



Carrier Site Access Transportation Study

Final Report

May 2009

prepared by



for SMTC and CNYRPDB

CARRIER SITE ACCESS TRANSPORTATION STUDY

Prepared by

C&S Engineers

for

Syracuse Metropolitan Transportation Council

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EXECUTIVE SUMMARY

Introduction

The Carrier Site Access Transportation Study was undertaken by the Syracuse Metropolitan Transportation Council (SMTTC) on behalf of the project sponsor, the Central New York Regional Planning and Development Board (CNYRPDB). This study focuses on the redevelopment of the Carrier Corporation parking lots on the west side of Thompson Road, which are no longer in use. The purpose of this study is threefold:

- 1) Evaluate the ability of the existing site access and the adjacent roadway network to accommodate the traffic associated with the redevelopment of the study site as proposed in the Carrier Site Reuse Plan.
- 2) Analyze alternative access locations and the effects of each on the adjacent roadway network.
- 3) Develop an internal transportation network based on the concepts in the Carrier Site Reuse Plan, including multi-modal accommodations.

A Study Advisory Committee (SAC) was established to guide the study. The SAC assisted in the determination of the design year (2018) and the definition of the study area, which included a number of intersections on Thompson Road (NYS RT 635), Carrier Parkway (NYS RT 298) and Court Street Road near Carrier Circle in the Town of DeWitt.

Existing Conditions

As part of the existing conditions analysis, it was determined that the peak hours for the study area were from 7:30 a.m. to 8:30 a.m. and 4:30 p.m. to 5:30 p.m. and that a number of side-street movements at the study intersections are currently operating at a poor level of service (LOS). Existing pedestrian and transit accommodations were also documented.

An accident analysis indicated that there were a total of 74 accidents recorded for the study segment of Thompson Road and 67 accidents on Carrier Parkway. Based on the number of accidents, average annual daily traffic for 2006, and the length of each segment, it was found that the accident rate for Thompson Road (1.81 ACC/MVM) is lower than the statewide average accident rate for similar facilities but the rate for NYS RT 298 (5.53 ACC/MVM) is more than double the statewide average rate.

Alternative Analysis and Comparison

Based on input from the SAC, five different access alternatives for the West parcel were developed to be included in the analysis. The alternatives are listed below:

- **Alternative 1 – Existing Access Points**
- **Alternative 2 – Single Access onto Thompson Road**
- **Alternative 3 – Two Access Points onto Thompson Road**
- **Alternative 4 – Single Access onto Thompson Road with Court Street Road Access**
- **Alternative 5 – Single Access onto Thompson Road and an Access Opposite the Verizon Access with Connection to Kinne Street**

The alternatives were evaluated based on eight criteria that were derived from the project goals. The table below shows how each alternative was rated:

Alternative Comparison Summary					
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Supports Access Management/Improves Safety					
Reduces Traffic along Thompson Road/Carrier Circle					
Acceptable Capacity/Traffic Operations *					
Provides Close Access to Each Building					
Cost Effective - Minimal Mitigation					
Minimizes Impacts to Wetlands					
Promotes Connectivity to Main Carrier Site					
Allows Flexibility in Internal Layout Options					

* For movements at access intersections

-  No / Minimally
-  Somewhat / Partially
-  Yes / Mostly

Recommendations

Based on the evaluation of alternatives and feedback from the SAC, an implantation plan divided into short- and long-term improvements is recommended. For the long-term, upon full build out of the Reuse Plan, Alternative 5 improves traffic operations the most for the area. However, Alternative 5 includes significant capital improvements that the SAC agrees would not be the sole responsibility of private developers as the West and Northern Outparcels are developed. Therefore, it was decided that the internal roadway network and single access onto Thompson Road (Alternative 2) would be an appropriate short-term recommendation that would be implemented by private developers. Alternative 2 allows for the future implementation of Alternative 5. The remaining improvements associated with Alternative 5 would be public infrastructure improvements constructed at a later time as the East Parcel is redeveloped.

I. Introduction

a. Study Purpose

The Carrier property off Thompson Road (New York State Route 635) in the Town of DeWitt is in a prime location for development with close proximity to major roadways, the Syracuse Hancock International Airport, and downtown Syracuse. However, the location of the site is not the only factor considered by prospective developers. A safe, adequate, and convenient transportation system in and around the proposed development site is a key ingredient for the feasibility, and ultimately the success, of that development.

In 2007, the Central New York Regional Planning and Development Board (CNYRPDB) developed the Carrier Site Reuse Plan (the Reuse Plan)¹ for the entire Carrier campus. The Reuse Plan proposed a “commercial village”, including hotel, office and flex-type spaces with ample parking, green space and an attractive frontage for Thompson Road, for the West Parcel and Northern Outparcels. The West Parcel currently contains a 900 space surface parking lot used by Carrier. The Northern Outparcels consist of a McDonald’s, Comfort Inn Suites and a vacant gas station and hotel. The proposed development on the west side of Thompson Road consists of a variety of land uses that would require an internal transportation network, as well as safe and sufficient access to the external network necessary to accommodate traffic.

Illustrations of the Reuse Plan are included in Appendix A.

The Carrier Site Access Transportation Study was undertaken by the Syracuse Metropolitan Transportation Council (SMTC) on behalf of the project sponsor, the Central New York Regional Planning and Development Board (CNYRPDB). The purpose of this study is threefold:

- 1) Evaluate the ability of the existing site access and the adjacent roadway network to accommodate the traffic associated with the redevelopment of the study site as proposed in the Carrier Site Reuse Plan.
- 2) Analyze alternative access locations and the effects of each on the adjacent roadway network.
- 3) Develop an internal transportation network based on the concepts in the Carrier Site Reuse Plan, including multi-modal accommodations.

¹ Carrier Site Reuse Plan, Master Plan Report, Volume 4, IDC Architects, June 2007, Page 38.

b. Study Advisory Committee

A Study Advisory Committee (SAC) was established to provide technical and procedural guidance for the project. The SAC included representatives from the following agencies:

- Syracuse Metropolitan Transportation Council (SMTC)
- Central New York Regional Planning and Development Board (CNYRPDB)
- Town of DeWitt
- Metropolitan Development Association (MDA)
- Central New York Regional Transportation Authority (CNYRTA)
- New York State Department of Transportation (NYSDOT)
- New York State Department of Environmental Conservation (NYSDEC)
- New York State Thruway Authority (NYSTA)
- Onondaga County Department of Transportation (OCDOT)
- Central New York Regional Transportation Authority (CNYRTA)
- Syracuse-Onondaga County Planning Agency (SOCPA)

c. Study Area

The adjacent roadway network for the study consists of Thompson Road (New York State Route 635) from James Street to Carrier Circle and Carrier Parkway/Kinne Street (New York State Route 298) from Carrier Circle to Court Street Road/New Venture Gear Drive and includes the following intersections:

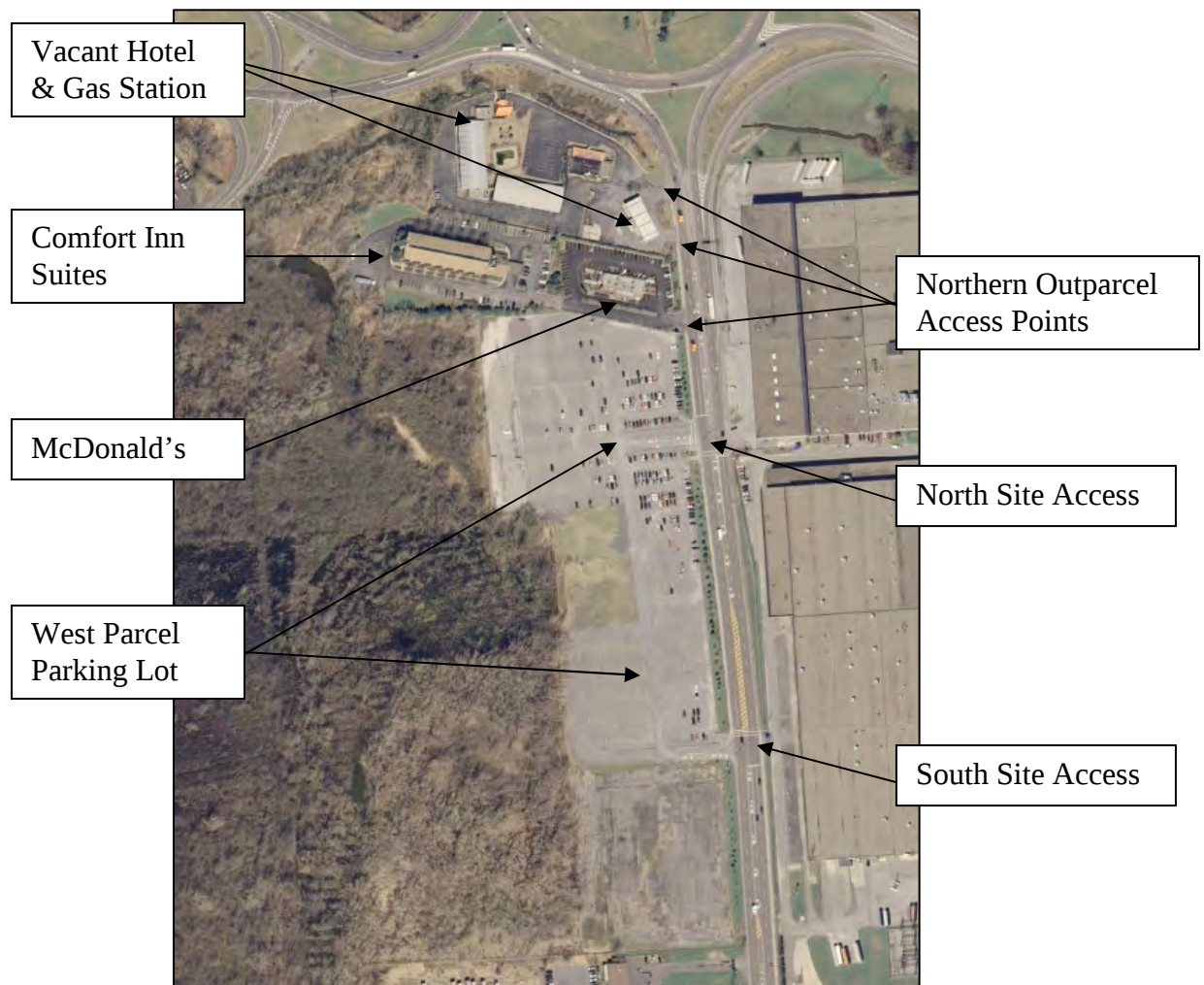
- Thompson Road/James Street
- Thompson Road/Exeter Street
- Thompson Road/Existing Verizon Access
- Thompson Road/Existing West Parcel Driveways (2)
- Carrier Parkway (NYS RT 298)/Old Collamer Road
- Carrier Parkway (NYS RT 298)/Telergy Parkway/Transicold Avenue
- Carrier Parkway (NYS RT 298)/Kinne Street/Weighlock Drive
- Kinne Street (NYS RT 298)/Court Street Road/New Venture Gear Drive
- Kinne Street/Franklin Park Drive/East Parcel Access
- Court Street Road/Deere Road

While the focus of this study is to evaluate alternatives for the West and Northern Outparcels, the development of the entire Carrier site was taken into consideration to accurately assess traffic conditions for the design year (2018). The existing access to the East Parcel off Kinne Street opposite Franklin Park Drive is also included in this analysis.

The West Parcel currently contains a surface parking lot with over 900 spaces for the Carrier campus. Access to the West Parcel is provided via two signalized driveways.

One of the goals of this study is to develop a plan to provide adequate access to all of the Northern Outparcels. The Northern Outparcels are located between the West Parcel and Carrier Circle and include two vacant properties (formerly a Howard Johnson and a gas station) and two operational businesses (Comfort Inn and McDonald's). Efforts to redevelop the former Howard Johnson motel site have been hindered by the lack of direct access from Thompson Road and Carrier Circle. Currently, the Howard Johnson site is accessed via the former gas station parcel, which has two right-in/right-out driveways on Thompson Road. The NYSDOT has expressed concerns about the safety of these two driveways, given their proximity to Carrier Circle. The Comfort Inn and the McDonald's are accessed via a single right-in/right-out driveway.

The following picture shows the existing access points along Thompson Road:



The entire study area including the study intersections are shown in Figure 1: General Location Map.



d. Methodology

Several traffic conditions were established and considered for the study intersections. The traffic conditions considered in this report are as follows:

- Existing (2008) traffic conditions during the weekday AM and PM peak hours
- Design year (2018) no-build traffic conditions during the weekday AM and PM peak hours, which include background growth and known development in the area
- Design year (2018) build traffic conditions for five access alternatives during the weekday AM and PM peak hours, which include the no-build condition plus development associated with the Reuse Plan

The study intersections were analyzed using SYNCHRO 7² which is a computer program that implements the methods presented in the 2000 Highway Capacity Manual³. SYNCHRO determines the level of service (LOS), which is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption and lost travel time. Level of Service criteria are stated in terms of the control delay per vehicle for a 15 minute analysis period and range from “A” to “F”. Level of Service A is representative of a movement that is free flowing with minimal delay, while LOS F generally represents long delays. LOS D is generally considered acceptable in urban environments.

The ranges of delay for each level of service, as contained in the 2000 Highway Capacity Manual, are shown in Table 1.

Table 1: Level of Service Criteria

Level of Service (LOS)	Signalized Intersections	Unsignalized Intersections
	Delay (sec)	Delay (sec)
A	0-10	0-10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	over 80	over 50

² SYNCHRO 7, Traffic Signal Coordination Software, Version 7, Trafficware Corporation, Albany, California, 1993-2006.

³ Highway Capacity Manual, Transportation Research Board, National Research Council, Washington D.C., 2000.

II. Existing Conditions

a. Roadway Network

The major roadways in the study area are Thompson Road and Carrier Parkway. Thompson Road between James Street and the Carrier Circle is a north-south oriented four-lane roadway with two lanes in each direction. This section of Thompson Road is classified as a principal arterial. There is a raised median on Thompson Road between the Existing North Site Access and Carrier Circle. Carrier Parkway between Carrier Circle and Court Street Road is an east-west oriented three-lane roadway with two eastbound lanes and one westbound lane. Carrier Parkway is classified as a minor arterial. The speed limit on these two roads in the study area is 45 mph. The signals along Thompson Road are part of an interconnected system from Burnet Street (south of this study area) to the North Site Access signal.

Other roadways in the study area include NYS RT 298 (classified as a principal arterial west of Carrier Circle), Kinne Street (minor arterial), Court Street Road (local road), and New Venture Gear Drive (collector).

The study intersections, selected by the SAC, are described in more detail below:

Thompson Road & James Street: The intersection of Thompson Road and James Street is an actuated-coordinated signal, owned and operated by the NYSDOT. All four approaches to this intersection have exclusive left-turn lanes and two through lanes. All the left turns are protected as well as permitted during the through phases. This intersection is elevated on a bridge structure over railroad tracks. The NYSDOT has recently upgraded this traffic signal to have pedestrian indications with countdown timers, ADA curb ramps and new crosswalks.

Thompson Road & Exeter Street: The intersection of Thompson Road and Exeter Street is an actuated-coordinated signal, owned and operated by the NYSDOT. The northbound approach on Thompson Road has exclusive left and right-turn lanes in addition to the two through lanes. The southbound approach on Thompson Road has an exclusive left-turn lane and two through lanes. The eastbound approach is a driveway with one lane for all movements. The westbound approach on Exeter Street has a shared left-turn/through lane and a right-turn only lane. The northbound and southbound left turns are protected as well as permitted during the through phases. Eastbound and westbound left turns are only permitted during the east-west through phases. A pedestrian crosswalk with push buttons is provided on the westbound approach for pedestrians crossing Exeter Street; however, pedestrian signals are not provided.

Thompson Road & Verizon Back Access: The intersection of Thompson Road and Verizon Back Access is controlled by a traffic signal (permit held by Verizon) and is actuated-coordinated. The northbound approach consists of a

through lane and a shared through/right-turn lane. The southbound approach on Thompson Road has an exclusive left-turn lane in addition to the two through lanes. The westbound approach has an exclusive left-turn lane and an exclusive right-turn lane. The southbound left turn is protected as well as permitted during the north-south through phase. A pedestrian crosswalk is provided on the westbound approach for pedestrians crossing the Verizon Back Access; however, pedestrian signals are not provided.

Thompson Road & Existing South Site Access: The intersection of Thompson Road and the Existing South Site Access is controlled by a traffic signal (permit held by Carrier) and is actuated-coordinated. An exclusive left-turn lane and two through lanes are provided for the northbound approach on Thompson Road. The southbound approach consists of a through lane and a shared through/right-turn lane. The eastbound approach consists of a right-turn lane. Left turns are not permitted from the eastbound approach to avoid conflict with the pedestrian crosswalk provided on the southbound approach on Thompson Road. The northbound left turn is protected as well as permitted during the north-south through phase. A push-button pedestrian signal is provided.

Thompson Road & Existing North Site Access: The intersection of Thompson Road and the Existing North Site Access is controlled by a permit traffic signal and is actuated-coordinated. Exclusive left-turn lanes are provided on the northbound and southbound approaches on Thompson Road in addition to the two through lanes. The eastbound approach for the traffic exiting from the parking lot has an exclusive left-turn lane and a shared left-turn/through lane. Right turns are not permitted from the eastbound approach to avoid conflict with the pedestrian crosswalk provided on the northbound approach of Thompson Road. The northbound and southbound left turns are protected as well as permitted during the through phases. Eastbound left-turning traffic from the parking lot has a protected left-turn phase. The westbound left turn is only permitted during the east-west through phases. A push-button pedestrian signal is provided.

Thompson Road & McDonald's Driveway: The McDonald's Driveway on Thompson Road is a right-in/right-out only driveway that is stop-controlled for traffic exiting from McDonald's.

Carrier Parkway & Old Collamer Road: The intersection of Carrier Parkway and Old Collamer Road is stop-controlled on the Old Collamer Road approach. There is one shared lane for the southbound approach. An exclusive left-turn lane is provided for the eastbound approach on Carrier Parkway in addition to the two through lanes. The westbound approach has only one shared through/right-turn lane. No pedestrian accommodations are provided.

Carrier Parkway & Telergy Parkway/Transicold Avenue: The intersection of Carrier Parkway and Telergy Parkway/Transicold Avenue is stop-controlled on the Telergy Parkway and Transicold Avenue approaches. The northbound and

southbound approaches consist of a shared lane for all movements. The eastbound approach on Carrier Parkway consists of an exclusive left-turn lane, a through lane, and a shared through/right-turn lane. The westbound approach on Carrier Parkway consists of exclusive left-turn lane and a shared through/right-turn lane. No pedestrian accommodations are provided.

Carrier Parkway & Weighlock Dr/Kinne Street: The intersection of Carrier Parkway and Weighlock Dr/Kinne Street is signalized and fully actuated. The signal is owned and operated by the NYSDOT. The northbound approach on Kinne Street has a dedicated left-turn lane, a through lane and a stop-controlled channelized right-turn lane. The southbound approach consists of a dedicated left-turn lane and a shared through/right-turn lane. The eastbound approach on Carrier Parkway has a dedicated left-turn lane, two through lanes and a channelized right-turn lane. The westbound approach consists of a dedicated left-turn lane and a through/right-turn lane. The eastbound and westbound left turns on Carrier Parkway are protected as well as permitted during the through phases. Northbound and southbound left turns on Kinne Street and Weighlock Drive respectively are only permitted during the north-south through phases. No pedestrian accommodations are provided.

Kinne Street & Court Street Road/New Venture Gear Drive: The intersection of Kinne Street and Court Street Road/New Venture Gear Drive is signalized and fully actuated. The signal is owned and operated by the NYSDOT. The northbound approach on Kinne Street has an exclusive left-turn lane, two through lanes and a channelized right-turn lane. The southbound, eastbound and westbound approaches each consist of a dedicated left-turn lane and a shared through/right-turn lane. The southbound left turn has a protected phase, but the northbound left turn is only permitted during the north-south through phase. Eastbound and westbound left turns are only permitted during the east-west through phase. No pedestrian accommodations are provided.

Kinne Street & Franklin Park Drive: The intersection of Kinne Street and Franklin Park Drive is a fully actuated signal that is owned and operated by the OCDOT. The northbound approach has a shared left-turn/through lane, through lane and a channelized right-turn lane with a yield sign. The southbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The westbound approach has an exclusive right-turn lane along with a shared left-turn/through lane. The eastbound approach consists of one shared lane for all movements. The northbound and southbound phases on Kinne Street are split, due to the need for protected left movements and a lack of left turn lanes. A protected right turn phase is provided for the westbound right turns during the southbound split phase. Eastbound and westbound phases run concurrently. No pedestrian accommodations are provided.

Court Street Road & Deere Road: The three-leg intersection of Court Street Road and Deere Road is stop controlled on the Deere Road approach. There is one shared lane for each approach. No pedestrian accommodations are provided.

b. Traffic Volumes (2008)

The traffic volume data for this study were obtained through a number of sources. The NYSDOT provided automated traffic recorder (ATR) counts for the on- and off-ramp lanes between Carrier Circle and Thompson Road. Turning movement counts for the North and South Site Access driveways on Thompson Road and the intersection of Carrier Parkway with Telergy Parkway/Transicold Avenue were taken from the “Carrier Site – TR-3 Building Redevelopment Traffic Impact Assessment” by GTS Consulting (August 4, 2008). The traffic counts for the intersection of Thompson Road and Exeter Street were provided in the “Thompson Road Commercial Development Traffic Impact Assessment,” also completed by GTS Consulting (July 10, 2008). The remaining intersections were counted by the SMTC in October and December 2008.

Even though the count data were obtained from a number of sources, the peak hours were found to be consistent throughout the study area: AM Peak Hour 7:30 a.m. to 8:30 a.m. and PM Peak Hour 4:30 p.m. to 5:30 p.m. The traffic counts were balanced and rounded along each roadway where there were no curb cuts that could affect the mainline volumes significantly.

Count data for each intersection are included in Appendix D. Appendix D also contains the AM and PM peak hour volumes used for the analysis of existing conditions.

c. Level of Service

A capacity analysis was performed for the study intersections using the existing traffic volumes with existing roadway and intersection geometries and signal timing and phasing information provided by the NYSDOT and the OCDOT.

During the AM peak period, the following movements were found to be operating at a LOS E or F:

- Thompson Road & Exeter Street
 - Westbound left-turn/through: LOS E (73 sec of delay)
- Carrier Parkway & Old Collamer Road
 - Southbound: LOS F (78 sec of delay)
- Carrier Parkway & Telergy Parkway/Transicold Avenue
 - Southbound: LOS E (40 sec of delay)
 - Northbound: LOS F (150 sec of delay)

The same movements experience the longest delays during the PM peak period with the addition of the westbound left-turn movement on New Venture Gear Drive at Carrier Parkway:

- Thompson Road & Exeter Street
 - Westbound left-turn/through: LOS E (70 sec of delay)
- Carrier Parkway & Old Collamer Road
 - Southbound: LOS F *
- Carrier Parkway & Telergy Parkway/Transicold Avenue
 - Southbound: LOS E (48 sec of delay)
 - Northbound: LOS F *
- Kinne Street & Court Street Road/New Venture Gear Drive
 - Westbound left-turn: LOS F (185 sec of delay)

* Volume-to-Capacity (v/C) ratio > 1: delay calculations unpredictable

For both peak periods, the high delays were found to be occurring on the side roads approaching Thompson Road and Carrier Parkway.

Tables C1 and C2 summarize the existing measures of effectiveness (MOEs), such as LOS, delays, 95th percentile queue lengths and v/C ratios, as determined by SYNCHRO for the AM and PM peak hours.

All SYNCHRO reports are included in Appendix G.

d. Pedestrian and Transit Accommodations

A pedestrian and transit accommodations inventory was conducted along Thompson Road and Carrier Parkway in December 2008. There is sidewalk on the east side of Thompson Road from James Street to the South Site Access driveway and on the west side of Thompson Road from the South Site Access to Carrier Circle. There are crosswalks on each side street approach. There are also crosswalks on Thompson Road at James Street and the North and South Site Access driveways. The North and South Access driveways are also equipped with working pedestrian signals. Push-buttons exist at the crosswalk on Exeter Street but there are no pedestrian signal indications. The pedestrian signals at the intersection of Thompson Road and James Street were covered at the time the inventory was conducted but the accommodations have been recently upgraded by the NYSDOT to include new indications with countdown timers, curb ramps and crosswalks.

There are no pedestrian accommodations on Carrier Parkway within the study area.

There are a number of bus stops signed along Thompson Road but only one stop along Carrier Parkway near Old Collamer Road. These stops are served by six different routes:

- 58 & 158 – Parkhill Route
- 152 – Court - Industrial Park
- 152X – Industrial Park Express
- 22 – James – Carrier
- 122 – James – Carrier – New Venture Gear – East Syracuse

All of these routes travel northbound on Thompson Road between Exeter Street and Carrier Circle.

The pedestrian accommodations, including sidewalks, crosswalks and pedestrian indications along with the signed bus stop locations and bus routes are shown in Figure B-1 in Appendix B.

e. Accident Analysis

An accident analysis was conducted on Thompson Road and Carrier Parkway based on NYSDOT accident data files from January 2004 through December 2006. It is important to note that the safety data examined within this report includes only those accidents with geographic reference information. Approximately 27 percent of the Onondaga County accidents reported in the time frames noted are not tied to a particular road segment or intersection and are therefore not included within this accident review. In addition, it should be noted that the 2004-2006 dataset was not complete at the time that this document was written. This dataset includes all reportable accidents (those over \$1,000 in damage) that occurred between 2004 and 2006 in the study area, but only some of the known non-reportable accidents. At the time this document was written, non-reportable information, in its entirety, had not yet been added to the dataset.

The accident database contains the date and time of the accident, weather/roadway conditions, accident type, contributing factors and vehicle direction. Each accident is also noted as being reportable or non-reportable. A non-reportable accident is one that resulted in no injuries and less than \$1,000 in personal property damage. Each accident is associated with a reference marker and X-Y coordinates for both roadways. Since reference markers are associated with a general area as opposed to a specific location, Thompson Road and Carrier Parkway were evaluated as a roadway mainline with junctions as opposed to separate intersections and roadway segments.

Tables 2 and 3 summarize accident information along Thompson Road.

Table 2: Thompson Road Accident Severity Summary

Year	Total Accidents	Property Damage Only	Injury	Fatal
2004	32	16	16	0
2005	21*	11	9	0
2006	21	11	10	0
Totals	74	38	35	0

* Listing included 1 non-reportable accident

Table 3: Thompson Road Accident Type Summary

Mile Marker	Location Description	Total Number of Accidents	Number of Accidents by Type						
			Rear End	Right Angle	Left Turn	Head On	Over-taking	Unknown	Other
1010	Near James Street	10	7		1	1		1	
1012	Near Exeter Street	7	3	1		2			1
1014	Between Exeter Street & Grover Street	1							1
1015	Near Grover Street	12	2	1	1		1	4	3
1016	North of Grover Street	2						1	1
1017	South of Verizon Back Access	7		4					3
1018	Between Verizon Back Access & South Site Access	5	2	1				2	
1021	Near North Site Access	30	17	1	1		2	5	4
Totals		74	31	8	3	3	3	13	13
		100%	42%	11%	4%	4%	4%	18%	18%

Rear end accidents were the most common type of collision noted on Thompson Road accounting for 42% of all accidents. A high number of rear end accidents is indicative of stop and go traffic, especially near intersections. The most common contributing factors noted were following too closely, driver inattention, unsafe lane change and improper lane usage.

Tables 4 and 5 summarize accident information along Carrier Parkway.

Table 4: Carrier Parkway Accident Severity Summary

Year	Total Accidents	Property Damage Only	Injury	Fatal
2004	20	7	13	0
2005	20	7	13	0
2006	27	14	13	0
Totals	67	28	39	0

Table 5: Carrier Parkway Accident Type Summary

Mile Marker	Location Description	Total Number of Accidents	Number of Accidents by Type						
			Rear End	Right Angle	Left Turn	Head On	Over-taking	Unknown	Other
2029	Near Carrier Circle	15	14						1
2030	Between Carrier Circle & Old Collamer Road	7	5				1	1	
2031	Between Old Collamer Road & Telergy Parkway/Transicold Avenue	8	2	2			1		3
2034	Near Kinne Street	13	2	1	5	1	1	2	1
2036	Near Court Street Road/New Venture Gear Drive	24	8	4	5	1	1		5
Totals		67	31	7	10	2	4	3	10
		100%	46%	10%	15%	3%	6%	4%	15%

The most common contributing factors noted were similar to those on Thompson Road: following too closely, driver inattention and failure to yield right of way. It was also found that over 30% of the accidents analyzed occurred near the Carrier Circle between vehicles waiting to enter or merging off the Circle.

Due to the insufficient location information for the accident data available, it should be noted that the accidents reported near Carrier Circle (MM 1021 on Thompson Road and MM 2029/2030 on Carrier Parkway) may have occurred on the Circle itself and may not be associated with either roadway.

Accident rates were calculated for these roadways using the segment lengths in miles, 2006 traffic volume data from the NYSDOT and the number of accidents. Individual intersection and segment rates could not be determined due to the insufficient data associated with the location of each accident. The comparisons

between the calculated rate for each roadway segment and the statewide average (SWA) rate for similar locations are shown in the table below:

Table 6: Accident Rates

	# of Accidents	AADT* (2006)	Segment Length (mi)	Acc Rate	SWA Rate**
Thompson Road	74	31,170	1.2	1.81	2.2
Carrier Parkway	67	16,500	0.67	5.53	2.2

* Average Annual Daily Traffic

** Rate for 2005-2006 reportable accidents on an urban, undivided roadway for all lanes
(5 lanes)

It was found that the accident rate for Thompson Road is lower than the statewide average accident rate but the rate for Carrier Parkway is more than double the statewide average rate. While there are fewer accidents in a three-year period on Carrier Parkway, the segment length is about half of the length of the Thompson Road segment and the AADT is much lower thereby making the rate higher.

Accident summary tables and diagrams are included in Appendix E.

III. Access Alternatives

Based on input from the SAC, five different access alternatives were developed and analyzed. Besides Alternative 1 – Existing Access Points, each alternative was created to find the appropriate balance among the following goals:

- 1) provide direct access to buildings on the West and Northern Outparcels;
- 2) manage access to improve safety and operations on Thompson Road; and
- 3) maintain operations on the adjacent roadway network while minimizing impacts.

A preliminary internal circulation plan for the West Parcel and the Northern Outparcels was also developed for each alternative. A common element of the internal circulation plans for each alternative is the main internal road that connects the Northern Outparcels to the south end of the West Parcel. This main road would bisect the existing McDonald's and Comfort Inn Suites parcels to provide access to all of the Northern Outparcels and continue south, parallel to Thompson Road, to the southern boundary of the West Parcel.

Since the focus of this study is on access to the West and Northern Outparcels, the access points to the East Parcel do not change between alternatives. The Reuse Plan shows access via First Street (opposite Franklin Park Drive), Third Street (opposite Winchester Road) and a new access across from Altmont Drive (see Appendix A). The only East Parcel access analyzed was First Street.

Each alternative is described below in more detail and graphically shown in Figures B-2 through B-6 in Appendix B:

a. Alternative 1 – Existing Access Points (Figure B-2)

This alternative provides the most access points to the site by maintaining the existing driveways along Thompson Road. It was assumed that the existing North and South Site Access driveways would remain signalized and the Northern Outparcel driveways would remain right-in/right-out access points. Due to the change in use for the Northern Outparcels, to be discussed in Section IV, the most northern right-in/right-out access was removed. Additional access to each building, including the Northern Outparcels, would be accommodated through the internal roadway network only.

b. Alternative 2 – Single Access onto Thompson Road (Figure B-3)

Alternative 2 consists of one access point to the West Parcel. The access would be located where the current North Site Access driveway is in order to maintain the signal at the driveway to the main Carrier site and provide the most central access location for the West Parcel. Access to each building, including the Northern Outparcels, would be accommodated through the internal roadway network only.

c. Alternative 3 – Two Access Points onto Thompson Road (Figure B-4)

The third alternative maintains the existing two signalized intersections as access to the West Parcel but eliminates the existing three right-in/right-out accesses to the Northern Outparcels. Access to each building, including the Northern Outparcels, would be accommodated through the internal roadway network only. This alternative reduces the number of access points on Thompson Road.

d. Alternative 4 – Single Access onto Thompson Road with Court Street Road Access (Figure B-5)

Alternative 4 includes an access to the West Parcel from Court Street Road and one access on Thompson Road at the current North Site Access driveway. The Court Street Road access would allow vehicles arriving from the west on NYS RT 298 to access the West Parcel and Northern Outparcels without driving through Carrier Circle. This alternative minimizes access points on Thompson Road and the volumes on the Circle and Thompson Road from the west.

e. Alternative 5 – Single Access onto Thompson Road and an Access Opposite the Verizon Back Access with Connection to Kinne Street (Figure B-6)

This alternative provides two access points to the West Parcel while minimizing the number of curb cuts and providing access to the East Parcel from Thompson Road, thereby reducing traffic on Carrier Circle. Alternative 5 maintains the North Site Access driveway on Thompson Road as well as an access to the West Parcel via a new roadway opposite the existing Verizon Back Access roadway. Access to the Northern Outparcels would be accommodated through the internal roadway network only.

IV. Design Year Traffic Volumes

a. Background Growth – No-Build Volumes

The design year is 2018 for the purposes of this study. A growth rate of 1.5 percent, compounded annually, was applied to the existing traffic volumes to determine the 2018 background volumes, which account for any unknown development that may occur in the area. This growth rate was provided by the NYSDOT and is consistent with historic traffic volume information recorded in the area.

Within those 10 years, two projects are expected to be completed in the area: construction of a Tim Hortons restaurant, office and retail space at the intersection of Thompson Road and Exeter Street and the relocation of the parking facilities on the West Parcel to the existing TR-3 building on the main Carrier site (Carrier plans to demolish the TR-3 building). Since none of these projects were complete at the time of this analysis, the volumes associated with these projects were taken from the studies conducted by GTS Consulting, as referenced on page 9 (the Tim Hortons restaurant has since opened). The relocation of parking from the West Parcel removes the need for the South Site Access and the eastbound movement at the North Site Access. These project volumes were added to the 2018 background traffic to create the 2018 no-build volumes.

According to the NYSDOT, the preferred access to the main Carrier site or the East Parcel is from Kinne Street. The NYSDOT does not have any existing plans to remove access to Transicold Avenue from Carrier Parkway. For the purpose of this study, it was assumed that existing traffic will continue to use Transicold Avenue. It was also assumed that Transicold Avenue would be used as a right-in only access for a percentage of redistributed or new trips to the main site or to the East Parcel. Vehicles redistributed from the existing West Parcel parking lots to the main Carrier site and all new (future) trips were assumed to use Kinne Street.

The no-build volumes for the AM and PM peaks are included in Appendix D.

b. Trip Generation

A trip generation analysis was conducted for the entire Carrier site based on the Reuse Plan, which includes a number of new uses such as office, hotel, flex space (lab, office, research and development) and recreation space. The Reuse Plan calls for the four existing Northern Outparcels to be combined into one parcel for a future hotel/conference center. This could require the existing uses on the site (McDonald's and Comfort Inn Suites) be removed. Based on input from the SMTC and the CNYRPDB, it was assumed that the McDonald's and Comfort Inn would remain and the two most northern parcels, which are currently vacant, would be combined into a single parcel and developed with an office building, similar in size to others in the Reuse Plan.

Using the Institute of Transportation Engineers (ITE) *Trip Generation*, 8th Edition⁴, the total number of person trips generated by each type of use was estimated. Appendix A includes a graphic of the preferred Plan showing the proposed location of the new buildings and their proposed uses.

Mode share information for the study area was obtained from the 2000 Census Transportation Planning Package (CTPP)⁵ and was summarized to determine how people get to work. The CTPP data indicated that approximately 89% of people in the study area drive alone to work. The total person trips generated by work places (office uses) were reduced by the non-auto mode share percentages to reflect the number of vehicle trips associated with the new developments based on recommendations from ITE for this use. The hotel use was not reduced since the ITE information provided was obtained by surveying suburban sites similar to those proposed in the Reuse Plan and the available mode share data is based on commuter trips.

The Wellness Center on the East Parcel is expected to be a support use for the development in that area. The total trips associated with this use were reduced by an internal capture rate – the assumption that most of the trips generated by this use are already accounted for in another use. Therefore, the trips generated by the wellness center were reduced by 75 percent, meaning it is assumed that 75 percent of those visiting the center will have come from one of the other uses on the East Parcel.

⁴ *Trip Generation, 8th Edition*, Institute of Transportation Engineers, Washington D.C., 2008.

⁵ 2000 Census Transportation Planning Package Census of Population and Housing, Part 2 – Data by Place of Work for DE, NJ, NY, US Census Bureau, August 2004.

Table 7 summarizes the land use assumptions and final trip generation.

Table 7: Trip Generation Summary

Project	Land Use	ITE Land Use	Units		AM Peak Hour Vehicle Trips	PM Peak Hour Vehicle Trips
Northern Outparcel	Office (N1)	General Office (710)	56	KSF	82	78
Northern Outparcel Subtotal			56	KSF	82	78
West Parcel	Hotel (W1)	Hotel (310)	140	Rooms	78	83
	Office (W2)	General Office (710)	56	KSF	82	78
	Flex Space (W4)	General Office (710)	60	KSF	87	84
	Office (W3)	General Office (710)	105	KSF	153	147
West Parcel Subtotal			221	KSF	400	392
			140	Rooms		
East Parcel	Office	General Office (710)	110	KSF	160	154
	Multi-user Flex Space	General Office (710)	230	KSF	335	322
	Wellness Center	Health/Fitness Club (492)	66	KSF	21	55
	Office (4-36 KSF Buildings)	General Office (710)	144	KSF	210	202
East Parcel Subtotal			550	KSF	726	732
Grand Total			827	KSF	1208	1202
			140	Rooms		

The AM and PM vehicle trips were then further broken down into trips entering or exiting each use based on directional distribution information provided by the ITE manual. The total new rounded vehicle entering and exiting trips for each parcel are shown below:

Table 8: Entering/Exiting Vehicle Trips

	AM Peak Hour		AM Peak Hour	
	Entering	Exiting	Entering	Exiting
Northern Outparcel	70	10	15	65
West Parcel	330	70	95	295
East Parcel	640	85	125	610

Detailed trip generation calculations are provided in Appendix F.

c. Trip Distribution

The broad external trip distribution is based on recent average annual daily traffic (AADT) data from the 2007 Traffic Volume Report by the NYSDOT⁶ and traffic volume data from the SMTc website⁷. A local distribution was also determined using the turning movement counts obtained for this study. The percentages were comparable to those determined by the AADT data thereby affirming the

⁶ 2007 Traffic Data Report for New York State, New York State Department of Transportation, Albany, New York, Appendix E, Pages 208 & 241.

⁷ <http://www.smtcmpo.org/data/TrafficCounts/default.asp?muni=DeWitt&munitype=Town#TrafficCounts>, referenced 1/12/09.

reasonableness of the distribution. The distribution based on turning movement counts also verified that the distribution is consistent between the AM and PM peak hours.

Vehicles from the east, north and the New York State Thruway (I-90) consolidate as they travel through Carrier Circle and approach the study area. These vehicles account for 35 percent of the site-generated traffic. The remaining site-generated traffic is distributed as follows: 25 percent on Carrier Parkway from the north/northeast, 5 percent on Franklin Park Drive from the east (Kirkville Road) and from New York State Route 481, and 35 percent on Thompson Road from the south. The external trip distribution is shown in Figure B-7 of Appendix B.

The trip distribution at each study intersection was based on existing traffic patterns and the alternative being analyzed. For the purposes of this study, the traffic distributed to each access was based on the location of the future uses according to the Reuse Plan and the closest access to each proposed use. For example, since approximately 60 percent of all the new project trips are generated by the East Parcel, it was assumed that 60 percent of the trips from each direction will be heading to the East Parcel. Since Franklin Park Drive leads directly to the East Parcel it was assumed that all trips on that roadway were associated with the East Parcel.

d. Future Traffic Volumes

The new project trips as calculated and distributed for each access alternative were added to the no-build volumes to create the future traffic volumes. The distributions and future volumes for each alternative are included in Appendix D.

The traffic volumes for the non-site access study intersections remain the same under Alternatives 1 through 3 since they are subject only to the broad external distribution. The volumes for the North Site Access in Alternative 4 are reduced by the redistribution of a small portion (3%) of vehicles to the access on Court Street Road. Volumes are changed significantly at the intersections closest to the development sites under Alternative 5 due to the redistribution of traffic along the connection street between Thompson Road and Kinne Street via the Verizon Back Access.

V. Alternative Analysis and Comparison

a. Alternative Analysis

A SYNCHRO analysis was completed for the AM and PM peak hours for each of the five alternatives as well as a no-build analysis, which indicates how the existing roadway network would accommodate the 2018 volumes without the proposed development. Appendix G contains the SYNCHRO reports for the AM and PM peak periods for each alternative, including the no-build scenario.

The no-build scenario is conducted using existing roadway characteristics. As with the inclusion of future volumes from known development in the area, the roadway characteristics were changed to reflect recommendations from other studies for the no-build analysis. The GTS study regarding the Thompson Road Commercial Development near Exeter Street (see Page 9) recommended that the eastbound and westbound approaches of Exeter Street consist of an exclusive left-turn lane and shared through/right-turn lanes. Therefore, these changes were made in the no-build analysis model as well as for each alternative analysis.

Tables 9 and 10 (Pages 23 – 26) compare the LOS for the peak periods analyzed for each movement at each intersection for all of the scenarios analyzed: existing, no-build, and Alternatives 1 through 5. A detailed comparison of additional MOEs (delay, queue length, and volume-to-capacity ratio) for each alternative and the no-build scenario is included as Tables C-1 and C-2 in Appendix C. The results are generally consistent between the different alternatives with a few notable differences in Alternatives 2 and 4 due to the reduction to one access on Thompson Road and in Alternative 5 due to the connection road between Thompson Road and Kinne Street.

A number of movements at a few intersections degrade in LOS under no-build conditions. The only changes made, other than the changes proposed as a result of the GTS Consulting study for the Thompson Road Commercial Development at Exeter Street, were the optimization of signal timings at existing intersections.

For each alternative, the intersections of each access with the main road of the internal roadway were included to determine if queuing back onto Thompson Road was an issue. The queue for the westbound approach during the AM peak hour to the intersection of the North Site Access driveway with the main internal road was the longest for all the alternatives analyzed. The analysis indicated that the 95th percentile queue would be approximately 130 feet long. Since the main internal road would be constructed 300 to 450 feet from Thompson Road, these queues would not affect operations on Thompson Road. The queue results are shown in Appendix G.

The following operational improvements were included in the analysis for all of the alternatives:

- Cycle lengths and signal timings for all the intersections on Thompson Road are optimized for coordination
- Provided exclusive left-turn lanes with protected phases and shared through/right-turn lanes for the eastbound and westbound approaches at the intersection of Thompson Road and Exeter Street (identified in the GTS study)
- Provided dual left turn lanes with a protected phase for eastbound approach at the intersection of Thompson Road and North Site Access
- Provided a protected left turn phase for the northbound left-turn movement and optimized the cycle length at the intersection of Carrier Parkway with Weighlock Drive/Kinne Street
- Provided protected left-turn phases for eastbound and westbound movements and optimized the cycle length at the intersection of Kinne Street with Court Street Road/New Venture Gear Drive
- Provided dual left-turn lanes with a protected phase for eastbound approach at the intersection of Kinne Street and First Street/Franklin Park Drive

Table 9: AM Peak Hour LOS Comparison

AM PEAK HOUR LOS COMPARISON								
Intersection	Movement	Existing	No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
James St & Thompson Rd (signalized intersection)	EBL	D	E	F	F	F	F	F
	EBT / EBR	D	D	D	D	D	D	D
	WBL	C	D	D	D	D	D	D
	WBT / WBR	C	E	F	F	F	F	F
	NBL	B	B	C	C	C	C	B
	NBT / NBR	C	C	E	E	E	E	E
	SBL	C	C	D	E	D	E	D
	SBT / SBR	B	B	B	B	B	B	B
Exeter St & Thompson Rd (signalized intersection)	(EBL)	-	C	D	D	D	D	D
	EBL / EBT / EBR (EBT / EBR)	C	B	C	D	C	D	D
	WBL / WBT (WBL)	E	E	D	D	D	D	D
	WBR (WBT / WBR)	A	B	B	C	B	C	C
	NBL	A	B	A	A	A	A	A
	NBT	A	B	A	B	A	B	A
	NBR	A	A	A	A	A	A	A
	SBL	A	B	C	C	C	C	B
Verizon Back Access & Thompson Rd (signalized intersection)	SBT / SBR	B	B	B	A	A	A	A
	(EBL)	-	-	-	-	-	-	D
	(EBT / EBR)	-	-	-	-	-	-	A
	WBL	D	D	D	E	D	E	D
	WBR (WBT / WBR)	B	B	C	C	C	C	A
	(NBL)	-	-	-	-	-	-	A
	NBT / NBR	B	B	A	A	A	A	A
	SBL	A	A	A	A	A	A	B
Existing South Site Access & Thompson Rd (signalized intersection)	SBT (SBT / SBR)	A	A	A	A	A	A	A
	EBR	A	-	D	-	D	-	-
	NBL	A	-	A	-	A	-	-
	NBT	A	-	A	-	A	-	-
Existing North Site Access & Thompson Rd (signalized intersection)	SBT / SBR	A	-	A	-	A	-	-
	EBL	D	-	D	E	D	E	D
	EBL / EBT (EBT / EBR)	C	-	A	A	A	A	C
	WBL / WBT / WBR	D	C	D	D	D	D	D
	NBL	A	-	A	B	A	B	A
	NBT / NBR	B	A	A	A	A	A	A
	SBL	A	A	A	B	A	B	A
McDonalds Driveway & Thompson Rd (unsignalized intersection)	SBT / SBR	A	A	A	B	A	B	A
	EBR	b	b	b	-	-	-	-

(XX) – Future lane configuration if different from existing

Table 9: AM Peak Hour LOS Comparison, cont.

Carrier Pkwy & Old Collamer Rd (unsignalized intersection)	EBL	b	b	b	b	b	b	b
	SBL / SBR	f	f	f	f	f	f	f
Carrier Pkwy & Telergy Pkwy / Transicold Ave (unsignalized intersection)	EBL	a	a	b	b	b	b	b
	WBL	b	b	c	c	c	c	b
	NBL / NBT / NBR	f	f	f	f	f	f	f
	SBL / SBT / SBR	e	f	f	f	f	f	f
Carrier Pkwy & Weighlock Dr / Kinne St (signalized intersection)	EBL	A	A	A	A	A	A	A
	EBT / EBR	C	C	E	E	E	E	C
	WBL	B	C	E	E	E	E	D
	WBT / WBR	B	B	B	B	B	B	B
	NBL	D	D	F	F	F	F	E
	NBT / NBR	A	A	A	A	A	A	A
	SBL	C	C	D	D	D	D	D
	SBT / SBR	B	B	C	C	C	C	C
Kinne St & Court St Rd / New Venture Gear Dr (signalized intersection)	EBL	C	C	C	C	C	C	C
	EBT / EBR	C	C	C	C	C	C	C
	WBL	D	D	C	C	C	C	C
	WBT / WBR	B	B	D	D	D	D	D
	NBL	B	C	B	B	B	B	B
	NBT	B	C	B	B	B	B	B
	NBR	A	A	A	A	A	A	A
	SBL	B	B	B	B	B	B	B
	SBT / SBR	B	B	C	C	C	C	C
Kinne St & Franklin Park Dr / First St (signalized intersection)	(EBL)	-	-	B	B	B	B	B
	EBL / EBT / EBR (EBT / EBR)	C	C	B	B	B	B	B
	WBL / WBT	D	D	D	D	D	D	C
	WBR	A	A	A	A	A	A	A
	NBL / NBT / NBR	B	C	C	C	C	C	C
	SBL / SBT / SBR	B	B	C	C	C	C	B
Court St Rd & Deere Rd (unsignalized intersection)	EBL / EBT	a	a	a	a	a	a	a
	SBL / SBR	b	b	b	b	b	b	b

(XX) – Future lane configuration if different from existing

Table 10: PM Peak Hour LOS Comparison

PM PEAK HOUR LOS COMPARISON								
Intersection	Movement	Existing	No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
James St & Thompson Rd (signalized intersection)	EBL	C	D	E	E	E	E	E
	EBT / EBR	D	D	E	E	E	E	E
	WBL	C	D	D	D	D	D	D
	WBT / WBR	D	E	F	F	F	F	F
	NBL	B	C	D	D	D	D	D
	NBT / NBR	C	C	C	C	C	C	C
	SBL	C	C	C	C	C	D	C
	SBT / SBR	C	C	C	C	C	C	C
Exeter St & Thompson Rd (signalized intersection)	(EBL)	-	C	D	D	D	D	D
	EBL / EBT / EBR (EBT / EBR)	C	A	C	C	C	C	C
	WBL / WBT (WBL)	E	E	D	D	D	D	D
	WBR (WBT / WBR)	B	B	B	B	B	B	B
	NBL	A	A	B	B	B	A	B
	NBT	A	B	A	A	A	A	A
	NBR	A	A	A	A	A	A	A
	SBL	A	B	C	C	C	B	C
Verizon Back Access & Thompson Rd (signalized intersection)	SBT / SBR	A	B	B	B	B	B	B
	(EBL)	-	-	-	-	-	-	D
	(EBT / EBR)	-	-	-	-	-	-	B
	WBL	D	D	E	E	E	E	D
	WBR (WBT / WBR)	B	A	B	B	B	B	D
	(NBL)	-	-	-	-	-	-	B
	NBT / NBR	A	B	A	A	A	A	A
	SBL	A	A	A	A	A	A	B
Existing South Site Access & Thompson Rd (signalized intersection)	SBT (SBT / SBR)	A	A	A	A	A	A	B
	EBR	A	-	D	-	D	-	-
	NBL	A	-	A	-	A	-	-
	NBT	A	-	A	-	A	-	-
Existing North Site Access & Thompson Rd (signalized intersection)	SBT / SBR	A	-	A	-	A	-	-
	EBL	D	-	D	E	D	D	D
	EBL / EBT (EBT / EBR)	C	-	A	C	A	C	A
	WBL / WBT / WBR	C	C	C	C	C	C	C
	NBL	A	-	A	A	A	A	A
	NBT / NBR	B	A	A	A	A	A	A
	SBL	A	A	A	A	A	A	A
McDonalds Driveway & Thompson Rd (unsignalized intersection)	SBT / SBR	A	A	A	A	A	A	A
	EBR	b	b	c	-	-	-	-

(XX) – Future lane configuration if different from existing

Table 10: PM Peak Hour LOS Comparison, cont.

Carrier Pkwy & Old Collamer Rd (unsignalized intersection)	EBL	b	c	f	f	f	f	c
	SBL / SBR	f	f	f	f	f	f	f
Carrier Pkwy & Telergy Pkwy / Transicold Ave (unsignalized intersection)	EBL	b	b	f	f	f	f	c
	WBL	a	a	b	b	b	b	b
	NBL / NBT / NBR	f	f	f	f	f	f	f
	SBL / SBT / SBR	e	f	f	f	f	f	f
Carrier Pkwy & Weighlock Dr / Kinne St (signalized intersection)	EBL	A	B	C	C	C	C	B
	EBT / EBR	C	C	F	F	F	F	D
	WBL	C	D	F	F	F	F	E
	WBT / WBR	C	C	F	F	F	F	C
	NBL	D	E	F	F	F	F	F
	NBT / NBR	A	A	C	C	C	C	C
	SBL	C	C	E	E	E	E	D
	SBT / SBR	B	B	E	E	E	E	D
Kinne St & Court St Rd / New Venture Gear Dr (signalized intersection)	EBL	C	B	D	D	D	D	D
	EBT / EBR	B	A	D	D	D	D	D
	WBL	F	E	E	E	E	E	E
	WBT / WBR	A	B	D	D	D	D	D
	NBL	C	C	C	C	C	C	C
	NBT	C	E	D	D	D	D	D
	NBR	A	A	A	A	A	A	A
	SBL	B	E	D	D	D	D	D
	SBT / SBR	B	E	C	C	C	C	C
Kinne St & Franklin Park Dr / First St (signalized intersection)	(EBL)	-	-	D	D	D	D	C
	EBL / EBT / EBR	C	D	C	C	C	C	C
	WBL / WBT	C	C	C	C	C	C	C
	WBR	A	A	B	B	B	B	A
	NBL / NBT / NBR	B	C	C	C	C	C	C
	SBL / SBT / SBR	C	C	D	D	D	D	C
Court St Rd & Deere Rd (unsignalized intersection)	EBL / EBT	a	a	a	a	a	a	a
	SBL / SBR	b	b	b	b	b	b	b

(XX) – Future lane configuration if different from existing

b. Alternative Comparison

The alternatives were compared based on a number of criteria that were established to reflect the project goals. The criteria are as follows:

- **Supports Access Management/Improves Safety** – Does the alternative reduce the number of intersections on Thompson Road? Does it position the access points as far away from Carrier Circle as practically possible?
- **Reduces Traffic along Thompson Road/Carrier Circle** – Does the alternative promote the reduction of traffic on Thompson Road, Carrier Parkway and Carrier Circle?
- **Acceptable Capacity/Traffic Operations** – Do the accesses for the alternative provide adequate capacity at the intersections with Thompson Road, Carrier Parkway and Kinne Street?
- **Provides Close Access to Each Building** – Even though the internal roadway network provides access to each building on the West Parcel, are the external access points for the alternative located within close enough proximity to each use on site?
- **Cost Effective - Minimal Mitigation** – Are significant construction efforts/mitigation measures necessary to implement the alternative?
- **Minimizes Impacts to Wetlands** – Based on the approximate wetland boundary provided by the NYSDEC, are the impacts to wetlands significant for the alternative?
- **Promotes Connectivity to Main Carrier Site** – Does the alternative provide options for pedestrians as well as vehicles to connect with the main Carrier site and East Parcel development?
- **Allows Flexibility in Internal Layout Options** – Does the alternative allow for flexibility in the layout of the buildings, roadways and pedestrian/transit accommodations within the site?

Each alternative was qualitatively analyzed based on whether or not it met the above criteria. The following table shows how each alternative was rated:

Table 11: Alternative Comparison Summary

Alternative Comparison Summary					
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Supports Access Management/Improves Safety					
Reduces Traffic along Thompson Road/Carrier Circle					
Acceptable Capacity/Traffic Operations *					
Provides Close Access to Each Building					
Cost Effective - Minimal Mitigation					
Minimizes Impacts to Wetlands					
Promotes Connectivity to Main Carrier Site					
Allows Flexibility in Internal Layout Options					

* For movements at access intersections

-  No / Minimally
-  Somewhat / Partially
-  Yes / Mostly

While Alternative 1 appears to meet a majority of the criteria with a positive rating, it is lacking in the most important goal and objective of this study as emphasized by the SAC: to support access management and improve safety.

Alternatives 2 and 4 rate very highly in supporting access management by reducing the number of curb cuts along the West Parcel on Thompson Road. As a result of this consolidation, the one access on Thompson Road operates below LOS D. In Alternative 4, the access to Court Street Road would provide minimal traffic reductions for Thompson Road/Carrier Circle while creating a major impact to the wetlands at the west end of the West Parcel.

Alternative 3 somewhat supports access management in the removal of the Northern Outparcel right-in/right-out driveways, but maintains two access points to the West Parcel via the North and South Site Access. While it does not do anything to reduce traffic on Thompson Road or Carrier Circle, it provides a LOS D or better for the access movements, close access to each use on the site, promotes pedestrian connectivity with the main Carrier site and East Parcel and is cost effective since it utilizes access points currently in use.

Alternative 5 reduces the five existing access points to the West Parcel and Northern Outparcels to one but creates another access at an existing intersection at Thompson Road and the Verizon Back Access thereby supporting access management and maintaining acceptable traffic operations for the site. The connection between Thompson Road and Kinne Street reduces traffic on Thompson Road/Carrier Circle by creating a bypass for traffic from the south to reach the East Parcel. The alternative also minimizes impacts to wetlands and promotes vehicular as well as pedestrian connectivity to the main Carrier site and East Parcel. While Alternative 5 partially or fully meets all of the criteria noted, the cost associated with its implementation would be significant including right-of-way acquisitions and the construction of new roadways.

VI. Recommendations

Based on the evaluation of alternatives and feedback from the SAC, an implementation plan divided into short- and long-term improvements is recommended. For the long-term, assuming full build out of the Reuse Plan, Alternative 5 improves traffic operations the most for the area. However, Alternative 5 includes significant capital improvements that the SAC agrees would not be the sole responsibility of private developers as the West and Northern Outparcels are developed. Therefore, it was decided that the internal roadway network and single access onto Thompson Road (Alternative 2) would be an appropriate short-term recommendation that would be implemented by private developers. Alternative 2 allows for the future implementation of Alternative 5. The remaining improvements associated with Alternative 5 would be public infrastructure improvements constructed at a later time as the East Parcel is redeveloped.

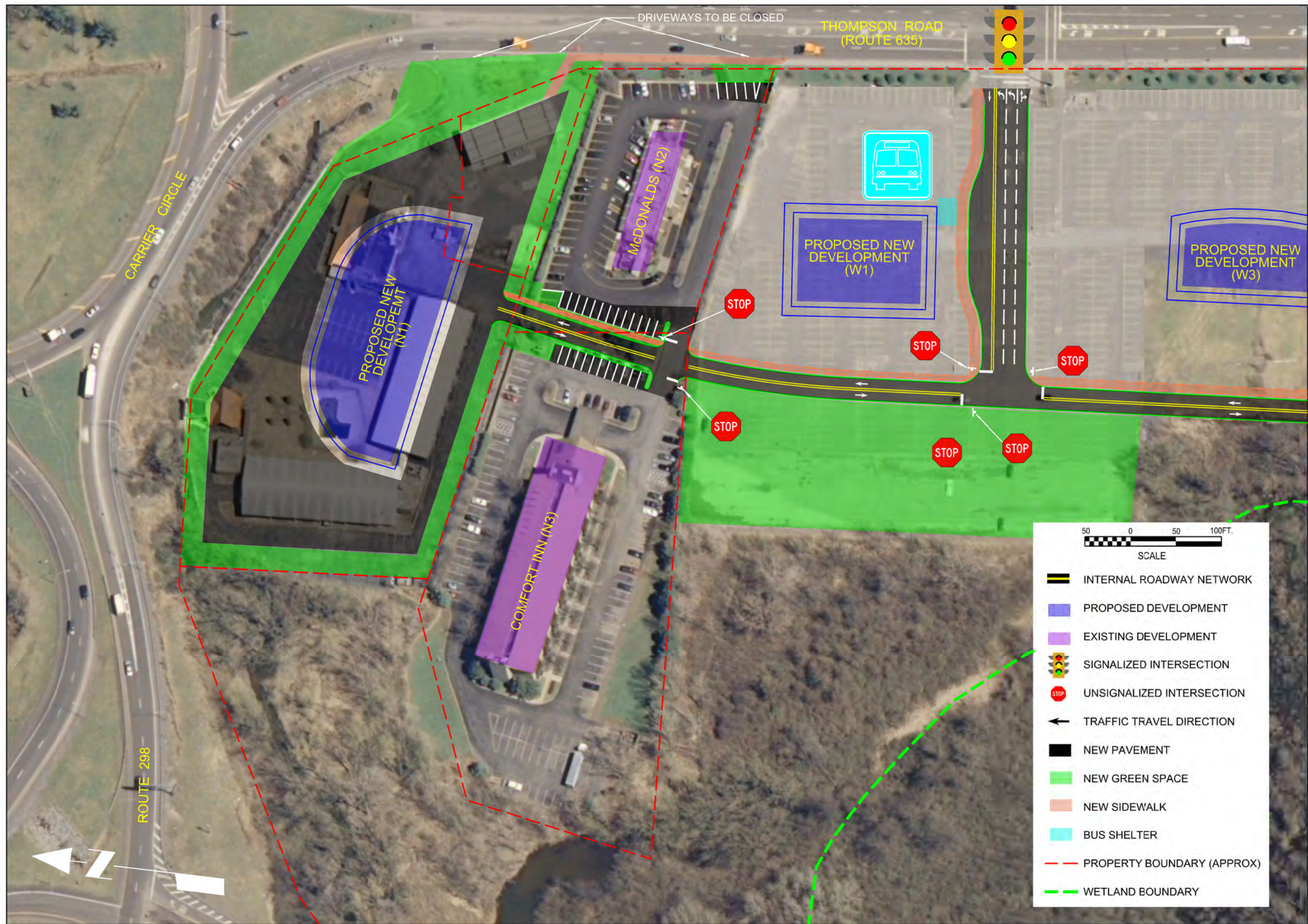
A concept illustration of Alternatives 2 and 5 with more a detailed pedestrian and transit plan is shown as Figure 2.

a. Short-Term Private Development Improvements – Alternative 2

While analysis showed a LOS E for exiting traffic at the North Site Access during the AM and PM peak periods, the SAC concluded this delay was acceptable in the short-term and would be reduced once the remainder of Alternative 5 was implemented. The NYSDOT also indicated that an additional unsignalized access point may be considered with this alternative, which would likely reduce the delay at the North Site Access as well. The developer should work with the NYSDOT to determine if an additional unsignalized access is acceptable based on the final proposed site plan.

A field investigation was conducted to evaluate the feasibility of constructing the new roadway between the McDonald's and Comfort Inn Suites parcels. With only minor changes to the parking configurations for both properties, the new access roadway can be accommodated between these two parcels. Figure 3, which is drawn to scale, shows how this connector roadway could be configured. There would be no loss in parking for either property and there would be sufficient width to accommodate a sidewalk for pedestrians. Other access options for the Northern Outparcels were explored, but this option is the most cost effective and practical.

The Reuse Plan calls for a pedestrian path around the entire West and Northern Outparcels that would connect to a proposed canalway pedestrian path along Ley Creek and the existing sidewalk along Thompson Road. An additional sidewalk should be installed along the east side of the internal main road with sidewalks connecting each building to this main walk. Connections should also be made to the original path around the entire parcel. Crosswalks would be striped at all crossings of the internal roadway network and where the sidewalks cross the access roads at the North Site Access and Verizon Back Access extension.



Currently, all six of the CENTRO routes in the area travel northbound on Thompson Road. Upon completion of the West Parcel development, it is recommended that southbound routes heading towards the downtown area be added, especially during the PM hours. To encourage transit usage, the routes could be redirected through the site with pull-off bus stops and shelters on the appropriate side of the roadway to provide a weather-protected place for users to wait for a bus. The presence of bus shelters, especially close to Thompson Road, would promote the use of the transit services by those on the main Carrier site as well.

b. Long-Term Public Infrastructure Improvements – Alternative 5

Once Alternative 2 is implemented, the construction of the new roadway from the south end of the West Parcel to Thompson Road at the Verizon Back Access and extending to Kinne Street would complete the implementation of Alternative 5.

To further support access management, it was assumed that the existing uses just south of the West Parcel would use the connection to Thompson Road to provide access to their properties. This would eliminate two curb cuts on the west side of Thompson Road north of the Verizon Back Access. The closure of these curb cuts was taken into consideration when determining the future volumes for this alternative.

The construction of the access between the West Parcel and Thompson Road and closure of curb cuts just south of the West Parcel will affect the following parcels:

- Thomas Race, 6387 Thompson Road (carwash)
- JW Thomas Properties LLC, 6389-6401 Thompson Road (Goodyear Tire & Service, Valvoline, diner, vacant building & vacant lot used for parking)

The vacant lot used for parking on the parcel at 6389-6401 Thompson Road would need to be acquired to construct the access between the West Parcel and Thompson Road.

The construction of the connection roadway between Thompson Road and Kinne Street will affect the following parcels:

- Marla Cohen, 6378-6384 Thompson Road (plaza)
- John P. Wozniczka, 6376 Thompson Road (JPW Industrial)
- Telesector Res Group, Inc., 6360 Thompson Road (Verizon)
- Carrier Corporation, 6304 Carrier Parkway (Carrier campus)
- Carrier Corporation, 600 Roby Avenue (playground)

c. Other Potential Infrastructure Improvements

As shown in Tables 10 and 11, some study area intersections continue to operate at LOS E or F under Alternative 5, even with the operational improvements discussed in Section V.a. An additional analysis was conducted to determine the improvements that would be necessary to achieve LOS D or better at the study area intersections. These improvements include:

- **Thompson Road & James Street**
 - Southbound approach: install new right turn lane
 - Eastbound approach: install additional left turn lane (dual left turn lanes)
- **Carrier Parkway**
 - Install additional westbound through lane from Court Street Road/New Venture Gear Drive to Carrier Circle
- **Carrier Parkway & Old Collamer Road**
 - Install traffic signal
- **Carrier Parkway & Telergy Parkway/Transicold Avenue**
 - Install traffic signal
- **Carrier Parkway & Kinne Street/Weighlock Drive**
 - Westbound approach: install additional left turn lane (dual left turn lanes) and receiving lane on Kinne Street Southbound
 - Northbound approach: install additional left turn lane (dual left turn lanes)
- **Kinne Street & Court Street Road/New Venture Gear Drive**
 - Westbound approach: install additional left turn lane (dual left turn lanes)

The SAC members acknowledge that these potential improvements are significant and costly, and will not be the sole responsibility of a private developer.

The full mitigation SYNCHRO files are included in Appendix G.

Another option for addressing the poor operations at Old Collamer Road & Telergy Parkway/Transicold Avenue is to restrict access onto those roadways from Carrier Parkway to right-in/right-out access and divert traffic to the signalized intersection at Kinne Street and Weighlock Drive. An analysis of this scenario shows a LOS D or better at all locations, without any traffic signals added, except for the southbound right turn at Old Collamer Road during the PM peak. This movement just exceeds the threshold for a LOS F, but this traffic may also divert to the Kinne Street and Weighlock Drive intersection.

VII. Summary

The purpose of the Carrier Site Access Transportation Study was to evaluate access alternatives associated with the redevelopment of the Carrier Corporation parking lots on the west side of Thompson Road, analyze the effects of the development on the adjacent roadway network and develop an internal transportation network for the site. As a result of this study, an implementation plan divided into short- and long-term improvements is recommended.

For the long-term, assuming full build out of the Carrier Site Reuse Plan, Alternative 5 improves traffic operations the most for the area. Alternative 5 provides two access points to the West Parcel while minimizing the number of curb cuts and providing access to the East Parcel from Thompson Road, thereby reducing traffic on Carrier Circle. It maintains the North Site Access driveway on Thompson Road as well as an access to the West Parcel via a new roadway opposite the existing Verizon Back Access roadway. Access to the Northern Outparcels would be accommodated through the internal roadway network only.

The internal circulation plan for the site contains a main internal road that connects the Northern Outparcels to the south end of the West Parcel. This main road would bisect the existing McDonald's and Comfort Inn Suites parcels to provide access to all of the Northern Outparcels and continue south, parallel to Thompson Road, to the southern boundary of the West Parcel. The construction of the internal network would be part of the short-term recommendations associated with the development of the site.

Alternative 5 includes significant capital improvements that the SAC agrees would not be the sole responsibility of private developers as the West and Northern Outparcels are developed. Therefore, it was decided that the internal roadway network and single access onto Thompson Road (Alternative 2) would be an appropriate short-term recommendation that would be implemented by private developers. Alternative 2 allows for the future implementation of Alternative 5. The remaining improvements associated with Alternative 5 and other potential off-site improvements would be constructed at a later time as the East Parcel is redeveloped.

Footnote Summary

¹ Carrier Site Reuse Plan, Master Plan Report, Volume 4, IDC Architects, June 2007, Page 38.

² SYNCHRO 7, Traffic Signal Coordination Software, Version 7, Trafficware Corporation, Albany, California, 1993-2006.

³ Highway Capacity Manual, Transportation Research Board, National Research Council, Washington D.C., 2000.

⁴ Trip Generation, 8th Edition, Institute of Transportation Engineers, Washington D.C., 2008.

⁵ 2000 Census Transportation Planning Package Census of Population and Housing, Part 2 – Data by Place of Work for DE, NJ, NY, US Census Bureau, August 2004.

⁶ 2007 Traffic Data Report for New York State, New York State Department of Transportation, Albany, New York, Appendix E, Pages 208 & 241.

⁷ <http://www.smtcmptpo.org/data/TrafficCounts/default.asp?muni=DeWitt&munitype=Town#TrafficCounts>, referenced 1/12/09.

Appendix A:

Excerpts from the Carrier Site Reuse Plan



Aerial View of Preferred Master Plan

4D Preferred Master Plan

Master Plan Report



CARRIER PARCEL:

TR-2 FACADE TREATMENTS *

CARRIER PARCEL:

* TR-3 DEMOLITION & PARKING LOT

OFFSITE PARCEL

ENTERTAINMENT / HOTEL w/
CONFERENCE FACILITIES
HOTEL: 200 ROOMS
INDOOR RECREATION: 40,000 GSF
500 P SP

WEST PARCEL

HOTEL
70,000 GSF / 2 LEVELS
140 ROOMS
154 P SP (1 / RM + 10%)

OFFICE
56,000 GSF / 3 LEVELS
224 P SP (4 / 1,000)

FLEX SPACE
60,000 GSF / 1 LEVEL
240 P SP (4 / 1,000)

OFFICE
105,000 GSF / 3 LEVELS
420 P SP (4 / 1,000)

EAST PARCEL

A&R TO BE RENOVATED
OFFICE
110,000 GSF
550 P SP (5 / 1,000)

TR-20 TO BE RENOVATED
MULTI-USER
FLEX / R&D / LAB / OFFICE
230,000 GSF
920 P SP (4 / 1,000)

WELLNESS CENTER IN TR-19
TO BE RENOVATED
68,000 GSF
198 P SP (3 / 1,000)

OFFICE
36,000 GSF / 2 LEVELS
144 P SP (4 / 1,000)

OFFICE
36,000 GSF / 2 LEVELS
144 P SP (4 / 1,000)

OFFICE
36,000 GSF / 2 LEVELS
144 P SP (4 / 1,000)

OFFICE
36,000 GSF / 2 LEVELS
144 P SP (4 / 1,000)

LEGEND

- CARRIER GLOBAL DESIGN CENTER
- OFFICE / ADMINISTRATION
- FLEX / R&D / LAB / OFFICE
- HOTEL / HOTEL WITH CONFERENCE FACILITY
- CONFERENCE FACILITY
- ENTERTAINMENT / INDOOR RECREATION
- PROPOSED TRAFFIC PATTERN
- PROPERTY BOUNDARY
- PROPOSED PEDESTRIAN PATH

Carrier Parcel Tabulation

Total Site Area (Acres)	256.73
Less East Parcel	60.50
Less West Parcel	80.87
Less Recreation Center Parcel	21.25
Remaining Carrier Parcel	94.11
Total Floor Area (Square Feet)	3,206,200
Less East Parcel Floor Area	979,200
Less West Parcel Floor Area	0
Less Recreation Center Floor Area	3,500
Remaining Carrier Floor Area	2,223,500
Less TR-1 Demolition	78,545
Less TR-3 Demolition	214,135
Net Carrier Floor Area	1,930,820

Developer Parcels Tabulation

East Parcel (Acres)	60.50
West Parcel	80.87
Total Developer Parcel Area	141.37
Office (SF)	415,000
Flex/R&D/Lab/Office (SF)	290,000
Hotel (SF/Rooms)	140 / 70,000
Wellness Center (SF)	68,000
Totals	140 / 841,000

Note: Offsite parcel not included in totals.

CARRIER PARCEL:

TR-1 RENOVATION AND SITE WORK *
DEMOLISH TR-11, TR-12, TR-13, JET FUEL, AND DOMESTIC WATER *
TR-19 & 20 BUSINESS UNIT RELOCATION *

REC CENTER PARCEL

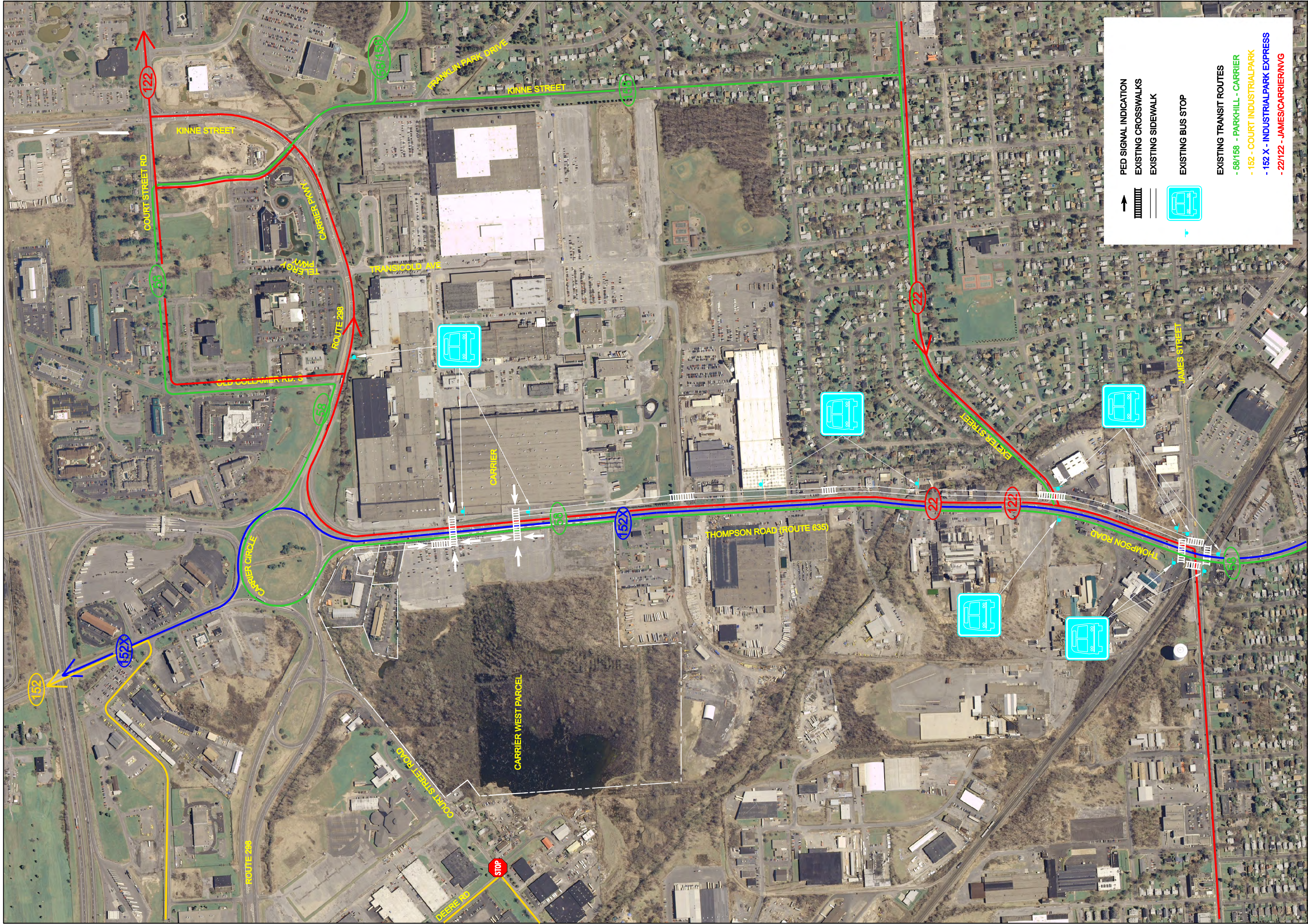
CONVEY TO DeWITT *

PREFERRED MASTER PLAN



Appendix B:

Figures



↑

PED SIGNAL INDICATION

|||||

EXISTING CROSSWALKS

EXISTING SIDEWALK

EXISTING BUS STOP

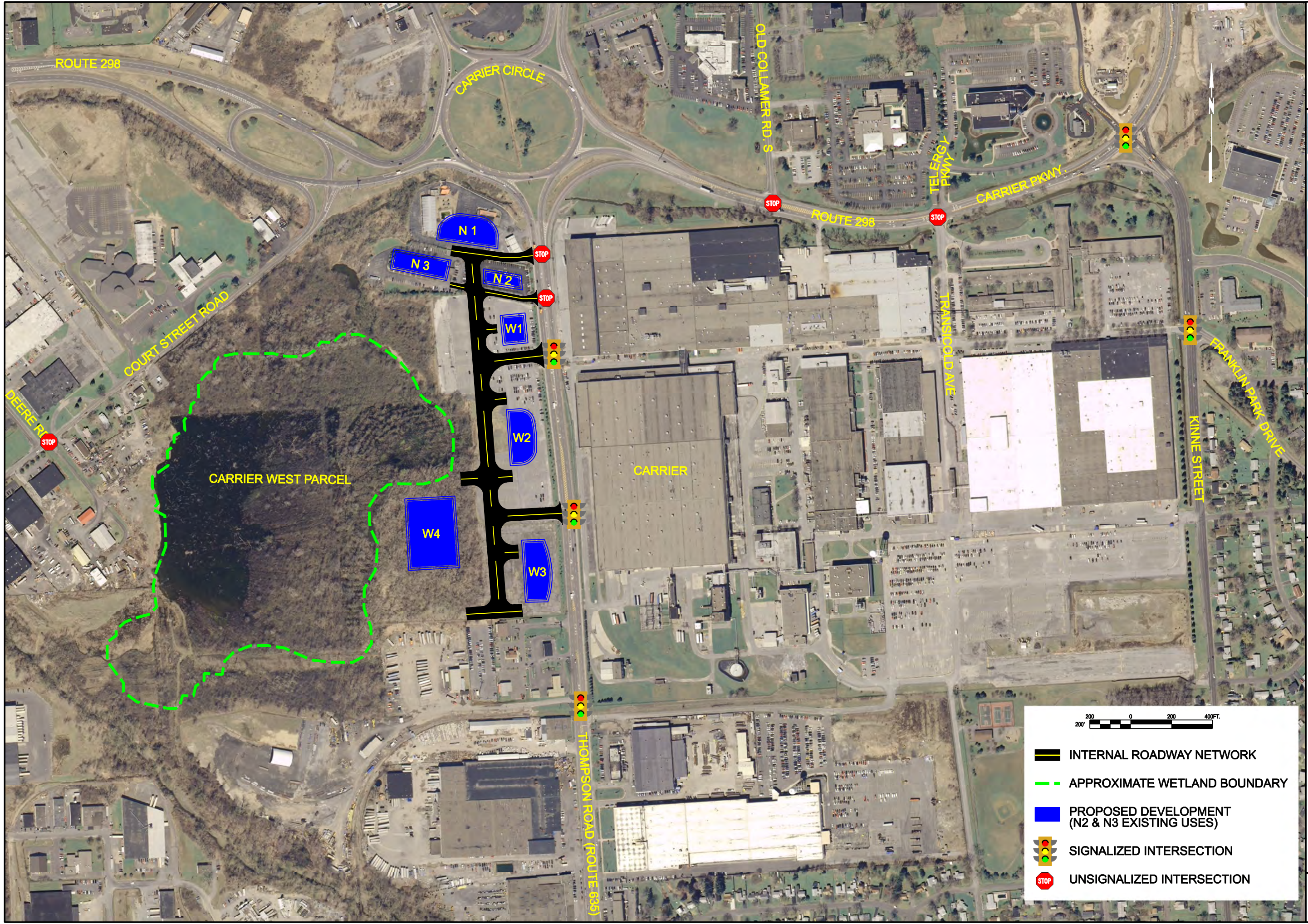
EXISTING TRANSIT ROUTES

- 58/158 - PARKHILL - CARRIER

- 152 - COURT INDUSTRIAL PARK

- 152 X - INDUSTRIAL PARK EXPRESS

- 22/122 - JAMES/CARRIER/VNG



200' 0 200 400FT.

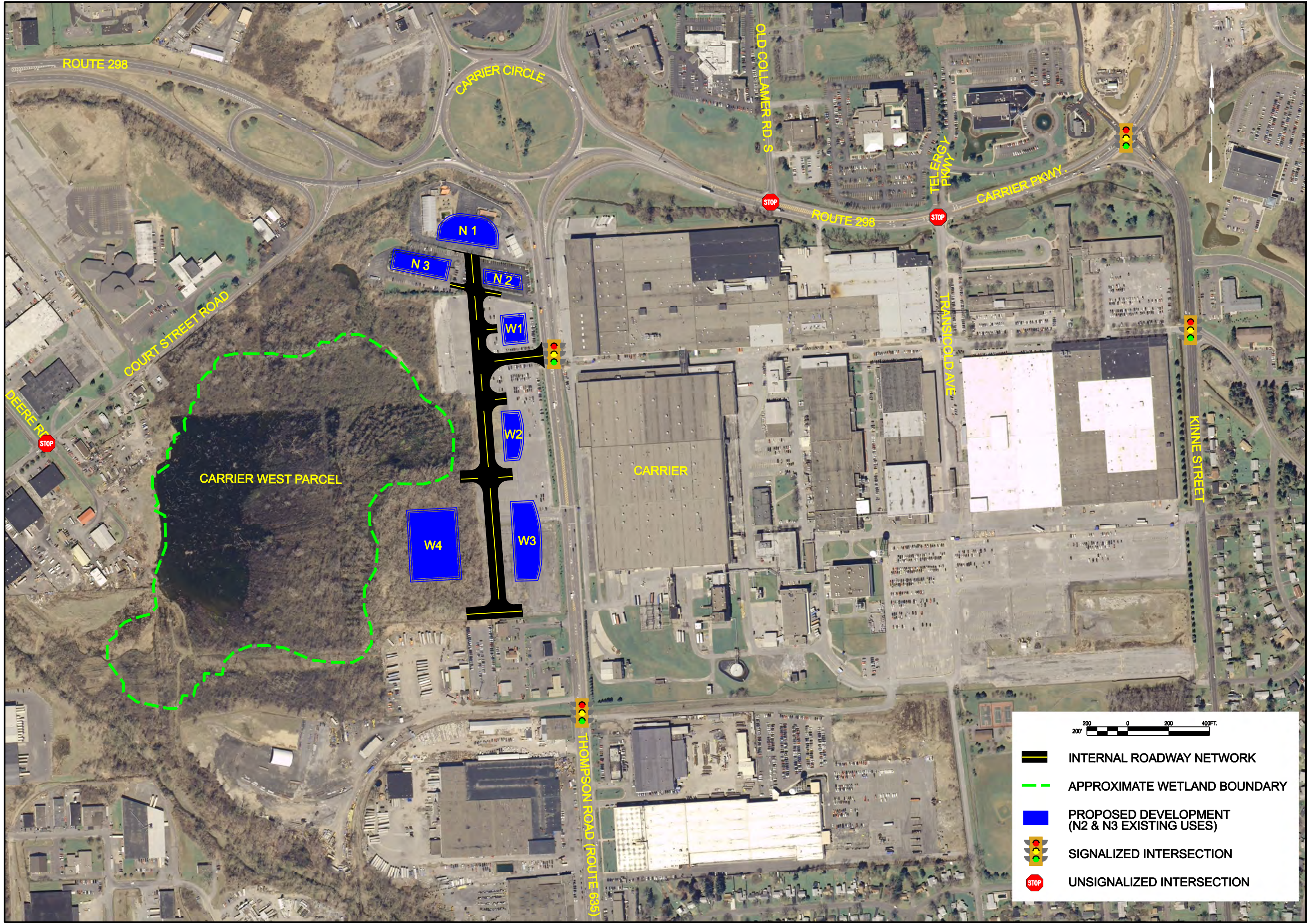
INTERNAL ROADWAY NETWORK

APPROXIMATE WETLAND BOUNDARY

PROPOSED DEVELOPMENT
(N2 & N3 EXISTING USES)

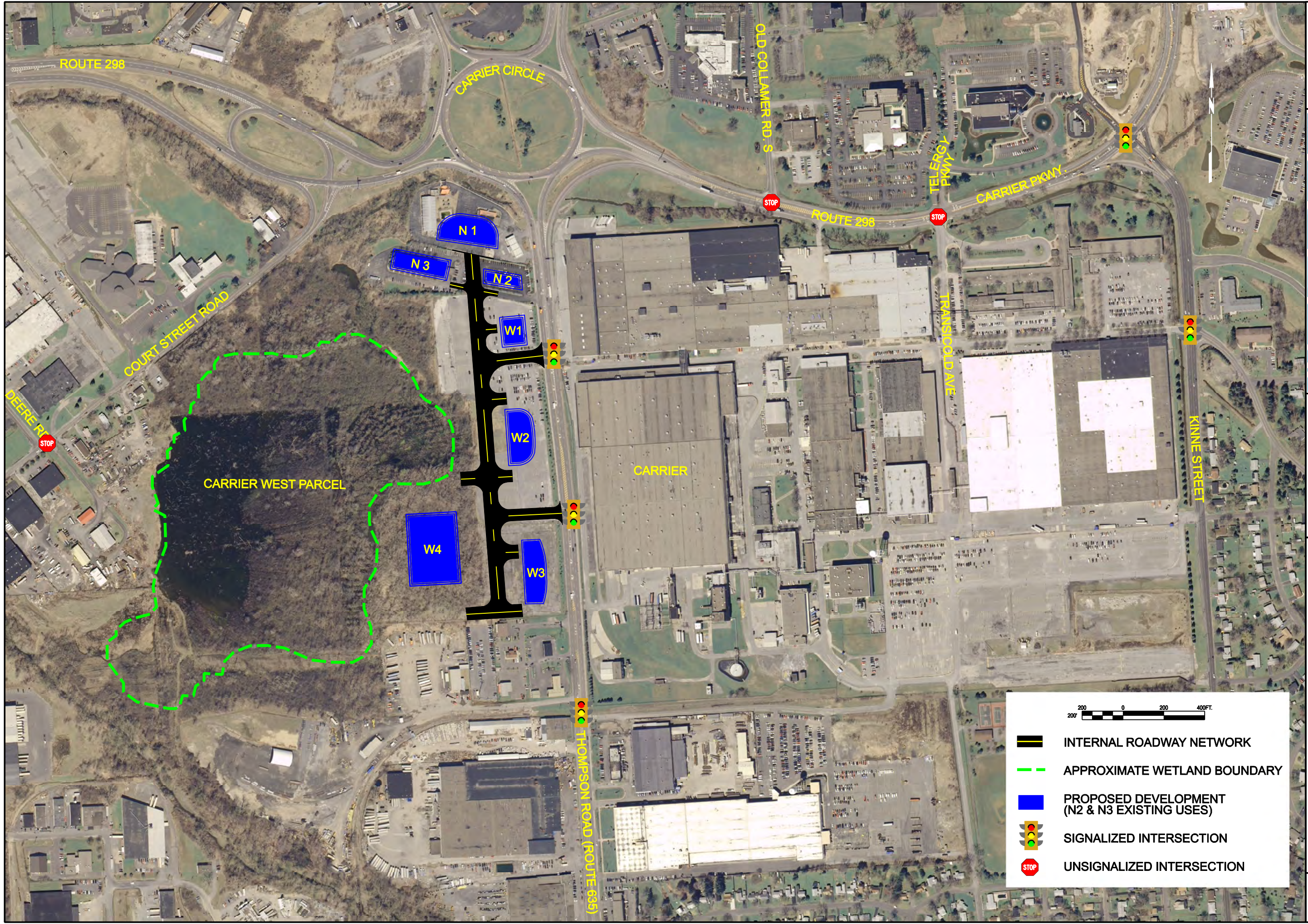
SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION



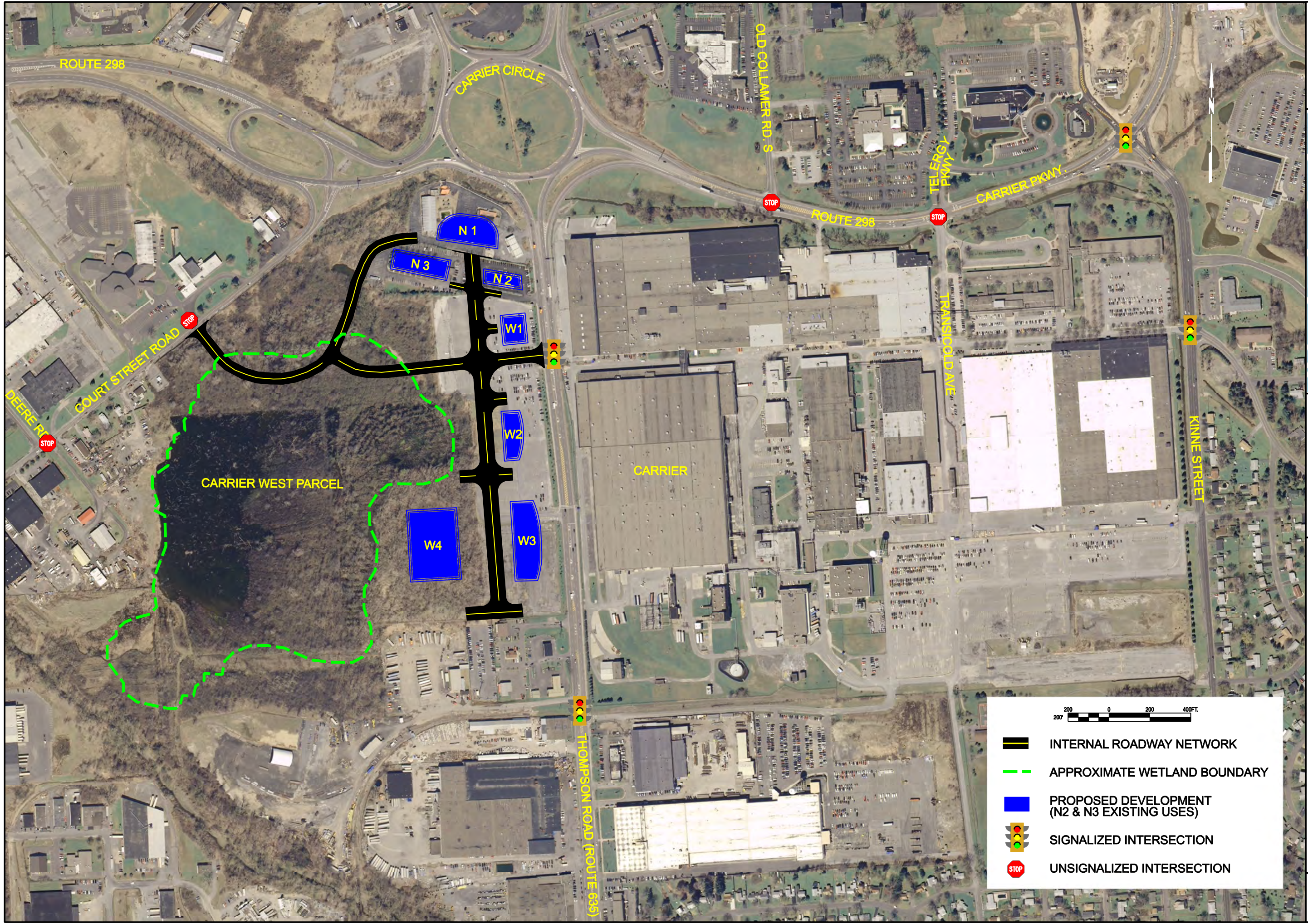
200' 0 200 400FT.

- INTERNAL ROADWAY NETWORK
- APPROXIMATE WETLAND BOUNDARY
- PROPOSED DEVELOPMENT (N2 & N3 EXISTING USES)
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



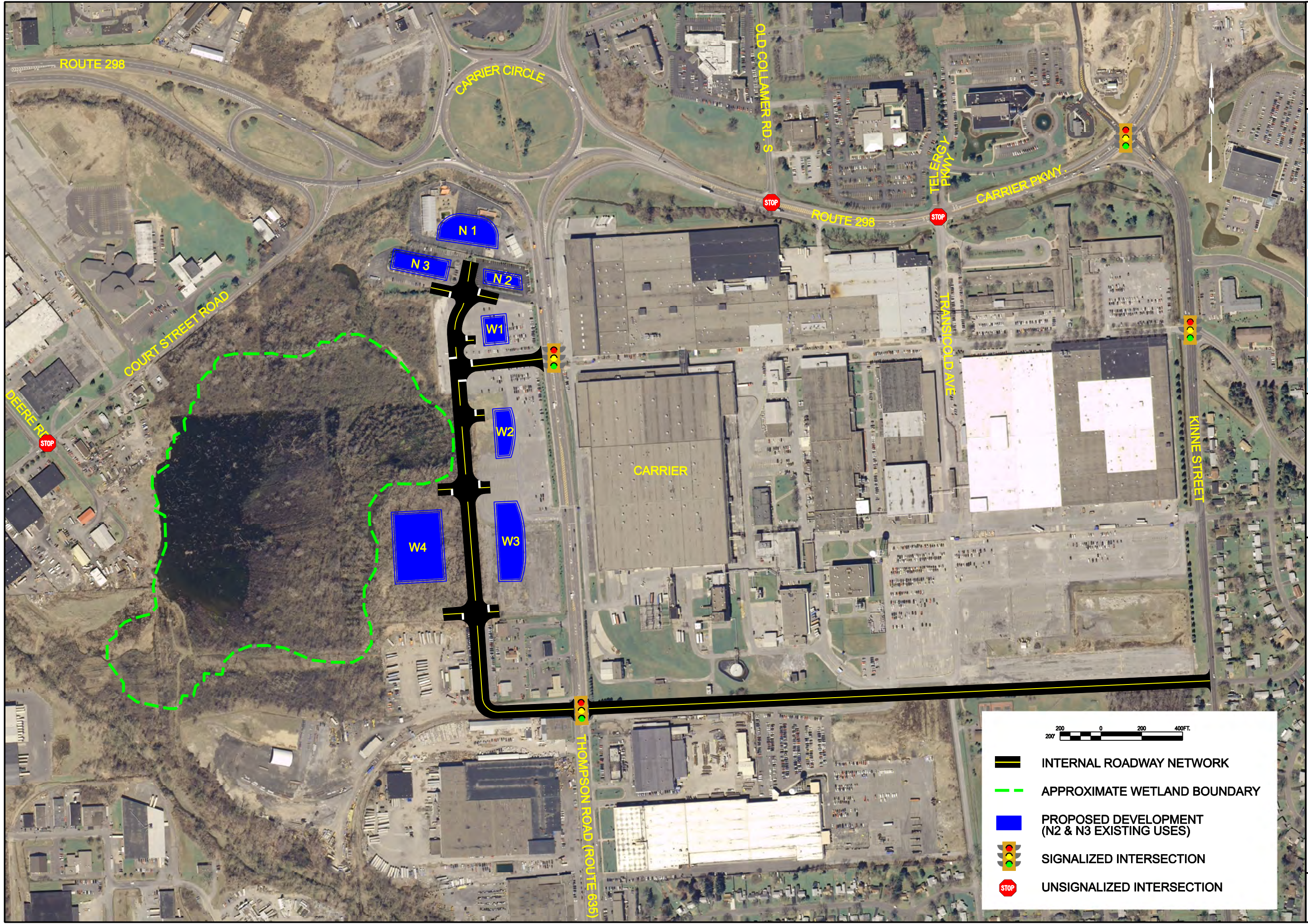
200 0 200 400FT.

- INTERNAL ROADWAY NETWORK
- APPROXIMATE WETLAND BOUNDARY
- PROPOSED DEVELOPMENT (N2 & N3 EXISTING USES)
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



200 0 200 400FT.
200'

- INTERNAL ROADWAY NETWORK
- APPROXIMATE WETLAND BOUNDARY
- PROPOSED DEVELOPMENT (N2 & N3 EXISTING USES)
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



200

0

200

400FT.

INTERNAL ROADWAY NETWORK

APPROXIMATE WETLAND BOUNDARY

PROPOSED DEVELOPMENT
(N2 & N3 EXISTING USES)

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

CARRIER SITE ACCESS
TRANSPORTATION STUDY
ALTERNATIVE 5:
SINGLE ACCESS POINT (THOMPSON RD)
ACCESS OPPOSITE VERZON BACK ACCESS
WITH CONNECTION TO KINNE ST.

B-6

Copyright

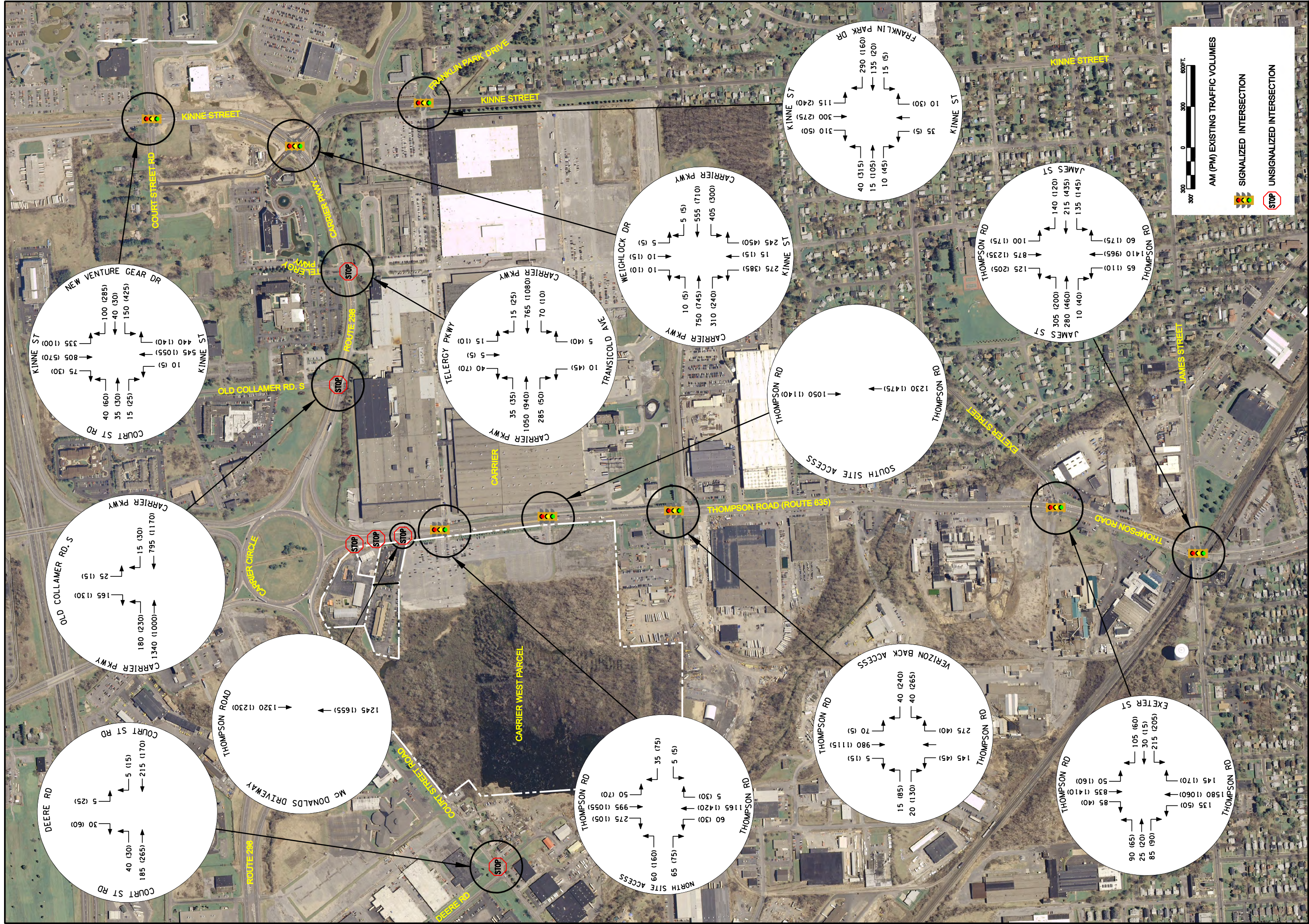


Appendix C:

Measures of Effectiveness Tables

Appendix D:

Count Data & Volume Information



STATION: **339303****New York State Department of Transportation**
Traffic Count Hourly Report

Page 1 of 1

ROUTE #: **635** ROAD NAME: FROM: **635 NB** TO: **CARRIER CIRCLE** COUNTY: **Onondaga**
DIRECTION: Northbound FACTOR GROUP: 30 REC. SERIAL #: 0433 FUNC. CLASS: 14 TOWN: **DEWITT**
STATE DIR CODE: 3 WK OF YR: 40 PLACEMENT: ON RAMP NHS: yes BIN:
DATE OF COUNT: 09/29/2008 @ REF MARKER: JURIS: Town RR CROSSING:
NOTES LANE 0: 339303 ADDL DATA: CC Stn: HPMS SAMPLE:
COUNT TYPE: AXLE PAIRS BATCH ID: R03-r3ww40

COUNT TAKEN BY: ORG CODE: TST INITIALS: AEC

PROCESSED BY: ORG CODE: R03 INITIALS: JAB

		12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12			
DATE	DAY	AM												PM												DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
29	M										414	379	493	587	558	451	532	531	484	260	233	155	120	127	65			
30	T	78	25	31	50	66	176	364	544	514	397	402	488	636	521	522	532	627	575	327	248	181	135	105	74	7618	636	12
1	W	61	35	32	48	87	164	384	615	520	383	426	466	603	499	516	529	594	532	309	250	158	119	143	86	7559	615	7
2	T	78	42	21	57	70	168	356	568	521	401																	

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)																							ADT	
70	33	27	51	72	164	358	560	503	388	391	469	592	511	482	516	568	515	291	237	160	121	121	73	7273
<u>DAYS Counted</u>	<u>HOURS Counted</u>		<u>WEEKDAYS Counted</u>	<u>WEEKDAY Hours</u>	<u>AVERAGE WEEKDAY</u>		Axle Adj. <u>Factor</u>	<u>Seasonal/Weekday Adjustment Factor</u>		<u>ESTIMATED</u>														
					High Hour	% of day																		
4	73		4	73	592		8%	0.972		1.070		AADT												

AADT
6797

ROUTE # **635** ROAD NAME: FROM: **635 NB** TO: **CARRIER CIRCLE** COUNTY: **Onondaga**
STATION: **339303** STATE DIR CODE: 3 PLACEMENT: **ON RAMP** DATE OF COUNT: **09/29/2008**

STATION: 339304

New York State Department of Transportation

Traffic Count Hourly Report

Page 1 of 1

ROUTE #: 635 ROAD NAME: FROM: RTE 635 TO: RTE 298 COUNTY: Onondaga
 DIRECTION: Eastbound FACTOR GROUP: 30 REC. SERIAL #: 0433 FUNC. CLASS: 14 TOWN: DEWITT
 STATE DIR CODE: 3 WK OF YR: 40 PLACEMENT: ON RAMP NHS: yes BIN:
 DATE OF COUNT: 09/29/2008 @ REF MARKER: JURIS: Town RR CROSSING:
 NOTES LANE 0: 339304 ADDL DATA: CC Stn: HPMS SAMPLE:
 COUNT TYPE: AXLE PAIRS BATCH ID: R03-r3ww40

COUNT TAKEN BY: ORG CODE: TST INITIALS: AEC

PROCESSED BY: ORG CODE: R03 INITIALS: JAB

		12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12			
DATE	DAY	AM												PM												DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
29	M										200	203	227	345	304	299	280	364	318	202	153	136	108	107	42			
30	T	42	20	24	14	42	61	179	326	330	225	167	272	354	302	274	302	390	343	215	174	139	123	113	43	4474	390	16
1	W	42	16	14	21	32	56	175	329	357	206	196	251	310	308	290	290	429	396	252	176	163	135	125	54	4623	429	16
2	T	28	21	20	14	42	61	183	324	361	187																	

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

ADT

4347

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
4	73	4	73	383	9%	0.972	1.070	

AADT
4063

ROUTE #635 ROAD NAME:
 STATION: 339304 STATE DIR CODE: 3

FROM: RTE 635
 PLACEMENT: ON RAMP

TO: RTE 298

COUNTY: Onondaga
 DATE OF COUNT: 09/29/2008

New York State Department of Transportation

Traffic Count Hourly Report

ROUTE #: **635** ROAD NAME: FROM: **CARRIER CIRCLE** TO: **RTE 635 SB** COUNTY: **Onondaga**
 DIRECTION: Southbound FACTOR GROUP: 30 REC. SERIAL #: 9013 FUNC. CLASS: 14 TOWN: **DEWITT**
 STATE DIR CODE: 3 WK OF YR: 43 PLACEMENT: 200' S OF CIRCLE NHS: yes BIN:
 DATE OF COUNT: 10/20/2008 @ REF MARKER: JURIS: Town RR CROSSING:
 NOTES LANE 0: 339302 ADDL DATA: CC Stn: HPMS SAMPLE:
 COUNT TYPE: AXLE PAIRS BATCH ID: R03-r3ww43

COUNT TAKEN BY: ORG CODE: TST INITIALS: AEC PROCESSED BY: ORG CODE: R03 INITIALS: JAB

		12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
DATE	DAY	AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
21	T	83	53	97	66	96	223	434	761	843	646	645	800	996	737	748	836	847	864	511	316	263	249	235	127			
22	W	63	46	95	73	98	211	421	864	841	639	606	808	1058	749	772	886	924	926	562	414	333	256	220	115	11725	996	12
23	T	92	69	81	84	121	217	473	854	887	668	661	856	1057	808	778	912	969	883	565	406	353	328	231	136	12489	1057	12
24	F	101	79	98	65	106	230	414	804	794	660	647																
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											
31	F																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)																							ADT	
83	60	90	70	102	214	424	798	817	635	622	798	1008	741	740	847	890	855	530	373	333	271	224	126	11651
<u>DAYS Counted</u>	<u>HOURS Counted</u>			<u>WEEKDAYS Counted</u>	<u>WEEKDAY Hours</u>	<u>AVERAGE WEEKDAY</u>		<u>Axle Adj. Factor</u>	<u>Seasonal/Weekday Adjustment Factor</u>	<u>ESTIMATED</u>														
						High Hour	% of day																	
5	94			5	94	1008		9%	0.972	1.067				AADT										

ROUTE # **635** ROAD NAME: FROM: **CARRIER CIRCLE** TO: **RTE 635 SB** COUNTY: **Onondaga**
 STATION: **339302** STATE DIR CODE: 3 PLACEMENT: **200' S OF CIRCLE** DATE OF COUNT: **10/20/2008**

STATION: 339301

New York State Department of Transportation

Traffic Count Hourly Report

Page 1 of 1

ROUTE #: 298 ROAD NAME: FROM: RTE 298 TO: RTE 635 COUNTY: Onondaga
 DIRECTION: Eastbound FACTOR GROUP: 30 REC. SERIAL #: 8382 FUNC. CLASS: 14 TOWN: DEWITT
 STATE DIR CODE: 3 WK OF YR: 43 PLACEMENT: ON RAMP NHS: yes BIN:
 DATE OF COUNT: 10/20/2008 @ REF MARKER: JURIS: Town RR CROSSING:
 NOTES LANE 0: 339301 ADDL DATA: CC Stn: HPMS SAMPLE:
 COUNT TYPE: AXLE PAIRS BATCH ID: R03-r3ww43

COUNT TAKEN BY: ORG CODE: TST INITIALS: AEC

PROCESSED BY: ORG CODE: R03 INITIALS: JAB

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M																											
14	T																											
15	W																											
16	T																											
17	F																											
18	S																											
19	S																											
20	M																											
21	T	9	11	4	8	16	36	92	185	191	149	157	199	264	188	189	221	268	246	110	53	40	35	23	16	2733	268	16
22	W	6	6	13	9	19	36	83	229	172	143	159	224	252	202	201	215	230	225	98	62	56	64	27	19	2750	252	12
23	T	11	10	6	3	18	39	110	187	211	167	172	233	282	203	181	237	273	266	104	82	52	79	21	9	2956	282	12
24	F	15	13	8	5	18	58	80	201	193	156	186																
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											
31	F																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

ADT

2727

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	% of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
5	94	5	94	259	9%	0.972	1.067

ESTIMATED

AADT
2556

ROUTE #298
 STATION: 339301

ROAD NAME:
 STATE DIR CODE: 3

FROM: RTE 298
 PLACEMENT: ON RAMP

TO: RTE 635

COUNTY: Onondaga
 DATE OF COUNT: 10/20/2008

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onon. Cty.

Syracuse, NY 13202

INT: Thompson Rd. @ Comfort Inn/McD's

Date: 12/3/08

Counter: AI

File Name : 790015

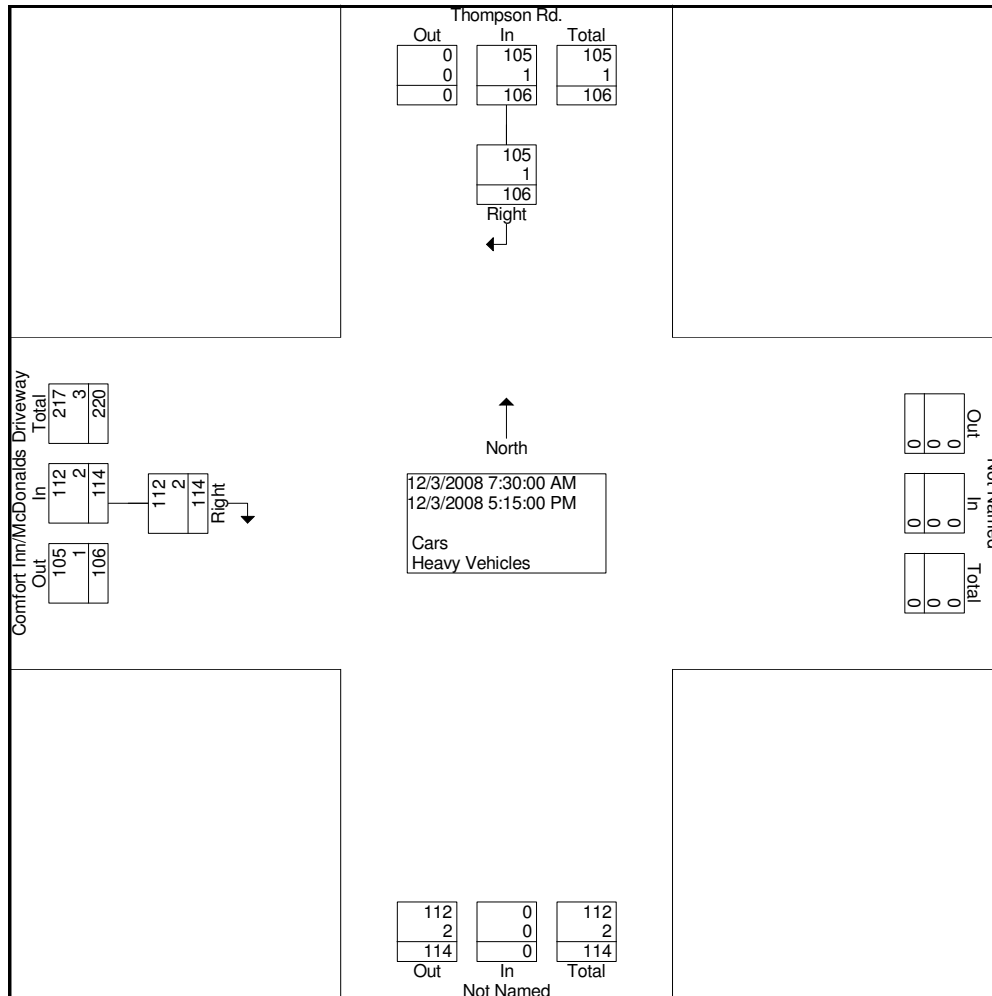
Site Code : 00070015

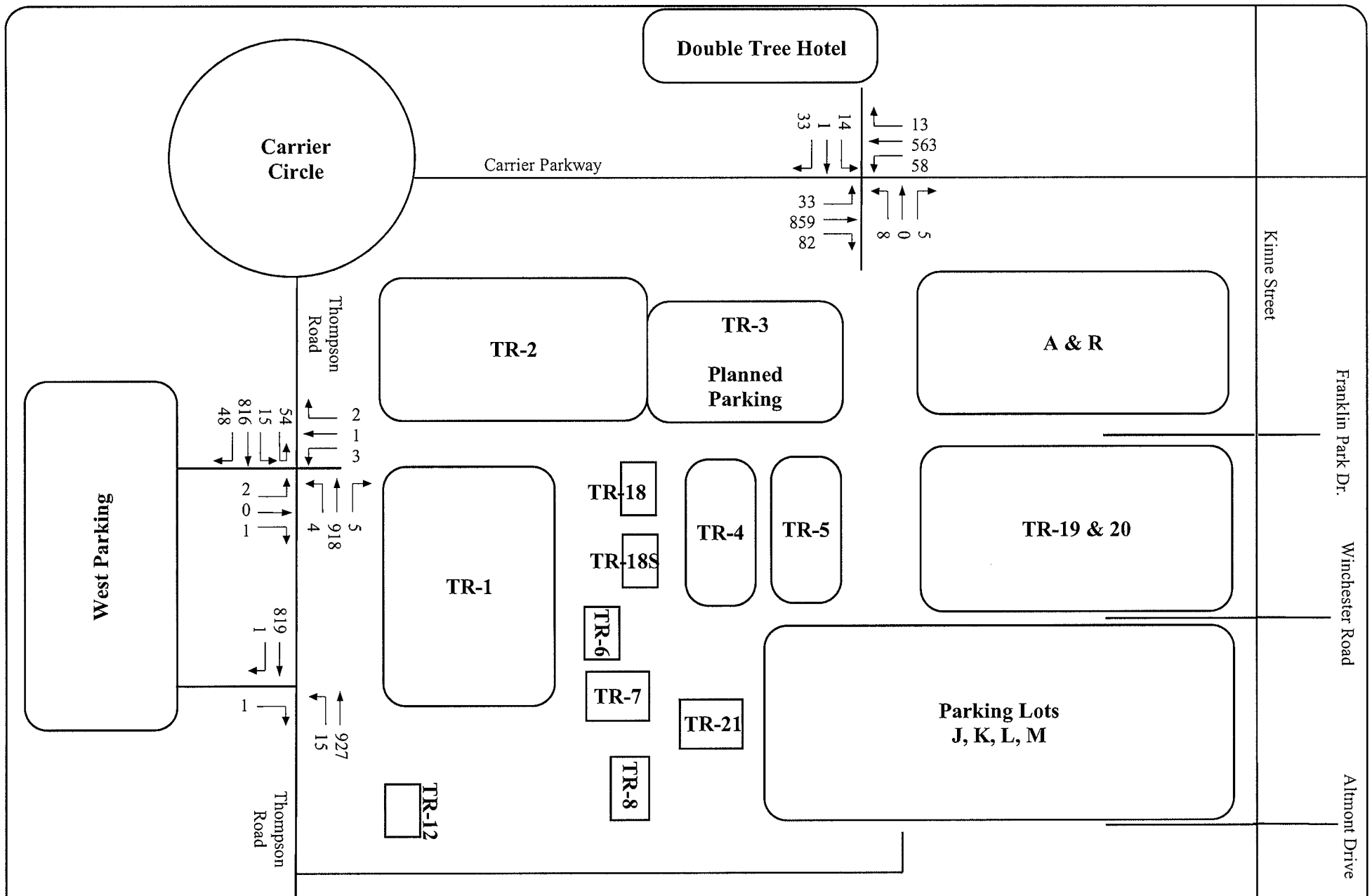
Start Date : 12/3/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Thompson Rd. From North	Comfort Inn/McDonalds Driveway From West	Int. Total
Start Time	Right	Right	
Factor	1.0	1.0	
07:30 AM	18	13	31
07:45 AM	14	17	31
Total	32	30	62
08:00 AM	12	15	27
08:15 AM	16	18	34
Total	28	33	61
04:30 PM	13	8	21
04:45 PM	17	18	35
Total	30	26	56
05:00 PM	10	17	27
05:15 PM	6	8	14
Grand Total	106	114	220
Apprch %	100.0	100.0	
Total %	48.2	51.8	

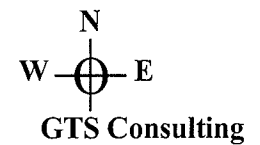


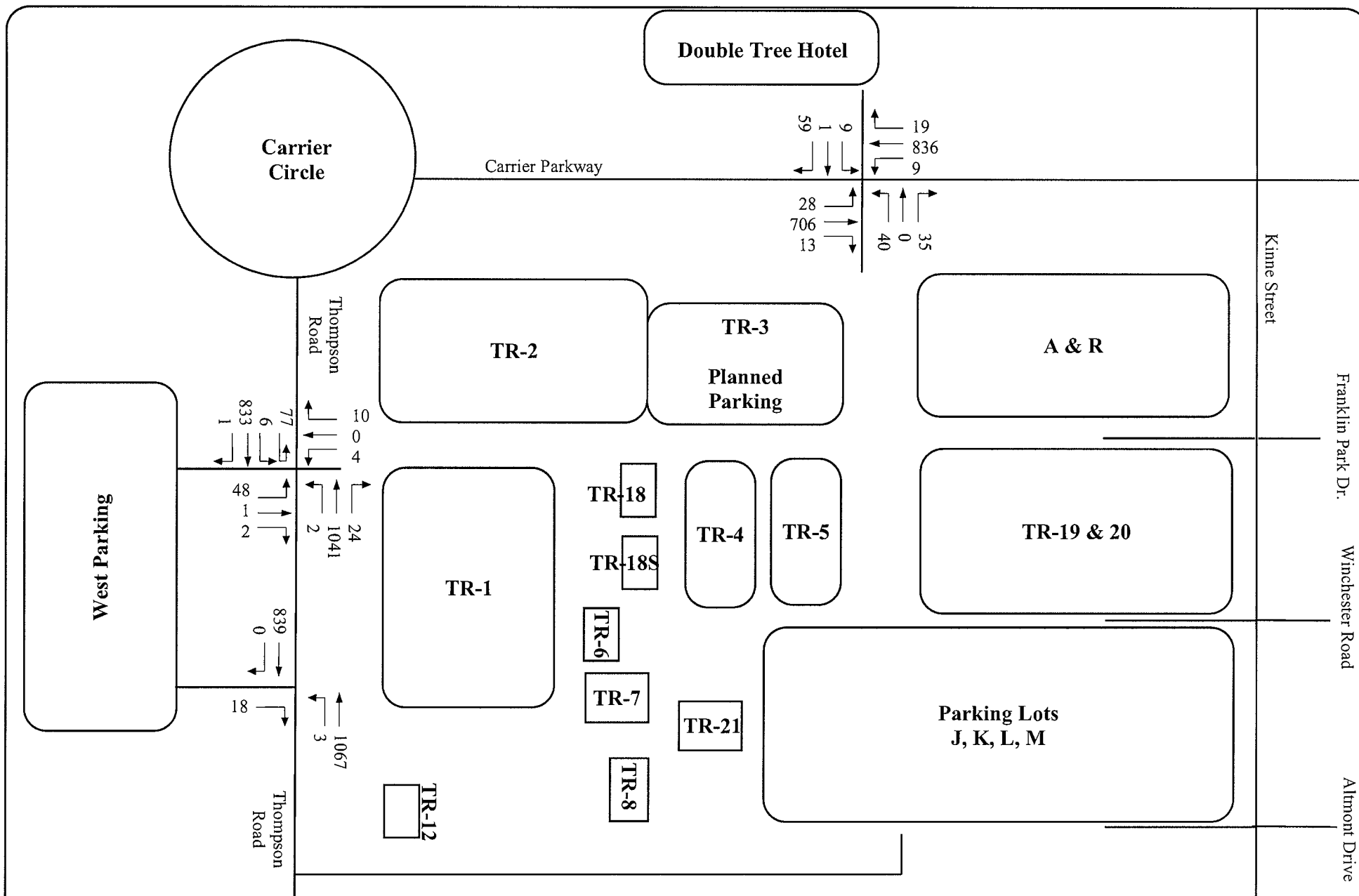


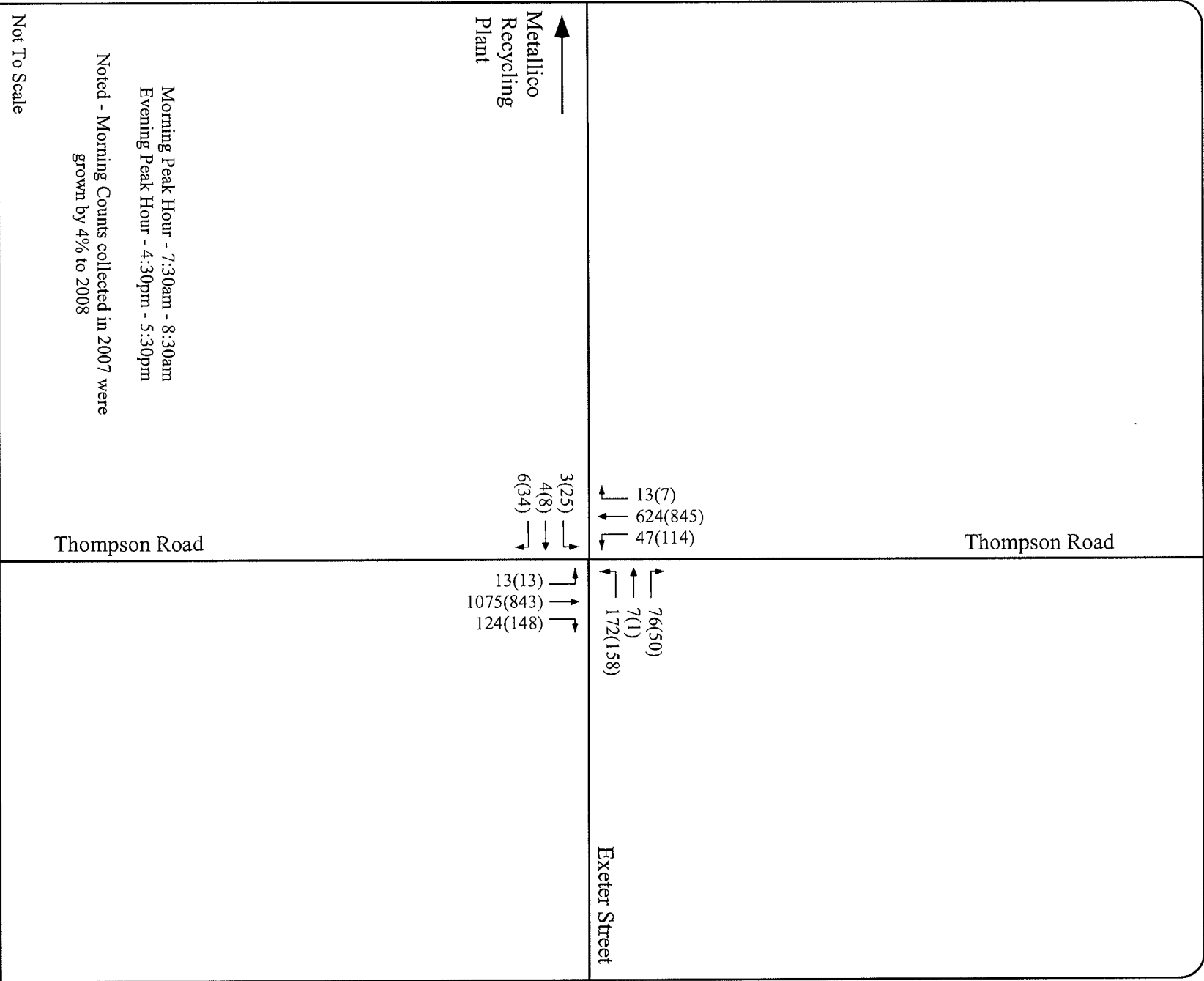
Carrier Site - TR-3 Building Re-Development

2008 Existing Traffic Volumes - Morning Peak Hour
 7:30am-8:30am

Figure 1







Tim Hortons Restaurant - Thompson Road @ Exeter Street
 2008 Existing Traffic Volumes
 Morning (Evening) Peak Hour

Figure 1

Location: Dewitt Twp, Onondaga Cty
Intersection: SR 290 @ SR635
Date: Thursday June 3, 2004
Counter: AC/RJ

222
Rt 290@Rt 635

File Name : Rt635Rt290
Site Code : 00000000
Start Date : 6/3/2004
Page No : 1

SR 635 Southbound													SR 290 Westbound													SR 635 Northbound													SR 290 Eastbound													Int. Total
Start Time	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total																	
07:00 AM	33	170	19	0	222	13	32	23	0	68	7	145	4	0	156	1	50	39	1	91	537																															
07:15 AM	43	214	18	0	275	19	40	26	0	85	22	246	6	0	274	0	74	48	0	122	756																															
07:30 AM	45	246	24	0	315	21	55	35	0	111	20	285	8	0	313	4	104	46	0	154	893																															
07:45 AM	61	279	14	0	354	27	76	42	0	145	15	381	13	1	410	3	93	45	1	142	1051																															
Total	182	909	75	0	1166	80	203	126	0	409	64	105	31	1	1153	8	321	178	2	509	3237																															
08:00 AM	49	266	27	0	342	22	71	47	0	140	5	260	14	0	279	4	75	53	0	132	893																															
08:15 AM	43	220	30	1	294	9	52	35	0	96	15	282	15	0	312	7	62	41	0	110	812																															
08:30 AM	38	206	18	0	262	13	49	31	0	93	16	193	12	0	221	10	77	34	0	121	697																															
08:45 AM	32	203	25	0	260	18	59	29	0	106	12	211	16	0	239	10	60	42	0	112	717																															
Total	162	895	100	1	1158	62	231	142	0	435	48	946	57	0	1051	31	274	170	0	475	3119																															
04:00 PM	57	247	41	0	345	26	75	44	2	147	23	208	35	0	266	6	80	59	0	145	903																															
04:15 PM	61	257	31	1	350	19	77	47	0	143	41	228	22	0	291	11	93	43	1	148	932																															
04:30 PM	42	227	20	1	290	28	86	39	0	153	41	278	36	1	356	7	122	62	0	191	990																															
04:45 PM	38	249	24	0	311	22	81	48	0	151	33	271	25	0	329	6	92	48	0	146	937																															
Total	198	980	116	2	1296	95	319	178	2	594	138	985	118	1	1242	30	387	212	1	630	3762																															
05:00 PM	41	278	11	0	330	13	84	53	0	150	35	224	18	0	277	16	102	55	1	174	931																															
05:15 PM	36	269	16	0	321	16	126	60	0	202	48	248	29	0	325	7	102	47	0	156	1004																															
05:30 PM	42	294	22	1	359	15	101	50	0	166	28	194	19	0	241	5	100	36	0	141	907																															
05:45 PM	42	246	24	0	312	19	70	41	0	130	26	172	14	1	213	14	92	46	0	152	807																															
Total	161	108	73	1	1322	63	381	204	0	648	137	838	80	1	1056	42	396	184	1	623	3649																															
Grand Total	703	387	364	4	4942	300	113	650	2	2086	387	382	286	3	4502	111	137	744	4	2237	1376																															
Apprch %	14.2	78.3	7.4	0.1		14.4	54.4	31.2	0.1		8.6	85.0	6.4	0.1		5.0	61.6	33.3	0.2																																	
Total %	5.1	28.1	2.6	0.0	35.9	2.2	8.2	4.7	0.0	15.2	2.8	27.8	2.1	0.0	32.7	0.8	10.0	5.4	0.0	16.2																																

Tri-State Traffic Data, Inc.

(610) 255-3944

Location: Town of Dewitt
 Intersection: James St @ Thompson St
 Date: Tuesday, July 11, 2006
 Counter: TW

File Name : ThompsonRd-JamesSt
 Site Code : 00000000
 Start Date : 7/11/2006
 Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Thompson Rd Southbound					James St Westbound					Thompson Rd Northbound					James St 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	18	135	17	1	171	16	26	15	1	58	3	138	7	3	151	2	27	27	0	56	436
07:15 AM	19	123	31	1	174	23	31	16	0	70	23	195	10	2	230	1	47	42	0	90	564
07:30 AM	27	164	20	0	211	22	34	24	1	81	16	203	9	0	228	2	37	59	0	98	618
07:45 AM	42	203	25	0	270	27	43	30	1	101	11	327	11	1	350	4	83	55	0	142	863
Total	106	625	93	2	826	88	134	85	3	310	53	863	37	6	959	9	194	183	0	386	2481
08:00 AM	28	196	21	0	245	29	46	30	0	105	14	245	9	0	268	1	57	43	1	102	720
08:15 AM	43	202	24	1	270	22	61	30	0	113	11	213	25	0	249	4	63	53	1	121	753
08:30 AM	37	137	34	2	210	28	52	11	0	91	20	165	17	0	202	3	55	41	1	100	603
08:45 AM	43	198	17	1	259	23	46	20	0	89	18	165	16	1	200	3	60	31	0	94	642
Total	151	733	96	4	984	102	205	91	0	398	63	788	67	1	919	11	235	168	3	417	2718
11:30 AM	46	177	32	0	255	21	71	25	2	119	20	129	20	0	169	12	81	42	0	135	678
11:45 AM	37	174	41	1	253	32	62	26	1	121	28	142	26	0	196	9	69	44	1	123	693
Total	83	351	73	1	508	53	133	51	3	240	48	271	46	0	365	21	150	86	1	258	1371
12:00 PM	50	220	44	0	314	15	81	23	0	119	30	169	24	0	223	9	77	39	0	125	781
12:15 PM	67	239	45	0	351	26	81	50	2	159	36	200	21	1	258	14	74	64	3	155	923
12:30 PM	64	250	46	1	361	32	93	44	0	169	36	187	30	0	253	9	88	57	3	157	940
12:45 PM	47	217	30	4	298	56	65	39	0	160	28	196	28	2	254	18	82	66	2	168	880
Total	228	926	165	5	1324	129	320	156	2	607	130	752	103	3	988	50	321	226	8	605	3524
01:00 PM	55	180	27	0	262	39	79	34	0	152	25	178	21	1	225	11	81	68	0	160	799
01:15 PM	28	150	27	1	206	19	71	42	0	132	27	169	25	0	221	8	78	42	2	130	689
Total	83	330	54	1	468	58	150	76	0	284	52	347	46	1	446	19	159	110	2	290	1488
03:00 PM	39	193	29	3	264	19	76	40	3	138	30	155	23	0	208	9	66	38	1	114	724
03:15 PM	61	240	31	6	338	34	83	17	3	137	31	179	17	1	228	11	97	44	4	156	859
03:30 PM	70	252	25	4	351	25	84	36	1	146	40	194	24	2	260	8	84	35	1	128	885
03:45 PM	42	203	37	4	286	19	103	35	0	157	39	221	28	1	289	10	112	44	0	166	898
Total	212	888	122	17	1239	97	346	128	7	578	140	749	92	4	985	38	359	161	6	564	3366
04:00 PM	54	265	41	3	363	18	105	39	3	165	41	190	24	2	257	8	104	38	0	150	935
04:15 PM	50	208	33	2	293	19	82	30	0	131	37	173	26	1	237	5	92	43	0	140	801
04:30 PM	64	225	33	2	324	25	98	49	0	172	34	155	21	2	212	7	94	36	0	137	845
04:45 PM	67	283	27	0	377	21	68	39	1	129	52	208	29	3	292	5	90	53	0	148	946
Total	235	981	134	7	1357	83	353	157	4	597	164	726	100	8	998	25	380	170	0	575	3527
Grand Total	1098	4834	737	37	6706	610	1641	744	19	3014	650	4496	491	23	5660	173	1798	1104	20	3095	18475
Apprch %	16.4	72.1	11	0.6		20.2	54.4	24.7	0.6		11.5	79.4	8.7	0.4		5.6	58.1	35.7	0.6		
Total %	5.9	26.2	4	0.2	36.3	3.3	8.9	4	0.1	16.3	3.5	24.3	2.7	0.1	30.6	0.9	9.7	6	0.1	16.8	
Cars	1095	4790	731	37	6653	606	1641	741	19	3007	648	4441	491	23	5603	172	1796	1102	20	3090	18353
% Cars	99.7	99.1	99.2	100	99.2	99.3	100	99.6	100	99.8	99.7	98.8	100	100	99.9	99.4	99.9	99.8	100	99.8	99.3
Heavy Vehicles	3	44	6	0	53	4	0	3	0	7	2	55	0	0	57	1	2	2	0	5	122
% Heavy Vehicles	0.3	0.9	0.8	0	0.8	0.7	0	0.4	0	0.2	0.3	1.2	0	0	1	0.6	0.1	0.2	0	0.2	0.7

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onon. Cty.

Syracuse, NY 13202

INT: Rt. 298 @ Old Collamer Rd.

Date: October 8, 2008

AI

File Name : 790006_both

Site Code : 00079006

Start Date : 10/8/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles - Buses

	Old Collamer Rd. From North				Rt. 298 From East				Rt. 298 From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. 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	
07:00 AM	36	0	1	0	1	128	0	0	0	120	21	0	307
07:15 AM	38	0	6	0	2	115	0	0	0	156	20	0	337
07:30 AM	49	0	6	0	5	159	0	0	0	186	26	0	431
07:45 AM	37	0	5	0	4	149	0	0	0	226	56	0	477
Total	160	0	18	0	12	551	0	0	0	688	123	0	1552
08:00 AM	51	0	6	0	3	125	0	0	0	202	33	0	420
08:15 AM	30	0	5	0	1	122	0	0	0	173	38	0	369
08:30 AM	41	0	2	0	3	112	0	0	0	188	16	0	362
08:45 AM	27	0	3	0	8	131	0	0	0	183	18	0	370
Total	149	0	16	0	15	490	0	0	0	746	105	0	1521
04:00 PM	27	0	4	0	5	182	0	0	0	142	40	0	400
04:15 PM	26	0	2	0	9	134	0	0	0	146	38	0	355
04:30 PM	30	0	2	0	2	198	0	0	0	181	42	0	455
04:45 PM	34	0	3	0	3	168	0	0	0	177	47	0	432
Total	117	0	11	0	19	682	0	0	0	646	167	0	1642
05:00 PM	46	0	7	1	6	251	0	0	0	134	59	0	504
05:15 PM	21	0	3	0	11	181	0	0	0	152	54	0	422
05:30 PM	23	0	2	0	3	172	0	0	0	115	71	0	386
05:45 PM	35	0	2	0	9	119	0	0	0	105	42	0	312
Total	125	0	14	1	29	723	0	0	0	506	226	0	1624
Grand Total	551	0	59	1	75	2446	0	0	0	2586	621	0	6339
Apprch %	90.2	0.0	9.7	0.2	3.0	97.0	0.0	0.0	0.0	80.6	19.4	0.0	
Total %	8.7	0.0	0.9	0.0	1.2	38.6	0.0	0.0	0.0	40.8	9.8	0.0	

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onon. County Syracuse, NY 13202

INT: Rt. 635 @ Carrier Back Access Road

Date: October 8, 2008

Counter: PSM

File Name : 79003_psm

Site Code : 00790003

Start Date : 10/9/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles - Buses

	Thompson Rd. / Rt. 635 From North				Carrier Back Access Road From East				Thompson Rd. / Rt. 635 From South				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
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	
07:00 AM	0	134	5	0	1	0	1	0	18	147	0	0	306
07:15 AM	0	167	16	0	2	0	2	0	13	177	0	0	377
07:30 AM	0	226	16	0	3	0	5	0	26	210	0	0	486
07:45 AM	0	219	25	0	7	0	5	0	32	292	0	1	581
Total	0	746	62	0	13	0	13	0	89	826	0	1	1750
08:00 AM	0	206	7	0	5	0	4	0	23	258	0	0	503
08:15 AM	0	196	11	0	2	0	2	0	12	211	0	0	434
08:30 AM	0	183	15	0	1	0	2	0	31	179	0	0	411
08:45 AM	0	175	16	0	3	0	2	0	18	217	0	1	432
Total	0	760	49	0	11	0	10	0	84	865	0	1	1780
04:00 PM	0	228	1	0	19	0	17	0	1	196	0	2	464
04:15 PM	0	214	1	0	7	0	11	0	2	193	0	0	428
04:30 PM	0	248	1	0	31	0	34	0	0	229	0	0	543
04:45 PM	0	215	1	0	7	0	7	0	5	207	0	0	442
Total	0	905	4	0	64	0	69	0	8	825	0	2	1877
05:00 PM	0	307	2	0	19	0	28	0	2	273	0	0	631
05:15 PM	0	220	2	0	9	0	7	0	4	209	0	0	451
05:30 PM	0	199	5	0	12	0	14	0	1	192	0	0	423
05:45 PM	0	150	1	0	6	0	7	0	0	155	0	0	319
Total	0	876	10	0	46	0	56	0	7	829	0	0	1824
Grand Total	0	3287	125	0	134	0	148	0	188	3345	0	4	7231
Apprch %	0.0	96.3	3.7	0.0	47.5	0.0	52.5	0.0	5.3	94.6	0.0	0.1	
Total %	0.0	45.5	1.7	0.0	1.9	0.0	2.0	0.0	2.6	46.3	0.0	0.1	

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onon. Cty.

Syracuse, NY 13202

INT: Rt. 298 @ Court St. Rd./NVG Dr.

Date: October 9, 2008

AI

File Name : 79009

Site Code : 00079009

Start Date : 10/9/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles - Buses

	Rt. 298 From North				NVG Dr. From East				Rt. 298 From South				Court St Rd. From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
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	
07:00 AM	8	81	27	0	17	1	44	0	53	56	2	0	1	5	3	0	298
07:15 AM	12	92	47	0	15	4	28	0	61	77	0	0	5	3	3	0	347
07:30 AM	14	139	65	0	26	5	39	0	91	92	2	0	1	5	10	0	489
07:45 AM	23	121	86	0	21	9	29	0	77	115	3	0	5	5	10	0	504
Total	57	433	225	0	79	19	140	0	282	340	7	0	12	18	26	0	1638
08:00 AM	14	121	63	0	18	6	30	0	91	96	1	0	2	9	8	0	459
08:15 AM	16	87	75	0	20	13	32	0	86	94	1	0	5	12	6	0	447
08:30 AM	12	110	62	0	11	7	23	0	73	64	5	0	5	8	5	0	385
08:45 AM	6	73	58	0	13	7	33	0	77	80	5	2	1	6	7	0	368
Total	48	391	258	0	62	33	118	0	327	334	12	2	13	35	26	0	1659
04:00 PM	8	83	25	0	48	3	66	0	24	150	2	0	2	3	14	0	428
04:15 PM	9	82	21	0	40	4	58	0	29	121	2	1	5	5	17	0	394
04:30 PM	4	133	30	1	43	5	81	1	32	176	2	0	9	7	15	1	540
04:45 PM	6	105	15	0	47	11	69	0	36	148	1	0	5	5	6	1	455
Total	27	403	91	1	178	23	274	1	121	595	7	1	21	20	52	2	1817
05:00 PM	9	115	20	0	111	5	139	0	27	192	1	0	3	8	20	0	650
05:15 PM	6	88	20	0	46	5	75	0	22	174	3	1	2	5	11	0	458
05:30 PM	8	75	16	0	34	5	42	0	24	140	3	0	1	5	9	0	362
05:45 PM	3	60	8	0	19	4	37	1	15	100	1	1	0	7	7	0	263
Total	26	338	64	0	210	19	293	1	88	606	8	2	6	25	47	0	1733
Grand Total	158	1565	638	1	529	94	825	2	818	1875	34	5	52	98	151	2	6847
Apprch %	6.7	66.3	27.0	0.0	36.5	6.5	56.9	0.1	29.9	68.6	1.2	0.2	17.2	32.3	49.8	0.7	
Total %	2.3	22.9	9.3	0.0	7.7	1.4	12.0	0.0	11.9	27.4	0.5	0.1	0.8	1.4	2.2	0.0	

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onon. Cty.

Syracuse, NY 13202

INT: Rt. 298 @ Kinne St.

Date: October 15, 2008

Counters: AI, PSM

File Name : 790008

Site Code : 00079008

Start Date : 10/15/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles - School Buses

	Rt. 298 From North				Kinne St. From East				Rt. 298 From South				Weighlock Dr. From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
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	
07:00 AM	1	102	29	0	20	0	36	0	23	98	0	0	0	1	0	0	310
07:15 AM	1	88	37	0	29	1	57	0	32	113	2	0	1	4	0	0	365
07:30 AM	3	109	57	0	52	4	75	0	39	138	2	0	7	3	0	1	490
07:45 AM	2	103	65	0	53	2	62	0	42	178	4	0	0	4	0	0	515
Total	7	402	188	0	154	7	230	0	136	527	8	0	8	12	0	1	1680
08:00 AM	0	102	43	0	40	7	49	0	42	167	1	0	0	3	0	0	454
08:15 AM	2	91	30	0	44	2	41	0	40	156	4	0	3	0	1	0	414
08:30 AM	1	90	51	0	29	4	41	0	39	147	6	0	1	2	1	0	412
08:45 AM	1	81	36	0	26	4	50	0	54	151	2	0	3	5	0	0	413
Total	4	364	160	0	139	17	181	0	175	621	13	0	7	10	2	0	1693
04:00 PM	1	124	49	4	61	3	19	0	41	122	4	0	3	7	1	0	439
04:15 PM	1	102	36	0	47	3	24	0	45	125	2	0	1	2	1	0	389
04:30 PM	0	144	55	2	58	4	55	0	49	174	2	0	3	4	0	0	550
04:45 PM	2	112	49	0	55	2	41	0	42	133	1	0	1	3	0	1	442
Total	4	482	189	6	221	12	139	0	177	554	9	0	8	16	2	1	1820
05:00 PM	0	194	69	0	71	3	85	0	37	143	2	0	3	6	0	0	613
05:15 PM	1	113	46	1	57	5	55	0	54	134	1	0	1	3	2	0	473
05:30 PM	0	126	34	0	51	2	71	0	41	111	1	0	1	4	0	0	442
05:45 PM	0	80	25	0	33	6	31	0	34	88	4	0	0	3	0	0	304
Total	1	513	174	1	212	16	242	0	166	476	8	0	5	16	2	0	1832
Grand Total	16	1761	711	7	726	52	792	0	654	2178	38	0	28	54	6	2	7025
Apprch %	0.6	70.6	28.5	0.3	46.2	3.3	50.4	0.0	22.8	75.9	1.3	0.0	31.1	60.0	6.7	2.2	
Total %	0.2	25.1	10.1	0.1	10.3	0.7	11.3	0.0	9.3	31.0	0.5	0.0	0.4	0.8	0.1	0.0	

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onon. Cty.

Syracuse, NY 13202

INT: Kinne St. @ Franklin Park Dr.

Date: 12/9/08

Counter: AI

File Name : 790025

Site Code : 00790025

Start Date : 12/9/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles - School Buses

	Kinne St. From North				Franklin Park Dr. From East				Kinne St. From South				Carrier Driveway From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
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	
07:00 AM	5	29	17	0	41	9	3	0	3	20	3	0	0	0	1	0	131
07:15 AM	5	40	28	0	64	8	3	0	3	29	4	0	2	0	0	0	186
07:30 AM	7	48	22	0	66	19	5	0	2	37	10	0	2	0	1	0	219
07:45 AM	9	51	25	0	59	14	4	0	1	40	8	0	3	1	0	0	215
Total	26	168	92	0	230	50	15	0	9	126	25	0	7	1	2	0	751
08:00 AM	10	48	21	0	53	17	2	0	2	44	6	0	2	0	1	0	206
08:15 AM	8	42	17	0	53	22	4	0	3	46	4	0	1	0	2	0	202
08:30 AM	9	42	19	0	40	10	1	0	0	32	0	0	2	1	0	0	156
08:45 AM	3	26	9	0	18	4	0	0	1	24	1	0	0	0	1	0	87
Total	30	158	66	0	164	53	7	0	6	146	11	0	5	1	4	0	651
04:00 PM	0	47	55	0	26	1	1	0	2	40	2	0	6	6	8	0	194
04:15 PM	0	46	51	0	30	2	2	0	4	36	2	0	5	4	5	0	187
04:30 PM	0	56	59	0	30	1	3	0	2	60	0	0	13	5	12	0	241
04:45 PM	0	61	49	0	21	0	0	0	9	54	1	0	9	14	12	0	230
Total	0	210	214	0	107	4	6	0	17	190	5	0	33	29	37	0	852
05:00 PM	4	85	64	0	31	0	2	0	7	77	0	0	13	18	18	0	319
05:15 PM	0	44	60	0	28	2	1	0	6	39	1	0	7	15	8	4	215
05:30 PM	1	41	52	0	57	1	0	0	6	41	1	0	3	15	9	2	229
05:45 PM	0	37	34	0	34	0	3	1	2	39	0	0	3	3	4	1	161
Total	5	207	210	0	150	3	6	1	21	196	2	0	26	51	39	7	924
Grand Total	61	743	582	0	651	110	34	1	53	658	43	0	71	82	82	7	3178
Apprch %	4.4	53.6	42.0	0.0	81.8	13.8	4.3	0.1	7.0	87.3	5.7	0.0	29.3	33.9	33.9	2.9	
Total %	1.9	23.4	18.3	0.0	20.5	3.5	1.1	0.0	1.7	20.7	1.4	0.0	2.2	2.6	2.6	0.2	

SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onond. Cty. NY Syracuse, NY 13202

INT: Deere Rd @ Court St Rd

Date: Thursday, October 2, 2008

Counter: PSM

File Name : 790010~2

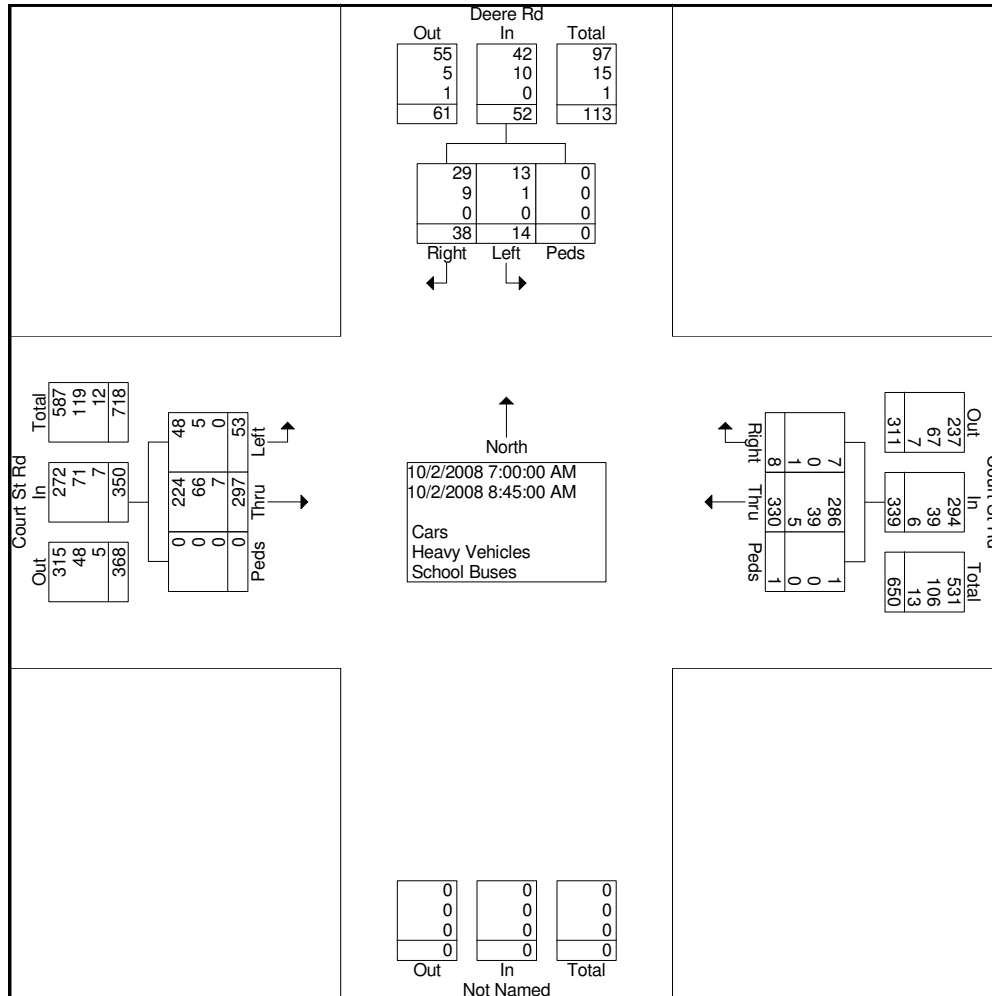
Site Code : 00790010

Start Date : 10/2/2008

Page No : 1

Groups Printed- Cars - Heavy Vehicles - School Buses

	Deere Rd From North			Court St Rd From East			Court St Rd From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	1	0	0	0	34	1	27	4	0	67
07:15 AM	6	0	0	0	48	0	27	10	0	91
07:30 AM	3	2	0	0	43	0	39	4	0	91
07:45 AM	5	1	0	1	47	0	55	13	0	122
Total	15	3	0	1	172	1	148	31	0	371
08:00 AM	9	4	0	2	46	0	38	7	0	106
08:15 AM	6	1	0	1	38	0	26	4	0	76
08:30 AM	5	2	0	2	32	0	42	9	0	92
08:45 AM	3	4	0	2	42	0	43	2	0	96
Total	23	11	0	7	158	0	149	22	0	370
Grand Total	38	14	0	8	330	1	297	53	0	741
Apprch %	73.1	26.9	0.0	2.4	97.3	0.3	84.9	15.1	0.0	
Total %	5.1	1.9	0.0	1.1	44.5	0.1	40.1	7.2	0.0	



SMTC

126 N. Salina Street, 100 Clinton Square

Location: Town of DeWitt, Onond. Cty. NY Syracuse, NY 13202

INT: Deere Rd @ Court St Rd

Date: Tuesday, September 30, 2008

Counter: AI

File Name : 790010~1

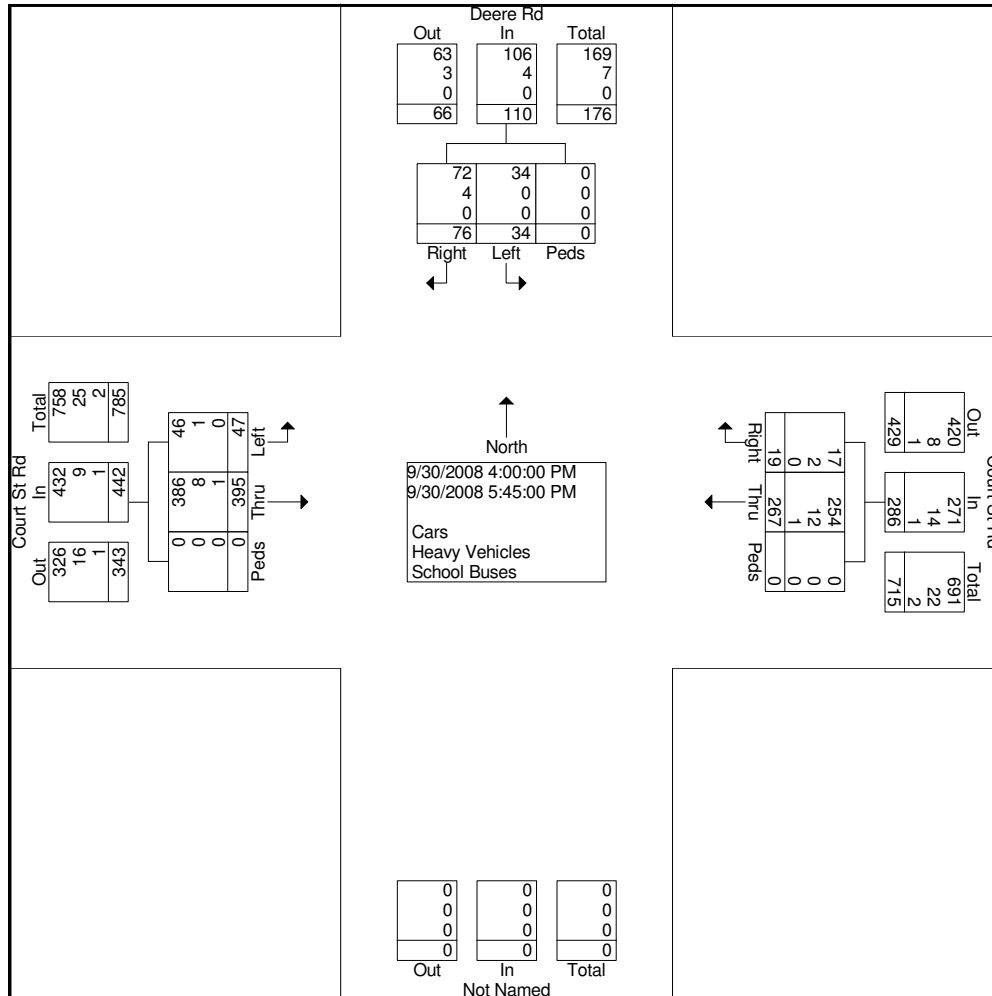
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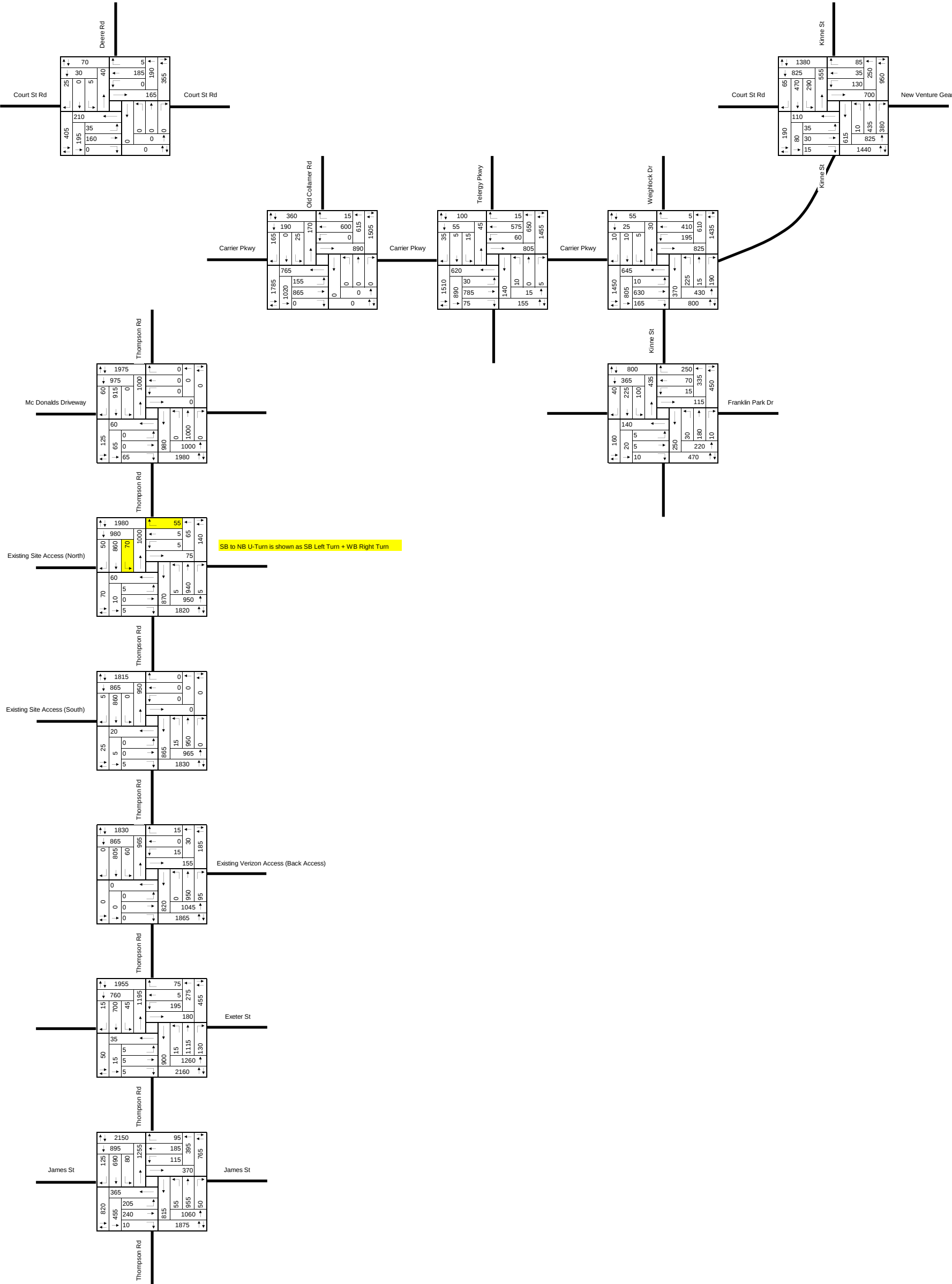
Start Date : 9/30/2008

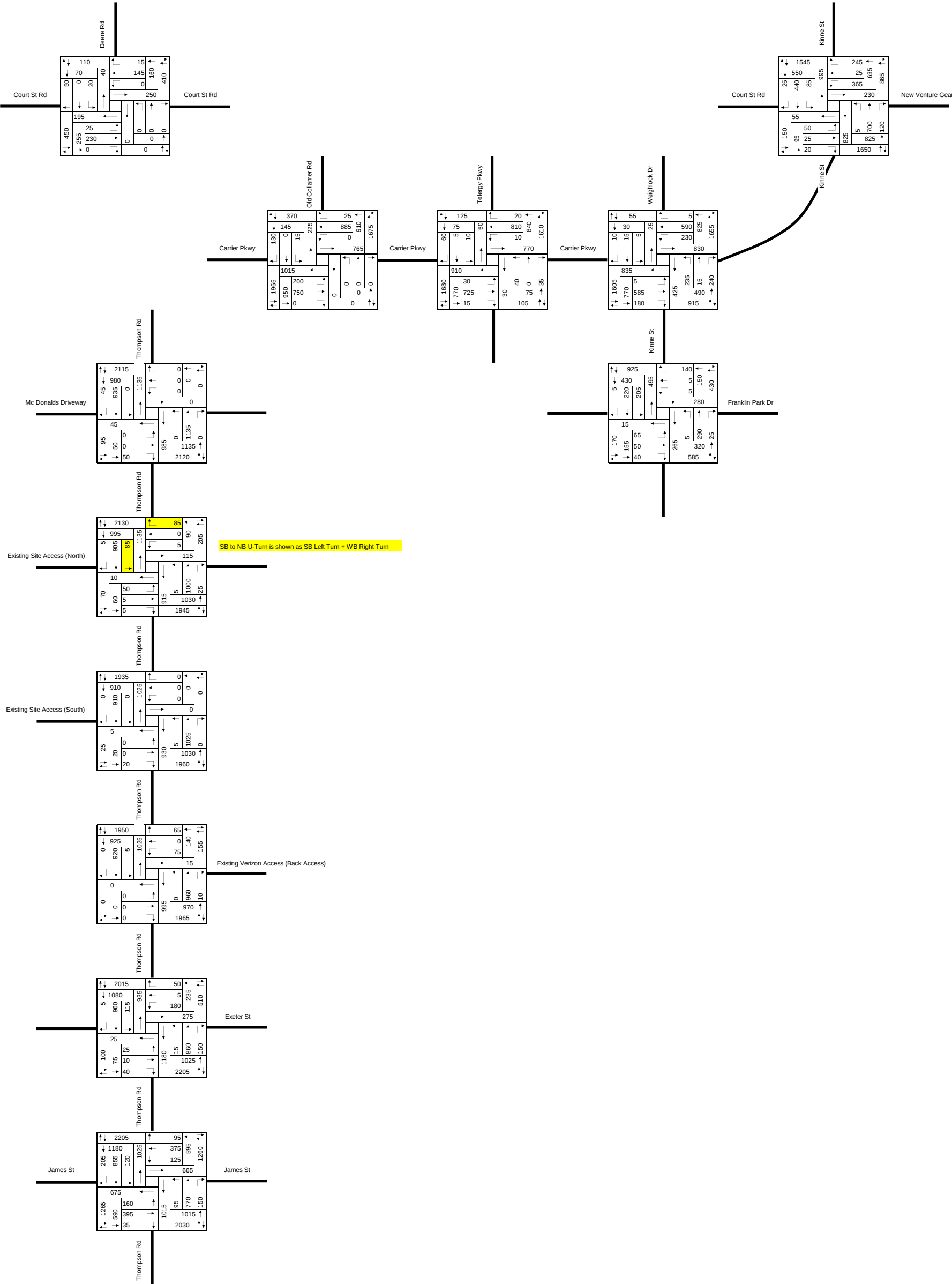
Page No : 1

Groups Printed- Cars - Heavy Vehicles - School Buses

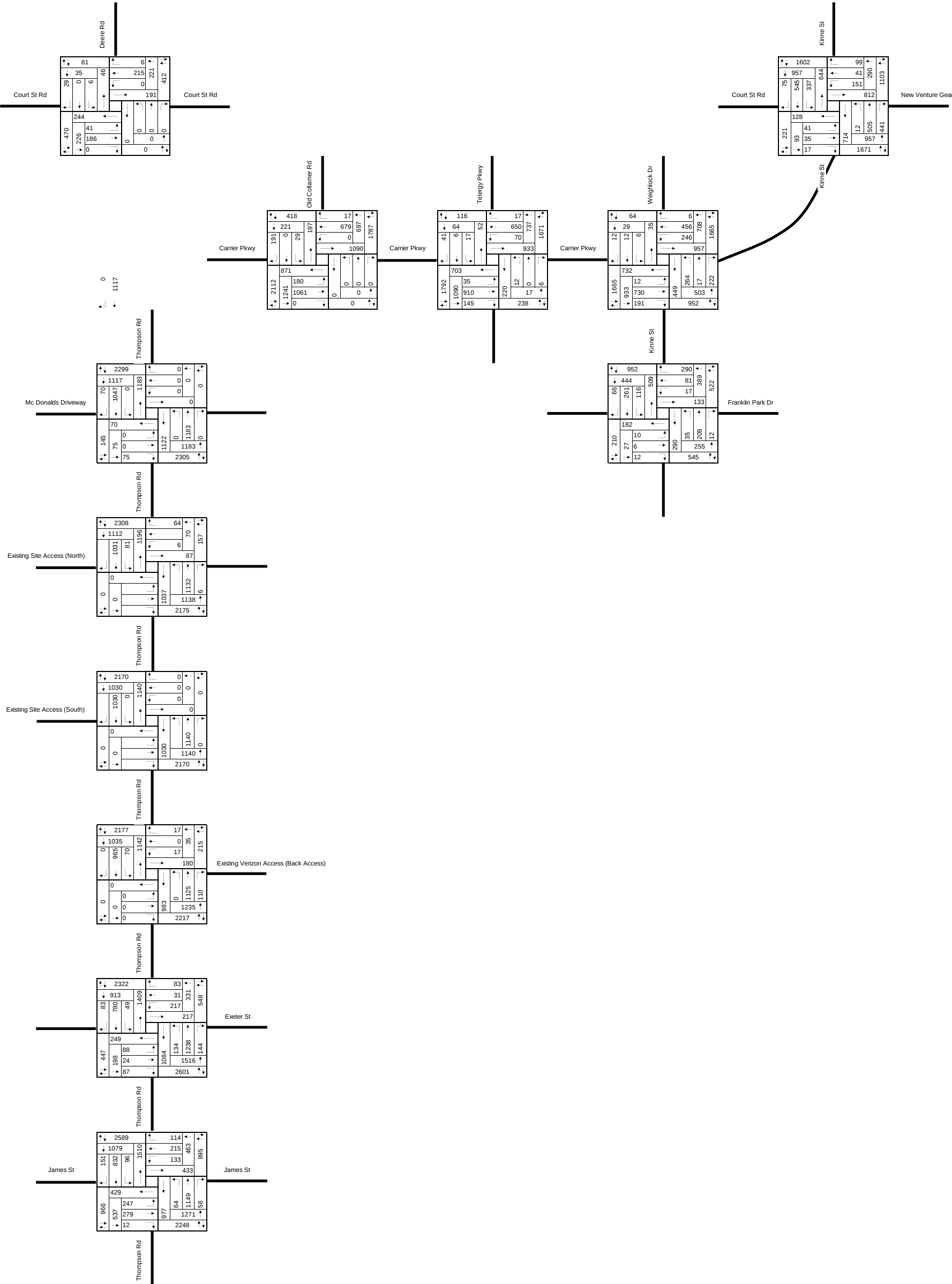
	Deere Rd From North			Court St Rd From East			Court St Rd From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	8	6	0	2	27	0	49	8	0	100
04:15 PM	11	9	0	6	42	0	51	9	0	128
04:30 PM	9	6	0	6	38	0	66	4	0	129
04:45 PM	13	4	0	2	34	0	57	6	0	116
Total	41	25	0	16	141	0	223	27	0	473
05:00 PM	17	2	0	2	32	0	57	8	0	118
05:15 PM	10	0	0	0	33	0	44	4	0	91
05:30 PM	6	4	0	0	35	0	44	4	0	93
05:45 PM	2	3	0	1	26	0	27	4	0	63
Total	35	9	0	3	126	0	172	20	0	365
Grand Total	76	34	0	19	267	0	395	47	0	838
Apprch %	69.1	30.9	0.0	6.6	93.4	0.0	89.4	10.6	0.0	
Total %	9.1	4.1	0.0	2.3	31.9	0.0	47.1	5.6	0.0	



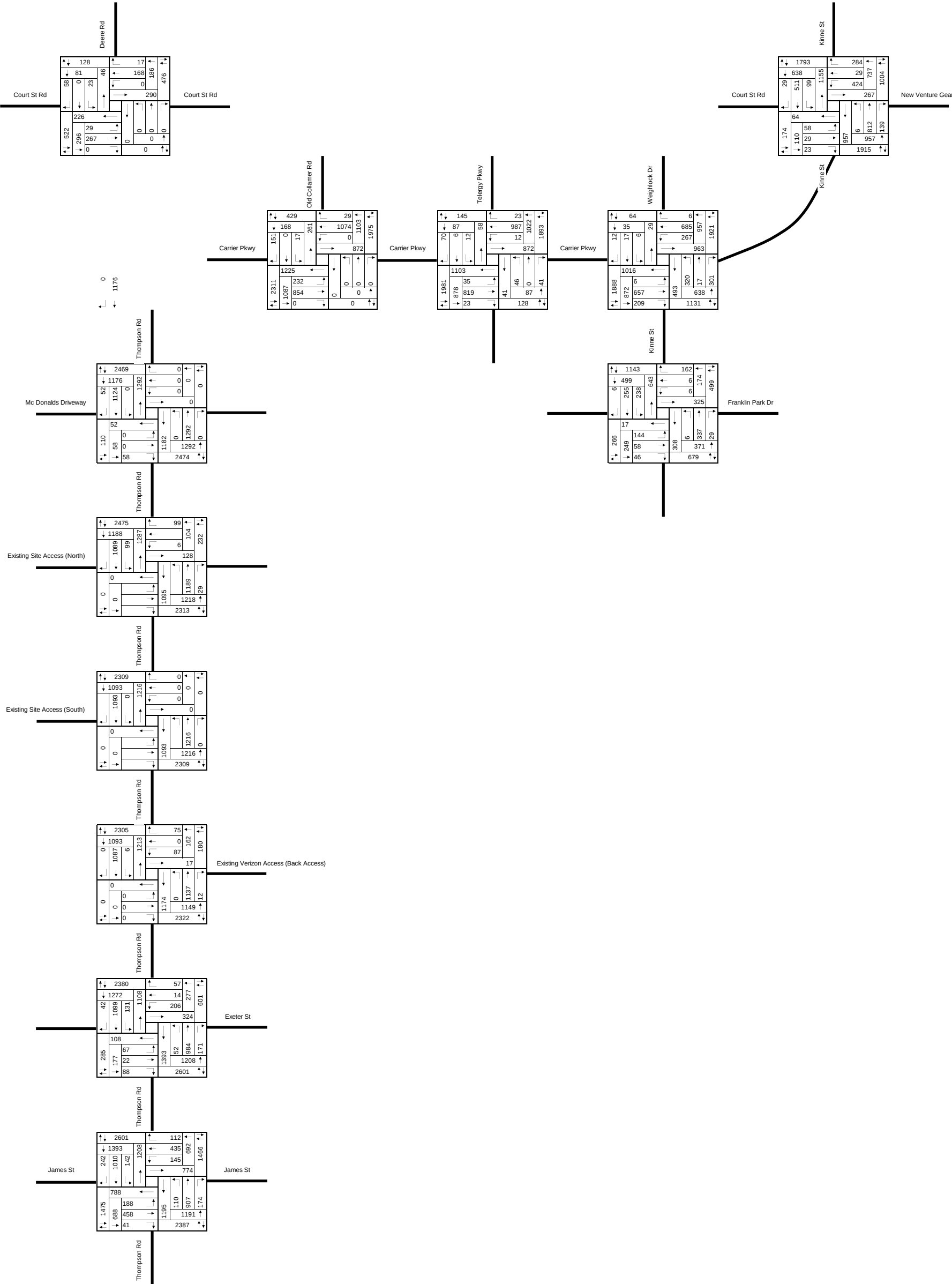




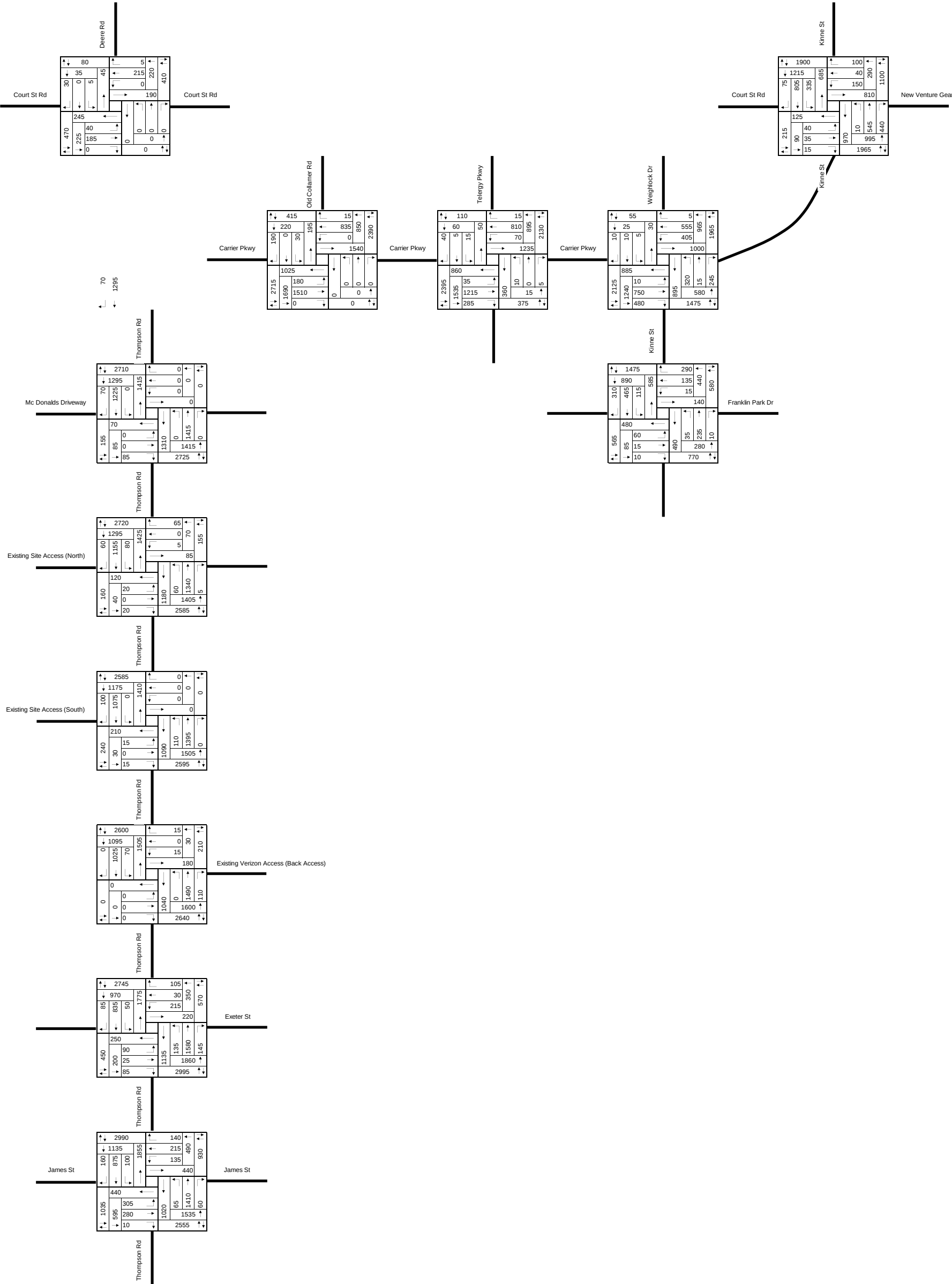
Future No-Build AM Peak Hour Volumes

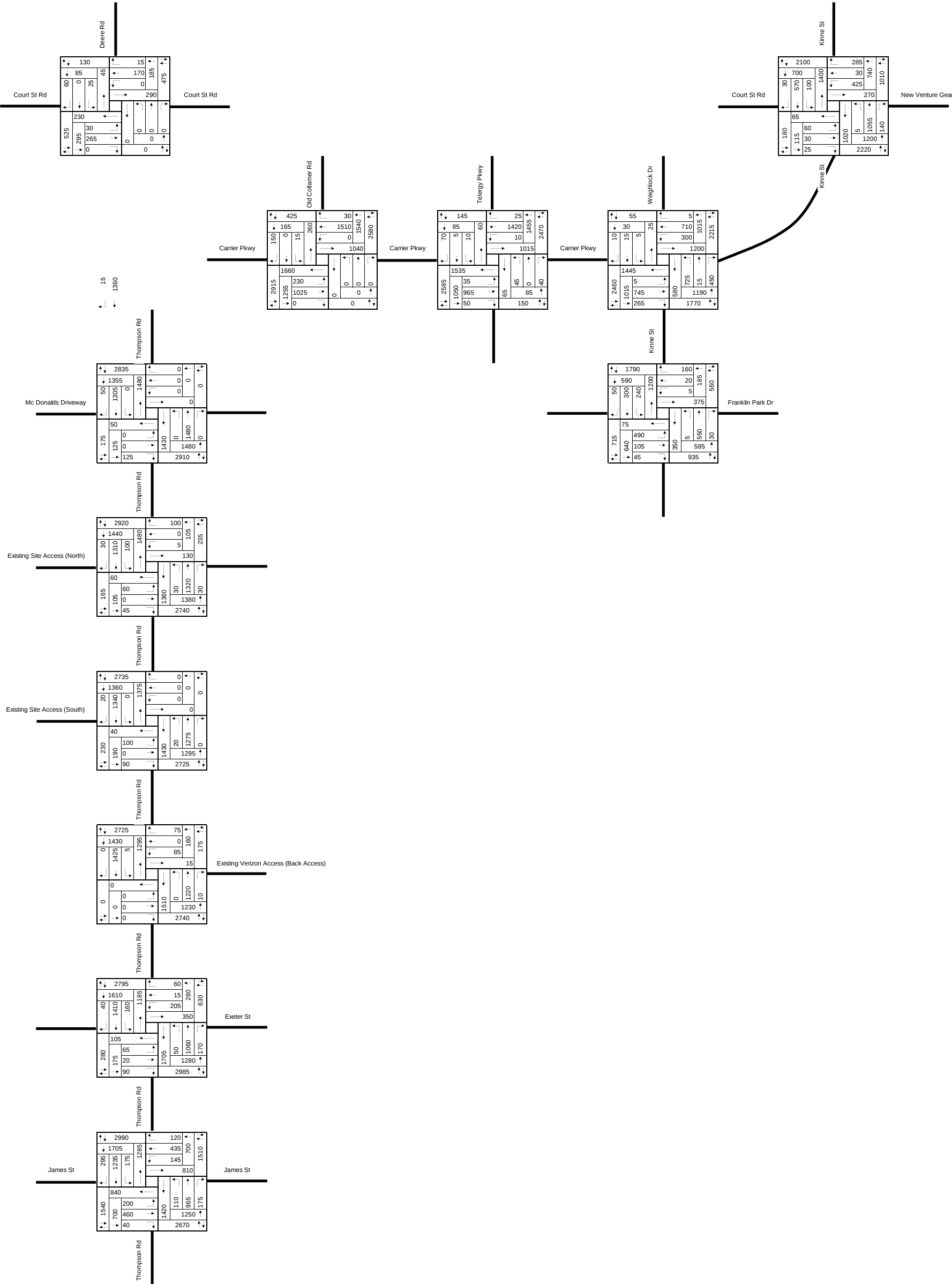


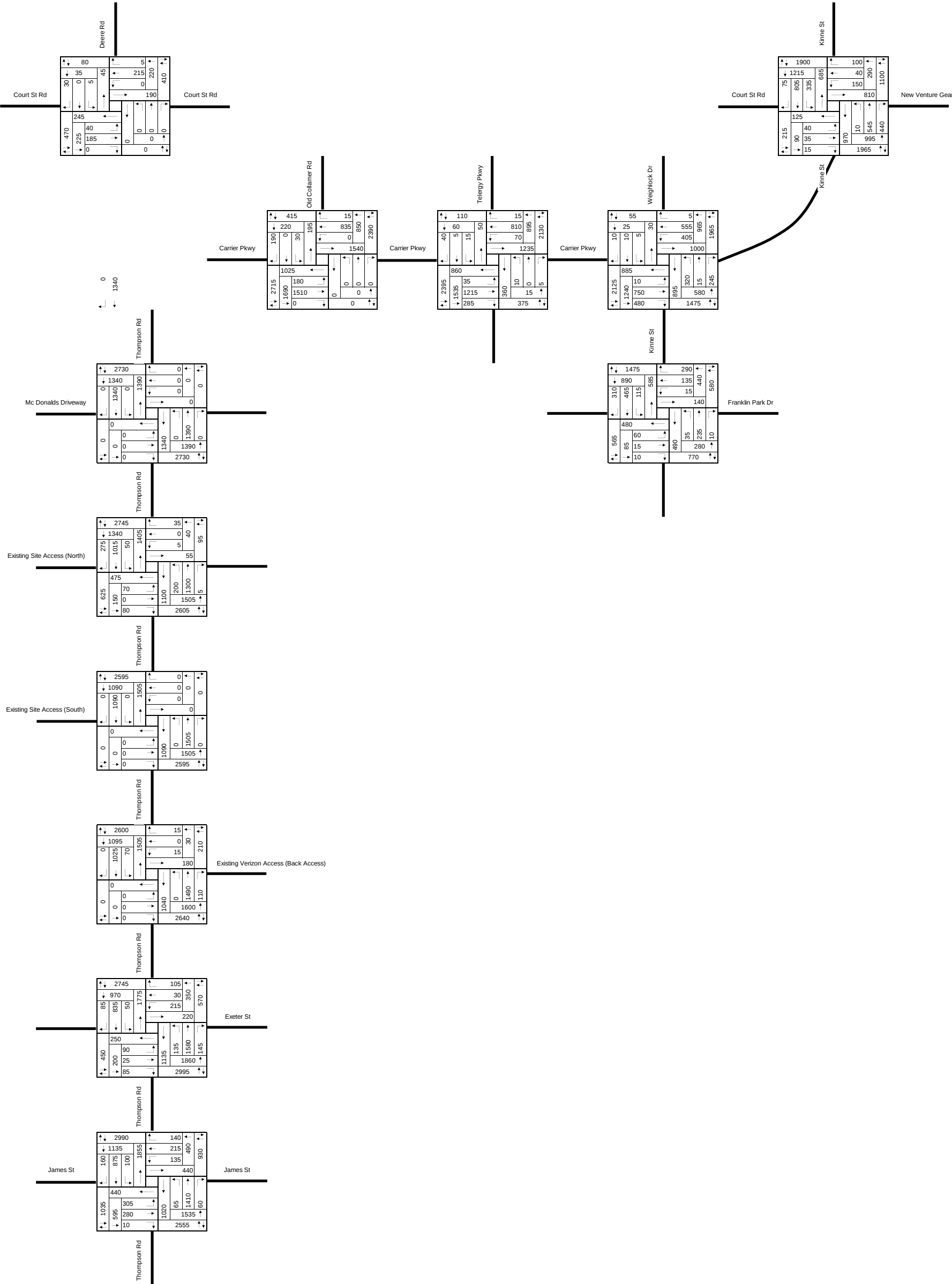
Future No-Build PM Peak Hour Volumes

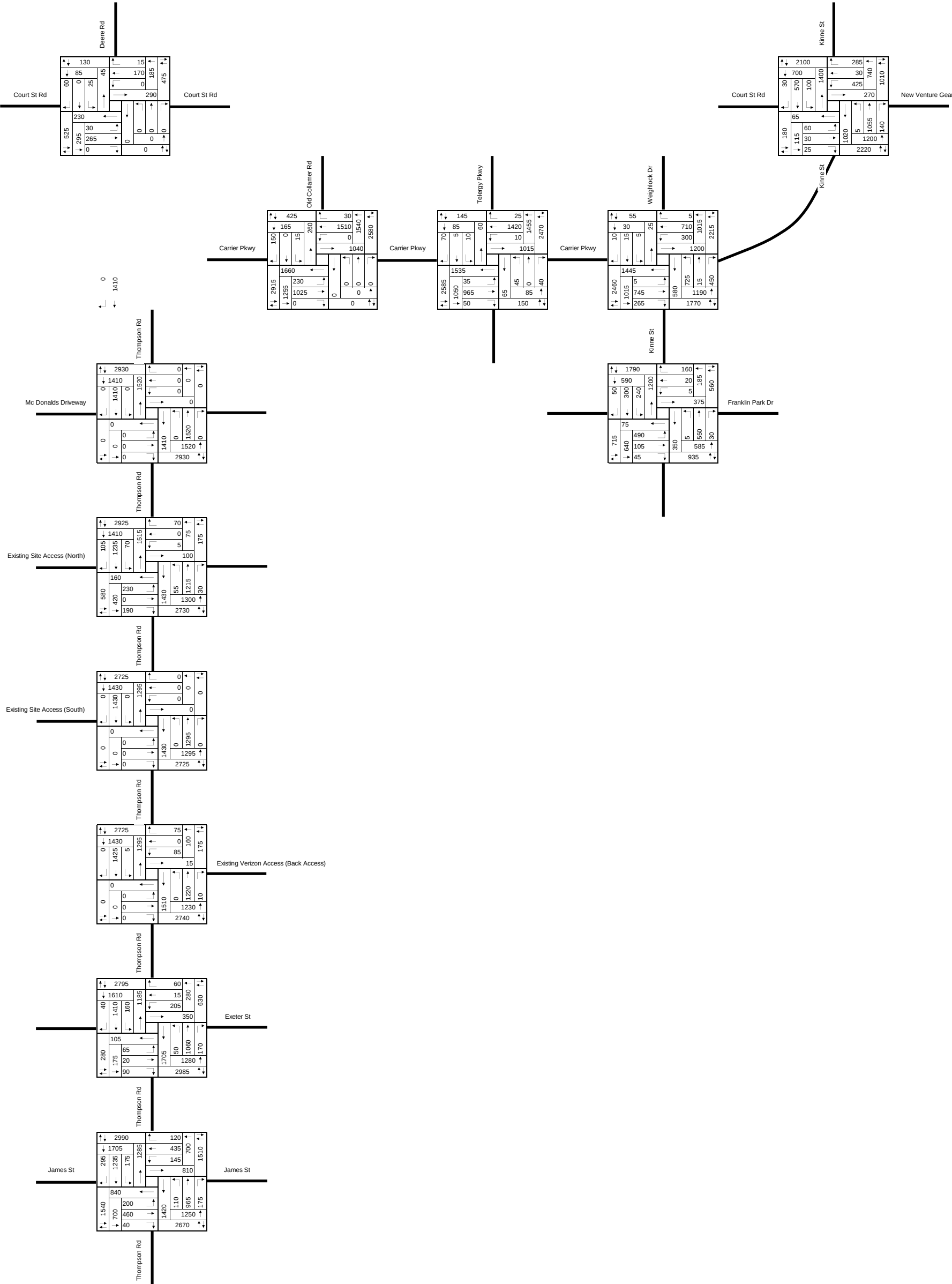


Alternative #1 AM Peak Hour Volumes

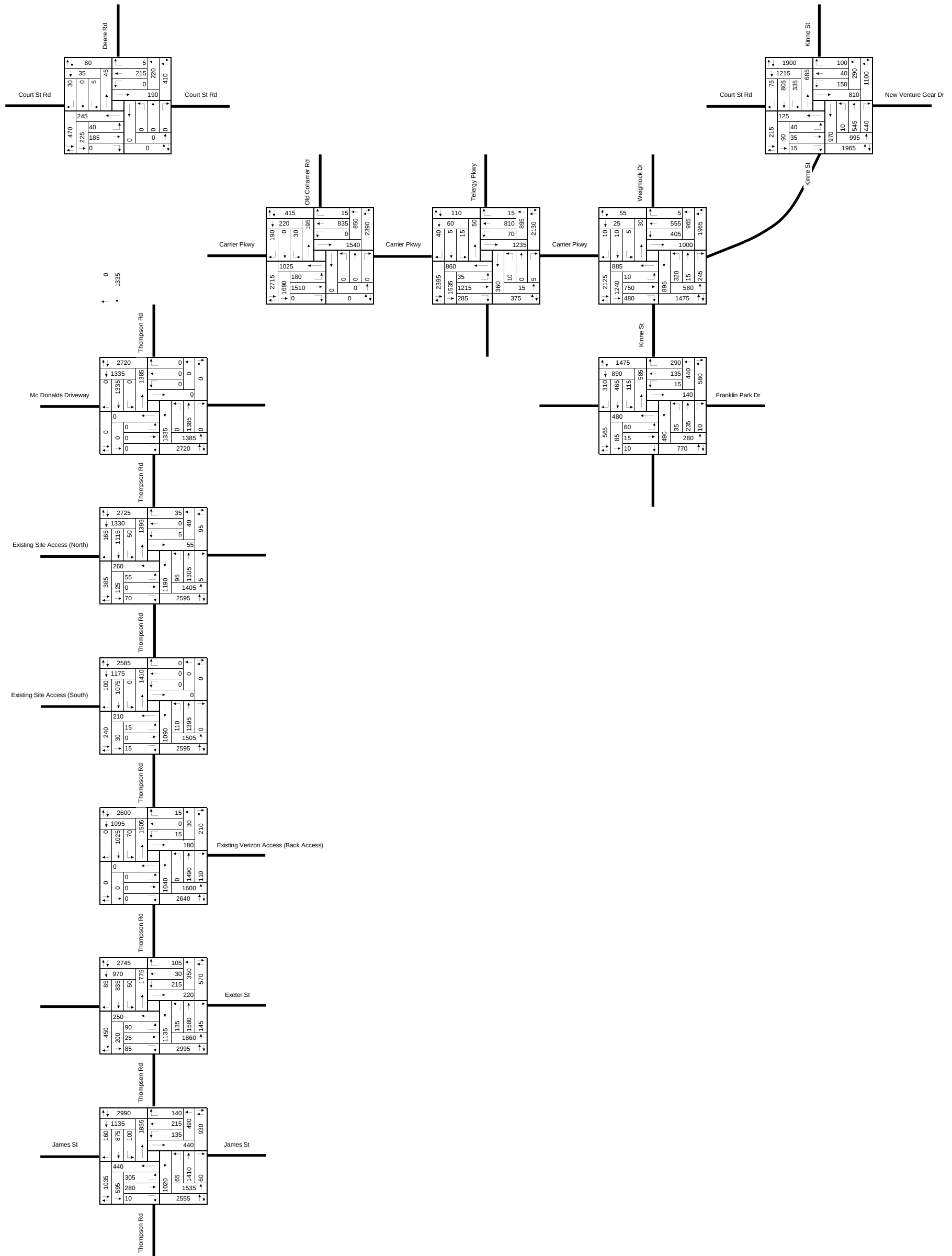




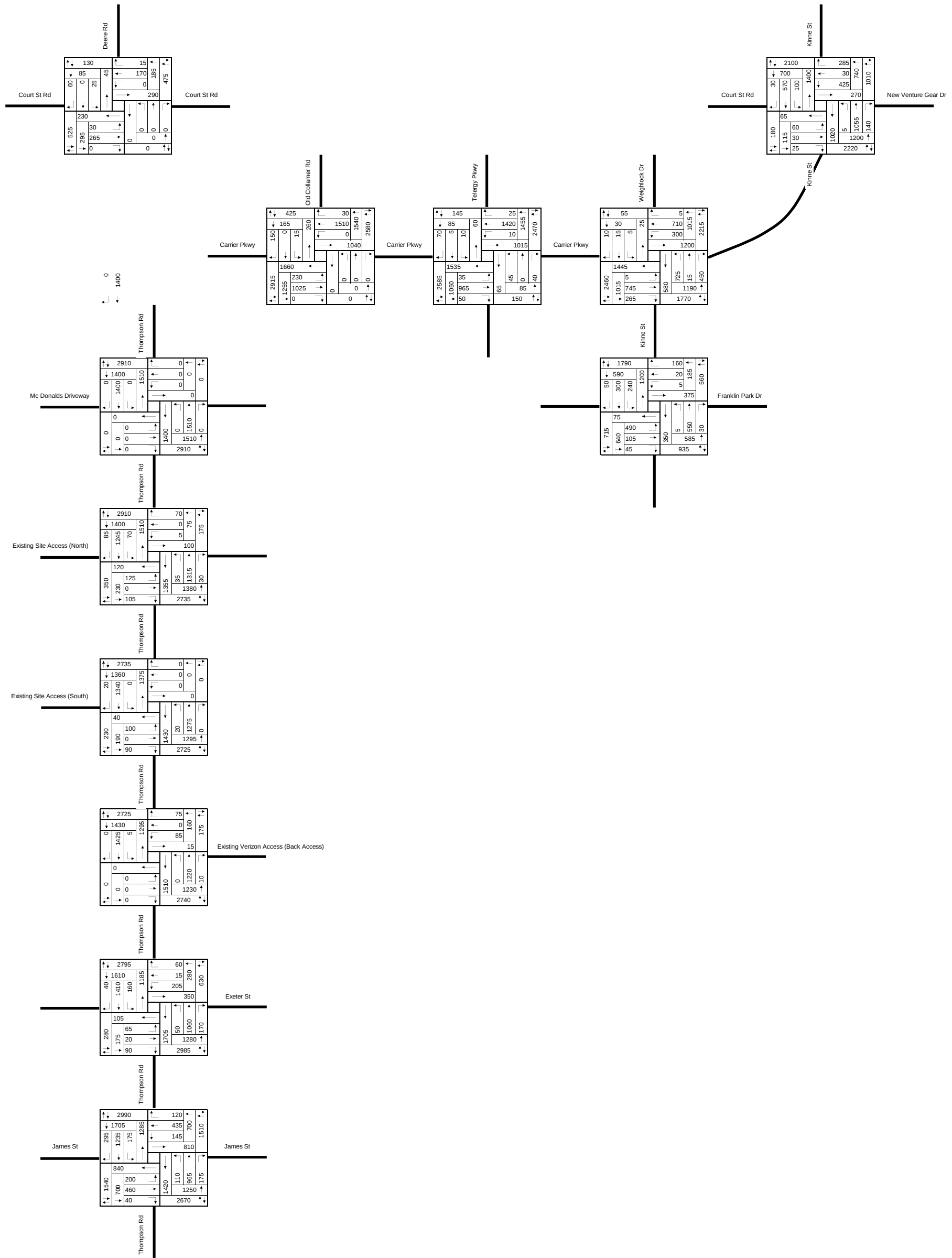


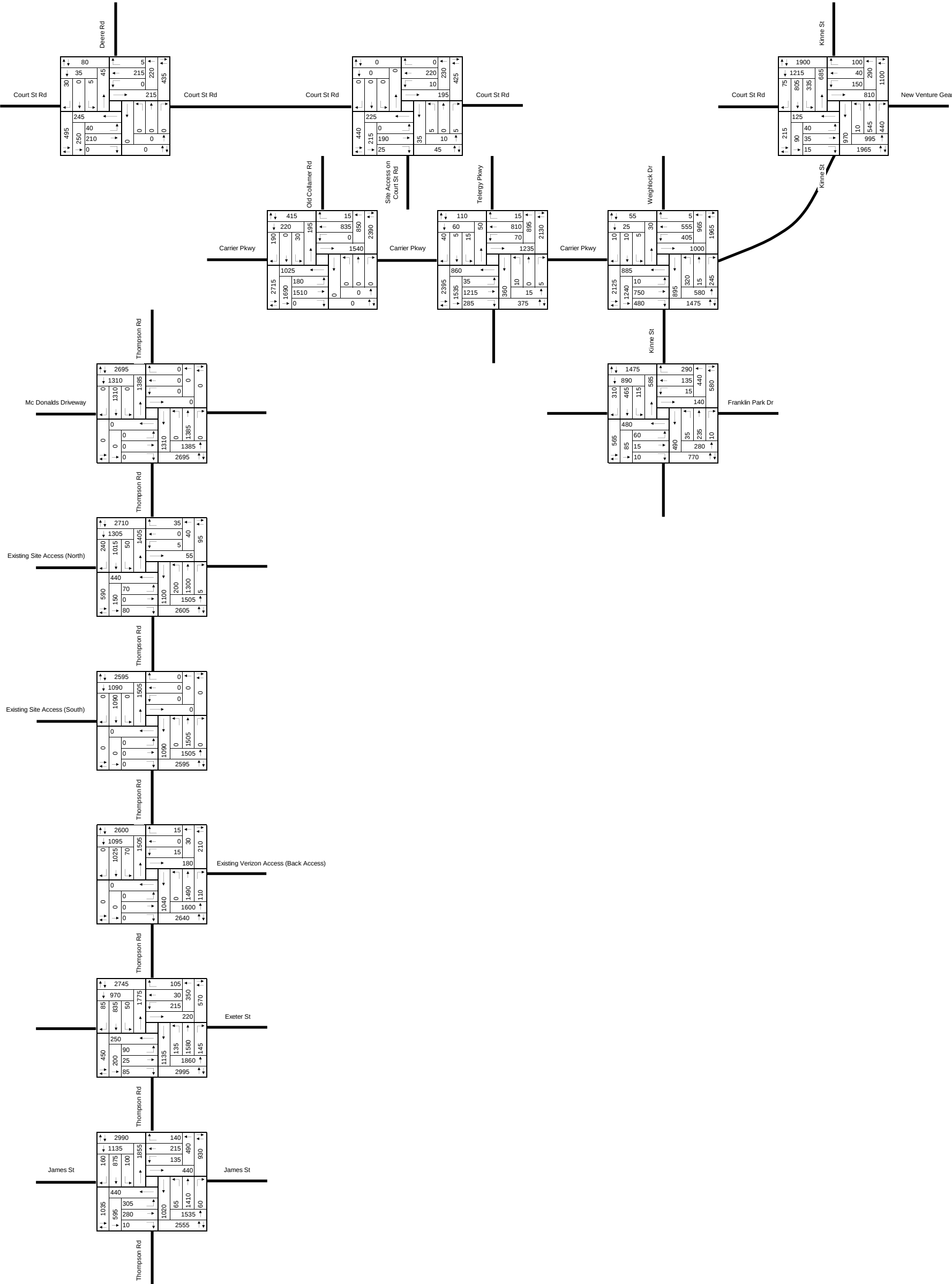


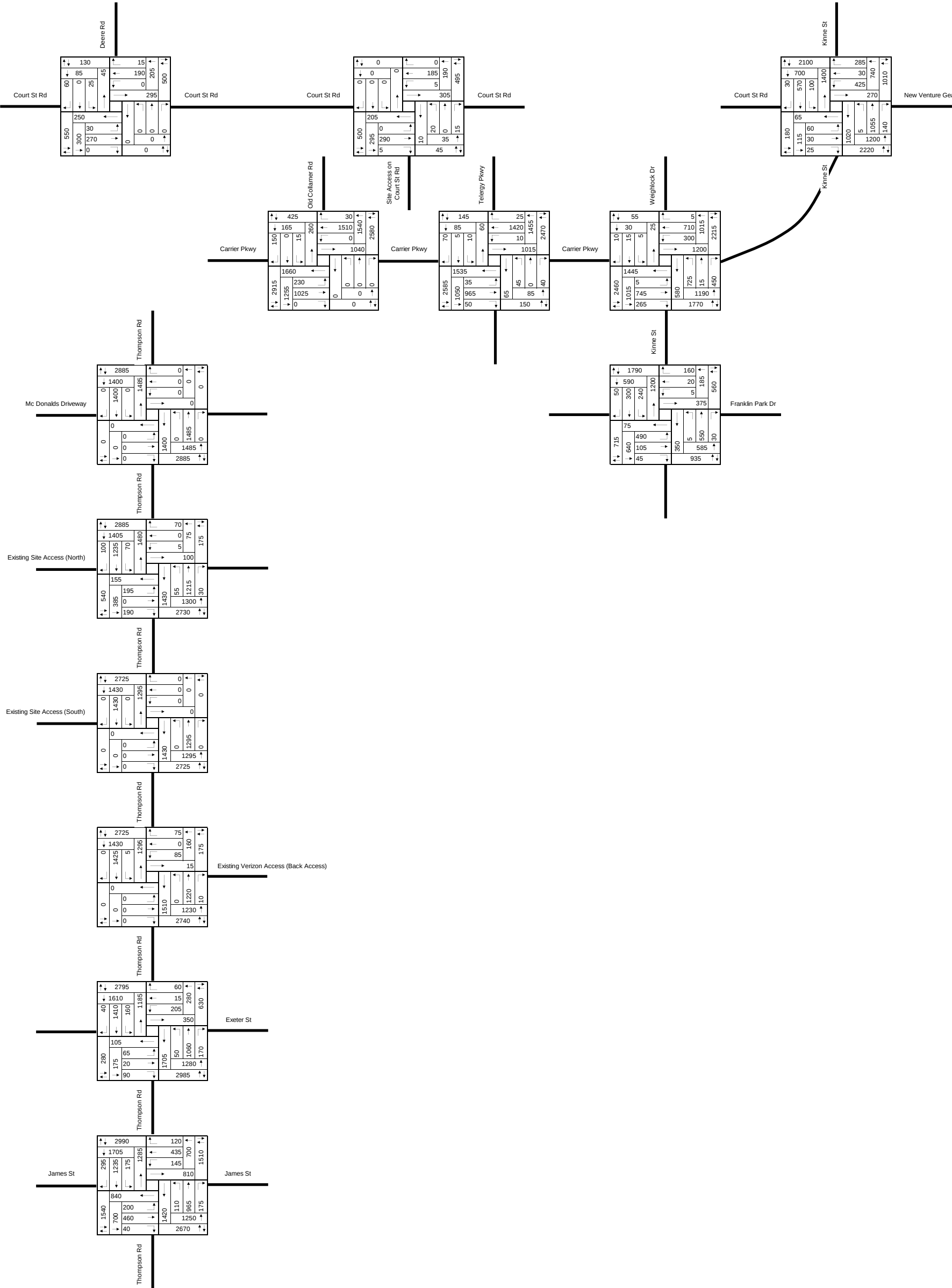
Alternative #3 AM Peak Hour Volumes

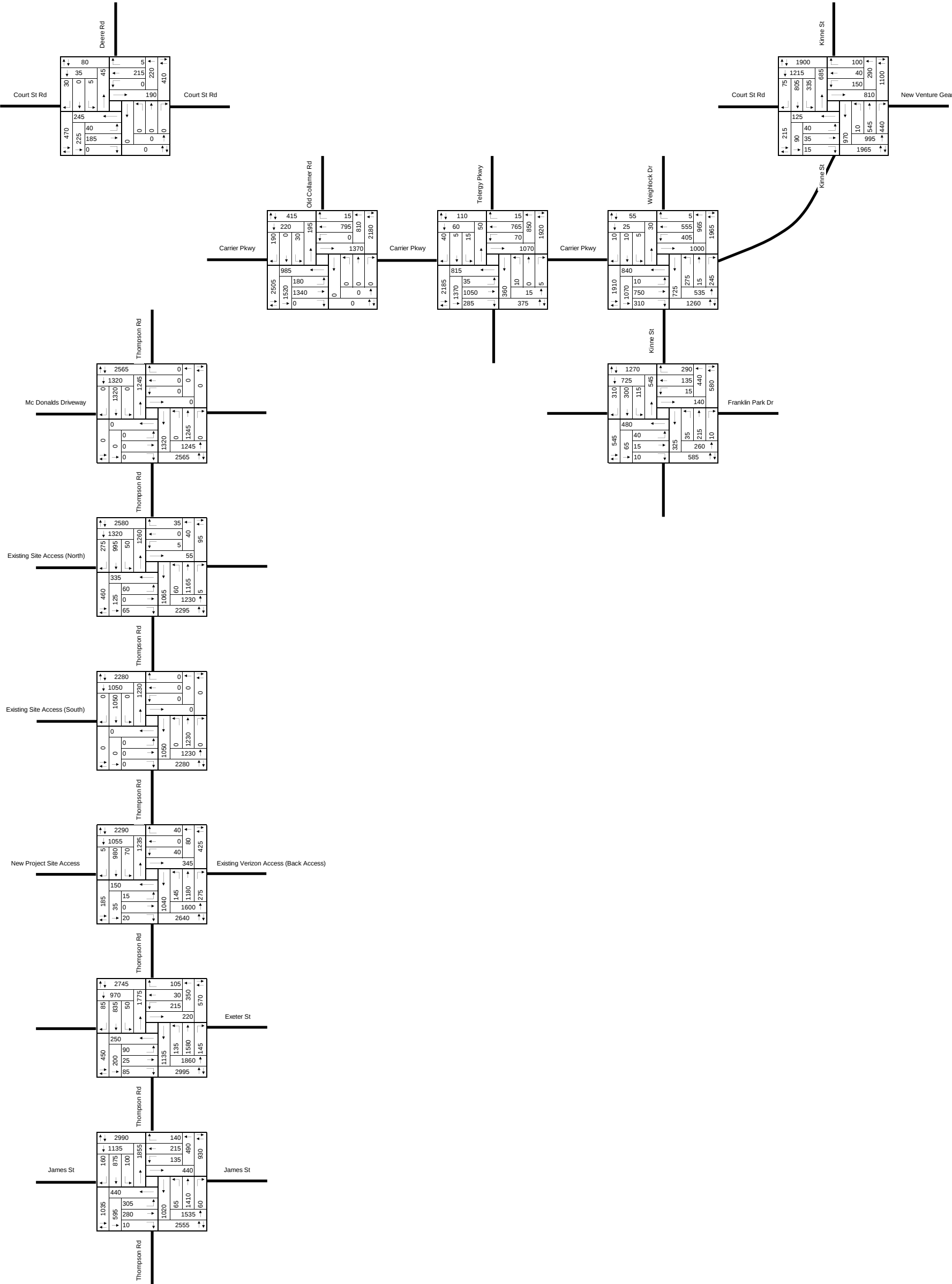


Alternative #3 PM Peak Hour Volumes

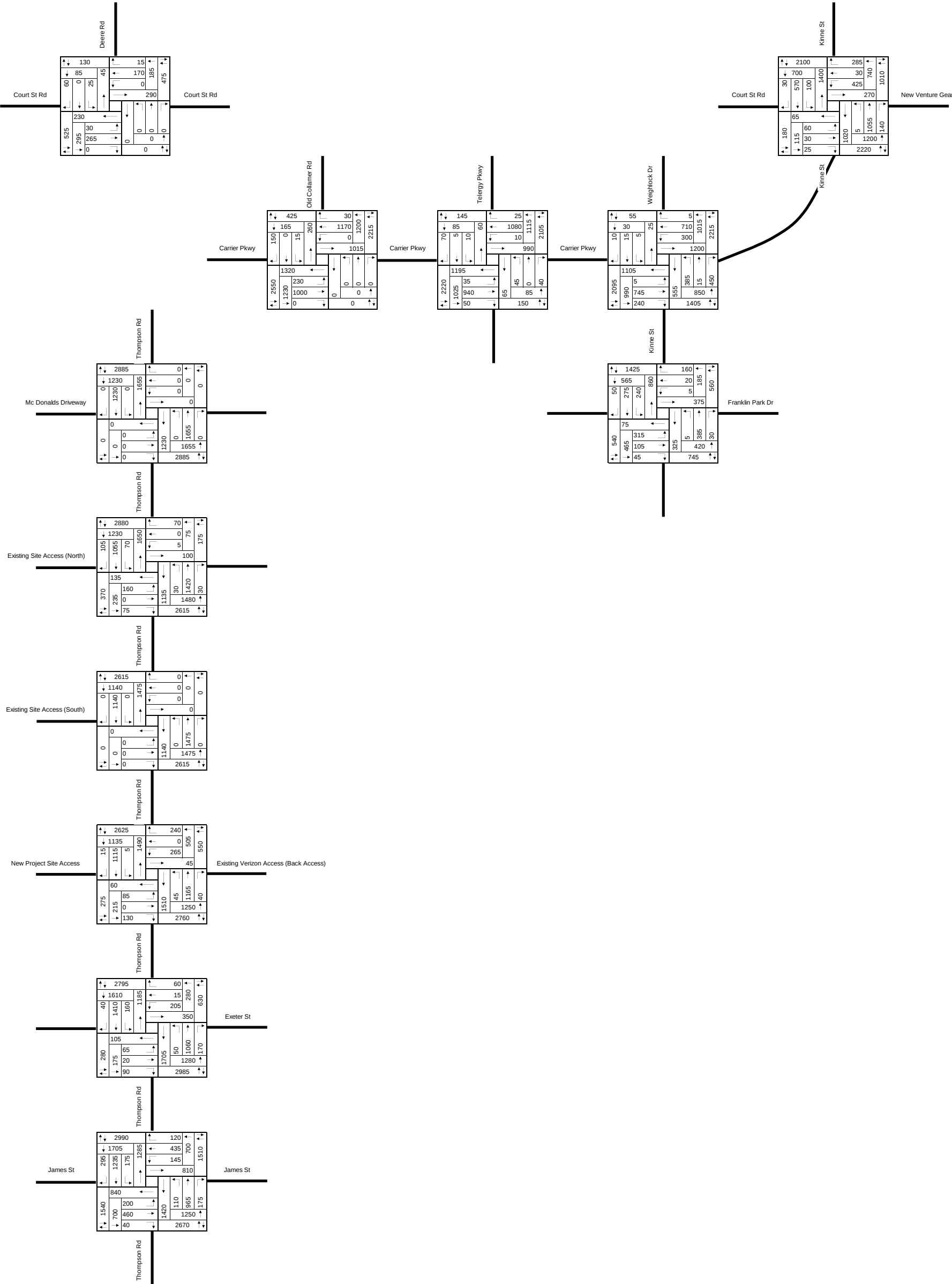




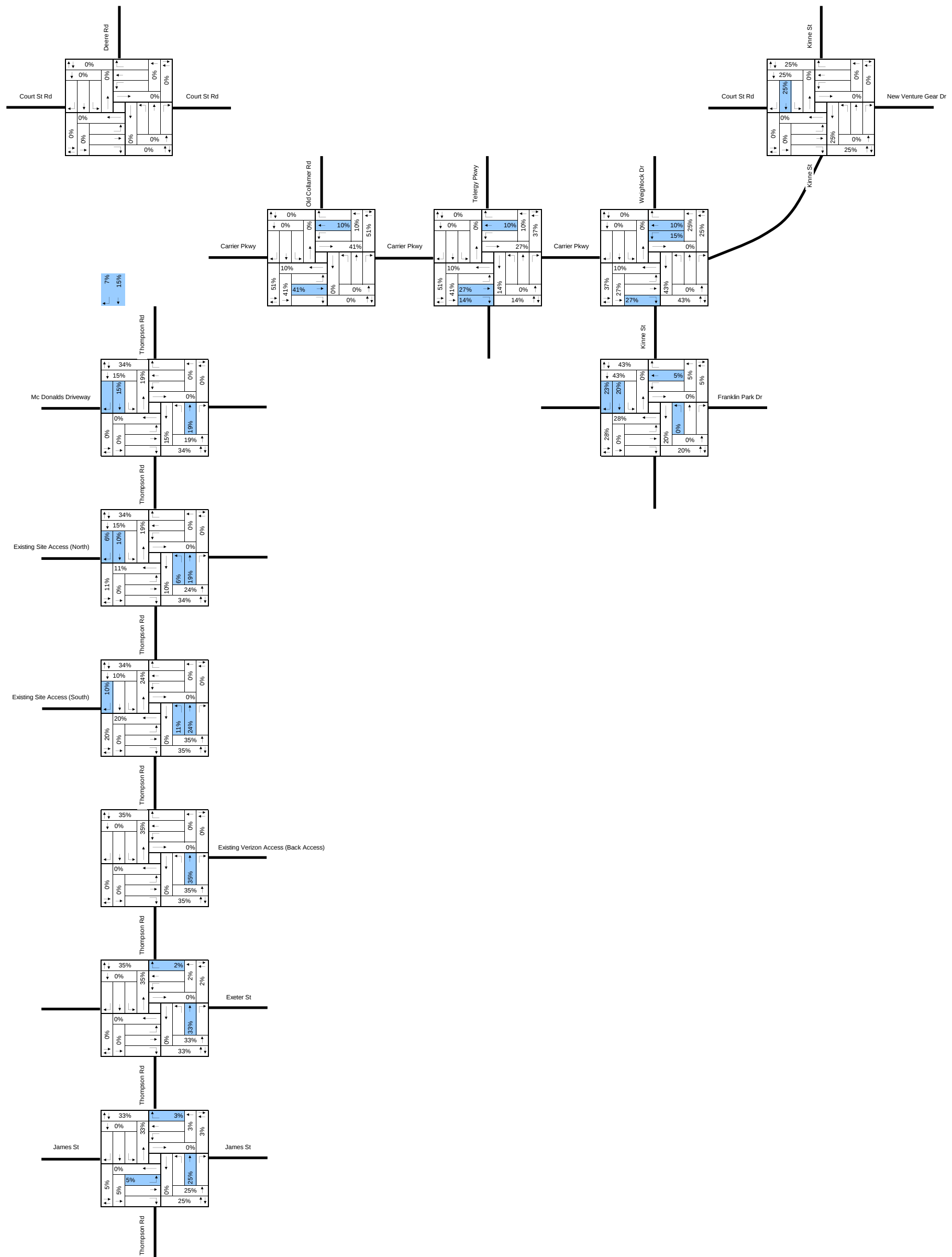


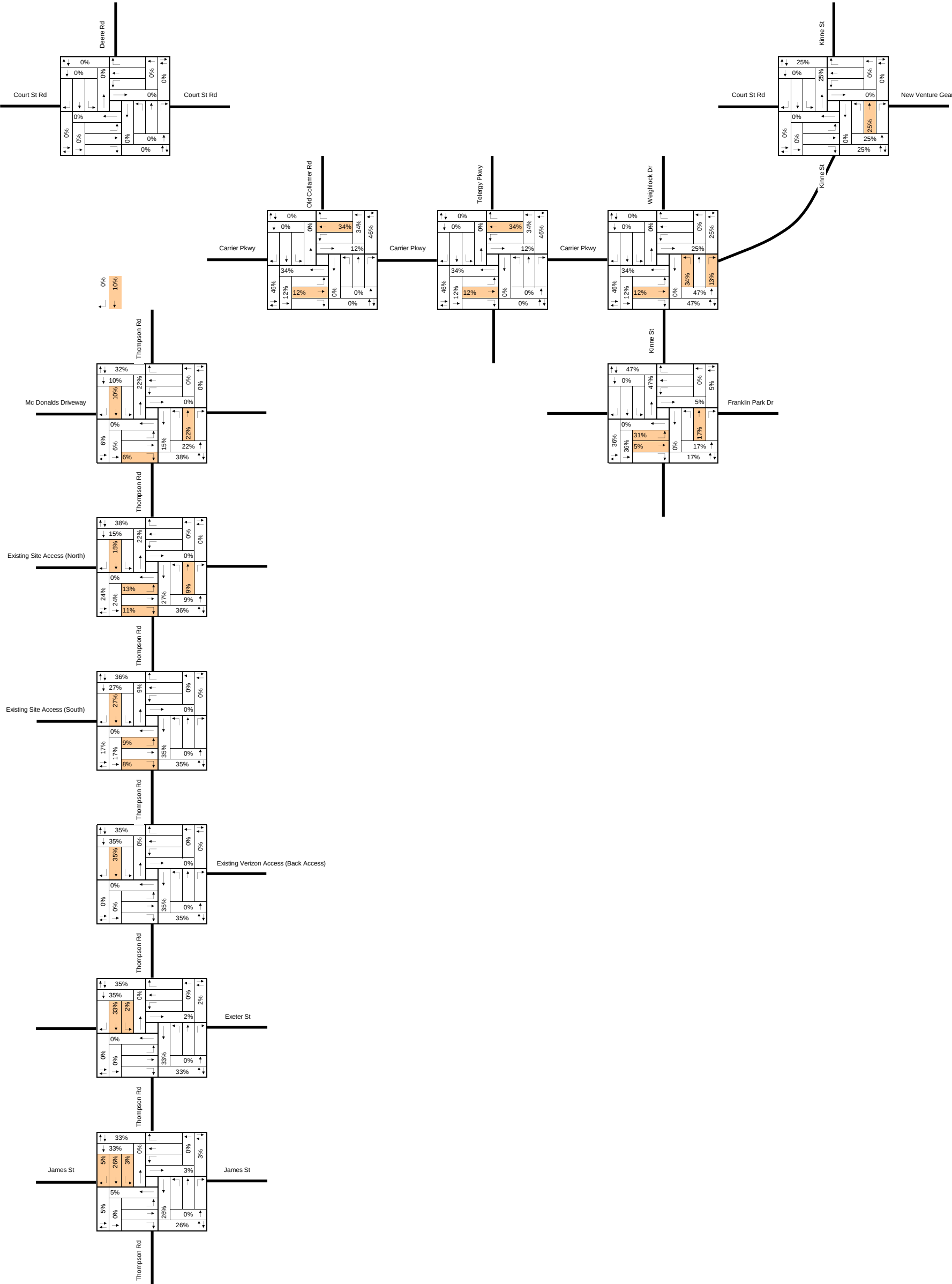


Alternative #5 PM Peak Hour Volumes

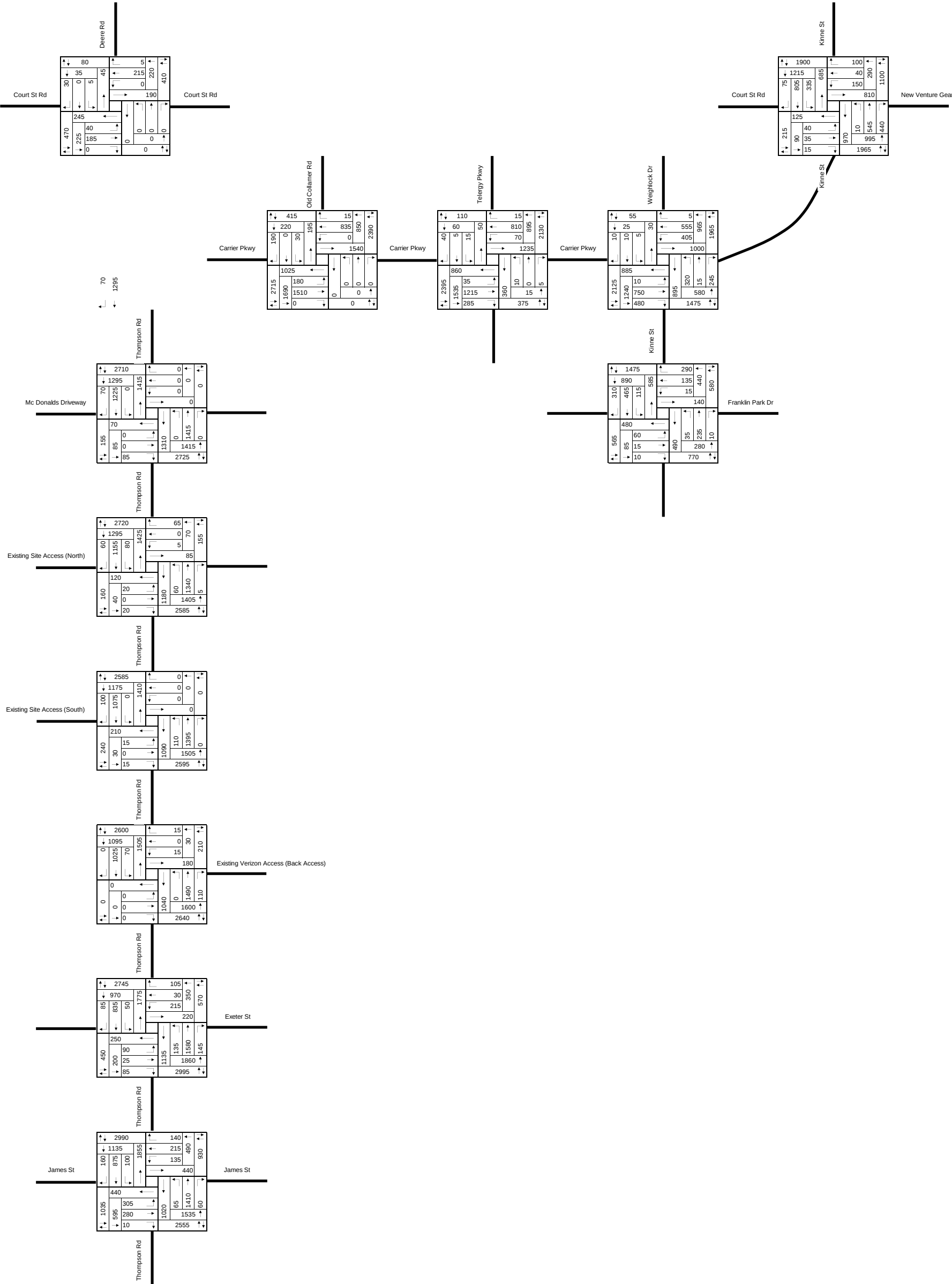


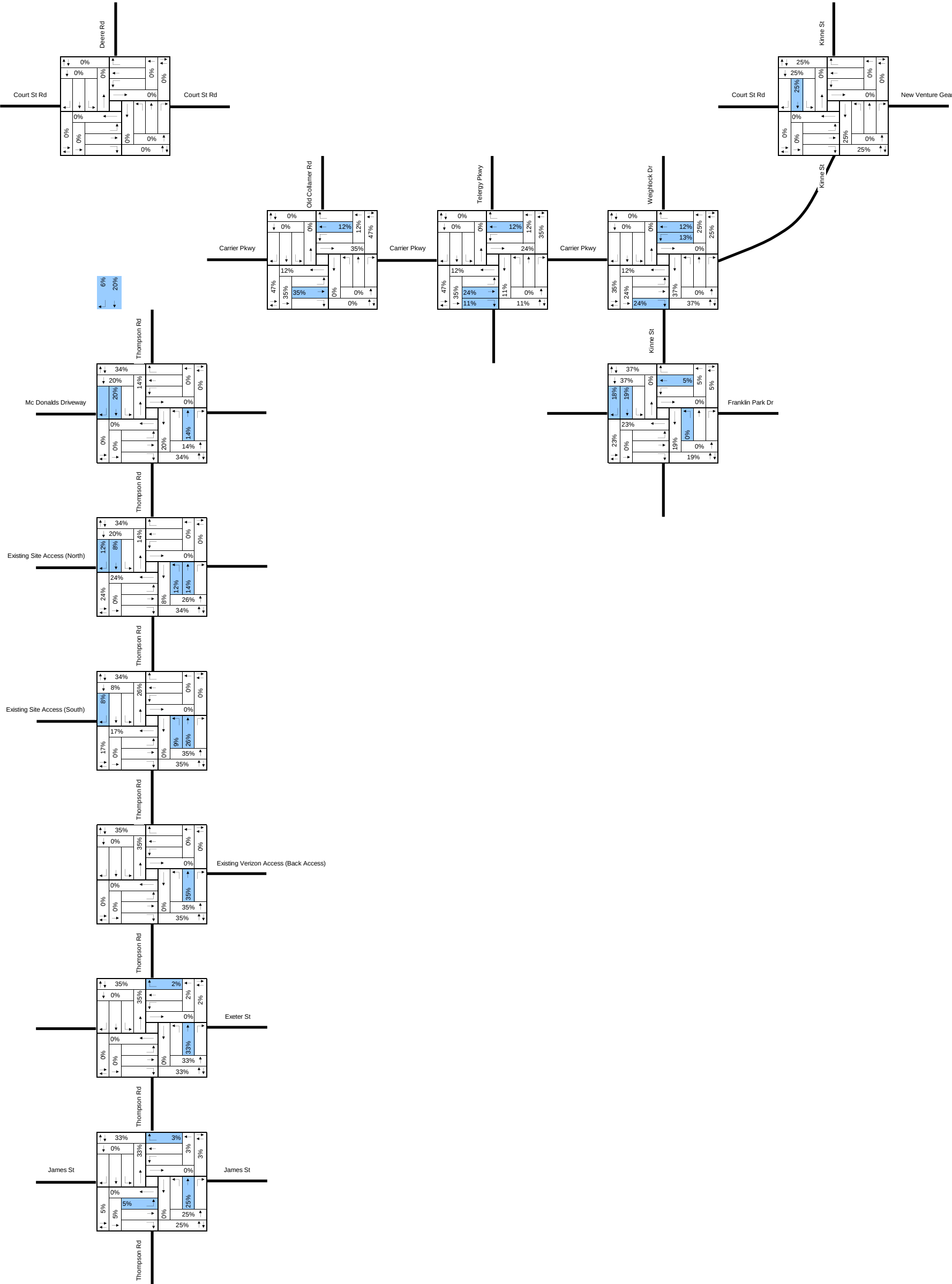
Alternative #1 AM Peak Hour Entering Traffic Distribution

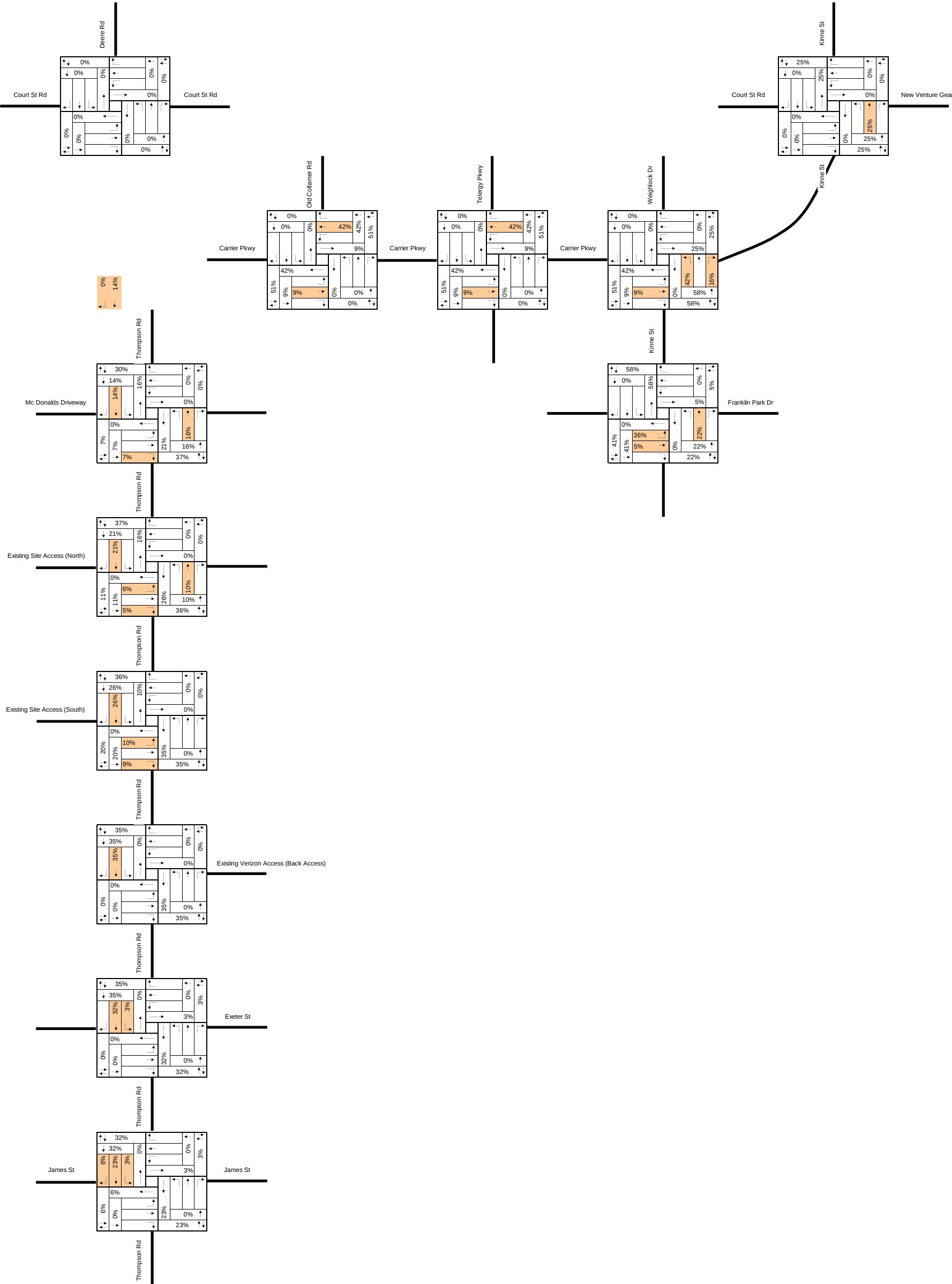




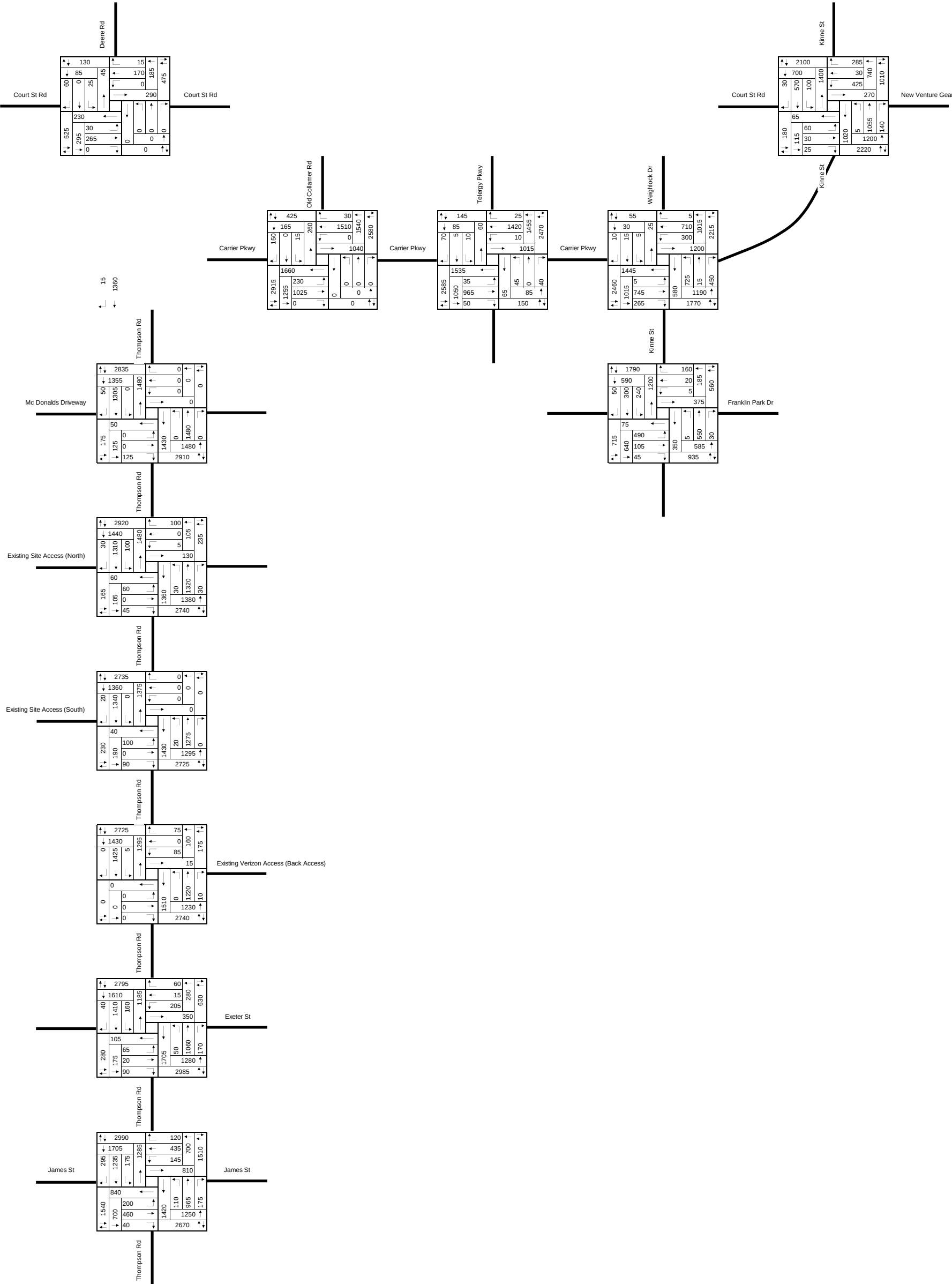
Alternative #1 AM Peak Hour Volumes

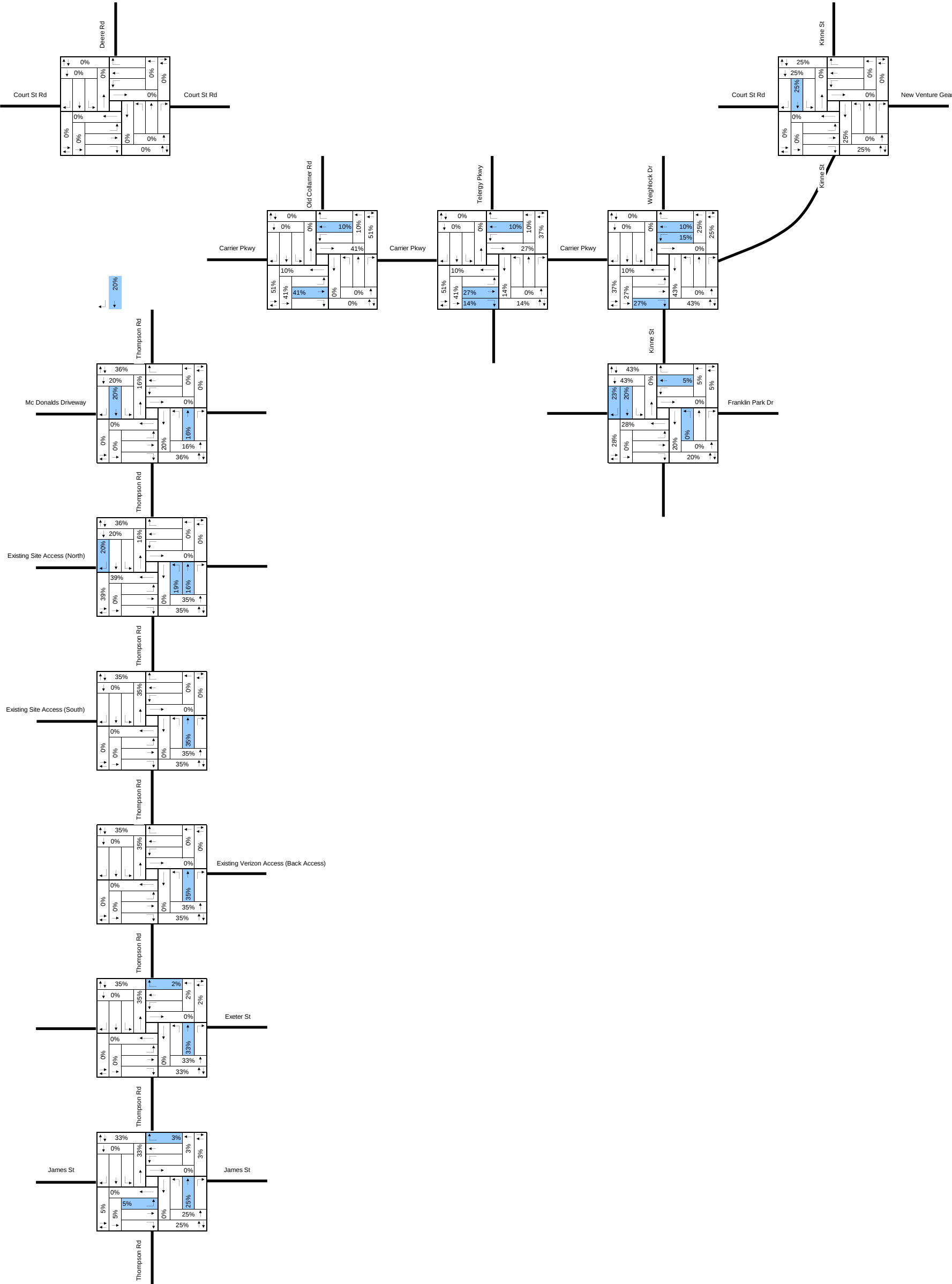


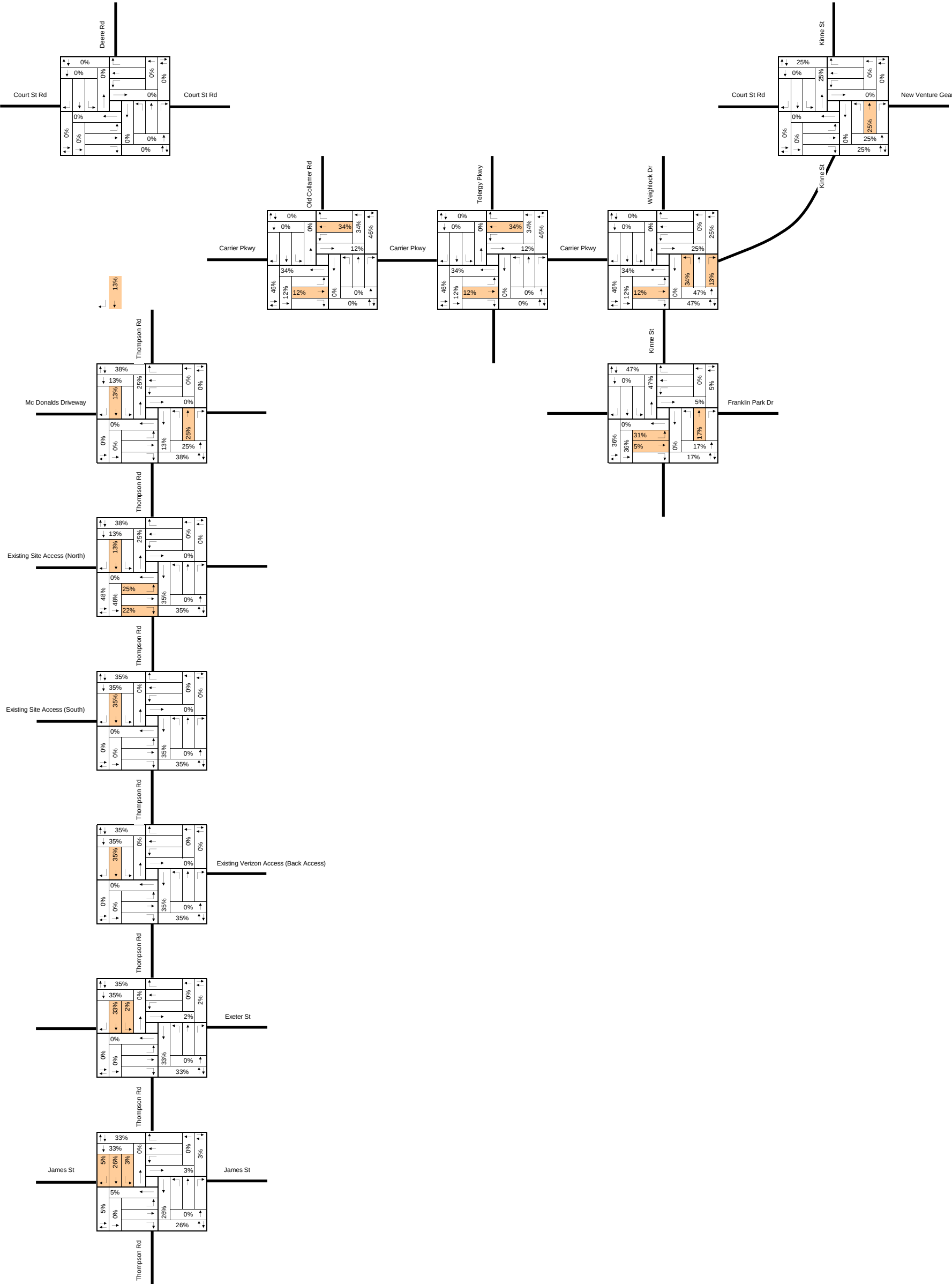




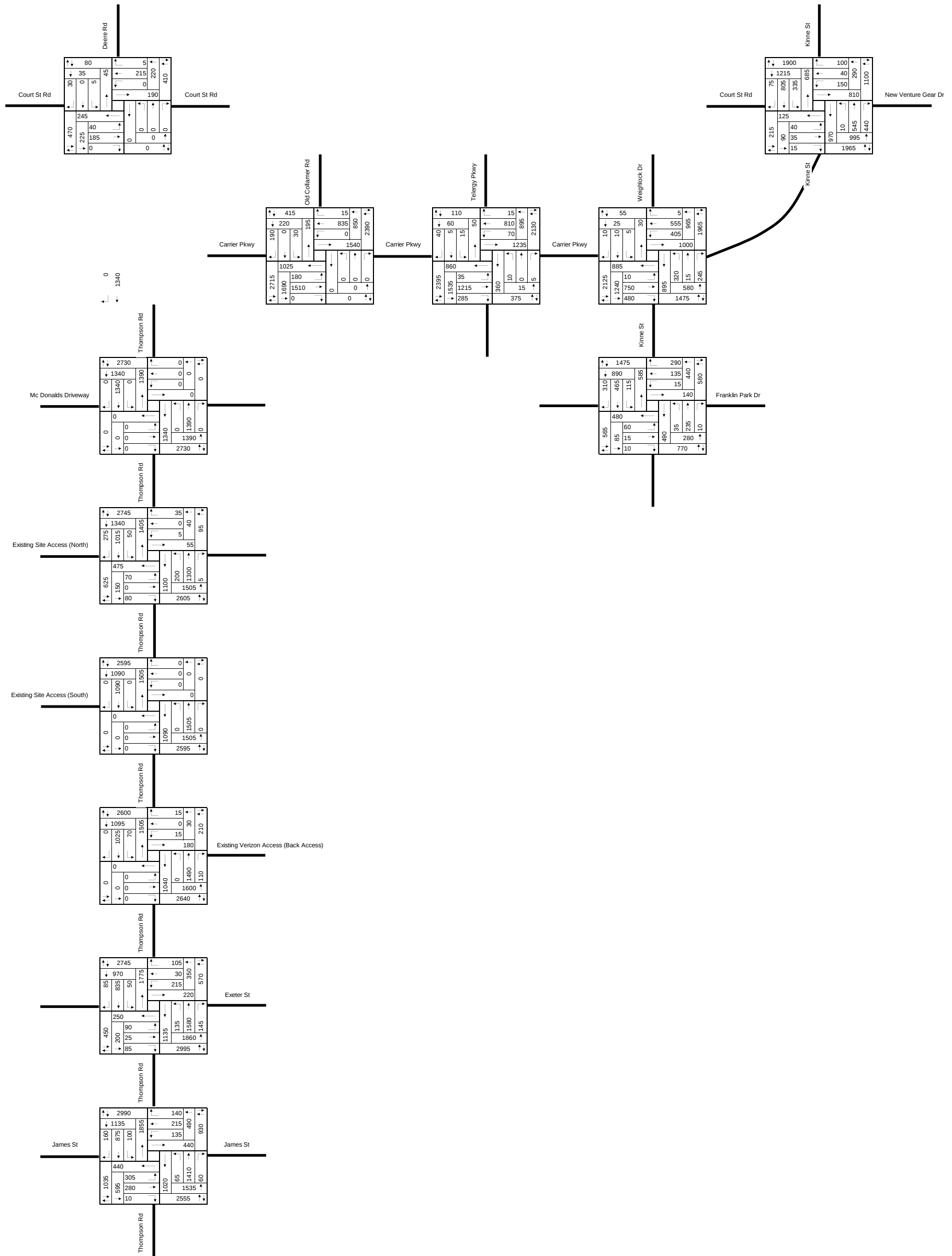
Alternative #1 PM Peak Hour Volumes

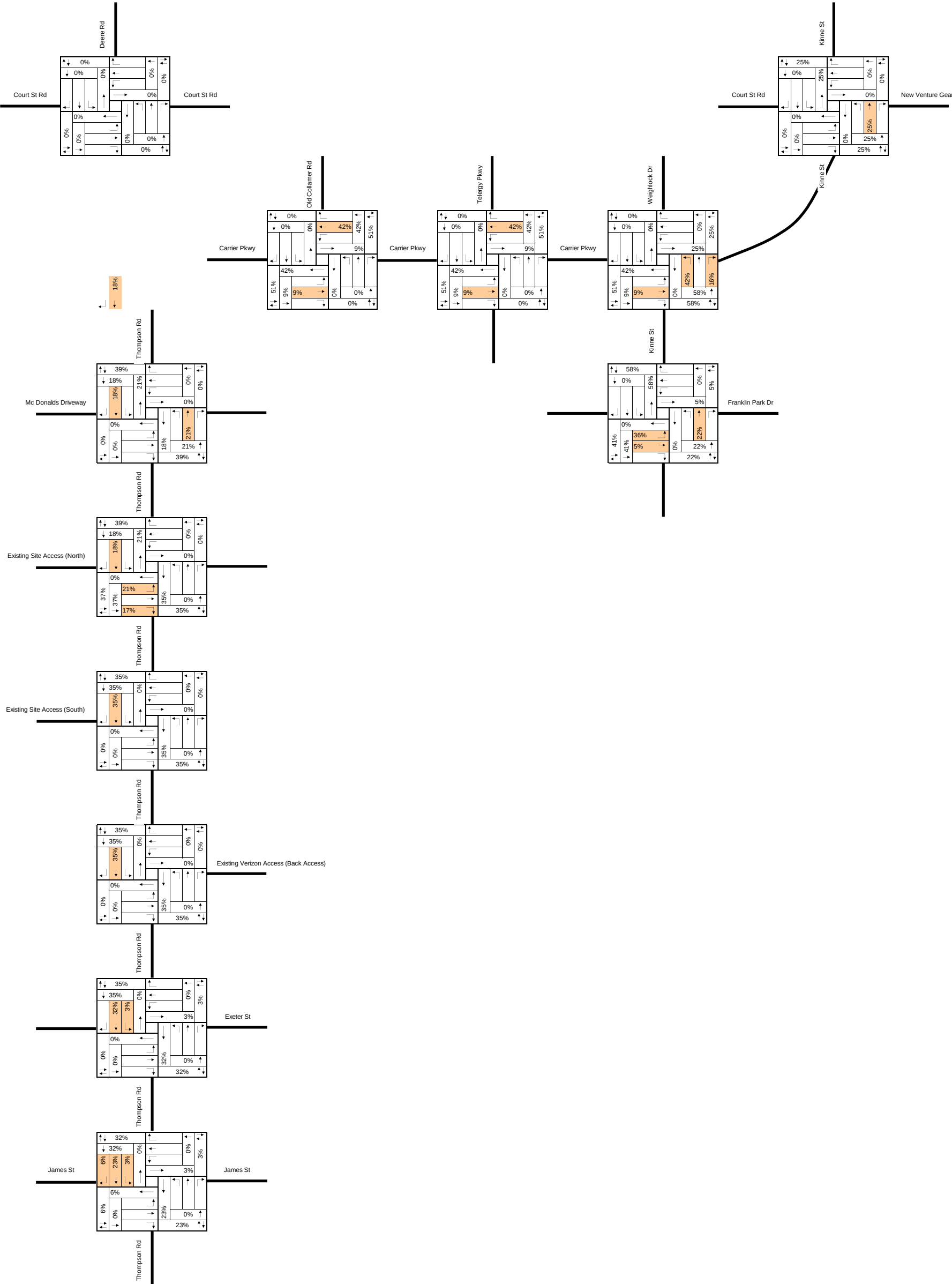


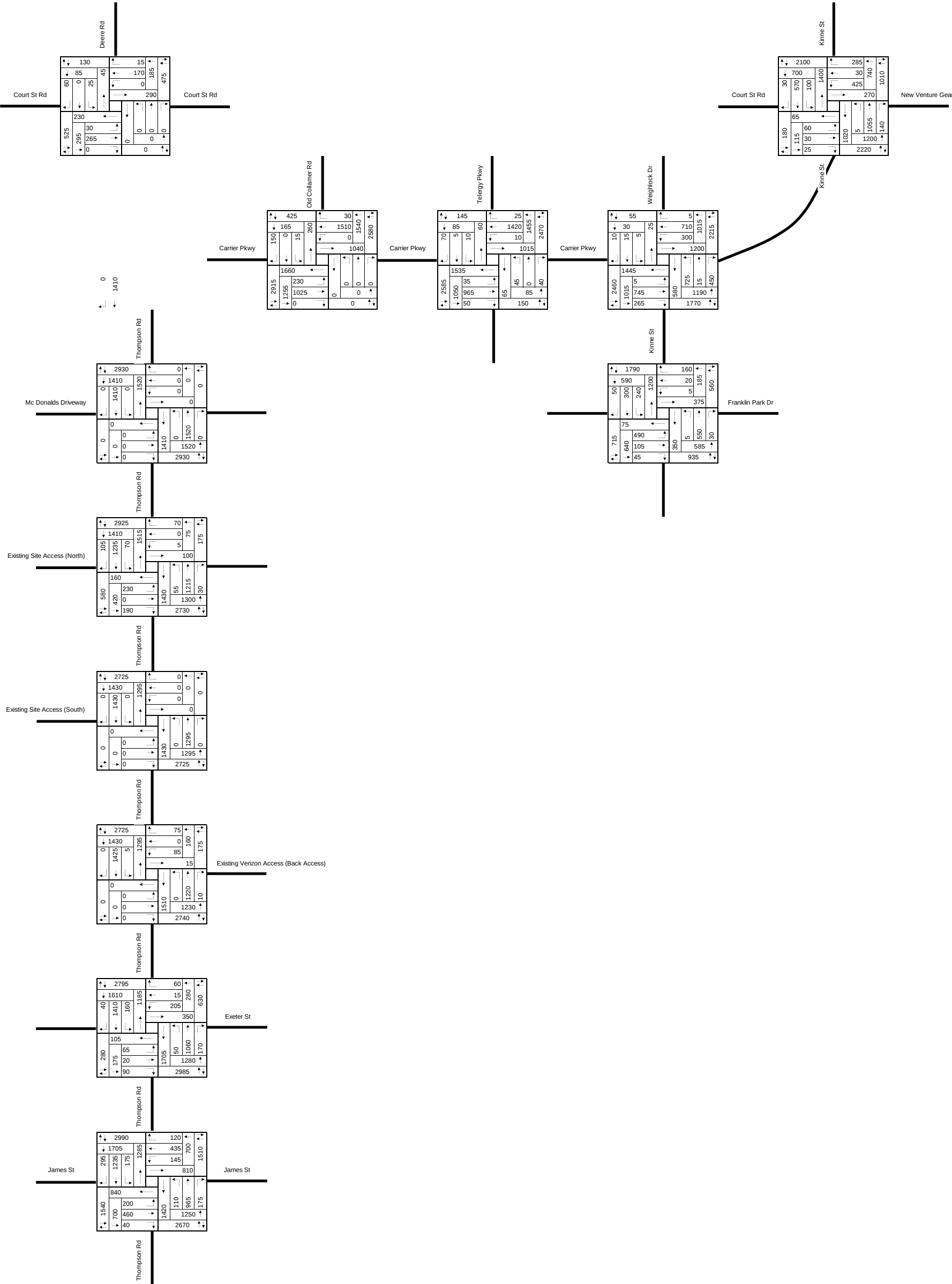


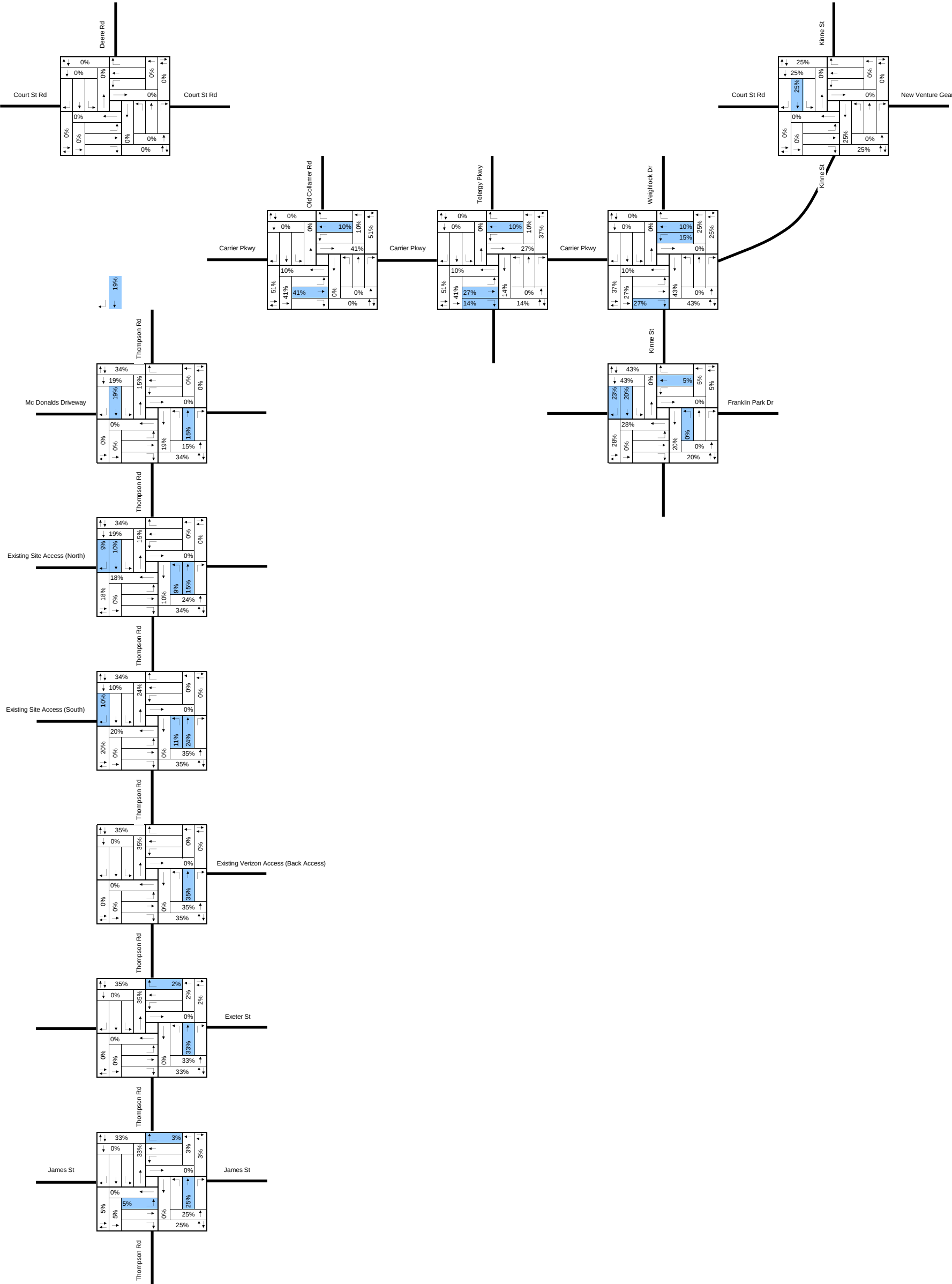


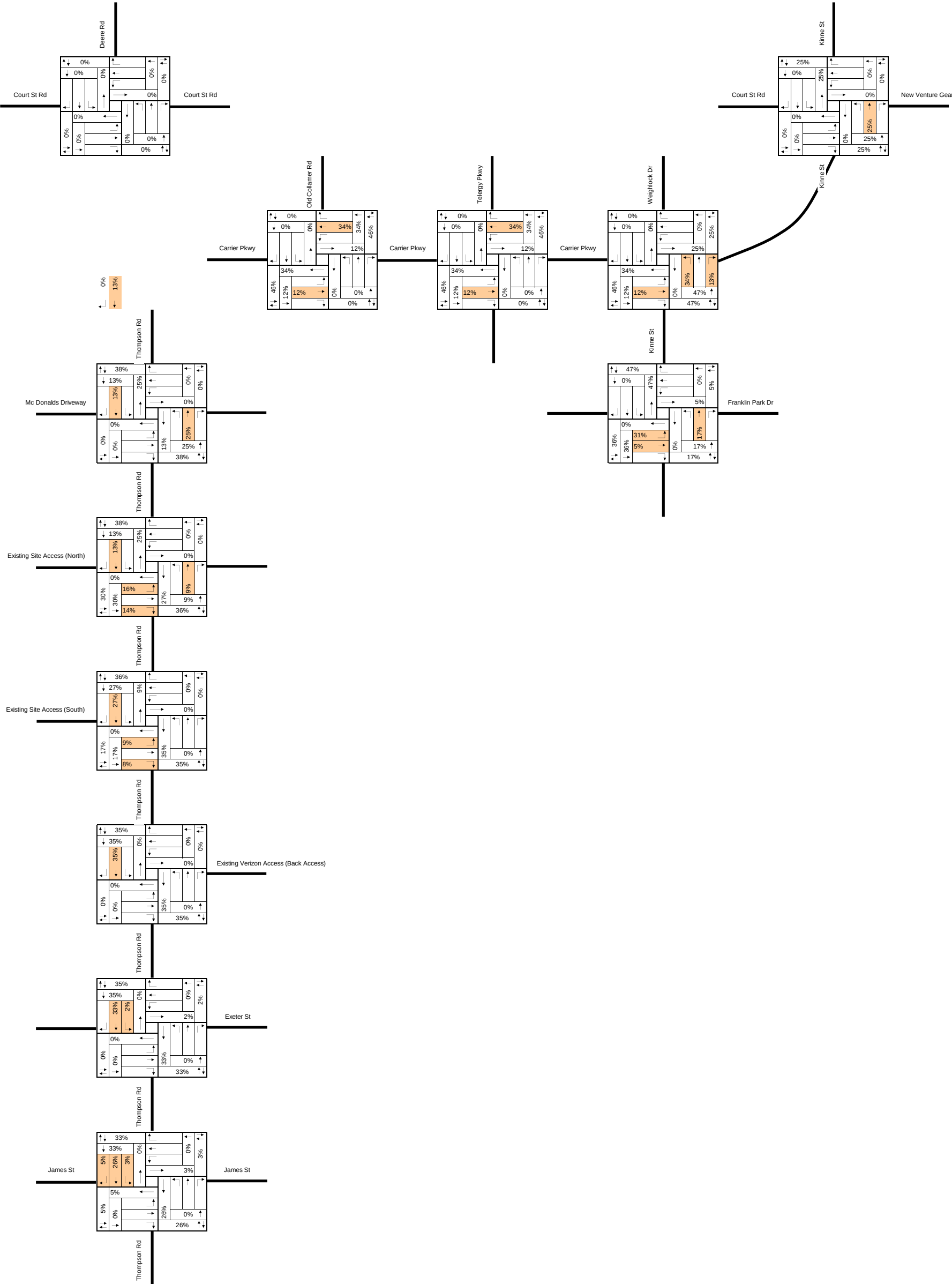
Alternative #2 AM Peak Hour Volumes



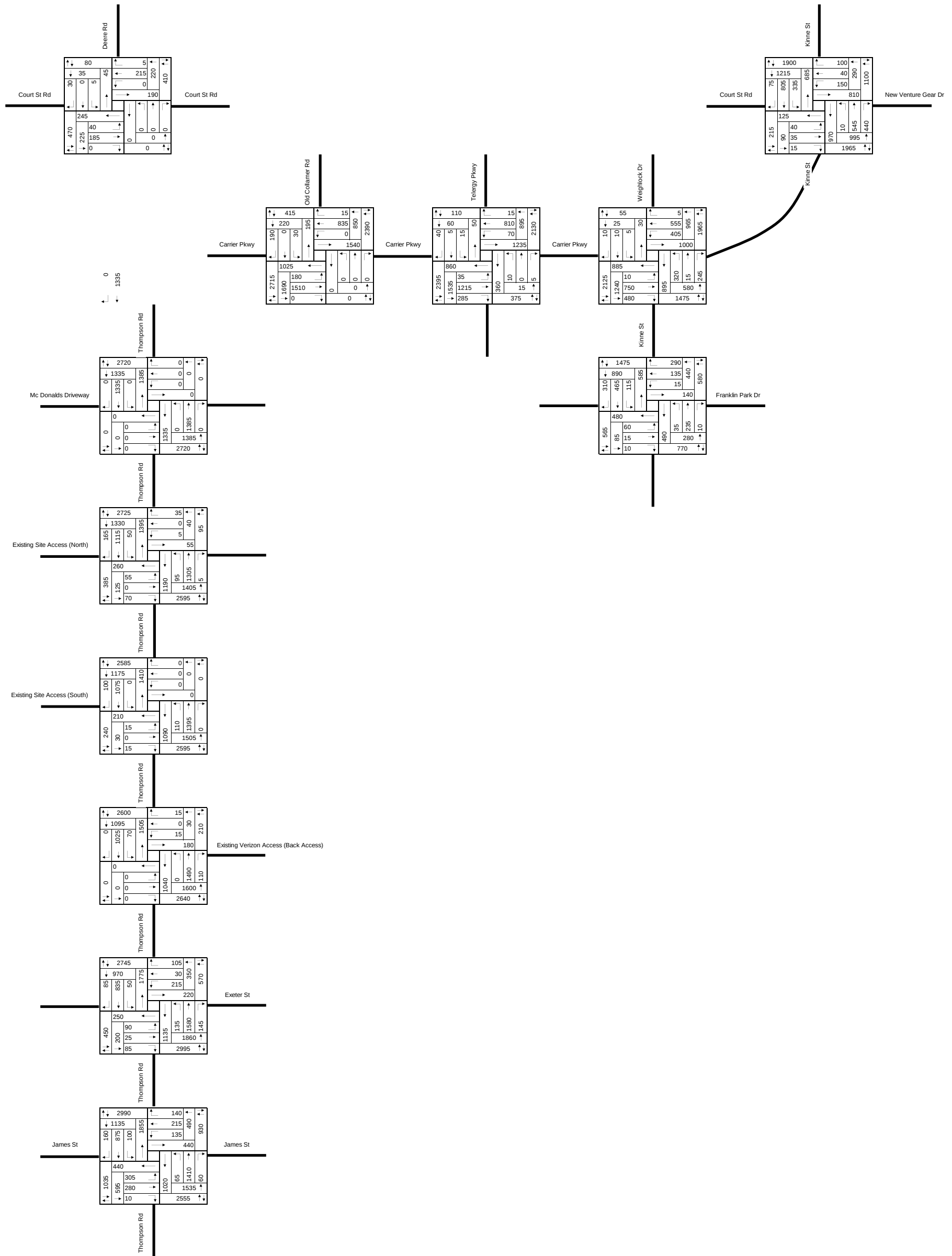


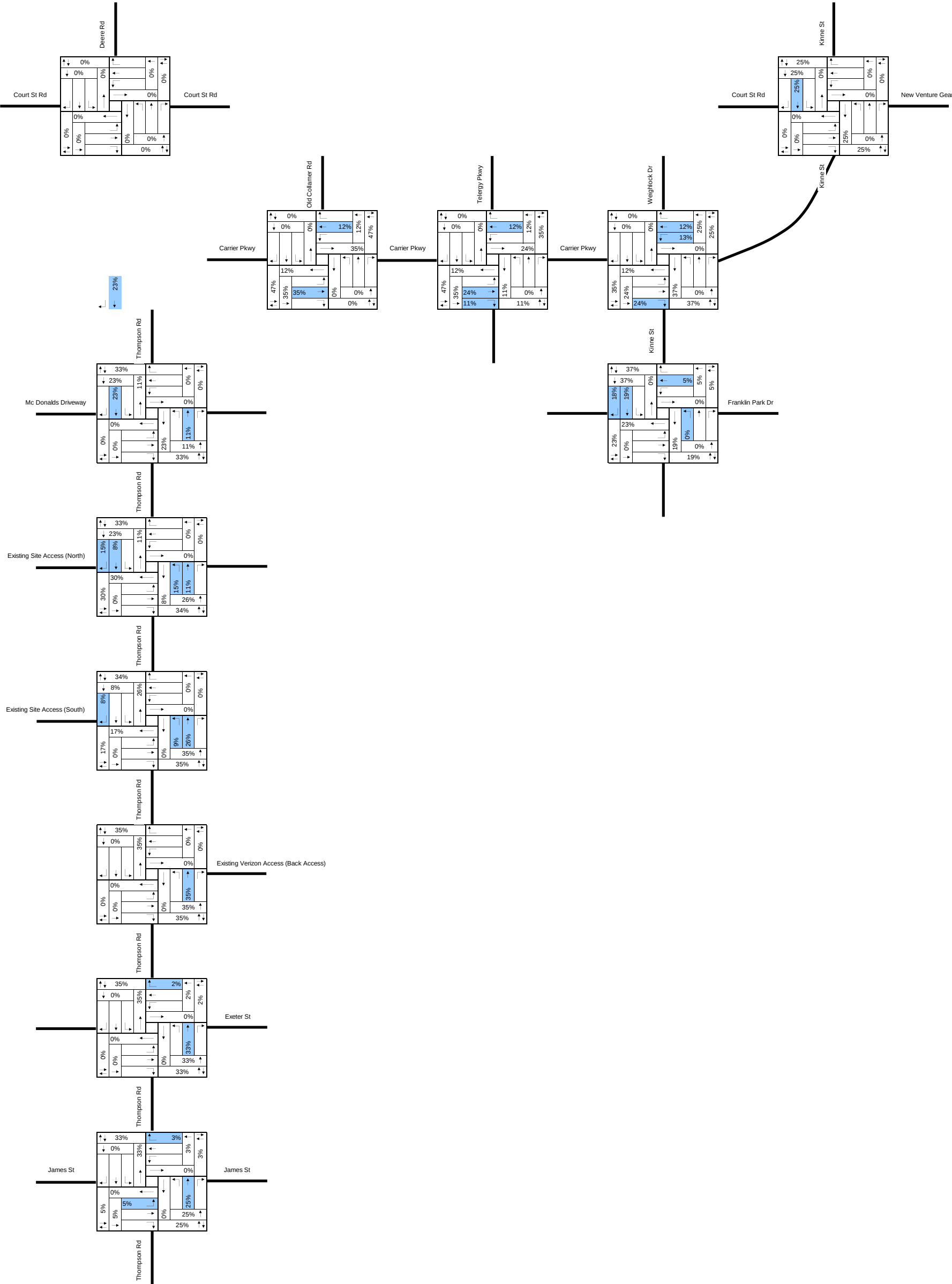


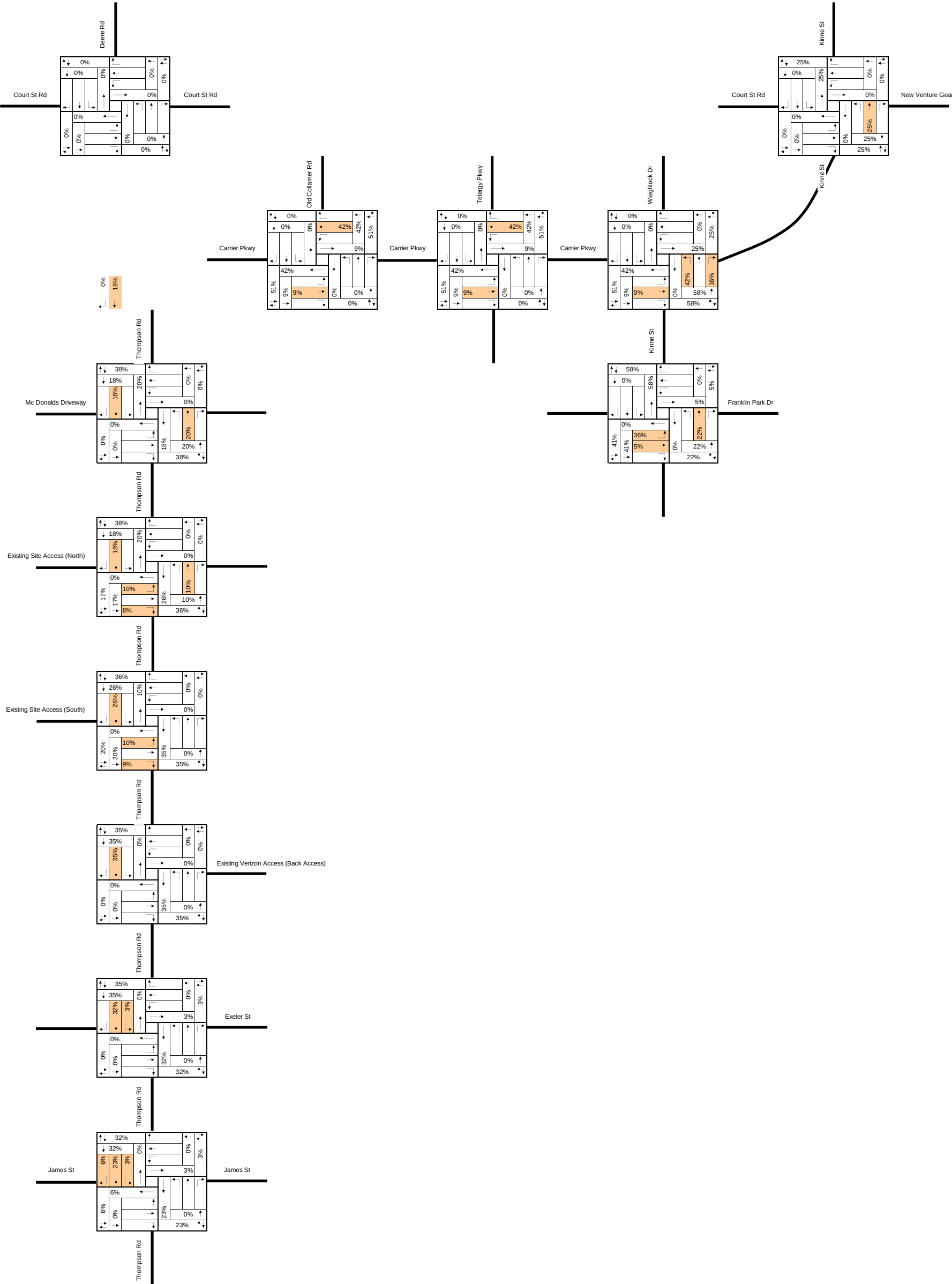




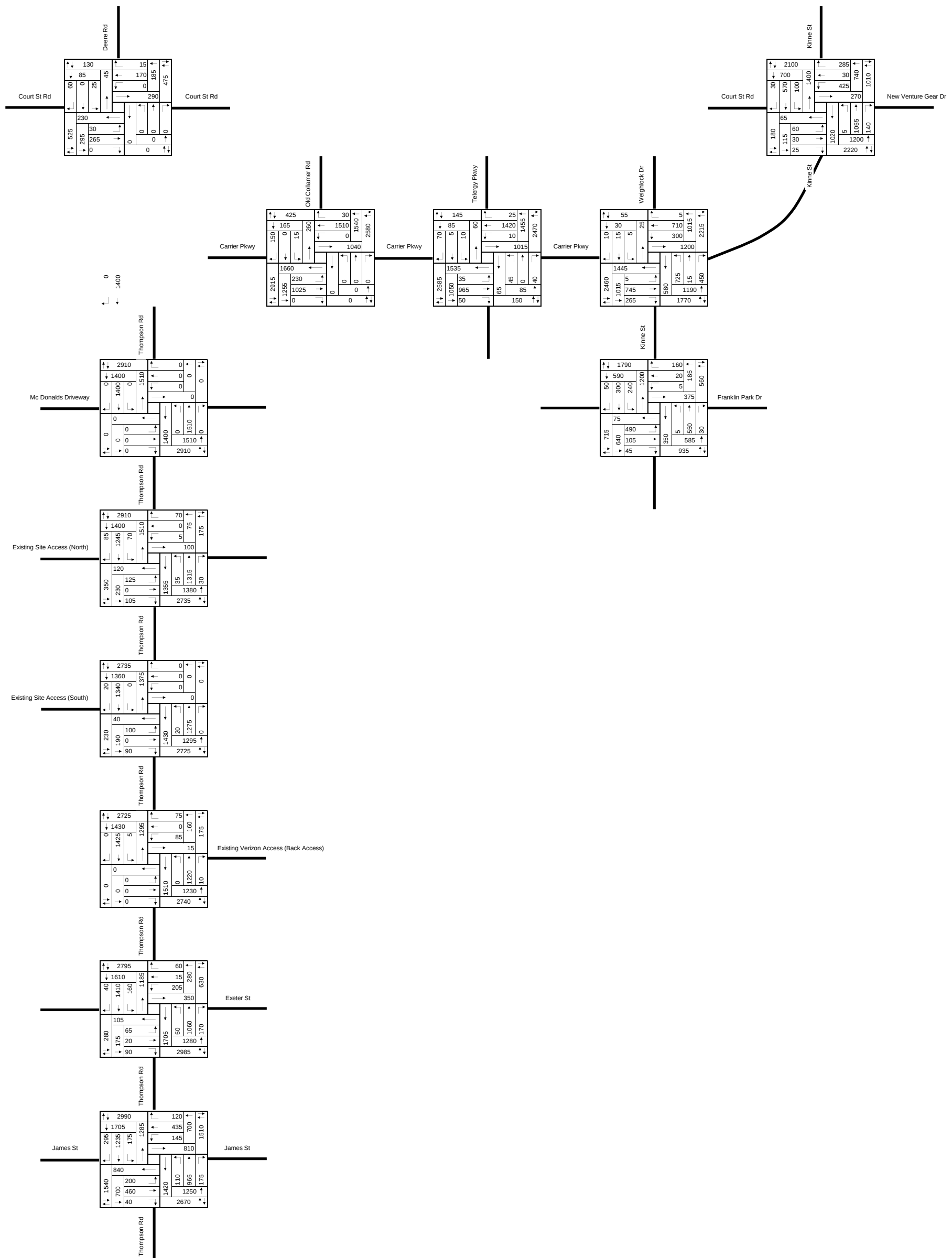
Alternative #3 AM Peak Hour Volumes

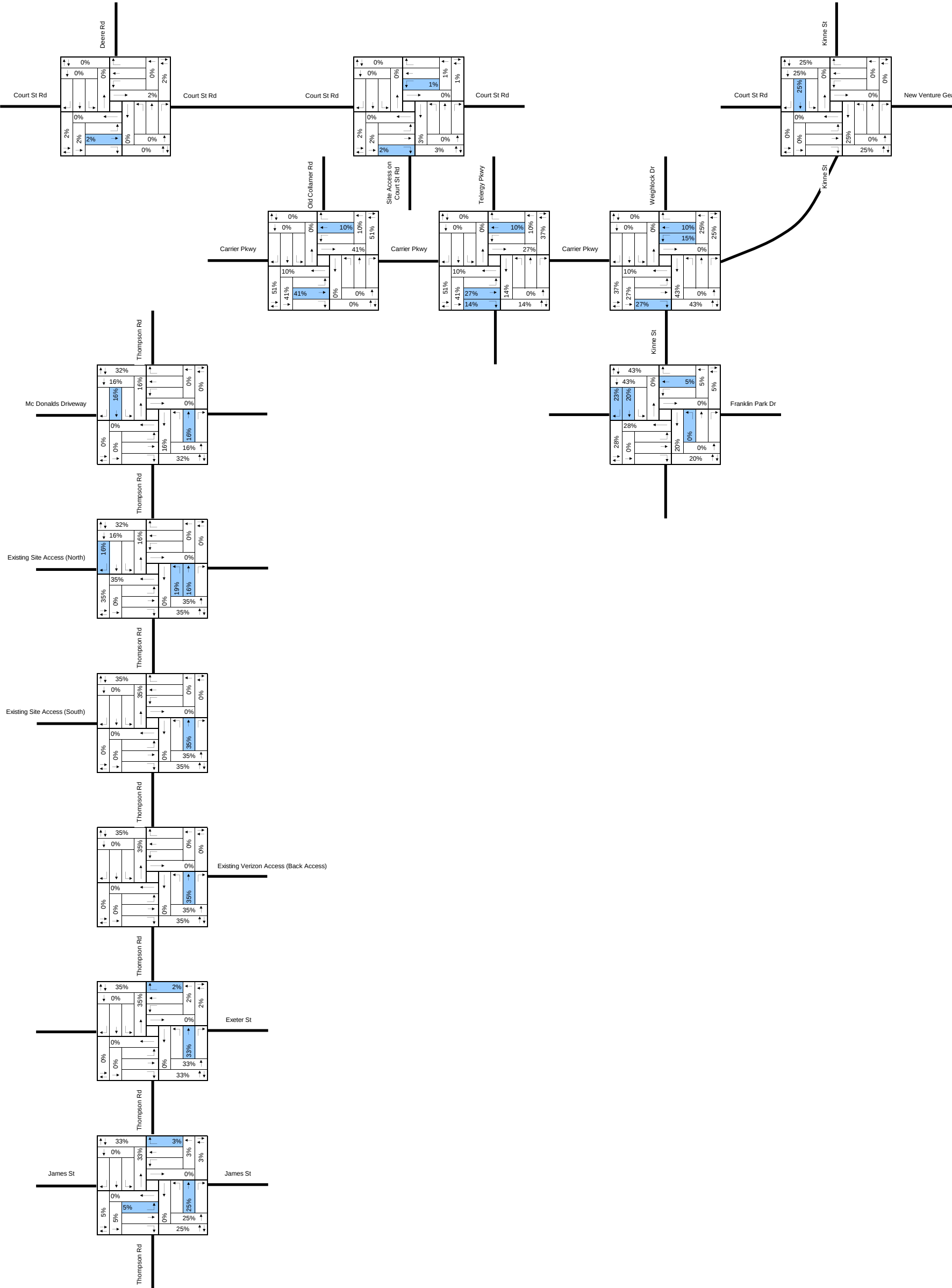


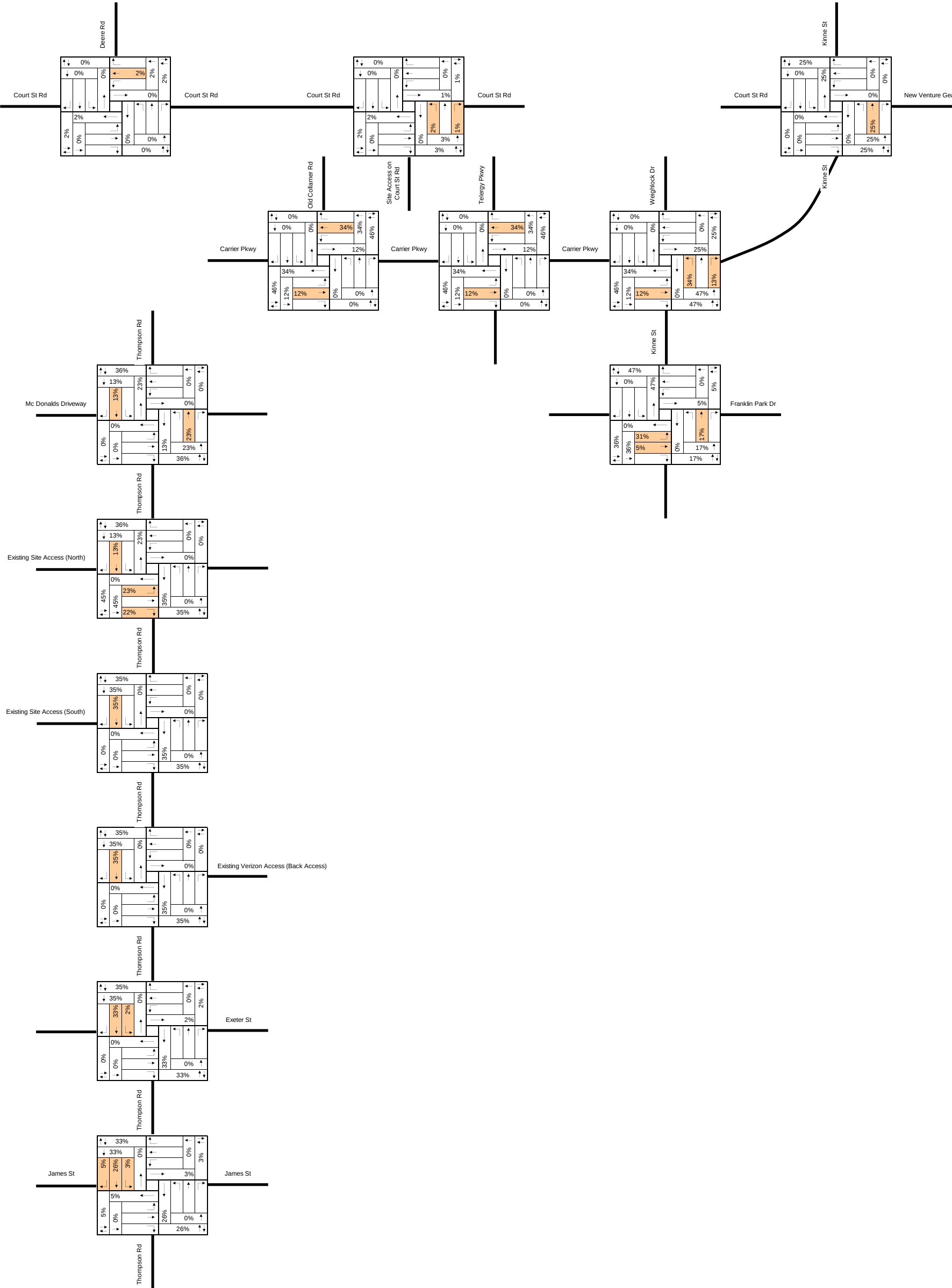


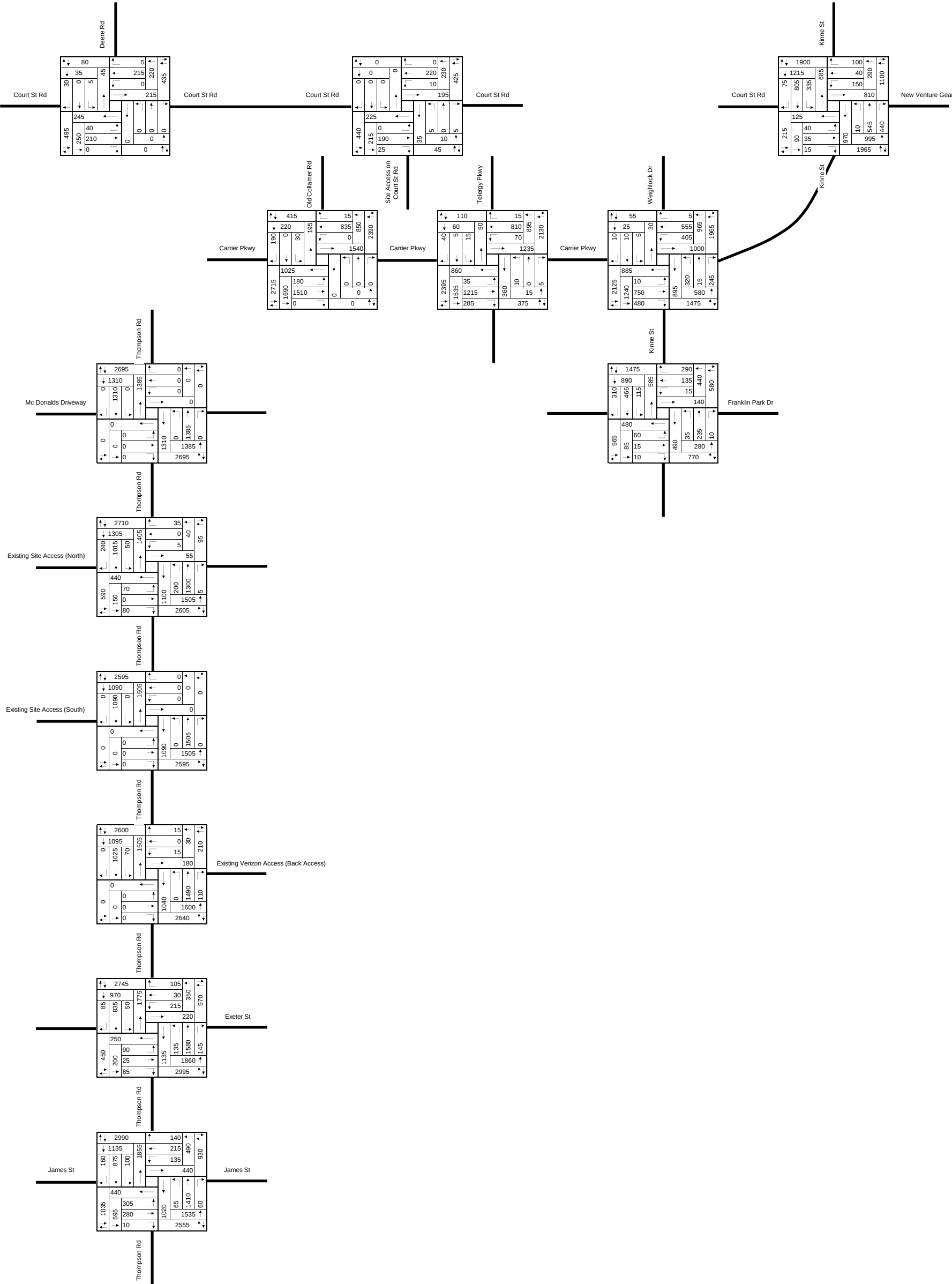


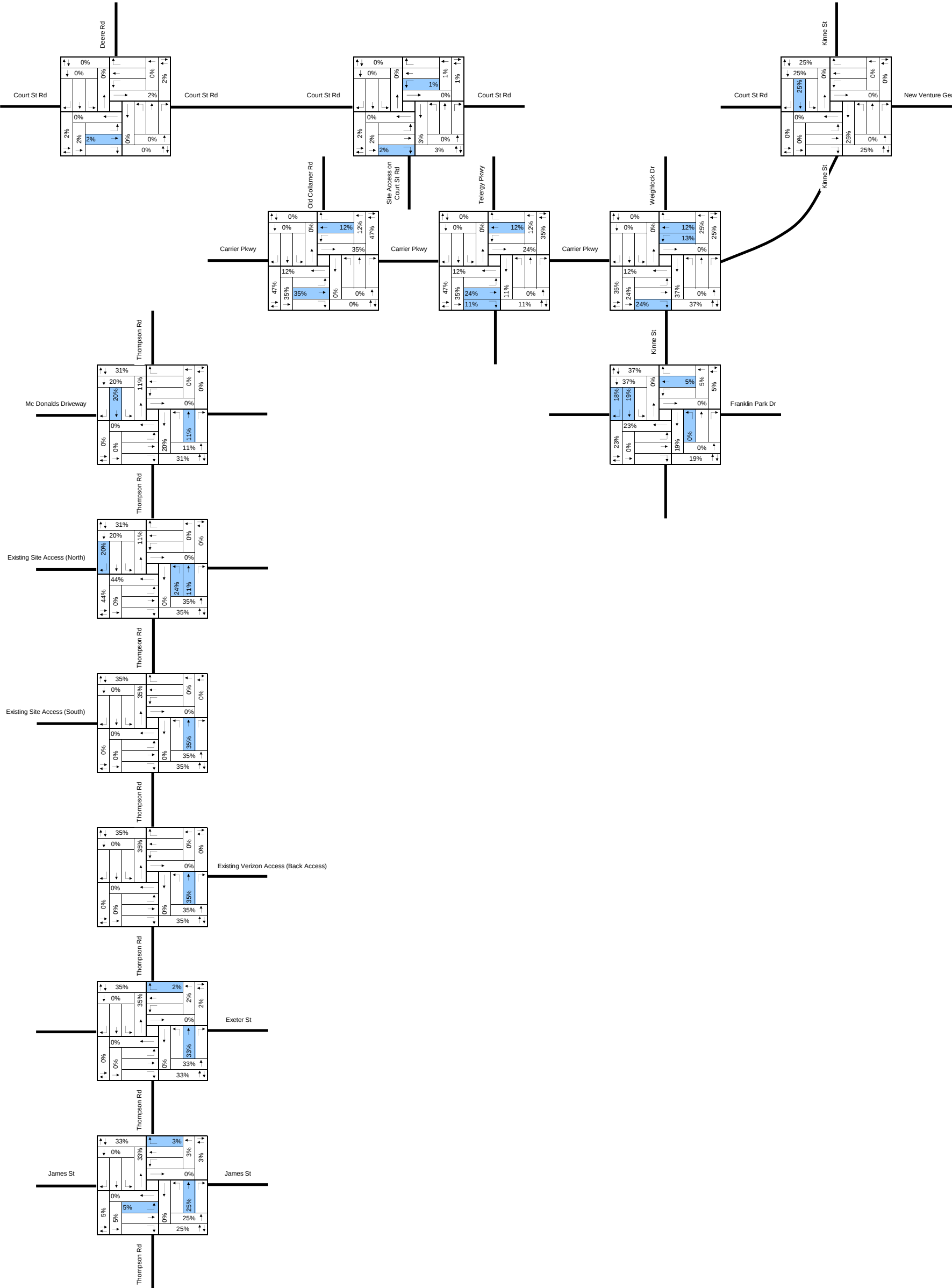
Alternative #3 PM Peak Hour Volumes

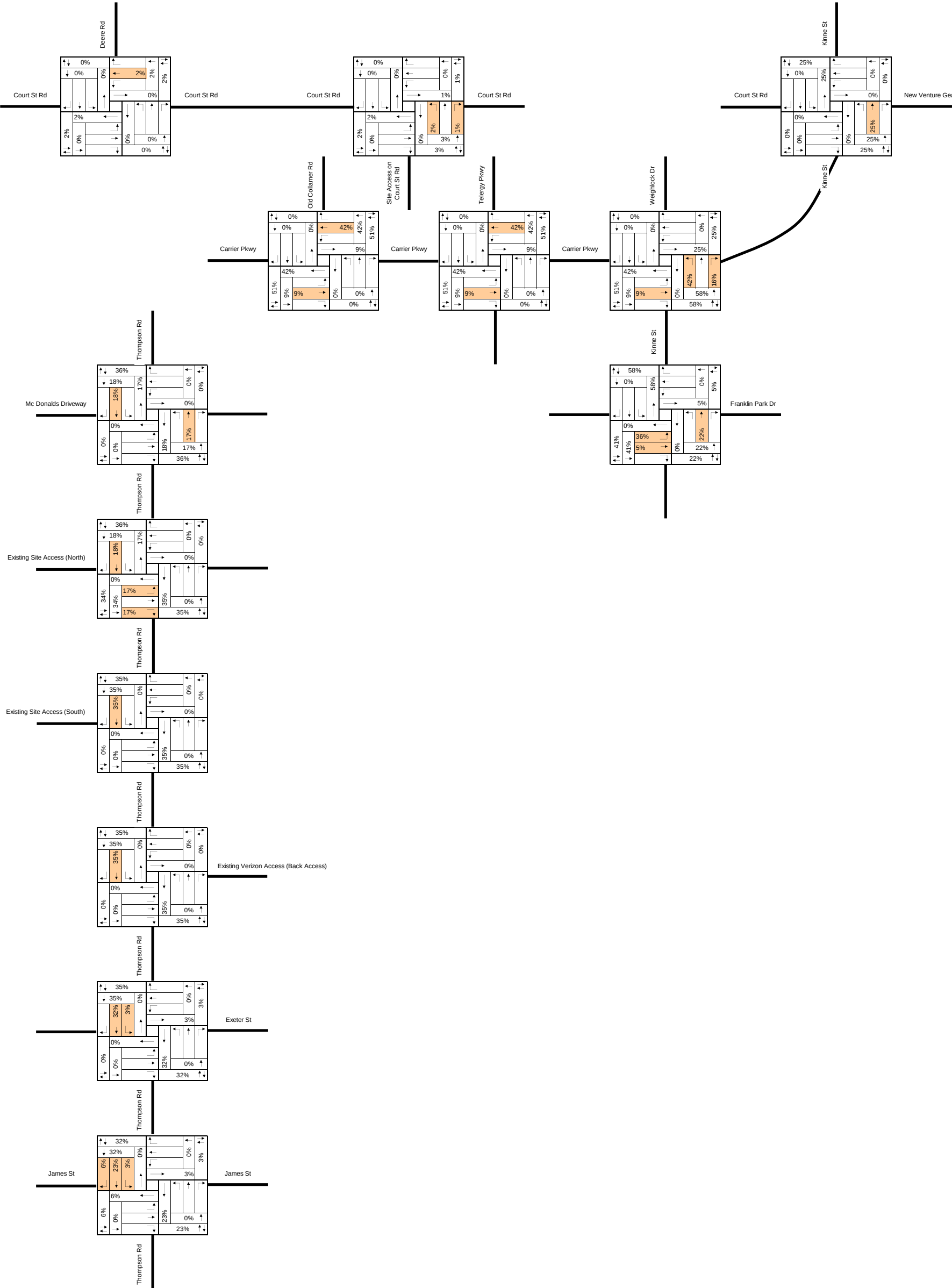


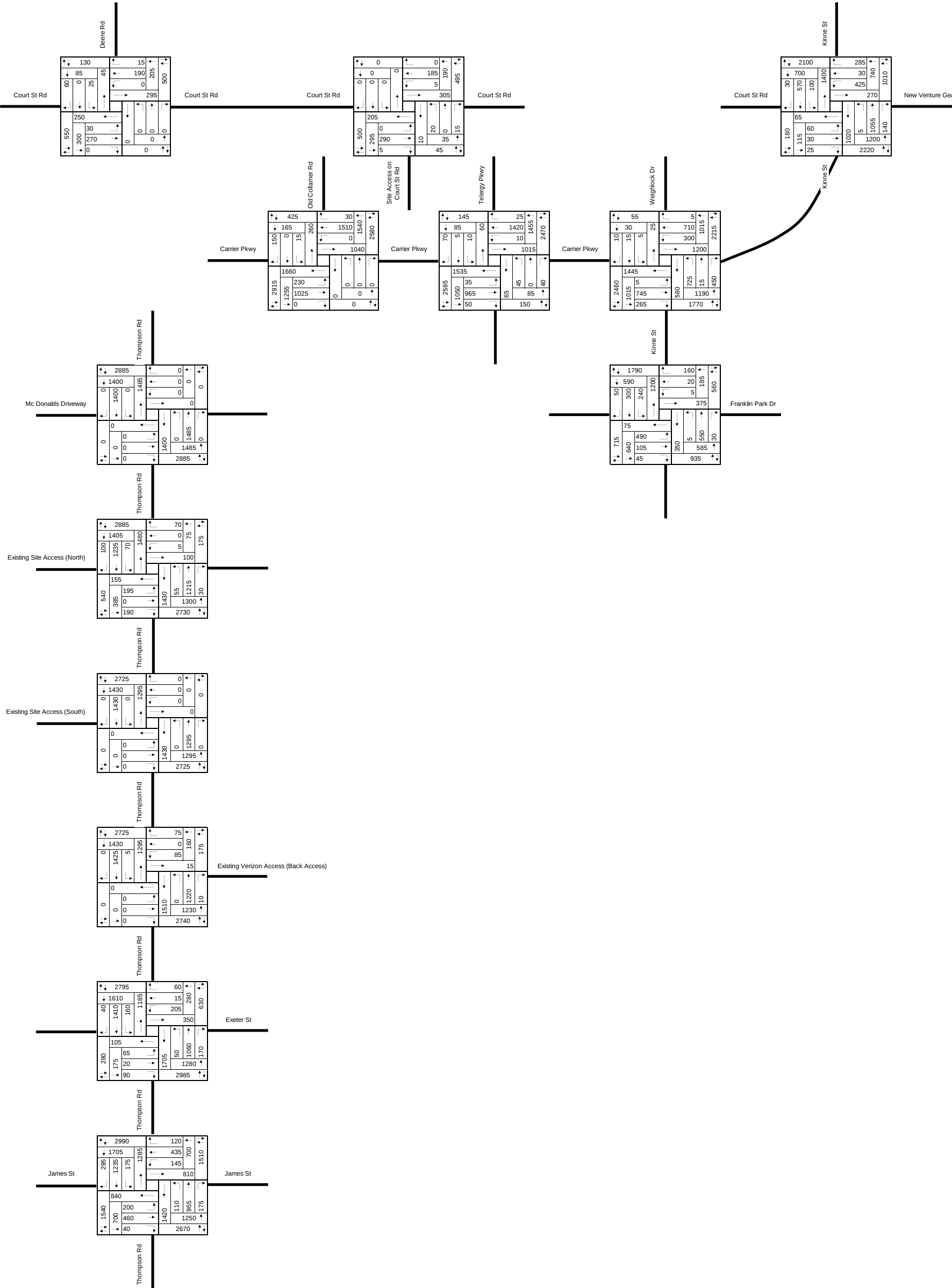


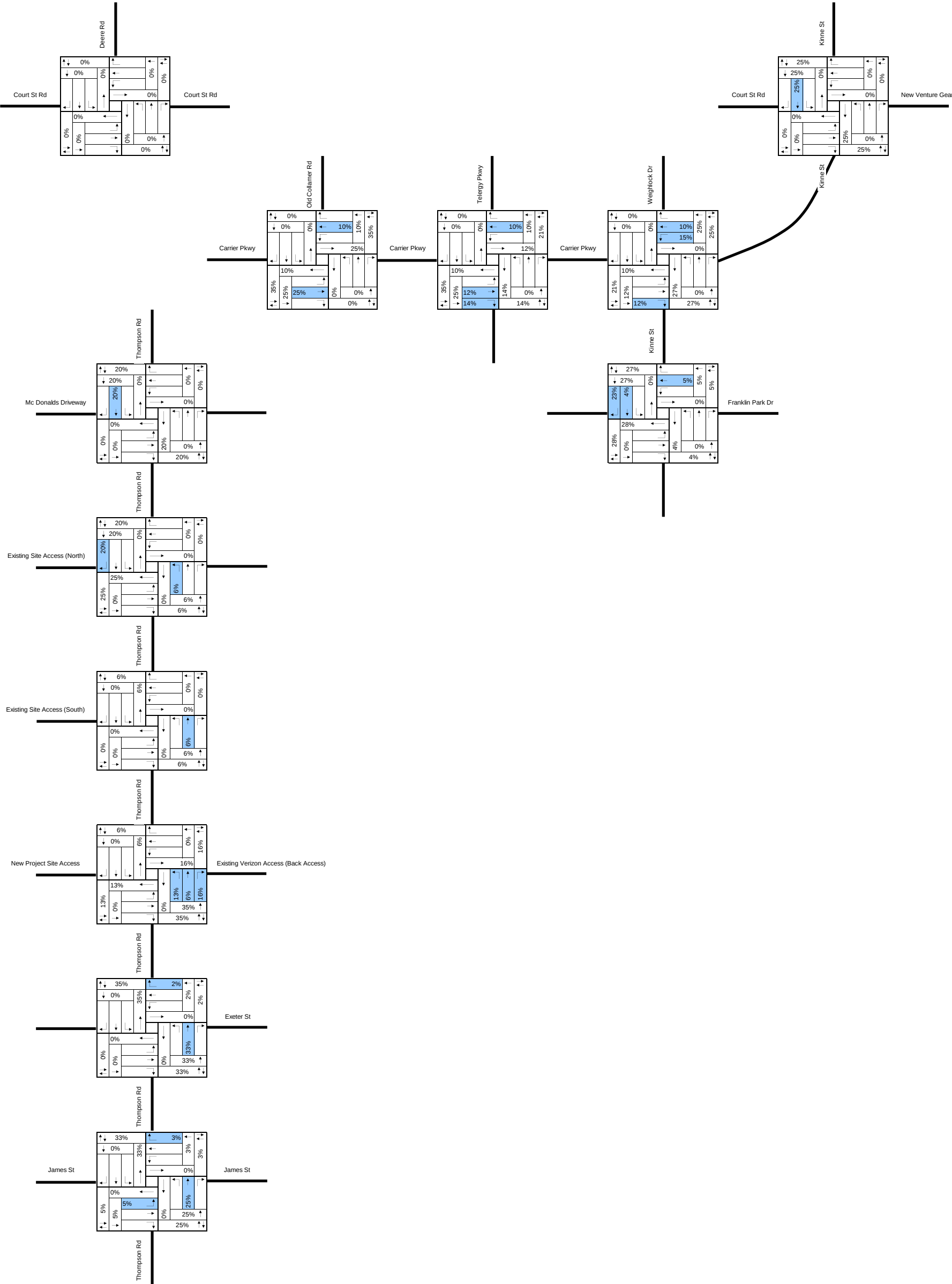


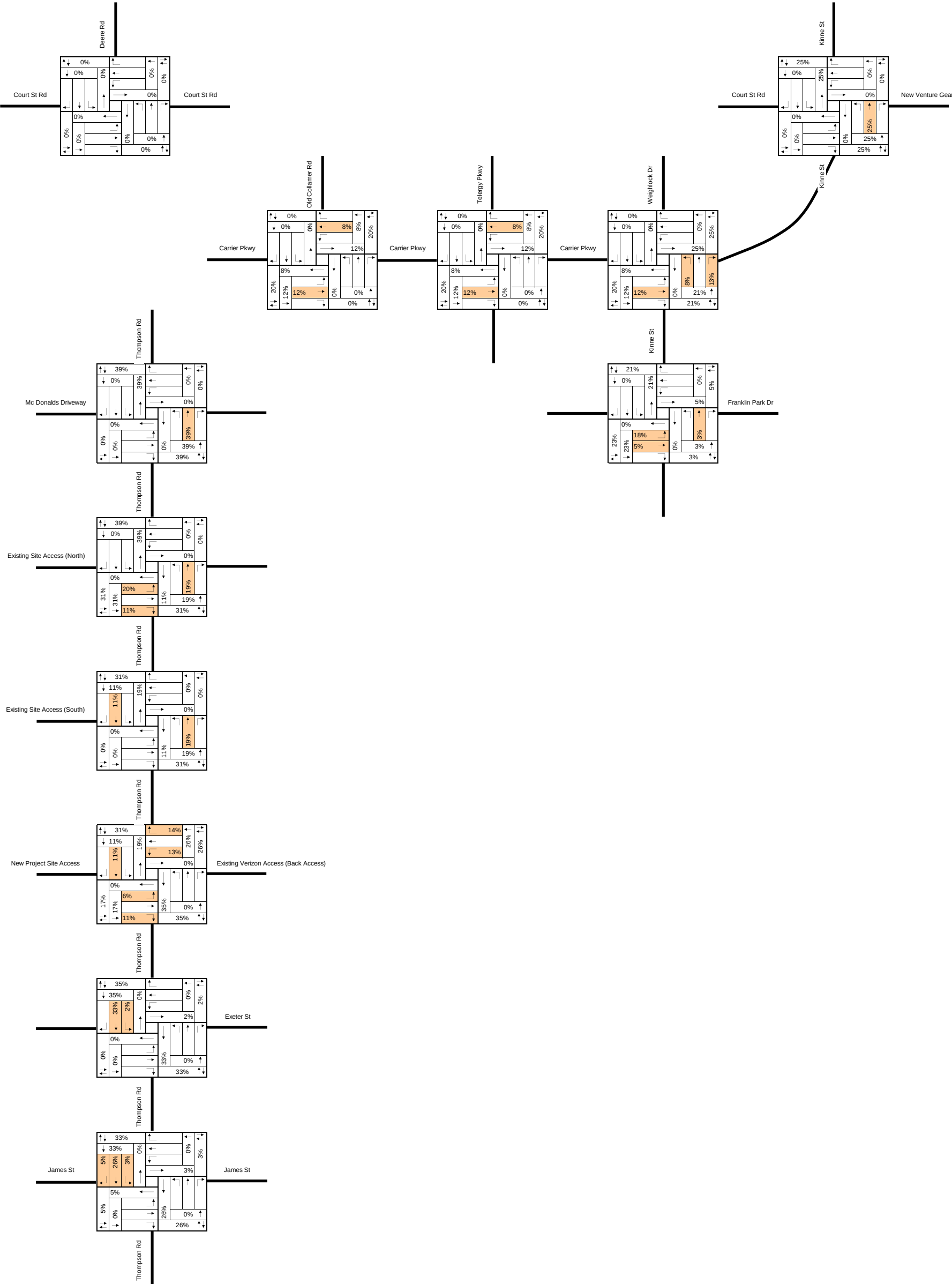


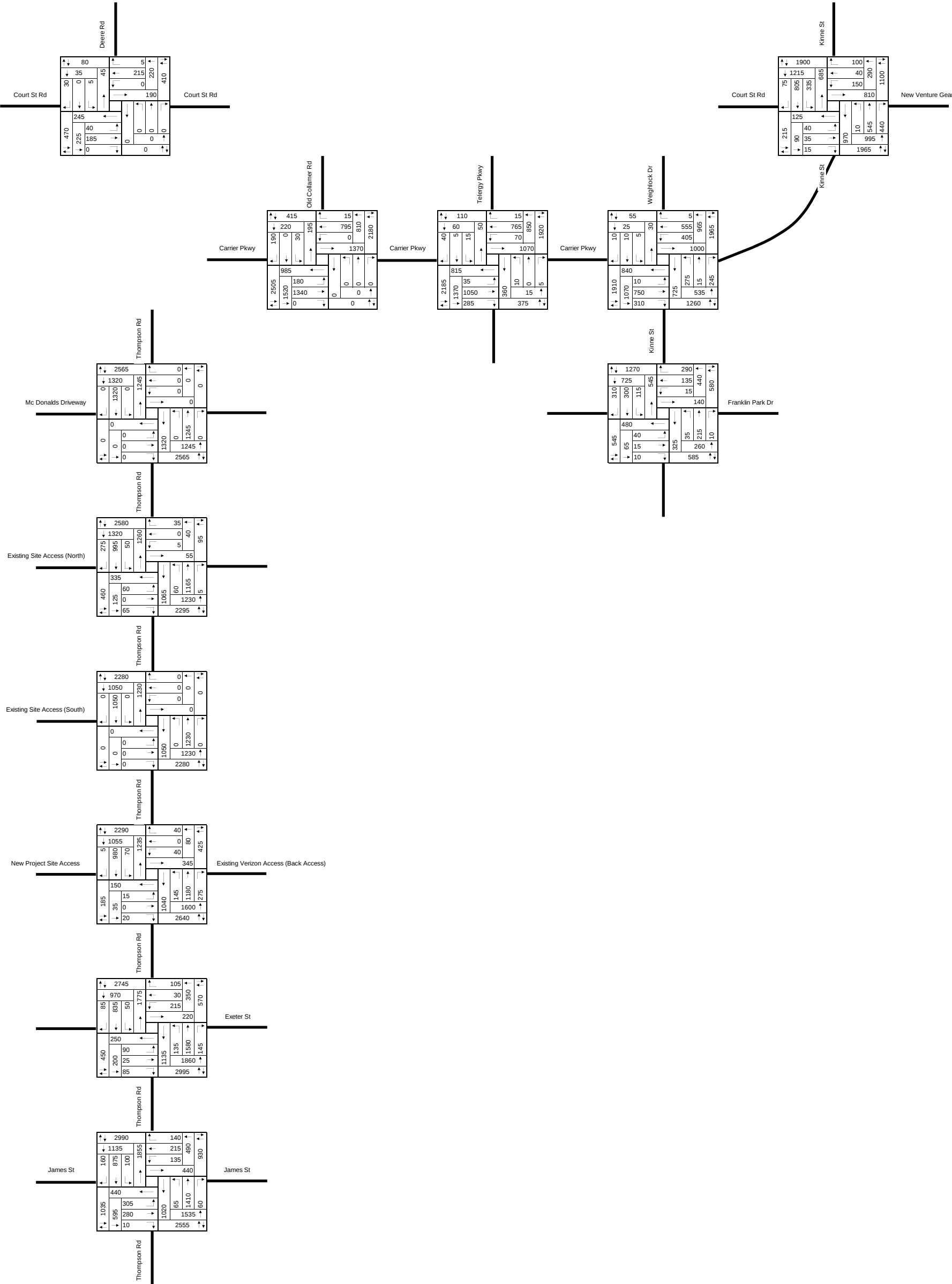


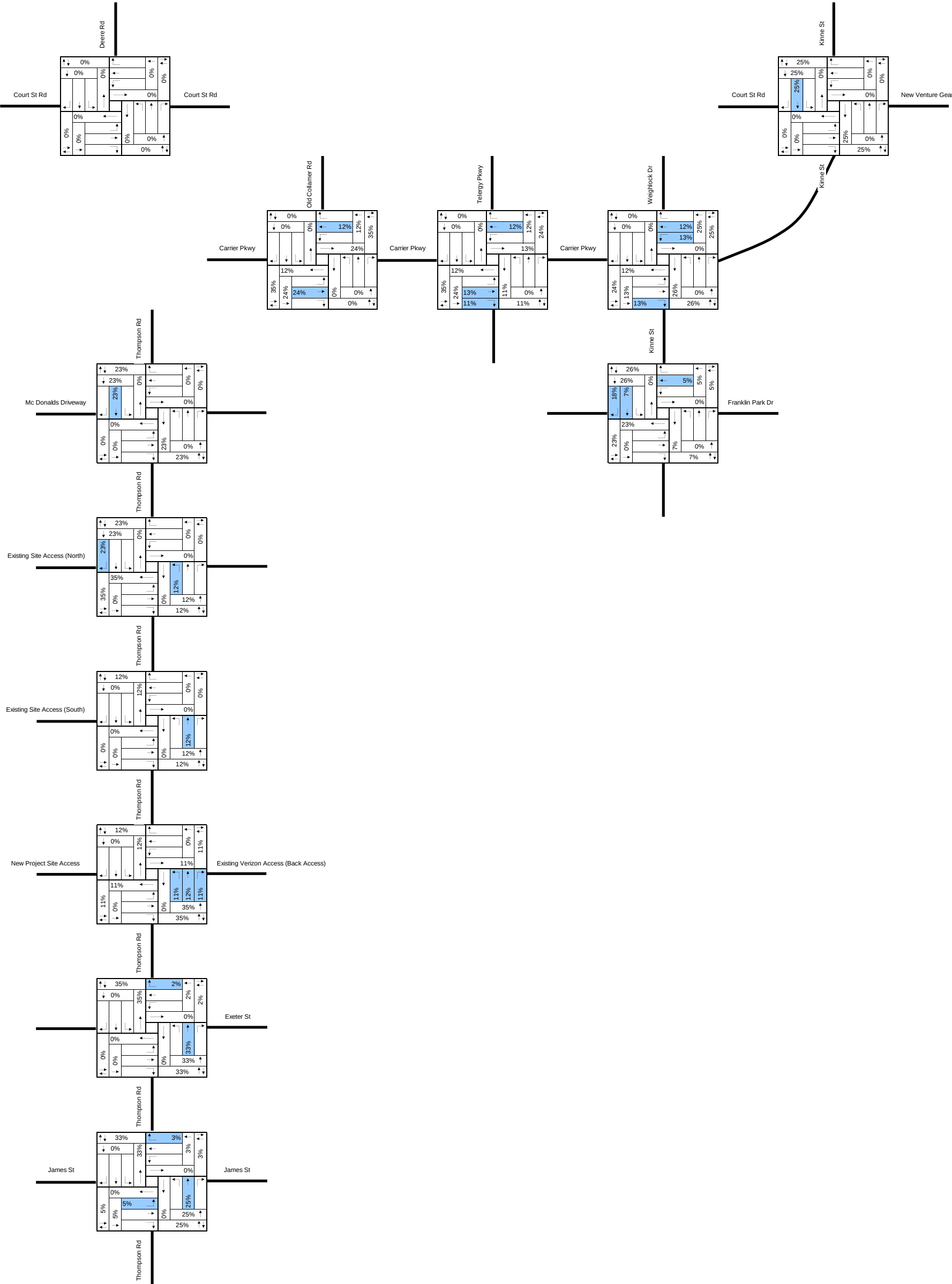


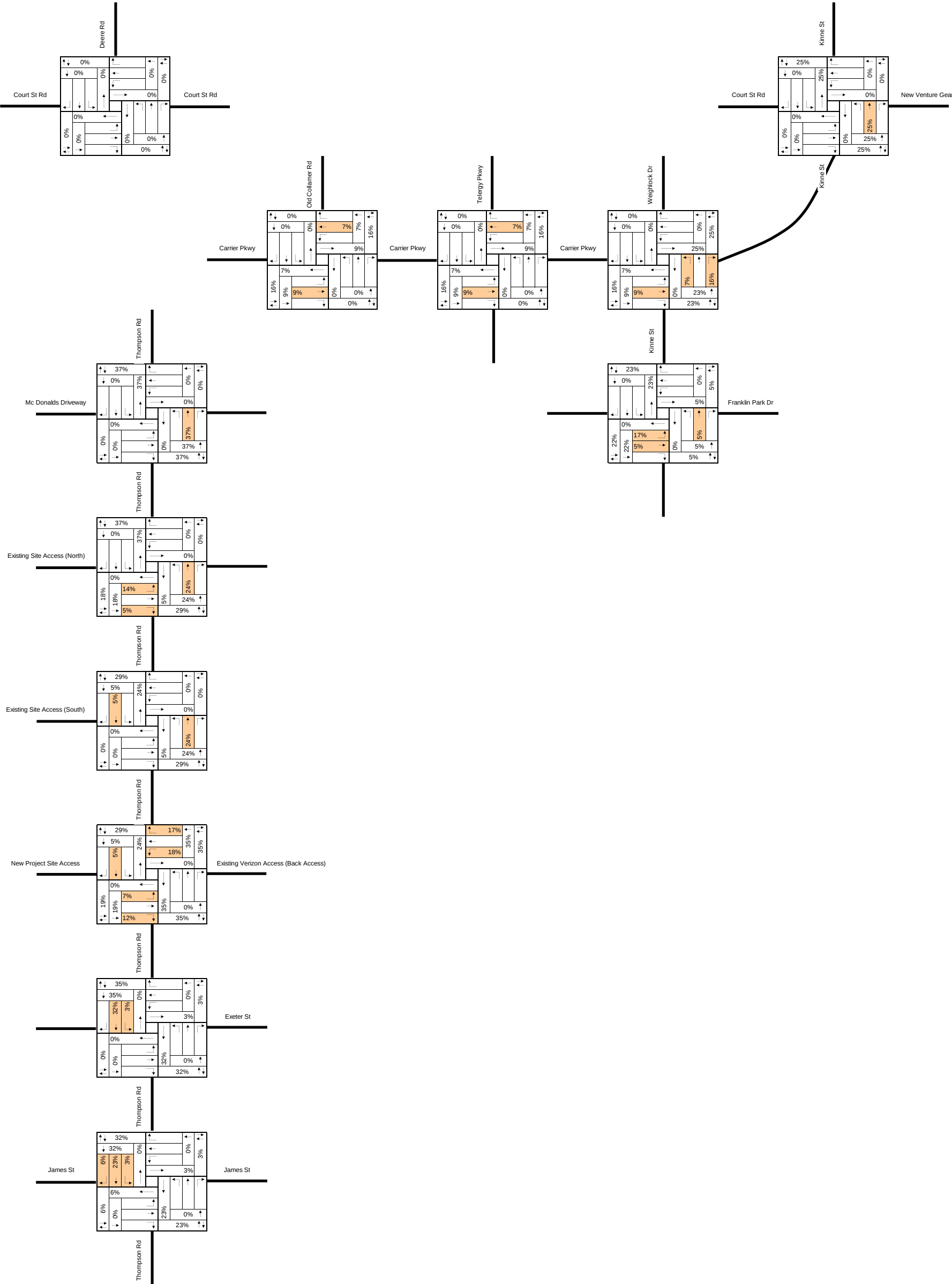


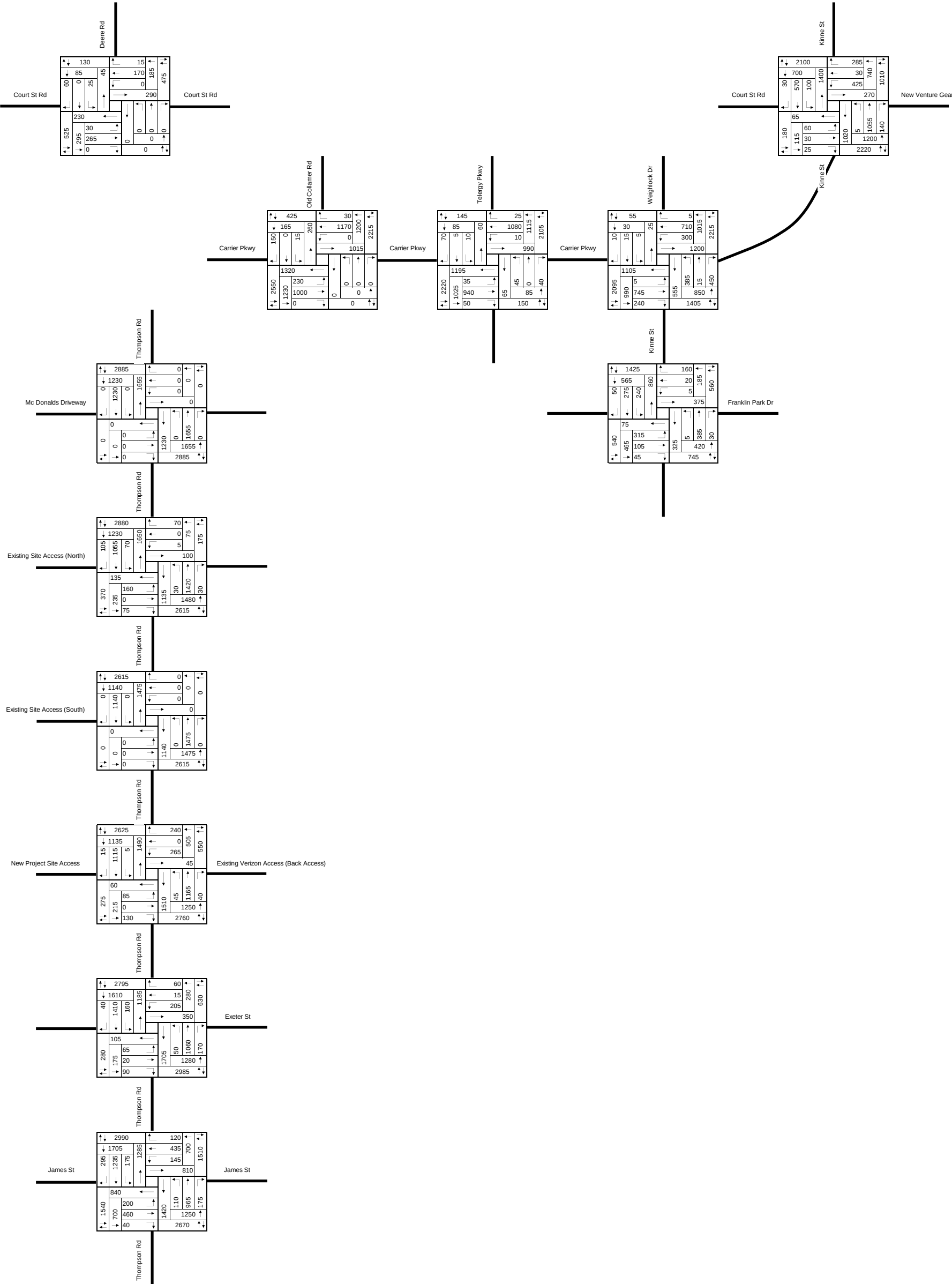












Appendix E:

Accident Summary Tables & Collision Diagrams

Key #	Case #	Ref Marker	Date	Time	# of Veh	Severity	Environment				Collision Type	Contributing Factor	Pre-Action
							Light	Weather	Roadway Character	Roadway Surface			
11	30894562	1010	6/1/2004	1:00 AM	2	PDO	Daylight	Cloudy	Straight & Grade	Dry	Rear End	Following Too Closely	Going Straight Ahead / Stopped in Traffic
35	31495433	1010	5/2/2005	7:00 AM	2	PDO	Daylight	Clear	Curve & Grade	Dry	Rear End	Unknown	Other
37	31547180	1010	7/2/2005	1:00 AM	2	1 INJ	Dark-Road Lighted	Cloudy	Straight & Grade	Dry	Rear End	Unknown	Going Straight Ahead / Stopped in Traffic
44	31647936	1010	10/12/2005	1:00 PM	2	2 INJ	Daylight	Rain	Straight & Level	Wet	Head On	Traffic Control Disregard / Driver Inattention	Making Left Turn / Going Straight Ahead
47	31660540	1010	11/12/2005	11:00 PM	2	1 INJ	Dark-Road Lighted	Clear	Straight & Grade	Dry	Rear End	Unknown	Going Straight Ahead
49	31679227	1010	11/26/2005	1:00 PM	2	PDO	Dawn	Cloudy	Straight & Grade	Wet	Left Turn (With Other Car)	Unknown	Going Straight Ahead / Making Left Turn
50	31668682	1010	11/28/2005	1:00 PM	2	PDO	Not Reported	Clear	Straight & Level	Dry	Unknown	Unknown	Going Straight Ahead / Making Left Turn
61	31928073	1010	9/3/2006	8:00 AM	2	PDO	Daylight	Cloudy	Straight & Grade	Wet	Rear End	Driver Inattention / Pavement Slippery	Going Straight Ahead / Stopped in Traffic
63	31926056	1010	9/8/2006	3:00 PM	2	1 INJ	Daylight	Clear	Straight & Grade	Dry	Rear End	Driver Inattention	Going Straight Ahead / Stopped in Traffic
66	31962968	1010	10/2/2006	1:00 PM	2	2 INJ	Daylight	Cloudy	Straight & Grade	Dry	Rear End	Following Too Closely / Driver Inattention	Going Straight Ahead / Stopped in Traffic
2	31129741	1012	2/4/2004	1:00 PM	2	PDO	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
24	31035263	1012	9/2/2004	4:00 PM	2	PDO	Daylight	Clear	Straight & Grade	Dry	Right Angle	Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
52	31706487	1012	12/19/2005	2:00 PM	2	PDO	Daylight	Clear	Straight & Level	Dry	Rear End	Unknown	Going Straight Ahead / Stopped in Traffic
54	31720500	1012	1/17/2006	8:00 AM	2	1 INJ	Daylight	Cloudy	Straight & Level	Snow/Ice	Head On	Unsafe Speed / Pavement Slippery	Making Right Turn / Slowed or Stopping
58	31843582	1012	6/28/2006	8:00 AM	3	1 INJ	Daylight	Cloudy	Straight & Grade	Wet	Other	Unknown	Unknown
64	31927091	1012	9/14/2006	12:00 PM	2	PDO	Daylight	Cloudy	Straight & Level	Wet	Rear End	Driver Inattention	Going Straight Ahead / Slowed or Stopping
74	31998538	1012	11/21/2006	2:00 PM	2	PDO	Daylight	Cloudy	Straight & Level	Dry	Head On	Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
41	31586444	1014	8/15/2005	5:00 PM	3	PDO	Daylight	Clear	Straight & Grade	Dry	Other	Unknown	Slowed or Stopping
15	31227499	1015	6/11/2004	8:00 PM	1	1 INJ	Dusk	Clear	Straight & Level	Dry	Other	Reaction to Other Uninvolved Vehicle / Driver Inexperience	Stopped in Traffic / Going Straight Ahead
23	31096076	1015	8/30/2004	11:00 AM	2	PDO	Daylight	Rain	Straight & Level	Wet	Rear End	Unsafe Lane Change / Following Too Closely	Going Straight Ahead / Changing Lanes
26	31292273	1015	10/1/2004	6:00 PM	2	PDO	Daylight	Clear	Straight & Level	Dry	Unknown	Unknown	Making U-turn
28	31311607	1015	10/28/2004	8:00 AM	2	2 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way	Going Straight Ahead / Other
32	31347927	1015	12/12/2004	8:00 AM	2	1 INJ	Daylight	Sleet/Hail/Freezing Rain	Straight & Level	Wet	Unknown	Driver Inattention / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
42	31582915	1015	8/24/2005	8:00 AM	2	NR	Not Entered	Not Entered	Not Entered	Not Entered	Not Entered	Unknown	Not Entered
45	31643494	1015	10/14/2005	5:00 PM	2	3 INJ	Daylight	Cloudy	Straight & Level	Wet	Unknown	Turning Improperly	Making Left Turn
56	31761927	1015	2/23/2006	8:00 AM	2	PDO	Daylight	Snow	Straight & Level	Wet	Left Turn (Against Other Car)	Unknown	Going Straight Ahead / Making Left Turn
68	31934631	1015	10/4/2006	6:00 AM	1	PDO	Dark-Road Lighted	Cloudy	Straight & Grade	Dry	Other	Animal Action	Going Straight Ahead
70	31972340	1015	10/18/2006	7:00 AM	1	PDO	Daylight	Cloudy	Straight & Level	Wet	Other	Animal Action	Going Straight Ahead
71	31955876	1015	10/21/2006	2:00 AM	2	1 INJ	Dark-Road Lighted	Cloudy	Straight & Level	Wet	Overtaking	Unsafe Lane Change	Going Straight Ahead / Changing Lanes
72	32017668	1015	10/26/2006	3:00 PM	2	3 INJ	Daylight	Cloudy	Straight & Grade	Dry	Rear End	Following Too Closely / Unsafe Lane Change	Slowed or Stopping / Changing Lanes



Key #	Case #	Ref Marker	Date	Time	# of Veh	Severity	Environment				Collision Type	Contributing Factor	Pre-Action
							Light	Weather	Roadway Character	Roadway Surface			
43	31531418	1016	8/31/2005	2:00 AM	1	PDO	Dark-Road Lighted	Rain	Straight & Level	Wet	Other	Passing or Lane Usage Improper	Going Straight Ahead
53	31724248	1016	12/27/2005	9:00 PM	2	1 INJ	Not Reported	Not Reported	Unknown	Unknown	Unknown	Unknown	Unknown
9	31187924	1017	5/1/2004	1:00 AM	2	3 INJ	Dark-Road Lighted	Clear	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way	Going Straight Ahead
10	31212376	1017	5/7/2004	11:00 PM	1	1INJ	Dark-Road Lighted	Clear	Straight & Level	Dry	Other	Pedestrian Confusion/Error	Going Straight Ahead
20	31253810	1017	8/7/2004	7:00 PM	1	1 INJ	Daylight	Cloudy	Straight & Level	Dry	Other	Aggressive Driving/Road Rage	Other
25	31283213	1017	9/9/2004	11:00 AM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way / View Obstructed/Limited	Going Straight Ahead / Making Left Turn
57	31832473	1017	5/12/2006	11:00 PM	2	1 INJ	Dark-Road Unlighted	Clear	Straight & Level	Dry	Other	Aggressive Driving/Road Rage	Starting from Parking / Parked
60	31892825	1017	7/20/2006	5:00 PM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Lane Marking Improper/Inadequate / View Obstructed/Limited	Making Left Turn / Slowed or Stopping
67	31940116	1017	10/3/2006	10:00 AM	2	PDO	Daylight	Rain	Straight & Level	Wet	Right Angle	Failure to Yield Right of Way	Going Straight Ahead
16	31208590	1018	6/15/2004	11:00 AM	2	PDO	Not Reported	Clear	Straight & Level	Dry	Unknown	Unknown	Making Left Turn / Overtaking
33	31427557	1018	3/23/2005	11:00 AM	2	1 INJ	Daylight	Cloudy	Straight & Level	Dry	Rear End	Following Too Closely / Driver Inattention	Starting in Traffic / Stopped in Traffic
34	31470944	1018	4/21/2005	11:00 AM	2	1 INJ	Daylight	Clear	Curve & Level	Dry	Right Angle	Unknown	Slowed or Stopping / Stopped in Traffic
55	31732366	1018	1/22/2006	9:00 AM	2	PDO	Daylight	Clear	Straight & Level	Dry	Unknown	Unknown	Going Straight Ahead
69	31957203	1018	10/13/2006		2	1 INJ	Daylight	Clear	Straight & Level	Dry	Rear End	Unknown	Going Straight Ahead / Stopped in Traffic

Key #	Case #	Ref Marker	Date	Time	# of Veh	Severity	Environment				Collision Type	Contributing Factor	Pre-Action
							Light	Weather	Roadway Character	Roadway Surface			
1	31114562	1021	1/26/2004	12:00 PM	2	PDO	Not Reported	Cloudy	Curve & Level	Wet	Rear End	Unknown	Merging
3	31136674	1021	2/13/2004	3:00 AM	2	PDO	Daylight	Clear	Straight & Level	Dry	Unknown	Unknown	Stopped in Traffic
4	31127802	1021	2/14/2004		2	PDO	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
5	31113989	1021	2/14/2004	12:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Unknown	Unknown	Going Straight Ahead / Changing Lanes
6	31148602	1021	3/18/2004	12:00 PM	2	3 INJ	Daylight	Cloudy	Straight & Level	Dry	Rear End	Following Too Closely	Stopped in Traffic / Starting in Traffic
7	31139325	1021	3/23/2004	11:00 AM	2	1 INJ	Dark-Road Lighted	Snow	Curve & Level	Wet	Rear End	Unknown	Going Straight Ahead / Merging
8	31204069	1021	4/1/2004	9:00 AM	3	1 INJ	Daylight	Clear	Straight & Level	Dry	Other	Driver Inattention / Following Too Closely	Going Straight Ahead / Stopped in Traffic
12	31218388	1021	6/2/2004	4:00 PM	2	1 INJ	Daylight	Cloudy	Curve & Level	Dry	Rear End	Driver Inattention	Stopped in Traffic / Starting in Traffic
13	31221060	1021	6/9/2004	2:00 PM	2	PDO	Not Reported	Clear	Curve & Level	Dry	Unknown	Unknown	Going Straight Ahead
14	31226228	1021	6/10/2004	4:00 PM	2	1 INJ	Daylight	Cloudy	Curve & Level	Dry	Rear End	Following Too Closely	Stopped in Traffic / Slowed or Stopping
17	31216997	1021	6/16/2004	6:00 PM	2	1 INJ	Daylight	Cloudy	Curve & Level	Dry	Rear End	Following Too Closely	Starting in Traffic / Slowed or Stopping
18	31226705	1021	6/25/2004	2:00 PM	2	PDO	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
19	31267521	1021	8/4/2004	12:00 PM	2	PDO	Not Reported	Clear	Straight & Level	Dry	Right Angle	Unknown	Going Straight Ahead / Starting from Parking
21	31253811	1021	8/8/2004	7:00 PM	2	2 INJ	Daylight	Clear	Straight & Level	Dry	Unknown	Following Too Closely	Other / Stopped in Traffic
22	31258317	1021	8/11/2004	2:00 PM	2	1 INJ	Daylight	Clear	Curve & Level	Dry	Rear End	Following Too Closely	Unknown
27	31291302	1021	10/15/2004	1:00 PM	2	1 INJ	Daylight	Cloudy	Straight & Level	Wet	Rear End	Following Too Closely / Driver Inattention	Going Straight Ahead
29	31336620	1021	11/1/2004	5:00 PM	2	PDO	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
30	31390825	1021	11/5/2004	8:00 AM	2	PDO	Daylight	Cloudy	Curve & Level	Wet	Rear End	Unknown	Starting in Traffic
31	31371742	1021	12/10/2004	6:00 PM	2	PDO	Dark-Road Lighted	Not Reported	Curve & Level	Slush	Left Turn (With Other Car)	Unknown	Merging / Other
36	31581684	1021	6/10/2005	7:00 AM	3	PDO	Daylight	Clear	Curve & Level	Dry	Other	Unknown	Stopped in Traffic
38	31567670	1021	7/11/2005	4:00 PM	2	PDO	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
39	31532223	1021	8/3/2005	8:00 AM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Rear End	Driver Inattention	Starting in Traffic / Stopped in Traffic
40	31591687	1021	8/13/2005	11:00 PM	1	PDO	Not Reported	Not Reported	Unknown	Unknown	Other	Unknown	Unknown
46	31641067	1021	10/15/2005	6:00 PM	2	PDO	Not Reported	Not Reported	Unknown	Unknown	Unknown	Unknown	Stopped in Traffic
48	31612102	1021	11/16/2005	7:00 AM	2	PDO	Daylight	Clear	Curve & Level	Dry	Overtaking	View Obstructed/Limited	Going Straight Ahead / Changing Lanes
51	31693989	1021	12/15/2005		2	1 INJ	Daylight	Cloudy	Curve & Level	Wet	Rear End	Unknown	Stopped in Traffic
59	31855260	1021	7/12/2006	6:00 AM	2	PDO	Dawn	Rain	Straight & Level	Wet	Rear End	Unknown	Starting in Traffic
62	31928081	1021	9/7/2006	7:00 AM	3	PDO	Daylight	Clear	Straight & Level	Dry	Other	Following Too Closely / Brakes Defective	Going Straight Ahead / Slowed or Stopping
65	31973485	1021	9/27/2006	7:00 PM	2	PDO	Dark-Road Lighted	Clear	Straight & Level	Dry	Overtaking	Driver Inattention	Slowed or Stopping / Stopped in Traffic
73	31990634	1021	11/14/2006	2:00 PM	2	1 INJ	Daylight	Rain	Straight & Level	Wet	Rear End	Unknown	Stopped in Traffic / Merging

Key #	Case #	Ref Marker	Date	Time	# of Veh	Severity	Environment				Collision Type	Contributing Factor	Pre-Action
							Light	Weather	Roadway Character	Roadway Surface			
4	31149524	2029	3/17/2004	8:00 AM	2	2 INJ	Daylight	Clear	Straight & Level	Wet	Rear End	Unknown	Going Straight Ahead / Stopped in Traffic
10	30894775	2029	6/11/2004	12:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Rear End	Unknown	Entering Parking Position
21	31198008	2029	11/8/2004	12:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Rear End	Driver Inattention	Starting in Traffic
24	31349151	2029	12/7/2004	12:00 PM	2	1 INJ	Daylight	Rain	Curve & Level	Wet	Rear End	Following Too Closely / Driver Inattention	Starting in Traffic / Stopped in Traffic
31	31436479	2029	4/12/2005	8:00 AM	2	1 INJ	Daylight	Clear	Curve & Level	Dry	Rear End	Following Too Closely / Driver Inattention	Stopped in Traffic / Starting in Traffic
36	31488316	2029	6/20/2005	3:00 PM	3	1 INJ	Daylight	Clear	Straight & Level	Dry	Other	Following Too Closely / Driver Inattention	Going Straight Ahead / Stopped in Traffic
37	31546601	2029	7/3/2005	12:00 PM	2	1 INJ	Daylight	Clear	Straight & Grade	Dry	Rear End	Driver Inattention	Going Straight Ahead / Stopped in Traffic
38	31525627	2029	7/23/2005	3:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Rear End	Unknown	Merging
41	31534455	2029	8/30/2005	8:00 AM	2	PDO	Daylight	Cloudy	Curve & Level	Wet	Rear End	Driver Inattention	Starting in Traffic / Stopped in Traffic
50	31722509	2029	1/17/2006	5:00 PM	2	1 INJ	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
58	31885728	2029	4/28/2006	12:00 PM	2	2 INJ	Daylight	Clear	Straight & Level	Dry	Rear End	Following Too Closely	Starting in Traffic
64	31895564	2029	8/18/2006	12:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Rear End	Following Too Closely	Stopped in Traffic / Going Straight Ahead
65	31897822	2029	8/18/2006	9:00 PM	2	PDO	Dark-Road Unlighted	Cloudy	Curve & Level	Dry	Rear End	Unknown	Slowed or Stopping
77	32008891	2029	12/4/2006	8:00 AM	2	1 INJ	Daylight	Clear	Curve & Level	Dry	Rear End	Driver Inattention / Following Too Closely	Starting in Traffic / Stopped in Traffic
80	32036585	2029	12/32/06	7:00 PM	2	2 INJ	Dark-Road Unlighted	Cloudy	Curve & Level	Dry	Rear End	Driver Inattention / Following Too Closely	Starting in Traffic / Going Straight Ahead
11	31212711	2030	6/25/2004	12:00 PM	3	PDO	Not Reported	Not Reported	Unknown	Unknown	Not Applicable	Following Too Closely	Unknown
12	30930628	2030	6/25/2004	7:00 AM	2	PDO	Daylight	Cloudy	Curve & Level	Dry	Rear End	Following Too Closely	Stopped in Traffic / Going Straight Ahead
42	31607561	2030	9/3/2005	10:00 PM	2	2 INJ	Daylight	Clear	Straight & Level	Dry	Rear End	Driver Inattention / Unsafe Speed	Going Straight Ahead / Slowed or Stopping
51	31652412	2030	1/18/2006	7:00 AM	2	PDO	Daylight	Rain	Curve & Level	Wet	Rear End	Following Too Closely	Going Straight Ahead
62	31892868	2030	6/28/2006	2:00 PM	2	1 INJ	Daylight	Clear	Curve & Level	Dry	Rear End	Following Too Closely	Making Left Turn
70	31935115	2030	9/29/2006	3:00 PM	2	PDO	Daylight	Clear	Straight & Level	Dry	Overtaking	Failure to Yield Right of Way	Changing Lanes / Going Straight Ahead
73	31983428	2030	10/30/2006	8:00 AM	2	PDO	Daylight	Clear	Curve & Level	Dry	Rear End	Glare / Driver Inattention	Merging
5	31163523	2031	3/27/2004	1:00 AM	2	2 INJ	Dark-Road Lighted	Rain	Straight & Level	Wet	Right Angle	Failure to Yield Right of Way / Driver Inattention	Making Right Turn / Going Straight Ahead
23	31362146	2031	12/3/2004		1	PDO	Dark-Road Unlighted	Snow	Straight & Level	Snow/Ice	Other	Unknown	Going Straight Ahead
26	31373295	2031	1/13/2005	8:00 PM	1	1 INJ	Dark-Road Lighted	Cloudy	Straight & Level	Wet	Other	Pedestrian Confusion/Error	Going Straight Ahead
46	31692331	2031	11/23/2005		2	PDO	Dark-Road Lighted	Cloudy	Curve & Level	Snow/Ice	Overtaking	Unknown	Making Left Turn / Going Straight Ahead
54	31800219	2031	2/26/2006		1	PDO	Not Reported	Not Reported	Unknown	Unknown	Other	Unknown	Unknown
69	31954024	2031	9/22/2006	10:00 PM	2	2 INJ	Dark-Road Unlighted	Clear	Straight & Grade	Dry	Rear End	Following Too Closely	Starting in Traffic / Stopped in Traffic
75	31983040	2031	11/2/2006	1:00 PM	2	PDO	Daylight	Clear	Straight & Grade	Dry	Rear End	Driver Inattention	Going Straight Ahead / Stopped in Traffic
79	32084529	2031	12/29/2006	9:00 PM	2	PDO	Dark-Road Unlighted	Cloudy	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way	Making Left Turn / Going Straight Ahead

3	31159340	2034	3/12/2004	7:00 AM	2	1 INJ	Daylight	Cloudy	Curve & Level	Slush	Head On	Pavement Slippery / Unsafe Speed	Stopped in Traffic
6	31194086	2034	4/17/2004	4:00 PM	2	3 INJ	Daylight	Clear	Straight & Level	Dry	Left Turn (Against Other Car)	Failure to Yield Right of Way / Turning Improperly	Going Straight Ahead / Making Left Turn
8	31180379	2034	5/12/2004		2	PDO	Not Reported	Clear	Curve & Level	Dry	Left Turn (With Other Car)	Unknown	Making Left Turn / Going Straight Ahead
13	30977063	2034	7/20/2004	3:00 PM	2	2 INJ	Daylight	Clear	Curve & Level	Dry	Left Turn (With Other Car)	Failure to Yield Right of Way	Making Left Turn / Going Straight Ahead
19	31291980	2034	10/1/2004	5:00 PM	2	1 INJ	Daylight	Clear	Curve & Grade	Dry	Left Turn (Against Other Car)	Glare / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
25	31330408	2034	12/10/2004	7:00 PM	2	PDO	Dark-Road Unlighted	Rain	Straight & Level	Wet	Other	Unsafe Lane Change	Merging / Going Straight Ahead
27	31386621	2034	2/1/2005	7:00 AM	2	PDO	Daylight	Clear	Straight & Level	Dry	Rear End	Unknown	Stopped in Traffic / Going Straight Ahead
33	31491084	2034	5/9/2005	5:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Unknown	Unknown	Merging
43	31547605	2034	9/19/2005	4:00 PM	2	PDO	Daylight	Cloudy	Curve & Grade	Dry	Left Turn (Against Other Car)	Traffic Control Device Improper/Not Working	Going Straight Ahead / Making Left Turn
60	31869519	2034	6/15/2006	7:00 AM	2	PDO	Daylight	Clear	Straight & Level	Dry	Unknown	Driver Inattention / Following Too Closely	Going Straight Ahead / Stopped in Traffic
74	31984412	2034	10/31/2006	7:00 AM	2	1 INJ	Daylight	Cloudy	Straight & Grade	Dry	Right Angle	View Obstructed/Limited / Driver Inattention	Going Straight Ahead / Making Right Turn
76	31998778	2034	11/2/2006	3:00 PM	2	PDO	Daylight	Clear	Straight & Level	Dry	Rear End	Driver Inattention	Going Straight Ahead / Slowed or Stopping
78	32031908	2034	12/18/2006	3:00 PM	2	PDO	Daylight	Cloudy	Straight & Level	Dry	Overtaking	Failure to Yield Right of Way	Making Right Turn
1	31160015	2036	1/9/2004	4:00 PM	1	1 INJ	Dusk	Clear	Straight & Grade	Dry	Left Turn (With Other Car)	Accelerator Defective	Slowed or Stopping
2	31125506	2036	1/15/2004	1:00 AM	2	1 INJ	Dusk	Snow	Curve & Level	Snow/Ice	Head On	Failure to Keep Right / Pavement Slippery	Going Straight Ahead
7	31201574	2036	4/29/2004	3:00 PM	5	3 INJ	Daylight	Clear	Straight & Level	Dry	Other	Unsafe Speed / Failure to Yield Right of Way	Making Left Turn / Going Straight Ahead
15	31257707	2036	8/19/2004	10:00 PM	3	2 INJ	Dark-Road Lighted	Cloudy	Straight & Level	Dry	Other	Driver Inattention / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
16	31266055	2036	8/30/2004	5:00 PM	2	1 INJ	Daylight	Rain	Straight & Level	Wet	Rear End	Following Too Closely	Going Straight Ahead / Slowed or Stopping
22	31320874	2036	11/22/2004	11:00 AM	2	1 INJ	Daylight	Clear	Straight & Grade	Dry	Rear End	Following Too Closely	Slowed or Stopping / Stopped in Traffic
28	31390871	2036	2/5/2005	3:00 PM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Traffic Control Disregard	Going Straight Ahead
29	31405940	2036	2/16/2005	6:00 AM	2	2 INJ	Daylight	Cloudy	Straight & Grade	Dry	Right Angle	Turning Improperly	Going Straight Ahead / Making Left Turn
30	31451563	2036	3/1/2005	10:00 AM	2	PDO	Not Reported	Not Reported	Unknown	Unknown	Right Angle	Unknown	Making U-turn / Stopped in Traffic
34	31494021	2036	5/12/2005	5:00 PM	3	1 INJ	Daylight	Clear	Straight & Level	Dry	Other	Unsafe Speed	Slowed or Stopping / Stopped in Traffic
35	31570948	2036	5/20/2005	3:00 PM	3	1 INJ	Daylight	Clear	Straight & Level	Dry	Other	Driver Inattention / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
39	31532208	2036	7/28/2005	5:00 PM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Left Turn (Against Other Car)	Driver Inattention / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
40	31557865	2036	8/4/2005	3:00 PM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Rear End	Driver Inattention / Cell Phone (Hand-held)	Going Straight Ahead / Stopped in Traffic
44	31576099	2036	9/20/2005	3:00 PM	3	1 INJ	Daylight	Clear	Straight & Level	Dry	Other	Driver Inattention / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
48	31680024	2036	12/30/2005	6:00 PM	2	1 INJ	Not Reported	Not Reported	Unknown	Unknown	Left Turn (Against Other Car)	Unknown	Making Left Turn



52	31748340	2036	1/18/2006	6:00 AM	2	1 INJ	Not Reported	Cloudy	Straight & Level	Wet	Rear End	Unknown	Stopped in Traffic / Going Straight Ahead
53	31729659	2036	2/4/2006		2	PDO	Not Reported	Not Reported	Unknown	Unknown	Rear End	Unknown	Unknown
55	31753482	2036	3/20/2006	7:00 AM	2	PDO	Daylight	Cloudy	Straight & Grade	Dry	Rear End	Unknown	Stopped in Traffic
56	31885782	2036	4/7/2006	4:00 PM	2	3 INJ	Daylight	Rain	Straight & Level	Wet	Overtaking	Unsafe Lane Change	Going Straight Ahead / Changing Lanes
57	31787994	2036	4/25/2006	3:00 PM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Left Turn (Against Other Car)	Unknown	Making Left Turn / Going Straight Ahead
59	31809293	2036	6/2/2006	7:00 AM	2	1 INJ	Daylight	Cloudy	Straight & Grade	Dry	Rear End	Following Too Closely	Making Left Turn / Going Straight Ahead
68	31916041	2036	9/7/2006	8:00 AM	2	1 INJ	Daylight	Cloudy	Straight & Level	Dry	Left Turn (Against Other Car)	Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
71	31970482	2036	10/19/2006	8:00 AM	2	1 INJ	Daylight	Cloudy	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way / Driver Inattention	Merging / Going Straight Ahead
72	31944632	2036	10/23/2006	2:00 PM	2	PDO	Daylight	Cloudy	Straight & Grade	Dry	Rear End	Following Too Closely	Stopped in Traffic / Going Straight Ahead
Out of Study Area													
67	31922996	2037	8/29/2006	10:00 AM	2	PDO	Daylight	Rain	Straight & Level	Wet	Left Turn (Against Other Car)	Failure to Yield Right of Way	Making Left Turn / Going Straight Ahead
49	31715253	2038	1/4/2006	11:00 PM	2	1 INJ	Dark-Road Lighted	Cloudy	Straight & Grade	Wet	Right Turn (Against Other Car)	Unsafe Lane Change / Turning Improperly	Going Straight Ahead / Making Right Turn
17	31096074	2039	9/21/2004	9:00 PM	2	PDO	Dark-Road Lighted	Clear	Curve & Grade	Dry	Unknown	View Obstructed/Limited / Unsafe Speed	Making Left Turn / Going Straight Ahead
45	31678335	2040	11/15/2005	3:00 PM	2	1 INJ	Daylight	Rain	Curve & Level	Wet	Right Angle	Reaction to Other Uninvolved Vehicle	Making Left Turn / Going Straight Ahead
9	31223634	2041	6/4/2004	3:00 PM	3	1 INJ	Daylight	Clear	Straight & Level	Dry	Other	Slowed or Stopping	
14	31258855	2041	8/19/2004	1:00 PM	3	1 INJ	Daylight	Rain	Straight & Grade	Wet	Other	Driver Inattention / Failure to Yield Right of Way	Going Straight Ahead / Making Left Turn
18	31285299	2041	9/27/2004	5:00 PM	2	2 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way	Making Left Turn / Going Straight Ahead
20	31296387	2041	10/8/2004	11:00 AM	2	2 INJ	Daylight	Clear	Curve & Level	Dry	Left Turn (Against Other Car)	Failure to Yield Right of Way / View Obstructed/Limited	Making Left Turn / Going Straight Ahead
32	31477980	2041	4/29/2005	6:00 AM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Failure to Yield Right of Way / Glare	Going Straight Ahead
47	31698019	2041	12/8/2005	8:00 AM	2	2 INJ	Daylight	Clear	Curve & Level	Snow/Ice	Right Angle	Failure to Yield Right of Way / Driver Inattention	Other / Going Straight Ahead
61	31839354	2041	6/19/2006	5:00 PM	2	1 INJ	Daylight	Clear	Straight & Level	Dry	Right Angle	Reaction to Other Uninvolved Vehicle / Turning Improperly	Starting from Parking / Going Straight Ahead
63	31895569	2041	8/9/2006	5:00 PM	2	PDO	Daylight	Clear	Curve & Level	Dry	Left Turn (Against Other Car)	Driver Inattention / Failure to Yield Right of Way	Making Left Turn / Going Straight Ahead

COLLISION DIAGRAM

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MUNICIPALITY TOWN OF DEWITT COUNTY ONONDAGA

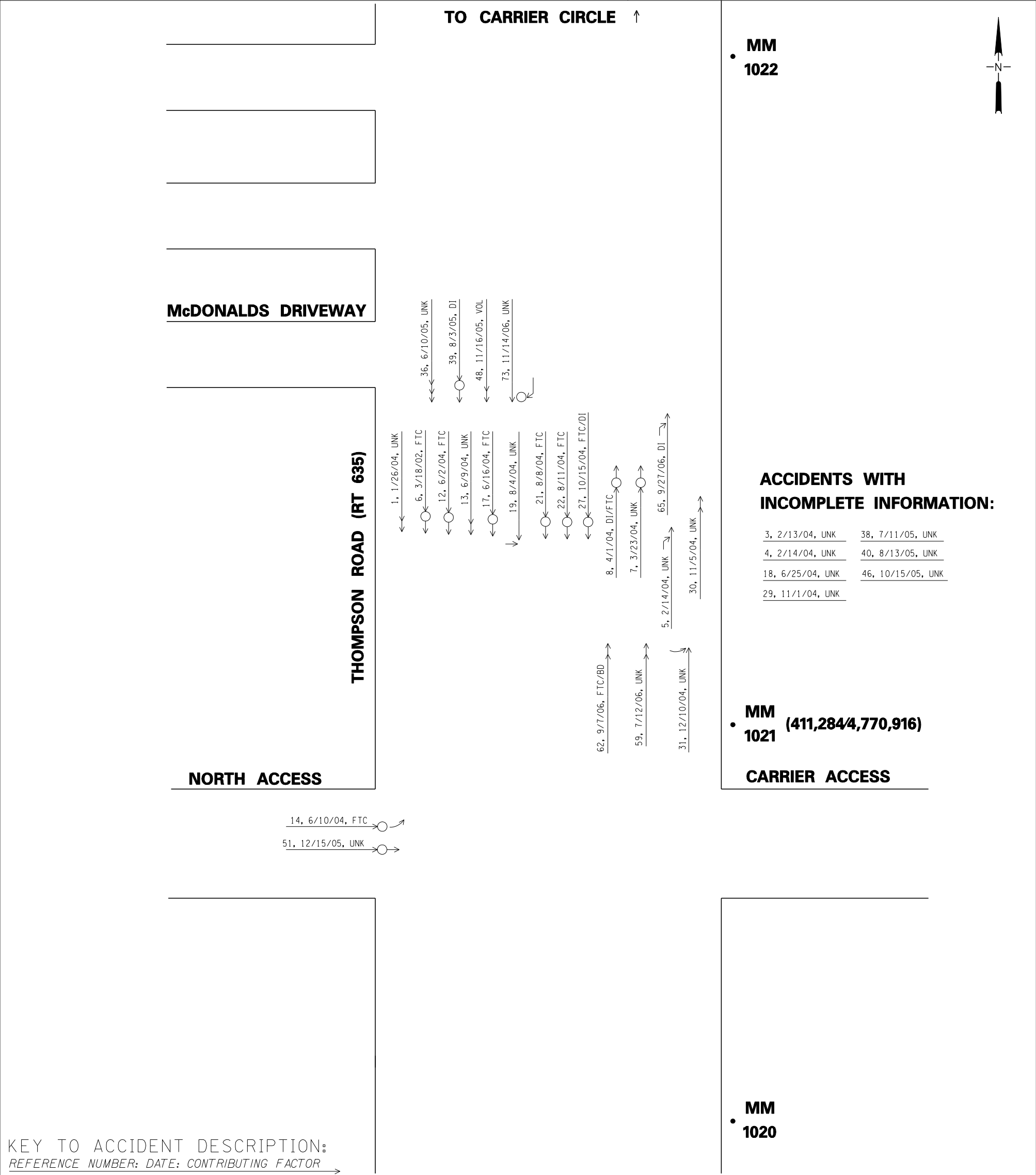
SECTION THOMPSON ROAD: CARRIER CIRCLE TO NORTH ACCESS

PERIOD 3 YR MO FROM 1/04 TO 12/06

FILE 895.001.001

FIGURE NO. 1

BY KMF/PTT DATE 12 / 29/ 08



KEY TO ACCIDENT DESCRIPTION:
REFERENCE NUMBER: DATE: CONTRIBUTING FACTOR →

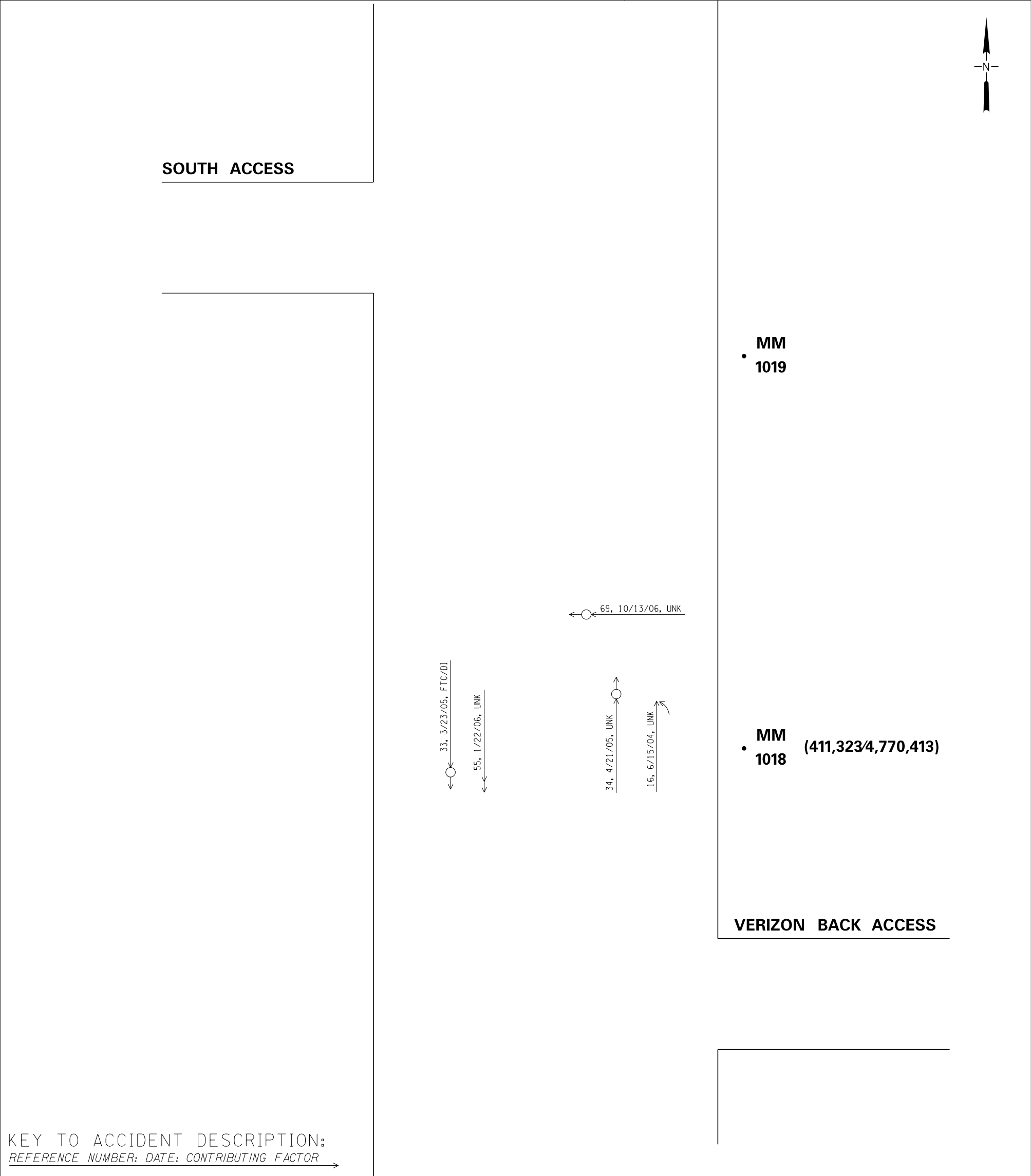
SYMBOLS		MANNER OF COLLISION	KEY TO CONTRIBUTING FACTORS	
←— MOVING VEHICLE	←•← REAR-END	FTYROW - FAILURE TO YIELD ROW	BUS -	BACKING UNSAFELY
↔→→ BACKING VEHICLE	←↖ SIDE-SWIPE	DI - DRIVER INATTENTION	DRUG -	DRUG (ILLEGAL)
←• STOPPED VEHICLE	←↗ OUT OF CONTROL	PASS - PASSING OR LANE USAGE IMPROPER	OBS -	OBSTRUCTION/DEBRIS
▧ PARKED VEHICLE	←↘ SKIDDING	TI - TURNING IMPROPERLY	ILL -	ILLNESS
□ FIXED OBJECT	←⊖ OVERTURNED	UNK - UNKNOWN	DISBL -	PHYSICAL DISABILITY
○ PERSONAL INJURY	→← HEAD-ON	FTC - FOLLOWING TOO CLOSELY	BD -	BRAKES DEFECTIVE
● FATAL INJURY	→↖ LEFT-TURN	PS - PAVEMENT SLIPPERY		
←-P-- PEDESTRIAN	→↘ RIGHT-ANGLE	DINEX - DRIVER INEXPERIENCE		
←-B-- BICYCLE	↓↘ SIDE IMPACT	VOL - VIEW OBSTRUCTED/LIMITED		
	↓↗ RIGHT TURN	AL - ALCOHOL INVOLVEMENT		
		TCD - TRAFFIC CONTROL DISREGARD		
		US - UNSAFE SPEED		
		ASL - DRIVER FELL ASLEEP		
		ULC - UNSAFE LANE CHANGE		
		MF - MECHANICAL FAILURE		

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MUNICIPALITY TOWN OF DEWITT	COUNTY ONONDAGA	FILE 895.001.001
SECTION THOMPSON ROAD: NORTH ACCESS TO VERIZON BACK ACCESS		FIGURE NO. 2
PERIOD 3 YR MO	FROM 1/04 TO 12/06	BY KMF/PTT DATE 12 / 29/ 08

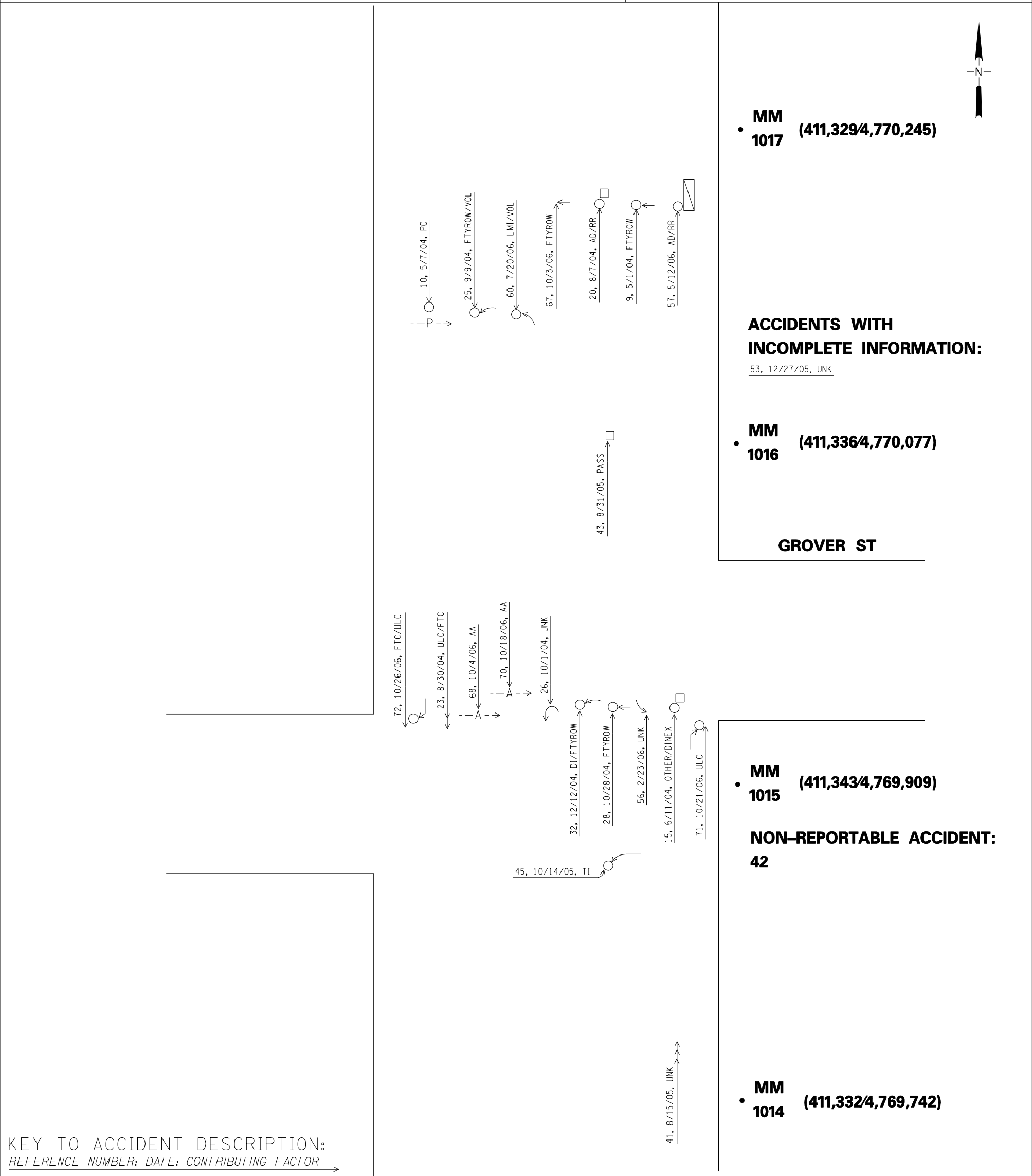


SYMBOLS	MANNER OF COLLISION	KEY TO CONTRIBUTING FACTORS	
←MOVING VEHICLE ↔↔↔↔BACKING VEHICLE ←●STOPPED VEHICLE ▮ PARKED VEHICLE □ FIXED OBJECT ○ PERSONAL INJURY ● FATAL INJURY ←-P--PEDESTRIAN ←-B--BICYCLE	←←←REAR-END ←↘SIDE-SWIPE ←~OUT OF CONTROL ←↗SKIDDING ←↻OVERTURNED →←HEAD-ON →↘LEFT-TURN →↓RIGHT-ANGLE ↓→SIDE IMPACT →↗RIGHT TURN	FTYROW - FAILURE TO YIELD ROW DI - DRIVER INATTENTION PASS - PASSING OR LANE USAGE IMPROPER TI - TURNING IMPROPERLY UNK - UNKNOWN FTC - FOLLOWING TOO CLOSELY PS - PAVEMENT SLIPPERY DINEX - DRIVER INEXPERIENCE VOL - VIEW OBSTRUCTED/LIMITED AL - ALCOHOL INVOLVEMENT TCD - TRAFFIC CONTROL DISREGARD US - UNSAFE SPEED ASL - DRIVER FELL ASLEEP ULC - UNSAFE LANE CHANGE MF - MECHANICAL FAILURE	BUS - BACKING UNSAFELY DRUG - DRUG (ILLEGAL) OBS - OBSTRUCTION/DEBRIS ILL - ILLNESS DISBL - PHYSICAL DISABILITY

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MUNICIPALITY	TOWN OF DEWITT	COUNTY	ONONDAGA	FILE	895.001.001
SECTION	THOMPSON ROAD NEAR GROVER STREET			FIGURE NO.	3
PERIOD	3	YR	MO	FROM	1/04
				TO	12/06
				BY	KMF/PTT
				DATE	12 / 29 / 08



SYMBOLS		MANNER OF COLLISION		KEY TO CONTRIBUTING FACTORS	
 MOVING VEHICLE	 REAR-END	FTYROW - FAILURE TO YIELD ROW	BUS - BACKING UNSAFELY		
 BACKING VEHICLE	 SIDE-SWIPE	DI - DRIVER INATTENTION	DRUG - DRUG (ILLEGAL)		
 STOPPED VEHICLE	 OUT OF CONTROL	PASS - PASSING OR LANE USAGE IMPROPER	OBS - OBSTRUCTION/DEBRIS		
 PARKED VEHICLE	 SKIDDING	TI - TURNING IMPROPERLY	ILL - ILLNESS		
 FIXED OBJECT	 OVERTURNED	UNK - UNKNOWN	DISBL - PHYSICAL DISABILITY		
 PERSONAL INJURY	 HEAD-ON	FTC - FOLLOWING TOO CLOSELY	PC - PEDESTRIAN CONFUSION		
 FATAL INJURY	 LEFT-TURN	PS - PAVEMENT SLIPPERY	LMI - LANE MARKING IMPROPER/ INADEQUATE		
 PEDESTRIAN	 RIGHT-ANGLE	DINEX - DRIVER INEXPERIENCE	AA - ANIMAL ACTION		
 BICYCLE	 SIDE IMPACT	VOL - VIEW OBSTRUCTED/LIMITED	AD/RR - AGGRESSIVE DRIVING/ ROAD RAGE		
 ANIMAL	 RIGHT TURN	AL - ALCOHOL INVOLVEMENT			
		TCD - TRAFFIC CONTROL DISREGARD			
		US - UNSAFE SPEED			
		ASL - DRIVER FELL ASLEEP			
		ULC - UNSAFE LANE CHANGE			
		MF - MECHANICAL FAILURE			

COLLISION DIAGRAM

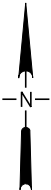
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MUNICIPALITY TOWN OF DEWITT	COUNTY ONONDAGA	FILE 895.001.001
SECTION THOMPSON ROAD: EXETER ST TO JAMES ST		FIGURE NO. 4
PERIOD 3 YR MO	FROM 1/04 TO 12/06	BY KMF/PTT DATE 12 / 29/ 08

ACCIDENTS WITH
INCOMPLETE INFORMATION:

- 2, 2/4/04 UNK
- 58, 6/28/06 UNK



EXETER ST

• **MM**
1012 **(411,324/4,769,406)**

• **MM**
1011

• **MM**
1010 **(411,320/4,769,406)**
JAMES ST

KEY TO ACCIDENT DESCRIPTION:
REFERENCE NUMBER: DATE: CONTRIBUTING FACTOR →

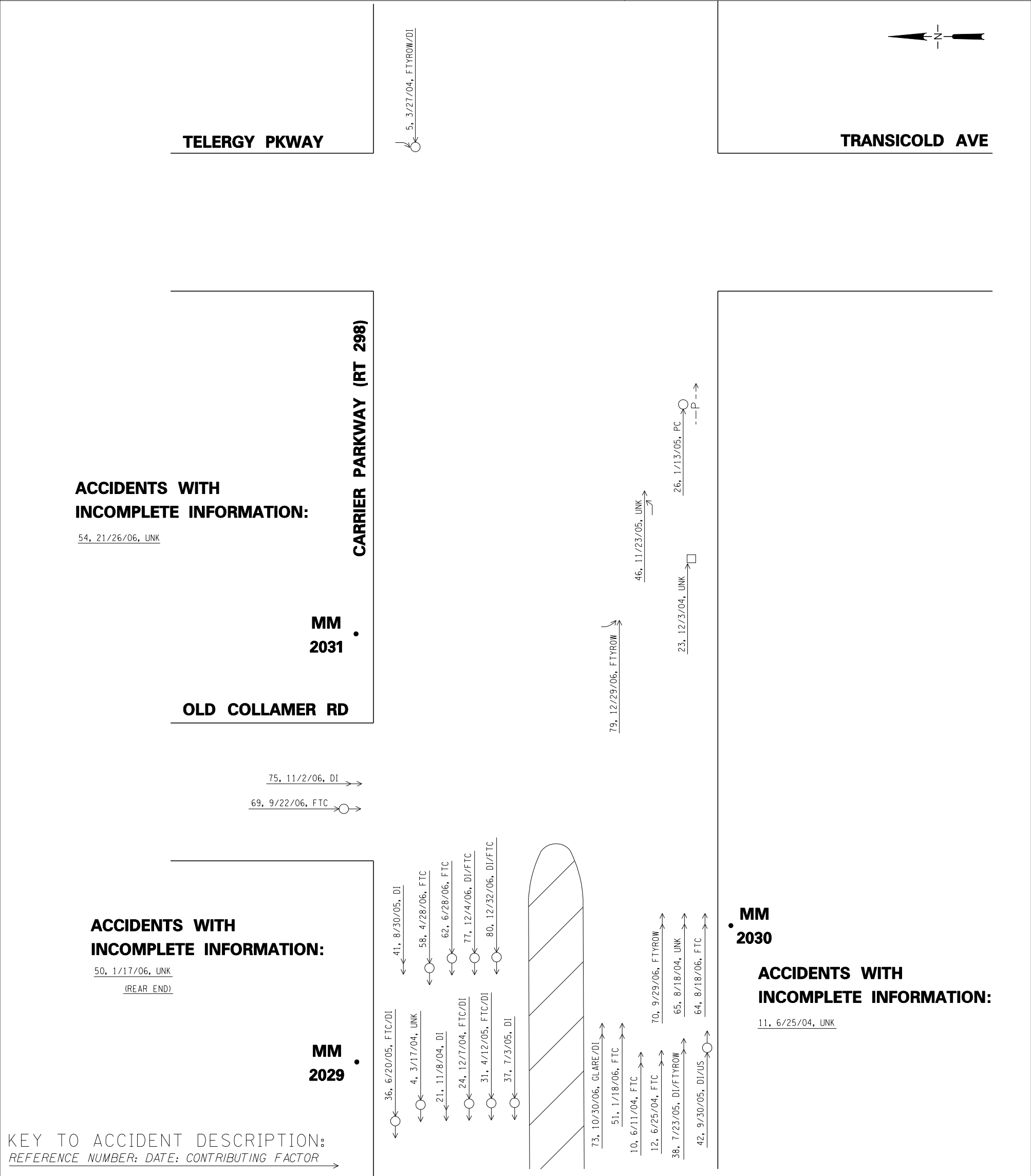
SYMBOLS	MANNER OF COLLISION	KEY TO CONTRIBUTING FACTORS	
←— MOVING VEHICLE ←→→→ BACKING VEHICLE ←•— STOPPED VEHICLE ▮ PARKED VEHICLE □ FIXED OBJECT ○ PERSONAL INJURY ● FATAL INJURY ←-P-- PEDESTRIAN ←-B-- BICYCLE	←•← REAR-END ←↗ SIDE-SWIPE ←~ OUT OF CONTROL ←↘ SKIDDING ←⊖ OVERTURNED →← HEAD-ON →↘ LEFT-TURN →↓ RIGHT-ANGLE ↓→ SIDE IMPACT ↘→ RIGHT TURN	FTYROW - FAILURE TO YIELD ROW DI - DRIVER INATTENTION PASS - PASSING OR LANE USAGE IMPROPER TI - TURNING IMPROPERLY UNK - UNKNOWN FTC - FOLLOWING TOO CLOSELY PS - PAVEMENT SLIPPERY DINEX - DRIVER INEXPERIENCE VOL - VIEW OBSTRUCTED/LIMITED AL - ALCOHOL INVOLVEMENT TCD - TRAFFIC CONTROL DISREGARD US - UNSAFE SPEED ASL - DRIVER FELL ASLEEP ULC - UNSAFE LANE CHANGE MF - MECHANICAL FAILURE	BUS - BACKING UNSAFELY DRUG - DRUG (ILLEGAL) OBS - OBSTRUCTION/DEBRIS ILL - ILLNESS DISBL - PHYSICAL DISABILITY CP - CELL PHONE AD - ACCELERATOR DEFECTIVE

COLLISION DIAGRAM

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MUNICIPALITY TOWN OF DEWITT	COUNTY ONONDAGA	FILE 895.001.001
SECTION CARRIER PARKWAY: CARRIER CIRCLE TO TELERGY PKWY		FIGURE NO. 5
PERIOD 3 YR MO	FROM 1/04 TO 12/06	BY KMF/PTT DATE 12 / 29/ 08



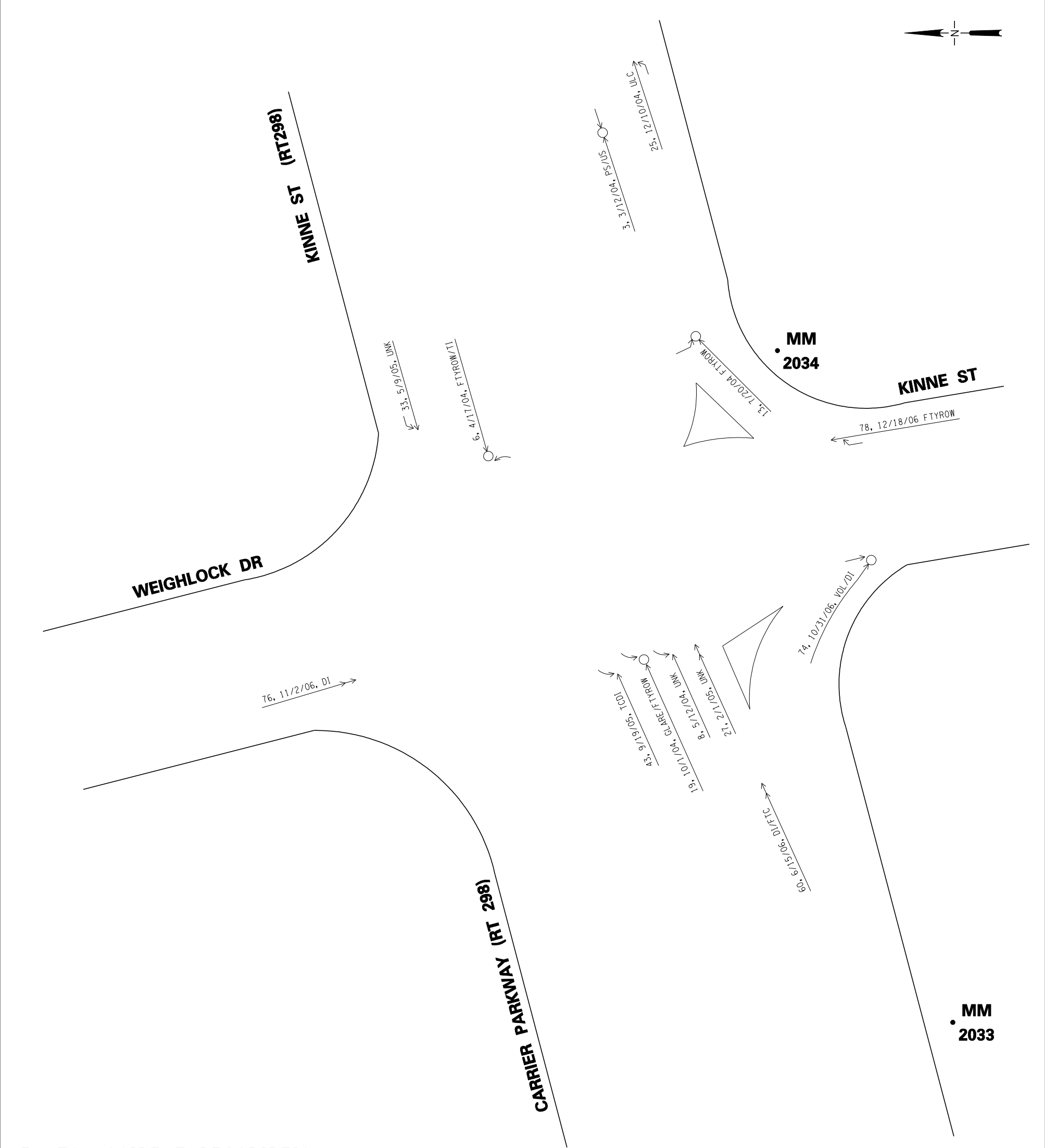
SYMBOLS	MANNER OF COLLISION	KEY TO CONTRIBUTING FACTORS	
←MOVING VEHICLE ←→→BACKING VEHICLE ←●STOPPED VEHICLE ▧ PARKED VEHICLE □ FIXED OBJECT ○ PERSONAL INJURY ● FATAL INJURY ←-P-- PEDESTRIAN ←-B-- BICYCLE	←-← REAR-END ←- SIDE-SWIE ←- OUT OF CONTROL ←- SKIDDING ←- OVERTURNED →← HEAD-ON →← LEFT-TURN →↓ RIGHT-ANGLE ↓ SIDE IMPACT → RIGHT TURN	FTYROW - FAILURE TO YIELD ROW DI - DRIVER INATTENTION PASS - PASSING OR LANE USAGE IMPROPER TI - TURNING IMPROPERLY UNK - UNKNOWN FTC - FOLLOWING TOO CLOSELY PS - PAVEMENT SLIPPERY DINEX - DRIVER INEXPERIENCE VOL - VIEW OBSTRUCTED/LIMITED AL - ALCOHOL INVOLVEMENT TCD - TRAFFIC CONTROL DISREGARD US - UNSAFE SPEED ASL - DRIVER FELL ASLEEP ULC - UNSAFE LANE CHANGE MF - MECHANICAL FAILURE	BUS - BACKING UNSAFELY DRUG - DRUG (ILLEGAL) OBS - OBSTRUCTION/DEBRIS ILL - ILLNESS DISBL - PHYSICAL DISABILITY PC - PEDESTRIAN CONFUSION

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MUNICIPALITY	TOWN OF DEWITT	COUNTY	ONONDAGA	FILE	895.001.001
SECTION	CARRIER PARKWAY & KINNE ST			FIGURE NO.	6
PERIOD	3 YR	MO	FROM 1/04 TO 12/06	BY	KMF/PTT
				DATE	12 / 29 / 08



KEY TO ACCIDENT DESCRIPTION:
REFERENCE NUMBER: DATE: CONTRIBUTING FACTOR →

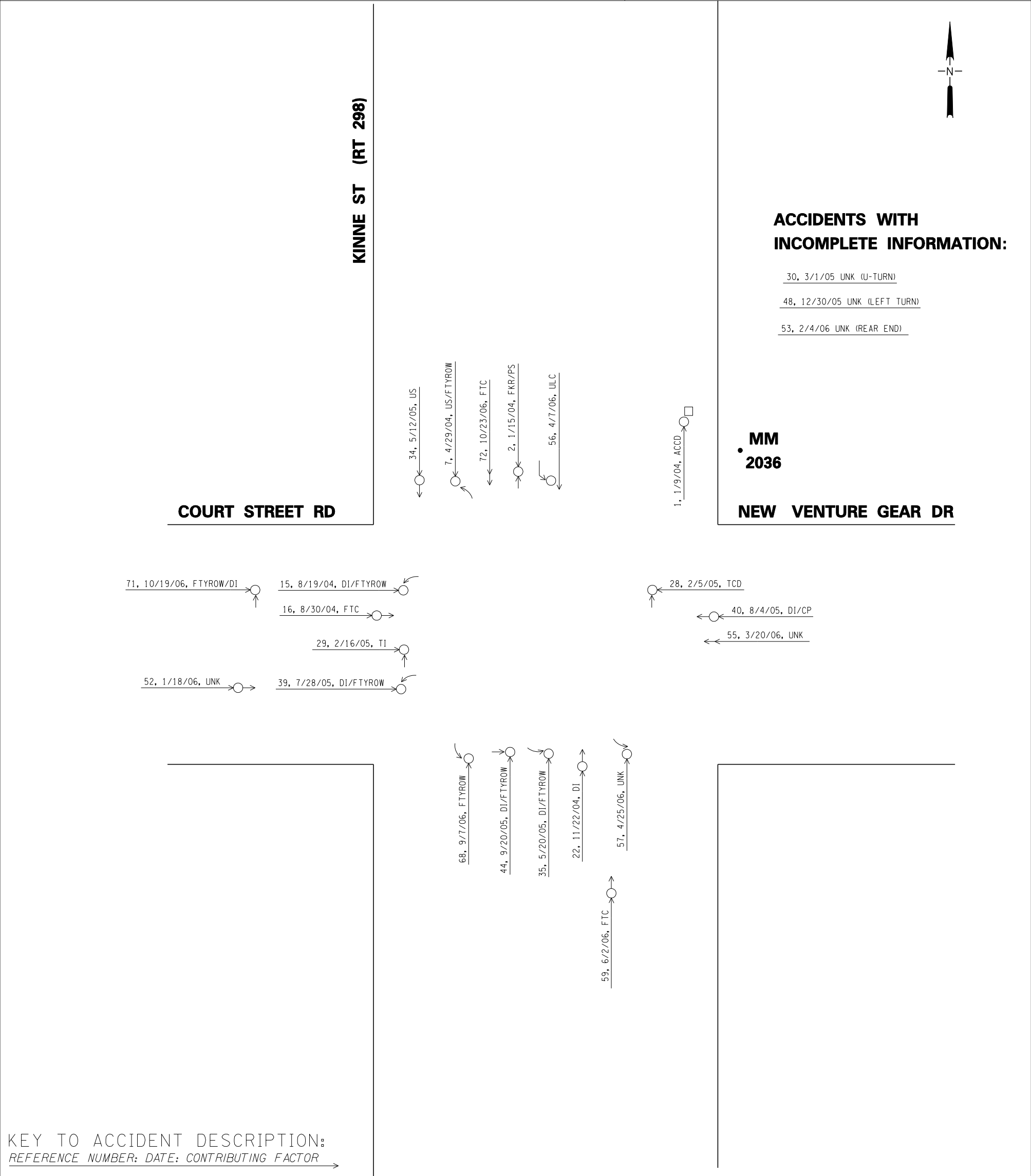
SYMBOLS	MANNER OF COLLISION	KEY TO CONTRIBUTING FACTORS	
←— MOVING VEHICLE	←•← REAR-END	FTYROW - FAILURE TO YIELD ROW	BUS - BACKING UNSAFELY
←→→→ BACKING VEHICLE	←→ SIDE-SWIPE	DI - DRIVER INATTENTION	DRUG - DRUG (ILLEGAL)
←• STOPPED VEHICLE	←→ OUT OF CONTROL	PASS - PASSING OR LANE USAGE IMPROPER	OBS - OBSTRUCTION/DEBRIS
▢ PARKED VEHICLE	←→ SKIDDING	TI - TURNING IMPROPERLY	ILL - ILLNESS
□ FIXED OBJECT	←→ OVERTURNED	UNK - UNKNOWN	DISBL - PHYSICAL DISABILITY
○ PERSONAL INJURY	→← HEAD-ON	FTC - FOLLOWING TOO CLOSELY	TCDI - TRAFFIC CONTROL DEVICE IMPROPER
● FATAL INJURY	→← LEFT-TURN	PS - PAVEMENT SLIPPERY	
←-P-- PEDESTRIAN	→← RIGHT-ANGLE	DINEX - DRIVER INEXPERIENCE	
←-B-- BICYCLE	→↓ SIDE IMPACT	VOL - VIEW OBSTRUCTED/LIMITED	
	→↘ RIGHT TURN	AL - ALCOHOL INVOLVEMENT	
		TCD - TRAFFIC CONTROL DISREGARD	
		US - UNSAFE SPEED	
		ASL - DRIVER FELL ASLEEP	
		ULC - UNSAFE LANE CHANGE	
		MF - MECHANICAL FAILURE	

COLLISION DIAGRAM

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MUNICIPALITY TOWN OF DEWITT	COUNTY ONONDAGA	FILE 895.001.001
SECTION KINNE ST & COURT ST RD/NEW VENTURE GEAR DR		FIGURE NO. 7
PERIOD 3 YR MO	FROM 1/04 TO 12/06	BY KMF/PTT DATE 12 / 29 / 08



SYMBOLS		MANNER OF COLLISION	KEY TO CONTRIBUTING FACTORS	
←MOVING VEHICLE	←•←REAR-END	FTYROW - FAILURE TO YIELD ROW	BUS -	BACKING UNSAFELY
↔→→BACKING VEHICLE	←↖SIDE-SWIPE	DI - DRIVER INATTENTION	DRUG -	DRUG (ILLEGAL)
←•STOPPED VEHICLE	←↗OUT OF CONTROL	PASS - PASSING OR LANE USAGE IMPROPER	OBS -	OBSTRUCTION/DEBRIS
▢PARKED VEHICLE	←↘SKIDDING	TI - TURNING IMPROPERLY	ILL -	ILLNESS
□FIXED OBJECT	←↻OVERTURNED	UNK - UNKNOWN	DISBL -	PHYSICAL DISABILITY
○PERSONAL INJURY	→←HEAD-ON	FTC - FOLLOWING TOO CLOSELY	CP -	CELL PHONE
●FATAL INJURY	→↖LEFT-TURN	PS - PAVEMENT SLIPPERY	ACCD -	ACCELERATOR DEFECTIVE
←-P--PEDESTRIAN	→↘RIGHT-ANGLE	DINEX - DRIVER INEXPERIENCE	FKR -	FAILURE TO KEEP RIGHT
←-B--BICYCLE	↓↘SIDE IMPACT	VOL - VIEW OBSTRUCTED/LIMITED		
	↘↗RIGHT TURN	AL - ALCOHOL INVOLVEMENT		
		TCD - TRAFFIC CONTROL DISREGARD		
		US - UNSAFE SPEED		
		ASL - DRIVER FELL ASLEEP		
		ULC - UNSAFE LANE CHANGE		
		MF - MECHANICAL FAILURE		

Appendix F:

Trip Generation Calculations



Project	Land Use	ITE Land Use	Units		Rate			Equation				AM		PM	
					Daily	AM	PM	Daily	AM	PM		In	Out	In	Out
Northern Off-Site Parcel	Office	General Office (710)	56	KSF	617	87	83	854	118	142		76	10	14	69
West Parcel	Hotel	Hotel (310)	140	Rooms	1144	78	83	880	62	~		48	31	44	39
	Office	General Office (710)	56	KSF	617	87	83	854	118	142		76	10	14	69
	Flex Space**	General Office (710)	60	KSF	661	93	89	900	125	146		82	11	15	74
	Office	General Office (710)	105	KSF	1156	163	156	1385	195	196		143	20	27	130
East Parcel	Office	General Office (710)	110	KSF	1211	171	164	1436	202	202		150	20	28	136
	Multi-user Flex Space **	General Office (710)	230	KSF	2532	357	343	2533	365	336		314	43	58	284
	Wellness Center*	Health/Fitness Club (492)	66	KSF	~	91	233	~	~	224		80	11	40	193
	Office (4-36 KSF Buildings)	General Office (710)	144	KSF	1585	223	215	1767	251	240		196	27	36	178
		Total Office	471	KSF											
		Total Flex	290	KSF											
		Total Hotel	140	Rooms											
		Total Other	66	KSF											
		Grand Total	827	KSF		1349	1449					1166	183	276	1173
			140	Rooms											

Used adjacent street traffic peak

* Wellness center will be an amenity for East Parcel Development - assume 75% internal capture

** Office is most conservative use for flex space therefore it was used in this analysis

Blue script identifies data used in the analysis - since each office building had its own parking (besides the 4-buildings on the East Parcel) they were analyzed as individual office buildings. The equation for office space seems to be more appropriate with larger buildings.

Based on ITE Trip Generation Manual, 8th Edition

Mode Share

Based on 2000 CTPP data for Carrier Site Area

Carrier Mode Share	
Mode	Percent
Drive Alone	88.90%
Car Pool	9.30%
Transit	0.70%
Walk/Bike/Motor Bike	0.60%
Taxi/Other Means	0.30%
Telecommute	0.00%

	Unadjusted Trip Generation		AM	PM
	In	Out		
Office	76	10	14	69
Hotel	48	31	44	39
Office	76	10	14	69
Flex Space**	82	11	15	74
Office	143	20	27	130
Office	150	20	28	136
Multi-user Flex Space **	314	43	58	284
Wellness Center*	80	11	40	193
Office (4-36 KSF Buildings)	196	27	36	178

	Adjusted Trip Generation		AM	PM
	In	Out		
Office	72	10	13	65
Northern Off-site Total	72	10	13	65
Hotel	48	31	44	39
Office	72	10	13	65
Flex Space**	77	10	14	70
Office	135	18	25	122
West Total	331	69	96	296
Office	141	19	26	128
Multi-user Flex Space **	295	40	55	267
Wellness Center*	19	3	9	45
Office (4-36 KSF Buildings)	184	25	34	167
East Total	639	87	124	608
GRAND TOTAL	1042	166	234	968
ROUNDED GRAND TOTAL	1040	165	235	970

Note: Hotel use was not adjusted for mode share since ITE information collected at suburban sites but ITE recommends applying mode share reductions to the office data

Appendix G:

SYNCHRO Reports

Lanes, Volumes, Timings
3: James St & Thompson Rd

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	205	240	10	115	185	95	55	955	50	80	690	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.994			0.949			0.993			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3518	0	1770	3359	0	1770	3514	0	1770	3458	0
Flt Permitted	0.332			0.554			0.228			0.097		
Satd. Flow (perm)	618	3518	0	1032	3359	0	425	3514	0	181	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			95			6			25	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	250	293	12	129	208	107	71	1224	64	87	750	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	250	305	0	129	315	0	71	1288	0	87	886	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	17.0	26.0	0.0	17.0	26.0	0.0	12.0	35.0	0.0	12.0	35.0	0.0
Total Split (%)	18.9%	28.9%	0.0%	18.9%	28.9%	0.0%	13.3%	38.9%	0.0%	13.3%	38.9%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	24.6	13.1		20.0	10.7		47.4	40.8		48.0	41.1	
Actuated g/C Ratio	0.27	0.15		0.22	0.12		0.53	0.45		0.53	0.46	
v/c Ratio	0.79	0.59		0.42	0.65		0.22	0.81		0.40	0.56	
Control Delay	44.2	40.3		27.2	32.2		11.2	27.6		23.5	18.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	44.2	40.3		27.2	32.2		11.2	27.6		23.5	18.7	
LOS	D	D		C	C		B	C		C	B	
Approach Delay		42.0			30.8			26.7			19.1	
Approach LOS		D			C			C			B	
Queue Length 50th (ft)	114	85		55	63		16	316		22	126	
Queue Length 95th (ft)	150	111		90	98		34	376		m58	m218	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	324	824		359	857		335	1597		229	1594	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.77	0.37		0.36	0.37		0.21	0.81		0.38	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 27.6

Intersection LOS: C

Intersection Capacity Utilization 69.2%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 3: James St & Thompson Rd

 ø1	 ø2	 ø3	 ø4
12 s	35 s	17 s	26 s
 ø5	 ø6	 ø7	 ø8
12 s	35 s	17 s	26 s

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Existing AM Peak Hour

2/5/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	15	950	95	60	805
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.986			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1612	1442	3396	0	1770	3312
Flt Permitted	0.950				0.172	
Satd. Flow (perm)	1612	1442	3396	0	320	3312
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22	17			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1079
Travel Time (s)	6.9		44.5			16.3
Peak Hour Factor	0.69	0.69	0.82	0.82	0.93	0.93
Heavy Vehicles (%)	12%	12%	5%	3%	2%	9%
Adj. Flow (vph)	22	22	1159	116	65	866
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	22	1275	0	65	866
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	12.0	12.0	51.0	0.0	27.0	78.0
Total Split (%)	13.3%	13.3%	56.7%	0.0%	30.0%	86.7%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.0	7.0	69.2		77.8	79.8
Actuated g/C Ratio	0.08	0.08	0.77		0.86	0.89
v/c Ratio	0.18	0.17	0.49		0.17	0.29
Control Delay	42.4	19.5	16.0		3.0	1.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	42.4	19.5	16.0		3.0	1.3
LOS	D	B	B		A	A
Approach Delay	30.9		16.0			1.5
Approach LOS	C		B			A
Queue Length 50th (ft)	12	0	406		5	47
Queue Length 95th (ft)	27	15	426		19	50

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Existing AM Peak Hour

2/5/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			999
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	125	132	2615		631	2936
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	0.18	0.17	0.49		0.10	0.29

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 37 (41%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 10.3

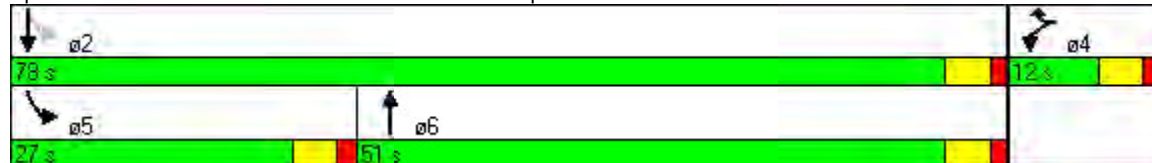
Intersection LOS: B

Intersection Capacity Utilization 53.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
7: Existing Site Access (South) & Thompson Rd

Existing AM Peak Hour

2/5/2009

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	5	15	950	860	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	440			0
Storage Lanes	0	0	1			0
Taper Length (ft)	0	0	25			0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.999	
Flt Protected			0.950			
Satd. Flow (prot)	0	1611	1770	3438	3435	0
Flt Permitted			0.249			
Satd. Flow (perm)	0	1611	464	3438	3435	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		273			1	
Link Speed (mph)	30			45	45	
Link Distance (ft)	150			1079	847	
Travel Time (s)	3.4			16.3	12.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	2%	5%	5%	2%
Adj. Flow (vph)	0	6	18	1131	1024	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	6	18	1131	1030	0
Turn Type		custom	pm+pt			
Protected Phases		8	1	6	2	
Permitted Phases			6			
Detector Phase		8	1	6	2	
Switch Phase						
Minimum Initial (s)		6.0	6.0	18.0	18.0	
Minimum Split (s)		11.0	11.0	31.0	23.0	
Total Split (s)	0.0	13.0	15.0	77.0	62.0	0.0
Total Split (%)	0.0%	14.4%	16.7%	85.6%	68.9%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5	
All-Red Time (s)		1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode		None	None	C-Max	C-Max	
Act Effct Green (s)		6.0	82.8	86.8	81.4	
Actuated g/C Ratio		0.07	0.92	0.96	0.90	
v/c Ratio		0.02	0.04	0.34	0.33	
Control Delay		0.0	0.2	0.3	5.4	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		0.0	0.2	0.3	5.4	
LOS		A	A	A	A	
Approach Delay				0.3	5.4	
Approach LOS				A	A	
Queue Length 50th (ft)		0	0	0	0	
Queue Length 95th (ft)		0	m0	5	336	

Lanes, Volumes, Timings
 7: Existing Site Access (South) & Thompson Rd

Existing AM Peak Hour

2/5/2009



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	70			999	767	
Turn Bay Length (ft)			440			
Base Capacity (vph)		392	572	3316	3107	
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		0.02	0.03	0.34	0.33	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 44 (49%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 2.7

Intersection LOS: A

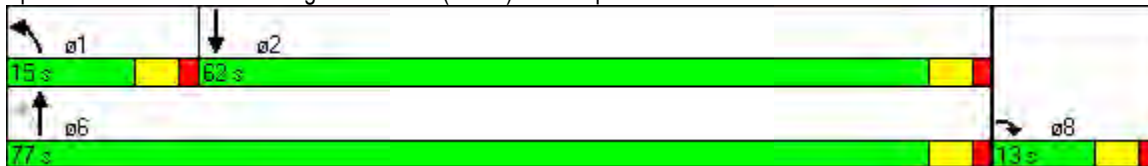
Intersection Capacity Utilization 37.3%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 7: Existing Site Access (South) & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	5	5	195	5	75	15	1115	130	45	700	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.955				0.850			0.850		0.997	
Flt Protected		0.984			0.954		0.950			0.950		
Satd. Flow (prot)	0	1750	0	0	1777	1583	1770	3471	1583	1770	3462	0
Flt Permitted		0.895			0.719		0.313			0.147		
Satd. Flow (perm)	0	1592	0	0	1339	1583	583	3471	1583	274	3462	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				86			149		4	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	6	6	6	224	6	86	17	1282	149	52	805	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	230	86	17	1282	149	52	822	0
Turn Type	Perm			Perm		Perm	pm+pt		Perm	pm+pt		
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4	6		6	2		
Detector Phase	8	8		4	4	4	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0	11.0	11.0	20.0	20.0	11.0	20.0	
Total Split (s)	23.0	23.0	0.0	23.0	23.0	23.0	12.0	55.0	55.0	12.0	55.0	0.0
Total Split (%)	25.6%	25.6%	0.0%	25.6%	25.6%	25.6%	13.3%	61.1%	61.1%	13.3%	61.1%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		17.1			17.1	17.1	59.8	56.2	56.2	60.9	58.5	
Actuated g/C Ratio		0.19			0.19	0.19	0.66	0.62	0.62	0.68	0.65	
v/c Ratio		0.06			0.90	0.23	0.04	0.59	0.14	0.18	0.37	
Control Delay		23.7			73.0	8.9	2.7	5.9	0.4	7.8	12.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		23.7			73.0	8.9	2.7	5.9	0.4	7.8	12.8	
LOS		C			E	A	A	A	A	A	B	
Approach Delay		23.7			55.5			5.3			12.5	
Approach LOS		C			E			A			B	
Queue Length 50th (ft)		6			127	0	2	91	1	8	83	
Queue Length 95th (ft)		23			#244	35	m2	104	m1	32	273	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)						100	320		410	220		
Base Capacity (vph)		323			268	385	484	2167	1045	303	2250	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.06			0.86	0.22	0.04	0.59	0.14	0.17	0.37	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 63.5%

ICU Level of Service B

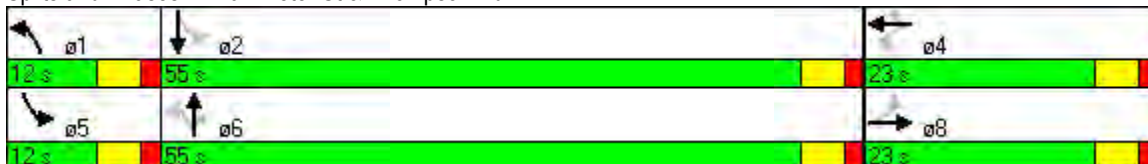
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	5	0	5	5	5	5	5	940	5	55	15	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.871			0.955			0.999				0.992
Flt Protected	0.950	0.993			0.984		0.950				0.950	
Satd. Flow (prot)	1681	1531	0	0	1750	0	1770	3435	0	0	1770	3416
Flt Permitted	0.597	0.979					0.244				0.197	
Satd. Flow (perm)	1056	1509	0	0	1779	0	455	3435	0	0	367	3416
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		6			6			1				10
Link Speed (mph)		30			30			45				45
Link Distance (ft)		145			118			847				288
Travel Time (s)		3.3			2.7			12.8				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	6	0	6	6	6	6	6	1146	6	67	18	1049
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	5	7	0	0	18	0	6	1152	0	0	85	1110
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	14.0	23.0	0.0	9.0	9.0	0.0	12.0	55.0	0.0	12.0	12.0	55.0
Total Split (%)	15.6%	25.6%	0.0%	10.0%	10.0%	0.0%	13.3%	61.1%	0.0%	13.3%	13.3%	61.1%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	6.9	8.1			5.0		74.4	70.6			77.6	79.3
Actuated g/C Ratio	0.08	0.09			0.06		0.83	0.78			0.86	0.88
v/c Ratio	0.04	0.05			0.17		0.01	0.43			0.21	0.37
Control Delay	35.2	22.3			35.1		6.4	16.0			3.3	4.1
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	35.2	22.3			35.1		6.4	16.0			3.3	4.1
LOS	D	C			D		A	B			A	A
Approach Delay		27.7			35.1			15.9				4.0
Approach LOS		C			D			B				A
Queue Length 50th (ft)	3	1			7		1	320			0	0
Queue Length 95th (ft)	11	11			25		m6	360			23	210

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Existing AM Peak Hour

2/5/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	50
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.82
Heavy Vehicles (%)	2%
Adj. Flow (vph)	61
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		65			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	186	307			105		482	2694			426	3011
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	0.03	0.02			0.17		0.01	0.43			0.20	0.37

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 5 (6%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 48.9%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd

 ø1	 ø2	 ø3	 ø4
12 s	55 s	14 s	19 s
 ø5	 ø6	 ø7	 ø8
12 s	55 s	23 s	



Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	630	165	195	410	5	225	15	190	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.998			0.861			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3403	0	1770	1790	0	1770	1604	0	1770	1515	0
Flt Permitted	0.495			0.201			0.731			0.467		
Satd. Flow (perm)	922	3403	0	374	1790	0	1362	1604	0	870	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39			1			232			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	692	181	219	461	6	274	18	232	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	873	0	219	467	0	274	250	0	10	40	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		11.0	11.0		11.0	11.0	
Total Split (s)	20.0	40.0	0.0	20.0	40.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	21.1%	42.1%	0.0%	21.1%	42.1%	0.0%	36.8%	36.8%	0.0%	36.8%	36.8%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	35.0	30.1		44.5	42.8		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.47	0.40		0.60	0.57		0.26	0.26		0.26	0.26	
v/c Ratio	0.02	0.63		0.55	0.45		0.77	0.42		0.04	0.10	
Control Delay	8.7	20.4		13.5	13.0		41.3	6.8		22.6	14.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.7	20.4		13.5	13.0		41.3	6.8		22.6	14.7	
LOS	A	C		B	B		D	A		C	B	
Approach Delay		20.3			13.1			24.8			16.3	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	2	155		42	106		120	6		4	7	
Queue Length 95th (ft)	10	283		95	285		199	45		9	13	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)	1009			1114			1031			218		
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	719	1691		517	1055		573	809		366	649	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.52		0.42	0.44		0.48	0.31		0.03	0.06	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 74.5

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 19.0

Intersection LOS: B

Intersection Capacity Utilization 65.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

 ø1	 ø2	 ø4
20 s	40 s	35 s
 ø5	 ø6	 ø8
20 s	40 s	35 s

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	30	15	130	35	85	10	435	380	290	470	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.949			0.893				0.850		0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1768	0	1687	1663	0	1770	3539	1583	1770	1814	0
Flt Permitted	0.671			0.722			0.440			0.407		
Satd. Flow (perm)	1250	1768	0	1282	1663	0	820	3539	1583	758	1814	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			96				396		11	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	41	35	18	146	39	96	10	453	396	322	522	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	53	0	146	135	0	10	453	396	322	594	0
Turn Type	Perm			Perm			Perm		Prot	pm+pt		
Protected Phases		3			3			2	2	1	6	
Permitted Phases	3			3			2			6		
Detector Phase	3	3		3	3		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	40.0	40.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0	20.0	60.0	0.0
Total Split (%)	40.0%	40.0%	0.0%	40.0%	40.0%	0.0%	40.0%	40.0%	40.0%	20.0%	60.0%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	16.0	16.0		16.0	16.0		35.6	35.6	35.6	53.2	53.2	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.43	0.43	0.43	0.64	0.64	
v/c Ratio	0.17	0.15		0.59	0.34		0.03	0.30	0.44	0.53	0.51	
Control Delay	28.8	20.5		40.6	12.5		17.9	17.8	3.9	10.9	10.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	28.8	20.5		40.6	12.5		17.9	17.8	3.9	10.9	10.8	
LOS	C	C		D	B		B	B	A	B	B	
Approach Delay		24.1			27.1			11.4			10.8	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	18	15		70	17		3	78	0	64	140	
Queue Length 95th (ft)	42	41		126	60		15	140	58	139	290	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Existing AM Peak Hour
2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	498	715		510	720		350	1513	904	643	1164	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.08	0.07		0.29	0.19		0.03	0.30	0.44	0.50	0.51	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 83.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 68.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Existing AM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	5	10	15	70	250	30	180	10	100	225	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.932				0.850		0.993			0.984	
Flt Protected		0.988			0.991			0.993			0.986	
Satd. Flow (prot)	0	1715	0	0	1846	1583	0	3490	0	0	3434	0
Flt Permitted		0.902			0.933			0.993			0.986	
Satd. Flow (perm)	0	1566	0	0	1738	1583	0	3490	0	0	3434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				284		5			15	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	6	6	12	17	80	284	31	188	10	110	247	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	97	284	0	229	0	0	401	0
Turn Type	Perm			Perm		pm+ov	Split			Split		
Protected Phases		4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	30.0	30.0	30.0	0.0	30.0	30.0	0.0
Total Split (%)	33.3%	33.3%	0.0%	33.3%	33.3%	33.3%	33.3%	33.3%	0.0%	33.3%	33.3%	0.0%
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effct Green (s)		9.1			9.3	36.9		25.2			25.2	
Actuated g/C Ratio		0.13			0.13	0.51		0.35			0.35	
v/c Ratio		0.11			0.43	0.30		0.19			0.33	
Control Delay		20.8			36.2	2.1		17.9			18.7	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		20.8			36.2	2.1		17.9			18.7	
LOS		C			D	A		B			B	
Approach Delay		20.8			10.8			17.9			18.7	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)		5			42	0		37			68	
Queue Length 95th (ft)		22			83	29		67			111	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Existing AM Peak Hour
2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		555			607	947		1222			1209	
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		0.04			0.16	0.30		0.19			0.33	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 72.2

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 15.7

Intersection LOS: B

Intersection Capacity Utilization 37.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis

13: McDonalds Driveway & Thompson Rd

Existing AM Peak Hour
2/5/2009

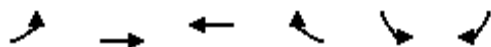


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	65	0	1000	915	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.88	0.82	0.82	0.82	0.83
Hourly flow rate (vph)	0	74	0	1220	1116	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				288		
pX, platoon unblocked	0.84					
vC, conflicting volume	1762	408	1188			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1524	408	1188			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	91	592	583			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	74	610	610	446	446	295
Volume Left	0	0	0	0	0	0
Volume Right	74	0	0	0	0	72
cSH	592	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.36	0.36	0.26	0.26	0.17
Queue Length 95th (ft)	11	0	0	0	0	0
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		31.0%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

20: Carrier Pkwy & Old Collamer Rd

Existing AM Peak Hour
2/5/2009

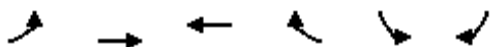


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	155	865	600	15	25	165
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	187	1042	690	17	30	199
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	707				1593	698
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	707				1593	698
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	79				61	48
cM capacity (veh/h)	887				77	383
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	187	521	521	707	229	
Volume Left	187	0	0	0	30	
Volume Right	0	0	0	17	199	
cSH	887	1700	1700	1700	252	
Volume to Capacity	0.21	0.31	0.31	0.42	0.91	
Queue Length 95th (ft)	20	0	0	0	199	
Control Delay (s)	10.1	0.0	0.0	0.0	78.1	
Lane LOS	B				F	
Approach Delay (s)	1.5			0.0	78.1	
Approach LOS					F	
Intersection Summary						
Average Delay			9.1			
Intersection Capacity Utilization			62.6%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

22: Court St Rd & Deere Rd

Existing AM Peak Hour
2/5/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Volume (veh/h)	35	160	185	5	5	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	49	225	191	5	9	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	196				517	193
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196				517	193
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	95
cM capacity (veh/h)	1319				479	800
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	275	196	52			
Volume Left	49	0	9			
Volume Right	0	5	43			
cSH	1319	1700	719			
Volume to Capacity	0.04	0.12	0.07			
Queue Length 95th (ft)	3	0	6			
Control Delay (s)	1.7	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			33.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Existing AM Peak Hour

2/5/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	785	75	60	575	15	10	0	5	15	5	35
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)	33	872	83	67	639	17	11	0	6	17	6	39
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.81						0.81	0.81		0.81	0.81	0.81
vC, conflicting volume	656			956			1794	1769	478	1289	1803	647
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	451			956			1866	1835	478	1238	1876	441
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 %	96			91			59	100	99	82	89	91
cM capacity (veh/h)	890			715			27	53	534	95	50	454
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	33	581	374	67	656	17	61					
Volume Left	33	0	0	67	0	11	17					
Volume Right	0	0	83	0	17	6	39					
cSH	890	1700	1700	715	1700	40	164					
Volume to Capacity	0.04	0.34	0.22	0.09	0.39	0.42	0.37					
Queue Length 95th (ft)	3	0	0	8	0	36	40					
Control Delay (s)	9.2	0.0	0.0	10.6	0.0	149.5	39.5					
Lane LOS	A			B		F	E					
Approach Delay (s)	0.3			1.0		149.5	39.5					
Approach LOS						F	E					
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			47.8%			ICU Level of Service			A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	395	35	125	375	95	95	770	150	120	855	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.970			0.975			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3433	0	1770	3451	0	1770	3437	0
Flt Permitted	0.227			0.319			0.114			0.127		
Satd. Flow (perm)	423	3497	0	594	3433	0	212	3451	0	237	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			32			26			34	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	178	439	39	136	408	103	107	865	169	130	929	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	478	0	136	511	0	107	1034	0	130	1152	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	17.0	25.0	0.0	17.0	25.0	0.0	15.0	33.0	0.0	15.0	33.0	0.0
Total Split (%)	18.9%	27.8%	0.0%	18.9%	27.8%	0.0%	16.7%	36.7%	0.0%	16.7%	36.7%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effct Green (s)	28.1	17.8		25.7	16.6		42.7	35.1		43.5	35.5	
Actuated g/C Ratio	0.31	0.20		0.29	0.18		0.47	0.39		0.48	0.39	
v/c Ratio	0.62	0.68		0.47	0.78		0.46	0.76		0.52	0.84	
Control Delay	29.8	38.0		24.9	41.1		19.6	29.5		25.8	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.8	38.0		24.9	41.1		19.6	29.5		25.8	34.8	
LOS	C	D		C	D		B	C		C	C	
Approach Delay		35.8			37.7			28.6			33.9	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	70	129		52	137		29	261		1	243	
Queue Length 95th (ft)	111	178		87	184		64	#418		m97	#412	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	319	787		346	788		279	1363		290	1378	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.56	0.61		0.39	0.65		0.38	0.76		0.45	0.84	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 33.3

Intersection LOS: C

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd

 Ø1	 Ø2	 Ø3	 Ø4
15 s	33 s	17 s	25 s
 Ø5	 Ø6	 Ø7	 Ø8
15 s	33 s	17 s	25 s

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Existing PM Peak Hour

2/5/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	75	65	960	10	5	920
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3465	0	1770	3539
Flt Permitted	0.950				0.197	
Satd. Flow (perm)	1770	1583	3465	0	367	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		118	1			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1079
Travel Time (s)	6.9		44.5			16.3
Peak Hour Factor	0.55	0.55	0.85	0.85	0.81	0.81
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	136	118	1129	12	6	1136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	118	1141	0	6	1136
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	36.0	36.0	42.0	0.0	12.0	54.0
Total Split (%)	40.0%	40.0%	46.7%	0.0%	13.3%	60.0%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	11.5	11.5	66.1		68.5	68.5
Actuated g/C Ratio	0.13	0.13	0.73		0.76	0.76
v/c Ratio	0.60	0.39	0.45		0.02	0.42
Control Delay	47.7	10.5	9.1		1.4	3.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	47.7	10.5	9.1		1.4	3.3
LOS	D	B	A		A	A
Approach Delay	30.5		9.1			3.3
Approach LOS	C		A			A
Queue Length 50th (ft)	74	0	97		1	117
Queue Length 95th (ft)	72	4	383		m1	16

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Existing PM Peak Hour

2/5/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			999
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	610	623	2547		389	2695
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	0.22	0.19	0.45		0.02	0.42

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 37 (41%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 8.6

Intersection LOS: A

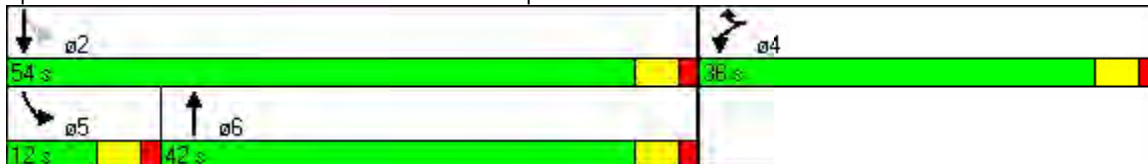
Intersection Capacity Utilization 41.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
7: Existing Site Access (South) & Thompson Rd

Existing PM Peak Hour

2/5/2009

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	20	5	1025	910	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	440			0
Storage Lanes	0	0	1			0
Taper Length (ft)	0	0	25			0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865				
Flt Protected			0.950			
Satd. Flow (prot)	0	1611	1770	3505	3505	0
Flt Permitted			0.267			
Satd. Flow (perm)	0	1611	497	3505	3505	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		215				
Link Speed (mph)	30			45	45	
Link Distance (ft)	150			1079	847	
Travel Time (s)	3.4			16.3	12.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	3%	2%
Adj. Flow (vph)	0	21	5	1090	968	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	21	5	1090	968	0
Turn Type		custom	pm+pt			
Protected Phases		8	1	6	2	
Permitted Phases			6			
Detector Phase		8	1	6	2	
Switch Phase						
Minimum Initial (s)		6.0	6.0	18.0	18.0	
Minimum Split (s)		31.0	11.0	23.0	23.0	
Total Split (s)	0.0	31.0	12.0	59.0	47.0	0.0
Total Split (%)	0.0%	34.4%	13.3%	65.6%	52.2%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5	
All-Red Time (s)		1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode		None	None	C-Max	C-Max	
Act Effct Green (s)		6.0	80.6	83.6	81.4	
Actuated g/C Ratio		0.07	0.90	0.93	0.90	
v/c Ratio		0.07	0.01	0.33	0.31	
Control Delay		0.4	0.4	0.4	5.1	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		0.4	0.4	0.4	5.1	
LOS		A	A	A	A	
Approach Delay				0.4	5.1	
Approach LOS				A	A	
Queue Length 50th (ft)		0	0	0	0	
Queue Length 95th (ft)		0	m0	10	338	

Lanes, Volumes, Timings
 7: Existing Site Access (South) & Thompson Rd

Existing PM Peak Hour

2/5/2009



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	70			999	767	
Turn Bay Length (ft)			440			
Base Capacity (vph)		618	544	3256	3170	
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		0.03	0.01	0.33	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 44 (49%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 2.6

Intersection LOS: A

Intersection Capacity Utilization 38.5%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 7: Existing Site Access (South) & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	10	40	180	5	50	15	860	150	115	960	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.928				0.850			0.850		0.999	
Flt Protected		0.984			0.953		0.950			0.950		
Satd. Flow (prot)	0	1701	0	0	1775	1583	1770	3471	1583	1770	3468	0
Flt Permitted		0.779			0.714		0.249			0.228		
Satd. Flow (perm)	0	1347	0	0	1330	1583	464	3471	1583	425	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44				55			165			1
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	27	11	44	198	5	55	16	945	165	126	1055	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	0	203	55	16	945	165	126	1060	0
Turn Type	Perm			Perm		Perm	pm+pt		Perm	pm+pt		
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4	6		6	2		
Detector Phase	8	8		4	4	4	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0	11.0	11.0	20.0	20.0	11.0	20.0	
Total Split (s)	22.0	22.0	0.0	22.0	22.0	22.0	12.0	56.0	56.0	12.0	56.0	0.0
Total Split (%)	24.4%	24.4%	0.0%	24.4%	24.4%	24.4%	13.3%	62.2%	62.2%	13.3%	62.2%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)		15.8			15.8	15.8	58.7	52.7	52.7	63.4	62.0	
Actuated g/C Ratio		0.18			0.18	0.18	0.65	0.59	0.59	0.70	0.69	
v/c Ratio		0.30			0.87	0.17	0.04	0.46	0.17	0.32	0.44	
Control Delay		20.2			70.6	10.4	3.2	7.3	0.6	8.6	10.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		20.2			70.6	10.4	3.2	7.3	0.6	8.6	10.0	
LOS		C			E	B	A	A	A	A	A	
Approach Delay		20.2			57.8			6.2			9.8	
Approach LOS		C			E			A			A	
Queue Length 50th (ft)		18			111	0	2	77	0	18	81	
Queue Length 95th (ft)		58			#228	31	m2	94	m2	89	301	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129				2854
Turn Bay Length (ft)						100	320		410	220		
Base Capacity (vph)		290			251	344	410	2033	996	404		2390
Starvation Cap Reductn		0			0	0	0	0	0	0		0
Spillback Cap Reductn		0			0	0	0	0	0	0		0
Storage Cap Reductn		0			0	0	0	0	0	0		0
Reduced v/c Ratio		0.28			0.81	0.16	0.04	0.46	0.17	0.31		0.44

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 13.3

Intersection LOS: B

Intersection Capacity Utilization 61.1%

ICU Level of Service B

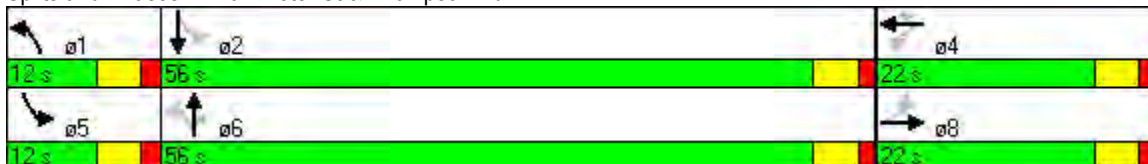
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	50	5	5	5	0	10	5	1000	25	75	10	905
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.976			0.910			0.996				0.999
Flt Protected	0.950	0.967			0.984		0.950				0.950	
Satd. Flow (prot)	1681	1670	0	0	1668	0	1770	3492	0	0	1770	3502
Flt Permitted	0.645	0.731					0.295				0.215	
Satd. Flow (perm)	1141	1263	0	0	1695	0	550	3492	0	0	400	3502
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		5			10			3				1
Link Speed (mph)		30			30			45				45
Link Distance (ft)		145			118			847				288
Travel Time (s)		3.3			2.7			12.8				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	52	5	5	5	0	10	5	1042	26	82	10	943
Shared Lane Traffic (%)	40%											
Lane Group Flow (vph)	31	31	0	0	15	0	5	1068	0	0	92	948
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	14.0	33.0	0.0	19.0	19.0	0.0	12.0	45.0	0.0	12.0	12.0	45.0
Total Split (%)	15.6%	36.7%	0.0%	21.1%	21.1%	0.0%	13.3%	50.0%	0.0%	13.3%	13.3%	50.0%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	7.9	8.6			4.6		71.6	67.8			75.0	75.6
Actuated g/C Ratio	0.09	0.10			0.05		0.80	0.75			0.83	0.84
v/c Ratio	0.23	0.22			0.15		0.01	0.41			0.21	0.32
Control Delay	39.4	34.3			29.5		4.4	16.2			3.8	4.5
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	39.4	34.3			29.5		4.4	16.2			3.8	4.5
LOS	D	C			C		A	B			A	A
Approach Delay		36.8			29.5			16.1				4.4
Approach LOS		D			C			B				A
Queue Length 50th (ft)	17	14			3		1	259			7	47
Queue Length 95th (ft)	40	37			22		m3	390			30	206

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Existing PM Peak Hour

2/5/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	5
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	2%
Adj. Flow (vph)	5
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		65			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	192	414			272		538	2632			440	2943
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	0.16	0.07			0.06		0.01	0.41			0.21	0.32

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 11.2

Intersection LOS: B

Intersection Capacity Utilization 51.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd

 ø1	 ø2	 ø3	 ø4
12 s	45 s	14 s	19 s
 ø5	 ø6	 ø7	 ø8
12 s	45 s	33 s	



Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	585	180	230	590	5	235	15	240	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.999			0.859			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3390	0	1770	1861	0	1770	1600	0	1770	1753	0
Flt Permitted	0.221			0.184			0.736			0.332		
Satd. Flow (perm)	412	3390	0	343	1861	0	1371	1600	0	618	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			1			312			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	680	209	307	787	7	305	19	312	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	889	0	307	794	0	305	331	0	7	33	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		11.0	11.0		11.0	11.0	
Total Split (s)	20.0	40.0	0.0	20.0	40.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	21.1%	42.1%	0.0%	21.1%	42.1%	0.0%	36.8%	36.8%	0.0%	36.8%	36.8%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	36.1	31.3		48.4	46.7		22.3	22.3		22.3	22.3	
Actuated g/C Ratio	0.45	0.39		0.60	0.58		0.28	0.28		0.28	0.28	
v/c Ratio	0.02	0.66		0.74	0.74		0.81	0.50		0.04	0.07	
Control Delay	9.6	23.4		23.1	20.6		45.9	6.6		23.6	16.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.6	23.4		23.1	20.6		45.9	6.6		23.6	16.5	
LOS	A	C		C	C		D	A		C	B	
Approach Delay		23.3			21.3			25.5			17.8	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	1	187		72	268		153	8		3	8	
Queue Length 95th (ft)	6	274		115	437		209	37		11	23	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	496	1548		479	1072		527	808		238	682	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.01	0.57		0.64	0.74		0.58	0.41		0.03	0.05	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 81

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 22.9

Intersection LOS: C

Intersection Capacity Utilization 66.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

 ø1	 ø2	 ø4
20 s	40 s	35 s
 ø5	 ø6	 ø8
20 s	40 s	35 s

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	25	20	365	25	245	5	700	120	85	440	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.933			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1738	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted	0.289			0.719			0.438			0.236		
Satd. Flow (perm)	538	1738	0	1339	1609	0	816	3539	1538	440	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			345				129		4	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1188			665	
Travel Time (s)		5.9			6.6			18.0			10.1	
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	65	32	26	579	40	389	5	753	129	104	537	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	58	0	579	429	0	5	753	129	104	567	0
Turn Type	Perm			Perm			Perm		Prot	pm+pt		
Protected Phases		3			3			2	2	1	6	
Permitted Phases	3			3			2			6		
Detector Phase	3	3		3	3		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	40.0	40.0	0.0	40.0	40.0	0.0	40.0	40.0	40.0	20.0	60.0	0.0
Total Split (%)	40.0%	40.0%	0.0%	40.0%	40.0%	0.0%	40.0%	40.0%	40.0%	20.0%	60.0%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	33.0	33.0		33.0	33.0		41.0	41.0	41.0	53.0	53.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.41	0.41	0.41	0.53	0.53	
v/c Ratio	0.37	0.10		1.31	0.56		0.01	0.52	0.18	0.31	0.58	
Control Delay	32.9	15.3		185.5	9.1		20.4	24.8	4.6	14.4	18.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	32.9	15.3		185.5	9.1		20.4	24.8	4.6	14.4	18.8	
LOS	C	B		F	A		C	C	A	B	B	
Approach Delay		24.6			110.4			21.8			18.1	
Approach LOS		C			F			C			B	
Queue Length 50th (ft)	31	14		~478	38		2	193	0	31	231	
Queue Length 95th (ft)	60	34		#391	24		10	263	38	53	289	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Existing PM Peak Hour

2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	178	591		442	762		334	1451	707	406	981	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.37	0.10		1.31	0.56		0.01	0.52	0.18	0.26	0.58	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.31

Intersection Signal Delay: 54.2

Intersection LOS: D

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

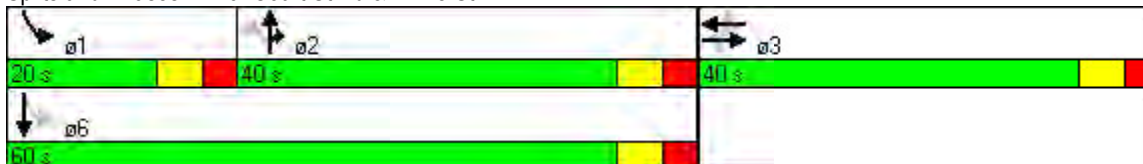
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Existing PM Peak Hour
2/5/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	50	40	5	5	140	5	290	25	205	220	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.965				0.850		0.988			0.998	
Flt Protected		0.979			0.976			0.999			0.977	
Satd. Flow (prot)	0	1760	0	0	1818	1583	0	3488	0	0	3451	0
Flt Permitted		0.858			0.872			0.999			0.977	
Satd. Flow (perm)	0	1542	0	0	1624	1583	0	3488	0	0	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				159		10			1	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	86	66	53	6	6	159	7	382	33	259	278	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	205	0	0	12	159	0	422	0	0	543	0
Turn Type	Perm			Perm		pm+ov	Split			Split		
Protected Phases		4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	30.0	30.0	30.0	0.0	30.0	30.0	0.0
Total Split (%)	33.3%	33.3%	0.0%	33.3%	33.3%	33.3%	33.3%	33.3%	0.0%	33.3%	33.3%	0.0%
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)		14.1			14.1	36.7		25.4			17.5	
Actuated g/C Ratio		0.20			0.20	0.51		0.35			0.24	
v/c Ratio		0.65			0.04	0.18		0.34			0.65	
Control Delay		34.9			24.5	2.0		19.8			28.9	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		34.9			24.5	2.0		19.8			28.9	
LOS		C			C	A		B			C	
Approach Delay		34.9			3.5			19.8			28.9	
Approach LOS		C			A			B			C	
Queue Length 50th (ft)		75			4	0		68			112	
Queue Length 95th (ft)		124			18	21		113			155	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)		555			572	1038		1234			1215	
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			0.02	0.15		0.34			0.45	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 72.3

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 23.7

Intersection LOS: C

Intersection Capacity Utilization 49.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 13: McDonalds Driveway & Thompson Rd

Existing PM Peak Hour
2/5/2009

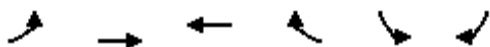


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	50	0	1135	935	45
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.71	0.92	0.96	0.96	0.68
Hourly flow rate (vph)	0	70	0	1182	974	66
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				288		
pX, platoon unblocked	0.85					
vC, conflicting volume	1598	358	1040			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1355	358	1040			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
cM capacity (veh/h)	120	639	664			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	70	591	591	390	390	261
Volume Left	0	0	0	0	0	0
Volume Right	70	0	0	0	0	66
cSH	639	1700	1700	1700	1700	1700
Volume to Capacity	0.11	0.35	0.35	0.23	0.23	0.15
Queue Length 95th (ft)	9	0	0	0	0	0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.3	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay		0.3				
Intersection Capacity Utilization		34.7%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

20: Carrier Pkwy & Old Collamer Rd

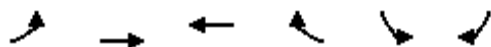
Existing PM Peak Hour
2/5/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	200	750	885	25	15	130
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	213	798	1106	31	22	191
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1138				1946	1122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138				1946	1122
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	65				40	4
cM capacity (veh/h)	610				37	200
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	213	399	399	1138	213	
Volume Left	213	0	0	0	22	
Volume Right	0	0	0	31	191	
cSH	610	1700	1700	1700	137	
Volume to Capacity	0.35	0.23	0.23	0.67	1.55	
Queue Length 95th (ft)	39	0	0	0	372	
Control Delay (s)	14.0	0.0	0.0	0.0	339.5	
Lane LOS	B				F	
Approach Delay (s)	3.0			0.0	339.5	
Approach LOS					F	
Intersection Summary						
Average Delay			31.9			
Intersection Capacity Utilization			78.0%	ICU Level of Service		D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Existing PM Peak Hour
2/5/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	25	230	145	15	20	50
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	27	250	173	18	22	56
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	190				486	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190				486	182
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	93
cM capacity (veh/h)	1383				530	856
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	277	190	79			
Volume Left	27	0	22			
Volume Right	0	18	56			
cSH	1383	1700	728			
Volume to Capacity	0.02	0.11	0.11			
Queue Length 95th (ft)	2	0	9			
Control Delay (s)	0.9	0.0	10.5			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			36.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Existing PM Peak Hour

2/5/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	725	15	10	810	20	40	0	35	10	5	60
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	32	771	16	11	862	21	43	0	37	11	5	64
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.60						0.60	0.60		0.60	0.60	0.60
vC, conflicting volume	883			787			1793	1747	394	1380	1745	872
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	473			787			1987	1912	394	1301	1907	455
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 %	95			99			0	100	94	83	86	81
cM capacity (veh/h)	652			828			15	38	605	64	38	332
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	32	514	273	11	883	80	80					
Volume Left	32	0	0	11	0	43	11					
Volume Right	0	0	16	0	21	37	64					
cSH	652	1700	1700	828	1700	27	160					
Volume to Capacity	0.05	0.30	0.16	0.01	0.52	2.91	0.50					
Queue Length 95th (ft)	4	0	0	1	0	241	60					
Control Delay (s)	10.8	0.0	0.0	9.4	0.0	1162.0	48.0					
Lane LOS	B			A		F	E					
Approach Delay (s)	0.4			0.1		1162.0	48.0					
Approach LOS						F	E					
Intersection Summary												
Average Delay			51.8									
Intersection Capacity Utilization			61.5%			ICU Level of Service			B			
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future No-Build AM Peak Hour
2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	247	279	12	133	215	114	64	1149	58	96	832	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.994			0.948			0.993			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3518	0	1770	3355	0	1770	3514	0	1770	3458	0
Flt Permitted	0.286			0.539			0.166			0.093		
Satd. Flow (perm)	533	3518	0	1004	3355	0	309	3514	0	173	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			85			8			32	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	301	340	15	149	242	128	82	1473	74	104	904	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	355	0	149	370	0	82	1547	0	104	1068	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	17.0	19.0	0.0	12.0	14.0	0.0	11.0	48.0	0.0	11.0	48.0	0.0
Total Split (%)	18.9%	21.1%	0.0%	13.3%	15.6%	0.0%	12.2%	53.3%	0.0%	12.2%	53.3%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	26.0	14.1		15.9	9.0		49.0	43.0		49.0	43.0	
Actuated g/C Ratio	0.29	0.16		0.18	0.10		0.54	0.48		0.54	0.48	
v/c Ratio	0.94	0.64		0.63	0.90		0.31	0.92		0.52	0.64	
Control Delay	68.8	41.1		39.8	57.1		10.9	32.2		23.7	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	68.8	41.1		39.8	57.1		10.9	32.2		23.7	16.0	
LOS	E	D		D	E		B	C		C	B	
Approach Delay		53.8			52.2			31.2			16.6	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	146	100		66	85		18	411		24	166	
Queue Length 95th (ft)	#230	131		#120	#165		31	402		m70	203	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future No-Build AM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	319	556		238	412		266	1683		201	1669	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.94	0.64		0.63	0.90		0.31	0.92		0.52	0.64	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 33.4

Intersection LOS: C

Intersection Capacity Utilization 78.9%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd

											
11 s	48 s	17 s	14 s	11 s	48 s	12 s	19 s				

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future No-Build AM Peak Hour

2/6/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	17	17	1125	110	70	965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.987			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1612	1442	3399	0	1770	3312
Flt Permitted	0.950				0.124	
Satd. Flow (perm)	1612	1442	3399	0	231	3312
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25	25			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1926
Travel Time (s)	6.9		44.5			29.2
Peak Hour Factor	0.69	0.69	0.82	0.82	0.93	0.93
Heavy Vehicles (%)	12%	12%	5%	3%	2%	9%
Adj. Flow (vph)	25	25	1372	134	75	1038
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	25	1506	0	75	1038
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	12.0	12.0	66.0	0.0	12.0	78.0
Total Split (%)	13.3%	13.3%	73.3%	0.0%	13.3%	86.7%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.0	7.0	69.2		77.8	79.8
Actuated g/C Ratio	0.08	0.08	0.77		0.86	0.89
v/c Ratio	0.20	0.19	0.58		0.24	0.35
Control Delay	43.0	19.1	11.5		3.2	2.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	43.0	19.1	11.5		3.2	2.0
LOS	D	B	B		A	A
Approach Delay	31.1		11.5			2.1
Approach LOS	C		B			A
Queue Length 50th (ft)	14	0	267		6	61
Queue Length 95th (ft)	29	15	335		12	79

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future No-Build AM Peak Hour

2/6/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			1846
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	125	135	2619		319	2936
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	0.20	0.19	0.58		0.24	0.35

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 37 (41%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 7.9

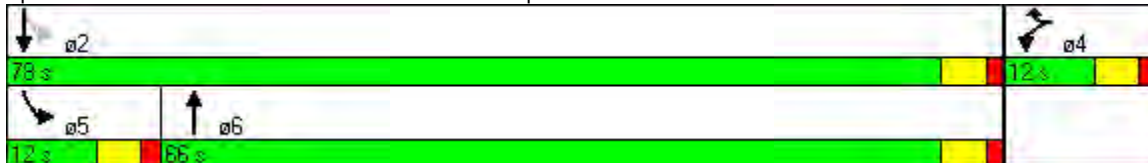
Intersection LOS: A

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future No-Build AM Peak Hour
2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	24	87	217	31	83	134	1238	144	49	780	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.883			0.891				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1645	0	1770	1660	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.665			0.199			0.102		
Satd. Flow (perm)	1228	1645	0	1239	1660	0	371	3471	1583	190	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		100			95				166		17	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	101	28	100	249	36	95	154	1423	166	56	897	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	128	0	249	131	0	154	1423	166	56	992	0
Turn Type	Perm			Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	14.0	50.0	50.0	11.0	47.0	0.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	15.6%	55.6%	55.6%	12.2%	52.2%	0.0%
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)	1.5	1.5		1.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	20.8	20.8		20.8	20.8		56.8	50.4	50.4	52.7	46.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.56	0.56	0.59	0.52	
v/c Ratio	0.36	0.28		0.87	0.29		0.44	0.73	0.17	0.26	0.55	
Control Delay	31.6	10.2		62.4	11.1		11.3	17.6	4.6	11.4	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	31.6	10.2		62.4	11.1		11.3	17.6	4.6	11.4	16.0	
LOS	C	B		E	B		B	B	A	B	B	
Approach Delay		19.6			44.7			15.8			15.8	
Approach LOS		B			D			B			B	
Queue Length 50th (ft)	47	12		133	16		36	248	7	11	191	
Queue Length 95th (ft)	87	51		#232	55		m44	m288	m13	30	245	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future No-Build AM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	327	512		330	512		378	1946	960	217	1788	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.31	0.25		0.75	0.26		0.41	0.73	0.17	0.26	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 19.3

Intersection LOS: B

Intersection Capacity Utilization 70.4%

ICU Level of Service C

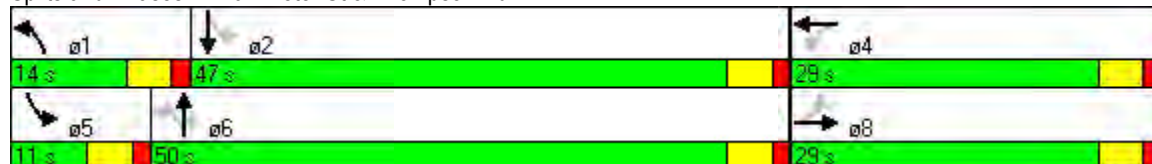
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future No-Build AM Peak Hour
2/6/2009

							
Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Volume (vph)	6	5	1132	6	59	22	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		0	
Storage Lanes	1	0		0		0	
Taper Length (ft)	0	0		0		0	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt	0.938		0.999				
Flt Protected	0.974					0.950	
Satd. Flow (prot)	1702	0	3435	0	0	1770	3438
Flt Permitted	0.974					0.149	
Satd. Flow (perm)	1702	0	3435	0	0	278	3438
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	6		1				
Link Speed (mph)	30		45				45
Link Distance (ft)	118		1926				288
Travel Time (s)	2.7		29.2				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	7	6	1380	7	72	27	1257
Shared Lane Traffic (%)							
Lane Group Flow (vph)	13	0	1387	0	0	99	1257
Turn Type					Prot	pm+pt	
Protected Phases			6		5	5	2
Permitted Phases	4					2	
Detector Phase	4		6		5	5	2
Switch Phase							
Minimum Initial (s)	4.0		18.0		6.0	6.0	18.0
Minimum Split (s)	9.0		23.0		11.0	11.0	23.0
Total Split (s)	9.0	0.0	55.0	0.0	12.0	12.0	55.0
Total Split (%)	11.8%	0.0%	72.4%	0.0%	15.8%	15.8%	72.4%
Yellow Time (s)	3.5		3.5		3.5	3.5	3.5
All-Red Time (s)	1.5		1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None		C-Max		None	None	C-Max
Act Effct Green (s)	4.0		61.4			69.2	73.2
Actuated g/C Ratio	0.05		0.81			0.91	0.96
v/c Ratio	0.14		0.50			0.27	0.38
Control Delay	30.3		4.4			2.4	0.9
Queue Delay	0.0		0.0			0.0	0.0
Total Delay	30.3		4.4			2.4	0.9
LOS	C		A			A	A
Approach Delay	30.3		4.4				1.0
Approach LOS	C		A				A
Queue Length 50th (ft)	3		85			0	0
Queue Length 95th (ft)	18		181			11	65

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future No-Build AM Peak Hour

2/6/2009

							
Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)	38		1846				208
Turn Bay Length (ft)							
Base Capacity (vph)	95		2775			390	3311
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	0.14		0.50			0.25	0.38

Intersection Summary

Area Type: Other

Cycle Length: 76

Actuated Cycle Length: 76

Offset: 5 (7%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 2.9

Intersection LOS: A

Intersection Capacity Utilization 52.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd



Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future No-Build AM Peak Hour
2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	730	191	246	456	6	264	17	222	6	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.998			0.861			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3403	0	1770	1790	0	1770	1604	0	1770	1515	0
Flt Permitted	0.472			0.138			0.726			0.398		
Satd. Flow (perm)	879	3403	0	257	1790	0	1352	1604	0	741	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			1			271			24	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	13	802	210	276	512	7	322	21	271	12	24	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1012	0	276	519	0	322	292	0	12	48	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		11.0	11.0		11.0	11.0	
Total Split (s)	9.0	39.0	0.0	21.0	51.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	9.5%	41.1%	0.0%	22.1%	53.7%	0.0%	36.8%	36.8%	0.0%	36.8%	36.8%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	36.8	32.7		50.2	48.7		23.7	23.7		23.7	23.7	
Actuated g/C Ratio	0.44	0.39		0.60	0.58		0.28	0.28		0.28	0.28	
v/c Ratio	0.03	0.75		0.73	0.50		0.85	0.45		0.06	0.11	
Control Delay	10.0	27.2		26.4	14.4		50.3	6.6		23.7	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.0	27.2		26.4	14.4		50.3	6.6		23.7	14.6	
LOS	A	C		C	B		D	A		C	B	
Approach Delay		27.0			18.6			29.5			16.4	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	3	247		74	152		167	8		5	10	
Queue Length 95th (ft)	11	360		168	318		244	48		10	15	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future No-Build AM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)	1009			1114			1031			218		
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	427	1431		448	1079		494	758		271	569	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.71		0.62	0.48		0.65	0.39		0.04	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 84.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 24.7

Intersection LOS: C

Intersection Capacity Utilization 73.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future No-Build AM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	35	17	151	41	99	12	505	441	337	545	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.951			0.894				0.850		0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1771	0	1687	1665	0	1770	3539	1583	1770	1814	0
Flt Permitted	0.647			0.717			0.403			0.366		
Satd. Flow (perm)	1205	1771	0	1273	1665	0	751	3539	1583	682	1814	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			111				459		13	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	48	41	20	170	46	111	12	526	459	374	606	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	61	0	170	157	0	12	526	459	374	689	0
Turn Type	Perm			Perm			Perm		Prot	pm+pt		
Protected Phases		3			3			2	2	1	6	
Permitted Phases	3			3			2			6		
Detector Phase	3	3		3	3		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	39.0	39.0	39.0	30.0	69.0	0.0
Total Split (%)	31.0%	31.0%	0.0%	31.0%	31.0%	0.0%	39.0%	39.0%	39.0%	30.0%	69.0%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	18.4	18.4		18.4	18.4		41.5	41.5	41.5	62.2	62.2	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.44	0.44	0.44	0.66	0.66	
v/c Ratio	0.21	0.17		0.69	0.38		0.04	0.34	0.48	0.62	0.58	
Control Delay	33.4	23.6		50.0	13.9		20.4	20.1	4.1	12.6	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.4	23.6		50.0	13.9		20.4	20.1	4.1	12.6	12.0	
LOS	C	C		D	B		C	C	A	B	B	
Approach Delay		27.9			32.7			12.8			12.2	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	24	20		95	23		4	108	0	91	208	
Queue Length 95th (ft)	53	50		163	74		18	181	66	159	352	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future No-Build AM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	307	465		324	507		330	1553	952	714	1197	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.16	0.13		0.52	0.31		0.04	0.34	0.48	0.52	0.58	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 94.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future No-Build AM Peak Hour
2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	6	12	17	81	290	35	209	12	116	261	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.940				0.850		0.993			0.978	
Flt Protected		0.983			0.992			0.993			0.987	
Satd. Flow (prot)	0	1721	0	0	1848	1583	0	3490	0	0	3416	0
Flt Permitted		0.857			0.934			0.993			0.987	
Satd. Flow (perm)	0	1501	0	0	1740	1583	0	3490	0	0	3416	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				330		5			25	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	12	7	15	19	92	330	36	218	12	127	287	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	111	330	0	266	0	0	487	0
Turn Type	Perm			Perm		pm+ov	Split			Split		
Protected Phases		4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	25.0	25.0	0.0	25.0	25.0	37.0	28.0	28.0	0.0	37.0	37.0	0.0
Total Split (%)	27.8%	27.8%	0.0%	27.8%	27.8%	41.1%	31.1%	31.1%	0.0%	41.1%	41.1%	0.0%
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effct Green (s)		10.0			10.2	44.8		23.2			32.3	
Actuated g/C Ratio		0.13			0.13	0.57		0.30			0.41	
v/c Ratio		0.17			0.49	0.31		0.26			0.34	
Control Delay		22.7			39.9	1.7		22.7			16.7	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		22.7			39.9	1.7		22.7			16.7	
LOS		C			D	A		C			B	
Approach Delay		22.7			11.3			22.7			16.7	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)		9			53	0		53			82	
Queue Length 95th (ft)		30			99	27		89			130	
Internal Link Dist (ft)		131			170			587			1031	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		399			449	1049		1041			1427	
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		0.09			0.25	0.31		0.26			0.34	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 78.1

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 16.3

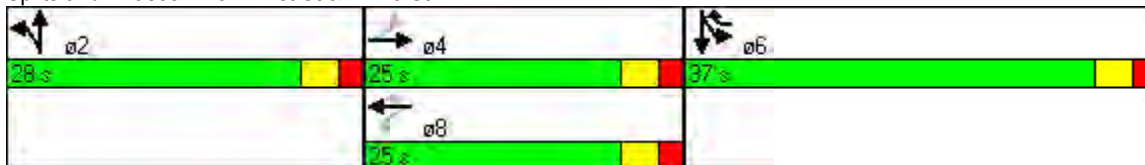
Intersection LOS: B

Intersection Capacity Utilization 41.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 13: McDonalds Driveway & Thompson Rd

Future No-Build AM Peak Hour
2/6/2009

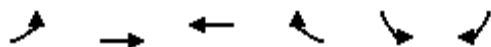


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	75	0	1183	1047	70
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.88	0.82	0.82	0.82	0.83
Hourly flow rate (vph)	0	85	0	1443	1277	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				288		
pX, platoon unblocked	0.81					
vC, conflicting volume	2040	468	1361			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1814	468	1361			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	84	100			
cM capacity (veh/h)	56	542	501			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	85	721	721	511	511	340
Volume Left	0	0	0	0	0	0
Volume Right	85	0	0	0	0	84
cSH	542	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.42	0.42	0.30	0.30	0.20
Queue Length 95th (ft)	14	0	0	0	0	0
Control Delay (s)	12.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	12.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		36.0%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

20: Carrier Pkwy & Old Collamer Rd

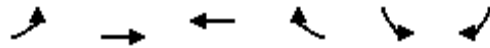
Future No-Build AM Peak Hour
2/6/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	1061	679	17	29	191
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	217	1278	780	20	35	230
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	800				1863	790
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	800				1863	790
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	74				26	31
cM capacity (veh/h)	819				47	333
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	217	639	639	800	265	
Volume Left	217	0	0	0	35	
Volume Right	0	0	0	20	230	
cSH	819	1700	1700	1700	186	
Volume to Capacity	0.26	0.38	0.38	0.47	1.43	
Queue Length 95th (ft)	27	0	0	0	403	
Control Delay (s)	11.0	0.0	0.0	0.0	268.3	
Lane LOS	B				F	
Approach Delay (s)	1.6			0.0	268.3	
Approach LOS					F	
Intersection Summary						
Average Delay			28.7			
Intersection Capacity Utilization			70.1%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future No-Build AM Peak Hour
2/6/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	186	215	6	6	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	58	262	222	6	10	50
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	228				602	225
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	228				602	225
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1284				423	767
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	320	228	60			
Volume Left	58	0	10			
Volume Right	0	6	50			
cSH	1284	1700	674			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	4	0	7			
Control Delay (s)	1.8	0.0	10.9			
Lane LOS	A		B			
Approach Delay (s)	1.8	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		37.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Future No-Build AM Peak Hour

2/6/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	910	145	70	650	17	12	0	6	17	6	41
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)	39	1011	161	78	722	19	13	0	7	19	7	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.73						0.73	0.73		0.73	0.73	0.73
vC, conflicting volume	741			1172			2096	2066	586	1477	2137	732
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	463			1172			2314	2273	586	1469	2371	450
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 %	95			87			0	100	99	66	68	89
cM capacity (veh/h)	801			592			9	24	453	56	21	407
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	39	674	498	78	741	20	71					
Volume Left	39	0	0	78	0	13	19					
Volume Right	0	0	161	0	19	7	46					
cSH	801	1700	1700	592	1700	13	92					
Volume to Capacity	0.05	0.40	0.29	0.13	0.44	1.55	0.77					
Queue Length 95th (ft)	4	0	0	11	0	81	100					
Control Delay (s)	9.7	0.0	0.0	12.0	0.0	869.5	120.2					
Lane LOS	A			B		F	F					
Approach Delay (s)	0.3			1.1		869.5	120.2					
Approach LOS						F	F					
Intersection Summary												
Average Delay			12.8									
Intersection Capacity Utilization			52.3%			ICU Level of Service			A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	458	41	145	435	112	110	907	174	142	1010	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.969			0.976			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3429	0	1770	3454	0	1770	3437	0
Flt Permitted	0.231			0.250			0.107			0.103		
Satd. Flow (perm)	430	3497	0	466	3429	0	199	3454	0	192	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			31			30			41	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	209	509	46	158	473	122	124	1019	196	154	1098	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	555	0	158	595	0	124	1215	0	154	1361	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	14.0	22.0	0.0	13.0	21.0	0.0	11.0	42.0	0.0	13.0	44.0	0.0
Total Split (%)	15.6%	24.4%	0.0%	14.4%	23.3%	0.0%	12.2%	46.7%	0.0%	14.4%	48.9%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	26.2	17.2		23.7	16.0		43.5	37.5		46.5	39.0	
Actuated g/C Ratio	0.29	0.19		0.26	0.18		0.48	0.42		0.52	0.43	
v/c Ratio	0.81	0.82		0.67	0.94		0.62	0.83		0.67	0.90	
Control Delay	49.0	45.9		38.4	59.1		27.0	29.3		34.8	29.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.0	45.9		38.4	59.1		27.0	29.3		34.8	29.4	
LOS	D	D		D	E		C	C		C	C	
Approach Delay		46.7			54.7			29.1			30.0	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	89	158		65	168		32	313		55	212	
Queue Length 95th (ft)	#181	#241		#116	#274		#86	396		m#117	#364	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	259	677		240	635		201	1458		241	1514	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.81	0.82		0.66	0.94		0.62	0.83		0.64	0.90	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 36.9

Intersection LOS: D

Intersection Capacity Utilization 84.4%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd

 ø1	 ø2	 ø3	 ø4
11 s	44 s	14 s	21 s
 ø5	 ø6	 ø7	 ø8
13 s	42 s	13 s	22 s

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future No-Build PM Peak Hour

2/6/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	87	75	1137	12	6	1087
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3465	0	1770	3539
Flt Permitted	0.950				0.144	
Satd. Flow (perm)	1770	1583	3465	0	268	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		136	2			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1926
Travel Time (s)	6.9		44.5			29.2
Peak Hour Factor	0.55	0.55	0.85	0.85	0.81	0.81
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	158	136	1338	14	7	1342
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	136	1352	0	7	1342
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	22.0	22.0	56.0	0.0	12.0	68.0
Total Split (%)	24.4%	24.4%	62.2%	0.0%	13.3%	75.6%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	12.3	12.3	65.3		67.7	67.7
Actuated g/C Ratio	0.14	0.14	0.73		0.75	0.75
v/c Ratio	0.66	0.41	0.54		0.02	0.50
Control Delay	49.2	10.0	14.1		3.8	5.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	49.2	10.0	14.1		3.8	5.6
LOS	D	A	B		A	A
Approach Delay	31.1		14.1			5.6
Approach LOS	C		B			A
Queue Length 50th (ft)	86	0	242		1	130
Queue Length 95th (ft)	81	2	431		4	177

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future No-Build PM Peak Hour
2/6/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			1846
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	334	409	2516		318	2664
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	0.47	0.33	0.54		0.02	0.50

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 37 (41%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 11.9

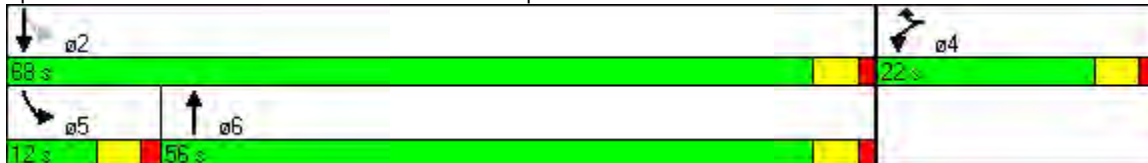
Intersection LOS: B

Intersection Capacity Utilization 46.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	22	88	206	14	57	52	984	171	131	1099	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.880			0.879				0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1639	0	1770	1637	0	1770	3471	1583	1770	3453	0
Flt Permitted	0.706			0.677			0.151			0.175		
Satd. Flow (perm)	1315	1639	0	1261	1637	0	281	3471	1583	326	3453	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		97			63				188			6
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	74	24	97	226	15	63	57	1081	188	144	1208	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	121	0	226	78	0	57	1081	188	144	1254	0
Turn Type	Perm			Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	11.0	45.0	45.0	14.0	48.0	0.0
Total Split (%)	34.4%	34.4%	0.0%	34.4%	34.4%	0.0%	12.2%	50.0%	50.0%	15.6%	53.3%	0.0%
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)	1.5	1.5		1.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	19.8	19.8		19.8	19.8		53.9	47.9	47.9	57.5	51.4	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.60	0.53	0.53	0.64	0.57	
v/c Ratio	0.26	0.28		0.82	0.19		0.21	0.59	0.20	0.44	0.64	
Control Delay	29.2	9.8		55.1	10.3		9.7	15.5	4.4	13.7	16.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	29.2	9.8		55.1	10.3		9.7	15.5	4.4	13.7	16.9	
LOS	C	A		E	B		A	B	A	B	B	
Approach Delay		17.2			43.6			13.7			16.5	
Approach LOS		B			D			B			B	
Queue Length 50th (ft)	35	11		121	7		11	168	1	24	214	
Queue Length 95th (ft)	67	50		191	38		m18	m233	m17	89	368	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	380	542		364	518		268	1846	930	357	1974	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.19	0.22		0.62	0.15		0.21	0.59	0.20	0.40	0.64	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 17.9

Intersection LOS: B

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 16: Exeter St & Thompson Rd

		
11 s	48 s	41 s
		
14 s	45 s	41 s

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future No-Build PM Peak Hour
2/6/2009

							
Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Volume (vph)	6	15	1189	29	84	15	1089
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0		0	
Storage Lanes	1	0		0		0	
Taper Length (ft)	0	0		0		0	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt	0.902		0.996				
Flt Protected	0.987					0.950	
Satd. Flow (prot)	1658	0	3492	0	0	1770	3505
Flt Permitted	0.987					0.171	
Satd. Flow (perm)	1658	0	3492	0	0	319	3505
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	16		5				
Link Speed (mph)	30		45				45
Link Distance (ft)	118		1926				288
Travel Time (s)	2.7		29.2				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	6	16	1239	30	91	16	1134
Shared Lane Traffic (%)							
Lane Group Flow (vph)	22	0	1269	0	0	107	1134
Turn Type					Prot	pm+pt	
Protected Phases			6		5	5	2
Permitted Phases	4					2	
Detector Phase	4		6		5	5	2
Switch Phase							
Minimum Initial (s)	4.0		18.0		6.0	6.0	18.0
Minimum Split (s)	9.0		23.0		11.0	11.0	23.0
Total Split (s)	19.0	0.0	45.0	0.0	12.0	12.0	45.0
Total Split (%)	25.0%	0.0%	59.2%	0.0%	15.8%	15.8%	59.2%
Yellow Time (s)	3.5		3.5		3.5	3.5	3.5
All-Red Time (s)	1.5		1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None		C-Max		None	None	C-Max
Act Effct Green (s)	4.7		59.0			66.8	69.8
Actuated g/C Ratio	0.06		0.78			0.88	0.92
v/c Ratio	0.19		0.47			0.27	0.35
Control Delay	23.2		5.4			2.9	1.5
Queue Delay	0.0		0.0			0.0	0.0
Total Delay	23.2		5.4			2.9	1.5
LOS	C		A			A	A
Approach Delay	23.2		5.4				1.7
Approach LOS	C		A				A
Queue Length 50th (ft)	3		72			0	0
Queue Length 95th (ft)	24		203			16	82

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future No-Build PM Peak Hour

2/6/2009

							
Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)	38		1846				208
Turn Bay Length (ft)							
Base Capacity (vph)	318		2711			414	3218
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	0.07		0.47			0.26	0.35

Intersection Summary

Area Type: Other

Cycle Length: 76

Actuated Cycle Length: 76

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 3.7

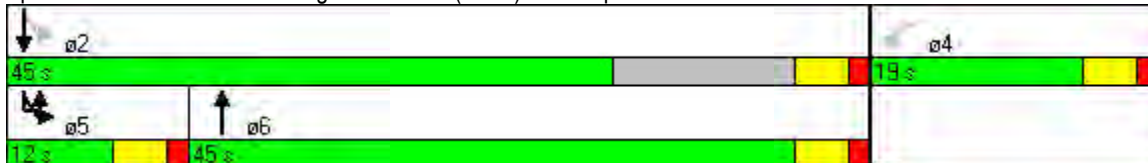
Intersection LOS: A

Intersection Capacity Utilization 55.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd



Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	657	209	267	685	6	320	17	301	6	17	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.999			0.858			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3387	0	1770	1861	0	1770	1598	0	1770	1747	0
Flt Permitted	0.111			0.108			0.732			0.249		
Satd. Flow (perm)	207	3387	0	201	1861	0	1364	1598	0	464	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			1			368			16	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	7	764	243	356	913	8	416	22	391	8	23	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	1007	0	356	921	0	416	413	0	8	39	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		11.0	11.0		11.0	11.0	
Total Split (s)	9.0	37.0	0.0	24.0	52.0	0.0	34.0	34.0	0.0	34.0	34.0	0.0
Total Split (%)	9.5%	38.9%	0.0%	25.3%	54.7%	0.0%	35.8%	35.8%	0.0%	35.8%	35.8%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	35.9	31.9		53.5	51.8		29.0	29.0		29.0	29.0	
Actuated g/C Ratio	0.39	0.34		0.58	0.56		0.31	0.31		0.31	0.31	
v/c Ratio	0.05	0.84		0.89	0.88		0.97	0.55		0.05	0.07	
Control Delay	11.0	34.9		48.0	30.6		71.3	7.5		24.8	16.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.0	34.9		48.0	30.6		71.3	7.5		24.8	16.4	
LOS	B	C		D	C		E	A		C	B	
Approach Delay		34.8			35.5			39.5			17.9	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	2	282		152	418		250	19		3	10	
Queue Length 95th (ft)	7	342		192	531		#344	49		12	26	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	148	1204		438	1041		428	754		146	559	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.84		0.81	0.88		0.97	0.55		0.05	0.07	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 92.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 36.0

Intersection LOS: D

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

		
24 s	37 s	34 s
		
9 s	52 s	34 s

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	29	23	424	29	284	6	812	139	99	511	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.934			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1740	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted	0.365			0.713			0.160			0.125		
Satd. Flow (perm)	680	1740	0	1328	1609	0	298	3539	1538	233	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			158				149		3	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1188			665	
Travel Time (s)		5.9			6.6			18.0			10.1	
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	75	38	30	673	46	451	6	873	149	121	623	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	68	0	673	497	0	6	873	149	121	658	0
Turn Type	Perm			Perm			Perm		Prot	pm+pt		
Protected Phases		3			3			2	2	1	6	
Permitted Phases	3			3			2			6		
Detector Phase	3	3		3	3		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	57.0	57.0	0.0	57.0	57.0	0.0	32.0	32.0	32.0	11.0	43.0	0.0
Total Split (%)	57.0%	57.0%	0.0%	57.0%	57.0%	0.0%	32.0%	32.0%	32.0%	11.0%	43.0%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	50.0	50.0		50.0	50.0		25.0	25.0	25.0	36.0	36.0	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.25	0.25	0.25	0.36	0.36	
v/c Ratio	0.22	0.08		1.01	0.56		0.08	0.99	0.30	0.83	0.99	
Control Delay	16.3	8.4		65.0	14.2		32.2	65.4	6.8	68.5	64.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.3	8.4		65.0	14.2		32.2	65.4	6.8	68.5	64.7	
LOS	B	A		E	B		C	E	A	E	E	
Approach Delay		12.5			43.4			56.7			65.3	
Approach LOS		B			D			E			E	
Queue Length 50th (ft)	26	12		~429	141		3	292	0	52	410	
Queue Length 95th (ft)	46	27		320	116		14	#425	47	#116	#552	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future No-Build PM Peak Hour
2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	340	885		664	884		75	885	496	145	667	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.22	0.08		1.01	0.56		0.08	0.99	0.30	0.83	0.99	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 51.8

Intersection LOS: D

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

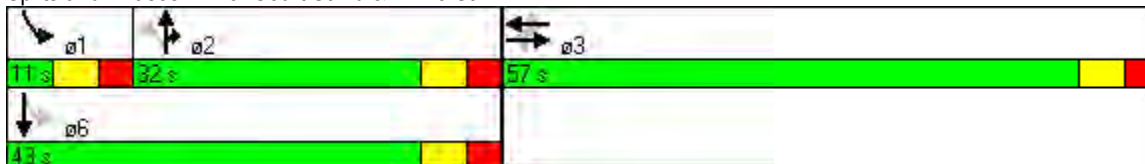
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future No-Build PM Peak Hour

2/6/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	58	46	6	6	162	6	337	29	238	255	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.975				0.850		0.988			0.998	
Flt Protected		0.972			0.976			0.999			0.977	
Satd. Flow (prot)	0	1765	0	0	1818	1583	0	3488	0	0	3451	0
Flt Permitted		0.813			0.852			0.999			0.977	
Satd. Flow (perm)	0	1477	0	0	1587	1583	0	3488	0	0	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				88		9			1	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	189	76	61	7	7	184	8	443	38	301	323	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	326	0	0	14	184	0	489	0	0	632	0
Turn Type	Perm			Perm		pm+ov	Split			Split		
Protected Phases		4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	35.0	35.0	0.0	35.0	35.0	29.0	26.0	26.0	0.0	29.0	29.0	0.0
Total Split (%)	38.9%	38.9%	0.0%	38.9%	38.9%	32.2%	28.9%	28.9%	0.0%	32.2%	32.2%	0.0%
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)		21.3			21.3	46.0		21.4			19.6	
Actuated g/C Ratio		0.27			0.27	0.59		0.28			0.25	
v/c Ratio		0.79			0.03	0.19		0.50			0.72	
Control Delay		39.4			20.9	3.9		27.5			32.5	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		39.4			20.9	3.9		27.5			32.5	
LOS		D			C	A		C			C	
Approach Delay		39.4			5.1			27.5			32.5	
Approach LOS		D			A			C			C	
Queue Length 50th (ft)		141			5	18		106			147	
Queue Length 95th (ft)		192			18	39		146			194	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)		591			626	1068		970			1090	
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		0.55			0.02	0.17		0.50			0.58	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 77.6

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.1

Intersection LOS: C

Intersection Capacity Utilization 57.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 13: McDonalds Driveway & Thompson Rd

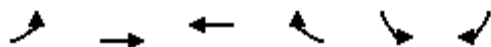
Future No-Build PM Peak Hour
2/6/2009



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	58	0	1292	1124	52
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.71	0.92	0.96	0.96	0.68
Hourly flow rate (vph)	0	82	0	1346	1171	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)				288		
pX, platoon unblocked	0.83					
vC, conflicting volume	1882	429	1247			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1654	429	1247			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	100			
cM capacity (veh/h)	74	575	554			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	82	673	673	468	468	311
Volume Left	0	0	0	0	0	0
Volume Right	82	0	0	0	0	76
cSH	575	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.40	0.40	0.28	0.28	0.18
Queue Length 95th (ft)	12	0	0	0	0	0
Control Delay (s)	12.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	12.3	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		39.0%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

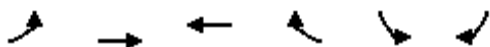
Future No-Build PM Peak Hour
2/6/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	232	854	1074	29	17	151
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	247	909	1342	36	25	222
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1379				2308	1361
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1379				2308	1361
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	50				0	0
cM capacity (veh/h)	493				16	138
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	247	454	454	1379	247	
Volume Left	247	0	0	0	25	
Volume Right	0	0	0	36	222	
cSH	493	1700	1700	1700	78	
Volume to Capacity	0.50	0.27	0.27	0.81	3.17	
Queue Length 95th (ft)	69	0	0	0	Err	
Control Delay (s)	19.4	0.0	0.0	0.0	Err	
Lane LOS	C				F	
Approach Delay (s)	4.1			0.0	Err	
Approach LOS					F	
Intersection Summary						
Average Delay			890.0			
Intersection Capacity Utilization			91.4%	ICU Level of Service		F
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future No-Build PM Peak Hour
2/6/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	29	267	168	17	23	58
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	32	290	200	20	26	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	220				563	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				563	210
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				95	92
cM capacity (veh/h)	1349				476	825
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	322	220	91			
Volume Left	32	0	26			
Volume Right	0	20	65			
cSH	1349	1700	683			
Volume to Capacity	0.02	0.13	0.13			
Queue Length 95th (ft)	2	0	11			
Control Delay (s)	1.0	0.0	11.1			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.1			
Approach LOS			B			
Intersection Summary						
Average Delay		2.1				
Intersection Capacity Utilization		40.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Future No-Build PM Peak Hour
2/6/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	819	23	12	987	23	46	0	41	12	6	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	37	871	24	13	1050	24	49	0	44	13	6	74
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.39						0.39	0.39		0.39	0.39	0.39
vC, conflicting volume	1074			896			2111	2058	448	1641	2058	1062
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			896			3078	2940	448	1865	2940	370
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			0	100	92	14	0	69
cM capacity (veh/h)	447			753			0	5	558	15	5	243
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	37	581	315	13	1074	93	94					
Volume Left	37	0	0	13	0	49	13					
Volume Right	0	0	24	0	24	44	74					
cSH	447	1700	1700	753	1700	0	39					
Volume to Capacity	0.08	0.34	0.19	0.02	0.63	Err	2.42					
Queue Length 95th (ft)	7	0	0	1	0	Err	257					
Control Delay (s)	13.8	0.0	0.0	9.9	0.0	Err	869.4					
Lane LOS	B			A		F	F					
Approach Delay (s)	0.6			0.1		Err	869.4					
Approach LOS						F	F					
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			71.7%		ICU Level of Service		C					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	280	10	135	215	140	65	1410	60	100	875	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.995			0.941			0.994			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3330	0	1770	3518	0	1770	3458	0
Flt Permitted	0.267			0.540			0.116			0.081		
Satd. Flow (perm)	497	3522	0	1006	3330	0	216	3518	0	151	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			107			6			27	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	372	341	12	152	242	157	83	1808	77	109	951	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	353	0	152	399	0	83	1885	0	109	1125	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	23.0	22.0	0.0	16.0	15.0	0.0	12.0	61.0	0.0	11.0	60.0	0.0
Total Split (%)	20.9%	20.0%	0.0%	14.5%	13.6%	0.0%	10.9%	55.5%	0.0%	10.0%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	33.0	18.0		20.0	10.0		56.0	56.0		55.4	55.4	
Actuated g/C Ratio	0.30	0.16		0.18	0.09		0.51	0.51		0.50	0.50	
v/c Ratio	1.04	0.61		0.60	1.00		0.41	1.05		0.66	0.64	
Control Delay	94.4	47.8		41.5	81.7		20.0	63.4		43.4	13.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	94.4	47.8		41.5	81.7		20.0	63.4		43.4	13.6	
LOS	F	D		D	F		C	E		D	B	
Approach Delay		71.7			70.6			61.6			16.3	
Approach LOS		E			E			E			B	
Queue Length 50th (ft)	~245	123		82	111		29	~766		29	166	
Queue Length 95th (ft)	#354	156		136	#212		48	636		m#89	245	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	357	579		268	400		209	1794		164	1754	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.04	0.61		0.57	1.00		0.40	1.05		0.66	0.64	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 102 (93%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 51.8

Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

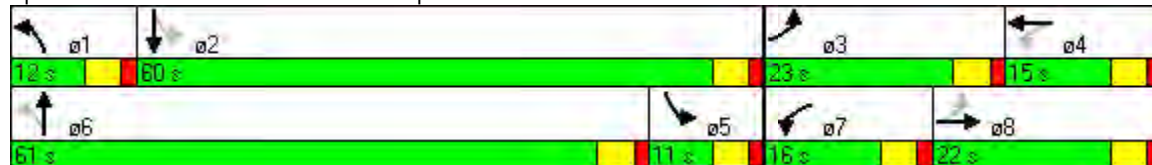
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	15	1490	110	70	1025
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1612	1442	3408	0	1770	3312
Flt Permitted	0.950				0.074	
Satd. Flow (perm)	1612	1442	3408	0	138	3312
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22	18			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1079
Travel Time (s)	6.9		44.5			16.3
Peak Hour Factor	0.69	0.69	0.82	0.82	0.93	0.93
Heavy Vehicles (%)	12%	12%	5%	3%	2%	9%
Adj. Flow (vph)	22	22	1817	134	75	1102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	22	1951	0	75	1102
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	12.0	12.0	85.0	0.0	13.0	98.0
Total Split (%)	10.9%	10.9%	77.3%	0.0%	11.8%	89.1%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.0	7.0	88.4		98.8	99.8
Actuated g/C Ratio	0.06	0.06	0.80		0.90	0.91
v/c Ratio	0.21	0.20	0.71		0.31	0.37
Control Delay	54.1	23.3	2.2		9.7	1.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	54.1	23.3	2.2		9.7	1.7
LOS	D	C	A		A	A
Approach Delay	38.7		2.2			2.2
Approach LOS	D		A			A
Queue Length 50th (ft)	15	0	50		6	65
Queue Length 95th (ft)	32	16	52		29	82

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			999
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	103	112	2742		241	3005
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	0.21	0.20	0.71		0.31	0.37

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 24 (22%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 2.7

Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
7: Existing Site Access (South) & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	15	15	110	1395	1075	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	440			0
Storage Lanes	0	0	1			0
Taper Length (ft)	0	0	25			0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.932				0.987	
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1694	0	1770	3438	3402	0
Flt Permitted	0.976		0.155			
Satd. Flow (perm)	1694	0	289	3438	3402	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18				17	
Link Speed (mph)	30			45	45	
Link Distance (ft)	465			1079	847	
Travel Time (s)	10.6			16.3	12.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	2%	5%	5%	2%
Adj. Flow (vph)	18	18	131	1661	1280	119
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	0	131	1661	1399	0
Turn Type			pm+pt			
Protected Phases	4		1	6	2	
Permitted Phases			6			
Detector Phase	4		1	6	2	
Switch Phase						
Minimum Initial (s)	4.0		6.0	18.0	18.0	
Minimum Split (s)	20.0		11.0	31.0	23.0	
Total Split (s)	20.0	0.0	17.0	90.0	73.0	0.0
Total Split (%)	18.2%	0.0%	15.5%	81.8%	66.4%	0.0%
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	7.0		97.8	99.8	86.7	
Actuated g/C Ratio	0.06		0.89	0.91	0.79	
v/c Ratio	0.29		0.39	0.53	0.52	
Control Delay	35.5		3.4	0.5	1.5	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	35.5		3.4	0.5	1.5	
LOS	D		A	A	A	
Approach Delay	35.5			0.7	1.5	
Approach LOS	D			A	A	
Queue Length 50th (ft)	12		0	1	15	
Queue Length 95th (ft)	40		m1	5	16	

Lanes, Volumes, Timings
 7: Existing Site Access (South) & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	385			999	767	
Turn Bay Length (ft)			440			
Base Capacity (vph)	262		418	3120	2685	
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	0.14		0.31	0.53	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 61 (55%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 1.4

Intersection LOS: A

Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 7: Existing Site Access (South) & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	25	85	215	30	105	135	1580	145	50	835	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.884			0.883				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1647	0	1770	1645	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.381			0.199			0.065		
Satd. Flow (perm)	1228	1647	0	710	1645	0	371	3471	1583	121	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			121				167		16	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	103	29	98	247	34	121	155	1816	167	57	960	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	127	0	247	155	0	155	1816	167	57	1058	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	14.0	12.0	0.0	20.0	18.0	0.0	12.0	67.0	67.0	11.0	66.0	0.0
Total Split (%)	12.7%	10.9%	0.0%	18.2%	16.4%	0.0%	10.9%	60.9%	60.9%	10.0%	60.0%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	16.7	6.5		27.0	12.8		70.8	65.2	65.2	68.2	62.2	
Actuated g/C Ratio	0.15	0.06		0.25	0.12		0.64	0.59	0.59	0.62	0.57	
v/c Ratio	0.44	0.67		0.76	0.52		0.48	0.88	0.17	0.35	0.54	
Control Delay	39.8	33.6		52.8	19.9		6.8	8.8	0.2	23.9	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	33.6		52.8	19.9		6.8	8.8	0.2	23.9	11.0	
LOS	D	C		D	B		A	A	A	C	B	
Approach Delay		36.4			40.1			8.0			11.6	
Approach LOS		D			D			A			B	
Queue Length 50th (ft)	58	20		152	22		19	183	0	0	117	
Queue Length 95th (ft)	101	#84		#233	80		m18	m174	m0	32	133	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	245	197		329	301		329	2057	1006	165	1945	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.42	0.64		0.75	0.51		0.47	0.88	0.17	0.35	0.54	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 100 (91%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 14.0

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	20	0	20	5	0	5	60	1340	5	60	20	1155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.932			0.999				0.993
Flt Protected	0.950				0.976		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1694	0	1770	3435	0	0	1770	3419
Flt Permitted	0.690						0.164				0.094	
Satd. Flow (perm)	2493	1583	0	0	1736	0	305	3435	0	0	175	3419
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		151			6			1				11
Link Speed (mph)		30			30			45				45
Link Distance (ft)		430			118			847				288
Travel Time (s)		9.8			2.7			12.8				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	24	0	24	6	0	6	73	1634	6	73	24	1409
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	24	0	0	12	0	73	1640	0	0	97	1482
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	9.0	18.0	0.0	9.0	9.0	0.0	11.0	78.0	0.0	14.0	14.0	81.0
Total Split (%)	8.2%	16.4%	0.0%	8.2%	8.2%	0.0%	10.0%	70.9%	0.0%	12.7%	12.7%	73.6%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	6.6	7.4			4.0		85.4	85.4			88.2	89.2
Actuated g/C Ratio	0.06	0.07			0.04		0.78	0.78			0.80	0.81
v/c Ratio	0.13	0.10			0.17		0.23	0.61			0.41	0.53
Control Delay	48.3	0.8			43.0		1.9	1.3			9.0	6.1
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	48.3	0.8			43.0		1.9	1.3			9.0	6.1
LOS	D	A			D		A	A			A	A
Approach Delay		24.5			43.0			1.3				6.3
Approach LOS		C			D			A				A
Queue Length 50th (ft)	8	0			4		1	8			15	198
Queue Length 95th (ft)	19	0			22		2	17			33	275

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 1 AM Peak Hour

2/10/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	60
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.82
Heavy Vehicles (%)	2%
Adj. Flow (vph)	73
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

17: Existing Site Access (North) & Thompson Rd

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		350			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	191	320			69		317	2668			271	2774
Starvation Cap Reductn	0	0			0		0	15			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	0.13	0.08			0.17		0.23	0.62			0.36	0.53

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 57 (52%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 4.2

Intersection LOS: A

Intersection Capacity Utilization 59.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	750	480	405	555	5	320	15	245	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.941			0.999			0.859			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3311	0	1770	1791	0	1770	1600	0	1770	1515	0
Flt Permitted	0.426			0.100			0.541					
Satd. Flow (perm)	794	3311	0	186	1791	0	1008	1600	0	1863	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		175			1			299			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	824	527	455	624	6	390	18	299	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1351	0	455	630	0	390	317	0	10	40	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	36.0	0.0	24.0	51.0	0.0	19.0	30.0	0.0	11.0	11.0	0.0
Total Split (%)	10.0%	40.0%	0.0%	26.7%	56.7%	0.0%	21.1%	33.3%	0.0%	12.2%	12.2%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	35.1	31.1		55.2	53.5		21.3	20.3		6.0	6.0	
Actuated g/C Ratio	0.41	0.36		0.64	0.62		0.25	0.24		0.07	0.07	
v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.52		0.08	0.32	
Control Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
LOS	A	E		E	B		F	A		D	C	
Approach Delay		57.3			32.7			48.3			33.8	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	2	~418		~220	196		202	8		6	11	
Queue Length 95th (ft)	9	#553		#411	376		#258	50		12	18	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1114			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	372	1315		473	1120		385	680		131	126	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.47		0.08	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

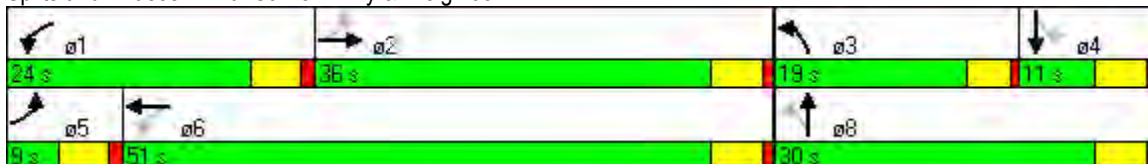
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	35	15	150	40	100	10	545	440	335	805	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.893				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1777	0	1687	1663	0	1770	3539	1583	1770	1822	0
Flt Permitted				0.976			0.198			0.318		
Satd. Flow (perm)	1863	1777	0	1733	1663	0	369	3539	1583	592	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			112				458		12	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	47	41	18	169	45	112	10	568	458	372	894	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	59	0	169	157	0	10	568	458	372	977	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	12.0	0.0	10.0	11.0	0.0	30.0	30.0	30.0	18.0	48.0	0.0
Total Split (%)	15.7%	17.1%	0.0%	14.3%	15.7%	0.0%	42.9%	42.9%	42.9%	25.7%	68.6%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	6.8	5.0		10.4	4.0		24.6	24.6	24.6	41.3	41.3	
Actuated g/C Ratio	0.10	0.08		0.16	0.06		0.38	0.38	0.38	0.63	0.63	
v/c Ratio	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.68	0.85	
Control Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
LOS	C	C		C	D		B	B	A	B	C	
Approach Delay		29.0			35.8			12.0			19.1	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	16	17		60	19		3	101	0	75	332	
Queue Length 95th (ft)	39	48		110	#107		14	146	58	#129	#621	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	188	153		273	207		138	1328	880	572	1151	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.65	0.85	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 65.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St

 ø1	 ø2	 ø3	 ø4
18 s	30 s	11 s	11 s
 ø6		 ø7	 ø8
48 s		10 s	12 s

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	15	10	15	135	290	35	235	10	115	465	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.942				0.850		0.995			0.948	
Flt Protected	0.950				0.995			0.994			0.994	
Satd. Flow (prot)	3433	1755	0	0	1853	1583	0	3500	0	0	3335	0
Flt Permitted	0.415				0.961			0.994			0.994	
Satd. Flow (perm)	1500	1755	0	0	1790	1583	0	3500	0	0	3335	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				286		5			172	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	74	19	12	17	153	330	36	245	10	126	511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	31	0	0	170	330	0	291	0	0	978	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	8.0	21.0	0.0	13.0	13.0	24.0	15.0	15.0	0.0	24.0	24.0	0.0
Total Split (%)	13.3%	35.0%	0.0%	21.7%	21.7%	40.0%	25.0%	25.0%	0.0%	40.0%	40.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effect Green (s)	13.4	12.4			7.8	32.0		10.1			19.1	
Actuated g/C Ratio	0.24	0.22			0.14	0.57		0.18			0.34	
v/c Ratio	0.15	0.08			0.69	0.32		0.46			0.79	
Control Delay	16.8	13.0			41.4	2.6		24.2			20.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	16.8	13.0			41.4	2.6		24.2			20.7	
LOS	B	B			D	A		C			C	
Approach Delay		15.7			15.8			24.2			20.7	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	10	5			60	7		50			140	
Queue Length 95th (ft)	20	20			#138	37		83			#242	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 1 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	492	507			254	1019		626			1240	
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	0.15	0.06			0.67	0.32		0.46			0.79	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 61.9%

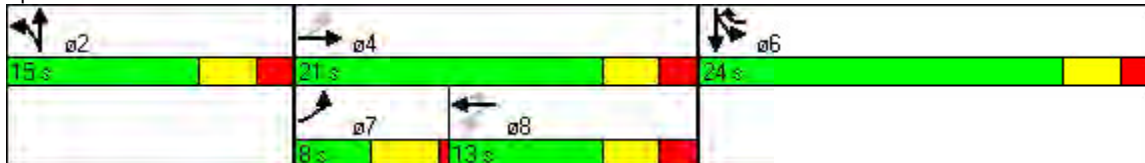
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 13: Driveway 3 & Thompson Rd

Future Alternative 1 AM Peak Hour
2/10/2009

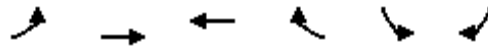


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	85	0	1415	1225	70
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.88	0.82	0.82	0.82	0.83
Hourly flow rate (vph)	0	97	0	1726	1494	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				288		
pX, platoon unblocked	0.73					
vC, conflicting volume	2399	540	1578			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2180	540	1578			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	80	100			
cM capacity (veh/h)	29	486	413			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	97	863	863	598	598	383
Volume Left	0	0	0	0	0	0
Volume Right	97	0	0	0	0	84
cSH	486	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.51	0.51	0.35	0.35	0.23
Queue Length 95th (ft)	18	0	0	0	0	0
Control Delay (s)	14.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	14.2	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		42.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

Future Alternative 1 AM Peak Hour

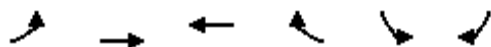
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	1510	835	15	30	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	217	1819	960	17	36	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	977				2312	968
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977				2312	968
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				0	10
cM capacity (veh/h)	702				22	254
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	217	910	910	977	265	
Volume Left	217	0	0	0	36	
Volume Right	0	0	0	17	229	
cSH	702	1700	1700	1700	104	
Volume to Capacity	0.31	0.54	0.54	0.57	2.54	
Queue Length 95th (ft)	33	0	0	0	605	
Control Delay (s)	12.4	0.0	0.0	0.0	785.9	
Lane LOS	B				F	
Approach Delay (s)	1.3			0.0	785.9	
Approach LOS					F	
Intersection Summary						
Average Delay		64.4				
Intersection Capacity Utilization		78.2%		ICU Level of Service	D	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 1 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	40	185	215	5	5	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	56	261	222	5	9	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	227				597	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				597	224
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1285				427	768
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	317	227	60			
Volume Left	56	0	9			
Volume Right	0	5	52			
cSH	1285	1700	689			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	3	0	7			
Control Delay (s)	1.7	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			36.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 1 AM Peak Hour
2/10/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	1215	285	70	810	15	10	0	5	15	5	40
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)	39	1350	317	78	900	17	11	0	6	17	6	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.61						0.61	0.61		0.61	0.61	0.61
vC, conflicting volume	917			1667			2689	2658	833	1822	2808	908
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	537			1667			3462	3412	833	2032	3659	523
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 %	94			80			0	100	98	0	0	85
cM capacity (veh/h)	622			382			0	3	312	16	2	302
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	39	900	767	78	917	17	67					
Volume Left	39	0	0	78	0	11	17					
Volume Right	0	0	317	0	17	6	44					
cSH	622	1700	1700	382	1700	0	18					
Volume to Capacity	0.06	0.53	0.45	0.20	0.54	Err	3.73					
Queue Length 95th (ft)	5	0	0	19	0	Err	Err					
Control Delay (s)	11.2	0.0	0.0	16.8	0.0	Err	Err					
Lane LOS	B			C		F	F					
Approach Delay (s)	0.3			1.3		Err	Err					
Approach LOS						F	F					
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			60.4%		ICU Level of Service		B					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 38: Driveway 2 & Thompson Rd

Future Alternative 1 AM Peak Hour
2/10/2009

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	 	
Volume (veh/h)	0	0	0	1415	1295	70
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	1538	1408	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)				505		
pX, platoon unblocked	0.89					
vC, conflicting volume	1958	742	1484			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1629	742	1484			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	82	358	449			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	513	513	513	938	545
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	76
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.30	0.30	0.30	0.55	0.32
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		41.4%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	460	40	145	435	120	110	965	175	175	1235	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.968			0.977			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3426	0	1770	3458	0	1770	3437	0
Flt Permitted	0.198			0.222			0.091			0.118		
Satd. Flow (perm)	369	3497	0	414	3426	0	170	3458	0	220	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			27			25			38	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	222	511	44	158	473	130	124	1084	197	190	1342	321
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	555	0	158	603	0	124	1281	0	190	1663	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	16.0	25.0	0.0	14.0	23.0	0.0	11.0	55.0	0.0	16.0	60.0	0.0
Total Split (%)	14.5%	22.7%	0.0%	12.7%	20.9%	0.0%	10.0%	50.0%	0.0%	14.5%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	31.2	20.2		26.8	18.0		50.0	50.0		55.0	55.0	
Actuated g/C Ratio	0.28	0.18		0.24	0.16		0.45	0.45		0.50	0.50	
v/c Ratio	0.91	0.86		0.75	1.03		0.75	0.81		0.72	0.96	
Control Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.6	24.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.6	24.8	
LOS	E	E		D	F		D	C		C	C	
Approach Delay		61.2			82.3			31.8			25.8	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	123	200		84	~232		50	393		67	594	
Queue Length 95th (ft)	#249	#291		#157	#349		#128	477		m100	#735	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	245	648		213	583		165	1585		265	1738	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.91	0.86		0.74	1.03		0.75	0.81		0.72	0.96	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 103 (94%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 42.2

Intersection LOS: D

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

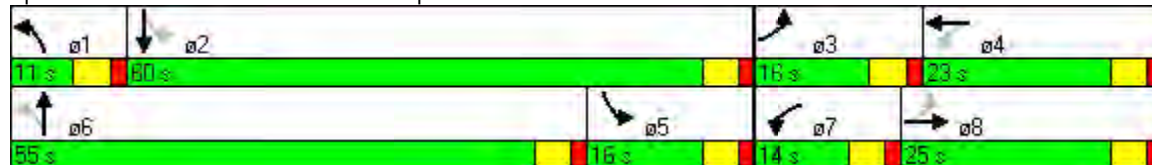
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	85	75	1220	10	5	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3468	0	1770	3539
Flt Permitted	0.950				0.146	
Satd. Flow (perm)	1770	1583	3468	0	272	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		136	1			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1079
Travel Time (s)	6.9		44.5			16.3
Peak Hour Factor	0.55	0.55	0.85	0.85	0.81	0.81
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	155	136	1435	12	6	1759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	136	1447	0	6	1759
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	24.0	24.0	74.0	0.0	12.0	86.0
Total Split (%)	21.8%	21.8%	67.3%	0.0%	10.9%	78.2%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.9	13.9	83.7		86.1	86.1
Actuated g/C Ratio	0.13	0.13	0.76		0.78	0.78
v/c Ratio	0.70	0.43	0.55		0.02	0.63
Control Delay	61.8	11.3	1.9		2.4	4.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	61.8	11.3	1.9		2.4	4.2
LOS	E	B	A		A	A
Approach Delay	38.2		1.9			4.2
Approach LOS	D		A			A
Queue Length 50th (ft)	106	0	19		1	147
Queue Length 95th (ft)	97	0	55		m1	87

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			999
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	306	386	2640		309	2771
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	0.51	0.35	0.55		0.02	0.63

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 35 (32%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 6.1

Intersection LOS: A

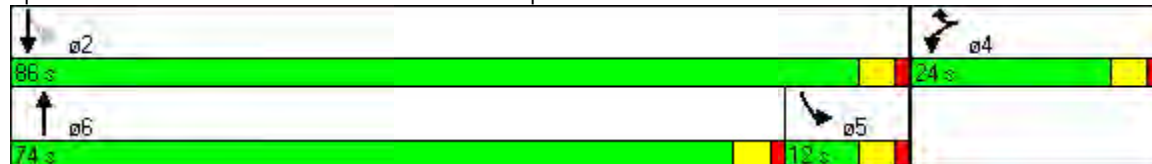
Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
7: Existing Site Access (South) & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	90	20	1275	1340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	440			0
Storage Lanes	0	0	1			0
Taper Length (ft)	0	0	25			0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.936				0.998	
Flt Protected	0.974		0.950			
Satd. Flow (prot)	1698	0	1770	3505	3498	0
Flt Permitted	0.974		0.141			
Satd. Flow (perm)	1698	0	263	3505	3498	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	37				2	
Link Speed (mph)	30			45	45	
Link Distance (ft)	465			1079	847	
Travel Time (s)	10.6			16.3	12.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	3%	2%
Adj. Flow (vph)	106	96	21	1356	1426	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	0	21	1356	1447	0
Turn Type			pm+pt			
Protected Phases	4		1	6	2	
Permitted Phases			6			
Detector Phase	4		1	6	2	
Switch Phase						
Minimum Initial (s)	4.0		6.0	18.0	18.0	
Minimum Split (s)	20.0		11.0	23.0	23.0	
Total Split (s)	26.0	0.0	11.0	84.0	73.0	0.0
Total Split (%)	23.6%	0.0%	10.0%	76.4%	66.4%	0.0%
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0	5.0	5.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	16.0		85.0	85.0	80.6	
Actuated g/C Ratio	0.15		0.77	0.77	0.73	
v/c Ratio	0.73		0.07	0.50	0.56	
Control Delay	51.0		1.2	1.2	4.2	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	51.0		1.2	1.2	4.2	
LOS	D		A	A	A	
Approach Delay	51.0			1.2	4.2	
Approach LOS	D			A	A	
Queue Length 50th (ft)	112		1	20	25	
Queue Length 95th (ft)	182		m1	27	97	

Lanes, Volumes, Timings
 7: Existing Site Access (South) & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	385			999	767	
Turn Bay Length (ft)			440			
Base Capacity (vph)	369		285	2709	2564	
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	0.55		0.07	0.50	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 42 (38%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 6.0

Intersection LOS: A

Intersection Capacity Utilization 56.2%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: Existing Site Access (South) & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	20	90	205	15	60	50	1060	170	160	1410	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.877			0.879				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1637	0	1770	3471	1583	1770	3459	0
Flt Permitted	0.704			0.345			0.099			0.124		
Satd. Flow (perm)	1311	1634	0	643	1637	0	184	3471	1583	231	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			66				187			4
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	71	22	99	225	16	66	55	1165	187	176	1549	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	121	0	225	82	0	55	1165	187	176	1593	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	10.0	13.0	0.0	19.0	22.0	0.0	11.0	59.0	59.0	19.0	67.0	0.0
Total Split (%)	9.1%	11.8%	0.0%	17.3%	20.0%	0.0%	10.0%	53.6%	53.6%	17.3%	60.9%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	13.8	6.8		26.4	17.4		59.6	59.6	59.6	65.8	65.8	
Actuated g/C Ratio	0.13	0.06		0.24	0.16		0.54	0.54	0.54	0.60	0.60	
v/c Ratio	0.38	0.62		0.74	0.26		0.30	0.62	0.20	0.63	0.77	
Control Delay	39.8	29.0		52.1	16.2		11.0	6.3	0.7	26.7	13.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	29.0		52.1	16.2		11.0	6.3	0.7	26.7	13.2	
LOS	D	C		D	B		B	A	A	C	B	
Approach Delay		33.0			42.5			5.8			14.6	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	40	15		140	10		8	108	2	41	110	
Queue Length 95th (ft)	77	75		#224	54		m11	m137	m2	128	122	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	190	211		308	326		186	1881	944	334	2072	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.37	0.57		0.73	0.25		0.30	0.62	0.20	0.53	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 106 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

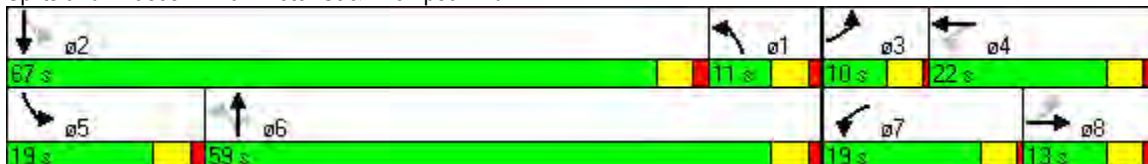
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	60	0	45	5	0	15	30	1320	30	85	15	1310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.897			0.997				0.997
Flt Protected	0.950				0.988		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1651	0	1770	3495	0	0	1770	3495
Flt Permitted	0.565						0.182				0.131	
Satd. Flow (perm)	2042	1583	0	0	1671	0	339	3495	0	0	244	3495
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		154			16			4				4
Link Speed (mph)		30			30			45				45
Link Distance (ft)		430			118			847				288
Travel Time (s)		9.8			2.7			12.8				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	62	0	47	5	0	16	31	1375	31	92	16	1365
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	47	0	0	21	0	31	1406	0	0	108	1396
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	9.0	20.0	0.0	11.0	11.0	0.0	11.0	73.0	0.0	17.0	17.0	79.0
Total Split (%)	8.2%	18.2%	0.0%	10.0%	10.0%	0.0%	10.0%	66.4%	0.0%	15.5%	15.5%	71.8%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	9.1	9.5			4.7		81.1	81.1			86.1	87.1
Actuated g/C Ratio	0.08	0.09			0.04		0.74	0.74			0.78	0.79
v/c Ratio	0.27	0.17			0.24		0.09	0.55			0.38	0.50
Control Delay	48.0	1.3			33.4		2.7	2.8			8.6	6.9
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	48.0	1.3			33.4		2.7	2.8			8.6	6.9
LOS	D	A			C		A	A			A	A
Approach Delay		27.8			33.4			2.8				7.0
Approach LOS		C			C			A				A
Queue Length 50th (ft)	22	0			4		2	64			17	178
Queue Length 95th (ft)	40	0			29		m5	67			43	312

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	2%
Adj. Flow (vph)	31
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		350			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	229	349			106		328	2578			358	2769
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	0.27	0.13			0.20		0.09	0.55			0.30	0.50

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 55 (50%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 6.0

Intersection LOS: A

Intersection Capacity Utilization 61.3%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	745	265	300	710	5	725	15	450	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.999			0.855			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3377	0	1770	1861	0	1770	1593	0	1770	1753	0
Flt Permitted	0.078			0.071			0.460			0.851		
Satd. Flow (perm)	145	3377	0	132	1861	0	857	1593	0	1585	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35						309			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	866	308	400	947	7	942	19	584	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1174	0	400	954	0	942	603	0	7	33	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	52.0	0.0	27.0	70.0	0.0	60.0	71.0	0.0	11.0	11.0	0.0
Total Split (%)	6.0%	34.7%	0.0%	18.0%	46.7%	0.0%	40.0%	47.3%	0.0%	7.3%	7.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	51.0	47.0		74.1	72.3		64.7	63.7		6.0	6.0	
Actuated g/C Ratio	0.35	0.32		0.50	0.49		0.44	0.43		0.04	0.04	
v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.70		0.11	0.39	
Control Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
LOS	C	F		F	F		F	C		E	E	
Approach Delay		93.2			112.9			118.4			64.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	3	~663		~457	~1004		~1117	236		7	19	
Queue Length 95th (ft)	11	#742		#500	#1012		#1064	251		20	45	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	94	1099		310	910		722	883		64	84	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.68		0.11	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 147.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 108.8

Intersection LOS: F

Intersection Capacity Utilization 105.0%

ICU Level of Service G

Analysis Period (min) 15

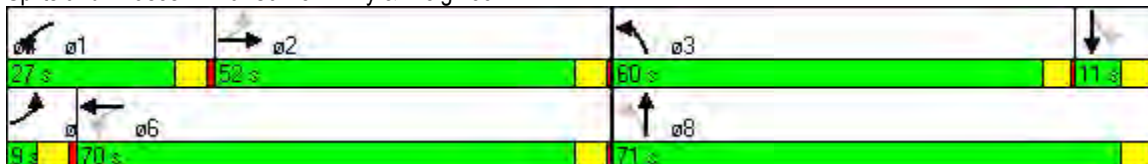
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	30	25	425	30	285	5	1055	140	100	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.932			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted				0.563			0.178			0.111		
Satd. Flow (perm)	1863	1736	0	1049	1609	0	332	3539	1538	207	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			163				151			4
Link Speed (mph)		40			45			45				45
Link Distance (ft)		348			436			1188				665
Travel Time (s)		5.9			6.6			18.0				10.1
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	78	39	32	675	48	452	5	1134	151	122	695	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	71	0	675	500	0	5	1134	151	122	732	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	11.0	0.0	32.0	32.0	0.0	36.0	36.0	36.0	11.0	47.0	0.0
Total Split (%)	12.2%	12.2%	0.0%	35.6%	35.6%	0.0%	40.0%	40.0%	40.0%	12.2%	52.2%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	7.1	4.0		36.7	25.1		29.1	29.1	29.1	40.1	40.1	
Actuated g/C Ratio	0.08	0.05		0.42	0.29		0.33	0.33	0.33	0.46	0.46	
v/c Ratio	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	
Control Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
LOS	D	D		E	D		C	D	A	D	C	
Approach Delay		45.0			52.5			44.9			36.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	27	22		342	191		2	335	0	40	368	
Queue Length 95th (ft)	47	#63		280	162		10	#481	41	#87	#468	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	147	110		669	576		110	1172	610	166	847	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 87.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 87.9%

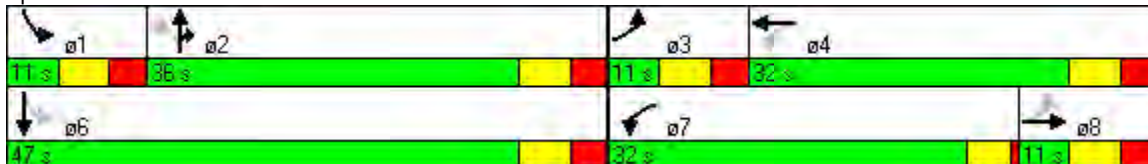
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	105	45	5	20	160	5	550	30	240	300	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955				0.850		0.992			0.987	
Flt Protected	0.950				0.990						0.980	
Satd. Flow (prot)	3433	1779	0	0	1844	1583	0	3507	0	0	3423	0
Flt Permitted	0.727										0.980	
Satd. Flow (perm)	2627	1779	0	0	1863	1583	0	3507	0	0	3423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35				29		9			15	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	645	138	59	6	23	182	7	724	39	304	380	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	645	197	0	0	29	182	0	770	0	0	747	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	12.0	21.0	0.0	9.0	9.0	18.0	21.0	21.0	0.0	18.0	18.0	0.0
Total Split (%)	20.0%	35.0%	0.0%	15.0%	15.0%	30.0%	35.0%	35.0%	0.0%	30.0%	30.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)	12.3	11.3			4.0	16.4		16.1			13.1	
Actuated g/C Ratio	0.22	0.20			0.07	0.30		0.29			0.24	
v/c Ratio	0.90	0.51			0.21	0.37		0.75			0.92	
Control Delay	38.2	20.4			30.0	14.9		24.8			40.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	38.2	20.4			30.0	14.9		24.8			40.7	
LOS	D	C			C	B		C			D	
Approach Delay		34.0			16.9			24.8			40.7	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	105	47			9	41		114			120	
Queue Length 95th (ft)	124	77			31	77		155			#198	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 1 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)	714	540			135	488		1022			816	
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	0.90	0.36			0.21	0.37		0.75			0.92	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 66.3%

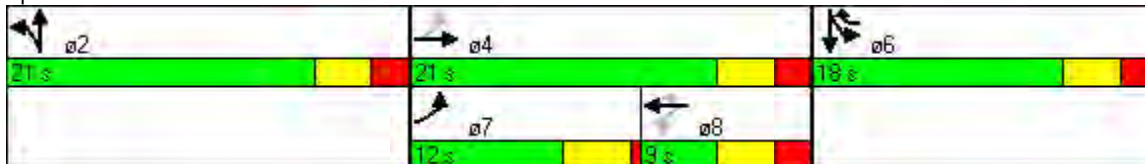
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



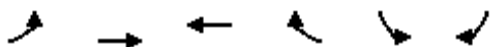
HCM Unsignalized Intersection Capacity Analysis 13: Driveway 3 & Thompson Rd

Future Alternative 1 PM Peak Hour
2/9/2009

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	125	0	1480	1305	50
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.71	0.92	0.96	0.96	0.68
Hourly flow rate (vph)	0	176	0	1542	1359	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				288		
pX, platoon unblocked	0.79					
vC, conflicting volume	2167	490	1433			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1950	490	1433			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	66	100			
cM capacity (veh/h)	45	524	470			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	176	771	771	544	544	345
Volume Left	0	0	0	0	0	0
Volume Right	176	0	0	0	0	74
cSH	524	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.45	0.45	0.32	0.32	0.20
Queue Length 95th (ft)	37	0	0	0	0	0
Control Delay (s)	15.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	15.3	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		44.2%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

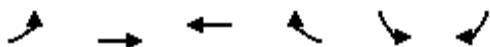
Future Alternative 1 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	230	1025	1510	30	15	150
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	245	1090	1888	38	22	221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1925				2941	1906
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1925				2941	1906
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	19				0	0
cM capacity (veh/h)	303				2	58
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	245	545	545	1925	243	
Volume Left	245	0	0	0	22	
Volume Right	0	0	0	38	221	
cSH	303	1700	1700	1700	18	
Volume to Capacity	0.81	0.32	0.32	1.13	13.63	
Queue Length 95th (ft)	165	0	0	0	Err	
Control Delay (s)	52.4	0.0	0.0	0.0	Err	
Lane LOS	F				F	
Approach Delay (s)	9.6			0.0	Err	
Approach LOS					F	
Intersection Summary						
Average Delay		696.3				
Intersection Capacity Utilization		114.1%		ICU Level of Service		H
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 1 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	265	170	15	25	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	33	288	202	18	28	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	220				565	211
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				565	211
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	92
cM capacity (veh/h)	1349				475	824
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	321	220	96			
Volume Left	33	0	28			
Volume Right	0	18	67			
cSH	1349	1700	677			
Volume to Capacity	0.02	0.13	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.0	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			40.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Future Alternative 1 PM Peak Hour

2/9/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	965	50	10	1420	25	45	0	40	10	5	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	37	1027	53	11	1511	27	48	0	43	11	5	74
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.13						0.13	0.13		0.13	0.13	0.13
vC, conflicting volume	1537			1080			2737	2686	540	2176	2699	1524
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1781			1080			10846	10464	540	6605	10565	1681
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 %	18			98			0	100	91	0	0	0
cM capacity (veh/h)	46			642			0	0	486	0	0	11
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	37	684	395	11	1537	90	90					
Volume Left	37	0	0	11	0	48	11					
Volume Right	0	0	53	0	27	43	74					
cSH	46	1700	1700	642	1700	0	0					
Volume to Capacity	0.82	0.40	0.23	0.02	0.90	Err	Err					
Queue Length 95th (ft)	81	0	0	1	0	Err	Err					
Control Delay (s)	218.1	0.0	0.0	10.7	0.0	Err	Err					
Lane LOS	F			B		F	F					
Approach Delay (s)	7.3			0.1		Err	Err					
Approach LOS						F	F					
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			94.5%		ICU Level of Service		F					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 38: Driveway 2 & Thompson Rd

Future Alternative 1 PM Peak Hour
2/9/2009

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	 	
Volume (veh/h)	0	0	0	1480	1360	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	1609	1478	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				526		
pX, platoon unblocked	0.86					
vC, conflicting volume	2023	747	1495			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1614	747	1495			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	81	355	445			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	536	536	536	986	509
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	16
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.32	0.32	0.32	0.58	0.30
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		41.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	280	10	135	215	140	65	1410	60	100	875	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.995			0.941			0.994			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3330	0	1770	3518	0	1770	3458	0
Flt Permitted	0.222			0.540			0.159			0.059		
Satd. Flow (perm)	414	3522	0	1006	3330	0	296	3518	0	110	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			91			5			24	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	372	341	12	152	242	157	83	1808	77	109	951	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	353	0	152	399	0	83	1885	0	109	1125	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	28.0	28.0	0.0	18.0	18.0	0.0	11.0	73.0	0.0	11.0	73.0	0.0
Total Split (%)	21.5%	21.5%	0.0%	13.8%	13.8%	0.0%	8.5%	56.2%	0.0%	8.5%	56.2%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	41.0	24.5		24.5	13.0		74.0	68.0		74.0	68.0	
Actuated g/C Ratio	0.32	0.19		0.19	0.10		0.57	0.52		0.57	0.52	
v/c Ratio	1.01	0.53		0.59	0.96		0.35	1.02		0.78	0.62	
Control Delay	88.0	51.1		44.7	80.3		20.1	57.9		60.6	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	88.0	51.1		44.7	80.3		20.1	57.9		60.6	13.1	
LOS	F	D		D	F		C	E		E	B	
Approach Delay		70.1			70.5			56.3			17.3	
Approach LOS		E			E			E			B	
Queue Length 50th (ft)	~273	143		96	139		27	~887		39	192	
Queue Length 95th (ft)	#400	176		153	#240		42	722		m#135	226	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	370	664		278	415		237	1843		139	1820	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.01	0.53		0.55	0.96		0.35	1.02		0.78	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 120 (92%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 49.5

Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	15	1490	110	70	1025
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1612	1442	3408	0	1770	3312
Flt Permitted	0.950				0.080	
Satd. Flow (perm)	1612	1442	3408	0	149	3312
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22	18			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1926
Travel Time (s)	6.9		44.5			29.2
Peak Hour Factor	0.69	0.69	0.82	0.82	0.93	0.93
Heavy Vehicles (%)	12%	12%	5%	3%	2%	9%
Adj. Flow (vph)	22	22	1817	134	75	1102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	22	1951	0	75	1102
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	12.0	12.0	105.0	0.0	13.0	118.0
Total Split (%)	9.2%	9.2%	80.8%	0.0%	10.0%	90.8%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.0	7.0	108.4		118.8	119.8
Actuated g/C Ratio	0.05	0.05	0.83		0.91	0.92
v/c Ratio	0.25	0.22	0.69		0.32	0.36
Control Delay	66.5	27.5	1.8		8.2	1.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	66.5	27.5	1.8		8.2	1.3
LOS	E	C	A		A	A
Approach Delay	47.0		1.8			1.7
Approach LOS	D		A			A
Queue Length 50th (ft)	18	0	49		6	66
Queue Length 95th (ft)	36	17	41		m13	78

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			1846
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	87	98	2845		235	3052
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	0.25	0.22	0.69		0.32	0.36

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 21 (16%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 2.4

Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	25	85	215	30	105	135	1580	145	50	835	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.884			0.883				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1647	0	1770	1645	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.364			0.205			0.052		
Satd. Flow (perm)	1228	1647	0	678	1645	0	382	3471	1583	97	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			114				167		14	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	103	29	98	247	34	121	155	1816	167	57	960	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	127	0	247	155	0	155	1816	167	57	1058	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	17.0	13.0	0.0	27.0	23.0	0.0	11.0	79.0	79.0	11.0	79.0	0.0
Total Split (%)	13.1%	10.0%	0.0%	20.8%	17.7%	0.0%	8.5%	60.8%	60.8%	8.5%	60.8%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	19.0	7.0		32.7	16.7		84.3	79.5	79.5	83.3	77.3	
Actuated g/C Ratio	0.15	0.05		0.25	0.13		0.65	0.61	0.61	0.64	0.59	
v/c Ratio	0.46	0.70		0.72	0.50		0.50	0.86	0.16	0.41	0.52	
Control Delay	45.2	38.5		54.1	22.1		6.7	10.1	0.2	31.9	5.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.2	38.5		54.1	22.1		6.7	10.1	0.2	31.9	5.8	
LOS	D	D		D	C		A	B	A	C	A	
Approach Delay		41.5			41.8			9.1			7.1	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)	68	24		178	31		22	265	0	17	255	
Queue Length 95th (ft)	112	#88		251	93		m23	m304	m0	46	147	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	253	193		364	326		312	2123	1033	139	2045	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.41	0.66		0.68	0.48		0.50	0.86	0.16	0.41	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 128 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd

												
ø2	ø1	ø3	ø4	ø5	ø6	ø7	ø8					
79 s	11 s	17 s	23 s	11 s	79 s	27 s	13 s					
												
ø6	ø5	ø7	ø8									
79 s	11 s	27 s	13 s									

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	70	0	80	5	0	5	200	1300	5	30	20	1015
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.932			0.999				0.968
Flt Protected	0.950				0.976		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1694	0	1770	3435	0	0	1770	3348
Flt Permitted	0.642						0.100				0.099	
Satd. Flow (perm)	2320	1583	0	0	1736	0	186	3435	0	0	184	3348
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		314			6			1				48
Link Speed (mph)		30			30			45				45
Link Distance (ft)		406			118			1926				288
Travel Time (s)		9.2			2.7			29.2				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	85	0	98	6	0	6	244	1585	6	37	24	1238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	98	0	0	12	0	244	1591	0	0	61	1573
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	9.0	18.0	0.0	9.0	9.0	0.0	28.0	100.0	0.0	12.0	12.0	84.0
Total Split (%)	6.9%	13.8%	0.0%	6.9%	6.9%	0.0%	21.5%	76.9%	0.0%	9.2%	9.2%	64.6%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	8.8	8.8			4.0		102.1	102.1			83.2	83.2
Actuated g/C Ratio	0.07	0.07			0.03		0.79	0.79			0.64	0.64
v/c Ratio	0.42	0.24			0.20		0.57	0.59			0.31	0.73
Control Delay	63.3	1.4			52.0		17.7	1.1			13.7	18.3
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	63.3	1.4			52.0		17.7	1.1			13.7	18.3
LOS	E	A			D		B	A			B	B
Approach Delay		30.2			52.0			3.3				18.1
Approach LOS		C			D			A				B
Queue Length 50th (ft)	36	0			5		87	2			17	397
Queue Length 95th (ft)	55	0			24		130	7			35	470

Lane Group	SBR
Lane Configurations	
Volume (vph)	275
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.82
Heavy Vehicles (%)	2%
Adj. Flow (vph)	335
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		326			38			1846				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	201	441			59		426	2698			203	2160
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	0.42	0.22			0.20		0.57	0.59			0.30	0.73

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 55 (42%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 11.4

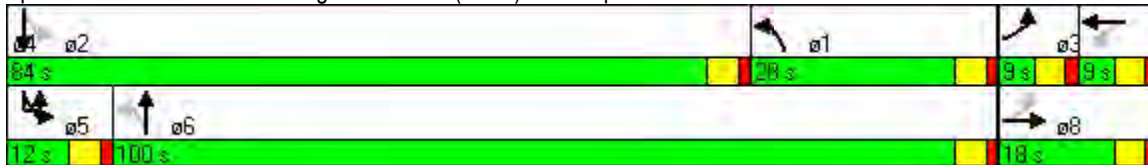
Intersection LOS: B

Intersection Capacity Utilization 65.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	750	480	405	555	5	320	15	245	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.941			0.999			0.859			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3311	0	1770	1791	0	1770	1600	0	1770	1515	0
Flt Permitted	0.426			0.100			0.541					
Satd. Flow (perm)	794	3311	0	186	1791	0	1008	1600	0	1863	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		175			1			299			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	824	527	455	624	6	390	18	299	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1351	0	455	630	0	390	317	0	10	40	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	36.0	0.0	24.0	51.0	0.0	19.0	30.0	0.0	11.0	11.0	0.0
Total Split (%)	10.0%	40.0%	0.0%	26.7%	56.7%	0.0%	21.1%	33.3%	0.0%	12.2%	12.2%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	35.1	31.1		55.2	53.5		21.3	20.3		6.0	6.0	
Actuated g/C Ratio	0.41	0.36		0.64	0.62		0.25	0.24		0.07	0.07	
v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.52		0.08	0.32	
Control Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
LOS	A	E		E	B		F	A		D	C	
Approach Delay		57.3			32.7			48.3			33.8	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	2	~418		~220	196		202	8		6	11	
Queue Length 95th (ft)	9	#553		#411	376		#258	50		12	18	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1114			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	372	1315		473	1120		385	680		131	126	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.47		0.08	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

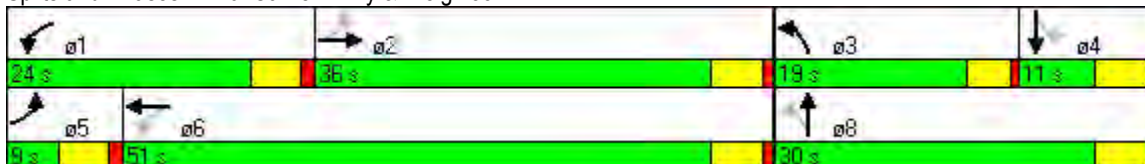
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	35	15	150	40	100	10	545	440	335	805	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.893				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1777	0	1687	1663	0	1770	3539	1583	1770	1822	0
Flt Permitted				0.976			0.198			0.318		
Satd. Flow (perm)	1863	1777	0	1733	1663	0	369	3539	1583	592	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			112				458		12	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	47	41	18	169	45	112	10	568	458	372	894	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	59	0	169	157	0	10	568	458	372	977	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	12.0	0.0	10.0	11.0	0.0	30.0	30.0	30.0	18.0	48.0	0.0
Total Split (%)	15.7%	17.1%	0.0%	14.3%	15.7%	0.0%	42.9%	42.9%	42.9%	25.7%	68.6%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	6.8	5.0		10.4	4.0		24.6	24.6	24.6	41.3	41.3	
Actuated g/C Ratio	0.10	0.08		0.16	0.06		0.38	0.38	0.38	0.63	0.63	
v/c Ratio	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.68	0.85	
Control Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
LOS	C	C		C	D		B	B	A	B	C	
Approach Delay		29.0			35.8			12.0			19.1	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	16	17		60	19		3	101	0	75	332	
Queue Length 95th (ft)	39	48		110	#107		14	146	58	#129	#621	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	188	153		273	207		138	1328	880	572	1151	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.65	0.85	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 65.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St

			
18 s	30 s	11 s	11 s
			
48 s	10 s	12 s	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	15	10	15	135	290	35	235	10	115	465	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.942				0.850		0.995			0.948	
Flt Protected	0.950				0.995			0.994			0.994	
Satd. Flow (prot)	3433	1755	0	0	1853	1583	0	3500	0	0	3335	0
Flt Permitted	0.415				0.961			0.994			0.994	
Satd. Flow (perm)	1500	1755	0	0	1790	1583	0	3500	0	0	3335	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				286		5			172	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	74	19	12	17	153	330	36	245	10	126	511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	31	0	0	170	330	0	291	0	0	978	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	8.0	21.0	0.0	13.0	13.0	24.0	15.0	15.0	0.0	24.0	24.0	0.0
Total Split (%)	13.3%	35.0%	0.0%	21.7%	21.7%	40.0%	25.0%	25.0%	0.0%	40.0%	40.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effect Green (s)	13.4	12.4			7.8	32.0		10.1			19.1	
Actuated g/C Ratio	0.24	0.22			0.14	0.57		0.18			0.34	
v/c Ratio	0.15	0.08			0.69	0.32		0.46			0.79	
Control Delay	16.8	13.0			41.4	2.6		24.2			20.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	16.8	13.0			41.4	2.6		24.2			20.7	
LOS	B	B			D	A		C			C	
Approach Delay		15.7			15.8			24.2			20.7	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	10	5			60	7		50			140	
Queue Length 95th (ft)	20	20			#138	37		83			#242	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 2 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	492	507			254	1019		626			1240	
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	0.15	0.06			0.67	0.32		0.46			0.79	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 61.9%

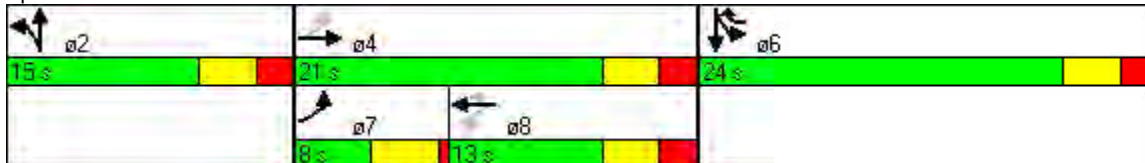
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

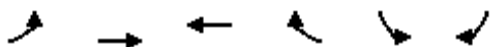
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis
20: Carrier Pkwy & Old Collamer Rd

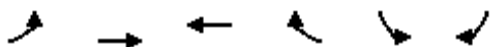
Future Alternative 2 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	1510	835	15	30	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	217	1819	960	17	36	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	977				2312	968
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977				2312	968
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				0	10
cM capacity (veh/h)	702				22	254
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	217	910	910	977	265	
Volume Left	217	0	0	0	36	
Volume Right	0	0	0	17	229	
cSH	702	1700	1700	1700	104	
Volume to Capacity	0.31	0.54	0.54	0.57	2.54	
Queue Length 95th (ft)	33	0	0	0	605	
Control Delay (s)	12.4	0.0	0.0	0.0	785.9	
Lane LOS	B				F	
Approach Delay (s)	1.3			0.0	785.9	
Approach LOS					F	
Intersection Summary						
Average Delay		64.4				
Intersection Capacity Utilization		78.2%		ICU Level of Service	D	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 2 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	40	185	215	5	5	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	56	261	222	5	9	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	227				597	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				597	224
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1285				427	768
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	317	227	60			
Volume Left	56	0	9			
Volume Right	0	5	52			
cSH	1285	1700	689			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	3	0	7			
Control Delay (s)	1.7	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		36.9%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 2 AM Peak Hour
2/10/2009

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Volume (veh/h)	35	1215	285	70	810	15	10	0	5	15	5	40						
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)	39	1350	317	78	900	17	11	0	6	17	6	44						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)				1089														
pX, platoon unblocked	0.61							0.61	0.61	0.61	0.61	0.61						
vC, conflicting volume	917				1667				2689	2658	833	1822						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	537				1667				3462	3412	833	2032						
tC, single (s)	4.1				4.1				7.5	6.5	6.9	7.5						
tC, 2 stage (s)																		
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5						
p0 queue free %	94				80				0	100	98	0						
cM capacity (veh/h)	622				382				0	3	312	16						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1											
Volume Total	39	900	767	78	917	17	67											
Volume Left	39	0	0	78	0	11	17											
Volume Right	0	0	317	0	17	6	44											
cSH	622	1700	1700	382	1700	0	18											
Volume to Capacity	0.06	0.53	0.45	0.20	0.54	Err	3.73											
Queue Length 95th (ft)	5	0	0	19	0	Err	Err											
Control Delay (s)	11.2	0.0	0.0	16.8	0.0	Err	Err											
Lane LOS	B				C				F									
Approach Delay (s)	0.3				1.3				Err									
Approach LOS							F				F							
Intersection Summary																		
Average Delay				Err														
Intersection Capacity Utilization				60.4%			ICU Level of Service			B								
Analysis Period (min)				15														

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	460	40	145	435	120	110	965	175	175	1235	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.968			0.977			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3426	0	1770	3458	0	1770	3437	0
Flt Permitted	0.198			0.222			0.091			0.118		
Satd. Flow (perm)	369	3497	0	414	3426	0	170	3458	0	220	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			27			25			38	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	222	511	44	158	473	130	124	1084	197	190	1342	321
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	555	0	158	603	0	124	1281	0	190	1663	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	16.0	25.0	0.0	14.0	23.0	0.0	11.0	55.0	0.0	16.0	60.0	0.0
Total Split (%)	14.5%	22.7%	0.0%	12.7%	20.9%	0.0%	10.0%	50.0%	0.0%	14.5%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	31.2	20.2		26.8	18.0		50.0	50.0		55.0	55.0	
Actuated g/C Ratio	0.28	0.18		0.24	0.16		0.45	0.45		0.50	0.50	
v/c Ratio	0.91	0.86		0.75	1.03		0.75	0.81		0.72	0.96	
Control Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.6	24.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.6	24.8	
LOS	E	E		D	F		D	C		C	C	
Approach Delay		61.2			82.3			31.8			25.8	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	123	200		84	~232		50	393		66	545	
Queue Length 95th (ft)	#249	#291		#157	#349		#128	477		m101	#737	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	245	648		213	583		165	1585		265	1738	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.91	0.86		0.74	1.03		0.75	0.81		0.72	0.96	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 107 (97%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 42.3

Intersection LOS: D

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

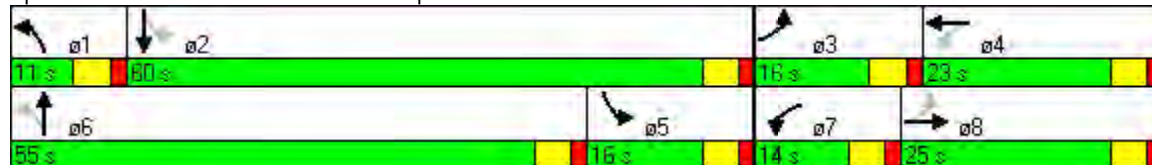
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	85	75	1220	10	5	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3468	0	1770	3539
Flt Permitted	0.950				0.146	
Satd. Flow (perm)	1770	1583	3468	0	272	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		136	1			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1926
Travel Time (s)	6.9		44.5			29.2
Peak Hour Factor	0.55	0.55	0.85	0.85	0.81	0.81
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	155	136	1435	12	6	1759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	136	1447	0	6	1759
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	24.0	24.0	74.0	0.0	12.0	86.0
Total Split (%)	21.8%	21.8%	67.3%	0.0%	10.9%	78.2%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.9	13.9	83.7		86.1	86.1
Actuated g/C Ratio	0.13	0.13	0.76		0.78	0.78
v/c Ratio	0.70	0.43	0.55		0.02	0.63
Control Delay	61.8	11.3	1.9		3.4	5.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	61.8	11.3	1.9		3.4	5.1
LOS	E	B	A		A	A
Approach Delay	38.2		1.9			5.1
Approach LOS	D		A			A
Queue Length 50th (ft)	106	0	19		1	157
Queue Length 95th (ft)	97	0	55		m2	157

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			1846
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	306	386	2640		309	2771
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	0.51	0.35	0.55		0.02	0.63

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 39 (35%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 6.5

Intersection LOS: A

Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd

	ø2		ø4
86 s		24 s	
	ø6		ø5
74 s		12 s	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	20	90	205	15	60	50	1060	170	160	1410	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.877			0.879				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1637	0	1770	3471	1583	1770	3459	0
Flt Permitted	0.704			0.345			0.099			0.124		
Satd. Flow (perm)	1311	1634	0	643	1637	0	184	3471	1583	231	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			66				187			4
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	71	22	99	225	16	66	55	1165	187	176	1549	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	121	0	225	82	0	55	1165	187	176	1593	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	10.0	13.0	0.0	19.0	22.0	0.0	11.0	59.0	59.0	19.0	67.0	0.0
Total Split (%)	9.1%	11.8%	0.0%	17.3%	20.0%	0.0%	10.0%	53.6%	53.6%	17.3%	60.9%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	13.8	6.8		26.4	17.4		59.6	59.6	59.6	65.8	65.8	
Actuated g/C Ratio	0.13	0.06		0.24	0.16		0.54	0.54	0.54	0.60	0.60	
v/c Ratio	0.38	0.62		0.74	0.26		0.30	0.62	0.20	0.63	0.77	
Control Delay	39.8	29.0		52.1	16.2		11.0	6.3	0.7	25.2	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	29.0		52.1	16.2		11.0	6.3	0.7	25.2	13.3	
LOS	D	C		D	B		B	A	A	C	B	
Approach Delay		33.0			42.5			5.8			14.5	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	40	15		140	10		8	108	2	47	111	
Queue Length 95th (ft)	77	75		#224	54		m11	m137	m2	118	122	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	190	211		308	326		186	1881	944	334	2072	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.37	0.57		0.73	0.25		0.30	0.62	0.20	0.53	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.4

Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

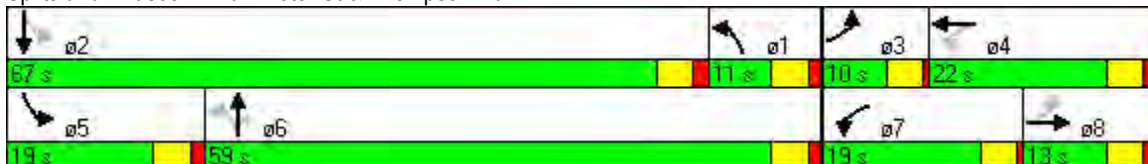
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	230	0	190	5	0	15	55	1215	30	55	15	1235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.897			0.996				0.988
Flt Protected	0.950				0.988		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1651	0	1770	3492	0	0	1770	3465
Flt Permitted	0.744						0.167				0.147	
Satd. Flow (perm)	2689	1583	0	0	1671	0	311	3492	0	0	274	3465
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		156			16			4				15
Link Speed (mph)		30			30			45				45
Link Distance (ft)		406			118			1926				288
Travel Time (s)		9.2			2.7			29.2				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	240	0	198	5	0	16	57	1266	31	60	16	1286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	198	0	0	21	0	57	1297	0	0	76	1395
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	16.0	27.0	0.0	11.0	11.0	0.0	11.0	70.0	0.0	13.0	13.0	72.0
Total Split (%)	14.5%	24.5%	0.0%	10.0%	10.0%	0.0%	10.0%	63.6%	0.0%	11.8%	11.8%	65.5%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag			Lead	Lead		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	12.4	12.4			5.0		78.6	78.6			78.8	78.8
Actuated g/C Ratio	0.11	0.11			0.05		0.71	0.71			0.72	0.72
v/c Ratio	0.67	0.63			0.23		0.19	0.52			0.27	0.56
Control Delay	56.4	21.0			32.7		3.8	3.1			8.3	9.4
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	56.4	21.0			32.7		3.8	3.1			8.3	9.4
LOS	E	C			C		A	A			A	A
Approach Delay		40.4			32.7			3.1				9.3
Approach LOS		D			C			A				A
Queue Length 50th (ft)	85	28			3		5	56			15	222
Queue Length 95th (ft)	119	96			29		m8	60			35	335

Lane Group	SBR
Lane Configurations	
Volume (vph)	105
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	2%
Adj. Flow (vph)	109
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		326			38			1846				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	453	441			106		302	2495			305	2488
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	0.53	0.45			0.20		0.19	0.52			0.25	0.56

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 60 (55%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 11.1

Intersection LOS: B

Intersection Capacity Utilization 68.2%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	745	265	300	710	5	725	15	450	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.999			0.855			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3377	0	1770	1861	0	1770	1593	0	1770	1753	0
Flt Permitted	0.078			0.071			0.460			0.851		
Satd. Flow (perm)	145	3377	0	132	1861	0	857	1593	0	1585	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35						309			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	866	308	400	947	7	942	19	584	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1174	0	400	954	0	942	603	0	7	33	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	52.0	0.0	27.0	70.0	0.0	60.0	71.0	0.0	11.0	11.0	0.0
Total Split (%)	6.0%	34.7%	0.0%	18.0%	46.7%	0.0%	40.0%	47.3%	0.0%	7.3%	7.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	51.0	47.0		74.1	72.3		64.7	63.7		6.0	6.0	
Actuated g/C Ratio	0.35	0.32		0.50	0.49		0.44	0.43		0.04	0.04	
v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.70		0.11	0.39	
Control Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
LOS	C	F		F	F		F	C		E	E	
Approach Delay		93.2			112.9			118.4			64.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	3	~663		~457	~1004		~1117	236		7	19	
Queue Length 95th (ft)	11	#742		#500	#1012		#1064	251		20	45	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	94	1099		310	910		722	883		64	84	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.68		0.11	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 147.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 108.8

Intersection LOS: F

Intersection Capacity Utilization 105.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

			
27 s	52 s	60 s	11 s
			
9 s	70 s	71 s	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	30	25	425	30	285	5	1055	140	100	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.932			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted				0.563			0.178			0.111		
Satd. Flow (perm)	1863	1736	0	1049	1609	0	332	3539	1538	207	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			163				151			4
Link Speed (mph)		40			45			45				45
Link Distance (ft)		348			436			1188				665
Travel Time (s)		5.9			6.6			18.0				10.1
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	78	39	32	675	48	452	5	1134	151	122	695	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	71	0	675	500	0	5	1134	151	122	732	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	11.0	0.0	32.0	32.0	0.0	36.0	36.0	36.0	11.0	47.0	0.0
Total Split (%)	12.2%	12.2%	0.0%	35.6%	35.6%	0.0%	40.0%	40.0%	40.0%	12.2%	52.2%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	7.1	4.0		36.7	25.1		29.1	29.1	29.1	40.1	40.1	
Actuated g/C Ratio	0.08	0.05		0.42	0.29		0.33	0.33	0.33	0.46	0.46	
v/c Ratio	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	
Control Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
LOS	D	D		E	D		C	D	A	D	C	
Approach Delay		45.0			52.5			44.9			36.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	27	22		342	191		2	335	0	40	368	
Queue Length 95th (ft)	47	#63		280	162		10	#481	41	#87	#468	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	147	110		669	576		110	1172	610	166	847	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 87.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 87.9%

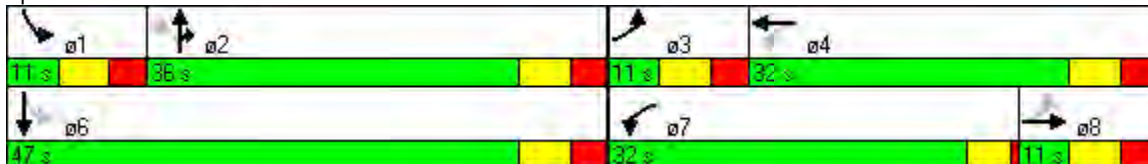
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	105	45	5	20	160	5	550	30	240	300	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955				0.850		0.992			0.987	
Flt Protected	0.950				0.990						0.980	
Satd. Flow (prot)	3433	1779	0	0	1844	1583	0	3507	0	0	3423	0
Flt Permitted	0.727										0.980	
Satd. Flow (perm)	2627	1779	0	0	1863	1583	0	3507	0	0	3423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35				29		9			15	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	645	138	59	6	23	182	7	724	39	304	380	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	645	197	0	0	29	182	0	770	0	0	747	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	12.0	21.0	0.0	9.0	9.0	18.0	21.0	21.0	0.0	18.0	18.0	0.0
Total Split (%)	20.0%	35.0%	0.0%	15.0%	15.0%	30.0%	35.0%	35.0%	0.0%	30.0%	30.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)	12.3	11.3			4.0	16.4		16.1			13.1	
Actuated g/C Ratio	0.22	0.20			0.07	0.30		0.29			0.24	
v/c Ratio	0.90	0.51			0.21	0.37		0.75			0.92	
Control Delay	38.2	20.4			30.0	14.9		24.8			40.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	38.2	20.4			30.0	14.9		24.8			40.7	
LOS	D	C			C	B		C			D	
Approach Delay		34.0			16.9			24.8			40.7	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	105	47			9	41		114			120	
Queue Length 95th (ft)	124	77			31	77		155			#198	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 2 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)	714	540			135	488		1022			816	
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	0.90	0.36			0.21	0.37		0.75			0.92	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 66.3%

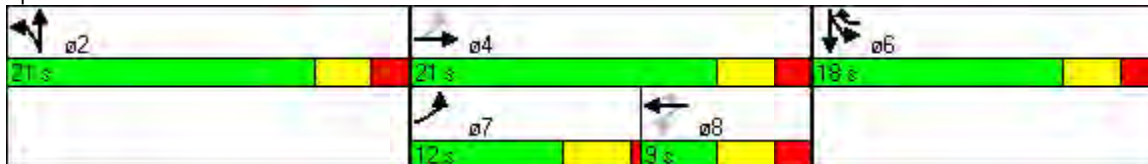
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

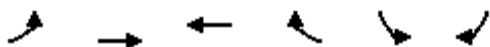
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

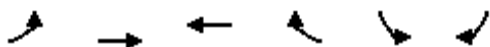
Future Alternative 2 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	230	1025	1510	30	15	150
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	245	1090	1888	38	22	221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1925				2941	1906
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1925				2941	1906
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	19				0	0
cM capacity (veh/h)	303				2	58
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	245	545	545	1925	243	
Volume Left	245	0	0	0	22	
Volume Right	0	0	0	38	221	
cSH	303	1700	1700	1700	18	
Volume to Capacity	0.81	0.32	0.32	1.13	13.63	
Queue Length 95th (ft)	165	0	0	0	Err	
Control Delay (s)	52.4	0.0	0.0	0.0	Err	
Lane LOS	F				F	
Approach Delay (s)	9.6			0.0	Err	
Approach LOS					F	
Intersection Summary						
Average Delay		696.3				
Intersection Capacity Utilization		114.1%		ICU Level of Service		H
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 2 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	265	170	15	25	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	33	288	202	18	28	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	220				565	211
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				565	211
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	92
cM capacity (veh/h)	1349				475	824
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	321	220	96			
Volume Left	33	0	28			
Volume Right	0	18	67			
cSH	1349	1700	677			
Volume to Capacity	0.02	0.13	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.0	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			40.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 2 PM Peak Hour
2/9/2009

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Volume (veh/h)	35	965	50	10	1420	25	45	0	40	10	5	70						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94						
Hourly flow rate (vph)	37	1027	53	11	1511	27	48	0	43	11	5	74						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)				1089														
pX, platoon unblocked	0.13							0.13	0.13	0.13	0.13	0.13						
vC, conflicting volume	1537				1080				2737	2686	540	2176						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	1781				1080				10846	10464	540	6605						
tC, single (s)	4.1				4.1				7.5	6.5	6.9	7.5						
tC, 2 stage (s)																		
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5						
p0 queue free %	18				98				0	100	91	0						
cM capacity (veh/h)	46				642				0	0	486	0						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1											
Volume Total	37	684	395	11	1537	90	90											
Volume Left	37	0	0	11	0	48	11											
Volume Right	0	0	53	0	27	43	74											
cSH	46	1700	1700	642	1700	0	0											
Volume to Capacity	0.82	0.40	0.23	0.02	0.90	Err	Err											
Queue Length 95th (ft)	81	0	0	1	0	Err	Err											
Control Delay (s)	218.1	0.0	0.0	10.7	0.0	Err	Err											
Lane LOS	F				B				F									
Approach Delay (s)	7.3				0.1				Err									
Approach LOS							F				F							
Intersection Summary																		
Average Delay				Err														
Intersection Capacity Utilization				94.5%			ICU Level of Service			F								
Analysis Period (min)				15														

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	280	10	135	215	140	65	1410	60	100	875	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.995			0.941			0.994			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3330	0	1770	3518	0	1770	3458	0
Flt Permitted	0.267			0.540			0.119			0.080		
Satd. Flow (perm)	497	3522	0	1006	3330	0	222	3518	0	149	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			107			6			28	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	372	341	12	152	242	157	83	1808	77	109	951	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	353	0	152	399	0	83	1885	0	109	1125	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	23.0	22.0	0.0	16.0	15.0	0.0	11.0	61.0	0.0	11.0	61.0	0.0
Total Split (%)	20.9%	20.0%	0.0%	14.5%	13.6%	0.0%	10.0%	55.5%	0.0%	10.0%	55.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	33.0	18.0		20.0	10.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio	0.30	0.16		0.18	0.09		0.51	0.51		0.51	0.51	
v/c Ratio	1.04	0.61		0.60	1.00		0.42	1.05		0.66	0.63	
Control Delay	94.4	47.8		41.5	81.7		20.6	63.4		43.4	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	94.4	47.8		41.5	81.7		20.6	63.4		43.4	13.5	
LOS	F	D		D	F		C	E		D	B	
Approach Delay		71.7			70.6			61.6			16.2	
Approach LOS		E			E			E			B	
Queue Length 50th (ft)	~245	123		82	111		29	~766		27	164	
Queue Length 95th (ft)	#354	156		136	#212		48	636		m#89	257	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	357	579		268	400		197	1794		164	1774	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.04	0.61		0.57	1.00		0.42	1.05		0.66	0.63	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 51.8

Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	15	1490	110	70	1025
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1612	1442	3408	0	1770	3312
Flt Permitted	0.950				0.074	
Satd. Flow (perm)	1612	1442	3408	0	138	3312
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22	18			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1079
Travel Time (s)	6.9		44.5			16.3
Peak Hour Factor	0.69	0.69	0.82	0.82	0.93	0.93
Heavy Vehicles (%)	12%	12%	5%	3%	2%	9%
Adj. Flow (vph)	22	22	1817	134	75	1102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	22	1951	0	75	1102
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	12.0	12.0	85.0	0.0	13.0	98.0
Total Split (%)	10.9%	10.9%	77.3%	0.0%	11.8%	89.1%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.0	7.0	88.4		98.8	99.8
Actuated g/C Ratio	0.06	0.06	0.80		0.90	0.91
v/c Ratio	0.21	0.20	0.71		0.31	0.37
Control Delay	54.1	23.3	2.2		9.3	1.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	54.1	23.3	2.2		9.3	1.7
LOS	D	C	A		A	A
Approach Delay	38.7		2.2			2.1
Approach LOS	D		A			A
Queue Length 50th (ft)	15	0	53		6	65
Queue Length 95th (ft)	32	16	59		27	82

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			999
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	103	112	2742		241	3005
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	0.21	0.20	0.71		0.31	0.37

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 75 (68%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 2.7

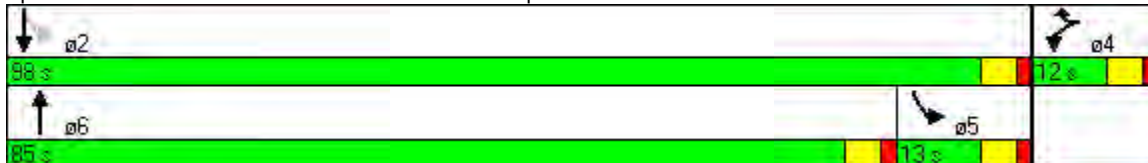
Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
7: Existing Site Access (South) & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	15	15	110	1395	1075	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	440			0
Storage Lanes	0	0	1			0
Taper Length (ft)	0	0	25			0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.932				0.987	
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1694	0	1770	3438	3402	0
Flt Permitted	0.976		0.155			
Satd. Flow (perm)	1694	0	289	3438	3402	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18				17	
Link Speed (mph)	30			45	45	
Link Distance (ft)	465			1079	847	
Travel Time (s)	10.6			16.3	12.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	2%	5%	5%	2%
Adj. Flow (vph)	18	18	131	1661	1280	119
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	0	131	1661	1399	0
Turn Type			pm+pt			
Protected Phases	4		1	6	2	
Permitted Phases			6			
Detector Phase	4		1	6	2	
Switch Phase						
Minimum Initial (s)	4.0		6.0	18.0	18.0	
Minimum Split (s)	20.0		11.0	31.0	23.0	
Total Split (s)	20.0	0.0	17.0	90.0	73.0	0.0
Total Split (%)	18.2%	0.0%	15.5%	81.8%	66.4%	0.0%
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	7.0		97.8	99.8	86.7	
Actuated g/C Ratio	0.06		0.89	0.91	0.79	
v/c Ratio	0.29		0.39	0.53	0.52	
Control Delay	35.5		3.4	0.5	0.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	35.5		3.4	0.5	0.8	
LOS	D		A	A	A	
Approach Delay	35.5			0.7	0.8	
Approach LOS	D			A	A	
Queue Length 50th (ft)	12		0	1	7	
Queue Length 95th (ft)	40		m0	1	8	

Lanes, Volumes, Timings
 7: Existing Site Access (South) & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	385			999	767	
Turn Bay Length (ft)			440			
Base Capacity (vph)	262		418	3120	2685	
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	0.14		0.31	0.53	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 108 (98%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 1.1

Intersection LOS: A

Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 7: Existing Site Access (South) & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	25	85	215	30	105	135	1580	145	50	835	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.884			0.883				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1647	0	1770	1645	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.381			0.199			0.065		
Satd. Flow (perm)	1228	1647	0	710	1645	0	371	3471	1583	121	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			121				167		16	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	103	29	98	247	34	121	155	1816	167	57	960	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	127	0	247	155	0	155	1816	167	57	1058	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	14.0	12.0	0.0	20.0	18.0	0.0	12.0	67.0	67.0	11.0	66.0	0.0
Total Split (%)	12.7%	10.9%	0.0%	18.2%	16.4%	0.0%	10.9%	60.9%	60.9%	10.0%	60.0%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	16.7	6.5		27.0	12.8		70.8	65.2	65.2	68.2	62.2	
Actuated g/C Ratio	0.15	0.06		0.25	0.12		0.64	0.59	0.59	0.62	0.57	
v/c Ratio	0.44	0.67		0.76	0.52		0.48	0.88	0.17	0.35	0.54	
Control Delay	39.8	33.6		52.8	19.9		6.8	8.8	0.2	21.5	9.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	33.6		52.8	19.9		6.8	8.8	0.2	21.5	9.7	
LOS	D	C		D	B		A	A	A	C	A	
Approach Delay		36.4			40.1			8.0			10.3	
Approach LOS		D			D			A			B	
Queue Length 50th (ft)	58	20		152	22		19	183	0	10	105	
Queue Length 95th (ft)	101	#84		#233	80		m18	m174	m0	32	121	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	245	197		329	301		329	2057	1006	165	1945	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.42	0.64		0.75	0.51		0.47	0.88	0.17	0.35	0.54	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 40 (36%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 13.7

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

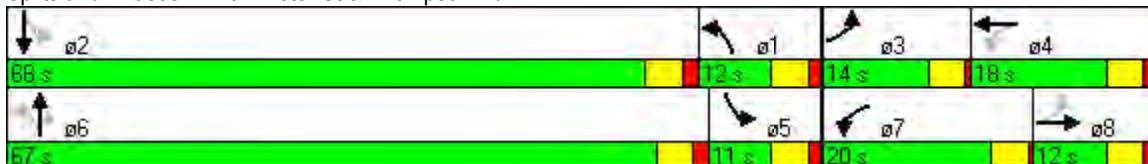
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	55	0	70	5	0	5	95	1305	5	30	20	1115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.932			0.999				0.981
Flt Protected	0.950				0.976		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1694	0	1770	3435	0	0	1770	3385
Flt Permitted	0.690						0.126				0.097	
Satd. Flow (perm)	2493	1583	0	0	1736	0	235	3435	0	0	181	3385
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		201			6			1				31
Link Speed (mph)		30			30			45				45
Link Distance (ft)		430			118			847				288
Travel Time (s)		9.8			2.7			12.8				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	67	0	85	6	0	6	116	1591	6	37	24	1360
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	85	0	0	12	0	116	1597	0	0	61	1561
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	9.0	18.0	0.0	9.0	9.0	0.0	15.0	81.0	0.0	11.0	11.0	77.0
Total Split (%)	8.2%	16.4%	0.0%	8.2%	8.2%	0.0%	13.6%	73.6%	0.0%	10.0%	10.0%	70.0%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	7.0	7.4			4.0		86.0	87.0			79.8	79.8
Actuated g/C Ratio	0.06	0.07			0.04		0.78	0.79			0.73	0.73
v/c Ratio	0.33	0.29			0.17		0.36	0.59			0.28	0.63
Control Delay	52.3	2.5			43.0		4.9	1.3			8.6	9.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	52.3	2.5			43.0		4.9	1.3			8.6	9.8
LOS	D	A			D		A	A			A	A
Approach Delay		24.5			43.0			1.6				9.8
Approach LOS		C			D			A				A
Queue Length 50th (ft)	24	0			4		1	8			11	258
Queue Length 95th (ft)	39	0			22		10	34			26	340

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 3 AM Peak Hour

2/10/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	165
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.82
Heavy Vehicles (%)	2%
Adj. Flow (vph)	201
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

17: Existing Site Access (North) & Thompson Rd

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		350			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	203	364			69		323	2717			218	2464
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	0.23			0.17		0.36	0.59			0.28	0.63

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 102 (93%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 6.5

Intersection LOS: A

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	750	480	405	555	5	320	15	245	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.941			0.999			0.859			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3311	0	1770	1791	0	1770	1600	0	1770	1515	0
Flt Permitted	0.426			0.100			0.541					
Satd. Flow (perm)	794	3311	0	186	1791	0	1008	1600	0	1863	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		175			1			299			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	824	527	455	624	6	390	18	299	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1351	0	455	630	0	390	317	0	10	40	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	36.0	0.0	24.0	51.0	0.0	19.0	30.0	0.0	11.0	11.0	0.0
Total Split (%)	10.0%	40.0%	0.0%	26.7%	56.7%	0.0%	21.1%	33.3%	0.0%	12.2%	12.2%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	35.1	31.1		55.2	53.5		21.3	20.3		6.0	6.0	
Actuated g/C Ratio	0.41	0.36		0.64	0.62		0.25	0.24		0.07	0.07	
v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.52		0.08	0.32	
Control Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
LOS	A	E		E	B		F	A		D	C	
Approach Delay		57.3			32.7			48.3			33.8	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	2	~418		~220	196		202	8		6	11	
Queue Length 95th (ft)	9	#553		#411	376		#258	50		12	18	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1114			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	372	1315		473	1120		385	680		131	126	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.47		0.08	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

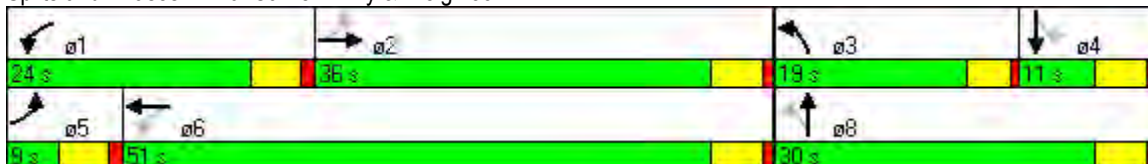
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	35	15	150	40	100	10	545	440	335	805	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.893				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1777	0	1687	1663	0	1770	3539	1583	1770	1822	0
Flt Permitted				0.976			0.198			0.318		
Satd. Flow (perm)	1863	1777	0	1733	1663	0	369	3539	1583	592	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			112				458		12	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	47	41	18	169	45	112	10	568	458	372	894	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	59	0	169	157	0	10	568	458	372	977	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	12.0	0.0	10.0	11.0	0.0	30.0	30.0	30.0	18.0	48.0	0.0
Total Split (%)	15.7%	17.1%	0.0%	14.3%	15.7%	0.0%	42.9%	42.9%	42.9%	25.7%	68.6%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	6.8	5.0		10.4	4.0		24.6	24.6	24.6	41.3	41.3	
Actuated g/C Ratio	0.10	0.08		0.16	0.06		0.38	0.38	0.38	0.63	0.63	
v/c Ratio	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.68	0.85	
Control Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
LOS	C	C		C	D		B	B	A	B	C	
Approach Delay		29.0			35.8			12.0			19.1	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	16	17		60	19		3	101	0	75	332	
Queue Length 95th (ft)	39	48		110	#107		14	146	58	#129	#621	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	188	153		273	207		138	1328	880	572	1151	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.65	0.85	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 65.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St

 ø1	 ø2	 ø3	 ø4
18 s	30 s	11 s	11 s
 ø6		 ø7	 ø8
48 s		10 s	12 s

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	15	10	15	135	290	35	235	10	115	465	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.942				0.850		0.995			0.948	
Flt Protected	0.950				0.995			0.994			0.994	
Satd. Flow (prot)	3433	1755	0	0	1853	1583	0	3500	0	0	3335	0
Flt Permitted	0.415				0.961			0.994			0.994	
Satd. Flow (perm)	1500	1755	0	0	1790	1583	0	3500	0	0	3335	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				286		5			172	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	74	19	12	17	153	330	36	245	10	126	511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	31	0	0	170	330	0	291	0	0	978	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	8.0	21.0	0.0	13.0	13.0	24.0	15.0	15.0	0.0	24.0	24.0	0.0
Total Split (%)	13.3%	35.0%	0.0%	21.7%	21.7%	40.0%	25.0%	25.0%	0.0%	40.0%	40.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effect Green (s)	13.4	12.4			7.8	32.0		10.1			19.1	
Actuated g/C Ratio	0.24	0.22			0.14	0.57		0.18			0.34	
v/c Ratio	0.15	0.08			0.69	0.32		0.46			0.79	
Control Delay	16.8	13.0			41.4	2.6		24.2			20.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	16.8	13.0			41.4	2.6		24.2			20.7	
LOS	B	B			D	A		C			C	
Approach Delay		15.7			15.8			24.2			20.7	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	10	5			60	7		50			140	
Queue Length 95th (ft)	20	20			#138	37		83			#242	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 3 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	492	507			254	1019		626			1240	
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	0.15	0.06			0.67	0.32		0.46			0.79	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 61.9%

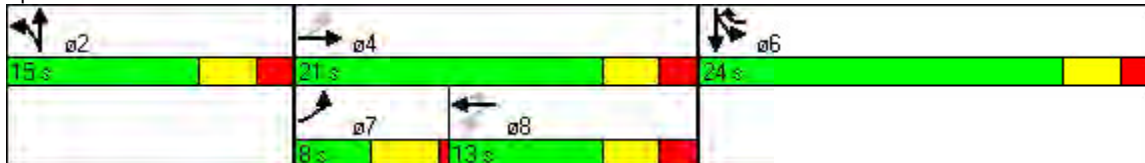
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

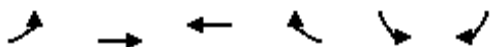
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

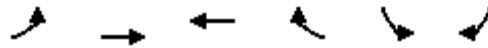
Future Alternative 3 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	1510	835	15	30	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	217	1819	960	17	36	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	977				2312	968
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977				2312	968
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				0	10
cM capacity (veh/h)	702				22	254
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	217	910	910	977	265	
Volume Left	217	0	0	0	36	
Volume Right	0	0	0	17	229	
cSH	702	1700	1700	1700	104	
Volume to Capacity	0.31	0.54	0.54	0.57	2.54	
Queue Length 95th (ft)	33	0	0	0	605	
Control Delay (s)	12.4	0.0	0.0	0.0	785.9	
Lane LOS	B				F	
Approach Delay (s)	1.3			0.0	785.9	
Approach LOS					F	
Intersection Summary						
Average Delay		64.4				
Intersection Capacity Utilization		78.2%		ICU Level of Service	D	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 3 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	40	185	215	5	5	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	56	261	222	5	9	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	227				597	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				597	224
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1285				427	768
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	317	227	60			
Volume Left	56	0	9			
Volume Right	0	5	52			
cSH	1285	1700	689			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	3	0	7			
Control Delay (s)	1.7	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		36.9%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Future Alternative 3 AM Peak Hour

2/10/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	1215	285	70	810	15	10	0	5	15	5	40
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)	39	1350	317	78	900	17	11	0	6	17	6	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.61						0.61	0.61		0.61	0.61	0.61
vC, conflicting volume	917			1667			2689	2658	833	1822	2808	908
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	537			1667			3462	3412	833	2032	3659	523
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 %	94			80			0	100	98	0	0	85
cM capacity (veh/h)	622			382			0	3	312	16	2	302
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	39	900	767	78	917	17	67					
Volume Left	39	0	0	78	0	11	17					
Volume Right	0	0	317	0	17	6	44					
cSH	622	1700	1700	382	1700	0	18					
Volume to Capacity	0.06	0.53	0.45	0.20	0.54	Err	3.73					
Queue Length 95th (ft)	5	0	0	19	0	Err	Err					
Control Delay (s)	11.2	0.0	0.0	16.8	0.0	Err	Err					
Lane LOS	B			C		F	F					
Approach Delay (s)	0.3			1.3		Err	Err					
Approach LOS						F	F					
Intersection Summary												
Average Delay			Err									
Intersection Capacity Utilization			60.4%	ICU Level of Service						B		
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	460	40	145	435	120	110	965	175	175	1235	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.968			0.977			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3426	0	1770	3458	0	1770	3437	0
Flt Permitted	0.198			0.222			0.091			0.118		
Satd. Flow (perm)	369	3497	0	414	3426	0	170	3458	0	220	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			27			25			38	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	222	511	44	158	473	130	124	1084	197	190	1342	321
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	555	0	158	603	0	124	1281	0	190	1663	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	16.0	25.0	0.0	14.0	23.0	0.0	11.0	55.0	0.0	16.0	60.0	0.0
Total Split (%)	14.5%	22.7%	0.0%	12.7%	20.9%	0.0%	10.0%	50.0%	0.0%	14.5%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	31.2	20.2		26.8	18.0		50.0	50.0		55.0	55.0	
Actuated g/C Ratio	0.28	0.18		0.24	0.16		0.45	0.45		0.50	0.50	
v/c Ratio	0.91	0.86		0.75	1.03		0.75	0.81		0.72	0.96	
Control Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.8	24.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.8	24.9	
LOS	E	E		D	F		D	C		C	C	
Approach Delay		61.2			82.3			31.8			25.9	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	123	200		84	~232		50	393		67	594	
Queue Length 95th (ft)	#249	#291		#157	#349		#128	477		m102	#738	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	245	648		213	583		165	1585		265	1738	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.91	0.86		0.74	1.03		0.75	0.81		0.72	0.96	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 105 (95%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 42.3

Intersection LOS: D

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

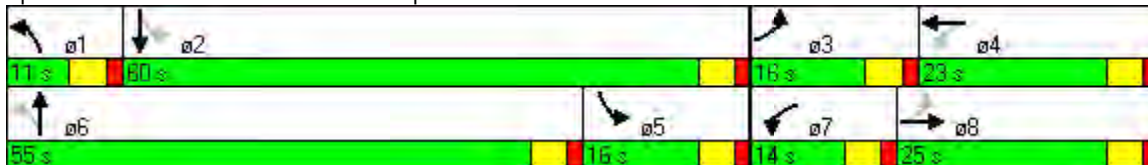
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	85	75	1220	10	5	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3468	0	1770	3539
Flt Permitted	0.950				0.146	
Satd. Flow (perm)	1770	1583	3468	0	272	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		136	1			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2934			1079
Travel Time (s)	6.9		44.5			16.3
Peak Hour Factor	0.55	0.55	0.85	0.85	0.81	0.81
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	155	136	1435	12	6	1759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	136	1447	0	6	1759
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	24.0	24.0	74.0	0.0	12.0	86.0
Total Split (%)	21.8%	21.8%	67.3%	0.0%	10.9%	78.2%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.9	13.9	83.7		86.1	86.1
Actuated g/C Ratio	0.13	0.13	0.76		0.78	0.78
v/c Ratio	0.70	0.43	0.55		0.02	0.63
Control Delay	61.8	11.3	1.9		2.4	4.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	61.8	11.3	1.9		2.4	4.0
LOS	E	B	A		A	A
Approach Delay	38.2		1.9			4.0
Approach LOS	D		A			A
Queue Length 50th (ft)	106	0	19		1	147
Queue Length 95th (ft)	97	0	55		m1	86

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2854			999
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	306	386	2640		309	2771
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	0.51	0.35	0.55		0.02	0.63

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 37 (34%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 6.0

Intersection LOS: A

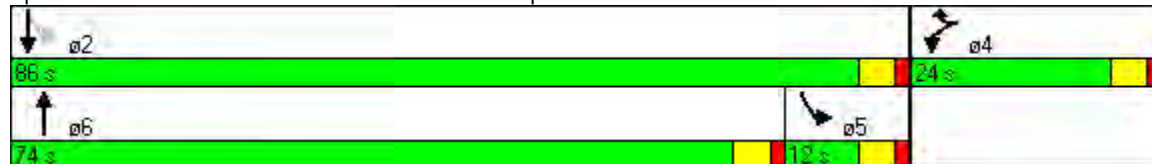
Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
7: Existing Site Access (South) & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	90	20	1275	1340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	440			0
Storage Lanes	0	0	1			0
Taper Length (ft)	0	0	25			0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.936				0.998	
Flt Protected	0.974		0.950			
Satd. Flow (prot)	1698	0	1770	3505	3498	0
Flt Permitted	0.974		0.141			
Satd. Flow (perm)	1698	0	263	3505	3498	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	37				2	
Link Speed (mph)	30			45	45	
Link Distance (ft)	465			1079	847	
Travel Time (s)	10.6			16.3	12.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	3%	2%
Adj. Flow (vph)	106	96	21	1356	1426	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	0	21	1356	1447	0
Turn Type			pm+pt			
Protected Phases	4		1	6	2	
Permitted Phases			6			
Detector Phase	4		1	6	2	
Switch Phase						
Minimum Initial (s)	4.0		6.0	18.0	18.0	
Minimum Split (s)	20.0		11.0	23.0	23.0	
Total Split (s)	26.0	0.0	11.0	84.0	73.0	0.0
Total Split (%)	23.6%	0.0%	10.0%	76.4%	66.4%	0.0%
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5		1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0	5.0	5.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	16.0		85.0	85.0	80.6	
Actuated g/C Ratio	0.15		0.77	0.77	0.73	
v/c Ratio	0.73		0.07	0.50	0.56	
Control Delay	51.0		1.2	1.2	4.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	51.0		1.2	1.2	4.3	
LOS	D		A	A	A	
Approach Delay	51.0			1.2	4.3	
Approach LOS	D			A	A	
Queue Length 50th (ft)	112		1	20	30	
Queue Length 95th (ft)	182		m1	27	110	

Lanes, Volumes, Timings
 7: Existing Site Access (South) & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	385			999	767	
Turn Bay Length (ft)			440			
Base Capacity (vph)	369		285	2709	2564	
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	0.55		0.07	0.50	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 44 (40%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 6.0

Intersection LOS: A

Intersection Capacity Utilization 56.2%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 7: Existing Site Access (South) & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	20	90	205	15	60	50	1060	170	160	1410	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.877			0.879				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1637	0	1770	3471	1583	1770	3459	0
Flt Permitted	0.704			0.345			0.099			0.124		
Satd. Flow (perm)	1311	1634	0	643	1637	0	184	3471	1583	231	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			66				187			4
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	71	22	99	225	16	66	55	1165	187	176	1549	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	121	0	225	82	0	55	1165	187	176	1593	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	10.0	13.0	0.0	19.0	22.0	0.0	11.0	59.0	59.0	19.0	67.0	0.0
Total Split (%)	9.1%	11.8%	0.0%	17.3%	20.0%	0.0%	10.0%	53.6%	53.6%	17.3%	60.9%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	13.8	6.8		26.4	17.4		59.6	59.6	59.6	65.8	65.8	
Actuated g/C Ratio	0.13	0.06		0.24	0.16		0.54	0.54	0.54	0.60	0.60	
v/c Ratio	0.38	0.62		0.74	0.26		0.30	0.62	0.20	0.63	0.77	
Control Delay	39.8	29.0		52.1	16.2		11.0	6.3	0.7	26.6	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	29.0		52.1	16.2		11.0	6.3	0.7	26.6	13.1	
LOS	D	C		D	B		B	A	A	C	B	
Approach Delay		33.0			42.5			5.8			14.5	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	40	15		140	10		8	108	2	41	110	
Queue Length 95th (ft)	77	75		#224	54		m11	m137	m2	129	122	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	190	211		308	326		186	1881	944	334	2072	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.37	0.57		0.73	0.25		0.30	0.62	0.20	0.53	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 108 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.4

Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

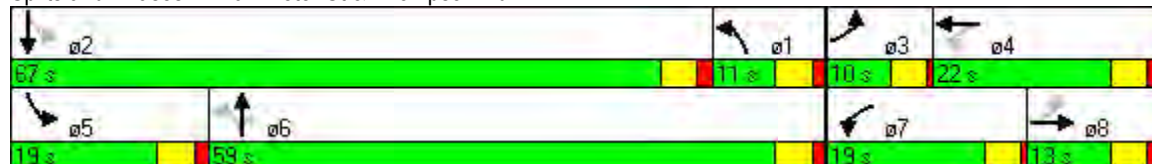
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	125	0	105	5	0	15	35	1315	30	55	15	1245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.897			0.997				0.990
Flt Protected	0.950				0.988		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1651	0	1770	3495	0	0	1770	3472
Flt Permitted	0.567						0.178				0.132	
Satd. Flow (perm)	2049	1583	0	0	1671	0	332	3495	0	0	246	3472
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		161			16			4				13
Link Speed (mph)		30			30			45				45
Link Distance (ft)		430			118			847				288
Travel Time (s)		9.8			2.7			12.8				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	130	0	109	5	0	16	36	1370	31	60	16	1297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	109	0	0	21	0	36	1401	0	0	76	1386
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	10.0	22.0	0.0	12.0	12.0	0.0	11.0	74.0	0.0	14.0	14.0	77.0
Total Split (%)	9.1%	20.0%	0.0%	10.9%	10.9%	0.0%	10.0%	67.3%	0.0%	12.7%	12.7%	70.0%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	10.0	10.0			4.9		80.9	80.9			83.4	83.4
Actuated g/C Ratio	0.09	0.09			0.04		0.74	0.74			0.76	0.76
v/c Ratio	0.51	0.37			0.23		0.11	0.54			0.28	0.53
Control Delay	52.8	5.5			32.7		2.9	2.9			7.7	7.6
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	52.8	5.5			32.7		2.9	2.9			7.7	7.6
LOS	D	A			C		A	A			A	A
Approach Delay		31.2			32.7			2.9				7.6
Approach LOS		C			C			A				A
Queue Length 50th (ft)	47	0			4		2	64			12	175
Queue Length 95th (ft)	71	15			29		m6	67			34	327

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	85
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	2%
Adj. Flow (vph)	89
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		350			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	257	381			121		323	2571			311	2634
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	0.51	0.29			0.17		0.11	0.54			0.24	0.53

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 56 (51%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 7.4

Intersection LOS: A

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	745	265	300	710	5	725	15	450	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.999			0.855			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3377	0	1770	1861	0	1770	1593	0	1770	1753	0
Flt Permitted	0.078			0.071			0.460			0.851		
Satd. Flow (perm)	145	3377	0	132	1861	0	857	1593	0	1585	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35						309			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	866	308	400	947	7	942	19	584	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1174	0	400	954	0	942	603	0	7	33	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	52.0	0.0	27.0	70.0	0.0	60.0	71.0	0.0	11.0	11.0	0.0
Total Split (%)	6.0%	34.7%	0.0%	18.0%	46.7%	0.0%	40.0%	47.3%	0.0%	7.3%	7.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	51.0	47.0		74.1	72.3		64.7	63.7		6.0	6.0	
Actuated g/C Ratio	0.35	0.32		0.50	0.49		0.44	0.43		0.04	0.04	
v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.70		0.11	0.39	
Control Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
LOS	C	F		F	F		F	C		E	E	
Approach Delay		93.2			112.9			118.4			64.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	3	~663		~457	~1004		~1117	236		7	19	
Queue Length 95th (ft)	11	#742		#500	#1012		#1064	251		20	45	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	94	1099		310	910		722	883		64	84	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.68		0.11	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 147.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 108.8

Intersection LOS: F

Intersection Capacity Utilization 105.0%

ICU Level of Service G

Analysis Period (min) 15

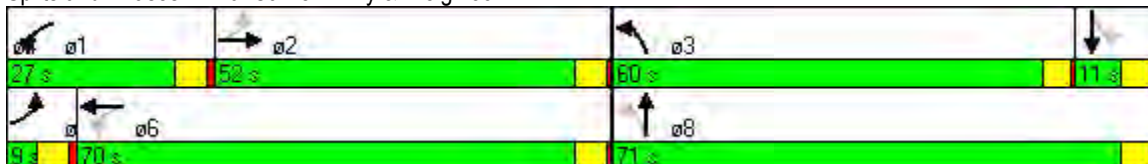
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	30	25	425	30	285	5	1055	140	100	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.932			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted				0.563			0.178			0.111		
Satd. Flow (perm)	1863	1736	0	1049	1609	0	332	3539	1538	207	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			163				151			4
Link Speed (mph)		40			45			45				45
Link Distance (ft)		348			436			1188				665
Travel Time (s)		5.9			6.6			18.0				10.1
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	78	39	32	675	48	452	5	1134	151	122	695	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	71	0	675	500	0	5	1134	151	122	732	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	11.0	0.0	32.0	32.0	0.0	36.0	36.0	36.0	11.0	47.0	0.0
Total Split (%)	12.2%	12.2%	0.0%	35.6%	35.6%	0.0%	40.0%	40.0%	40.0%	12.2%	52.2%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	7.1	4.0		36.7	25.1		29.1	29.1	29.1	40.1	40.1	
Actuated g/C Ratio	0.08	0.05		0.42	0.29		0.33	0.33	0.33	0.46	0.46	
v/c Ratio	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	
Control Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
LOS	D	D		E	D		C	D	A	D	C	
Approach Delay		45.0			52.5			44.9			36.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	27	22		342	191		2	335	0	40	368	
Queue Length 95th (ft)	47	#63		280	162		10	#481	41	#87	#468	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	147	110		669	576		110	1172	610	166	847	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 87.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 87.9%

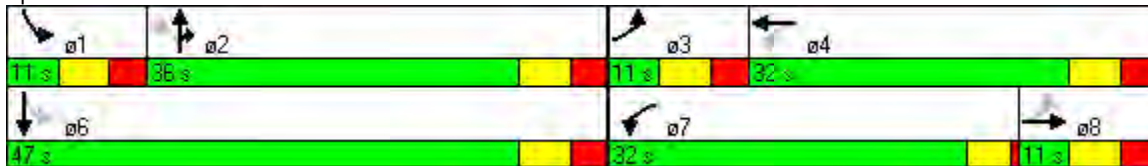
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	105	45	5	20	160	5	550	30	240	300	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955				0.850		0.992			0.987	
Flt Protected	0.950				0.990						0.980	
Satd. Flow (prot)	3433	1779	0	0	1844	1583	0	3507	0	0	3423	0
Flt Permitted	0.727										0.980	
Satd. Flow (perm)	2627	1779	0	0	1863	1583	0	3507	0	0	3423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35				29		9			15	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	645	138	59	6	23	182	7	724	39	304	380	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	645	197	0	0	29	182	0	770	0	0	747	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	12.0	21.0	0.0	9.0	9.0	18.0	21.0	21.0	0.0	18.0	18.0	0.0
Total Split (%)	20.0%	35.0%	0.0%	15.0%	15.0%	30.0%	35.0%	35.0%	0.0%	30.0%	30.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)	12.3	11.3			4.0	16.4		16.1			13.1	
Actuated g/C Ratio	0.22	0.20			0.07	0.30		0.29			0.24	
v/c Ratio	0.90	0.51			0.21	0.37		0.75			0.92	
Control Delay	38.2	20.4			30.0	14.9		24.8			40.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	38.2	20.4			30.0	14.9		24.8			40.7	
LOS	D	C			C	B		C			D	
Approach Delay		34.0			16.9			24.8			40.7	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	105	47			9	41		114			120	
Queue Length 95th (ft)	124	77			31	77		155			#198	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 3 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)	714	540			135	488		1022			816	
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	0.90	0.36			0.21	0.37		0.75			0.92	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 66.3%

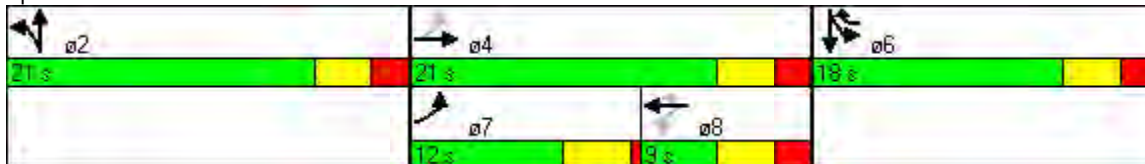
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

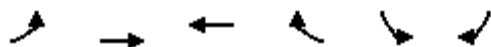
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

Future Alternative 3 PM Peak Hour
2/9/2009

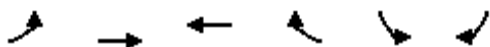


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	230	1025	1510	30	15	150
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	245	1090	1888	38	22	221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1925				2941	1906
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1925				2941	1906
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	19				0	0
cM capacity (veh/h)	303				2	58
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	245	545	545	1925	243	
Volume Left	245	0	0	0	22	
Volume Right	0	0	0	38	221	
cSH	303	1700	1700	1700	18	
Volume to Capacity	0.81	0.32	0.32	1.13	13.63	
Queue Length 95th (ft)	165	0	0	0	Err	
Control Delay (s)	52.4	0.0	0.0	0.0	Err	
Lane LOS	F				F	
Approach Delay (s)	9.6			0.0	Err	
Approach LOS					F	
Intersection Summary						
Average Delay		696.3				
Intersection Capacity Utilization		114.1%		ICU Level of Service		H
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

22: Court St Rd & Deere Rd

Future Alternative 3 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	265	170	15	25	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	33	288	202	18	28	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	220				565	211
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				565	211
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	92
cM capacity (veh/h)	1349				475	824
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	321	220	96			
Volume Left	33	0	28			
Volume Right	0	18	67			
cSH	1349	1700	677			
Volume to Capacity	0.02	0.13	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.0	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			40.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 3 PM Peak Hour
2/9/2009

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Volume (veh/h)	35	965	50	10	1420	25	45	0	40	10	5	70						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94						
Hourly flow rate (vph)	37	1027	53	11	1511	27	48	0	43	11	5	74						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)				1089														
pX, platoon unblocked	0.13							0.13	0.13	0.13	0.13	0.13						
vC, conflicting volume	1537				1080				2737	2686	540	2176						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	1781				1080				10846	10464	540	6605						
tC, single (s)	4.1				4.1				7.5	6.5	6.9	7.5						
tC, 2 stage (s)																		
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5						
p0 queue free %	18				98				0	100	91	0						
cM capacity (veh/h)	46				642				0	0	486	0						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1											
Volume Total	37	684	395	11	1537	90	90											
Volume Left	37	0	0	11	0	48	11											
Volume Right	0	0	53	0	27	43	74											
cSH	46	1700	1700	642	1700	0	0											
Volume to Capacity	0.82	0.40	0.23	0.02	0.90	Err	Err											
Queue Length 95th (ft)	81	0	0	1	0	Err	Err											
Control Delay (s)	218.1	0.0	0.0	10.7	0.0	Err	Err											
Lane LOS	F				B				F									
Approach Delay (s)	7.3				0.1				Err									
Approach LOS							F				F							
Intersection Summary																		
Average Delay				Err														
Intersection Capacity Utilization				94.5%			ICU Level of Service			F								
Analysis Period (min)				15														

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	280	10	135	215	140	65	1410	60	100	875	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.995			0.941			0.994			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3330	0	1770	3518	0	1770	3458	0
Flt Permitted	0.222			0.540			0.159			0.059		
Satd. Flow (perm)	414	3522	0	1006	3330	0	296	3518	0	110	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			91			5			24	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	372	341	12	152	242	157	83	1808	77	109	951	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	353	0	152	399	0	83	1885	0	109	1125	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	28.0	28.0	0.0	18.0	18.0	0.0	11.0	73.0	0.0	11.0	73.0	0.0
Total Split (%)	21.5%	21.5%	0.0%	13.8%	13.8%	0.0%	8.5%	56.2%	0.0%	8.5%	56.2%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	41.0	24.5		24.5	13.0		74.0	68.0		74.0	68.0	
Actuated g/C Ratio	0.32	0.19		0.19	0.10		0.57	0.52		0.57	0.52	
v/c Ratio	1.01	0.53		0.59	0.96		0.35	1.02		0.78	0.62	
Control Delay	88.0	51.1		44.7	80.3		20.1	57.9		63.3	13.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	88.0	51.1		44.7	80.3		20.1	57.9		63.3	13.9	
LOS	F	D		D	F		C	E		E	B	
Approach Delay		70.1			70.5			56.3			18.2	
Approach LOS		E			E			E			B	
Queue Length 50th (ft)	~273	143		96	139		27	~887		40	186	
Queue Length 95th (ft)	#400	176		153	#240		42	722		m#133	223	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	370	664		278	415		237	1843		139	1820	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.01	0.53		0.55	0.96		0.35	1.02		0.78	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 120 (92%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 49.8

Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	15	15	1490	110	70	1025
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1612	1442	3408	0	1770	3312
Flt Permitted	0.950				0.080	
Satd. Flow (perm)	1612	1442	3408	0	149	3312
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22	18			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2993			1865
Travel Time (s)	6.9		45.3			28.3
Peak Hour Factor	0.69	0.69	0.82	0.82	0.93	0.93
Heavy Vehicles (%)	12%	12%	5%	3%	2%	9%
Adj. Flow (vph)	22	22	1817	134	75	1102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	22	1951	0	75	1102
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	12.0	12.0	105.0	0.0	13.0	118.0
Total Split (%)	9.2%	9.2%	80.8%	0.0%	10.0%	90.8%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	7.0	7.0	108.4		118.8	119.8
Actuated g/C Ratio	0.05	0.05	0.83		0.91	0.92
v/c Ratio	0.25	0.22	0.69		0.32	0.36
Control Delay	66.5	27.5	1.7		9.8	0.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	66.5	27.5	1.7		9.8	0.6
LOS	E	C	A		A	A
Approach Delay	47.0		1.7			1.2
Approach LOS	D		A			A
Queue Length 50th (ft)	18	0	28		3	20
Queue Length 95th (ft)	36	17	40		m22	23

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2913			1785
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	87	98	2845		235	3052
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	0.25	0.22	0.69		0.32	0.36

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 34 (26%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 2.1

Intersection LOS: A

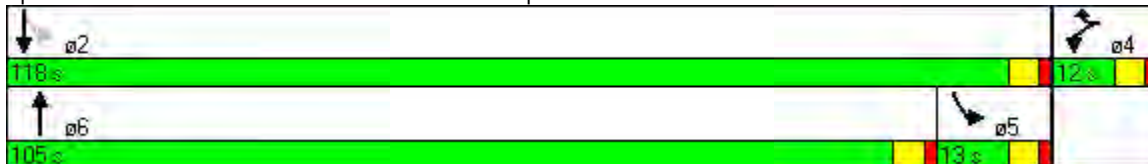
Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	25	85	215	30	105	135	1580	145	50	835	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.884			0.883				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1647	0	1770	1645	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.364			0.236			0.056		
Satd. Flow (perm)	1228	1647	0	678	1645	0	440	3471	1583	104	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			114				167		14	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2993	
Travel Time (s)		4.8			6.3			18.3			45.3	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	103	29	98	247	34	121	155	1816	167	57	960	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	127	0	247	155	0	155	1816	167	57	1058	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	17.0	13.0	0.0	27.0	23.0	0.0	11.0	79.0	79.0	11.0	79.0	0.0
Total Split (%)	13.1%	10.0%	0.0%	20.8%	17.7%	0.0%	8.5%	60.8%	60.8%	8.5%	60.8%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	19.0	7.0		32.7	16.7		79.4	79.4	79.4	77.3	77.3	
Actuated g/C Ratio	0.15	0.05		0.25	0.13		0.61	0.61	0.61	0.59	0.59	
v/c Ratio	0.46	0.70		0.72	0.50		0.47	0.86	0.16	0.41	0.52	
Control Delay	45.2	38.5		54.1	22.1		8.5	10.0	0.2	28.0	5.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	45.2	38.5		54.1	22.1		8.5	10.0	0.2	28.0	5.4	
LOS	D	D		D	C		A	B	A	C	A	
Approach Delay		41.5			41.8			9.1			6.5	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)	68	24		178	31		30	278	0	7	183	
Queue Length 95th (ft)	112	#88		251	93		m30	m304	m0	39	48	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2913	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	253	193		364	326		330	2121	1032	139	2045	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.41	0.66		0.68	0.48		0.47	0.86	0.16	0.41	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 128 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 13.7

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	70	0	80	5	0	5	200	1300	5	30	20	1015
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.932			0.999				0.974
Flt Protected	0.950				0.976		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1694	0	1770	3435	0	0	1770	3365
Flt Permitted	0.710				0.909		0.123				0.102	
Satd. Flow (perm)	2566	1583	0	0	1578	0	229	3435	0	0	190	3365
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		297			6			1				35
Link Speed (mph)		30			30			45				45
Link Distance (ft)		430			118			1865				288
Travel Time (s)		9.8			2.7			28.3				4.4
Peak Hour Factor	0.92	0.92	0.92	0.82	0.92	0.82	0.92	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	76	0	87	6	0	6	217	1585	6	37	24	1238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	87	0	0	12	0	217	1591	0	0	61	1499
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	18.0		6.0	6.0	18.0
Minimum Split (s)	8.0	20.0		9.0	9.0		8.0	23.0		11.0	11.0	23.0
Total Split (s)	8.0	20.0	0.0	12.0	12.0	0.0	26.0	98.0	0.0	12.0	12.0	84.0
Total Split (%)	6.2%	15.4%	0.0%	9.2%	9.2%	0.0%	20.0%	75.4%	0.0%	9.2%	9.2%	64.6%
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)	0.5	0.5		1.5	1.5		0.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	9.3	9.3			5.0		103.5	102.5			85.7	85.7
Actuated g/C Ratio	0.07	0.07			0.04		0.80	0.79			0.66	0.66
v/c Ratio	0.35	0.22			0.18		0.49	0.59			0.30	0.67
Control Delay	60.2	1.3			48.9		12.8	1.9			12.7	15.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	60.2	1.3			48.9		12.8	1.9			12.7	15.8
LOS	E	A			D		B	A			B	B
Approach Delay		28.8			48.9			3.2				15.7
Approach LOS		C			D			A				B
Queue Length 50th (ft)	32	0			5		50	36			15	332
Queue Length 95th (ft)	55	0			27		106	43			35	433

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 4 AM Peak Hour

2/10/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	240
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Heavy Vehicles (%)	2%
Adj. Flow (vph)	261
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

17: Existing Site Access (North) & Thompson Rd

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		350			38			1785				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	215	455			91		443	2710			211	2230
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	0.35	0.19			0.13		0.49	0.59			0.29	0.67

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 56 (43%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 10.0

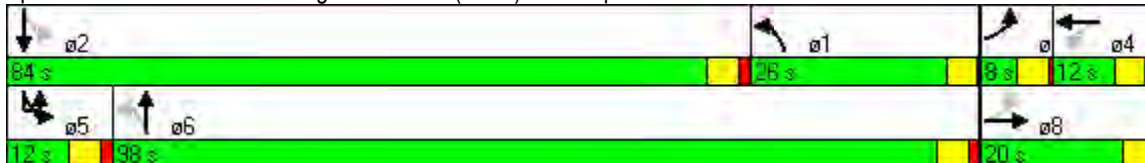
Intersection LOS: B

Intersection Capacity Utilization 63.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	750	480	405	555	5	320	15	245	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.941			0.999			0.859			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3311	0	1770	1791	0	1770	1600	0	1770	1515	0
Flt Permitted	0.426			0.100			0.541					
Satd. Flow (perm)	794	3311	0	186	1791	0	1008	1600	0	1863	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		175			1			299			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	824	527	455	624	6	390	18	299	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1351	0	455	630	0	390	317	0	10	40	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	36.0	0.0	24.0	51.0	0.0	19.0	30.0	0.0	11.0	11.0	0.0
Total Split (%)	10.0%	40.0%	0.0%	26.7%	56.7%	0.0%	21.1%	33.3%	0.0%	12.2%	12.2%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	35.1	31.1		55.2	53.5		21.3	20.3		6.0	6.0	
Actuated g/C Ratio	0.41	0.36		0.64	0.62		0.25	0.24		0.07	0.07	
v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.52		0.08	0.32	
Control Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	57.7		59.1	13.6		81.5	7.4		40.8	32.1	
LOS	A	E		E	B		F	A		D	C	
Approach Delay		57.3			32.7			48.3			33.8	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	2	~418		~220	196		202	8		6	11	
Queue Length 95th (ft)	9	#553		#411	376		#258	50		12	18	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1114			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	372	1315		473	1120		385	680		131	126	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	1.03		0.96	0.56		1.01	0.47		0.08	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

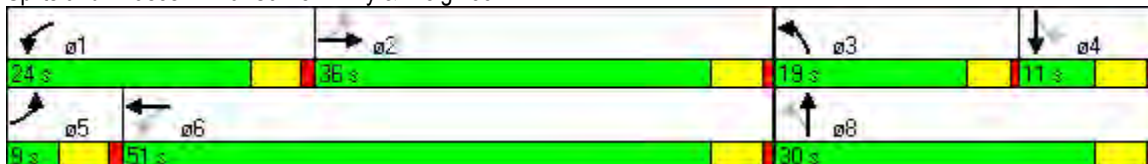
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	35	15	150	40	100	10	545	440	335	805	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.893				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1777	0	1687	1663	0	1770	3539	1583	1770	1822	0
Flt Permitted				0.976			0.198			0.318		
Satd. Flow (perm)	1863	1777	0	1733	1663	0	369	3539	1583	592	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			112				458		12	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	47	41	18	169	45	112	10	568	458	372	894	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	59	0	169	157	0	10	568	458	372	977	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	12.0	0.0	10.0	11.0	0.0	30.0	30.0	30.0	18.0	48.0	0.0
Total Split (%)	15.7%	17.1%	0.0%	14.3%	15.7%	0.0%	42.9%	42.9%	42.9%	25.7%	68.6%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	6.8	5.0		10.4	4.0		24.6	24.6	24.6	41.3	41.3	
Actuated g/C Ratio	0.10	0.08		0.16	0.06		0.38	0.38	0.38	0.63	0.63	
v/c Ratio	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.68	0.85	
Control Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
LOS	C	C		C	D		B	B	A	B	C	
Approach Delay		29.0			35.8			12.0			19.1	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	16	17		60	19		3	101	0	75	332	
Queue Length 95th (ft)	39	48		110	#107		14	146	58	#129	#621	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	188	153		273	207		138	1328	880	572	1151	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.65	0.85	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 65.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St

 ø1	 ø2	 ø3	 ø4
18 s	30 s	11 s	11 s
 ø6		 ø7	 ø8
48 s		10 s	12 s

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	15	10	15	135	290	35	235	10	115	465	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.942				0.850		0.995			0.948	
Flt Protected	0.950				0.995			0.994			0.994	
Satd. Flow (prot)	3433	1755	0	0	1853	1583	0	3500	0	0	3335	0
Flt Permitted	0.415				0.961			0.994			0.994	
Satd. Flow (perm)	1500	1755	0	0	1790	1583	0	3500	0	0	3335	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				286		5			172	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	74	19	12	17	153	330	36	245	10	126	511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	31	0	0	170	330	0	291	0	0	978	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	8.0	21.0	0.0	13.0	13.0	24.0	15.0	15.0	0.0	24.0	24.0	0.0
Total Split (%)	13.3%	35.0%	0.0%	21.7%	21.7%	40.0%	25.0%	25.0%	0.0%	40.0%	40.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effect Green (s)	13.4	12.4			7.8	32.0		10.1			19.1	
Actuated g/C Ratio	0.24	0.22			0.14	0.57		0.18			0.34	
v/c Ratio	0.15	0.08			0.69	0.32		0.46			0.79	
Control Delay	16.8	13.0			41.4	2.6		24.2			20.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	16.8	13.0			41.4	2.6		24.2			20.7	
LOS	B	B			D	A		C			C	
Approach Delay		15.7			15.8			24.2			20.7	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	10	5			60	7		50			140	
Queue Length 95th (ft)	20	20			#138	37		83			#242	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 4 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	492	507			254	1019		626			1240	
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	0.15	0.06			0.67	0.32		0.46			0.79	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 61.9%

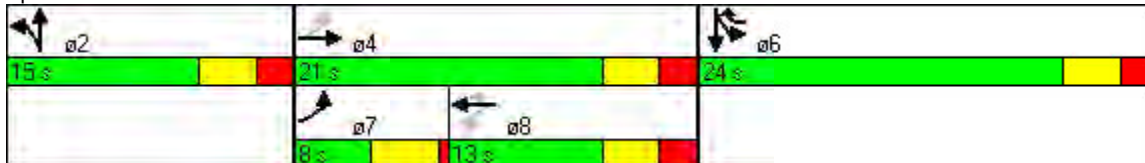
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

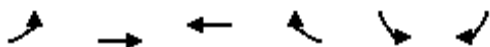
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

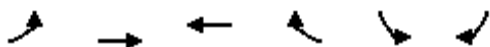
Future Alternative 4 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	1510	835	15	30	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	217	1819	960	17	36	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	977				2312	968
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977				2312	968
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				0	10
cM capacity (veh/h)	702				22	254
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	217	910	910	977	265	
Volume Left	217	0	0	0	36	
Volume Right	0	0	0	17	229	
cSH	702	1700	1700	1700	104	
Volume to Capacity	0.31	0.54	0.54	0.57	2.54	
Queue Length 95th (ft)	33	0	0	0	605	
Control Delay (s)	12.4	0.0	0.0	0.0	785.9	
Lane LOS	B				F	
Approach Delay (s)	1.3			0.0	785.9	
Approach LOS					F	
Intersection Summary						
Average Delay			64.4			
Intersection Capacity Utilization			78.2%		ICU Level of Service	D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 4 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	40	210	215	5	5	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	56	296	222	5	9	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	227				633	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				633	224
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1285				407	768
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	352	227	60			
Volume Left	56	0	9			
Volume Right	0	5	52			
cSH	1285	1700	681			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	3	0	7			
Control Delay (s)	1.6	0.0	10.8			
Lane LOS	A		B			
Approach Delay (s)	1.6	0.0	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay		1.9				
Intersection Capacity Utilization		38.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

23: Carrier Pkwy & Telergy Pkwy

Future Alternative 4 AM Peak Hour

2/10/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	1215	285	70	810	15	10	0	5	15	5	40
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)	39	1350	317	78	900	17	11	0	6	17	6	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.61						0.61	0.61		0.61	0.61	0.61
vC, conflicting volume	917			1667			2689	2658	833	1822	2808	908
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	537			1667			3462	3412	833	2032	3659	523
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 %	94			80			0	100	98	0	0	85
cM capacity (veh/h)	622			382			0	3	312	16	2	302
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	39	900	767	78	917	17	67					
Volume Left	39	0	0	78	0	11	17					
Volume Right	0	0	317	0	17	6	44					
cSH	622	1700	1700	382	1700	0	18					
Volume to Capacity	0.06	0.53	0.45	0.20	0.54	Err	3.73					
Queue Length 95th (ft)	5	0	0	19	0	Err	Err					
Control Delay (s)	11.2	0.0	0.0	16.8	0.0	Err	Err					
Lane LOS	B			C		F	F					
Approach Delay (s)	0.3			1.3		Err	Err					
Approach LOS						F	F					
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			60.4%		ICU Level of Service		B					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	460	40	145	435	120	110	965	175	175	1235	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.968			0.977			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3426	0	1770	3458	0	1770	3437	0
Flt Permitted	0.198			0.222			0.091			0.118		
Satd. Flow (perm)	369	3497	0	414	3426	0	170	3458	0	220	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			27			25			38	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	222	511	44	158	473	130	124	1084	197	190	1342	321
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	555	0	158	603	0	124	1281	0	190	1663	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	16.0	25.0	0.0	14.0	23.0	0.0	11.0	55.0	0.0	16.0	60.0	0.0
Total Split (%)	14.5%	22.7%	0.0%	12.7%	20.9%	0.0%	10.0%	50.0%	0.0%	14.5%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	31.2	20.2		26.8	18.0		50.0	50.0		55.0	55.0	
Actuated g/C Ratio	0.28	0.18		0.24	0.16		0.45	0.45		0.50	0.50	
v/c Ratio	0.91	0.86		0.75	1.03		0.75	0.81		0.72	0.96	
Control Delay	71.2	57.2		53.4	89.8		47.2	30.3		37.4	27.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.2	57.2		53.4	89.8		47.2	30.3		37.4	27.0	
LOS	E	E		D	F		D	C		D	C	
Approach Delay		61.2			82.3			31.8			28.0	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	123	200		84	~232		50	393		54	177	
Queue Length 95th (ft)	#249	#291		#157	#349		#128	477		m100	#732	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	245	648		213	583		165	1585		265	1738	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.91	0.86		0.74	1.03		0.75	0.81		0.72	0.96	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 109 (99%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 43.1

Intersection LOS: D

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

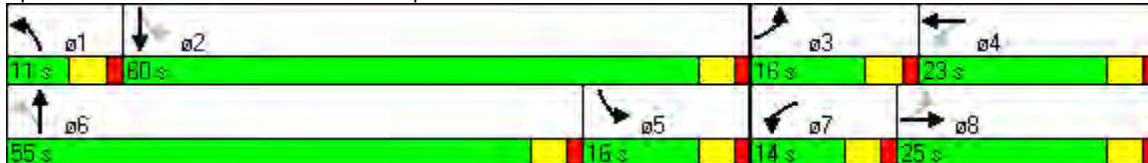
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	85	75	1220	10	5	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130	0		0	200	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25	0		0	25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3468	0	1770	3539
Flt Permitted	0.950				0.146	
Satd. Flow (perm)	1770	1583	3468	0	272	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		136	1			
Link Speed (mph)	30		45			45
Link Distance (ft)	305		2995			1864
Travel Time (s)	6.9		45.4			28.2
Peak Hour Factor	0.55	0.55	0.85	0.85	0.81	0.81
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	155	136	1435	12	6	1759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	136	1447	0	6	1759
Turn Type		Prot			pm+pt	
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	15.0		7.0	15.0
Minimum Split (s)	12.0	12.0	20.0		12.0	20.0
Total Split (s)	24.0	24.0	74.0	0.0	12.0	86.0
Total Split (%)	21.8%	21.8%	67.3%	0.0%	10.9%	78.2%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.5	1.5	1.5		1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.9	13.9	83.7		86.1	86.1
Actuated g/C Ratio	0.13	0.13	0.76		0.78	0.78
v/c Ratio	0.70	0.43	0.55		0.02	0.63
Control Delay	61.8	11.3	2.0		3.6	5.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	61.8	11.3	2.0		3.6	5.7
LOS	E	B	A		A	A
Approach Delay	38.2		2.0			5.7
Approach LOS	D		A			A
Queue Length 50th (ft)	106	0	19		1	210
Queue Length 95th (ft)	97	0	51		m2	210

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	225		2915			1784
Turn Bay Length (ft)	130				200	
Base Capacity (vph)	306	386	2640		309	2771
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	0.51	0.35	0.55		0.02	0.63

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 6.9

Intersection LOS: A

Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd

	ø2		ø4
86 s		24 s	
	ø6		ø5
74 s		12 s	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	20	90	205	15	60	50	1060	170	160	1410	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.877			0.879				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1637	0	1770	3471	1583	1770	3459	0
Flt Permitted	0.704			0.345			0.076			0.149		
Satd. Flow (perm)	1311	1634	0	643	1637	0	142	3471	1583	278	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			66				187			4
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209				2995
Travel Time (s)		4.8			6.3			18.3				45.4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	71	22	99	225	16	66	55	1165	187	176	1549	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	121	0	225	82	0	55	1165	187	176	1593	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	10.0	13.0	0.0	19.0	22.0	0.0	11.0	60.0	60.0	18.0	67.0	0.0
Total Split (%)	9.1%	11.8%	0.0%	17.3%	20.0%	0.0%	10.0%	54.5%	54.5%	16.4%	60.9%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	13.8	6.8		26.4	17.4		66.8	60.8	60.8	73.1	65.8	
Actuated g/C Ratio	0.13	0.06		0.24	0.16		0.61	0.55	0.55	0.66	0.60	
v/c Ratio	0.38	0.62		0.74	0.26		0.31	0.61	0.19	0.58	0.77	
Control Delay	39.8	29.0		52.1	16.2		9.2	6.0	0.7	14.5	13.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	29.0		52.1	16.2		9.2	6.0	0.7	14.5	13.7	
LOS	D	C		D	B		A	A	A	B	B	
Approach Delay		33.0			42.5			5.4			13.8	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	40	15		140	10		4	104	2	22	302	
Queue Length 95th (ft)	77	75		#224	54		m5	m140	m2	71	349	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2915	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	190	211		308	326		175	1919	959	365	2072	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.37	0.57		0.73	0.25		0.31	0.61	0.19	0.48	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 109 (99%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.0

Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

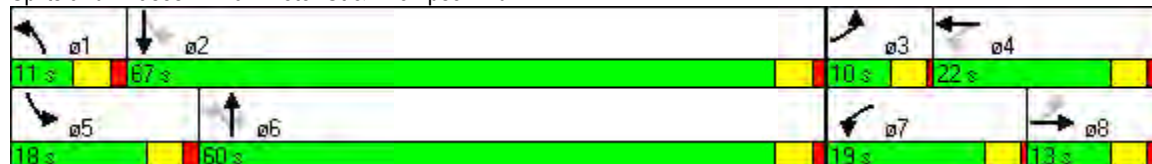
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	195	0	190	5	0	15	55	1215	30	55	15	1235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.897			0.996				0.988
Flt Protected	0.950				0.988		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1651	0	1770	3492	0	0	1770	3465
Flt Permitted	0.744				0.750		0.170				0.147	
Satd. Flow (perm)	2689	1583	0	0	1253	0	317	3492	0	0	274	3465
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		131			16			4				15
Link Speed (mph)		30			30			45				45
Link Distance (ft)		430			118			1864				288
Travel Time (s)		9.8			2.7			28.2				4.4
Peak Hour Factor	0.92	0.92	0.92	0.96	0.92	0.96	0.92	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	212	0	207	5	0	16	60	1266	31	60	16	1286
Shared Lane Traffic (%)												
Lane Group Flow (vph)	212	207	0	0	21	0	60	1297	0	0	76	1395
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	18.0		6.0	6.0	18.0
Minimum Split (s)	8.0	20.0		9.0	9.0		8.0	23.0		11.0	11.0	23.0
Total Split (s)	13.0	27.0	0.0	14.0	14.0	0.0	9.0	69.0	0.0	14.0	14.0	74.0
Total Split (%)	11.8%	24.5%	0.0%	12.7%	12.7%	0.0%	8.2%	62.7%	0.0%	12.7%	12.7%	67.3%
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)	0.5	0.5		1.5	1.5		0.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lag			Lead	Lead		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	13.7	13.7			5.8		79.2	78.2			80.1	80.1
Actuated g/C Ratio	0.12	0.12			0.05		0.72	0.71			0.73	0.73
v/c Ratio	0.54	0.66			0.26		0.20	0.52			0.27	0.55
Control Delay	49.8	27.8			33.3		2.5	1.9			7.9	8.7
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	49.8	27.8			33.3		2.5	1.9			7.9	8.7
LOS	D	C			C		A	A			A	A
Approach Delay		38.9			33.3			1.9				8.7
Approach LOS		D			C			A				A
Queue Length 50th (ft)	74	51			4		2	23			13	202
Queue Length 95th (ft)	104	122			29		m4	34			34	327

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	100
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.92
Heavy Vehicles (%)	2%
Adj. Flow (vph)	109
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		350			38			1784				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	438	435			117		295	2484			322	2527
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	0.48	0.48			0.18		0.20	0.52			0.24	0.55

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 73 (66%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 63.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	745	265	300	710	5	725	15	450	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.999			0.855			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3377	0	1770	1861	0	1770	1593	0	1770	1753	0
Flt Permitted	0.078			0.071			0.460			0.851		
Satd. Flow (perm)	145	3377	0	132	1861	0	857	1593	0	1585	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35						309			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	866	308	400	947	7	942	19	584	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1174	0	400	954	0	942	603	0	7	33	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	52.0	0.0	27.0	70.0	0.0	60.0	71.0	0.0	11.0	11.0	0.0
Total Split (%)	6.0%	34.7%	0.0%	18.0%	46.7%	0.0%	40.0%	47.3%	0.0%	7.3%	7.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	51.0	47.0		74.1	72.3		64.7	63.7		6.0	6.0	
Actuated g/C Ratio	0.35	0.32		0.50	0.49		0.44	0.43		0.04	0.04	
v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.70		0.11	0.39	
Control Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	93.6		190.8	80.2		181.1	20.4		73.4	62.1	
LOS	C	F		F	F		F	C		E	E	
Approach Delay		93.2			112.9			118.4			64.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	3	~663		~457	~1004		~1117	236		7	19	
Queue Length 95th (ft)	11	#742		#500	#1012		#1064	251		20	45	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	94	1099		310	910		722	883		64	84	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	1.07		1.29	1.05		1.30	0.68		0.11	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 147.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 108.8

Intersection LOS: F

Intersection Capacity Utilization 105.0%

ICU Level of Service G

Analysis Period (min) 15

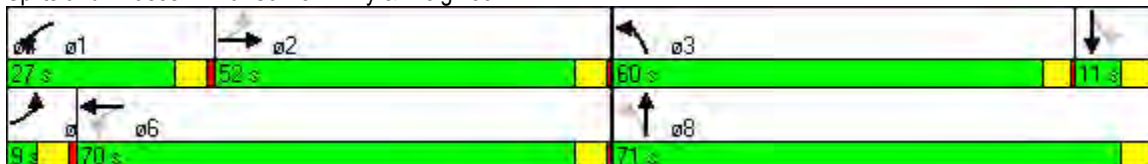
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	30	25	425	30	285	5	1055	140	100	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.932			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted				0.563			0.178			0.111		
Satd. Flow (perm)	1863	1736	0	1049	1609	0	332	3539	1538	207	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			163				151			4
Link Speed (mph)		40			45			45				45
Link Distance (ft)		348			436			1188				665
Travel Time (s)		5.9			6.6			18.0				10.1
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	78	39	32	675	48	452	5	1134	151	122	695	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	71	0	675	500	0	5	1134	151	122	732	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	11.0	0.0	32.0	32.0	0.0	36.0	36.0	36.0	11.0	47.0	0.0
Total Split (%)	12.2%	12.2%	0.0%	35.6%	35.6%	0.0%	40.0%	40.0%	40.0%	12.2%	52.2%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	7.1	4.0		36.7	25.1		29.1	29.1	29.1	40.1	40.1	
Actuated g/C Ratio	0.08	0.05		0.42	0.29		0.33	0.33	0.33	0.46	0.46	
v/c Ratio	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	
Control Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
LOS	D	D		E	D		C	D	A	D	C	
Approach Delay		45.0			52.5			44.9			36.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	27	22		342	191		2	335	0	40	368	
Queue Length 95th (ft)	47	#63		280	162		10	#481	41	#87	#468	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	147	110		669	576		110	1172	610	166	847	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 87.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 87.9%

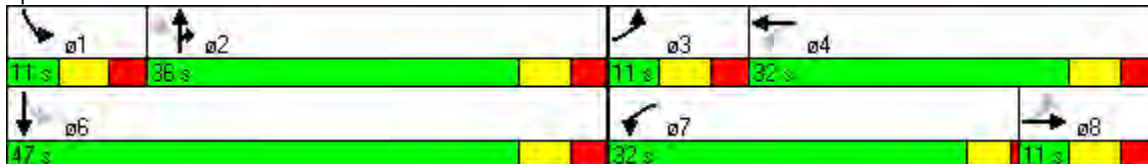
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	105	45	5	20	160	5	550	30	240	300	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955				0.850		0.992			0.987	
Flt Protected	0.950				0.990						0.980	
Satd. Flow (prot)	3433	1779	0	0	1844	1583	0	3507	0	0	3423	0
Flt Permitted	0.727										0.980	
Satd. Flow (perm)	2627	1779	0	0	1863	1583	0	3507	0	0	3423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35				29		9			15	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	645	138	59	6	23	182	7	724	39	304	380	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	645	197	0	0	29	182	0	770	0	0	747	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	12.0	21.0	0.0	9.0	9.0	18.0	21.0	21.0	0.0	18.0	18.0	0.0
Total Split (%)	20.0%	35.0%	0.0%	15.0%	15.0%	30.0%	35.0%	35.0%	0.0%	30.0%	30.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)	12.3	11.3			4.0	16.4		16.1			13.1	
Actuated g/C Ratio	0.22	0.20			0.07	0.30		0.29			0.24	
v/c Ratio	0.90	0.51			0.21	0.37		0.75			0.92	
Control Delay	38.2	20.4			30.0	14.9		24.8			40.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	38.2	20.4			30.0	14.9		24.8			40.7	
LOS	D	C			C	B		C			D	
Approach Delay		34.0			16.9			24.8			40.7	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	105	47			9	41		114			120	
Queue Length 95th (ft)	124	77			31	77		155			#198	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 4 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)	714	540			135	488		1022			816	
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	0.90	0.36			0.21	0.37		0.75			0.92	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 66.3%

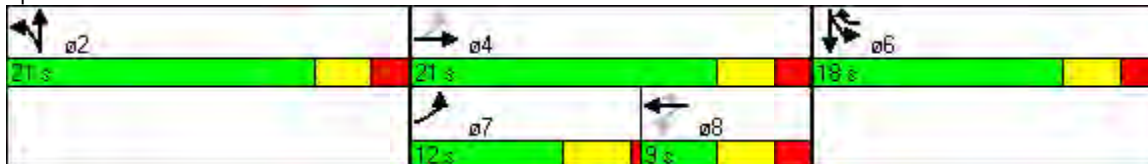
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

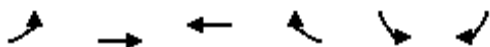
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

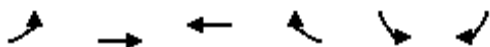
Future Alternative 4 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	230	1025	1510	30	15	150
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	245	1090	1888	38	22	221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1925				2941	1906
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1925				2941	1906
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	19				0	0
cM capacity (veh/h)	303				2	58
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	245	545	545	1925	243	
Volume Left	245	0	0	0	22	
Volume Right	0	0	0	38	221	
cSH	303	1700	1700	1700	18	
Volume to Capacity	0.81	0.32	0.32	1.13	13.63	
Queue Length 95th (ft)	165	0	0	0	Err	
Control Delay (s)	52.4	0.0	0.0	0.0	Err	
Lane LOS	F				F	
Approach Delay (s)	9.6			0.0	Err	
Approach LOS					F	
Intersection Summary						
Average Delay		696.3				
Intersection Capacity Utilization		114.1%		ICU Level of Service		H
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 4 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	270	190	15	25	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	33	293	226	18	28	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	244				594	235
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244				594	235
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	92
cM capacity (veh/h)	1322				456	799
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	326	244	96			
Volume Left	33	0	28			
Volume Right	0	18	67			
cSH	1322	1700	654			
Volume to Capacity	0.02	0.14	0.15			
Queue Length 95th (ft)	2	0	13			
Control Delay (s)	1.0	0.0	11.4			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			41.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 4 PM Peak Hour
2/9/2009

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Volume (veh/h)	35	965	50	10	1420	25	45	0	40	10	5	70						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94						
Hourly flow rate (vph)	37	1027	53	11	1511	27	48	0	43	11	5	74						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)				1089														
pX, platoon unblocked	0.13							0.13	0.13	0.13	0.13	0.13						
vC, conflicting volume	1537				1080				2737	2686	540	2176						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	1781				1080				10846	10464	540	6605						
tC, single (s)	4.1				4.1				7.5	6.5	6.9	7.5						
tC, 2 stage (s)																		
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5						
p0 queue free %	18				98				0	100	91	0						
cM capacity (veh/h)	46				642				0	0	486	0						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1											
Volume Total	37	684	395	11	1537	90	90											
Volume Left	37	0	0	11	0	48	11											
Volume Right	0	0	53	0	27	43	74											
cSH	46	1700	1700	642	1700	0	0											
Volume to Capacity	0.82	0.40	0.23	0.02	0.90	Err	Err											
Queue Length 95th (ft)	81	0	0	1	0	Err	Err											
Control Delay (s)	218.1	0.0	0.0	10.7	0.0	Err	Err											
Lane LOS	F				B				F									
Approach Delay (s)	7.3				0.1				Err									
Approach LOS							F				F							
Intersection Summary																		
Average Delay				Err														
Intersection Capacity Utilization				94.5%			ICU Level of Service			F								
Analysis Period (min)				15														

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	280	10	135	215	140	65	1410	60	100	875	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.995			0.941			0.994			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3330	0	1770	3518	0	1770	3458	0
Flt Permitted	0.250			0.540			0.157			0.065		
Satd. Flow (perm)	466	3522	0	1006	3330	0	292	3518	0	121	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			98			5			26	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	372	341	12	152	242	157	83	1808	77	109	951	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	353	0	152	399	0	83	1885	0	109	1125	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	26.0	24.0	0.0	18.0	16.0	0.0	11.0	67.0	0.0	11.0	67.0	0.0
Total Split (%)	21.7%	20.0%	0.0%	15.0%	13.3%	0.0%	9.2%	55.8%	0.0%	9.2%	55.8%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	37.0	20.8		22.2	11.0		68.0	62.0		68.0	62.0	
Actuated g/C Ratio	0.31	0.17		0.18	0.09		0.57	0.52		0.57	0.52	
v/c Ratio	1.00	0.58		0.59	1.01		0.35	1.04		0.72	0.63	
Control Delay	84.9	50.1		42.4	89.4		19.1	60.1		49.9	13.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	84.9	50.1		42.4	89.4		19.1	60.1		49.9	13.0	
LOS	F	D		D	F		B	E		D	B	
Approach Delay		68.0			76.5			58.4			16.3	
Approach LOS		E			E			E			B	
Queue Length 50th (ft)	~252	134		89	~128		25	~826		36	174	
Queue Length 95th (ft)	#370	168		144	#232		40	678		m#112	225	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	372	612		284	394		239	1820		151	1799	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.00	0.58		0.54	1.01		0.35	1.04		0.72	0.63	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 50.6

Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Volume (vph)	15	0	20	40	0	40	145	1180	275	70	980	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	130		0	200		0	200		0
Storage Lanes	1		0	2		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.850			0.972			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	3127	1442	0	1770	3354	0	1770	3310	0
Flt Permitted	0.755			0.597			0.220			0.102		
Satd. Flow (perm)	1406	1583	0	1965	1442	0	410	3354	0	190	3310	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		280			182			45			1	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		566			305			2934			1079	
Travel Time (s)		12.9			6.9			44.5			16.3	
Peak Hour Factor	0.92	0.92	0.92	0.69	0.92	0.69	0.92	0.82	0.82	0.93	0.93	0.92
Heavy Vehicles (%)	2%	2%	2%	12%	2%	12%	2%	5%	3%	2%	9%	2%
Adj. Flow (vph)	16	0	22	58	0	58	158	1439	335	75	1054	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	22	0	58	58	0	158	1774	0	75	1059	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	7.0		4.0	15.0		7.0	15.0	
Minimum Split (s)	8.0	20.0		8.0	12.0		8.0	20.0		12.0	20.0	
Total Split (s)	8.0	20.0	0.0	8.0	20.0	0.0	17.0	80.0	0.0	12.0	75.0	0.0
Total Split (%)	6.7%	16.7%	0.0%	6.7%	16.7%	0.0%	14.2%	66.7%	0.0%	10.0%	62.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	1.5		0.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	8.3	6.5		9.9	8.1		92.5	92.5		88.5	88.5	
Actuated g/C Ratio	0.07	0.05		0.08	0.07		0.77	0.77		0.74	0.74	
v/c Ratio	0.15	0.06		0.28	0.22		0.38	0.68		0.32	0.43	
Control Delay	49.6	0.4		51.2	1.8		2.3	1.8		11.1	5.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.6	0.4		51.2	1.8		2.3	1.8		11.1	5.4	
LOS	D	A		D	A		A	A		B	A	
Approach Delay		21.1			26.5			1.8			5.8	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	11	0		21	0		4	21		12	94	
Queue Length 95th (ft)	33	0		31	0		m8	37		m21	115	

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		486			225			2854			999	
Turn Bay Length (ft)	130			130			200			200		
Base Capacity (vph)	109	454		208	340		463	2596		232	2441	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.05		0.28	0.17		0.34	0.68		0.32	0.43	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 4.3

Intersection LOS: A

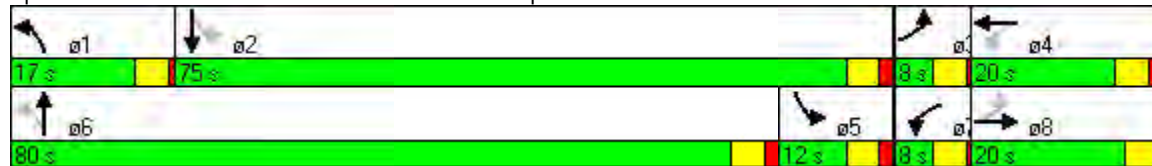
Intersection Capacity Utilization 67.5%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	25	85	215	30	105	135	1580	145	50	835	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.884			0.883				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1647	0	1770	1645	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.377			0.238			0.062		
Satd. Flow (perm)	1228	1647	0	702	1645	0	443	3471	1583	115	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			121				167		15	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	103	29	98	247	34	121	155	1816	167	57	960	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	127	0	247	155	0	155	1816	167	57	1058	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	16.0	12.0	0.0	23.0	19.0	0.0	11.0	74.0	74.0	11.0	74.0	0.0
Total Split (%)	13.3%	10.0%	0.0%	19.2%	15.8%	0.0%	9.2%	61.7%	61.7%	9.2%	61.7%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	17.9	6.6		29.5	14.2		72.7	72.7	72.7	70.5	70.5	
Actuated g/C Ratio	0.15	0.06		0.25	0.12		0.61	0.61	0.61	0.59	0.59	
v/c Ratio	0.45	0.69		0.74	0.51		0.46	0.86	0.16	0.38	0.52	
Control Delay	42.8	37.1		54.0	20.6		7.2	8.7	0.2	19.3	8.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	42.8	37.1		54.0	20.6		7.2	8.7	0.2	19.3	8.5	
LOS	D	D		D	C		A	A	A	B	A	
Approach Delay		39.7			41.1			7.9			9.0	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)	63	22		165	24		26	210	0	12	139	
Queue Length 95th (ft)	108	#92		241	84		m25	m201	m0	31	157	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	255	188		342	304		335	2102	1024	150	2020	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.40	0.68		0.72	0.51		0.46	0.86	0.16	0.38	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 13.6

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

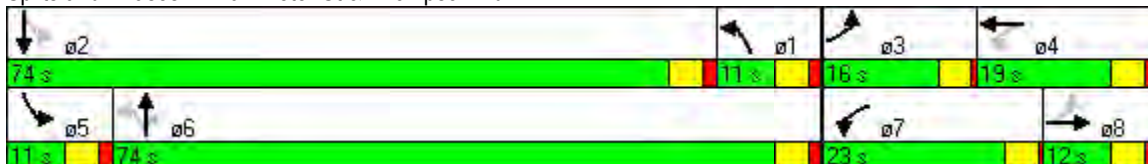
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	60	0	65	5	0	5	60	1155	5	30	20	995
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.862			0.932			0.999				0.968
Flt Protected	0.950	0.996			0.976		0.950				0.950	
Satd. Flow (prot)	3221	1455	0	0	1694	0	1770	3435	0	0	1770	3349
Flt Permitted	0.642	0.991					0.143				0.140	
Satd. Flow (perm)	2177	1448	0	0	1736	0	266	3435	0	0	261	3349
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		79			6			1				70
Link Speed (mph)		30			30			45				45
Link Distance (ft)		507			118			847				288
Travel Time (s)		11.5			2.7			12.8				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	73	0	79	6	0	6	73	1409	6	37	24	1213
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	66	86	0	0	12	0	73	1415	0	0	61	1548
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	10.0	19.0	0.0	9.0	9.0	0.0	12.0	88.0	0.0	13.0	13.0	89.0
Total Split (%)	8.3%	15.8%	0.0%	7.5%	7.5%	0.0%	10.0%	73.3%	0.0%	10.8%	10.8%	74.2%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	8.9	9.2			4.0		95.1	95.1			93.4	94.4
Actuated g/C Ratio	0.07	0.08			0.03		0.79	0.79			0.78	0.79
v/c Ratio	0.32	0.47			0.19		0.25	0.52			0.22	0.58
Control Delay	54.9	21.2			47.4		2.8	1.6			6.6	7.9
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	54.9	21.2			47.4		2.8	1.6			6.6	7.9
LOS	D	C			D		A	A			A	A
Approach Delay		35.9			47.4			1.7				7.8
Approach LOS		D			D			A				A
Queue Length 50th (ft)	28	5			5		3	32			10	218
Queue Length 95th (ft)	45	48			23		m5	35			24	303

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	275
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.82
Heavy Vehicles (%)	2%
Adj. Flow (vph)	335
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		427			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	210	239			64		296	2722			304	2649
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	0.31	0.36			0.19		0.25	0.52			0.20	0.58

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 61 (51%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 6.5

Intersection LOS: A

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	750	310	405	555	5	275	15	245	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.999			0.859			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3360	0	1770	1791	0	1770	1600	0	1770	1515	0
Flt Permitted	0.426			0.097			0.541					
Satd. Flow (perm)	794	3360	0	181	1791	0	1008	1600	0	1863	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		78			1			299			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	824	341	455	624	6	335	18	299	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1165	0	455	630	0	335	317	0	10	40	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	37.0	0.0	25.0	53.0	0.0	17.0	28.0	0.0	11.0	11.0	0.0
Total Split (%)	10.0%	41.1%	0.0%	27.8%	58.9%	0.0%	18.9%	31.1%	0.0%	12.2%	12.2%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	36.2	32.2		56.5	54.8		19.3	18.3		6.0	6.0	
Actuated g/C Ratio	0.43	0.38		0.67	0.65		0.23	0.22		0.07	0.07	
v/c Ratio	0.03	0.88		0.95	0.54		0.97	0.55		0.08	0.31	
Control Delay	8.8	33.4		54.6	12.2		73.5	8.2		40.8	32.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.8	33.4		54.6	12.2		73.5	8.2		40.8	32.0	
LOS	A	C		D	B		E	A		D	C	
Approach Delay		33.2			30.0			41.8			33.8	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	2	313		210	182		172	8		6	11	
Queue Length 95th (ft)	8	#454		#398	356		#277	52		12	18	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)	1009			1114			1031			218		
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	385	1323		498	1157		347	654		132	127	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.03	0.88		0.91	0.54		0.97	0.48		0.08	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 84.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 33.9

Intersection LOS: C

Intersection Capacity Utilization 87.5%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

			
25 s	27 s	17 s	11 s
			
9 s	53 s	28 s	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	35	15	150	40	100	10	545	440	335	805	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.893				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1777	0	1687	1663	0	1770	3539	1583	1770	1822	0
Flt Permitted				0.976			0.198			0.318		
Satd. Flow (perm)	1863	1777	0	1733	1663	0	369	3539	1583	592	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			112				458		12	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	47	41	18	169	45	112	10	568	458	372	894	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	59	0	169	157	0	10	568	458	372	977	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	12.0	0.0	10.0	11.0	0.0	30.0	30.0	30.0	18.0	48.0	0.0
Total Split (%)	15.7%	17.1%	0.0%	14.3%	15.7%	0.0%	42.9%	42.9%	42.9%	25.7%	68.6%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	6.8	5.0		10.4	4.0		24.6	24.6	24.6	41.3	41.3	
Actuated g/C Ratio	0.10	0.08		0.16	0.06		0.38	0.38	0.38	0.63	0.63	
v/c Ratio	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.68	0.85	
Control Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	26.3	31.2		34.0	37.7		18.2	18.0	4.5	14.3	20.9	
LOS	C	C		C	D		B	B	A	B	C	
Approach Delay		29.0			35.8			12.0			19.1	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	16	17		60	19		3	101	0	75	332	
Queue Length 95th (ft)	39	48		110	#107		14	146	58	#129	#621	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	188	153		273	207		138	1328	880	572	1151	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.25	0.39		0.62	0.76		0.07	0.43	0.52	0.65	0.85	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 65.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St

 ø1	 ø2	 ø3	 ø4
18 s	30 s	11 s	11 s
 ø6		 ø7	 ø8
48 s		10 s	12 s

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	15	10	15	135	290	35	215	10	115	300	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.942				0.850		0.994			0.936	
Flt Protected	0.950				0.995			0.993			0.992	
Satd. Flow (prot)	3433	1755	0	0	1853	1583	0	3493	0	0	3286	0
Flt Permitted	0.402				0.960			0.993			0.992	
Satd. Flow (perm)	1453	1755	0	0	1788	1583	0	3493	0	0	3286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				330		6			329	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	49	19	12	17	153	330	36	224	10	126	330	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	31	0	0	170	330	0	270	0	0	797	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	8.0	22.0	0.0	14.0	14.0	19.0	14.0	14.0	0.0	19.0	19.0	0.0
Total Split (%)	14.5%	40.0%	0.0%	25.5%	25.5%	34.5%	25.5%	25.5%	0.0%	34.5%	34.5%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effect Green (s)	12.8	12.5			8.4	24.9		9.4			14.6	
Actuated g/C Ratio	0.26	0.26			0.17	0.51		0.19			0.30	
v/c Ratio	0.09	0.07			0.56	0.34		0.40			0.66	
Control Delay	13.2	10.8			29.0	2.2		21.3			13.2	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	13.2	10.8			29.0	2.2		21.3			13.2	
LOS	B	B			C	A		C			B	
Approach Delay		12.3			11.3			21.3			13.2	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	5	4			52	0		41			70	
Queue Length 95th (ft)	13	17			#106	28		72			126	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 5 AM Peak Hour

2/10/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	548	643			343	967		674			1210	
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	0.09	0.05			0.50	0.34		0.40			0.66	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 48.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 13.9

Intersection LOS: B

Intersection Capacity Utilization 56.8%

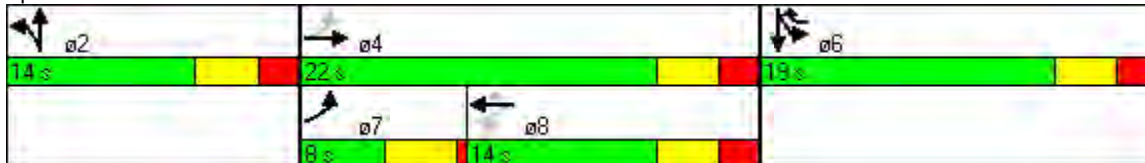
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

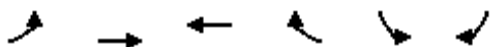
Queue shown is maximum after two cycles.

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

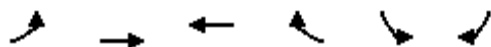
Future Alternative 5 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	1340	795	15	30	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	217	1614	914	17	36	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	931				2163	922
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	931				2163	922
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	70				0	16
cM capacity (veh/h)	731				28	272
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	217	807	807	931	265	
Volume Left	217	0	0	0	36	
Volume Right	0	0	0	17	229	
cSH	731	1700	1700	1700	125	
Volume to Capacity	0.30	0.47	0.47	0.55	2.12	
Queue Length 95th (ft)	31	0	0	0	550	
Control Delay (s)	12.0	0.0	0.0	0.0	585.3	
Lane LOS	B				F	
Approach Delay (s)	1.4			0.0	585.3	
Approach LOS					F	
Intersection Summary						
Average Delay		52.1				
Intersection Capacity Utilization		76.1%		ICU Level of Service	D	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 5 AM Peak Hour
2/10/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	40	185	215	5	5	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	56	261	222	5	9	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	227				597	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				597	224
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1285				427	768
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	317	227	60			
Volume Left	56	0	9			
Volume Right	0	5	52			
cSH	1285	1700	689			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	3	0	7			
Control Delay (s)	1.7	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			36.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 5 AM Peak Hour
2/10/2009

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	1050	285	70	765	15	10	0	5	15	5	40
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)	39	1167	317	78	850	17	11	0	6	17	6	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					1089							
pX, platoon unblocked	0.65						0.65	0.65		0.65	0.65	0.65
vC, conflicting volume	867			1483			2456	2425	742	1681	2575	858
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529			1483			2965	2918	742	1777	3148	517
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 %	94			83			0	100	98	40	0	86
cM capacity (veh/h)	675			449			0	8	358	28	5	329
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	39	778	706	78	867	17	67					
Volume Left	39	0	0	78	0	11	17					
Volume Right	0	0	317	0	17	6	44					
cSH	675	1700	1700	449	1700	0	38					
Volume to Capacity	0.06	0.46	0.42	0.17	0.51	Err	1.76					
Queue Length 95th (ft)	5	0	0	15	0	Err	178					
Control Delay (s)	10.7	0.0	0.0	14.7	0.0	Err	594.0					
Lane LOS	B			B		F	F					
Approach Delay (s)	0.3			1.2		Err	594.0					
Approach LOS						F	F					
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			58.0%		ICU Level of Service		B					
Analysis Period (min)			15									

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	460	40	145	435	120	110	965	175	175	1235	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988			0.968			0.977			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3497	0	1770	3426	0	1770	3458	0	1770	3437	0
Flt Permitted	0.198			0.222			0.091			0.118		
Satd. Flow (perm)	369	3497	0	414	3426	0	170	3458	0	220	3437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			27			25			38	
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	222	511	44	158	473	130	124	1084	197	190	1342	321
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	555	0	158	603	0	124	1281	0	190	1663	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	
Total Split (s)	16.0	25.0	0.0	14.0	23.0	0.0	11.0	55.0	0.0	16.0	60.0	0.0
Total Split (%)	14.5%	22.7%	0.0%	12.7%	20.9%	0.0%	10.0%	50.0%	0.0%	14.5%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	
Act Effect Green (s)	31.2	20.2		26.8	18.0		50.0	50.0		55.0	55.0	
Actuated g/C Ratio	0.28	0.18		0.24	0.16		0.45	0.45		0.50	0.50	
v/c Ratio	0.91	0.86		0.75	1.03		0.75	0.81		0.72	0.96	
Control Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.2	24.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.2	57.2		53.4	89.8		47.2	30.3		34.2	24.7	
LOS	E	E		D	F		D	C		C	C	
Approach Delay		61.2			82.3			31.8			25.7	
Approach LOS		E			F			C			C	
Queue Length 50th (ft)	123	200		84	~232		50	393		67	575	
Queue Length 95th (ft)	#249	#291		#157	#349		#128	477		m100	#733	
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	245	648		213	583		165	1585		265	1738	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.91	0.86		0.74	1.03		0.75	0.81		0.72	0.96	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 106 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 42.2

Intersection LOS: D

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

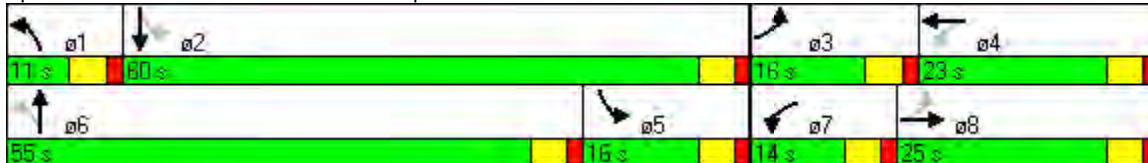
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	0	130	265	0	240	45	1165	40	5	1115	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	130		0	200		0	200		0
Storage Lanes	1		0	2		0	1		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.850			0.995			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	3433	1583	0	1770	3456	0	1770	3532	0
Flt Permitted	0.245			0.405			0.076			0.115		
Satd. Flow (perm)	456	1583	0	1464	1583	0	142	3456	0	214	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			176			4			1	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		566			305			2934			1079	
Travel Time (s)		12.9			6.9			44.5			16.3	
Peak Hour Factor	0.92	0.92	0.92	0.55	0.92	0.55	0.92	0.85	0.85	0.81	0.81	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%
Adj. Flow (vph)	92	0	141	482	0	436	49	1371	47	6	1377	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	141	0	482	436	0	49	1418	0	6	1393	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	15.0		7.0	15.0	
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		12.0	20.0	
Total Split (s)	10.0	24.0	0.0	18.0	32.0	0.0	8.0	56.0	0.0	12.0	60.0	0.0
Total Split (%)	9.1%	21.8%	0.0%	16.4%	29.1%	0.0%	7.3%	50.9%	0.0%	10.9%	54.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	21.5	15.5		33.5	25.5		66.1	65.1		60.3	60.3	
Actuated g/C Ratio	0.20	0.14		0.30	0.23		0.60	0.59		0.55	0.55	
v/c Ratio	0.57	0.46		0.69	0.87		0.31	0.69		0.03	0.72	
Control Delay	42.3	19.5		36.0	42.3		13.0	8.6		13.0	17.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.3	19.5		36.0	42.3		13.0	8.6		13.0	17.5	
LOS	D	B		D	D		B	A		B	B	
Approach Delay		28.5			39.0			8.7			17.5	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	46	26		135	184		3	224		2	411	
Queue Length 95th (ft)	83	84		100	#347		m11	395		m4	212	

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		486			225			2854			999	
Turn Bay Length (ft)	130			130			200			200		
Base Capacity (vph)	161	368		696	534		160	2046		216	1938	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.57	0.38		0.69	0.82		0.31	0.69		0.03	0.72	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 52 (47%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 19.9

Intersection LOS: B

Intersection Capacity Utilization 67.8%

ICU Level of Service C

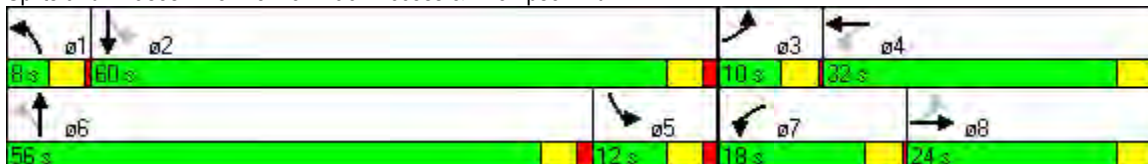
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	20	90	205	15	60	50	1060	170	160	1410	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.877			0.879				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1637	0	1770	3471	1583	1770	3459	0
Flt Permitted	0.704			0.345			0.099			0.124		
Satd. Flow (perm)	1311	1634	0	643	1637	0	184	3471	1583	231	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			66				187			4
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	71	22	99	225	16	66	55	1165	187	176	1549	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	121	0	225	82	0	55	1165	187	176	1593	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	10.0	13.0	0.0	19.0	22.0	0.0	11.0	59.0	59.0	19.0	67.0	0.0
Total Split (%)	9.1%	11.8%	0.0%	17.3%	20.0%	0.0%	10.0%	53.6%	53.6%	17.3%	60.9%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	13.8	6.8		26.4	17.4		59.6	59.6	59.6	65.8	65.8	
Actuated g/C Ratio	0.13	0.06		0.24	0.16		0.54	0.54	0.54	0.60	0.60	
v/c Ratio	0.38	0.62		0.74	0.26		0.30	0.62	0.20	0.63	0.77	
Control Delay	39.8	29.0		52.1	16.2		10.9	6.4	0.7	27.6	14.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	39.8	29.0		52.1	16.2		10.9	6.4	0.7	27.6	14.8	
LOS	D	C		D	B		B	A	A	C	B	
Approach Delay		33.0			42.5			5.8			16.1	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	40	15		140	10		8	108	2	46	185	
Queue Length 95th (ft)	77	75		#224	54		m11	m136	m2	m96	350	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	190	211		308	326		186	1881	944	334	2072	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.37	0.57		0.73	0.25		0.30	0.62	0.20	0.53	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 108 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

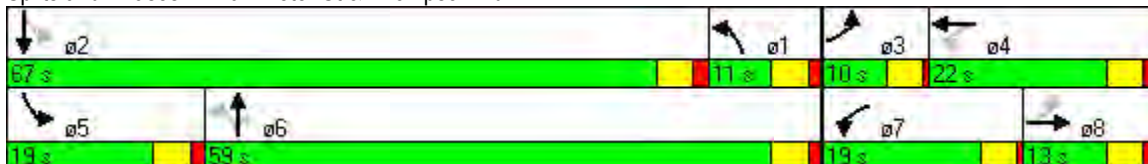
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	160	0	75	5	0	15	30	1420	30	55	15	1055
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.897			0.997				0.986
Flt Protected	0.950				0.988		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1651	0	1770	3495	0	0	1770	3459
Flt Permitted	0.565						0.224				0.107	
Satd. Flow (perm)	2042	1583	0	0	1671	0	417	3495	0	0	199	3459
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		196			16			4				19
Link Speed (mph)		30			30			45				45
Link Distance (ft)		507			118			847				288
Travel Time (s)		11.5			2.7			12.8				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	167	0	78	5	0	16	31	1479	31	60	16	1099
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	78	0	0	21	0	31	1510	0	0	76	1208
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	12.0	23.0	0.0	11.0	11.0	0.0	11.0	74.0	0.0	13.0	13.0	76.0
Total Split (%)	10.9%	20.9%	0.0%	10.0%	10.0%	0.0%	10.0%	67.3%	0.0%	11.8%	11.8%	69.1%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	11.1	11.1			4.7		79.8	79.8			82.3	82.3
Actuated g/C Ratio	0.10	0.10			0.04		0.73	0.73			0.75	0.75
v/c Ratio	0.57	0.23			0.24		0.08	0.60			0.32	0.47
Control Delay	53.3	1.6			33.4		2.8	3.4			9.1	7.4
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	53.3	1.6			33.4		2.8	3.4			9.1	7.4
LOS	D	A			C		A	A			A	A
Approach Delay		36.9			33.4			3.4				7.5
Approach LOS		D			C			A				A
Queue Length 50th (ft)	60	0			4		3	66			12	146
Queue Length 95th (ft)	86	0			29		m3	112			35	273

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	105
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	2%
Adj. Flow (vph)	109
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
17: Existing Site Access (North) & Thompson Rd

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		427			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	297	423			106		376	2536			263	2592
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	0.56	0.18			0.20		0.08	0.60			0.29	0.47

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 54 (49%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 8.0

Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd





Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	745	240	300	710	5	385	15	450	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.999			0.855			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1770	1861	0	1770	1593	0	1770	1753	0
Flt Permitted	0.113			0.082			0.533					
Satd. Flow (perm)	210	3383	0	153	1861	0	993	1593	0	1863	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			1			343			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	866	279	400	947	7	500	19	584	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1145	0	400	954	0	500	603	0	7	33	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	45.0	0.0	26.0	62.0	0.0	28.0	39.0	0.0	11.0	11.0	0.0
Total Split (%)	8.2%	40.9%	0.0%	23.6%	56.4%	0.0%	25.5%	35.5%	0.0%	10.0%	10.0%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	44.0	40.0		66.1	64.3		30.4	29.4		6.0	6.0	
Actuated g/C Ratio	0.42	0.38		0.63	0.61		0.29	0.28		0.06	0.06	
v/c Ratio	0.04	0.87		0.95	0.84		1.08	0.87		0.07	0.29	
Control Delay	11.8	38.8		65.8	26.9		100.5	29.9		50.8	41.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.8	38.8		65.8	26.9		100.5	29.9		50.8	41.8	
LOS	B	D		E	C		F	C		D	D	
Approach Delay		38.6			38.4			61.9			43.4	
Approach LOS		D			D			E			D	
Queue Length 50th (ft)	2	388		236	517		~348	181		5	14	
Queue Length 95th (ft)	7	450		#308	612		#374	220		17	36	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)	1009			1108			1031			218		
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	147	1314		419	1135		463	747		107	112	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.87		0.95	0.84		1.08	0.81		0.07	0.29	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 105.5

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 45.6

Intersection LOS: D

Intersection Capacity Utilization 86.0%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

			
26 s	45 s	26 s	11 s
			
9 s	62 s	39 s	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	30	25	425	30	285	5	1055	140	100	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.932			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted				0.563			0.178			0.111		
Satd. Flow (perm)	1863	1736	0	1049	1609	0	332	3539	1538	207	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			163				151		4	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1188			665	
Travel Time (s)		5.9			6.6			18.0			10.1	
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	78	39	32	675	48	452	5	1134	151	122	695	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	71	0	675	500	0	5	1134	151	122	732	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	11.0	0.0	32.0	32.0	0.0	36.0	36.0	36.0	11.0	47.0	0.0
Total Split (%)	12.2%	12.2%	0.0%	35.6%	35.6%	0.0%	40.0%	40.0%	40.0%	12.2%	52.2%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	7.1	4.0		36.7	25.1		29.1	29.1	29.1	40.1	40.1	
Actuated g/C Ratio	0.08	0.05		0.42	0.29		0.33	0.33	0.33	0.46	0.46	
v/c Ratio	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	
Control Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	36.5	54.3		63.2	38.0		22.6	50.3	5.1	44.7	34.8	
LOS	D	D		E	D		C	D	A	D	C	
Approach Delay		45.0			52.5			44.9			36.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	27	22		342	191		2	335	0	40	368	
Queue Length 95th (ft)	47	#63		280	162		10	#481	41	#87	#468	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	147	110		669	576		110	1172	610	166	847	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.53	0.65		1.01	0.87		0.05	0.97	0.25	0.73	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 87.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 87.9%

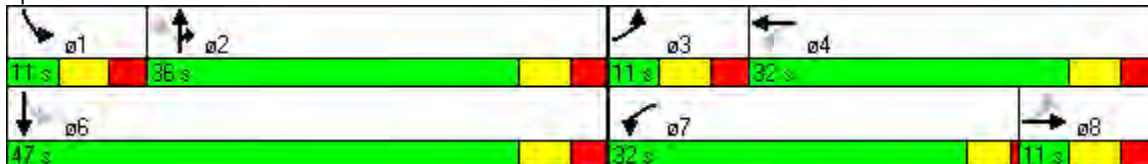
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Future Alternative 5 PM Peak Hour

2/9/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	315	105	45	5	20	160	5	385	30	240	275	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955				0.850		0.989			0.987	
Flt Protected	0.950				0.990			0.999			0.979	
Satd. Flow (prot)	3433	1779	0	0	1844	1583	0	3492	0	0	3420	0
Flt Permitted	0.727							0.999			0.979	
Satd. Flow (perm)	2627	1779	0	0	1863	1583	0	3492	0	0	3420	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				76		12			16	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	414	138	59	6	23	182	7	507	39	304	348	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	414	197	0	0	29	182	0	553	0	0	715	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	10.0	19.0	0.0	9.0	9.0	21.0	20.0	20.0	0.0	21.0	21.0	0.0
Total Split (%)	16.7%	31.7%	0.0%	15.0%	15.0%	35.0%	33.3%	33.3%	0.0%	35.0%	35.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)	11.5	10.5			4.0	18.3		15.1			14.9	
Actuated g/C Ratio	0.21	0.19			0.07	0.33		0.27			0.27	
v/c Ratio	0.63	0.55			0.21	0.32		0.58			0.77	
Control Delay	24.6	23.0			30.2	9.4		20.9			25.6	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	24.6	23.0			30.2	9.4		20.9			25.6	
LOS	C	C			C	A		C			C	
Approach Delay		24.1			12.3			20.9			25.6	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	65	50			10	27		83			111	
Queue Length 95th (ft)	84	82			31	56		111			150	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)	659	476			135	604		958			1003	
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	0.63	0.41			0.21	0.30		0.58			0.71	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 22.6

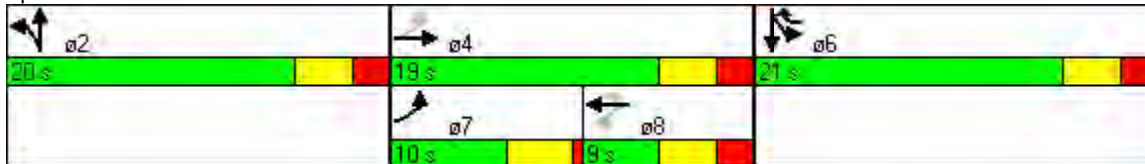
Intersection LOS: C

Intersection Capacity Utilization 56.1%

ICU Level of Service B

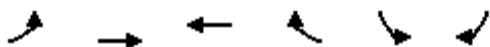
Analysis Period (min) 15

Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis 20: Carrier Pkwy & Old Collamer Rd

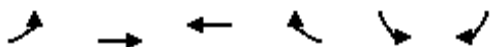
Future Alternative 5 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	230	1000	1170	30	15	150
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Hourly flow rate (vph)	245	1064	1462	38	22	221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1500				2503	1481
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1500				2503	1481
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	45				0	0
cM capacity (veh/h)	443				11	114
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	SB 1	
Volume Total	245	532	532	1500	243	
Volume Left	245	0	0	0	22	
Volume Right	0	0	0	38	221	
cSH	443	1700	1700	1700	60	
Volume to Capacity	0.55	0.31	0.31	0.88	4.02	
Queue Length 95th (ft)	82	0	0	0	Err	
Control Delay (s)	22.7	0.0	0.0	0.0	Err	
Lane LOS	C				F	
Approach Delay (s)	4.2			0.0	Err	
Approach LOS					F	
Intersection Summary						
Average Delay			797.0			
Intersection Capacity Utilization			96.2%	ICU Level of Service		F
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: Court St Rd & Deere Rd

Future Alternative 5 PM Peak Hour
2/9/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	265	170	15	25	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	33	288	202	18	28	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	220				565	211
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				565	211
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	92
cM capacity (veh/h)	1349				475	824
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	321	220	96			
Volume Left	33	0	28			
Volume Right	0	18	67			
cSH	1349	1700	677			
Volume to Capacity	0.02	0.13	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.0	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			40.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 23: Carrier Pkwy & Telergy Pkwy

Future Alternative 5 PM Peak Hour

2/9/2009

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Volume (veh/h)	35	940	50	10	1080	25	45	0	40	10	5	70			
Sign Control		Free			Free			Stop			Stop				
Grade		0%			0%			0%			0%				
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Hourly flow rate (vph)	37	1000	53	11	1149	27	48	0	43	11	5	74			
Pedestrians															
Lane Width (ft)															
Walking Speed (ft/s)															
Percent Blockage															
Right turn flare (veh)															
Median type	None			None											
Median storage veh															
Upstream signal (ft)	1089														
pX, platoon unblocked	0.32							0.32	0.32			0.32	0.32	0.32	
vC, conflicting volume	1176				1053				2348	2298	527	1801	2311	1162	
vC1, stage 1 conf vol															
vC2, stage 2 conf vol															
vCu, unblocked vol	477				1053				4176	4016	527	2448	4058	435	
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 %	89				98				0	100	91	0	0	59	
cM capacity (veh/h)	343				657				0	1	496	4	1	181	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1								
Volume Total	37	667	387	11	1176	90	90								
Volume Left	37	0	0	11	0	48	11								
Volume Right	0	0	53	0	27	43	74								
cSH	343	1700	1700	657	1700	0	9								
Volume to Capacity	0.11	0.39	0.23	0.02	0.69	Err	10.36								
Queue Length 95th (ft)	9	0	0	1	0	Err	Err								
Control Delay (s)	16.8	0.0	0.0	10.6	0.0	Err	Err								
Lane LOS	C				B				F						
Approach Delay (s)	0.6				0.1				Err						
Approach LOS							F				F				
Intersection Summary															
Average Delay				Err											
Intersection Capacity Utilization				76.6%			ICU Level of Service			D					
Analysis Period (min)				15											

Lanes, Volumes, Timings
3: James St & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	280	10	135	215	140	65	1410	60	100	875	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	0.91
Frt		0.995			0.941			0.994			0.997	0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3522	0	1770	3330	0	1770	3518	0	1770	3380	1441
Flt Permitted	0.206			0.433			0.165			0.070		
Satd. Flow (perm)	744	3522	0	807	3330	0	307	3518	0	130	3380	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			98			5			2	157
Link Speed (mph)		40			40			40			45	
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.82	0.82	0.82	0.89	0.89	0.89	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	372	341	12	152	242	157	83	1808	77	109	951	174
Shared Lane Traffic (%)												10%
Lane Group Flow (vph)	372	353	0	152	399	0	83	1885	0	109	968	157
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		2
Detector Phase	3	8		7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	15.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	20.0
Total Split (s)	26.0	24.0	0.0	18.0	16.0	0.0	11.0	67.0	0.0	11.0	67.0	67.0
Total Split (%)	21.7%	20.0%	0.0%	15.0%	13.3%	0.0%	9.2%	55.8%	0.0%	9.2%	55.8%	55.8%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	C-Max
Act Effect Green (s)	34.0	19.4		27.3	16.0		63.3	63.3		63.2	63.2	63.2
Actuated g/C Ratio	0.28	0.16		0.23	0.13		0.53	0.53		0.53	0.53	0.53
v/c Ratio	0.69	0.62		0.55	0.75		0.35	1.01		0.73	0.54	0.19
Control Delay	40.2	51.9		40.6	47.7		18.8	53.4		53.5	12.0	1.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	40.2	51.9		40.6	47.7		18.8	53.4		53.5	12.0	1.3
LOS	D	D		D	D		B	D		D	B	A
Approach Delay		45.9			45.7			51.9			14.3	
Approach LOS		D			D			D			B	
Queue Length 50th (ft)	114	134		89	118		32	~826		42	150	4
Queue Length 95th (ft)	142	168		144	#207		50	678		m#113	191	m8
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	692	572		299	530		236	1858		150	1782	833
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
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	0.54	0.62		0.51	0.75		0.35	1.01		0.73	0.54	0.19

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 116 (97%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 39.8

Intersection LOS: D

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	0	20	40	0	40	145	1180	275	70	980	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	130		0	200		0	200		0
Storage Lanes	1		0	2		0	1		0	1		0
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.850			0.972			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	3127	1442	0	1770	3354	0	1770	3310	0
Flt Permitted	0.755			0.597			0.220			0.102		
Satd. Flow (perm)	1406	1583	0	1965	1442	0	410	3354	0	190	3310	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		280			182			45			1	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		566			305			2934			1079	
Travel Time (s)		12.9			6.9			44.5			16.3	
Peak Hour Factor	0.92	0.92	0.92	0.69	0.92	0.69	0.92	0.82	0.82	0.93	0.93	0.92
Heavy Vehicles (%)	2%	2%	2%	12%	2%	12%	2%	5%	3%	2%	9%	2%
Adj. Flow (vph)	16	0	22	58	0	58	158	1439	335	75	1054	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	22	0	58	58	0	158	1774	0	75	1059	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	7.0		4.0	15.0		7.0	15.0	
Minimum Split (s)	8.0	20.0		8.0	12.0		8.0	20.0		12.0	20.0	
Total Split (s)	8.0	20.0	0.0	8.0	20.0	0.0	17.0	80.0	0.0	12.0	75.0	0.0
Total Split (%)	6.7%	16.7%	0.0%	6.7%	16.7%	0.0%	14.2%	66.7%	0.0%	10.0%	62.5%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	1.5		0.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	8.3	6.5		9.9	8.1		92.5	92.5		88.5	88.5	
Actuated g/C Ratio	0.07	0.05		0.08	0.07		0.77	0.77		0.74	0.74	
v/c Ratio	0.15	0.06		0.28	0.22		0.38	0.68		0.32	0.43	
Control Delay	49.6	0.4		51.2	1.8		2.2	2.0		10.4	5.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.6	0.4		51.2	1.8		2.2	2.0		10.4	5.1	
LOS	D	A		D	A		A	A		B	A	
Approach Delay		21.1			26.5			2.0			5.5	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	11	0		21	0		4	21		11	87	
Queue Length 95th (ft)	33	0		31	0		m7	34		m19	108	

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		486			225			2854			999	
Turn Bay Length (ft)	130			130			200			200		
Base Capacity (vph)	109	454		208	340		463	2596		232	2441	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.05		0.28	0.17		0.34	0.68		0.32	0.43	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 4.3

Intersection LOS: A

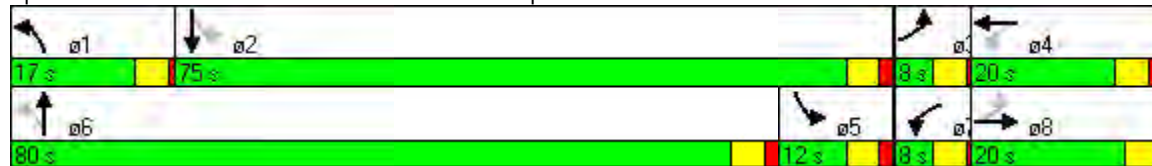
Intersection Capacity Utilization 67.5%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	25	85	215	30	105	135	1580	145	50	835	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.884			0.883				0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1647	0	1770	1645	0	1770	3471	1583	1770	3429	0
Flt Permitted	0.659			0.377			0.238			0.062		
Satd. Flow (perm)	1228	1647	0	702	1645	0	443	3471	1583	115	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			121				167		15	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	103	29	98	247	34	121	155	1816	167	57	960	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	127	0	247	155	0	155	1816	167	57	1058	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	16.0	12.0	0.0	23.0	19.0	0.0	11.0	74.0	74.0	11.0	74.0	0.0
Total Split (%)	13.3%	10.0%	0.0%	19.2%	15.8%	0.0%	9.2%	61.7%	61.7%	9.2%	61.7%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	17.9	6.6		29.5	14.2		72.7	72.7	72.7	70.5	70.5	
Actuated g/C Ratio	0.15	0.06		0.25	0.12		0.61	0.61	0.61	0.59	0.59	
v/c Ratio	0.45	0.69		0.74	0.51		0.46	0.86	0.16	0.38	0.52	
Control Delay	42.8	37.1		54.0	20.6		9.3	11.9	0.6	20.2	8.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	42.8	37.1		54.0	20.6		9.3	11.9	0.6	20.2	8.4	
LOS	D	D		D	C		A	B	A	C	A	
Approach Delay		39.7			41.1			10.8			9.0	
Approach LOS		D			D			B			A	
Queue Length 50th (ft)	63	22		165	24		27	341	2	11	132	
Queue Length 95th (ft)	108	#92		241	84		m28	m347	m2	31	153	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	255	188		342	304		335	2102	1024	150	2020	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.40	0.68		0.72	0.51		0.46	0.86	0.16	0.38	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 119 (99%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 15.1

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

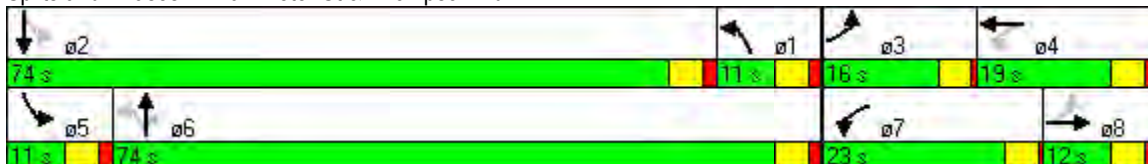
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings

Full Mitigation - Future Alternative 5 AM Peak Hour

17: Existing Site Access (North) & Thompson Rd

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	60	0	65	5	0	5	60	1155	5	30	20	995
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.862			0.932			0.999				0.968
Flt Protected	0.950	0.996			0.976		0.950				0.950	
Satd. Flow (prot)	3221	1455	0	0	1694	0	1770	3435	0	0	1770	3349
Flt Permitted	0.642	0.993					0.141				0.138	
Satd. Flow (perm)	2177	1451	0	0	1736	0	263	3435	0	0	257	3349
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		79			6			1				66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		507			118			847				288
Travel Time (s)		11.5			2.7			12.8				4.4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	5%
Adj. Flow (vph)	73	0	79	6	0	6	73	1409	6	37	24	1213
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	66	86	0	0	12	0	73	1415	0	0	61	1548
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	11.0	20.0	0.0	9.0	9.0	0.0	13.0	87.0	0.0	13.0	13.0	87.0
Total Split (%)	9.2%	16.7%	0.0%	7.5%	7.5%	0.0%	10.8%	72.5%	0.0%	10.8%	10.8%	72.5%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	9.3	9.6			4.0		94.7	94.7			92.2	93.2
Actuated g/C Ratio	0.08	0.08			0.03		0.79	0.79			0.77	0.78
v/c Ratio	0.30	0.46			0.19		0.24	0.52			0.22	0.59
Control Delay	53.8	20.4			47.4		2.8	1.7			7.2	8.6
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	53.8	20.4			47.4		2.8	1.7			7.2	8.6
LOS	D	C			D		A	A			A	A
Approach Delay		34.9			47.4			1.8				8.6
Approach LOS		C			D			A				A
Queue Length 50th (ft)	28	5			5		3	32			10	229
Queue Length 95th (ft)	44	47			23		m5	38			25	325

Lanes, Volumes, Timings
 17: Existing Site Access (North) & Thompson Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

Lane Group	SBR
Lane Configurations	
Volume (vph)	275
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.82
Heavy Vehicles (%)	2%
Adj. Flow (vph)	335
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		427			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	226	251			64		306	2710			298	2616
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	0.29	0.34			0.19		0.24	0.52			0.20	0.59

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 61 (51%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 6.8

Intersection LOS: A

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd



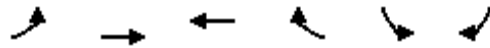


Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
20: Carrier Pkwy & Old Collamer Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

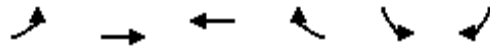


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	180	1340	795	15	30	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	330			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.997		0.883	
Flt Protected	0.950				0.993	
Satd. Flow (prot)	1770	3539	3430	0	1633	0
Flt Permitted	0.183				0.993	
Satd. Flow (perm)	341	3539	3430	0	1633	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			4		229	
Link Speed (mph)		45	45		30	
Link Distance (ft)		466	898		532	
Travel Time (s)		7.1	13.6		12.1	
Peak Hour Factor	0.83	0.83	0.87	0.87	0.83	0.83
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	217	1614	914	17	36	229
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	1614	931	0	265	0
Turn Type	pm+pt					
Protected Phases	7	4	8		6	
Permitted Phases	4					
Detector Phase	7	4	8		6	
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	
Minimum Split (s)	8.0	20.0	20.0		20.0	
Total Split (s)	11.0	35.0	24.0	0.0	20.0	0.0
Total Split (%)	20.0%	63.6%	43.6%	0.0%	36.4%	0.0%
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	0.5	0.5	0.5		0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None		Min	
Act Effct Green (s)	27.4	27.4	19.0		7.6	
Actuated g/C Ratio	0.63	0.63	0.44		0.18	
v/c Ratio	0.49	0.72	0.62		0.56	
Control Delay	8.1	8.0	12.8		9.4	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	8.1	8.0	12.8		9.4	
LOS	A	A	B		A	
Approach Delay		8.0	12.8		9.4	
Approach LOS		A	B		A	
Queue Length 50th (ft)	15	92	90		8	
Queue Length 95th (ft)	46	194	165		46	

Lanes, Volumes, Timings
20: Carrier Pkwy & Old Collamer Rd

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		386	818		452	
Turn Bay Length (ft)	330					
Base Capacity (vph)	454	2607	1632		763	
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	0.48	0.62	0.57		0.35	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 43.2

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.6

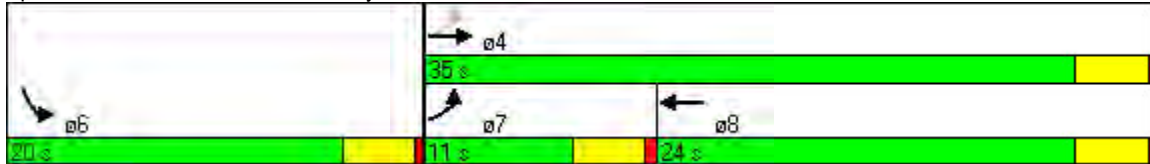
Intersection LOS: A

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 20: Carrier Pkwy & Old Collamer Rd



Lanes, Volumes, Timings
23: Carrier Pkwy & Telergy Pkwy

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	1050	285	70	765	15	10	0	5	15	5	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	470		0	450		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.997			0.952			0.911	
Flt Protected	0.950			0.950				0.969			0.987	
Satd. Flow (prot)	1770	3400	0	1770	3430	0	0	1718	0	0	1675	0
Flt Permitted	0.310			0.250				0.807			0.920	
Satd. Flow (perm)	577	3400	0	466	3430	0	0	1431	0	0	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			6			6			44	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		898			1089			674			449	
Travel Time (s)		13.6			16.5			15.3			10.2	
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
Heavy Vehicles (%)	2%	3%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	39	1167	317	78	850	17	11	0	6	17	6	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1484	0	78	867	0	0	17	0	0	67	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	16.0	16.0		16.0	16.0			6.2			6.2	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.21			0.21	
v/c Ratio	0.13	0.80		0.32	0.48			0.06			0.19	
Control Delay	5.1	10.8		8.5	5.6			8.5			6.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	5.1	10.8		8.5	5.6			8.5			6.8	
LOS	A	B		A	A			A			A	
Approach Delay		10.6			5.9			8.5			6.8	
Approach LOS		B			A			A			A	
Queue Length 50th (ft)	2	66		5	32			1			3	
Queue Length 95th (ft)	10	#164		22	64			9			18	

Lanes, Volumes, Timings
23: Carrier Pkwy & Telergy Pkwy

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		818			1009			594			369	
Turn Bay Length (ft)	470			450								
Base Capacity (vph)	306	1850		247	1820			761			848	
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	0.13	0.80		0.32	0.48			0.02			0.08	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 30.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 8.8

Intersection LOS: A

Intersection Capacity Utilization 55.5%

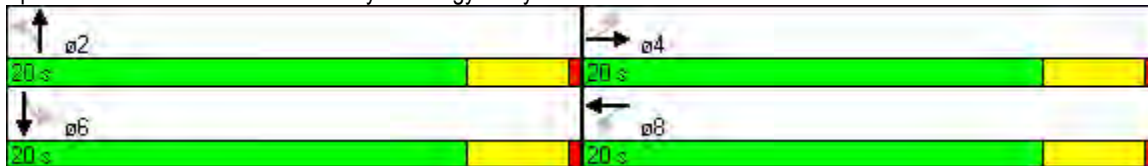
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 23: Carrier Pkwy & Telergy Pkwy



Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	750	310	405	555	5	275	15	245	5	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	2		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.999			0.859			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3360	0	3433	3403	0	3433	1600	0	1770	1515	0
Flt Permitted	0.413			0.124			0.541					
Satd. Flow (perm)	769	3360	0	448	3403	0	1955	1600	0	1863	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		122			2			214			20	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1194			1111			298	
Travel Time (s)		16.5			18.1			21.6			6.8	
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.82	0.82	0.82	0.50	0.50	0.50
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	2%	2%	30%	2%
Adj. Flow (vph)	11	824	341	455	624	6	335	18	299	10	20	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1165	0	455	630	0	335	317	0	10	40	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	28.0	0.0	12.0	31.0	0.0	9.0	20.0	0.0	11.0	11.0	0.0
Total Split (%)	15.0%	46.7%	0.0%	20.0%	51.7%	0.0%	15.0%	33.3%	0.0%	18.3%	18.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	27.2	23.2		34.5	33.2		12.1	11.1		6.1	6.1	
Actuated g/C Ratio	0.48	0.41		0.61	0.59		0.22	0.20		0.11	0.11	
v/c Ratio	0.02	0.80		0.72	0.31		0.58	0.65		0.05	0.22	
Control Delay	6.0	19.4		16.7	7.7		23.1	14.0		25.2	19.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.0	19.4		16.7	7.7		23.1	14.0		25.2	19.8	
LOS	A	B		B	A		C	B		C	B	
Approach Delay		19.3			11.5			18.7			20.9	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	2	176		36	53		50	30		3	7	
Queue Length 95th (ft)	7	#295		#99	114		73	75		8	14	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1114			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	445	1461		652	2017		579	588		201	182	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.80		0.70	0.31		0.58	0.54		0.05	0.22	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 70.6%

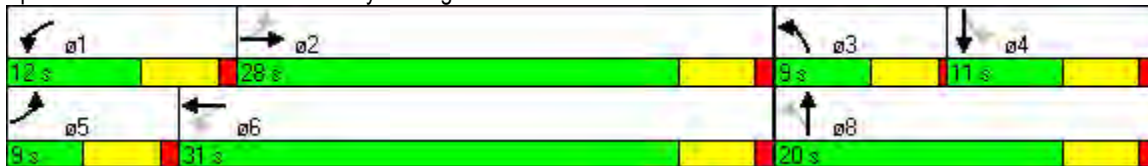
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr



Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 				
Volume (vph)	40	35	15	150	40	100	10	545	440	335	805	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.893				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1777	0	3273	1663	0	1770	3539	1583	1770	1822	0
Flt Permitted				0.976			0.198			0.318		
Satd. Flow (perm)	1863	1777	0	3362	1663	0	369	3539	1583	592	1822	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			112				458		12	
Link Speed (mph)		40			45			45			45	
Link Distance (ft)		348			436			1194			657	
Travel Time (s)		5.9			6.6			18.1			10.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.96	0.96	0.96	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	7%	2%	2%	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	47	41	18	169	45	112	10	568	458	372	894	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	59	0	169	157	0	10	568	458	372	977	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	14.0	0.0	8.0	11.0	0.0	30.0	30.0	30.0	18.0	48.0	0.0
Total Split (%)	15.7%	20.0%	0.0%	11.4%	15.7%	0.0%	42.9%	42.9%	42.9%	25.7%	68.6%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	8.0	6.9		9.3	4.0		24.6	24.6	24.6	41.3	41.3	
Actuated g/C Ratio	0.12	0.11		0.14	0.06		0.38	0.38	0.38	0.63	0.63	
v/c Ratio	0.21	0.29		0.36	0.76		0.07	0.43	0.52	0.68	0.85	
Control Delay	25.2	26.1		24.1	37.7		18.2	18.0	4.5	14.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	25.2	26.1		24.1	37.7		18.2	18.0	4.5	14.3	20.9	
LOS	C	C		C	D		B	B	A	B	C	
Approach Delay		25.7			30.7			12.0			19.1	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	16	17		29	19		3	101	0	75	332	
Queue Length 95th (ft)	39	47		51	#107		14	146	58	#129	#621	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1114			577	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	220	207		473	207		138	1328	880	572	1151	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.29		0.36	0.76		0.07	0.43	0.52	0.65	0.85	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 65.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	15	10	15	135	290	35	215	10	115	300	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.942				0.850		0.994			0.936	
Flt Protected	0.950				0.995			0.993			0.992	
Satd. Flow (prot)	3433	1755	0	0	1853	1583	0	3493	0	0	3286	0
Flt Permitted	0.402				0.960			0.993			0.992	
Satd. Flow (perm)	1453	1755	0	0	1788	1583	0	3493	0	0	3286	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				330		6			329	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	49	19	12	17	153	330	36	224	10	126	330	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	31	0	0	170	330	0	270	0	0	797	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	8.0	22.0	0.0	14.0	14.0	19.0	14.0	14.0	0.0	19.0	19.0	0.0
Total Split (%)	14.5%	40.0%	0.0%	25.5%	25.5%	34.5%	25.5%	25.5%	0.0%	34.5%	34.5%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	Max	Max	Max		Max	Max	
Act Effect Green (s)	12.8	12.5			8.4	24.9		9.4			14.6	
Actuated g/C Ratio	0.26	0.26			0.17	0.51		0.19			0.30	
v/c Ratio	0.09	0.07			0.56	0.34		0.40			0.66	
Control Delay	13.2	10.8			29.0	2.2		21.3			13.2	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	13.2	10.8			29.0	2.2		21.3			13.2	
LOS	B	B			C	A		C			B	
Approach Delay		12.3			11.3			21.3			13.2	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	5	4			52	0		41			70	
Queue Length 95th (ft)	13	17			#106	28		72			126	
Internal Link Dist (ft)		131			170			587			1031	

Lanes, Volumes, Timings
32: First St & Kinne St

Full Mitigation - Future Alternative 5 AM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	548	643			343	967		674			1210	
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	0.09	0.05			0.50	0.34		0.40			0.66	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 48.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 13.9

Intersection LOS: B

Intersection Capacity Utilization 56.8%

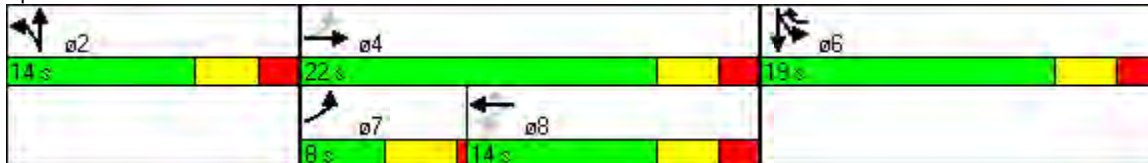
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

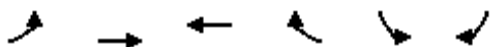
Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis Mitigation - Future Alternative 5 AM Peak Hour

22: Court St Rd & Deere Rd

2/18/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Volume (veh/h)	40	185	215	5	5	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.71	0.71	0.97	0.97	0.58	0.58
Hourly flow rate (vph)	56	261	222	5	9	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	227				597	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				597	224
tC, single (s)	4.2				6.5	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.5
p0 queue free %	96				98	93
cM capacity (veh/h)	1285				427	768
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	317	227	60			
Volume Left	56	0	9			
Volume Right	0	5	52			
cSH	1285	1700	689			
Volume to Capacity	0.04	0.13	0.09			
Queue Length 95th (ft)	3	0	7			
Control Delay (s)	1.7	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			36.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
3: James St & Thompson Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	460	40	145	435	120	110	965	175	175	1235	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		0	220		0	650		0	460		0
Storage Lanes	2		0	1		0	1		0	1		1
Taper Length (ft)	25		0	25		0	25		0	25		0
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.988			0.968			0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3497	0	1770	3426	0	1770	3458	0	1770	3539	1583
Flt Permitted	0.244			0.230			0.127			0.127		
Satd. Flow (perm)	882	3497	0	428	3426	0	237	3458	0	237	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			35			28				306
Link Speed (mph)		40			40			40				45
Link Distance (ft)		350			409			791			1209	
Travel Time (s)		6.0			7.0			13.5			18.3	
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	222	511	44	158	473	130	124	1084	197	190	1342	321
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	555	0	158	603	0	124	1281	0	190	1342	321
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		2
Detector Phase	3	8		7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	15.0		6.0	15.0	15.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	20.0		11.0	20.0	20.0
Total Split (s)	11.0	22.0	0.0	12.0	23.0	0.0	11.0	42.0	0.0	14.0	45.0	45.0
Total Split (%)	12.2%	24.4%	0.0%	13.3%	25.6%	0.0%	12.2%	46.7%	0.0%	15.6%	50.0%	50.0%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min	C-Max	C-Max
Act Effect Green (s)	22.4	16.4		24.4	17.4		37.6	37.6		40.6	40.6	40.6
Actuated g/C Ratio	0.25	0.18		0.27	0.19		0.42	0.42		0.45	0.45	0.45
v/c Ratio	0.57	0.86		0.72	0.88		0.61	0.88		0.73	0.84	0.36
Control Delay	29.1	50.0		43.9	48.3		31.3	32.1		30.5	14.2	1.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	29.1	50.0		43.9	48.3		31.3	32.1		30.5	14.2	1.1
LOS	C	D		D	D		C	C		C	B	A
Approach Delay		44.0			47.4			32.0			13.6	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	46	158		66	165		44	341		43	102	1
Queue Length 95th (ft)	74	#241		#124	#253		#86	#450		m74	322	m9
Internal Link Dist (ft)		270			329			711			1129	

Lanes, Volumes, Timings
3: James St & Thompson Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180			220			650			460		
Base Capacity (vph)	389	668		220	713		202	1462		261	1597	882
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
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	0.57	0.83		0.72	0.85		0.61	0.88		0.73	0.84	0.36

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 29.3

Intersection LOS: C

Intersection Capacity Utilization 80.6%

ICU Level of Service D

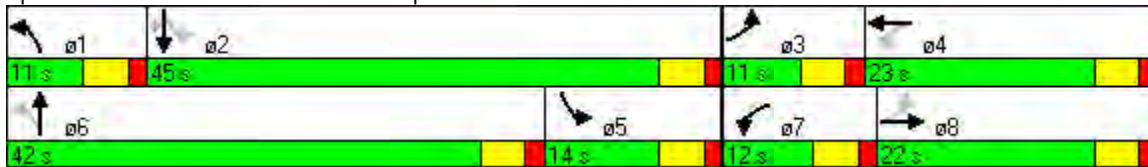
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: James St & Thompson Rd



Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Volume (vph)	85	0	130	265	0	240	45	1165	40	5	1115	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		0	130		0	200		0	200		0
Storage Lanes	1		0	2		0	1		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.850			0.995			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1583	0	3433	1583	0	1770	3456	0	1770	3532	0
Flt Permitted	0.460			0.514			0.108			0.091		
Satd. Flow (perm)	857	1583	0	1857	1583	0	201	3456	0	170	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		96			217			5			2	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		566			305			2934			1079	
Travel Time (s)		12.9			6.9			44.5			16.3	
Peak Hour Factor	0.92	0.92	0.92	0.55	0.92	0.55	0.92	0.85	0.85	0.81	0.81	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%
Adj. Flow (vph)	92	0	141	482	0	436	49	1371	47	6	1377	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	141	0	482	436	0	49	1418	0	6	1393	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Detector Phase	3	8		7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	15.0		7.0	15.0	
Minimum Split (s)	8.0	20.0		8.0	20.0		8.0	20.0		12.0	20.0	
Total Split (s)	8.0	20.0	0.0	13.0	25.0	0.0	8.0	45.0	0.0	12.0	49.0	0.0
Total Split (%)	8.9%	22.2%	0.0%	14.4%	27.8%	0.0%	8.9%	50.0%	0.0%	13.3%	54.4%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	13.7	8.7		26.2	19.1		53.4	52.4		50.0	50.0	
Actuated g/C Ratio	0.15	0.10		0.29	0.21		0.59	0.58		0.56	0.56	
v/c Ratio	0.51	0.59		0.62	0.86		0.26	0.70		0.03	0.71	
Control Delay	35.8	24.5		33.2	34.7		9.3	7.6		4.4	14.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.8	24.5		33.2	34.7		9.3	7.6		4.4	14.5	
LOS	D	C		C	C		A	A		A	B	
Approach Delay		29.0			33.9			7.7			14.4	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)	37	24		110	121		3	55		0	336	
Queue Length 95th (ft)	73	78		87	#280		m7	286		m2	356	

Lanes, Volumes, Timings
5: Verizon Back Access & Thompson Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		486			225			2854			999	
Turn Bay Length (ft)	130			130			200			200		
Base Capacity (vph)	181	360		790	536		189	2014		219	1963	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.39		0.61	0.81		0.26	0.70		0.03	0.71	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 44 (49%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 67.8%

ICU Level of Service C

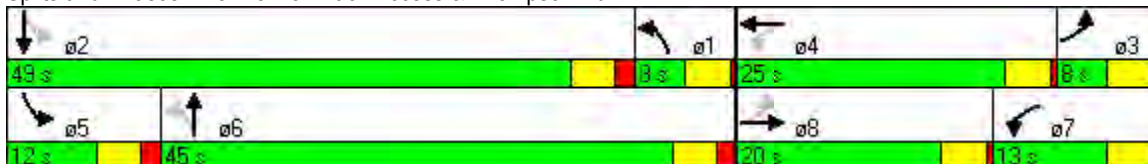
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Verizon Back Access & Thompson Rd



Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	20	90	205	15	60	50	1060	170	160	1410	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	320		410	220		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	0		0	0		25	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.877			0.879				0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1637	0	1770	3471	1583	1770	3459	0
Flt Permitted	0.704			0.370			0.102			0.102		
Satd. Flow (perm)	1311	1634	0	689	1637	0	190	3471	1583	190	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			66				187			5
Link Speed (mph)		30			30			45				45
Link Distance (ft)		210			276			1209			2934	
Travel Time (s)		4.8			6.3			18.3			44.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	71	22	99	225	16	66	55	1165	187	176	1549	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	121	0	225	82	0	55	1165	187	176	1593	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Detector Phase	3	8		7	4		1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	6.0		6.0	15.0	15.0	6.0	15.0	
Minimum Split (s)	8.0	11.0		8.0	11.0		11.0	20.0	20.0	11.0	20.0	
Total Split (s)	9.0	11.0	0.0	15.0	17.0	0.0	11.0	47.0	47.0	17.0	53.0	0.0
Total Split (%)	10.0%	12.2%	0.0%	16.7%	18.9%	0.0%	12.2%	52.2%	52.2%	18.9%	58.9%	0.0%
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)	0.5	1.5		0.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	12.0	6.0		22.0	13.8		44.9	44.9	44.9	50.2	50.2	
Actuated g/C Ratio	0.13	0.07		0.24	0.15		0.50	0.50	0.50	0.56	0.56	
v/c Ratio	0.36	0.60		0.75	0.27		0.28	0.67	0.21	0.66	0.82	
Control Delay	33.2	26.0		46.8	15.1		10.6	7.2	0.9	29.0	14.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	33.2	26.0		46.8	15.1		10.6	7.2	0.9	29.0	14.3	
LOS	C	C		D	B		B	A	A	C	B	
Approach Delay		28.7			38.3			6.5			15.8	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	32	12		111	8		7	100	0	49	215	
Queue Length 95th (ft)	67	#76		#179	49		m10	m130	m0	m97	307	

Lanes, Volumes, Timings
16: Exeter St & Thompson Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		130			196			1129			2854	
Turn Bay Length (ft)							320		410	220		
Base Capacity (vph)	200	201		301	307		200	1731	883	317	1931	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.36	0.60		0.75	0.27		0.28	0.67	0.21	0.56	0.82	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

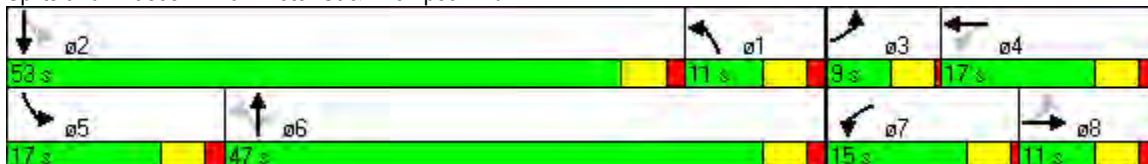
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Exeter St & Thompson Rd



Lanes, Volumes, Timings

Full Mitigation - Future Alternative 5 PM Peak Hour

17: Existing Site Access (North) & Thompson Rd

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	160	0	75	5	0	15	30	1420	30	55	15	1055
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		0		0	
Storage Lanes	0		0	0		0	1		0		0	
Taper Length (ft)	0		0	0		0	25		0		0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt		0.850			0.897			0.997				0.986
Flt Protected	0.950				0.988		0.950				0.950	
Satd. Flow (prot)	3433	1583	0	0	1651	0	1770	3495	0	0	1770	3459
Flt Permitted	0.606						0.159				0.131	
Satd. Flow (perm)	2190	1583	0	0	1671	0	296	3495	0	0	244	3459
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		207			16			4				21
Link Speed (mph)		30			30			45				45
Link Distance (ft)		507			118			847				288
Travel Time (s)		11.5			2.7			12.8				4.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	167	0	78	5	0	16	31	1479	31	60	16	1099
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	78	0	0	21	0	31	1510	0	0	76	1208
Turn Type	pm+pt			Perm			pm+pt			Prot	pm+pt	
Protected Phases	3	8			4		1	6		5	5	2
Permitted Phases	8			4			6				2	
Detector Phase	3	8		4	4		1	6		5	5	2
Switch Phase												
Minimum Initial (s)	4.0	6.0		4.0	4.0		6.0	18.0		6.0	6.0	18.0
Minimum Split (s)	9.0	11.0		9.0	9.0		11.0	23.0		11.0	11.0	23.0
Total Split (s)	10.0	19.0	0.0	9.0	9.0	0.0	11.0	60.0	0.0	11.0	11.0	60.0
Total Split (%)	11.1%	21.1%	0.0%	10.0%	10.0%	0.0%	12.2%	66.7%	0.0%	12.2%	12.2%	66.7%
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)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	None	C-Max
Act Effct Green (s)	9.2	9.2			4.0		62.0	62.0			64.2	64.2
Actuated g/C Ratio	0.10	0.10			0.04		0.69	0.69			0.71	0.71
v/c Ratio	0.55	0.22			0.23		0.10	0.63			0.28	0.49
Control Delay	44.4	1.5			29.2		3.8	5.5			13.8	7.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	44.4	1.5			29.2		3.8	5.5			13.8	7.8
LOS	D	A			C		A	A			B	A
Approach Delay		30.7			29.2			5.4				8.2
Approach LOS		C			C			A				A
Queue Length 50th (ft)	48	0			3		2	46			12	139
Queue Length 95th (ft)	73	0			26		m4	84			33	248

Lane Group	SBR
Lane Configurations	
Volume (vph)	105
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	0
Lane Util. Factor	0.95
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	2%
Adj. Flow (vph)	109
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.0
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Internal Link Dist (ft)		427			38			767				208
Turn Bay Length (ft)							430					
Base Capacity (vph)	301	421			90		302	2409			276	2474
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	0.55	0.19			0.23		0.10	0.63			0.28	0.49

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 82 (91%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 8.7

Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 17: Existing Site Access (North) & Thompson Rd



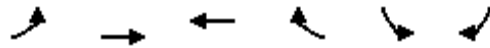


Lane Group	SBR
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
20: Carrier Pkwy & Old Collamer Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

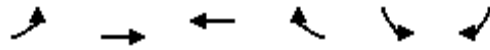


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	230	1000	1170	30	15	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	330			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996		0.877	
Flt Protected	0.950				0.995	
Satd. Flow (prot)	1770	3539	3525	0	1625	0
Flt Permitted	0.133				0.995	
Satd. Flow (perm)	248	3539	3525	0	1625	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			5		185	
Link Speed (mph)		45	45		30	
Link Distance (ft)		466	898		542	
Travel Time (s)		7.1	13.6		12.3	
Peak Hour Factor	0.94	0.94	0.80	0.80	0.68	0.68
Adj. Flow (vph)	245	1064	1462	38	22	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	1064	1500	0	243	0
Turn Type	pm+pt					
Protected Phases	7	4	8		6	
Permitted Phases	4					
Detector Phase	7	4	8		6	
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	
Minimum Split (s)	8.0	20.0	20.0		20.0	
Total Split (s)	9.0	39.0	30.0	0.0	21.0	0.0
Total Split (%)	15.0%	65.0%	50.0%	0.0%	35.0%	0.0%
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	0.5	0.5	0.5		0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None		Min	
Act Effct Green (s)	35.1	35.1	26.1		8.1	
Actuated g/C Ratio	0.68	0.68	0.51		0.16	
v/c Ratio	0.77	0.44	0.84		0.59	
Control Delay	27.0	4.8	17.7		12.5	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	27.0	4.8	17.7		12.5	
LOS	C	A	B		B	
Approach Delay		8.9	17.7		12.5	
Approach LOS		A	B		B	
Queue Length 50th (ft)	19	52	175		15	
Queue Length 95th (ft)	#142	121	262		33	
Internal Link Dist (ft)		386	818		462	

Lanes, Volumes, Timings
20: Carrier Pkwy & Old Collamer Rd

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	330					
Base Capacity (vph)	319	2424	1796		664	
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	0.77	0.44	0.84		0.37	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 51.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 13.5

Intersection LOS: B

Intersection Capacity Utilization 66.1%

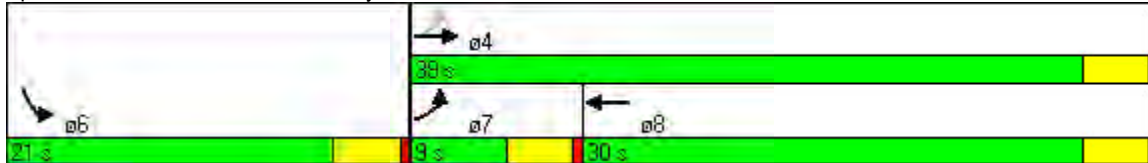
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 20: Carrier Pkwy & Old Collamer Rd



Lanes, Volumes, Timings
23: Carrier Pkwy & Telergy Pkwy

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	940	50	10	1080	25	45	0	40	10	5	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	470		0	450		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.997			0.936			0.889	
Flt Protected	0.950			0.950				0.974			0.994	
Satd. Flow (prot)	1770	3447	0	1770	3495	0	0	1698	0	0	1646	0
Flt Permitted	0.261			0.261				0.793			0.955	
Satd. Flow (perm)	486	3447	0	486	3495	0	0	1383	0	0	1581	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			7			38			22	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		898			1089			667			451	
Travel Time (s)		13.6			16.5			15.2			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	37	1000	53	11	1149	27	48	0	43	11	5	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	1053	0	11	1176	0	0	91	0	0	90	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	15.2	15.2		15.2	15.2			6.8			6.8	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.23			0.23	
v/c Ratio	0.15	0.60		0.04	0.66			0.27			0.24	
Control Delay	6.2	7.1		4.8	7.9			8.7			9.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.2	7.1		4.8	7.9			8.7			9.5	
LOS	A	A		A	A			A			A	
Approach Delay		7.1			7.9			8.7			9.5	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	2	46		1	55			7			9	
Queue Length 95th (ft)	12	93		5	108			26			27	

Lanes, Volumes, Timings
23: Carrier Pkwy & Telergy Pkwy

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		818			1009			587			371	
Turn Bay Length (ft)	470			450								
Base Capacity (vph)	260	1850		260	1872			757			855	
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	0.57		0.04	0.63			0.12			0.11	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 30.1

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 7.6

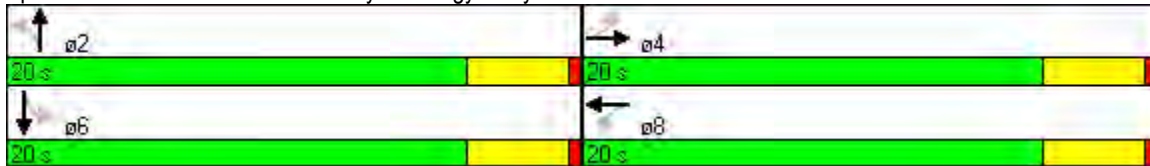
Intersection LOS: A

Intersection Capacity Utilization 48.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 23: Carrier Pkwy & Telergy Pkwy



Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	745	240	300	710	5	385	15	450	5	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	430		0	650		0	0		0	120		0
Storage Lanes	1		0	2		0	0		0	1		0
Taper Length (ft)	25		0	25		0	0		0	25		0
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.999			0.855			0.941	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	3433	3536	0	3433	1593	0	1770	1753	0
Flt Permitted	0.238			0.124			0.556					
Satd. Flow (perm)	443	3383	0	448	3536	0	2009	1593	0	1863	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		76			1			196			13	
Link Speed (mph)		45			45			35			30	
Link Distance (ft)		1089			1188			1111			298	
Travel Time (s)		16.5			18.0			21.6			6.8	
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.77	0.77	0.77	0.75	0.75	0.75
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	866	279	400	947	7	500	19	584	7	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1145	0	400	954	0	500	603	0	7	33	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		4.0	20.0		4.0	6.0		6.0	6.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		8.0	11.0		11.0	11.0	
Total Split (s)	9.0	29.0	0.0	10.0	30.0	0.0	13.0	26.0	0.0	13.0	13.0	0.0
Total Split (%)	13.8%	44.6%	0.0%	15.4%	46.2%	0.0%	20.0%	40.0%	0.0%	20.0%	20.0%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	28.0	24.0		33.3	32.3		21.0	20.0		6.8	6.8	
Actuated g/C Ratio	0.44	0.37		0.52	0.50		0.33	0.31		0.11	0.11	
v/c Ratio	0.02	0.87		0.86	0.54		0.49	0.95		0.04	0.17	
Control Delay	8.0	26.8		31.7	13.2		18.8	43.3		25.8	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.0	26.8		31.7	13.2		18.8	43.3		25.8	20.9	
LOS	A	C		C	B		B	D		C	C	
Approach Delay		26.7			18.7			32.2			21.8	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	1	204		40	119		77	160		3	7	
Queue Length 95th (ft)	6	#298		#76	173		95	#257		10	24	

Lanes, Volumes, Timings
26: Carrier Pkwy & Weighlock Dr

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1009			1108			1031			218	
Turn Bay Length (ft)	430			650						120		
Base Capacity (vph)	276	1316		466	1781		1013	654		233	230	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.87		0.86	0.54		0.49	0.92		0.03	0.14	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 64.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 25.3

Intersection LOS: C

Intersection Capacity Utilization 77.9%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 26: Carrier Pkwy & Weighlock Dr

			
10 s	29 s	13 s	13 s
			
9 s	30 s	26 s	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	30	25	425	30	285	5	1055	140	100	570	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	0		0	430		430	525		0
Storage Lanes	1		0	0		0	1		1	1		0
Taper Length (ft)	25		0	0		0	25		25	25		0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt		0.932			0.864				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	3433	1609	0	1770	3539	1538	1770	1848	0
Flt Permitted	0.345			0.529			0.217			0.105		
Satd. Flow (perm)	643	1736	0	1912	1609	0	404	3539	1538	196	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			164				151			4
Link Speed (mph)		40			45			45				45
Link Distance (ft)		348			436			1188				665
Travel Time (s)		5.9			6.6			18.0				10.1
Peak Hour Factor	0.77	0.77	0.77	0.63	0.63	0.63	0.93	0.93	0.93	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%
Adj. Flow (vph)	78	39	32	675	48	452	5	1134	151	122	695	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	71	0	675	500	0	5	1134	151	122	732	0
Turn Type	pm+pt			pm+pt			Perm		Prot	pm+pt		
Protected Phases	3	8		7	4			2	2	1	6	
Permitted Phases	8			4			2			6		
Detector Phase	3	8		7	4		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0	10.0	4.0	10.0	
Minimum Split (s)	11.0	11.0		8.0	11.0		17.0	17.0	17.0	11.0	17.0	
Total Split (s)	11.0	22.0	0.0	19.0	30.0	0.0	38.0	38.0	38.0	11.0	49.0	0.0
Total Split (%)	12.2%	24.4%	0.0%	21.1%	33.3%	0.0%	42.2%	42.2%	42.2%	12.2%	54.4%	0.0%
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		0.5	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0	7.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	
Act Effct Green (s)	15.6	13.1		33.7	22.2		31.2	31.2	31.2	42.2	42.2	
Actuated g/C Ratio	0.18	0.15		0.39	0.26		0.36	0.36	0.36	0.49	0.49	
v/c Ratio	0.46	0.25		0.65	0.94		0.03	0.89	0.23	0.73	0.81	
Control Delay	30.2	22.9		23.5	50.0		20.6	38.1	4.7	42.3	29.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	30.2	22.9		23.5	50.0		20.6	38.1	4.7	42.3	29.2	
LOS	C	C		C	D		C	D	A	D	C	
Approach Delay		26.7			34.7			34.1			31.1	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	28	19		141	196		2	323	0	38	352	
Queue Length 95th (ft)	49	45		121	168		10	#456	39	#84	438	

Lanes, Volumes, Timings
29: Court St Rd & Kinne St

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		268			356			1108			585	
Turn Bay Length (ft)	210						430		430	525		
Base Capacity (vph)	168	327		1033	548		145	1268	648	168	900	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
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	0.46	0.22		0.65	0.91		0.03	0.89	0.23	0.73	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 87

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 33.3

Intersection LOS: C

Intersection Capacity Utilization 86.0%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 29: Court St Rd & Kinne St



Lanes, Volumes, Timings
32: First St & Kinne St

Full Mitigation - Future Alternative 5 PM Peak Hour

2/18/2009

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	315	105	45	5	20	160	5	385	30	240	275	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	2		0	0		0	0		0	0		0
Taper Length (ft)	0		0	25		0	0		0	0		0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955				0.850		0.989			0.987	
Flt Protected	0.950				0.990			0.999			0.979	
Satd. Flow (prot)	3433	1779	0	0	1844	1583	0	3492	0	0	3420	0
Flt Permitted	0.727							0.999			0.979	
Satd. Flow (perm)	2627	1779	0	0	1863	1583	0	3492	0	0	3420	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				76		12			16	
Link Speed (mph)		30			30			35			45	
Link Distance (ft)		211			250			667			1111	
Travel Time (s)		4.8			5.7			13.0			16.8	
Peak Hour Factor	0.76	0.76	0.76	0.88	0.88	0.88	0.76	0.76	0.76	0.79	0.79	0.79
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Adj. Flow (vph)	414	138	59	6	23	182	7	507	39	304	348	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	414	197	0	0	29	182	0	553	0	0	715	0
Turn Type	pm+pt			Perm		pm+ov	Split			Split		
Protected Phases	7	4			8	6	2	2		6	6	
Permitted Phases	4			8		8						
Detector Phase	7	4		8	8	6	2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	9.0		9.0	9.0	9.0	9.0	9.0		9.0	9.0	
Total Split (s)	10.0	19.0	0.0	9.0	9.0	21.0	20.0	20.0	0.0	21.0	21.0	0.0
Total Split (%)	16.7%	31.7%	0.0%	15.0%	15.0%	35.0%	33.3%	33.3%	0.0%	35.0%	35.0%	0.0%
Yellow Time (s)	3.5	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None	None	Max	Max		None	None	
Act Effct Green (s)	11.5	10.5			4.0	18.3		15.1			14.9	
Actuated g/C Ratio	0.21	0.19			0.07	0.33		0.27			0.27	
v/c Ratio	0.63	0.55			0.21	0.32		0.58			0.77	
Control Delay	24.6	23.0			30.2	9.4		20.9			25.6	
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	
Total Delay	24.6	23.0			30.2	9.4		20.9			25.6	
LOS	C	C			C	A		C			C	
Approach Delay		24.1			12.3			20.9			25.6	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	65	50			10	27		83			111	
Queue Length 95th (ft)	84	82			31	56		111			150	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		131			170			587			1031	
Turn Bay Length (ft)												
Base Capacity (vph)	659	476			135	604		958			1003	
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	0.63	0.41			0.21	0.30		0.58			0.71	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 22.6

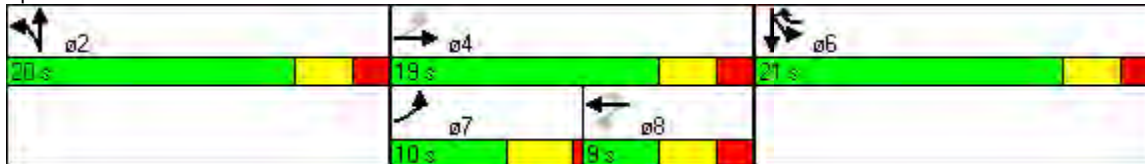
Intersection LOS: C

Intersection Capacity Utilization 56.1%

ICU Level of Service B

Analysis Period (min) 15

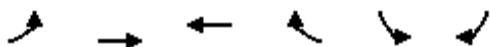
Splits and Phases: 32: First St & Kinne St



HCM Unsignalized Intersection Capacity Analysis Mitigation - Future Alternative 5 PM Peak Hour

22: Court St Rd & Deere Rd

2/18/2009



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Volume (veh/h)	30	265	170	15	25	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.84	0.84	0.89	0.89
Hourly flow rate (vph)	33	288	202	18	28	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	220				565	211
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				565	211
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	92
cM capacity (veh/h)	1349				475	824
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	321	220	96			
Volume Left	33	0	28			
Volume Right	0	18	67			
cSH	1349	1700	677			
Volume to Capacity	0.02	0.13	0.14			
Queue Length 95th (ft)	2	0	12			
Control Delay (s)	1.0	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay		2.2				
Intersection Capacity Utilization		40.5%		ICU Level of Service	A	
Analysis Period (min)		15				

Queuing and Blocking Report
Future Alternative 2 AM Peak Hour

3/11/2009

Intersection: 19: Existing Site Access (North) &

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	171	72	66
Average Queue (ft)	78	37	29
95th Queue (ft)	129	62	54
Link Distance (ft)	328		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Future Alternative 2 PM Peak Hour

3/11/2009

Intersection: 38: Existing Site Access (North) &

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	103	106	83
Average Queue (ft)	38	63	43
95th Queue (ft)	67	88	75
Link Distance (ft)	328		
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 38: Existing Site Access (North) &

Movement	WB	NB	SB
Directions Served	LR	LR	LR
Maximum Queue (ft)	124	86	55
Average Queue (ft)	67	34	25
95th Queue (ft)	110	63	48
Link Distance (ft)	354		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Future Alternative 4 PM Peak Hour

3/11/2009

Intersection: 38: Existing Site Access (North) &

Movement	WB	NB	SB
Directions Served	LR	LR	LR
Maximum Queue (ft)	57	75	73
Average Queue (ft)	37	55	39
95th Queue (ft)	54	80	66
Link Distance (ft)	354		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Future Alternative 5 AM Peak Hour

3/11/2009

Intersection: 8: Existing Site Access (North) &

Movement	WB	NB	SB
Directions Served	LR	LR	LR
Maximum Queue (ft)	125	62	44
Average Queue (ft)	50	29	26
95th Queue (ft)	91	51	50
Link Distance (ft)	430		
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Future Alternative 5 PM Peak Hour

3/11/2009

Intersection: 38: Existing Site Access (North) &

Movement	WB	NB	SB
Directions Served	LR	LR	LR
Maximum Queue (ft)	54	79	66
Average Queue (ft)	33	37	35
95th Queue (ft)	44	62	54
Link Distance (ft)	430		
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			