Traffic Impact Study

NNSA Development Project

Route 150 and Botts Road

Kansas City, Missouri

Prepared for:

Honeywell

August 2007

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August 31, 2007

Mr. Craig Ham
Manager, Facilities Engineering Projects
NNSA Kansas City Plant operated by Honeywell FM & T, LLC
2000 East Bannister Road
Kansas City, MO 64131

Re: Traffic Impact Study for the Proposed NNSA Development Project
Route 150 and US-71
Kansas City, Missouri

Dear Mr. Ham:

In response to your request and authorization, TranSystems Corporation has completed a traffic impact study for the proposed NNSA development project to be located in the northwest quadrant of the Route 150 and Botts Road intersection in Kansas City, Missouri. The purpose of this study was to assess the impacts of the proposed and nearby development projects in the area on the surrounding transportation system.

Included in this study are assessments of existing, existing plus initial development, and future development conditions. The study also identifies improvements needed to mitigate impacts to the surrounding street system, taking into consideration the proposed NNSA facility as well as other nearby projects in the area. Note that a companion traffic impact study is currently being prepared by TranSystems for the nearby Richards-Gebaur redevelopment project on the south side of Route 150.

We trust that the enclosed information proves beneficial to you, the City of Kansas City, 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 this study with you at your convenience.

Sincerely,
TranSystems

By: _____
Dustin L. Elliott, EIT
Project Engineer

By: _____
Michael R. Wahlstedt, PE, PTOE
Assistant Vice President

MRW:DLE:de:P101070294

Introduction

The purpose of this study was to assess the impact of the proposed National Nuclear Security Administration (NNSA) facility on the surrounding transportation system. The project will be generally located in the northwest quadrant of the Route 150 and Botts Road intersection in Kansas City, Missouri. The location of the proposed development relative to the major streets in the area is shown on Figure A-1 in Appendix A. Included in this study are discussions of the existing, existing plus initial development, and future conditions as they relate to traffic operations on the adjacent street system. The study includes trip generation projections, volume/capacity analyses, identification of improvements to the street system for the purposes of mitigating potential impacts of the proposed development, and a walkability assessment.

Proposed Development Plan

The Kansas City branch of the National Nuclear Security Administration (NNSA), operated by Honeywell Federal Manufacturing & Technologies, LLC, is planning to build a new facility in the northwest quadrant of the Route 150 and Botts Road intersection. The new facility will replace the existing plant located in the Bannister Road Federal Complex in Kansas City, Missouri. The plant is expected to maintain the existing workforce, which is comprised of approximately 2,700 employees that are split between three shifts. Shift times are flexible, but the majority of the employees work this general schedule:

- First Shift (Approximately 2,200 employees, 7:00 A.M. to 3:30 P.M.)
- Second Shift (Approximately 300 employees, 3:30 P.M. to 12:00 A.M.)
- Third Shift (Approximately 100 employees, 12:00 A.M. to 7:00 A.M.)

Detailed site information was not available at the time of this study; however, Honeywell staff indicated that the site would likely have two entrances on Botts Road, north of Route 150, and potentially one limited-access intersection on Route 150. For the purposes of this study, it was assumed that there would be two full-access driveways on Botts Road. The first (South Drive) was assumed to be located approximately 1,500 feet north of Route 150 and the second (North Drive) was assumed to be located approximately 800 feet north of the first driveway. A copy of the conceptual site plan for the proposed project has been included on Figure A-2.

Other Nearby Development Projects

Several nearby development projects were considered for this study in addition to the proposed development. Brief descriptions of each of the nearby projects have been provided below.

Richards-Gebaur Redevelopment Project

There is a plan currently being proposed to re-develop portions of the former Richards-Gebaur Air Force Base south of Route 150 and west of US-71. The current development plan proposes approximately 924 acres of industrial land and 52 acres of retail land. Access to the site along Route 150 will generally be provided at Botts Road and at Andrews Road (Andrews Road will be relocated from its current location). Access will also be provided to the southern portion of the project via the US-71 and 155th Street interchange. Internal to the site, Botts Road will be extended south from Route 150 and will serve as the primary north-south roadway. 155th Street will be the primary east-west corridor. Andrews Road is planned to be relocated approximately 1,000 feet west of its current location at Route 150 and will extend south then curving west to intersect Botts Road. Traffic volume projections for the industrial portion of the proposed project were developed based on traffic count data collected at similar local industrial developments within the Kansas City Metropolitan area. Traffic volume projections for the proposed retail portion of the project were estimated using the Institute of Transportation Engineers' Trip Generation, 7th Edition.

TranSystems is in the process of preparing a companion traffic study for the Richards-Gebaur site. That study focuses primarily on the Richards-Gebaur site and will include additional details about that proposed project.

Kansas City Southern Intermodal Facility

The Kansas City Southern Railroad (KCS) is planning to build a rail-truck intermodal facility on the existing airport section of the Richards-Gebaur site. Traffic volume projections for this site were derived based on information provided by KCS. Thunderbird Road is planned as the primary access for the proposed facility.

Underground Industrial

An underground industrial development is planned on the eastern edge of the Richards-Gebaur site. This project will include an underground mining/quarry operation and over time, as the mining is completed in areas the space will be converted to storage and industrial uses similar to some of the other underground facilities in the Kansas City area. The total amount of potential development for this project is undetermined at this time. For the purposes of this study, we have assumed an absorption rate of approximately 200,000 square feet of leasable industrial space per year after an initial five year lag time for quarry operations. Trip generation for this site was based on similar rates as those that were used for the above ground industrial development in this study. The development rate assumptions were based on information received from the developer.

Auto-load Facility Expansion

There is an existing auto-load facility in operation on the western edge of the Richards-Gebaur site, near the old runway. This facility transfers vehicles manufactured by automakers to and from rail cars for transport and is expected to double their existing operations within the next 20 years. The primary access to the site is provided via 155th Street. Trip generation for this site was based on traffic counts taken in 2004 near the site along 155th Street.

Northeast corner of Route 150 and Botts Road Intersection

Approximately 320 acres of currently undeveloped land in the northeast quadrant of the Route 150 and Botts Road intersection was considered for potential development. The land is zoned light industrial according to the Kansas City zoning map and was considered to develop as such for the purposes of this study. Trip generation and distributions were developed based on this assumption. There was also a recent plan to build a gas station / fast food restaurant in the northeast corner of the Route 150 and Colorado Avenue intersection. Information for this project was taken from the Proposed Gas Station Traffic Impact Study prepared by TranSystems in November 2006. In general, access to this area was considered to be provided via the Route 150 and Colorado Avenue intersection as well as two access locations north of Route 150 on Botts Road.

Study Area

Study Intersections

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

- Route 150 and Prospect Avenue
- Route 150 and Thunderbird Road
- Route 150 and Botts Road
- Route 150 and Colorado Avenue
- Route 150 and Andrews Road
- Route 150 and West Outer Road
- Route 150 and US-71 SB Ramps
- Route 150 and US-71 NB Ramps
- Route 150 and East Outer Road

Existing Traffic Volumes

Turning movement traffic counts were collected at the existing study intersections during a typical weekday in May 2004 from 6:45 to 8:45 A.M. and 4:15 to 6:15 P.M. The existing A.M. peak hour within the count period was found to generally be from 7:30 to 8:30 A.M. The existing P.M. peak hour within the count period was found to generally be from 5:00 to 6:00 P.M. The turning movement counts were adjusted to reflect 2006 conditions based on 24-hour machine count data collected on Route 150 in August 2006. The existing lane configurations and weekday peak hour traffic volumes have been illustrated on Figures A-3, A-4, and A-5.

Zoning

The proposed development is located on vacant land and is generally bordered by Route 150 to the south, Botts Road to the east, and the KCS railroad to the west and north. The site is zoned for industrial uses according to the City's land use plan.

Street Network

According to the Kansas City Major Street Plan, Route 150 is a four-lane east/west expressway that serves as a connection to Johnson County, Kansas to the west of the proposed project and cities in eastern Jackson County, Missouri to the east. The posted speed limit on Route 150 is 45 mph east of Botts Road and 60 mph west of Botts Road. US-71 Highway is a north/south freeway that serves as a southern entrance point to the Greater Kansas City Metropolitan Area and connects to the nearby cities of Belton, Peculiar, and Raymore to the south. US-71 has both an east and west outer roads that serve various developments adjacent to the highway. In the near future, the connection between Route 150 and US-71 Highway will be reconfigured from a standard diamond interchange to a new single-point urban interchange (SPUI). This project is planned to begin construction within the next year and is illustrated on Figure A-6. Improvements are also planned to widen Route 150 to a four-lane divided arterial east of US 71 to Route 291 in the near future.

Prospect Avenue is classified as a secondary arterial and runs north/south to the west of the proposed development. Botts Road north of Route 150 is currently a two-lane rural roadway; however Jackson County is planning improvements that may upgrade the roadway to urban collector standards. Colorado Avenue is currently a stub street north of Route 150.

Future Traffic Growth

Future traffic growth projections for this study were developed based on two primary sources of information, MoDOT historical traffic count maps and model data from the Mid-America Regional Council (MARC). The data indicates that the existing traffic volumes on Route 150 can be expected to increase by roughly 60 percent within the next 20 years. Botts Road traffic volumes were increased by two percent per year as well to account for potential growth or traffic shifts along this roadway. Additional information on the projected traffic growth can be found in *Appendix B*.

Analysis

The analysis of the proposed development's impact includes estimates of vehicle trip generation, distribution of trips onto the street network, and analysis of peak hour operations. Each of these analysis techniques and their results are described below. The study focused on typical weekday A.M. and P.M. peak hour operations.

Trip Generation

Trip generation estimates for this project were developed for the A.M. and P.M. peak hour conditions of the adjacent street traffic based on traffic counts conducted at the existing Bannister Road NNSA facility on June 28, 2007 from 6:00 to 8:30 A.M. and 2:00 to 4:30 P.M. The highest one-hour count within each period was used as the basis for trip generation for a conservative estimate. A breakdown of the count data collected has been included in *Appendix B*. The estimated daily, A.M. peak hour, and P.M. peak hour traffic volumes associated with the proposed and other nearby developments are listed in Table 1. Additional trip generation information can be found in Appendix B.

Trip Distribution

The trips generated by the proposed and other nearby developments were distributed onto the street system based on the trip distributions summarized in Table 2. Three general distributions were developed for use in this study – one for the NNSA employee trips, one for industrial uses, and one for retail uses. The NNSA distributions were developed based on general employee home zip code data received from Honeywell. The industrial distributions were based on the projected regional service area of the industrial developments, i.e. the surrounding populated cities. The retail distributions were based on the nearby residential areas. Detailed distribution patterns through the study intersections can be found in Appendix B. Trip distribution adjacent to the site will be driven in large part by the location of the drives to the parking areas and policies by the NNSA for gate usage. This study assumes relatively even distribution amongst the drives. As plans develop for the site, if this does not turn out to be the case, some localized changes to the recommended geometrics and the entrance intersections may be necessary.

Table 1
Trip Generation

Land Use	Intensity		ITE Code	Daily	A.M. Peak Hour Total	A.M. Peak Hour In	A.M. Peak Hour Out	P.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out
Proposed Development										
NNSA	2,700	Emp	---	5,900	800	771	29	912	44	868
Total Proposed Development Trips				*5,900*	*800*	*771*	*29*	*912*	*44*	*868*
Other Nearby Planned Development										
Richards-Gebaur Industrial	924	Acres	130	32,827	2,718	2,038	679	3,217	933	2,284
Richards-Gebaur Retail	342,000	Sq. Ft.	820	15,103	327	200	127	1,409	677	732
Industrial (NE of Route 150/Botts)	320	Acres	130	11,363	941	706	235	1,114	323	791
Gas Station with Convenience Mart	*8*	*Pumps*	*945*	*1,302*	*80*	*40*	*40*	*107*	*54*	*54*
Fast Food with Drive-Through	*3,000*	*Sq. Ft.*	*934*	*1,488*	*159*	*81*	*78*	*104*	*54*	*50*
Internal Trips (20%) for Convenience Store				*558*	*48*	*24*	*24*	*42*	*22*	*21*
External Trips for Convenience Store				*2,232*	*192*	*97*	*95*	*169*	*86*	*83*
Pass-By Trips (60%) for Convenience Store				*1,339*	*115*	*58*	*57*	*101*	*52*	*50*
Non-Pass-By Trips for Convenience Store				*893*	*77*	*39*	*38*	*68*	*34*	*33*
Car Load Facility Expansion	---	---	---	---	90	57	33	106	9	97
Underground Industrial Development	75	Acres	130	2,663	221	165	55	261	76	185
KCS Intermodal Facility	---	---	---	2,867	221	100	121	271	142	129
Total Other Nearby Development Trips				*67,055*	*4,709*	*3,364*	*1,346*	*6,547*	*2,246*	*4,301*

Table 2
Trip Distribution

Direction To/From	General Distributions		
	Industrial	NNSA	Retail
North on US-71 Hwy	50%	55%	25%
South on US-71 Hwy	10%	20%	15%
West on Route 150	30%	10%	---
East on Route 150	10%	10%	---
North on Botts Rd	---	5%	---
South on Kensington/Westover	---	---	10%
South on Scott Ave	---	---	30%
North on E. Outer Road	---	---	5%
East on 155th St	---	---	15%
Total	100%	100%	100%

Traffic Operation Assessment

An assessment of traffic operations was made for three separate scenarios. These scenarios allowed for comparison of the before and after impacts of the proposed and other nearby developments in the study area. The scenarios studied included:

- Existing Conditions
- Existing plus Initial Development Conditions
- Future Year 2025 Conditions

The study intersections were evaluated based on the methodologies outlined in the Highway Capacity Manual, 2000 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

The LOS rating deemed acceptable varies by community, facility type and traffic control device. A LOS D is the desirable goal for movements at unsignalized intersections that must yield to other movements; however, a LOS E or F is 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 is deemed undesirable for signalization for other reasons. Other reasons may include the close proximity of an existing traffic signal or the presence of a convenient alternative path. For signalized intersections, level of service and average delay relate to all vehicles using the intersection. LOS D is the minimum desirable standard set by Kansas City for signalized intersections. All study intersections were evaluated using the Synchro analysis software package based on Highway Capacity Manual methods. Note that for analysis purposes, trucks were considered to be 10 percent of the total traffic mix at all study intersections. This amount appears to be somewhat higher than the existing percentage of trucks on Route 150. However, it was considered to be an appropriate, and potentially conservative, amount for use in this study, given the proposed development sizes and types in the area.

Existing Conditions

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

Table 4 Intersection Level of Service Existing Conditions				
Intersection	A.M. Peak Hour		P.M. Peak Hour	
Approach/Movement	LOS	Delay	LOS	Delay
Route 150 and Prospect Avenue				
Eastbound Shared Through / Left-turn	B	13.1	A	0.1
Westbound Shared Through / Left-turn	A	0.3	A	8.3
Northbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Northbound Right-turn	B	10.9	D	29.2
Southbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Southbound Right-turn	D	26.0	B	11.5
Route 150 and Thunderbird Road				
Westbound Left-turn	A	8.8	D	25.9
Northbound Left-turn	*F*	*52.6*	*F*	*>100*
Northbound Right-turn	B	10.2	D	26.9
Route 150 and Botts Road				
Eastbound Left-turn	D	30.6	B	10.6
Westbound Left-turn	A	8.5	C	24.0
Northbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Southbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Route 150 and Andrews Road				
Westbound Shared Through / Left-turn	A	1.6	*F*	*>100*
Northbound Left-turn	*F*	*82.6*	*F*	*>100*
Northbound Right-turn	A	9.8	C	23.4
Route 150 and W. Outer Road				
All Movements (Signalized)	A	7.5	C	32.0
Route 150 and US-71 SB Ramps				
All Movements (Signalized)	C	23.1	*F*	*>100*
Route 150 and US-71 NB Ramps				
All Movements (Signalized)	*F*	*>100*	*F*	*>100*
Route 150 and E. Outer Road				
All Movements (Signalized)	B	18.3	D	53.4

LOS – Level of Service
Delay – Delay in Seconds per Vehicle

The analysis results indicate that operations at several study intersections are below desirable levels of service (LOS) under existing traffic conditions. In general, most of the stop-controlled cross-street movements along Route 150 experience long delays during the A.M. and P.M. peak hours. Although the delays are undesirable, traffic volumes at these locations are relatively low and do not appear to meet traffic signal warrant thresholds. In addition to the unsignalized intersections, the signalized US-71 Highway ramp intersections on Route 150 appear to be failing under existing traffic loads. These deficiencies are expected to be remedied with the new interchange.

Existing plus Initial Development Conditions

The results for the intersection analyses of existing plus initial development A.M. and P.M. peak hour conditions have been summarized in *Table 5*. This scenario was developed to simulate traffic conditions approximately five years from now, considering the likely development of all planned projects in the area that will occur within that time frame. This scenario included the full development of the proposed NNSA facility as well as the projected initial development of the Richards-Gebaur and Kansas City Southern sites, plus the proposed gas station at the Route 150 and Colorado Avenue intersection. The initial Richards-Gebaur development considered was approximately 200 acres, including all of Phase 1 and about 35 percent of Tract D, based on estimates provided by the developer. The initial KCS intermodal facility was considered to be about 25 percent of the planned growth between now and the ultimate

operation. Botts Road at Route 150 was considered as the primary access for the Richards-Gebaur traffic and Thunderbird Road at Route 150 was considered as the primary access for the KCS intermodal traffic. Background traffic growth on Route 150 for the five year development period was also considered. Trip generation projections for this scenario can be found in *Appendix B*.

The Route 150 and US-71 Highway interchange improvement project currently underway by MoDOT was assumed to be completed for this scenario. The improvements for this project include replacing the traditional diamond interchange with a single-point urban interchange (SPUI) and building bridges over Route 150 for the east and west outer roads. A right-in / right-out intersection will be provided for the west outer road at Route 150. Existing traffic volumes at the West Outer Road intersection were shifted to account for this geometric change. For example, at the Route 150 and West Outer Road intersection, the southbound left-turn volume was shifted to the northbound right-turn movement. The East Outer Road intersection will go away with the new interchange, but Route 150 will be connected to the East Outer Road via the White Avenue full-access intersection further east. A sketch of the Route 150 and US-71 Highway interchange improvements has been included on *Figure A-6*.

The assessment of existing plus development conditions is an iterative process that begins by applying existing plus development traffic volumes to the existing street system. As deficiencies were identified, improvements were considered and evaluated to achieve acceptable operations. The analysis of this scenario considered Thunderbird Road, Botts Road, and Andrews Road to be at-grade intersections with traffic signal control. The development traffic volumes for the proposed NNSA facility were split as evenly as possible between the Thunderbird Road and Botts Road intersections to spread the loading and minimize overall delays. The study intersections were evaluated with the existing plus initial development lane configurations, traffic volumes, and traffic controls shown on Figures A-7, A-8, and A-9. Appendix C contains the analysis output files from Synchro.

The improvements considered in the analyses of this scenario include the following:

- Route 150 and Thunderbird Road / NNSA Drive (analyzed as a full-access at-grade intersection) – Install a traffic signal at the intersection. Provide dedicated eastbound and westbound left- and right-turn lanes with minimum lengths of 450 feet plus appropriate taper. For the northbound approach, provide a minimum of two outbound lanes (one left-turn lane and a shared through / right-turn lane). For southbound, provide a minimum of three outbound lanes (dual left-turn lanes and a shared through / right-turn lane). The northbound and southbound turn lanes should provide a minimum length of 250 feet plus appropriate taper.
- Route 150 and Botts Road (analyzed as a full-access at-grade intersection) – Install a traffic signal at the intersection. Provide dual left-turn lanes and single right-turn lanes on the eastbound and westbound approaches, all with minimum lengths of 450. For the southbound approach, provide dual left-turn lanes, a through lane, and a separate right-turn lane. For the northbound approach, provide dual left-turn lanes, a through lane, and dual right-turn lanes. The northbound turn lanes should provide a minimum storage length of 300 feet plus appropriate tapers.
- Route 150 and Andrews Road (analyzed as a full-access at-grade intersection) – Install a traffic signal at the intersection. Provide separate eastbound and westbound left-turn lanes with minimum lengths of 450 feet plus appropriate taper. For the northbound and southbound approaches, provide a left-turn lane and a shared through / right-turn lane.
- NNSA North Drive and Botts Road (analyzed with stop control on the eastbound approach) – Provide a northbound left-turn lane and a southbound right-turn lane each with minimum lengths of 250 feet plus appropriate taper. Provide separate left- and right-turn lanes on the eastbound approach. A minimum throat distance (distance between the public street and the first internal intersection) of 250 feet should be provided on the private driveway.
- NNSA South Drive and Botts Road (analyzed with stop control on the eastbound approach) – Provide a northbound left-turn lane and a southbound right-turn lane each with minimum lengths of 250 feet plus appropriate taper. Provide separate left- and right-turn lanes on the eastbound approach. A minimum throat distance of 250 feet should be provided on the private driveway.

Note that the improvements identified for the site driveways on Botts Road are relatively minor due to the fact that the site driveway on Route 150, in this scenario, was considered to serve a significant portion of traffic from the NNSA site as a full-access intersection. If the full-access driveway is not provided on Route 150, the improvements needed at the Botts Road intersections would be more substantial. Refer to the future scenario of this study for the ultimate improvement needs at the Botts Road intersections.

Table 5
Intersection Level of Service
Existing plus Initial Development Conditions

Intersection	A.M. Peak Hour		P.M. Peak Hour	
Approach/Movement	LOS	Delay	LOS	Delay
Route 150 and Prospect Avenue				
Eastbound Shared Through / Left-turn	D	30.7	A	0.2
Westbound Shared Through / Left-turn	A	0.6	C	19.6
Northbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Northbound Right-turn	B	12.5	E	39.8
Southbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Southbound Right-turn	D	34.2	B	13.9
Route 150 and Thunderbird Road				
All Movements (Signalized)	D	53.9	*F*	*93.7*
Route 150 and Botts Road				
All Movements (Signalized)	*E*	*68.1*	*F*	*>100*
Route 150 and Andrews Road				
All Movements (Signalized)	*F*	*>100*	*F*	*>100*
Route 150 and W. Outer Road*				
Northbound Right-turn	B	10.1	*F*	*>100*
Southbound Right-turn	C	18.6	B	14.8
Route 150 and US-71 SPUI				
All Movements (Signalized)	*F*	*80.5*	C	26.4
NNSA North Drive and Botts Road				
Eastbound Left-turn	B	12.1	B	10.2
Eastbound Right-turn	A	8.8	A	9.5
Northbound Left-turn	A	7.7	A	7.5
NNSA South Drive and Botts Road				
Eastbound Left-turn	C	16.9	B	11.1
Eastbound Right-turn	A	8.6	B	10.9
Northbound Left-turn	A	8.0	A	7.8

LOS – Level of Service
Delay – Delay in Seconds per Vehicle
* Number of through lanes reduced to three eastbound and westbound, based on HCM maximums for analysis. Results may be conservative.

Several study intersections along Route 150 are expected to perform poorly with the combined short-term traffic from all the developments in the area considered even with the improvements identified above. The Botts Road and Andrews Road intersections on Route 150 are projected to fail in at least one or both peak hour travel periods if considered as signalized intersections. In addition, the Route 150 and US-71 interchange is expected to perform below desirable LOS goals in the A.M. peak hour at the projected traffic conditions.

The study intersections were also evaluated considering Route 150 to extend the six-lane section (three through lanes in each direction) west from the new Route 150 and US-71 interchange improvements. The results of those

analyses indicated that three of the four signalized study intersections on Route 150 would remain on the threshold of failing conditions at this level of development even with six lanes on Route 150. Analysis results for these key intersections have been summarized in *Table 6*.

Table 6
Intersection Level of Service
Existing plus Initial Development Conditions (With Six Lanes on Route 150)

Intersection		A.M. Peak Hour		P.M. Peak Hour	
	Approach/Movement	LOS	Delay	LOS	Delay
Route 150 and Thunderbird Road	All Movements (Signalized)	A	7.4	C	24.9
Route 150 and Botts Road	All Movements (Signalized)	B	13.4	*E*	*56.8*
Route 150 and Andrews Road	All Movements (Signalized)	*D*	*39.6*	*F*	*86.6*
Route 150 and US-71 SPUI	All Movements (Signalized)	*E*	*79.1*	C	26.1

LOS – Level of Service
Delay – Delay in Seconds per Vehicle

Future Conditions

The future conditions analyses of this study include full build-out traffic from all of the planned projects in the area, including the proposed NNSA site, plus general background traffic growth along Route 150 and Botts Road. Given the results of the intermediate development analyses, an interchange was assumed at Route 150 and Botts Road for the future conditions with two separate configurations. The Route 150 and Andrews Road intersection was initially considered to be a signalized at-grade intersection. However, the initial analysis results indicated that the projected future traffic volumes on Route 150 would be too high to support a full-access intersection at this location. Therefore, Andrews Road was considered to provide RI/RO access to Route 150. With an interchange, the Botts Road site driveways were considered to be the primary access points for the NNSA site. Under this geometry configuration, the South Drive would be expected to meet peak hour traffic signal warrants and was therefore analyzed as such.

Alternative 1 included a diamond interchange at Route 150 and Botts Road. Thunderbird Road was considered to be rerouted to connect to Botts Road south of Route 150 and Andrews Road was considered to be RI/RO only. The results of the intersection analysis for Alternative 1 have been summarized in *Table 7*.

Alternative 2 included a split-diamond interchange between Thunderbird Road and Botts Road. That is, for the south side of the interchange, the eastbound off ramp from Route 150 would connect to Thunderbird Road and the eastbound on ramp to Route 150 would be connected to Botts Road. There would be a roadway adjacent to Route 150 that connects Thunderbird Road to Botts Road. The north side of the interchange would be similar, except the Route 150 off ramp would connect to Botts Road and the on ramp would connect to Thunderbird Road and a potential NNSA site driveway (only minor volumes were assigned to this drive, if it would be used as a major drive, some localized changes to the recommended intersection geometrics at the entrances would likely be necessary). The results of the intersection analysis for Alternative 2 have been summarized in *Table 8*. Note that the analysis results for the Route 150 study intersections at Prospect Avenue, Andrews Road, W. Outer Road, and US-71 SPUI are the same as Alternative 1 and were therefore not duplicated in this table.

The general improvements considered in the analyses of this scenario include the following:

- Route 150 and Botts Road Interchange – Provide a seven-lane bridge over Route 150 to accommodate a three lanes northbound (left-turn lane, shared through / left turn lane, and a through lane) and four lanes southbound (dual left-turn lanes and two through lanes). The dedicated northbound and southbound left-turn lanes should be extended approximately 400 feet beyond the preceding ramp intersection. Dedicated right-turn lanes should be provided on Botts Road at both Route 150 on ramps. Four lanes should be provided on both Route 150 off ramps at Botts Road.
- Route 150 and Andrews Road (analyzed as a RIRO intersection) – Provide separate eastbound and westbound right-turn lanes on Route 150 at the Andrews Road intersection with minimum lengths of 450 feet plus appropriate tapers. Provide a right-turn lane on the northbound and southbound approaches.
- NNSA North Drive and Botts Road (analyzed with stop control on the east and west legs) – Provide separate left- and right-turn lanes on the northbound and southbound approaches, each with minimum lengths of 250 feet plus appropriate taper. Provide a left-turn lane and a shared through / right-turn lane on the eastbound and westbound approaches. The left turn lanes should provide a minimum storage length of 250 feet plus appropriate tapers.
- NNSA South Drive and Botts Road – Install a traffic signal at the intersection. For the southbound approach, provide a left-turn lane, two through lanes, and a separate right-turn lane. The southbound turn lanes should provide minimum lengths of 250 feet plus appropriate tapers. For the northbound approach, provide dual left-turn lanes, two through lanes, and separate right-turn lane. The northbound turn lanes should provide minimum lengths of 250 feet plus appropriate tapers.
- Route 150 and Prospect Avenue – It was assumed that dedicated eastbound and westbound left-turn lanes would be provided on Route 150 at Prospect Avenue by the future year 2025.

The study intersections were evaluated with the future lane configurations, traffic volumes, and traffic controls shown on Figures A-10 through A-15. Appendix C contains the analysis output files from Synchro.

The future conditions analysis results indicate that an interchange at Route 150 and Botts Road would generally accommodate the traffic for the proposed adjacent developments. However, the Route 150 and US-71 interchange is expected to operate below desirable LOS conditions in the peak A.M. and P.M. weekday travel periods with all of the planned development in the area. This interchange appears to be designed to its maximum geometric potential for the given interchange configuration. Therefore, additional system-wide improvements may need to be considered to alleviate congestion at this interchange during the A.M. and P.M. peak hour travel periods after all planned developments are built in the area. The stop-controlled movements at the unsignalized study intersections along Route 150 are expected to experience long delays due to the high volumes of through traffic on Route 150. Although the delays would be undesirable at these locations, it was determined that traffic signal warrants would not be met at Route 150 and Prospect Avenue with the projected traffic volumes. Furthermore, Route 150 would no longer be able to support at-grade signalized intersections between Botts Road and US-71 at the projected traffic volumes.

Table 7 Intersection Level of Service Future Conditions (Alternative 1)				
Intersection	A.M. Peak Hour		P.M. Peak Hour	
Approach/Movement	LOS	Delay	LOS	Delay
Route 150 and Prospect Avenue				
Eastbound Left-turn	*F*	*>100*	D	27.9
Westbound Left-turn	C	19.5	*F*	*>100*
Northbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Northbound Right-turn	C	21.3	*F*	*>100*
Southbound Shared Through / Left-turn	*F*	*>100*	*F*	*>100*
Southbound Right-turn	*F*	*87.1*	D	29.5
WB Route 150 Ramps and Botts Road				
All Movements (Signalized)	C	24.3	D	36.5
EB Route 150 Ramps and Botts Road				
All Movements (Signalized)	C	22.0	D	46.1
Route 150 and Andrews Road				
Northbound Right-turn	B	12.2	*F*	*>100*
Southbound Right-turn	*F*	*>100*	C	24.6
Route 150 and W. Outer Road*				
Northbound Right-turn	B	12.3	*F*	*>100*
Southbound Right-turn	*F*	*>100*	C	25.0
Route 150 and US-71 SPUI				
All Movements (Signalized)	*F*	*>100*	*F*	*91.8*
NNSA North Drive and Botts Road				
Eastbound Left-turn	C	19.1	B	12.8
Eastbound Shared Through / Right-turn	C	16.4	B	11.0
Westbound Left-turn	C	22.5	*F*	*61.9*
Westbound Shared Through / Right-turn	B	12.2	B	10.5
Northbound Left-turn	A	8.0	A	7.6
Southbound Left-turn	A	8.1	A	8.0
NNSA South Drive and Botts Road				
All Movements (Signalized)	D	37.3	D	40.3

LOS – Level of Service
Delay – Delay in Seconds per Vehicle
* Number of through lanes reduced to three eastbound and westbound, based on HCM maximums for analysis. Results may be conservative.

Table 8 Intersection Level of Service Future Conditions (Alternative 2)				
Intersection	A.M. Peak Hour		P.M. Peak Hour	
Approach/Movement	LOS	Delay	LOS	Delay
WB Route 150 Ramps and Thunderbird Road				
Westbound Left-turn	A	7.4	A	7.5
Northbound Left-turn	B	12.8	D	25.3
Northbound Shared Through / Right-turn	C	18.5	D	31.8
Southbound	C	16.0	C	19.8
EB Route 150 Ramps and Thunderbird Road				
Eastbound Left-turn	A	7.3	A	7.3
Southbound Left-turn	C	21.3	B	14.8
Southbound Shared Through / Right-turn	D	32.7	C	15.8
Northbound	C	17.6	B	12.7
WB Route 150 Ramps and Botts Road				
All Movements (Signalized)	C	24.3	C	31.5
EB Route 150 Ramps and Botts Road				
All Movements (Signalized)	C	22.5	D	39.9
NNSA North Drive and Botts Road				
Eastbound Left-turn	C	17.5	B	13.2
Eastbound Shared Through / Right-turn	B	13.8	B	10.5
Westbound Left-turn	C	19.9	*E*	*48.1*
Westbound Shared Through / Right-turn	B	10.8	B	10.2
Northbound Left-turn	A	7.9	A	7.6
Southbound Left-turn	A	8.1	A	8.1
NNSA South Drive and Botts Road				
All Movements (Signalized)	C	24.5	D	36.7

LOS – Level of Service
Delay – Delay in Seconds per Vehicle

Walkability Analysis

The City of Kansas City, Missouri prepared the Kansas City Walkability Plan, March 2003, in an effort to align with the FOCUS Kansas City Strategic and Comprehensive Plan's effort to promote choice in transportation. The FOCUS Plan emphasizes the importance of all transportation modes and the Walkability Plan specifically addresses the pedestrian mode. The purpose of conducting a walkability assessment, through the use of the Pedestrian LOS Impact Analysis Manual, is to ensure that impacts to walkability be considered in addition to other traffic impacts in a development plan.

The Pedestrian Area Type for the study area has been identified by the City to be "Neighborhood Activity Centers and Corridors," based on other studies in the immediate area. Specific origins and destinations for pedestrian activities were not identified for this particular study. However, there do not appear to be many properties nearby (within ¼ mile as identified by the FOCUS Plan) that would potentially produce or attract pedestrians to and from the proposed site, such as retail and residential uses. In general, the existing area surrounding the proposed development does not appear to include pedestrian amenities.

The study area could generally be characterized as rural industrial. Route 150 is currently an expressway facility with relatively high speed limits and traffic volumes, including a significant amount of truck traffic, which is not conducive to pedestrian traffic. The proposed development is expected to provide some pedestrian amenities on site, primarily to accommodate employees walking to and from parking areas to the building(s).

Discussion

Route 150

With the widening of Route 150 west of US-71 Highway, the roadway has seen significant traffic growth in the past several years. Traffic volumes increased from approximately 17,000 vehicles per day in 1998 to around 25,000 in 2004. With all of the proposed developments plus the general growth in through traffic on Route 150, the corridor is expected to carry roughly 70,000 vehicles per day. At this traffic volume level, Route 150 would not be able to operate as an expressway facility with at grade intersections, as there will not be sufficient capacity for traffic signals to operate, even with the widening of Route 150 to three lanes in each direction.

The actual timing of each development project in the area will determine how long at-grade intersections may accommodate the traffic needs of the Route 150 corridor. This study identified that with significant improvements, Route 150 may be able to operate with traffic signals at the Thunderbird Road, Botts Road, and Andrews Road intersections up to about the five year projected development mark of projects in this area. Around that level of development, the signalized at-grade intersections are expected to begin to fail even with the consideration of six through lanes on Route 150. Based on the analyses performed in this study, a diamond interchange at Route 150 and Botts Road, with a seven-lane bridge (or eight, if a shared through-left turn lane is not used on the northbound approach), can be expected to accommodate the projected future traffic volumes from the proposed projects in this area.

Botts Road

Projected traffic volumes indicate two northbound through lanes and three southbound through lanes should be provided on Botts Road between the south NNSA Drive and the westbound Route 150 ramp intersection. Between the north and south NNSA drives, two through lanes should be provided in each direction on Botts Road. North of the north NNSA drive, Botts Road could transition back to a three-lane industrial commercial section, i.e. one through lane in each direction and a center two-way left-turn lane (TWLTL).

MoDOT access management standards suggest that the first full-access intersection adjacent to an interchange should be a minimum one-quarter mile (1,320 feet) away from the nearest ramp intersection. The same standards suggest that a limited-access driveway should be spaced a minimum one-eighth mile from the nearest ramp intersection. These minimum distances should be provided to maximize efficient traffic operations near the interchange.

Summary

This study documents the impact of the proposed NNSA development project to be located in the northwest quadrant of the Route 150 and Botts Road intersection in Kansas City, Missouri. This study included the analysis of the intersections adjacent to and surrounding the proposed development for typical weekday A.M. and P.M. peak hours of operation. Brief descriptions of the results for each study scenario have been provided below.

Existing Conditions

This scenario considered only the existing traffic volumes at the study intersections. The analysis results indicated that drivers at several study intersections experience long delays under existing peak hour traffic conditions. The planned Route 150 and US-71 interchange project is expected to improve traffic operations.

Existing plus Initial Development Conditions

This scenario took into consideration the full build-out of the proposed NNSA site, as well as initial projected build-outs of other planned developments in the area. Initial build-outs of other planned projects for this scenario included portions of the Richards-Gebaur and KCS Intermodal sites, as well as the proposed gas station site on the north side of Route 150. The analysis results for this scenario indicated that most study intersections along Route 150 would

operate with failing levels of service, when considered as at-grade intersections. Widening Route 150 to three lanes in each direction would bring operations closer to desirable LOS goals under the projected traffic conditions; however, the Route 150 intersections at Botts Road, Andrews Road, and US-71 would still be expected to perform below desirable LOS during at least one peak hour study period.

Future Year 2025 Conditions

This scenario considered full build-out of all planned projects in the area plus general background traffic growth along Route 150 and Botts Road. An interchange at Route 150 and Botts Road can be expected to provide adequate access to Route 150 for the surrounding developments. However, the Route 150 and US-71 interchange is expected to operate below desirable LOS conditions in the peak A.M. and P.M. weekday travel periods with all of the planned development in the area. This interchange appears to be designed to its maximum geometric potential for the given interchange configuration. Therefore, additional system-wide improvements may need to be considered to alleviate congestion at this interchange during the A.M. and P.M. peak hour travel periods after all planned developments are built in the area.

Appendix A - Figures

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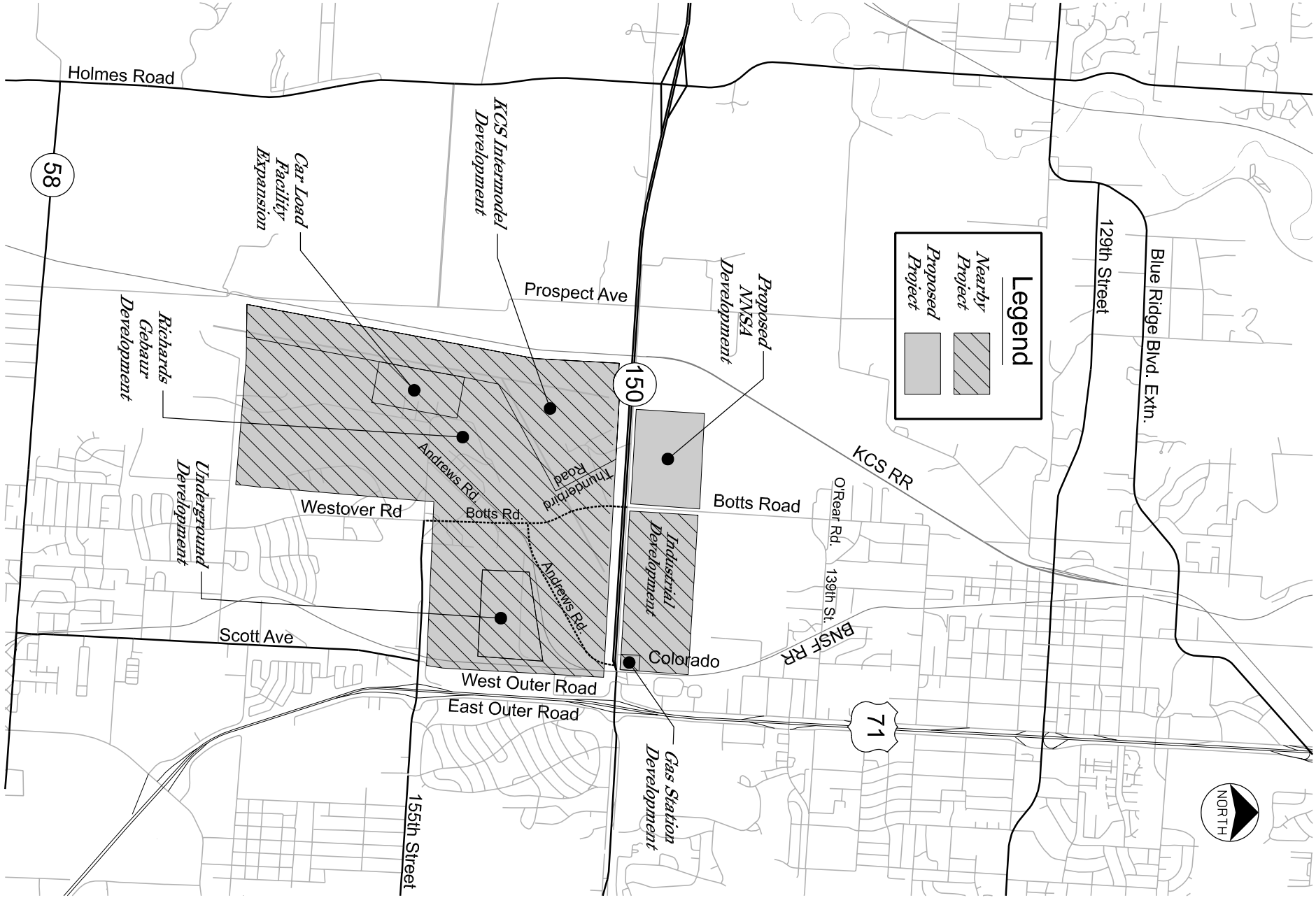

TranSystems	LOCATION MAP	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-1

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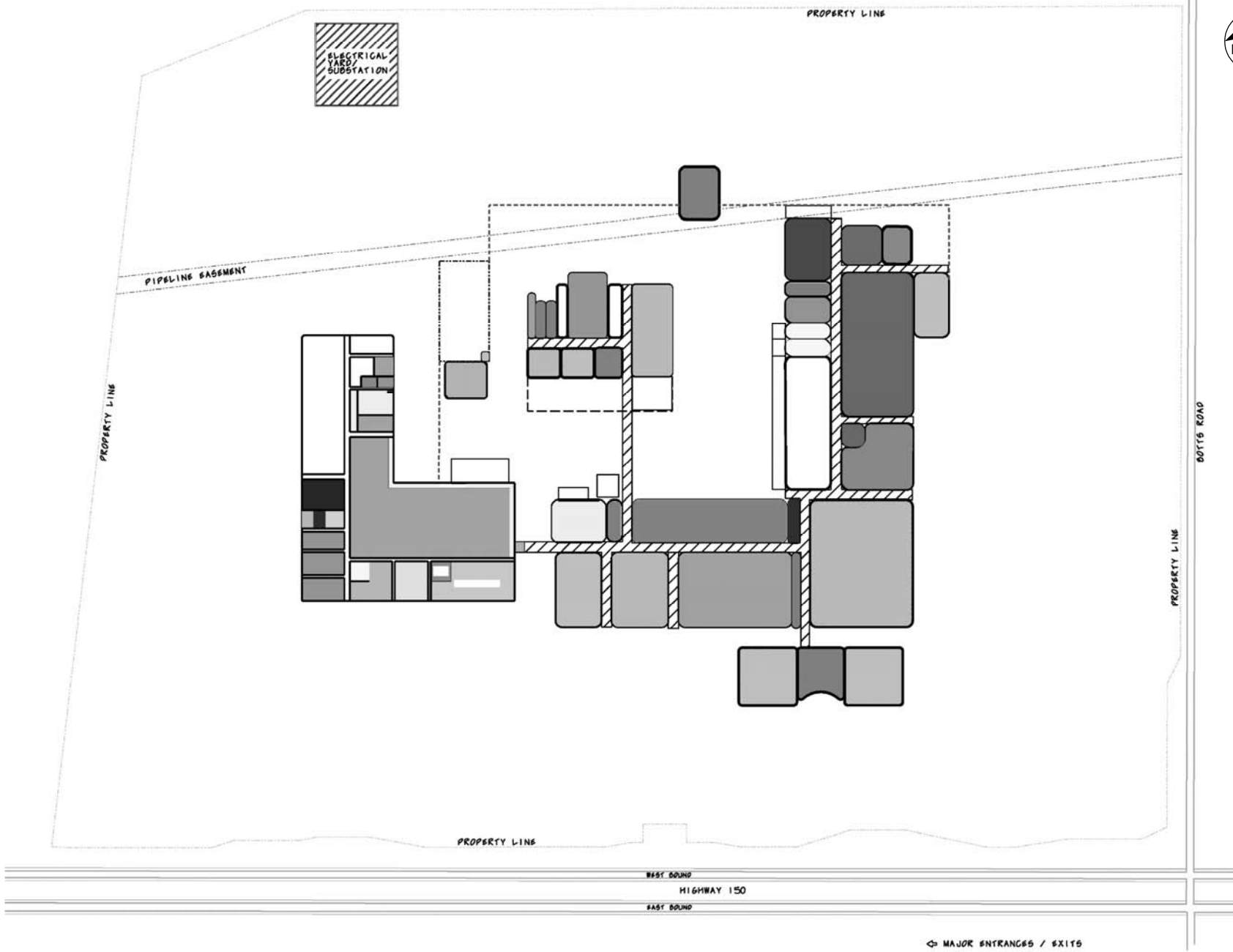

TranSystems	SITE PLAN	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-2

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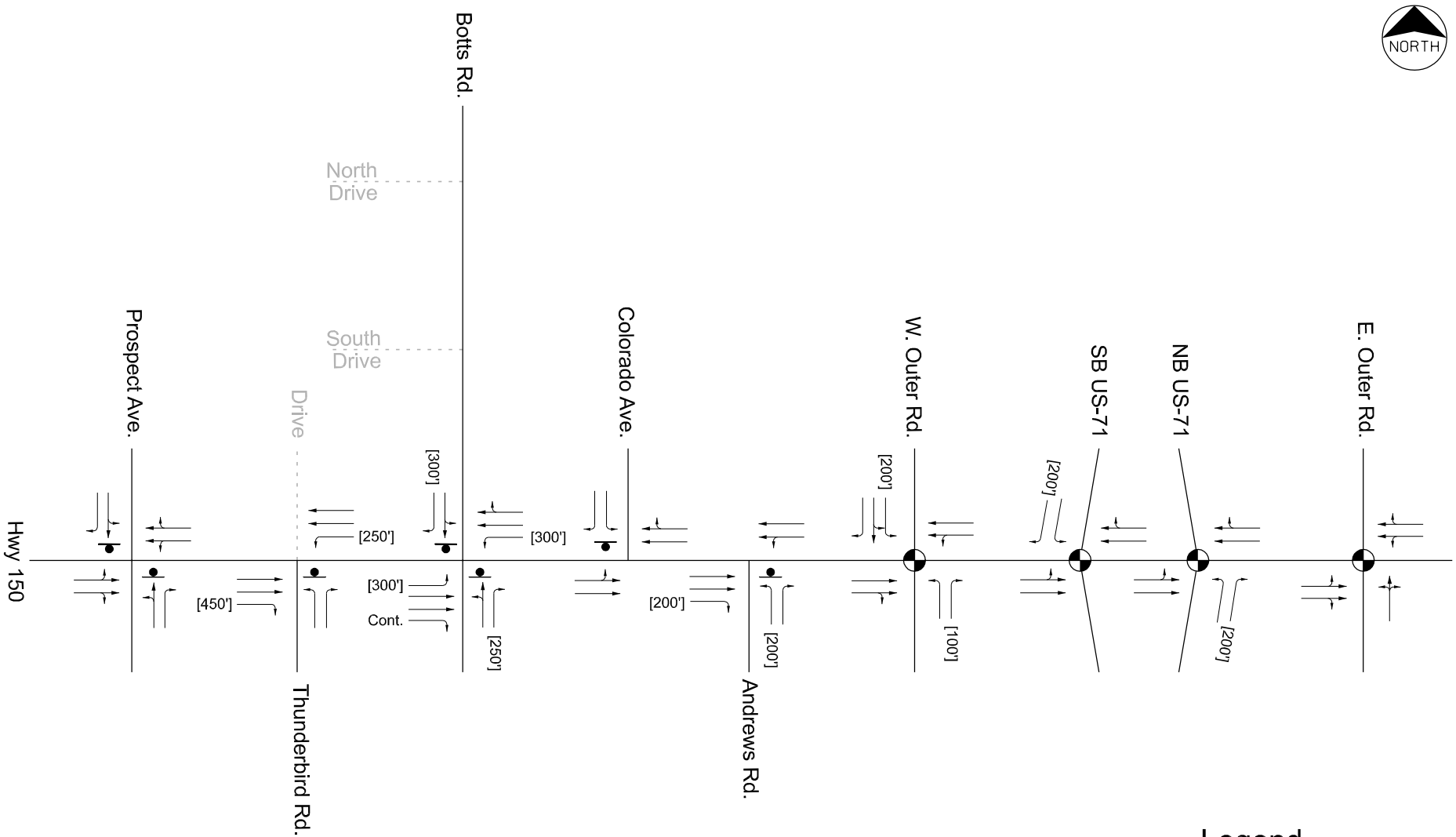

TranSystems	EXISTING LANE CONFIGURATIONS	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-3

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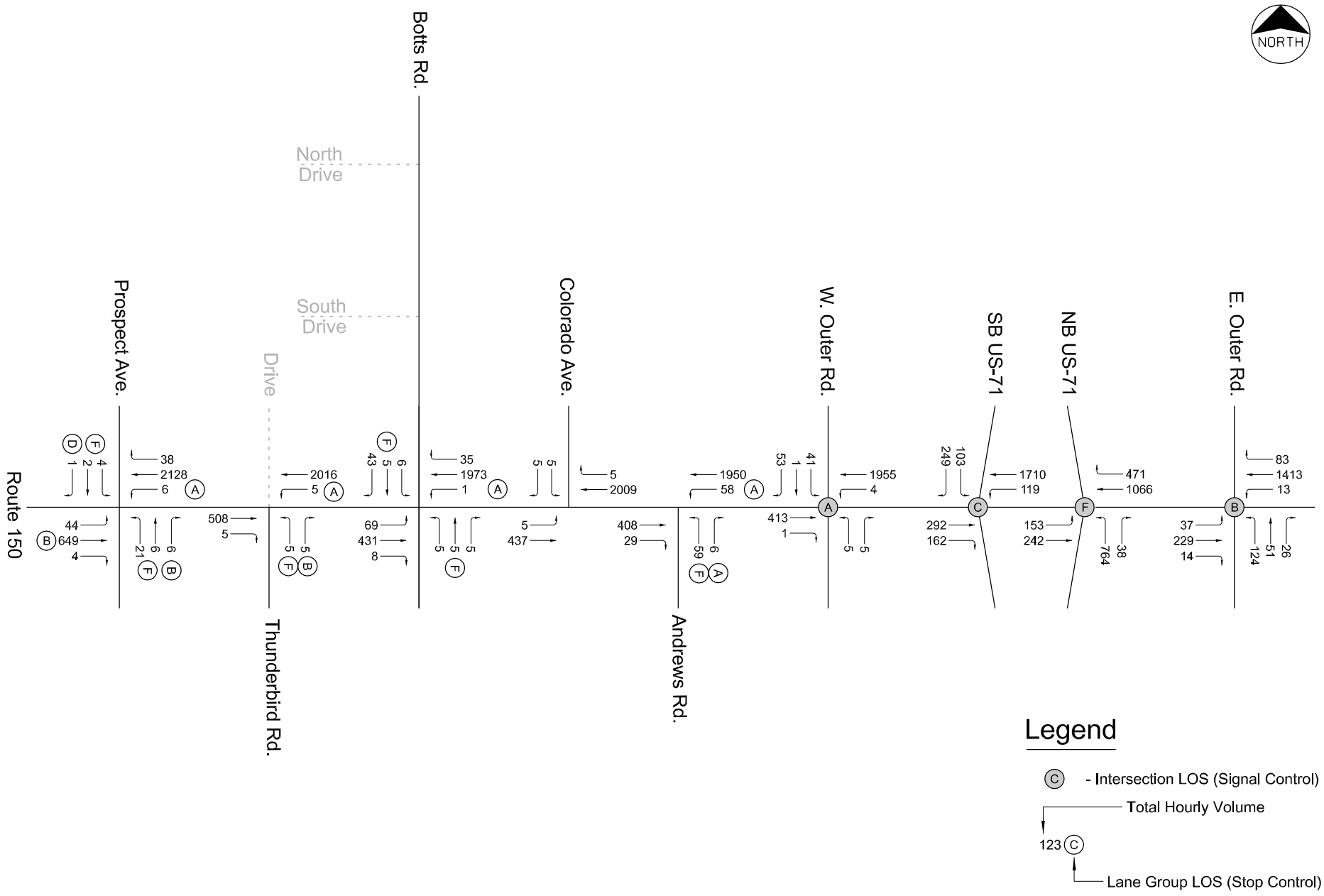

TranSystems	EXISTING A.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 / No Scale	Figure A-4

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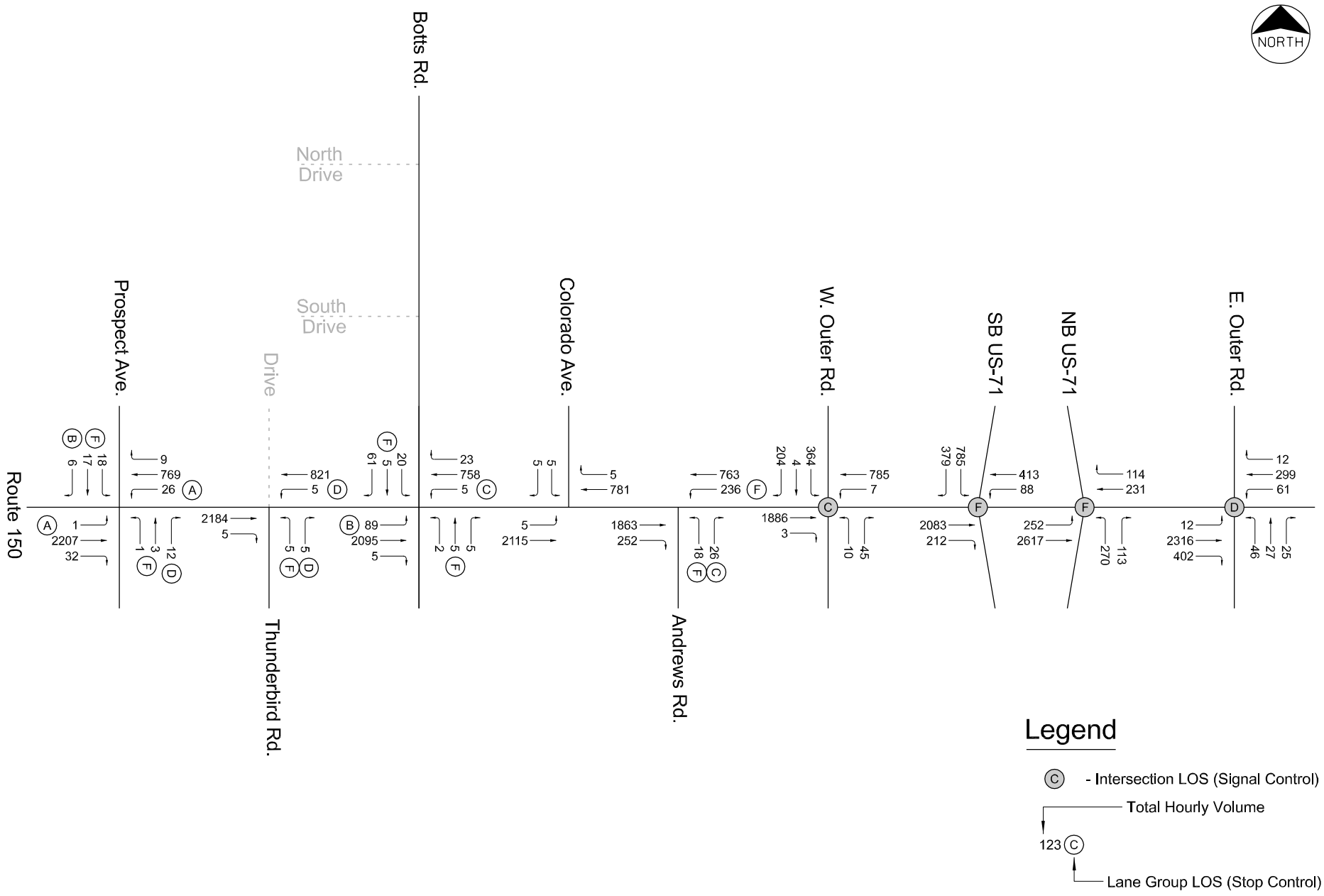

TranSystems	EXISTING P.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	No Scale	Figure A-5

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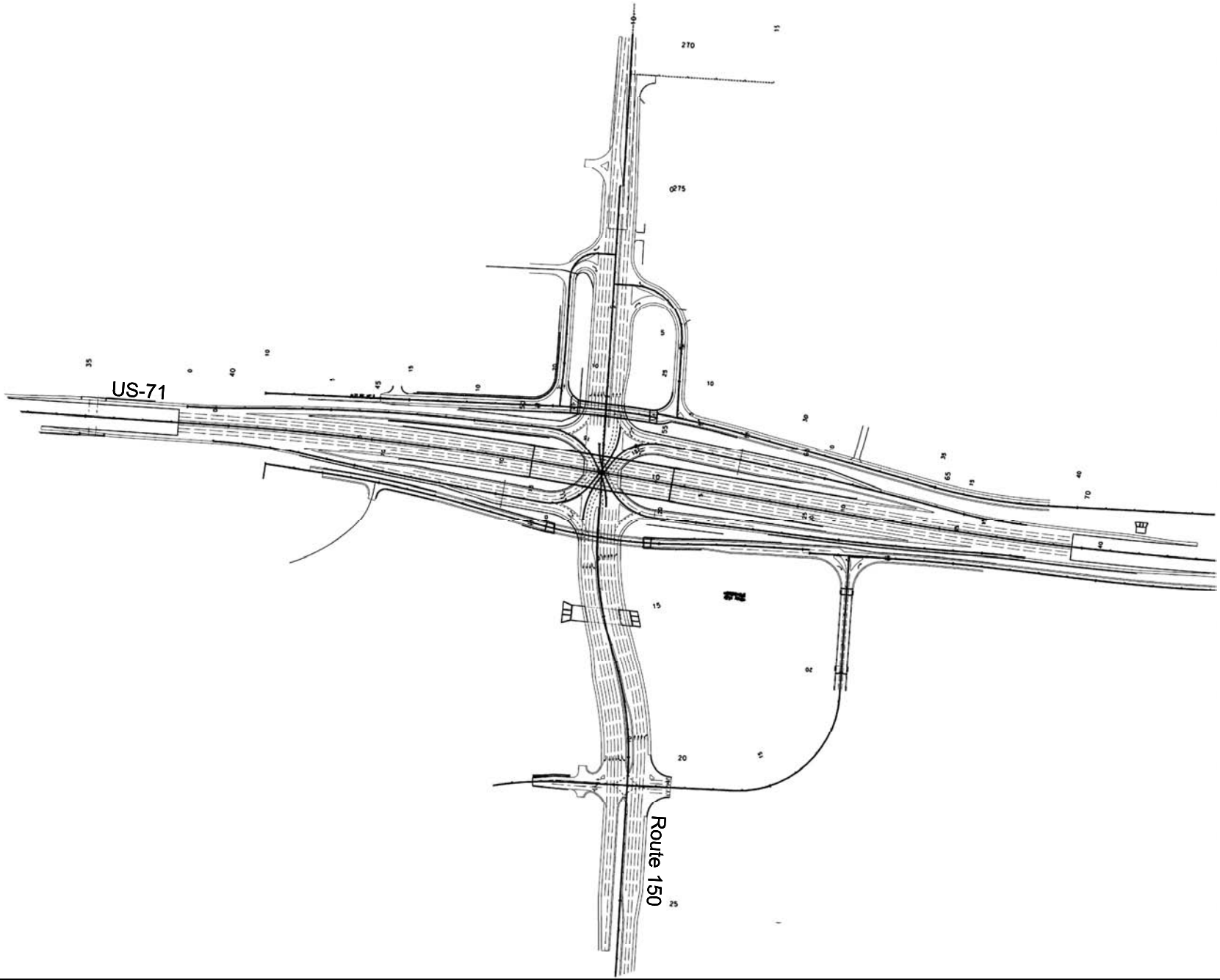

TranSystems	PLANNED MODOT ROUTE 150 AND US-71 SPUI IMPROVEMENTS	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-6

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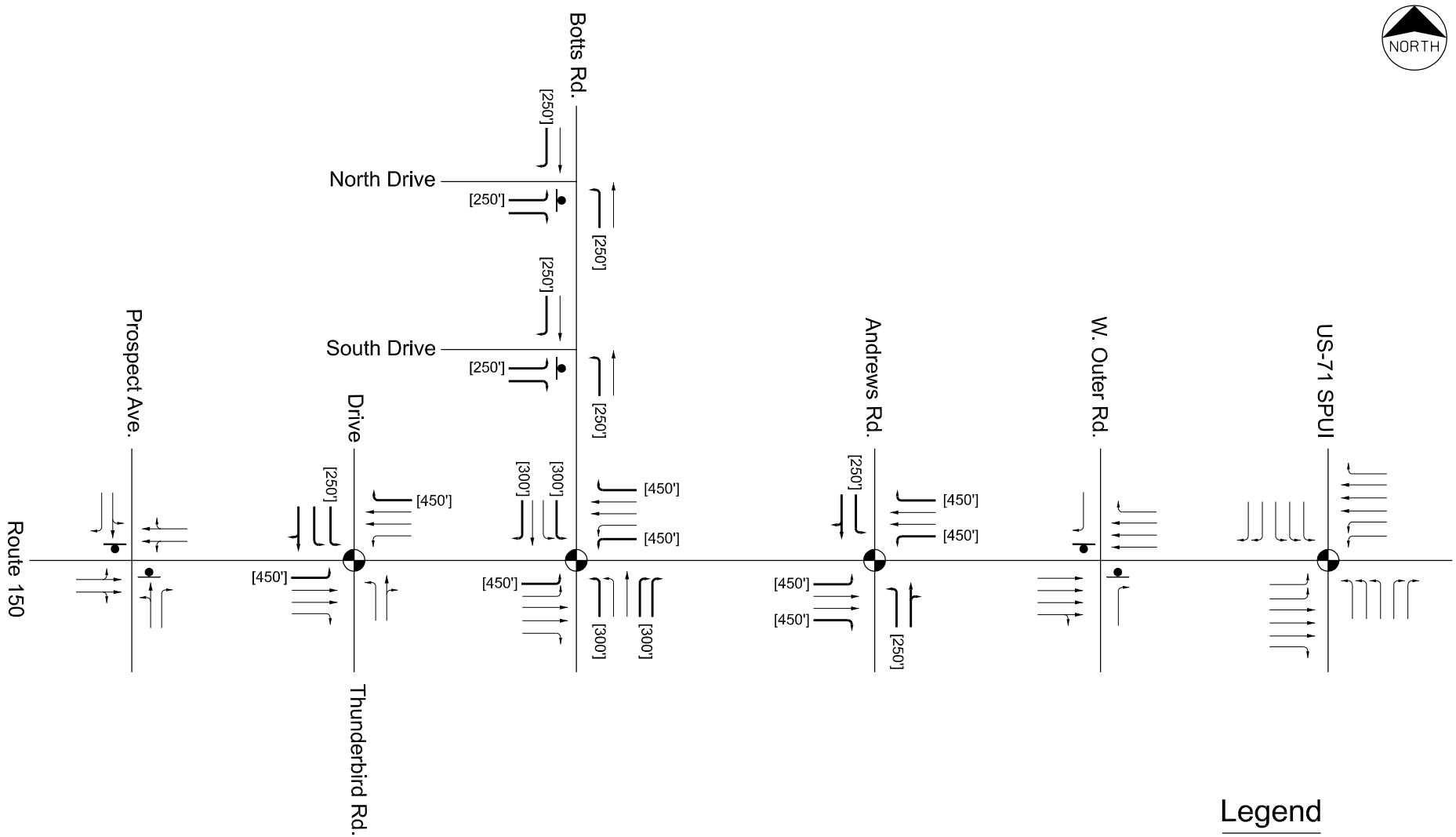

TranSystems	EXISTING PLUS INITIAL DEVELOPMENT LANE CONFIGURATIONS	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-7

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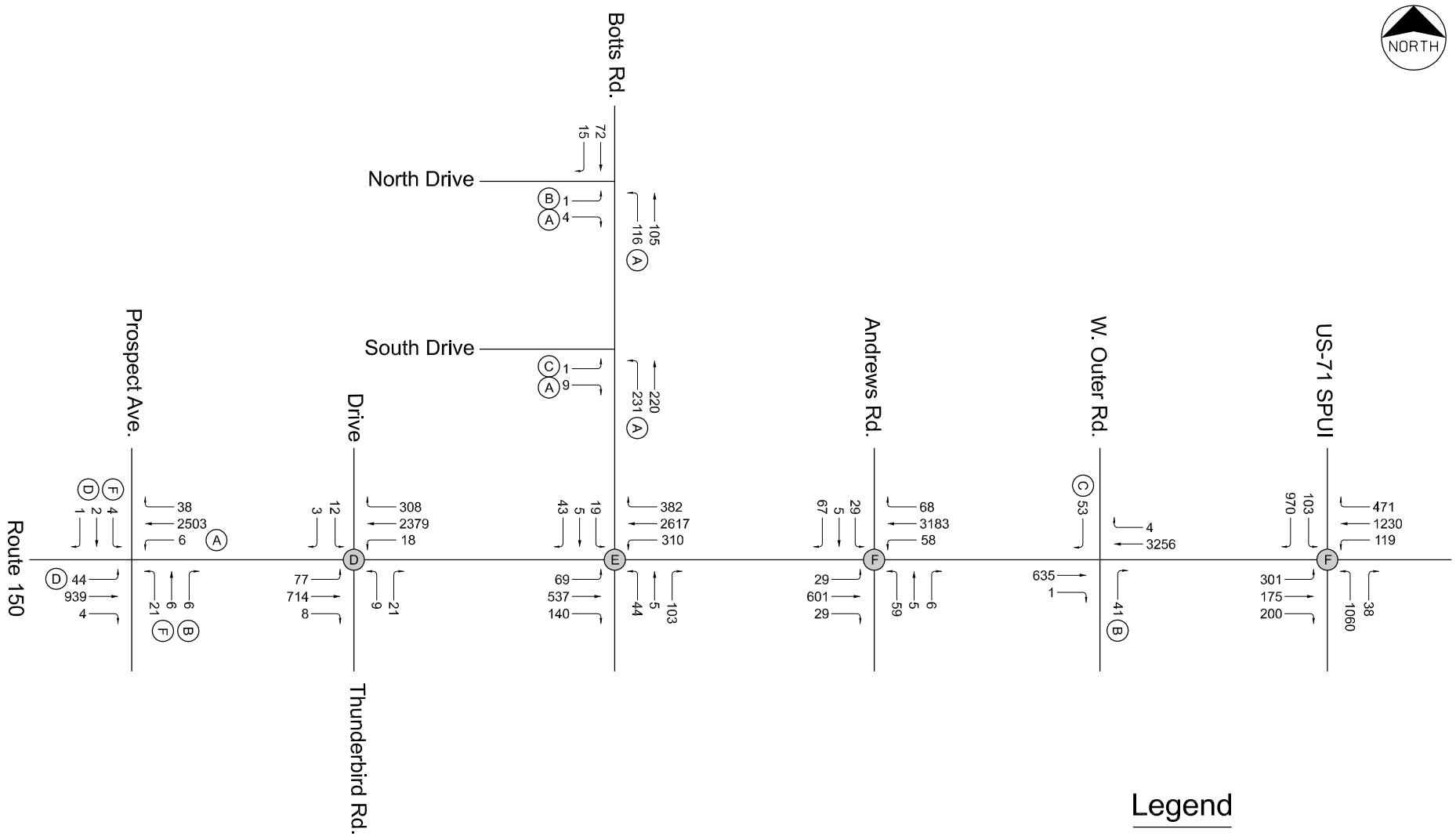

Legend

C - Intersection LOS (Signal Control)

Total Hourly Volume

123 C

Lane Group LOS (Stop Control)

TranSystems	EXISTING PLUS INITIAL DEVELOPMENT A.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-8

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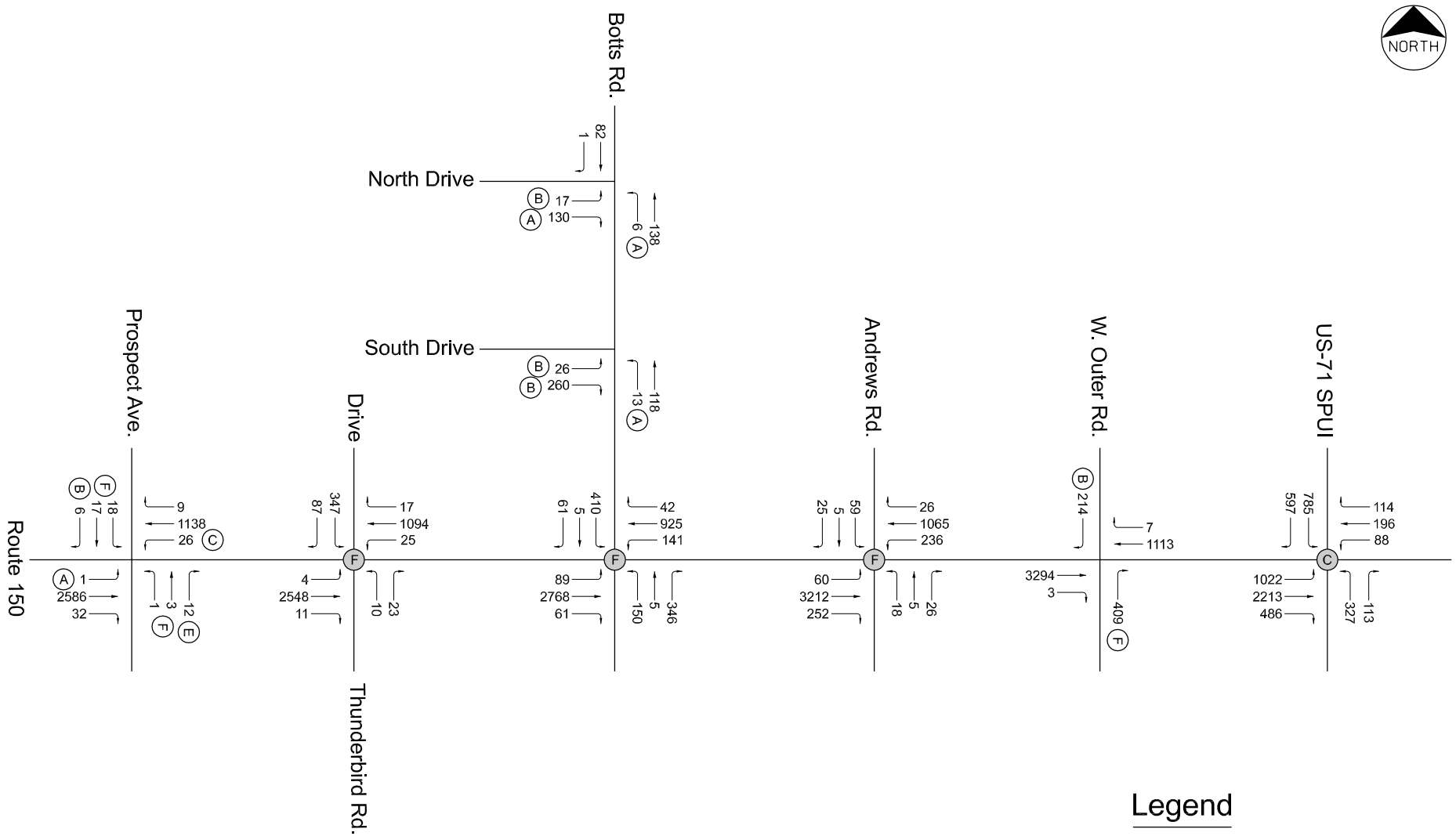

Legend

C - Intersection LOS (Signal Control)

Total Hourly Volume

123 C

Lane Group LOS (Stop Control)

TranSystems	EXISTING PLUS INITIAL DEVELOPMENT P.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-9

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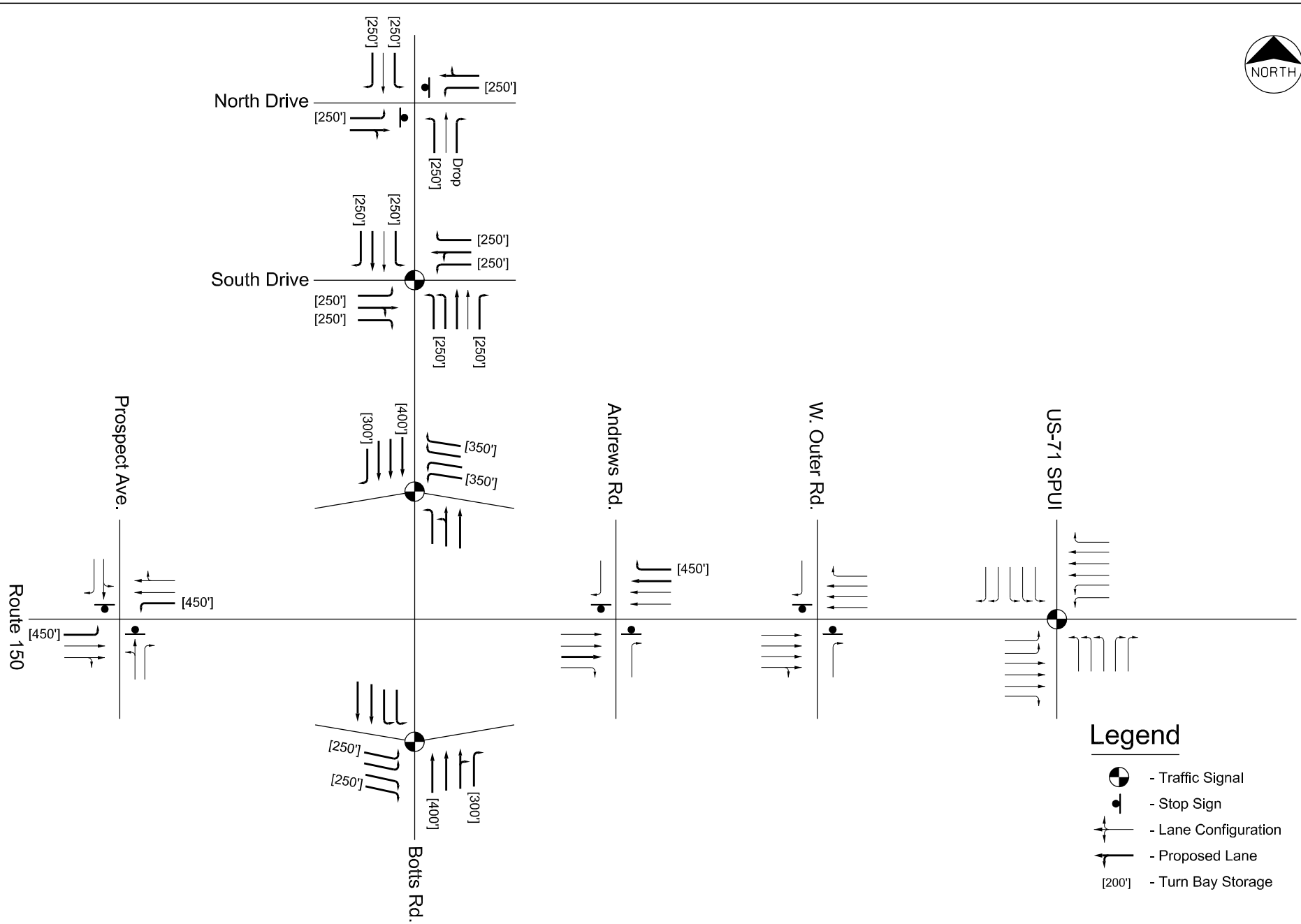

TranSystems	FUTURE YEAR 2025 (ALT. 1) LANE CONFIGURATIONS	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-10

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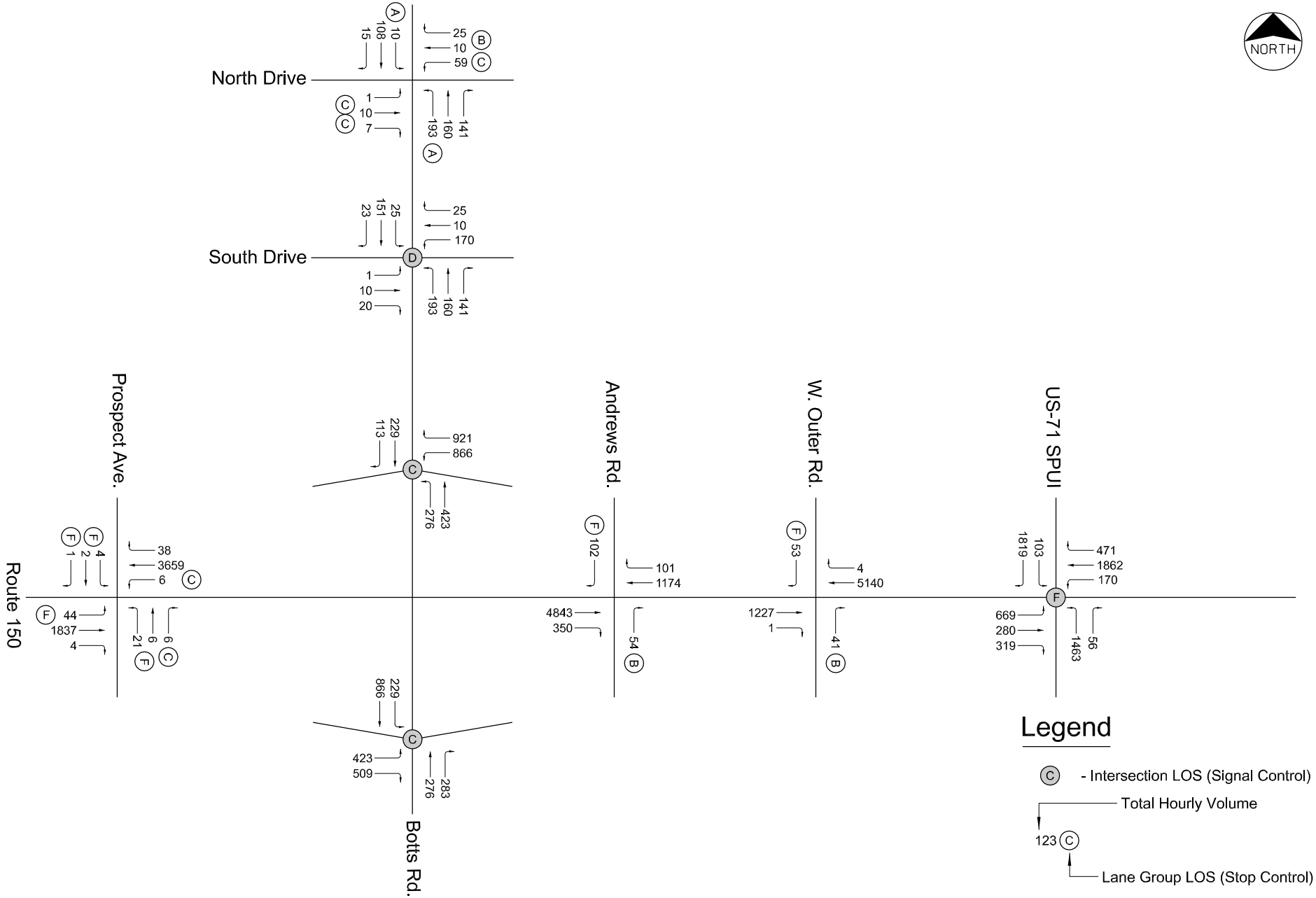

TranSystems	FUTURE YEAR 2025 (ALT. 1) A.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-11

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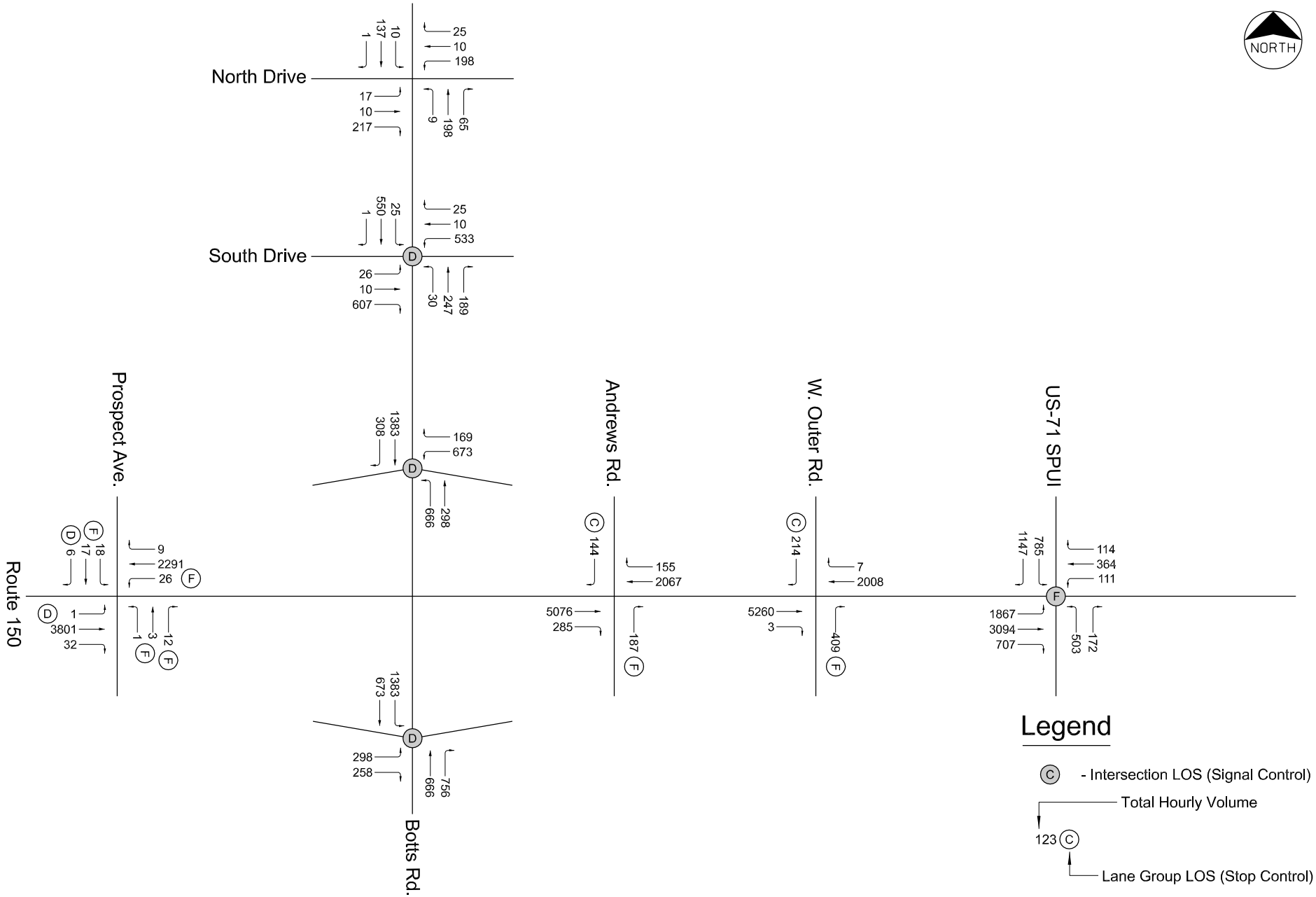

TranSystems	FUTURE YEAR 2025 (ALT. 1) P.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-12

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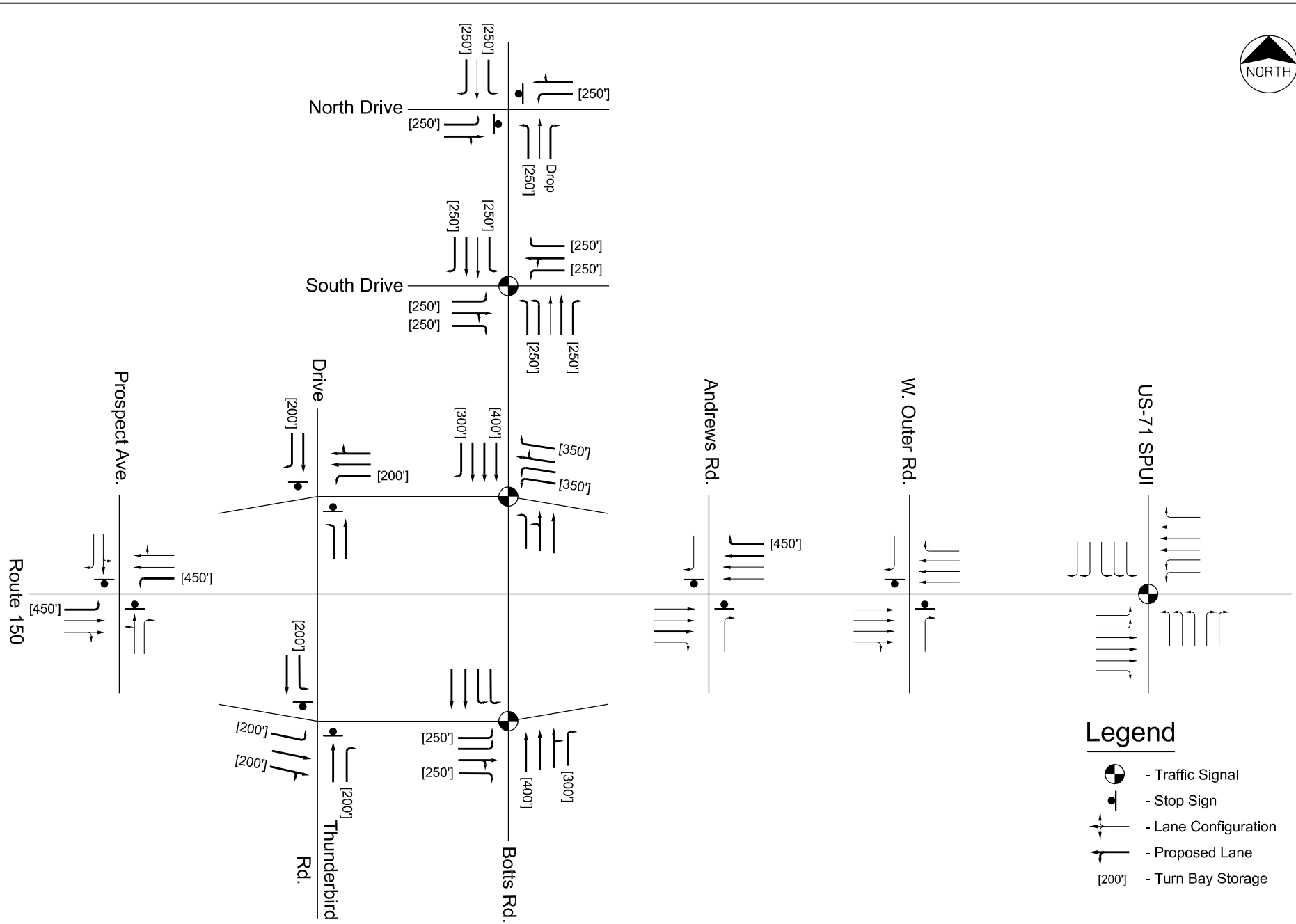

TranSystems	FUTURE YEAR 2025 (ALT. 2) LANE CONFIGURATIONS	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-13

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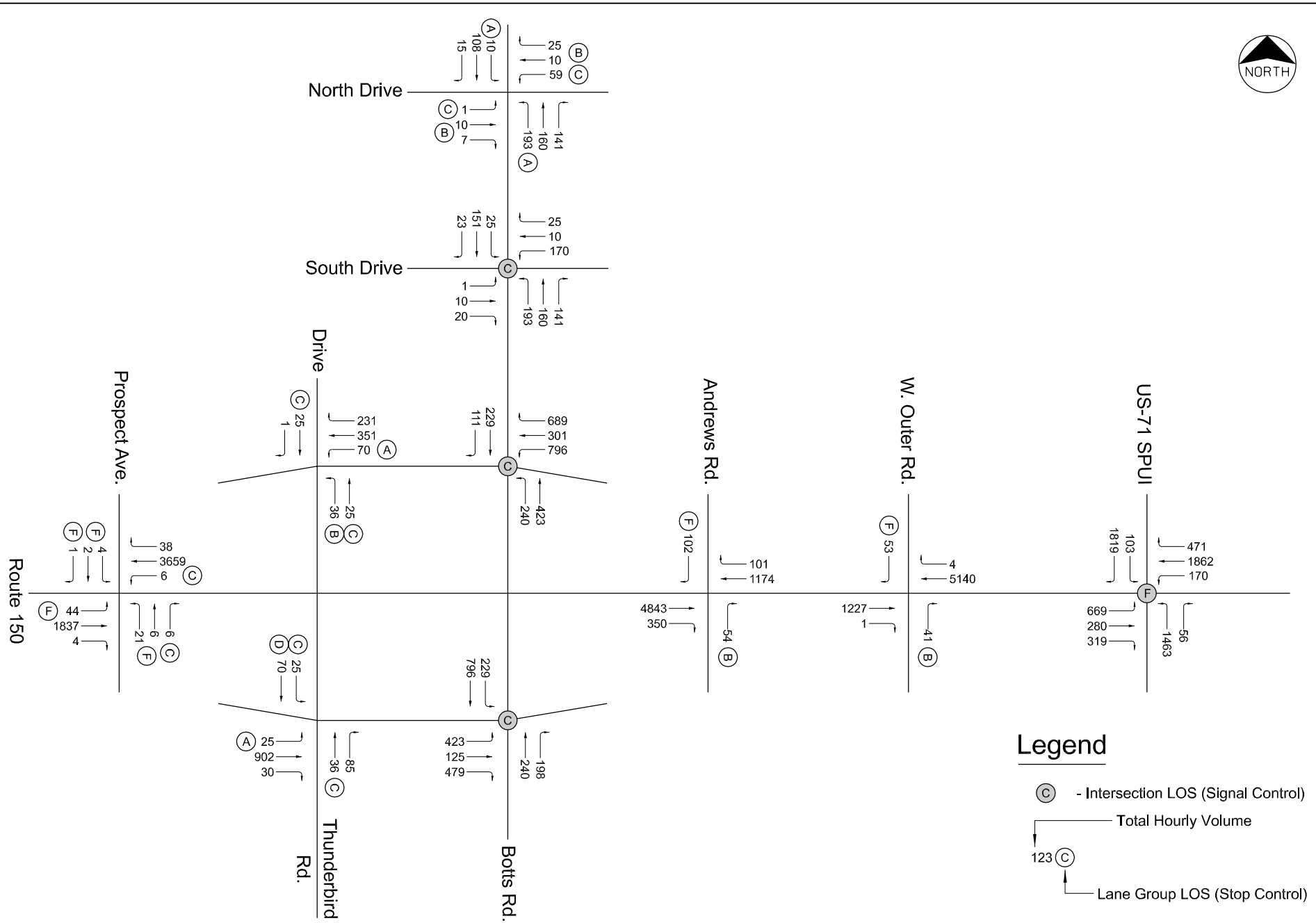

TranSystems	FUTURE YEAR 2025 (ALT. 2) A.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-14

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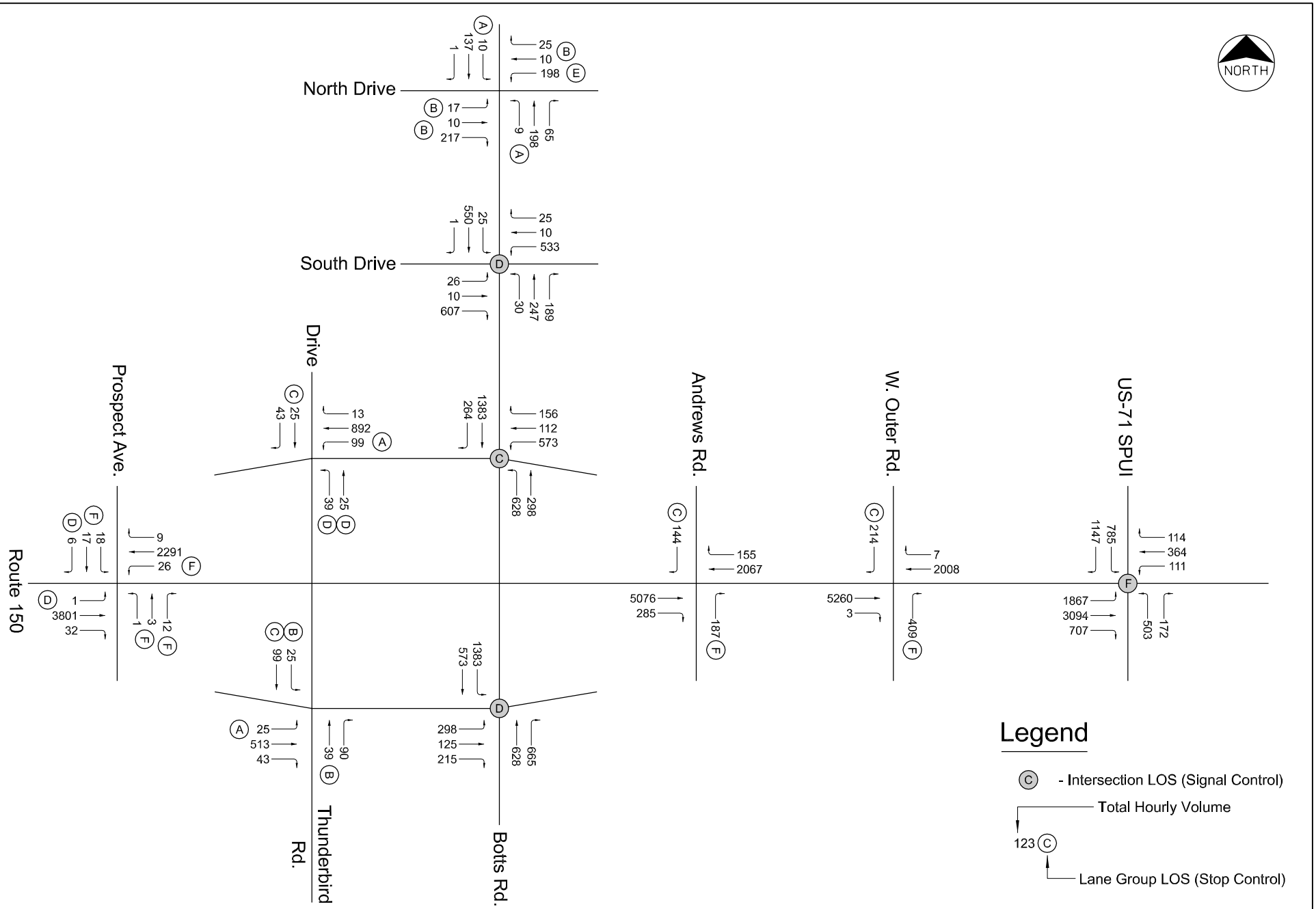


TranSystems	FUTURE YEAR 2025 (ALT. 2) P.M. PEAK HOUR TRAFFIC VOLUMES	NNSA Development Grandview, Missouri	August 2007 No Scale	Figure A-15

Appendix B – Trip Generation and Distribution

See attached worksheets.

NNSA Bannister Federal Complex Traffic Count Data Summary
June 28, 2007

Time (A.M. Peak)	Number of Vehicles					
	Bannister and 95th	Bannister and Wayne	NW Lot	Sante Fe and Liberty	TOTAL	One Hour Running Totals
6:00 to 6:15	86	43	40	27	196	**800**
6:15 to 6:30	123	24	61	33	241	791
6:30 to 6:45	93	11	42	23	169	719
6:45 to 7:00	111	18	42	23	194	683
7:00 to 7:15	113	25	35	14	187	610
7:15 to 7:30	107	21	35	6	169	533
7:30 to 7:45	99	14	18	2	133	457
7:45 to 8:00	76	14	22	9	121	
8:00 to 8:15	65	14	25	6	110	
8:15 to 8:30	65	16	11	1	93	
TOTAL	938	200	331	144	1613	

Time (P.M. Peak)	Number of Vehicles					
	Bannister and 95th	Bannister and Wayne	NW Lot	Sante Fe and Liberty	TOTAL	One Hour Running Totals
2:00 to 2:15	36	10	10	4	60	262
2:15 to 2:30	34	9	1	4	48	634
2:30 to 2:45	53	14	4	2	73	773
2:45 to 3:00	38	18	20	5	81	867
3:00 to 3:15	203	71	97	61	432	**912**
3:15 to 3:30	92	24	40	31	187	641
3:30 to 3:45	102	25	28	12	167	603
3:45 to 4:00	70	14	27	15	126	
4:00 to 4:15	94	24	35	8	161	
4:15 to 4:30	90	29	24	6	149	
TOTAL	812	238	286	148	1484	

NNSA Traffic Study
Kansas City, Missouri
Trip Generation

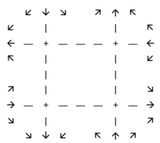
	Intensity		ITE Code	Weekday Trips	AM Peak Hour Trips	% In	% Out	# In	# Out	PM Peak Hour Trips	% In	% Out	# In	# Out
TOTAL PROPOSED AND NEARBY PLANNED PROJECTS														
Proposed Development														
NNSA Development***	2,700	Employees	---	5,900	800	96%	4%	771	29	912	5%	95%	44	868
Total Proposed Development Trips				**5,900**	**800**			**771**	**29**	**912**			**44**	**868**
Nearby Planned Development														
Richards-Gebaur Industrial (Phase 1)*	151	Acres	130	5,362	444	75%	25%	333	111	525	29%	71%	152	373
Richards-Gebaur Industrial (Tract D)*	138	Acres	130	4,916	407	75%	25%	305	102	482	29%	71%	140	342
Richards-Gebaur Industrial (Phase 2)*	130	Acres	130	4,616	382	75%	25%	287	96	452	29%	71%	131	321
Richards-Gebaur Industrial (Phase 3)*	142	Acres	130	5,042	417	75%	25%	313	104	494	29%	71%	143	351
Richards-Gebaur Industrial (Phase 4)*	171	Acres	130	6,072	503	75%	25%	377	126	595	29%	71%	173	423
Richards-Gebaur Industrial (Phase 5)*	33	Acres	130	1,172	97	75%	25%	73	24	115	29%	71%	33	82
Richards-Gebaur Industrial (Phase 6)*	159	Acres	130	5,646	467	75%	25%	351	117	553	29%	71%	160	393
Richards-Gebaur Retail**	342,000	Sq. Ft.	820	15,103	327	61%	39%	200	127	1,409	48%	52%	677	732
Industrial n/o M-150, e/o Botts*	320	Acres	130	11,363	941	75%	25%	706	235	1,114	29%	71%	323	791
Gas Station with Convenience Mart	8	Pumps	945	1,302	80	50%	50%	40	40	107	50%	50%	54	54
Fast Food with Drive-Through	3,000	Sq. Ft.	934	1,488	159	51%	49%	81	78	104	52%	48%	54	50
Internal Trips (20%) for Convenience Store				*558*	*48*			*24*	*24*	*42*			*22*	*21*
External Trips for Convenience Store				*2,232*	*192*			*97*	*95*	*169*			*86*	*83*
Pass-By Trips (60%) for Convenience Store				*1,339*	*115*			*58*	*57*	*101*			*52*	*50*
Non-Pass-By Trips for Convenience Store				*893*	*77*			*39*	*38*	*68*			*34*	*33*
Car Load Facility Expansion (approx. double existing)					90	63%	37%	57	33	106	8%	92%	9	97
Underground Industrial Development*	75	Acres	130	2,663	221	75%	25%	165	55	261	29%	71%	76	185
KC Southern Intermodal Facility	200,000	Lifts/Year		2,867	221	45%	55%	100	121	271	52%	48%	142	129
Total Other Nearby Development Trips				**67,055**	**4,709**			**3,364**	**1,346**	**6,547**			**2,246**	**4,301**
INITIAL DEVELOPMENT SCENARIO														
Initial Development (5-Year Scenario)														
NNSA Development	2,700	Employees	---	5,500	800	96%	4%	771	29	912	5%	95%	44	868
Richards-Gebaur Industrial (Phase 1)	151	Acres	130	5,362	444	75%	25%	333	111	525	29%	71%	152	373
Richards-Gebaur Industrial (Tract D)	49	Acres	130	1,740	144	75%	25%	108	36	171	29%	71%	49	121
KC Southern Intermodal	50,000	Lifts/Year		717	55			25	30	68			36	32
Gas Station with Convenience Mart	8	Pumps	945	1,302	80	50%	50%	40	40	107	50%	50%	54	54
Fast Food with Drive-Through	3,000	Sq. Ft.	934	1,488	159	51%	49%	81	78	104	52%	48%	54	50
Internal Trips (20%) for Convenience Store				*558*	*48*			*24*	*24*	*42*			*22*	*21*
External Trips for Convenience Store				*2,232*	*192*			*97*	*95*	*169*			*86*	*83*
Pass-By Trips (60%) for Convenience Store				*1,339*	*115*			*58*	*57*	*101*			*52*	*50*
Non-Pass-By Trips for Convenience Store				*893*	*77*			*39*	*38*	*68*			*34*	*33*
Total 5-Year Buildout Non-Pass-By				**14,212**	**1,520**			**1,276**	**244**	**1,743**			**316**	**1,427**
Total 5-Year Buildout Pass-By				**1,339**	**115**			**58**	**57**	**101**			**52**	**50**

*Using rates based on traffic volumes counted from a similar industrial park in the KC Metro area (Heartland Meadows)
**Using 15% F.A.R.
***Based on traffic counts taken at the existing NNSA Bannister Road facility in June 2007

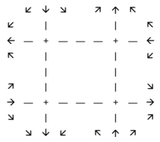
NNSA Traffic Study
Kansas City, Missouri
Raw 2004 Existing Traffic Volumes

AM Peak Hour

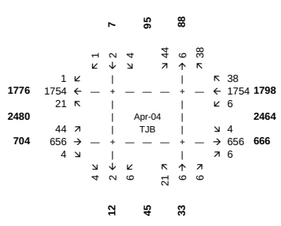
NNSA North Drive & Botts Rd.



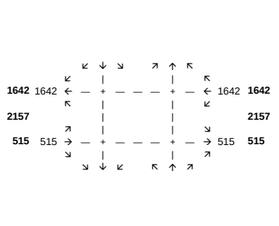
NNSA South Drive & Botts Rd.



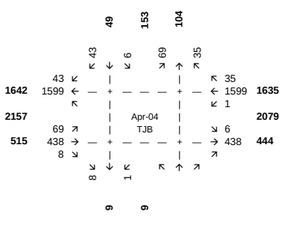
Hwy 150 & Prospect Ave.



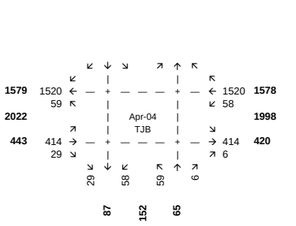
Hwy 150 & T-Bird Rd. / NNSA Drive



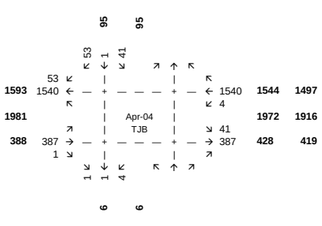
Hwy 150 & Botts Rd.



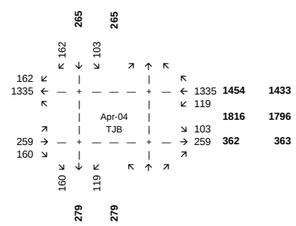
Hwy 150 & Andrews/Colorado



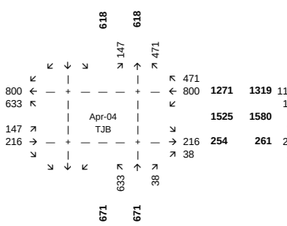
Hwy 150 & W. Outer Rd.



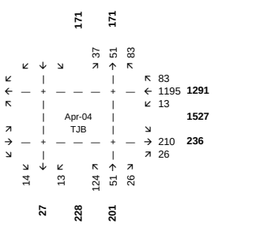
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



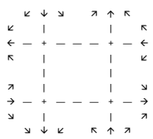
Hwy 150 & E. Outer Rd.



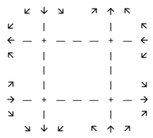
NNSA Traffic Study
Kansas City, Missouri
Raw 2004 Existing Traffic Volumes

PM Peak Hour

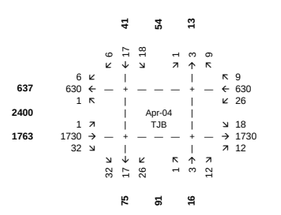
NNSA North Drive & Botts Rd.



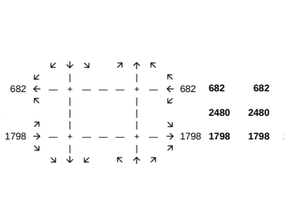
NNSA South Drive & Botts Rd.



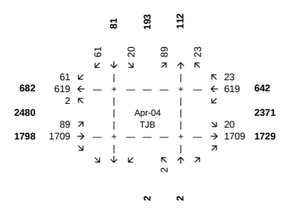
Hwy 150 & Prospect Ave.



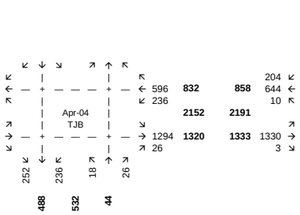
Hwy 150 & T-Bird Rd. / NNSA Drive



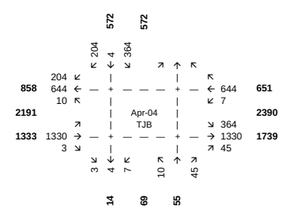
Hwy 150 & Botts Rd.



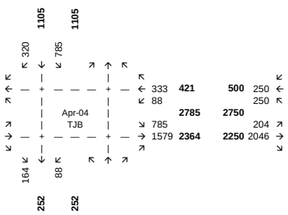
Hwy 150 & Andrews/Colorado



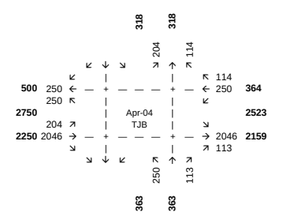
Hwy 150 & W. Outer Rd.



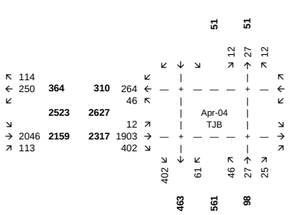
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

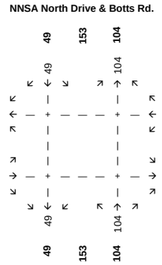


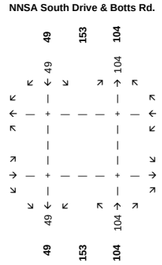
Hwy 150 & E. Outer Rd.

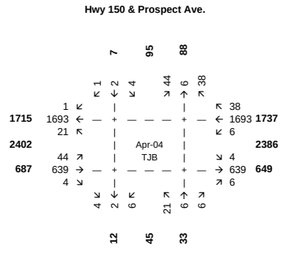


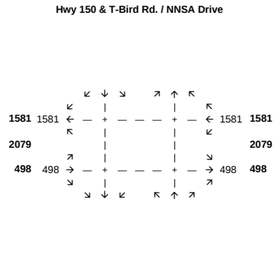
NNSA Traffic Study
Kansas City, Missouri
Ballanced 2004 Existing Traffic Volumes

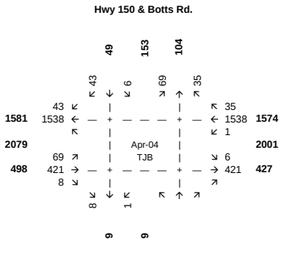
AM Peak Hour

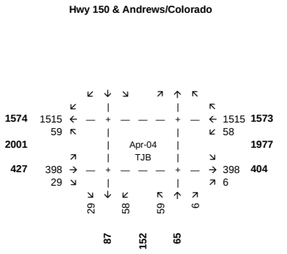


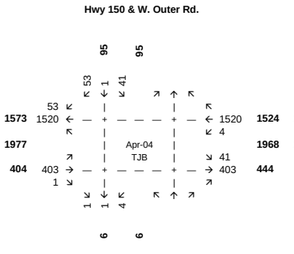


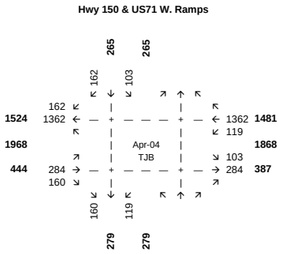


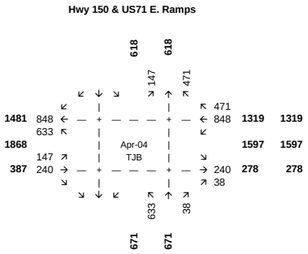


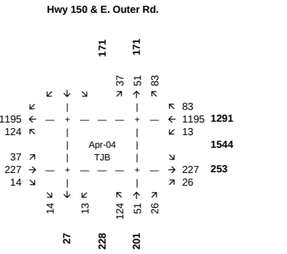






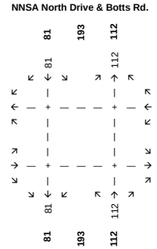


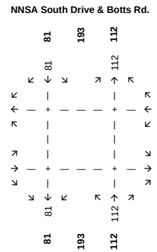


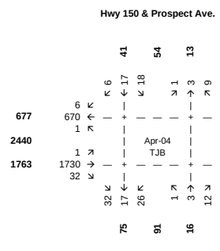


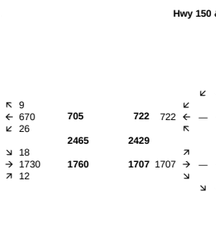
NNSA Traffic Study
Kansas City, Missouri
Ballanced 2004 Existing Traffic Volumes

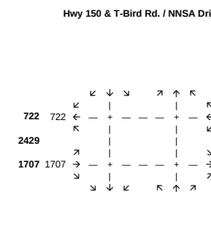
PM Peak Hour

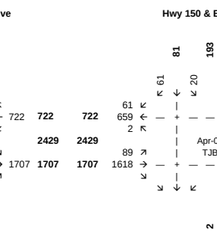


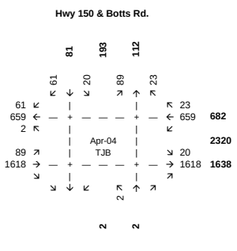








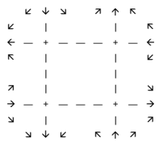




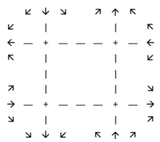
NNSA Traffic Study
Kansas City, Missouri
2004-2006 Traffic Volume Growth

AM Peak Hour

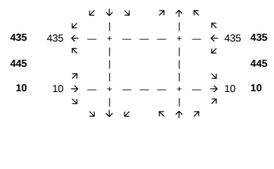
NNSA North Drive & Botts Rd.



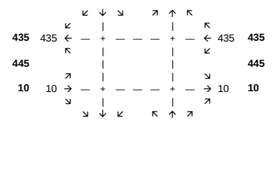
NNSA South Drive & Botts Rd.



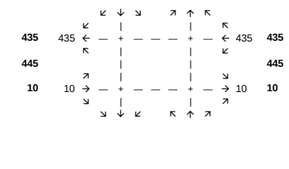
Hwy 150 & Prospect Ave.



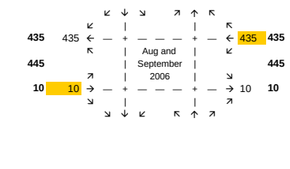
Hwy 150 & T-Bird Rd. / NNSA Drive



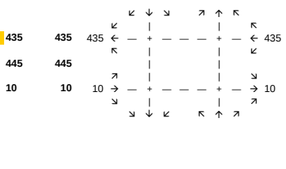
Hwy 150 & Botts Rd.



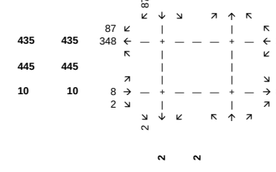
Hwy 150 & Andrews/Colorado



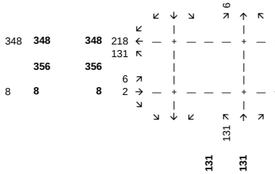
Hwy 150 & W. Outer Rd.



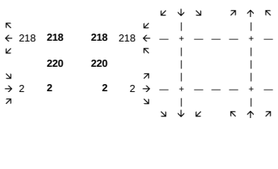
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



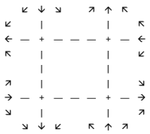
Hwy 150 & E. Outer Rd.



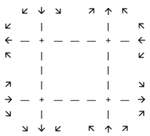
NNSA Traffic Study
Kansas City, Missouri
2004-2006 Traffic Volume Growth

PM Peak Hour

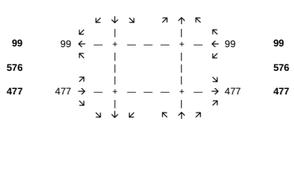
NNSA North Drive & Botts Rd.



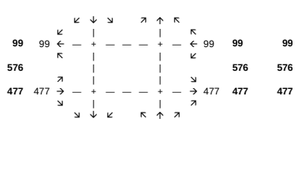
NNSA South Drive & Botts Rd.



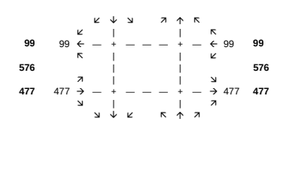
Hwy 150 & Prospect Ave.



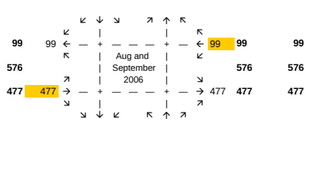
Hwy 150 & T-Bird Rd. / NNSA Drive



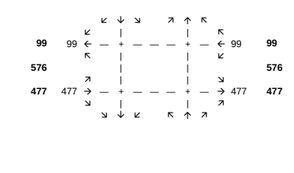
Hwy 150 & Botts Rd.



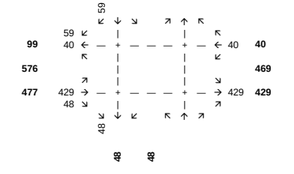
Hwy 150 & Andrews/Colorado



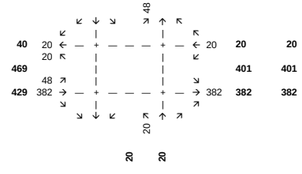
Hwy 150 & W. Outer Rd.



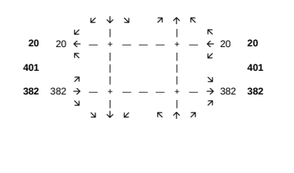
Hwy 150 & US71 W. Ramps



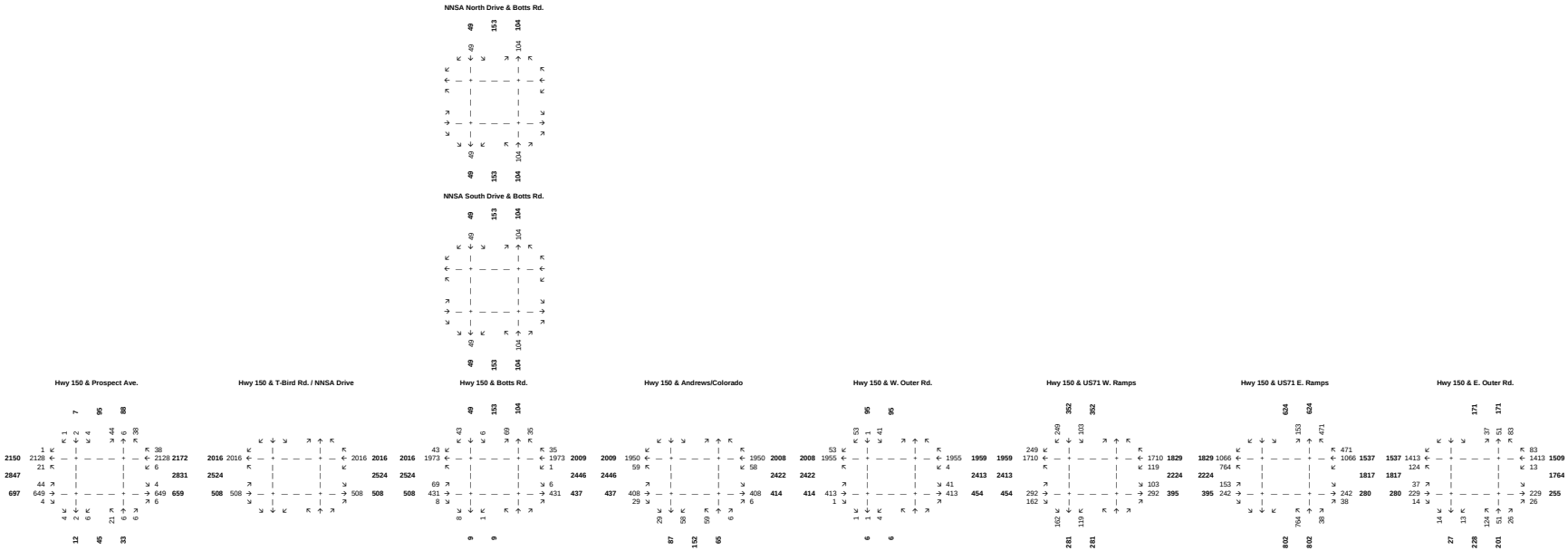
Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



NNSA Traffic Study
Kansas City, Missouri
Existing Traffic Volumes
AM Peak Hour

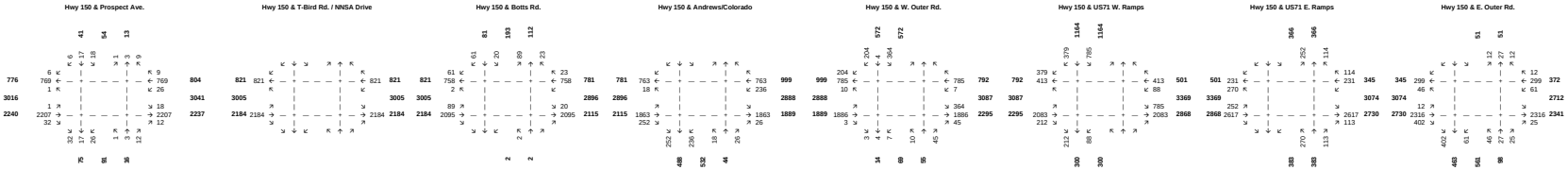


NNSA Traffic Study

Kansas City, Missouri

Existing Traffic Volumes

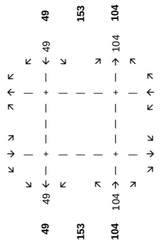
PM Peak Hour



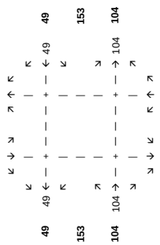
NNSA Traffic Study
Kansas City, Missouri
Existing Traffic Volumes Redistributed for Interchange Improvements

AM Peak Hour

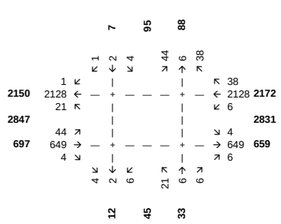
NNSA North Drive & Botts Rd.



NNSA South Drive & Botts Rd.

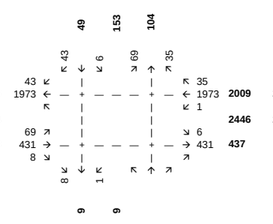


Hwy 150 & Prospect Ave.

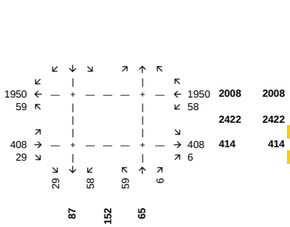


Hwy 150 & T-Bird Rd. / NNSA Drive

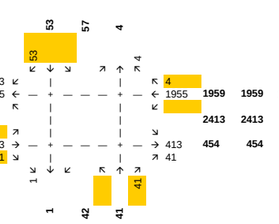
Hwy 150 & Botts Rd.



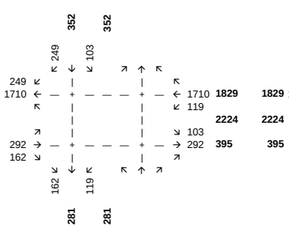
Hwy 150 & Andrews/Colorado



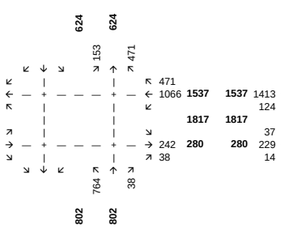
Hwy 150 & W. Outer Rd.



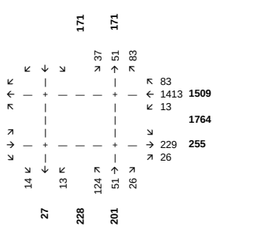
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

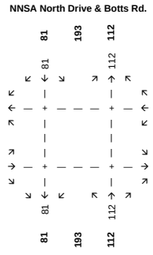


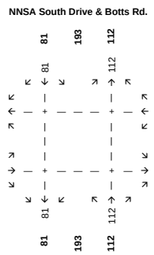
Hwy 150 & E. Outer Rd.

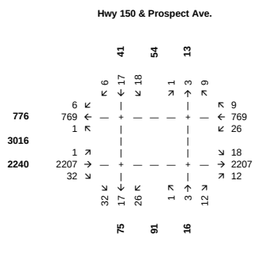


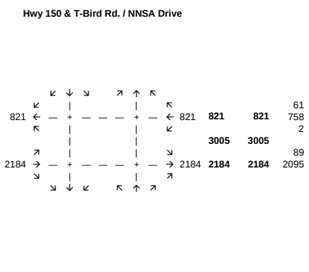
NNSA Traffic Study
Kansas City, Missouri
Existing Traffic Volumes Redistributed for Interchange Improvements

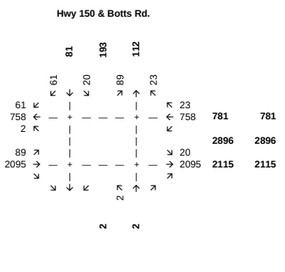
PM Peak Hour

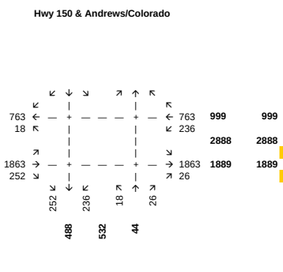


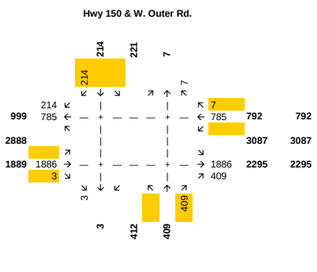


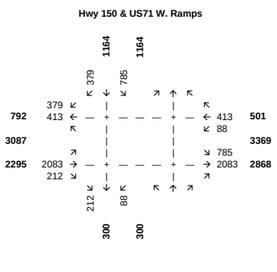


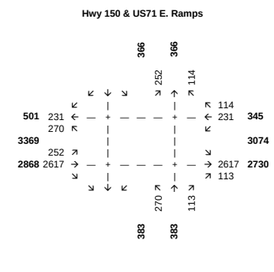












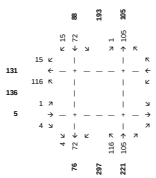
NNSA Traffic Study

Kansas City, Missouri

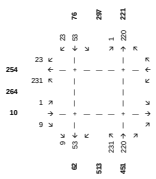
Existing plus Initial Development Traffic Volumes (Three At-Grade Intersections)

AM Peak Hour

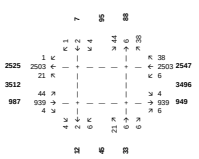
NNSA North Drive & Botts Rd.



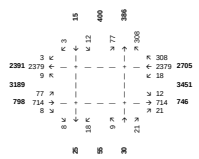
NNSA South Drive & Botts Rd.



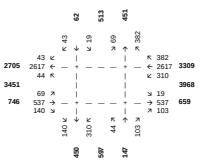
Hwy 150 & Prospect Ave.



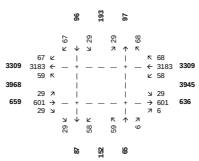
Hwy 150 & T-Bird Rd. / NNSA Drive



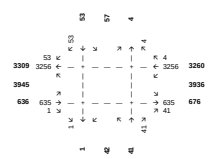
Hwy 150 & Botts Rd.



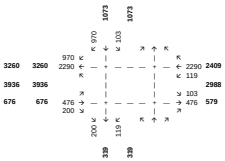
Hwy 150 & Andrews/Colorado



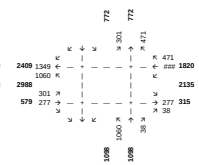
Hwy 150 & W. Outer Rd.



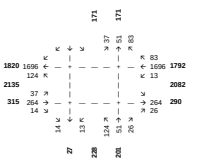
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

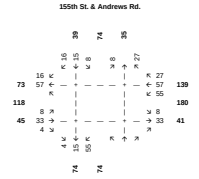


Hwy 150 & E. Outer Rd.

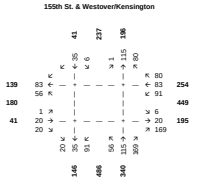


Andrews Rd. & Kensington Ave.

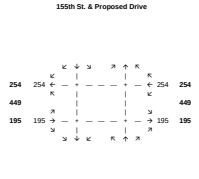
155th St. & Andrews Rd.



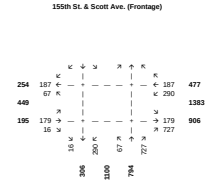
155th St. & Westover/Kensington



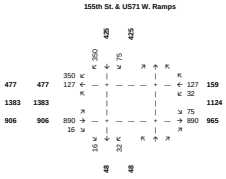
155th St. & Proposed Drive



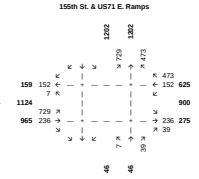
155th St. & Scott Ave. (Frontage)



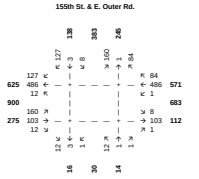
155th St. & US71 W. Ramps



155th St. & US71 E. Ramps



155th St. & E. Outer Rd.



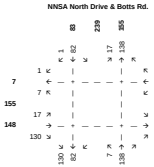
NNSA Traffic Study

Kansas City, Missouri

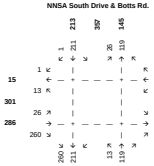
Existing plus Initial Development Traffic Volumes (Three At-Grade Intersections)

PM Peak Hour

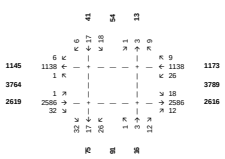
NNSA North Drive & Botts Rd.



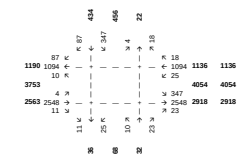
NNSA South Drive & Botts Rd.



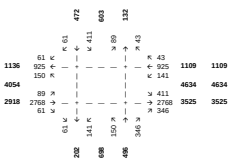
Hwy 150 & Prospect Ave.



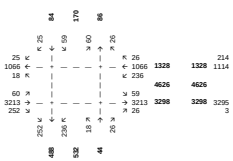
Hwy 150 & T-Bird Rd. / NNSA Drive



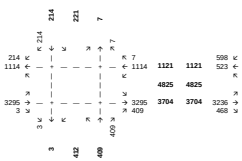
Hwy 150 & Botts Rd.



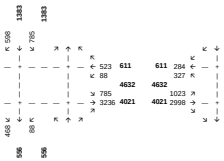
Hwy 150 & Andrews/Colorado



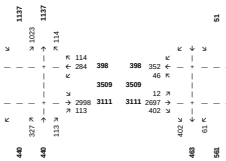
Hwy 150 & W. Outer Rd.



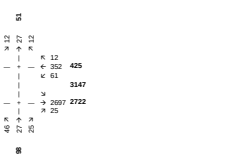
Hwy 150 & US71 W. Ramps



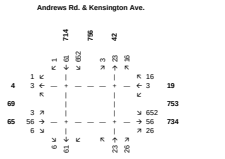
Hwy 150 & US71 E. Ramps



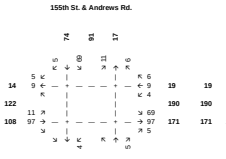
Hwy 150 & E. Outer Rd.



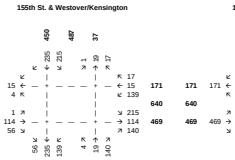
Andrews Rd. & Kensington Ave.



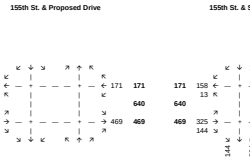
155th St. & Andrews Rd.



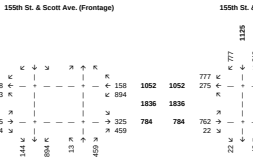
155th St. & Westover/Kensington



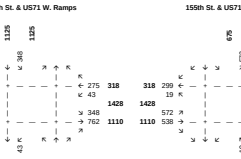
155th St. & Proposed Drive



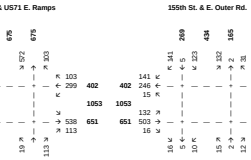
155th St. & Scott Ave. (Frontage)



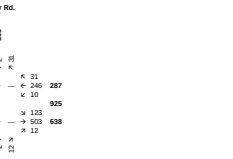
155th St. & US71 W. Ramps



155th St. & US71 E. Ramps



155th St. & E. Outer Rd.



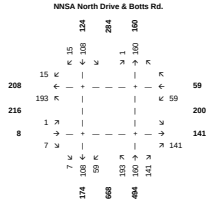
NNSA Traffic Study

Kansas City, Missouri

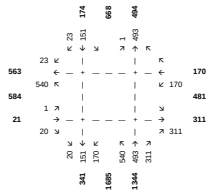
Future Year 2025 Traffic Volumes (Diamond Interchange w/ Thunderbird Eliminated and Andrews/Colorado RIRO)

AM Peak Hour

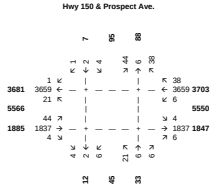
NNSA North Drive & Botts Rd.



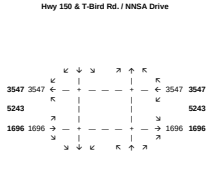
NNSA South Drive & Botts Rd.



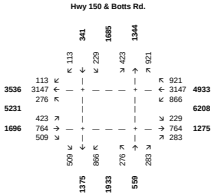
Hwy 150 & Prospect Ave.



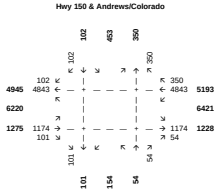
Hwy 150 & T-Bird Rd. / NNSA Drive



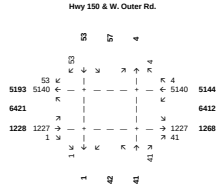
Hwy 150 & Botts Rd.



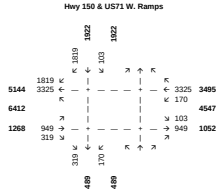
Hwy 150 & Andrews/Colorado



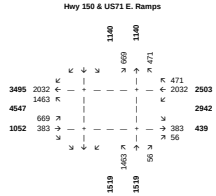
Hwy 150 & W. Outer Rd.



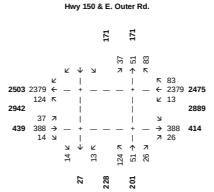
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



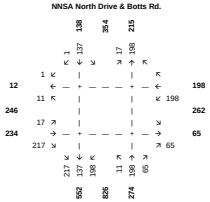
NNSA Traffic Study

Kansas City, Missouri

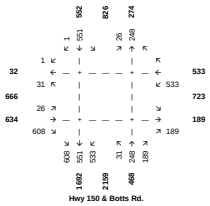
Future Year 2025 Traffic Volumes (Diamond Interchange w/ Thunderbird Eliminated and Andrews/Colorado RIRO)

PM Peak Hour

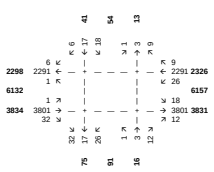
NNSA North Drive & Botts Rd.



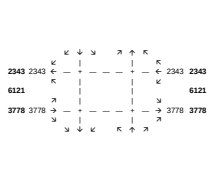
NNSA South Drive & Botts Rd.



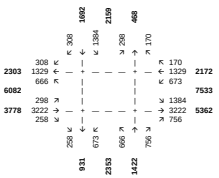
Hwy 150 & Prospect Ave.



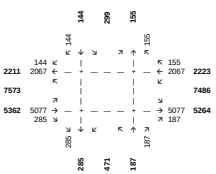
Hwy 150 & T-Bird Rd. / NNSA Drive



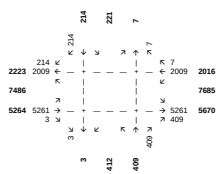
Hwy 150 & Botts Rd.



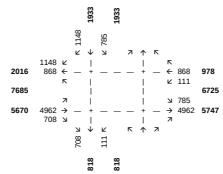
Hwy 150 & Andrews/Colorado



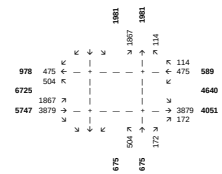
Hwy 150 & W. Outer Rd.



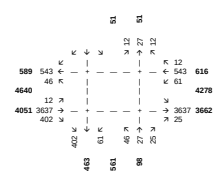
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



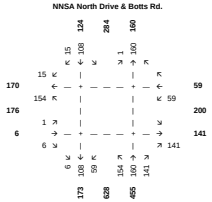
NNSA Traffic Study

Kansas City, Missouri

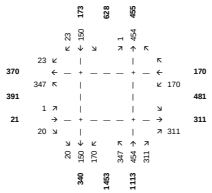
Future Year 2025 Traffic Volumes (Split Diamond Interchange w/ Andrews/Colorado RIRO)

AM Peak Hour

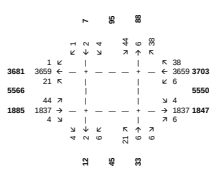
NNSA North Drive & Botts Rd.



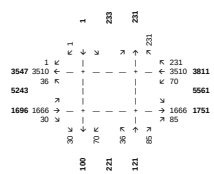
NNSA South Drive & Botts Rd.



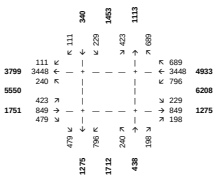
Hwy 150 & Prospect Ave.



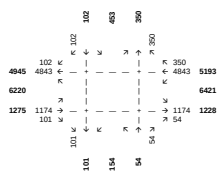
Hwy 150 & T-Bird Rd. / NNSA Drive



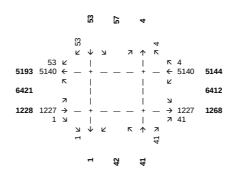
Hwy 150 & Botts Rd.



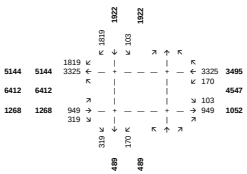
Hwy 150 & Andrews/Colorado



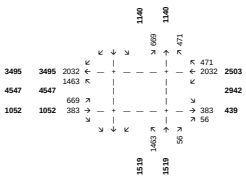
Hwy 150 & W. Outer Rd.



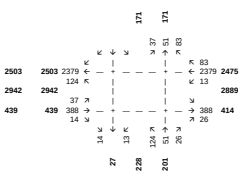
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.

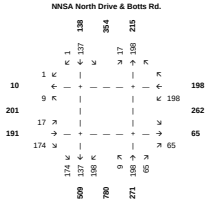


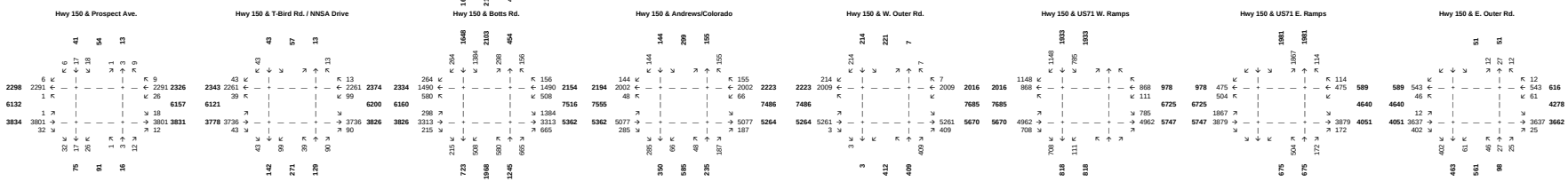
NNSA Traffic Study

Kansas City, Missouri

Future Year 2025 Traffic Volumes (Split Diamond Interchange w/ Andrews/Colorado RIRO)

PM Peak Hour

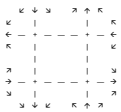




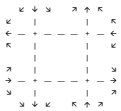
NNSA Traffic Study
Kansas City, Missouri
Intermodal Trips (Full Build - Split Diamond Interchange at Botts)

AM Peak Hour

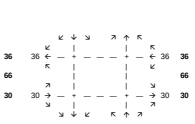
NNSA North Drive & Botts Rd.



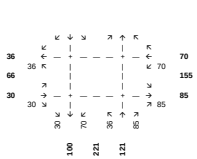
NNSA South Drive & Botts Rd.



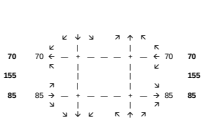
Hwy 150 & Prospect Ave.



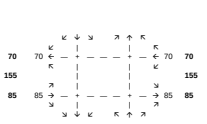
Hwy 150 & T-Bird Rd. / NNSA Drive



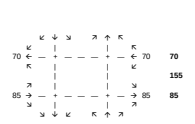
Hwy 150 & Botts Rd.



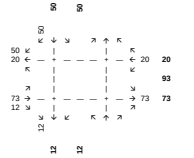
Hwy 150 & Andrews/Colorado



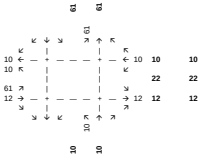
Hwy 150 & W. Outer Rd.



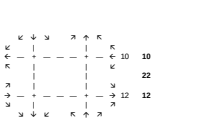
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



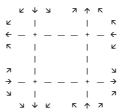
NNSA Traffic Study

Kansas City, Missouri

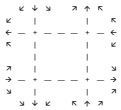
Intermodal Trips (Full Build - Split Diamond Interchange at Botts)

PM Peak Hour

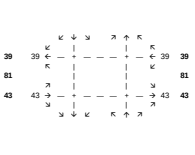
NNSA North Drive & Botts Rd.



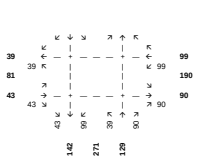
NNSA South Drive & Botts Rd.



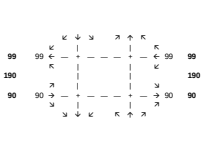
Hwy 150 & Prospect Ave.



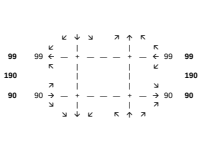
Hwy 150 & T-Bird Rd. / NNSA Drive



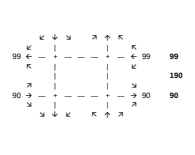
Hwy 150 & Botts Rd.



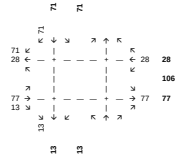
Hwy 150 & Andrews/Colorado



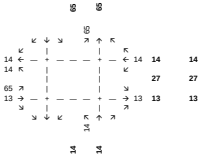
Hwy 150 & W. Outer Rd.



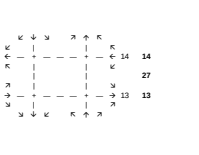
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



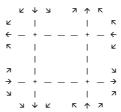
Hwy 150 & E. Outer Rd.



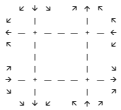
NNSA Traffic Study
Kansas City, Missouri
Intermodal Trips (Full Build - Diamond Interchange at Botts)

AM Peak Hour

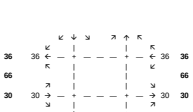
NNSA North Drive & Botts Rd.



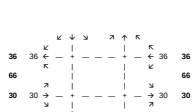
NNSA South Drive & Botts Rd.



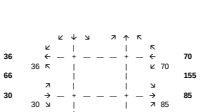
Hwy 150 & Prospect Ave.



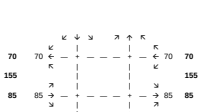
Hwy 150 & T-Bird Rd. / NNSA Drive



Hwy 150 & Botts Rd.



Hwy 150 & Andrews/Colorado

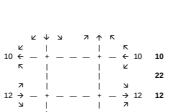


Hwy 150 & W. Outer Rd.

Hwy 150 & US71 W. Ramps

Hwy 150 & US71 E. Ramps

Hwy 150 & E. Outer Rd.



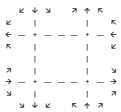
NNSA Traffic Study

Kansas City, Missouri

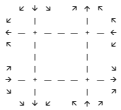
Intermodal Trips (Full Build - Diamond Interchange at Botts)

PM Peak Hour

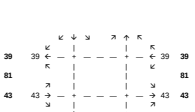
NNSA North Drive & Botts Rd.



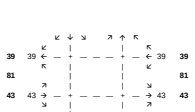
NNSA South Drive & Botts Rd.



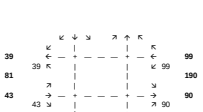
Hwy 150 & Prospect Ave.



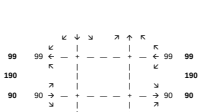
Hwy 150 & T-Bird Rd. / NNSA Drive



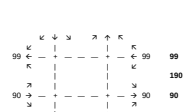
Hwy 150 & Botts Rd.



Hwy 150 & Andrews/Colorado

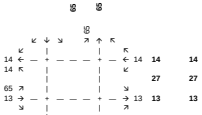


Hwy 150 & W. Outer Rd.

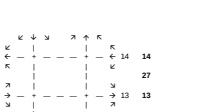


Hwy 150 & US71 W. Ramps

Hwy 150 & US71 E. Ramps



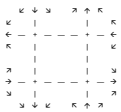
Hwy 150 & E. Outer Rd.



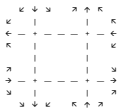
NNSA Traffic Study
Kansas City, Missouri
Car Load Facility Expansion Trips

AM Peak Hour

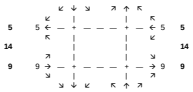
NNSA North Drive & Botts Rd.



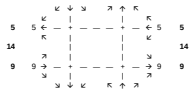
NNSA South Drive & Botts Rd.



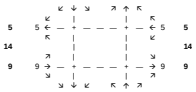
Hwy 150 & Prospect Ave.



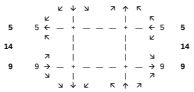
Hwy 150 & T-Bird Rd. / NNSA Drive



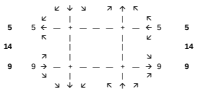
Hwy 150 & Botts Rd.



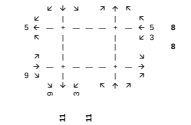
Hwy 150 & Andrews/Colorado



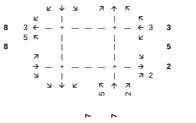
Hwy 150 & W. Outer Rd.



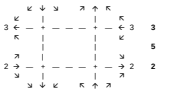
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



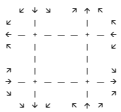
Hwy 150 & E. Outer Rd.



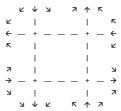
NNSA Traffic Study
Kansas City, Missouri
Car Load Facility Expansion Trips

PM Peak Hour

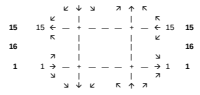
NNSA North Drive & Botts Rd.



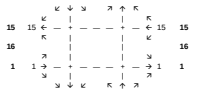
NNSA South Drive & Botts Rd.



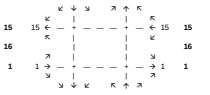
Hwy 150 & Prospect Ave.



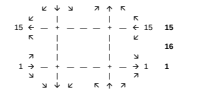
Hwy 150 & T-Bird Rd. / NNSA Drive



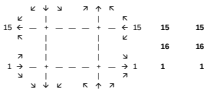
Hwy 150 & Botts Rd.



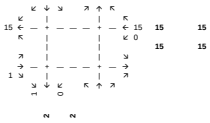
Hwy 150 & Andrews/Colorado



Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

Hwy 150 & E. Outer Rd.

NNSA Traffic Study

Kansas City, Missouri

NNSA Trips (Initial Development Scenario)

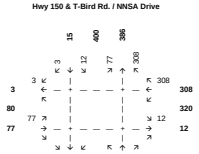
AM Peak Hour

NNSA North Drive & Botts Rd.

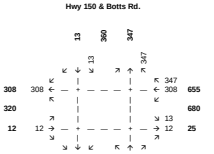
NNSA South Drive & Botts Rd.

Hwy 150 & Prospect Ave.

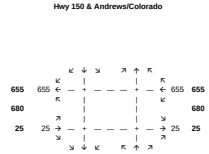
Hwy 150 & T-Bird Rd. / NNSA Drive



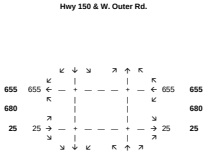
Hwy 150 & Botts Rd.



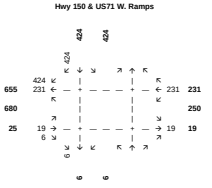
Hwy 150 & Andrews/Colorado



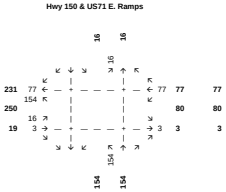
Hwy 150 & W. Outer Rd.



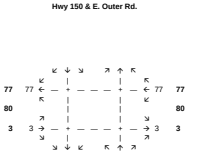
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



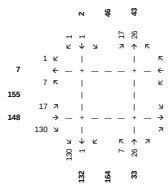
NNSA Traffic Study

Kansas City, Missouri

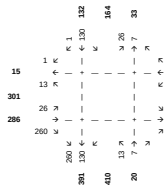
NNSA Trips (Initial Development Scenario)

PM Peak Hour

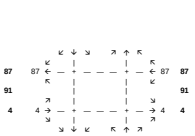
NNSA North Drive & Botts Rd.



NNSA South Drive & Botts Rd.



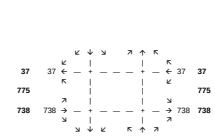
Hwy 150 & Prospect Ave.



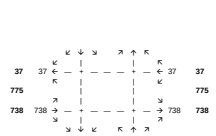
Hwy 150 & T-Bird Rd. / NNSA Drive

Hwy 150 & Botts Rd.

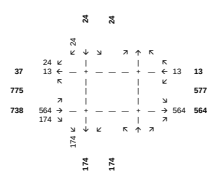
Hwy 150 & Andrews/Colorado



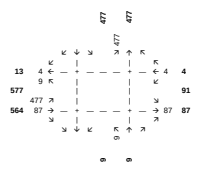
Hwy 150 & W. Outer Rd.



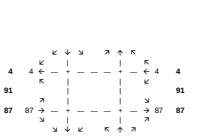
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



NNSA Traffic Study

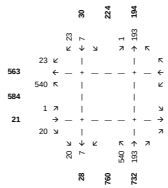
Kansas City, Missouri

NNSA Trips (Future Scenario - Diamond Interchange Alternative)

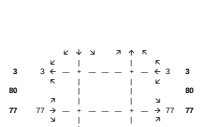
AM Peak Hour

NNSA North Drive & Botts Rd.

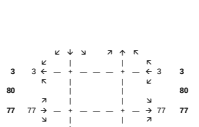
NNSA South Drive & Botts Rd.



Hwy 150 & Prospect Ave.

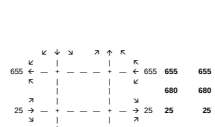


Hwy 150 & T-Bird Rd. / NNSA Drive

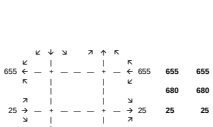


Hwy 150 & Botts Rd.

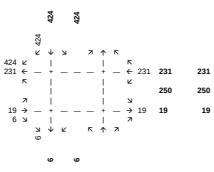
Hwy 150 & Andrews/Colorado



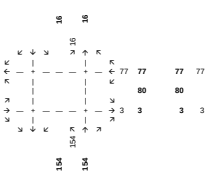
Hwy 150 & W. Outer Rd.



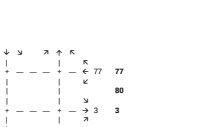
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

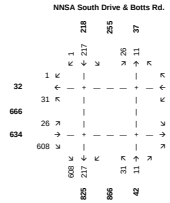


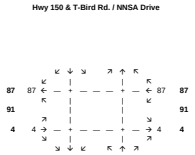
Hwy 150 & E. Outer Rd.

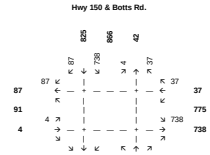


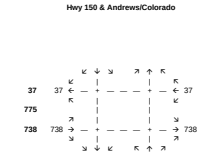
NNSA Traffic Study
Kansas City, Missouri
NNSA Trips (Future Scenario - Diamond Interchange Alternative)

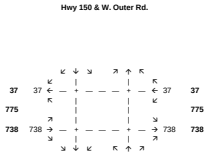
PM Peak Hour

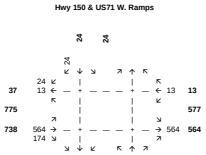


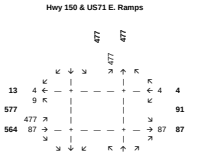


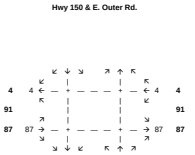






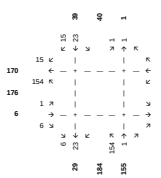






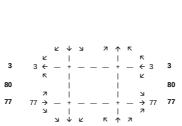
NNSA Traffic Study
Kansas City, Missouri
NNSA Trips (Future Scenario - Split Diamond Interchange Alternative)
AM Peak Hour

NNSA North Drive & Botts Rd.



NNSA South Drive & Botts Rd.

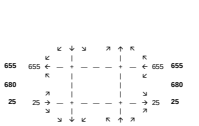
Hwy 150 & Prospect Ave.



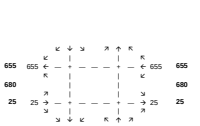
Hwy 150 & T-Bird Rd. / NNSA Drive

Hwy 150 & Botts Rd.

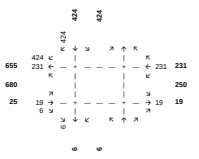
Hwy 150 & Andrews/Colorado



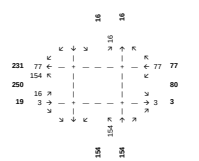
Hwy 150 & W. Outer Rd.



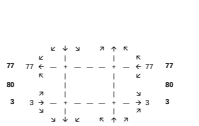
Hwy 150 & US71 W. Ramps



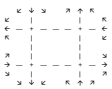
Hwy 150 & US71 E. Ramps



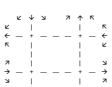
Hwy 150 & E. Outer Rd.



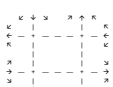
Andrews Rd. & Kensington Ave.



155th St. & Andrews Rd.



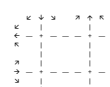
155th St. & Westover/Kensington



155th St. & Proposed Drive

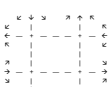
155th St. & Scott Ave. (Frontage)

155th St. & US71 W. Ramps

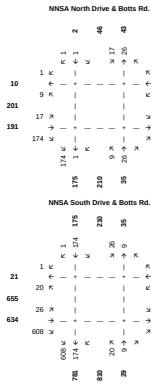


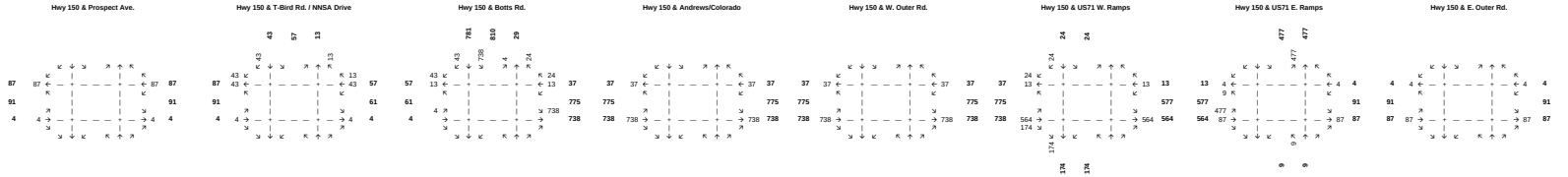
155th St. & US71 E. Ramps

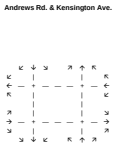
155th St. & E. Outer Rd.

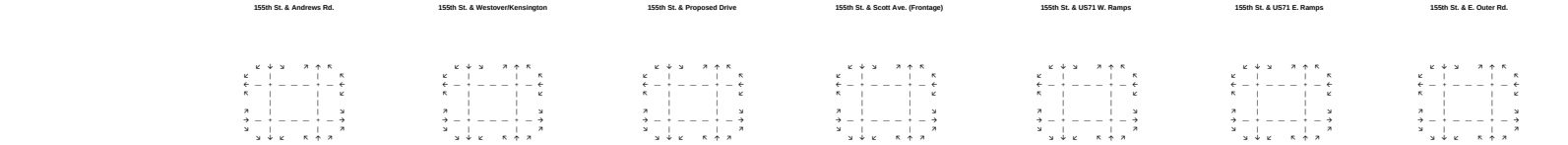


NNSA Traffic Study
Kansas City, Missouri
NNSA Trips (Future Scenario - Split Diamond Interchange Alternative)
PM Peak Hour





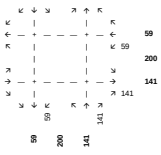




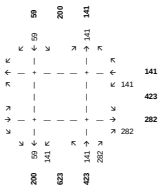
NNSA Traffic Study
Kansas City, Missouri
Colorado Avenue Industrial Development Trips (Full Build w/ RIRO Andrews / Colorado)

AM Peak Hour

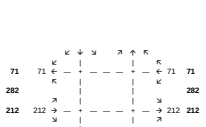
NNSA North Drive & Botts Rd.



NNSA South Drive & Botts Rd.

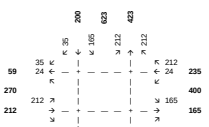


Hwy 150 & Prospect Ave.



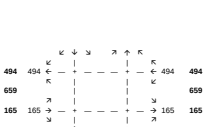
Hwy 150 & T-Bird Rd. / NNSA Drive

Hwy 150 & Botts Rd.

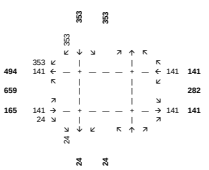


Hwy 150 & Andrews/Colorado

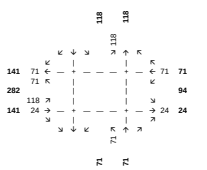
Hwy 150 & W. Outer Rd.



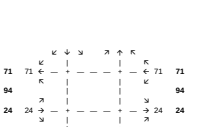
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



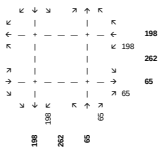
NNSA Traffic Study

Kansas City, Missouri

Colorado Avenue Industrial Development Trips (Full Build w/ RIRO Andrews / Colorado)

PM Peak Hour

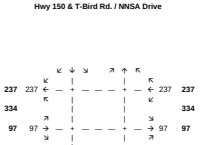
NNSA North Drive & Botts Rd.



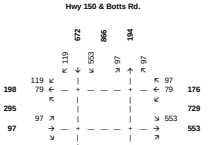
NNSA South Drive & Botts Rd.

Hwy 150 & Prospect Ave.

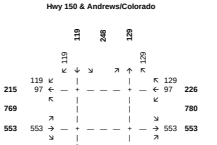
Hwy 150 & T-Bird Rd. / NNSA Drive



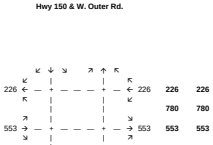
Hwy 150 & Botts Rd.



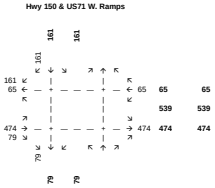
Hwy 150 & Andrews/Colorado



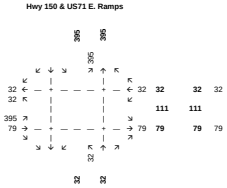
Hwy 150 & W. Outer Rd.



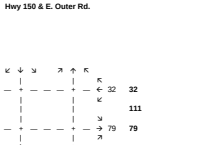
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



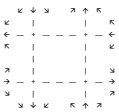
NNSA Traffic Study

Kansas City, Missouri

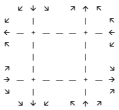
RGB Phase 1 Trips

AM Peak Hour

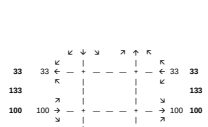
NNSA North Drive & Botts Rd.



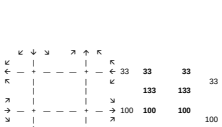
NNSA South Drive & Botts Rd.



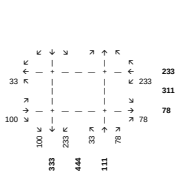
Hwy 150 & Prospect Ave.



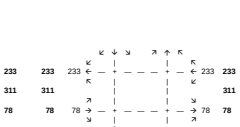
Hwy 150 & T-Bird Rd. / NNSA Drive



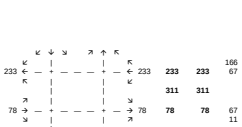
Hwy 150 & Botts Rd.



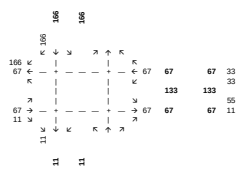
Hwy 150 & Andrews/Colorado



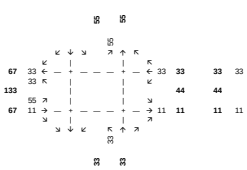
Hwy 150 & W. Outer Rd.



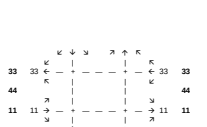
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



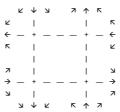
Hwy 150 & E. Outer Rd.



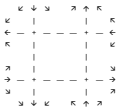
NNSA Traffic Study
Kansas City, Missouri
RGB Phase 1 Trips

PM Peak Hour

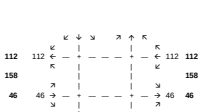
NNSA North Drive & Botts Rd.



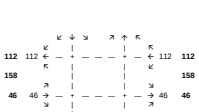
NNSA South Drive & Botts Rd.



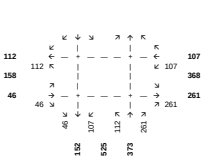
Hwy 150 & Prospect Ave.



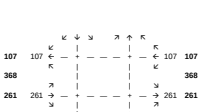
Hwy 150 & T-Bird Rd. / NNSA Drive



Hwy 150 & Botts Rd.

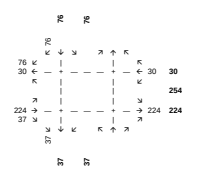


Hwy 150 & Andrews/Colorado

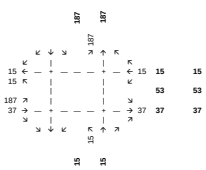


Hwy 150 & W. Outer Rd.

Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.

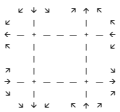
NNSA Traffic Study

Kansas City, Missouri

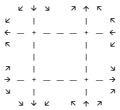
RGB Tract D Trips

AM Peak Hour

NNSA North Drive & Botts Rd.

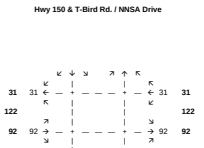


NNSA South Drive & Botts Rd.

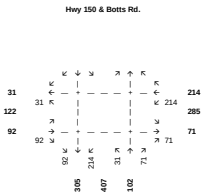


Hwy 150 & Prospect Ave.

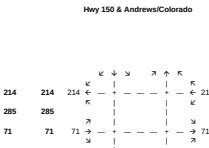
Hwy 150 & T-Bird Rd. / NNSA Drive



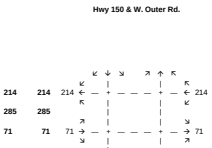
Hwy 150 & Botts Rd.



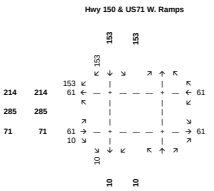
Hwy 150 & Andrews/Colorado



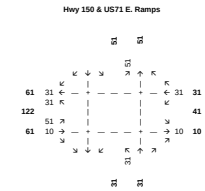
Hwy 150 & W. Outer Rd.



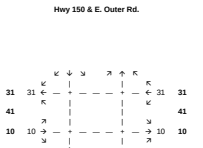
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



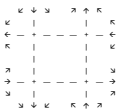
Hwy 150 & E. Outer Rd.



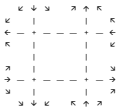
NNSA Traffic Study
Kansas City, Missouri
RGB Tract D Trips

PM Peak Hour

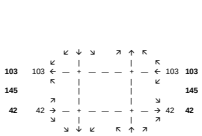
NNSA North Drive & Botts Rd.



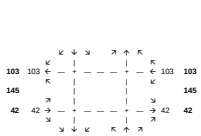
NNSA South Drive & Botts Rd.



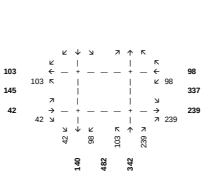
Hwy 150 & Prospect Ave.



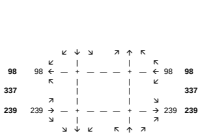
Hwy 150 & T-Bird Rd. / NNSA Drive



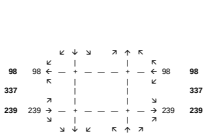
Hwy 150 & Botts Rd.



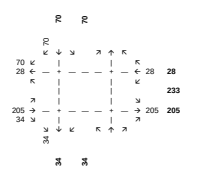
Hwy 150 & Andrews/Colorado



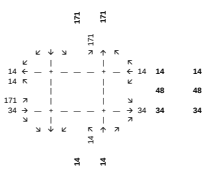
Hwy 150 & W. Outer Rd.



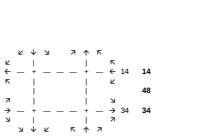
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



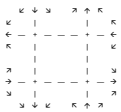
Hwy 150 & E. Outer Rd.



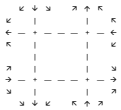
NNSA Traffic Study
Kansas City, Missouri
RGB Phase 2 Trips (Andrews RIRO)

AM Peak Hour

NNSA North Drive & Botts Rd.

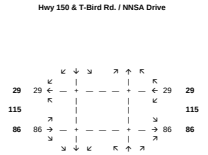


NNSA South Drive & Botts Rd.

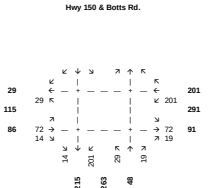


Hwy 150 & Prospect Ave.

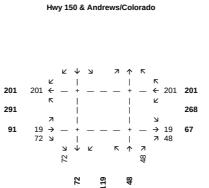
Hwy 150 & T-Bird Rd. / NNSA Drive



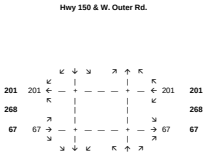
Hwy 150 & Botts Rd.



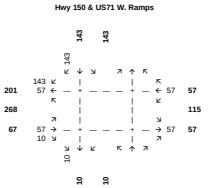
Hwy 150 & Andrews/Colorado



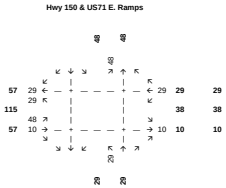
Hwy 150 & W. Outer Rd.



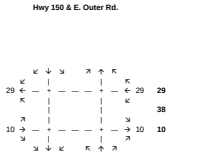
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



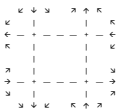
NNSA Traffic Study

Kansas City, Missouri

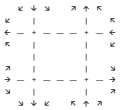
RGB Phase 2 Trips (Andrews RIRO)

PM Peak Hour

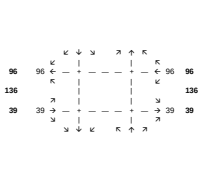
NNSA North Drive & Botts Rd.



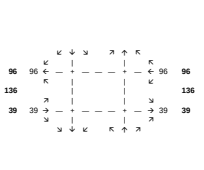
NNSA South Drive & Botts Rd.



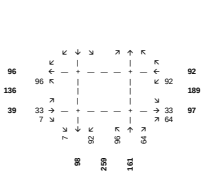
Hwy 150 & Prospect Ave.



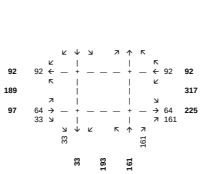
Hwy 150 & T-Bird Rd. / NNSA Drive



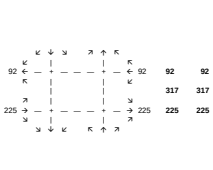
Hwy 150 & Botts Rd.



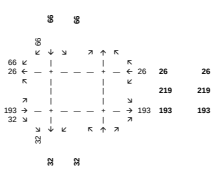
Hwy 150 & Andrews/Colorado



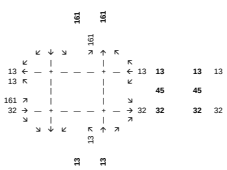
Hwy 150 & W. Outer Rd.



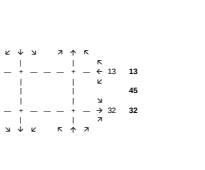
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



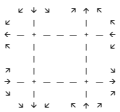
Hwy 150 & E. Outer Rd.



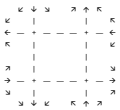
NNSA Traffic Study
Kansas City, Missouri
RGB Phase 3 Trips

AM Peak Hour

NNSA North Drive & Botts Rd.

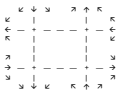


NNSA South Drive & Botts Rd.

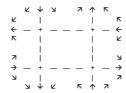


Note some or all of these trips were assigned to 155th Street

Hwy 150 & Prospect Ave.

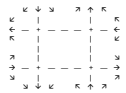


Hwy 150 & T-Bird Rd. / NNSA Drive

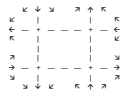


Hwy 150 & Botts Rd.

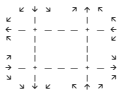
Hwy 150 & Andrews/Colorado



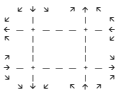
Hwy 150 & W. Outer Rd.



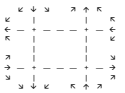
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



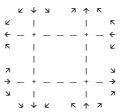
Hwy 150 & E. Outer Rd.



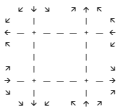
NNSA Traffic Study
Kansas City, Missouri
RGB Phase 3 Trips

PM Peak Hour

NNSA North Drive & Botts Rd.

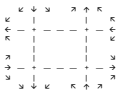


NNSA South Drive & Botts Rd.

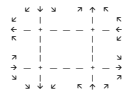


Note some or all of these trips were assigned to 155th Street

Hwy 150 & Prospect Ave.

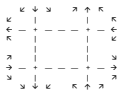


Hwy 150 & T-Bird Rd. / NNSA Drive

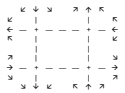


Hwy 150 & Botts Rd.

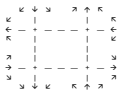
Hwy 150 & Andrews/Colorado



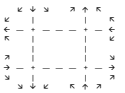
Hwy 150 & W. Outer Rd.



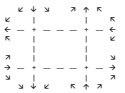
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



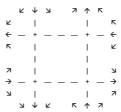
Hwy 150 & E. Outer Rd.



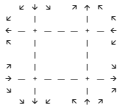
NNSA Traffic Study
Kansas City, Missouri
RGB Phase 4, 5, and 6 Trips

AM Peak Hour

NNSA North Drive & Botts Rd.

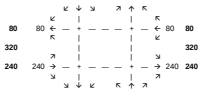


NNSA South Drive & Botts Rd.

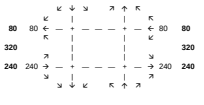


Note some or all of these trips were assigned to 155th Street

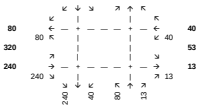
Hwy 150 & Prospect Ave.



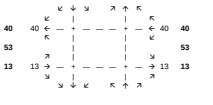
Hwy 150 & T-Bird Rd. / NNSA Drive



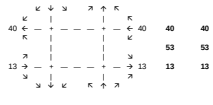
Hwy 150 & Botts Rd.



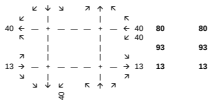
Hwy 150 & Andrews/Colorado



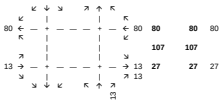
Hwy 150 & W. Outer Rd.



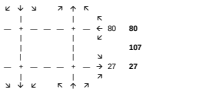
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



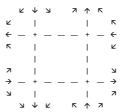
NNSA Traffic Study

Kansas City, Missouri

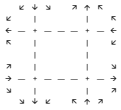
RGB Phase 4, 5, and 6 Trips

PM Peak Hour

NNSA North Drive & Botts Rd.

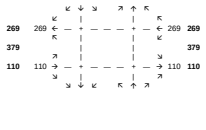


NNSA South Drive & Botts Rd.

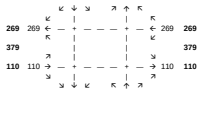


Note some or all of these trips were assigned to 155th Street

Hwy 150 & Prospect Ave.

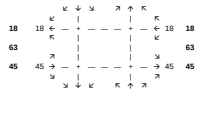


Hwy 150 & T-Bird Rd. / NNSA Drive

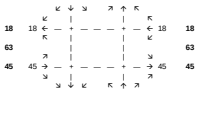


Hwy 150 & Botts Rd.

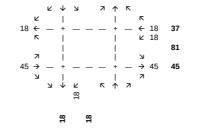
Hwy 150 & Andrews/Colorado



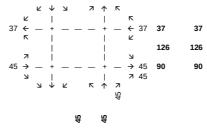
Hwy 150 & W. Outer Rd.



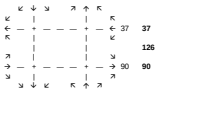
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



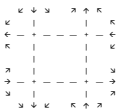
Hwy 150 & E. Outer Rd.



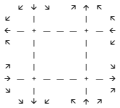
NNSA Traffic Study
Kansas City, Missouri
RGB Retail Trips

AM Peak Hour

NNSA North Drive & Botts Rd.

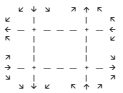


NNSA South Drive & Botts Rd.

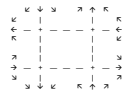


Note some or all of these trips were assigned to 155th Street

Hwy 150 & Prospect Ave.

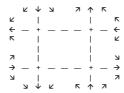


Hwy 150 & T-Bird Rd. / NNSA Drive

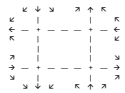


Hwy 150 & Botts Rd.

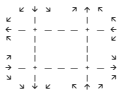
Hwy 150 & Andrews/Colorado



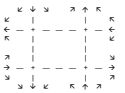
Hwy 150 & W. Outer Rd.



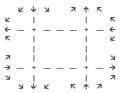
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



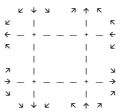
Hwy 150 & E. Outer Rd.



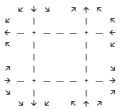
NNSA Traffic Study
Kansas City, Missouri
RGB Retail Trips

PM Peak Hour

NNSA North Drive & Botts Rd.

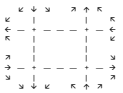


NNSA South Drive & Botts Rd.

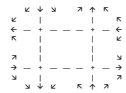


Note some or all of these trips were assigned to 155th Street

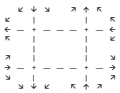
Hwy 150 & Prospect Ave.



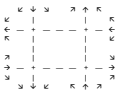
Hwy 150 & T-Bird Rd. / NNSA Drive



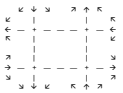
Hwy 150 & Botts Rd.



Hwy 150 & Andrews/Colorado



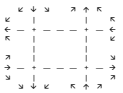
Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps

Hwy 150 & US71 E. Ramps

Hwy 150 & E. Outer Rd.



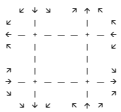
NNSA Traffic Study

Kansas City, Missouri

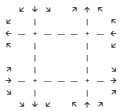
Colorado Avenue Convenience Store Development Trips

AM Peak Hour

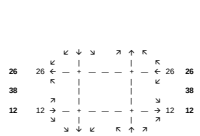
NNSA North Drive & Botts Rd.



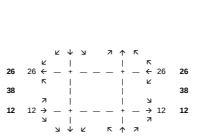
NNSA South Drive & Botts Rd.



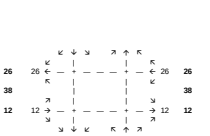
Hwy 150 & Prospect Ave.



Hwy 150 & T-Bird Rd. / NNSA Drive

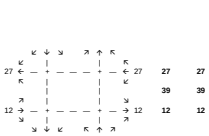


Hwy 150 & Botts Rd.

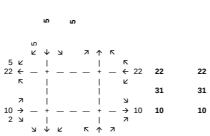


Hwy 150 & Andrews/Colorado

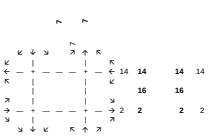
Hwy 150 & W. Outer Rd.



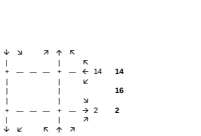
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



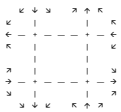
NNSA Traffic Study

Kansas City, Missouri

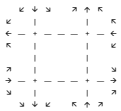
Colorado Avenue Convenience Store Development Trips

PM Peak Hour

NNSA North Drive & Botts Rd.

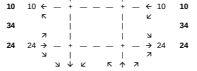


NNSA South Drive & Botts Rd.



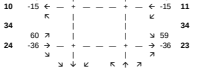
Hwy 150 & Prospect Ave.

Hwy 150 & T-Bird Rd. / NNSA Drive



Hwy 150 & Botts Rd.

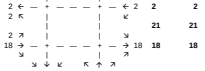
Hwy 150 & Andrews/Colorado



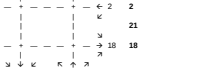
Hwy 150 & W. Outer Rd.

Hwy 150 & US71 W. Ramps

Hwy 150 & US71 E. Ramps



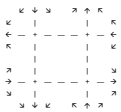
Hwy 150 & E. Outer Rd.



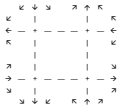
NNSA Traffic Study
Kansas City, Missouri
RGB Underground Development Trips

AM Peak Hour

NNSA North Drive & Botts Rd.

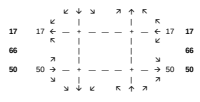


NNSA South Drive & Botts Rd.

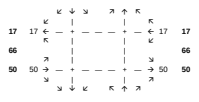


Note some or all of these trips were assigned to 155th Street

Hwy 150 & Prospect Ave.

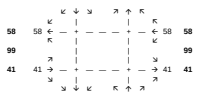


Hwy 150 & T-Bird Rd. / NNSA Drive

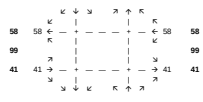


Hwy 150 & Botts Rd.

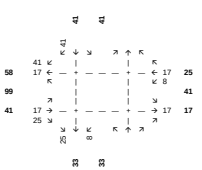
Hwy 150 & Andrews/Colorado



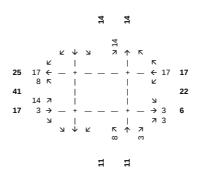
Hwy 150 & W. Outer Rd.



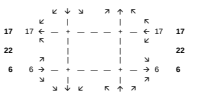
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



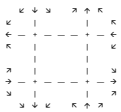
NNSA Traffic Study

Kansas City, Missouri

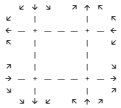
RGB Underground Development Trips

PM Peak Hour

NNSA North Drive & Botts Rd.

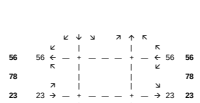


NNSA South Drive & Botts Rd.

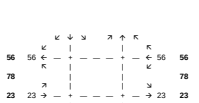


Note some or all of these trips were assigned to 155th Street

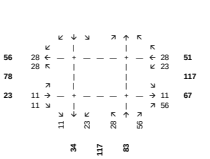
Hwy 150 & Prospect Ave.



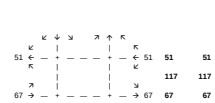
Hwy 150 & T-Bird Rd. / NNSA Drive



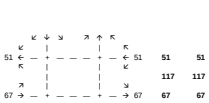
Hwy 150 & Botts Rd.



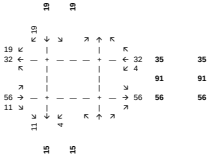
Hwy 150 & Andrews/Colorado



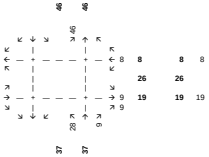
Hwy 150 & W. Outer Rd.



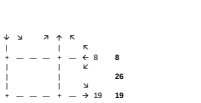
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

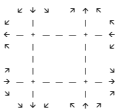


Hwy 150 & E. Outer Rd.

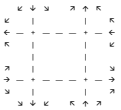


NNSA Traffic Study
Kansas City, Missouri
Projected Background Growth Trips (2006 - 2025)
AM Peak Hour

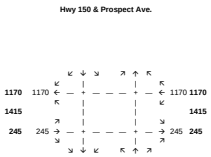
NNSA North Drive & Botts Rd.



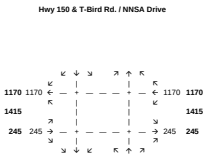
NNSA South Drive & Botts Rd.



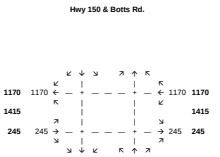
Hwy 150 & Prospect Ave.



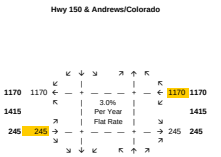
Hwy 150 & T-Bird Rd. / NNSA Drive



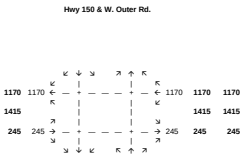
Hwy 150 & Botts Rd.



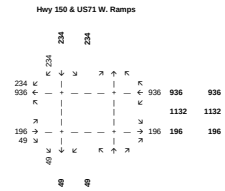
Hwy 150 & Andrews/Colorado



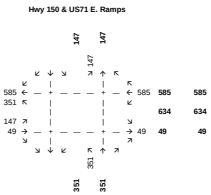
Hwy 150 & W. Outer Rd.



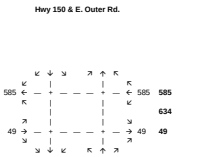
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

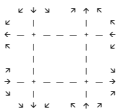


Hwy 150 & E. Outer Rd.

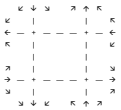


NNSA Traffic Study
Kansas City, Missouri
Projected Background Growth Trips (2006 - 2025)
PM Peak Hour

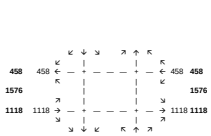
NNSA North Drive & Botts Rd.



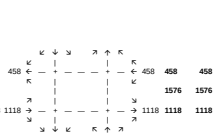
NNSA South Drive & Botts Rd.



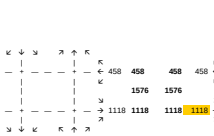
Hwy 150 & Prospect Ave.



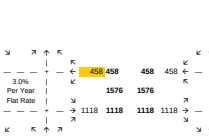
Hwy 150 & T-Bird Rd. / NNSA Drive



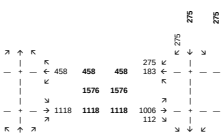
Hwy 150 & Botts Rd.



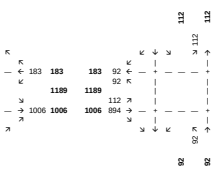
Hwy 150 & Andrews/Colorado



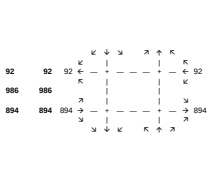
Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

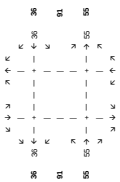


Hwy 150 & E. Outer Rd.

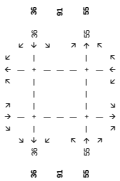
NNSA Traffic Study
Kansas City, Missouri
Botts Road Growth / Traffic Shift

AM Peak Hour

NNSA North Drive & Botts Rd.

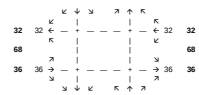


NNSA South Drive & Botts Rd.



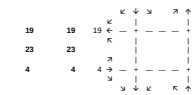
Hwy 150 & Prospect Ave.

Hwy 150 & T-Bird Rd. / NNSA Drive

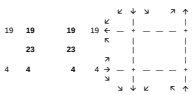


Hwy 150 & Botts Rd.

Hwy 150 & Andrews/Colorado



Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps

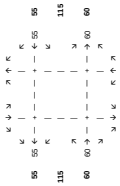
Hwy 150 & US71 E. Ramps

Hwy 150 & E. Outer Rd.

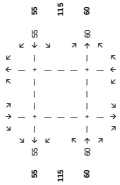
NNSA Traffic Study
Kansas City, Missouri
Botts Road Growth / Traffic Shift

PM Peak Hour

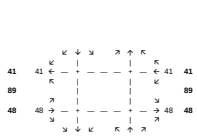
NNSA North Drive & Botts Rd.



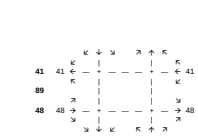
NNSA South Drive & Botts Rd.



Hwy 150 & Prospect Ave.

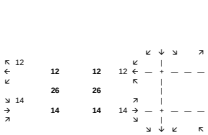


Hwy 150 & T-Bird Rd. / NNSA Drive

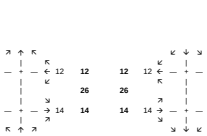


Hwy 150 & Botts Rd.

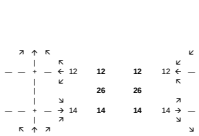
Hwy 150 & Andrews/Colorado



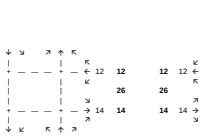
Hwy 150 & W. Outer Rd.



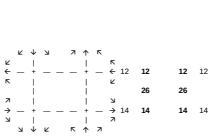
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



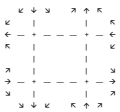
Hwy 150 & E. Outer Rd.



NNSA Traffic Study
Kansas City, Missouri
Andrews/Colorado Traffic Adjustments for Interchange

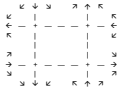
AM Peak Hour

NNSA North Drive & Botts Rd.

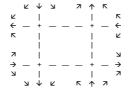


NNSA South Drive & Botts Rd.

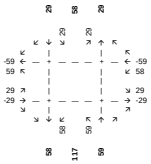
Hwy 150 & Prospect Ave.



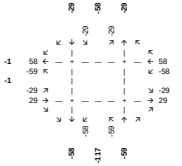
Hwy 150 & T-Bird Rd. / NNSA Drive



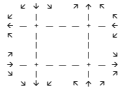
Hwy 150 & Botts Rd.



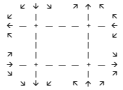
Hwy 150 & Andrews/Colorado



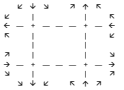
Hwy 150 & W. Outer Rd.



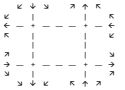
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



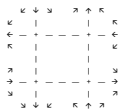
Hwy 150 & E. Outer Rd.



NNSA Traffic Study
Kansas City, Missouri
Andrews/Colorado Traffic Adjustments for Interchange

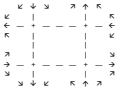
PM Peak Hour

NNSA North Drive & Botts Rd.

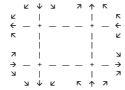


NNSA South Drive & Botts Rd.

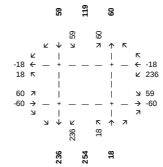
Hwy 150 & Prospect Ave.



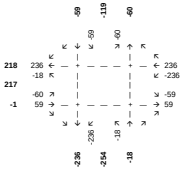
Hwy 150 & T-Bird Rd. / NNSA Drive



Hwy 150 & Botts Rd.

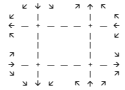


Hwy 150 & Andrews/Colorado

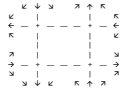


59		
119		
60		
218	218	
217	217	
-1	-1	

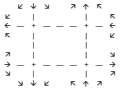
Hwy 150 & W. Outer Rd.



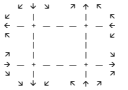
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



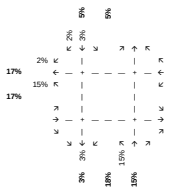
NNSA Traffic Study

Kansas City, Missouri

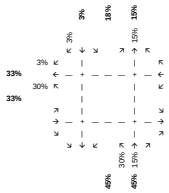
Trip Distribution - NNSA Development (Initial Development Scenario)

Inbound

NNSA North Drive & Botts Rd.

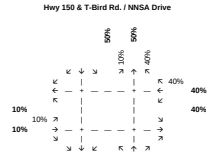


NNSA South Drive & Botts Rd.

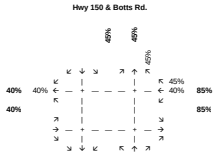


Hwy 150 & Prospect Ave.

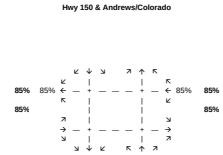
Hwy 150 & T-Bird Rd. / NNSA Drive



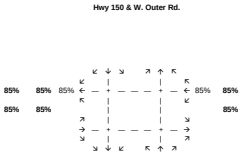
Hwy 150 & Botts Rd.



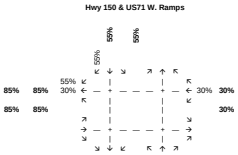
Hwy 150 & Andrews/Colorado



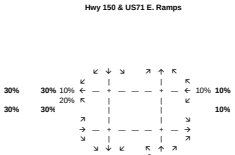
Hwy 150 & W. Outer Rd.



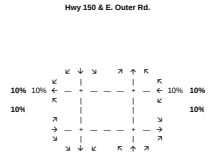
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.

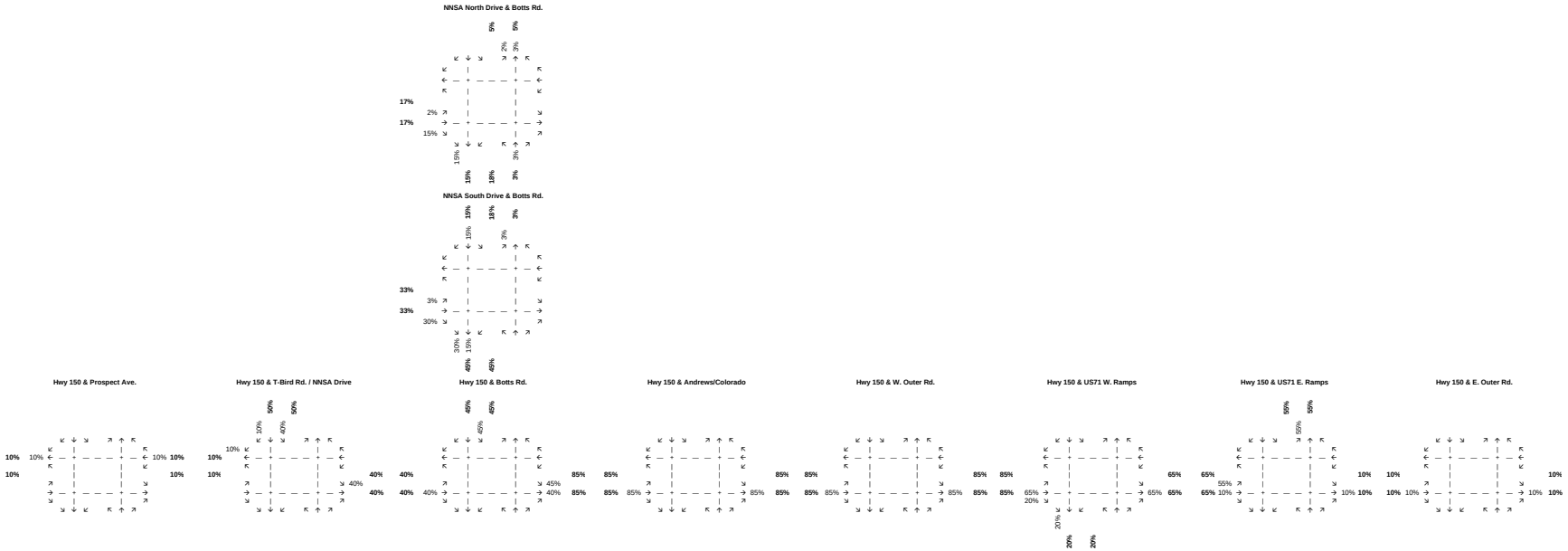


NNSA Traffic Study

Kansas City, Missouri

Trip Distribution - NNSA Development (Initial Development Scenario)

Outbound

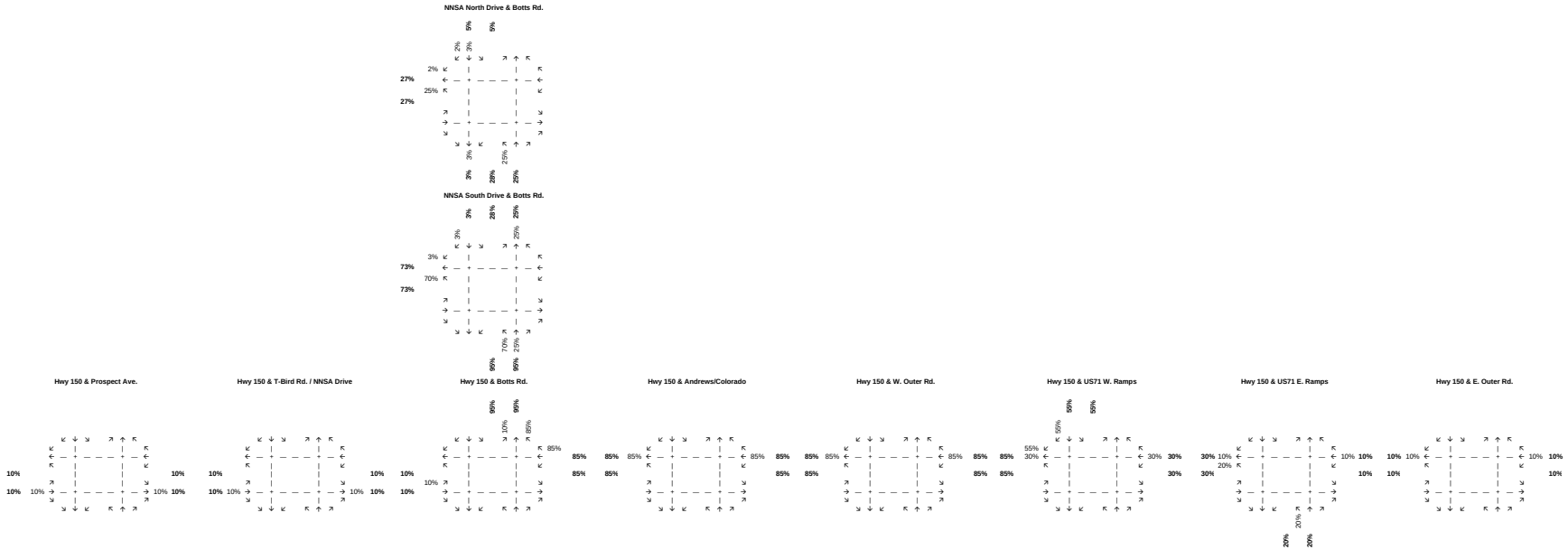


NNSA Traffic Study

Kansas City, Missouri

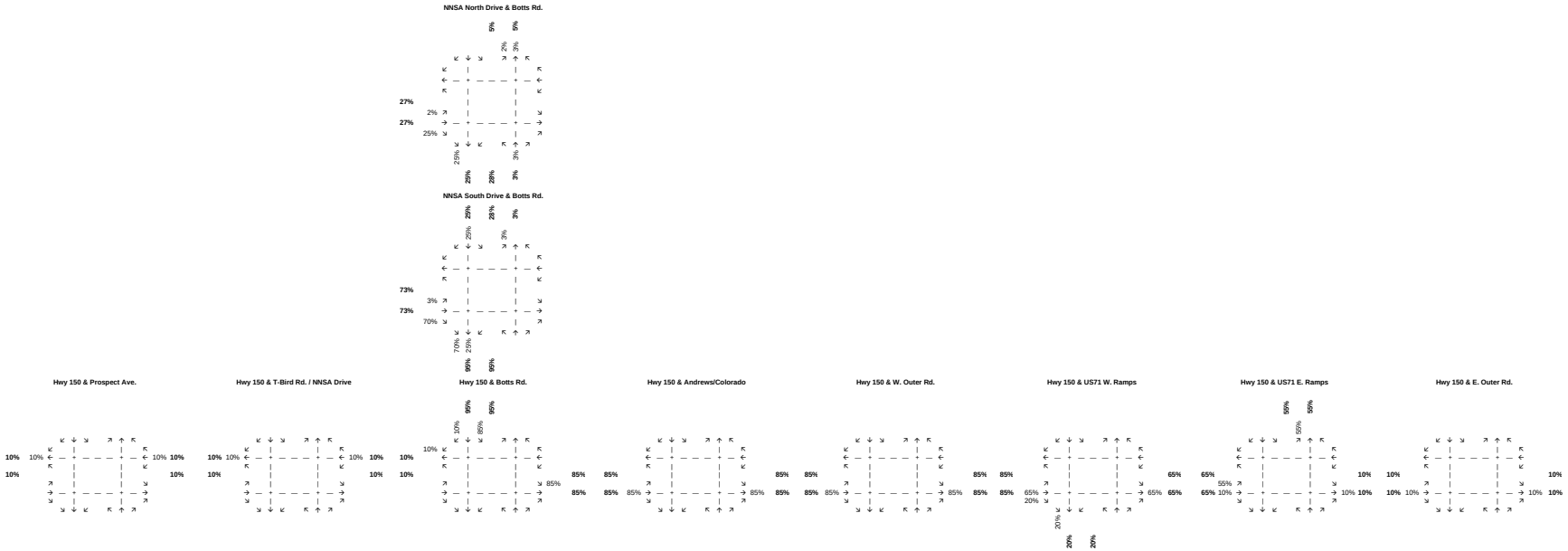
Trip Distribution - NNSA Development (Future Scenario - Diamond Interchange Alternative)

Inbound



NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - NNSA Development (Future Scenario - Diamond Interchange Alternative)

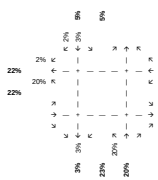
Outbound



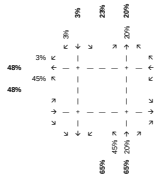
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - NNSA Development (Future Scenario - Split Diamond Interchange Alternative)

Inbound

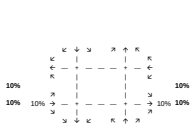
NNSA North Drive & Botts Rd.



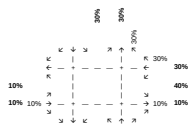
NNSA South Drive & Botts Rd.



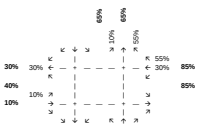
Hwy 150 & Prospect Ave.



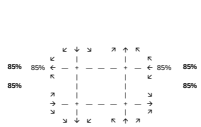
Hwy 150 & T-Bird Rd. / NNSA Drive



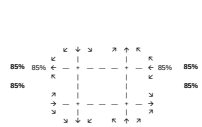
Hwy 150 & Botts Rd.



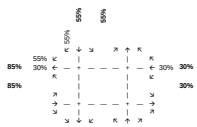
Hwy 150 & Andrews/Colorado



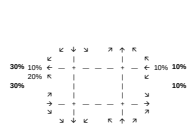
Hwy 150 & W. Outer Rd.



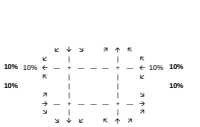
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



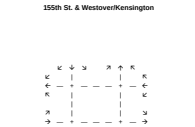
Hwy 150 & E. Outer Rd.



Andrews Rd. & Kensington Ave.

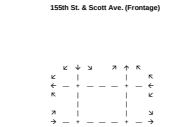
155th St. & Andrews Rd.

155th St. & Westover/Kensington

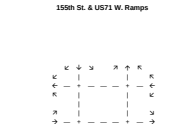


155th St. & Proposed Drive

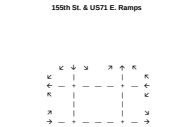
155th St. & Scott Ave. (Frontage)



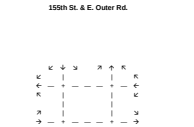
155th St. & US71 W. Ramps



155th St. & US71 E. Ramps



155th St. & E. Outer Rd.



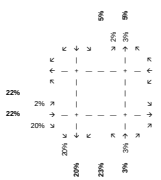
NNSA Traffic Study

Kansas City, Missouri

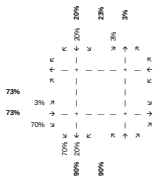
Trip Distribution - NNSA Development (Future Scenario - Split Diamond Interchange Alternative)

Outbound

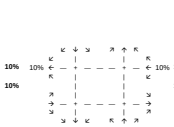
NNSA North Drive & Botts Rd.



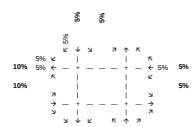
NNSA South Drive & Botts Rd.



Hwy 150 & Prospect Ave.

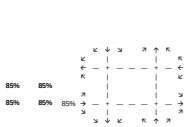


Hwy 150 & T-Bird Rd. / NNSA Drive

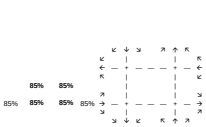


Hwy 150 & Botts Rd.

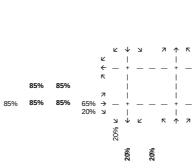
Hwy 150 & Andrews/Colorado



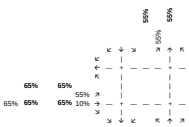
Hwy 150 & W. Outer Rd.



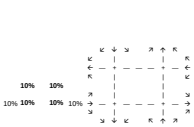
Hwy 150 & US71 W. Ramps



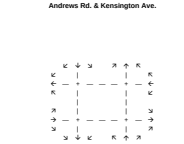
Hwy 150 & US71 E. Ramps



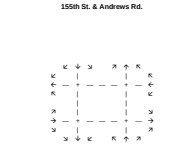
Hwy 150 & E. Outer Rd.



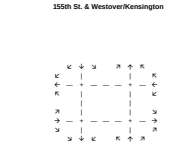
Andrews Rd. & Kensington Ave.



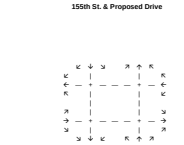
155th St. & Andrews Rd.



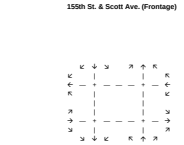
155th St. & Westover/Kensington



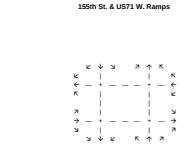
155th St. & Proposed Drive



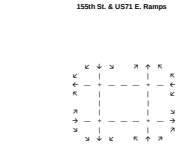
155th St. & Scott Ave. (Frontage)



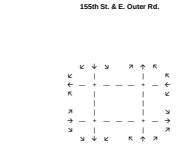
155th St. & US71 W. Ramps



155th St. & US71 E. Ramps

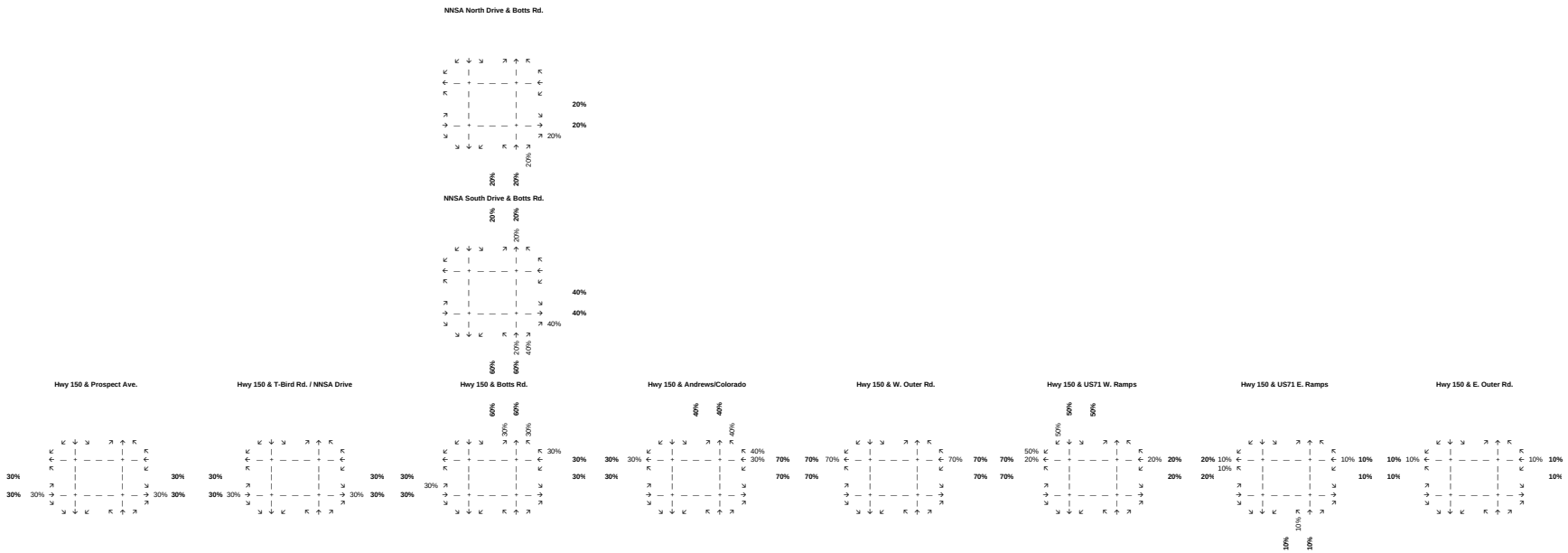


155th St. & E. Outer Rd.



NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Colorado Avenue Industrial Development (Full Build w/ RIRO Andrews / Colorado)

Inbound

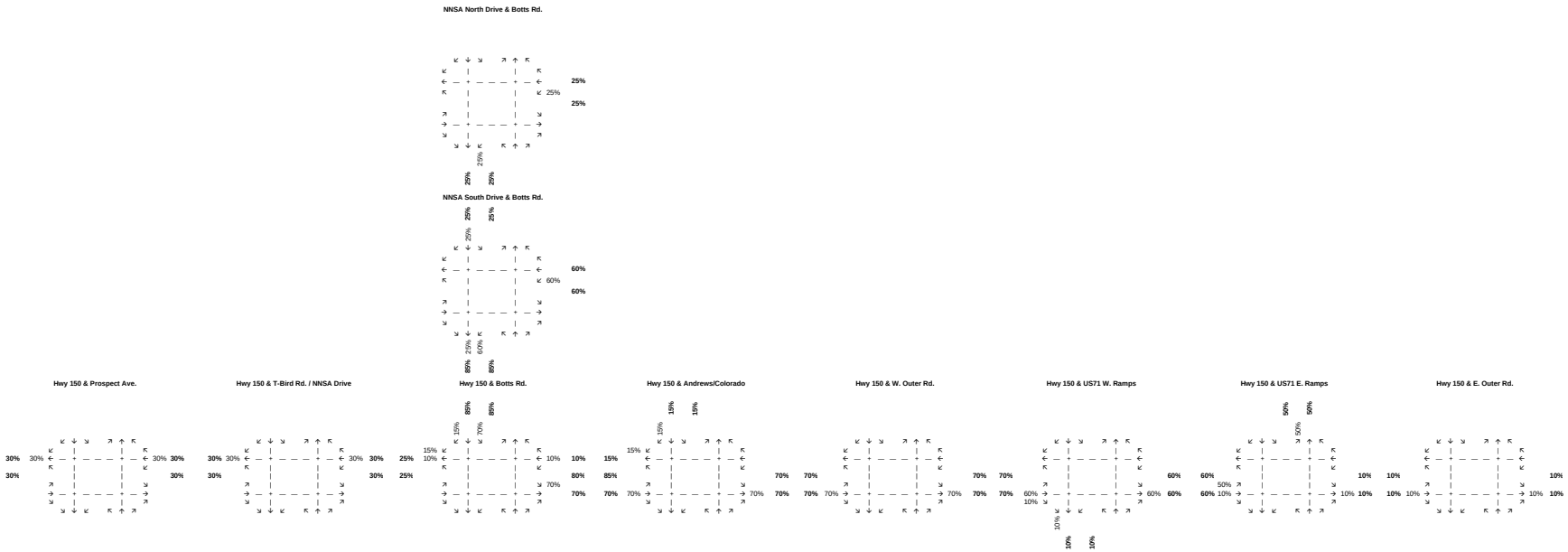


NNSA Traffic Study

Kansas City, Missouri

Trip Distribution - Colorado Avenue Industrial Development (Full Build w/ RIRO Andrews / Colorado)

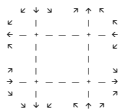
Outbound



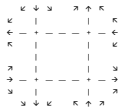
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Richards Gebaur Industrial (Phase 1)

Inbound

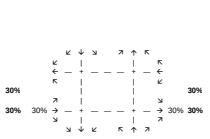
NNSA North Drive & Botts Rd.



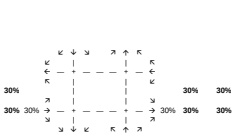
NNSA South Drive & Botts Rd.



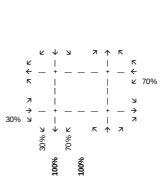
Hwy 150 & Prospect Ave.



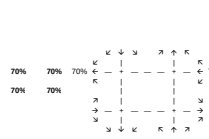
Hwy 150 & T-Bird Rd. / NNSA Drive



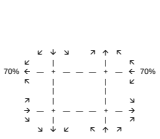
Hwy 150 & Botts Rd.



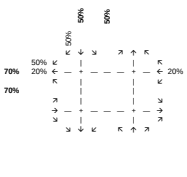
Hwy 150 & Andrews/Colorado



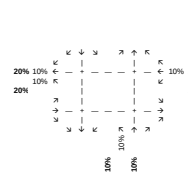
Hwy 150 & W. Outer Rd.



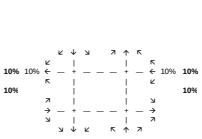
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



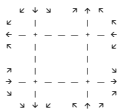
NNSA Traffic Study

Kansas City, Missouri

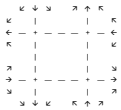
Trip Distribution - Richards Gebaur Industrial (Phase 1)

Outbound

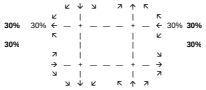
NNSA North Drive & Botts Rd.



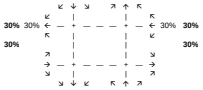
NNSA South Drive & Botts Rd.



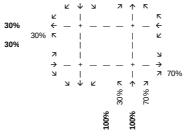
Hwy 150 & Prospect Ave.



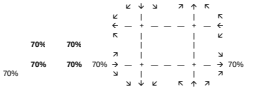
Hwy 150 & T-Bird Rd. / NNSA Drive



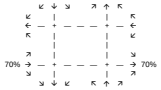
Hwy 150 & Botts Rd.



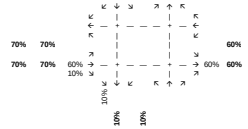
Hwy 150 & Andrews/Colorado



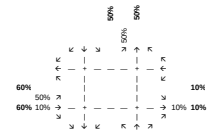
Hwy 150 & W. Outer Rd.



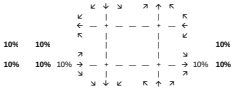
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



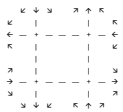
Hwy 150 & E. Outer Rd.



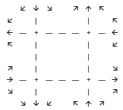
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Richards Gebaur Industrial (Phase 2 - Andrews RIRO)

Inbound

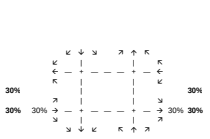
NNSA North Drive & Botts Rd.



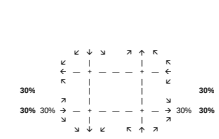
NNSA South Drive & Botts Rd.



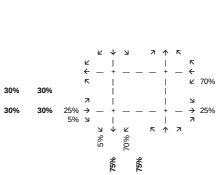
Hwy 150 & Prospect Ave.



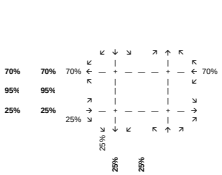
Hwy 150 & T-Bird Rd. / NNSA Drive



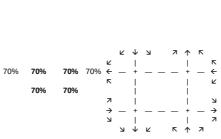
Hwy 150 & Botts Rd.



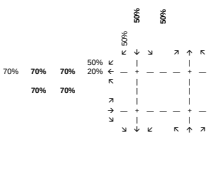
Hwy 150 & Andrews/Colorado



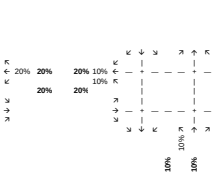
Hwy 150 & W. Outer Rd.



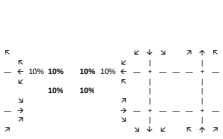
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



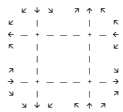
NNSA Traffic Study

Kansas City, Missouri

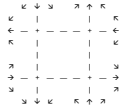
Trip Distribution - Richards Gebaur Industrial (Phase 2 Andrews RIRO)

Outbound

NNSA North Drive & Botts Rd.

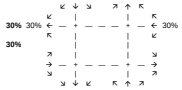


NNSA South Drive & Botts Rd.

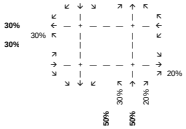


Hwy 150 & Prospect Ave.

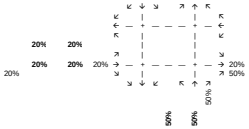
Hwy 150 & T-Bird Rd. / NNSA Drive



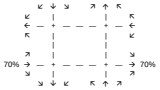
Hwy 150 & Botts Rd.



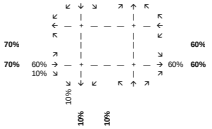
Hwy 150 & Andrews/Colorado



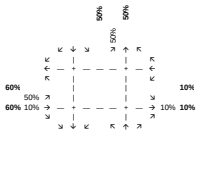
Hwy 150 & W. Outer Rd.



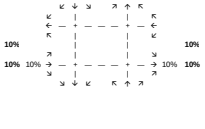
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



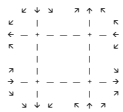
NNSA Traffic Study

Kansas City, Missouri

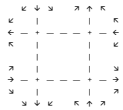
Trip Distribution - Richards Gebaur Industrial (Phase 3)

Inbound

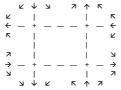
NNSA North Drive & Botts Rd.



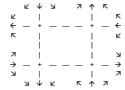
NNSA South Drive & Botts Rd.



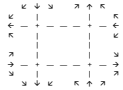
Hwy 150 & Prospect Ave.



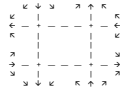
Hwy 150 & T-Bird Rd. / NNSA Drive



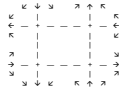
Hwy 150 & Botts Rd.



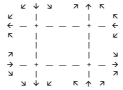
Hwy 150 & Andrews/Colorado



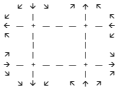
Hwy 150 & W. Outer Rd.



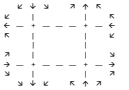
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



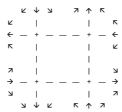
NNSA Traffic Study

Kansas City, Missouri

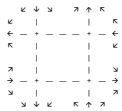
Trip Distribution - Richards Gebaur Industrial (Phase 3)

Outbound

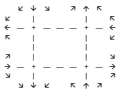
NNSA North Drive & Botts Rd.



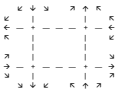
NNSA South Drive & Botts Rd.



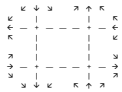
Hwy 150 & Prospect Ave.



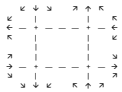
Hwy 150 & T-Bird Rd. / NNSA Drive



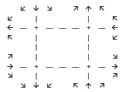
Hwy 150 & Botts Rd.



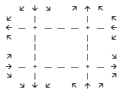
Hwy 150 & Andrews/Colorado



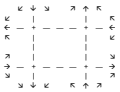
Hwy 150 & W. Outer Rd.



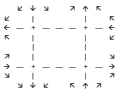
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



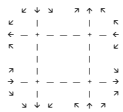
NNSA Traffic Study

Kansas City, Missouri

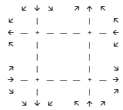
Trip Distribution - Richards Gebaur Industrial (Phases 4, 5, and 6)

Inbound

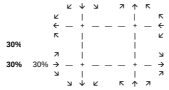
NNSA North Drive & Botts Rd.



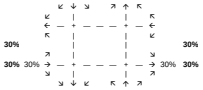
NNSA South Drive & Botts Rd.



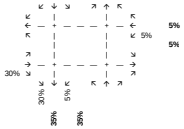
Hwy 150 & Prospect Ave.



Hwy 150 & T-Bird Rd. / NNSA Drive

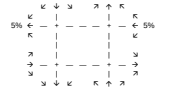


Hwy 150 & Botts Rd.

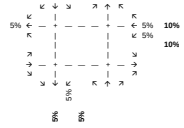


Hwy 150 & Andrews/Colorado

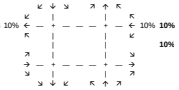
Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.

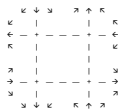
NNSA Traffic Study

Kansas City, Missouri

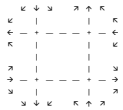
Trip Distribution - Richards Gebaur Industrial (Phases 4, 5, and 6)

Outbound

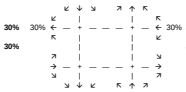
NNSA North Drive & Botts Rd.



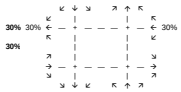
NNSA South Drive & Botts Rd.



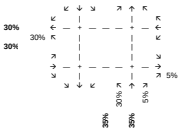
Hwy 150 & Prospect Ave.



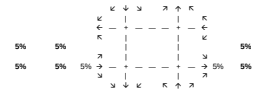
Hwy 150 & T-Bird Rd. / NNSA Drive



Hwy 150 & Botts Rd.



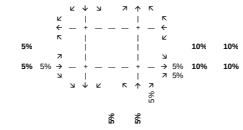
Hwy 150 & Andrews/Colorado



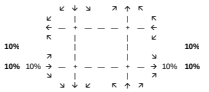
Hwy 150 & W. Outer Rd.

Hwy 150 & US71 W. Ramps

Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



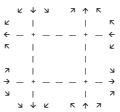
NNSA Traffic Study

Kansas City, Missouri

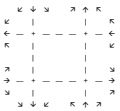
Trip Distribution - 155th Street Retail

Inbound

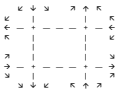
NNSA North Drive & Botts Rd.



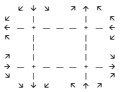
NNSA South Drive & Botts Rd.



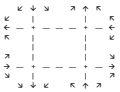
Hwy 150 & Prospect Ave.



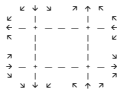
Hwy 150 & T-Bird Rd. / NNSA Drive



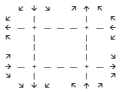
Hwy 150 & Botts Rd.



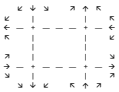
Hwy 150 & Andrews/Colorado



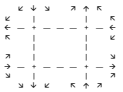
Hwy 150 & W. Outer Rd.



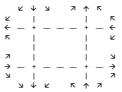
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



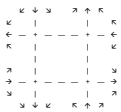
Hwy 150 & E. Outer Rd.



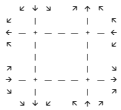
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - 155th Street Retail

Outbound

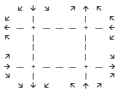
NNSA North Drive & Botts Rd.



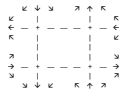
NNSA South Drive & Botts Rd.



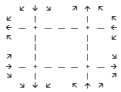
Hwy 150 & Prospect Ave.



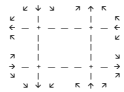
Hwy 150 & T-Bird Rd. / NNSA Drive



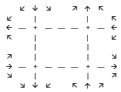
Hwy 150 & Botts Rd.



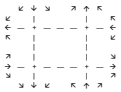
Hwy 150 & Andrews/Colorado



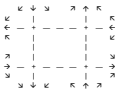
Hwy 150 & W. Outer Rd.



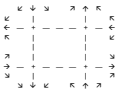
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



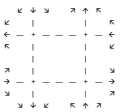
NNSA Traffic Study

Kansas City, Missouri

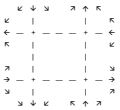
Trip Distribution - Intermodal Facility (Full Build - Split Diamond Interchange at Botts)

Inbound

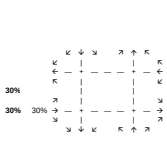
NNSA North Drive & Botts Rd.



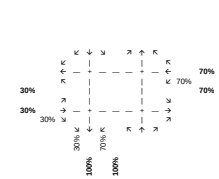
NNSA South Drive & Botts Rd.



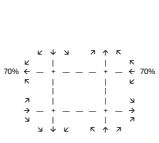
Hwy 150 & Prospect Ave.



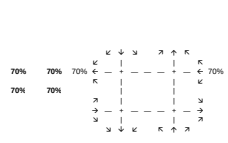
Hwy 150 & T-Bird Rd. / NNSA Drive



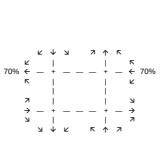
Hwy 150 & Botts Rd.



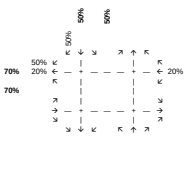
Hwy 150 & Andrews/Colorado



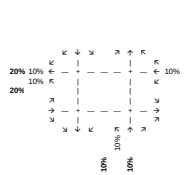
Hwy 150 & W. Outer Rd.



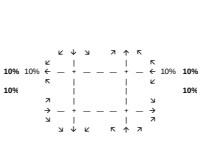
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



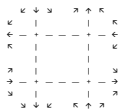
NNSA Traffic Study

Kansas City, Missouri

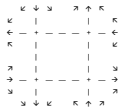
Trip Distribution - Intermodal Facility (Full Build - Split Diamond Interchange at Botts)

Outbound

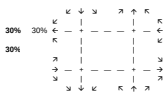
NNSA North Drive & Botts Rd.



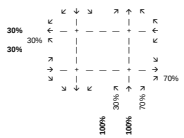
NNSA South Drive & Botts Rd.



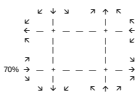
Hwy 150 & Prospect Ave.



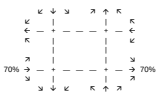
Hwy 150 & T-Bird Rd. / NNSA Drive



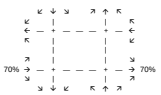
Hwy 150 & Botts Rd.



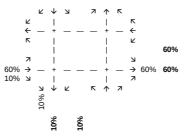
Hwy 150 & Andrews/Colorado



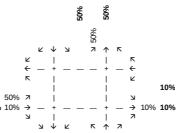
Hwy 150 & W. Outer Rd.



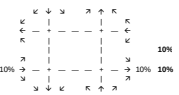
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



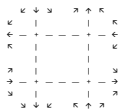
Hwy 150 & E. Outer Rd.



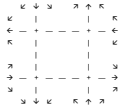
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Intermodal Facility (Full Build - Diamond Interchange at Botts)

Inbound

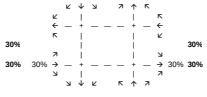
NNSA North Drive & Botts Rd.



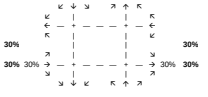
NNSA South Drive & Botts Rd.



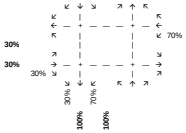
Hwy 150 & Prospect Ave.



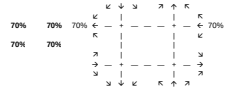
Hwy 150 & T-Bird Rd. / NNSA Drive



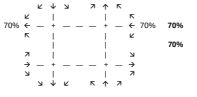
Hwy 150 & Botts Rd.



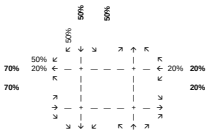
Hwy 150 & Andrews/Colorado



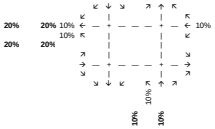
Hwy 150 & W. Outer Rd.



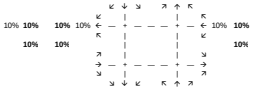
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.



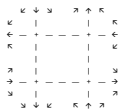
NNSA Traffic Study

Kansas City, Missouri

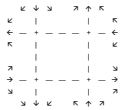
Trip Distribution - Intermodal Facility (Full Build - Diamond Interchange at Botts)

Outbound

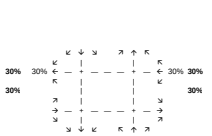
NNSA North Drive & Botts Rd.



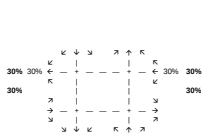
NNSA South Drive & Botts Rd.



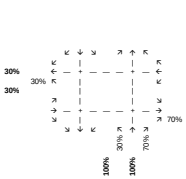
Hwy 150 & Prospect Ave.



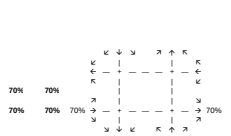
Hwy 150 & T-Bird Rd. / NNSA Drive



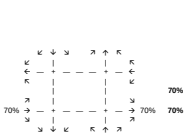
Hwy 150 & Botts Rd.



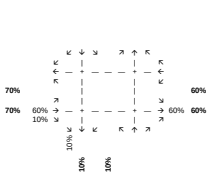
Hwy 150 & Andrews/Colorado



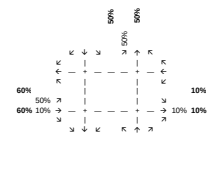
Hwy 150 & W. Outer Rd.



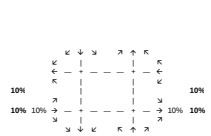
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



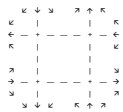
Hwy 150 & E. Outer Rd.



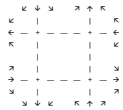
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Car Load Facility

Inbound

NNSA North Drive & Botts Rd.

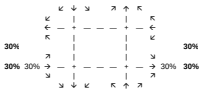


NNSA South Drive & Botts Rd.

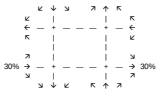


Hwy 150 & Prospect Ave.

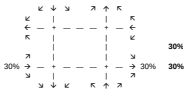
Hwy 150 & T-Bird Rd. / NNSA Drive



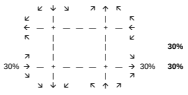
Hwy 150 & Botts Rd.



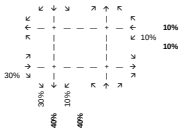
Hwy 150 & Andrews/Colorado



Hwy 150 & W. Outer Rd.

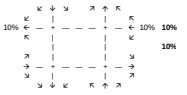


Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps

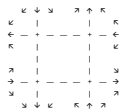
Hwy 150 & E. Outer Rd.



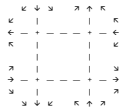
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Car Load Facility

Outbound

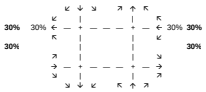
NNSA North Drive & Botts Rd.



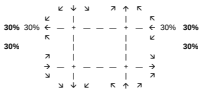
NNSA South Drive & Botts Rd.



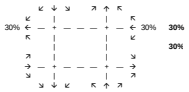
Hwy 150 & Prospect Ave.



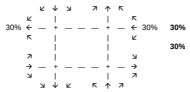
Hwy 150 & T-Bird Rd. / NNSA Drive



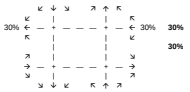
Hwy 150 & Botts Rd.



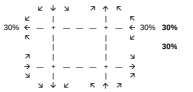
Hwy 150 & Andrews/Colorado



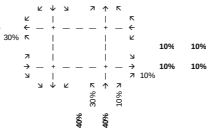
Hwy 150 & W. Outer Rd.



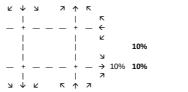
Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



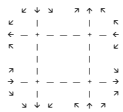
Hwy 150 & E. Outer Rd.



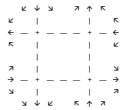
NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Underground Development

Inbound

NNSA North Drive & Botts Rd.

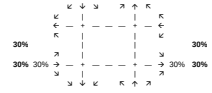


NNSA South Drive & Botts Rd.

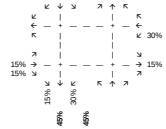


Hwy 150 & Prospect Ave.

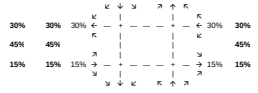
Hwy 150 & T-Bird Rd. / NNSA Drive



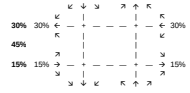
Hwy 150 & Botts Rd.



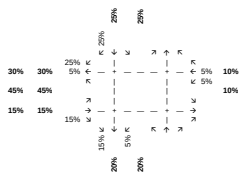
Hwy 150 & Andrews/Colorado



Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps



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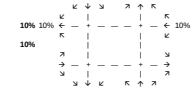

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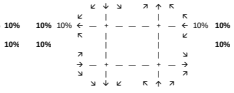
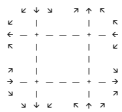


NNSA Traffic Study
Kansas City, Missouri
Trip Distribution - Underground Development

Outbound

NNSA North Drive & Botts Rd.



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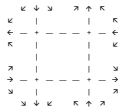
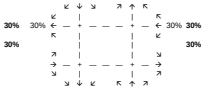
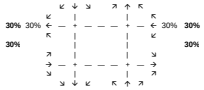


Hwy 150 & Prospect Ave.

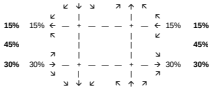


Hwy 150 & T-Bird Rd. / NNSA Drive

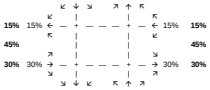


Hwy 150 & Botts Rd.

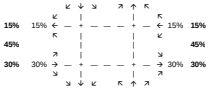
Hwy 150 & Andrews/Colorado



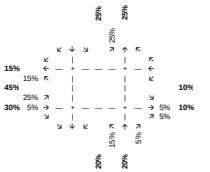
Hwy 150 & W. Outer Rd.



Hwy 150 & US71 W. Ramps



Hwy 150 & US71 E. Ramps



Hwy 150 & E. Outer Rd.

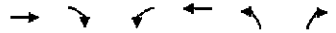
Appendix C – Capacity Analysis Worksheets

See attached worksheets.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↰	↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	44	649	4	6	2128	38	21	6	6	4	2	1
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)	48	705	4	7	2313	41	23	7	7	4	2	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2354			710			1975	3171	355	2805	3152	1177
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2354			710			1975	3171	355	2805	3152	1177
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	74			99			0	0	99	0	68	99
cM capacity (veh/h)	182			834			20	7	619	0	7	172

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	401	357	1163	1198	29	7	7	1
Volume Left	48	0	7	0	23	0	4	0
Volume Right	0	4	0	41	0	7	0	1
cSH	182	1700	834	1700	14	619	0	172
Volume to Capacity	0.26	0.21	0.01	0.70	2.14	0.01	Err	0.01
Queue Length 95th (ft)	25	0	1	0	111	1	Err	0
Control Delay (s)	13.1	0.0	0.3	0.0	1086.6	10.9	Err	26.0
Lane LOS	B		A		F	B	F	D
Approach Delay (s)	6.9		0.1		891.0		Err	
Approach LOS					F		F	

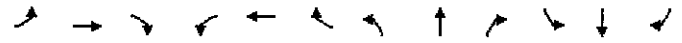
Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰	↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	508	0	5	2016	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	552	0	5	2191	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			552		1659	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			552		1659	276
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			99		93	99
cM capacity (veh/h)			960		81	698

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	276	276	0	5	1096	1096	5	5
Volume Left	0	0	0	5	0	0	5	0
Volume Right	0	0	0	0	0	0	0	5
cSH	1700	1700	1700	960	1700	1700	81	698
Volume to Capacity	0.16	0.16	0.00	0.01	0.64	0.64	0.07	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	5	1
Control Delay (s)	0.0	0.0	0.0	8.8	0.0	0.0	52.6	10.2
Lane LOS				A			F	B
Approach Delay (s)	0.0			0.0			31.4	
Approach LOS							D	

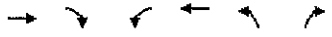
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	69	431	8	1	1973	35	5	5	5	6	5	43
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)	75	468	9	1	2145	38	5	5	5	7	5	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2183			477			1696	2803	234	2553	2793	1091
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2183			477			1696	2803	234	2553	2793	1091
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	65			100			71	47	99	0	48	76
cM capacity (veh/h)	214			1027			19	10	744	5	10	197

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	75	234	234	9	1	1430	753	16	59
Volume Left	75	0	0	0	1	0	0	5	7
Volume Right	0	0	0	9	0	0	38	5	47
cSH	214	1700	1700	1700	1027	1700	1700	22	37
Volume to Capacity	0.35	0.14	0.14	0.01	0.00	0.84	0.44	0.75	1.58
Queue Length 95th (ft)	37	0	0	0	0	0	0	54	156
Control Delay (s)	30.6	0.0	0.0	0.0	8.5	0.0	0.0	331.6	269.7
Lane LOS	D				A			F	F
Approach Delay (s)	4.2				0.0			331.6	269.7
Approach LOS								F	F

Intersection Summary				
Average Delay	8.4			
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	408	29	58	1950	59	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	443	32	63	2120	64	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh)						
Upstream signal (ft)				401		
pX, platoon unblocked					0.26	
vC, conflicting volume			475		1629	222
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			475		575	222
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			94		39	99
cM capacity (veh/h)			1029		105	758

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2
Volume Total	222	222	32	770	1413	64	7
Volume Left	0	0	0	63	0	64	0
Volume Right	0	0	32	0	0	0	7
cSH	1700	1700	1700	1029	1700	105	758
Volume to Capacity	0.13	0.13	0.02	0.06	0.83	0.61	0.01
Queue Length 95th (ft)	0	0	0	5	0	74	1
Control Delay (s)	0.0	0.0	0.0	1.6	0.0	82.6	9.8
Lane LOS				A		F	A
Approach Delay (s)	0.0			0.5		75.8	
Approach LOS						F	

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	82.7%	ICU Level of Service	E	
Analysis Period (min)	15			

Lane Group	EBL	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	450	2129	5	5	23	23	58
v/c Ratio	0.18	0.90	0.09	0.06	0.25	0.25	0.41
Control Delay	4.2	6.1	57.0	33.0	61.2	61.2	23.0
Queue Delay	0.0	9.6	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	15.7	57.0	33.0	61.2	61.2	23.0
Queue Length 50th (ft)	43	107	4	0	17	17	0
Queue Length 95th (ft)	58	m110	18	14	48	48	43
Internal Link Dist (ft)	321	441				694	
Turn Bay Length (ft)							
Base Capacity (vph)	2489	2374	58	90	91	91	140
Starvation Cap Reductn	0	252	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.00	0.09	0.06	0.25	0.25	0.41

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												
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0		5.0	5.0	5.0	5.0
Lane Util. Factor		0.95			0.95		1.00		1.00	0.95	0.95	1.00
Frt		1.00			1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00		0.95		1.00	0.95	0.95	1.00
Satd. Flow (prot)		3281			3282		1641		1468	1559	1566	1468
Flt Permitted		1.00			0.95		0.57		1.00	0.95	0.95	1.00
Satd. Flow (perm)		3281			3132		987		1468	1559	1566	1468
Volume (vph)	0	413	1	4	1955	0	5	0	5	41	1	53
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	449	1	4	2125	0	5	0	5	45	1	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	5	0	0	55
Lane Group Flow (vph)	0	450	0	0	2129	0	5	0	0	23	23	3
Turn Type			Perm			custom			custom	Split		Perm
Protected Phases		4			8					6	6	
Permitted Phases			8			2			2			6
Actuated Green, G (s)		90.0			90.0		6.0		6.0	6.0	6.0	6.0
Effective Green, g (s)		91.0			91.0		7.0		7.0	7.0	7.0	7.0
Actuated g/C Ratio		0.76			0.76		0.06		0.06	0.06	0.06	0.06
Clearance Time (s)		6.0			6.0		6.0		6.0	6.0	6.0	6.0
Lane Grp Cap (vph)		2488			2375		58		86	91	91	86
v/s Ratio Prot		0.14								c0.01	0.01	
v/s Ratio Perm					c0.68		c0.01		0.00			0.00
v/c Ratio		0.18			0.90		0.09		0.00	0.25	0.25	0.04
Uniform Delay, d1		4.1			10.9		53.5		53.2	54.0	54.0	53.3
Progression Factor		1.00			0.35		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2			1.6		2.9		0.1	6.6	6.6	0.9
Delay (s)		4.2			5.5		56.4		53.3	60.6	60.6	54.2
Level of Service		A			A		E		D	E	E	D
Approach Delay (s)		4.2			5.5			54.8			57.0	
Approach LOS		A			A			D			E	

Intersection Summary

HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	493	1988	112	271
v/c Ratio	0.25	1.00	0.36	0.87
Control Delay	3.6	19.8	45.9	69.0
Queue Delay	0.0	122.8	0.0	0.0
Total Delay	3.6	142.5	45.9	69.0
Queue Length 50th (ft)	11	258	76	181
Queue Length 95th (ft)	16	m206	133	#336
Internal Link Dist (ft)	441	231		
Turn Bay Length (ft)				
Base Capacity (vph)	2004	1990	315	310
Starvation Cap Reductn	0	453	0	0
Spillback Cap Reductn	0	4	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	1.29	0.36	0.87

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		↑↑↱			↰↑↑					↰		↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0					5.0		5.0
Lane Util. Factor		0.95			0.95					1.00		1.00
Frt		0.95			1.00					1.00		0.85
Flt Protected		1.00			1.00					0.95		1.00
Satd. Flow (prot)		3106			3271					1641		1468
Flt Permitted		1.00			0.82					0.95		1.00
Satd. Flow (perm)		3106			2699					1641		1468
Volume (vph)	0	292	162	119	1710	0	0	0	0	103	0	249
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	317	176	129	1859	0	0	0	0	112	0	271
RTOR Reduction (vph)	0	64	0	0	0	0	0	0	0	0	0	28
Lane Group Flow (vph)	0	429	0	0	1988	0	0	0	0	112	0	243
Turn Type			pm+pt							custom		custom
Protected Phases		4			3	8						
Permitted Phases					8					6		6
Actuated Green, G (s)		74.0			86.0					22.0		22.0
Effective Green, g (s)		75.0			87.0					23.0		23.0
Actuated g/C Ratio		0.62			0.72					0.19		0.19
Clearance Time (s)		6.0			6.0					6.0		6.0
Lane Grp Cap (vph)		1941			1990					315		281
v/s Ratio Prot		0.14			c0.06							
v/s Ratio Perm					c0.67					0.07		c0.17
v/c Ratio		0.22			1.00					0.36		0.86
Uniform Delay, d1		9.8			18.5					42.1		47.0
Progression Factor		0.52			0.82					1.00		1.00
Incremental Delay, d2		0.3			5.8					3.1		27.9
Delay (s)		5.3			19.3					45.2		74.9
Level of Service		A			B					D		E
Approach Delay (s)		5.3			19.3			0.0			66.2	
Approach LOS		A			B			A			E	

Intersection Summary

HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	429	1671	830	41
v/c Ratio	1.08dl	1.24	1.27	0.07
Control Delay	16.2	136.1	163.7	11.4
Queue Delay	0.7	36.8	54.6	0.0
Total Delay	16.8	172.9	218.3	11.4
Queue Length 50th (ft)	92	~837	~809	6
Queue Length 95th (ft)	116	#962	#1052	30
Internal Link Dist (ft)	231	181		
Turn Bay Length (ft)				
Base Capacity (vph)	1047	1347	656	603
Starvation Cap Reductn	309	70	0	0
Spillback Cap Reductn	0	84	58	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	1.32	1.39	0.07

Intersection Summary
~: Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl: Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0		5.0			
Lane Util. Factor		0.95			0.95		1.00		1.00			
Frt		1.00			0.95		1.00		0.85			
Flt Protected		0.98			1.00		0.95		1.00			
Satd. Flow (prot)		3220			3131		1641		1468			
Flt Permitted		0.57			1.00		0.95		1.00			
Satd. Flow (perm)		1875			3131		1641		1468			
Volume (vph)	153	242	0	0	1066	471	764	0	38	0	0	0
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)	166	263	0	0	1159	512	830	0	41	0	0	0
RTOR Reduction (vph)	0	0	0	0	42	0	0	0	16	0	0	0
Lane Group Flow (vph)	0	429	0	0	1629	0	830	0	25	0	0	0
Turn Type	pm+pt						custom		custom			
Protected Phases	7	4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)		61.0			49.0		47.0		47.0			
Effective Green, g (s)		62.0			50.0		48.0		48.0			
Actuated g/C Ratio		0.52			0.42		0.40		0.40			
Clearance Time (s)		6.0			6.0		6.0		6.0			
Lane Grp Cap (vph)		1047			1305		656		587			
v/s Ratio Prot		c0.02			c0.52							
v/s Ratio Perm		0.19					c0.51		0.02			
v/c Ratio		1.08dl			1.25		1.27		0.04			
Uniform Delay, d1		17.8			35.0		36.0		22.0			
Progression Factor		0.91			0.67		1.00		1.00			
Incremental Delay, d2		1.2			115.8		131.3		0.1			
Delay (s)		17.3			139.3		167.3		22.1			
Level of Service		B			F		F		C			
Approach Delay (s)		17.3			139.3			160.4			0.0	
Approach LOS		B			F			F			A	

Intersection Summary			
HCM Average Control Delay	127.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
Analysis Period (min)	15		

dl: Defacto Left Lane. Recode with 1 though lane as a left lane.
c: Critical Lane Group

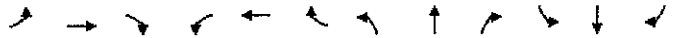
Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	304	1640	218
v/c Ratio	0.21	0.80	0.51
Control Delay	1.1	18.7	41.8
Queue Delay	0.3	1.2	2.0
Total Delay	1.4	19.9	43.7
Queue Length 50th (ft)	4	443	141
Queue Length 95th (ft)	6	551	221
Internal Link Dist (ft)	181	2622	791
Turn Bay Length (ft)			
Base Capacity (vph)	1430	2042	430
Starvation Cap Reductn	652	0	0
Spillback Cap Reductn	0	199	103
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.89	0.67

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			1.00				
Frt		0.99			0.99			0.98				
Flt Protected		0.99			1.00			0.97				
Satd. Flow (prot)		3236			3253			1646				
Flt Permitted		0.66			0.95			0.97				
Satd. Flow (perm)		2165			3095			1646				
Volume (vph)	37	229	14	13	1413	83	124	51	26	0	0	0
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)	40	249	15	14	1536	90	135	55	28	0	0	0
RTOR Reduction (vph)	0	3	0	0	3	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	301	0	0	1637	0	0	214	0	0	0	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2				
Permitted Phases	4			8			2					
Actuated Green, G (s)		78.0			78.0			30.0				
Effective Green, g (s)		79.0			79.0			31.0				
Actuated g/C Ratio		0.66			0.66			0.26				
Clearance Time (s)		6.0			6.0			6.0				
Lane Grp Cap (vph)		1425			2038			425				
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.53			0.13				
v/c Ratio		0.21			0.80			0.50				
Uniform Delay, d1		8.1			14.9			37.9				
Progression Factor		0.09			1.00			1.00				
Incremental Delay, d2		0.3			3.5			4.2				
Delay (s)		1.1			18.3			42.1				
Level of Service		A			B			D				
Approach Delay (s)		1.1			18.3			42.1			0.0	
Approach LOS		A			B			D			A	

Intersection Summary					
HCM Average Control Delay	18.3	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	70.4%	ICU Level of Service		C	
Analysis Period (min)	15				

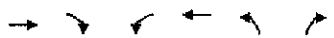
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↰	↱		↰	↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	2207	32	26	769	9	1	3	12	18	17	6
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)	1	2399	35	28	836	10	1	3	13	20	18	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	846			2434			2909	3321	1217	2114	3333	423
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	846			2434			2909	3321	1217	2114	3333	423
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			83			0	44	92	0	0	99
cM capacity (veh/h)	738			169			0	6	162	12	6	558

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	1201	1234	446	428	4	13	38	7
Volume Left	1	0	28	0	1	0	20	0
Volume Right	0	35	0	10	0	13	0	7
cSH	738	1700	169	1700	0	162	8	558
Volume to Capacity	0.00	0.73	0.17	0.25	Err	0.08	4.87	0.01
Queue Length 95th (ft)	0	0	15	0	Err	6	Err	1
Control Delay (s)	0.1	0.0	8.3	0.0	Err	29.2	Err	11.5
Lane LOS	A		A		F	D	F	B
Approach Delay (s)	0.0		4.2		Err		8537.4	
Approach LOS					F		F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	61.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰	↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2184	5	5	821	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2374	5	5	892	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2379		2831	1187
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2379		2831	1187
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			97		54	97
cM capacity (veh/h)			178		12	169

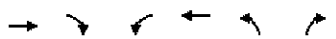
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1187	1187	5	5	446	446	5	5
Volume Left	0	0	0	5	0	0	5	0
Volume Right	0	0	5	0	0	0	0	5
cSH	1700	1700	1700	178	1700	1700	12	169
Volume to Capacity	0.70	0.70	0.00	0.03	0.26	0.26	0.46	0.03
Queue Length 95th (ft)	0	0	0	2	0	0	27	2
Control Delay (s)	0.0	0.0	0.0	25.9	0.0	0.0	464.8	26.9
Lane LOS				D			F	D
Approach Delay (s)	0.0			0.2			245.9	
Approach LOS							F	

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	89	2095	5	5	758	23	2	5	5	20	5	61
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)	97	2277	5	5	824	25	2	5	5	22	5	66
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	849			2283			2896	3330	1139	2182	3323	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	849			2283			2896	3330	1139	2182	3323	424
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	87			97			0	7	97	0	8	88
cM capacity (veh/h)	736			195			1	6	183	4	6	556

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	97	1139	1139	5	5	549	300	13	93	
Volume Left	97	0	0	0	5	0	0	2	22	
Volume Right	0	0	0	5	0	0	25	5	66	
cSH	736	1700	1700	1700	195	1700	1700	8	14	
Volume to Capacity	0.13	0.67	0.67	0.00	0.03	0.32	0.18	1.71	6.82	
Queue Length 95th (ft)	11	0	0	0	2	0	0	64	Err	
Control Delay (s)	10.6	0.0	0.0	0.0	24.0	0.0	0.0	1045.8	Err	
Lane LOS	B				C			F	F	
Approach Delay (s)	0.4				0.2			1045.8	Err	
Approach LOS								F	F	

Intersection Summary				
Average Delay	284.3			
Intersection Capacity Utilization	81.8%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1863	252	236	763	18	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2025	274	257	829	20	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				401		
pX, platoon unblocked					0.89	
vC, conflicting volume			2299		2953	1012
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2299		3074	1012
tC, single (s)			4.3		7.0	7.1
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			0		0	87
cM capacity (veh/h)			192		0	223

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2
Volume Total	1012	1012	274	533	553	20	28
Volume Left	0	0	0	257	0	20	0
Volume Right	0	0	274	0	0	0	28
cSH	1700	1700	1700	192	1700	0	223
Volume to Capacity	0.60	0.60	0.16	1.34	0.33	Err	0.13
Queue Length 95th (ft)	0	0	0	367	0	Err	11
Control Delay (s)	0.0	0.0	0.0	253.9	0.0	Err	23.4
Lane LOS				F		F	C
Approach Delay (s)	0.0			124.6		Err	
Approach LOS						F	

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	95.3%	ICU Level of Service	F	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBL	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2053	861	11	49	198	202	222
v/c Ratio	0.93	0.44	0.22	0.52	0.74	0.75	0.51
Control Delay	29.5	12.6	75.1	58.7	72.6	73.5	10.5
Queue Delay	1.1	0.4	0.0	0.4	262.9	270.9	0.0
Total Delay	30.6	13.0	75.1	59.1	335.5	344.4	10.5
Queue Length 50th (ft)	802	238	10	23	182	186	0
Queue Length 95th (ft)	961	300	32	#69	#298	#308	75
Internal Link Dist (ft)	321	441				694	
Turn Bay Length (ft)							
Base Capacity (vph)	2204	1972	49	95	267	268	436
Starvation Cap Reductn	0	582	0	0	0	0	0
Spillback Cap Reductn	47	0	0	2	141	141	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.62	0.22	0.53	1.57	1.59	0.51

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0		5.0	5.0	5.0	5.0
Lane Util. Factor		0.95			0.95		1.00		1.00	0.95	0.95	1.00
Frt		1.00			1.00		1.00		0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00		0.95		1.00	0.95	0.95	1.00
Satd. Flow (prot)		3281			3280		1641		1468	1559	1564	1468
Flt Permitted		1.00			0.90		0.57		1.00	0.95	0.95	1.00
Satd. Flow (perm)		3281			2938		987		1468	1559	1564	1468
Volume (vph)	0	1886	3	7	785	0	10	0	45	364	4	204
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	2050	3	8	853	0	11	0	49	396	4	222
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	22	0	0	184
Lane Group Flow (vph)	0	2053	0	0	861	0	11	0	27	198	202	38
Turn Type			Perm			custom			custom	Split		Perm
Protected Phases		4			8					6	6	
Permitted Phases				8			2		2			6
Actuated Green, G (s)		93.0			93.0		6.0		6.0	23.0	23.0	23.0
Effective Green, g (s)		94.0			94.0		7.0		7.0	24.0	24.0	24.0
Actuated g/C Ratio		0.67			0.67		0.05		0.05	0.17	0.17	0.17
Clearance Time (s)		6.0			6.0		6.0		6.0	6.0	6.0	6.0
Lane Grp Cap (vph)		2203			1973		49		73	267	268	252
v/s Ratio Prot		c0.63								0.13	c0.13	
v/s Ratio Perm					0.29		0.01		c0.02			0.03
v/c Ratio		0.93			0.44		0.22		0.37	0.74	0.75	0.15
Uniform Delay, d1		20.2			10.7		63.9		64.4	55.1	55.2	49.3
Progression Factor		1.00			1.11		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		8.7			0.6		10.3		13.9	16.9	17.7	1.3
Delay (s)		28.9			12.4		74.2		78.3	71.9	72.9	50.6
Level of Service		C			B		E		E	E	E	D
Approach Delay (s)		28.9			12.4			77.5			64.6	
Approach LOS		C			B			E			E	

Intersection Summary

HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2494	545	853	412
v/c Ratio	1.51	0.52	1.55	0.65
Control Delay	257.5	15.7	288.7	24.5
Queue Delay	162.3	6.6	425.6	0.0
Total Delay	419.8	22.4	714.3	24.5
Queue Length 50th (ft)	~1658	190	~1091	161
Queue Length 95th (ft)	#1790	m183	#1345	284
Internal Link Dist (ft)	441	231		
Turn Bay Length (ft)				
Base Capacity (vph)	1647	1041	551	630
Starvation Cap Reductn	0	438	0	0
Spillback Cap Reductn	317	0	218	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.88	0.90	2.56	0.65

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0					5.0		5.0
Lane Util. Factor		0.95			0.95					1.00		1.00
Frt		0.99			1.00					1.00		0.85
Flt Protected		1.00			0.99					0.95		1.00
Satd. Flow (prot)		3236			3253					1641		1468
Flt Permitted		1.00			0.49					0.95		1.00
Satd. Flow (perm)		3236			1619					1641		1468
Volume (vph)	0	2083	212	88	413	0	0	0	0	785	0	379
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	2264	230	96	449	0	0	0	0	853	0	412
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	137
Lane Group Flow (vph)	0	2489	0	0	545	0	0	0	0	853	0	275
Turn Type				pm+pt						custom		custom
Protected Phases		4			3	8						
Permitted Phases					8					6		6
Actuated Green, G (s)		70.0			82.0					46.0		46.0
Effective Green, g (s)		71.0			83.0					47.0		47.0
Actuated g/C Ratio		0.51			0.59					0.34		0.34
Clearance Time (s)		6.0			6.0					6.0		6.0
Lane Grp Cap (vph)		1641			1042					551		493
v/s Ratio Prot		c0.77			c0.03							
v/s Ratio Perm					0.28					c0.52		0.19
v/c Ratio		1.52			0.52					1.55		0.56
Uniform Delay, d1		34.5			16.8					46.5		38.0
Progression Factor		0.76			0.98					1.00		1.00
Incremental Delay, d2		233.8			1.1					255.5		4.5
Delay (s)		259.8			17.6					302.0		42.5
Level of Service		F			B					F		D
Approach Delay (s)		259.8			17.6			0.0			217.5	
Approach LOS		F			B			A			F	

Intersection Summary			
HCM Average Control Delay	216.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	125.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	3119	375	293	123
v/c Ratio	1.43	0.17	1.31	0.60
Control Delay	211.8	6.7	215.2	66.1
Queue Delay	100.8	0.5	2.6	0.0
Total Delay	312.5	7.1	217.8	66.1
Queue Length 50th (ft)	~2039	53	~343	100
Queue Length 95th (ft)	m133	m73	#530	171
Internal Link Dist (ft)	231	181		
Turn Bay Length (ft)				
Base Capacity (vph)	2179	2220	223	206
Starvation Cap Reductn	295	1391	0	0
Spillback Cap Reductn	111	4	1	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.66	0.45	1.32	0.60

Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0		5.0			
Lane Util. Factor		0.95			0.95		1.00		1.00			
Frt		1.00			0.95		1.00		0.85			
Flt Protected		1.00			1.00		0.95		1.00			
Satd. Flow (prot)		3267			3119		1641		1468			
Flt Permitted		0.83			1.00		0.95		1.00			
Satd. Flow (perm)		2709			3119		1641		1468			
Volume (vph)	252	2617	0	0	231	114	270	0	113	0	0	0
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)	274	2845	0	0	251	124	293	0	123	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	0	7	0	0	0
Lane Group Flow (vph)	0	3119	0	0	338	0	293	0	116	0	0	0
Turn Type	pm+pt						custom		custom			
Protected Phases	7	4			8							
Permitted Phases	4						2		2			
Actuated Green, G (s)		110.0			97.0		18.0		18.0			
Effective Green, g (s)		111.0			98.0		19.0		19.0			
Actuated g/C Ratio		0.79			0.70		0.14		0.14			
Clearance Time (s)		6.0			6.0		6.0		6.0			
Lane Grp Cap (vph)		2180			2183		223		199			
v/s Ratio Prot		c0.08			0.11							
v/s Ratio Perm		c1.05					c0.18		0.08			
v/c Ratio		1.43			0.15		1.31		0.58			
Uniform Delay, d1		14.5			7.1		60.5		56.8			
Progression Factor		0.71			1.40		1.00		1.00			
Incremental Delay, d2		194.3			0.1		169.4		11.9			
Delay (s)		204.4			10.0		229.9		68.7			
Level of Service		F			B		F		E			
Approach Delay (s)		204.4			10.0			182.3			0.0	
Approach LOS		F			B			F			A	

Intersection Summary			
HCM Average Control Delay	183.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	WBT	NBT
Lane Group Flow (vph)	2967	404	106
v/c Ratio	1.11	1.29dl	1.04
Control Delay	60.3	1.9	156.8
Queue Delay	90.3	0.0	0.0
Total Delay	150.6	1.9	156.8
Queue Length 50th (ft)	~1355	22	~96
Queue Length 95th (ft)	m38	31	#225
Internal Link Dist (ft)	181	2622	791
Turn Bay Length (ft)			
Base Capacity (vph)	2673	1490	102
Starvation Cap Reductn	413	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.31	0.27	1.04

Intersection Summary

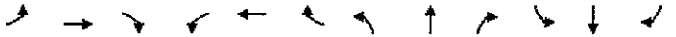
~: Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m: Volume for 95th percentile queue is metered by upstream signal.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			1.00				
Frt		0.98			1.00			0.97				
Flt Protected		1.00			0.99			0.98				
Satd. Flow (prot)		3209			3240			1629				
Flt Permitted		0.95			0.52			0.98				
Satd. Flow (perm)		3057			1709			1629				
Volume (vph)	12	2316	402	61	299	12	46	27	25	0	0	0
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)	13	2517	437	66	325	13	50	29	27	0	0	0
RTOR Reduction (vph)	0	10	0	0	2	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	2957	0	0	402	0	0	98	0	0	0	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2				
Permitted Phases	4			8			2					
Actuated Green, G (s)		121.0			121.0			7.0				
Effective Green, g (s)		122.0			122.0			8.0				
Actuated g/C Ratio		0.87			0.87			0.06				
Clearance Time (s)		6.0			6.0			6.0				
Lane Grp Cap (vph)		2664			1489			93				
v/s Ratio Prot												
v/s Ratio Perm		c0.97			0.24			0.06				
v/c Ratio		1.11			1.29dl			1.05				
Uniform Delay, d1		9.0			1.5			66.0				
Progression Factor		0.67			1.00			1.00				
Incremental Delay, d2		50.1			0.4			107.1				
Delay (s)		56.2			2.0			173.1				
Level of Service		E			A			F				
Approach Delay (s)		56.2			2.0			173.1			0.0	
Approach LOS		E			A			F			A	

Intersection Summary

HCM Average Control Delay	53.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↰	↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	44	939	4	6	2503	38	21	6	6	4	2	1
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)	48	1021	4	7	2721	41	23	7	7	4	2	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2762			1025			2494	3893	512	3370	3875	1381
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2762			1025			2494	3893	512	3370	3875	1381
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	61			99			0	0	99	0	0	99
cM capacity (veh/h)	123			627			0	2	486	0	2	124

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	558	515	1367	1402	29	7	7	1
Volume Left	48	0	7	0	23	0	4	0
Volume Right	0	4	0	41	0	7	0	1
cSH	123	1700	627	1700	0	486	0	124
Volume to Capacity	0.39	0.30	0.01	0.82	Err	0.01	Err	0.01
Queue Length 95th (ft)	41	0	1	0	Err	1	Err	1
Control Delay (s)	30.7	0.0	0.6	0.0	Err	12.5	Err	34.2
Lane LOS	D		A		F	B	F	D
Approach Delay (s)	16.0		0.3		Err		Err	
Approach LOS					F		F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	776	9	20	2586	335	10	28	13	8
v/c Ratio	0.70	0.30	0.01	0.24	1.10	0.27	0.07	0.29	0.08	0.10
Control Delay	92.4	6.2	1.2	79.3	53.3	0.1	60.0	35.0	64.7	54.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.4	6.2	1.2	79.3	53.3	0.1	60.0	35.0	64.7	54.6
Queue Length 50th (ft)	~81	130	0	19	~1425	0	8	4	6	4
Queue Length 95th (ft)	#195	160	4	m18	m33	m1	29	38	18	23
Internal Link Dist (ft)		894			1611			1543		1030
Turn Bay Length (ft)	450		450	450		450				
Base Capacity (vph)	120	2546	1337	82	2359	1246	138	98	159	84
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.30	0.01	0.24	1.10	0.27	0.07	0.29	0.08	0.10

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3282	1468	1641	1514		3183	1630	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1641	3282	1468	1641	3282	1468	1641	1514		3183	1630	
Volume (vph)	77	714	8	18	2379	308	9	5	21	12	5	3
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)	84	776	9	20	2586	335	10	5	23	13	5	3
RTOR Reduction (vph)	0	0	2	0	0	89	0	22	0	0	3	0
Lane Group Flow (vph)	84	776	7	20	2586	246	10	6	0	13	5	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	9.2	100.4	108.8	3.6	94.8	100.8	8.4	6.0		6.0	3.6	
Effective Green, g (s)	10.2	101.4	110.8	4.6	95.8	102.8	9.4	7.0		7.0	4.6	
Actuated g/C Ratio	0.07	0.72	0.79	0.03	0.68	0.73	0.07	0.05		0.05	0.03	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	2377	1214	54	2246	1130	110	76		159	54	
v/s Ratio Prot	c0.05	0.24	0.00	0.01	c0.79	c0.01	0.01	c0.00		0.00	0.00	
v/s Ratio Perm			0.00			0.16						
v/c Ratio	0.70	0.33	0.01	0.37	1.15	0.22	0.09	0.08		0.08	0.09	
Uniform Delay, d1	63.4	7.0	3.1	66.3	22.1	5.9	61.3	63.4		63.4	65.7	
Progression Factor	1.00	1.00	1.00	1.22	0.23	0.02	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.4	0.4	0.0	0.4	68.7	0.0	0.4	0.5		0.2	0.8	
Delay (s)	79.8	7.3	3.1	81.2	73.8	0.1	61.6	63.9		63.7	66.4	
Level of Service	E	A	A	F	E	A	E	E		E	E	
Approach Delay (s)		14.3			65.5			63.3			64.7	
Approach LOS		B			E			E			E	

Intersection Summary				
HCM Average Control Delay	53.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	81.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	75	584	152	337	2845	415	48	27	112	21	27	47
v/c Ratio	0.45	0.27	0.14	0.75	1.17	0.33	0.30	0.31	0.19	0.13	0.31	0.27
Control Delay	67.4	11.0	1.1	73.3	88.2	0.1	69.4	74.1	7.8	65.6	74.1	36.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	11.0	1.1	73.3	88.2	0.1	69.4	74.1	7.8	65.6	74.1	36.6
Queue Length 50th (ft)	85	115	0	156	~1668	0	22	24	0	9	24	20
Queue Length 95th (ft)	62	137	18	m112	m46	m0	44	58	27	24	58	60
Internal Link Dist (ft)		1611			3267			979			1439	
Turn Bay Length (ft)	450		450	450		450	250			250		250
Base Capacity (vph)	168	2134	1120	500	2424	1271	159	86	627	159	86	174
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.27	0.14	0.67	1.17	0.33	0.30	0.31	0.18	0.13	0.31	0.27

Intersection Summary

~: Volume exceeds capacity, queue is theoretically infinite.
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3183	3282	1468	3183	3282	1468	3183	1727	2584	3183	1727	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3183	3282	1468	3183	3282	1468	3183	1727	2584	3183	1727	1468
Volume (vph)	69	537	140	310	2617	382	44	25	103	19	25	43
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)	75	584	152	337	2845	415	48	27	112	21	27	47
RTOR Reduction (vph)	0	0	48	0	0	80	0	0	92	0	0	21
Lane Group Flow (vph)	75	584	104	337	2845	335	48	27	20	21	27	26
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.4	87.6	93.6	18.8	100.0	106.0	6.0	3.6	22.4	6.0	3.6	10.0
Effective Green, g (s)	7.4	88.6	95.6	19.8	101.0	108.0	7.0	4.6	24.4	7.0	4.6	12.0
Actuated g/C Ratio	0.05	0.63	0.68	0.14	0.72	0.77	0.05	0.03	0.17	0.05	0.03	0.09
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	168	2077	1055	450	2368	1185	159	57	543	159	57	178
v/s Ratio Prot	0.02	0.18	0.00	c0.11	c0.87	c0.01	0.02	c0.02	0.01	0.01	0.02	0.01
v/s Ratio Perm			0.07			0.21			0.00			0.01
v/c Ratio	0.45	0.28	0.10	0.75	1.20	0.28	0.30	0.47	0.04	0.13	0.47	0.15
Uniform Delay, d1	64.3	11.5	7.5	57.7	19.5	4.7	64.1	66.5	48.0	63.6	66.5	59.3
Progression Factor	0.92	0.93	0.84	1.25	0.13	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.3	0.0	0.6	91.1	0.0	1.1	6.1	0.0	0.4	6.1	0.4
Delay (s)	60.7	11.0	6.4	72.9	93.6	0.0	65.2	72.6	48.1	64.0	72.6	59.6
Level of Service	E	B	A	E	F	A	E	E	D	E	E	E
Approach Delay (s)		14.7			80.8			56.0			64.3	
Approach LOS		B			F			E			E	

Intersection Summary			
HCM Average Control Delay	68.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	653	32	63	3460	74	64	12	32	78
v/c Ratio	0.39	0.28	0.03	0.53	1.42	0.06	0.91	0.11	0.29	0.41
Control Delay	88.6	7.1	2.4	67.1	207.0	0.7	149.8	44.3	71.0	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.6	7.1	2.4	67.1	207.0	0.7	149.8	44.3	71.0	22.3
Queue Length 50th (ft)	25	125	3	57	~2287	1	~72	4	29	4
Queue Length 95th (ft)	61	147	12	m53	m#2034	m0	#174	27	#73	59
Internal Link Dist (ft)		432			199			1003		628
Turn Bay Length (ft)	450		450	450						
Base Capacity (vph)	82	2307	1165	129	2433	1223	70	112	109	192
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.28	0.03	0.49	1.42	0.06	0.91	0.11	0.29	0.41

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

HCM Signalized Intersection Capacity Analysis
4: Route 150 & Andrews Rd

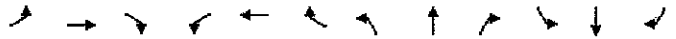
NNSA Development TIA
Exist plus Initial Development AM (3 At-Grade)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3282	1468	1641	1576		1641	1485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.71	1.00		0.67	1.00	
Satd. Flow (perm)	1641	3282	1468	1641	3282	1468	1220	1576		1163	1485	
Volume (vph)	29	601	29	58	3183	68	59	5	6	29	5	67
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)	32	653	32	63	3460	74	64	5	7	32	5	73
RTOR Reduction (vph)	0	0	9	0	0	14	0	6	0	0	67	0
Lane Group Flow (vph)	32	653	23	63	3460	60	64	6	0	32	11	0
Turn Type	Prot		custom	Prot		custom	Perm			Perm		
Protected Phases	7	4	5	3	8	1		2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	3.6	93.8	97.4	7.8	98.0	102.8	9.6	9.6		10.8	10.8	
Effective Green, g (s)	4.6	94.8	99.4	8.8	99.0	104.8	10.6	10.6		11.8	11.8	
Actuated g/C Ratio	0.03	0.66	0.71	0.06	0.71	0.75	0.08	0.08		0.08	0.08	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	54	2222	1095	103	2321	1151	92	119		98	125	
v/s Ratio Prot	0.02	0.20	0.00	c0.04	c1.05	c0.00		0.00			0.01	
v/s Ratio Perm			0.01			0.04	c0.05			0.03		
v/c Ratio	0.59	0.29	0.02	0.61	1.49	0.05	0.70	0.05		0.33	0.09	
Uniform Delay, d1	66.8	9.1	6.0	63.9	20.5	4.6	63.1	60.0		60.4	59.1	
Progression Factor	1.16	0.82	1.91	1.04	0.49	0.58	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.9	0.3	0.0	1.0	221.0	0.0	20.4	0.2		1.9	0.3	
Delay (s)	93.2	7.8	11.4	67.7	231.2	2.7	83.5	60.2		62.3	59.5	
Level of Service	F	A	B	E	F	A	F	E		E	E	
Approach Delay (s)		11.8			223.6			79.8			60.3	
Approach LOS		B			F			E			E	

Intersection Summary				
HCM Average Control Delay	183.4	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.28			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	106.3%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
5: Route 150 & W. Outer Rd

NNSA Development TIA
Exist plus Initial Development AM (3 At-Grade)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	635	1	0	3256	4	0	0	41	0	0	53
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	690	1	0	3539	4	0	0	45	0	0	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					654							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	3543			691			1928	4234	230	3814	4230	1180
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3717			691			1585	4628	230	4074	4623	598
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			100	100	94	100	100	82
cM capacity (veh/h)	37			848			42	1	748	0	1	323

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	230	230	230	1	1180	1180	1180	4	45	58
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	1	0	0	0	4	45	58
cSH	1700	1700	1700	1700	1700	1700	1700	1700	748	323
Volume to Capacity	0.14	0.14	0.14	0.00	0.69	0.69	0.69	0.00	0.06	0.18
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	5	16
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	18.6
Lane LOS									B	C
Approach Delay (s)	0.0				0.0				10.1	18.6
Approach LOS									B	C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	74.6%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	9	231	220	53	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	10	251	239	58	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	679	29	83			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	679	29	83			
tC, single (s)	7.0	7.1	4.3			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	100	99	83			
cM capacity (veh/h)	304	1014	1456			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	1	10	251	120	120	29	29	25
Volume Left	1	0	251	0	0	0	0	0
Volume Right	0	10	0	0	0	0	0	25
cSH	304	1014	1456	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.01	0.17	0.07	0.07	0.02	0.02	0.01
Queue Length 95th (ft)	0	1	16	0	0	0	0	0
Control Delay (s)	16.9	8.6	8.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A	A					
Approach Delay (s)	9.4		4.1			0.0		
Approach LOS	A							

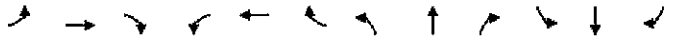
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Lane Group Flow (vph)	327	190	217	129	1337	512	1152	41	112	1054
v/c Ratio	0.28	0.07	0.17	0.57	1.10	0.52	1.02	0.20	0.10	1.12
Control Delay	42.9	17.9	0.9	73.2	106.6	7.6	84.9	34.0	41.5	108.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	17.9	0.9	73.2	106.6	7.6	84.9	34.0	41.5	108.3
Queue Length 50th (ft)	149	35	6	59	~585	79	~395	7	28	~626
Queue Length 95th (ft)	193	49	11	95	#603	170	#489	30	46	#777
Internal Link Dist (ft)		574			290					
Turn Bay Length (ft)			500				400	200	300	400
Base Capacity (vph)	1160	2593	1272	227	1212	977	1124	208	1124	943
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.07	0.17	0.57	1.10	0.52	1.02	0.20	0.10	1.12

Intersection Summary

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

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



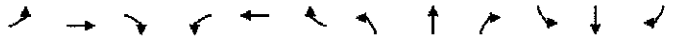
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	5.0	5.0	6.0	5.0	8.0		5.0	8.0		5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94		0.88	0.94		0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Volume (vph)	301	175	200	119	1230	471	1060	0	38	103	0	970
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)	327	190	217	129	1337	512	1152	0	41	112	0	1054
RTOR Reduction (vph)	0	0	14	0	0	149	0	0	23	0	0	1
Lane Group Flow (vph)	327	190	203	129	1337	363	1152	0	18	112	0	1053
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Over	Prot		Over
Protected Phases	5	2	2 3	1	6	6 7	3		1	7		5
Permitted Phases												
Actuated Green, G (s)	48.0	75.0	117.0	7.0	34.0	76.0	34.0		7.0	34.0		48.0
Effective Green, g (s)	51.0	77.0	120.0	10.0	36.0	79.0	34.0		10.0	34.0		51.0
Actuated g/C Ratio	0.36	0.55	0.86	0.07	0.26	0.56	0.24		0.07	0.24		0.36
Clearance Time (s)	8.0	8.0		8.0	8.0		8.0		8.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1160	2593	1258	227	1212	828	1124		185	1124		941
v/s Ratio Prot	0.10	0.04	0.14	0.04	c0.28	0.25	c0.25		0.01	0.02		c0.41
v/s Ratio Perm												
v/c Ratio	0.28	0.07	0.16	0.57	1.10	0.44	1.02		0.10	0.10		1.12
Uniform Delay, d1	31.5	14.8	1.7	62.9	52.0	17.7	53.0		60.8	41.1		44.5
Progression Factor	1.33	1.20	0.68	1.00	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.1	0.0	0.1	3.2	58.9	0.4	33.4		0.2	0.2		67.7
Delay (s)	42.1	17.7	1.2	66.2	110.9	18.0	86.4		61.0	41.3		112.2
Level of Service	D	B	A	E	F	B	F		E	D		F
Approach Delay (s)		23.7			84.0			85.5			105.4	
Approach LOS		C			F			F			F	

Intersection Summary				
HCM Average Control Delay	80.5	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.09			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	91.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	4	116	105	72	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	4	126	114	78	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	445	78	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	445	78	95			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	100	100	91			
cM capacity (veh/h)	508	961	1451			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	1	4	126	114	78	16
Volume Left	1	0	126	0	0	0
Volume Right	0	4	0	0	0	16
cSH	508	961	1451	1700	1700	1700
Volume to Capacity	0.00	0.00	0.09	0.07	0.05	0.01
Queue Length 95th (ft)	0	0	7	0	0	0
Control Delay (s)	12.1	8.8	7.7	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	9.4		4.1		0.0	
Approach LOS	A					

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	24.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑	↱		↑	↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	2586	32	26	1138	9	1	3	12	18	17	6
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)	1	2811	35	28	1237	10	1	3	13	20	18	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1247			2846			3521	4134	1423	2721	4146	623
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1247			2846			3521	4134	1423	2721	4146	623
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			75			0	0	89	0	0	98
cM capacity (veh/h)	512			113			0	1	116	0	1	410

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	1407	1440	647	628	4	13	38	7
Volume Left	1	0	28	0	1	0	20	0
Volume Right	0	35	0	10	0	13	0	7
cSH	512	1700	113	1700	0	116	0	410
Volume to Capacity	0.00	0.85	0.25	0.37	Err	0.11	Err	0.02
Queue Length 95th (ft)	0	0	23	0	Err	9	Err	1
Control Delay (s)	0.2	0.0	19.6	0.0	Err	39.8	Err	13.9
Lane LOS	A		C		F	E	F	B
Approach Delay (s)	0.1		10.0		Err		Err	
Approach LOS					F		F	

Intersection Summary					
Average Delay	Err				
Intersection Capacity Utilization	91.7%	ICU Level of Service		F	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	2770	12	27	1189	18	11	30	377	100
v/c Ratio	0.05	1.15	0.01	0.33	0.47	0.01	0.13	0.30	1.27	0.45
Control Delay	64.8	94.3	2.0	75.9	3.4	0.1	67.5	35.0	196.0	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	94.3	2.0	75.9	3.4	0.1	67.5	35.0	196.0	19.2
Queue Length 50th (ft)	4	~1670	0	26	64	0	10	4	~223	4
Queue Length 95th (ft)	17	#1787	5	m56	95	m0	32	39	#328	62
Internal Link Dist (ft)		894			1611			1543		1030
Turn Bay Length (ft)	450		450	450		450				
Base Capacity (vph)	82	2405	1204	83	2518	1338	82	99	296	224
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	1.15	0.01	0.33	0.47	0.01	0.13	0.30	1.27	0.45

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3282	1468	1641	1511		3183	1481	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1641	3282	1468	1641	3282	1468	1641	1511		3183	1481	
Volume (vph)	4	2548	11	25	1094	17	10	5	23	347	5	87
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)	4	2770	12	27	1189	18	11	5	25	377	5	95
RTOR Reduction (vph)	0	0	3	0	0	3	0	24	0	0	86	0
Lane Group Flow (vph)	4	2770	9	27	1189	15	11	6	0	377	14	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.2	96.8	100.4	3.6	99.2	111.2	3.6	3.6		12.0	12.0	
Effective Green, g (s)	2.2	97.8	102.4	4.6	100.2	113.2	4.6	4.6		13.0	13.0	
Actuated g/C Ratio	0.02	0.70	0.73	0.03	0.72	0.81	0.03	0.03		0.09	0.09	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	26	2293	1126	54	2349	1239	54	50		296	138	
v/s Ratio Prot	0.00	c0.84	0.00	c0.02	0.36	0.00	0.01	0.00		c0.12	c0.01	
v/s Ratio Perm			0.01			0.01						
v/c Ratio	0.15	1.21	0.01	0.50	0.51	0.01	0.20	0.12		1.27	0.10	
Uniform Delay, d1	68.0	21.1	5.1	66.6	8.9	2.6	65.9	65.7		63.5	58.1	
Progression Factor	1.00	1.00	1.00	1.03	0.40	0.02	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	98.0	0.0	6.5	0.7	0.0	1.9	1.0		146.9	0.3	
Delay (s)	70.7	119.1	5.1	75.1	4.2	0.1	67.8	66.8		210.4	58.5	
Level of Service	E	F	A	E	A	A	E	E		F	E	
Approach Delay (s)		118.5			5.7			67.0			178.5	
Approach LOS		F			A			E			F	

Intersection Summary				
HCM Average Control Delay	93.7	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.10			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	95.3%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	3009	66	153	1005	46	163	27	376	446	27	66
v/c Ratio	0.52	1.41	0.06	0.57	0.45	0.04	0.54	0.31	1.07	1.31	0.25	0.28
Control Delay	73.7	206.0	0.1	72.3	15.1	3.9	68.3	74.1	122.0	205.4	67.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	206.0	0.1	72.3	15.1	3.9	68.3	74.1	122.0	205.4	67.6	14.3
Queue Length 50th (ft)	48	~1930	1	65	411	11	75	24	~213	~268	24	0
Queue Length 95th (ft)	m41	m#1507	m0	#143	472	m24	114	58	#330	#379	56	44
Internal Link Dist (ft)		1611			3267			979			1439	
Turn Bay Length (ft)	450		450	450		450	250			250		250
Base Capacity (vph)	189	2133	1160	268	2216	1209	300	86	353	341	123	239
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	1.41	0.06	0.57	0.45	0.04	0.54	0.31	1.07	1.31	0.22	0.28

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3183	3282	1468	3183	3282	1468	3183	1727	2584	3183	1727	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3183	3282	1468	3183	3282	1468	3183	1727	2584	3183	1727	1468
Volume (vph)	89	2768	61	141	925	42	150	25	346	410	25	61
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)	97	3009	66	153	1005	46	163	27	376	446	27	66
RTOR Reduction (vph)	0	0	18	0	0	11	0	0	3	0	0	59
Lane Group Flow (vph)	97	3009	48	153	1005	35	163	27	373	446	27	7
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.3	87.6	99.8	10.8	91.1	105.1	12.2	3.6	14.4	14.0	5.4	12.7
Effective Green, g (s)	8.3	88.6	101.8	11.8	92.1	107.1	13.2	4.6	16.4	15.0	6.4	14.7
Actuated g/C Ratio	0.06	0.63	0.73	0.08	0.66	0.76	0.09	0.03	0.12	0.11	0.05	0.10
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	2077	1120	268	2159	1175	300	57	395	341	79	207
v/s Ratio Prot	0.03	c0.92	0.00	0.05	c0.31	0.00	0.05	0.02	c0.08	c0.14	0.02	0.00
v/s Ratio Perm			0.03			0.02			0.06			0.00
v/c Ratio	0.51	1.45	0.04	0.57	0.47	0.03	0.54	0.47	0.95	1.31	0.34	0.03
Uniform Delay, d1	63.9	25.7	5.4	61.7	11.8	4.0	60.5	66.5	61.4	62.5	64.8	56.3
Progression Factor	1.13	0.69	0.12	1.04	1.27	4.31	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	202.2	0.0	2.6	0.6	0.0	2.0	6.1	31.3	158.2	2.6	0.1
Delay (s)	72.5	220.0	0.7	66.8	15.7	17.1	62.5	72.6	92.7	220.7	67.3	56.3
Level of Service	E	F	A	E	B	B	E	E	F	F	E	E
Approach Delay (s)		210.9			22.2			83.0			192.9	
Approach LOS		F			C			F			F	

Intersection Summary				
HCM Average Control Delay	154.5	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.40			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	112.8%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	3491	274	257	1158	28	20	33	64	32
v/c Ratio	0.52	1.64	0.24	1.46	0.51	0.02	0.19	0.22	1.00	0.32
Control Delay	67.8	307.7	0.1	281.6	13.4	2.8	68.0	28.8	177.3	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	307.7	0.1	281.6	13.4	2.8	68.0	28.8	177.3	34.3
Queue Length 50th (ft)	59	~2458	1	~326	348	0	18	4	~60	4
Queue Length 95th (ft)	m43	m#1528	m0	#509	385	m7	47	41	#163	40
Internal Link Dist (ft)		432			199			1003		628
Turn Bay Length (ft)	450		450	450						
Base Capacity (vph)	141	2133	1152	176	2293	1157	107	153	64	101
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.64	0.24	1.46	0.51	0.02	0.19	0.22	1.00	0.32

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

HCM Signalized Intersection Capacity Analysis
4: Route 150 & Andrews Rd

NNSA Development TIA
Exist plus Initial Development PM (3 At-Grade)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3282	1468	1641	1507		1641	1509	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.59	1.00		0.74	1.00	
Satd. Flow (perm)	1641	3282	1468	1641	3282	1468	1013	1507		1271	1509	
Volume (vph)	60	3212	252	236	1065	26	18	5	26	59	5	25
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)	65	3491	274	257	1158	28	20	5	28	64	5	27
RTOR Reduction (vph)	0	0	87	0	0	8	0	26	0	0	25	0
Lane Group Flow (vph)	65	3491	187	257	1158	20	20	7	0	64	7	0
Turn Type	Prot		custom	Prot		custom	Perm			Perm		
Protected Phases	7	4	5	3	8	1		2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	8.4	87.6	93.6	14.0	93.2	96.8	10.8	10.8		8.4	8.4	
Effective Green, g (s)	9.4	88.6	95.6	15.0	94.2	98.8	11.8	11.8		9.4	9.4	
Actuated g/C Ratio	0.07	0.63	0.68	0.11	0.67	0.71	0.08	0.08		0.07	0.07	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	110	2077	1055	176	2208	1088	85	127		85	101	
v/s Ratio Prot	0.04	c1.06	c0.01	c0.16	0.35	0.00					0.00	
v/s Ratio Perm			0.12			0.01	0.02			c0.05		
v/c Ratio	0.59	1.68	0.18	1.46	0.52	0.02	0.24	0.06		0.75	0.07	
Uniform Delay, d1	63.4	25.7	8.0	62.5	11.6	6.1	59.9	59.0		64.2	61.2	
Progression Factor	1.07	0.73	0.06	1.17	1.19	1.99	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	306.5	0.0	234.5	0.9	0.0	1.4	0.2		30.8	0.3	
Delay (s)	68.6	325.4	0.5	307.9	14.6	12.2	61.3	59.2		95.0	61.5	
Level of Service	E	F	A	F	B	B	E	E		F	E	
Approach Delay (s)		297.8			66.8			60.0			83.8	
Approach LOS		F			E			E			F	

Intersection Summary				
HCM Average Control Delay	230.2	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.44			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	124.3%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
5: Route 150 & W. Outer Rd

NNSA Development TIA
Exist plus Initial Development PM (3 At-Grade)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	3294	3	0	1113	7	0	0	409	0	0	214
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	3580	3	0	1210	8	0	0	445	0	0	233
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					654							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	1217			3584			4216	4798	1193	2848	4793	403
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1195			3584			4231	4820	1193	2846	4816	371
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			100	100	0	0	100	61
cM capacity (veh/h)	530			55			0	1	168	0	1	596

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	1193	1193	1193	3	403	403	403	8	445	233		
Volume Left	0	0	0	0	0	0	0	0	0	0		
Volume Right	0	0	0	3	0	0	0	8	445	233		
cSH	1700	1700	1700	1700	1700	1700	1700	1700	168	596		
Volume to Capacity	0.70	0.70	0.70	0.00	0.24	0.24	0.24	0.00	2.65	0.39		
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	972	46		
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	802.2	14.8		
Lane LOS									F	B		
Approach Delay (s)	0.0				0.0				802.2	14.8		
Approach LOS									F	B		

Intersection Summary			
Average Delay	65.7		
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	26	260	13	118	211	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	283	14	128	229	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	322	115	230			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322	115	230			
tC, single (s)	7.0	7.1	4.3			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	95	68	99			
cM capacity (veh/h)	619	891	1278			

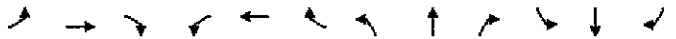
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	28	283	14	64	64	115	115	1
Volume Left	28	0	14	0	0	0	0	0
Volume Right	0	283	0	0	0	0	0	1
cSH	619	891	1278	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.32	0.01	0.04	0.04	0.07	0.07	0.00
Queue Length 95th (ft)	4	34	1	0	0	0	0	0
Control Delay (s)	11.1	10.9	7.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B	A					
Approach Delay (s)	10.9		0.8			0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Lane Group Flow (vph)	1111	2405	509	96	213	124	355	123	853	649
v/c Ratio	0.83	0.88	0.40	0.41	0.19	0.16	0.37	0.63	0.89	0.50
Control Delay	33.9	7.0	0.8	67.8	44.2	14.2	48.6	74.9	65.6	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	7.0	0.8	67.8	44.2	14.2	48.6	74.9	65.6	13.2
Queue Length 50th (ft)	345	332	26	43	58	43	98	60	268	97
Queue Length 95th (ft)	m175	m116	m12	74	85	82	131	#103	321	156
Internal Link Dist (ft)		574			290					
Turn Bay Length (ft)			500				400	200	300	400
Base Capacity (vph)	1387	2748	1290	234	1115	773	992	195	992	1332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.88	0.39	0.41	0.19	0.16	0.36	0.63	0.86	0.49

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	5.0	5.0	6.0	5.0	8.0		5.0	8.0		5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94		0.88	0.94		0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Volume (vph)	1022	2213	468	88	196	114	327	0	113	785	0	597
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)	1111	2405	509	96	213	124	355	0	123	853	0	649
RTOR Reduction (vph)	0	0	27	0	0	17	0	0	6	0	0	212
Lane Group Flow (vph)	1111	2405	482	96	213	107	355	0	117	853	0	437
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Over	Prot		Over
Protected Phases	5	2	2 3	1	6	6 7	3		1	7		5
Permitted Phases												
Actuated Green, G (s)	55.8	79.6	116.7	7.3	31.1	68.2	29.1		7.3	29.1		55.8
Effective Green, g (s)	58.8	81.6	119.7	10.3	33.1	71.2	29.1		10.3	29.1		58.8
Actuated g/C Ratio	0.42	0.58	0.86	0.07	0.24	0.51	0.21		0.07	0.21		0.42
Clearance Time (s)	8.0	8.0		8.0	8.0		8.0		8.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1337	2748	1255	234	1115	747	962		190	962		1085
v/s Ratio Prot	c0.35	c0.51	0.33	0.03	0.05	0.07	0.08		0.05	c0.18		0.17
v/s Ratio Perm												
v/c Ratio	0.83	0.88	0.38	0.41	0.19	0.14	0.37		0.62	0.89		0.40
Uniform Delay, d1	36.2	24.9	2.2	61.9	42.7	18.2	47.6		62.9	53.8		28.3
Progression Factor	0.92	0.26	0.57	1.00	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.4	0.3	0.0	1.2	0.1	0.1	0.2		5.9	9.9		0.2
Delay (s)	33.6	6.7	1.3	63.1	42.8	18.3	47.8		68.8	63.8		28.6
Level of Service	C	A	A	E	D	B	D		E	E		C
Approach Delay (s)		13.5			40.3			53.2			48.6	
Approach LOS		B			D			D			D	

Intersection Summary				
HCM Average Control Delay	26.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	78.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	17	130	6	138	82	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	141	7	150	89	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	252	89	90			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	252	89	90			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	97	85	100			
cM capacity (veh/h)	716	947	1456			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	18	141	7	150	89	1
Volume Left	18	0	7	0	0	0
Volume Right	0	141	0	0	0	1
cSH	716	947	1456	1700	1700	1700
Volume to Capacity	0.03	0.15	0.00	0.09	0.05	0.00
Queue Length 95th (ft)	2	13	0	0	0	0
Control Delay (s)	10.2	9.5	7.5	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	9.5		0.3		0.0	
Approach LOS	A					

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	776	9	20	2586	335	10	28	13	8
v/c Ratio	0.59	0.21	0.01	0.24	0.78	0.27	0.07	0.29	0.08	0.10
Control Delay	77.6	5.4	1.2	75.4	4.2	0.3	60.0	35.0	64.7	54.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.6	5.4	1.2	75.4	4.2	0.3	60.0	35.0	64.7	54.6
Queue Length 50th (ft)	74	82	0	19	65	0	8	4	6	4
Queue Length 95th (ft)	132	100	4	m24	74	m0	29	38	18	23
Internal Link Dist (ft)		894			1611			1543		1030
Turn Bay Length (ft)	450		450	450		450				
Base Capacity (vph)	164	3657	1337	82	3319	1230	138	98	159	84
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.21	0.01	0.24	0.78	0.27	0.07	0.29	0.08	0.10

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	4715	1468	1641	4715	1468	1641	1514		3183	1630	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1641	4715	1468	1641	4715	1468	1641	1514		3183	1630	
Volume (vph)	77	714	8	18	2379	308	9	5	21	12	5	3
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)	84	776	9	20	2586	335	10	5	23	13	5	3
RTOR Reduction (vph)	0	0	2	0	0	94	0	22	0	0	3	0
Lane Group Flow (vph)	84	776	7	20	2586	241	10	6	0	13	5	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.2	100.4	108.8	3.6	92.8	98.8	8.4	6.0		6.0	3.6	
Effective Green, g (s)	12.2	101.4	110.8	4.6	93.8	100.8	9.4	7.0		7.0	4.6	
Actuated g/C Ratio	0.09	0.72	0.79	0.03	0.67	0.72	0.07	0.05		0.05	0.03	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	143	3415	1214	54	3159	1109	110	76		159	54	
v/s Ratio Prot	c0.05	0.16	0.00	0.01	c0.55	c0.01	0.01	c0.00		0.00	0.00	
v/s Ratio Perm			0.00			0.15						
v/c Ratio	0.59	0.23	0.01	0.37	0.82	0.22	0.09	0.08		0.08	0.09	
Uniform Delay, d1	61.5	6.4	3.1	66.3	16.9	6.5	61.3	63.4		63.4	65.7	
Progression Factor	1.00	1.00	1.00	1.11	0.21	0.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.0	0.2	0.0	2.3	1.4	0.1	0.4	0.5		0.2	0.8	
Delay (s)	67.5	6.5	3.1	75.8	4.9	0.1	61.6	63.9		63.7	66.4	
Level of Service	E	A	A	E	A	A	E	E		E	E	
Approach Delay (s)		12.4			4.8			63.3			64.7	
Approach LOS		B			A			E			E	

Intersection Summary

HCM Average Control Delay	7.4	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	70.6%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	75	584	152	337	2845	415	48	27	112	21	27	47
v/c Ratio	0.40	0.20	0.14	0.74	0.84	0.33	0.30	0.25	0.18	0.12	0.24	0.23
Control Delay	65.6	11.0	1.1	75.6	3.3	0.2	69.0	68.0	7.3	64.3	66.4	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	11.0	1.1	75.6	3.3	0.2	69.0	68.0	7.3	64.3	66.4	32.9
Queue Length 50th (ft)	34	71	0	155	39	0	22	24	0	9	24	19
Queue Length 95th (ft)	62	85	15	m151	m70	m0	44	56	26	24	55	57
Internal Link Dist (ft)		1611			3267			979			1439	
Turn Bay Length (ft)	450		450	450		450	250			250		250
Base Capacity (vph)	187	2982	1098	506	3379	1287	162	106	660	273	148	204
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.20	0.14	0.67	0.84	0.32	0.30	0.25	0.17	0.08	0.18	0.23

Intersection Summary

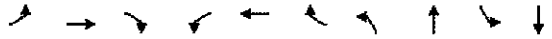
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	3183	1727	2584	3183	1727	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	3183	1727	2584	3183	1727	1468
Volume (vph)	69	537	140	310	2617	382	44	25	103	19	25	43
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)	75	584	152	337	2845	415	48	27	112	21	27	47
RTOR Reduction (vph)	0	0	51	0	0	86	0	0	91	0	0	21
Lane Group Flow (vph)	75	584	101	337	2845	329	48	27	21	21	27	26
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.2	85.1	91.2	19.0	96.9	103.6	6.1	5.2	24.2	6.7	5.8	13.0
Effective Green, g (s)	8.2	86.1	93.2	20.0	97.9	105.6	7.1	6.2	26.2	7.7	6.8	15.0
Actuated g/C Ratio	0.06	0.61	0.67	0.14	0.70	0.75	0.05	0.04	0.19	0.06	0.05	0.11
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	186	2900	1030	455	3297	1160	161	76	576	175	84	210
v/s Ratio Prot	0.02	0.12	0.00	c0.11	c0.60	c0.02	0.02	c0.02	0.01	0.01	0.02	0.01
v/s Ratio Perm			0.06			0.21			0.00			0.01
v/c Ratio	0.40	0.20	0.10	0.74	0.86	0.28	0.30	0.36	0.04	0.12	0.32	0.13
Uniform Delay, d1	63.5	11.8	8.4	57.5	16.0	5.4	64.0	65.0	46.6	62.9	64.4	56.6
Progression Factor	0.93	0.90	0.62	1.27	0.16	0.02	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.0	1.8	0.9	0.0	1.0	2.8	0.0	0.3	2.2	0.3
Delay (s)	60.4	10.8	5.3	74.9	3.4	0.1	65.1	67.8	46.6	63.2	66.6	56.8
Level of Service	E	B	A	E	A	A	E	E	D	E	E	E
Approach Delay (s)		14.3			9.8			54.4			61.0	
Approach LOS		B			A			D			E	

Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

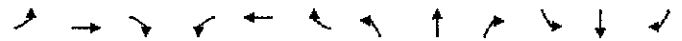
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	653	32	63	3460	74	64	12	32	78
v/c Ratio	0.39	0.20	0.03	0.53	0.99	0.06	0.86	0.10	0.29	0.40
Control Delay	98.4	6.0	2.1	65.5	25.1	1.2	136.0	43.5	69.9	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.4	6.0	2.1	65.5	25.1	1.2	136.0	43.5	69.9	21.9
Queue Length 50th (ft)	24	78	0	53	~1260	4	~63	4	29	4
Queue Length 95th (ft)	67	93	6	m50	m1010	m3	#165	27	66	59
Internal Link Dist (ft)		432			199			1003		628
Turn Bay Length (ft)	450		450	450						
Base Capacity (vph)	82	3305	1162	129	3487	1224	74	116	112	195
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.20	0.03	0.49	0.99	0.06	0.86	0.10	0.29	0.40

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	4715	1468	1641	4715	1468	1641	1576		1641	1485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.71	1.00		0.68	1.00	
Satd. Flow (perm)	1641	4715	1468	1641	4715	1468	1220	1576		1167	1485	
Volume (vph)	29	601	29	58	3183	68	59	5	6	29	5	67
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)	32	653	32	63	3460	74	64	5	7	32	5	73
RTOR Reduction (vph)	0	0	9	0	0	19	0	6	0	0	67	0
Lane Group Flow (vph)	32	653	23	63	3460	55	64	6	0	32	11	0
Turn Type	Prot		custom	Prot		custom	Perm			Perm		
Protected Phases	7	4	5	3	8	1		2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	3.6	93.5	97.1	7.8	97.7	102.5	9.9	9.9		11.1	11.1	
Effective Green, g (s)	4.6	94.5	99.1	8.8	98.7	104.5	10.9	10.9		12.1	12.1	
Actuated g/C Ratio	0.03	0.68	0.71	0.06	0.71	0.75	0.08	0.08		0.09	0.09	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	54	3183	1092	103	3324	1148	95	123		101	128	
v/s Ratio Prot	0.02	0.14	0.00	c0.04	c0.73	c0.00		0.00			0.01	
v/s Ratio Perm			0.01			0.04	c0.05			0.03		
v/c Ratio	0.59	0.21	0.02	0.61	1.04	0.05	0.67	0.05		0.32	0.09	
Uniform Delay, d1	66.8	8.6	6.1	63.9	20.6	4.7	62.8	59.7		60.1	58.9	
Progression Factor	1.31	0.74	1.54	1.02	1.20	1.69	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.1	0.1	0.0	1.0	19.6	0.0	17.2	0.2		1.8	0.3	
Delay (s)	103.3	6.5	9.4	66.0	44.3	7.9	80.0	59.9		61.9	59.2	
Level of Service	F	A	A	E	D	A	F	E		E	E	
Approach Delay (s)		10.9			44.0			76.9			60.0	
Approach LOS		B			D			E			E	

Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Lane Group Flow (vph)	327	190	217	129	1337	512	1152	41	112	1054
v/c Ratio	0.28	0.07	0.17	0.57	1.10	0.52	1.02	0.20	0.10	1.12
Control Delay	18.5	16.7	2.7	73.2	106.6	7.6	84.9	34.0	41.5	108.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	16.7	2.7	73.2	106.6	7.6	84.9	34.0	41.5	108.3
Queue Length 50th (ft)	80	44	53	59	~505	79	~395	7	28	~626
Queue Length 95th (ft)	123	64	78	95	#603	170	#489	30	46	#777
Internal Link Dist (ft)		574			290					
Turn Bay Length (ft)			500				400	200	300	400
Base Capacity (vph)	1160	2593	1272	227	1212	977	1124	208	1124	943
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.07	0.17	0.57	1.10	0.52	1.02	0.20	0.10	1.12

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	5.0	5.0	6.0	5.0	8.0		5.0	8.0		5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94		0.88	0.94		0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Volume (vph)	301	175	200	119	1230	471	1060	0	38	103	0	970
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)	327	190	217	129	1337	512	1152	0	41	112	0	1054
RTOR Reduction (vph)	0	0	14	0	0	149	0	0	23	0	0	1
Lane Group Flow (vph)	327	190	203	129	1337	363	1152	0	18	112	0	1053
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Over	Prot		Over
Protected Phases	5	2	2 3	1	6	6 7	3		1	7		5
Permitted Phases												
Actuated Green, G (s)	48.0	75.0	117.0	7.0	34.0	76.0	34.0		7.0	34.0		48.0
Effective Green, g (s)	51.0	77.0	120.0	10.0	36.0	79.0	34.0		10.0	34.0		51.0
Actuated g/C Ratio	0.36	0.55	0.86	0.07	0.26	0.56	0.24		0.07	0.24		0.36
Clearance Time (s)	8.0	8.0		8.0	8.0		8.0		8.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1160	2593	1258	227	1212	828	1124		185	1124		941
v/s Ratio Prot	0.10	0.04	0.14	0.04	c0.28	0.25	c0.25		0.01	0.02		c0.41
v/s Ratio Perm												
v/c Ratio	0.28	0.07	0.16	0.57	1.10	0.44	1.02		0.10	0.10		1.12
Uniform Delay, d1	31.5	14.8	1.7	62.9	52.0	17.7	53.0		60.8	41.1		44.5
Progression Factor	0.56	1.12	2.74	1.00	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.1	0.0	0.1	3.2	58.9	0.4	33.4		0.2	0.2		67.7
Delay (s)	17.9	16.8	4.6	66.2	110.9	18.0	86.4		61.0	41.3		112.2
Level of Service	B	B	A	E	F	B	F		E	D		F
Approach Delay (s)		13.6			84.0			85.5			105.4	
Approach LOS		B			F			F			F	

Intersection Summary

HCM Average Control Delay	79.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	2770	12	27	1189	18	11	30	377	100
v/c Ratio	0.05	0.85	0.01	0.33	0.35	0.01	0.13	0.30	0.88	0.36
Control Delay	64.8	22.1	2.7	77.3	3.5	0.1	67.5	35.0	81.3	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	22.1	2.7	77.3	3.5	0.1	67.5	35.0	81.3	15.1
Queue Length 50th (ft)	4	803	0	25	50	0	10	4	176	4
Queue Length 95th (ft)	17	891	6	m59	64	m0	32	39	#261	59
Internal Link Dist (ft)		894			1611			1543		1030
Turn Bay Length (ft)	450		450	450		450				
Base Capacity (vph)	82	3259	1143	83	3420	1329	82	99	432	283
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.85	0.01	0.33	0.35	0.01	0.13	0.30	0.87	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	4715	1468	1641	4715	1468	1641	1511		3183	1481	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1641	4715	1468	1641	4715	1468	1641	1511		3183	1481	
Volume (vph)	4	2548	11	25	1094	17	10	5	23	347	5	87
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)	4	2770	12	27	1189	18	11	5	25	377	5	95
RTOR Reduction (vph)	0	0	4	0	0	3	0	24	0	0	82	0
Lane Group Flow (vph)	4	2770	8	27	1189	15	11	6	0	377	18	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.2	91.0	94.6	3.6	93.4	111.2	3.6	3.6		17.8	17.8	
Effective Green, g (s)	2.2	92.0	96.6	4.6	94.4	113.2	4.6	4.6		18.8	18.8	
Actuated g/C Ratio	0.02	0.68	0.69	0.03	0.67	0.81	0.03	0.03		0.13	0.13	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	26	3098	1065	54	3179	1239	54	50		427	199	
v/s Ratio Prot	0.00	c0.59	0.00	c0.02	0.25	0.00	0.01	0.00		c0.12	c0.01	
v/s Ratio Perm			0.01			0.01						
v/c Ratio	0.15	0.89	0.01	0.50	0.37	0.01	0.20	0.12		0.88	0.09	
Uniform Delay, d1	68.0	20.0	6.8	66.6	9.9	2.6	65.9	65.7		59.5	53.1	
Progression Factor	1.00	1.00	1.00	1.04	0.40	0.03	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	4.5	0.0	6.8	0.3	0.0	1.9	1.0		18.9	0.2	
Delay (s)	70.7	24.4	6.8	76.3	4.3	0.1	67.8	66.8		78.4	53.3	
Level of Service	E	C	A	E	A	A	E	E		E	D	
Approach Delay (s)		24.4			5.8			67.0			73.2	
Approach LOS		C			A			E			E	

Intersection Summary				
HCM Average Control Delay	24.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	74.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	3009	66	153	1005	46	163	27	376	446	27	66
v/c Ratio	0.52	1.05	0.06	0.49	0.33	0.04	0.48	0.31	0.96	1.03	0.19	0.25
Control Delay	83.9	48.2	0.1	51.6	17.5	8.3	65.4	74.1	94.9	109.9	61.9	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.9	48.2	0.1	51.6	17.5	8.3	65.4	74.1	94.9	109.9	61.9	13.0
Queue Length 50th (ft)	48	~1099	1	70	257	14	75	24	194	~224	23	0
Queue Length 95th (ft)	m56	#1164	m1	#124	282	41	114	58	#309	#335	55	43
Internal Link Dist (ft)		1611			3267			979			1439	
Turn Bay Length (ft)	450		450	450		450	250			250		250
Base Capacity (vph)	189	2863	1115	314	3049	1209	337	86	391	432	173	263
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	1.05	0.06	0.49	0.33	0.04	0.48	0.31	0.96	1.03	0.16	0.25

Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	1.00	0.88	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	3183	1727	2584	3183	1727	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	3183	1727	2584	3183	1727	1468
Volume (vph)	89	2768	61	141	925	42	150	25	346	410	25	61
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)	97	3009	66	153	1005	46	163	27	376	446	27	66
RTOR Reduction (vph)	0	0	20	0	0	11	0	0	3	0	0	58
Lane Group Flow (vph)	97	3009	46	153	1005	35	163	27	373	446	27	8
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.3	81.6	95.4	12.8	87.1	105.1	13.8	3.6	16.4	18.0	7.8	15.1
Effective Green, g (s)	8.3	82.6	97.4	13.8	88.1	107.1	14.8	4.6	18.4	19.0	8.8	17.1
Actuated g/C Ratio	0.06	0.59	0.70	0.10	0.63	0.76	0.11	0.03	0.13	0.14	0.06	0.12
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	2782	1074	314	2967	1175	336	57	432	432	109	232
v/s Ratio Prot	0.03	c0.64	0.00	0.05	0.21	0.00	0.05	0.02	c0.09	c0.14	c0.02	0.00
v/s Ratio Perm			0.03			0.02			0.06			0.00
v/c Ratio	0.51	1.08	0.04	0.49	0.34	0.03	0.49	0.47	0.86	1.03	0.25	0.03
Uniform Delay, d1	63.9	28.7	6.7	59.7	12.2	4.0	59.0	66.5	59.6	60.5	62.4	54.2
Progression Factor	1.22	0.68	0.06	0.75	1.47	9.31	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	40.6	0.0	1.1	0.3	0.0	1.1	6.1	16.1	51.9	1.2	0.1
Delay (s)	79.4	60.2	0.4	45.7	18.3	36.9	60.1	72.6	75.6	112.4	63.6	54.2
Level of Service	E	E	A	D	B	D	E	E	E	F	E	D
Approach Delay (s)		59.6			22.5			71.0			102.8	
Approach LOS		E			C			E			F	

Intersection Summary

HCM Average Control Delay	56.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	3491	274	257	1158	28	20	33	64	32
v/c Ratio	0.52	1.18	0.24	1.22	0.35	0.02	0.19	0.22	1.00	0.32
Control Delay	67.8	98.9	0.1	189.7	10.4	2.8	68.0	28.8	177.3	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	98.9	0.1	189.7	10.4	2.8	68.0	28.8	177.3	34.3
Queue Length 50th (ft)	59	~1391	0	~293	222	0	18	4	~60	4
Queue Length 95th (ft)	m57	m#1295	m0	#476	244	m7	47	41	#163	40
Internal Link Dist (ft)		432			199			1003		628
Turn Bay Length (ft)	450		450	450						
Base Capacity (vph)	141	2964	1127	211	3294	1157	107	153	64	101
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.18	0.24	1.22	0.35	0.02	0.19	0.22	1.00	0.32

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	4715	1468	1641	4715	1468	1641	1507		1641	1509	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.59	1.00		0.74	1.00	
Satd. Flow (perm)	1641	4715	1468	1641	4715	1468	1013	1507		1271	1509	
Volume (vph)	60	3212	252	236	1065	26	18	5	26	59	5	25
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)	65	3491	274	257	1158	28	20	5	28	64	5	27
RTOR Reduction (vph)	0	0	93	0	0	8	0	26	0	0	25	0
Lane Group Flow (vph)	65	3491	181	257	1158	20	20	7	0	64	7	0
Turn Type	Prot		custom	Prot		custom	Perm			Perm		
Protected Phases	7	4	5	3	8	1		2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	8.4	84.6	90.6	17.0	93.2	96.8	10.8	10.8		8.4	8.4	
Effective Green, g (s)	9.4	85.6	92.6	18.0	94.2	98.8	11.8	11.8		9.4	9.4	
Actuated g/C Ratio	0.07	0.61	0.66	0.13	0.67	0.71	0.08	0.08		0.07	0.07	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	110	2883	1023	211	3173	1088	85	127		85	101	
v/s Ratio Prot	0.04	c0.74	c0.01	c0.16	0.25	0.00		0.00			0.00	
v/s Ratio Perm			0.11			0.01	0.02			c0.05		
v/c Ratio	0.59	1.21	0.18	1.22	0.36	0.02	0.24	0.06		0.75	0.07	
Uniform Delay, d1	63.4	27.2	9.1	61.0	9.9	6.1	59.9	59.0		64.2	61.2	
Progression Factor	1.07	0.58	0.03	1.21	1.13	1.99	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	95.2	0.0	132.0	0.3	0.0	1.4	0.2		30.8	0.3	
Delay (s)	68.6	110.9	0.3	205.6	11.5	12.2	61.3	59.2		95.0	61.5	
Level of Service	E	F	A	F	B	B	E	E		F	E	
Approach Delay (s)		102.3			46.1			60.0			83.8	
Approach LOS		F			D			E			F	

Intersection Summary

HCM Average Control Delay	86.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Lane Group Flow (vph)	1111	2405	509	96	213	124	355	123	853	649
v/c Ratio	0.83	0.88	0.40	0.41	0.19	0.16	0.37	0.63	0.89	0.50
Control Delay	34.4	5.9	0.5	67.8	44.2	14.2	48.6	74.9	65.6	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	5.9	0.5	67.8	44.2	14.2	48.6	74.9	65.6	13.2
Queue Length 50th (ft)	331	262	7	43	58	43	98	60	268	97
Queue Length 95th (ft)	m261	m167	m6	74	85	82	131	#103	321	156
Internal Link Dist (ft)		574			290					
Turn Bay Length (ft)			500				400	200	300	400
Base Capacity (vph)	1387	2748	1290	234	1114	773	992	195	992	1332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.88	0.39	0.41	0.19	0.16	0.36	0.63	0.86	0.49

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	5.0	5.0	6.0	5.0	8.0		5.0	8.0		5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94		0.88	0.94		0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Volume (vph)	1022	2213	468	88	196	114	327	0	113	785	0	597
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)	1111	2405	509	96	213	124	355	0	123	853	0	649
RTOR Reduction (vph)	0	0	27	0	0	17	0	0	6	0	0	212
Lane Group Flow (vph)	1111	2405	482	96	213	107	355	0	117	853	0	437
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Over	Prot		Over
Protected Phases	5	2	2 3	1	6	6 7	3		1	7		5
Permitted Phases												
Actuated Green, G (s)	55.8	79.6	116.7	7.3	31.1	68.2	29.1		7.3	29.1		55.8
Effective Green, g (s)	58.8	81.6	119.7	10.3	33.1	71.2	29.1		10.3	29.1		58.8
Actuated g/C Ratio	0.42	0.58	0.86	0.07	0.24	0.51	0.21		0.07	0.21		0.42
Clearance Time (s)	8.0	8.0		8.0	8.0		8.0		8.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1337	2748	1255	234	1115	747	962		190	962		1085
v/s Ratio Prot	c0.35	c0.51	0.33	0.03	0.05	0.07	0.08		0.05	c0.18		0.17
v/s Ratio Perm												
v/c Ratio	0.83	0.88	0.38	0.41	0.19	0.14	0.37		0.62	0.89		0.40
Uniform Delay, d1	36.2	24.9	2.2	61.9	42.7	18.2	47.6		62.9	53.8		28.3
Progression Factor	0.93	0.22	0.30	1.00	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.4	0.3	0.0	1.2	0.1	0.1	0.2		5.9	9.9		0.2
Delay (s)	34.1	5.7	0.7	63.1	42.8	18.3	47.8		68.8	63.8		28.6
Level of Service	C	A	A	E	D	B	D		E	E		C
Approach Delay (s)		12.9			40.3			53.2			48.6	
Approach LOS		B			D			D			D	

Intersection Summary

HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1	17	16	185	38	587	536	338	27	164	25
v/c Ratio	0.01	0.13	0.13	0.65	0.23	0.72	0.61	0.43	0.21	0.56	0.09
Control Delay	38.0	33.2	20.5	51.5	23.0	36.7	30.9	5.3	43.2	47.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.0	33.2	20.5	51.5	23.0	36.7	30.9	5.3	43.2	47.3	7.6
Queue Length 50th (ft)	1	6	0	53	6	171	135	34	15	47	0
Queue Length 95th (ft)	5	27	21	#93	36	233	186	69	41	80	13
Internal Link Dist (ft)		414			450		299			577	
Turn Bay Length (ft)						200		200	200		200
Base Capacity (vph)	128	126	123	283	162	813	875	790	128	292	266
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.13	0.13	0.65	0.23	0.72	0.61	0.43	0.21	0.56	0.09

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.95	0.85	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1554	1395	3183	1543		3183	3282	1468	1641	3282	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1641	1554	1395	3183	1543		3183	3282	1468	1641	3282	1468
Volume (vph)	1	10	20	170	10	25	540	493	311	25	151	23
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)	1	11	22	185	11	27	587	536	338	27	164	25
RTOR Reduction (vph)	0	6	15	0	25	0	0	0	222	0	0	21
Lane Group Flow (vph)	1	11	1	185	13	0	587	536	116	27	164	4
Turn Type	Split		Perm	Split			Prot		custom	Prot		custom
Protected Phases	4	4		8	8		5	2	3	1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	6.0	6.0	6.0	7.0	7.0		22.0	23.0	29.0	6.0	7.0	13.0
Effective Green, g (s)	7.0	7.0	7.0	8.0	8.0		23.0	24.0	31.0	7.0	8.0	15.0
Actuated g/C Ratio	0.08	0.08	0.08	0.09	0.09		0.26	0.27	0.34	0.08	0.09	0.17
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	128	121	109	283	137		813	875	587	128	292	245
v/s Ratio Prot	0.00	c0.01		c0.06	0.01		c0.18	c0.16	c0.02	0.02	0.05	c0.00
v/s Ratio Perm			0.00						0.06			0.00
v/c Ratio	0.01	0.09	0.01	0.65	0.10		0.72	0.61	0.20	0.21	0.56	0.02
Uniform Delay, d1	38.3	38.6	38.3	39.7	37.7		30.6	28.9	20.8	38.9	39.3	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.04	0.97	1.78	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.6	0.2	11.2	1.4		4.3	2.5	0.6	3.7	7.6	0.1
Delay (s)	38.4	40.1	38.5	50.9	39.1		36.3	30.5	37.5	42.6	46.9	31.5
Level of Service	D	D	D	D	D		D	C	D	D	D	C
Approach Delay (s)		39.3			48.9			34.5			44.6	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM Average Control Delay	37.3	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	44.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	941	1001	245	515	249	123
v/c Ratio	0.66	0.64	0.60	0.61	0.47	0.45
Control Delay	23.0	6.8	55.3	21.0	25.6	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	6.8	55.3	21.0	25.6	15.0
Queue Length 50th (ft)	211	48	141	22	32	0
Queue Length 95th (ft)	296	121	m193	84	47	m44
Internal Link Dist (ft)				316	889	
Turn Bay Length (ft)	600	600				200
Base Capacity (vph)	1433	1575	435	913	629	302
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	0.66	0.64	0.56	0.56	0.40	0.41

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0		5.0	5.0	5.0			5.0	5.0
Lane Util. Factor				0.97		0.88	0.91	0.91			0.91	1.00
Frt				1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95		1.00	0.95	0.99			1.00	1.00
Satd. Flow (prot)				3183		2584	1493	3127			4715	1468
Flt Permitted				0.95		1.00	0.95	0.99			1.00	1.00
Satd. Flow (perm)				3183		2584	1493	3127			4715	1468
Volume (vph)	0	0	0	866	0	921	276	423	0	0	229	113
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	0	0	941	0	1001	300	460	0	0	249	123
RTOR Reduction (vph)	0	0	0	0	0	413	0	0	0	0	0	109
Lane Group Flow (vph)	0	0	0	941	0	589	245	515	0	0	249	14
Turn Type				custom		custom	Split					Perm
Protected Phases							2	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				39.5		39.5	23.4	23.4			9.1	9.1
Effective Green, g (s)				40.5		40.5	24.4	24.4			10.1	10.1
Actuated g/C Ratio				0.45		0.45	0.27	0.27			0.11	0.11
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				1432		1163	405	848			529	165
v/s Ratio Prot							0.16	c0.16			c0.05	
v/s Ratio Perm				c0.30		0.23						0.01
v/c Ratio				0.66		0.51	0.60	0.61			0.47	0.08
Uniform Delay, d1				19.3		17.6	28.6	28.6			37.4	35.8
Progression Factor				1.00		1.00	1.73	0.66			0.62	1.44
Incremental Delay, d2				2.4		1.6	2.2	0.8			0.5	0.2
Delay (s)				21.7		19.2	51.8	19.8			23.8	51.8
Level of Service				C		B	D	B			C	D
Approach Delay (s)		0.0			20.4			30.1			33.1	
Approach LOS		A			C			C			C	

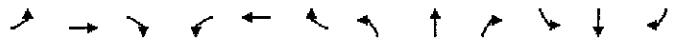
Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	460	553	430	178	249	941
v/c Ratio	0.68	0.56	0.59	0.52	0.17	0.61
Control Delay	37.8	5.1	29.6	11.2	4.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	5.1	29.6	11.2	4.8	7.5
Queue Length 50th (ft)	122	0	65	0	0	37
Queue Length 95th (ft)	172	43	97	63	59	96
Internal Link Dist (ft)			385			316
Turn Bay Length (ft)	600	600		200		
Base Capacity (vph)	743	1027	891	383	1495	1542
Starvation Cap Reductn	0	0	0	0	0	14
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.54	0.48	0.46	0.17	0.62

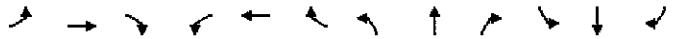
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97		0.88					0.86	0.86	0.97	0.95	
Frt	1.00		0.85					0.95	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3183		2584					4254	1263	3183	3282	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3183		2584					4254	1263	3183	3282	
Volume (vph)	423	0	509	0	0	0	0	276	283	229	866	0
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)	460	0	553	0	0	0	0	300	308	249	941	0
RTOR Reduction (vph)	0	0	435	0	0	0	0	91	151	0	0	0
Lane Group Flow (vph)	460	0	118	0	0	0	0	339	27	249	941	0
Turn Type	custom		custom						Perm	Split		
Protected Phases								2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	18.2		18.2					12.5	12.5	41.3	41.3	
Effective Green, g (s)	19.2		19.2					13.5	13.5	42.3	42.3	
Actuated g/C Ratio	0.21		0.21					0.15	0.15	0.47	0.47	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	679		551					638	189	1496	1543	
v/s Ratio Prot								c0.08		0.08	c0.29	
v/s Ratio Perm	c0.14		0.05						0.02			
v/c Ratio	0.68		0.21					0.53	0.14	0.17	0.61	
Uniform Delay, d1	32.6		29.2					35.3	33.2	13.7	17.7	
Progression Factor	1.00		1.00					1.00	1.00	0.31	0.32	
Incremental Delay, d2	2.7		0.2					0.9	0.3	0.2	1.3	
Delay (s)	35.2		29.4					36.2	33.6	4.4	7.1	
Level of Service	D		C					D	C	A	A	
Approach Delay (s)		32.0			0.0			35.4			6.5	
Approach LOS		C			A			D			A	

Intersection Summary

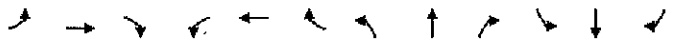
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	10	7	59	10	25	193	160	141	10	108	15
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)	1	11	8	64	11	27	210	174	153	11	117	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								657				
pX, platoon unblocked												
vC, conflicting volume	765	886	117	746	749	174	134			327		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	765	886	117	746	749	174	134			327		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.3			2.3		
p0 queue free %	100	95	99	76	96	97	85			99		
cM capacity (veh/h)	256	232	913	269	279	849	1403			1189		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	1	18	64	38	210	174	153	11	117	16
Volume Left	1	0	64	0	210	0	0	11	0	0
Volume Right	0	8	0	27	0	0	153	0	0	16
cSH	256	335	269	536	1403	1700	1700	1189	1700	1700
Volume to Capacity	0.00	0.06	0.24	0.07	0.15	0.10	0.09	0.01	0.07	0.01
Queue Length 95th (ft)	0	4	23	6	13	0	0	1	0	0
Control Delay (s)	19.1	16.4	22.5	12.2	8.0	0.0	0.0	8.1	0.0	0.0
Lane LOS	C	C	C	B	A			A		
Approach Delay (s)	16.5		18.7		3.1			0.6		
Approach LOS	C		C							

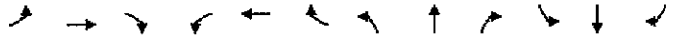
Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	35.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	44	1837	4	6	3659	38	21	6	6	4	2	1
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)	48	1997	4	7	3977	41	23	7	7	4	2	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4018			2001			4098	6126	1001	5115	6108	2009
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4018			2001			4098	6126	1001	5115	6108	2009
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	0			97			0	0	97	0	0	98
cM capacity (veh/h)	36			254			0	0	228	0	0	45

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	48	1331	670	7	2651	1367	29	7	7	1
Volume Left	48	0	0	7	0	0	23	0	4	0
Volume Right	0	0	4	0	0	41	0	7	0	1
cSH	36	1700	1700	254	1700	1700	0	228	0	45
Volume to Capacity	1.33	0.78	0.39	0.03	1.56	0.80	Err	0.03	Err	0.02
Queue Length 95th (ft)	126	0	0	2	0	0	Err	2	Err	2
Control Delay (s)	437.9	0.0	0.0	19.5	0.0	0.0	Err	21.3	Err	87.1
Lane LOS	F			C			F	C	F	F
Approach Delay (s)	10.2			0.0			Err		Err	
Approach LOS							F		F	

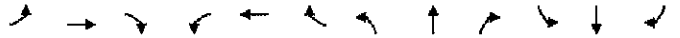
Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	121.5%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱			↱			↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	1174	101	0	4843	350	0	0	54	0	0	102
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	1276	110	0	5264	380	0	0	59	0	0	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)												
pX, platoon unblocked												
vC, conflicting volume	5645			1386			3142	6921	425	5748	6650	1755
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5645			1386			3142	6921	425	5748	6650	1755
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			0	100	89	100	100	0
cM capacity (veh/h)	7			451			0	0	556	0	0	68

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	425	425	425	110	1755	1755	1755	380	59	111
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	110	0	0	0	380	59	111
cSH	1700	1700	1700	1700	1700	1700	1700	1700	556	68
Volume to Capacity	0.25	0.25	0.25	0.06	1.03	1.03	1.03	0.22	0.11	1.63
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	9	241
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	441.5
Lane LOS									B	F
Approach Delay (s)	0.0				0.0				12.2	441.5
Approach LOS									B	F

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱			↱			↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	1227	1	0	5140	4	0	0	41	0	0	53
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	1334	1	0	5587	4	0	0	45	0	0	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					654							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	5591			1335			3254	6925	445	6076	6922	1862
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6419			1335			3335	8178	445	7058	8174	1499
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			100	100	92	100	100	26
cM capacity (veh/h)	2			472			1	0	540	0	0	78

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	445	445	445	1	1862	1862	1862	4	45	58
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	1	0	0	0	4	45	58
cSH	1700	1700	1700	1700	1700	1700	1700	1700	540	78
Volume to Capacity	0.26	0.26	0.26	0.00	1.10	1.10	1.10	0.00	0.08	0.74
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	7	89
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	129.3
Lane LOS									B	F
Approach Delay (s)	0.0				0.0				12.3	129.3
Approach LOS									B	F

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Lane Group Flow (vph)	727	304	347	185	2024	512	1590	61	112	1977
v/c Ratio	0.55	0.11	0.28	0.63	1.67	0.63	1.78	0.23	0.13	1.85
Control Delay	33.1	13.4	2.4	71.4	338.2	23.1	389.2	37.4	47.2	411.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	13.4	2.4	71.4	338.2	23.1	389.2	37.4	47.2	411.2
Queue Length 50th (ft)	256	43	39	85	~981	261	~766	15	30	~1547
Queue Length 95th (ft)	319	59	60	126	#1074	388	#860	42	49	#1693
Internal Link Dist (ft)		574			290					
Turn Bay Length (ft)							400	200	300	400
Base Capacity (vph)	1319	2731	1240	296	1212	807	892	265	892	1074
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.11	0.28	0.63	1.67	0.63	1.78	0.23	0.13	1.85

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	5.0	5.0	6.0	5.0	8.0		5.0	8.0		5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94		0.88	0.94		0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Volume (vph)	669	280	319	170	1862	471	1463	0	56	103	0	1819
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)	727	304	347	185	2024	512	1590	0	61	112	0	1977
RTOR Reduction (vph)	0	0	13	0	0	52	0	0	25	0	0	0
Lane Group Flow (vph)	727	304	334	185	2024	460	1590	0	36	112	0	1977
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Over	Prot		Over
Protected Phases	5	2	2 3	1	6	6 7	3		1	7		5
Permitted Phases												
Actuated Green, G (s)	55.0	79.1	114.1	9.9	34.0	69.0	27.0		9.9	27.0		55.0
Effective Green, g (s)	58.0	81.1	117.1	12.9	36.0	72.0	27.0		12.9	27.0		58.0
Actuated g/C Ratio	0.41	0.58	0.84	0.09	0.26	0.51	0.19		0.09	0.19		0.41
Clearance Time (s)	8.0	8.0		8.0	8.0		8.0		8.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1319	2731	1228	293	1212	755	892		238	892		1071
v/s Ratio Prot	0.23	0.06	0.23	0.06	c0.43	0.31	c0.34		0.01	0.02		c0.77
v/s Ratio Perm												
v/c Ratio	0.55	0.11	0.27	0.63	1.67	0.61	1.78		0.15	0.13		1.85
Uniform Delay, d1	31.1	13.2	2.4	61.3	52.0	24.1	56.5		58.5	46.7		41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.5	0.0	0.1	4.4	305.1	1.4	356.7		0.3	0.1		384.3
Delay (s)	31.6	13.3	2.5	65.6	357.1	25.5	413.2		58.8	46.8		425.3
Level of Service	C	B	A	E	F	C	F		E	D		F
Approach Delay (s)		20.2			274.9			400.1			405.0	
Approach LOS		C			F			F			F	

Intersection Summary

HCM Average Control Delay	291.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	140.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	28	341	330	579	38	33	268	205	27	598	1
v/c Ratio	0.19	0.80	0.78	0.64	0.08	0.13	0.33	0.30	0.21	0.82	0.00
Control Delay	42.4	21.7	19.1	33.9	14.4	50.1	12.9	2.8	43.2	46.6	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	21.7	19.1	33.9	14.4	50.1	12.9	2.8	43.2	46.6	10.0
Queue Length 50th (ft)	15	6	0	141	4	8	20	0	15	~192	0
Queue Length 95th (ft)	42	#145	#129	#285	32	m14	m65	m24	41	#298	2
Internal Link Dist (ft)		414			450		299			577	
Turn Bay Length (ft)						200		200	200		200
Base Capacity (vph)	144	424	424	905	458	248	813	686	128	725	439
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.80	0.78	0.64	0.08	0.13	0.33	0.30	0.21	0.82	0.00

Intersection Summary
~: Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
#: 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m: Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.85	0.85	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1403	1395	3183	1543		3183	3282	1468	1641	3282	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1641	1403	1395	3183	1543		3183	3282	1468	1641	3282	1468
Volume (vph)	26	10	607	533	10	25	30	247	189	25	550	1
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)	28	11	660	579	11	27	33	268	205	27	598	1
RTOR Reduction (vph)	0	301	301	0	22	0	0	0	138	0	0	1
Lane Group Flow (vph)	28	40	29	579	16	0	33	268	67	27	598	0
Turn Type	Split		Perm	Split			Prot		custom	Prot		custom
Protected Phases	4	4		8	8		5	2	3	1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	6.9	6.9	6.9	16.2	16.2		3.6	21.3	27.3	2.4	20.1	21.3
Effective Green, g (s)	7.9	7.9	7.9	17.2	17.2		4.6	22.3	29.3	3.4	21.1	23.3
Actuated g/C Ratio	0.09	0.09	0.09	0.19	0.19		0.05	0.25	0.33	0.04	0.23	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	144	123	122	608	295		163	813	559	62	769	380
v/s Ratio Prot	0.02	c0.03		c0.18	0.01		0.01	0.08	c0.01	c0.02	c0.18	c0.00
v/s Ratio Perm			0.02						0.04			0.00
v/c Ratio	0.19	0.32	0.24	0.95	0.05		0.20	0.33	0.12	0.44	0.78	0.00
Uniform Delay, d1	38.1	38.5	38.2	36.0	29.8		40.9	27.7	21.3	42.4	32.3	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.27	0.41	0.52	1.00	1.00	1.00
Incremental Delay, d2	3.0	6.9	4.5	26.5	0.4		0.5	0.2	0.1	4.8	5.0	0.0
Delay (s)	41.1	45.4	42.8	62.5	30.1		52.3	11.6	11.1	47.2	37.2	24.7
Level of Service	D	D	D	E	C		D	B	B	D	D	C
Approach Delay (s)		44.0			60.5			14.1			37.6	
Approach LOS		D			E			B			D	

Intersection Summary

HCM Average Control Delay	40.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	732	184	362	686	1503	335
v/c Ratio	0.99	0.25	0.95	0.91dl	0.93	0.46
Control Delay	65.4	5.4	27.3	22.8	34.9	7.1
Queue Delay	0.8	0.0	0.0	0.0	1.8	0.0
Total Delay	66.2	5.4	27.3	22.8	36.7	7.1
Queue Length 50th (ft)	214	0	23	257	253	38
Queue Length 95th (ft)	#332	28	m27	m#377	#378	m71
Internal Link Dist (ft)				316	889	
Turn Bay Length (ft)	600	600				200
Base Capacity (vph)	743	744	382	783	1624	725
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	3	0	0	0	48	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.25	0.95	0.88	0.95	0.46

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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0		5.0	5.0	5.0			5.0	5.0
Lane Util. Factor				0.97		0.88	0.91	0.91			0.91	1.00
Frt				1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95		1.00	0.95	0.97			1.00	1.00
Satd. Flow (prot)				3183		2584	1493	3063			4715	1468
Flt Permitted				0.95		1.00	0.95	0.97			1.00	1.00
Satd. Flow (perm)				3183		2584	1493	3063			4715	1468
Volume (vph)	0	0	0	673	0	169	666	298	0	0	1383	308
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	0	0	732	0	184	724	324	0	0	1503	335
RTOR Reduction (vph)	0	0	0	0	0	141	0	0	0	0	0	219
Lane Group Flow (vph)	0	0	0	732	0	43	362	686	0	0	1503	116
Turn Type				custom		custom	Split					Perm
Protected Phases							2	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				20.0		20.0	22.0	22.0			30.0	30.0
Effective Green, g (s)				21.0		21.0	23.0	23.0			31.0	31.0
Actuated g/C Ratio				0.23		0.23	0.26	0.26			0.34	0.34
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				743		603	382	783			1624	506
v/s Ratio Prot							c0.24	0.22			c0.32	
v/s Ratio Perm				c0.23		0.02						0.08
v/c Ratio				0.99		0.07	0.95	0.91dl			0.93	0.23
Uniform Delay, d1				34.3		26.9	32.9	32.1			28.4	21.0
Progression Factor				1.00		1.00	0.16	0.55			0.95	2.08
Incremental Delay, d2				29.1		0.1	17.0	1.1			7.2	0.7
Delay (s)				63.4		26.9	22.2	19.0			34.1	44.4
Level of Service				E		C	C	B			C	D
Approach Delay (s)		0.0			56.1			20.1			36.0	
Approach LOS		A			E			C			D	

Intersection Summary

HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	324	280	1113	433	1503	732
v/c Ratio	0.92	0.52	0.98	0.93	0.99	0.47
Control Delay	71.8	8.7	51.9	47.5	39.7	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.1
Total Delay	71.8	8.7	51.9	47.5	39.7	32.8
Queue Length 50th (ft)	95	0	216	158	201	247
Queue Length 95th (ft)	#174	39	#320	#380	m207	m287
Internal Link Dist (ft)			385			316
Turn Bay Length (ft)	600	600		200		
Base Capacity (vph)	354	536	1141	464	1521	1568
Starvation Cap Reductn	0	0	0	0	0	553
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.52	0.98	0.93	0.99	0.72

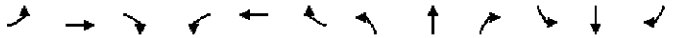
Intersection Summary

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97		0.88					0.86	0.86	0.97	0.95	
Frt	1.00		0.85					0.95	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3183		2584					4223	1263	3183	3282	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3183		2584					4223	1263	3183	3282	
Volume (vph)	298	0	258	0	0	0	0	666	756	1383	673	0
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)	324	0	280	0	0	0	0	724	822	1503	732	0
RTOR Reduction (vph)	0	0	249	0	0	0	0	108	155	0	0	0
Lane Group Flow (vph)	324	0	31	0	0	0	0	1005	276	1503	732	0
Turn Type	custom		custom						Perm	Split		
Protected Phases								2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	9.0		9.0					21.0	21.0	42.0	42.0	
Effective Green, g (s)	10.0		10.0					22.0	22.0	43.0	43.0	
Actuated g/C Ratio	0.11		0.11					0.24	0.24	0.48	0.48	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	354		287					1032	309	1521	1568	
v/s Ratio Prot								c0.24		c0.47	0.22	
v/s Ratio Perm	c0.10		0.01						0.22			
v/c Ratio	0.92		0.11					0.97	0.90	0.99	0.47	
Uniform Delay, d1	39.6		36.0					33.7	32.9	23.2	15.8	
Progression Factor	1.00		1.00					1.00	1.00	1.14	1.97	
Incremental Delay, d2	27.4		0.2					21.7	27.4	13.3	0.1	
Delay (s)	66.9		36.2					55.4	60.3	39.7	31.3	
Level of Service	E		D					E	E	D	C	
Approach Delay (s)		52.7			0.0			56.8			37.0	
Approach LOS		D			A			E			D	

Intersection Summary

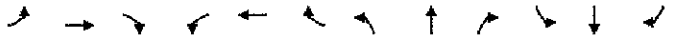
HCM Average Control Delay	46.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	17	10	217	198	10	25	9	198	65	10	137	1
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)	18	11	236	215	11	27	10	215	71	11	149	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								657				
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	438	476	149	647	407	215	150			286		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	413	453	149	631	380	180	150			254		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.3			2.3		
p0 queue free %	96	98	73	17	98	97	99			99		
cM capacity (veh/h)	481	462	877	260	509	806	1384			1212		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	18	247	215	38	10	215	71	11	149	1
Volume Left	18	0	215	0	10	0	0	11	0	0
Volume Right	0	236	0	27	0	0	71	0	0	1
cSH	481	844	260	691	1384	1700	1700	1212	1700	1700
Volume to Capacity	0.04	0.29	0.83	0.06	0.01	0.13	0.04	0.01	0.09	0.00
Queue Length 95th (ft)	3	30	166	4	1	0	0	1	0	0
Control Delay (s)	12.8	11.0	61.9	10.5	7.6	0.0	0.0	8.0	0.0	0.0
Lane LOS	B	B	F	B	A			A		
Approach Delay (s)	11.1		54.2		0.3			0.5		
Approach LOS	B		F							

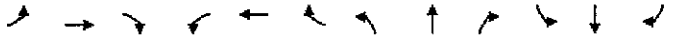
Intersection Summary				
Average Delay	17.3			
Intersection Capacity Utilization	47.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	3801	32	26	2291	9	1	3	12	18	17	6
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)	1	4132	35	28	2490	10	1	3	13	20	18	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2500			4166			5468	6708	2083	4634	6720	1250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2500			4166			5468	6708	2083	4634	6720	1250
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	99			9			0	0	67	0	0	96
cM capacity (veh/h)	158			31			0	0	40	0	0	153

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	1	2754	1412	28	1660	840	4	13	38	7
Volume Left	1	0	0	28	0	0	1	0	20	0
Volume Right	0	0	35	0	0	10	0	13	0	7
cSH	158	1700	1700	31	1700	1700	0	40	0	153
Volume to Capacity	0.01	1.62	0.83	0.91	0.98	0.49	Err	0.33	Err	0.04
Queue Length 95th (ft)	1	0	0	77	0	0	Err	28	Err	3
Control Delay (s)	27.9	0.0	0.0	322.1	0.0	0.0	Err	134.5	Err	29.5
Lane LOS	D			F			F	F	F	D
Approach Delay (s)	0.0			3.6			Err		Err	
Approach LOS							F		F	

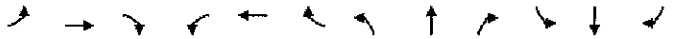
Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	125.3%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱			↱			↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	5076	285	0	2067	155	0	0	187	0	0	144
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	5517	310	0	2247	168	0	0	203	0	0	157
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2415			5827			6423	7933	1839	4289	8074	749
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2415			5827			6423	7933	1839	4289	8074	749
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			100	100	0	0	100	54
cM capacity (veh/h)	172			6			0	0	59	0	0	337

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	1839	1839	1839	310	749	749	749	168	203	157
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	310	0	0	0	168	203	157
cSH	1700	1700	1700	1700	1700	1700	1700	1700	59	337
Volume to Capacity	1.08	1.08	1.08	0.18	0.44	0.44	0.44	0.10	3.42	0.46
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	Err	59
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Err	24.6
Lane LOS									F	C
Approach Delay (s)	0.0				0.0				Err	24.6
Approach LOS									F	C

Intersection Summary			
Average Delay	236.7		
Intersection Capacity Utilization	118.0%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NB	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱			↱			↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	5260	3	0	2008	7	0	0	409	0	0	214
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	5717	3	0	2183	8	0	0	445	0	0	233
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					654							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	2190			5721			6678	7908	1906	4533	7903	728
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2141			5721			6901	8206	1906	4626	8202	589
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			100	100	0	0	100	43
cM capacity (veh/h)	210			6			0	0	53	0	0	407

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	1906	1906	1906	3	728	728	728	8	445	233
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	0	0	0	3	0	0	0	8	445	233
cSH	1700	1700	1700	1700	1700	1700	1700	1700	53	407
Volume to Capacity	1.12	1.12	1.12	0.00	0.43	0.43	0.43	0.00	8.35	0.57
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	Err	86
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Err	25.0
Lane LOS									F	C
Approach Delay (s)	0.0				0.0				Err	25.0
Approach LOS									F	C

Intersection Summary			
Average Delay	518.3		
Intersection Capacity Utilization	135.3%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Lane Group Flow (vph)	2029	3363	768	121	396	124	547	187	853	1247
v/c Ratio	1.27	1.12	0.60	0.59	0.42	0.20	0.72	1.12	1.12	0.94
Control Delay	160.3	86.1	4.5	76.0	50.5	25.2	61.5	162.4	123.8	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	160.3	86.1	4.5	76.0	50.5	25.2	61.5	162.4	123.8	44.5
Queue Length 50th (ft)	~1201	~1290	121	56	116	67	169	~110	~317	564
Queue Length 95th (ft)	#1333	#1358	180	91	152	113	213	#202	#406	#752
Internal Link Dist (ft)		574			290					
Turn Bay Length (ft)							400	200	300	400
Base Capacity (vph)	1592	2997	1281	205	943	631	760	167	760	1333
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	1.12	0.60	0.59	0.42	0.20	0.72	1.12	1.12	0.94

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	5.0	5.0	6.0	5.0	8.0		5.0	8.0		5.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94		0.88	0.94		0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (prot)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00
Satd. Flow (perm)	3183	4715	1468	3183	4715	1468	4627		2584	4627		2584
Volume (vph)	1867	3094	707	111	364	114	503	0	172	785	0	1147
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)	2029	3363	768	121	396	124	547	0	187	853	0	1247
RTOR Reduction (vph)	0	0	12	0	0	2	0	0	1	0	0	41
Lane Group Flow (vph)	2029	3363	756	121	396	122	547	0	186	853	0	1206
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Over	Prot		Over
Protected Phases	5	2	2 3	1	6	6 7	3		1	7		5
Permitted Phases												
Actuated Green, G (s)	67.0	87.0	118.0	6.0	26.0	57.0	23.0		6.0	23.0		67.0
Effective Green, g (s)	70.0	89.0	121.0	9.0	28.0	60.0	23.0		9.0	23.0		70.0
Actuated g/C Ratio	0.50	0.64	0.86	0.06	0.20	0.43	0.16		0.06	0.16		0.50
Clearance Time (s)	8.0	8.0		8.0	8.0		8.0		8.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	1592	2997	1269	205	943	629	760		166	760		1292
v/s Ratio Prot	c0.64	c0.71	0.51	0.04	0.08	0.08	0.12		0.07	c0.18		0.47
v/s Ratio Perm												
v/c Ratio	1.27	1.12	0.60	0.59	0.42	0.19	0.72		1.12	1.12		0.93
Uniform Delay, d1	35.0	25.5	2.7	63.7	48.9	24.9	55.4		65.5	58.5		32.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	128.6	60.0	0.8	4.5	0.3	0.2	3.3		106.0	71.7		12.3
Delay (s)	163.6	85.5	3.4	68.2	49.2	25.1	58.7		171.5	130.2		45.1
Level of Service	F	F	A	E	D	C	E		F	F		D
Approach Delay (s)		101.0			48.1			67.5			79.7	
Approach LOS		F			D			F			E	

Intersection Summary

HCM Average Control Delay	91.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

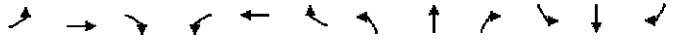
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1	14	13	185	32	377	493	338	27	163	25
v/c Ratio	0.00	0.06	0.06	0.33	0.11	0.51	0.34	0.40	0.19	0.22	0.07
Control Delay	33.0	22.8	17.5	34.2	15.1	35.5	12.8	3.2	40.5	29.6	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	22.8	17.5	34.2	15.1	35.5	12.8	3.2	40.5	29.6	11.9
Queue Length 50th (ft)	1	2	0	47	2	106	62	10	15	40	0
Queue Length 95th (ft)	5	21	17	78	27	145	125	48	39	67	20
Internal Link Dist (ft)		414			450		1268			577	
Turn Bay Length (ft)						200		200	200		200
Base Capacity (vph)	237	222	213	566	290	743	1468	844	237	729	346
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.06	0.06	0.33	0.11	0.51	0.34	0.40	0.11	0.22	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.90	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1483	1395	3183	1509		3183	3282	1468	1641	3282	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1641	1483	1395	3183	1509		3183	3282	1468	1641	3282	1468
Volume (vph)	1	5	20	170	5	25	347	454	311	25	150	23
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)	1	5	22	185	5	27	377	493	338	27	163	25
RTOR Reduction (vph)	0	8	11	0	22	0	0	0	200	0	0	18
Lane Group Flow (vph)	1	6	2	185	10	0	377	493	138	27	163	7
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	12.0	12.0	12.0	15.0	15.0		16.4	35.7	35.7	3.3	22.6	22.6
Effective Green, g (s)	13.0	13.0	13.0	16.0	16.0		17.4	36.7	36.7	4.3	23.6	23.6
Actuated g/C Ratio	0.14	0.14	0.14	0.18	0.18		0.19	0.41	0.41	0.05	0.26	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	237	214	202	566	268		615	1338	599	78	861	385
v/s Ratio Prot	0.00	c0.00		c0.06	0.01		c0.12	c0.15		0.02	0.05	
v/s Ratio Perm			0.00						0.09			0.00
v/c Ratio	0.00	0.03	0.01	0.33	0.04		0.61	0.37	0.23	0.35	0.19	0.02
Uniform Delay, d1	33.0	33.1	33.0	32.3	30.6		33.2	18.6	17.4	41.5	25.8	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.11	0.69	0.78	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.3	0.1	1.5	0.3		3.4	0.6	0.7	2.7	0.1	0.0
Delay (s)	33.0	33.3	33.1	33.8	30.9		40.2	13.4	14.3	44.2	25.9	24.6
Level of Service	C	C	C	C	C		D	B	B	D	C	C
Approach Delay (s)		33.2			33.4			22.0			28.0	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



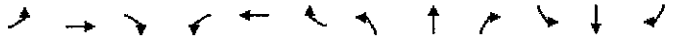
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	70	351	231	36	25	0	0	25	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	76	382	251	39	27	0	0	27	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												8
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	633			0			357	785	0	673	659	316
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	633			0			357	785	0	673	659	316
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			95			92	91	100	100	92	100
cM capacity (veh/h)	894			1565			501	293	1059	292	348	656

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	76	254	378	39	27	28
Volume Left	76	0	0	39	0	0
Volume Right	0	0	251	0	0	1
cSH	1565	1700	1700	501	293	362
Volume to Capacity	0.05	0.15	0.22	0.08	0.09	0.08
Queue Length 95th (ft)	4	0	0	6	8	6
Control Delay (s)	7.4	0.0	0.0	12.8	18.5	16.0
Lane LOS	A			B	C	C
Approach Delay (s)	0.8			15.1		16.0
Approach LOS				C		C

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	47.0%	ICU Level of Service		A
Analysis Period (min)	15			

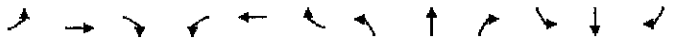
Lane Group	WBL	WBT	WBR	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	865	513	563	232	489	249	121
v/c Ratio	0.55	0.65	0.64	0.66	0.67	0.52	0.47
Control Delay	17.8	20.6	9.7	37.0	34.4	34.3	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	20.6	9.7	37.0	34.4	34.3	17.7
Queue Length 50th (ft)	186	222	80	59	63	35	0
Queue Length 95th (ft)	231	330	194	100	92	60	4
Internal Link Dist (ft)		1332			316	1268	
Turn Bay Length (ft)	200		200				200
Base Capacity (vph)	1602	802	883	391	820	484	260
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.64	0.64	0.59	0.60	0.51	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lane Util. Factor				0.97	0.95	0.95	0.91	0.91			0.91	1.00
Frt				1.00	0.95	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3183	1552	1395	1493	3134			4715	1468
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				3183	1552	1395	1493	3134			4715	1468
Volume (vph)	0	0	0	796	301	689	240	423	0	0	229	111
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	0	0	865	327	749	261	460	0	0	249	121
RTOR Reduction (vph)	0	0	0	0	22	184	0	0	0	0	0	109
Lane Group Flow (vph)	0	0	0	865	491	379	232	489	0	0	249	12
Turn Type				Perm		Perm	Split					Perm
Protected Phases					8		2	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				43.7	43.7	43.7	20.1	20.1			8.2	8.2
Effective Green, g (s)				44.7	44.7	44.7	21.1	21.1			9.2	9.2
Actuated g/C Ratio				0.50	0.50	0.50	0.23	0.23			0.10	0.10
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				1581	771	693	350	735			482	150
v/s Ratio Prot					c0.32		0.16	c0.16			c0.05	
v/s Ratio Perm				0.27		0.27						0.01
v/c Ratio				0.55	0.64	0.55	0.66	0.67			0.52	0.08
Uniform Delay, d1				15.7	16.7	15.7	31.2	31.2			38.3	36.6
Progression Factor				1.00	1.00	1.00	0.94	0.98			0.79	1.47
Incremental Delay, d2				1.4	4.0	3.1	3.9	1.9			0.9	0.2
Delay (s)				17.0	20.7	18.7	33.1	32.6			31.2	54.2
Level of Service				B	C	B	C	C			C	D
Approach Delay (s)		0.0			18.5			32.7			38.7	
Approach LOS		A			B			C			D	

Intersection Summary				
HCM Average Control Delay	24.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	25	902	30	0	0	0	0	36	85	25	70	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)	27	980	33	0	0	0	0	39	92	27	76	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1013			1089	1051	507	610	1067	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1013			1089	1051	507	610	1067	0
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	98			100			100	81	81	89	63	100
cM capacity (veh/h)	1565			634			112	209	491	248	205	1059

Direction, Lane #	EB 1	EB 2	EB 3	NB 1	SB 1	SB 2
Volume Total	27	654	359	132	27	76
Volume Left	27	0	0	0	27	0
Volume Right	0	0	33	92	0	0
cSH	1565	1700	1700	698	248	205
Volume to Capacity	0.02	0.38	0.21	0.19	0.11	0.37
Queue Length 95th (ft)	1	0	0	17	9	40
Control Delay (s)	7.3	0.0	0.0	17.6	21.3	32.7
Lane LOS	A			C	C	D
Approach Delay (s)	0.2			17.6	29.7	
Approach LOS				C	D	

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	460	298	359	330	146	249	865
v/c Ratio	0.59	0.71	0.61	0.55	0.51	0.17	0.57
Control Delay	32.7	33.0	9.3	33.9	12.9	6.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	32.7	33.0	9.3	33.9	12.9	6.5	8.6
Queue Length 50th (ft)	118	125	14	56	0	9	34
Queue Length 95th (ft)	155	207	90	87	61	21	127
Internal Link Dist (ft)		1599		1259			316
Turn Bay Length (ft)	200		200		200		
Base Capacity (vph)	955	499	647	671	307	1468	1514
Starvation Cap Reductn	0	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.60	0.55	0.49	0.48	0.17	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97	0.95	0.95					0.86	0.86	0.97	0.95	
Frt	1.00	0.92	0.85					0.97	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3183	1507	1395					4317	1263	3183	3282	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3183	1507	1395					4317	1263	3183	3282	
Volume (vph)	423	125	479	0	0	0	0	240	198	229	796	0
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)	460	136	521	0	0	0	0	261	215	249	865	0
RTOR Reduction (vph)	0	51	247	0	0	0	0	48	127	0	0	0
Lane Group Flow (vph)	460	247	112	0	0	0	0	282	19	249	865	0
Turn Type	Perm		Perm						Perm	Split		
Protected Phases		4						2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	20.9	20.9	20.9					10.5	10.5	40.6	40.6	
Effective Green, g (s)	21.9	21.9	21.9					11.5	11.5	41.6	41.6	
Actuated g/C Ratio	0.24	0.24	0.24					0.13	0.13	0.46	0.46	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	775	367	339					552	161	1471	1517	
v/s Ratio Prot		c0.16						c0.07		0.08	c0.26	
v/s Ratio Perm	0.14		0.08						0.01			
v/c Ratio	0.59	0.67	0.33					0.51	0.12	0.17	0.57	
Uniform Delay, d1	30.1	30.8	28.0					36.6	34.7	14.1	17.7	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.39	0.36	
Incremental Delay, d2	1.2	4.8	0.6					0.8	0.3	0.2	1.3	
Delay (s)	31.3	35.6	28.6					37.4	35.1	5.8	7.8	
Level of Service	C	D	C					D	D	A	A	
Approach Delay (s)		31.6			0.0			36.7			7.3	
Approach LOS		C			A			D			A	

Intersection Summary

HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	5	6	59	5	25	154	160	141	25	108	15
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)	1	5	7	64	5	27	167	174	153	27	117	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								657				
pX, platoon unblocked												
vC, conflicting volume	710	834	117	690	697	174	134			327		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	710	834	117	690	697	174	134			327		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.3			2.3		
p0 queue free %	100	98	99	79	98	97	88			98		
cM capacity (veh/h)	288	254	913	305	306	849	1403			1189		

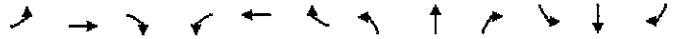
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	1	12	64	33	167	174	153	27	117	16
Volume Left	1	0	64	0	167	0	0	27	0	0
Volume Right	0	7	0	27	0	0	153	0	0	16
cSH	288	419	305	655	1403	1700	1700	1189	1700	1700
Volume to Capacity	0.00	0.03	0.21	0.05	0.12	0.10	0.09	0.02	0.07	0.01
Queue Length 95th (ft)	0	2	19	4	10	0	0	2	0	0
Control Delay (s)	17.5	13.8	19.9	10.8	7.9	0.0	0.0	8.1	0.0	0.0
Lane LOS	C	B	C	B	A			A		
Approach Delay (s)	14.1		16.9		2.7			1.4		
Approach LOS	B		C							

Intersection Summary					
Average Delay	4.4				
Intersection Capacity Utilization	36.7%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	28	335	330	579	32	21	266	205	27	551	1
v/c Ratio	0.05	0.58	0.58	0.73	0.08	0.09	0.41	0.45	0.23	0.76	0.00
Control Delay	27.1	19.9	19.5	40.6	13.3	43.3	19.7	7.2	49.3	44.0	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	19.9	19.5	40.6	13.3	43.3	19.7	7.2	49.3	44.0	24.0
Queue Length 50th (ft)	12	92	88	174	2	4	75	50	17	157	0
Queue Length 95th (ft)	36	210	204	235	26	m8	m100	m63	44	236	5
Internal Link Dist (ft)		414			450		1268			577	
Turn Bay Length (ft)						200		200	200		200
Base Capacity (vph)	543	574	573	796	397	223	722	483	115	767	344
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.58	0.58	0.73	0.08	0.09	0.37	0.42	0.23	0.72	0.00

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.85	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1641	1398	1395	3183	1509		3183	3282	1468	1641	3282	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1641	1398	1395	3183	1509		3183	3282	1468	1641	3282	1468
Volume (vph)	26	5	607	533	5	25	19	245	189	25	507	1
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)	28	5	660	579	5	27	21	266	205	27	551	1
RTOR Reduction (vph)	0	112	112	0	21	0	0	0	162	0	0	1
Lane Group Flow (vph)	28	223	218	579	11	0	21	266	43	27	551	0
Turn Type	Split		Perm	Split			Prot		Perm	Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	32.1	32.1	32.1	20.4	20.4		2.4	19.9	19.9	3.6	21.1	21.1
Effective Green, g (s)	33.1	33.1	33.1	21.4	21.4		3.4	20.9	20.9	4.6	22.1	22.1
Actuated g/C Ratio	0.33	0.33	0.33	0.21	0.21		0.03	0.21	0.21	0.05	0.22	0.22
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	543	463	462	681	323		108	686	307	75	725	324
v/s Ratio Prot	0.02	c0.16		c0.18	0.01		0.01	0.08		c0.02	c0.17	
v/s Ratio Perm			0.16						0.03			0.00
v/c Ratio	0.05	0.48	0.47	0.85	0.03		0.19	0.39	0.14	0.36	0.76	0.00
Uniform Delay, d1	22.8	26.6	26.5	37.8	31.1		47.0	34.0	32.2	46.3	36.5	30.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.98	0.62	0.96	1.00	1.00	1.00
Incremental Delay, d2	0.2	3.6	3.4	12.6	0.2		0.7	0.3	0.2	2.9	4.7	0.0
Delay (s)	22.9	30.2	30.0	50.4	31.3		46.5	18.1	31.2	49.2	41.2	30.3
Level of Service	C	C	C	D	C		D	B	C	D	D	C
Approach Delay (s)		29.8			49.4			24.7			41.5	
Approach LOS		C			D			C			D	

Intersection Summary				
HCM Average Control Delay	36.7	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	99	892	13	39	25	0	0	25	43
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	0	0	108	970	14	42	27	0	0	27	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												8
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	984			0			737	1199	0	1205	1192	492
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	984			0			737	1199	0	1205	1192	492
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			93			81	83	100	100	83	91
cM capacity (veh/h)	651			1565			219	161	1059	108	163	502

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	108	646	337	42	27	74
Volume Left	108	0	0	42	0	0
Volume Right	0	0	14	0	0	47
cSH	1565	1700	1700	219	161	442
Volume to Capacity	0.07	0.38	0.20	0.19	0.17	0.17
Queue Length 95th (ft)	6	0	0	17	15	15
Control Delay (s)	7.5	0.0	0.0	25.3	31.8	19.8
Lane LOS	A			D	D	C
Approach Delay (s)	0.7			27.9		19.8
Approach LOS				D		C

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	44.2%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	623	134	158	342	665	1503	287
v/c Ratio	0.90	0.38	0.37	0.84	0.80	0.89	0.41
Control Delay	55.9	35.6	8.1	24.2	17.2	32.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	35.6	8.1	24.2	17.2	32.6	7.1
Queue Length 50th (ft)	199	73	0	123	119	250	24
Queue Length 95th (ft)	#296	132	54	m145	m141	349	m63
Internal Link Dist (ft)		1332			316	1268	
Turn Bay Length (ft)	200		200				200
Base Capacity (vph)	700	360	430	407	836	1697	694
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.37	0.37	0.84	0.80	0.89	0.41

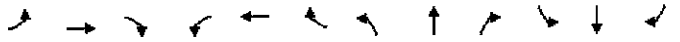
Intersection Summary

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lane Util. Factor				0.97	0.95	0.95	0.91	0.91			0.91	1.00
Frt				1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	0.98			1.00	1.00
Satd. Flow (prot)				3183	1619	1395	1493	3065			4715	1468
Flt Permitted				0.95	1.00	1.00	0.95	0.98			1.00	1.00
Satd. Flow (perm)				3183	1619	1395	1493	3065			4715	1468
Volume (vph)	0	0	0	573	112	156	628	298	0	0	1383	264
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	0	0	623	122	170	683	324	0	0	1503	287
RTOR Reduction (vph)	0	0	0	0	4	124	0	0	0	0	0	166
Lane Group Flow (vph)	0	0	0	623	130	34	342	665	0	0	1503	121
Turn Type				Perm		Perm	Split					Perm
Protected Phases					8		2	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				20.7	20.7	20.7	26.3	26.3			35.0	35.0
Effective Green, g (s)				21.7	21.7	21.7	27.3	27.3			36.0	36.0
Actuated g/C Ratio				0.22	0.22	0.22	0.27	0.27			0.36	0.36
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				691	351	303	408	837			1697	528
v/s Ratio Prot					0.08		c0.23	0.22			c0.32	
v/s Ratio Perm				c0.20		0.02						0.08
v/c Ratio				0.90	0.37	0.11	0.84	0.79			0.89	0.23
Uniform Delay, d1				38.1	33.3	31.4	34.3	33.7			30.1	22.3
Progression Factor				1.00	1.00	1.00	0.41	0.40			0.89	1.36
Incremental Delay, d2				15.0	0.7	0.2	5.8	2.0			5.4	0.7
Delay (s)				53.1	34.0	31.6	19.8	15.5			32.0	31.1
Level of Service				D	C	C	B	B			C	C
Approach Delay (s)	0.0				46.6			17.0			31.9	
Approach LOS	A				D			B			C	

Intersection Summary

HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	25	513	43	0	0	0	0	39	90	25	25	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)	27	558	47	0	0	0	0	42	98	27	27	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			604			649	635	302	403	659	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			604			649	635	302	403	659	0
tC, single (s)	4.3			4.3			7.7	6.7	7.1	7.7	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	98			100			100	89	85	93	92	100
cM capacity (veh/h)	1565			917			315	372	671	395	360	1059

Direction, Lane #	EB 1	EB 2	EB 3	NB 1	SB 1	SB 2
Volume Total	27	372	233	140	27	27
Volume Left	27	0	0	0	27	0
Volume Right	0	0	47	98	0	0
cSH	1565	1700	1700	961	395	360
Volume to Capacity	0.02	0.22	0.14	0.15	0.07	0.08
Queue Length 95th (ft)	1	0	0	13	6	6
Control Delay (s)	7.3	0.0	0.0	12.7	14.8	15.8
Lane LOS	A			B	B	C
Approach Delay (s)	0.3			12.7	15.3	
Approach LOS				B	C	

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	324	136	234	1044	362	1503	623
v/c Ratio	0.93	0.75	0.65	0.92	0.99	0.98	0.40
Control Delay	77.8	69.2	14.8	48.0	77.8	28.2	12.9
Queue Delay	0.0	0.0	0.0	1.7	0.0	0.0	0.3
Total Delay	77.8	69.2	14.8	49.7	77.8	28.2	13.2
Queue Length 50th (ft)	107	90	0	240	236	163	69
Queue Length 95th (ft)	#190	#190	77	#331	#458	m#615	m88
Internal Link Dist (ft)		1599		1259			316
Turn Bay Length (ft)	200		200		200		
Base Capacity (vph)	350	181	362	1136	366	1528	1575
Starvation Cap Reductn	0	0	0	0	0	0	403
Spillback Cap Reductn	0	0	0	29	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.75	0.65	0.94	0.99	0.98	0.53

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97	0.95	0.95					0.86	0.86	0.97	0.95	
Frt	1.00	1.00	0.85					0.95	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3183	1641	1395					4225	1263	3183	3282	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3183	1641	1395					4225	1263	3183	3282	
Volume (vph)	298	125	215	0	0	0	0	628	665	1383	573	0
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)	324	136	234	0	0	0	0	683	723	1503	623	0
RTOR Reduction (vph)	0	0	208	0	0	0	0	38	38	0	0	0
Lane Group Flow (vph)	324	136	26	0	0	0	0	1006	324	1503	623	0
Turn Type	Perm		Perm						Perm	Split		
Protected Phases		4						2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	10.0	10.0	10.0					25.0	25.0	47.0	47.0	
Effective Green, g (s)	11.0	11.0	11.0					26.0	26.0	48.0	48.0	
Actuated g/C Ratio	0.11	0.11	0.11					0.26	0.26	0.48	0.48	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	350	181	153					1099	328	1528	1575	
v/s Ratio Prot		0.08						0.24		c0.47	0.19	
v/s Ratio Perm	c0.10		0.02						c0.26			
v/c Ratio	0.93	0.75	0.17					0.92	0.99	0.98	0.40	
Uniform Delay, d1	44.1	43.2	40.4					35.9	36.9	25.6	16.7	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.57	0.74	
Incremental Delay, d2	29.6	16.0	0.5					11.6	46.1	11.8	0.3	
Delay (s)	73.7	59.2	40.9					47.6	83.0	26.4	12.7	
Level of Service	E	E	D					D	F	C	B	
Approach Delay (s)		59.8			0.0			56.7			22.4	
Approach LOS		E			A			E			C	

Intersection Summary				
HCM Average Control Delay	39.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	83.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	17	5	173	198	5	25	9	198	65	25	137	1
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)	18	5	188	215	5	27	10	215	71	27	149	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								657				
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	468	509	149	629	439	215	150			286		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	437	480	149	607	406	169	150			244		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.3			2.3		
p0 queue free %	96	99	79	25	99	97	99			98		
cM capacity (veh/h)	457	434	877	285	478	807	1384			1206		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	18	193	215	33	10	215	71	27	149	1
Volume Left	18	0	215	0	10	0	0	27	0	0
Volume Right	0	188	0	27	0	0	71	0	0	1
cSH	457	853	285	724	1384	1700	1700	1206	1700	1700
Volume to Capacity	0.04	0.23	0.75	0.05	0.01	0.13	0.04	0.02	0.09	0.00
Queue Length 95th (ft)	3	22	140	4	1	0	0	2	0	0
Control Delay (s)	13.2	10.5	48.1	10.2	7.6	0.0	0.0	8.1	0.0	0.0
Lane LOS	B	B	E	B	A			A		
Approach Delay (s)	10.7		43.1		0.3			1.2		
Approach LOS	B		E							

Intersection Summary				
Average Delay	14.2			
Intersection Capacity Utilization	52.4%	ICU Level of Service		A
Analysis Period (min)	15			