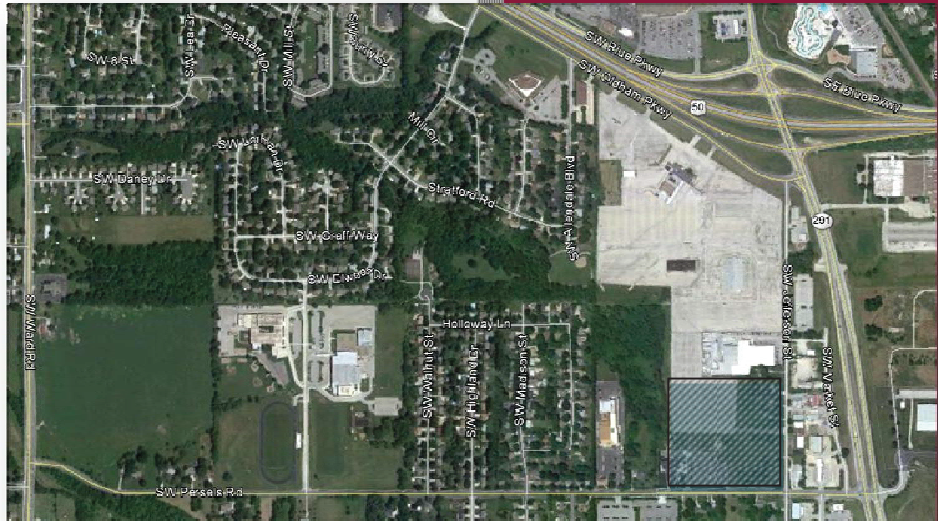


Abundant Life Baptist Church Traffic Impact Study

Jefferson Street and Persels Road
Lee's Summit, Missouri



Prepared for:

Abundant Life Baptist Church

Prepared by TranSystems

June 2013



TranSystems

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June 17, 2013

Mr. Terry Allen
President
Abundant Life Baptist Church
414 SW Persels Road
Lee's Summit, MO 64081

**RE: Abundant Life Baptist Church Traffic Impact Study
Jefferson Street and Persels Road
Lee's Summit, Missouri**

Dear Mr. Allen:

In response to your request and authorization, TranSystems has completed a traffic impact study for the proposed expansion of the Abundant Life Baptist Church in the northwest quadrant of the Jefferson Street and Persels Road intersection in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

Included in this study is a discussion of the anticipated impacts of the proposed development on the adjacent street network during a typical Sunday peak period for the following analysis scenarios:

- Existing Conditions
- Existing plus Development Conditions

We trust that the enclosed information proves beneficial to you and the City of Lee's Summit, and the Missouri Department of Transportation 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 at your convenience.

Sincerely,

TRANSYSTEMS

By: 

Jeffrey J. Wilke, PE, PTOE
Project Engineer

JJW:DLE/jw:PI01110443
Enclosure

Introduction

TranSystems has completed a traffic impact study for the proposed expansion of the Abundant Life Baptist Church located in the northwest quadrant of the Jefferson Street and Persels Road intersection in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The location of the project relative to the major streets in the area is shown on **Figure A-1** in **Appendix A**.

In addition to a description of the proposed development and the surrounding transportation infrastructure, this study includes trip generation estimates, trip distribution estimates, capacity analyses, and a summary of the findings.

Existing Church

The Abundant Life Baptist Church is an existing church with approximately 2,500 people regularly attending Sunday services. The church operates out of two separate facilities; the original building located at 414 SW Persels Road and the Core building located at 400 SW Persels Road, approximately 500 feet to the east. There are three services held on Sunday mornings and one on Sunday evenings. The first morning service begins at 8:00, the second at 9:30 and the third at 11:00. All three are held in the main building; however, the 9:30 and 11:00 services are also simulcast in the Core building to accommodate increased attendances. The most congestion occurs when people are leaving the site from the 9:30 service and arriving for the 11:00 service.

Four parking areas are available to the church. There is a lot surrounding the main building with two access driveways on Persels Road. There is a lot located east of the Core building that also has two access driveways on Persels Road. There is a lot located on the south side of Persels Road between the two buildings, which has two access driveways on Persels Road. There is a satellite lot located to the north of the Core building parking lot with an access drive on Jefferson Street.

Proposed Expansion

The church plans to ultimately provide one large sanctuary so that all attendees can meet together in one building rather than having to split the services into two separate buildings as they do now. The current plan calls for the addition of a new 120,000 square-foot building that includes a 2,000-seat sanctuary. The existing 140 space surface parking lot, located between the Core building and Jefferson Street, will be removed to make way for the new building. The plan calls for the addition of approximately 647 new parking spaces.

Access to the new building and parking areas created by the plan will be provided by three existing driveways. Two are located on Persels Road, with one located approximately 400 feet west of Jefferson Street and the other located approximately 285 feet further to the west. The other driveway is located on Jefferson Street approximately 425 feet north of Persels Road. While the driveway on Jefferson Street appears to meet the minimum spacing criteria established in Section 15.1 of the Lee's Summit Access Management Code, the existing driveways are less than the 400 foot required spacing.

The City's Unimproved Road Policy does not allow new development to access unimproved roads. As such Jefferson Street will need to be improved in order for Drive F to access it. Improvements will consist of one through lane in each direction that is 12 feet wide. Also, six foot wide turf shoulders will be required by the City.

The throat length of Drives D, E, and F are to be approximately 50 feet, which is less than the requirements of the Access Management Code. Drives D and F include two outbound lanes, while Drive E has a single lane. Drive E will serve less outbound traffic than the other two drives, given that is less convenient to the main parking area. Intersection sight distances from all site driveways along Persels Road are more than adequate. The intersection sight distance looking to the north along Jefferson Street from Drive F is limited by a vertical curve, but is adequate for the 25 mph posted speed limit.

A copy of the proposed site plan is included on **Figure A-2** in **Appendix A** for reference.

Study Area

To assess the impacts of the proposed development, the intersections listed below were identified for study during the A.M. and P.M. peak hours of a typical weekday.

- Westbound U.S. 50 Ramps and Route 291
- Eastbound Route 291 Ramps and Route 291
- Oldham Parkway and Route 291
- Oldham Parkway and Jefferson Street
- Persels Road and Route 291
- Persels Road and Market Street (North Leg)
- Persels Road and Market Street (South Leg)
- Persels Road and Jefferson Street
- Persels Road and Ward Road

Table I on the following page establishes the naming convention used in this study for the various church driveways. The intersections of these driveways with the public street were also assessed in the analysis.

Table I
Church Driveway Naming Convention

Designation	Description	Location
Drive A	Original church building west driveway	1,315 feet west of Jefferson on Persels
Drive B	Original church building east driveway and shared with the west satellite lot on south side of Persels	1,165 feet west of Jefferson on Persels
Drive C	East satellite lot driveway on south side of Persels	860 feet west of Jefferson on Persels
Drive D	Core building west driveway on Persels	685 feet west of Jefferson on Persels
Drive E	Core building east driveway on Persels	400 feet west of Jefferson on Persels
Drive F	Core building driveway on Jefferson	425 feet north of Persels on Jefferson

Traffic Counts

Turning-movement traffic counts were collected at the existing study intersections over two different Sunday mornings, including December 4, 2011 and December 11, 2011. The counts collected on the first Sunday were taken from 9:15 to 11:15 A.M to capture the heaviest inbound and outbound traffic associated with the church. These counts indicated the peak hour to be from 10:15 to 11:15 A.M. Observations made in the field confirmed this period as the peak. Counts on the second Sunday were collected for the peak hour only. The existing lane configurations, traffic control devices, and peak hour traffic volumes have been illustrated on **Figure A-3** in **Appendix A**. The field observations made during the count periods indicated that, in general, drivers traveled through the area at or below the posted speed limits, while following the rules of the road as well as the direction given by the church's traffic attendants.

The counts showed relatively low peak hour factors (PHF) for many movements, indicating that traffic flows during the highest volume 15-minute period within the peak hour was relatively high compared to the other three 15-minute periods. This is consistent with observations as well as expectations. It is common for traffic related to large gatherings such as church services and sporting events to significantly peak just before and just after the event unlike traffic during a typical weekday commuter peak hour period, which is usually spread more evenly over the entire hour. Peak hour factors from the counts were used in the analysis to reflect the existing peaking characteristics of traffic.

Street Network

Route 291 is a four-lane divided highway with a posted speed limit of 45 mph within the study area. The Route 291 bridge over U.S. 50 is a five-lane bridge with center left-turn lane shared for northbound and southbound traffic. Oldham Parkway west of Route 291 is a two-lane outer road that runs parallel to U.S. 50 on its south side. Persels is an east/west minor arterial roadway with one lane in each direction and a posted speed limit of 35 mph. Jefferson Street south of Oldham Parkway is an unimproved two-

lane local street with a posted speed limit of 25 mph. Jefferson Street and Oldham Parkway are to be improved and realigned as development occurs in the future.

The City plans to make improvements to Jefferson Street, including the Persels Road intersection in the near future. These improvements include widening the intersection to include left-turn lanes on all approaches and installing a traffic signal. This study considered these improvements to be completed for all analysis scenarios.

There is another project in progress to extend Bailey Road from Hamblen Road to the Route 291 and Persels Road intersection. The project has been designed and the first phase of construction has been completed, which includes the segment between Route 291 and the Union Pacific Railroad (UPRR). The entire project is expected to be completed by 2014. This study considered the Bailey Road extension to be completed for all analysis scenarios, as directed by City staff. Estimates were prepared for the anticipated amount of existing Sunday peak hour traffic that would be redistributed when the Bailey Road project is completed. Since the majority of traffic on the street system during the morning peak of a Sunday is associated with churches, membership zip code data from the Abundant Life Church was used to approximate the proportion of traffic that would benefit from the Bailey Road project. The redistributed trips are included in **Appendix B**.

Land Use

The project site is zoned for industrial and single-family residential land uses. The residential zoning is primarily located in the southeast corner of the site.

Analysis

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

The analysis of the proposed development's impact included development of trip generation and trip distribution estimates as well as a traffic operations assessment for each study scenario. Each of the analysis methodologies and findings are described below in the subsequent sections.

Trip Generation

Summarized in **Table 2** on the next page is the number of trips expected to be generated by the proposed development. These estimates were prepared using the Institute of Transportation Engineers' (ITE) Trip Generation, 8th Edition. The two existing church buildings currently have a total seating capacity of approximately 1,000. Once the new building is completed, the two existing buildings are planned to be converted to ancillary use spaces such as offices and Sunday school classrooms. There are no plans to include a weekday school program. The following trip generation estimate is based on

net increase of trips being added to the street system for going from a 1,000-seat church to a 2,000-seat church.

Table 2 Trip Generation							
Land Use	Intensity		ITE Code	Average Sunday	Sunday Peak Hour		
					Total	In	Out
Church (Existing Church)	1,000	seats	560	1,850	610	311	299
Church (Ultimate Total)	2,000	seats	560	3,700	1,220	622	598
Church (Expansion)	1,000	seats	560	1,850	610	311	299

Based on ITE data, the church is expected to generate approximately 1,850 new trips during a typical Sunday with 610 of those trips occurring during the peak hour.

Traffic counts from the driveways indicate that the existing church generates nearly 1,000 trips during the peak hour, which differs from the ITE trip generation rates. This difference may be due to two main factors. First, given the parking arrangement of the site, it is typical practice for a driver to drop-off and pick-up family members at one of the church buildings while parking the vehicle at the satellite parking lot or at the parking lot across Persels Road. These pick-up and drop-off patterns can create up to three trips for a single vehicle. The second reason for the increased trip generation is that the existing church is nearly exceeding its current capacity, hence the need to expand. Therefore it is likely that the crowded existing facility would have higher attendance and more trips than an average church of similar size.

Trip Distribution

The estimated trips were distributed onto the street system based on the trip distributions summarized below in **Table 3**. These distributions are based on existing church membership zip code data. The detailed distribution patterns through the study intersections are shown in **Appendix B**.

Table 3 Trip Distribution	
Direction To/From	Distribution
North on Route 291	5%
South on Route 291	25%
West on U.S. 50	20%
East on U.S. 50	20%
North on Ward Road	15%
South on Ward Road	5%
East on Bailey Road	10%
Total	100%

Traffic Operation Assessment

An assessment of traffic operations was made for the following scenarios. These scenarios allowed for comparison of the before and after impacts of the proposed development in the area and include:

- Existing Conditions
- Existing plus Development Conditions

Details regarding the traffic volume estimates for each scenario can be found in **Appendix B**.

The study intersections were evaluated based on the methodologies outlined in the Highway Capacity Manual (HCM), 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 4** on the following page shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Table 4 Intersection Level of Service Delay Thresholds		
Level of Service (LOS)	Signalized	Unsignalized
A	< 10 Seconds	< 10 Seconds
B	< 20 Seconds	< 15 Seconds
C	< 35 Seconds	< 25 Seconds
D	< 55 Seconds	< 35 Seconds
E	< 80 Seconds	< 50 Seconds
F	≥ 80 Seconds	≥ 50 Seconds

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

Unsignalized intersections, in contrast, are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are the left turns off of the major street and the side-street approaches for two-way stop-controlled intersections. Lower LOS ratings (D, E and F) do not, in themselves, indicate significant difficulties or the need for additional improvements. Many times there

are convenient alternative paths to avoid the longer delays. Other times, the volumes on the unsignalized approaches are relatively minor when compared to the major street traffic.

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

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

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

The LOS rating deemed acceptable varies by community, facility type and traffic control device. In Lee's Summit LOS C has been identified as the minimum desirable goal for signalized intersections; however, lower LOS may be considered acceptable under certain circumstances. MoDOT has identified LOS D as the minimum desirable goal for signalized intersections. At unsignalized intersections, LOS D, E and above can be considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection or the location has been deemed undesirable for signalization for other reasons, e.g. the close proximity of an existing traffic signal or the presence of a convenient alternative path.

The Synchro software package was used to evaluate the study intersections. Documented results are based on HCM methodologies and have been included in **Appendix C**.

Existing Conditions

The results of the Existing Conditions intersection analyses are summarized in **Table 5**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-3** and **A-4**. **Appendix C** contains the analyses output files from Synchro.

Table 5 Intersection Operational Analysis Existing Conditions				
Intersection	Movement	Sunday Peak Hour		
		LOS ¹	Delay ²	v/c ³
Westbound U.S. 50 and Route 291	Signalized Intersection (All Movements)	C	23.9	0.89
Eastbound U.S. 50 and Route 291	Signalized Intersection (All Movements)	A	8.2	0.65
Oldham Parkway and Route 291	Signalized Intersection (All Movements)	B	17.8	0.71
Oldham Parkway and Jefferson Street	Westbound Left-turn	A	4.6	0.08
	Northbound	B	13.7	0.49
Persels Road and Route 291	Signalized Intersection (All Movements)	C	24.2	0.65
Persels Road and Market Street (North Leg)	Eastbound Left-turn	A	0.2	0.00
	Southbound	B	14.2	0.06
Persels Road and Market Street (South Leg)	Westbound Left-turn	B	10.4	0.05
	Northbound	D	30.2	0.38
Persels Road and Jefferson Street	Signalized Intersection (All Movements)	B	16.5	0.41
Persels Road and Ward Road	Signalized Intersection (All Movements)	B	12.3	0.61
Persels Road and Drive A	Southbound	B	13.8	0.28
Persels Road and Drive B	Eastbound Left-turn	A	3.1	0.10
	Westbound Left-turn	A	1.9	0.06
	Northbound Left-turn	A	0.0	0.00
	Northbound Shared Through / Right-turn	A	0.0	0.00
	Southbound Left-turn	C	22.4	0.04
	Southbound Shared Through / Right-turn	B	14.6	0.28
Persels Road and Drive C	Westbound Left-turn	A	2.1	0.06
	Northbound Left-turn	C	17.8	0.31
	Northbound Right-turn	B	12.3	0.43
Persels Road and Drive D	Southbound Left-turn	C	24.6	0.49
	Southbound Right-turn	B	10.7	0.13

Table 5 Continued
Intersection Operational Analysis
Existing Conditions

Intersection	Movement	Sunday Peak Hour		
		LOS ¹	Delay ²	v/c ³
Persels Road and Drive E	Eastbound Left-turn	A	0.9	0.03
Drive F and Jefferson Street	Eastbound Left-turn	B	11.5	0.29
	Eastbound Right-turn	A	9.0	0.10
	Northbound Left-turn	A	5.7	0.03

1 – Level of Service

2 – Delay in seconds per vehicle

3 – Volume/Capacity Ratio

The analyses indicate that traffic operations at most of the existing study intersections are currently within desirable levels of service during the Sunday peak hour. The only exception is the intersection of Jefferson Street and Market Street (south leg), which is discussed further in the paragraphs below.

Persels Road and Market Street (south leg)

Drivers on the northbound movement of this intersection are expected to experience undesirable delays as the movement operates at LOS D. Traffic volumes on this approach are relatively low (54 vehicles) with the majority (37 vehicles) making a right-turn maneuver. Given the distance to adjacent traffic signals, a full access intersection is not desirable at this location. A raised median could also be constructed along Persels Road to eliminate the northbound left-turn movement altogether, thus improving operations at the intersection.

The nearby Lee's Summit Community Christian Church, located on Jefferson Street approximately one-quarter mile south of Persels Road, also holds services on Sunday mornings with the same start times as the Abundant Life Baptist Church. It appears that a significant proportion of traffic for both churches currently travels Persels Road between Jefferson Street and Route 291. Staggering the start times of the services at the two churches so that they do not overlap could improve operation along this section of Persels Road.

Persels Road and Drive D

City staff has indicated that full access may be permitted at this driveway at some point in the future if the parking lot driveway on the south side of Persels Road was relocated to this intersection. By doing so, Drive C would be eliminated. Realignment of Drive C is not included in this project, therefore the egress only condition shall remain at this time.

Existing plus Development Conditions

This study scenario considers the additional trips for the proposed church expansion to be added to the existing traffic volumes. The results of the Existing plus Development Conditions intersection analyses are summarized in **Table 6**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-5** and **A-6**. **Appendix C** contains the analysis output files from Synchro.

Table 6 Intersection Operational Analysis Existing plus Development Conditions				
Intersection	Movement	Sunday Peak Hour		
		LOS ¹	Delay ²	v/c ³
Westbound U.S. 50 and Route 291	Signalized Intersection (All Movements)	C	29.3	0.96
Eastbound U.S. 50 and Route 291	Signalized Intersection (All Movements)	A	9.3	0.73
Oldham Parkway and Route 291	Signalized Intersection (All Movements)	C	23.1	0.84
Oldham Parkway and Jefferson Street	Westbound Left-turn	A	6.2	0.17
	Northbound	C	23.6	0.76
Persels Road and Route 291	Signalized Intersection (All Movements)	D	53.6	0.91
Persels Road and Market Street (North Leg)	Eastbound Left-turn	A	0.2	0.01
	Southbound	C	21.7	0.10
Persels Road and Market Street (South Leg)	Westbound Left-turn	B	10.8	0.05
	Northbound	E	40.4	0.47
Persels Road and Jefferson Street	Signalized Intersection (All Movements)	C	25.6	0.83
Persels Road and Ward Road	Signalized Intersection (All Movements)	B	16.9	0.78
Persels Road and Drive A	Southbound	C	19.4	0.33
Persels Road and Drive B	Eastbound Left-turn	A	2.9	0.11
	Westbound Left-turn	A	1.8	0.07
	Northbound Left-turn	A	0.0	0.00
	Northbound Shared Through / Right-turn	A	0.0	0.00
	Southbound Left-turn	D	29.9	0.05
	Southbound Shared Through / Right-turn	C	17.9	0.34
Persels Road and Drive C	Westbound Left-turn	A	2.0	0.06
	Northbound Left-turn	C	23.4	0.40
	Northbound Right-turn	B	13.9	0.48

Table 6 Continued
Intersection Operational Analysis
Existing plus Development Conditions

Intersection	Movement	Sunday Peak Hour		
		LOS ¹	Delay ²	v/c ³
Persels Road and Drive D	Southbound Left-turn	F	>100	1.09
	Southbound Right-turn	B	12.3	0.29
Persels Road and Drive E	Eastbound Left-turn	A	3.9	0.16
	Southbound	E	37.9	0.31
Drive F and Jefferson Street	Eastbound Left-turn	E	42.2	0.82
	Eastbound Right-turn	B	10.5	0.30
	Northbound Left-turn	A	7.6	0.15

1 – Level of Service

2 – Delay in seconds per vehicle

3 – Volume/Capacity Ratio

The Synchro capacity analyses indicate some study intersections do not meet the City's desirable LOS criteria with the additional development traffic added to the street system. Listed below are brief descriptions of each situation.

Persels Road and Route 291

The intersection is projected to operate at a LOS D, which is higher than the City's desirable goal of LOS C, but within MoDOT's desirable operations goal of LOS D or better. It is difficult to achieve LOS C with a peak hour factor (PHF) of 0.60, as was used for this analysis. If the churches would stagger the start times of their services, the PHF may moderate, which would reduce delays. Otherwise, the improvements needed to achieve LOS C would include constructing dual northbound left-turn lanes, widening M-291 to six-lanes, and converting the eastbound through lane to a shared left-turn/through lane. The shared left-turn/through lane would also require the traffic signal to function with split phasing for eastbound and westbound traffic. These improvements are extensive and not realistic for a Sunday morning event scenario.

Persels Road and Market Street (south leg)

Drivers on the northbound movement of this intersection are expected to experience undesirable delays with LOS E. As stated in the existing conditions scenario, traffic volumes on this approach are relatively low, and most drivers are making a right-turn maneuver.

Persels Road and Jefferson Street

The intersection is expected to operate acceptably under traffic signal control. Maximum projected queue length (79 feet exceeds the storage capacity (50 feet) of the short northbound left turn lane. However, this will be an infrequent occurrence, and the queues will clear on each green phase. Further the right-turn and through traffic volumes are low, suggesting that few vehicles will be inconvenienced when the queue length exceeds the storage capacity.

Persels Road and Drives B, D, and E

The southbound left-turn movement on Drive B at Persels Road is expected to operate at LOS D, while the same movements on Drives D and E are expected to operate at LOS F. Though these delays are longer than desirable goals, it should be taken into consideration that the primary reason for delay is the peaking characteristic of the traffic volumes. Unlike typical weekday commuter peak hour operations where the peak is steady through a one-hour period or longer, the undesirable delays in these locations occur during a short duration of time, typically around 15 minutes. In addition, drivers participating in or traveling through event conditions, such as these church services, tend to expect and accept longer delays.

According to the Lee's Summit Access Management Code (AMC), left-turn lanes should be installed on all arterial roadways at each driveway or street intersection. However, the traffic volumes for the left-turn movements into the site at Drives B, D, and E are all below 100 vehicles during the Sunday peak hour. No significant queuing was identified in the analysis on the public street approaches to these intersections, indicating no compelling reason for their need.

Jefferson Street and Drive F

Since Jefferson Street is a local street, there are no requirements in the AMC for installation of a right or left-turn lane at this intersection. Only 35 through vehicles travel through the intersection during the analysis period, which indicates that there would not be a significant operational or safety benefit if turn lanes were added.

Summary

This study documents the traffic impacts of the proposed expansion of the Abundant Life Church in Lee's Summit, Missouri. A proposed new building with a 2,000-seat sanctuary is planned. This sanctuary would replace the sanctuary spaces that are currently being used in the two existing church buildings and those spaces will be converted to ancillary uses such as office areas and Sunday school classrooms. The church has no plans to provide any kind of weekday school program. The expansion project is expected to generate approximately 1,850 new trips during a typical Sunday with 610 of those trips occurring during the peak hour.

The City is currently working on the design of a project that will add a traffic signal and turn lanes at the intersection of Jefferson Street and Persels Road. Therefore, the analysis scenarios considered the traffic signal and roadway improvements at this location to be an existing condition.

The analyses identified that with the addition of development traffic, the intersection of M-291 and Persels Road is expected to operate at LOS D. While this exceeds the City's desirable goal, the improvements needed to achieve LOS C are extensive and not realistic for a Sunday morning event scenario.

Left turn traffic exiting several of the site driveways is expected to experience undesirable delays with the addition of development traffic. It should be taken into consideration that the primary reason for

delay is the peaking characteristic of the traffic volumes. Unlike typical weekday commuter peak hour operations where the peak is steady through a one-hour period or longer, the undesirable delays in these locations occur during a short duration of time, typically around 15 minutes. In addition, drivers participating in or traveling through event conditions, such as these church services, tend to expect and accept longer delays.



Appendix A - Figures

Figure A-1	Location Map
Figure A-2	Site Plan
Figure A-3	Existing Lane Configurations and Traffic Control
Figure A-4	Existing Traffic Volumes
Figure A-5	Existing plus Development Lane Configurations and Traffic Control
Figure A-6	Existing plus Development Traffic Volumes

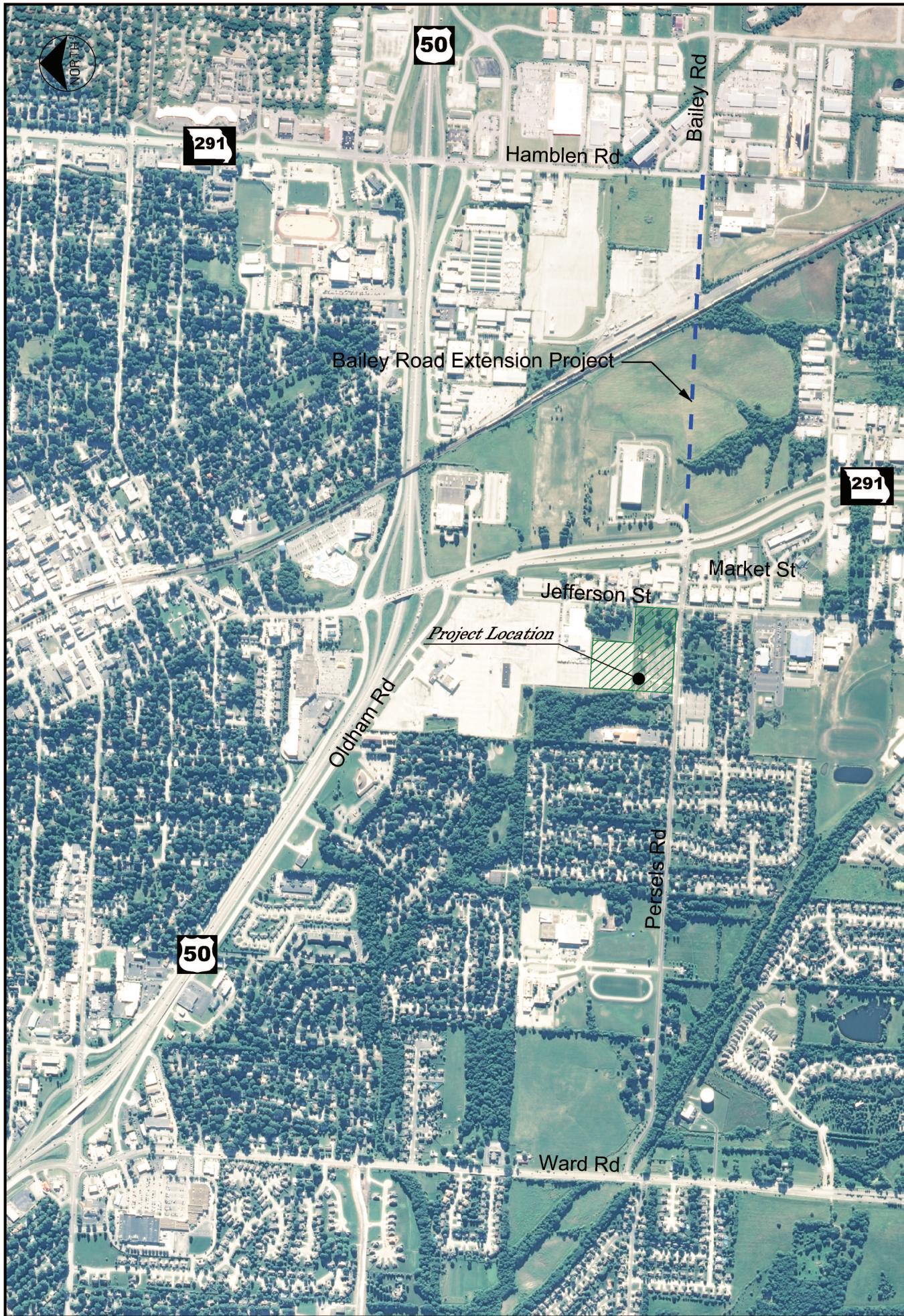


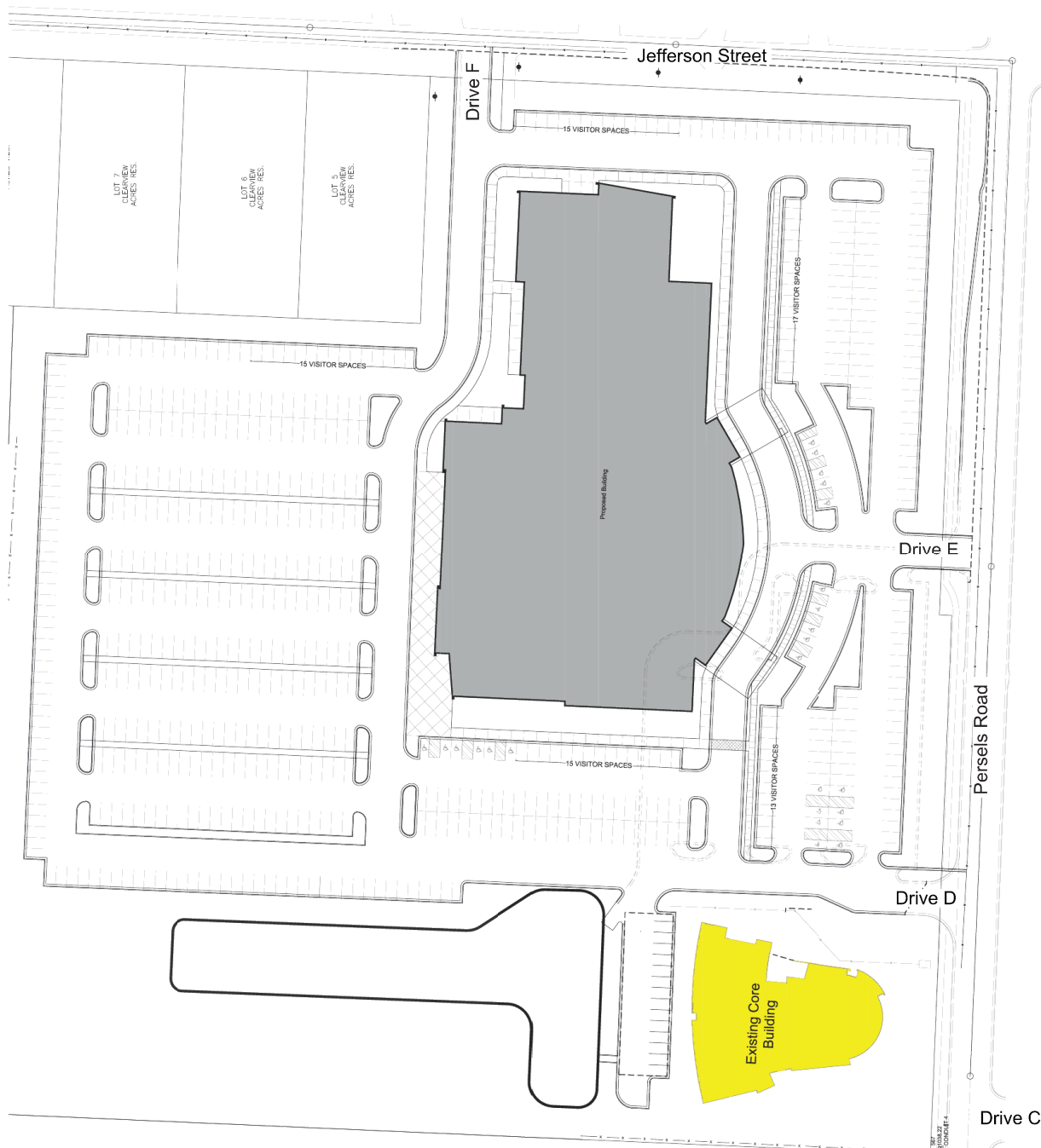
Figure A-1

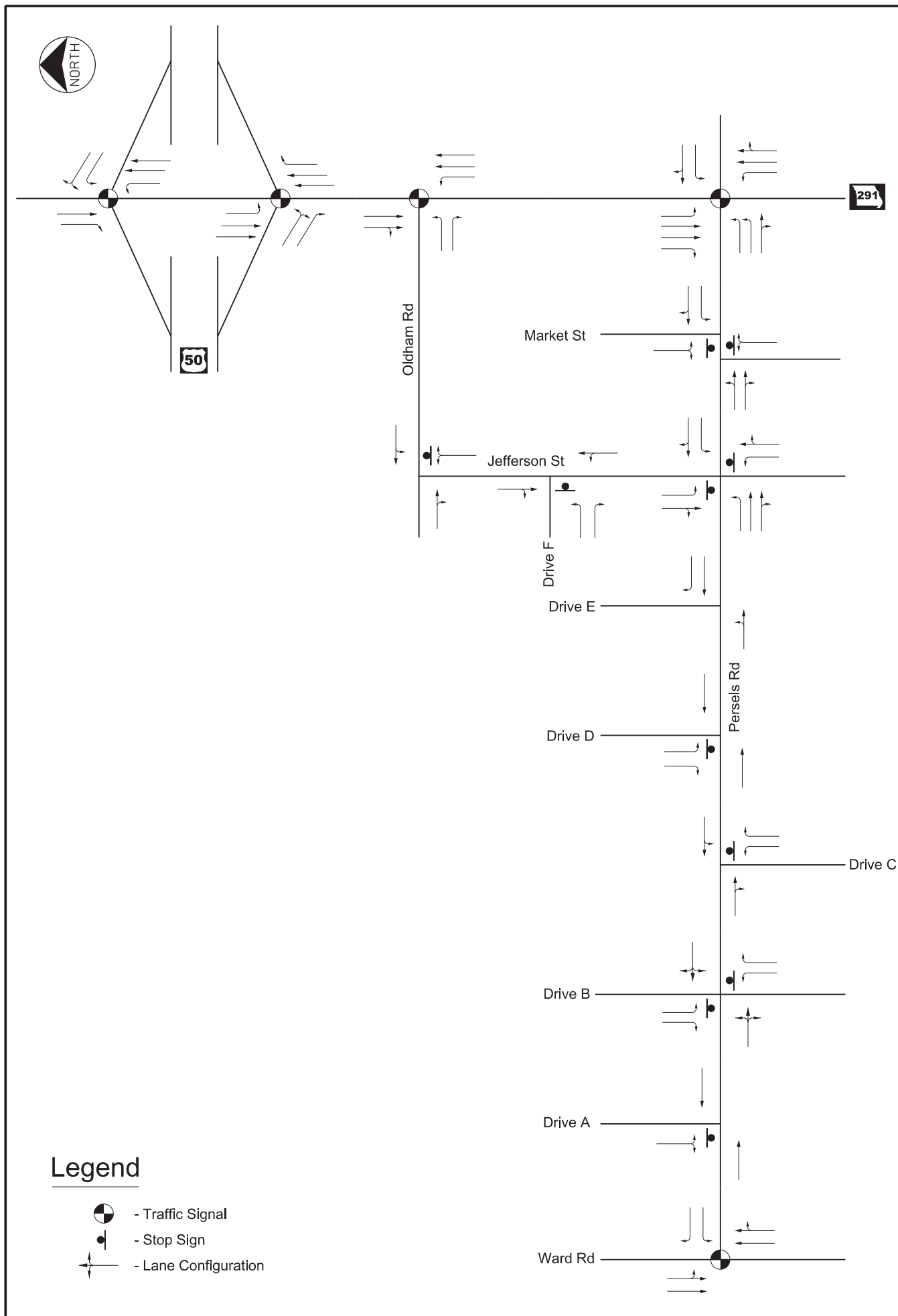
June 2013

No Scale

Abundant Life Church
Traffic Impact Study
Lee's Summit, Missouri

LOCATION PLAN



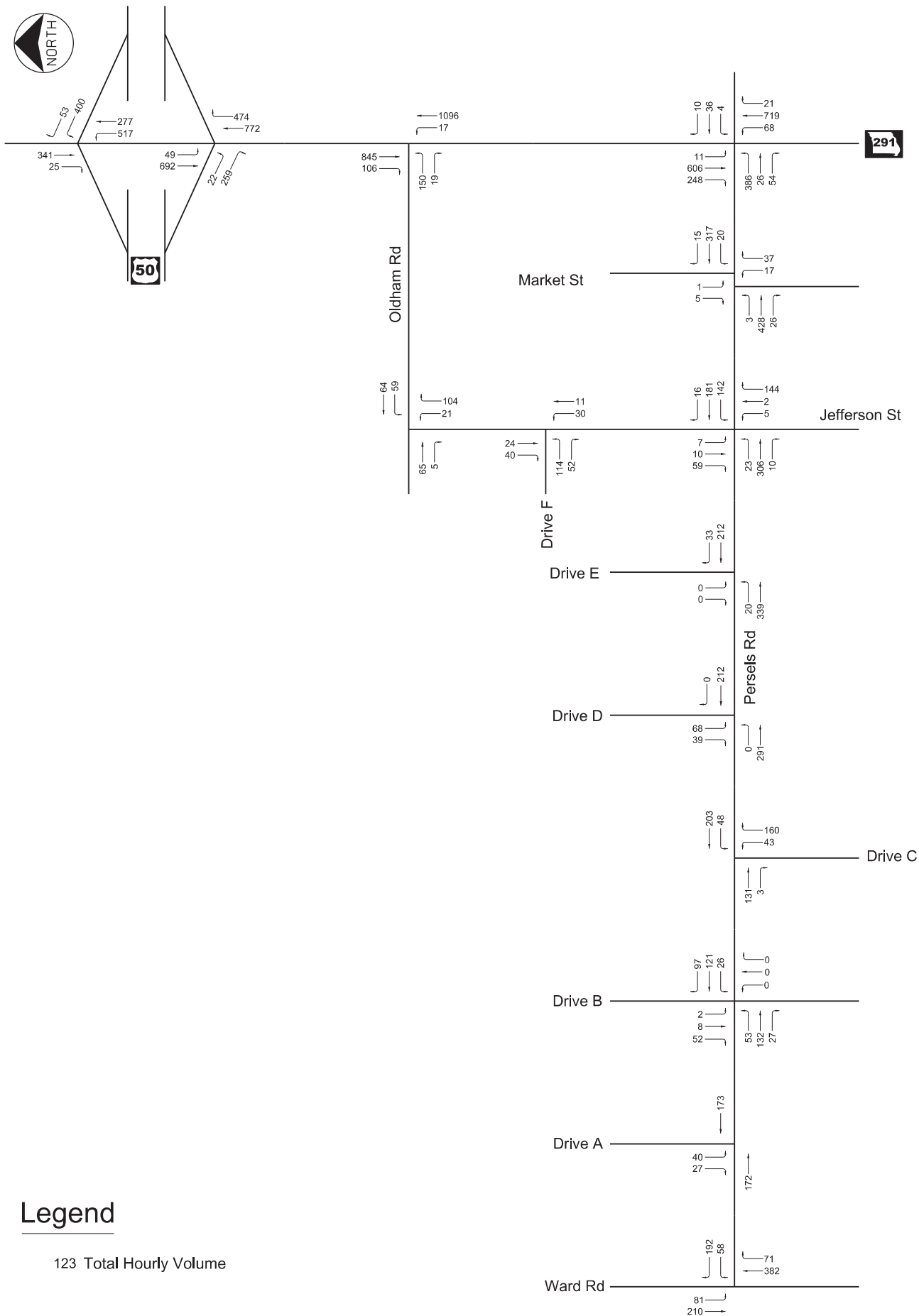


Abundant Life Church Traffic Impact Study Lee's Summit, Missouri	June 2013	Figure A-3
	No Scale	

EXISTING
LANE CONFIGURATIONS

Legend

123 Total Hourly Volume



EXISTING SUNDAY PEAK HOUR TRAFFIC VOLUMES

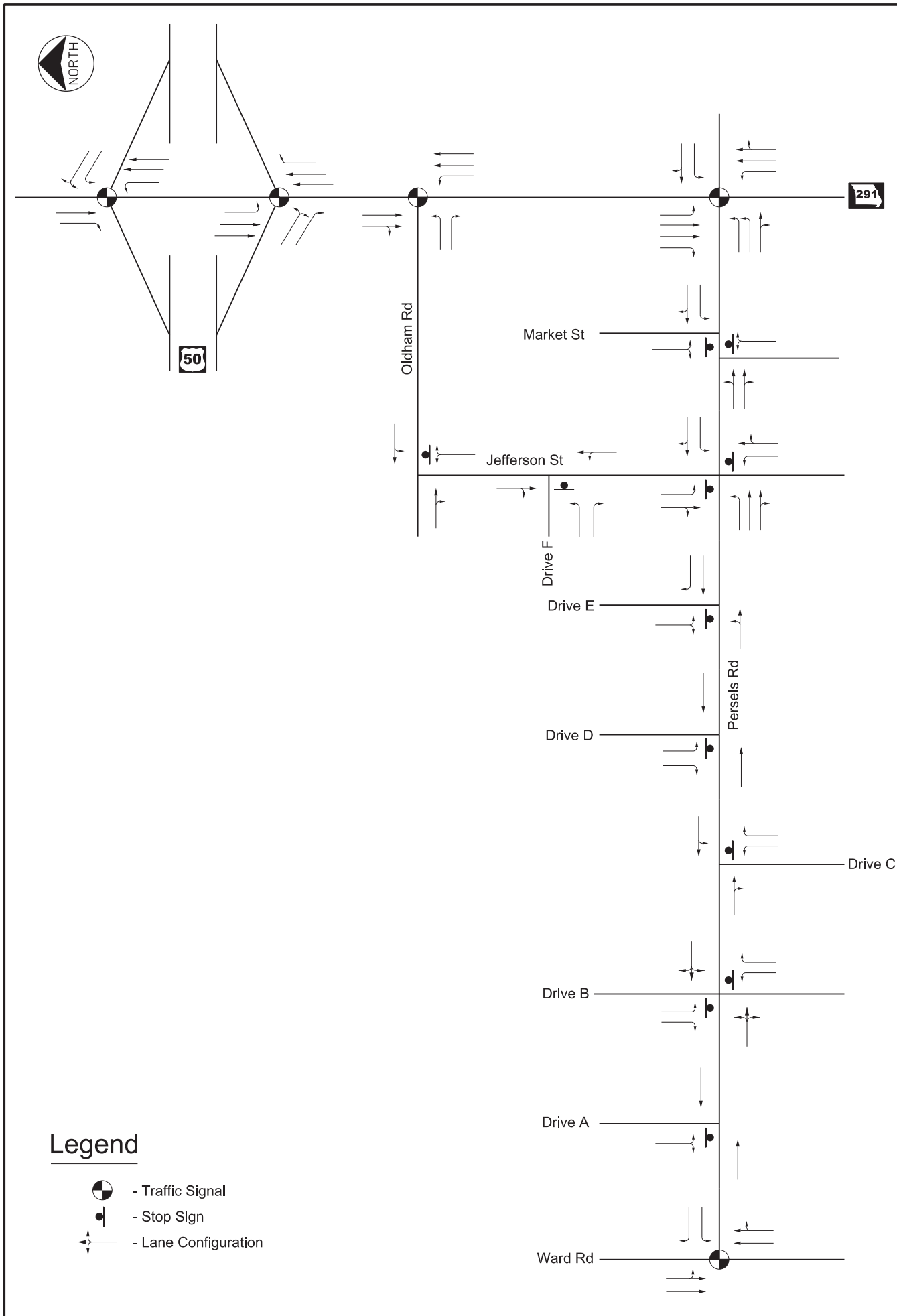
Abundant Life Church
Traffic Impact Study
Lee's Summit, Missouri

June 2013

No Scale

Figure A-4

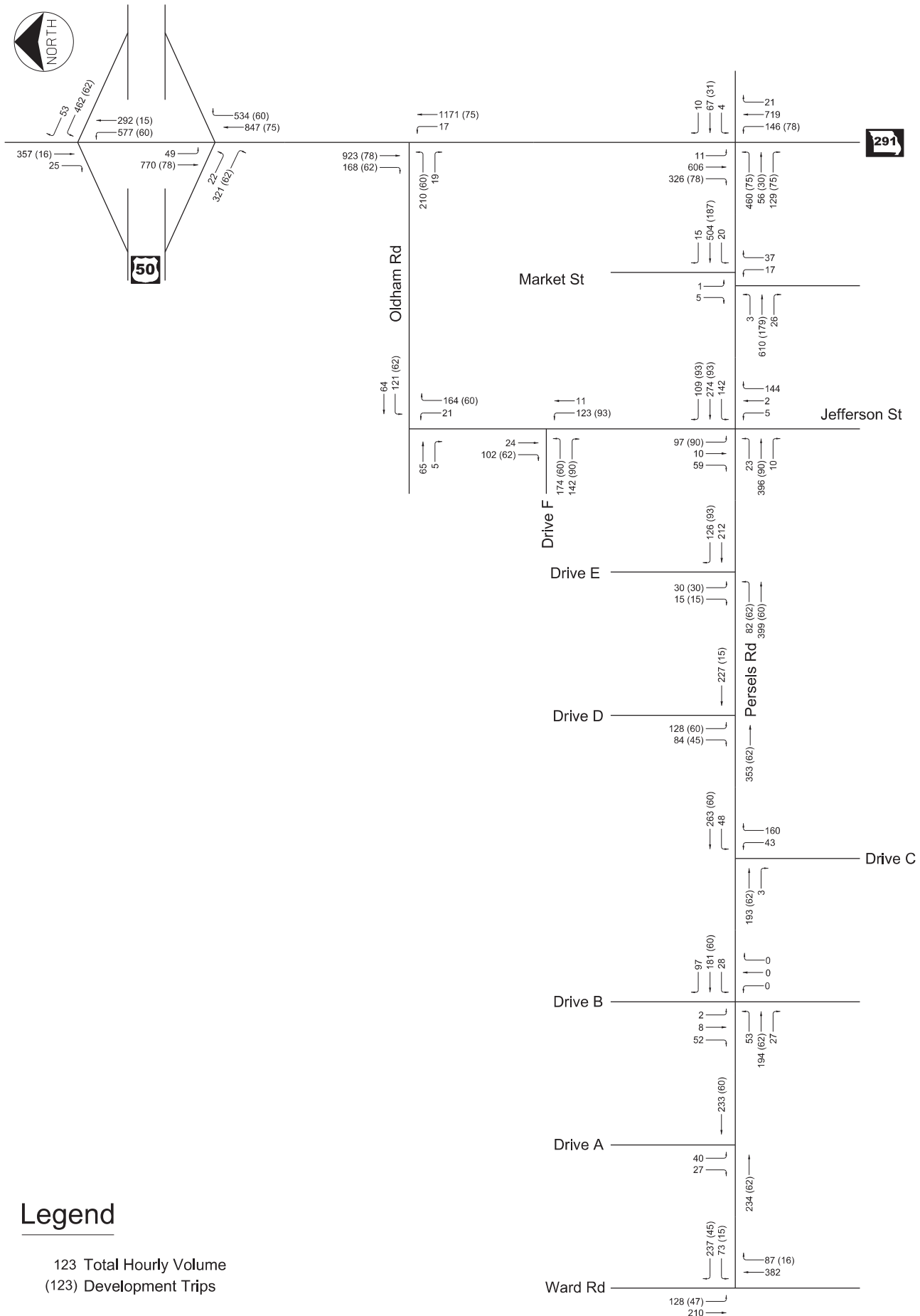




 EXISTING PLUS DEVELOPMENT LANE CONFIGURATIONS	Abundant Life Church Traffic Impact Study Lee's Summit, Missouri	June 2013	Figure A-5
		No Scale	

Legend

123 Total Hourly Volume
(123) Development Trips



EXISTING PLUS DEVELOPMENT SUNDAY PEAK HOUR TRAFFIC VOLUMES

Abundant Life Church
Traffic Impact Study
Lee's Summit, Missouri

June 2013

No Scale

Figure A-6

