232	301
Turn Bay Length (ft)	60					
Base Capacity (vph)	691	2482	1661	265	600	741
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.32	0.29	0.08	0.08	0.37

Intersection Summary

Wegmans TIS
1: East & Probert

Existing 2009 - Friday PM Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	616	0	0	394	36	19	10	31	73	0	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			0.99		1.00	0.89			0.90	
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1711	3455			3295		1685	1574			1861	
Flt Permitted	0.45	1.00			1.00		0.41	1.00			0.89	
Satd. Flow (perm)	809	3455			3295		724	1574			1683	
Peak-hour factor, PHF	0.77	0.77	0.77	0.90	0.90	0.90	0.86	0.86	0.86	0.95	0.95	0.95
Adj. Flow (vph)	197	800	0	0	438	40	22	12	36	77	0	195
RTOR Reduction (vph)	0	0	0	0	8	0	0	29	0	0	156	0
Lane Group Flow (vph)	197	800	0	0	470	0	22	19	0	0	116	0
Heavy Vehicles (%)	2%	1%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1			3			3	
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	34.1	39.6			27.6		9.4	9.4			9.4	
Effective Green, g (s)	39.1	42.1			30.1		11.9	11.9			11.9	
Actuated g/C Ratio	0.65	0.70			0.50		0.20	0.20			0.20	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.5	
Vehicle Extension (s)	2.0				2.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	662	2424			1653		144	312			334	
v/s Ratio Prot	0.04	c0.23			0.14			0.01				
v/s Ratio Perm	0.15						0.03				c0.07	
v/c Ratio	0.30	0.33			0.28		0.15	0.06			0.35	
Uniform Delay, d1	5.6	3.5			8.7		19.9	19.5			20.7	
Progression Factor	1.00	1.00			1.21		1.00	1.00			1.16	
Incremental Delay, d2	0.1	0.0			0.4		0.5	0.1			0.6	
Delay (s)	5.7	3.5			10.9		20.4	19.6			24.6	
Level of Service	A	A			B		C	B			C	
Approach Delay (s)		3.9			10.9			19.8			24.6	
Approach LOS		A			B			B			C	

Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

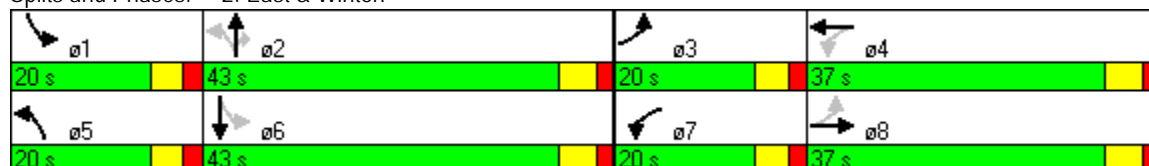


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	120	401	122	268	223	510	109	186	498
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	45.1	32.0	45.9	32.5	62.7	48.0	48.0	62.3	47.8
Actuated g/C Ratio	0.38	0.27	0.38	0.27	0.52	0.40	0.40	0.52	0.40
v/c Ratio	0.34	0.73	0.50	0.41	0.60	0.39	0.16	0.46	0.56
Control Delay	22.8	37.2	28.7	34.2	22.2	28.2	5.6	9.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5
Total Delay	22.8	37.2	28.7	34.2	22.2	28.4	5.6	9.3	16.6
LOS	C	D	C	C	C	C	A	A	B
Approach Delay		34.8		32.7		23.8			14.9
Approach LOS		C		C		C			B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 25.4
 Intersection LOS: C
 Intersection Capacity Utilization 68.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	133	674	136	378	235	537	115	214	725
v/c Ratio	0.34	0.73	0.50	0.41	0.60	0.39	0.16	0.46	0.56
Control Delay	22.8	37.2	28.7	34.2	22.2	28.2	5.6	9.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5
Total Delay	22.8	37.2	28.7	34.2	22.2	28.4	5.6	9.3	16.6
Queue Length 50th (ft)	65	217	67	116	92	154	0	51	109
Queue Length 95th (ft)	98	292	103	159	156	225	41	m70	130
Internal Link Dist (ft)		831		439		405			303
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	437	985	319	979	424	1382	729	492	1303
Starvation Cap Reductn	0	0	0	0	0	0	0	0	215
Spillback Cap Reductn	0	0	0	1	0	284	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.68	0.43	0.39	0.55	0.49	0.16	0.43	0.67

Intersection Summary

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

Wegmans TIS
2: East & Winton

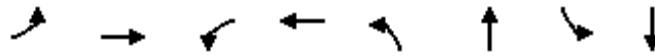
Existing 2009 - Friday PM Peak Hour
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	401	205	122	268	72	223	510	109	186	498	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3258		1728	3326		1745	3455	1652	1710	3228	
Flt Permitted	0.40	1.00		0.16	1.00		0.24	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	742	3258		290	3326		449	3455	1652	638	3228	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.87	0.87	0.87
Adj. Flow (vph)	133	446	228	136	298	80	235	537	115	214	572	153
RTOR Reduction (vph)	0	55	0	0	20	0	0	0	69	0	18	0
Lane Group Flow (vph)	133	619	0	136	358	0	235	537	46	214	707	0
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	1%	2%	2%	1%	3%	6%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	39.5	29.0		40.5	29.5		57.2	45.0	45.0	56.8	44.8	
Effective Green, g (s)	44.5	32.0		45.5	32.5		62.2	48.0	48.0	61.8	47.8	
Actuated g/C Ratio	0.37	0.27		0.38	0.27		0.52	0.40	0.40	0.51	0.40	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	384	869		272	901		391	1382	661	458	1286	
v/s Ratio Prot	0.04	c0.19		c0.06	0.11		c0.07	0.16		0.06	0.22	
v/s Ratio Perm	0.09			0.13			c0.24		0.03	0.18		
v/c Ratio	0.35	0.71		0.50	0.40		0.60	0.39	0.07	0.47	0.55	
Uniform Delay, d1	26.0	39.8		27.0	35.7		17.8	25.6	22.2	16.7	27.8	
Progression Factor	0.92	0.92		1.00	1.00		1.00	1.00	1.00	0.45	0.53	
Incremental Delay, d2	0.2	2.9		0.5	0.4		1.8	0.8	0.2	0.2	1.2	
Delay (s)	24.1	39.4		27.5	36.1		19.6	26.4	22.4	7.7	15.8	
Level of Service	C	D		C	D		B	C	C	A	B	
Approach Delay (s)		36.9			33.9			24.1			13.9	
Approach LOS		D			C			C			B	

Intersection Summary

HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

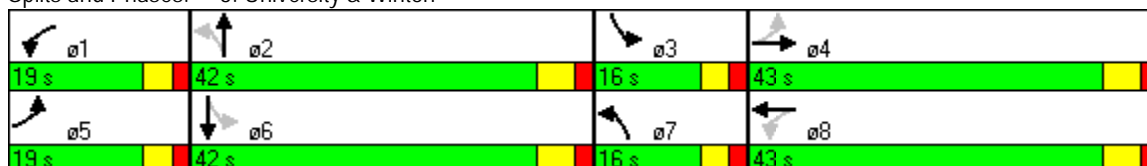


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	229	528	176	355	91	765	176	522
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	56.4	40.7	56.4	40.7	51.6	39.3	51.6	39.3
Actuated g/C Ratio	0.47	0.34	0.47	0.34	0.43	0.33	0.43	0.33
v/c Ratio	0.91	0.82	0.79	0.69	0.34	0.79	0.81	0.64
Control Delay	74.0	41.2	62.7	30.0	22.5	33.9	69.4	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Total Delay	74.0	41.2	62.7	30.0	22.5	34.8	69.4	36.3
LOS	E	D	E	C	C	C	E	D
Approach Delay		48.7		37.0		33.6		43.3
Approach LOS		D		D		C		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 41.0
 Intersection LOS: D
 Intersection Capacity Utilization 76.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	286	955	229	836	103	896	191	709
v/c Ratio	0.91	0.82	0.79	0.69	0.34	0.79	0.81	0.64
Control Delay	74.0	41.2	62.7	30.0	22.5	33.9	69.4	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Total Delay	74.0	41.2	62.7	30.0	22.5	34.8	69.4	36.3
Queue Length 50th (ft)	145	337	121	233	25	345	94	237
Queue Length 95th (ft)	#235	354	167	237	45	272	#211	304
Internal Link Dist (ft)		587		799		303		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	320	1159	293	1209	310	1140	245	1102
Starvation Cap Reductn	0	0	0	0	0	80	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.82	0.78	0.69	0.33	0.85	0.78	0.64

Intersection Summary

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

Wegmans TIS
3: University & Winton

Existing 2009 - Friday PM Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Volume (vph)	229	528	236	176	355	289	91	765	24	176	522	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.93		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	3295		1728	3208		1745	3475		1694	3311	
Flt Permitted	0.14	1.00		0.10	1.00		0.20	1.00		0.10	1.00	
Satd. Flow (perm)	263	3295		183	3208		370	3475		187	3311	
Peak-hour factor, PHF	0.80	0.80	0.80	0.77	0.77	0.77	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	286	660	295	229	461	375	103	869	27	191	567	142
RTOR Reduction (vph)	0	42	0	0	121	0	0	2	0	0	18	0
Lane Group Flow (vph)	286	913	0	229	715	0	103	894	0	191	691	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	1%	1%	0%	2%	1%	2%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	51.4	37.7		51.4	37.7		46.6	36.3		46.6	36.3	
Effective Green, g (s)	55.4	40.7		55.4	40.7		50.6	39.3		50.6	39.3	
Actuated g/C Ratio	0.46	0.34		0.46	0.34		0.42	0.33		0.42	0.33	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	313	1118		287	1088		297	1138		233	1084	
v/s Ratio Prot	c0.12	0.28		0.10	0.22		0.04	0.26		c0.08	0.21	
v/s Ratio Perm	c0.30			0.26			0.11			c0.26		
v/c Ratio	0.91	0.82		0.80	0.66		0.35	0.79		0.82	0.64	
Uniform Delay, d1	41.8	36.2		43.5	33.7		37.4	36.5		45.3	34.3	
Progression Factor	1.00	1.00		1.00	1.00		0.71	0.77		1.00	1.00	
Incremental Delay, d2	29.2	6.6		13.4	3.1		0.3	5.3		18.8	2.9	
Delay (s)	70.9	42.9		56.9	36.8		26.9	33.5		64.1	37.2	
Level of Service	E	D		E	D		C	C		E	D	
Approach Delay (s)		49.3			41.1			32.9			42.9	
Approach LOS		D			D			C			D	

















Intersection Summary

HCM Average Control Delay	42.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

Existing 2009 - Friday PM Peak Hour
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	409	81	74	408	0	75	0	76	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.97	0.97	0.97	0.90	0.90	0.90
Hourly flow rate (vph)	0	476	94	77	425	0	77	0	78	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					904							
pX, platoon unblocked	0.85						0.85	0.85		0.85	0.85	0.85
vC, conflicting volume	425			570			1102	1102	523	1180	1149	425
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237			570			1032	1032	523	1124	1088	237
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			55	100	86	100	100	100
cM capacity (veh/h)	1142			1013			171	185	558	127	171	687
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	570	502	156	0								
Volume Left	0	77	77	0								
Volume Right	94	0	78	0								
cSH	1142	1013	262	1700								
Volume to Capacity	0.00	0.08	0.59	0.00								
Queue Length 95th (ft)	0	6	87	0								
Control Delay (s)	0.0	2.1	37.0	0.0								
Lane LOS		A	E	A								
Approach Delay (s)	0.0	2.1	37.0	0.0								
Approach LOS			E	A								
Intersection Summary												
Average Delay			5.6									
Intersection Capacity Utilization			70.8%		ICU Level of Service				C			
Analysis Period (min)			15									

Wegmans TIS
1: East & Probert

Existing 2009 - Saturday Midday Peak Hour
Timings



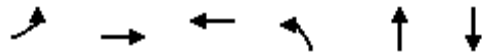
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗↗	↗↖	↖	↗		↕
Volume (vph)	103	576	366	18	6	50	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	5.0		7.0	6.0	6.0	6.0	6.0
Minimum Split (s)	13.0		22.0	25.0	25.0	25.0	25.0
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	None		C-Max	None	None	None	None
Act Effct Green (s)	40.1	43.1	32.0	10.9	10.9		10.9
Actuated g/C Ratio	0.67	0.72	0.53	0.18	0.18		0.18
v/c Ratio	0.16	0.25	0.22	0.17	0.12		0.49
Control Delay	4.2	3.6	7.6	22.1	10.2		9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	4.2	3.6	7.6	22.1	10.2		9.4
LOS	A	A	A	C	B		A
Approach Delay		3.7	7.6		14.9		9.4
Approach LOS		A	A		B		A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 2 (3%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 6.2
 Intersection Capacity Utilization 44.7%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	111	619	410	25	38	219
v/c Ratio	0.16	0.25	0.22	0.17	0.12	0.49
Control Delay	4.2	3.6	7.6	22.1	10.2	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	3.6	7.6	22.1	10.2	9.4
Queue Length 50th (ft)	8	27	29	8	2	20
Queue Length 95th (ft)	27	63	68	19	15	49
Internal Link Dist (ft)		374	843		232	304
Turn Bay Length (ft)	75					
Base Capacity (vph)	771	2591	1833	292	592	727
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.22	0.09	0.06	0.30

Intersection Summary

Wegmans TIS
1: East & Probert

Existing 2009 - Saturday Midday Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖	↗			↖↗	
Volume (vph)	103	576	0	0	366	20	18	6	22	50	0	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			0.99		1.00	0.88			0.90	
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1728	3455			3430		1685	1563			1857	
Flt Permitted	0.50	1.00			1.00		0.45	1.00			0.90	
Satd. Flow (perm)	906	3455			3430		797	1563			1702	
Peak-hour factor, PHF	0.93	0.93	0.93	0.94	0.94	0.94	0.73	0.73	0.73	0.88	0.88	0.88
Adj. Flow (vph)	111	619	0	0	389	21	25	8	30	57	0	162
RTOR Reduction (vph)	0	0	0	0	4	0	0	25	0	0	133	0
Lane Group Flow (vph)	111	619	0	0	406	0	25	13	0	0	86	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1			3				3
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	35.1	40.6			29.5		8.4	8.4			8.4	
Effective Green, g (s)	40.1	43.1			32.0		10.9	10.9			10.9	
Actuated g/C Ratio	0.67	0.72			0.53		0.18	0.18			0.18	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.5	
Vehicle Extension (s)	2.0				2.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	716	2482			1829		145	284			309	
v/s Ratio Prot	0.02	c0.18			0.12			0.01				
v/s Ratio Perm	0.08						0.03				c0.05	
v/c Ratio	0.16	0.25			0.22		0.17	0.05			0.28	
Uniform Delay, d1	4.1	2.9			7.4		20.7	20.3			21.2	
Progression Factor	1.00	1.00			0.93		1.00	1.00			0.91	
Incremental Delay, d2	0.0	0.0			0.3		0.6	0.1			0.5	
Delay (s)	4.1	2.9			7.2		21.3	20.3			19.8	
Level of Service	A	A			A		C	C			B	
Approach Delay (s)		3.1			7.2			20.7			19.8	
Approach LOS		A			A			C			B	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

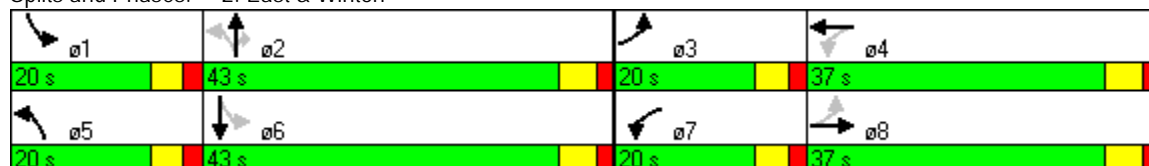


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↕	↙	↕	↙	↕	↗	↙	↕
Volume (vph)	116	365	115	190	197	351	131	128	415
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	43.5	30.6	43.8	30.7	66.2	52.0	52.0	62.4	50.1
Actuated g/C Ratio	0.36	0.26	0.36	0.26	0.55	0.43	0.43	0.52	0.42
v/c Ratio	0.31	0.66	0.44	0.32	0.50	0.26	0.18	0.27	0.45
Control Delay	23.7	37.0	28.2	31.7	18.3	23.7	4.7	10.4	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	23.7	37.0	28.2	31.7	18.3	23.7	4.7	10.4	16.7
LOS	C	D	C	C	B	C	A	B	B
Approach Delay		34.6		30.6		18.5			15.5
Approach LOS		C		C		B			B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 23.8
 Intersection LOS: C
 Intersection Capacity Utilization 61.4%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	129	584	128	282	224	399	149	147	623
v/c Ratio	0.31	0.66	0.44	0.32	0.50	0.26	0.18	0.27	0.45
Control Delay	23.7	37.0	28.2	31.7	18.3	23.7	4.7	10.4	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	23.7	37.0	28.2	31.7	18.3	23.7	4.7	10.4	16.7
Queue Length 50th (ft)	67	179	66	81	81	98	0	36	87
Queue Length 95th (ft)	98	211	98	114	145	160	42	60	176
Internal Link Dist (ft)		843		439		405			258
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	462	986	341	970	480	1529	816	597	1385
Starvation Cap Reductn	0	0	0	0	0	0	0	0	251
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.59	0.38	0.29	0.47	0.26	0.18	0.25	0.55

Intersection Summary

Wegmans TIS
2: East & Winton

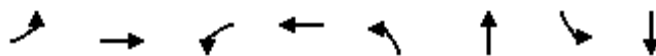
Existing 2009 - Saturday Midday Peak Hour
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	365	160	115	190	64	197	351	131	128	415	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3330		1745	3308		1762	3525	1686	1727	3268	
Flt Permitted	0.48	1.00		0.21	1.00		0.30	1.00	1.00	0.47	1.00	
Satd. Flow (perm)	889	3330		386	3308		554	3525	1686	863	3268	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.88	0.88	0.88	0.87	0.87	0.87
Adj. Flow (vph)	129	406	178	128	211	71	224	399	149	147	477	146
RTOR Reduction (vph)	0	43	0	0	29	0	0	0	84	0	21	0
Lane Group Flow (vph)	129	541	0	128	253	0	224	399	65	147	602	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%	2%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	38.1	27.6		38.3	27.7		60.7	49.0	49.0	56.9	47.1	
Effective Green, g (s)	43.1	30.6		43.3	30.7		65.7	52.0	52.0	61.9	50.1	
Actuated g/C Ratio	0.36	0.26		0.36	0.26		0.55	0.43	0.43	0.52	0.42	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	412	849		288	846		446	1528	731	534	1364	
v/s Ratio Prot	0.03	c0.16		c0.05	0.08		c0.06	0.11		0.03	0.18	
v/s Ratio Perm	0.08			0.11			c0.22		0.04	0.11		
v/c Ratio	0.31	0.64		0.44	0.30		0.50	0.26	0.09	0.28	0.44	
Uniform Delay, d1	26.7	39.8		27.6	36.0		15.3	21.7	20.0	15.5	25.0	
Progression Factor	0.93	0.93		1.00	1.00		1.00	1.00	1.00	0.66	0.62	
Incremental Delay, d2	0.2	1.7		0.4	0.3		0.3	0.4	0.2	0.1	1.0	
Delay (s)	25.1	38.8		28.0	36.3		15.6	22.1	20.3	10.3	16.4	
Level of Service	C	D		C	D		B	C	C	B	B	
Approach Delay (s)		36.3			33.7			19.9			15.2	
Approach LOS		D			C			B			B	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

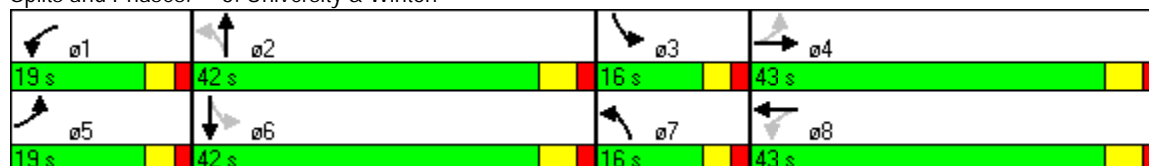


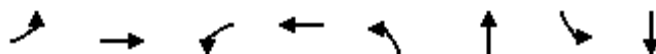
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	153	229	92	227	64	506	146	491
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	52.0	44.9	52.0	44.9	55.9	47.9	56.0	47.9
Actuated g/C Ratio	0.43	0.37	0.43	0.37	0.47	0.40	0.47	0.40
v/c Ratio	0.48	0.33	0.26	0.29	0.22	0.42	0.43	0.49
Control Delay	28.6	24.2	23.3	22.0	16.0	21.8	25.9	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	28.6	24.2	23.3	22.0	16.0	22.3	25.9	27.2
LOS	C	C	C	C	B	C	C	C
Approach Delay		25.6		22.3		21.6		27.0
Approach LOS		C		C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 24.4
 Intersection LOS: C
 Intersection Capacity Utilization 54.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	199	419	102	373	72	584	152	643
v/c Ratio	0.48	0.33	0.26	0.29	0.22	0.42	0.43	0.49
Control Delay	28.6	24.2	23.3	22.0	16.0	21.8	25.9	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	28.6	24.2	23.3	22.0	16.0	22.3	25.9	27.2
Queue Length 50th (ft)	90	102	44	82	20	101	65	184
Queue Length 95th (ft)	126	125	83	129	32	124	100	242
Internal Link Dist (ft)		582		799		258		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	546	1271	512	1272	405	1389	421	1322
Starvation Cap Reductn	0	0	0	0	0	381	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	37
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.33	0.20	0.29	0.18	0.58	0.36	0.50

Intersection Summary

Wegmans TIS
3: University & Winton

Existing 2009 - Saturday Midday Peak Hour
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	229	94	92	227	109	64	506	13	146	491	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.95		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3304		1711	3277		1762	3477		1727	3270	
Flt Permitted	0.46	1.00		0.42	1.00		0.29	1.00		0.32	1.00	
Satd. Flow (perm)	836	3304		757	3277		535	3477		587	3270	
Peak-hour factor, PHF	0.77	0.77	0.77	0.90	0.90	0.90	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	199	297	122	102	252	121	72	569	15	152	511	132
RTOR Reduction (vph)	0	34	0	0	46	0	0	1	0	0	17	0
Lane Group Flow (vph)	199	385	0	102	327	0	72	583	0	152	626	0
Heavy Vehicles (%)	0%	1%	1%	2%	0%	4%	0%	1%	0%	0%	3%	0%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.0	41.9		47.0	41.9		51.0	44.9		51.0	44.9	
Effective Green, g (s)	51.0	44.9		51.0	44.9		55.0	47.9		55.0	47.9	
Actuated g/C Ratio	0.42	0.37		0.42	0.37		0.46	0.40		0.46	0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	409	1236		378	1226		328	1388		346	1305	
v/s Ratio Prot	c0.03	0.12		0.02	0.10		0.01	0.17		c0.03	c0.19	
v/s Ratio Perm	c0.18			0.10			0.09			0.17		
v/c Ratio	0.49	0.31		0.27	0.27		0.22	0.42		0.44	0.48	
Uniform Delay, d1	29.6	26.6		27.4	26.1		28.5	26.0		30.5	26.8	
Progression Factor	1.00	1.00		1.00	1.00		0.79	0.80		1.00	1.00	
Incremental Delay, d2	0.3	0.7		0.1	0.5		0.1	0.9		0.3	1.3	
Delay (s)	29.9	27.3		27.6	26.6		22.5	21.6		30.8	28.1	
Level of Service	C	C		C	C		C	C		C	C	
Approach Delay (s)		28.1			26.8			21.7			28.6	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

Existing 2009 - Saturday Midday Peak Hour
HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	311	50	42	242	0	74	0	97	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.87	0.87	0.87	0.25	0.25	0.25
Hourly flow rate (vph)	0	375	60	44	255	0	85	0	111	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					912							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	255			435			748	748	405	859	778	255
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	247			435			743	743	405	855	774	247
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			74	100	83	100	100	100
cM capacity (veh/h)	1322			1136			322	330	648	224	317	792

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	435	299	197	0
Volume Left	0	44	85	0
Volume Right	60	0	111	0
cSH	1322	1136	450	1700
Volume to Capacity	0.00	0.04	0.44	0.00
Queue Length 95th (ft)	0	3	54	0
Control Delay (s)	0.0	1.6	19.0	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	1.6	19.0	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization	54.5%		ICU Level of Service A
Analysis Period (min)		15	

BUILD

(2012)

(Signal at Probert Street)

Wegmans TIS
1: East & Probert

2012_Weekday AM Peak_Signal at Probert_35%
Timings



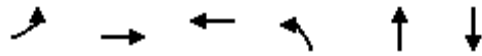
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗↗	↗↖	↖	↗		↕
Volume (vph)	41	563	549	18	11	24	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	3.0		3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	8.5		21.5	24.5	24.5	24.5	24.5
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	Min		C-Max	None	None	None	None
Act Effct Green (s)	43.6	47.2	34.4	9.6	9.6		9.6
Actuated g/C Ratio	0.73	0.79	0.57	0.16	0.16		0.16
v/c Ratio	0.08	0.24	0.32	0.11	0.27		0.33
Control Delay	3.1	2.7	5.9	21.8	10.3		8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	3.1	2.7	5.9	21.8	10.3		8.2
LOS	A	A	A	C	B		A
Approach Delay		2.8	5.9		12.6		8.2
Approach LOS		A	A		B		A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 5 (8%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.33
 Intersection Signal Delay: 5.1
 Intersection Capacity Utilization 41.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	47	647	619	20	82	110
v/c Ratio	0.08	0.24	0.32	0.11	0.27	0.33
Control Delay	3.1	2.7	5.9	21.8	10.3	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	2.7	5.9	21.8	10.3	8.2
Queue Length 50th (ft)	3	26	56	6	4	9
Queue Length 95th (ft)	11	51	m105	21	33	29
Internal Link Dist (ft)		374	70		232	301
Turn Bay Length (ft)	75					
Base Capacity (vph)	629	2675	1917	425	597	668
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.24	0.32	0.05	0.14	0.16

Intersection Summary

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

Wegmans TIS
1: East & Probert

2012_Weekday AM Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑		↘	↗			↕	
Volume (vph)	41	563	0	0	549	8	18	11	63	24	0	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			1.00		1.00	0.87			0.90	
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1586	3388			3344		1685	1508			1856	
Flt Permitted	0.38	1.00			1.00		0.65	1.00			0.89	
Satd. Flow (perm)	635	3388			3344		1159	1508			1680	
Peak-hour factor, PHF	0.87	0.87	0.87	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	47	647	0	0	610	9	20	12	70	28	0	82
RTOR Reduction (vph)	0	0	0	0	1	0	0	60	0	0	70	0
Lane Group Flow (vph)	47	647	0	0	618	0	20	22	0	0	40	0
Heavy Vehicles (%)	10%	3%	0%	0%	4%	13%	0%	0%	3%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1		3	3			3	
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	37.5	43.0			30.7		6.0	6.0			6.0	
Effective Green, g (s)	42.5	45.5			33.2		8.5	8.5			8.5	
Actuated g/C Ratio	0.71	0.76			0.55		0.14	0.14			0.14	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.5	
Vehicle Extension (s)	3.0				3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	597	2569			1850		164	214			238	
v/s Ratio Prot	0.01	c0.19			c0.18			0.01				
v/s Ratio Perm	0.04						0.02				c0.02	
v/c Ratio	0.08	0.25			0.33		0.12	0.10			0.17	
Uniform Delay, d1	3.7	2.2			7.3		22.5	22.4			22.6	
Progression Factor	1.00	1.00			0.72		1.00	1.00			0.80	
Incremental Delay, d2	0.1	0.1			0.4		0.3	0.2			0.3	
Delay (s)	3.8	2.2			5.7		22.8	22.6			18.4	
Level of Service	A	A			A		C	C			B	
Approach Delay (s)		2.3			5.7			22.7			18.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

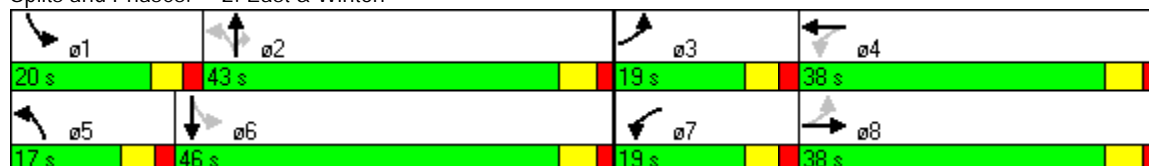


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	63	324	198	501	190	496	66	85	880
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	32.0	12.0	32.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	19.0	38.0	19.0	38.0	17.0	43.0	43.0	20.0	46.0
Total Split (%)	15.8%	31.7%	15.8%	31.7%	14.2%	35.8%	35.8%	16.7%	38.3%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min	None	Min	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	41.4	30.8	49.4	38.0	63.8	50.7	50.7	58.7	47.8
Actuated g/C Ratio	0.34	0.26	0.41	0.32	0.53	0.42	0.42	0.49	0.40
v/c Ratio	0.27	0.75	0.72	0.53	0.80	0.38	0.10	0.24	0.91
Control Delay	22.2	37.6	38.8	35.7	51.1	26.2	6.1	11.4	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	22.2	37.6	38.8	35.7	51.1	26.2	6.1	11.4	34.2
LOS	C	D	D	D	D	C	A	B	C
Approach Delay		36.0		36.5		30.7			32.4
Approach LOS		D		D		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 45 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 33.7
 Intersection LOS: C
 Intersection Capacity Utilization 78.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	81	677	218	576	209	545	73	101	1188
v/c Ratio	0.27	0.75	0.72	0.53	0.80	0.38	0.10	0.24	0.91
Control Delay	22.2	37.6	38.8	35.7	51.1	26.2	6.1	11.4	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	22.2	37.6	38.8	35.7	51.1	26.2	6.1	11.4	34.2
Queue Length 50th (ft)	38	206	110	194	106	152	0	25	481
Queue Length 95th (ft)	59	213	177	249	#244	221	32	43	#548
Internal Link Dist (ft)		691		432		405			264
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	381	1016	307	1084	270	1431	740	498	1301
Starvation Cap Reductn	0	0	0	0	0	0	0	0	29
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.67	0.71	0.53	0.77	0.38	0.10	0.20	0.93

Intersection Summary

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

Wegmans TIS
2: East & Winton

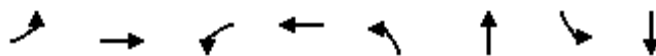
2012_Weekday AM Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	324	204	198	501	23	190	496	66	85	880	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.94		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3196		1745	3418		1728	3389	1652	1677	3250	
Flt Permitted	0.33	1.00		0.15	1.00		0.08	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	596	3196		266	3418		148	3389	1652	664	3250	
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84
Adj. Flow (vph)	81	415	262	218	551	25	209	545	73	101	1048	140
RTOR Reduction (vph)	0	87	0	0	3	0	0	0	43	0	8	0
Lane Group Flow (vph)	81	590	0	218	573	0	209	545	30	101	1180	0
Heavy Vehicles (%)	2%	4%	1%	0%	1%	11%	2%	4%	2%	3%	3%	15%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	35.9	28.9		47.5	35.0		57.9	46.6	46.6	52.1	43.7	
Effective Green, g (s)	40.9	31.9		50.0	38.0		62.9	49.6	49.6	57.1	46.7	
Actuated g/C Ratio	0.34	0.27		0.42	0.32		0.52	0.41	0.41	0.48	0.39	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	291	850		303	1082		259	1401	683	408	1265	
v/s Ratio Prot	0.02	0.18		c0.09	0.17		c0.09	0.16		0.02	c0.36	
v/s Ratio Perm	0.07			c0.21			0.33		0.02	0.10		
v/c Ratio	0.28	0.69		0.72	0.53		0.81	0.39	0.04	0.25	0.93	
Uniform Delay, d1	27.6	39.7		26.2	33.7		31.9	24.6	21.0	17.8	35.1	
Progression Factor	0.96	0.97		1.00	1.00		1.00	1.00	1.00	0.67	0.59	
Incremental Delay, d2	0.2	2.6		6.7	0.6		15.7	0.8	0.1	0.1	13.0	
Delay (s)	26.7	41.1		32.8	34.3		47.6	25.4	21.2	12.0	33.7	
Level of Service	C	D		C	C		D	C	C	B	C	
Approach Delay (s)		39.6			33.9			30.7			32.0	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

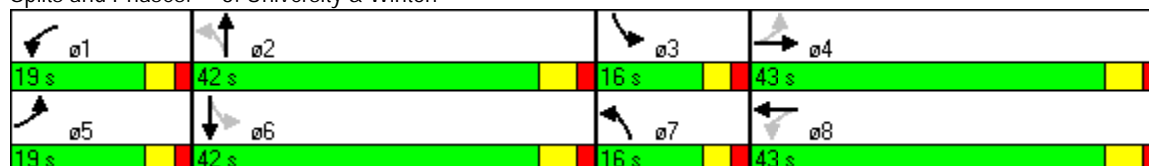


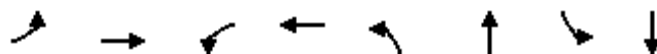
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	40	193	68	490	153	448	166	656
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effect Green (s)	48.7	41.7	48.7	41.7	59.3	48.0	59.3	48.0
Actuated g/C Ratio	0.41	0.35	0.41	0.35	0.49	0.40	0.49	0.40
v/c Ratio	0.26	0.29	0.22	0.72	0.59	0.41	0.48	0.62
Control Delay	29.4	23.5	24.3	37.1	25.9	13.5	25.7	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.9
Total Delay	29.4	23.5	24.3	37.1	25.9	13.7	25.7	32.0
LOS	C	C	C	D	C	B	C	C
Approach Delay		24.3		35.9		16.8		30.8
Approach LOS		C		D		B		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 28.2
 Intersection LOS: C
 Intersection Capacity Utilization 63.4%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	329	88	841	184	541	189	800
v/c Ratio	0.26	0.29	0.22	0.72	0.59	0.41	0.48	0.62
Control Delay	29.4	23.5	24.3	37.1	25.9	13.5	25.7	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.9
Total Delay	29.4	23.5	24.3	37.1	25.9	13.7	25.7	32.0
Queue Length 50th (ft)	22	81	41	291	66	50	74	253
Queue Length 95th (ft)	42	102	63	294	96	57	117	316
Internal Link Dist (ft)		583		787		264		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	310	1121	524	1162	338	1330	416	1286
Starvation Cap Reductn	0	0	0	0	0	261	0	0
Spillback Cap Reductn	0	1	39	0	0	0	0	227
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.29	0.18	0.72	0.54	0.51	0.45	0.76

Intersection Summary

Wegmans TIS
3: University & Winton

2012_Weekday AM Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	40	193	74	68	490	158	153	448	1	166	656	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3130		1694	3272		1728	3324		1630	3204	
Flt Permitted	0.15	1.00		0.48	1.00		0.21	1.00		0.35	1.00	
Satd. Flow (perm)	259	3130		857	3272		379	3324		599	3204	
Peak-hour factor, PHF	0.81	0.81	0.81	0.77	0.77	0.77	0.83	0.83	0.83	0.88	0.88	0.88
Adj. Flow (vph)	49	238	91	88	636	205	184	540	1	189	745	55
RTOR Reduction (vph)	0	33	0	0	25	0	0	0	0	0	4	0
Lane Group Flow (vph)	49	296	0	88	816	0	184	541	0	189	796	0
Heavy Vehicles (%)	6%	3%	17%	3%	3%	2%	2%	6%	0%	6%	7%	3%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.7	38.7		43.7	38.7		54.3	45.0		54.3	45.0	
Effective Green, g (s)	47.7	41.7		47.7	41.7		58.3	48.0		58.3	48.0	
Actuated g/C Ratio	0.40	0.35		0.40	0.35		0.49	0.40		0.49	0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	184	1088		389	1137		311	1330		388	1282	
v/s Ratio Prot	c0.02	0.09		0.01	c0.25		c0.06	0.16		0.05	c0.25	
v/s Ratio Perm	0.09			0.08			0.23			0.19		
v/c Ratio	0.27	0.27		0.23	0.72		0.59	0.41		0.49	0.62	
Uniform Delay, d1	40.9	28.2		27.6	34.0		36.7	25.8		28.8	28.7	
Progression Factor	0.92	0.93		1.00	1.00		0.64	0.48		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.1	3.9		1.9	0.9		0.4	2.3	
Delay (s)	38.0	26.9		27.7	37.9		25.6	13.4		29.1	31.0	
Level of Service	D	C		C	D		C	B		C	C	
Approach Delay (s)		28.4			37.0			16.5			30.6	
Approach LOS		C			D			B			C	

Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

2012_Weekday AM Peak_Signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	313	14	31	626	0	10	0	20	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.65	0.65	0.65	0.25	0.25	0.25
Hourly flow rate (vph)	0	377	17	36	736	0	15	0	31	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					139							
pX, platoon unblocked	0.82						0.82	0.82		0.82	0.82	0.82
vC, conflicting volume	736			394			1195	1195	386	1226	1203	736
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	565			394			1127	1127	386	1164	1137	565
tC, single (s)	5.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	3.1			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	100			97			89	100	95	100	100	100
cM capacity (veh/h)	538			1176			146	163	618	131	161	431

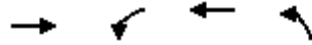
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	394	773	46	0
Volume Left	0	36	15	0
Volume Right	17	0	31	0
cSH	538	1176	298	1700
Volume to Capacity	0.00	0.03	0.15	0.00
Queue Length 95th (ft)	0	2	14	0
Control Delay (s)	0.0	0.8	19.3	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	0.8	19.3	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

Wegmans TIS
5: East & Wegmans Drive

2012_Weekday AM Peak_Signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	73	578	14	17	493	63	18	3	25	60	3	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	81	642	16	19	548	70	20	3	28	67	3	71
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		150			771							
pX, platoon unblocked	0.98			0.96			0.97	0.97	0.96	0.97	0.97	0.98
vC, conflicting volume	618			658			1197	1468	329	1133	1441	309
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			566			1037	1315	224	972	1287	242
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			98			87	98	96	62	98	90
cM capacity (veh/h)	984			964			148	137	750	176	143	740
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	81	428	230	19	365	253	51	141				
Volume Left	81	0	0	19	0	0	20	67				
Volume Right	0	0	16	0	0	70	28	71				
cSH	984	1700	1700	964	1700	1700	260	283				
Volume to Capacity	0.08	0.25	0.14	0.02	0.21	0.15	0.20	0.50				
Queue Length 95th (ft)	7	0	0	1	0	0	18	65				
Control Delay (s)	9.0	0.0	0.0	8.8	0.0	0.0	22.2	29.7				
Lane LOS	A			A			C	D				
Approach Delay (s)	1.0			0.3			22.2	29.7				
Approach LOS							C	D				
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			40.1%		ICU Level of Service			A				
Analysis Period (min)			15									

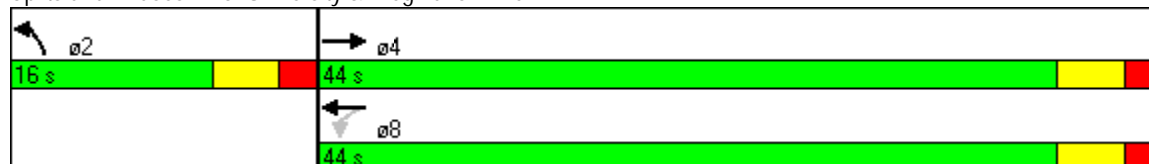


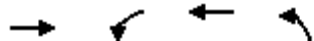
Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↻	↻	↻	↻
Volume (vph)	280	69	615	42
Turn Type	Perm			
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	3.0	3.0	3.0	3.0
Minimum Split (s)	15.0	15.0	15.0	15.0
Total Split (s)	44.0	44.0	44.0	16.0
Total Split (%)	73.3%	73.3%	73.3%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.5	4.5	4.5	4.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	Min
Act Effct Green (s)	42.5	42.5	42.5	8.5
Actuated g/C Ratio	0.71	0.71	0.71	0.14
v/c Ratio	0.28	0.11	0.52	0.37
Control Delay	3.8	2.2	3.7	15.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.8	2.2	3.7	15.7
LOS	A	A	A	B
Approach Delay	3.8		3.6	15.7
Approach LOS	A		A	B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 4.7
 Intersection LOS: A
 Intersection Capacity Utilization 45.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: University & Wegmans Drive





Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	370	77	683	106
v/c Ratio	0.28	0.11	0.52	0.37
Control Delay	3.8	2.2	3.7	15.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.8	2.2	3.7	15.7
Queue Length 50th (ft)	32	4	32	15
Queue Length 95th (ft)	73	m12	90	50
Internal Link Dist (ft)	59		30	47
Turn Bay Length (ft)		100		
Base Capacity (vph)	1344	715	1321	371
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.11	0.52	0.29

Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	
Volume (vph)	280	53	69	615	42	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.92	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	1883		1770	1863	1685	
Flt Permitted	1.00		0.54	1.00	0.98	
Satd. Flow (perm)	1883		1007	1863	1685	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	311	59	77	683	47	59
RTOR Reduction (vph)	10	0	0	0	51	0
Lane Group Flow (vph)	360	0	77	683	55	0
Turn Type			Perm			
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	41.5		41.5	41.5	7.5	
Effective Green, g (s)	42.5		42.5	42.5	8.5	
Actuated g/C Ratio	0.71		0.71	0.71	0.14	
Clearance Time (s)	5.5		5.5	5.5	5.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1334		713	1320	239	
v/s Ratio Prot	0.19			c0.37	c0.03	
v/s Ratio Perm			0.08			
v/c Ratio	0.27		0.11	0.52	0.23	
Uniform Delay, d1	3.2		2.8	4.0	22.9	
Progression Factor	1.00		0.62	0.61	1.00	
Incremental Delay, d2	0.5		0.2	1.1	0.5	
Delay (s)	3.7		1.9	3.5	23.4	
Level of Service	A		A	A	C	
Approach Delay (s)	3.7			3.3	23.4	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
1: East & Probert

Weekday PM Peak Hour_Signal at Probert_35%
Timings



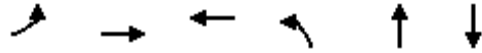
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗↗	↗↖	↖	↗		↕
Volume (vph)	29	771	557	17	9	22	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	3.0		3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	8.0		21.0	24.0	24.0	24.0	24.0
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	Min		C-Max	None	None	None	None
Act Effect Green (s)	43.9	47.5	34.2	9.2	9.2		9.2
Actuated g/C Ratio	0.73	0.79	0.57	0.15	0.15		0.15
v/c Ratio	0.06	0.35	0.38	0.16	0.21		0.41
Control Delay	3.0	3.1	10.1	23.8	11.3		7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	3.0	3.1	10.1	23.8	11.3		7.9
LOS	A	A	B	C	B		A
Approach Delay		3.1	10.1		14.7		7.9
Approach LOS		A	B		B		A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 45 (75%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.41
 Intersection Signal Delay: 6.6
 Intersection Capacity Utilization 45.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	35	940	714	22	58	154
v/c Ratio	0.06	0.35	0.38	0.16	0.21	0.41
Control Delay	3.0	3.1	10.1	23.8	11.3	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	3.1	10.1	23.8	11.3	7.9
Queue Length 50th (ft)	2	40	112	7	4	1
Queue Length 95th (ft)	8	74	135	20	23	26
Internal Link Dist (ft)		374	70		232	307
Turn Bay Length (ft)	75					
Base Capacity (vph)	582	2663	1893	321	589	722
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.35	0.38	0.07	0.10	0.21

Intersection Summary

Wegmans TIS
1: East & Probert

Weekday PM Peak Hour_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖	↗			↖↗	
Volume (vph)	29	771	0	0	557	29	17	9	36	22	0	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			0.99		1.00	0.88			0.89	
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1586	3388			3317		1685	1526			1836	
Flt Permitted	0.33	1.00			1.00		0.49	1.00			0.94	
Satd. Flow (perm)	557	3388			3317		876	1526			1742	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.78	0.78	0.78	0.94	0.94	0.94
Adj. Flow (vph)	35	940	0	0	679	35	22	12	46	23	0	131
RTOR Reduction (vph)	0	0	0	0	4	0	0	40	0	0	113	0
Lane Group Flow (vph)	35	940	0	0	710	0	22	18	0	0	41	0
Heavy Vehicles (%)	10%	3%	0%	0%	4%	13%	0%	0%	3%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1			3			3	
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	38.9	43.9			31.2		6.1	6.1			6.1	
Effective Green, g (s)	42.9	45.9			33.2		8.1	8.1			8.1	
Actuated g/C Ratio	0.71	0.76			0.55		0.13	0.13			0.13	
Clearance Time (s)	5.0				5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0				3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	565	2592			1835		118	206			235	
v/s Ratio Prot	0.01	c0.28			c0.21			0.01				
v/s Ratio Perm	0.03						c0.03				0.02	
v/c Ratio	0.06	0.36			0.39		0.19	0.09			0.17	
Uniform Delay, d1	4.0	2.3			7.6		23.0	22.7			23.0	
Progression Factor	1.00	1.00			1.20		1.00	1.00			0.91	
Incremental Delay, d2	0.0	0.1			0.6		0.8	0.2			0.4	
Delay (s)	4.0	2.4			9.8		23.8	22.9			21.4	
Level of Service	A	A			A		C	C			C	
Approach Delay (s)		2.4			9.8			23.1			21.4	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Wegmans TIS
2: East & Winton

Weekday PM Peak Hour_Signal at Probert_35%
Timings

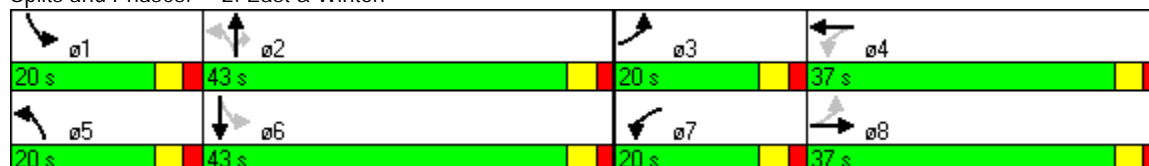


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	124	526	121	294	259	450	134	191	578
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	31.0	12.0	31.0	10.0	24.0	24.0	10.0	24.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	49.6	36.6	50.9	37.3	59.1	43.2	43.2	56.4	41.8
Actuated g/C Ratio	0.41	0.30	0.42	0.31	0.49	0.36	0.36	0.47	0.35
v/c Ratio	0.36	0.90	0.58	0.39	0.76	0.38	0.20	0.46	0.65
Control Delay	22.0	48.4	31.6	33.1	34.2	30.3	5.3	15.3	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	22.0	48.4	31.6	33.1	34.2	30.4	5.3	15.3	29.9
LOS	C	D	C	C	C	C	A	B	C
Approach Delay		44.8		32.7		27.6			26.7
Approach LOS		D		C		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 33.5
 Intersection LOS: C
 Intersection Capacity Utilization 76.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton






























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	950	149	416	273	474	141	212	758
v/c Ratio	0.36	0.90	0.58	0.39	0.76	0.38	0.20	0.46	0.65
Control Delay	22.0	48.4	31.6	33.1	34.2	30.3	5.3	15.3	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	22.0	48.4	31.6	33.1	34.2	30.4	5.3	15.3	29.9
Queue Length 50th (ft)	68	343	68	127	121	144	0	78	287
Queue Length 95th (ft)	103	#436	108	161	#223	197	44	103	286
Internal Link Dist (ft)		692		432		405			259
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	459	1051	306	1057	370	1244	697	489	1172
Starvation Cap Reductn	0	0	0	0	0	0	0	0	209
Spillback Cap Reductn	0	0	0	0	0	62	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.90	0.49	0.39	0.74	0.40	0.20	0.43	0.79

Intersection Summary

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

Wegmans TIS
2: East & Winton

Weekday PM Peak Hour_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	124	526	272	121	294	43	259	450	134	191	578	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1728	3267		1745	3372		1745	3455	1686	1727	3327	
Flt Permitted	0.40	1.00		0.11	1.00		0.19	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	727	3267		197	3372		349	3455	1686	708	3327	
Peak-hour factor, PHF	0.84	0.84	0.84	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90
Adj. Flow (vph)	148	626	324	149	363	53	273	474	141	212	642	116
RTOR Reduction (vph)	0	53	0	0	9	0	0	0	90	0	12	0
Lane Group Flow (vph)	148	897	0	149	407	0	273	474	51	212	746	0
Heavy Vehicles (%)	1%	1%	2%	0%	1%	5%	1%	2%	0%	0%	1%	4%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	45.7	34.7		46.9	35.3		55.1	41.2	41.2	52.3	39.8	
Effective Green, g (s)	49.7	36.7		50.9	37.3		59.1	43.2	43.2	56.3	41.8	
Actuated g/C Ratio	0.41	0.31		0.42	0.31		0.49	0.36	0.36	0.47	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	410	999		259	1048		357	1244	607	455	1159	
v/s Ratio Prot	0.04	c0.27		c0.07	0.12		c0.10	0.14		0.06	0.22	
v/s Ratio Perm	0.11			0.18			c0.28		0.03	0.16		
v/c Ratio	0.36	0.90		0.58	0.39		0.76	0.38	0.08	0.47	0.64	
Uniform Delay, d1	22.8	39.8		26.1	32.4		21.3	28.5	25.3	19.6	32.8	
Progression Factor	0.96	0.96		1.00	1.00		1.00	1.00	1.00	0.70	0.79	
Incremental Delay, d2	0.2	10.7		1.9	0.3		8.5	0.9	0.3	0.3	2.6	
Delay (s)	22.0	49.1		28.0	32.7		29.8	29.4	25.6	14.1	28.6	
Level of Service	C	D		C	C		C	C	C	B	C	
Approach Delay (s)		45.4			31.5			28.9			25.5	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
3: University & Winton

Weekday PM Peak Hour_Signal at Probert_35%
Timings

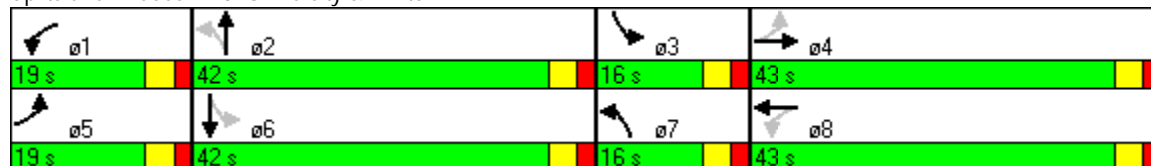


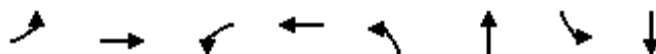
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	206	493	135	343	77	645	134	382
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	28.0	11.0	28.0	11.0	28.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	53.3	42.8	53.3	42.8	54.7	44.5	54.7	44.5
Actuated g/C Ratio	0.44	0.36	0.44	0.36	0.46	0.37	0.46	0.37
v/c Ratio	0.59	0.65	0.58	0.38	0.24	0.61	0.54	0.43
Control Delay	30.9	32.1	40.7	29.5	15.1	24.7	37.9	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3
Total Delay	30.9	32.1	40.7	29.5	15.1	25.1	37.9	28.9
LOS	C	C	D	C	B	C	D	C
Approach Delay		31.8		32.4		24.0		30.9
Approach LOS		C		C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 29.6
 Intersection LOS: C
 Intersection Capacity Utilization 65.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	242	785	159	453	93	791	149	531
v/c Ratio	0.59	0.65	0.58	0.38	0.24	0.61	0.54	0.43
Control Delay	30.9	32.1	40.7	29.5	15.1	24.7	37.9	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3
Total Delay	30.9	32.1	40.7	29.5	15.1	25.1	37.9	28.9
Queue Length 50th (ft)	110	233	71	133	24	146	63	150
Queue Length 95th (ft)	146	287	102	173	38	166	111	217
Internal Link Dist (ft)		583		787		259		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	488	1206	356	1198	423	1304	316	1241
Starvation Cap Reductn	0	0	0	0	0	168	0	0
Spillback Cap Reductn	0	2	0	0	0	0	0	245
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.65	0.45	0.38	0.22	0.70	0.47	0.53

Intersection Summary

Wegmans TIS
3: University & Winton

Weekday PM Peak Hour_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	206	493	174	135	343	42	77	645	12	134	382	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3303		1745	3337		1745	3515		1710	3298	
Flt Permitted	0.39	1.00		0.19	1.00		0.34	1.00		0.20	1.00	
Satd. Flow (perm)	716	3303		347	3337		631	3515		353	3298	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	242	580	205	159	404	49	93	777	14	149	424	107
RTOR Reduction (vph)	0	28	0	0	8	0	0	1	0	0	18	0
Lane Group Flow (vph)	242	757	0	159	445	0	93	790	0	149	513	0
Heavy Vehicles (%)	0%	1%	3%	0%	3%	2%	1%	0%	1%	1%	2%	0%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	49.3	40.8		49.3	40.8		50.7	42.5		50.7	42.5	
Effective Green, g (s)	53.3	42.8		53.3	42.8		54.7	44.5		54.7	44.5	
Actuated g/C Ratio	0.44	0.36		0.44	0.36		0.46	0.37		0.46	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	408	1178		276	1190		382	1303		276	1223	
v/s Ratio Prot	c0.05	c0.23		0.05	0.13		0.02	c0.22		c0.05	0.16	
v/s Ratio Perm	0.21			0.21			0.09			0.20		
v/c Ratio	0.59	0.64		0.58	0.37		0.24	0.61		0.54	0.42	
Uniform Delay, d1	32.5	32.2		39.8	28.7		27.2	30.6		39.0	28.1	
Progression Factor	0.92	0.95		1.00	1.00		0.67	0.72		1.00	1.00	
Incremental Delay, d2	1.5	2.6		1.8	0.9		0.1	2.0		1.0	1.1	
Delay (s)	31.4	33.0		41.6	29.6		18.3	24.0		40.0	29.2	
Level of Service	C	C		D	C		B	C		D	C	
Approach Delay (s)		32.7			32.7			23.4			31.6	
Approach LOS		C			C			C			C	

















Intersection Summary

HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group




















Wegmans TIS
4: University & Probert

Weekday PM Peak Hour_Signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	567	32	75	374	0	13	0	45	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	637	36	81	402	0	14	0	50	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					140							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	402			673			1218	1218	655	1268	1236	402
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	305			673			1193	1193	655	1248	1213	305
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			90	100	89	100	100	100
cM capacity (veh/h)	1164			927			142	158	470	116	154	680
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	673	483	64	0								
Volume Left	0	81	14	0								
Volume Right	36	0	50	0								
cSH	1164	927	309	1700								
Volume to Capacity	0.00	0.09	0.21	0.00								
Queue Length 95th (ft)	0	7	19	0								
Control Delay (s)	0.0	2.4	19.7	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	2.4	19.7	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			69.1%		ICU Level of Service				C			
Analysis Period (min)			15									

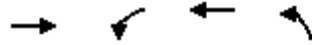
Wegmans TIS
5: East & Wegmans Drive

Weekday PM Peak Hour_Signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (veh/h)	176	653	58	40	442	171	26	3	32	154	3	144	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	196	726	64	44	491	190	29	3	36	171	3	160	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None					None							
Median storage (veh)													
Upstream signal (ft)	150					772							
pX, platoon unblocked	0.97			0.94			0.95	0.95	0.94	0.95	0.95	0.97	
vC, conflicting volume	681			790			1645	1919	395	1466	1856	341	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	607			641			1431	1719	220	1243	1653	256	
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	79			95			47	95	95	0	95	78	
cM capacity (veh/h)	937			880			55	64	735	92	70	721	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	196	484	306	44	327	354	68	334					
Volume Left	196	0	0	44	0	0	29	171					
Volume Right	0	0	64	0	0	190	36	160					
cSH	937	1700	1700	880	1700	1700	108	157					
Volume to Capacity	0.21	0.28	0.18	0.05	0.19	0.21	0.63	2.13					
Queue Length 95th (ft)	20	0	0	4	0	0	78	671					
Control Delay (s)	9.9	0.0	0.0	9.3	0.0	0.0	82.8	575.3					
Lane LOS	A			A			F	F					
Approach Delay (s)	2.0			0.6			82.8	575.3					
Approach LOS							F	F					
Intersection Summary													
Average Delay	94.8												
Intersection Capacity Utilization	61.6%			ICU Level of Service					B				
Analysis Period (min)	15												

Wegmans TIS
6: University & Wegmans Drive

Weekday PM Peak Hour_Signal at Probert_35%
Timings

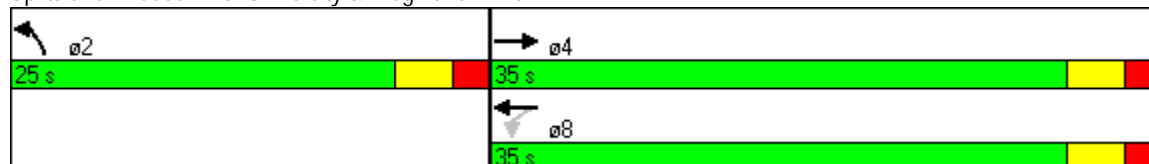


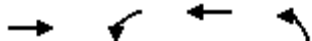
Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↻	↻	↑	↻
Volume (vph)	505	59	333	116
Turn Type	Perm			
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	3.0	3.0	3.0	3.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	35.0	35.0	35.0	25.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	Min
Act Effct Green (s)	39.9	39.9	39.9	12.1
Actuated g/C Ratio	0.66	0.66	0.66	0.20
v/c Ratio	0.54	0.17	0.30	0.58
Control Delay	8.0	3.2	2.7	19.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.0	3.2	2.7	19.5
LOS	A	A	A	B
Approach Delay	8.0		2.8	19.5
Approach LOS	A		A	B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 8.3
 Intersection Capacity Utilization 58.7%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 6: University & Wegmans Drive





Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	680	66	370	235
v/c Ratio	0.54	0.17	0.30	0.58
Control Delay	8.0	3.2	2.7	19.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.0	3.2	2.7	19.5
Queue Length 50th (ft)	99	5	28	51
Queue Length 95th (ft)	232	11	41	98
Internal Link Dist (ft)	60		31	37
Turn Bay Length (ft)		100		
Base Capacity (vph)	1257	400	1238	645
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.17	0.30	0.36
Intersection Summary				

Wegmans TIS
6: University & Wegmans Drive

Weekday PM Peak Hour_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	
Volume (vph)	505	107	59	333	116	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.94	
Flt Protected	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1879		1770	1863	1703	
Flt Permitted	1.00		0.32	1.00	0.97	
Satd. Flow (perm)	1879		601	1863	1703	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	561	119	66	370	129	106
RTOR Reduction (vph)	9	0	0	0	61	0
Lane Group Flow (vph)	671	0	66	370	174	0
Turn Type			Perm			
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	38.9		38.9	38.9	11.1	
Effective Green, g (s)	39.9		39.9	39.9	12.1	
Actuated g/C Ratio	0.66		0.66	0.66	0.20	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1250		400	1239	343	
v/s Ratio Prot	c0.36			0.20	c0.10	
v/s Ratio Perm			0.11			
v/c Ratio	0.54		0.17	0.30	0.51	
Uniform Delay, d1	5.2		3.8	4.2	21.3	
Progression Factor	1.00		0.46	0.43	1.00	
Incremental Delay, d2	1.7		0.8	0.6	1.2	
Delay (s)	6.9		2.6	2.4	22.5	
Level of Service	A		A	A	C	
Approach Delay (s)	6.9			2.4	22.5	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
1: East & Probert

Friday PM Peak_signal at Probert_35%
Timings



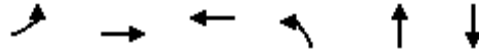
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗↗	↗↖	↖	↗		↕
Volume (vph)	29	530	540	19	8	4	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	3.0		3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	8.5		21.5	24.5	24.5	24.5	24.5
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	Min		C-Max	None	None	None	None
Act Effct Green (s)	43.6	47.2	34.4	9.6	9.6		9.6
Actuated g/C Ratio	0.73	0.79	0.57	0.16	0.16		0.16
v/c Ratio	0.05	0.22	0.35	0.15	0.21		0.32
Control Delay	2.9	2.6	9.5	22.6	11.0		12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	2.9	2.6	9.5	22.6	11.0		12.5
LOS	A	A	A	C	B		B
Approach Delay		2.7	9.5		14.6		12.5
Approach LOS		A	A		B		B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 17 (28%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.35
 Intersection Signal Delay: 7.1
 Intersection Capacity Utilization 38.5%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	32	589	657	28	61	97
v/c Ratio	0.05	0.22	0.35	0.15	0.21	0.32
Control Delay	2.9	2.6	9.5	22.6	11.0	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	2.6	9.5	22.6	11.0	12.5
Queue Length 50th (ft)	2	24	92	9	4	12
Queue Length 95th (ft)	9	47	122	20	18	34
Internal Link Dist (ft)		161	75		215	324
Turn Bay Length (ft)	75					
Base Capacity (vph)	659	2730	1899	443	603	577
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.35	0.06	0.10	0.17

Intersection Summary

Wegmans TIS
1: East & Probert

Friday PM Peak_signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑		↘	↘			↕	
Volume (vph)	29	530	0	0	540	38	19	8	33	4	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	8	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			0.99		1.00	0.88			0.87	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1711	3455			3301		1685	1560			1431	
Flt Permitted	0.36	1.00			1.00		0.68	1.00			0.99	
Satd. Flow (perm)	651	3455			3301		1210	1560			1413	
Peak-hour factor, PHF	0.90	0.90	0.90	0.88	0.88	0.88	0.67	0.67	0.67	0.92	0.92	0.92
Adj. Flow (vph)	32	589	0	0	614	43	28	12	49	4	0	93
RTOR Reduction (vph)	0	0	0	0	5	0	0	42	0	0	80	0
Lane Group Flow (vph)	32	589	0	0	652	0	28	19	0	0	17	0
Heavy Vehicles (%)	2%	1%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1			3			3	
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	37.5	43.0			30.8		6.0	6.0			6.0	
Effective Green, g (s)	42.5	45.5			33.3		8.5	8.5			8.5	
Actuated g/C Ratio	0.71	0.76			0.55		0.14	0.14			0.14	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.5	
Vehicle Extension (s)	3.0				3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	624	2620			1832		171	221			200	
v/s Ratio Prot	0.01	c0.17			c0.20			0.01				
v/s Ratio Perm	0.03						c0.02				0.01	
v/c Ratio	0.05	0.22			0.36		0.16	0.09			0.09	
Uniform Delay, d1	3.8	2.1			7.4		22.6	22.4			22.4	
Progression Factor	1.00	1.00			1.18		1.00	1.00			2.15	
Incremental Delay, d2	0.0	0.0			0.5		0.5	0.2			0.2	
Delay (s)	3.8	2.2			9.2		23.1	22.5			48.3	
Level of Service	A	A			A		C	C			D	
Approach Delay (s)		2.2			9.2			22.7			48.3	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Wegmans TIS
2: East & Winton

Friday PM Peak_signal at Probert_35%
Timings



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	134	424	124	292	251	515	111	193	508
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	12.0	36.0	16.0	40.0	26.0	50.0	50.0	18.0	42.0
Total Split (%)	10.0%	30.0%	13.3%	33.3%	21.7%	41.7%	41.7%	15.0%	35.0%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min	None	Min	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	40.1	31.1	46.1	34.5	66.6	50.8	50.8	61.1	47.3
Actuated g/C Ratio	0.33	0.26	0.38	0.29	0.56	0.42	0.42	0.51	0.39
v/c Ratio	0.43	0.77	0.57	0.41	0.65	0.38	0.15	0.48	0.57
Control Delay	27.8	41.4	33.4	33.2	21.9	25.6	4.6	9.1	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5
Total Delay	27.8	41.4	33.4	33.2	21.9	25.9	4.6	9.1	17.6
LOS	C	D	C	C	C	C	A	A	B
Approach Delay		39.1		33.2		22.0			15.6
Approach LOS		D		C		C			B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 88 (73%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 26.4
 Intersection LOS: C
 Intersection Capacity Utilization 71.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton






























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	143	697	138	404	270	554	119	222	738
v/c Ratio	0.43	0.77	0.57	0.41	0.65	0.38	0.15	0.48	0.57
Control Delay	27.8	41.4	33.4	33.2	21.9	25.6	4.6	9.1	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5
Total Delay	27.8	41.4	33.4	33.2	21.9	25.9	4.6	9.1	17.6
Queue Length 50th (ft)	70	228	68	120	109	161	0	57	154
Queue Length 95th (ft)	114	302	114	166	163	210	37	m67	m202
Internal Link Dist (ft)		685		417		371			323
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	335	955	250	1045	486	1462	768	482	1292
Starvation Cap Reductn	0	0	0	0	0	0	0	0	203
Spillback Cap Reductn	0	0	0	1	0	339	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.73	0.55	0.39	0.56	0.49	0.15	0.46	0.68

Intersection Summary

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

Wegmans TIS
2: East & Winton

Friday PM Peak_signal at Probert_35%
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	134	424	231	124	292	72	251	515	111	193	508	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3251		1728	3333		1745	3455	1652	1710	3230	
Flt Permitted	0.43	1.00		0.12	1.00		0.22	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	789	3251		227	3333		408	3455	1652	683	3230	
Peak-hour factor, PHF	0.94	0.94	0.94	0.90	0.90	0.90	0.93	0.93	0.93	0.87	0.87	0.87
Adj. Flow (vph)	143	451	246	138	324	80	270	554	119	222	584	154
RTOR Reduction (vph)	0	62	0	0	19	0	0	0	69	0	18	0
Lane Group Flow (vph)	143	635	0	138	385	0	270	554	50	222	720	0
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	1%	2%	2%	1%	3%	6%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	34.6	28.1		41.4	31.5		62.5	47.8	47.8	55.5	44.3	
Effective Green, g (s)	39.6	31.1		46.0	34.5		67.0	50.8	50.8	60.5	47.3	
Actuated g/C Ratio	0.33	0.26		0.38	0.29		0.56	0.42	0.42	0.50	0.39	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	332	843		242	958		419	1463	699	462	1273	
v/s Ratio Prot	0.03	c0.20		c0.06	0.12		c0.09	0.16		0.05	0.22	
v/s Ratio Perm	0.11			0.16			c0.27		0.03	0.19		
v/c Ratio	0.43	0.75		0.57	0.40		0.64	0.38	0.07	0.48	0.57	
Uniform Delay, d1	29.5	40.9		27.5	34.4		16.6	23.8	20.6	17.2	28.3	
Progression Factor	0.97	0.98		1.00	1.00		1.00	1.00	1.00	0.47	0.55	
Incremental Delay, d2	0.3	4.1		2.0	0.4		2.5	0.7	0.2	0.2	1.2	
Delay (s)	28.9	44.0		29.5	34.8		19.2	24.5	20.8	8.3	16.7	
Level of Service	C	D		C	C		B	C	C	A	B	
Approach Delay (s)		41.4			33.5			22.5			14.8	
Approach LOS		D			C			C			B	

Intersection Summary

HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

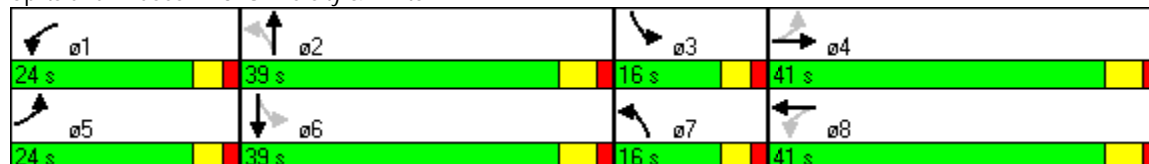


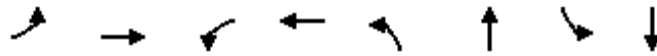
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	243	543	180	366	93	781	179	534
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	24.0	41.0	24.0	41.0	16.0	39.0	16.0	39.0
Total Split (%)	20.0%	34.2%	20.0%	34.2%	13.3%	32.5%	13.3%	32.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	58.4	38.6	58.4	38.6	49.6	37.2	49.6	37.2
Actuated g/C Ratio	0.49	0.32	0.49	0.32	0.41	0.31	0.41	0.31
v/c Ratio	0.86	0.89	0.67	0.74	0.38	0.85	0.83	0.70
Control Delay	63.4	48.6	49.3	33.2	31.4	40.1	71.8	39.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Total Delay	63.4	48.6	49.3	33.2	31.4	42.1	71.8	39.7
LOS	E	D	D	C	C	D	E	D
Approach Delay		52.1		36.7		41.0		46.5
Approach LOS		D		D		D		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 86 (72%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 44.4
 Intersection LOS: D
 Intersection Capacity Utilization 78.6%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	304	981	234	856	106	916	195	735
v/c Ratio	0.86	0.89	0.67	0.74	0.38	0.85	0.83	0.70
Control Delay	63.4	48.6	49.3	33.2	31.4	40.1	71.8	39.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Total Delay	63.4	48.6	49.3	33.2	31.4	42.1	71.8	39.7
Queue Length 50th (ft)	155	371	116	252	30	366	95	257
Queue Length 95th (ft)	218	388	160	255	70	#436	#223	330
Internal Link Dist (ft)		514		307		323		283
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	371	1102	365	1151	286	1079	244	1045
Starvation Cap Reductn	0	0	0	0	0	68	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	8
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.89	0.64	0.74	0.37	0.91	0.80	0.71

Intersection Summary

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

Wegmans TIS
3: University & Winton

Friday PM Peak_signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	243	543	242	180	366	293	93	781	25	179	534	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.93		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	3296		1728	3210		1745	3475		1694	3305	
Flt Permitted	0.12	1.00		0.11	1.00		0.17	1.00		0.11	1.00	
Satd. Flow (perm)	215	3296		193	3210		312	3475		197	3305	
Peak-hour factor, PHF	0.80	0.80	0.80	0.77	0.77	0.77	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	304	679	302	234	475	381	106	888	28	195	580	155
RTOR Reduction (vph)	0	42	0	0	119	0	0	2	0	0	20	0
Lane Group Flow (vph)	304	939	0	234	737	0	106	914	0	195	715	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	1%	1%	0%	2%	1%	2%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	53.4	35.6		53.4	35.6		44.6	34.2		44.6	34.2	
Effective Green, g (s)	57.4	38.6		57.4	38.6		48.6	37.2		48.6	37.2	
Actuated g/C Ratio	0.48	0.32		0.48	0.32		0.41	0.31		0.41	0.31	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	352	1060		346	1033		274	1077		234	1025	
v/s Ratio Prot	c0.14	c0.28		0.11	0.23		0.04	c0.26		c0.09	0.22	
v/s Ratio Perm	0.27			0.21			0.12			0.25		
v/c Ratio	0.86	0.89		0.68	0.71		0.39	0.85		0.83	0.70	
Uniform Delay, d1	41.1	38.6		41.7	35.8		40.9	38.8		47.0	36.4	
Progression Factor	0.97	1.03		1.00	1.00		0.86	0.81		1.00	1.00	
Incremental Delay, d2	18.4	10.8		4.1	4.2		0.3	8.1		20.9	3.9	
Delay (s)	58.5	50.6		45.8	40.0		35.6	39.4		67.9	40.4	
Level of Service	E	D		D	D		D	D		E	D	
Approach Delay (s)		52.5			41.3			39.0			46.2	
Approach LOS		D			D			D			D	

















Intersection Summary

HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



















Wegmans TIS
4: University & Probert

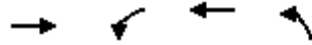
Friday PM Peak_signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	472	43	77	498	0	13	0	59	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.97	0.97	0.97	0.90	0.90	0.90
Hourly flow rate (vph)	0	549	50	80	519	0	13	0	61	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					157							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	519			599			1253	1253	574	1314	1278	519
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	356			599			1212	1212	574	1283	1241	356
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	100			92			90	100	87	100	100	100
cM capacity (veh/h)	1041			988			129	145	481	101	139	594
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	599	599	74	0								
Volume Left	0	80	13	0								
Volume Right	50	0	61	0								
cSH	1041	988	322	1700								
Volume to Capacity	0.00	0.08	0.23	0.00								
Queue Length 95th (ft)	0	7	22	0								
Control Delay (s)	0.0	2.1	19.5	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	2.1	19.5	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			72.3%		ICU Level of Service				C			
Analysis Period (min)			15									

Wegmans TIS
5: East & Wegmans Drive

Friday PM Peak_signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Volume (veh/h)	180	387	58	40	404	160	26	5	32	155	5	174				
Sign Control		Free			Free			Stop			Stop					
Grade		0%			0%			0%			0%					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90				
Hourly flow rate (vph)	200	430	64	44	449	178	29	6	36	172	6	193				
Pedestrians																
Lane Width (ft)																
Walking Speed (ft/s)																
Percent Blockage																
Right turn flare (veh)																
Median type	None					None										
Median storage (veh)																
Upstream signal (ft)	155					765										
pX, platoon unblocked				0.99			0.99			0.99			0.99			
vC, conflicting volume	627			494			1372			1578			247			
vC1, stage 1 conf vol																
vC2, stage 2 conf vol																
vCu, unblocked vol	627			480			1362			1570			232			
tC, single (s)	4.1			4.1			7.5			6.5			6.9			
tC, 2 stage (s)																
tF (s)	2.2			2.2			3.5			4.0			3.3			
p0 queue free %	79			96			51			93			95			
cM capacity (veh/h)	951			1072			59			83			766			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1								
Volume Total	200	287	208	44	299	327	70	371								
Volume Left	200	0	0	44	0	0	29	172								
Volume Right	0	0	64	0	0	178	36	193								
cSH	951	1700	1700	1072	1700	1700	116	167								
Volume to Capacity	0.21	0.17	0.12	0.04	0.18	0.19	0.60	2.23								
Queue Length 95th (ft)	20	0	0	3	0	0	75	754								
Control Delay (s)	9.8	0.0	0.0	8.5	0.0	0.0	74.8	616.0								
Lane LOS	A			A			F	F								
Approach Delay (s)	2.8			0.6			74.8	616.0								
Approach LOS							F	F								
Intersection Summary																
Average Delay	130.7															
Intersection Capacity Utilization	62.4%					ICU Level of Service					B					
Analysis Period (min)	15															

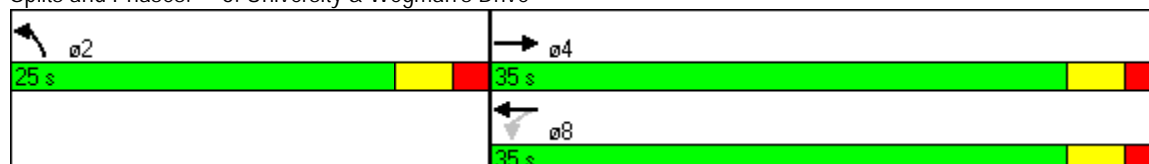


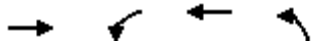
Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↻	↻	↻	↻
Volume (vph)	440	59	524	102
Turn Type	Perm			
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	3.0	3.0	3.0	3.0
Minimum Split (s)	8.0	8.0	8.0	8.0
Total Split (s)	35.0	35.0	35.0	25.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	Min
Act Effect Green (s)	40.5	40.5	40.5	11.5
Actuated g/C Ratio	0.68	0.68	0.68	0.19
v/c Ratio	0.46	0.14	0.46	0.55
Control Delay	6.6	4.2	7.8	18.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.6	4.2	7.8	18.0
LOS	A	A	A	B
Approach Delay	6.6		7.4	18.0
Approach LOS	A		A	B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 8.7
 Intersection Capacity Utilization 53.6%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: University & Wegman's Drive





Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	591	66	582	219
v/c Ratio	0.46	0.14	0.46	0.55
Control Delay	6.6	4.2	7.8	18.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.6	4.2	7.8	18.0
Queue Length 50th (ft)	75	10	241	42
Queue Length 95th (ft)	178	m21	350	88
Internal Link Dist (ft)	77		91	37
Turn Bay Length (ft)		100		
Base Capacity (vph)	1279	480	1259	651
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.14	0.46	0.34

Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	
Volume (vph)	440	92	59	524	102	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.93	
Flt Protected	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1880		1770	1863	1697	
Flt Permitted	1.00		0.38	1.00	0.97	
Satd. Flow (perm)	1880		710	1863	1697	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	489	102	66	582	113	106
RTOR Reduction (vph)	8	0	0	0	70	0
Lane Group Flow (vph)	583	0	66	582	149	0
Turn Type			Perm			
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	39.5		39.5	39.5	10.5	
Effective Green, g (s)	40.5		40.5	40.5	11.5	
Actuated g/C Ratio	0.68		0.68	0.68	0.19	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1269		479	1258	325	
v/s Ratio Prot	0.31			c0.31	c0.09	
v/s Ratio Perm			0.09			
v/c Ratio	0.46		0.14	0.46	0.46	
Uniform Delay, d1	4.6		3.5	4.6	21.5	
Progression Factor	1.00		0.82	1.29	1.00	
Incremental Delay, d2	1.2		0.4	0.9	1.0	
Delay (s)	5.8		3.3	6.8	22.5	
Level of Service	A		A	A	C	
Approach Delay (s)	5.8			6.5	22.5	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
1: East & Probert

Saturday Midday Peak_Signal at Probert_35%
Timings



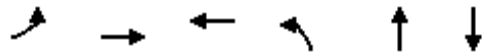
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Volume (vph)	10	725	586	18	4	5	0
Turn Type	pm+pt			Perm		Perm	
Protected Phases	2	1 2	1		3		3
Permitted Phases	1 2			3		3	
Detector Phase	2	1 2	1	3	3	3	3
Switch Phase							
Minimum Initial (s)	3.0		3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	8.5		21.5	24.5	24.5	24.5	24.5
Total Split (s)	13.0	35.0	22.0	25.0	25.0	25.0	25.0
Total Split (%)	21.7%	58.3%	36.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Recall Mode	Min		C-Max	None	None	None	None
Act Effct Green (s)	44.1	47.7	34.5	9.1	9.1		9.1
Actuated g/C Ratio	0.74	0.80	0.58	0.15	0.15		0.15
v/c Ratio	0.02	0.28	0.35	0.10	0.12		0.24
Control Delay	2.5	2.7	6.5	22.3	11.5		7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	2.5	2.7	6.5	22.3	11.5		7.6
LOS	A	A	A	C	B		A
Approach Delay		2.7	6.5		15.7		7.6
Approach LOS		A	A		B		A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 7 (12%), Referenced to phase 1:EBWB, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.35
 Intersection Signal Delay: 5.0
 Intersection Capacity Utilization 35.5%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 1: East & Probert





Lane Group	EBL	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	11	780	690	20	31	82
v/c Ratio	0.02	0.28	0.35	0.10	0.12	0.24
Control Delay	2.5	2.7	6.5	22.3	11.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	2.7	6.5	22.3	11.5	7.6
Queue Length 50th (ft)	1	32	73	6	1	5
Queue Length 95th (ft)	4	59	73	22	20	24
Internal Link Dist (ft)		374	70		232	307
Turn Bay Length (ft)	75					
Base Capacity (vph)	649	2734	1979	484	582	703
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.29	0.35	0.04	0.05	0.12

Intersection Summary

Wegmans TIS
1: East & Probert

Saturday Midday Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑		↘	↘			↕	
Volume (vph)	10	725	0	0	586	21	18	4	24	5	0	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	8	15	8
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0			3.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	
Frt	1.00	1.00			0.99		1.00	0.87			0.87	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1728	3455			3438		1685	1542			1822	
Flt Permitted	0.35	1.00			1.00		0.75	1.00			0.98	
Satd. Flow (perm)	629	3455			3438		1322	1542			1784	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	11	780	0	0	666	24	20	4	27	6	0	76
RTOR Reduction (vph)	0	0	0	0	3	0	0	23	0	0	66	0
Lane Group Flow (vph)	11	780	0	0	687	0	20	8	0	0	16	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt						Perm			Perm		
Protected Phases	2	1 2			1			3			3	
Permitted Phases	1 2						3			3		
Actuated Green, G (s)	38.0	43.5			30.9		5.5	5.5			5.5	
Effective Green, g (s)	43.0	46.0			33.4		8.0	8.0			8.0	
Actuated g/C Ratio	0.72	0.77			0.56		0.13	0.13			0.13	
Clearance Time (s)	5.5				5.5		5.5	5.5			5.5	
Vehicle Extension (s)	3.0				3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	627	2649			1914		176	206			238	
v/s Ratio Prot	0.00	c0.23			c0.20			0.00				
v/s Ratio Perm	0.01						c0.02				0.01	
v/c Ratio	0.02	0.29			0.36		0.11	0.04			0.07	
Uniform Delay, d1	3.6	2.1			7.4		22.9	22.6			22.7	
Progression Factor	1.00	1.00			0.79		1.00	1.00			1.06	
Incremental Delay, d2	0.0	0.1			0.5		0.3	0.1			0.1	
Delay (s)	3.6	2.2			6.3		23.2	22.7			24.3	
Level of Service	A	A			A		C	C			C	
Approach Delay (s)		2.2			6.3			22.9			24.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

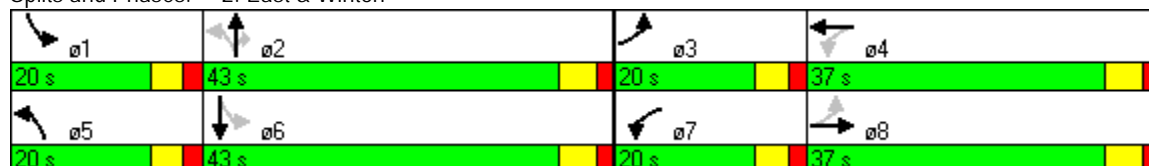


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	126	390	117	218	230	356	133	134	424
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min	None	Min	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	44.4	30.7	45.6	31.3	65.0	50.3	50.3	60.9	48.2
Actuated g/C Ratio	0.37	0.26	0.38	0.26	0.54	0.42	0.42	0.51	0.40
v/c Ratio	0.36	0.73	0.51	0.39	0.56	0.26	0.18	0.28	0.47
Control Delay	24.4	40.9	28.9	33.8	20.6	25.1	5.0	10.9	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	24.4	40.9	28.9	33.8	20.6	25.1	5.0	10.9	17.2
LOS	C	D	C	C	C	C	A	B	B
Approach Delay		38.0		32.3		20.0			16.0
Approach LOS		D		C		B			B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 48 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 26.1
 Intersection LOS: C
 Intersection Capacity Utilization 65.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton






























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	145	659	144	349	245	379	141	152	629
v/c Ratio	0.36	0.73	0.51	0.39	0.56	0.26	0.18	0.28	0.47
Control Delay	24.4	40.9	28.9	33.8	20.6	25.1	5.0	10.9	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	24.4	40.9	28.9	33.8	20.6	25.1	5.0	10.9	17.2
Queue Length 50th (ft)	71	219	71	104	97	100	0	41	96
Queue Length 95th (ft)	105	254	96	128	162	156	44	63	119
Internal Link Dist (ft)		693		432		405			256
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	441	991	319	975	464	1478	789	595	1334
Starvation Cap Reductn	0	0	0	0	0	0	0	0	215
Spillback Cap Reductn	0	0	0	0	0	15	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.66	0.45	0.36	0.53	0.26	0.18	0.26	0.56

Intersection Summary

Wegmans TIS
2: East & Winton

Saturday Midday Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	126	390	184	117	218	65	230	356	133	134	424	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3322		1745	3319		1762	3525	1686	1727	3268	
Flt Permitted	0.43	1.00		0.15	1.00		0.29	1.00	1.00	0.49	1.00	
Satd. Flow (perm)	783	3322		284	3319		531	3525	1686	886	3268	
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.94	0.94	0.94	0.88	0.88	0.88
Adj. Flow (vph)	145	448	211	144	269	80	245	379	141	152	482	147
RTOR Reduction (vph)	0	48	0	0	24	0	0	0	82	0	22	0
Lane Group Flow (vph)	145	611	0	144	325	0	245	379	59	152	607	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%	2%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	38.9	27.7		40.1	28.3		59.6	47.3	47.3	55.4	45.2	
Effective Green, g (s)	43.9	30.7		45.1	31.3		64.6	50.3	50.3	60.4	48.2	
Actuated g/C Ratio	0.37	0.26		0.38	0.26		0.54	0.42	0.42	0.50	0.40	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	396	850		281	866		438	1478	707	535	1313	
v/s Ratio Prot	0.04	c0.18		c0.06	0.10		c0.07	0.11		0.03	0.19	
v/s Ratio Perm	0.09			0.13			c0.23		0.04	0.11		
v/c Ratio	0.37	0.72		0.51	0.38		0.56	0.26	0.08	0.28	0.46	
Uniform Delay, d1	26.5	40.7		27.3	36.3		16.3	22.7	21.0	16.3	26.4	
Progression Factor	0.97	0.98		1.00	1.00		1.00	1.00	1.00	0.64	0.59	
Incremental Delay, d2	0.2	3.1		0.7	0.4		0.9	0.4	0.2	0.1	1.1	
Delay (s)	26.0	43.1		28.0	36.7		17.2	23.1	21.2	10.6	16.7	
Level of Service	C	D		C	D		B	C	C	B	B	
Approach Delay (s)		40.0			34.2			20.9			15.5	
Approach LOS		D			C			C			B	

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
3: University & Winton

Saturday Midday Peak_Signal at Probert_35%
Timings

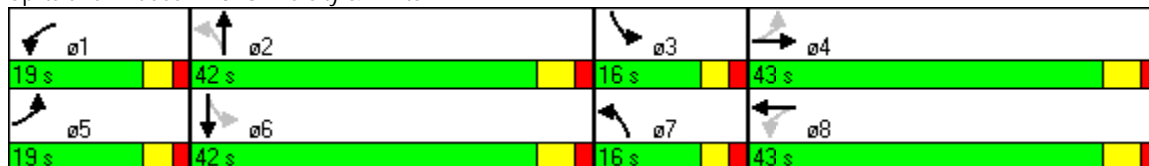


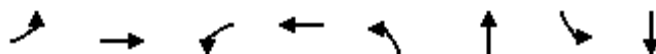
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↙	↕	↙	↕	↙	↕	↙	↕
Volume (vph)	167	240	94	238	66	520	148	504
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.5	4.0	6.5	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	52.4	44.7	52.4	44.7	55.6	47.3	55.6	47.3
Actuated g/C Ratio	0.44	0.37	0.44	0.37	0.46	0.39	0.46	0.39
v/c Ratio	0.52	0.35	0.27	0.31	0.23	0.44	0.45	0.52
Control Delay	28.4	23.1	23.3	22.8	14.5	24.7	27.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	28.4	23.1	23.3	22.8	14.5	25.2	27.2	28.1
LOS	C	C	C	C	B	C	C	C
Approach Delay		24.9		22.9		24.0		27.9
Approach LOS		C		C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 25.2
 Intersection LOS: C
 Intersection Capacity Utilization 55.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	217	439	104	387	74	600	154	673
v/c Ratio	0.52	0.35	0.27	0.31	0.23	0.44	0.45	0.52
Control Delay	28.4	23.1	23.3	22.8	14.5	24.7	27.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	28.4	23.1	23.3	22.8	14.5	25.2	27.2	28.1
Queue Length 50th (ft)	98	105	44	87	19	138	66	194
Queue Length 95th (ft)	125	121	82	137	29	133	104	263
Internal Link Dist (ft)		583		787		256		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	536	1266	500	1265	388	1372	410	1306
Starvation Cap Reductn	0	0	0	0	0	366	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.35	0.21	0.31	0.19	0.60	0.38	0.52

Intersection Summary

Wegmans TIS
3: University & Winton

Saturday Midday Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	167	240	98	94	238	111	66	520	14	148	504	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.95		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3305		1711	3282		1762	3477		1727	3264	
Flt Permitted	0.44	1.00		0.41	1.00		0.27	1.00		0.31	1.00	
Satd. Flow (perm)	815	3305		730	3282		499	3477		565	3264	
Peak-hour factor, PHF	0.77	0.77	0.77	0.90	0.90	0.90	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	217	312	127	104	264	123	74	584	16	154	525	148
RTOR Reduction (vph)	0	35	0	0	43	0	0	1	0	0	19	0
Lane Group Flow (vph)	217	404	0	104	344	0	74	599	0	154	654	0
Heavy Vehicles (%)	0%	1%	1%	2%	0%	4%	0%	1%	0%	0%	3%	0%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.4	41.7		47.4	41.7		50.6	44.3		50.6	44.3	
Effective Green, g (s)	51.4	44.7		51.4	44.7		54.6	47.3		54.6	47.3	
Actuated g/C Ratio	0.43	0.37		0.43	0.37		0.46	0.39		0.46	0.39	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	409	1231		376	1223		314	1371		337	1287	
v/s Ratio Prot	c0.03	0.12		0.02	0.10		0.02	0.17		c0.03	c0.20	
v/s Ratio Perm	c0.19			0.10			0.09			0.18		
v/c Ratio	0.53	0.33		0.28	0.28		0.24	0.44		0.46	0.51	
Uniform Delay, d1	30.4	26.9		27.7	26.4		29.8	26.6		31.5	27.5	
Progression Factor	0.95	0.93		1.00	1.00		0.66	0.88		1.00	1.00	
Incremental Delay, d2	0.6	0.7		0.1	0.6		0.1	1.0		0.4	1.4	
Delay (s)	29.4	25.8		27.9	27.0		19.9	24.4		31.9	29.0	
Level of Service	C	C		C	C		B	C		C	C	
Approach Delay (s)		27.0			27.2			23.9			29.5	
Approach LOS		C			C			C			C	

















Intersection Summary

HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



















Wegmans TIS
4: University & Probert

Saturday Midday Peak_Signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	377	14	45	320	0	22	0	75	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.87	0.87	0.87	0.25	0.25	0.25
Hourly flow rate (vph)	0	454	17	47	337	0	25	0	86	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					140							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	337			471			894	894	463	980	903	337
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268			471			858	858	463	950	867	268
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			90	100	86	100	100	100
cM capacity (veh/h)	1234			1101			255	268	601	189	265	732
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	471	384	111	0								
Volume Left	0	47	25	0								
Volume Right	17	0	86	0								
cSH	1234	1101	460	1700								
Volume to Capacity	0.00	0.04	0.24	0.00								
Queue Length 95th (ft)	0	3	24	0								
Control Delay (s)	0.0	1.4	15.3	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	1.4	15.3	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			55.9%		ICU Level of Service				B			
Analysis Period (min)			15									

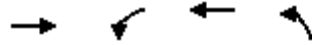
Wegmans TIS
5: East & Wegmans Drive

Saturday Midday Peak_Signal at Probert_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	163	591	34	20	384	151	27	5	36	140	5	132
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	181	657	38	22	427	168	30	6	40	156	6	147
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		150			773							
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	0.96
vC, conflicting volume	594			694			1445	1677	347	1288	1612	297
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	594			593			1377	1618	230	1213	1551	297
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			98			53	93	95	0	94	79
cM capacity (veh/h)	978			938			63	78	739	100	86	699
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	181	438	257	22	284	310	76	308				
Volume Left	181	0	0	22	0	0	30	156				
Volume Right	0	0	38	0	0	168	40	147				
cSH	978	1700	1700	938	1700	1700	126	168				
Volume to Capacity	0.19	0.26	0.15	0.02	0.17	0.18	0.60	1.84				
Queue Length 95th (ft)	17	0	0	2	0	0	76	566				
Control Delay (s)	9.5	0.0	0.0	8.9	0.0	0.0	69.3	445.4				
Lane LOS	A			A			F	F				
Approach Delay (s)	2.0			0.3			69.3	445.4				
Approach LOS							F	F				
Intersection Summary												
Average Delay				76.9								
Intersection Capacity Utilization			57.2%		ICU Level of Service			B				
Analysis Period (min)			15									

Wegmans TIS
6: University & Wegmans Drive

Saturday Midday Peak_Signal at Probert_35%
Timings

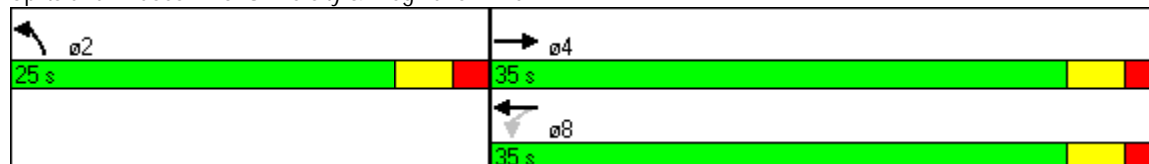


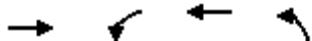
Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↻	↻	↻	↻
Volume (vph)	350	124	268	97
Turn Type	Perm			
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	3.0	3.0	3.0	3.0
Minimum Split (s)	15.0	15.0	15.0	15.0
Total Split (s)	35.0	35.0	35.0	25.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	Min
Act Effct Green (s)	40.4	40.4	40.4	11.6
Actuated g/C Ratio	0.67	0.67	0.67	0.19
v/c Ratio	0.39	0.25	0.24	0.59
Control Delay	5.9	3.1	2.4	16.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.9	3.1	2.4	16.7
LOS	A	A	A	B
Approach Delay	5.9		2.6	16.7
Approach LOS	A		A	B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 7.0
 Intersection LOS: A
 Intersection Capacity Utilization 54.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: University & Wegmans Drive





Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	491	138	298	250
v/c Ratio	0.39	0.25	0.24	0.59
Control Delay	5.9	3.1	2.4	16.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.9	3.1	2.4	16.7
Queue Length 50th (ft)	57	8	17	41
Queue Length 95th (ft)	139	16	29	89
Internal Link Dist (ft)	60		30	40
Turn Bay Length (ft)		100		
Base Capacity (vph)	1270	557	1254	668
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.25	0.24	0.37

Intersection Summary

Wegmans TIS
6: University & Wegmans Drive

Saturday Midday Peak_Signal at Probert_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	
Volume (vph)	350	92	124	268	97	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.92	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	1871		1770	1863	1684	
Flt Permitted	1.00		0.44	1.00	0.98	
Satd. Flow (perm)	1871		827	1863	1684	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	389	102	138	298	108	142
RTOR Reduction (vph)	11	0	0	0	98	0
Lane Group Flow (vph)	480	0	138	298	152	0
Turn Type			Perm			
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	39.4		39.4	39.4	10.6	
Effective Green, g (s)	40.4		40.4	40.4	11.6	
Actuated g/C Ratio	0.67		0.67	0.67	0.19	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1260		557	1254	326	
v/s Ratio Prot	c0.26			0.16	c0.09	
v/s Ratio Perm			0.17			
v/c Ratio	0.38		0.25	0.24	0.47	
Uniform Delay, d1	4.3		3.8	3.8	21.5	
Progression Factor	1.00		0.43	0.44	1.00	
Incremental Delay, d2	0.9		1.0	0.4	1.1	
Delay (s)	5.2		2.7	2.1	22.5	
Level of Service	A		A	A	C	
Approach Delay (s)	5.2			2.3	22.5	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

BUILD (2012)





















(Signal at Wegmans Driveway)

F|R|A

A **TYLIN** INTERNATIONAL COMPANY

Wegmans TIS
1: East & Probert

Weekday AM Peak_Signal at Wegmans_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Volume (veh/h)	41	563	0	0	549	8	18	11	63	24	0	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85
Hourly flow rate (vph)	47	647	0	0	610	9	20	12	70	28	0	82
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					150							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	619			647			1129	1360	324	1108	1356	309
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	451			647			997	1245	324	975	1240	120
tC, single (s)	4.3			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			88	92	90	82	100	90
cM capacity (veh/h)	982			948			164	156	669	158	157	855
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1					
Volume Total	263	431	407	212	20	82	111					
Volume Left	47	0	0	0	20	0	28					
Volume Right	0	0	0	9	0	70	82					
cSH	982	1700	1700	1700	164	450	402					
Volume to Capacity	0.05	0.25	0.24	0.12	0.12	0.18	0.27					
Queue Length 95th (ft)	4	0	0	0	10	17	28					
Control Delay (s)	2.0	0.0	0.0	0.0	30.0	14.8	17.3					
Lane LOS	A				D	B	C					
Approach Delay (s)	0.8		0.0		17.8		17.3					
Approach LOS					C		C					
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			54.5%		ICU Level of Service		A					
Analysis Period (min)			15									

Wegmans TIS
2: East & Winton

Weekday AM Peak_Signal at Wegmans_35%
Timings

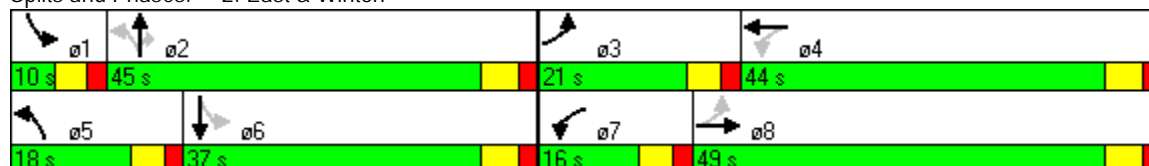


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	63	324	198	501	190	496	66	85	880
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	21.0	49.0	16.0	44.0	18.0	45.0	45.0	10.0	37.0
Total Split (%)	17.5%	40.8%	13.3%	36.7%	15.0%	37.5%	37.5%	8.3%	30.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min	None	Min	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	42.5	31.7	46.4	36.1	66.2	52.7	52.7	58.1	47.5
Actuated g/C Ratio	0.35	0.26	0.39	0.30	0.55	0.44	0.44	0.48	0.40
v/c Ratio	0.28	0.72	0.81	0.56	0.72	0.37	0.10	0.23	0.92
Control Delay	30.2	45.4	49.2	37.5	39.9	24.9	6.1	13.0	36.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Total Delay	30.2	45.4	49.2	37.5	39.9	24.9	6.1	13.0	37.9
LOS	C	D	D	D	D	C	A	B	D
Approach Delay		43.7		40.7		27.0			35.9
Approach LOS		D		D		C			D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 45 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 36.6
 Intersection LOS: D
 Intersection Capacity Utilization 78.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton






























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	81	677	218	576	209	545	73	101	1188
v/c Ratio	0.28	0.72	0.81	0.56	0.72	0.37	0.10	0.23	0.92
Control Delay	30.2	45.4	49.2	37.5	39.9	24.9	6.1	13.0	36.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Total Delay	30.2	45.4	49.2	37.5	39.9	24.9	6.1	13.0	37.9
Queue Length 50th (ft)	47	238	115	202	103	145	0	26	223
Queue Length 95th (ft)	73	249	#205	243	192	223	32	56	#655
Internal Link Dist (ft)		683		432		405			258
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	386	1309	268	1170	308	1488	767	430	1292
Starvation Cap Reductn	0	0	0	0	0	0	0	0	28
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.52	0.81	0.49	0.68	0.37	0.10	0.23	0.94

Intersection Summary

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

Wegmans TIS
2: East & Winton

Weekday AM Peak_Signal at Wegmans_35%
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	63	324	204	198	501	23	190	496	66	85	880	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.94		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3196		1745	3418		1728	3389	1652	1677	3250	
Flt Permitted	0.29	1.00		0.15	1.00		0.08	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	524	3196		283	3418		149	3389	1652	711	3250	
Peak-hour factor, PHF	0.78	0.78	0.78	0.91	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84
Adj. Flow (vph)	81	415	262	218	551	25	209	545	73	101	1048	140
RTOR Reduction (vph)	0	99	0	0	3	0	0	0	42	0	7	0
Lane Group Flow (vph)	81	578	0	218	573	0	209	545	31	101	1181	0
Heavy Vehicles (%)	2%	4%	1%	0%	1%	11%	2%	4%	2%	3%	3%	15%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	37.0	29.8		43.6	33.1		62.0	48.6	48.6	51.4	43.3	
Effective Green, g (s)	42.0	32.8		48.3	36.1		64.7	51.6	51.6	56.4	46.3	
Actuated g/C Ratio	0.35	0.27		0.40	0.30		0.54	0.43	0.43	0.47	0.39	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	279	874		272	1028		290	1457	710	420	1254	
v/s Ratio Prot	0.02	0.18		c0.09	0.17		c0.10	0.16		0.02	c0.36	
v/s Ratio Perm	0.08			c0.24			0.29		0.02	0.09		
v/c Ratio	0.29	0.66		0.80	0.56		0.72	0.37	0.04	0.24	0.94	
Uniform Delay, d1	27.1	38.7		27.2	35.2		30.5	23.2	19.9	18.0	35.5	
Progression Factor	1.30	1.32		1.00	1.00		1.00	1.00	1.00	0.79	0.64	
Incremental Delay, d2	0.2	2.0		14.7	0.8		7.3	0.7	0.1	0.1	14.1	
Delay (s)	35.5	53.0		41.9	36.1		37.7	24.0	20.0	14.4	36.8	
Level of Service	D	D		D	D		D	C	B	B	D	
Approach Delay (s)		51.1			37.7			27.1			35.0	
Approach LOS		D			D			C			D	

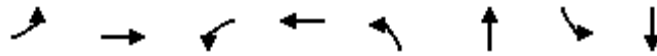
Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
3: University & Winton

Weekday AM Peak_Signal at Wegmans_35%
Timings

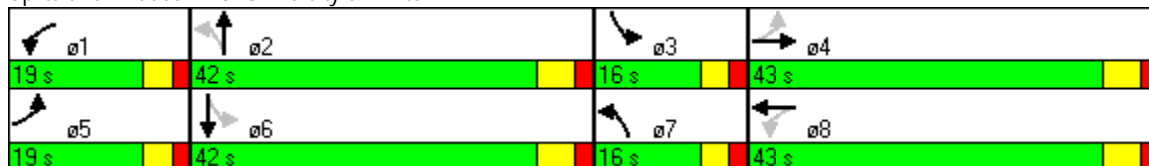


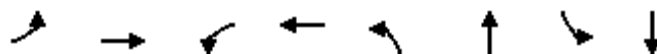
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	40	193	68	490	153	448	166	656
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	48.7	41.7	48.7	41.7	59.3	48.0	59.3	48.0
Actuated g/C Ratio	0.41	0.35	0.41	0.35	0.49	0.40	0.49	0.40
v/c Ratio	0.26	0.29	0.22	0.72	0.59	0.41	0.48	0.62
Control Delay	29.9	23.9	24.3	37.1	29.9	14.4	25.7	31.2
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.4
Total Delay	29.9	23.9	24.4	37.1	29.9	14.8	25.7	31.5
LOS	C	C	C	D	C	B	C	C
Approach Delay		24.7		35.9		18.6		30.4
Approach LOS		C		D		B		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 28.6
 Intersection LOS: C
 Intersection Capacity Utilization 63.4%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	329	88	841	184	541	189	800
v/c Ratio	0.26	0.29	0.22	0.72	0.59	0.41	0.48	0.62
Control Delay	29.9	23.9	24.3	37.1	29.9	14.4	25.7	31.2
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.4
Total Delay	29.9	23.9	24.4	37.1	29.9	14.8	25.7	31.5
Queue Length 50th (ft)	23	83	41	291	85	165	74	253
Queue Length 95th (ft)	42	103	63	294	106	49	117	316
Internal Link Dist (ft)		582		787		258		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	310	1121	524	1162	338	1330	416	1286
Starvation Cap Reductn	0	0	0	0	0	351	0	0
Spillback Cap Reductn	0	69	111	0	0	0	0	130
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.31	0.21	0.72	0.54	0.55	0.45	0.69

Intersection Summary

Wegmans TIS
3: University & Winton

Weekday AM Peak_Signal at Wegmans_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	193	74	68	490	158	153	448	1	166	656	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1646	3130		1694	3272		1728	3324		1630	3204	
Flt Permitted	0.15	1.00		0.48	1.00		0.21	1.00		0.35	1.00	
Satd. Flow (perm)	259	3130		857	3272		379	3324		599	3204	
Peak-hour factor, PHF	0.81	0.81	0.81	0.77	0.77	0.77	0.83	0.83	0.83	0.88	0.88	0.88
Adj. Flow (vph)	49	238	91	88	636	205	184	540	1	189	745	55
RTOR Reduction (vph)	0	33	0	0	25	0	0	0	0	0	4	0
Lane Group Flow (vph)	49	296	0	88	816	0	184	541	0	189	796	0
Heavy Vehicles (%)	6%	3%	17%	3%	3%	2%	2%	6%	0%	6%	7%	3%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.7	38.7		43.7	38.7		54.3	45.0		54.3	45.0	
Effective Green, g (s)	47.7	41.7		47.7	41.7		58.3	48.0		58.3	48.0	
Actuated g/C Ratio	0.40	0.35		0.40	0.35		0.49	0.40		0.49	0.40	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	184	1088		389	1137		311	1330		388	1282	
v/s Ratio Prot	c0.02	0.09		0.01	c0.25		c0.06	0.16		0.05	c0.25	
v/s Ratio Perm	0.09			0.08			0.23			0.19		
v/c Ratio	0.27	0.27		0.23	0.72		0.59	0.41		0.49	0.62	
Uniform Delay, d1	40.9	28.2		27.6	34.0		36.7	25.8		28.8	28.7	
Progression Factor	0.94	0.95		1.00	1.00		0.78	0.52		1.00	1.00	
Incremental Delay, d2	0.3	0.6		0.1	3.9		1.9	0.9		0.4	2.3	
Delay (s)	38.8	27.4		27.7	37.9		30.7	14.2		29.1	31.0	
Level of Service	D	C		C	D		C	B		C	C	
Approach Delay (s)		28.8			37.0			18.4			30.6	
Approach LOS		C			D			B			C	

















Intersection Summary

HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

Weekday AM Peak_Signal at Wegmans_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	313	14	31	626	0	10	0	20	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.65	0.65	0.65	0.25	0.25	0.25
Hourly flow rate (vph)	0	377	17	36	736	0	15	0	31	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					140							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	736			394			1195	1195	386	1226	1203	736
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	581			394			1133	1133	386	1170	1143	581
tC, single (s)	5.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	3.1			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	100			97			90	100	95	100	100	100
cM capacity (veh/h)	538			1176			147	165	618	132	162	430
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	394	773	46	0								
Volume Left	0	36	15	0								
Volume Right	17	0	31	0								
cSH	538	1176	299	1700								
Volume to Capacity	0.00	0.03	0.15	0.00								
Queue Length 95th (ft)	0	2	13	0								
Control Delay (s)	0.0	0.8	19.2	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	0.8	19.2	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			65.3%		ICU Level of Service				C			
Analysis Period (min)			15									

Wegmans TIS
5: East & Wegman's Drive

Weekday AM Peak_Signal at Wegmans_35%
Timings



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↕	↖	↕		↕		↕	↗
Volume (vph)	73	578	17	493	18	3	60	3	64
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	27.5	27.5	21.5	21.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-0.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Total Lost Time (s)	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	78.0	80.0	80.0	80.0		34.0		34.0	34.0
Actuated g/C Ratio	0.65	0.67	0.67	0.67		0.28		0.28	0.28
v/c Ratio	0.18	0.29	0.04	0.27		0.11		0.18	0.14
Control Delay	9.5	8.6	5.1	9.4		18.3		34.1	8.0
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	9.5	8.6	5.1	9.4		18.3		34.1	8.0
LOS	A	A	A	A		B		C	A
Approach Delay		8.7		9.3		18.3		21.0	
Approach LOS		A		A		B		C	

Intersection Summary

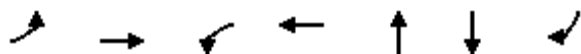
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 10 (8%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.29
 Intersection Signal Delay: 10.3
 Intersection Capacity Utilization 39.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 5: East & Wegman's Drive



Wegmans TIS
5: East & Wegman's Drive

Weekday AM Peak_Signal at Wegmans_35%
Queues



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	81	658	19	618	51	70	71
v/c Ratio	0.18	0.29	0.04	0.27	0.11	0.18	0.14
Control Delay	9.5	8.6	5.1	9.4	18.3	34.1	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	8.6	5.1	9.4	18.3	34.1	8.0
Queue Length 50th (ft)	23	101	6	153	13	41	0
Queue Length 95th (ft)	46	129	m8	m180	44	81	35
Internal Link Dist (ft)		70		683	43	60	
Turn Bay Length (ft)	140		150				
Base Capacity (vph)	453	2273	443	2250	462	390	499
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.29	0.04	0.27	0.11	0.18	0.14

Intersection Summary

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

Wegmans TIS
5: East & Wegman's Drive

Weekday AM Peak_Signal at Wegmans_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	578	14	17	493	63	18	3	25	60	3	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	12	10	10	12	12
Total Lost time (s)	5.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1711	3409		1711	3363			1692			1778	1583
Flt Permitted	0.39	1.00		0.37	1.00			0.90			0.74	1.00
Satd. Flow (perm)	696	3409		664	3363			1557			1376	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	81	642	16	19	548	70	20	3	28	67	3	71
RTOR Reduction (vph)	0	1	0	0	8	0	0	20	0	0	0	51
Lane Group Flow (vph)	81	657	0	19	610	0	0	31	0	0	70	20
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	77.5	77.5		77.5	77.5			31.5			31.5	31.5
Effective Green, g (s)	78.0	80.0		80.0	80.0			34.0			34.0	34.0
Actuated g/C Ratio	0.65	0.67		0.67	0.67			0.28			0.28	0.28
Clearance Time (s)	5.5	5.5		5.5	5.5			5.5			5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	452	2273		443	2242			441			390	449
v/s Ratio Prot		c0.19			0.18							
v/s Ratio Perm	0.12			0.03				0.02			c0.05	0.01
v/c Ratio	0.18	0.29		0.04	0.27			0.07			0.18	0.04
Uniform Delay, d1	8.3	8.3		6.9	8.1			31.4			32.5	31.2
Progression Factor	1.00	1.00		0.71	1.16			1.00			1.00	1.00
Incremental Delay, d2	0.9	0.3		0.1	0.2			0.3			1.0	0.2
Delay (s)	9.2	8.6		5.0	9.7			31.7			33.5	31.4
Level of Service	A	A		A	A			C			C	C
Approach Delay (s)		8.6			9.6			31.7			32.4	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
6: University & Wegman's Drive

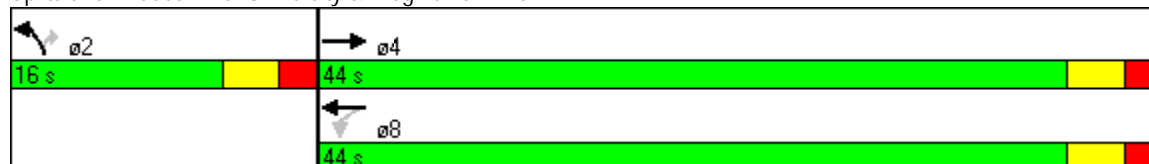
Weekday AM Peak_Signal at Wegmans_35%
Timings

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↗	↙	↗	↙	↗
Volume (vph)	280	69	615	42	53
Turn Type		Perm			Perm
Protected Phases	4		8	2	
Permitted Phases		8			2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0
Total Split (s)	44.0	44.0	44.0	16.0	16.0
Total Split (%)	73.3%	73.3%	73.3%	26.7%	26.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	43.9	43.9	43.9	8.1	8.1
Actuated g/C Ratio	0.73	0.73	0.73	0.14	0.14
v/c Ratio	0.27	0.10	0.50	0.20	0.22
Control Delay	3.2	1.8	3.3	24.4	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	1.8	3.3	24.4	9.4
LOS	A	A	A	C	A
Approach Delay	3.2		3.1	16.1	
Approach LOS	A		A	B	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.50
 Intersection Signal Delay: 4.2
 Intersection LOS: A
 Intersection Capacity Utilization 42.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: University & Wegman's Drive





Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	370	77	683	47	59
v/c Ratio	0.27	0.10	0.50	0.20	0.22
Control Delay	3.2	1.8	3.3	24.4	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	1.8	3.3	24.4	9.4
Queue Length 50th (ft)	29	3	30	15	0
Queue Length 95th (ft)	61	m11	82	40	26
Internal Link Dist (ft)	60		30	47	
Turn Bay Length (ft)		100			
Base Capacity (vph)	1385	734	1362	354	364
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.10	0.50	0.13	0.16

Intersection Summary

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

Wegmans TIS
6: University & Wegman's Drive

Weekday AM Peak_Signal at Wegmans_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Volume (vph)	280	53	69	615	42	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1883		1770	1863	1770	1583
Flt Permitted	1.00		0.54	1.00	0.95	1.00
Satd. Flow (perm)	1883		1004	1863	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	311	59	77	683	47	59
RTOR Reduction (vph)	9	0	0	0	0	51
Lane Group Flow (vph)	361	0	77	683	47	8
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	42.9		42.9	42.9	7.1	7.1
Effective Green, g (s)	43.9		43.9	43.9	8.1	8.1
Actuated g/C Ratio	0.73		0.73	0.73	0.13	0.13
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1378		735	1363	239	214
v/s Ratio Prot	0.19			c0.37	c0.03	
v/s Ratio Perm			0.08			0.01
v/c Ratio	0.26		0.10	0.50	0.20	0.04
Uniform Delay, d1	2.7		2.3	3.4	23.1	22.6
Progression Factor	1.00		0.61	0.62	1.00	1.00
Incremental Delay, d2	0.5		0.2	1.0	0.4	0.1
Delay (s)	3.1		1.6	3.1	23.5	22.6
Level of Service	A		A	A	C	C
Approach Delay (s)	3.1			2.9	23.0	
Approach LOS	A			A	C	























Intersection Summary

HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
1: East & Probert

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (veh/h)	29	771	0	0	527	29	17	9	36	22	0	123
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.78	0.78	0.78	0.94	0.94	0.94
Hourly flow rate (vph)	35	940	0	0	643	35	22	12	46	23	0	131
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (ft)	149											
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	678			940			1463	1689	470	1253	1671	339
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510			940			1352	1594	470	1127	1575	146
tC, single (s)	4.3			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			74	88	91	81	100	84
cM capacity (veh/h)	930			737			84	97	537	122	100	821
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1				
Volume Total	35	470	470	428	250	22	58	154				
Volume Left	35	0	0	0	0	22	0	23				
Volume Right	0	0	0	0	35	0	46	131				
cSH	930	1700	1700	1700	1700	84	281	439				
Volume to Capacity	0.04	0.28	0.28	0.25	0.15	0.26	0.20	0.35				
Queue Length 95th (ft)	3	0	0	0	0	23	19	39				
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	62.1	21.1	17.6				
Lane LOS	A					F	C	C				
Approach Delay (s)	0.3			0.0		32.3		17.6				
Approach LOS						D		C				
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			44.3%	ICU Level of Service		A						
Analysis Period (min)			15									

Wegmans TIS
2: East & Winton

Weekday PM Peak Hour_Signal at Wegman's_35%
Timings

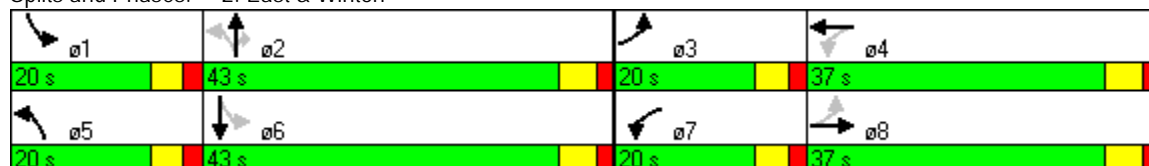


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	124	526	121	294	259	450	134	191	578
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	33.0	33.0	10.0	33.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	50.0	36.6	51.1	37.2	58.7	42.6	42.6	56.2	41.3
Actuated g/C Ratio	0.42	0.30	0.43	0.31	0.49	0.36	0.36	0.47	0.34
v/c Ratio	0.36	0.90	0.56	0.39	0.77	0.39	0.20	0.47	0.65
Control Delay	27.0	55.4	30.9	33.2	34.9	30.7	5.3	15.4	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Total Delay	27.0	55.4	30.9	33.2	34.9	30.7	5.3	15.4	30.3
LOS	C	E	C	C	C	C	A	B	C
Approach Delay		51.6		32.6		28.0			27.0
Approach LOS		D		C		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 35.8
 Intersection LOS: D
 Intersection Capacity Utilization 76.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton




























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	950	149	416	273	474	141	212	758
v/c Ratio	0.36	0.90	0.56	0.39	0.77	0.39	0.20	0.47	0.65
Control Delay	27.0	55.4	30.9	33.2	34.9	30.7	5.3	15.4	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Total Delay	27.0	55.4	30.9	33.2	34.9	30.7	5.3	15.4	30.3
Queue Length 50th (ft)	77	379	68	127	121	145	0	77	287
Queue Length 95th (ft)	117	#443	107	161	#228	197	44	102	286
Internal Link Dist (ft)		694		432		405			258
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	458	1050	307	1054	366	1227	689	484	1158
Starvation Cap Reductn	0	0	0	0	0	0	0	0	208
Spillback Cap Reductn	0	0	0	0	0	62	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.90	0.49	0.39	0.75	0.41	0.20	0.44	0.80

Intersection Summary

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

Wegmans TIS
1: East & Probert

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (veh/h)	29	771	0	0	527	29	17	9	36	22	0	123
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.78	0.78	0.78	0.94	0.94	0.94
Hourly flow rate (vph)	35	940	0	0	643	35	22	12	46	23	0	131
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (ft)	149											
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	678			940			1463	1689	470	1253	1671	339
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	545			940			1375	1614	470	1153	1595	186
tC, single (s)	4.3			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			73	88	91	80	100	83
cM capacity (veh/h)	914			737			81	96	537	118	98	785
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1				
Volume Total	35	470	470	428	250	22	58	154				
Volume Left	35	0	0	0	0	22	0	23				
Volume Right	0	0	0	0	35	0	46	131				
cSH	914	1700	1700	1700	1700	81	279	423				
Volume to Capacity	0.04	0.28	0.28	0.25	0.15	0.27	0.21	0.36				
Queue Length 95th (ft)	3	0	0	0	0	24	19	41				
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	64.7	21.2	18.3				
Lane LOS	A					F	C	C				
Approach Delay (s)	0.3			0.0		33.2		18.3				
Approach LOS						D		C				
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization		44.3%		ICU Level of Service	A							
Analysis Period (min)	15											

Wegmans TIS
2: East & Winton

Weekday PM Peak Hour_Signal at Wegman's_35%
Timings

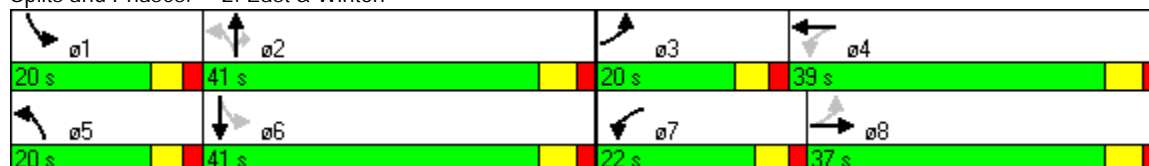


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	124	526	121	294	259	450	134	191	578
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	33.0	33.0	10.0	33.0
Total Split (s)	20.0	37.0	22.0	39.0	20.0	41.0	41.0	20.0	41.0
Total Split (%)	16.7%	30.8%	18.3%	32.5%	16.7%	34.2%	34.2%	16.7%	34.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Ped	None	Ped	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	51.0	37.7	53.3	38.9	57.2	40.9	40.9	54.5	39.6
Actuated g/C Ratio	0.42	0.31	0.44	0.32	0.48	0.34	0.34	0.45	0.33
v/c Ratio	0.35	0.88	0.55	0.38	0.79	0.40	0.21	0.48	0.68
Control Delay	24.6	49.6	28.9	31.6	39.0	32.2	5.6	16.3	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
Total Delay	24.6	49.6	28.9	31.6	39.0	32.2	5.6	16.3	32.0
LOS	C	D	C	C	D	C	A	B	C
Approach Delay		46.2		30.9		30.1			28.6
Approach LOS		D		C		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 34.8
 Intersection LOS: C
 Intersection Capacity Utilization 76.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	148	950	149	416	273	474	141	212	758
v/c Ratio	0.35	0.88	0.55	0.38	0.79	0.40	0.21	0.48	0.68
Control Delay	24.6	49.6	28.9	31.6	39.0	32.2	5.6	16.3	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
Total Delay	24.6	49.6	28.9	31.6	39.0	32.2	5.6	16.3	32.0
Queue Length 50th (ft)	71	331	66	123	126	150	0	79	292
Queue Length 95th (ft)	112	#436	103	156	#249	202	46	105	296
Internal Link Dist (ft)		694		432		405			258
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	474	1080	333	1103	354	1178	668	470	1109
Starvation Cap Reductn	0	0	0	0	0	0	0	0	186
Spillback Cap Reductn	0	0	0	0	0	59	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.88	0.45	0.38	0.77	0.42	0.21	0.45	0.82

Intersection Summary

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

Wegmans TIS
2: East & Winton

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	526	272	121	294	43	259	450	134	191	578	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1728	3267		1745	3372		1745	3455	1686	1727	3327	
Flt Permitted	0.41	1.00		0.10	1.00		0.17	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	750	3267		191	3372		318	3455	1686	686	3327	
Peak-hour factor, PHF	0.84	0.84	0.84	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90
Adj. Flow (vph)	148	626	324	149	363	53	273	474	141	212	642	116
RTOR Reduction (vph)	0	53	0	0	9	0	0	0	93	0	12	0
Lane Group Flow (vph)	148	897	0	149	407	0	273	474	48	212	746	0
Heavy Vehicles (%)	1%	1%	2%	0%	1%	5%	1%	2%	0%	0%	1%	4%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	45.4	34.7		47.8	35.9		51.7	37.9	37.9	49.1	36.6	
Effective Green, g (s)	50.4	37.7		52.8	38.9		56.7	40.9	40.9	54.1	39.6	
Actuated g/C Ratio	0.42	0.31		0.44	0.32		0.47	0.34	0.34	0.45	0.33	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	423	1026		271	1093		344	1178	575	439	1098	
v/s Ratio Prot	0.04	c0.27		c0.07	0.12		c0.11	0.14		0.06	0.22	
v/s Ratio Perm	0.11			0.18			c0.27		0.03	0.16		
v/c Ratio	0.35	0.87		0.55	0.37		0.79	0.40	0.08	0.48	0.68	
Uniform Delay, d1	22.3	38.9		25.1	31.2		23.0	30.2	26.8	21.0	34.7	
Progression Factor	1.17	1.10		1.00	1.00		1.00	1.00	1.00	0.70	0.78	
Incremental Delay, d2	0.2	8.4		1.2	0.3		11.1	1.0	0.3	0.3	3.2	
Delay (s)	26.2	51.1		26.3	31.5		34.1	31.2	27.1	14.9	30.4	
Level of Service	C	D		C	C		C	C	C	B	C	
Approach Delay (s)		47.7			30.1			31.5			27.0	
Approach LOS		D			C			C			C	

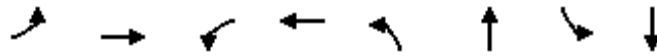
Intersection Summary

HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
3: University & Winton

Weekday PM Peak Hour_Signal at Wegman's_35%
Timings

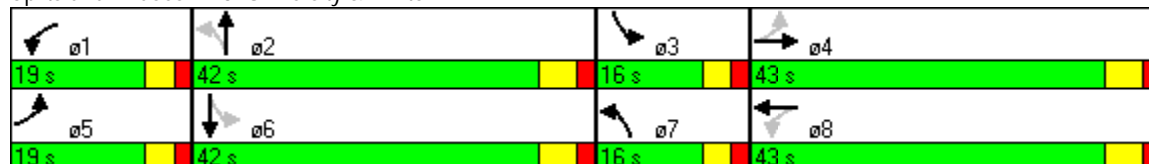


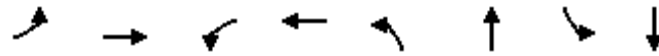
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Volume (vph)	206	493	135	343	77	645	134	382
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	53.3	42.7	53.3	42.7	54.7	44.4	54.7	44.4
Actuated g/C Ratio	0.44	0.36	0.44	0.36	0.46	0.37	0.46	0.37
v/c Ratio	0.59	0.65	0.58	0.38	0.24	0.61	0.54	0.43
Control Delay	31.4	31.5	41.3	29.6	13.6	24.4	38.3	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Total Delay	31.4	31.5	41.3	29.6	13.6	24.7	38.3	29.0
LOS	C	C	D	C	B	C	D	C
Approach Delay		31.5		32.6		23.6		31.0
Approach LOS		C		C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 29.4
 Intersection LOS: C
 Intersection Capacity Utilization 65.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	242	785	159	453	93	791	149	531
v/c Ratio	0.59	0.65	0.58	0.38	0.24	0.61	0.54	0.43
Control Delay	31.4	31.5	41.3	29.6	13.6	24.4	38.3	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Total Delay	31.4	31.5	41.3	29.6	13.6	24.7	38.3	29.0
Queue Length 50th (ft)	109	224	71	133	21	143	63	150
Queue Length 95th (ft)	148	265	102	173	35	162	111	217
Internal Link Dist (ft)		215		787		258		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	486	1203	353	1194	421	1301	313	1238
Starvation Cap Reductn	0	0	0	0	0	137	0	0
Spillback Cap Reductn	0	2	0	0	0	0	0	254
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.65	0.45	0.38	0.22	0.68	0.48	0.54

Intersection Summary

Wegmans TIS
3: University & Winton

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	206	493	174	135	343	42	77	645	12	134	382	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3303		1745	3337		1745	3515		1710	3298	
Flt Permitted	0.39	1.00		0.18	1.00		0.34	1.00		0.19	1.00	
Satd. Flow (perm)	711	3303		338	3337		625	3515		346	3298	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	242	580	205	159	404	49	93	777	14	149	424	107
RTOR Reduction (vph)	0	28	0	0	8	0	0	1	0	0	18	0
Lane Group Flow (vph)	242	757	0	159	445	0	93	790	0	149	513	0
Heavy Vehicles (%)	0%	1%	3%	0%	3%	2%	1%	0%	1%	1%	2%	0%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	48.3	39.7		48.3	39.7		49.7	41.4		49.7	41.4	
Effective Green, g (s)	52.3	42.7		52.3	42.7		53.7	44.4		53.7	44.4	
Actuated g/C Ratio	0.44	0.36		0.44	0.36		0.45	0.37		0.45	0.37	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	401	1175		272	1187		376	1301		272	1220	
v/s Ratio Prot	c0.05	c0.23		0.05	0.13		0.02	c0.22		c0.05	0.16	
v/s Ratio Perm	0.21			0.20			0.09			0.20		
v/c Ratio	0.60	0.64		0.58	0.38		0.25	0.61		0.55	0.42	
Uniform Delay, d1	33.3	32.3		40.3	28.7		27.9	30.7		39.5	28.2	
Progression Factor	0.93	0.92		1.00	1.00		0.59	0.71		1.00	1.00	
Incremental Delay, d2	1.7	2.6		2.1	0.9		0.1	2.1		1.2	1.1	
Delay (s)	32.8	32.4		42.3	29.6		16.7	23.8		40.7	29.3	
Level of Service	C	C		D	C		B	C		D	C	
Approach Delay (s)		32.5			32.9			23.0			31.8	
Approach LOS		C			C			C			C	

















Intersection Summary

HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	567	32	75	374	0	13	0	45	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	637	36	81	402	0	14	0	50	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					139							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	402			673			1218	1218	655	1268	1236	402
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	313			673			1196	1196	655	1250	1215	313
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			90	100	89	100	100	100
cM capacity (veh/h)	1164			927			142	159	470	117	154	677
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	673	483	64	0								
Volume Left	0	81	14	0								
Volume Right	36	0	50	0								
cSH	1164	927	310	1700								
Volume to Capacity	0.00	0.09	0.21	0.00								
Queue Length 95th (ft)	0	7	19	0								
Control Delay (s)	0.0	2.4	19.7	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	2.4	19.7	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			69.1%		ICU Level of Service				C			
Analysis Period (min)			15									

Wegmans TIS
5: East & Wegman's Drive

Weekday PM Peak Hour_Signal at Wegman's_35%
Timings



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↕	↖	↕		↕		↕	↗
Volume (vph)	176	653	40	442	26	3	154	3	144
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	22.0	22.0	22.0	22.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	88.0	88.0	88.0	88.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	73.3%	73.3%	73.3%	73.3%	26.7%	26.7%	26.7%	26.7%	26.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	83.0	85.0	85.0	85.0		29.0		29.0	29.0
Actuated g/C Ratio	0.69	0.71	0.71	0.71		0.24		0.24	0.24
v/c Ratio	0.43	0.33	0.11	0.29		0.18		0.57	0.32
Control Delay	11.6	6.9	4.8	5.9		20.8		48.6	7.3
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	11.6	6.9	4.8	5.9		20.8		48.6	7.3
LOS	B	A	A	A		C		D	A
Approach Delay		7.8		5.8		20.8		28.9	
Approach LOS		A		A		C		C	

Intersection Summary

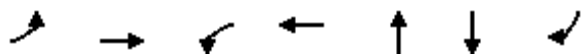
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 25 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 10.9
 Intersection Capacity Utilization 53.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 5: East & Wegman's Drive



Wegmans TIS
5: East & Wegman's Drive

Weekday PM Peak Hour_Signal at Wegman's_35%
Queues



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	196	790	44	681	68	174	160
v/c Ratio	0.43	0.33	0.11	0.29	0.18	0.57	0.32
Control Delay	11.6	6.9	4.8	5.9	20.8	48.6	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	6.9	4.8	5.9	20.8	48.6	7.3
Queue Length 50th (ft)	60	106	14	110	19	119	0
Queue Length 95th (ft)	112	134	m19	141	58	197	54
Internal Link Dist (ft)		69		694	43	60	
Turn Bay Length (ft)	140		150				125
Base Capacity (vph)	456	2400	411	2356	382	304	504
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.33	0.11	0.29	0.18	0.57	0.32

Intersection Summary

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

Wegmans TIS
5: East & Wegman's Drive

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	176	653	58	40	442	171	26	3	32	154	3	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	12	10	10	12	12
Total Lost time (s)	5.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1711	3380		1711	3278			1694			1776	1583
Flt Permitted	0.37	1.00		0.32	1.00			0.85			0.68	1.00
Satd. Flow (perm)	659	3380		579	3278			1465			1259	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	196	726	64	44	491	190	29	3	36	171	3	160
RTOR Reduction (vph)	0	6	0	0	34	0	0	27	0	0	0	121
Lane Group Flow (vph)	196	784	0	44	647	0	0	41	0	0	174	39
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	83.0	83.0		83.0	83.0			27.0			27.0	27.0
Effective Green, g (s)	83.0	85.0		85.0	85.0			29.0			29.0	29.0
Actuated g/C Ratio	0.69	0.71		0.71	0.71			0.24			0.24	0.24
Clearance Time (s)	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
Lane Grp Cap (vph)	456	2394		410	2322			354			304	383
v/s Ratio Prot		0.23			0.20							
v/s Ratio Perm	c0.30			0.08				0.03			c0.14	0.02
v/c Ratio	0.43	0.33		0.11	0.28			0.11			0.57	0.10
Uniform Delay, d1	8.1	6.6		5.5	6.4			35.5			40.0	35.4
Progression Factor	1.00	1.00		0.76	1.08			1.00			1.00	1.00
Incremental Delay, d2	2.9	0.4		0.4	0.2			0.7			7.6	0.5
Delay (s)	11.1	7.0		4.6	7.1			36.1			47.7	35.9
Level of Service	B	A		A	A			D			D	D
Approach Delay (s)		7.8			7.0			36.1			42.0	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
6: University & Wegman's Drive

Weekday PM Peak Hour_Signal at Wegman's_35%
Timings

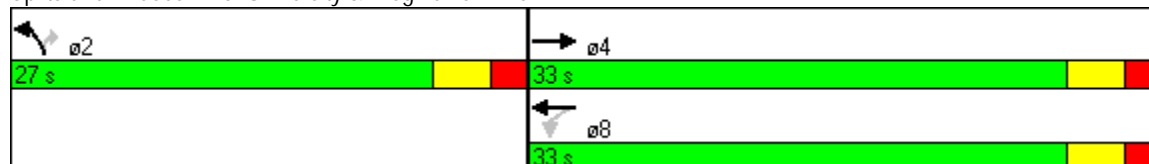


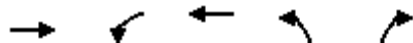
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↻	↻	↻	↻	↻
Volume (vph)	505	59	333	116	95
Turn Type		Perm			Perm
Protected Phases	4		8	2	
Permitted Phases		8			2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0
Total Split (s)	33.0	33.0	33.0	27.0	27.0
Total Split (%)	55.0%	55.0%	55.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	41.3	41.3	41.3	10.7	10.7
Actuated g/C Ratio	0.69	0.69	0.69	0.18	0.18
v/c Ratio	0.52	0.15	0.29	0.41	0.29
Control Delay	6.7	2.9	2.6	24.9	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	2.9	2.6	24.9	7.1
LOS	A	A	A	C	A
Approach Delay	6.7		2.6	16.9	
Approach LOS	A		A	B	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 7.2
 Intersection Capacity Utilization 52.8%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: University & Wegman's Drive





Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	680	66	370	129	106
v/c Ratio	0.52	0.15	0.29	0.41	0.29
Control Delay	6.7	2.9	2.6	24.9	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	2.9	2.6	24.9	7.1
Queue Length 50th (ft)	90	4	26	42	0
Queue Length 95th (ft)	196	11	45	79	31
Internal Link Dist (ft)	59		399	37	
Turn Bay Length (ft)		100			50
Base Capacity (vph)	1301	428	1282	679	672
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.15	0.29	0.19	0.16

Intersection Summary

Wegmans TIS
6: University & Wegman's Drive

Weekday PM Peak Hour_Signal at Wegman's_35%
HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Volume (vph)	505	107	59	333	116	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1879		1770	1863	1770	1583
Flt Permitted	1.00		0.33	1.00	0.95	1.00
Satd. Flow (perm)	1879		622	1863	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	561	119	66	370	129	106
RTOR Reduction (vph)	8	0	0	0	0	87
Lane Group Flow (vph)	672	0	66	370	129	19
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	40.3		40.3	40.3	9.7	9.7
Effective Green, g (s)	41.3		41.3	41.3	10.7	10.7
Actuated g/C Ratio	0.69		0.69	0.69	0.18	0.18
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1293		428	1282	316	282
v/s Ratio Prot	c0.36			0.20	c0.07	
v/s Ratio Perm			0.11			0.01
v/c Ratio	0.52		0.15	0.29	0.41	0.07
Uniform Delay, d1	4.5		3.3	3.6	21.8	20.5
Progression Factor	1.00		0.54	0.50	1.00	1.00
Incremental Delay, d2	1.5		0.7	0.5	0.9	0.1
Delay (s)	6.0		2.5	2.4	22.7	20.6
Level of Service	A		A	A	C	C
Approach Delay (s)	6.0			2.4	21.8	
Approach LOS	A			A	C	


















Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
1: East & Probert

Friday Peak_signal at wegmans_10.6.10
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	530	0	0	540	38	19	8	33	4	0	86
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.67	0.67	0.67	0.92	0.92	0.92
Hourly flow rate (vph)	32	589	0	0	614	43	28	12	49	4	0	93
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (ft)	163											
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	657			589			1054	1310	294	1049	1289	328
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	532			589			950	1220	294	945	1197	186
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			84	93	93	98	100	88
cM capacity (veh/h)	980			996			178	167	708	179	172	789
Direction, Lane #												
	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1					
Volume Total	229	393	409	248	28	61	98					
Volume Left	32	0	0	0	28	0	4					
Volume Right	0	0	0	43	0	49	93					
cSH	980	1700	1700	1700	178	433	685					
Volume to Capacity	0.03	0.23	0.24	0.15	0.16	0.14	0.14					
Queue Length 95th (ft)	3	0	0	0	14	12	12					
Control Delay (s)	1.5	0.0	0.0	0.0	29.1	14.7	11.1					
Lane LOS	A				D	B	B					
Approach Delay (s)	0.6		0.0		19.2		11.1					
Approach LOS					C		B					
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			50.7%		ICU Level of Service			A				
Analysis Period (min)	15											



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↗	↖	↕
Volume (vph)	134	424	124	292	251	515	111	193	508
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	33.0	12.0	33.0	10.0	25.0	25.0	10.0	25.0
Total Split (s)	12.0	36.0	16.0	40.0	20.0	50.0	50.0	18.0	48.0
Total Split (%)	10.0%	30.0%	13.3%	33.3%	16.7%	41.7%	41.7%	15.0%	40.0%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min	None	Min	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	40.1	31.1	46.1	34.5	66.2	50.8	50.8	62.9	49.1
Actuated g/C Ratio	0.33	0.26	0.38	0.29	0.55	0.42	0.42	0.52	0.41
v/c Ratio	0.43	0.77	0.57	0.41	0.66	0.38	0.15	0.48	0.55
Control Delay	29.3	41.5	33.4	33.2	22.6	25.6	4.6	20.8	32.8
Queue Delay	7.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	1.2
Total Delay	36.4	41.5	33.4	33.3	22.6	25.7	4.6	20.8	34.0
LOS	D	D	C	C	C	C	A	C	C
Approach Delay		40.6		33.3		22.2			31.0
Approach LOS		D		C		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 31.3
 Intersection LOS: C
 Intersection Capacity Utilization 71.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton































Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	143	697	138	404	270	554	119	222	738
v/c Ratio	0.43	0.77	0.57	0.41	0.66	0.38	0.15	0.48	0.55
Control Delay	29.3	41.5	33.4	33.2	22.6	25.6	4.6	20.8	32.8
Queue Delay	7.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	1.2
Total Delay	36.4	41.5	33.4	33.3	22.6	25.7	4.6	20.8	34.0
Queue Length 50th (ft)	68	200	68	120	109	161	0	107	229
Queue Length 95th (ft)	116	284	114	166	163	210	37	m153	m290
Internal Link Dist (ft)		670		427		217			304
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	335	955	250	1045	428	1462	768	482	1342
Starvation Cap Reductn	0	0	0	0	0	0	0	0	371
Spillback Cap Reductn	146	0	0	129	0	163	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.73	0.55	0.44	0.63	0.43	0.15	0.46	0.76

Intersection Summary

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

Wegmans TIS
2: East & Winton

Friday Peak_signal at wegmans_10.6.10
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	134	424	231	124	292	72	251	515	111	193	508	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3251		1728	3333		1745	3455	1652	1710	3230	
Flt Permitted	0.43	1.00		0.12	1.00		0.24	1.00	1.00	0.37	1.00	
Satd. Flow (perm)	789	3251		227	3333		435	3455	1652	658	3230	
Peak-hour factor, PHF	0.94	0.94	0.94	0.90	0.90	0.90	0.93	0.93	0.93	0.87	0.87	0.87
Adj. Flow (vph)	143	451	246	138	324	80	270	554	119	222	584	154
RTOR Reduction (vph)	0	62	0	0	19	0	0	0	69	0	19	0
Lane Group Flow (vph)	143	635	0	138	385	0	270	554	50	222	719	0
Heavy Vehicles (%)	0%	2%	1%	1%	2%	0%	1%	2%	2%	1%	3%	6%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	34.6	28.1		41.4	31.5		60.7	47.8	47.8	57.3	46.1	
Effective Green, g (s)	39.6	31.1		46.0	34.5		65.7	50.8	50.8	62.3	49.1	
Actuated g/C Ratio	0.33	0.26		0.38	0.29		0.55	0.42	0.42	0.52	0.41	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	332	843		242	958		406	1463	699	462	1322	
v/s Ratio Prot	0.03	c0.20		c0.06	0.12		c0.09	0.16		0.05	0.22	
v/s Ratio Perm	0.11			0.16			c0.28		0.03	0.19		
v/c Ratio	0.43	0.75		0.57	0.40		0.67	0.38	0.07	0.48	0.54	
Uniform Delay, d1	29.5	40.9		27.5	34.4		16.8	23.8	20.6	16.4	26.9	
Progression Factor	1.03	0.98		1.00	1.00		1.00	1.00	1.00	1.31	1.18	
Incremental Delay, d2	0.3	4.0		2.0	0.4		3.2	0.7	0.2	0.2	1.1	
Delay (s)	30.8	44.2		29.5	34.8		20.0	24.5	20.8	21.6	32.7	
Level of Service	C	D		C	C		B	C	C	C	C	
Approach Delay (s)		41.9			33.5			22.7			30.1	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			31.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			71.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

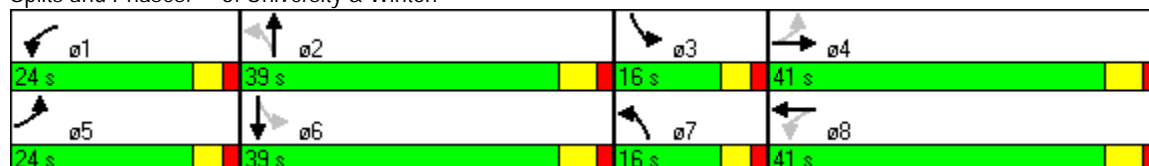


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	243	543	180	366	93	781	179	534
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	24.0	41.0	24.0	41.0	16.0	39.0	16.0	39.0
Total Split (%)	20.0%	34.2%	20.0%	34.2%	13.3%	32.5%	13.3%	32.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	58.4	38.6	58.4	38.6	49.6	37.2	49.6	37.2
Actuated g/C Ratio	0.49	0.32	0.49	0.32	0.41	0.31	0.41	0.31
v/c Ratio	0.86	0.89	0.67	0.74	0.38	0.85	0.83	0.70
Control Delay	62.9	50.9	49.3	33.2	42.8	47.6	71.8	39.7
Queue Delay	0.0	1.7	0.1	0.0	0.0	29.6	0.0	0.0
Total Delay	62.9	52.6	49.4	33.2	42.8	77.2	71.8	39.7
LOS	E	D	D	C	D	E	E	D
Approach Delay		55.1		36.7		73.7		46.4
Approach LOS		E		D		E		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 53.0
 Intersection LOS: D
 Intersection Capacity Utilization 78.6%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	304	981	234	856	106	916	195	735
v/c Ratio	0.86	0.89	0.67	0.74	0.38	0.85	0.83	0.70
Control Delay	62.9	50.9	49.3	33.2	42.8	47.6	71.8	39.7
Queue Delay	0.0	1.7	0.1	0.0	0.0	29.6	0.0	0.0
Total Delay	62.9	52.6	49.4	33.2	42.8	77.2	71.8	39.7
Queue Length 50th (ft)	169	384	116	252	59	375	95	257
Queue Length 95th (ft)	223	394	160	255	100	#443	#223	330
Internal Link Dist (ft)		152		428		304		206
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	371	1102	365	1151	286	1079	244	1045
Starvation Cap Reductn	0	0	0	0	0	208	0	0
Spillback Cap Reductn	0	41	5	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.92	0.65	0.74	0.37	1.05	0.80	0.70

Intersection Summary

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

Wegmans TIS
3: University & Winton

Friday Peak_signal at wegmans_10.6.10
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	243	543	242	180	366	293	93	781	25	179	534	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.93		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	3296		1728	3210		1745	3475		1694	3305	
Flt Permitted	0.12	1.00		0.11	1.00		0.17	1.00		0.11	1.00	
Satd. Flow (perm)	215	3296		193	3210		312	3475		197	3305	
Peak-hour factor, PHF	0.80	0.80	0.80	0.77	0.77	0.77	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	304	679	302	234	475	381	106	888	28	195	580	155
RTOR Reduction (vph)	0	42	0	0	119	0	0	2	0	0	20	0
Lane Group Flow (vph)	304	939	0	234	737	0	106	914	0	195	715	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	1%	1%	0%	2%	1%	2%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	53.4	35.6		53.4	35.6		44.6	34.2		44.6	34.2	
Effective Green, g (s)	57.4	38.6		57.4	38.6		48.6	37.2		48.6	37.2	
Actuated g/C Ratio	0.48	0.32		0.48	0.32		0.41	0.31		0.41	0.31	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	352	1060		346	1033		274	1077		234	1025	
v/s Ratio Prot	c0.14	c0.28		0.11	0.23		0.04	c0.26		c0.09	0.22	
v/s Ratio Perm	0.27			0.21			0.12			0.25		
v/c Ratio	0.86	0.89		0.68	0.71		0.39	0.85		0.83	0.70	
Uniform Delay, d1	41.1	38.6		41.7	35.8		40.9	38.8		47.0	36.4	
Progression Factor	0.96	1.10		1.00	1.00		1.22	1.00		1.00	1.00	
Incremental Delay, d2	18.5	10.8		4.1	4.2		0.3	8.1		20.9	3.9	
Delay (s)	58.0	53.1		45.8	40.0		50.2	47.0		67.9	40.4	
Level of Service	E	D		D	D		D	D		E	D	
Approach Delay (s)		54.3			41.3			47.3			46.2	
Approach LOS		D			D			D			D	

















Intersection Summary

HCM Average Control Delay	47.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

Friday Peak_signal at wegmans_10.6.10
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	472	43	77	498	0	13	0	59	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.97	0.97	0.97	0.90	0.90	0.90
Hourly flow rate (vph)	0	549	50	80	519	0	13	0	61	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					147							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	519			599			1253	1253	574	1314	1278	519
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	369			599			1215	1215	574	1285	1244	369
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	100			92			90	100	87	100	100	100
cM capacity (veh/h)	1042			988			130	146	481	101	140	591
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	599	599	74	0								
Volume Left	0	80	13	0								
Volume Right	50	0	61	0								
cSH	1042	988	323	1700								
Volume to Capacity	0.00	0.08	0.23	0.00								
Queue Length 95th (ft)	0	7	22	0								
Control Delay (s)	0.0	2.1	19.4	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	2.1	19.4	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			72.3%		ICU Level of Service				C			
Analysis Period (min)			15									

Wegmans TIS
5: East & Wegman's Drive

Friday Peak_signal at wegmans_10.6.10
Timings



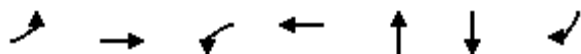
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↕	↖	↕		↕		↕	↗
Volume (vph)	180	387	40	404	26	5	155	5	174
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	7.0	7.0	6.0	6.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	27.0	27.0	27.0	27.0	24.5	24.5	24.5	24.5	24.5
Total Split (s)	84.0	84.0	84.0	84.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	0.0
Total Lost Time (s)	5.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	78.5	81.0	81.0	81.0		33.0		33.0	30.5
Actuated g/C Ratio	0.65	0.68	0.68	0.68		0.28		0.28	0.25
v/c Ratio	0.44	0.22	0.08	0.28		0.16		0.51	0.35
Control Delay	13.9	7.2	6.2	6.1		19.4		42.9	6.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	13.9	7.2	6.2	6.1		19.4		42.9	6.9
LOS	B	A	A	A		B		D	A
Approach Delay		9.1		6.1		19.4		24.1	
Approach LOS		A		A		B		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 95 (79%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 11.5
 Intersection Capacity Utilization 53.0%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 5: East & Wegman's Drive





Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	200	494	44	627	71	178	193
v/c Ratio	0.44	0.22	0.08	0.28	0.16	0.51	0.35
Control Delay	13.9	7.2	6.2	6.1	19.4	42.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	7.2	6.2	6.1	19.4	42.9	6.9
Queue Length 50th (ft)	70	65	14	92	20	117	0
Queue Length 95th (ft)	126	87	m26	118	58	191	57
Internal Link Dist (ft)		83		670	30	128	
Turn Bay Length (ft)	140		150				125
Base Capacity (vph)	452	2275	548	2245	433	348	546
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.22	0.08	0.28	0.16	0.51	0.35

Intersection Summary

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

Wegmans TIS
5: East & Wegman's Drive

Friday Peak_signal at wegmans_10.6.10
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	387	58	40	404	160	26	5	32	155	5	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	12	10	10	12	12
Total Lost time (s)	5.5	3.0		3.0	3.0			3.0			3.0	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.96			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1711	3355		1711	3276			1701			1777	1583
Flt Permitted	0.38	1.00		0.45	1.00			0.85			0.68	1.00
Satd. Flow (perm)	691	3355		811	3276			1480			1264	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	200	430	64	44	449	178	29	6	36	172	6	193
RTOR Reduction (vph)	0	10	0	0	35	0	0	26	0	0	0	144
Lane Group Flow (vph)	200	484	0	44	592	0	0	45	0	0	178	49
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	78.5	78.5		78.5	78.5			30.5			30.5	30.5
Effective Green, g (s)	78.5	81.0		81.0	81.0			33.0			33.0	30.5
Actuated g/C Ratio	0.65	0.68		0.68	0.68			0.28			0.28	0.25
Clearance Time (s)	5.5	5.5		5.5	5.5			5.5			5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	452	2265		547	2211			407			348	402
v/s Ratio Prot		0.14			0.18							
v/s Ratio Perm	c0.29			0.05				0.03			c0.14	0.03
v/c Ratio	0.44	0.21		0.08	0.27			0.11			0.51	0.12
Uniform Delay, d1	10.1	7.4		6.7	7.7			32.5			36.7	34.4
Progression Factor	1.00	1.00		0.86	0.92			1.00			1.00	1.00
Incremental Delay, d2	3.1	0.2		0.3	0.3			0.5			5.3	0.6
Delay (s)	13.2	7.6		6.0	7.4			33.1			42.0	35.1
Level of Service	B	A		A	A			C			D	D
Approach Delay (s)		9.2			7.3			33.1			38.4	
Approach LOS		A			A			C			D	

Intersection Summary

HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

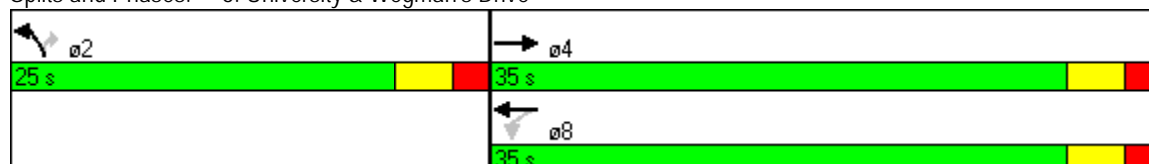


Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↻	↻	↻	↻	↻
Volume (vph)	440	59	524	102	95
Turn Type		Perm			Perm
Protected Phases	4		8	2	
Permitted Phases		8			2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	8.0	8.0	8.0	8.0	8.0
Total Split (s)	35.0	35.0	35.0	25.0	25.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	41.8	41.8	41.8	10.2	10.2
Actuated g/C Ratio	0.70	0.70	0.70	0.17	0.17
v/c Ratio	0.45	0.13	0.45	0.38	0.30
Control Delay	5.6	1.8	3.7	24.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.8	3.7	24.9	7.4
LOS	A	A	A	C	A
Approach Delay	5.6		3.5	16.5	
Approach LOS	A		A	B	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 21 (35%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.45
 Intersection Signal Delay: 6.3
 Intersection Capacity Utilization 47.7%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: University & Wegman's Drive





Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	591	66	582	113	106
v/c Ratio	0.45	0.13	0.45	0.38	0.30
Control Delay	5.6	1.8	3.7	24.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.8	3.7	24.9	7.4
Queue Length 50th (ft)	68	1	10	37	0
Queue Length 95th (ft)	149	m10	223	71	32
Internal Link Dist (ft)	67		435	32	
Turn Bay Length (ft)		100			50
Base Capacity (vph)	1320	506	1299	620	623
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.13	0.45	0.18	0.17

Intersection Summary

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Volume (vph)	440	92	59	524	102	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1880		1770	1863	1770	1583
Flt Permitted	1.00		0.39	1.00	0.95	1.00
Satd. Flow (perm)	1880		726	1863	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	489	102	66	582	113	106
RTOR Reduction (vph)	8	0	0	0	0	88
Lane Group Flow (vph)	583	0	66	582	113	18
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	40.8		40.8	40.8	9.2	9.2
Effective Green, g (s)	41.8		41.8	41.8	10.2	10.2
Actuated g/C Ratio	0.70		0.70	0.70	0.17	0.17
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1310		506	1298	301	269
v/s Ratio Prot	0.31			c0.31	c0.06	
v/s Ratio Perm			0.09			0.01
v/c Ratio	0.45		0.13	0.45	0.38	0.07
Uniform Delay, d1	4.0		3.0	4.0	22.1	20.9
Progression Factor	1.00		0.38	0.64	1.00	1.00
Incremental Delay, d2	1.1		0.4	0.8	0.8	0.1
Delay (s)	5.1		1.5	3.4	22.9	21.0
Level of Service	A		A	A	C	C
Approach Delay (s)	5.1			3.2	22.0	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
1: East & Probert

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave
HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑			↑↑		↖	↗			↕	
Volume (veh/h)	10	725	0	0	586	21	18	4	24	5	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.90	0.90	0.90	0.85	0.85	0.85
Hourly flow rate (vph)	11	780	0	0	666	24	20	4	27	6	0	76
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					150							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	690			780			1211	1491	390	1118	1479	345
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	616			780			1153	1443	390	1058	1430	260
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			85	97	96	96	100	89
cM capacity (veh/h)	937			847			133	128	615	163	130	722

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	11	390	390	444	246	20	31	82
Volume Left	11	0	0	0	0	20	0	6
Volume Right	0	0	0	0	24	0	27	76
cSH	937	1700	1700	1700	1700	133	398	579
Volume to Capacity	0.01	0.23	0.23	0.26	0.14	0.15	0.08	0.14
Queue Length 95th (ft)	1	0	0	0	0	13	6	12
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	36.8	14.8	12.2
Lane LOS	A					E	B	B
Approach Delay (s)	0.1			0.0		23.4		12.2
Approach LOS						C		B

Intersection Summary		
Average Delay		1.4
Intersection Capacity Utilization	35.5%	ICU Level of Service A
Analysis Period (min)		15

Wegmans TIS
2: East & Winton

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave

Timings

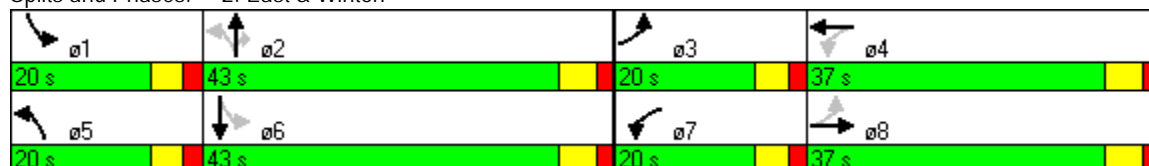


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	126	390	117	218	230	356	133	134	424
Turn Type	pm+pt		pm+pt		pm+pt		Perm	pm+pt	
Protected Phases	3	8	7	4	5	2		1	6
Permitted Phases	8		4		2		2	6	
Detector Phase	3	8	7	4	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	10.0	4.0	10.0	4.0	7.0	7.0	4.0	7.0
Minimum Split (s)	12.0	32.0	12.0	32.0	10.0	28.0	28.0	10.0	28.0
Total Split (s)	20.0	37.0	20.0	37.0	20.0	43.0	43.0	20.0	43.0
Total Split (%)	16.7%	30.8%	16.7%	30.8%	16.7%	35.8%	35.8%	16.7%	35.8%
Yellow Time (s)	3.5	4.0	3.5	4.0	3.5	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.5	-3.0	-2.5	-3.0	-2.5	-3.0	-3.0	-2.5	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min	None	Min	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	44.4	30.7	45.6	31.3	65.0	50.3	50.3	60.9	48.2
Actuated g/C Ratio	0.37	0.26	0.38	0.26	0.54	0.42	0.42	0.51	0.40
v/c Ratio	0.36	0.73	0.51	0.39	0.56	0.26	0.18	0.28	0.47
Control Delay	29.7	47.4	28.9	33.8	20.6	25.1	5.0	11.9	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	29.7	47.4	28.9	33.8	20.6	25.1	5.0	11.9	20.5
LOS	C	D	C	C	C	C	A	B	C
Approach Delay		44.2		32.3		20.0			18.8
Approach LOS		D		C		B			B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 28.7
 Intersection LOS: C
 Intersection Capacity Utilization 65.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: East & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	145	659	144	349	245	379	141	152	629
v/c Ratio	0.36	0.73	0.51	0.39	0.56	0.26	0.18	0.28	0.47
Control Delay	29.7	47.4	28.9	33.8	20.6	25.1	5.0	11.9	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	29.7	47.4	28.9	33.8	20.6	25.1	5.0	11.9	20.5
Queue Length 50th (ft)	79	224	71	104	97	100	0	37	185
Queue Length 95th (ft)	119	274	96	128	162	156	44	58	261
Internal Link Dist (ft)		688		432		405			258
Turn Bay Length (ft)	180		140		150		150	150	
Base Capacity (vph)	441	991	319	975	464	1478	789	595	1334
Starvation Cap Reductn	0	0	0	0	0	0	0	0	254
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.66	0.45	0.36	0.53	0.26	0.18	0.26	0.58

Intersection Summary

Wegmans TIS
2: East & Winton

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave
HCM Signalized Intersection Capacity Analysis

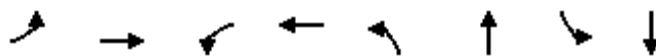


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	390	184	117	218	65	230	356	133	134	424	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	13	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3322		1745	3319		1762	3525	1686	1727	3268	
Flt Permitted	0.43	1.00		0.15	1.00		0.29	1.00	1.00	0.49	1.00	
Satd. Flow (perm)	783	3322		284	3319		531	3525	1686	886	3268	
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.94	0.94	0.94	0.88	0.88	0.88
Adj. Flow (vph)	145	448	211	144	269	80	245	379	141	152	482	147
RTOR Reduction (vph)	0	48	0	0	24	0	0	0	82	0	22	0
Lane Group Flow (vph)	145	611	0	144	325	0	245	379	59	152	607	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%	2%
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	38.9	27.7		40.1	28.3		59.6	47.3	47.3	55.4	45.2	
Effective Green, g (s)	43.9	30.7		45.1	31.3		64.6	50.3	50.3	60.4	48.2	
Actuated g/C Ratio	0.37	0.26		0.38	0.26		0.54	0.42	0.42	0.50	0.40	
Clearance Time (s)	5.5	6.0		5.5	6.0		5.5	6.0	6.0	5.5	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	396	850		281	866		438	1478	707	535	1313	
v/s Ratio Prot	0.04	c0.18		c0.06	0.10		c0.07	0.11		0.03	0.19	
v/s Ratio Perm	0.09			0.13			c0.23		0.04	0.11		
v/c Ratio	0.37	0.72		0.51	0.38		0.56	0.26	0.08	0.28	0.46	
Uniform Delay, d1	26.5	40.7		27.3	36.3		16.3	22.7	21.0	16.3	26.4	
Progression Factor	1.21	1.16		1.00	1.00		1.00	1.00	1.00	0.71	0.71	
Incremental Delay, d2	0.2	3.0		0.7	0.4		0.9	0.4	0.2	0.1	1.1	
Delay (s)	32.4	50.4		28.0	36.7		17.2	23.1	21.2	11.7	19.9	
Level of Service	C	D		C	D		B	C	C	B	B	
Approach Delay (s)		47.2			34.2			20.9			18.3	
Approach LOS		D			C			C			B	

Intersection Summary

HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

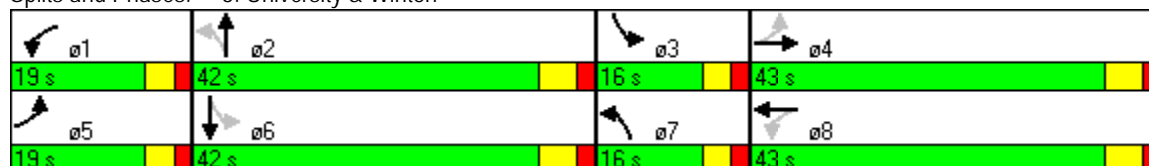


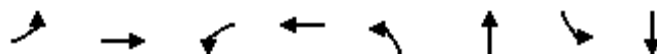
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↙	↕	↙	↕	↙	↕	↙	↕
Volume (vph)	167	240	94	238	66	520	148	504
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	5	4	1	8	7	2	3	6
Permitted Phases	4		8		2		6	
Detector Phase	5	4	1	8	7	2	3	6
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	7.0	4.0	7.0	4.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	11.0	29.0	11.0	29.0
Total Split (s)	19.0	43.0	19.0	43.0	16.0	42.0	16.0	42.0
Total Split (%)	15.8%	35.8%	15.8%	35.8%	13.3%	35.0%	13.3%	35.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0	-2.0	-3.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	Max	None	Max	None	C-Max	None	C-Max
Act Effct Green (s)	52.4	44.7	52.4	44.7	55.6	47.3	55.6	47.3
Actuated g/C Ratio	0.44	0.37	0.44	0.37	0.46	0.39	0.46	0.39
v/c Ratio	0.52	0.35	0.27	0.31	0.23	0.44	0.45	0.52
Control Delay	29.0	28.6	23.3	22.8	18.4	23.2	27.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1
Total Delay	29.0	28.6	23.3	22.8	18.4	23.7	27.2	28.2
LOS	C	C	C	C	B	C	C	C
Approach Delay		28.7		22.9		23.1		28.0
Approach LOS		C		C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 26.0
 Intersection LOS: C
 Intersection Capacity Utilization 55.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: University & Winton





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	217	439	104	387	74	600	154	673
v/c Ratio	0.52	0.35	0.27	0.31	0.23	0.44	0.45	0.52
Control Delay	29.0	28.6	23.3	22.8	18.4	23.2	27.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1
Total Delay	29.0	28.6	23.3	22.8	18.4	23.7	27.2	28.2
Queue Length 50th (ft)	99	126	44	87	25	125	66	194
Queue Length 95th (ft)	137	147	82	137	43	155	104	263
Internal Link Dist (ft)		151		787		258		404
Turn Bay Length (ft)	100		75		75		70	
Base Capacity (vph)	536	1266	500	1265	388	1372	410	1306
Starvation Cap Reductn	0	0	0	0	0	375	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	77
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.35	0.21	0.31	0.19	0.60	0.38	0.55

Intersection Summary

Wegmans TIS
3: University & Winton

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	167	240	98	94	238	111	66	520	14	148	504	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			-2%				2%
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.95		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3305		1711	3282		1762	3477		1727	3264	
Flt Permitted	0.44	1.00		0.41	1.00		0.27	1.00		0.31	1.00	
Satd. Flow (perm)	815	3305		730	3282		499	3477		565	3264	
Peak-hour factor, PHF	0.77	0.77	0.77	0.90	0.90	0.90	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	217	312	127	104	264	123	74	584	16	154	525	148
RTOR Reduction (vph)	0	35	0	0	43	0	0	1	0	0	19	0
Lane Group Flow (vph)	217	404	0	104	344	0	74	599	0	154	654	0
Heavy Vehicles (%)	0%	1%	1%	2%	0%	4%	0%	1%	0%	0%	3%	0%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	4		1	8		7	2		3	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.4	41.7		47.4	41.7		50.6	44.3		50.6	44.3	
Effective Green, g (s)	51.4	44.7		51.4	44.7		54.6	47.3		54.6	47.3	
Actuated g/C Ratio	0.43	0.37		0.43	0.37		0.46	0.39		0.46	0.39	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	409	1231		376	1223		314	1371		337	1287	
v/s Ratio Prot	c0.03	0.12		0.02	0.10		0.02	0.17		c0.03	c0.20	
v/s Ratio Perm	c0.19			0.10			0.09			0.18		
v/c Ratio	0.53	0.33		0.28	0.28		0.24	0.44		0.46	0.51	
Uniform Delay, d1	30.4	26.9		27.7	26.4		29.8	26.6		31.5	27.5	
Progression Factor	0.96	1.16		1.00	1.00		0.86	0.82		1.00	1.00	
Incremental Delay, d2	0.6	0.7		0.1	0.6		0.1	1.0		0.4	1.4	
Delay (s)	30.0	31.9		27.9	27.0		25.9	22.9		31.9	29.0	
Level of Service	C	C		C	C		C	C		C	C	
Approach Delay (s)		31.3			27.2			23.2			29.5	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Wegmans TIS
4: University & Probert

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave
HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	0	377	14	45	320	0	22	0	75	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.87	0.87	0.87	0.25	0.25	0.25
Hourly flow rate (vph)	0	454	17	47	337	0	25	0	86	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					140							
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	337			471			894	894	463	980	903	337
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275			471			862	862	463	953	871	275
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			90	100	86	100	100	100
cM capacity (veh/h)	1234			1101			255	268	601	190	265	730

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	471	384	111	0
Volume Left	0	47	25	0
Volume Right	17	0	86	0
cSH	1234	1101	460	1700
Volume to Capacity	0.00	0.04	0.24	0.00
Queue Length 95th (ft)	0	3	24	0
Control Delay (s)	0.0	1.4	15.3	0.0
Lane LOS		A	C	A
Approach Delay (s)	0.0	1.4	15.3	0.0
Approach LOS			C	A

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Wegmans TIS
5: East & Wegmans Drive

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave

Timings



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↕	↖	↕		↕		↕	↗
Volume (vph)	163	591	20	384	27	5	140	5	132
Turn Type	Perm		Perm		Perm		Perm		Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
Total Split (s)	87.0	87.0	87.0	87.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	72.5%	72.5%	72.5%	72.5%	27.5%	27.5%	27.5%	27.5%	27.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-0.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-0.5
Total Lost Time (s)	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min	Min
Act Effect Green (s)	89.0	91.0	91.0	91.0		23.0		23.0	21.0
Actuated g/C Ratio	0.74	0.76	0.76	0.76		0.19		0.19	0.18
v/c Ratio	0.33	0.27	0.04	0.24		0.25		0.70	0.37
Control Delay	8.2	5.1	5.7	5.7		22.3		60.1	8.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	8.2	5.1	5.7	5.7		22.3		60.1	8.8
LOS	A	A	A	A		C		E	A
Approach Delay		5.8		5.7		22.3		35.7	
Approach LOS		A		A		C		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 45 (38%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 11.3
 Intersection Capacity Utilization 50.0%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

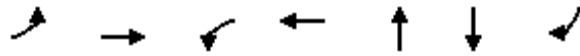
Splits and Phases: 5: East & Wegmans Drive



Wegmans TIS
5: East & Wegmans Drive

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave

Queues



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	181	695	22	595	76	162	147
v/c Ratio	0.33	0.27	0.04	0.24	0.25	0.70	0.37
Control Delay	8.2	5.1	5.7	5.7	22.3	60.1	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	5.1	5.7	5.7	22.3	60.1	8.8
Queue Length 50th (ft)	42	73	6	80	23	118	0
Queue Length 95th (ft)	96	120	m14	106	63	183	52
Internal Link Dist (ft)		70		688	43	60	
Turn Bay Length (ft)	140		150				125
Base Capacity (vph)	550	2577	504	2514	384	304	482
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.27	0.04	0.24	0.20	0.53	0.30

Intersection Summary

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

Wegmans TIS
5: East & Wegmans Drive

Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	591	34	20	384	151	27	5	36	140	5	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	12	10	10	12	12
Total Lost time (s)	5.0	3.0		3.0	3.0			3.0			3.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.96			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1711	3393		1711	3276			1697			1777	1583
Flt Permitted	0.41	1.00		0.37	1.00			0.82			0.65	1.00
Satd. Flow (perm)	742	3393		664	3276			1415			1217	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	657	38	22	427	168	30	6	40	156	6	147
RTOR Reduction (vph)	0	3	0	0	28	0	0	32	0	0	0	121
Lane Group Flow (vph)	181	692	0	22	567	0	0	44	0	0	162	26
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	88.5	88.5		88.5	88.5			20.5			20.5	20.5
Effective Green, g (s)	89.0	91.0		91.0	91.0			23.0			23.0	21.0
Actuated g/C Ratio	0.74	0.76		0.76	0.76			0.19			0.19	0.18
Clearance Time (s)	5.5	5.5		5.5	5.5			5.5			5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	550	2573		504	2484			271			233	277
v/s Ratio Prot		0.20			0.17							
v/s Ratio Perm	c0.24			0.03				0.03			c0.13	0.02
v/c Ratio	0.33	0.27		0.04	0.23			0.16			0.70	0.09
Uniform Delay, d1	5.3	4.4		3.6	4.2			40.5			45.2	41.5
Progression Factor	1.00	1.00		1.12	1.43			1.00			1.00	1.00
Incremental Delay, d2	1.6	0.3		0.1	0.2			0.3			8.7	0.1
Delay (s)	6.9	4.7		4.2	6.3			40.7			53.9	41.7
Level of Service	A	A		A	A			D			D	D
Approach Delay (s)		5.1			6.2			40.7			48.1	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

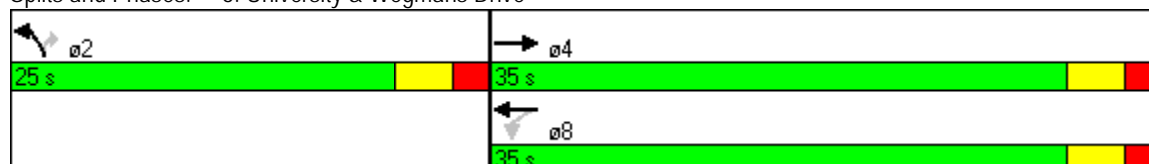


Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↻	↻	↻	↻	↻
Volume (vph)	350	124	268	97	128
Turn Type		Perm			Perm
Protected Phases	4		8	2	
Permitted Phases		8			2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0
Total Split (s)	35.0	35.0	35.0	25.0	25.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	42.0	42.0	42.0	10.0	10.0
Actuated g/C Ratio	0.70	0.70	0.70	0.17	0.17
v/c Ratio	0.37	0.23	0.23	0.37	0.37
Control Delay	4.8	6.8	6.0	24.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	6.8	6.0	24.9	7.4
LOS	A	A	A	C	A
Approach Delay	4.8		6.3	15.0	
Approach LOS	A		A	B	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 25 (42%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 7.5
 Intersection Capacity Utilization 46.3%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: University & Wegmans Drive



Wegmans TIS Saturday Peak_Signal at Wegman's_No EBL phase @ Weg East Ave
 6: University & Wegmans Drive Queues



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	491	138	298	108	142
v/c Ratio	0.37	0.23	0.23	0.37	0.37
Control Delay	4.8	6.8	6.0	24.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	6.8	6.0	24.9	7.4
Queue Length 50th (ft)	51	39	84	35	0
Queue Length 95th (ft)	111	74	134	69	38
Internal Link Dist (ft)	60		462	40	
Turn Bay Length (ft)		100			50
Base Capacity (vph)	1320	589	1304	620	646
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.23	0.23	0.17	0.22

Intersection Summary



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Volume (vph)	350	92	124	268	97	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1871		1770	1863	1770	1583
Flt Permitted	1.00		0.45	1.00	0.95	1.00
Satd. Flow (perm)	1871		843	1863	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	389	102	138	298	108	142
RTOR Reduction (vph)	10	0	0	0	0	118
Lane Group Flow (vph)	481	0	138	298	108	24
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	41.0		41.0	41.0	9.0	9.0
Effective Green, g (s)	42.0		42.0	42.0	10.0	10.0
Actuated g/C Ratio	0.70		0.70	0.70	0.17	0.17
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1310		590	1304	295	264
v/s Ratio Prot	c0.26			0.16	c0.06	
v/s Ratio Perm			0.16			0.01
v/c Ratio	0.37		0.23	0.23	0.37	0.09
Uniform Delay, d1	3.6		3.2	3.2	22.2	21.1
Progression Factor	1.00		1.55	1.57	1.00	1.00
Incremental Delay, d2	0.8		0.9	0.4	0.8	0.1
Delay (s)	4.4		5.9	5.4	23.0	21.3
Level of Service	A		A	A	C	C
Approach Delay (s)	4.4			5.6	22.0	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix E
Signal Warrant Analysis

SIGNAL WARRANT #1A & B

(Minimum Vehicular Volume & Interruption of Continuous Traffic)

EAST AVENUE AT PROBERT STREET & McDONALD'S DRIVEWAY

HOUR	EXISTING TRAFFIC					PROJECTED TRAFFIC				
	EAST AVE TWO-WAY VOLUME	PROBERT ST. SOUTHBOUND VOLUME	MCDONALD'S OUTBOUND VOLUME	HOURS WARRANT #1A MET	HOURS WARRANT #1B MET	EAST AVE (TWO-WAY) VOLUME	PROBERT ST (SB)	MCDONALD'S (OUT)	HOURS WARRANT #1A MET	HOURS WARRANT #1B MET
				100% 80%	100% 80%				100% 80%	100% 80%
<u>AM</u>										
7:00-8:00	690	81	45	NO NO	NO NO	784	41	45	NO NO	NO NO
8:00-9:00	893	110	72	NO NO	NO YES	1015	56	72	NO NO	NO NO
9:00-10:00	743	120	56	NO YES	NO YES	844	61	56	NO NO	NO YES
10:00-11:00	775	125	61	NO YES	NO YES	880	64	61	NO NO	NO YES
11:00-12:00	696	108	69	NO NO	NO NO	791	55	69	NO NO	NO NO
<u>PM</u>										
12:00 - 1:00	1160	267	147	YES YES	YES YES	1317	135	147	NO YES	YES YES
1:00 - 2:00	826	157	103	YES YES	NO YES	938	79	103	NO NO	YES YES
2:00 - 3:00	854	169	75	YES YES	NO YES	971	86	75	NO NO	YES YES
3:00 - 4:00	895	181	66	YES YES	NO YES	1017	92	66	NO NO	YES YES
4:00 - 5:00	949	204	62	YES YES	YES YES	1078	103	62	NO NO	YES YES
5:00 - 6:00	1220	286	62	YES YES	YES YES	1386	145	75	NO YES	YES YES
6:00 - 7:00	802	164	73	YES YES	NO YES	911	83	73	NO NO	YES YES
7:00 - 8:00	710	127	58	YES YES	NO NO	806	65	58	NO NO	NO YES
WARRANT MET	...	...	...	NO YES	NO YES	...	...	...	NO NO	NO YES

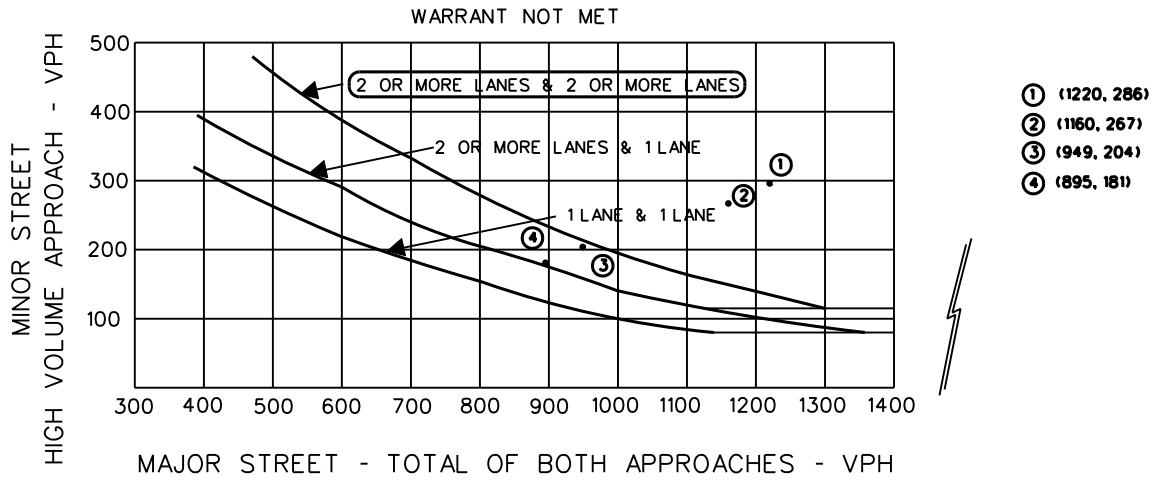
VOLUME WARRANT KEY

WARRANT NUMBER	HOURLY VOLUME REQUIRED FOR 8 HOURS			
	EAST AVE (TWO-WAY) VOLUME		PROBERT ST (SB)	
#1A	100%	80%	100%	80%
#1B	600	480	150	200
	900	720	75	100
				160
				80

WARRANT #1A - Minimum Vehicle Volume.
WARRANT #1B - Interruption of Continuous Traffic.
Note: * If 100% of warrants #1A or #1B are met than warrant #1 is met
if 80% of warrants #1A and #1B are met than warrant #1 is met

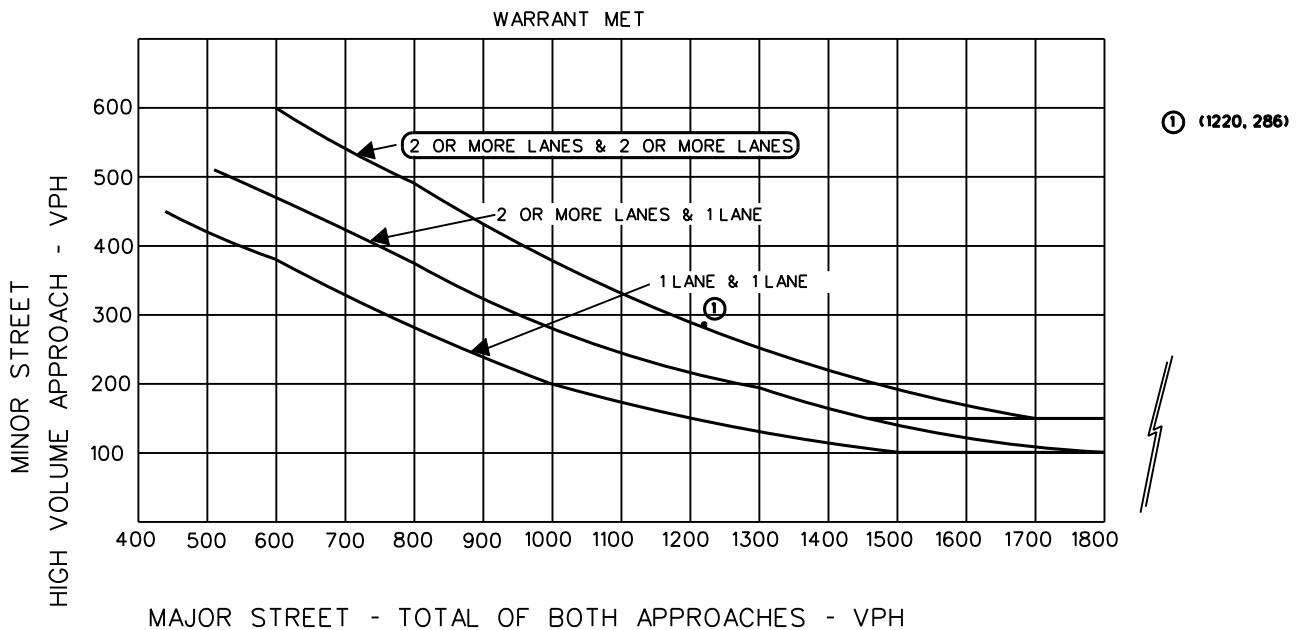
EAST AVE @ PROBERT STREET & McDONALD'S DRIVEWAY EXISTING TRAFFIC

WARRANT * 2 - FOUR HOUR VOLUME WARRANT



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

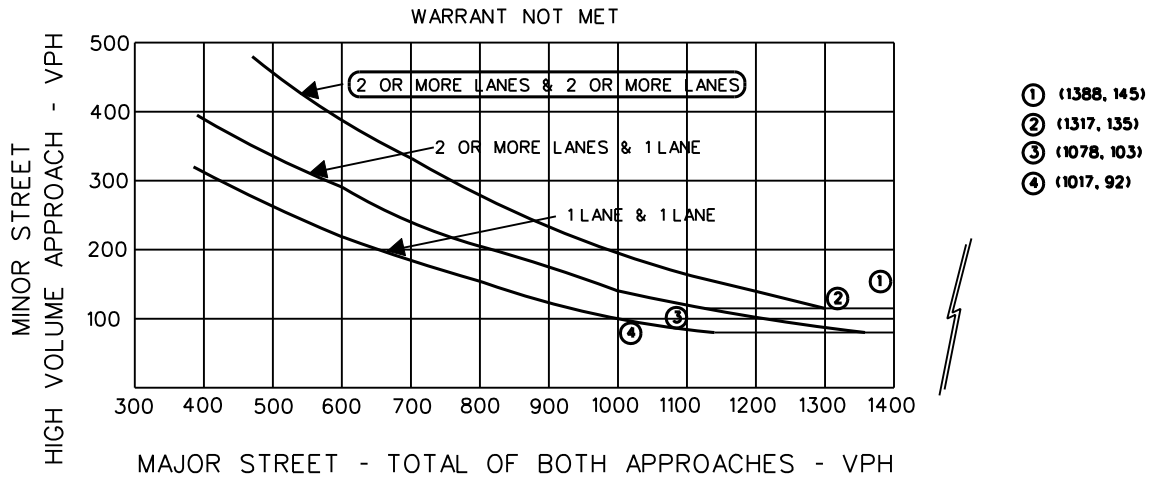
WARRANT * 3 - PEAK HOUR VOLUME WARRANT



* NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

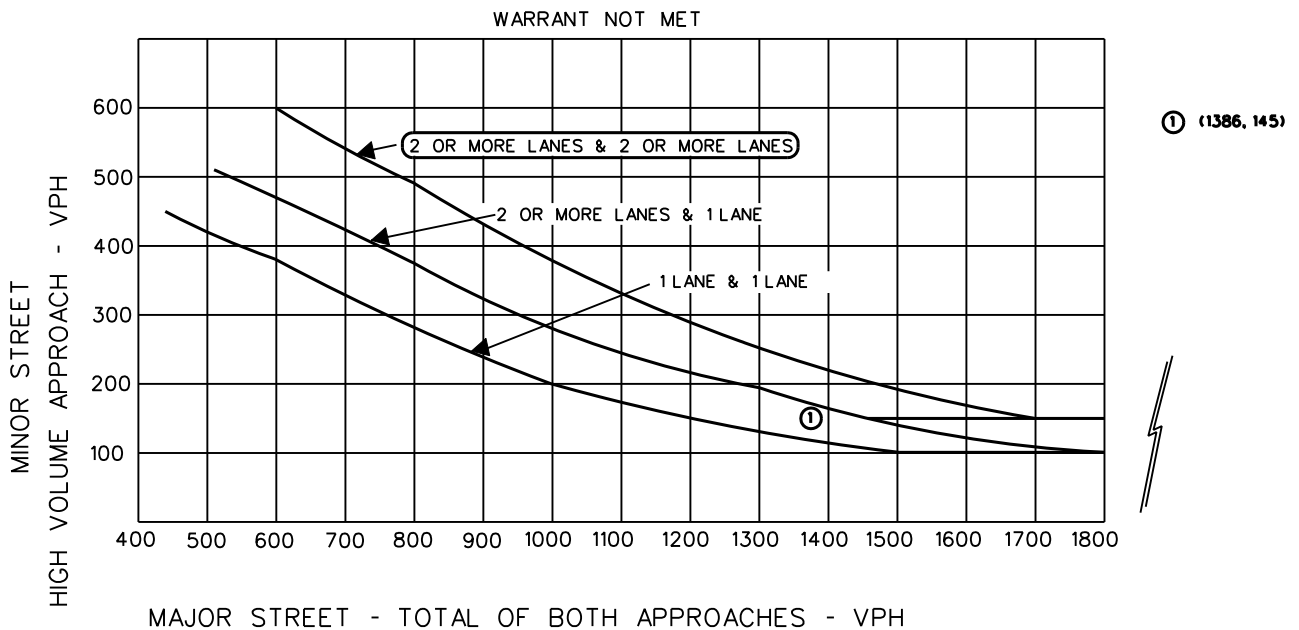
EAST AVE @ PROBERT STREET & McDONALD'S DRIVEWAY FUTURE TRAFFIC

WARRANT * 2 - FOUR HOUR VOLUME WARRANT



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

WARRANT * 3 - PEAK HOUR VOLUME WARRANT



* NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

SIGNAL WARRANT #1A & B
(Minimum Vehicular Volume & Interruption of Continuous Traffic)

EAST AVENUE AT NEW WEGMANS DRIVEWAY & COUNTRY CLUB DINER

HOUR	PROJECTED TRAFFIC				
	EAST AVE TWO-WAY VOLUME	WEGMANS DRIVEWAY OUTBOUND VOLUME	COUNTRY CLUB DRIVEWAY OUTBOUND VOLUME	HOURS WARRANT #1A MET	HOURS WARRANT #1B MET
<u>AM</u>					
7:00-8:00	775	115	30	NO	NO
8:00-9:00	1013	126	43	NO	YES
9:00-10:00	875	147	31	NO	NO
10:00-11:00	927	173	25	YES	YES
11:00-12:00	864	193	37	YES	NO
<u>PM</u>					
12:00 - 1:00	1405	233	59	YES	YES
1:00 - 2:00	1034	222	60	YES	YES
2:00 - 3:00	1086	245	42	YES	YES
3:00 - 4:00	1141	263	37	YES	YES
4:00 - 5:00	1213	291	40	YES	YES
5:00 - 6:00	1540	298	58	YES	YES
6:00 - 7:00	1026	269	58	YES	YES
7:00 - 8:00	916	208	50	YES	YES
WARRANT MET	---	---	---	YES	YES

VOLUME WARRANT KEY

WARRANT NUMBER	HOURLY VOLUME REQUIRED FOR 8 HOURS		
	EAST AVE TWO-WAY	WEGMANS DRIVEWAY OUTBOUND	COUNTRY CLUB OUTBOUND
	100%	100%	100%
#1A	600	150	150
#1B	900	75	75

WARRANT #1A - Minimum Vehicle Volume.

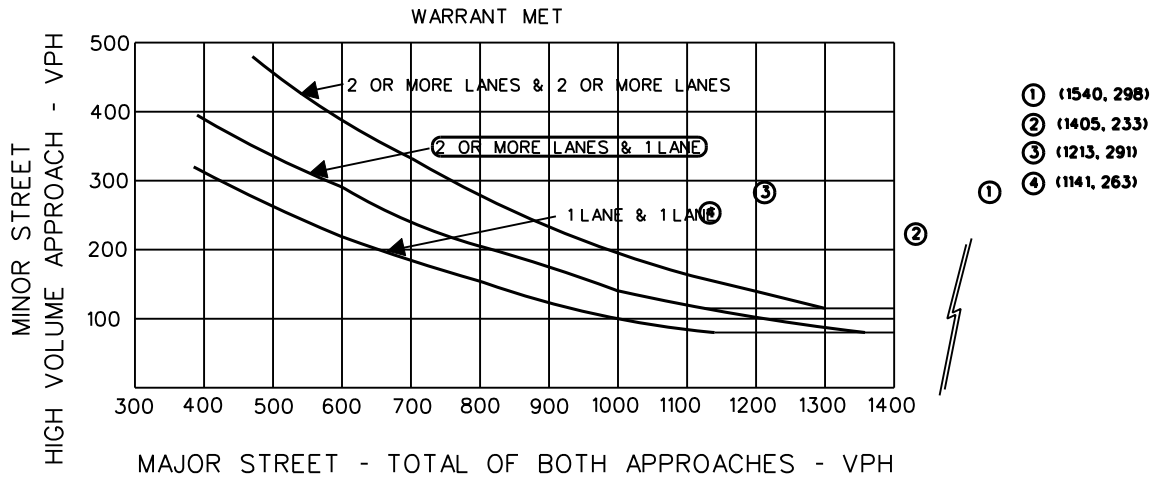
WARRANT #1B - Interruption of Continuous Traffic.

Note: * If 100% of warrants #1A or #1B are met than warrant #1 is met

If 80% of warrants #1A and #1B are met than warrant #1 is met

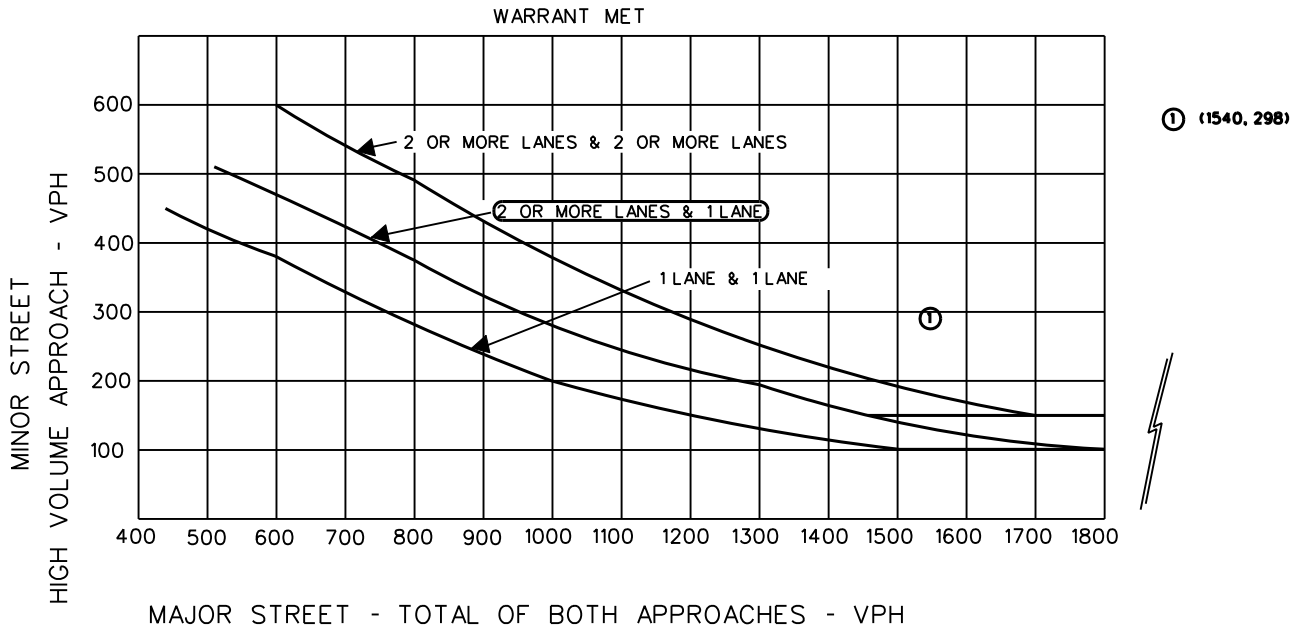
EAST AVE @ PROPOSED WEGMANS DRIVEWAY & COUNTRY CLUB DINER FUTURE TRAFFIC

WARRANT * 2 - FOUR HOUR VOLUME WARRANT



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

WARRANT * 3 - PEAK HOUR VOLUME WARRANT



* NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Appendix F
MCDOT Pedestrian Investigation

file



Department of Transportation

Jack Doyle
County Executive

Terrence J. Rice, P.E.
Director of Transportation

May 15, 2002

Mr. Paul Marinucci
Harris Corporation, R F Communications
1680 University Avenue
Rochester, New York 14610

RE: UNIVERSITY AVENUE – CROSSWALKS AT HARRIS CORPORATION

Dear Mr. Marinucci:

In response to your telephoned concern of January 14, 2002 stating that an employee had been struck crossing University Avenue, the Department of Transportation reviewed traffic conditions at the subject location to determine if additional traffic control devices are needed. We conducted on-site reviews during daylight and dark hours to identify existing conditions and check the quality of illumination and the visibility of existing traffic signs and crosswalks. Also, we reviewed the accident history on University Avenue for the three year one month period ending January 17, 2002.

Our field review revealed that there are three midblock crosswalks and one intersection crosswalk that can be used to cross University Avenue in the vicinity of Harris Corporation. Advance pedestrian warning signs with flashers exist on University Avenue for both directions of traffic entering the area. Each of the three midblock crosswalks is signed with pedestrian crossing warning signs. All pedestrian-related warning signs utilize conspicuous strong yellow/green reflective material. Overhead lighting was observed to be adequate along University Avenue in the area.

The accident history, which is obtained from police files, did not contain a report of the recent pedestrian accident of your concern. One other pedestrian accident occurred on January 20, 2000 at 7:30 a.m. in the crosswalk adjacent to Wegmans. These incidents are not indicative of an accident pattern relating to pedestrians.

Appendix G
Traffic Count Summary Sheets

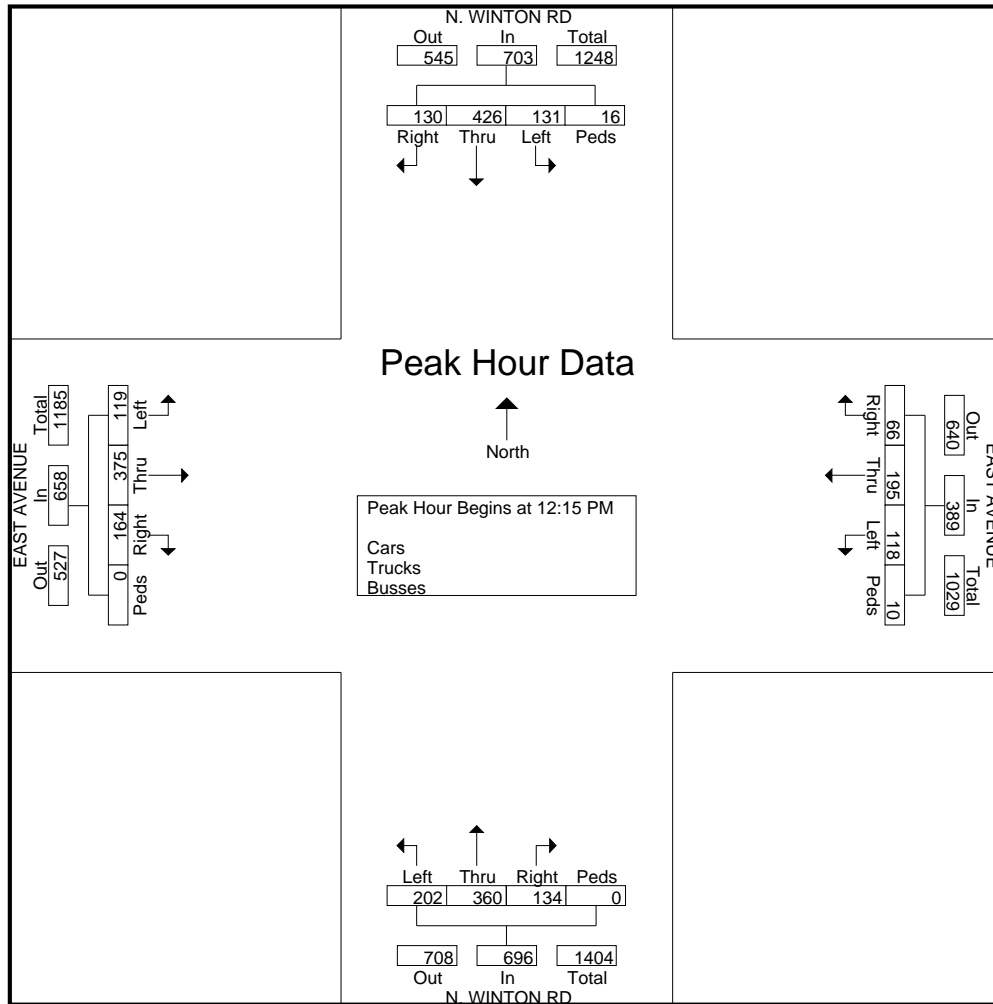


A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : SAT_N Winton & East
Site Code : 00000000
Start Date : 9/19/2009
Page No : 2

Start Time	N. WINTON RD Southbound					EAST AVENUE Westbound					N. WINTON RD Northbound					EAST AVENUE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:15 PM																					
12:15 PM	43	104	22	4	173	18	42	28	4	92	30	79	51	0	160	52	96	41	0	189	614
12:30 PM	44	114	34	3	195	16	51	30	4	101	30	76	50	0	156	33	101	24	0	158	610
12:45 PM	26	101	37	6	170	20	61	25	2	108	29	102	51	0	182	32	84	28	0	144	604
01:00 PM	17	107	38	3	165	12	41	35	0	88	45	103	50	0	198	47	94	26	0	167	618
Total Volume	130	426	131	16	703	66	195	118	10	389	134	360	202	0	696	164	375	119	0	658	2446
% App. Total	18.5	60.6	18.6	2.3		17	50.1	30.3	2.6		19.3	51.7	29	0		24.9	57	18.1	0		
PHF	.739	.934	.862	.667	.901	.825	.799	.843	.625	.900	.744	.874	.990	.000	.879	.788	.928	.726	.000	.870	.989



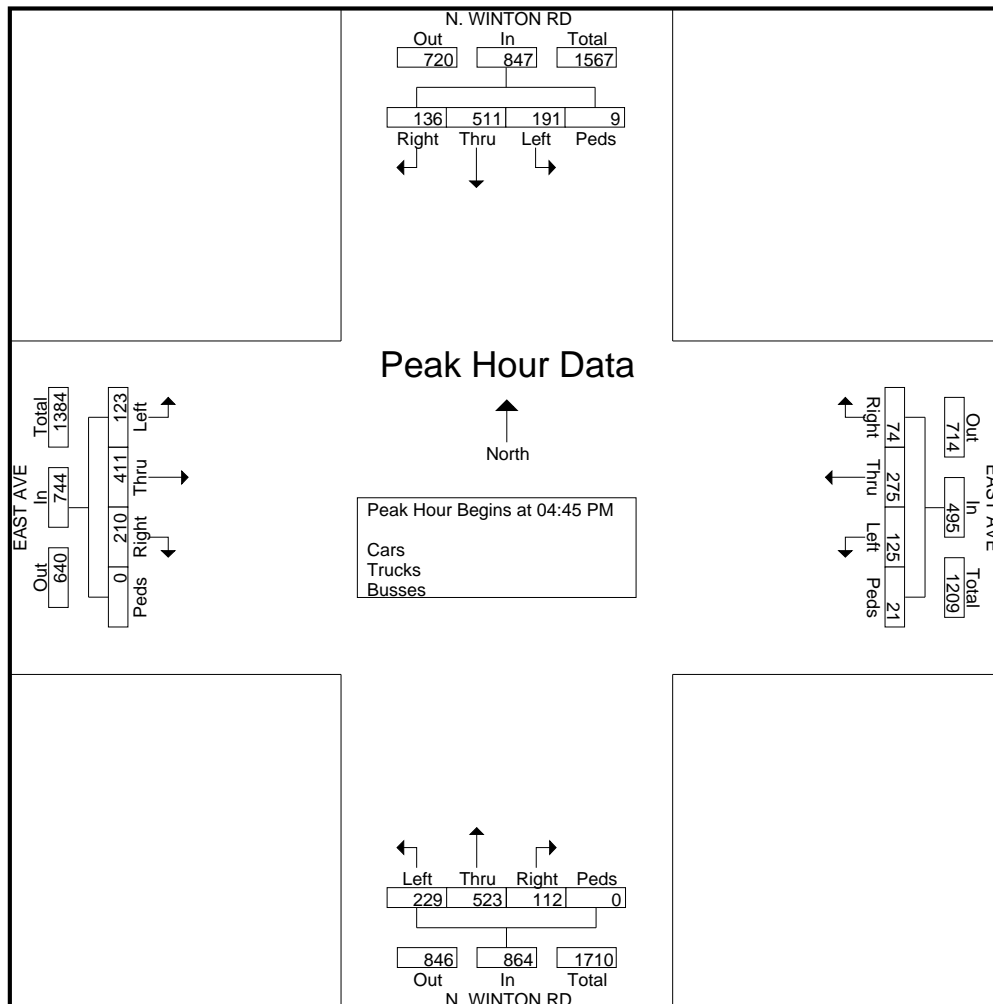


A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : FRI PM_N Winton & East
Site Code : 00000000
Start Date : 9/18/2009
Page No : 2

Start Time	N. WINTON RD Southbound					EAST AVE Westbound					N. WINTON RD Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	42	137	47	4	230	12	52	28	3	95	28	128	55	0	211	61	121	32	0	214	750
05:00 PM	23	122	55	4	204	19	76	35	4	134	32	118	62	0	212	45	102	30	0	177	727
05:15 PM	38	145	52	0	235	16	77	34	10	137	26	147	41	0	214	61	100	29	0	190	776
05:30 PM	33	107	37	1	178	27	70	28	4	129	26	130	71	0	227	43	88	32	0	163	697
Total Volume	136	511	191	9	847	74	275	125	21	495	112	523	229	0	864	210	411	123	0	744	2950
% App. Total	16.1	60.3	22.6	1.1		14.9	55.6	25.3	4.2		13	60.5	26.5	0		28.2	55.2	16.5	0		
PHF	.810	.881	.868	.563	.901	.685	.893	.893	.525	.903	.875	.889	.806	.000	.952	.861	.849	.961	.000	.869	.950





A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : East & Probert_WEEKDAY
Site Code : 00000000
Start Date : 9/17/2009
Page No : 1

Groups Printed- Cars - Trucks - Busses

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	21	0	4	0	25	0	81	0	0	81	13	0	2	0	15	0	73	17	0	90	211
07:15 AM	28	0	10	0	38	0	102	0	0	102	19	1	2	0	22	0	88	9	0	97	259
07:30 AM	23	0	8	0	31	2	129	0	0	131	22	1	4	0	27	0	140	17	0	157	346
07:45 AM	23	0	12	0	35	1	135	0	0	136	5	7	5	0	17	0	145	26	0	171	359
Total	95	0	34	0	129	3	447	0	0	450	59	9	13	0	81	0	446	69	0	515	1175
08:00 AM	32	0	12	0	44	2	134	0	0	136	20	3	6	0	29	0	109	17	0	126	335
08:15 AM	26	0	8	0	34	2	108	0	0	110	15	2	3	0	20	0	117	19	0	136	300
08:30 AM	27	0	2	0	29	5	112	0	0	117	15	5	4	0	24	0	103	21	0	124	294
08:45 AM	23	0	7	0	30	5	104	0	0	109	14	3	9	0	26	0	119	21	0	140	305
Total	108	0	29	0	137	14	458	0	0	472	64	13	22	0	99	0	448	78	0	526	1234
*** BREAK ***																					
12:00 PM	40	0	14	0	54	5	104	0	0	109	16	5	10	1	32	0	125	30	0	155	350
12:15 PM	31	0	20	0	51	5	83	0	0	88	15	1	10	0	26	0	128	34	0	162	327
12:30 PM	37	0	19	0	56	10	76	0	0	86	18	5	17	0	40	0	115	29	0	144	326
12:45 PM	43	0	19	0	62	5	92	0	0	97	19	4	10	0	33	0	114	39	0	153	345
Total	151	0	72	0	223	25	355	0	0	380	68	15	47	1	131	0	482	132	0	614	1348
*** BREAK ***																					
04:00 PM	36	0	14	0	50	9	92	0	0	101	8	1	0	0	9	0	134	29	0	163	323
04:15 PM	34	0	19	0	53	7	89	0	0	96	9	2	2	0	13	0	130	30	0	160	322
04:30 PM	43	0	18	0	61	1	112	0	0	113	6	4	3	0	13	0	160	31	0	191	378
04:45 PM	39	0	21	0	60	6	88	0	0	94	8	3	2	0	13	0	142	27	0	169	336
Total	152	0	72	0	224	23	381	0	0	404	31	10	7	0	48	0	566	117	0	683	1359
05:00 PM	50	0	25	0	75	7	95	0	2	104	10	2	7	0	19	0	155	38	0	193	391
05:15 PM	53	0	30	0	83	7	138	0	0	145	11	4	3	0	18	0	170	45	0	215	461
05:30 PM	48	0	20	0	68	10	124	0	0	134	6	2	4	0	12	0	158	27	0	185	399
05:45 PM	48	0	19	0	67	5	93	0	0	98	6	5	3	0	14	0	151	29	0	180	359
Total	199	0	94	0	293	29	450	0	2	481	33	13	17	0	63	0	634	139	0	773	1610
Grand Total	705	0	301	0	1006	94	2091	0	2	2187	255	60	106	1	422	0	2576	535	0	3111	6726
Apprch %	70.1	0	29.9	0		4.3	95.6	0	0.1		60.4	14.2	25.1	0.2		0	82.8	17.2	0		
Total %	10.5	0	4.5	0	15	1.4	31.1	0	0	32.5	3.8	0.9	1.6	0	6.3	0	38.3	8	0	46.3	
Cars	704	0	300	0	1004	92	2081	0	2	2175	254	60	106	1	421	0	2568	528	0	3096	6696
% Cars	99.9	0	99.7	0	99.8	97.9	99.5	0	100	99.5	99.6	100	100	100	99.8	0	99.7	98.7	0	99.5	99.6
Trucks	1	0	1	0	2	1	1	0	0	2	1	0	0	0	1	0	4	1	0	5	10
% Trucks	0.1	0	0.3	0	0.2	1.1	0	0	0	0.1	0.4	0	0	0	0.2	0	0.2	0.2	0	0.2	0.1
Busses	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	0	4	6	0	10	20
% Busses	0	0	0	0	0	1.1	0.4	0	0	0.5	0	0	0	0	0	0	0.2	1.1	0	0.3	0.3

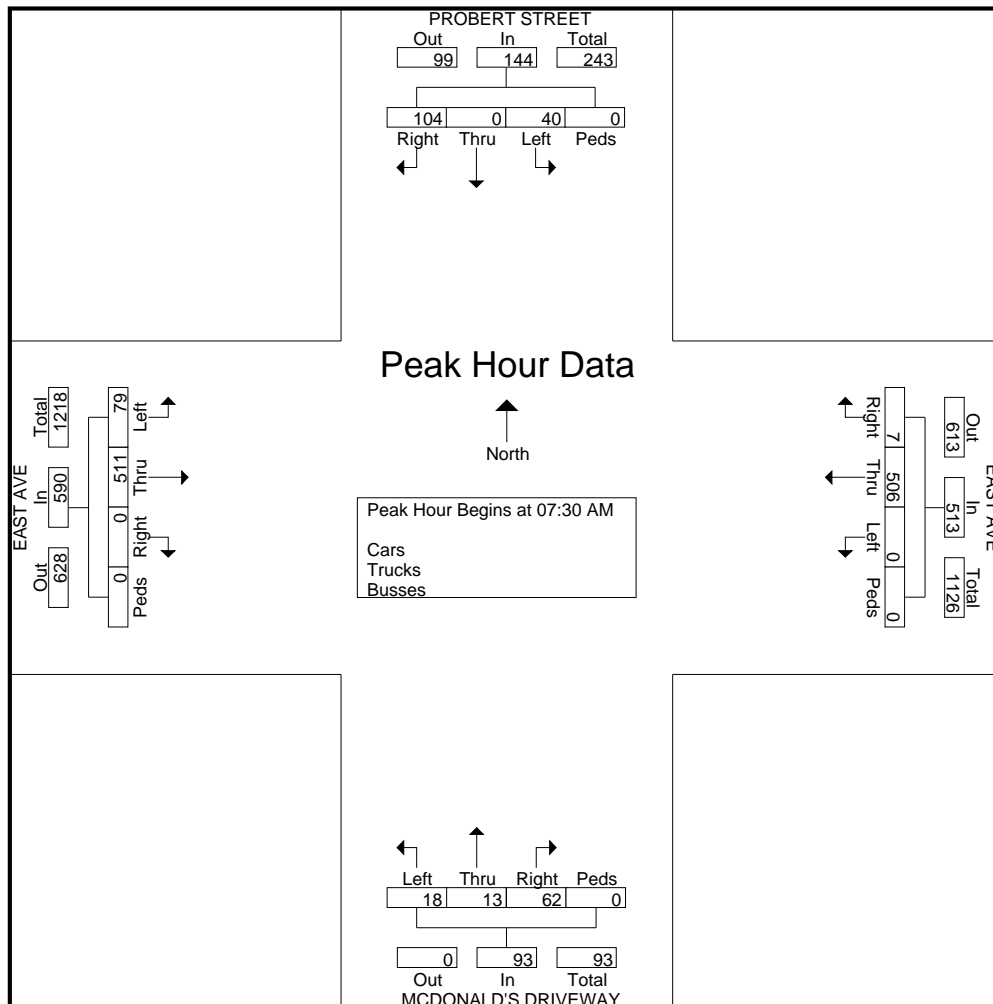


A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : East & Probert_WEEKDAY
Site Code : 00000000
Start Date : 9/17/2009
Page No : 2

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	23	0	8	0	31	2	129	0	0	131	22	1	4	0	27	0	140	17	0	157	346
07:45 AM	23	0	12	0	35	1	135	0	0	136	5	7	5	0	17	0	145	26	0	171	359
08:00 AM	32	0	12	0	44	2	134	0	0	136	20	3	6	0	29	0	109	17	0	126	335
08:15 AM	26	0	8	0	34	2	108	0	0	110	15	2	3	0	20	0	117	19	0	136	300
Total Volume	104	0	40	0	144	7	506	0	0	513	62	13	18	0	93	0	511	79	0	590	1340
% App. Total	72.2	0	27.8	0		1.4	98.6	0	0		66.7	14	19.4	0		0	86.6	13.4	0		
PHF	.813	.000	.833	.000	.818	.875	.937	.000	.000	.943	.705	.464	.750	.000	.802	.000	.881	.760	.000	.863	.933



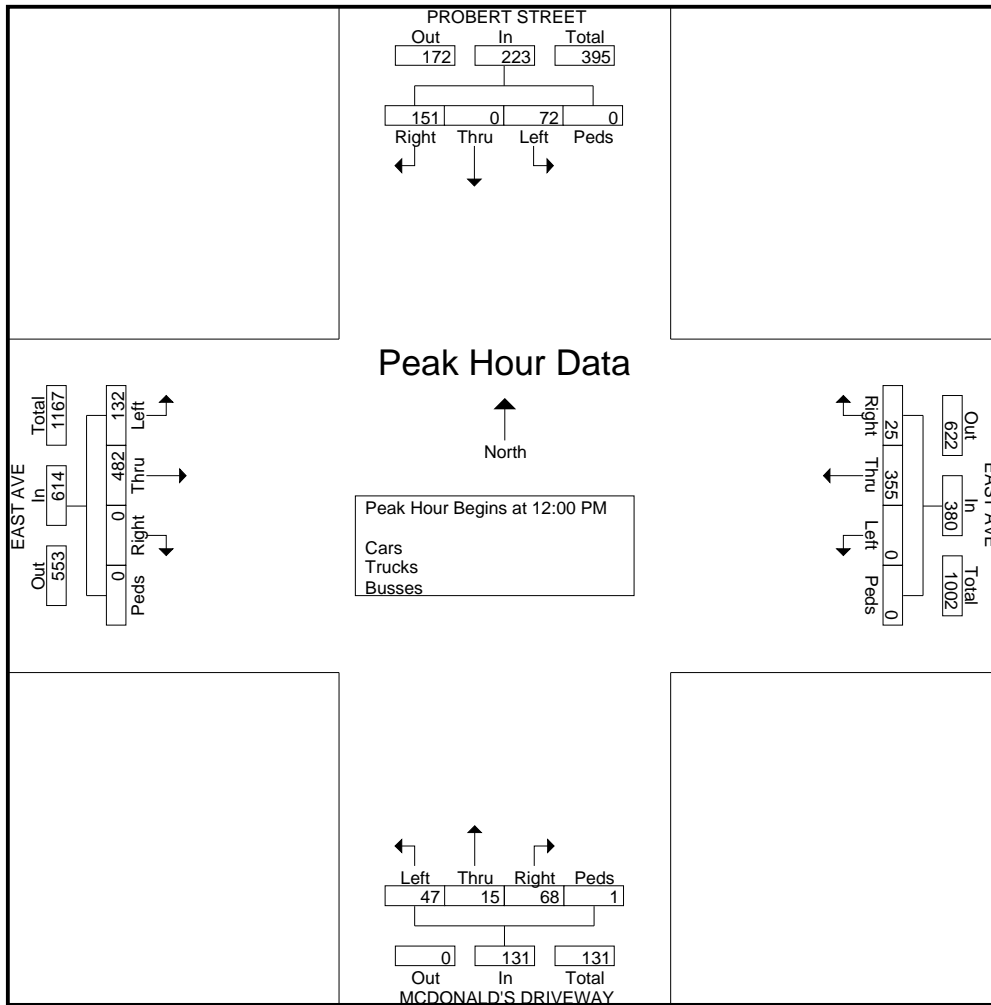


A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : East & Probert_WEEKDAY
Site Code : 00000000
Start Date : 9/17/2009
Page No : 3

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	40	0	14	0	54	5	104	0	0	109	16	5	10	1	32	0	125	30	0	155	350
12:15 PM	31	0	20	0	51	5	83	0	0	88	15	1	10	0	26	0	128	34	0	162	327
12:30 PM	37	0	19	0	56	10	76	0	0	86	18	5	17	0	40	0	115	29	0	144	326
12:45 PM	43	0	19	0	62	5	92	0	0	97	19	4	10	0	33	0	114	39	0	153	345
Total Volume	151	0	72	0	223	25	355	0	0	380	68	15	47	1	131	0	482	132	0	614	1348
% App. Total	67.7	0	32.3	0		6.6	93.4	0	0		51.9	11.5	35.9	0.8		0	78.5	21.5	0		
PHF	.878	.000	.900	.000	.899	.625	.853	.000	.000	.872	.895	.750	.691	.250	.819	.000	.941	.846	.000	.948	.963





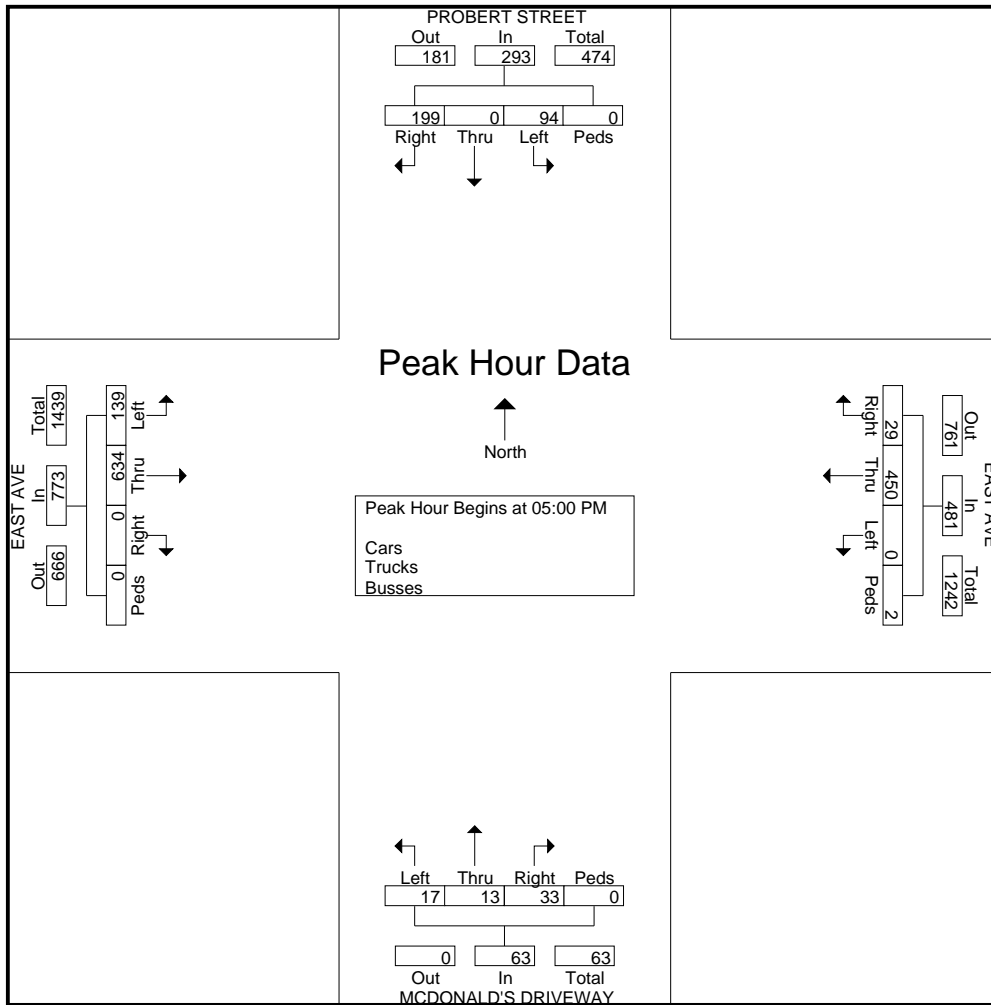
A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : East & Probert_WEEKDAY
Site Code : 00000000
Start Date : 9/17/2009
Page No : 4

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
05:00 PM	50	0	25	0	75	7	95	0	2	104	10	2	7	0	19	0	155	38	0	193	391
05:15 PM	53	0	30	0	83	7	138	0	0	145	11	4	3	0	18	0	170	45	0	215	461
05:30 PM	48	0	20	0	68	10	124	0	0	134	6	2	4	0	12	0	158	27	0	185	399
05:45 PM	48	0	19	0	67	5	93	0	0	98	6	5	3	0	14	0	151	29	0	180	359
Total Volume	199	0	94	0	293	29	450	0	2	481	33	13	17	0	63	0	634	139	0	773	1610
% App. Total	67.9	0	32.1	0		6	93.6	0	0.4		52.4	20.6	27	0		0	82	18	0		
PHF	.939	.000	.783	.000	.883	.725	.815	.000	.250	.829	.750	.650	.607	.000	.829	.000	.932	.772	.000	.899	.873

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM





A TYLIN INTERNATIONAL COMPANY
 255 East Avenue
 Rochester, NY 14604

File Name : SAT_East & Probert
 Site Code : 00000000
 Start Date : 9/19/2009
 Page No : 1

Groups Printed- Cars - Trucks - Busses

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	35	0	18	0	53	3	77	0	0	80	10	3	8	0	21	0	120	32	0	152	306
11:15 AM	32	0	8	0	40	4	88	0	0	92	7	0	5	0	12	0	130	29	0	159	303
11:30 AM	37	0	15	0	52	8	98	0	0	106	5	2	8	0	15	0	171	28	0	199	372
11:45 AM	36	0	13	0	49	2	93	0	0	95	10	1	5	0	16	0	146	27	0	173	333
Total	140	0	54	0	194	17	356	0	0	373	32	6	26	0	64	0	567	116	0	683	1314
12:00 PM	32	0	12	0	44	7	96	0	0	103	5	3	3	0	11	0	136	21	0	157	315
12:15 PM	42	0	11	0	53	4	89	0	0	93	3	0	2	0	5	0	138	30	0	168	319
12:30 PM	32	0	20	0	52	3	101	0	0	104	13	4	5	0	22	0	122	28	0	150	328
12:45 PM	30	0	16	0	46	3	91	0	0	94	11	3	4	0	18	0	124	30	0	154	312
Total	136	0	59	0	195	17	377	0	0	394	32	10	14	0	56	0	520	109	0	629	1274
01:00 PM	31	0	13	0	44	3	82	0	0	85	10	2	3	0	15	0	128	34	0	162	306
01:15 PM	26	0	23	0	49	6	59	0	0	65	10	2	3	0	15	0	108	31	0	139	268
01:30 PM	36	0	12	0	48	7	98	0	0	105	12	3	5	0	20	0	113	39	0	152	325
01:45 PM	27	0	15	0	42	5	80	0	0	85	12	1	6	0	19	0	111	25	0	136	282
Total	120	0	63	0	183	21	319	0	0	340	44	8	17	0	69	0	460	129	0	589	1181
Grand Total	396	0	176	0	572	55	1052	0	0	1107	108	24	57	0	189	0	1547	354	0	1901	3769
Apprch %	69.2	0	30.8	0		5	95	0	0		57.1	12.7	30.2	0		0	81.4	18.6	0		
Total %	10.5	0	4.7	0	15.2	1.5	27.9	0	0	29.4	2.9	0.6	1.5	0	5	0	41	9.4	0	50.4	
Cars	395	0	175	0	570	55	1039	0	0	1094	106	23	56	0	185	0	1542	350	0	1892	3741
% Cars	99.7	0	99.4	0	99.7	100	98.8	0	0	98.8	98.1	95.8	98.2	0	97.9	0	99.7	98.9	0	99.5	99.3
Trucks	1	0	1	0	2	0	6	0	0	6	1	1	1	0	3	0	2	0	0	2	13
% Trucks	0.3	0	0.6	0	0.3	0	0.6	0	0	0.5	0.9	4.2	1.8	0	1.6	0	0.1	0	0	0.1	0.3
Busses	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	0	3	4	0	7	15
% Busses	0	0	0	0	0	0	0.7	0	0	0.6	0.9	0	0	0	0.5	0	0.2	1.1	0	0.4	0.4

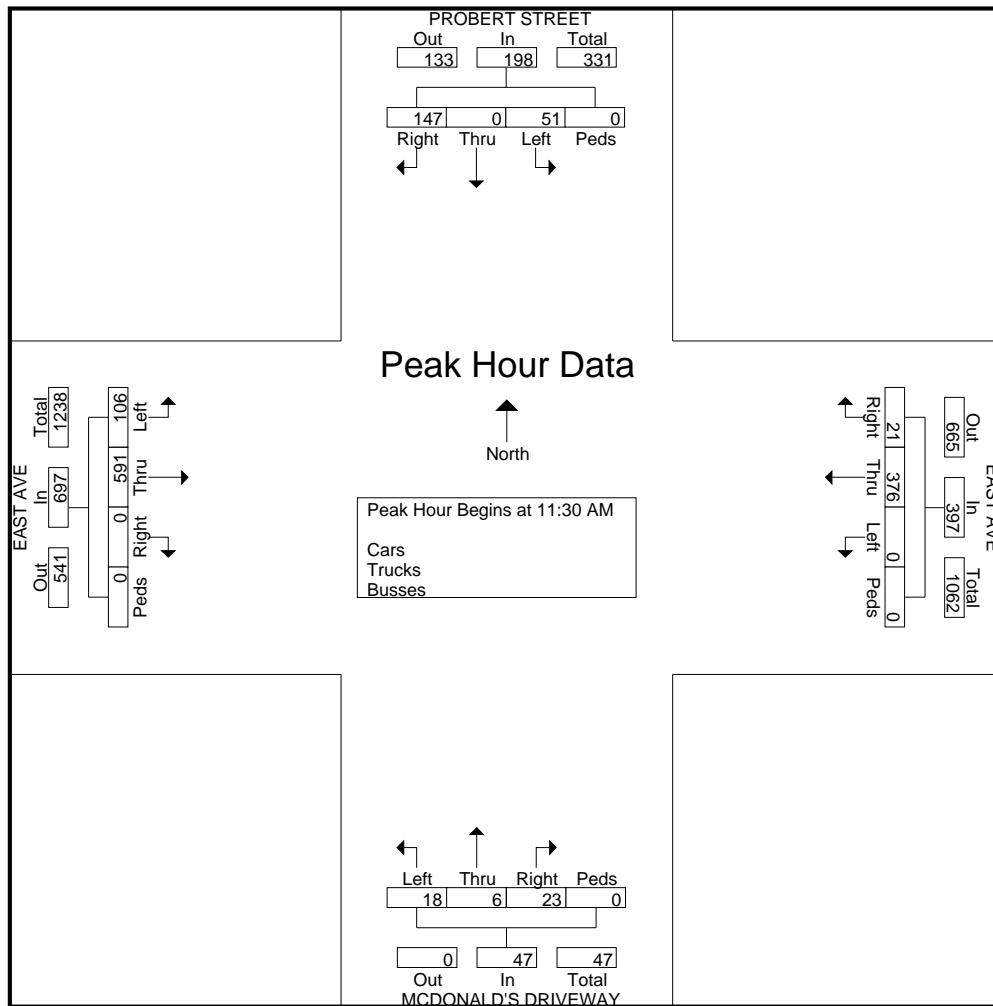


A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : SAT_East & Probert
Site Code : 00000000
Start Date : 9/19/2009
Page No : 2

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	37	0	15	0	52	8	98	0	0	106	5	2	8	0	15	0	171	28	0	199	372
11:45 AM	36	0	13	0	49	2	93	0	0	95	10	1	5	0	16	0	146	27	0	173	333
12:00 PM	32	0	12	0	44	7	96	0	0	103	5	3	3	0	11	0	136	21	0	157	315
12:15 PM	42	0	11	0	53	4	89	0	0	93	3	0	2	0	5	0	138	30	0	168	319
Total Volume	147	0	51	0	198	21	376	0	0	397	23	6	18	0	47	0	591	106	0	697	1339
% App. Total	74.2	0	25.8	0		5.3	94.7	0	0		48.9	12.8	38.3	0		0	84.8	15.2	0		
PHF	.875	.000	.850	.000	.934	.656	.959	.000	.000	.936	.575	.500	.563	.000	.734	.000	.864	.883	.000	.876	.900





A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : FRI PM_East & Probert
Site Code : 00000000
Start Date : 9/18/2009
Page No : 1

Groups Printed- Cars - Trucks - Busses

Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	37	0	25	0	62	7	107	0	0	114	13	2	2	0	17	0	144	25	0	169	362
04:15 PM	43	0	24	0	67	7	95	0	0	102	4	2	4	0	10	0	157	36	0	193	372
04:30 PM	51	0	18	0	69	13	78	0	0	91	8	4	2	0	14	0	164	37	0	201	375
04:45 PM	44	0	13	0	57	8	101	0	0	109	7	1	8	0	16	0	172	36	0	208	390
Total	175	0	80	0	255	35	381	0	0	416	32	9	16	0	57	0	637	134	0	771	1499
05:00 PM	42	0	13	0	55	9	114	0	0	123	8	3	7	0	18	0	151	37	0	188	384
05:15 PM	53	0	31	3	87	7	111	0	0	118	9	2	3	0	14	0	145	46	0	191	410
05:30 PM	45	0	18	0	63	8	110	0	0	118	1	3	4	0	8	0	131	46	0	177	366
05:45 PM	54	0	20	0	74	4	102	0	0	106	9	2	4	0	15	0	125	35	0	160	355
Total	194	0	82	3	279	28	437	0	0	465	27	10	18	0	55	0	552	164	0	716	1515
Grand Total	369	0	162	3	534	63	818	0	0	881	59	19	34	0	112	0	1189	298	0	1487	3014
Apprch %	69.1	0	30.3	0.6		7.2	92.8	0	0		52.7	17	30.4	0		0	80	20	0		
Total %	12.2	0	5.4	0.1	17.7	2.1	27.1	0	0	29.2	2	0.6	1.1	0	3.7	0	39.4	9.9	0	49.3	
Cars	367	0	162	3	532	62	803	0	0	865	59	19	34	0	112	0	1186	292	0	1478	2987
% Cars	99.5	0	100	100	99.6	98.4	98.2	0	0	98.2	100	100	100	0	100	0	99.7	98	0	99.4	99.1
Trucks	2	0	0	0	2	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	8
% Trucks	0.5	0	0	0	0.4	0	0.5	0	0	0.5	0	0	0	0	0	0	0.2	0	0	0.1	0.3
Busses	0	0	0	0	0	1	11	0	0	12	0	0	0	0	0	0	1	6	0	7	19
% Busses	0	0	0	0	0	1.6	1.3	0	0	1.4	0	0	0	0	0	0	0.1	2	0	0.5	0.6

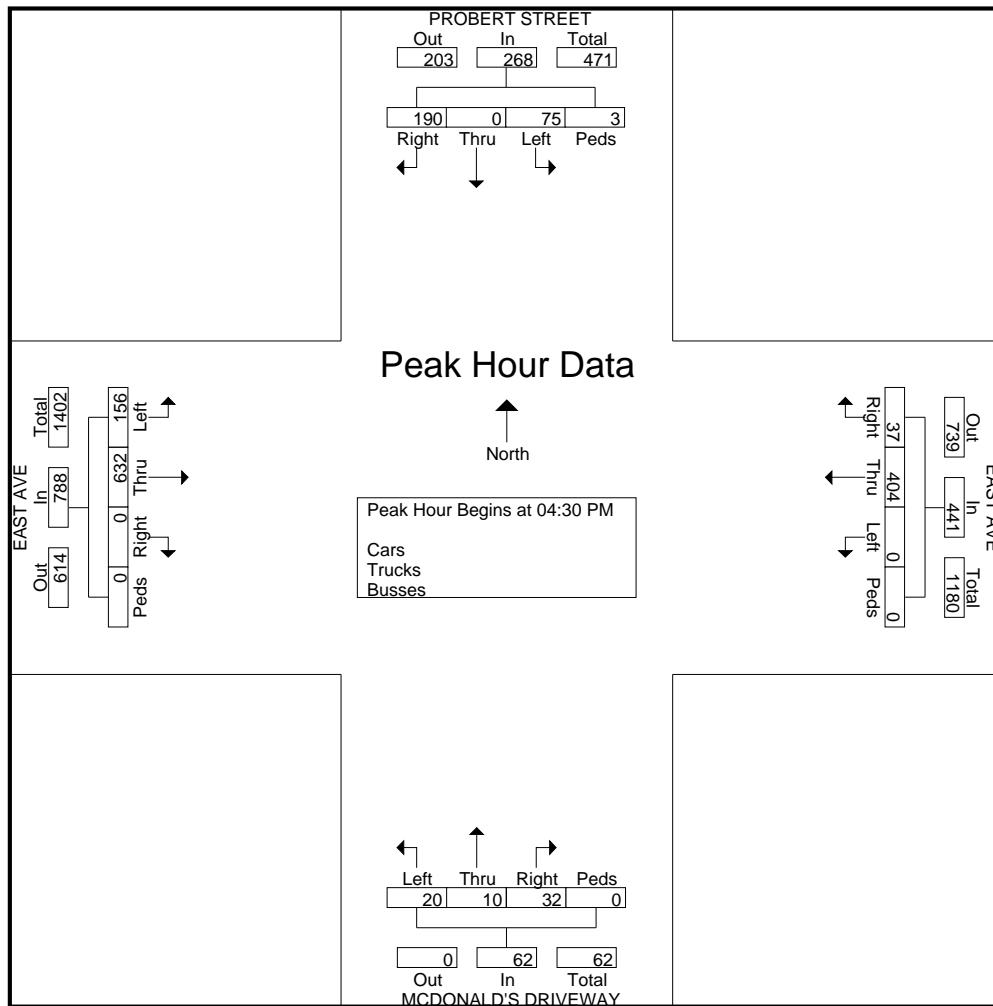


A TYLIN INTERNATIONAL COMPANY

255 East Avenue
Rochester, NY 14604

File Name : FRI PM_East & Probert
Site Code : 00000000
Start Date : 9/18/2009
Page No : 2

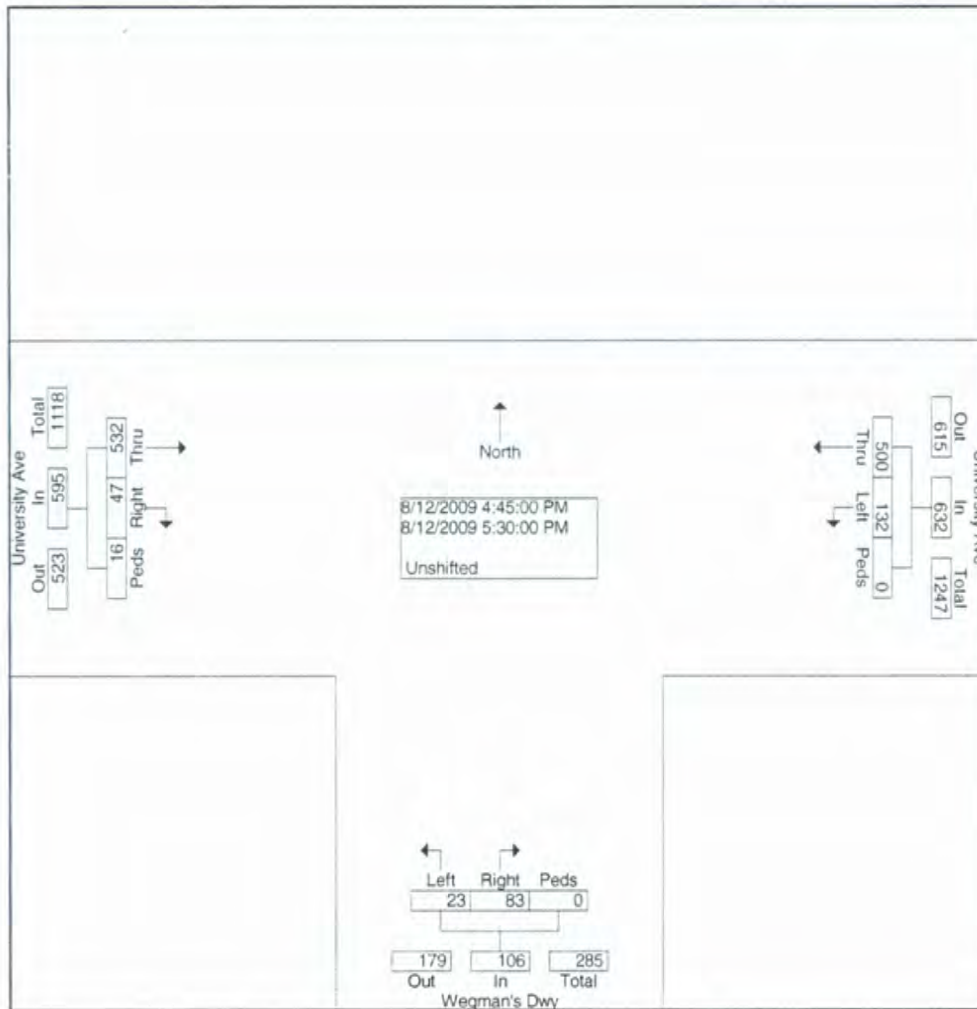
Start Time	PROBERT STREET Southbound					EAST AVE Westbound					MCDONALD'S DRIVEWAY Northbound					EAST AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	51	0	18	0	69	13	78	0	0	91	8	4	2	0	14	0	164	37	0	201	375
04:45 PM	44	0	13	0	57	8	101	0	0	109	7	1	8	0	16	0	172	36	0	208	390
05:00 PM	42	0	13	0	55	9	114	0	0	123	8	3	7	0	18	0	151	37	0	188	384
05:15 PM	53	0	31	3	87	7	111	0	0	118	9	2	3	0	14	0	145	46	0	191	410
Total Volume	190	0	75	3	268	37	404	0	0	441	32	10	20	0	62	0	632	156	0	788	1559
% App. Total	70.9	0	28	1.1		8.4	91.6	0	0		51.6	16.1	32.3	0		0	80.2	19.8	0		
PHF	.896	.000	.605	.250	.770	.712	.886	.000	.000	.896	.889	.625	.625	.000	.861	.000	.919	.848	.000	.947	.951



Monroe County
 Department of Transportation
 Signals Engineering Division
 Traffic Studies Unit

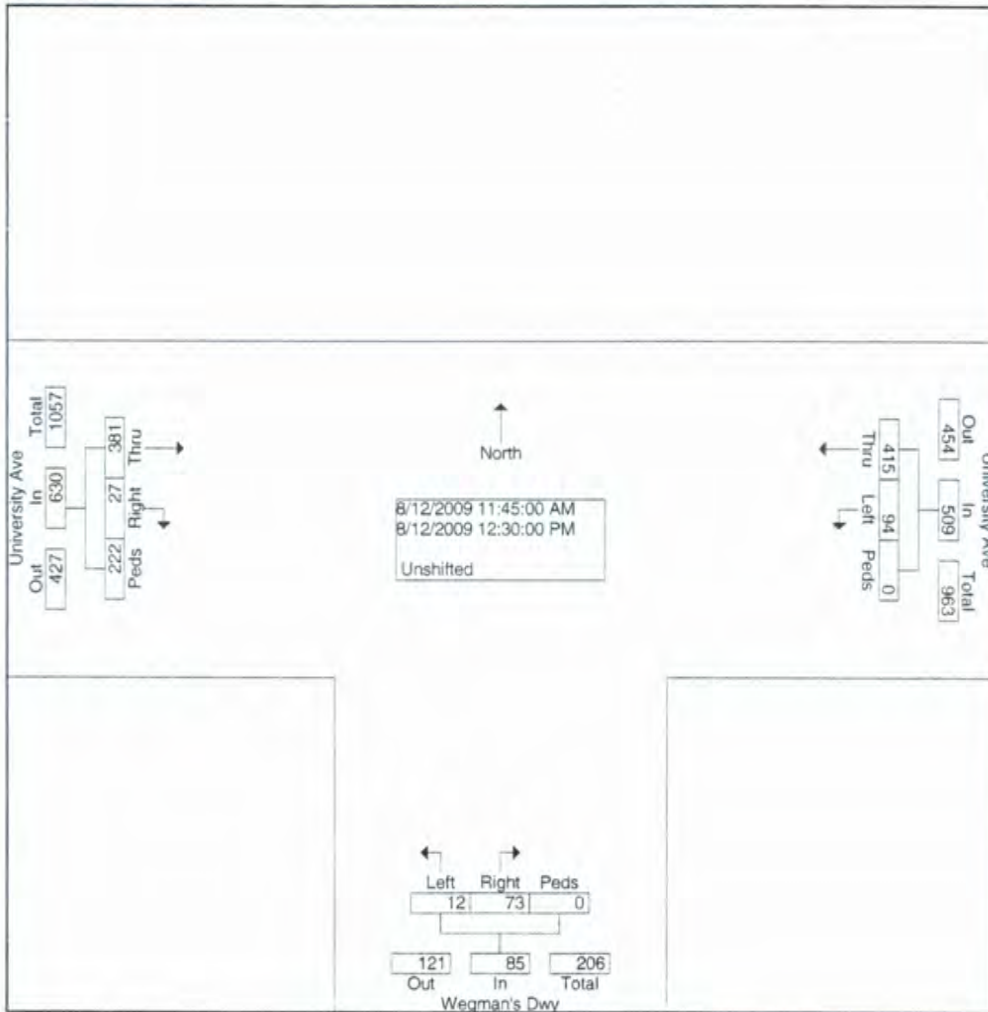
File Name : University Ave at Wegmans Dwy
 Site Code :
 Start Date : 08/12/2009
 Page No : 4

Start Time	Wegman's Dwy From North					University Ave From East					Wegman's Dwy From South					University Ave From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Peak Hour From 02:00 PM to 05:30 PM - Peak 1 of 1																					
Intersection 04:45 PM																					
Volume	0	0	0	0	0	0	500	132	0	632	83	0	23	0	106	47	532	0	16	595	1333
Percent	0.0	0.0	0.0	0.0		0.0	79.1	20.9	0.0		78.3	0.0	21.7	0.0		7.9	89.4	0.0	2.7		
Volume	0	0	0	0	0	0	149	35	0	184	24	0	12	0	36	12	121	0	5	138	358
Peak Factor																					0.931
High Int. 05:15 PM																					
Volume	0	0	0	0	0	0	149	35	0	184	24	0	12	0	36	10	155	0	3	168	
Peak Factor																					0.885



Monroe County
 Department of Transportation
 Signals Engineering Division : University Ave at Wegmans Dwy
 Traffic Studies Unit :
 Site Code :
 Start Date : 08/12/2009
 Page No : 3

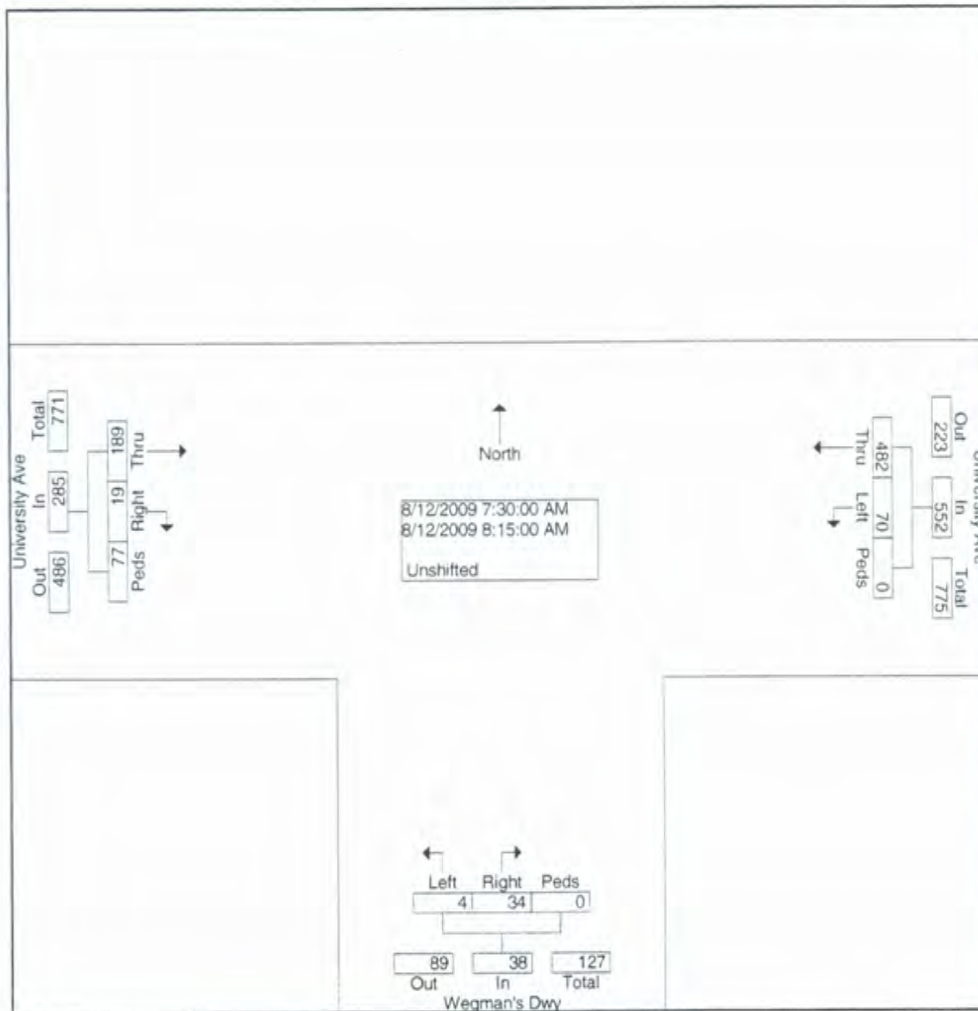
Start Time	Wegman's Dwy From North					University Ave From East					Wegman's Dwy From South					University Ave From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Peak Hour From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Intersection	11:45 AM																				
Volume	0	0	0	1	1	0	415	94	0	509	73	0	12	0	85	27	381	0	222	630	1225
Percent	0.0	0.0	0.0	100.0		0.0	81.5	18.5	0.0		85.9	0.0	14.1	0.0		4.3	60.5	0.0	35.2		
12:00 Volume	0	0	0	0	0	0	97	22	0	119	19	0	5	0	24	3	109	0	73	185	328
Peak Factor																					
High Int.	12:15 PM																				
Volume	0	0	0	1	1	0	109	24	0	133	24	0	2	0	26	3	109	0	73	185	
Peak Factor	0.250					0.957					0.817					0.851					



Monroe County
 Department of Transportation
 Signals Engineering Division
 Traffic Studies Unit

File Name : University Ave at Wegmans Dwy
 Site Code :
 Start Date : 08/12/2009
 Page No : 2

Start Time	Wegman's Dwy From North					University Ave From East					Wegman's Dwy From South					University Ave From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Peak Hour From 07:30 AM to 09:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	0	0	0	0	0	482	70	0	552	34	0	4	0	38	19	189	0	77	285	875
Percent	0.0	0.0	0.0	0.0	0	0.0	87.3	12.7	0.0	552	89.5	0.0	10.5	0.0	38	6.7	66.3	0.0	27.0	285	
07:45	07:45 AM																				
Volume	0	0	0	0	0	0	148	21	0	169	7	0	2	0	9	7	50	0	20	77	255
Peak Factor																					
High Int.	7:15:00 AM					07:45 AM					08:00 AM					07:30 AM					
Volume	0	0	0	0	0	0	148	21	0	169	16	0	1	0	17	4	50	0	37	91	
Peak Factor	0.817										0.559					0.783					



Monroe County
Department of Transportation

Town: City of Rochester
N/S Street: Wegman's Dwy
E/W Street: University Ave
Observer: PBM

Signal Engineering Division Name : University Ave at Wegmans Dwy
Traffic Studies Unit Site Code :
Start Date : 08/12/2009
Page No : 1

Groups Printed- Unshifted

Start Time	Wegman's Dwy From North					University Ave From East					Wegman's Dwy From South					University Ave From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:30 AM	0	0	0	0	0	0	111	14	0	125	7	0	1	0	8	4	50	0	37	91	224
07:45 AM	0	0	0	0	0	0	148	21	0	169	7	0	2	0	9	7	50	0	20	77	255
Total	0	0	0	0	0	0	259	35	0	294	14	0	3	0	17	11	100	0	57	168	479
08:00 AM	0	0	0	0	0	0	112	18	0	130	16	0	1	0	17	4	50	0	10	64	211
08:15 AM	0	0	0	0	0	0	111	17	0	128	4	0	0	0	4	4	39	0	10	53	185
08:30 AM	0	0	0	0	0	0	104	18	1	123	9	0	1	0	10	5	67	0	13	85	218
Total	0	0	0	0	0	0	327	53	1	381	29	0	2	0	31	13	156	0	33	202	614
11:30 AM	0	0	0	0	0	0	70	23	0	93	15	0	3	0	18	11	70	0	25	106	217
11:45 AM	0	0	0	0	0	0	109	24	0	133	14	0	3	0	17	11	83	0	42	136	286
Total	0	0	0	0	0	0	179	47	0	226	29	0	6	0	35	22	153	0	67	242	503
12:00 PM	0	0	0	0	0	0	97	22	0	119	19	0	5	0	24	3	109	0	73	185	328
12:15 PM	0	0	0	1	1	0	101	25	0	126	24	0	2	0	26	6	88	0	65	159	312
12:30 PM	0	0	0	0	0	0	108	23	0	131	16	0	2	0	18	7	101	0	42	150	299
12:45 PM	0	0	0	0	0	0	107	28	0	135	26	0	2	0	28	13	80	0	22	115	278
Total	0	0	0	1	1	0	413	98	0	511	85	0	11	0	96	29	378	0	202	609	1217
01:00 PM	0	0	0	0	0	0	96	20	0	116	24	0	5	0	29	9	80	0	13	102	247
01:15 PM	0	0	0	0	0	0	79	22	0	101	12	0	5	0	17	10	67	0	7	84	202
Total	0	0	0	0	0	0	175	42	0	217	36	0	10	0	46	19	147	0	20	186	449
04:30 PM	0	0	0	0	0	0	93	32	0	125	25	0	5	0	30	6	113	0	3	122	277
04:45 PM	0	0	0	0	0	0	116	31	0	147	20	0	5	0	25	10	155	0	3	168	340
Total	0	0	0	0	0	0	209	63	0	272	45	0	10	0	55	16	268	0	6	290	617
05:00 PM	0	0	0	0	0	0	99	28	0	127	17	0	3	0	20	10	126	0	3	139	286
05:15 PM	0	0	0	0	0	0	149	35	0	184	24	0	12	0	36	12	121	0	5	138	358
05:30 PM	0	0	0	0	0	0	136	38	0	174	22	0	3	0	25	15	130	0	5	150	349
Grand Total	0	0	0	1	1	0	194	439	1	2386	301	0	60	0	361	147	1579	0	398	2124	4872
Apprch %	0.0	0.0	0.0	100.0		0.0	81.6	18.4	0.0		83.4	0.0	16.6	0.0		6.9	74.3	0.0	18.7		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	39.9	9.0	0.0	49.0	6.2	0.0	1.2	0.0	7.4	3.0	32.4	0.0	8.2	43.6	

Appendix H
Gap Analysis



A TYLIN INTERNATIONAL COMPANY
 255 East Avenue
 Rochester, NY 14604

File Name : PM Peak
 Site Code : 00000000
 Start Date : 10/15/2009
 Page No : 1

Plaza
 Entering

Directions Printed: Eastbound

Start Time	Volume	2 - 3	4 - 5	6 - 7	8 - 9	10 - 11	12 - 13	14 - 15	16 - 17	18 - 19	20 - 21	22 - 23	24 - 25	26 - 27	28 - 29	>29	Int. Total	Average
04:45 PM	4	47	19	11	10	1	4	3	1	2	1	1	1	0	1	2	104	4 - 5
Total	4	47	19	11	10	1	4	3	1	2	1	1	1	0	1	2	104	4 - 5
05:00 PM	7	52	33	10	5	10	6	4	1	0	0	0	0	0	0	1	122	4 - 5
05:15 PM	7	48	18	17	7	6	4	1	3	2	0	0	1	0	1	0	108	4 - 5
05:30 PM	10	47	16	16	3	4	1	2	2	0	3	0	2	1	0	1	98	4 - 5
Grand Total	28	194	86	54	25	21	15	10	7	4	4	1	4	1	2	4	432	4 - 5
Total %		44.9	19.9	12.5	5.8	4.9	3.5	2.3	1.6	0.9	0.9	0.2	0.9	0.2	0.5	0.9		

Plaza
 Exiting

Directions Printed: Westbound

Start Time	Volume	2 - 3	4 - 5	6 - 7	8 - 9	10 - 11	12 - 13	14 - 15	16 - 17	18 - 19	20 - 21	22 - 23	24 - 25	26 - 27	28 - 29	>29	Int. Total	Average
04:45 PM	6	62	10	9	8	3	5	3	5	2	1	2	1	0	0	0	111	2 - 3
Total	6	62	10	9	8	3	5	3	5	2	1	2	1	0	0	0	111	2 - 3
05:00 PM	6	43	13	6	3	5	5	5	4	3	2	2	0	0	0	1	92	4 - 5
05:15 PM	7	66	14	6	6	3	4	2	1	0	1	0	1	0	1	1	106	2 - 3
05:30 PM	8	50	9	5	7	2	4	5	1	2	1	1	0	2	0	3	92	2 - 3
Grand Total	27	221	46	26	24	13	18	15	11	7	5	5	2	2	1	5	401	2 - 3
Total %		55.1	11.5	6.5	6.0	3.2	4.5	3.7	2.7	1.7	1.2	1.2	0.5	0.5	0.2	1.2		

Directions Printed: Combined

Start Time	Volume	2 - 3	4 - 5	6 - 7	8 - 9	10 - 11	12 - 13	14 - 15	16 - 17	18 - 19	20 - 21	22 - 23	24 - 25	26 - 27	28 - 29	>29	Int. Total	Average
04:45 PM	10	76	25	11	6	0	4	2	0	0	0	1	0	0	0	0	125	2 - 3
Total	10	76	25	11	6	0	4	2	0	0	0	1	0	0	0	0	125	2 - 3
05:00 PM	13	75	30	11	4	2	0	1	0	0	0	0	0	0	0	0	123	2 - 3
05:15 PM	14	84	17	7	3	1	1	0	0	0	0	0	0	0	0	0	113	2 - 3
05:30 PM	18	75	10	9	6	2	0	2	0	1	0	1	0	0	0	0	106	2 - 3
Grand Total	55	310	82	38	19	5	5	5	0	1	0	2	0	0	0	0	467	2 - 3
Total %		66.4	17.6	8.1	4.1	1.1	1.1	1.1	0.0	0.2	0.0	0.4	0.0	0.0	0.0	0.0		



A TYLIN INTERNATIONAL COMPANY
 255 East Avenue
 Rochester, NY 14604

File Name : Off-Peak
 Site Code : 00000000
 Start Date : 10/15/2009
 Page No : 1

Directions Printed: Eastbound

Start Time	Volume	2 - 3	4 - 5	6 - 7	8 - 9	10 - 11	12 - 13	14 - 15	16 - 17	18 - 19	20 - 21	22 - 23	24 - 25	26 - 27	28 - 29	>29	Int. Total	Average
02:30 PM	0	66	25	13	9	4	1	2	2	2	2	0	0	0	0	2	128	2 - 3
02:45 PM	0	34	20	8	10	7	9	2	1	4	2	0	0	1	0	2	100	4 - 5
Total	0	100	45	21	19	11	10	4	3	6	4	0	0	1	0	4	228	4 - 5
03:00 PM	0	48	24	12	7	4	4	2	3	3	1	1	0	0	1	1	111	4 - 5
03:15 PM	0	42	31	11	12	4	4	3	1	2	0	0	1	1	1	0	113	4 - 5
Grand Total	0	190	100	44	38	19	18	9	7	11	5	1	1	2	2	5	452	4 - 5
Total %		42.0	22.1	9.7	8.4	4.2	4.0	2.0	1.5	2.4	1.1	0.2	0.2	0.4	0.4	1.1		

Directions Printed: Westbound

Start Time	Volume	2 - 3	4 - 5	6 - 7	8 - 9	10 - 11	12 - 13	14 - 15	16 - 17	18 - 19	20 - 21	22 - 23	24 - 25	26 - 27	28 - 29	>29	Int. Total	Average
02:30 PM	0	30	10	8	4	8	5	2	6	1	4	0	1	0	2	3	84	6 - 7
02:45 PM	0	43	14	9	9	4	5	3	0	5	3	2	0	0	1	1	99	4 - 5
Total	0	73	24	17	13	12	10	5	6	6	7	2	1	0	3	4	183	4 - 5
03:00 PM	0	32	13	15	2	9	6	4	4	0	2	2	0	2	2	0	93	6 - 7
03:15 PM	0	43	20	8	9	3	7	4	1	0	2	2	1	1	0	1	102	4 - 5
Grand Total	0	148	57	40	24	24	23	13	11	6	11	6	2	3	5	5	378	4 - 5
Total %		39.2	15.1	10.6	6.3	6.3	6.1	3.4	2.9	1.6	2.9	1.6	0.5	0.8	1.3	1.3		

Directions Printed: Combined

Start Time	Volume	2 - 3	4 - 5	6 - 7	8 - 9	10 - 11	12 - 13	14 - 15	16 - 17	18 - 19	20 - 21	22 - 23	24 - 25	26 - 27	28 - 29	>29	Int. Total	Average
02:30 PM	0	95	20	11	4	6	2	0	2	1	1	0	0	0	0	0	142	2 - 3
02:45 PM	0	71	28	17	9	2	4	2	1	0	0	0	0	1	0	0	135	2 - 3
Total	0	166	48	28	13	8	6	2	3	1	1	0	0	1	0	0	277	2 - 3
03:00 PM	0	71	34	12	6	6	1	1	0	0	0	1	0	0	0	0	132	2 - 3
03:15 PM	0	78	30	8	6	1	2	1	0	0	0	0	0	1	0	0	127	2 - 3
Grand Total	0	315	112	48	25	15	9	4	3	1	1	1	0	2	0	0	536	2 - 3
Total %		58.8	20.9	9.0	4.7	2.8	1.7	0.7	0.6	0.2	0.2	0.2	0.0	0.4	0.0	0.0		

BY	DATE	CHECKED	DATE
PROJECT #	PROJECT NAME	East Ave Wye	
		SHEET	OF

Gap Analysis

For Lefts out of Wegmans (to Eastbound)
 \$ Lefts out of McDonald's (to Westbound)

★ Based on 7.0s minimum \$ 3.4s followup time

Time of gap (seconds)	Number of Cars Possible in Gap	Number of Gaps	Total Number of Cars Per gap period
8-11	1	24	24
12-15	2	10	20
16-17	3	0	0
18-21	4	1	4
>21	5	2	10

OFF PEAK	OFF PEAK
40	40
13	26
3	9
2	8
1	5
2	12
	160

Total Number of opportunities in the PM Peak Hour = 58

For Rights out of Wegmans (Westbound)

★ Based on 5.5s min & 2.6s followup

6-7	1	26	26
8-11	2	37	74
12-13	3	18	54
14-15	4	15	60
16-19	5	18	90
20-21	6	5	30
22-23	7	5	35
24-27	8	4	32
28-29	9	1	9
>29	10	5	50

Number of opportunities PM Peak 460

For Rights out of McDonald's (Eastbound)

6-7	1	54	54
8-11	2	46	92
12-13	3	15	45
14-15	4	10	40
16-19	5	11	55
20-21	6	4	24
22-23	7	1	7
24-27	8	5	40
28-29	9	2	18
>29	10	4	40

45

Appendix I
Accident Analysis

DETAILS OF ACCIDENT HISTORY

PERIOD STUDIED: FROM: <u>7/1/2006</u> TO: <u>6/30/2009</u> <u>36</u> MONTHS			# V E H I C L E S	S E V E R I T Y	L I G H T C O N D	R O A D C H A R	S U R F A C E	W E A T H E R	ROUTE NUMBER/STREET NAME: <u>East Avenue</u>				CASE No. <u>433164.04</u>				
LOCATION: <u>Midblock of East Avenue</u>									FILE: <u>East Ave_09</u>				MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u>				BY: <u>KMO</u>
REFERENCE MARKERS / NODES: <u>Probert St - Winton Rd</u>				DATE: <u>12/3/2009</u>				CONTRIB. FACTORS	ACC. TYPE	ACCIDENT DESCRIPTION				KEY #			
1	10/14/2006	14:12	2	PDO	1	1	2	2	7	69	Ltrn	75' W of Winton - turning left into Parking Lot				4	
2	10/3/2006	20:39	2	PDO	4	1	1	2	7		Ltrn	H&R				5	
3	10/6/2006	12:42	2	PDO	1	1	1	1	13		Ovtk	In EB right turn lane to turn SB on Winton				7	
4	8/27/2006	17:58	2	N/R	1	1	1	1	12	4	4	Ovtk	Outer lane to inner lane				11
5	8/7/2006	9:10	1	N/R	1	1	1	1				Bike					12
6	8/2/2006	8:00	3	INJ	1	1	1	1	4			Rend					14
7	9/23/2006	13:18	1	PDO	1	2	2	2	7			Bike					16
8	9/9/2006	9:45	2	PDO	1	1	1	2	4			Rtrn					18
9	9/13/2006	12:25	2	PDO	1	1	1	2	7			Ltrn					21
10	1/25/2007	13:13	2	PDO	1	1	4	4	7			Rang	Left Turn out of Wegman's Driveway				23
11	1/12/2007		2	PDO	1	1			20			Ovtk					25
12	1/28/2007	21:00	2	PDO	4	1	4	4	9	66		Rend					26
13	1/27/2007	13:44	2	PDO	1	2	2	2	7	68		Rang	Possible traffic signal/power outage issue				28
14	2/5/2007	16:44	2	N/R	1	1	4	2	26	7		Rang	Exiting Parking Lot - Waved out of lot by uninvolved vehicle				29
15	11/16/2006	15:46	2	PDO	4	1	2	3	20			Ovtk					30
16	11/25/2006	14:02	2	PDO	1	1	1	1	4			Rend	Distracted Driver				33
17	11/26/2006	16:06	1	INJ	1	1	1	1	4	7	14	Bike	Bicycle was on sidewalk				36
18	12/21/2006	21:05	2	PDO	4	1	1	2	7	69		Rang	Left turn out of Wegman's Lot				37
19	1/6/2007	10:47	2	PDO	1	1	1	2	9			Rend					38
20	1/9/2007	21:00	3	INJ	4	1	1	1	17	7		Rang					42
21	5/23/2007	13:28	2	PDO	1	1	1	1	7	18		Ltrn	Left turning vehicle was waved thru into parking lot				43

DETAILS OF ACCIDENT HISTORY

PERIOD STUDIED: FROM: <u>7/1/2006</u> TO: <u>6/30/2009</u> <u>36</u> MONTHS			# V E H I C L E S	S E V E R I T Y	L I G H T C O N D	R O A D C H A R	S U R F A C E	W E A T H E R	ROUTE NUMBER/STREET NAME: <u>East Avenue</u>				CASE No. <u>433164.04</u>
LOCATION: <u>Midblock of East Avenue</u>									MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u>				FILE: <u>East Ave_09</u>
REFERENCE MARKERS / NODES: <u>Probert St - Winton Rd</u>				BY: <u>KMO</u>				DATE: <u>12/3/2009</u>					
No.	DATE	TIME							CONTRIB. FACTORS	ACC. TYPE	ACCIDENT DESCRIPTION	KEY #	
22	4/5/2007	17:57	2	PDO	1	1	2	2	7 69	Rang	Left out of parking lot was waived thru by uninvolved vehicle	49	
23	4/29/2007	3:45	2	INJ	4	2	1	2	17 19	Rang	5 injured. Failure to stop for red light	52	
24	8/28/2007	8:20	2	PDO	1	1	1	1	20	Side		54	
25	7/26/2007	12:00	2	PDO	1	1	1	2	7	Ltrn	Left turn into parking lot, was waived on by uninvolved vehicle	59	
26	7/31/2007	15:53	2	N/R	1	1	1	1	45	Park		60	
27	8/6/2007	15:10	2	PDO	1	1	1	1	7	Ltrn	Left turn out of Wegman's Parking Lot	61	
29	11/24/2007	11:46	2	PDO	1	1	1	2	7 18	Rang	Left turn out of parking lot, was waived thru by uninvolved veh	73	
31	12/1/2007	20:15	2	PDO	4	1	1	2	7 69	Rang	Left turn out of parking lot, view obst by large truck	77	
32	12/11/2007	21:07	2	PDO	4	1	2	3	4	Ltrn		78	
33	1/8/2008	16:32	2	N/R	1	1	1	2	4	Rend		83	
34	1/12/2008	16:38	2	N/R	4	1	1	2	69	Rang	Exiting parking lot	86	
35	4/24/2008	12:55	2	INJ	1	1	1	1	7	Ltrn		89	
36	3/6/2008	16:53	3	PDO	1	1	1	2	4	Rend		93	
37	2/29/2008	7:29	2	PDO	1	1	1	1	62 9	Rend		95	
38	4/4/2008	19:54	1	N/R	4	2	2	1		FixO	H&R. Vehicle struck sign in median	98	
39	3/30/2008	12:56	2	PDO	1	2	1	1	20	Ovtk		102	
40	7/23/2008	12:22	2	N/R	1	1	1	1	7	Rang		108	
41	8/15/2008	16:15	2	N/R	1	1	1	1	4	Park		110	
42	5/30/2008	15:12	2	N/R	1	1	1	2	7 69	Ltrn	Left turn into parking lot	111	
43	5/30/2008	12:21	2	PDO	1	1	1	1	20	Ovtk		112	
44	6/18/2008	19:13	2	PDO	1	1	1	2	69	Rang	Left turn out of parking lot. EB car was passing uninvolved veh	113	

DETAILS OF ACCIDENT HISTORY

PERIOD STUDIED: FROM: <u>7/1/2006</u> TO: <u>6/30/2009</u> <u>36</u> MONTHS			# V E H I C L E S	S E V E R I T Y	L I G H T C O N D	R O A D C H A R	S U R F A C E	W E A T H E R	ROUTE NUMBER/STREET NAME: <u>East Avenue</u>				CASE No. <u>433164.04</u>
LOCATION: <u>Midblock of East Avenue</u>									MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u>				FILE: <u>East Ave_09</u>
REFERENCE MARKERS / NODES: <u>Probert St - Winton Rd</u>				BY: <u>KMO</u>				DATE: <u>12/3/2009</u>					
No.	DATE	TIME							CONTRIB. FACTORS	ACC. TYPE	ACCIDENT DESCRIPTION	KEY #	
45	6/25/2008	12:38	2	PDO	1	2	1	2	9	Rend		116	
46	7/8/2008	12:40	2	PDO	1	1	1	1	4	Rang	Left turn out of parking lot	119	
47	6/28/2008	16:40	2	PDO	1	1	1	1	7 69	Ltrn	left turn into parking lot, waived thru by uninvolved veh	121	
48	8/8/2008	7:32	2	PDO	1	1	1	2	27	HdOn	In TWLTL	123	
49	1/25/2009	13:37	3	PDO	1	1	2	1	9	Rend		124	
50	12/1/2008	17:30	2	N/R	4	2	1	2	60	Rend		126	
51	1/10/2009	11:47	2	PDO	1	1	2	2	4 7	Ltrn	Left turn into parking lot	128	
52	10/1/2008	15:26	2	PDO	1	3	2	2	4	Rend		134	
53	11/15/2008	11:45	2	INJ	1	2	2	3	9	Rend		139	
54	1/25/2009	13:37	3	PDO	1	1	2	1	9	Rend		140	
55	11/10/2008	22:30	2	N/R	4	1	1	2	20	Ovtk		141	
56	2/27/2009	17:30	2	PDO	1	1	2	1	13 7 26	Rang	Left Turn out of parkinglot, waived thru from uninvolved veh	145	
57	1/23/2009	2:46	2	PDO	4	1	2	1	17 4	Rang	H&R	147	
58	2/3/2009	8:24	2	PDO	1	1	1	2		Ovtk		148	
59	1/27/2009	15:30	2	PDO	1	1	1	2	13	Ovtk		149	
60	1/28/2009	12:50	3	PDO	2	2	4	4	66 9	Rend		151	
61	1/14/2009	21:45	2	PDO	4	1	4	4	17	Ltrn		153	
62	5/19/2009	17:20	2	INJ	1	1	1	1	7	Ltrn	Left turn into parking lot, waived thru by uninvolved veh	159	
63	3/28/2009	18:35	2	PDO	1	1	1	1	7 69	Rang	Left turn out of Wegman's Parking Lot	161	
64	3/28/2009	13:30	2	PDO	1	1	1	1	18	Ovtk	Vehicle attempted RT from center-most lane	162	
65	4/11/2009	1:55	2	PDO	4	1	1	1	4 9	Rend		163	

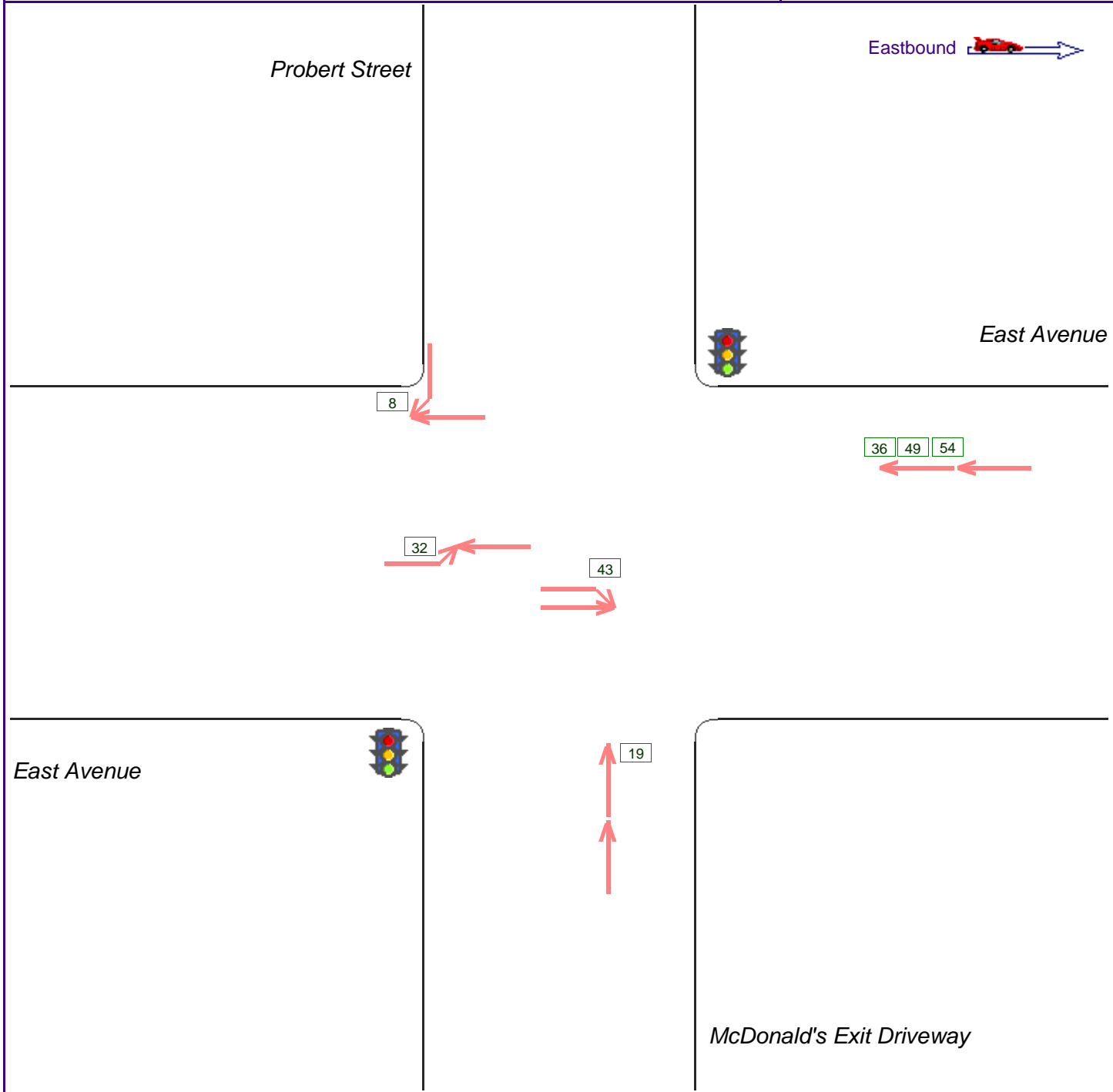
DETAILS OF ACCIDENT HISTORY

PERIOD STUDIED: FROM: <u>7/1/2006</u> TO: <u>6/30/2009</u> <u>36</u> MONTHS			# V E H I C L E S	S E V E R I T Y	L I G H T C O N D	R O A D C H A R	S U R F A C E	W E A T H E R	ROUTE NUMBER/STREET NAME: <u>East Avenue</u>			CASE No. <u>433164.04</u>	
LOCATION: <u>Midblock of East Avenue</u>									FILE: <u>East Ave_09</u>				
MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u>			REFERENCE MARKERS / NODES: <u>Probert St - Winton Rd</u>										BY: <u>KMO</u>
DATE: <u>12/3/2009</u>													DATE: <u>12/3/2009</u>
No.	DATE	TIME							CONTRIB. FACTORS	ACC. TYPE	ACCIDENT DESCRIPTION	KEY #	
66	5/9/2009	16:31	3	INJ	1	1	1	1	2 9	Rend		167	
67	5/8/2009	18:23	2	PDO	1	2	1	1	9 4	Rend		169	

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u> INTERSECTION: <u>East Avenue & Probert Street (Ref #1)</u> PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	FILE: <u>East Ave_09</u> CASE #: <u>433164.04</u> BY: <u>KMO</u> DATE: <u>12/2/2009</u>
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SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		LEFT TURN
	BACKING VEHICLE		LEFT TURN
	PARKED VEHICLE		OVERTAKE
999	RECORD NUMBER		OUT OF CONTROL
P	PEDESTRIAN		HEAD ON
B	BICYCLIST		RIGHT TURN
A	ANIMAL		RIGHT TURN
	FIXED OBJECT		RIGHT ANGLE
	Injury		SIDE SWIPE

ACCIDENT SUMMARY SHEET

ROUTE: East Avenue **LOCATION:** Intersection of East Avenue & Probert Street
MUNICIPALITY: City of Rochester **COUNTY:** Monroe
TIME PERIOD COVERED: 7/1/2006 - 6/30/2009 **REFERENCE MARKERS / NODES:** -
REMARKS: Selected Intersection Accidents (Excludes Non-Reportable) **DATE:** 12/2/2009

TIME OF DAY	# ACC	%	DIRECTION	# ACC	%	DIRECTION	# ACC	%
6 AM - 10 AM	1	14.3%	North	2	11.8%	Northeast	0	0.0%
10 AM - 4 PM	4	57.1%	South	1	5.9%	Northwest	0	0.0%
4 PM - 7 PM	1	14.3%	East	3	17.6%	Southeast	0	0.0%
7 PM - 12 AM	1	14.3%	West	11	64.7%	Southwest	0	0.0%
12 AM - 6 AM	0	0.0%	Total	17		Unspecified	0	0.0%
Unspecified	0	0.0%						
Total	7							

WEATHER	# ACC	%	ACCIDENT TYPE	# ACC	%	ACCIDENT TYPE	# ACC	%
Clear	3	42.9%	Rear End	4	57.1%	Pedestrian	0	0.0%
Cloudy	3	42.9%	Overtake	1	14.3%	Bicycle	0	0.0%
Rain	1	14.3%	Right Angle	0	0.0%	Parked Vehicle	0	0.0%
Snow	0	0.0%	Left Turn	1	14.3%	Backing	0	0.0%
Sleet/Hail/Freezing Rain	0	0.0%	Right Turn	1	14.3%	Run Off The Road	0	0.0%
Fog/Smog/Smoke	0	0.0%	Fixed Object	0	0.0%	Animal	0	0.0%
Unspecified	0	0.0%	Head On	0	0.0%	Other	0	0.0%
			Sideswipe	0	0.0%	Unspecified	0	0.0%
Total	7		Total	7				

SURFACE	# ACC	%	ACCIDENT SEVERITY	# ACC	%
Dry	4	57.1%	Fatal	0	0.0%
Wet	3	42.9%	Injury	0	0.0%
Mud/Slush	0	0.0%	Property Damage	7	100.0%
Snow/Ice	0	0.0%	Non-Reportable	0	0.0%
Unspecified	0	0.0%	Total	7	
Total	7				

TIME OF YEAR	# ACC	%	TYPE OF VEHICLE	# ACC	%
Winter (Dec-Feb)	4	57.1%	Passenger Cars	17	100.0%
Spring (Mar-May)	2	28.6%	Commercial Vehicles	0	0.0%
Summer (Jun-Aug)	0	0.0%	Total	17	
Fall (Sep-Nov)	1	14.3%			
Total	7				

DAY OF WEEK	# ACC	%	LIGHT CONDITION	# ACC	%
Sunday	2	28.6%	Daylight	6	85.7%
Monday	0	0.0%	Dawn/Dusk	0	0.0%
Tuesday	1	14.3%	Night	1	14.3%
Wednesday	0	0.0%	Unspecified	0	0.0%
Thursday	1	14.3%	Total	7	
Friday	1	14.3%			
Saturday	2	28.6%			
Total	7				

SUMMARY OF ACCIDENT SEVERITY BY YEAR:

	2006	2007	2008	2009
Fatal Accidents	0	0	0	0
Injury Accidents	0	0	0	0
Property Damage Accidents	1	2	2	2
Non-Reportable Accidents	0	0	0	0
Total Accidents	1	2	2	2

ACCIDENT RATE CALCULATIONS

Segment

Intersection

ROUTE: *East Avenue*

LOCATION: *Intersection of East Avenue & Probert Street*

REFERENCE MARKERS / NODES: -

TIME PERIOD: *7/1/2006 - 6/30/2009*

REMARKS: *Selected Intersection Accidents (Excludes Non-Reportable)*

$$\begin{aligned} \text{ACCIDENT RATE} &= \frac{(7 \text{ selected accidents in } 3.0 \text{ years}) * (1,000,000)}{(365 \text{ days/yr.}) * (3.0 \text{ years}) * (17400 \text{ veh./day})} \\ &= \underline{0.37} \text{ accidents per million entering vehicles} \end{aligned}$$

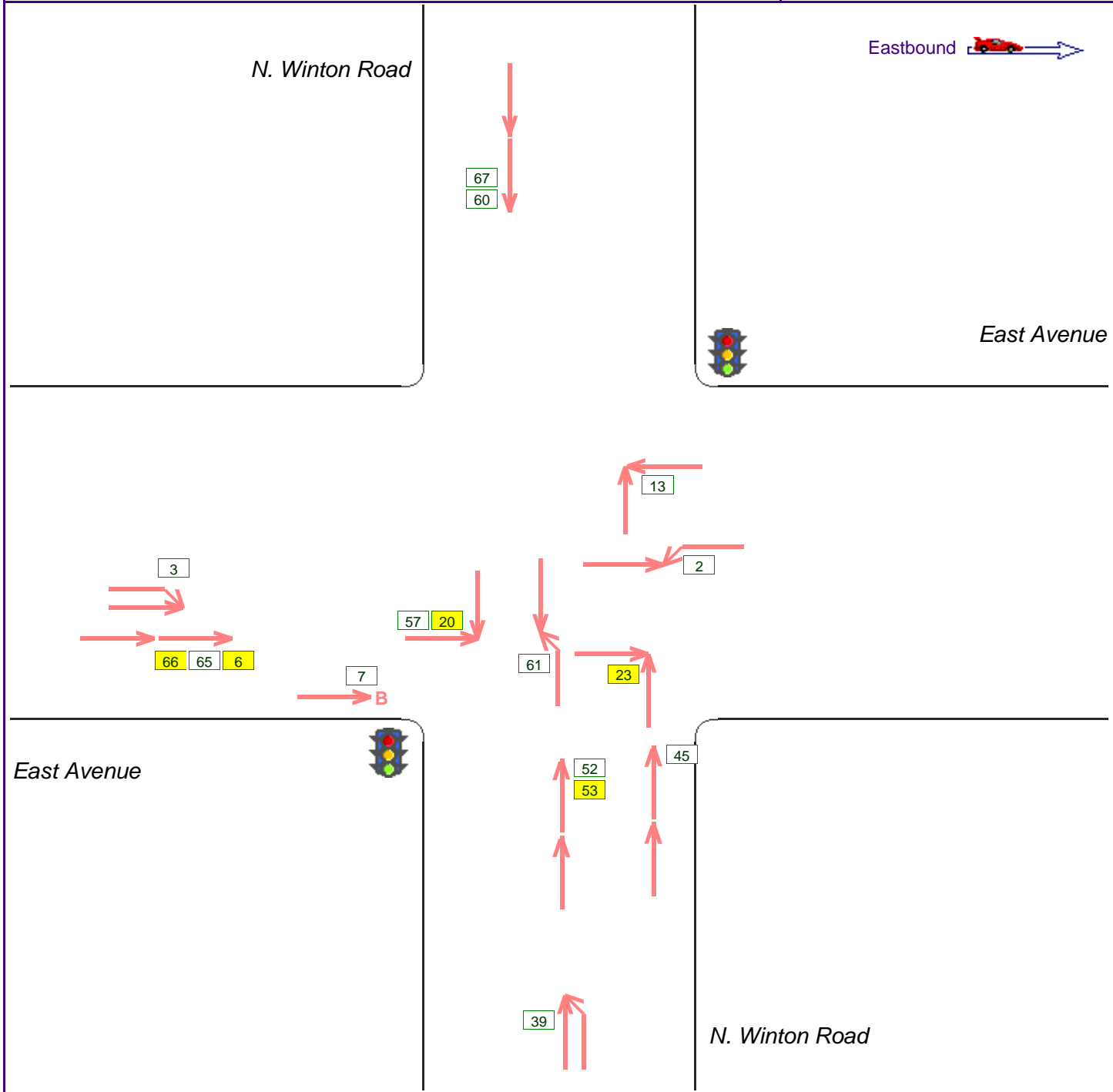
(Statewide average rate = 0.69)

(County average rate = 0.35)

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u> INTERSECTION: <u>East Avenue & N. Winton Road (Ref #2)</u> PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	FILE: <u>East Ave_09</u> CASE #: <u>433164.04</u> BY: <u>KMO</u> DATE: <u>12/2/2009</u>
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SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		PEDESTRIAN
	TURNING VEHICLE		BICYCLIST
	BACKING VEHICLE		ANIMAL
	PARKED VEHICLE		FIXED OBJECT
	RECORD NUMBER		Injury
	REAR END		HEAD ON
	LEFT TURN		RIGHT TURN
	LEFT TURN		RIGHT TURN
	OVERTAKE		RIGHT ANGLE
	OUT OF CONTROL		SIDE SWIPE

ACCIDENT SUMMARY SHEET

ROUTE: East Avenue **LOCATION:** Intersection of East Avenue & N. Winton Road
MUNICIPALITY: City of Rochester **COUNTY:** Monroe
TIME PERIOD COVERED: 7/1/2006 - 6/30/2009 **REFERENCE MARKERS / NODES:** -
REMARKS: Selected Intersection Accidents (Excludes Non-Reportable) **DATE:** 12/2/2009

TIME OF DAY	# ACC	%	DIRECTION	# ACC	%	DIRECTION	# ACC	%
6 AM - 10 AM	1	5.9%	North	13	34.2%	Northeast	0	0.0%
10 AM - 4 PM	8	47.1%	South	8	21.1%	Northwest	0	0.0%
4 PM - 7 PM	2	11.8%	East	15	39.5%	Southeast	0	0.0%
7 PM - 12 AM	3	17.6%	West	2	5.3%	Southwest	0	0.0%
12 AM - 6 AM	3	17.6%	Total	38		Unspecified	0	0.0%
Unspecified	0	0.0%						
Total	17							
WEATHER	# ACC	%	ACCIDENT TYPE	# ACC	%	ACCIDENT TYPE	# ACC	%
Clear	8	47.1%	Rear End	8	47.1%	Pedestrian	0	0.0%
Cloudy	6	35.3%	Overtake	2	11.8%	Bicycle	1	5.9%
Rain	1	5.9%	Right Angle	4	23.5%	Parked Vehicle	0	0.0%
Snow	2	11.8%	Left Turn	2	11.8%	Backing	0	0.0%
Sleet/Hail/Freezing Rain	0	0.0%	Right Turn	0	0.0%	Run Off The Road	0	0.0%
Fog/Smog/Smoke	0	0.0%	Fixed Object	0	0.0%	Animal	0	0.0%
Unspecified	0	0.0%	Head On	0	0.0%	Other	0	0.0%
			Sideswipe	0	0.0%	Unspecified	0	0.0%
Total	17		Total	17				
SURFACE	# ACC	%	ACCIDENT SEVERITY	# ACC	%			
Dry	10	58.8%	Fatal	0	0.0%			
Wet	5	29.4%	Injury	5	29.4%			
Mud/Slush	0	0.0%	Property Damage	12	70.6%			
Snow/Ice	2	11.8%	Non-Reportable	0	0.0%			
Unspecified	0	0.0%	Total	17				
Total	17							
TIME OF YEAR	# ACC	%	TYPE OF VEHICLE	# ACC	%			
Winter (Dec-Feb)	5	29.4%	Passenger Cars	37	100.0%			
Spring (Mar-May)	5	29.4%	Commercial Vehicles	0	0.0%			
Summer (Jun-Aug)	2	11.8%	Total	37				
Fall (Sep-Nov)	5	29.4%						
Total	17							
DAY OF WEEK	# ACC	%	LIGHT CONDITION	# ACC	%			
Sunday	2	11.8%	Daylight	10	58.8%			
Monday	0	0.0%	Dawn/Dusk	1	5.9%			
Tuesday	2	11.8%	Night	6	35.3%			
Wednesday	5	29.4%	Unspecified	0	0.0%			
Thursday	0	0.0%	Total	17				
Friday	3	17.6%						
Saturday	5	29.4%						
Total	17							

SUMMARY OF ACCIDENT SEVERITY BY YEAR:

	2006	2007	2008	2009
Fatal Accidents	0	0	0	0
Injury Accidents	1	2	1	1
Property Damage Accidents	3	1	3	5
Non-Reportable Accidents	0	0	0	0
Total Accidents	4	3	4	6

ACCIDENT RATE CALCULATIONS

<input type="radio"/> Segment
<input checked="" type="radio"/> Intersection

ROUTE: East Avenue
LOCATION: Intersection of East Avenue & N Winton Road
REFERENCE MARKERS / NODES: -
TIME PERIOD: 7/1/2006 - 6/30/2009

REMARKS: Selected Intersection Accidents (Excludes Non-Reportable)

$$\begin{aligned} \text{ACCIDENT RATE} &= \frac{(17 \text{ selected accidents in } 3.0 \text{ years}) * (1,000,000)}{(365 \text{ days/yr.}) * (3.0 \text{ years}) * (17400 \text{ veh./day})} \\ &= \underline{0.89} \text{ accidents per million entering vehicles} \end{aligned}$$

(Statewide average rate = 0.54) (County average rate = 0.80)

ACCIDENT SUMMARY SHEET

ROUTE: East Avenue **LOCATION:** Midblock of East Avenue
MUNICIPALITY: City of Rochester **COUNTY:** Monroe
TIME PERIOD COVERED: 7/1/2006 - 6/30/2009 **REFERENCE MARKERS / NODES:** Probert St - Winton Rd
REMARKS: Selected Accidents **DATE:** 12/3/2009

TIME OF DAY	# ACC	%	DIRECTION	# ACC	%	DIRECTION	# ACC	
6 AM - 10 AM	3	12.5%	North	5	10.4%	Northeast	0	0.0%
10 AM - 4 PM	13	54.2%	South	5	10.4%	Northwest	0	0.0%
4 PM - 7 PM	5	20.8%	East	23	47.9%	Southeast	0	0.0%
7 PM - 12 AM	3	12.5%	West	15	31.3%	Southwest	0	0.0%
12 AM - 6 AM	0	0.0%	Total	48		Unspecified	0	0.0%
Unspecified	0	0.0%						
Total	24							
WEATHER	# ACC	%	ACCIDENT TYPE	# ACC	%	ACCIDENT TYPE	# ACC	%
Clear	10	41.7%	Rear End	2	8.3%	Pedestrian	0	0.0%
Cloudy	12	50.0%	Overtake	4	16.7%	Bicycle	1	4.2%
Rain	1	4.2%	Right Angle	8	33.3%	Parked Vehicle	0	0.0%
Snow	1	4.2%	Left Turn	8	33.3%	Backing	0	0.0%
Sleet/Hail/Freezing Rain	0	0.0%	Right Turn	0	0.0%	Run Off The Road	0	0.0%
Fog/Smog/Smoke	0	0.0%	Fixed Object	0	0.0%	Animal	0	0.0%
Unspecified	0	0.0%	Head On	1	4.2%	Other	0	0.0%
			Sideswipe	0	0.0%	Unspecified	0	0.0%
Total	24		Total	24				
SURFACE	# ACC	%	ACCIDENT SEVERITY	# ACC	%			
Dry	19	79.2%	Fatal	0	0.0%			
Wet	4	16.7%	Injury	2	8.3%			
Mud/Slush	0	0.0%	Property Damage	22	91.7%			
Snow/Ice	1	4.2%	Non-Reportable	0	0.0%			
Unspecified	0	0.0%	Total	24				
Total	24							
TIME OF YEAR	# ACC	%	TYPE OF VEHICLE	# ACC	%			
Winter (Dec-Feb)	7	29.2%	Passenger Cars	47	100.0%			
Spring (Mar-May)	5	20.8%	Commercial Vehicles	0	0.0%			
Summer (Jun-Aug)	6	25.0%	Total	47				
Fall (Sep-Nov)	6	25.0%						
Total	24							
DAY OF WEEK	# ACC	%	LIGHT CONDITION	# ACC	%			
Sunday	1	4.2%	Daylight	21	87.5%			
Monday	1	4.2%	Dawn/Dusk	0	0.0%			
Tuesday	4	16.7%	Night	3	12.5%			
Wednesday	3	12.5%	Unspecified	0	0.0%			
Thursday	5	20.8%	Total	24				
Friday	2	8.3%						
Saturday	8	33.3%						
Total	24							

SUMMARY OF ACCIDENT SEVERITY BY YEAR:

	2006	2007	2008	2009
Fatal Accidents	0	0	0	0
Injury Accidents	1	0	0	1
Property Damage Accidents	5	7	5	5
Non-Reportable Accidents	0	0	0	0
Total Accidents	6	7	5	6

ACCIDENT RATE CALCULATIONS

Segment

Intersection

ROUTE: *East Avenue*

LOCATION: *Midblock of East Avenue*

REFERENCE MARKERS / NODES: *Probert St - Winton Rd*

TIME PERIOD: *7/1/2006 - 6/30/2009*

REMARKS: *Selected Accidents*

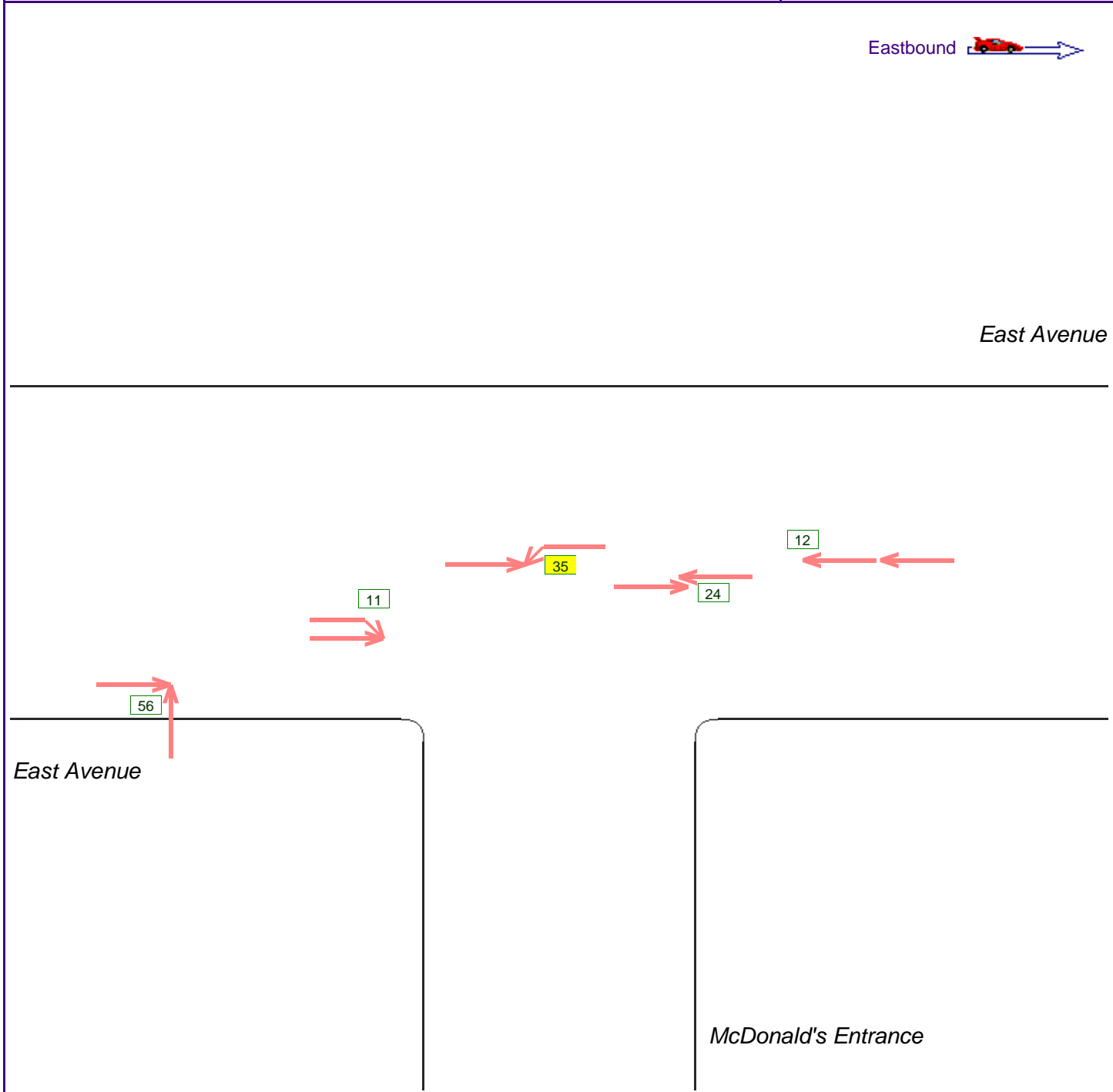
$$\begin{aligned}\text{ACCIDENT RATE} &= \frac{(24 \text{ selected accidents in } 3.0 \text{ years}) * (1,000,000)}{(365 \text{ days/yr.}) * (3.0 \text{ years}) * (17400 \text{ veh./day}) * (0.17 \text{ miles})} \\ &= \underline{7.28} \text{ accidents per million vehicle miles}\end{aligned}$$

(Statewide average rate = 2.41) (County average rate = 3.81)

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u>	FILE: <u>East Ave_09</u>
INTERSECTION: <u>East Avenue & McDonald's Entrance (Ref #101)</u>	CASE #: <u>433164.04</u>
PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	BY: <u>KMO</u> DATE: <u>12/2/2009</u>

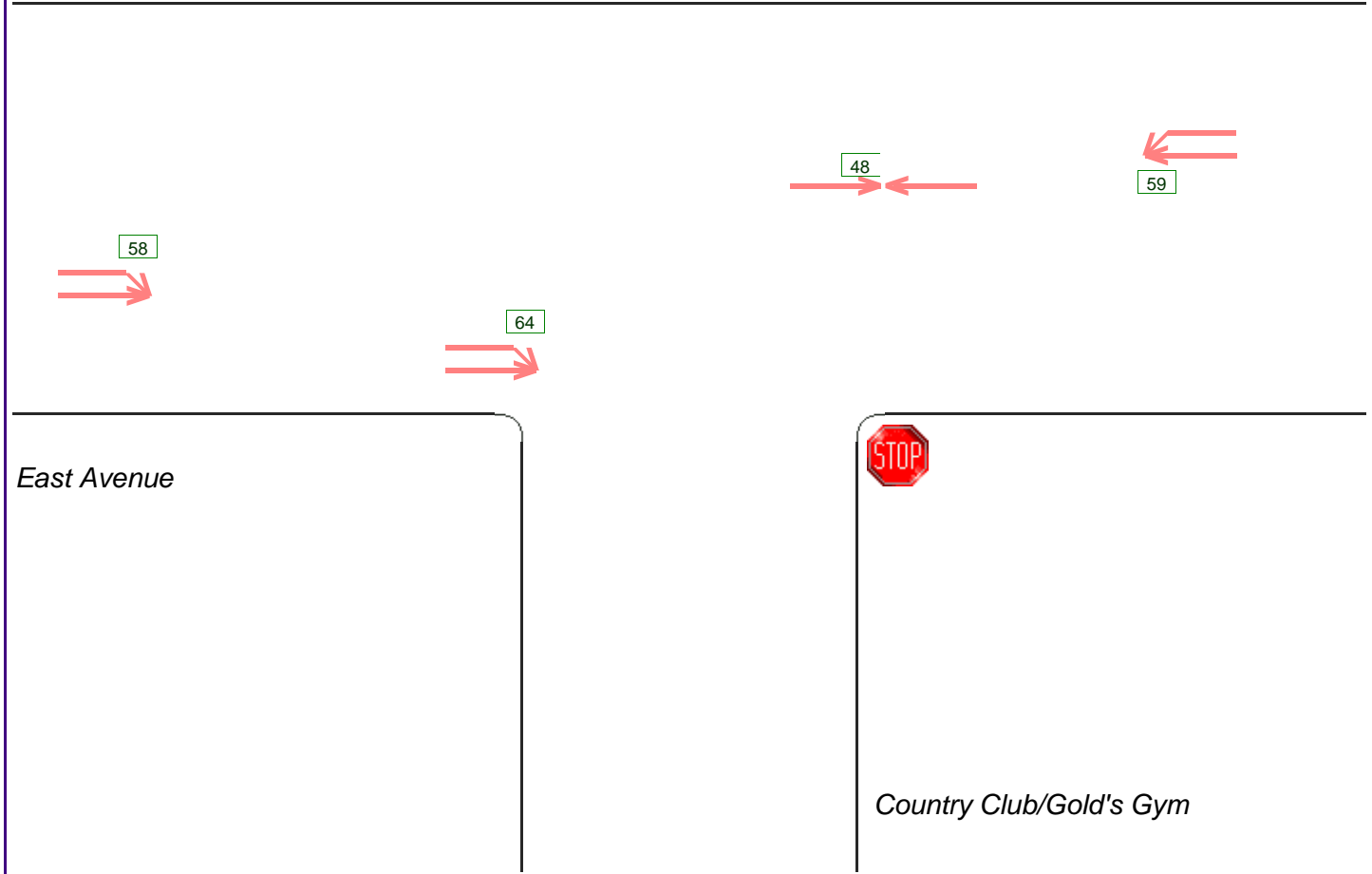
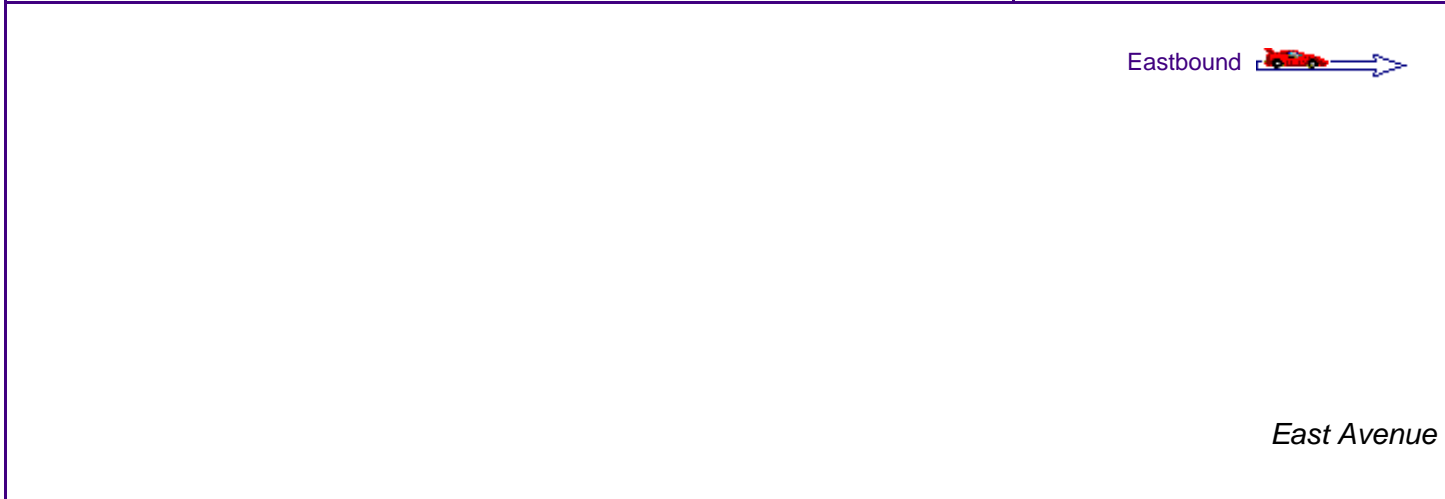


SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		HEAD ON
	BACKING VEHICLE		RIGHT TURN
	PARKED VEHICLE		LEFT TURN
999	RECORD NUMBER		LEFT TURN
P	PEDESTRIAN		OVERTAKE
B	BICYCLIST		OUT OF CONTROL
A	ANIMAL		RIGHT TURN
	FIXED OBJECT		LEFT TURN
	Injury		RIGHT ANGLE
			SIDE SWIPE

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u> INTERSECTION: <u>East Avenue & Country Club/Gold's Gym (Ref #102)</u> PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	FILE: <u>East Ave_09</u> CASE #: <u>433164.04</u> BY: <u>KMO</u> DATE: <u>12/2/2009</u>
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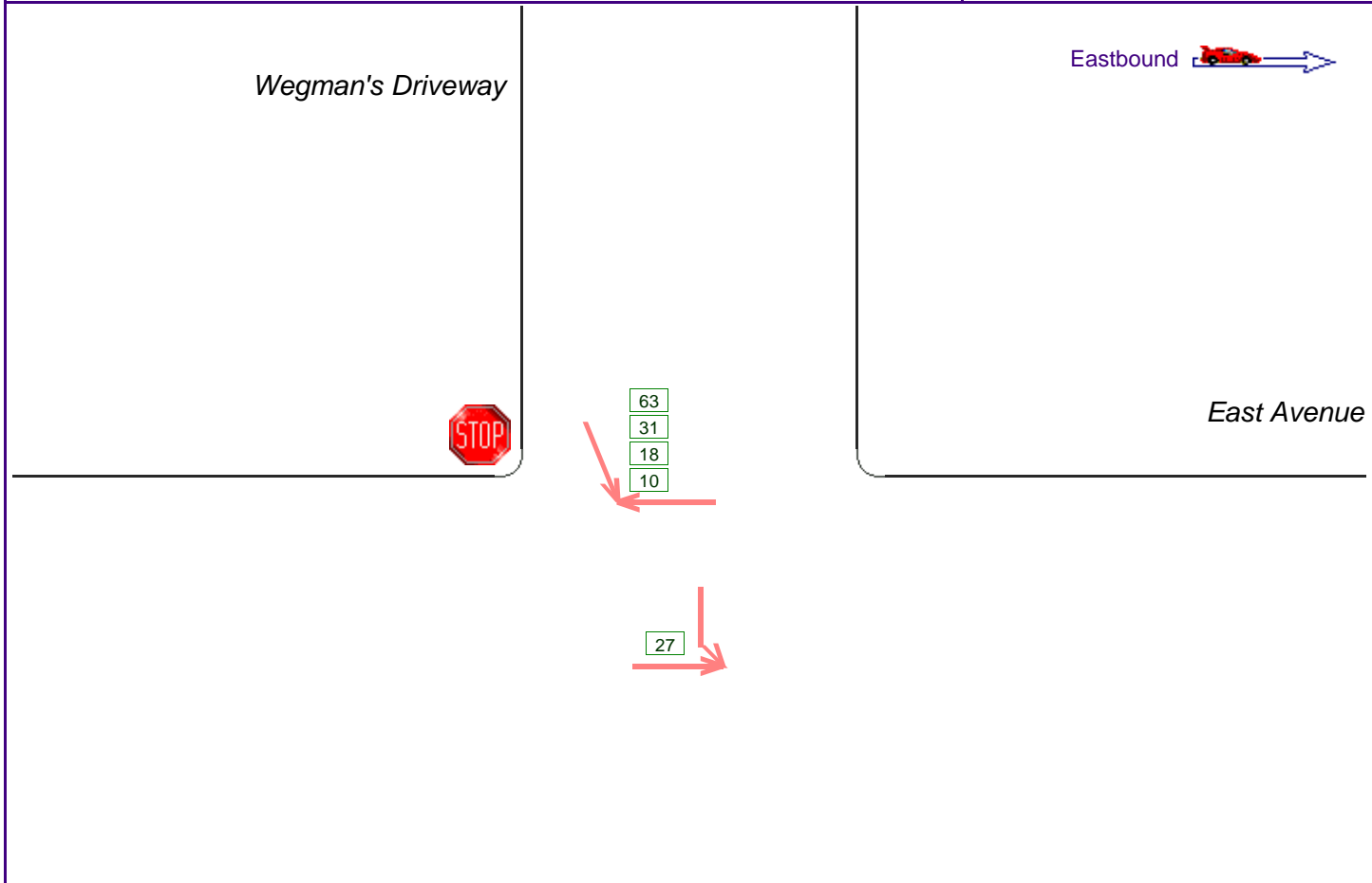


SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	P PEDESTRIAN	REAR END	HEAD ON
TURNING VEHICLE	B BICYCLIST	LEFT TURN	RIGHT TURN
BACKING VEHICLE	A ANIMAL	LEFT TURN	RIGHT TURN
PARKED VEHICLE	FIXED OBJECT	OVERTAKE	RIGHT ANGLE
999 RECORD NUMBER	Injury	OUT OF CONTROL	SIDE SWIPE

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u> INTERSECTION: <u>East Avenue & Wegman's Driveway (Ref #103)</u> PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	FILE: <u>East Ave_09</u> CASE #: <u>433164.04</u> BY: <u>KMO</u> DATE: <u>12/2/2009</u>
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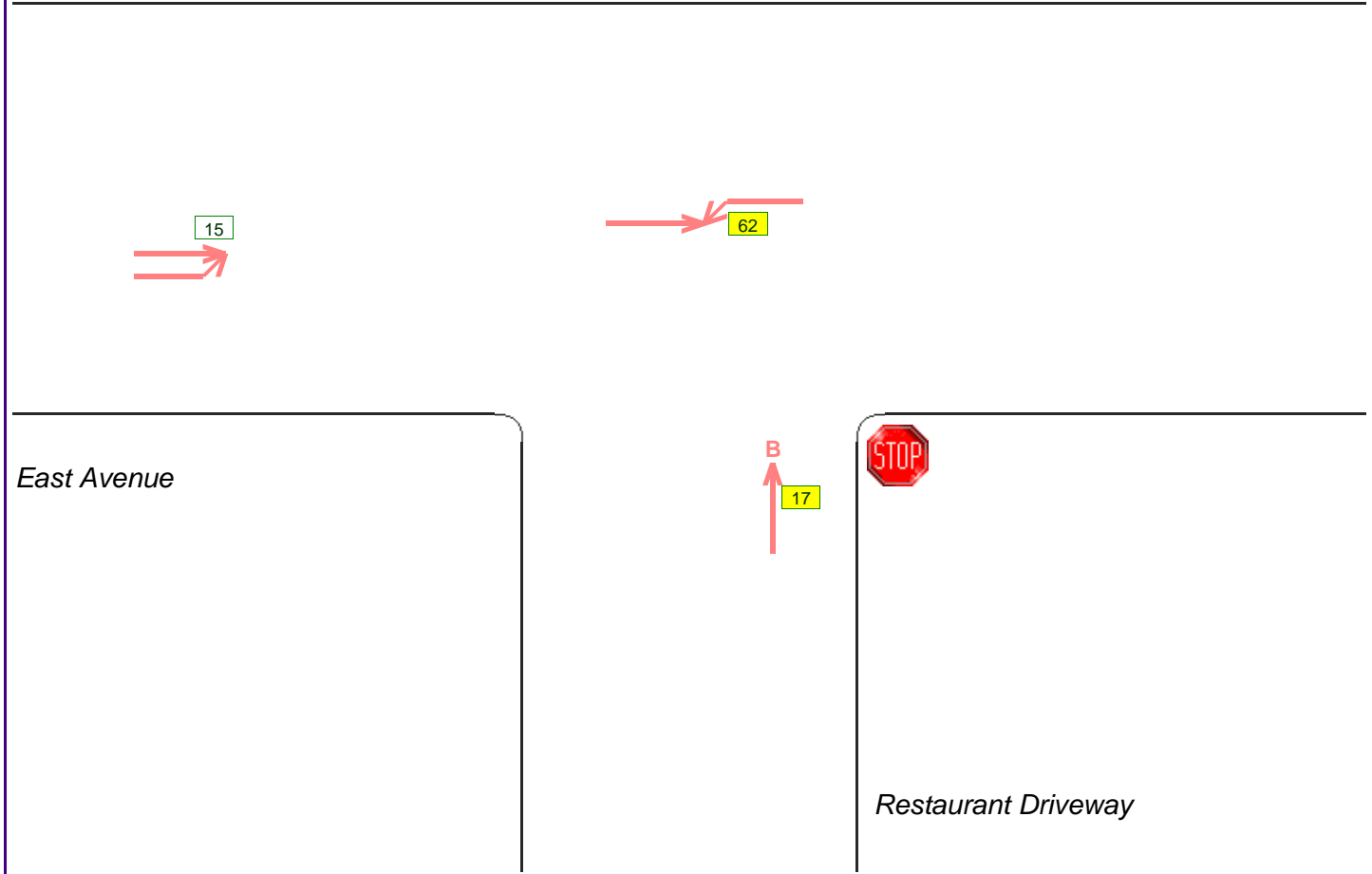
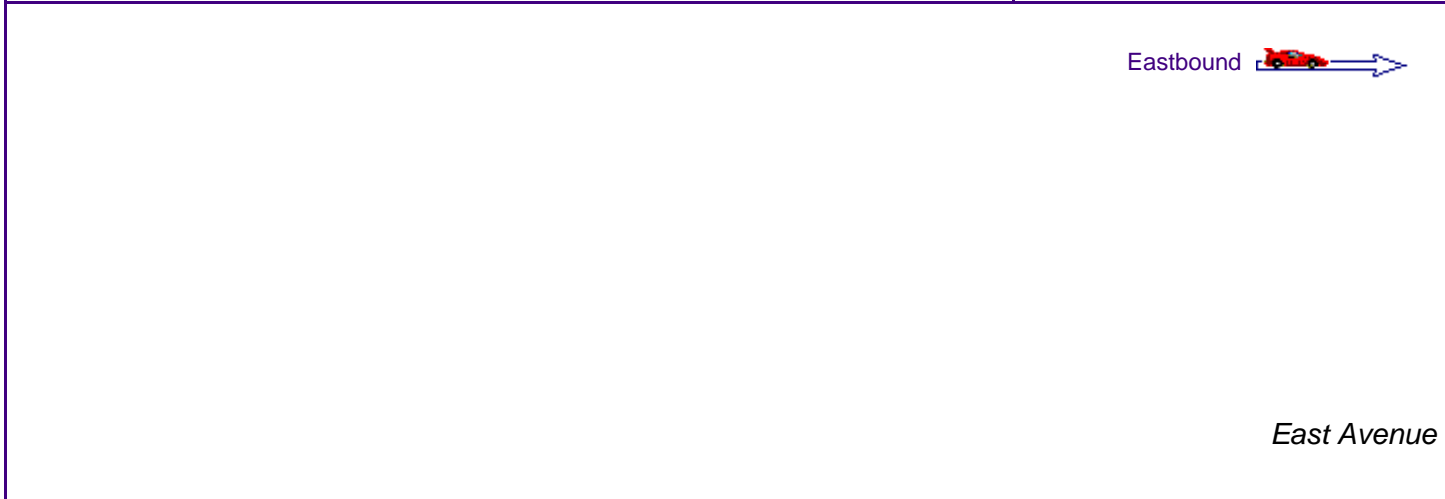


SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	P PEDESTRIAN	REAR END	HEAD ON
TURNING VEHICLE	B BICYCLIST	LEFT TURN	RIGHT TURN
BACKING VEHICLE	A ANIMAL	LEFT TURN	RIGHT TURN
PARKED VEHICLE	FIXED OBJECT	OVERTAKE	RIGHT ANGLE
RECORD NUMBER	Injury	OUT OF CONTROL	SIDE SWIPE

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u>	FILE: <u>East Ave_09</u>
INTERSECTION: <u>East Avenue & Restaurant Driveway (Ref #104)</u>	CASE #: <u>433164.04</u>
PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	BY: <u>KMO</u> DATE: <u>12/2/2009</u>



SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	P PEDESTRIAN	REAR END	HEAD ON
TURNING VEHICLE	B BICYCLIST	LEFT TURN	RIGHT TURN
BACKING VEHICLE	A ANIMAL	LEFT TURN	RIGHT TURN
PARKED VEHICLE	□ FIXED OBJECT	OVERTAKE	RIGHT ANGLE
999 RECORD NUMBER	■ Injury	OUT OF CONTROL	SIDE SWIPE

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u> INTERSECTION: <u>East Avenue & Local Store Driveay (Ref #105)</u> PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	FILE: <u>East Ave_09</u> CASE #: <u>433164.04</u> BY: <u>KMO</u> DATE: <u>12/2/2009</u>
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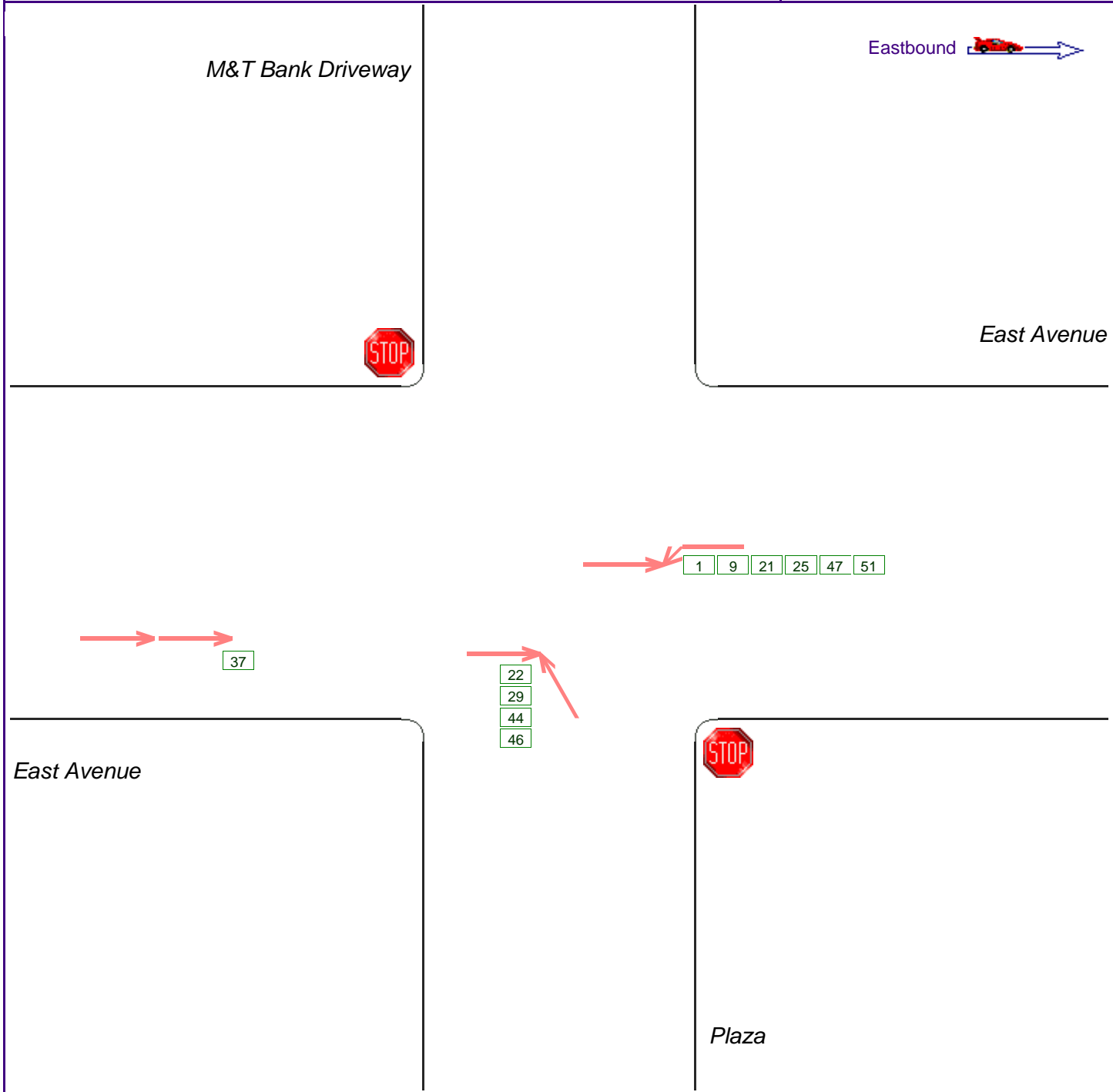


SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	P PEDESTRIAN	REAR END	HEAD ON
TURNING VEHICLE	B BICYCLIST	LEFT TURN	RIGHT TURN
BACKING VEHICLE	A ANIMAL	LEFT TURN	RIGHT TURN
PARKED VEHICLE	FIXED OBJECT	OVERTAKE	RIGHT ANGLE
RECORD NUMBER	Injury	OUT OF CONTROL	SIDE SWIPE

COLLISION DIAGRAM

Key Number = _____

MUNICIPALITY: <u>City of Rochester</u> COUNTY: <u>Monroe</u> INTERSECTION: <u>East Avenue & Plaza/M&T Bank Driveway (Ref #107)</u> PERIOD: <u>3</u> YEARS <u>0</u> MONTHS FROM <u>7/1/2006</u> TO <u>6/30/2009</u>	FILE: <u>East Ave_09</u> CASE #: <u>433164.04</u> BY: <u>KMO</u> DATE: <u>12/3/2009</u>
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SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		PEDESTRIAN
	TURNING VEHICLE		BICYCLIST
	BACKING VEHICLE		ANIMAL
	PARKED VEHICLE		FIXED OBJECT
	RECORD NUMBER		Fatal
	REAR END		HEAD ON
	LEFT TURN		RIGHT TURN
	LEFT TURN		RIGHT TURN
	OVERTAKE		RIGHT ANGLE
	OUT OF CONTROL		SIDE SWIPE