Traffic Impact Analysis Update

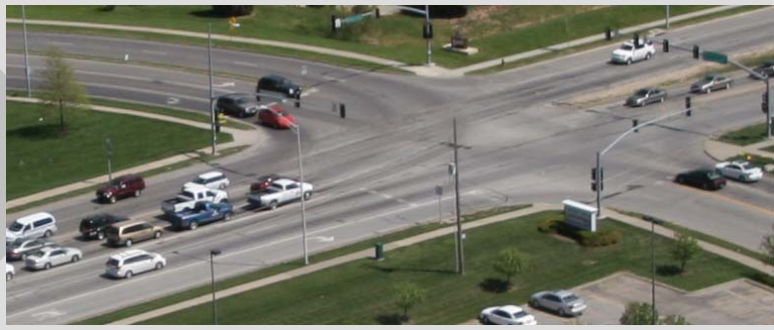
Route 92 and I-35 Commercial Development

Kearney, Missouri

Prepared for:

Star Development Corp.

July 2012



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July 9, 2012

Mr. Tim Harris
President
Star Development Corp.
244 W. Mill Street
Liberty, Missouri 64068

Re: Traffic Impact Analysis Update
Route 92 and I-35 Commercial Development
Kearney, Missouri

Dear Mr. Harris:

In response to your request and authorization, TranSystems Corporation has completed a traffic impact study for the proposed commercial development located on the southeast corner of the Route 92 and I-35 interchange. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

Included in this study is a discussion of the anticipated impact of the proposed development on the adjacent street network and identified improvements to mitigate deficiencies for the following development conditions:

- Existing Conditions
- Existing plus Development Conditions
- Future Year 2030 Conditions

We trust that the enclosed information proves beneficial to you, the City of Kearney, and MoDOT in this phase of the development process. We appreciate the opportunity to be of service to you and will be available to review the study with you at your convenience.

Sincerely,
TranSystems

By: _____
Dustin L. Elliott, PE, PTOE

DLE:de:P101120220

Introduction

TranSystems has completed this traffic impact analysis (TIA) update for the proposed 92 Highway and I-35 Commercial Development located in the southeast quadrant of the I-35 and Route 92 interchange in Kearney, Missouri. This study is an update to the previous TIA performed for the development that is dated November 5, 2009. The development plan for this study is generally consistent with the previous plan; however, there are some changes to the proposed access for the site. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The location of the project site relative to the major streets in the area is shown on ***Figure A-1*** in ***Appendix A***.

Included in this study is a discussion of the anticipated impact of the proposed development on the existing and future transportation system. In addition to a description of the proposed development and the surrounding transportation infrastructure, this study includes:

- the amount of traffic estimated to be generated by the development;
- the projected distribution patterns of the development traffic onto the surrounding transportation system;
- an analysis of existing intersection operating conditions;
- an analysis of the intersection operating conditions with the addition of the proposed development;
- an analysis of future intersection operating conditions; and
- an identification of improvements to the surrounding transportation system to mitigate the potential impact of the proposed development, if necessary.

Proposed Development Plan

The proposed development site is located on the south side of Route 92 between I-35 and Regency Drive in Kearney, Missouri. The proposed development consists of a retail development of approximately 163,170 square feet. Access to the site will be provided via Regency Drive and two limited-access driveways on Route 92. The West Site Drive is proposed to align with the Shell gas station driveway (Shell Drive), located approximately 450 feet east of the northbound I-35 Ramps intersection on Route 92. The East Site Drive is proposed to be located approximately 260 feet east of the West Site Drive, or approximately 450 feet west of Platte Clay Way / Regency Drive. A copy of the site plan used for this study is included in ***Figure A-2*** and was dated January 2012.

Study Area

To assess the impacts of the proposed development, several intersections were identified for study during the A.M. and P.M. peak hours. The intersections are located in the immediate area of the site and include:

- I-35 Ramps and Route 92 (two intersections);
- McDonald's Drive and Route 92;
- Shell Drive / West Site Drive and Route 92;
- Platte Clay Way / Regency Drive and Route 92; and
- Remaining Site Driveways.

Traffic Counts

Intersection turning-movement traffic counts were collected at the existing study intersections during the A.M. and P.M. commuter peak periods on June 19 and 20, 2012, from 7:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M. In general, the peak hours for all study intersections were determined to be

from 7:00 A.M. to 8:00 A.M. and from 4:45 P.M. to 5:45 P.M. The existing lane configurations, traffic control devices, and peak hour traffic volumes are shown on ***Figures A-3*** through ***A-5***.

Street Network

Route 92 serves as the major east/west arterial in the City of Kearney, and adjacent to the proposed development it consists of two through lanes in each direction and a center two-way left-turn lane. The posted speed is 35 mph. Route 92 transitions to a two-lane facility as it passes under I-35 to the west. Regency Drive is a collector roadway serving predominately residential land uses south of Route 92.

With the proposed development, Regency Drive will be realigned by extending the main portion of roadway through the proposed development. The intent is for this roadway to be extended further south in the future as additional development occurs. The southern existing portion of Regency Drive will "tee" into the new extension approximately 475 feet south of Route 92.

There is a MoDOT project underway to improve Route 92 from Nation Road to approximately 300 feet east of the northbound I-35 Ramp intersection. The improvements are proposed to include adding a third westbound lane under the I-35 bridges to provide two continuous through lanes in each direction on Route 92. The project also includes several intersection and access management related improvements to the west of I-35 through Nations Road, including the installation of roundabouts at the Route 92 intersections with Nations Road and Sam Barr Drive. The project is expected to start construction in 2013 and be completed by the end of 2014. For the purposes of this study, the interchange improvements were considered in the Future Year 2030 Conditions analysis.

Surrounding Land Use

The proposed development is bordered by I-35 on the west, commercial businesses along the north side of Route 92, and residential uses to the south and east.

Analysis

The scope of analysis for the assessment of the proposed development's impact on the surrounding transportation system in based in large part on the recommended practices of the Institute of Transportation Engineers (ITE), as outlined in their Traffic Engineering Handbook. ITE is a nationally-recognized organization of transportation professionals with members from both private and public sectors.

The analysis of the proposed development's impact includes:

- Trip Generation estimates;
- Trip Distribution assumptions; and
- Operational Analysis of the surrounding transportation system for various development assumptions (including existing conditions).

Each of these analysis methodologies and findings are described in more detail in the subsequent sections of the report.

Trip Generation

The vehicle trips generated by the proposed development were estimated using the Institute of Transportation Engineers' (ITE) Trip Generation, 8th Edition. The estimated daily, A.M. Peak Hour and P.M. Peak Hour traffic volumes associated with this development are shown in ***Table 1***.

Because the site includes retail and service type uses, some of the traffic expected to use the site will include drivers that already pass by the site on the adjacent street system (Route 92) during the peak hours. These drivers would not make a special trip from home or work to the site, but would rather stop by on their way to someplace else. An example would be someone on their way to work in the morning that is driving along Route 92 and decides to stop into the site to fill up with gas before continuing on to work. This traffic is referred to as pass-by trips. The ITE *Trip Generation Handbook* provides estimates for pass by traffic based on the land use type. For shopping centers (ITE Code 820), ITE estimates that 34% of the trips during the P.M. peak hour are pass-by trips. These are treated differently than the purposeful trips to and from the site, which are referred to as new external trips. The net increase of external trips is calculated by subtracting the pass-by trips from the total external trips.

Table 1
Trip Generation

Land Use	Intensity	ITE Code	Average Weekday	A.M. Peak Hour			P.M. Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	163,170 sf	820	9,340	206	125	81	883	433	450
		Pass-By Trips (34%)	*3,180*	*0*	*0*	*0*	*300*	*150*	*150*
		Net New Trips	***6,160***	***206***	***125***	***81***	***583***	***283***	***300***

The proposed development is anticipated to generate approximately 6,160 daily net new trips, with 206 trips in the A.M. peak hour and 583 trips in the P.M. peak hour.

Trip Distribution

The estimated peak hour trips generated by the proposed development were distributed onto the street system based on the trip distributions summarized below. ***Table 2*** illustrates the general distributions used in this study, which were derived based on existing travel patterns, site geometry, and the anticipated locations of site users. The detailed distribution patterns through the study intersections are documented in ***Appendix B***.

Table 2
Trip Distribution

Direction To/From	Percentage
West on Route 92	25%
North on I-29	10%
South on I-29	20%
North on Platte Clay Way	10%
East on Route 92	25%
South on Regency Drive	10%
Total	**100%**

Traffic Operation Assessment

The study intersections were evaluated based on the methodologies outlined in the Highway Capacity Manual (HCM), 2010 Edition, published by the Transportation Research Board. The operating conditions at an intersection are graded by the "level of service" experienced by drivers. Level of service (LOS) describes the quality of traffic operating conditions and is rated from "A" to "F". LOS A represents the most desirable condition with free-flow movement of traffic with minimal delays. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate

grades of B, C, D, and E reflect incremental increases in the average delay per stopped vehicle. Delay is measured in seconds per vehicle. ***Table 3*** shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Table 3
Intersection Level of Service Delay Thresholds

Level of Service (LOS)	Signalized	Unsignalized
A	< 10 Seconds	< 10 Seconds
B	< 20 Seconds	< 15 Seconds
C	< 35 Seconds	< 25 Seconds
D	< 55 Seconds	< 35 Seconds
E	< 80 Seconds	< 50 Seconds
F	≥ 80 Seconds	≥ 50 Seconds

While one of the primary measurements of traffic operations, LOS, applies to both signalized and unsignalized intersections, there are significant differences between how these intersections operate and how they are evaluated. LOS for signalized intersections reflects the operation of the intersection as a whole. While the individual movements may operate with varying LOS ratings, that is largely a function of the signal timings and how the intersection is operating relative to other signals in the vicinity. As an example, in coordinated system of multiple signalized intersections, some minor side-street approaches may have LOS ratings of D, E or even F. This can be the result of the length of time provided to the major movements and do not reflect a condition where the intersection is operating over capacity or is judged to be operating poorly.

Unsignalized intersections, in contrast, are evaluated based on the movement grouping which are required to yield to other traffic. Typically, this is the left-turns off of the major street and the side-street approaches for two-way stop-controlled intersections. Lower LOS ratings (D, E and F) do not, in themselves, indicate significant difficulties or the need for additional improvements. Many times there are convenient alternative paths to avoid the longer delays. Other times, the volumes on the unsignalized approaches are relative minor when compared to the major street traffic.

The decision to install a traffic signal, which is often considered when lower LOS ratings are projected, should be based on engineering studies and the warrants for traffic signal installation as outlined in the most current edition of the Manual on Uniform Traffic Control Devices, published by the Federal Highway Administration. Signals are typically not recommended in locations where there are convenient alternative paths, or the installation of a traffic signal would have negative impacts on the surrounding transportation system. For instance, if the new signalized intersection is located too close to existing traffic signals it may not be recommended despite meeting the minimum warrants.

In addition to delay (and the corresponding Level of Service), a secondary means of evaluation is often utilized to assess the overall capacity of the intersection or unsignalized movement. This evaluation is a ratio of volume to capacity (*v/c*) that reflects, regardless of delay, the ability to accommodate the existing or projected traffic volumes over the course of a peak hour. A *v/c* ratio of 1.00 reflects the capacity of the intersection or movement.

Lastly, traffic queues are evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues are analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

The LOS rating deemed acceptable varies by community, facility type and traffic control device. In communities similar to Kearney, a LOS C for signalized intersections is often found to be acceptable. As communities expand and grow, oftentimes these LOS thresholds for signalized intersections increase to LOS D, when providing a LOS C becomes impractical. However, at unsignalized intersections LOS D, E and above are often accepted for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection or the location has been deemed undesirable for signalization for other reasons, e.g. the close proximity of an existing traffic signal or the presence of a convenient alternative path.

The Synchro software package was used to evaluate signalized and stop controlled intersections. Documented results are based on HCM methodology and have been included in ***Appendix C***.

Existing Conditions

The results of the intersection analysis for the existing conditions during A.M. and P.M. peak hour are summarized in **Table 4**. The study intersections were evaluated with the lane configurations shown on **Figure A-3.** The existing traffic volumes are shown on **Figures A-4** and **A-5. Appendix C** contains the capacity analyses output files from Synchro.

Table 4
Intersection Operational Analysis
Existing Conditions

Intersection	A.M. Peak Hour			P.M. Peak Hour		
Movement	LOS[1]	Delay[2]	v/c[3]	LOS[1]	Delay[2]	v/c[3]
Route 92 and Southbound I-35 Ramps						
All Movements (Signalized Intersection)	*B*	*16.5*	*0.40*	*B*	*17.5*	*0.47*
Route 92 and Northbound I-35 Ramps						
All Movements (Signalized Intersection)	*B*	*10.6*	*0.42*	*B*	*17.3*	*0.59*
Route 92 and McDonald's Drive						
Eastbound Left-Turn	*A*	*9.90*	*0.09*	*A*	*9.5*	*0.05*
Southbound Left-Turn	*D*	*27.5*	*0.11*	***F***	***>120***	***0.88***
Southbound Right-Turn	*B*	*10.3*	*0.14*	*B*	*10.9*	*0.18*
Route 92 and Shell Drive						
Eastbound Left-Turn	*A*	*9.4*	*0.00*	*A*	*9.2*	*0.01*
Southbound Left-Turn	*C*	*21.0*	*0.08*	***E***	***43.0***	***0.24***
Southbound Right-Turn	*A*	*9.5*	*0.03*	*A*	*9.8*	*0.03*
Route 92 and Platte Clay Way / Regency Drive						
All Movements (Signalized Intersection)	*B*	*17.4*	*0.42*	*B*	*18.5*	*0.59*

1 – Level of Service
2 – Delay in seconds per vehicle
3 – Volume/Capacity Ratio

The study intersections are all projected to operate at acceptable levels of service. While the unsignalized left-turns operate with higher delays, this is not uncommon for side-street movements onto a major roadway during peak travel periods.

Existing plus Development Conditions

Intersection analyses were conducted to determine the impact that the addition of the proposed development traffic would have on the adjacent street system. The results for the intersection analyses of existing plus proposed development conditions have been summarized in ***Table 5***. The study intersections were evaluated with the lane configurations, traffic control devices, and traffic volumes shown on **Figures A-6** through **A-8. Appendix C** contains the capacity analysis output files from Synchro.

The West Site Drive was assessed as a left-in/right-in/right-out driveway and the East Site Drive was assessed as a right-in/right-out driveway. Left-turn traffic in and out of the Shell Drive was rerouted to the McDonald's Drive for this analysis scenario in consideration of the access control measures that will ultimately be required on Route 92. According to the MoDOT *Engineering Policy Guide*, the existing plus development traffic volumes suggests the need for right-turn lanes to be installed on Route 92 at both the East Site Drive and West Site Drive. These lanes were considered in the analysis. The length of these turn lanes should be no less than 150 feet plus appropriate taper. The remaining lane configurations match what was shown on the proposed site plan.

Table 5
Intersection Operational Analysis
Existing plus Development Conditions

Intersection	**A.M. Peak Hour**			**P.M. Peak Hour**		
Movement	**LOS[1]**	**Delay[2]**	**v/c[3]**	**LOS[1]**	**Delay[2]**	**v/c[3]**
Route 92 and Southbound I-35 Ramps						
All Movements (Signalized Intersection)	*B*	*16.9*	*0.43*	*B*	*17.3*	*0.55*
Route 92 and Northbound I-35 Ramps						
All Movements (Signalized Intersection)	*B*	*11.5*	*0.44*	*B*	*19.6*	*0.66*
Route 92 and McDonald's Drive						
Eastbound Left-Turn	*B*	*10.1*	*0.10*	*B*	*10.4*	*0.06*
Southbound Left-Turn	***E***	***37.1***	***0.26***	***F***	***>120***	***1.83***
Southbound Right-Turn	*B*	*10.5*	*0.14*	*B*	*12.2*	*0.21*
Route 92 and Shell Drive/West Site Drive						
Westbound Left-Turn	*A*	*8.7*	*0.03*	*C*	*16.5*	*0.28*
Northbound Right-Turn	*A*	*9.9*	*0.02*	*C*	*18.8*	*0.37*
Southbound Right-Turn	*A*	*9.9*	*0.03*	*B*	*10.6*	*0.04*
Route 92 and Platte Clay Way						
All Movements (Signalized Intersection)	*B*	*18.3*	*0.41*	*C*	*23.8*	*0.71*
Development Drive and Regency Drive						
Westbound Left-Turn	*A*	*7.5*	*0.08*	*A*	*8.7*	*0.22*
Northbound Left-Turn	*B*	*10.9*	*0.02*	*C*	*22.2*	*0.13*
Northbound Right-Turn	*A*	*9.5*	*0.20*	*B*	*11.7*	*0.27*
Route 92 and East Site Drive						
Northbound Right-turn	*A*	*9.9*	*0.01*	*C*	*15.4*	*0.09*
Development Drive and West Site Drive						
All Movements (Roundabout)	*A*	*3.9*	*0.08*	*A*	*6.6*	*0.34*

1 – Level of Service
2 – Delay in seconds per vehicle
3 – Volume/Capacity Ratio

As with the existing conditions, the unsignalized left-turn movement from the McDonalds Drive onto Route 92 is expected to experience longer delays than is desirable. It would be desirable to have access to Platte Clay Way somewhere north of Route 92 so that drivers headed east could have access to a traffic signal.

In summary, the following improvements were identified to mitigate the impact of the proposed development on the existing transportation system:

- Construct a right-turn lane on eastbound Route 92 at the West Site Drive, providing a minimum storage length of 150 feet plus taper.
- Construct a right-turn lane on eastbound Route 92 at the East Site Drive, providing a minimum storage length of 150 feet plus taper.

- Construction of a third northbound lane on Regency Drive at Route 92, providing for dual left-turn lanes and a shared through/right-turn lane. The two left-turn lanes should provide a minimum 200 feet of storage length each and an appropriate taper.

Future Year 2030 Conditions

Intersection analyses were conducted to determine the impact that additional future traffic growth could have on the street network within the study area. Traffic growth estimates were developed using the Kearney Travel Demand Model developed by Olsson Associates in 2011. The model growth was calculated by subtracting the base year model outputs from the future year 2030 estimates. This growth was then further adjusted to reflect the change is traffic from the base year to 2012. The resulting 2012 to 2030 traffic growth was then added to the existing plus development traffic volumes. The results for the intersection analyses of future year 2030 conditions have been summarized in ***Table 6***. As previously mentioned, the proposed MoDOT improvement project on Route 92 was included in this analysis. Additionally, the traffic volumes on eastbound Route 92 at Regency Drive appear to meet the warrant criteria for the addition of an exclusive right-turn lane. This turn lane was considered in the analysis and should be planned to include a minimum storage length of 200 feet plus an appropriate taper.

The study intersections were evaluated with the lane configurations, traffic control devices, and traffic volumes shown on **Figures A-9** through **A-11**. **Appendix C** contains the capacity analysis output files from Synchro.

Table 6
Intersection Operational Analysis
Future Conditions

Intersection	A.M. Peak Hour			P.M. Peak Hour		
Movement	LOS[1]	Delay[2]	v/c[3]	LOS[1]	Delay[2]	v/c[3]
Route 92 and Southbound I-35 Ramps						
All Movements (Signalized Intersection)	*B*	*17.9*	*0.55*	*B*	*16.7*	*0.69*
Route 92 and Northbound I-35 Ramps						
All Movements (Signalized Intersection)	*B*	*15.2*	*0.50*	*C*	*28.0*	*0.84*
Route 92 and McDonald's Drive						
Eastbound Left-Turn	*B*	*10.8*	*0.11*	*B*	*13.7*	*0.10*
Southbound Left-Turn	***D***	***31.6***	***0.22***	***F***	***>120***	***1.80***
Southbound Right-Turn	*B*	*10.9*	*0.15*	*B*	*12.3*	*0.21*
Route 92 and Shell Drive/West Site Drive						
Westbound Left-Turn	*A*	*10.0*	*0.04*	*C*	*18.3*	*0.30*
Northbound Right-Turn	*B*	*10.1*	*0.02*	*B*	*14.1*	*0.28*
Southbound Right-Turn	*A*	*9.9*	*0.03*	*B*	*10.8*	*0.04*
Route 92 and Platte Clay Way						
All Movements (Signalized Intersection)	*B*	*19.1*	*0.49*	*C*	*29.4*	*0.74*
Development Drive and Regency Drive						
Westbound Left-Turn	*A*	*7.8*	*0.13*	*A*	*9.5*	*0.31*
Northbound Left-Turn	*B*	*14.0*	*0.03*	*D*	*39.8*	*0.23*
Northbound Right-Turn	*B*	*10.5*	*0.29*	*B*	*14.4*	*0.43*
Route 92 and East Site Drive						
Northbound Right-turn	*B*	*10.4*	*0.01*	*B*	*13.3*	*0.07*
Development Drive and West Site Drive						
All Movements (Roundabout)	*A*	*3.9*	*0.08*	*A*	*6.6*	*0.34*

1 – Level of Service
2 – Delay in seconds per vehicle
3 – Volume/Capacity Ratio

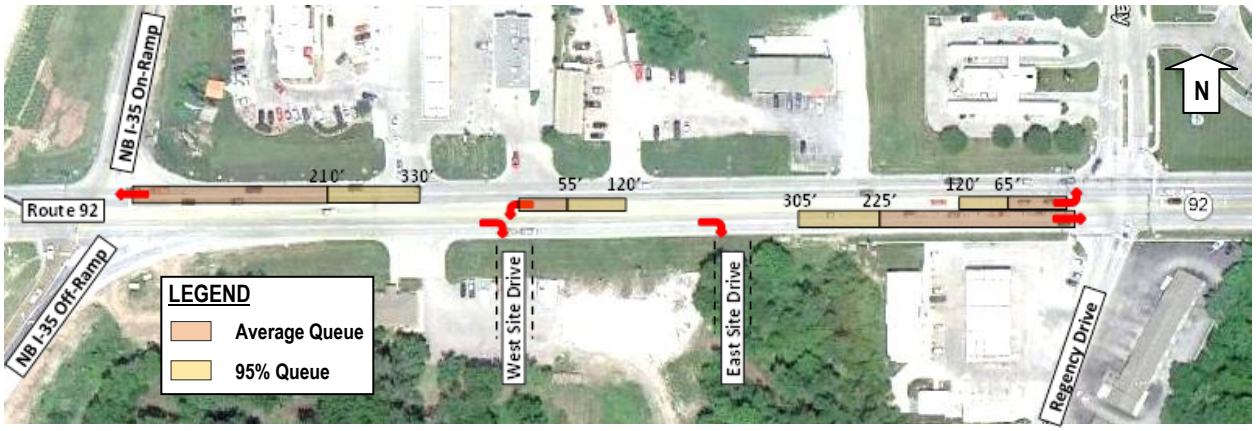
The unsignalized left-turns onto Route 92 from the McDonald's Drive are expected to continue to experience undesirable delays. Otherwise, the identified improvements are expected to adequately accommodate the projected future traffic conditions.

Proposed Access Discussion

MoDOT access management guidelines presented in Section 940 of the *Engineering Policy Guide* indicate that the ideal spacing between an interchange ramp intersection and the first limited-access intersection is 750 feet. The West Site Drive of the development is proposed as a left-in / right-in / right-out (LIRIRO) driveway to be located approximately 450 feet east of the northbound I-35 ramps. Although this is less than ideal, the developer proposes to build right-turn lanes on Route 92 at both entrances to minimize the impacts to eastbound through traffic. The turn lanes would provide a place for right-turning traffic to slow down outside of the through lanes. In addition, the proposed location is approximately 80 feet farther east than the existing full access driveway for the property that is aligned with the McDonald's restaurant driveway on the north side of Route 92.

The analyses of this study suggest that the proposed plan of providing LIRIRO access at the West Site Drive and RIRO access at the East Site Drive is not expected to have significant adverse impacts to the corridor based on future projected traffic conditions. As shown in ***Figure 2***, the proposed left-in opening at the West Site Drive is expected to remain outside of the areas of queues for adjacent intersections under the worst case projected 2030 conditions. The analysis results indicate that westbound left-turn queues on Route 92 at the West Site Drive could be contained within a turn lane that provides approximately 125 feet in of storage length.

Figure 2 - Projected Worst Case Queues for Future 2030 Conditions

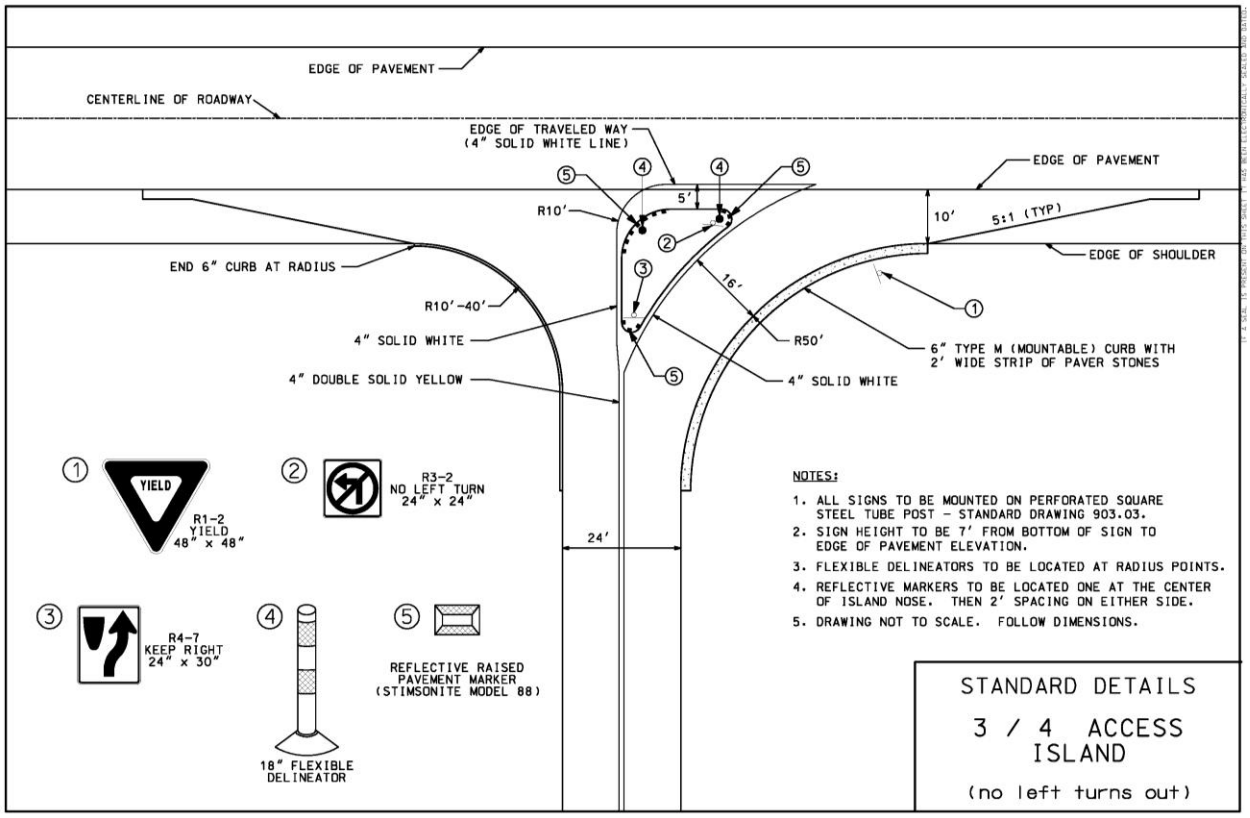


Route 92 does not currently have a raised center median; however, current design practices suggest there is a need to manage access along arterial roadways. Ideally, full-access driveways and intersections would be located at a minimum one-quarter mile apart from each other. This is roughly the distance available between the existing northbound I-35 ramp intersection and Platte Clay Way / Regency Drive. Therefore, based on current design practices, all driveways and intersections between these two established signalized intersections should have limited access. Converting a roadway with no access control to a controlled facility can be very difficult to accomplish in areas that have established development such as along Route 92 in Kearney.

There are a couple of approaches that can be taken to limit the turning movements into and out of the proposed development. One option would include installing raised center medians on Route 92 across the proposed driveways. This measure would effectively limit access to the proposed development site, but could also have potential impacts to the access of existing properties along the north side of Route 92, which do not currently have other means of access available to them.

Another option would be to provide raised "pork chop" islands on the driveways at the intersections with Route 92. Raised "pork chop" islands can be effective at deterring some drivers, but experience has shown their overall effectiveness to be limited. ***Figure 1*** illustrates a MoDOT standard detail for a LIRIRO access driveway as an example of how this option could be accomplished.

Figure 1 - MoDOT LIRIRO Design Layout



The developer understands the need for and is in support of access restrictions on Route 92 at their driveways. However, they prefer a plan that would not have significant adverse impact neighboring properties. The developer would like to work with MoDOT and the City to develop a solution that best fits the interests and needs of all parties.

Summary

This study documents the transportation impact of the proposed 92 Highway and I-35 Commercial Development for the City of Kearney, Missouri.. Included in this report is a review of the anticipated impact of the proposed development on the existing and future transportation system, specifically:

- the amount of traffic estimated to be generated by the development;
- the projected distribution patterns of the development traffic onto the surrounding transportation system;
- an analysis of existing intersection operating conditions;

- an analysis of the intersection operating conditions with the addition of the proposed development;
- an analysis of future intersection operating conditions; and
- an identification of improvements to the surrounding transportation system to mitigate the potential impact of the proposed development.

The proposed development is anticipated to generate approximately 6,160 daily net new trips, with 206 trips in the A.M. peak hour and 583 trips in the P.M. peak hour. The following improvements are recommended to mitigate the impact of the proposed development on the existing transportation system:

- Construct a right-turn lane on eastbound Route 92 at the West Site Drive, providing a minimum storage length of 150 feet plus taper.
- Construct a right-turn lane on eastbound Route 92 at the East Site Drive, providing a minimum storage length of 150 feet plus taper.
- Construction of a third northbound lane on Regency Drive at Route 92, providing for dual left-turn lanes and a shared through/right-turn lane. The two left-turn lanes should provide a minimum 200 feet of storage length each and an appropriate taper.

The proposed site driveways on Route 92, an arterial roadway, should have limited access based on current design practices. The analyses of this study suggest that the proposed plan of providing LIRIRO access at the West Site Drive and RIRO access at the East Site Drive is not expected to have significant adverse impacts to the corridor based on future projected traffic conditions. The analysis results indicate that westbound left-turn queues on Route 92 at the West Site Drive could be contained within a turn lane that is approximately 125 feet in length.

There are a couple of approaches that can be taken to limit the turning movements into and out of the proposed site driveways on Route 92. One option would include installing raised center medians on Route 92. This measure would effectively limit access to the proposed development site, but could also have potential impacts to the access of existing properties along the north side of Route 92, which do not currently have other means of access available to them. Another option would be to provide raised "pork chop" islands on the driveways at the intersections with Route 92. Raised "pork chop" islands can be effective at deterring some drivers, but experience has shown their overall effectiveness to be limited.

The developer understands the need for and is in support of access restrictions on Route 92 at their driveways. However, they prefer a plan that would not have significant adverse impact neighboring properties. The developer would like to work with MoDOT and the City to develop a solution that best fits the interests and needs of all parties.

Appendix A - Figures

Figure A-1 Location Map
Figure A-2 Site Plan
Figure A-3 Existing - Lane Configurations
Figure A-4 Existing - A.M. Peak Hour Traffic Volumes
Figure A-5 Existing - P.M. Peak Hour Traffic Volumes
Figure A-6 Existing plus Development Conditions - Lane Configurations
Figure A-7 Existing plus Development Conditions - A.M. Peak Hour Traffic Volumes
Figure A-8 Existing plus Development Conditions - P.M. Peak Hour Traffic Volumes
Figure A-9 Future Year 2030 Conditions - Lane Configurations
Figure A-10 Future Year 2030 Conditions - A.M. Peak Hour Traffic Volumes
Figure A-11 Future Year 2030 Conditions - P.M. Peak Hour Traffic Volumes

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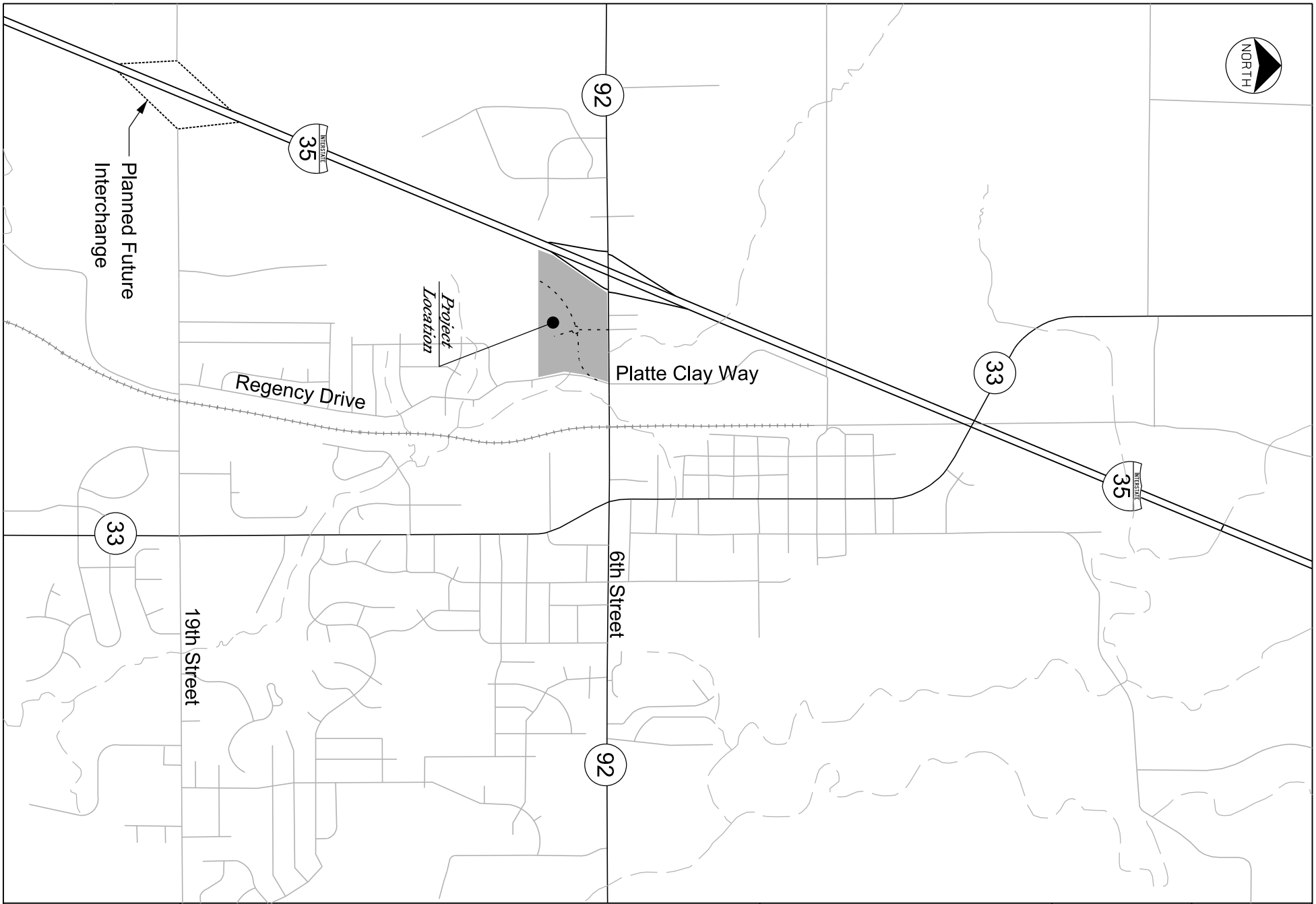

TranSystems	LOCATION MAP	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-1

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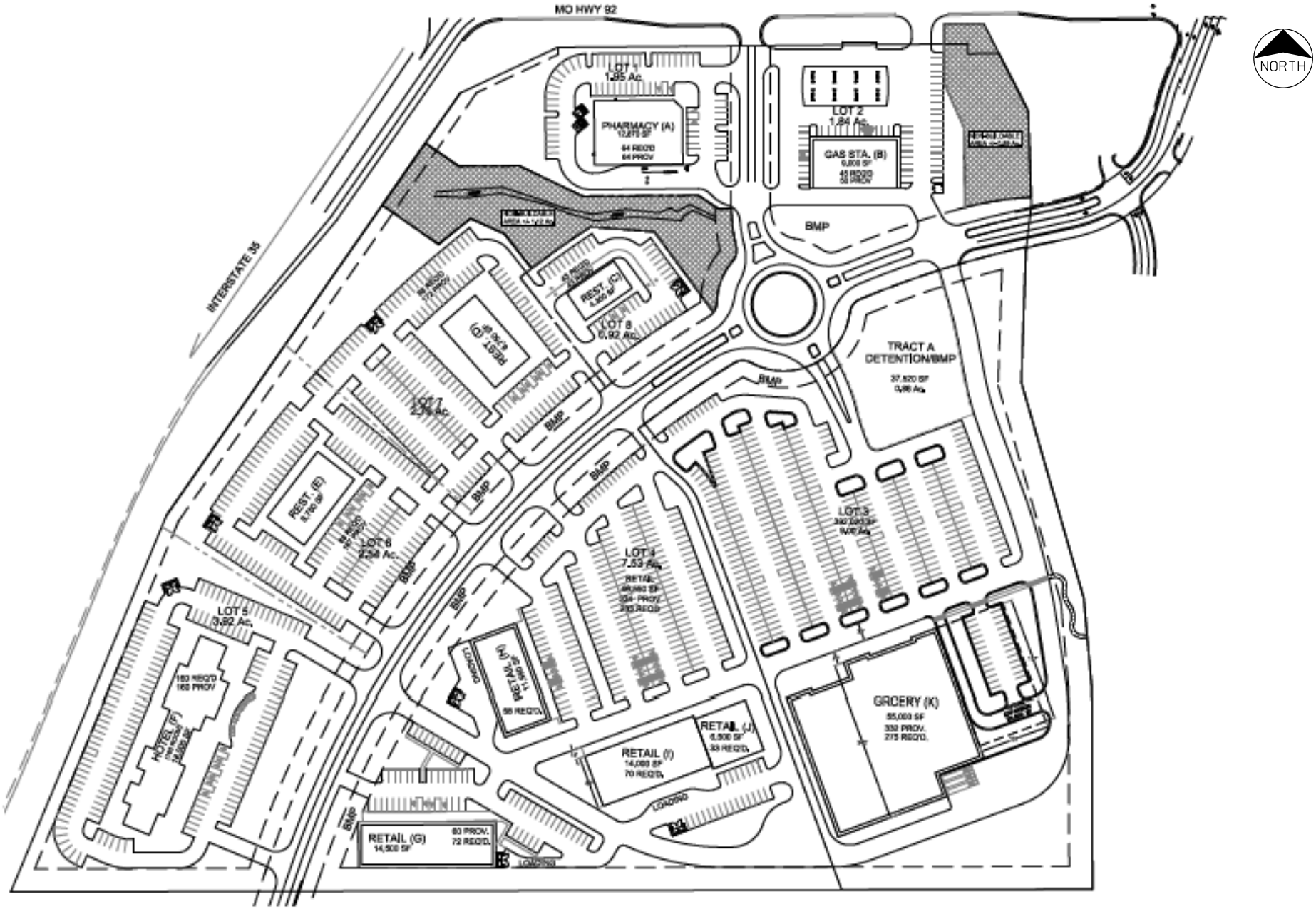

TranSystems	SITE PLAN	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-2

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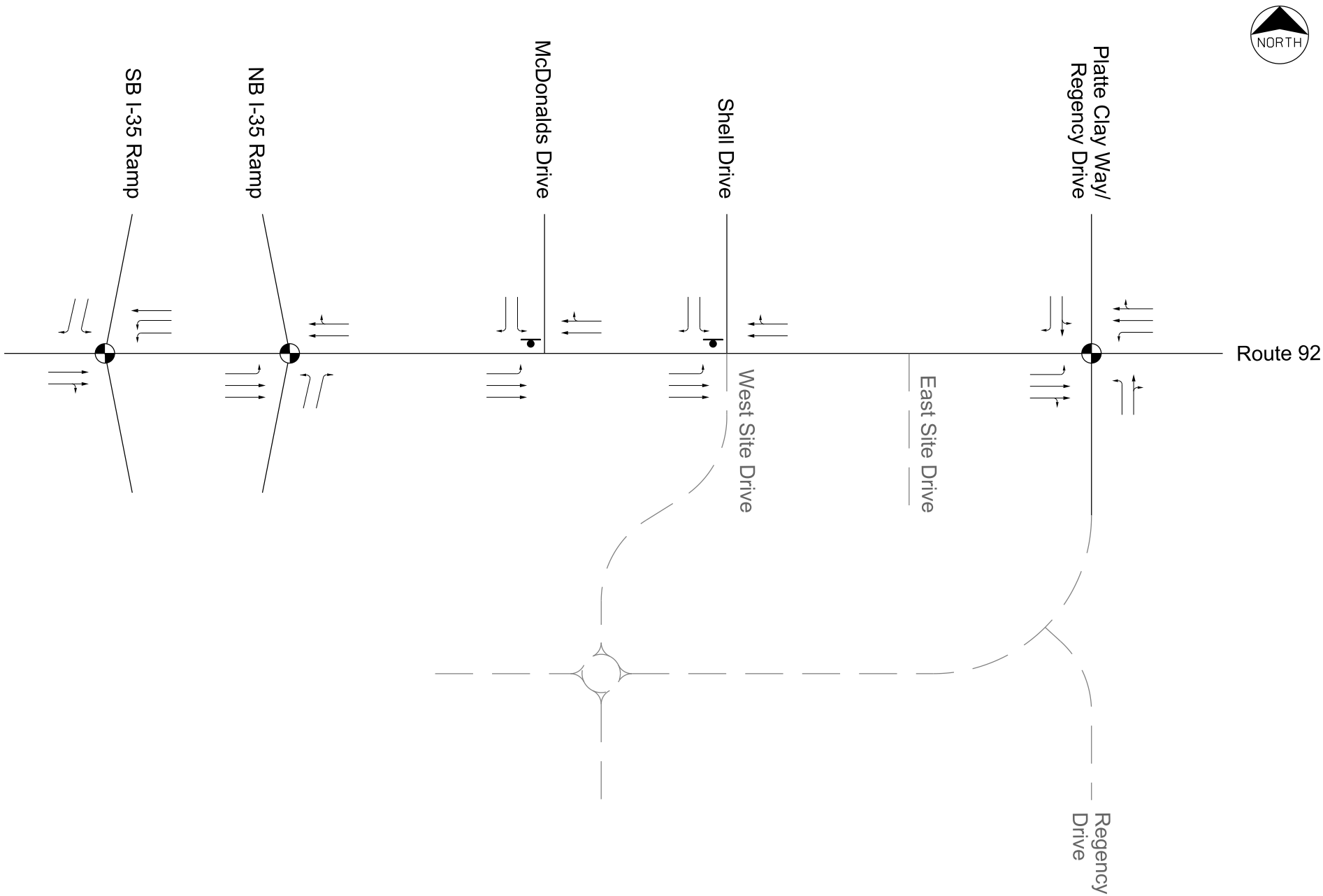

TranSystems	EXISTING LANE CONFIGURATIONS	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-3

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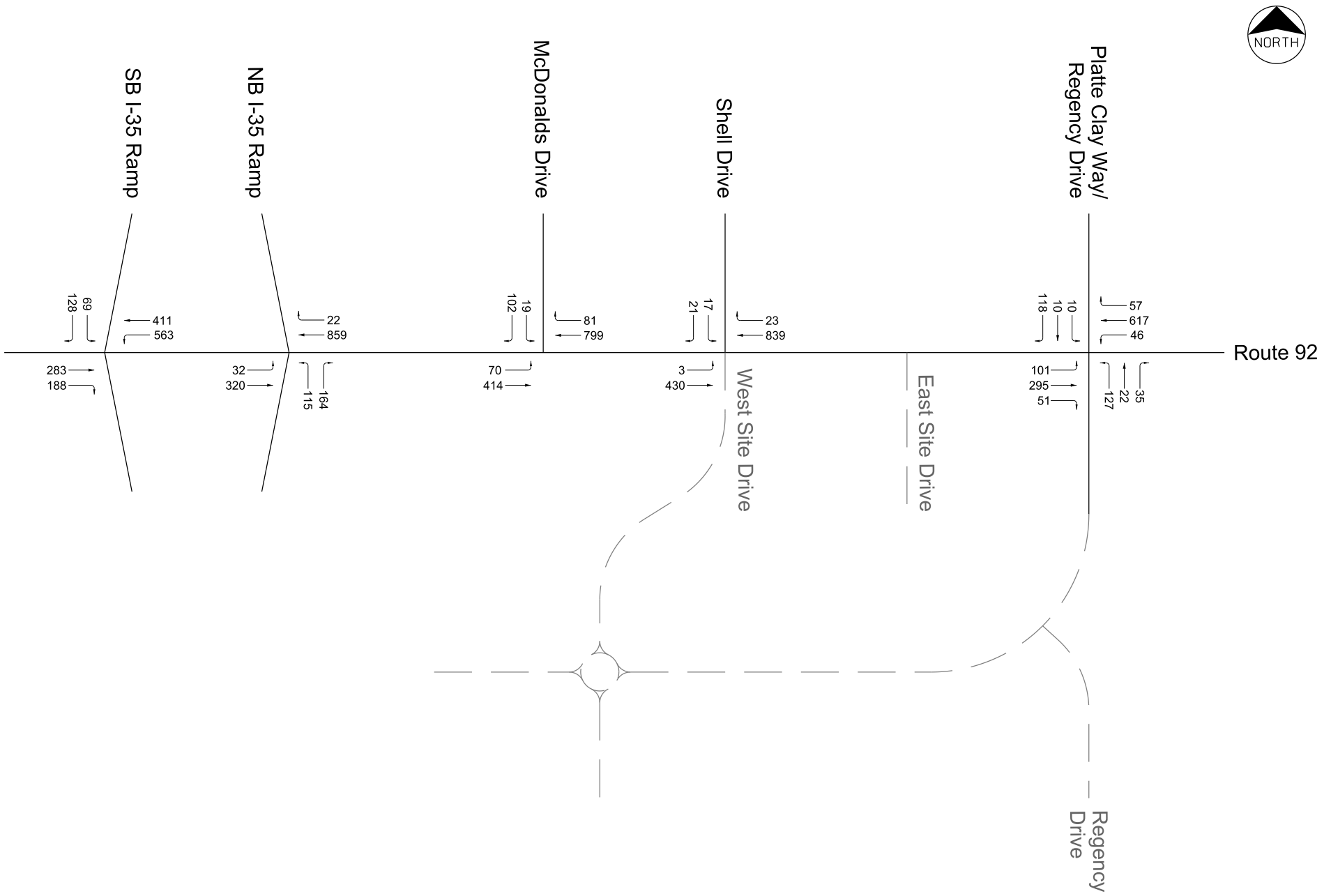

TranSystems	EXISTING A.M. PEAK HOUR TRAFFIC VOLUMES	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-4

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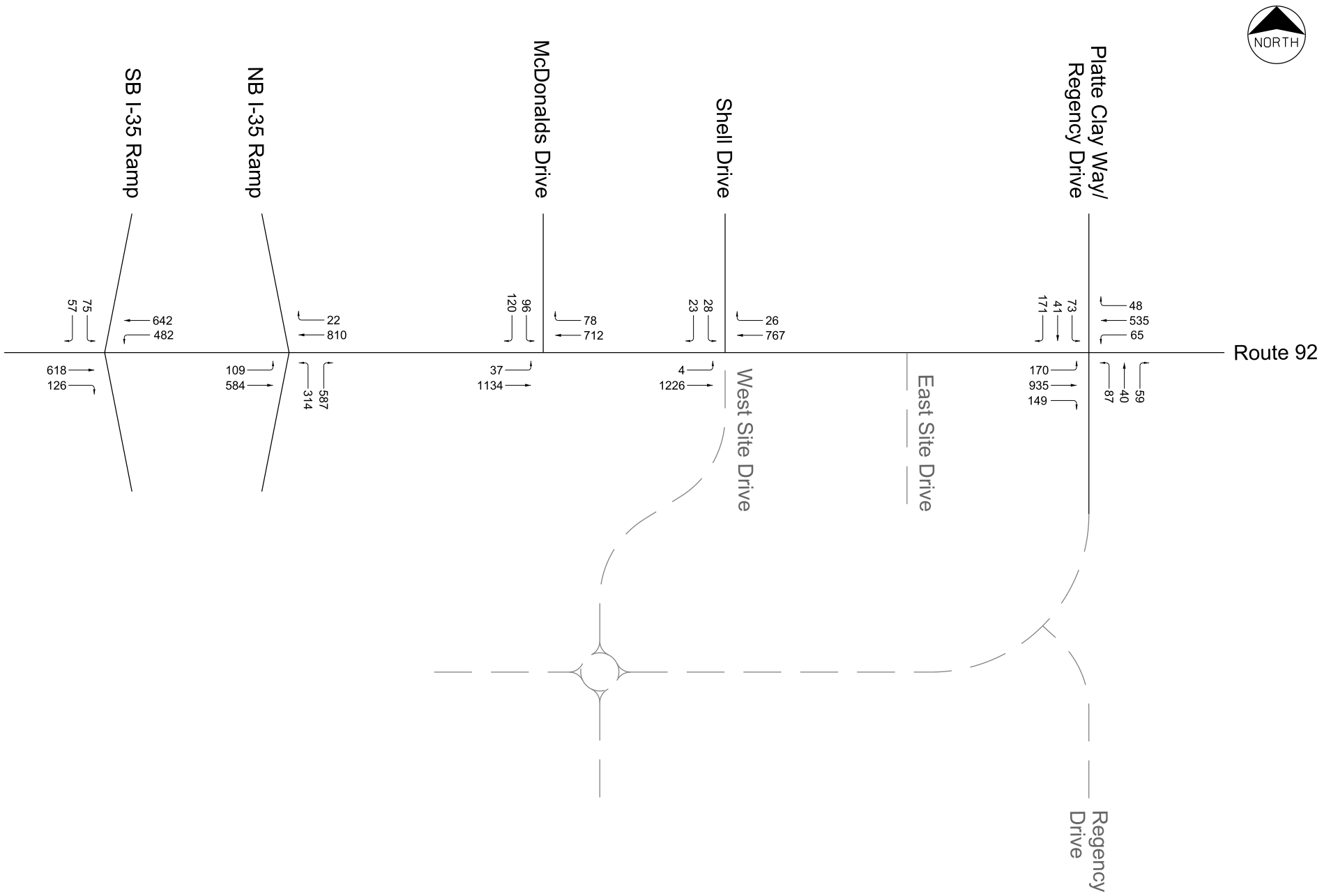

TranSystems	EXISTING P.M. PEAK HOUR TRAFFIC VOLUMES	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-5

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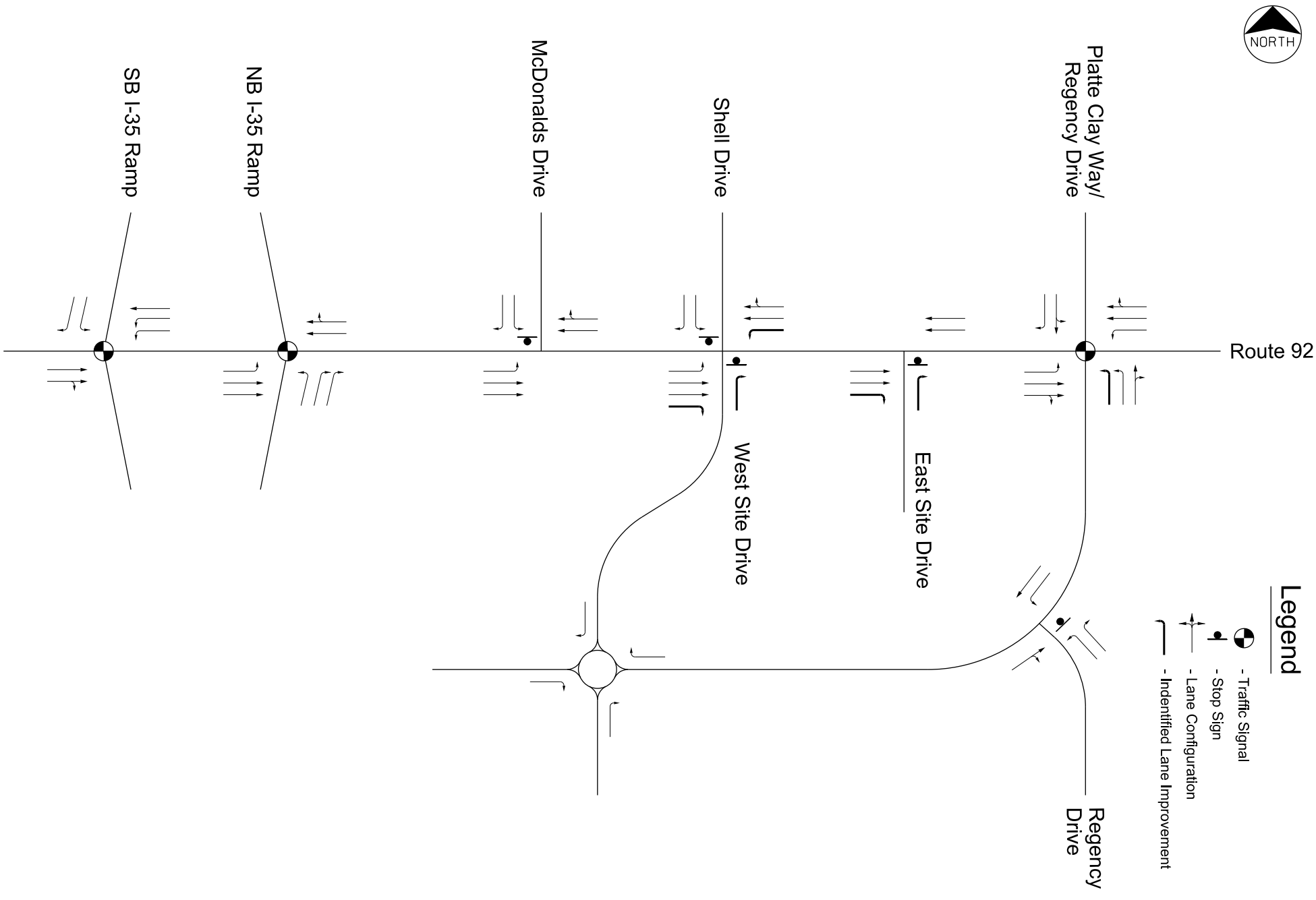

TranSystems	EXISTING PLUS PROPOSED DEVELOPMENT CONDITIONS LANE CONFIGURATIONS	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-6

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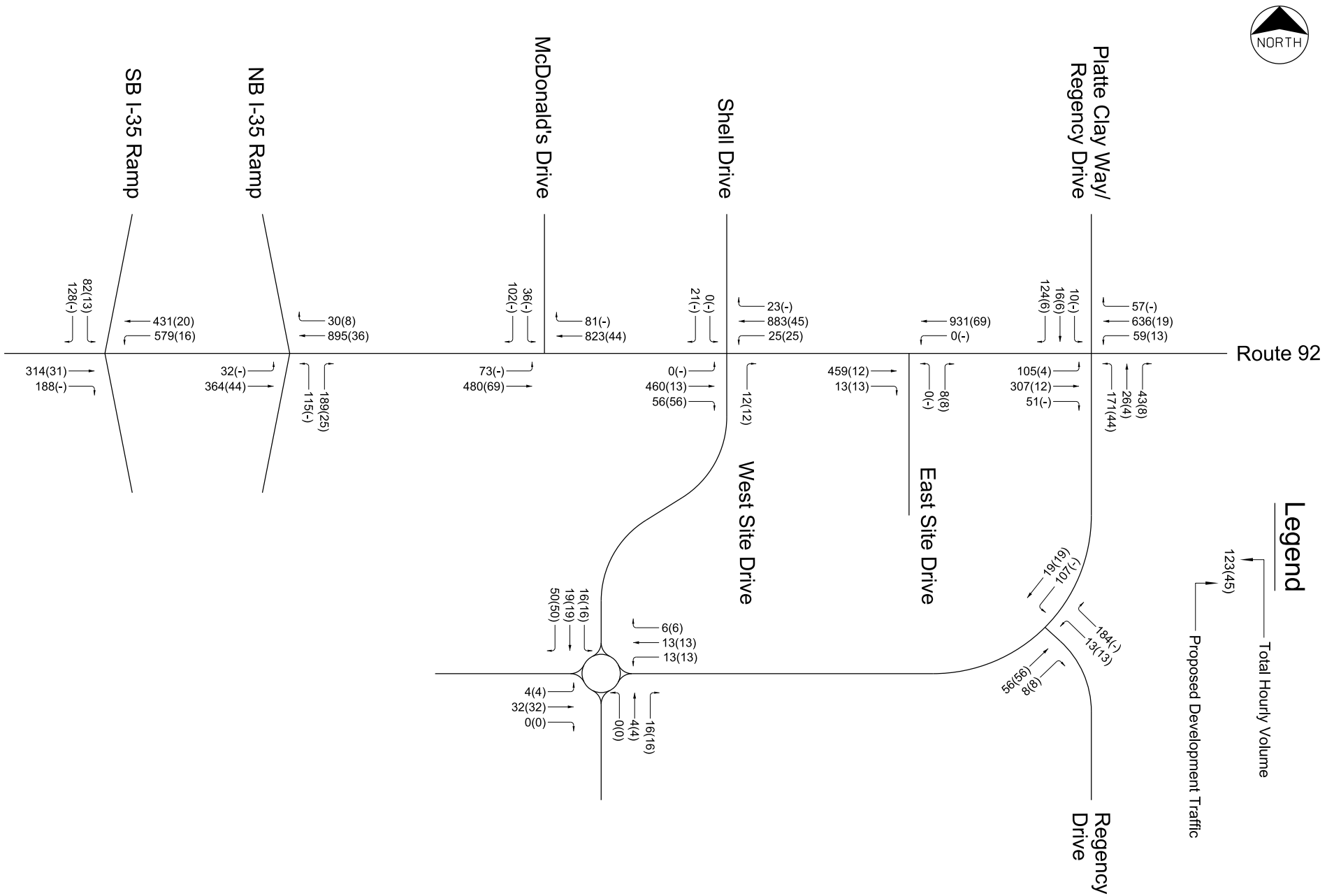

TranSystems	EXISTING PLUS PROPOSED DEVELOPMENT CONDITIONS A.M. PEAK HOUR TRAFFIC VOLUMES	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-7

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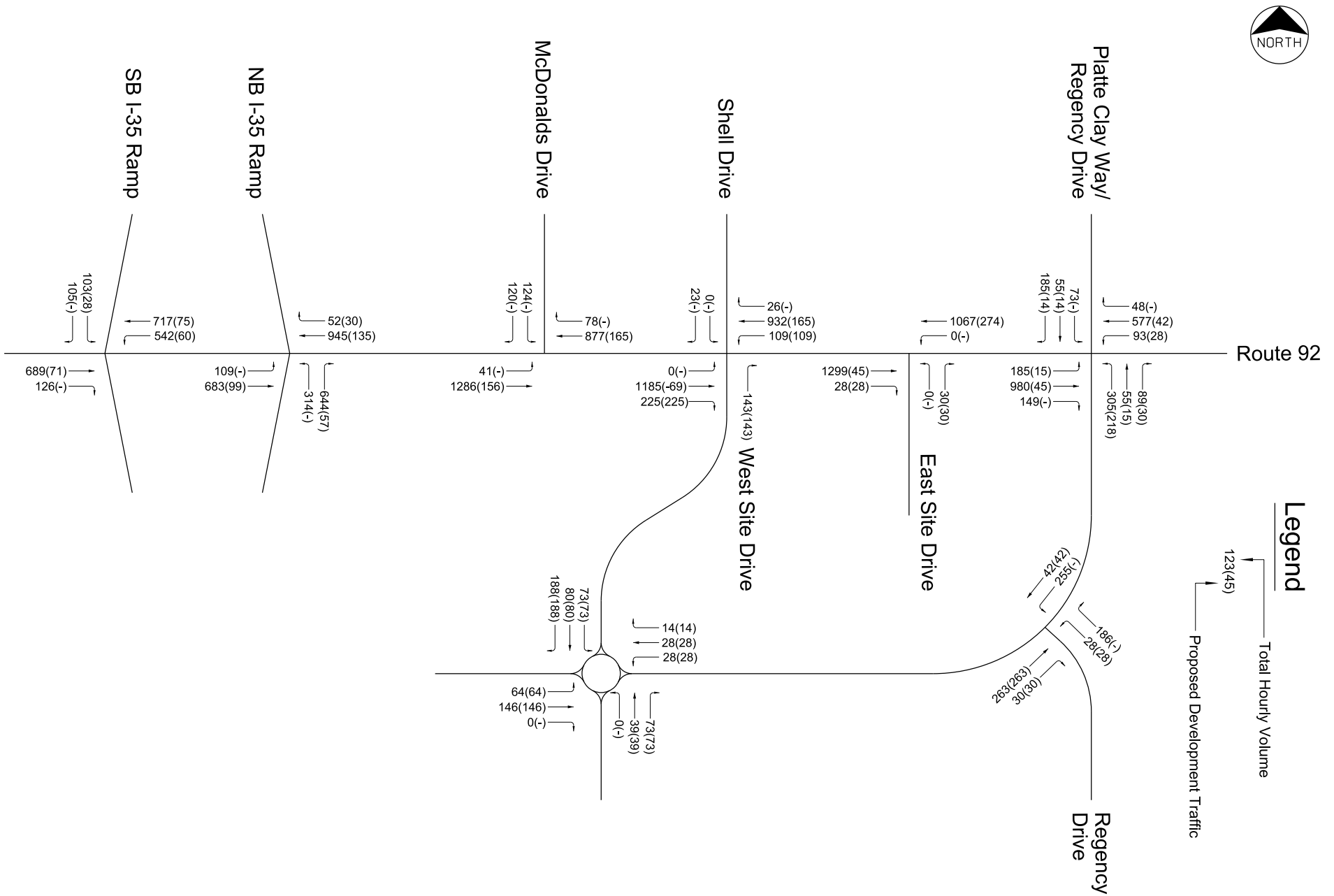

TranSystems	EXISTING PLUS PROPOSED DEVELOPMENT CONDITIONS P.M. PEAK HOUR TRAFFIC VOLUMES	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-8

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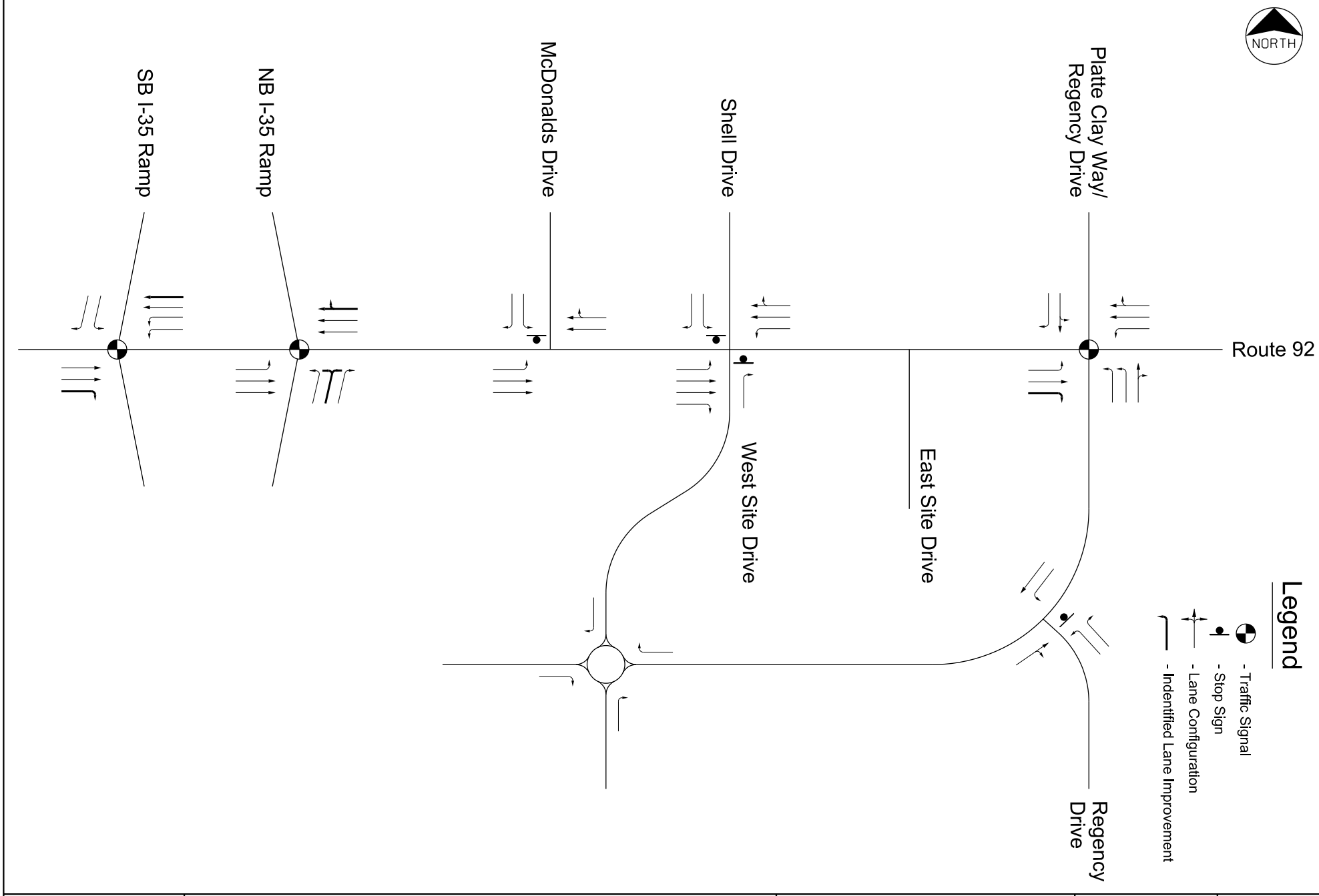

TranSystems	FUTURE YEAR 2030 CONDITIONS LANE CONFIGURATIONS	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-9

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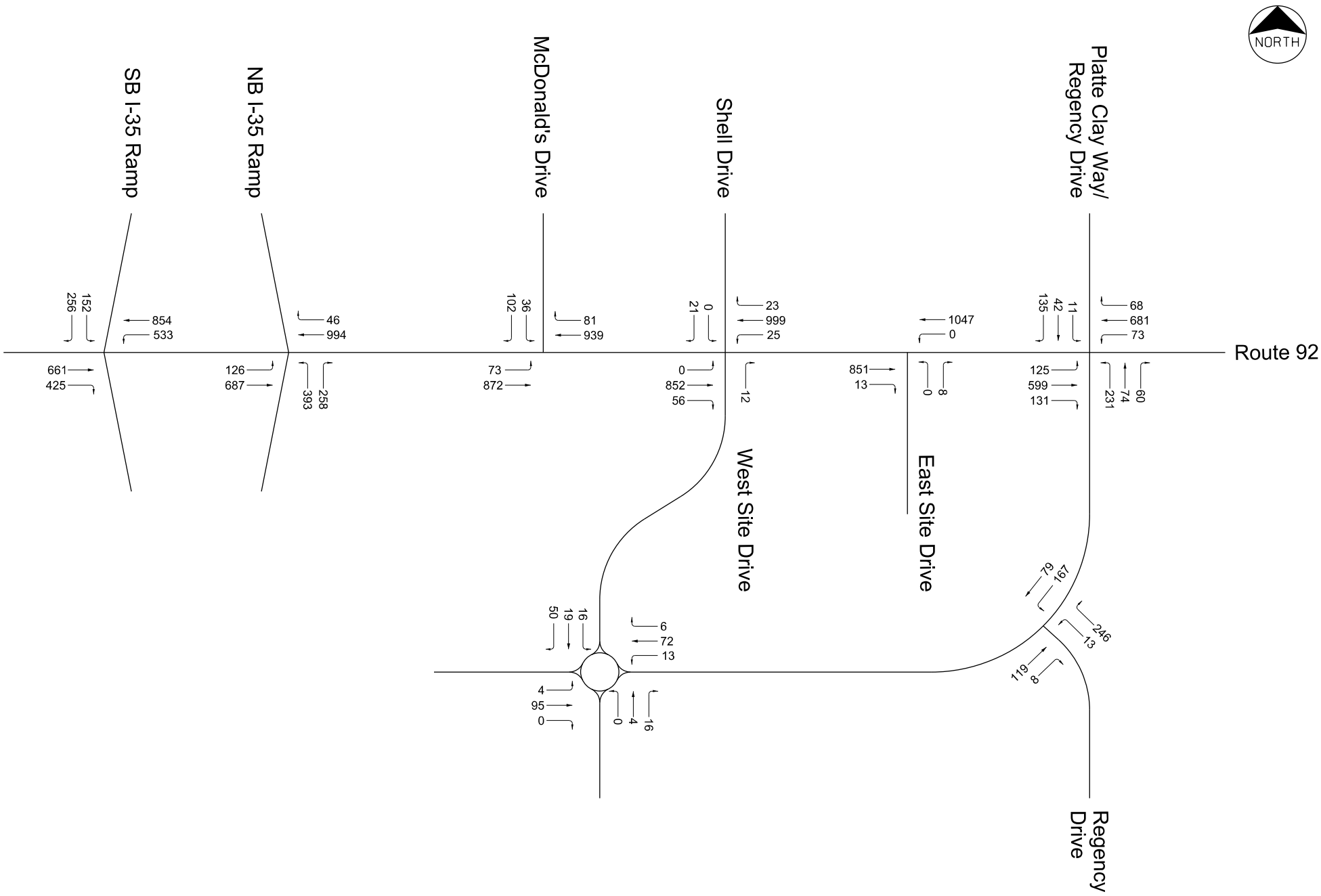

TranSystems	FUTURE YEAR 2030 CONDITIONS A.M. PEAK HOUR TRAFFIC VOLUMES	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-10

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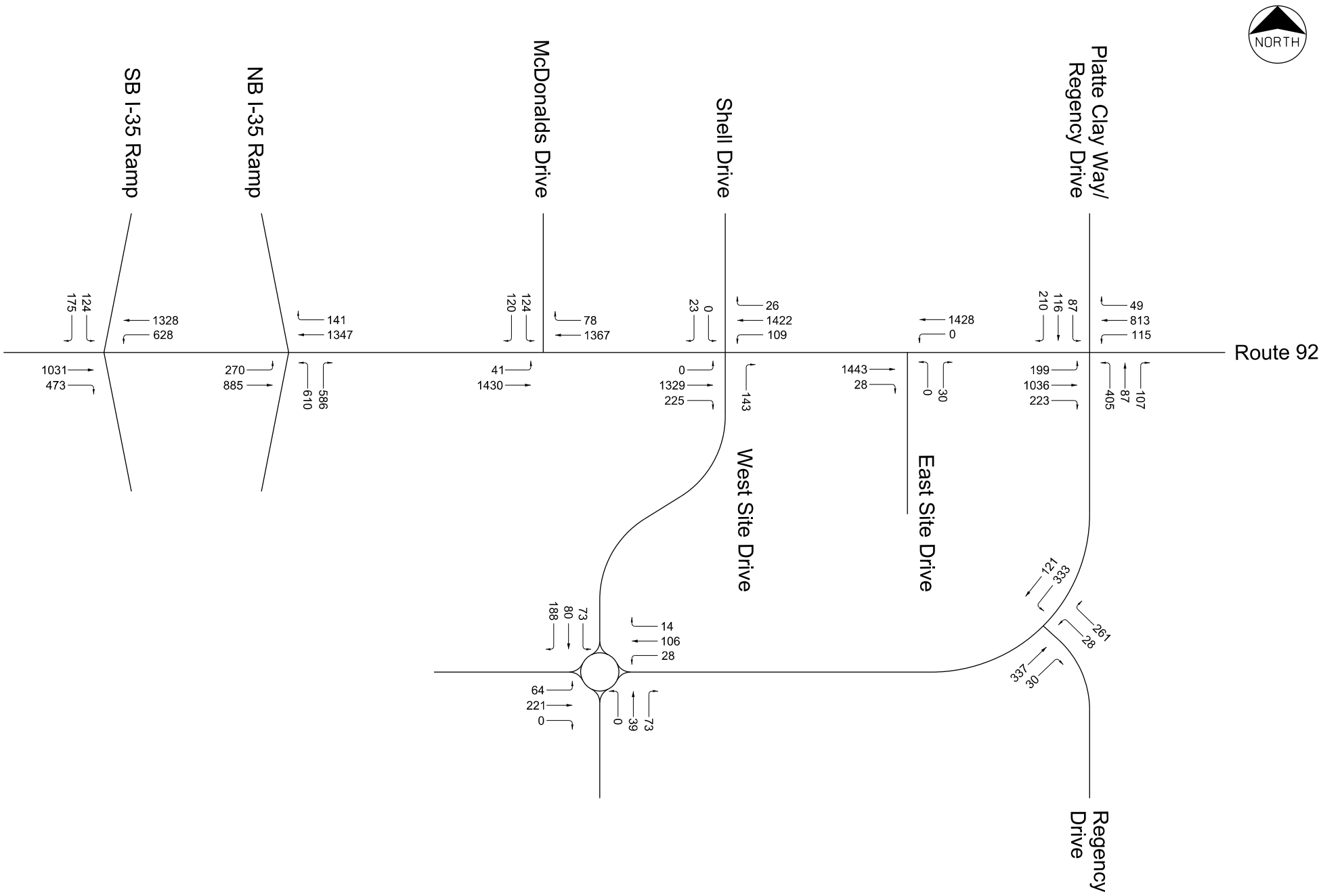


TranSystems	FUTURE YEAR 2030 CONDITIONS P.M. PEAK HOUR TRAFFIC VOLUMES	Route 92 and I-35 Commercial Development TIA Update Kearney, Missouri	July 2012 No Scale	Figure A-11

Appendix B – Trip Generation and Distribution

See attached worksheets.

Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri
Trip Generation

Land Use	Intensity	ITE Code	Daily	A.M. Peak Hour Total	A.M. % In	A.M. % Out	A.M. In	A.M. Out	P.M. Peak Hour Total	P.M. % In	P.M. % Out	P.M. In	P.M. Out
Shopping Center	163,170 sf	820	9,340	206	61%	39%	125	81	883	49%	51%	433	450
		Pass-By Trips (34%)	*3,180*	*0*			*0*	*0*	*300*			*150*	*150*
		Net New External Trips	*6,160*	*206*			*125*	*81*	*583*			*283*	*300*

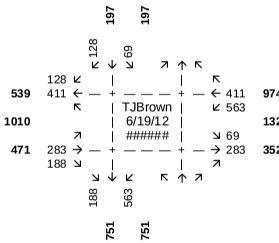
Notes -

Estimates based on ITE's Trip Generation, 8th Edition

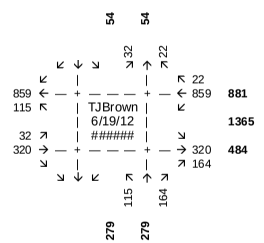
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Existing Traffic Volumes
AM Peak Hour (7:00 AM to 8:00 AM)

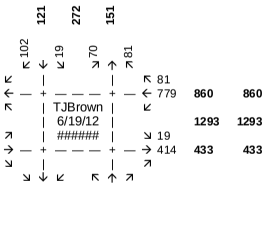
SB I-29 and Route 92



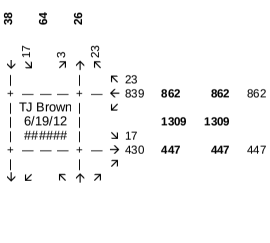
NB I-29 and Route 92



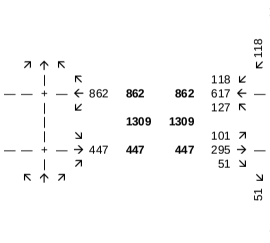
McDonald's Drive and Route 92



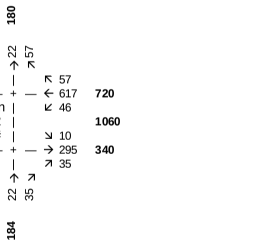
Shell Drive/Entrance and Route 92



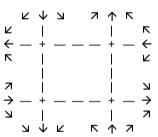
Proposed East Drive and Route 92



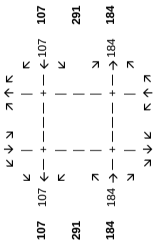
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



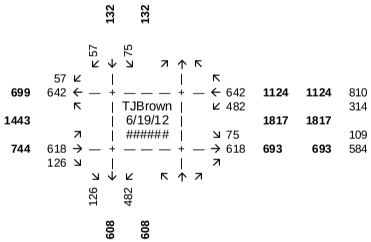
Regency Drive and Platte Clay Way



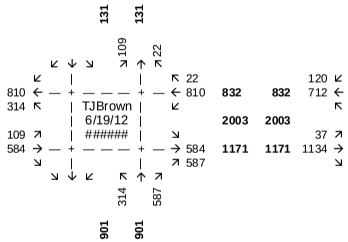
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Existing Traffic Volumes
PM Peak Hour (4:30 P.M. to 5:30 P.M.)

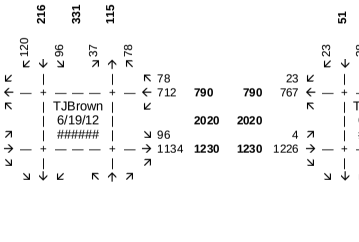
SB I-29 and Route 92



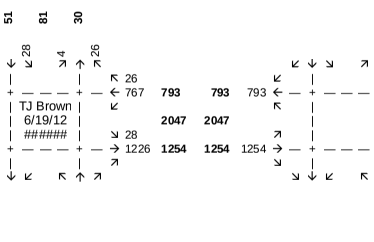
NB I-29 and Route 92



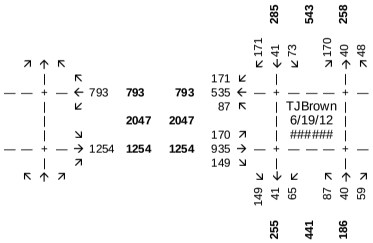
McDonald's Drive and Route 92



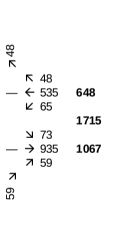
Shell Drive/Entrance and Route 92



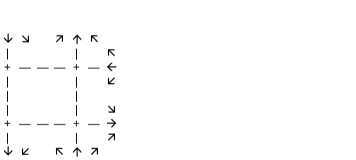
Proposed East Drive and Route 92



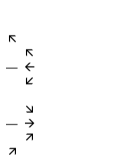
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



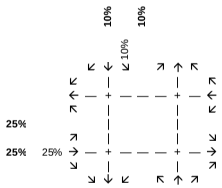
Regency Drive and Platte Clay Way



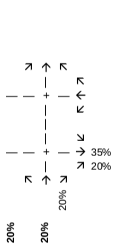
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Trip Distribution
Inbound %

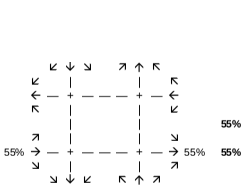
SB I-29 and Route 92



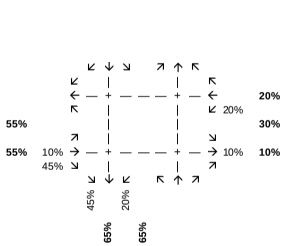
NB I-29 and Route 92



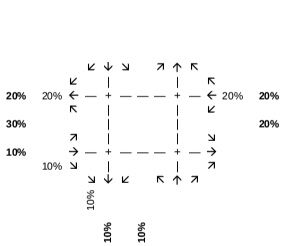
McDonald's Drive and Route 92



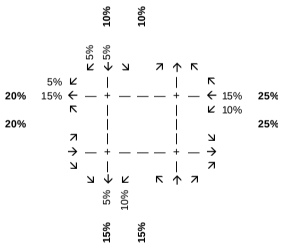
Shell Drive/Entrance and Route 92



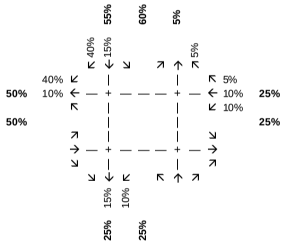
Proposed East Drive and Route 92



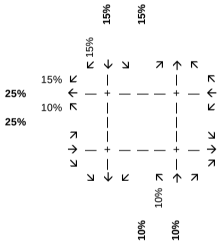
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



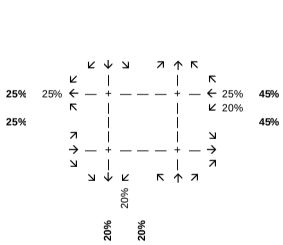
Regency Drive and Platte Clay Way



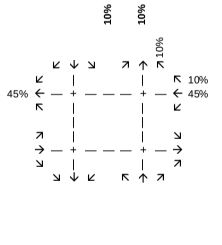
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Trip Distribution
Outbound%

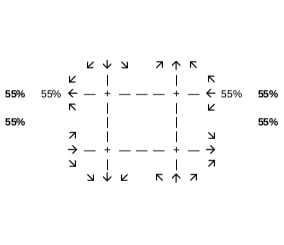
SB I-29 and Route 92



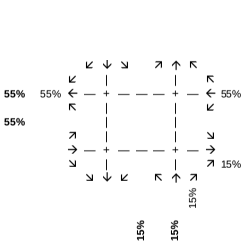
NB I-29 and Route 92



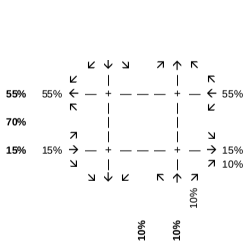
McDonald's Drive and Route 92



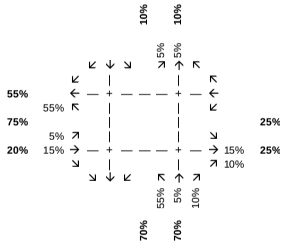
Shell Drive/Entrance and Route 92



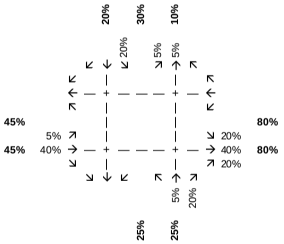
Proposed East Drive and Route 92



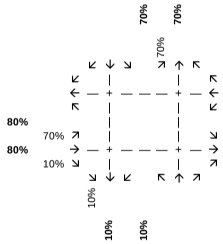
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



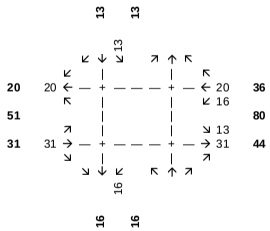
Regency Drive and Platte Clay Way



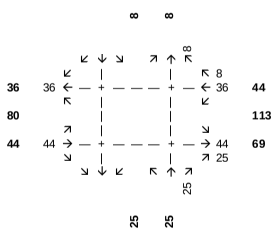
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Non Pass-By Trips
AM Peak Hour

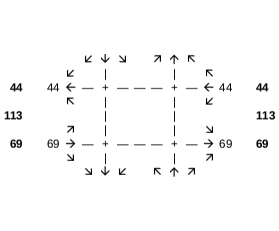
SB I-29 and Route 92



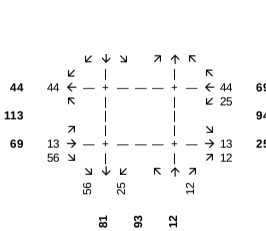
NB I-29 and Route 92



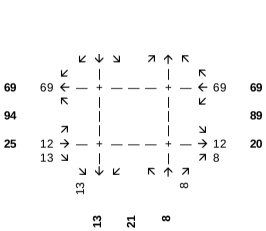
McDonald's Drive and Route 92



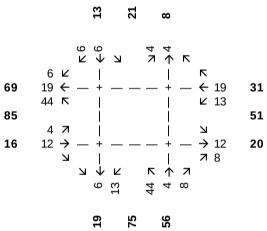
Shell Drive/Entrance and Route 92



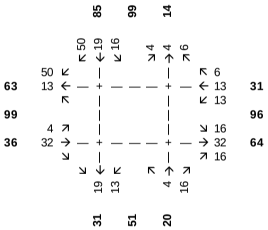
Proposed East Drive and Route 92



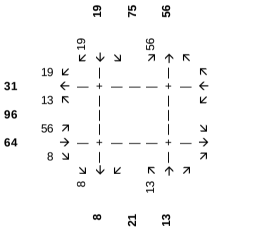
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



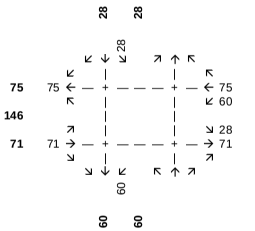
Regency Drive and Platte Clay Way



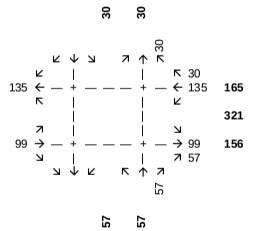
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Non Pass-By Trips
PM Peak Hour

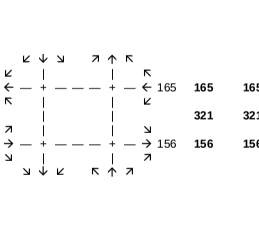
SB I-29 and Route 92



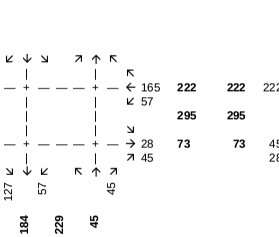
NB I-29 and Route 92



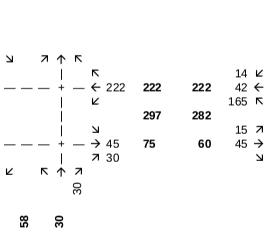
McDonald's Drive and Route 92



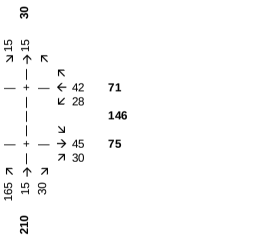
Shell Drive/Entrance and Route 92



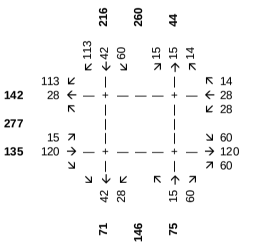
Proposed East Drive and Route 92



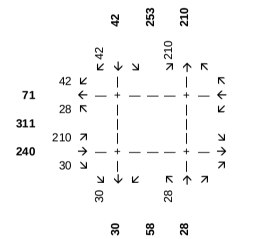
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



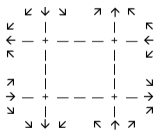
Regency Drive and Platte Clay Way



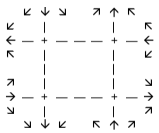
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Pass-By Trips
PM Peak Hour

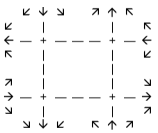
SB I-29 and Route 92



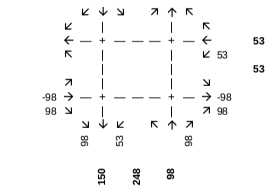
NB I-29 and Route 92



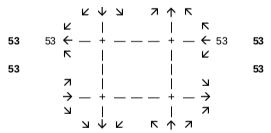
McDonald's Drive and Route 92



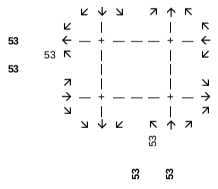
Shell Drive/Entrance and Route 92



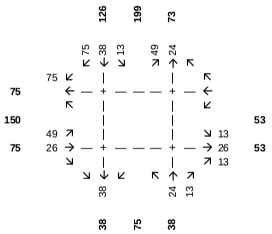
Proposed East Drive and Route 92



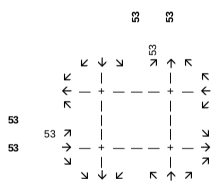
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



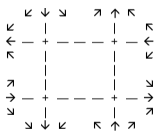
Regency Drive and Platte Clay Way



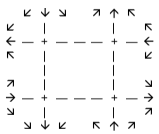
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Existing Traffic Shift for Access Restrictions on Route 92
PM Peak Hour

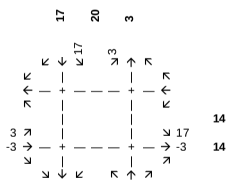
SB I-29 and Route 92



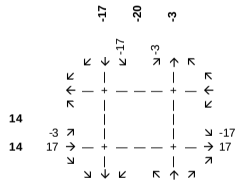
NB I-29 and Route 92



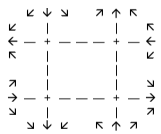
McDonald's Drive and Route 92



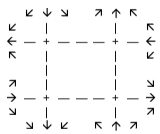
Shell Drive/Entrance and Route 92



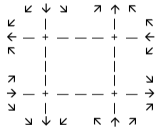
Proposed East Drive and Route 92



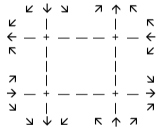
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



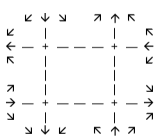
Regency Drive and Platte Clay Way



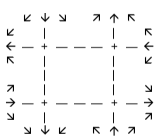
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Existing Traffic Shift for Access Restrictions on Route 92
PM Peak Hour

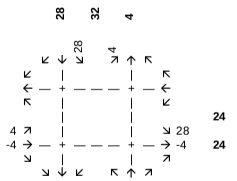
SB I-29 and Route 92



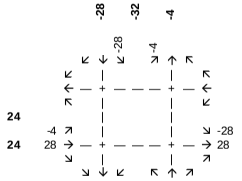
NB I-29 and Route 92



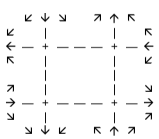
McDonald's Drive and Route 92



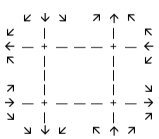
Shell Drive/Entrance and Route 92



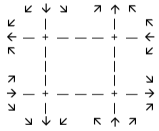
Proposed East Drive and Route 92



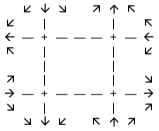
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



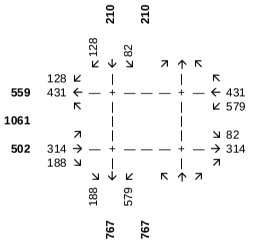
Regency Drive and Platte Clay Way



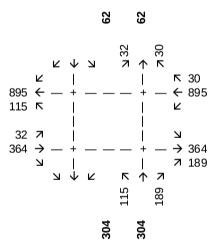
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Existing Plus Development Trips
AM Peak Hour

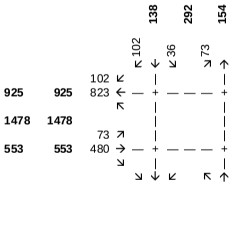
SB I-29 and Route 92



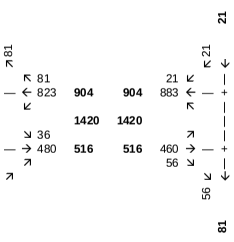
NB I-29 and Route 92



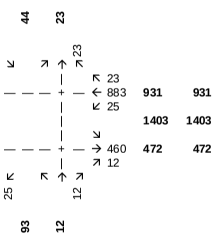
McDonald's Drive and Route 92



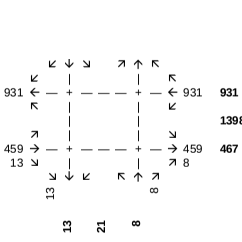
Shell Drive/Entrance and Route 92



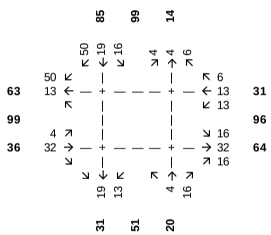
Proposed East Drive and Route 92



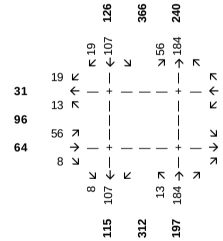
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



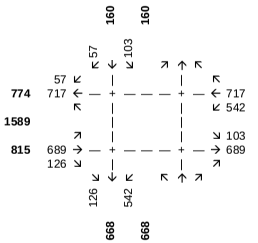
Regency Drive and Platte Clay Way



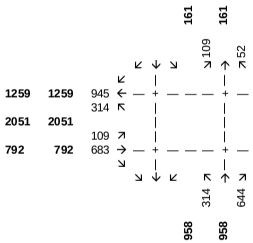
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Existing Plus Development Trips
PM Peak Hour

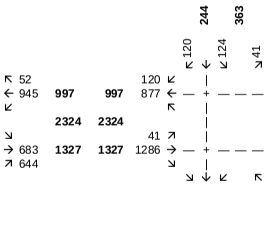
SB I-29 and Route 92



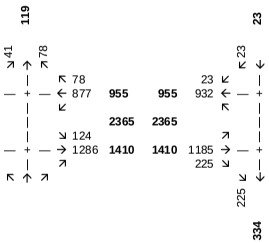
NB I-29 and Route 92



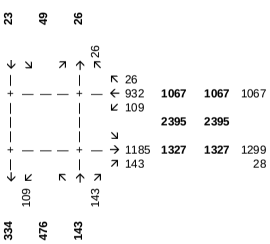
McDonald's Drive and Route 92



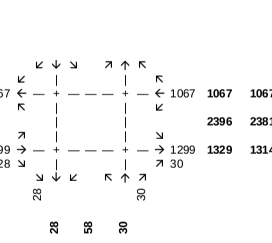
Shell Drive/Entrance and Route 92



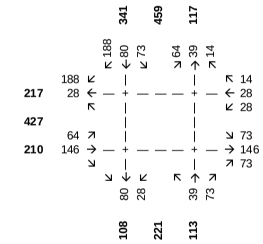
Proposed East Drive and Route 92



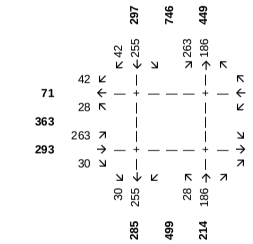
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



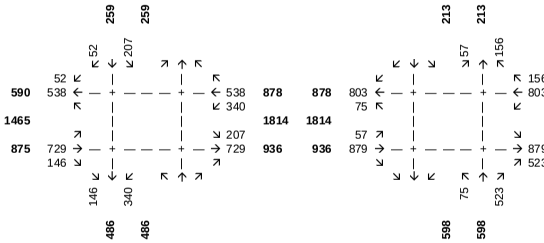
Regency Drive and Platte Clay Way



Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

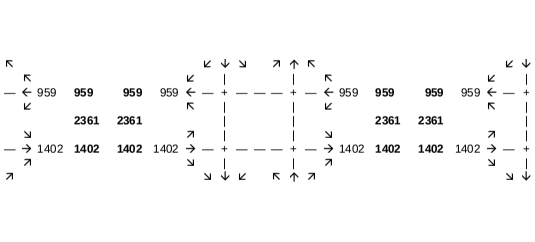
Base Year 2005 Model (TranSystems 2007)
PM Peak Hour

SB I-29 and Route 92



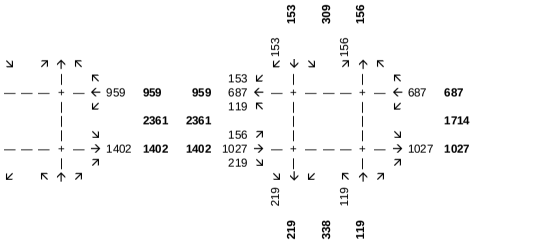
NB I-29 and Route 92

McDonald's Drive and Route 92

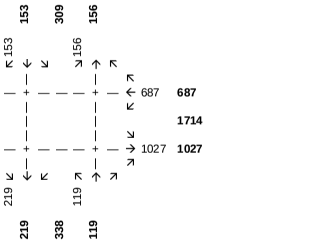


Shell Drive/Entrance and Route 92

Proposed East Drive and Route 92

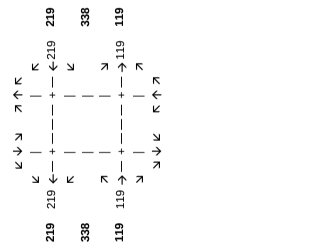


Platte Clay Way and Route 92



Main Entrance and Platte Clay Way

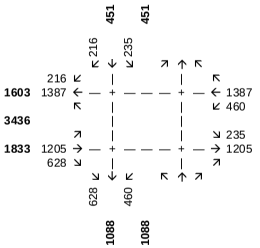
Regency Drive and Platte Clay Way



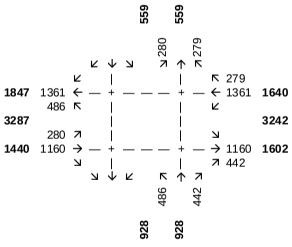
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

2030 Year Model (Olsson Associates 2011)
PM Peak Hour

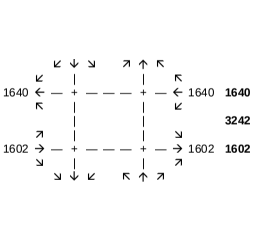
SB I-29 and Route 92



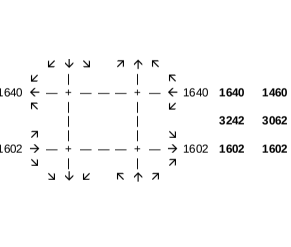
NB I-29 and Route 92



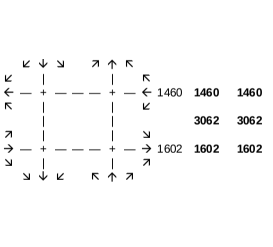
McDonald's Drive and Route 92



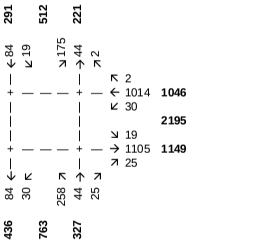
Shell Drive/Entrance and Route 92



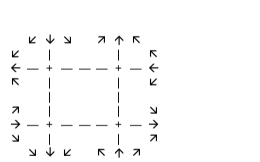
Proposed East Drive and Route 92



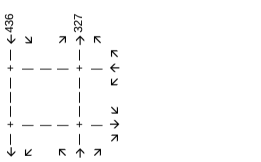
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



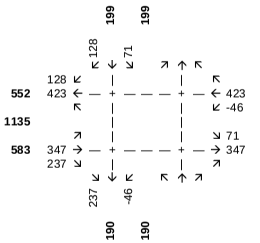
Regency Drive and Platte Clay Way



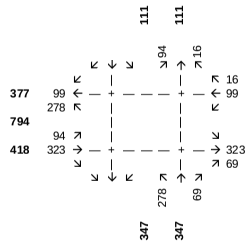
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Model Growth 2012 to 2030 (Estimated as 80% of PM growth in reverse direction based on existing volumes)
AM Peak Hour

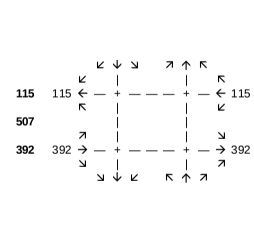
SB I-29 and Route 92



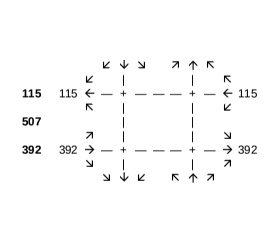
NB I-29 and Route 92



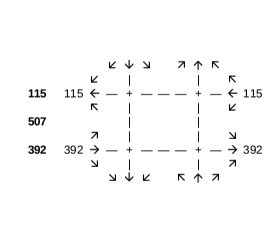
McDonald's Drive and Route 92



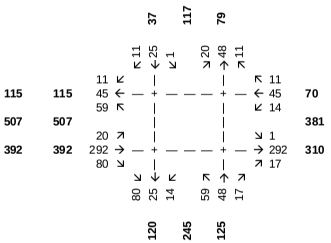
Shell Drive/Entrance and Route 92



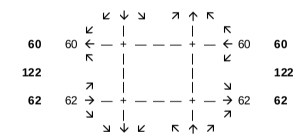
Proposed East Drive and Route 92



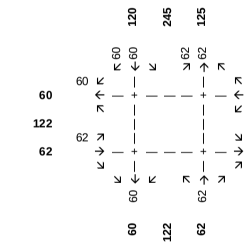
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



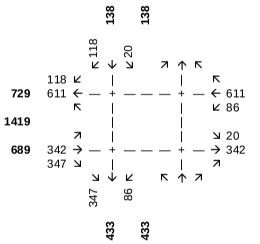
Regency Drive and Platte Clay Way



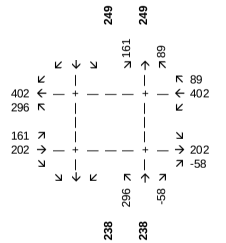
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

Model Growth 2012 to 2030
PM Peak Hour

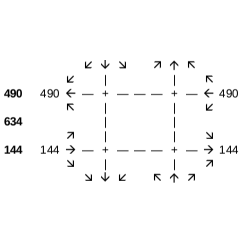
SB I-29 and Route 92



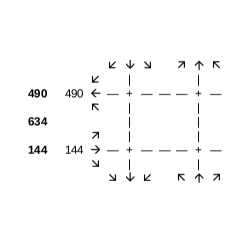
NB I-29 and Route 92



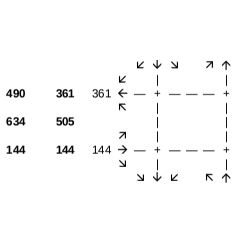
McDonald's Drive and Route 92



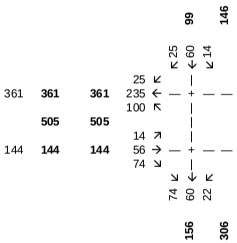
Shell Drive/Entrance and Route 92



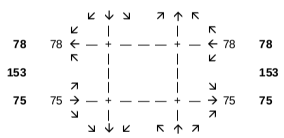
Proposed East Drive and Route 92



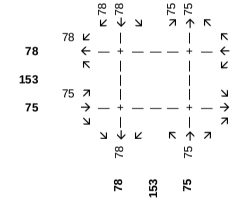
Platte Clay Way and Route 92



Main Entrance and Platte Clay Way



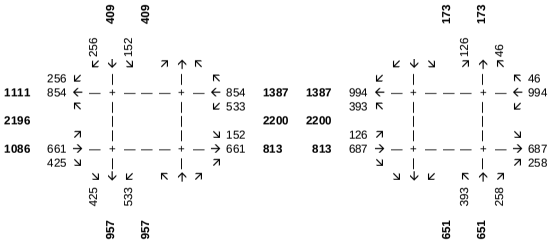
Regency Drive and Platte Clay Way



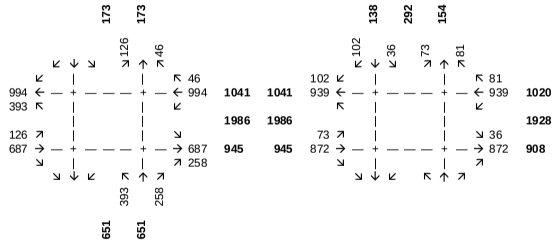
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

2030 Projections
AM Peak Hour

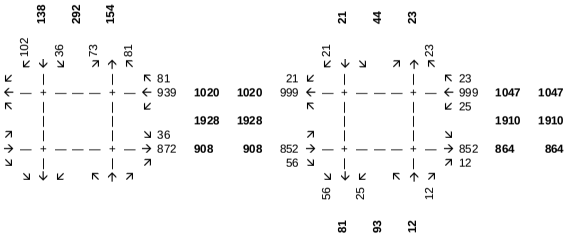
SB I-29 and Route 92



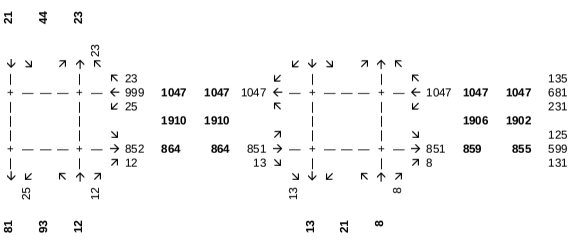
NB I-29 and Route 92



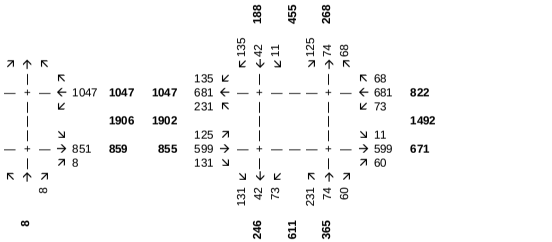
McDonald's Drive and Route 92



Shell Drive/Entrance and Route 92

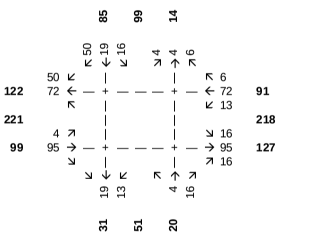


Proposed East Drive and Route 92

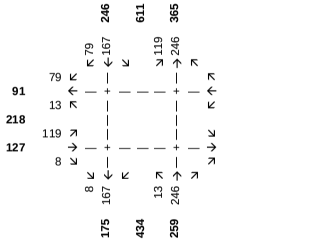


Platte Clay Way and Route 92

Main Entrance and Platte Clay Way



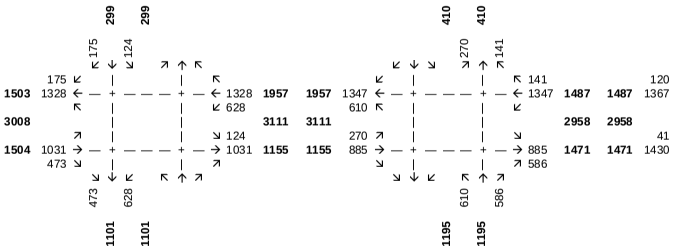
Regency Drive and Platte Clay Way



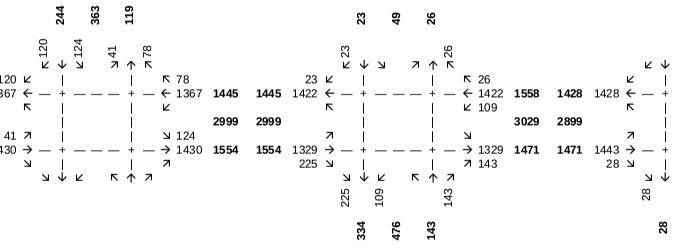
Route 92 and I-35 Commercial Development TIA Update
Kearney, Missouri

2030 Projections
PM Peak Hour

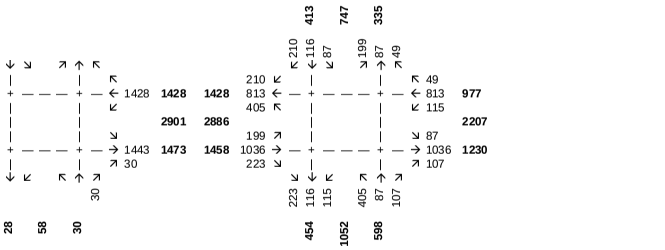
SB I-29 and Route 92



NB I-29 and Route 92

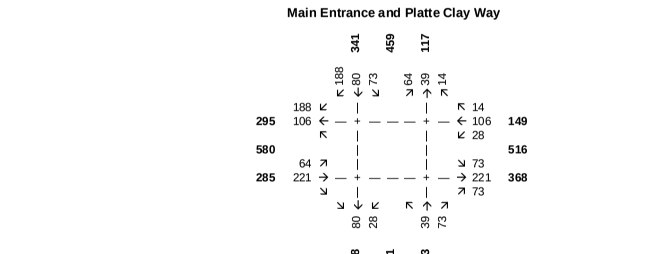


McDonald's Drive and Route 92



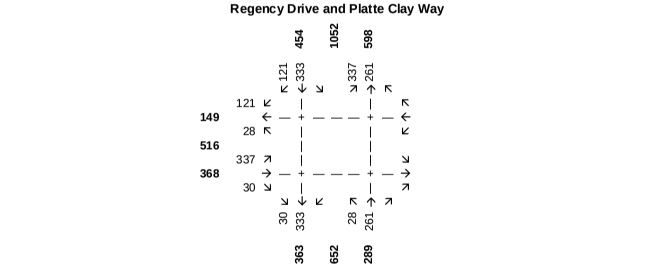
Shell Drive/Entrance and Route 92

Proposed East Drive and Route 92



Platte Clay Way and Route 92

Main Entrance and Platte Clay Way



Regency Drive and Platte Clay Way

Appendix C – Capacity Analysis Reports

See attached reports.

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	512	612	447	75	139
v/c Ratio	0.43	0.49	0.33	0.25	0.36
Control Delay	16.5	14.6	3.4	34.7	8.9
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	16.5	14.6	3.4	34.7	8.9
Queue Length 50th (ft)	73	89	52	37	0
Queue Length 95th (ft)	118	118	69	77	49
Internal Link Dist (ft)	682		406		
Turn Bay Length (ft)		200			
Base Capacity (vph)	1179	1240	1356	305	388
Starvation Cap Reductn	0	0	172	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.49	0.38	0.25	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	283	188	563	411	0	0	0	0	69	0	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5					4.5		4.5
Lane Util. Factor		0.95		0.97	1.00					1.00		1.00
Frt		0.94		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3328		3433	1863					1770		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3328		3433	1863					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	308	204	612	447	0	0	0	0	75	0	139
RTOR Reduction (vph)	0	126	0	0	0	0	0	0	0	0	0	115
Lane Group Flow (vph)	0	386	0	612	447	0	0	0	0	75	0	24
Turn Type		NA		Prot	NA					custom		custom
Protected Phases		4		3	8							
Permitted Phases										6		6
Actuated Green, G (s)		28.5		32.5	65.5					15.5		15.5
Effective Green, g (s)		28.5		32.5	65.5					15.5		15.5
Actuated g/C Ratio		0.32		0.36	0.73					0.17		0.17
Clearance Time (s)		4.5		4.5	4.5					4.5		4.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1054		1240	1356					305		273
v/s Ratio Prot		c0.12		c0.18	0.24							
v/s Ratio Perm										c0.04		0.02
v/c Ratio		0.37		0.49	0.33					0.25		0.09
Uniform Delay, d1		23.8		22.4	4.4					32.2		31.3
Progression Factor		1.00		0.59	0.61					1.00		1.00
Incremental Delay, d2		1.0		0.3	0.6					1.9		0.6
Delay (s)		24.8		13.5	3.3					34.1		31.9
Level of Service		C		B	A					C		C
Approach Delay (s)		24.8			9.2			0.0			32.7	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	35	348	958	125	178
v/c Ratio	0.09	0.27	0.44	0.34	0.25
Control Delay	3.6	4.5	6.6	33.7	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	4.5	6.6	33.7	5.9
Queue Length 50th (ft)	5	59	80	61	0
Queue Length 95th (ft)	m12	78	108	113	28
Internal Link Dist (ft)		406	261		
Turn Bay Length (ft)					
Base Capacity (vph)	422	1294	2194	364	714
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	0.08	0.27	0.44	0.34	0.25

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	320	0	0	859	22	115	0	164	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5		4.5			
Lane Util. Factor	1.00	1.00			0.95		1.00		0.88			
Frt	1.00	1.00			1.00		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	1863			3526		1770		2787			
Flt Permitted	0.23	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	425	1863			3526		1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	348	0	0	934	24	125	0	178	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	141	0	0	0
Lane Group Flow (vph)	35	348	0	0	956	0	125	0	37	0	0	0
Turn Type	pm+pt	NA			NA		custom		custom			
Protected Phases	7	4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	62.5	62.5			54.2		18.5		18.5			
Effective Green, g (s)	62.5	62.5			54.2		18.5		18.5			
Actuated g/C Ratio	0.69	0.69			0.60		0.21		0.21			
Clearance Time (s)	4.5	4.5			4.5		4.5		4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	352	1294			2123		364		573			
v/s Ratio Prot	0.00	c0.19			c0.27							
v/s Ratio Perm	0.06						c0.07		0.01			
v/c Ratio	0.10	0.27			0.45		0.34		0.06			
Uniform Delay, d1	5.4	5.2			9.8		30.6		28.8			
Progression Factor	0.72	0.77			0.61		1.00		1.00			
Incremental Delay, d2	0.1	0.5			0.7		2.6		0.2			
Delay (s)	4.0	4.4			6.7		33.1		29.0			
Level of Service	A	A			A		C		C			
Approach Delay (s)		4.4			6.7			30.7			0.0	
Approach LOS		A			A			C			A	

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	110	376	50	733	138	62	22	128
v/c Ratio	0.29	0.22	0.09	0.47	0.31	0.10	0.08	0.33
Control Delay	8.1	8.7	9.6	19.4	23.6	11.0	33.4	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	8.7	9.6	19.4	23.6	11.0	33.4	9.3
Queue Length 50th (ft)	19	37	12	153	56	9	11	0
Queue Length 95th (ft)	27	58	28	215	100	36	33	48
Internal Link Dist (ft)		580		999		606	578	
Turn Bay Length (ft)								
Base Capacity (vph)	423	1689	568	1559	461	598	290	384
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	0.26	0.22	0.09	0.47	0.30	0.10	0.08	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	295	51	46	617	57	127	22	35	10	10	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	3462		1770	3494		1770	1691			1817	1583
Flt Permitted	0.27	1.00		0.53	1.00		0.58	1.00			0.89	1.00
Satd. Flow (perm)	494	3462		985	3494		1077	1691			1650	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	321	55	50	671	62	138	24	38	11	11	128
RTOR Reduction (vph)	0	14	0	0	7	0	0	25	0	0	0	106
Lane Group Flow (vph)	110	362	0	50	726	0	138	37	0	0	22	22
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	48.7	41.8		43.3	39.1		30.5	30.5			15.8	15.8
Effective Green, g (s)	48.7	41.8		43.3	39.1		30.5	30.5			15.8	15.8
Actuated g/C Ratio	0.54	0.46		0.48	0.43		0.34	0.34			0.18	0.18
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	365	1608		511	1518		444	573			290	278
v/s Ratio Prot	c0.02	0.10		0.00	c0.21		c0.04	0.02				
v/s Ratio Perm	0.14			0.04			c0.07				0.01	0.01
v/c Ratio	0.30	0.22		0.10	0.48		0.31	0.06			0.08	0.08
Uniform Delay, d1	11.1	14.4		12.5	18.2		21.5	20.1			31.0	31.0
Progression Factor	0.67	0.62		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.5	0.3		0.1	1.1		0.4	0.2			0.5	0.6
Delay (s)	7.8	9.3		12.6	19.2		21.9	20.3			31.5	31.6
Level of Service	A	A		B	B		C	C			C	C
Approach Delay (s)		9.0			18.8			21.4			31.6	
Approach LOS		A			B			C			C	

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	70	414	779	81	19	102
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	450	847	88	21	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		341	800			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	935				1268	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	666				1042	137
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				89	86
cM capacity (veh/h)	814				181	784

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	76	225	225	564	370	21	111
Volume Left	76	0	0	0	0	21	0
Volume Right	0	0	0	0	88	0	111
cSH	814	1700	1700	1700	1700	181	784
Volume to Capacity	0.09	0.13	0.13	0.33	0.22	0.11	0.14
Queue Length 95th (ft)	8	0	0	0	0	10	12
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	27.5	10.3
Lane LOS	A					D	B
Approach Delay (s)	1.4			0.0		13.0	
Approach LOS						B	

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	430	839	23	17	21
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	467	912	25	18	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		481	660			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	937				1165	468
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634				895	97
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	97
cM capacity (veh/h)	824				243	820

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	3	234	234	608	329	18	23
Volume Left	3	0	0	0	0	18	0
Volume Right	0	0	0	0	25	0	23
cSH	824	1700	1700	1700	1700	243	820
Volume to Capacity	0.00	0.14	0.14	0.36	0.19	0.08	0.03
Queue Length 95th (ft)	0	0	0	0	0	6	2
Control Delay (s)	9.4	0.0	0.0	0.0	0.0	21.0	9.5
Lane LOS	A					C	A
Approach Delay (s)	0.1			0.0		14.7	
Approach LOS						B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	809	524	698	82	62
v/c Ratio	0.53	0.53	0.48	0.35	0.24
Control Delay	20.3	24.7	5.1	42.4	12.5
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	20.3	24.7	5.2	42.4	12.5
Queue Length 50th (ft)	175	113	106	46	0
Queue Length 95th (ft)	231	165	142	92	37
Internal Link Dist (ft)	682		406		
Turn Bay Length (ft)		200			
Base Capacity (vph)	1526	994	1441	233	262
Starvation Cap Reductn	0	0	106	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.53	0.52	0.35	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	618	126	482	642	0	0	0	0	75	0	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5					4.5		4.5
Lane Util. Factor		0.95		0.97	1.00					1.00		1.00
Frt		0.97		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3449		3433	1863					1770		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3449		3433	1863					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	672	137	524	698	0	0	0	0	82	0	62
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	791	0	524	698	0	0	0	0	82	0	8
Turn Type		NA		Prot	NA					custom		custom
Protected Phases		4		3	8							
Permitted Phases										6		6
Actuated Green, G (s)		41.5		27.5	73.5					12.5		12.5
Effective Green, g (s)		41.5		27.5	73.5					12.5		12.5
Actuated g/C Ratio		0.44		0.29	0.77					0.13		0.13
Clearance Time (s)		4.5		4.5	4.5					4.5		4.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1507		994	1441					233		208
v/s Ratio Prot		c0.23		0.15	c0.37							
v/s Ratio Perm										c0.05		0.01
v/c Ratio		0.52		0.53	0.48					0.35		0.04
Uniform Delay, d1		19.5		28.3	3.9					37.6		36.0
Progression Factor		1.00		0.81	1.02					1.00		1.00
Incremental Delay, d2		1.3		0.4	1.0					4.1		0.4
Delay (s)		20.9		23.2	4.9					41.7		36.4
Level of Service		C		C	A					D		D
Approach Delay (s)		20.9			12.8			0.0			39.4	
Approach LOS		C			B			A			D	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	118	635	904	341	638
v/c Ratio	0.38	0.61	0.59	0.56	0.51
Control Delay	7.6	5.7	17.7	29.9	8.8
Queue Delay	0.0	0.5	0.0	0.0	0.0
Total Delay	7.6	6.2	17.7	29.9	8.8
Queue Length 50th (ft)	9	53	148	166	47
Queue Length 95th (ft)	29	82	191	255	99
Internal Link Dist (ft)		406	261		
Turn Bay Length (ft)					
Base Capacity (vph)	319	1049	1530	606	1244
Starvation Cap Reductn	0	126	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	0.69	0.59	0.56	0.51

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	584	0	0	810	22	314	0	587	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5		4.5			
Lane Util. Factor	1.00	1.00			0.95		1.00		0.88			
Frt	1.00	1.00			1.00		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	1863			3525		1770		2787			
Flt Permitted	0.18	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	339	1863			3525		1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	635	0	0	880	24	341	0	638	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	291	0	0	0
Lane Group Flow (vph)	118	635	0	0	902	0	341	0	347	0	0	0
Turn Type	pm+pt	NA			NA		custom		custom			
Protected Phases	7	4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	53.5	53.5			41.2		32.5		32.5			
Effective Green, g (s)	53.5	53.5			41.2		32.5		32.5			
Actuated g/C Ratio	0.56	0.56			0.43		0.34		0.34			
Clearance Time (s)	4.5	4.5			4.5		4.5		4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	308	1049			1529		606		953			
v/s Ratio Prot	0.03	c0.34			0.26							
v/s Ratio Perm	0.18						c0.19		0.12			
v/c Ratio	0.38	0.61			0.59		0.56		0.36			
Uniform Delay, d1	12.2	13.8			20.5		25.5		23.5			
Progression Factor	0.45	0.24			0.77		1.00		1.00			
Incremental Delay, d2	0.7	2.3			1.6		3.8		1.1			
Delay (s)	6.2	5.5			17.4		29.2		24.6			
Level of Service	A	A			B		C		C			
Approach Delay (s)		5.7			17.4			26.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	185	1178	71	634	95	107	124	186
v/c Ratio	0.40	0.66	0.28	0.39	0.27	0.19	0.45	0.40
Control Delay	9.1	14.6	11.0	17.3	26.9	12.5	41.1	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	14.6	11.0	17.3	26.9	12.5	41.1	8.2
Queue Length 50th (ft)	37	171	16	125	42	19	69	0
Queue Length 95th (ft)	73	268	33	169	82	58	127	57
Internal Link Dist (ft)		580		999		606	578	
Turn Bay Length (ft)								
Base Capacity (vph)	466	1772	262	1631	351	553	277	464
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	0.40	0.66	0.27	0.39	0.27	0.19	0.45	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	935	149	65	535	48	87	40	59	73	41	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1770	3466		1770	3496		1770	1696			1805	1583
Flt Permitted	0.32	1.00		0.14	1.00		0.51	1.00			0.75	1.00
Satd. Flow (perm)	593	3466		262	3496		958	1696			1393	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	1016	162	71	582	52	95	43	64	79	45	186
RTOR Reduction (vph)	0	13	0	0	7	0	0	44	0	0	0	149
Lane Group Flow (vph)	185	1165	0	71	627	0	95	63	0	0	124	37
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	55.3	46.4		48.9	43.2		29.4	29.4			18.9	18.9
Effective Green, g (s)	55.3	46.4		48.9	43.2		29.4	29.4			18.9	18.9
Actuated g/C Ratio	0.58	0.49		0.51	0.45		0.31	0.31			0.20	0.20
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	455	1693		225	1590		348	525			277	315
v/s Ratio Prot	c0.04	c0.34		0.02	0.18		c0.02	0.04				
v/s Ratio Perm	0.20			0.14			0.07				c0.09	0.02
v/c Ratio	0.41	0.69		0.32	0.39		0.27	0.12			0.45	0.12
Uniform Delay, d1	10.0	18.7		13.6	17.2		24.1	23.5			33.5	31.2
Progression Factor	0.80	0.71		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.5	2.0		0.8	0.7		0.4	0.5			5.2	0.8
Delay (s)	8.5	15.4		14.5	17.9		24.5	24.0			38.6	32.0
Level of Service	A	B		B	B		C	C			D	C
Approach Delay (s)		14.4			17.6			24.2			34.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	37	1134	712	78	96	120
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	1233	774	85	104	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		341	800			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	859				1513	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	667				1380	199
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				12	82
cM capacity (veh/h)	843				118	742

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	40	616	616	516	343	104	130
Volume Left	40	0	0	0	0	104	0
Volume Right	0	0	0	0	85	0	130
cSH	843	1700	1700	1700	1700	118	742
Volume to Capacity	0.05	0.36	0.36	0.30	0.20	0.88	0.18
Queue Length 95th (ft)	4	0	0	0	0	136	16
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	121.8	10.9
Lane LOS	A					F	B
Approach Delay (s)	0.3			0.0		60.2	
Approach LOS						F	

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	4	1226	767	26	28	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	1333	834	28	30	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		481	660			
pX, platoon unblocked	0.90				0.90	0.90
vC, conflicting volume	862				1523	431
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	633				1365	156
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				76	97
cM capacity (veh/h)	854				125	778

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	4	666	666	556	306	30	25
Volume Left	4	0	0	0	0	30	0
Volume Right	0	0	0	0	28	0	25
cSH	854	1700	1700	1700	1700	125	778
Volume to Capacity	0.01	0.39	0.39	0.33	0.18	0.24	0.03
Queue Length 95th (ft)	0	0	0	0	0	23	2
Control Delay (s)	9.2	0.0	0.0	0.0	0.0	43.0	9.8
Lane LOS	A					E	A
Approach Delay (s)	0.0			0.0		28.0	
Approach LOS						D	

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	545	629	468	89	139
v/c Ratio	0.47	0.51	0.35	0.29	0.36
Control Delay	19.4	15.4	2.7	35.5	8.9
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	19.4	15.4	2.8	35.5	8.9
Queue Length 50th (ft)	93	102	36	45	0
Queue Length 95th (ft)	141	135	48	88	49
Internal Link Dist (ft)	682		406		
Turn Bay Length (ft)		200			
Base Capacity (vph)	1156	1240	1356	305	388
Starvation Cap Reductn	0	0	145	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.51	0.39	0.29	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	314	188	579	431	0	0	0	0	82	0	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5					4.5		4.5
Lane Util. Factor		0.95		0.97	1.00					1.00		1.00
Frt		0.94		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3341		3433	1863					1770		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3341		3433	1863					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	341	204	629	468	0	0	0	0	89	0	139
RTOR Reduction (vph)	0	98	0	0	0	0	0	0	0	0	0	115
Lane Group Flow (vph)	0	447	0	629	468	0	0	0	0	89	0	24
Turn Type		NA		Prot	NA					custom		custom
Protected Phases		4		3	8							
Permitted Phases										6		6
Actuated Green, G (s)		28.5		32.5	65.5					15.5		15.5
Effective Green, g (s)		28.5		32.5	65.5					15.5		15.5
Actuated g/C Ratio		0.32		0.36	0.73					0.17		0.17
Clearance Time (s)		4.5		4.5	4.5					4.5		4.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1058		1240	1356					305		273
v/s Ratio Prot		c0.13		c0.18	0.25							
v/s Ratio Perm										c0.05		0.02
v/c Ratio		0.42		0.51	0.35					0.29		0.09
Uniform Delay, d1		24.3		22.5	4.5					32.5		31.3
Progression Factor		1.00		0.62	0.46					1.00		1.00
Incremental Delay, d2		1.2		0.3	0.6					2.4		0.6
Delay (s)		25.5		14.2	2.7					34.9		31.9
Level of Service		C		B	A					C		C
Approach Delay (s)		25.5			9.3			0.0			33.1	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	35	396	1006	125	205
v/c Ratio	0.09	0.31	0.46	0.34	0.28
Control Delay	1.8	2.8	8.8	33.7	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	2.8	8.8	33.7	5.7
Queue Length 50th (ft)	1	60	125	61	0
Queue Length 95th (ft)	m2	28	160	113	30
Internal Link Dist (ft)		406	261		
Turn Bay Length (ft)					
Base Capacity (vph)	404	1294	2193	364	736
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	0.31	0.46	0.34	0.28

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	364	0	0	895	30	115	0	189	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5		4.5			
Lane Util. Factor	1.00	1.00			0.95		1.00		0.88			
Frt	1.00	1.00			1.00		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	1863			3522		1770		2787			
Flt Permitted	0.21	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	396	1863			3522		1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	396	0	0	973	33	125	0	205	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	163	0	0	0
Lane Group Flow (vph)	35	396	0	0	1004	0	125	0	42	0	0	0
Turn Type	pm+pt	NA			NA		custom		custom			
Protected Phases	7	4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	62.5	62.5			54.2		18.5		18.5			
Effective Green, g (s)	62.5	62.5			54.2		18.5		18.5			
Actuated g/C Ratio	0.69	0.69			0.60		0.21		0.21			
Clearance Time (s)	4.5	4.5			4.5		4.5		4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	333	1294			2121		364		573			
v/s Ratio Prot	0.00	c0.21			c0.28							
v/s Ratio Perm	0.07						c0.07		0.02			
v/c Ratio	0.11	0.31			0.47		0.34		0.07			
Uniform Delay, d1	5.6	5.3			10.0		30.6		28.8			
Progression Factor	0.31	0.41			0.82		1.00		1.00			
Incremental Delay, d2	0.1	0.6			0.7		2.6		0.2			
Delay (s)	1.8	2.8			8.9		33.1		29.1			
Level of Service	A	A			A		C		C			
Approach Delay (s)		2.7			8.9			30.6			0.0	
Approach LOS		A			A			C			A	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	114	393	64	753	186	75	28	135
v/c Ratio	0.28	0.22	0.11	0.46	0.39	0.27	0.15	0.28
Control Delay	6.4	7.3	8.0	17.3	38.0	19.5	38.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	7.3	8.0	17.3	38.0	19.5	38.6	6.5
Queue Length 50th (ft)	15	30	14	144	50	14	15	0
Queue Length 95th (ft)	22	52	29	201	82	54	40	42
Internal Link Dist (ft)		338		999		418	578	
Turn Bay Length (ft)	350							
Base Capacity (vph)	483	1758	600	1641	477	275	193	561
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	0.24	0.22	0.11	0.46	0.39	0.27	0.15	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	311	51	59	636	57	171	26	43	10	16	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	3465		1770	3496		3433	1688			1827	1583
Flt Permitted	0.27	1.00		0.52	1.00		0.95	1.00			0.98	1.00
Satd. Flow (perm)	508	3465		968	3496		3433	1688			1827	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	338	55	64	691	62	186	28	47	11	17	135
RTOR Reduction (vph)	0	14	0	0	7	0	0	40	0	0	0	109
Lane Group Flow (vph)	114	379	0	64	746	0	186	35	0	0	28	26
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases	4			8								6
Actuated Green, G (s)	52.3	44.4		47.7	42.1		12.5	12.5			9.5	17.4
Effective Green, g (s)	52.3	44.4		47.7	42.1		12.5	12.5			9.5	17.4
Actuated g/C Ratio	0.58	0.49		0.53	0.47		0.14	0.14			0.11	0.19
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	406	1709		563	1635		477	234			193	385
v/s Ratio Prot	c0.02	0.11		0.01	c0.21		c0.05	0.02			c0.02	0.01
v/s Ratio Perm	0.14			0.05								0.01
v/c Ratio	0.28	0.22		0.11	0.46		0.39	0.15			0.15	0.07
Uniform Delay, d1	9.3	13.0		10.3	16.2		35.3	34.1			36.6	29.7
Progression Factor	0.61	0.57		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.4	0.3		0.1	0.9		2.4	1.3			1.6	0.1
Delay (s)	6.0	7.7		10.4	17.1		37.7	35.4			38.1	29.7
Level of Service	A	A		B	B		D	D			D	C
Approach Delay (s)		7.3			16.6			37.0			31.2	
Approach LOS		A			B			D			C	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	73	480	823	81	36	102
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	522	895	88	39	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		341	800			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	983				1358	491
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	742				1162	192
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				74	85
cM capacity (veh/h)	769				151	730

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	79	261	261	596	386	39	111
Volume Left	79	0	0	0	0	39	0
Volume Right	0	0	0	0	88	0	111
cSH	769	1700	1700	1700	1700	151	730
Volume to Capacity	0.10	0.15	0.15	0.35	0.23	0.26	0.15
Queue Length 95th (ft)	9	0	0	0	0	25	13
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	37.1	10.8
Lane LOS	B					E	B
Approach Delay (s)	1.3			0.0		17.7	
Approach LOS						C	

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	460	56	25	883	23	0	0	12	0	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	500	61	27	960	25	0	0	13	0	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		481			660							
pX, platoon unblocked	0.88						0.88	0.88		0.88	0.88	0.88
vC, conflicting volume	985			561			1057	1539	250	1290	1588	492
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	710			561			792	1340	250	1056	1395	150
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 %	100			97			100	100	98	100	100	97
cM capacity (veh/h)	779			1006			234	130	750	152	120	765

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	250	250	61	27	640	345	13	23
Volume Left	0	0	0	27	0	0	0	0
Volume Right	0	0	61	0	0	25	13	23
cSH	1700	1700	1700	1006	1700	1700	750	765
Volume to Capacity	0.15	0.15	0.04	0.03	0.38	0.20	0.02	0.03
Queue Length 95th (ft)	0	0	0	2	0	0	1	2
Control Delay (s)	0.0	0.0	0.0	8.7	0.0	0.0	9.9	9.9
Lane LOS				A			A	A
Approach Delay (s)	0.0			0.2			9.9	9.9
Approach LOS							A	A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	56	8	107	19	13	184
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	9	116	21	14	200
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				498		
pX, platoon unblocked						
vC, conflicting volume			70		318	65
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			70		318	65
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		98	80
cM capacity (veh/h)			1531		624	999

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	70	116	21	14	200
Volume Left	0	116	0	14	0
Volume Right	9	0	0	0	200
cSH	1700	1531	1700	624	999
Volume to Capacity	0.04	0.08	0.01	0.02	0.20
Queue Length 95th (ft)	0	6	0	2	19
Control Delay (s)	0.0	7.5	0.0	10.9	9.5
Lane LOS		A		B	A
Approach Delay (s)	0.0	6.4		9.6	
Approach LOS				A	

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization		22.6%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	4	32	10	13	13	6	10	4	16	16	19	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	35	11	14	14	7	11	4	17	17	21	54
Approach Volume (veh/h)		50			35			33			92	
Crossing Volume (veh/h)		52			20			57			39	
High Capacity (veh/h)		1329			1364			1325			1343	
High v/c (veh/h)		0.04			0.03			0.02			0.07	
Low Capacity (veh/h)		1111			1142			1107			1123	
Low v/c (veh/h)		0.05			0.03			0.03			0.08	

Intersection Summary			
Maximum v/c High		0.07	
Maximum v/c Low		0.08	
Intersection Capacity Utilization		17.5%	ICU Level of Service A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	459	13	0	931	0	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	499	14	0	1012	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	723			418		
pX, platoon unblocked					0.87	
vC, conflicting volume			513		1005	249
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			513		696	249
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1049		325	750

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	249	249	14	506	506	9
Volume Left	0	0	0	0	0	0
Volume Right	0	0	14	0	0	9
cSH	1700	1700	1700	1700	1700	750
Volume to Capacity	0.15	0.15	0.01	0.30	0.30	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.9
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.9
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	886	589	779	112	62
v/c Ratio	0.62	0.58	0.56	0.42	0.21
Control Delay	23.0	20.9	4.6	40.2	11.4
Queue Delay	0.2	0.0	0.0	0.0	0.0
Total Delay	23.1	20.9	4.6	40.2	11.4
Queue Length 50th (ft)	199	132	113	59	0
Queue Length 95th (ft)	263	177	136	110	35
Internal Link Dist (ft)	682		406		
Turn Bay Length (ft)		200			
Base Capacity (vph)	1419	1011	1397	266	290
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	92	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.58	0.56	0.42	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	689	126	542	717	0	0	0	0	103	0	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5					4.5		4.5
Lane Util. Factor		0.95		0.97	1.00					1.00		1.00
Frt		0.98		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3457		3433	1863					1770		1583
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3457		3433	1863					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	749	137	589	779	0	0	0	0	112	0	62
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	869	0	589	779	0	0	0	0	112	0	9
Turn Type		NA		Prot	NA					custom		custom
Protected Phases		4		3	8							
Permitted Phases										6		6
Actuated Green, G (s)		36.5		26.5	67.5					13.5		13.5
Effective Green, g (s)		36.5		26.5	67.5					13.5		13.5
Actuated g/C Ratio		0.41		0.29	0.75					0.15		0.15
Clearance Time (s)		4.5		4.5	4.5					4.5		4.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1402		1011	1397					266		237
v/s Ratio Prot		c0.25		0.17	c0.42							
v/s Ratio Perm										c0.06		0.01
v/c Ratio		0.62		0.58	0.56					0.42		0.04
Uniform Delay, d1		21.2		27.0	4.8					34.7		32.7
Progression Factor		1.00		0.70	0.67					1.00		1.00
Incremental Delay, d2		2.1		0.6	1.2					4.8		0.3
Delay (s)		23.3		19.5	4.4					39.5		33.0
Level of Service		C		B	A					D		C
Approach Delay (s)		23.3			10.9			0.0			37.2	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	118	742	1084	341	700
v/c Ratio	0.42	0.67	0.67	0.63	0.63
Control Delay	13.2	7.7	19.5	33.1	14.8
Queue Delay	0.0	2.7	0.0	0.0	0.0
Total Delay	13.2	10.4	19.5	33.1	14.8
Queue Length 50th (ft)	10	381	201	166	85
Queue Length 95th (ft)	m33	546	276	259	151
Internal Link Dist (ft)		406	261		
Turn Bay Length (ft)					
Base Capacity (vph)	299	1107	1609	541	1112
Starvation Cap Reductn	0	246	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.39	0.86	0.67	0.63	0.63

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	683	0	0	945	52	314	0	644	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5		4.5			
Lane Util. Factor	1.00	1.00			0.95		1.00		0.88			
Frt	1.00	1.00			0.99		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1770	1863			3511		1770		2787			
Flt Permitted	0.13	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	247	1863			3511		1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	742	0	0	1027	57	341	0	700	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	260	0	0	0
Lane Group Flow (vph)	118	742	0	0	1080	0	341	0	440	0	0	0
Turn Type	pm+pt	NA			NA		custom		custom			
Protected Phases	7	4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)	53.5	53.5			41.1		27.5		27.5			
Effective Green, g (s)	53.5	53.5			41.1		27.5		27.5			
Actuated g/C Ratio	0.59	0.59			0.46		0.31		0.31			
Clearance Time (s)	4.5	4.5			4.5		4.5		4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	281	1107			1603		541		852			
v/s Ratio Prot	0.04	c0.40			0.31							
v/s Ratio Perm	0.21						c0.19		0.16			
v/c Ratio	0.42	0.67			0.67		0.63		0.52			
Uniform Delay, d1	11.7	12.3			19.2		26.9		25.8			
Progression Factor	1.17	0.39			0.89		1.00		1.00			
Incremental Delay, d2	0.8	2.6			2.1		5.5		2.2			
Delay (s)	14.5	7.5			19.1		32.4		28.0			
Level of Service	B	A			B		C		C			
Approach Delay (s)		8.4			19.1			29.4			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	201	1244	101	679	332	157	139	201
v/c Ratio	0.45	0.73	0.43	0.45	0.70	0.53	0.66	0.38
Control Delay	10.0	17.6	15.2	19.2	45.5	26.4	54.3	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	17.6	15.2	19.2	45.5	26.4	54.3	13.5
Queue Length 50th (ft)	39	197	23	136	94	43	77	37
Queue Length 95th (ft)	m76	353	46	194	139	104	#156	91
Internal Link Dist (ft)		338		999		418	578	
Turn Bay Length (ft)	350							
Base Capacity (vph)	488	1708	244	1519	477	299	211	568
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	0.41	0.73	0.41	0.45	0.70	0.53	0.66	0.35

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	995	149	93	577	48	305	55	89	73	55	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1770	3470		1770	3499		3433	1690			1811	1583
Flt Permitted	0.28	1.00		0.12	1.00		0.95	1.00			0.97	1.00
Satd. Flow (perm)	523	3470		224	3499		3433	1690			1811	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	1082	162	101	627	52	332	60	97	79	60	201
RTOR Reduction (vph)	0	13	0	0	6	0	0	65	0	0	0	89
Lane Group Flow (vph)	201	1231	0	101	673	0	332	92	0	0	139	112
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases	4			8								6
Actuated Green, G (s)	53.2	43.1		44.8	38.9		12.5	12.5			10.5	20.6
Effective Green, g (s)	53.2	43.1		44.8	38.9		12.5	12.5			10.5	20.6
Actuated g/C Ratio	0.59	0.48		0.50	0.43		0.14	0.14			0.12	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	449	1662		213	1512		477	235			211	441
v/s Ratio Prot	c0.05	c0.35		0.03	0.19		c0.10	0.05			c0.08	0.03
v/s Ratio Perm	0.21			0.21								0.04
v/c Ratio	0.45	0.74		0.47	0.44		0.70	0.39			0.66	0.25
Uniform Delay, d1	9.7	18.9		14.4	18.0		36.9	35.3			38.0	28.4
Progression Factor	0.84	0.80		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.6	2.6		1.7	1.0		8.2	4.9			15.0	0.3
Delay (s)	8.7	17.7		16.1	18.9		45.1	40.2			53.0	28.7
Level of Service	A	B		B	B		D	D			D	C
Approach Delay (s)		16.5			18.5			43.5			38.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	1286	877	78	124	120
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	1398	953	85	135	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		341	800			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	1038				1784	519
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	872				1681	310
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				0	79
cM capacity (veh/h)	709				74	633

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	45	699	699	636	403	135	130
Volume Left	45	0	0	0	0	135	0
Volume Right	0	0	0	0	85	0	130
cSH	709	1700	1700	1700	1700	74	633
Volume to Capacity	0.06	0.41	0.41	0.37	0.24	1.83	0.21
Queue Length 95th (ft)	5	0	0	0	0	297	19
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	512.3	12.2
Lane LOS	B					F	B
Approach Delay (s)	0.3			0.0		266.3	
Approach LOS						F	

Intersection Summary			
Average Delay	25.9		
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1185	225	109	932	26	0	0	143	0	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1288	245	118	1013	28	0	0	155	0	0	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		481			660							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	1041			1533			2057	2566	644	2064	2797	521
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	835			1533			1957	2521	644	1965	2775	259
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 %	100			72			100	100	63	100	100	96
cM capacity (veh/h)	719			430			26	18	416	17	12	669

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	644	644	245	118	675	366	155	25
Volume Left	0	0	0	118	0	0	0	0
Volume Right	0	0	245	0	0	28	155	25
cSH	1700	1700	1700	430	1700	1700	416	669
Volume to Capacity	0.38	0.38	0.14	0.28	0.40	0.22	0.37	0.04
Queue Length 95th (ft)	0	0	0	28	0	0	43	3
Control Delay (s)	0.0	0.0	0.0	16.5	0.0	0.0	18.8	10.6
Lane LOS				C			C	B
Approach Delay (s)	0.0			1.7			18.8	10.6
Approach LOS							C	B

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	48.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	263	30	255	42	28	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	286	33	277	46	30	202
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				498		
pX, platoon unblocked						
vC, conflicting volume			318		902	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			318		902	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		87	73
cM capacity (veh/h)			1242		239	737

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	318	277	46	30	202
Volume Left	0	277	0	30	0
Volume Right	33	0	0	0	202
cSH	1700	1242	1700	239	737
Volume to Capacity	0.19	0.22	0.03	0.13	0.27
Queue Length 95th (ft)	0	21	0	11	28
Control Delay (s)	0.0	8.7	0.0	22.2	11.7
Lane LOS		A		C	B
Approach Delay (s)	0.0	7.5		13.1	
Approach LOS				B	

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	43.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	64	146	10	28	28	14	10	39	73	73	80	188
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	159	11	30	30	15	11	42	79	79	87	204
Approach Volume (veh/h)		239			76			133			371	
Crossing Volume (veh/h)		197			123			308			72	
High Capacity (veh/h)		1187			1258			1088			1309	
High v/c (veh/h)		0.20			0.06			0.12			0.28	
Low Capacity (veh/h)		982			1046			892			1093	
Low v/c (veh/h)		0.24			0.07			0.15			0.34	

Intersection Summary				
Maximum v/c High		0.28		
Maximum v/c Low		0.34		
Intersection Capacity Utilization		47.0%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1299	28	0	1067	0	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1412	30	0	1160	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	723			418		
pX, platoon unblocked					0.88	
vC, conflicting volume			1442		1992	706
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1442		1849	706
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	91
cM capacity (veh/h)			466		58	378

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	706	706	30	580	580	33
Volume Left	0	0	0	0	0	0
Volume Right	0	0	30	0	0	33
cSH	1700	1700	1700	1700	1700	378
Volume to Capacity	0.42	0.42	0.02	0.34	0.34	0.09
Queue Length 95th (ft)	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	15.4
Lane LOS						C
Approach Delay (s)	0.0			0.0		15.4
Approach LOS						C

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		45.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	718	462	579	928	165	278
v/c Ratio	0.56	0.53	0.65	0.39	0.41	0.56
Control Delay	25.1	4.6	12.7	8.4	33.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	4.6	12.7	8.4	33.3	16.1
Queue Length 50th (ft)	169	0	91	141	80	47
Queue Length 95th (ft)	226	62	86	185	140	125
Internal Link Dist (ft)	682			406		
Turn Bay Length (ft)		200	150			
Base Capacity (vph)	1278	867	896	2379	403	499
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	0.56	0.53	0.65	0.39	0.41	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	661	425	533	854	0	0	0	0	152	0	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lane Util. Factor		0.95	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	3433	3539					1770		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	3433	3539					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	718	462	579	928	0	0	0	0	165	0	278
RTOR Reduction (vph)	0	0	295	0	0	0	0	0	0	0	0	138
Lane Group Flow (vph)	0	718	167	579	928	0	0	0	0	165	0	140
Turn Type		NA	Perm	Prot	NA					Prot		custom
Protected Phases		4		3	8					1		
Permitted Phases			4									6
Actuated Green, G (s)		32.5	32.5	23.5	60.5					20.5		20.5
Effective Green, g (s)		32.5	32.5	23.5	60.5					20.5		20.5
Actuated g/C Ratio		0.36	0.36	0.26	0.67					0.23		0.23
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1278	572	896	2379					403		361
v/s Ratio Prot		c0.20		c0.17	0.26					c0.09		
v/s Ratio Perm			0.11									0.09
v/c Ratio		0.56	0.29	0.65	0.39					0.41		0.39
Uniform Delay, d1		23.0	20.5	29.6	6.6					29.6		29.4
Progression Factor		1.00	1.00	0.32	1.20					1.00		1.00
Incremental Delay, d2		1.8	1.3	1.4	0.4					0.7		3.1
Delay (s)		24.8	21.8	10.9	8.3					30.3		32.5
Level of Service		C	C	B	A					C		C
Approach Delay (s)		23.7			9.3			0.0			31.7	
Approach LOS		C			A			A			C	

Intersection Summary

HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	137	747	1130	243	243	221
v/c Ratio	0.44	0.36	0.51	0.46	0.49	0.46
Control Delay	10.1	5.1	15.0	28.0	28.9	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	5.1	15.0	28.0	28.9	28.6
Queue Length 50th (ft)	9	54	102	114	121	105
Queue Length 95th (ft)	37	66	128	189	201	176
Internal Link Dist (ft)		406	261		731	
Turn Bay Length (ft)	100					
Base Capacity (vph)	408	2064	2213	532	499	476
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	0.34	0.36	0.51	0.46	0.49	0.46

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	687	0	0	994	46	393	0	258	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.91		0.95	0.91	0.95			
Frt	1.00	1.00			0.99		1.00	0.96	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (prot)	1770	3539			5052		1681	1574	1504			
Flt Permitted	0.16	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (perm)	292	3539			5052		1681	1574	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	137	747	0	0	1080	50	427	0	280	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	137	747	0	0	1125	0	243	243	221	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	52.5	52.5			39.3		28.5	28.5	28.5			
Effective Green, g (s)	52.5	52.5			39.3		28.5	28.5	28.5			
Actuated g/C Ratio	0.58	0.58			0.44		0.32	0.32	0.32			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	313	2064			2206		532	498	476			
v/s Ratio Prot	c0.04	0.21			c0.22							
v/s Ratio Perm	0.21						0.14	0.15	0.15			
v/c Ratio	0.44	0.36			0.51		0.46	0.49	0.46			
Uniform Delay, d1	10.3	9.9			18.4		24.6	24.9	24.6			
Progression Factor	0.74	0.46			0.76		1.00	1.00	1.00			
Incremental Delay, d2	0.8	0.4			0.8		2.8	3.4	3.2			
Delay (s)	8.5	5.0			14.8		27.4	28.2	27.9			
Level of Service	A	A			B		C	C	C			
Approach Delay (s)		5.5			14.8			27.8			0.0	
Approach LOS		A			B			C			A	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	136	651	142	79	814	251	145	58	147
v/c Ratio	0.37	0.38	0.17	0.18	0.53	0.42	0.44	0.33	0.31
Control Delay	11.3	8.9	1.6	9.6	20.1	35.8	28.8	43.8	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	8.9	1.6	9.6	20.1	35.8	28.8	43.8	10.1
Queue Length 50th (ft)	11	65	3	18	170	66	54	31	14
Queue Length 95th (ft)	52	103	14	37	237	103	111	69	59
Internal Link Dist (ft)		338			999		418	578	
Turn Bay Length (ft)	350		200			250			
Base Capacity (vph)	420	1697	833	445	1534	591	332	174	515
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	0.32	0.38	0.17	0.18	0.53	0.42	0.44	0.33	0.29

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	599	131	73	681	68	231	74	60	11	42	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5			4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3491		3433	1737			1844	1583
Flt Permitted	0.23	1.00	1.00	0.37	1.00		0.95	1.00			0.99	1.00
Satd. Flow (perm)	426	3539	1583	680	3491		3433	1737			1844	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	651	142	79	740	74	251	80	65	12	46	147
RTOR Reduction (vph)	0	0	75	0	8	0	0	32	0	0	0	94
Lane Group Flow (vph)	136	651	67	79	806	0	251	113	0	0	58	53
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases	4		4	8								6
Actuated Green, G (s)	50.9	42.3	42.3	45.1	39.4		15.5	15.5			8.5	17.1
Effective Green, g (s)	50.9	42.3	42.3	45.1	39.4		15.5	15.5			8.5	17.1
Actuated g/C Ratio	0.57	0.47	0.47	0.50	0.44		0.17	0.17			0.09	0.19
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	369	1663	744	410	1528		591	299			174	380
v/s Ratio Prot	c0.04	0.18		0.01	c0.23		c0.07	0.06			c0.03	0.01
v/s Ratio Perm	0.17		0.04	0.08								0.02
v/c Ratio	0.37	0.39	0.09	0.19	0.53		0.42	0.38			0.33	0.14
Uniform Delay, d1	10.6	15.5	13.2	11.8	18.5		33.3	33.0			38.1	30.3
Progression Factor	0.99	0.53	0.43	1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.6	0.7	0.2	0.2	1.3		2.2	3.6			5.1	0.2
Delay (s)	11.1	8.8	5.9	12.0	19.8		35.5	36.6			43.2	30.5
Level of Service	B	A	A	B	B		D	D			D	C
Approach Delay (s)		8.7			19.1			35.9			34.1	
Approach LOS		A			B			D			C	

Intersection Summary

HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	73	872	939	81	36	102
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	948	1021	88	39	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		341	800			
pX, platoon unblocked	0.87				0.92	0.87
vC, conflicting volume	1109				1697	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	815				1076	175
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				78	85
cM capacity (veh/h)	699				174	725

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	79	474	474	680	428	39	111
Volume Left	79	0	0	0	0	39	0
Volume Right	0	0	0	0	88	0	111
cSH	699	1700	1700	1700	1700	174	725
Volume to Capacity	0.11	0.28	0.28	0.40	0.25	0.22	0.15
Queue Length 95th (ft)	10	0	0	0	0	21	13
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	31.6	10.9
Lane LOS	B					D	B
Approach Delay (s)	0.8			0.0		16.3	
Approach LOS						C	

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	852	56	25	999	23	0	0	12	0	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	926	61	27	1086	25	0	0	13	0	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		481			660							
pX, platoon unblocked	0.85			0.91			0.90	0.90	0.91	0.90	0.90	0.85
vC, conflicting volume	1111			987			1546	2091	463	1629	2140	555
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	787			789			934	1541	214	1026	1595	137
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 %	100			96			100	100	98	100	100	97
cM capacity (veh/h)	707			752			187	99	720	162	92	757

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	463	463	61	27	724	387	13	23
Volume Left	0	0	0	27	0	0	0	0
Volume Right	0	0	61	0	0	25	13	23
cSH	1700	1700	1700	752	1700	1700	720	757
Volume to Capacity	0.27	0.27	0.04	0.04	0.43	0.23	0.02	0.03
Queue Length 95th (ft)	0	0	0	3	0	0	1	2
Control Delay (s)	0.0	0.0	0.0	10.0	0.0	0.0	10.1	9.9
Lane LOS				A			B	A
Approach Delay (s)	0.0			0.2			10.1	9.9
Approach LOS							B	A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	119	8	167	79	13	246
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	129	9	182	86	14	267
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				498		
pX, platoon unblocked						
vC, conflicting volume			138		583	134
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			138		583	134
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		97	71
cM capacity (veh/h)			1446		415	915

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	138	182	86	14	267
Volume Left	0	182	0	14	0
Volume Right	9	0	0	0	267
cSH	1700	1446	1700	415	915
Volume to Capacity	0.08	0.13	0.05	0.03	0.29
Queue Length 95th (ft)	0	11	0	3	30
Control Delay (s)	0.0	7.8	0.0	14.0	10.5
Lane LOS		A		B	B
Approach Delay (s)	0.0	5.3		10.7	
Approach LOS				B	

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	4	95	10	13	72	6	10	4	16	16	19	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	103	11	14	78	7	11	4	17	17	21	54
Approach Volume (veh/h)		118			99			33			92	
Crossing Volume (veh/h)		52			20			125			103	
High Capacity (veh/h)		1329			1364			1256			1277	
High v/c (veh/h)		0.09			0.07			0.03			0.07	
Low Capacity (veh/h)		1111			1142			1044			1064	
Low v/c (veh/h)		0.11			0.09			0.03			0.09	

Intersection Summary			
Maximum v/c High	0.09		
Maximum v/c Low	0.11		
Intersection Capacity Utilization	22.1%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	851	13	0	1047	0	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	925	14	0	1138	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	723			418		
pX, platoon unblocked			0.93		0.88	0.93
vC, conflicting volume			939		1494	462
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			784		922	272
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			772		236	675

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	462	462	14	569	569	9
Volume Left	0	0	0	0	0	0
Volume Right	0	0	14	0	0	9
cSH	1700	1700	1700	1700	1700	675
Volume to Capacity	0.27	0.27	0.01	0.33	0.33	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.4
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.4
Approach LOS						B

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		33.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1121	514	683	1443	135	190
v/c Ratio	0.74	0.57	0.70	0.54	0.55	0.64
Control Delay	25.3	7.6	5.2	6.3	45.4	30.8
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	25.3	7.6	5.2	6.6	45.4	30.8
Queue Length 50th (ft)	272	44	2	213	73	54
Queue Length 95th (ft)	351	131	m7	255	131	#129
Internal Link Dist (ft)	682			406		
Turn Bay Length (ft)		200	150			
Base Capacity (vph)	1514	899	973	2694	246	296
Starvation Cap Reductn	0	0	0	573	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.57	0.70	0.68	0.55	0.64

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1031	473	628	1328	0	0	0	0	124	0	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lane Util. Factor		0.95	1.00	0.97	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	3433	3539					1770		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	3433	3539					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1121	514	683	1443	0	0	0	0	135	0	190
RTOR Reduction (vph)	0	0	221	0	0	0	0	0	0	0	0	76
Lane Group Flow (vph)	0	1121	293	683	1443	0	0	0	0	135	0	114
Turn Type		NA	Perm	Prot	NA					Prot		custom
Protected Phases		4		3	8					1		
Permitted Phases			4									6
Actuated Green, G (s)		38.5	38.5	25.5	68.5					12.5		12.5
Effective Green, g (s)		38.5	38.5	25.5	68.5					12.5		12.5
Actuated g/C Ratio		0.43	0.43	0.28	0.76					0.14		0.14
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1514	677	973	2694					246		220
v/s Ratio Prot		c0.32		c0.20	0.41					c0.08		
v/s Ratio Perm			0.18									0.07
v/c Ratio		0.74	0.43	0.70	0.54					0.55		0.52
Uniform Delay, d1		21.6	18.1	28.9	4.3					36.1		36.0
Progression Factor		1.00	1.00	0.11	1.33					1.00		1.00
Incremental Delay, d2		3.3	2.0	1.1	0.4					2.5		8.5
Delay (s)		24.9	20.1	4.3	6.2					38.6		44.5
Level of Service		C	C	A	A					D		D
Approach Delay (s)		23.4			5.6			0.0			42.0	
Approach LOS		C			A			A			D	

Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	293	962	1617	451	435	414
v/c Ratio	0.83	0.48	0.87	0.82	0.87	0.84
Control Delay	36.7	2.6	23.7	41.9	48.2	45.3
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	36.7	3.1	23.7	41.9	48.2	45.3
Queue Length 50th (ft)	59	44	268	245	252	227
Queue Length 95th (ft)	m#124	53	#402	#414	#441	#397
Internal Link Dist (ft)		406	261		731	
Turn Bay Length (ft)	100					
Base Capacity (vph)	384	2025	1863	551	501	493
Starvation Cap Reductn	0	527	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	0.76	0.64	0.87	0.82	0.87	0.84

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	885	0	0	1347	141	610	0	586	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.91		0.95	0.91	0.95			
Frt	1.00	1.00			0.99		1.00	0.92	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (prot)	1770	3539			5013		1681	1528	1504			
Flt Permitted	0.11	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (perm)	198	3539			5013		1681	1528	1504			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	962	0	0	1464	153	663	0	637	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	0	0	0
Lane Group Flow (vph)	293	962	0	0	1604	0	451	435	414	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)	51.5	51.5			33.2		29.5	29.5	29.5			
Effective Green, g (s)	51.5	51.5			33.2		29.5	29.5	29.5			
Actuated g/C Ratio	0.57	0.57			0.37		0.33	0.33	0.33			
Clearance Time (s)	4.5	4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	354	2025			1849		551	501	493			
v/s Ratio Prot	c0.13	0.27			0.32							
v/s Ratio Perm	c0.35						0.27	0.28	0.28			
v/c Ratio	0.83	0.48			0.87		0.82	0.87	0.84			
Uniform Delay, d1	22.8	11.3			26.4		27.8	28.4	28.1			
Progression Factor	1.14	0.18			0.68		1.00	1.00	1.00			
Incremental Delay, d2	10.1	0.6			4.8		12.7	18.1	15.7			
Delay (s)	36.1	2.6			22.9		40.5	46.6	43.8			
Level of Service	D	A			C		D	D	D			
Approach Delay (s)		10.4			22.9			43.6			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	216	1126	242	125	937	440	211	221	228
v/c Ratio	0.74	0.83	0.32	0.60	0.79	0.66	0.55	0.81	0.43
Control Delay	35.0	33.0	7.6	26.9	33.1	38.9	29.2	60.5	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	33.0	7.6	26.9	33.1	38.9	29.2	60.5	22.7
Queue Length 50th (ft)	92	254	26	36	253	120	76	123	82
Queue Length 95th (ft)	m150	m366	m59	#84	331	170	148	#241	148
Internal Link Dist (ft)		338			999		418	578	
Turn Bay Length (ft)	350		200			250			
Base Capacity (vph)	311	1358	754	210	1184	668	382	274	547
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	0.69	0.83	0.32	0.60	0.79	0.66	0.55	0.81	0.42

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	199	1036	223	115	813	49	405	87	107	87	116	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5			4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3509		3433	1709			1824	1583
Flt Permitted	0.12	1.00	1.00	0.13	1.00		0.95	1.00			0.98	1.00
Satd. Flow (perm)	216	3539	1583	247	3509		3433	1709			1824	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	1126	242	125	884	53	440	95	116	95	126	228
RTOR Reduction (vph)	0	0	147	0	5	0	0	49	0	0	0	27
Lane Group Flow (vph)	216	1126	95	125	932	0	440	162	0	0	221	201
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases	4		4	8								6
Actuated Green, G (s)	45.3	34.5	34.5	36.7	30.2		17.5	17.5			13.5	24.3
Effective Green, g (s)	45.3	34.5	34.5	36.7	30.2		17.5	17.5			13.5	24.3
Actuated g/C Ratio	0.50	0.38	0.38	0.41	0.34		0.19	0.19			0.15	0.27
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	295	1357	607	211	1177		668	332			274	507
v/s Ratio Prot	c0.09	c0.32		0.04	0.27		c0.13	0.09			c0.12	0.05
v/s Ratio Perm	0.28		0.06	0.20								0.08
v/c Ratio	0.73	0.83	0.16	0.59	0.79		0.66	0.49			0.81	0.40
Uniform Delay, d1	16.9	25.1	18.2	19.3	27.1		33.5	32.3			37.0	26.9
Progression Factor	1.26	1.08	2.27	1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	8.0	5.3	0.5	4.4	5.5		5.0	5.0			21.9	0.5
Delay (s)	29.3	32.5	41.8	23.7	32.6		38.5	37.3			58.9	27.4
Level of Service	C	C	D	C	C		D	D			E	C
Approach Delay (s)		33.5			31.5			38.1			42.9	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	34.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	72.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	1430	1367	78	124	120
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	1554	1486	85	135	130
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		341	800			
pX, platoon unblocked	0.79				0.87	0.79
vC, conflicting volume	1571				2395	785
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1188				1479	192
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				0	80
cM capacity (veh/h)	460				91	644

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	45	777	777	991	580	135	130
Volume Left	45	0	0	0	0	135	0
Volume Right	0	0	0	0	85	0	130
cSH	460	1700	1700	1700	1700	91	644
Volume to Capacity	0.10	0.46	0.46	0.58	0.34	1.47	0.20
Queue Length 95th (ft)	8	0	0	0	0	258	19
Control Delay (s)	13.7	0.0	0.0	0.0	0.0	345.1	12.0
Lane LOS	B					F	B
Approach Delay (s)	0.4			0.0		181.3	
Approach LOS						F	

Intersection Summary			
Average Delay	14.2		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1329	225	109	1422	26	0	0	143	0	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1445	245	118	1546	28	0	0	155	0	0	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		481			660							
pX, platoon unblocked	0.78			0.86			0.85	0.85	0.86	0.85	0.85	0.78
vC, conflicting volume	1574			1689			2479	3255	722	2674	3486	787
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1171			1482			1662	2577	363	1892	2849	162
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 %	100			70			100	100	72	100	100	96
cM capacity (veh/h)	462			389			40	15	548	20	10	666

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	722	722	245	118	1030	543	155	25
Volume Left	0	0	0	118	0	0	0	0
Volume Right	0	0	245	0	0	28	155	25
cSH	1700	1700	1700	389	1700	1700	548	666
Volume to Capacity	0.42	0.42	0.14	0.30	0.61	0.32	0.28	0.04
Queue Length 95th (ft)	0	0	0	32	0	0	29	3
Control Delay (s)	0.0	0.0	0.0	18.3	0.0	0.0	14.2	10.6
Lane LOS				C			B	B
Approach Delay (s)	0.0			1.3			14.2	10.6
Approach LOS							B	B

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	337	30	333	121	28	261
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	366	33	362	132	30	284
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				498		
pX, platoon unblocked						
vC, conflicting volume			399		1238	383
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			399		1238	383
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			69		77	57
cM capacity (veh/h)			1160		133	665

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	399	362	132	30	284
Volume Left	0	362	0	30	0
Volume Right	33	0	0	0	284
cSH	1700	1160	1700	133	665
Volume to Capacity	0.23	0.31	0.08	0.23	0.43
Queue Length 95th (ft)	0	34	0	21	53
Control Delay (s)	0.0	9.5	0.0	39.8	14.4
Lane LOS		A		E	B
Approach Delay (s)	0.0	7.0		16.8	
Approach LOS				C	

Intersection Summary				
Average Delay	7.2			
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Volume (veh/h)	64	221	10	28	106	14	10	39	73	73	80	188
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	240	11	30	115	15	11	42	79	79	87	204
Approach Volume (veh/h)		321			161			133			371	
Crossing Volume (veh/h)		197			123			389			157	
High Capacity (veh/h)		1187			1258			1020			1225	
High v/c (veh/h)		0.27			0.13			0.13			0.30	
Low Capacity (veh/h)		982			1046			831			1016	
Low v/c (veh/h)		0.33			0.15			0.16			0.36	

Intersection Summary				
Maximum v/c High		0.30		
Maximum v/c Low		0.36		
Intersection Capacity Utilization		55.3%	ICU Level of Service	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1443	28	0	1428	0	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1568	30	0	1552	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	723			418		
pX, platoon unblocked			0.88		0.82	0.88
vC, conflicting volume			1599		2345	784
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1411		1557	487
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			423		85	464

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	784	784	30	776	776	33
Volume Left	0	0	0	0	0	0
Volume Right	0	0	30	0	0	33
cSH	1700	1700	1700	1700	1700	464
Volume to Capacity	0.46	0.46	0.02	0.46	0.46	0.07
Queue Length 95th (ft)	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.3
Lane LOS						B
Approach Delay (s)	0.0			0.0		13.3
Approach LOS						B

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		49.9%	ICU Level of Service	A
Analysis Period (min)		15		

Intersection: 14: Main Entrance/Shell Drive & Route 92

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	R	L	TR	R	R
Maximum Queue (ft)	4	19	80	14	68	36
Average Queue (ft)	0	3	35	1	35	14
95th Queue (ft)	4	16	70	15	61	39
Link Distance (ft)	78	78		183	321	89
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			150			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 14: Main Entrance/Shell Drive & Route 92

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	T	R	L	T	TR	R	R
Maximum Queue (ft)	12	34	154	197	194	111	49
Average Queue (ft)	1	7	54	72	55	50	19
95th Queue (ft)	9	26	116	199	182	93	47
Link Distance (ft)	78	78		183	183	321	89
Upstream Blk Time (%)			0	3	3		
Queuing Penalty (veh)			0	20	19		
Storage Bay Dist (ft)			150				
Storage Blk Time (%)				4			
Queuing Penalty (veh)				5			