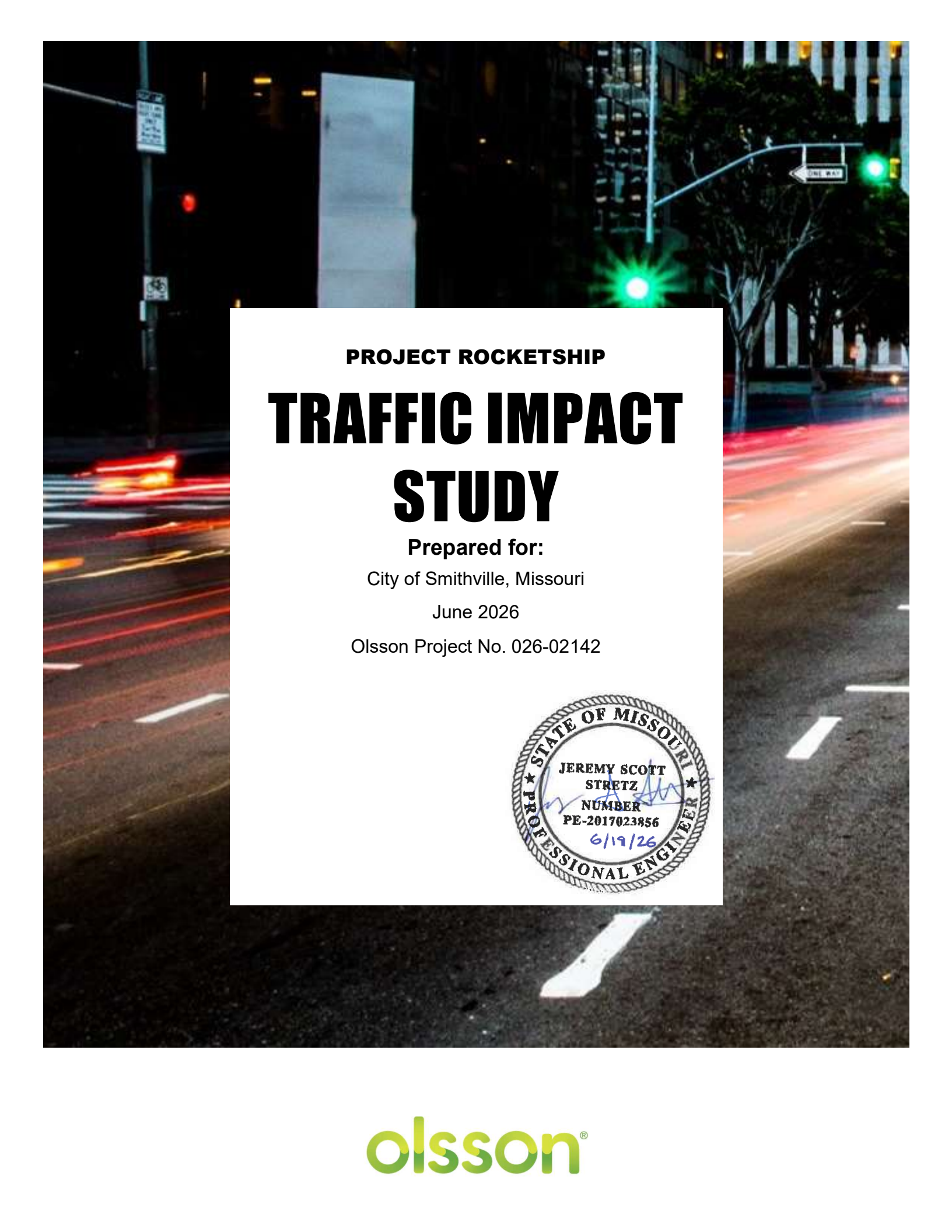




PROJECT ROCKETSHIP

TRAFFIC IMPACT STUDY

Prepared for:

City of Smithville, Missouri

June 2026

Olsson Project No. 026-02142



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EXECUTIVE SUMMARY

This report studies the traffic impacts of the Project Rocketship development located along the Highway 169 corridor near Amory Road and 136th Street in Smithville, Missouri. The site is generally located along the west side of Highway 169, between Amory Road and 136th Street. This report presents the potential impacts of the proposed development on the existing roadway network and, as appropriate, recommends improvements in accordance with Missouri Department of Transportation (MoDOT) and applicable local agency guidelines and standards.

The proposed development consists of a multi-phase industrial and commercial development totaling approximately 1.5 million square feet, including manufacturing, warehousing, and retail land uses. The development was considered under existing conditions, Phase 1 buildout, and full build conditions under a future year (2045) scenario. One primary full-access driveway is proposed along the study corridor near 136th Street, aligned with an existing access on the south side of the roadway. An additional driveway is proposed along Amory Road under the full-build conditions.

The development is expected to result in operational deficiencies at key intersections along Highway 169 under existing full-access conditions; however, with implementation of MoDOT's planned access management strategy and recommended improvements, the roadway network is expected to operate sufficiently under both Phase 1 and Full Build conditions through the Future Year period.

To support the proposed development, the following improvements are recommended:

- Implementation of J-turn intersection configuration at Highway 169 and 136th Street to restrict direct crossing and left-turn movements under the Phase 1 development conditions.
- Construction of the proposed site access driveway aligned with the existing driveway on the south side of the roadway along 136th Street.
- Provision of appropriate turn lanes and storage at new J-turn intersections along Highway 169, as needed, to align with MoDOT design guidance based on speeds and volumes.
- Implementation of J-turn intersection configuration at Highway 169 and Amory Road to restrict direct crossing and left-turn movements under the Full Build development conditions.
- Construction of a secondary site access connection to Amory Road consistent with MoDOT's Access Management Policy, to support Full Build circulation and access.

- Continued coordination with MoDOT regarding corridor access management and median control strategies along Highway 169 as the corridor transitions to reduced conflict intersection layouts through Future Year conditions.
- Implementation of corridor-wide access management measures to support consistent operations, reduce conflict points, and improve overall safety along the Highway 169 corridor.

A detailed summary of recommendations is presented in **Section 8**.

1. INTRODUCTION

This report studies the traffic impacts of the proposed commercial and industrial development site located in Smithville, Missouri. The proposed development is bounded by the intersections of 136th Street to the south, Highway 169 to the east, and Amory Road to the north. Vacant land is located to the sites west. The approximate location is shown on the Vicinity Map in **Figure 1**.

This report presents the potential impacts of the proposed development on the existing roadway network and, as appropriate, recommends additional turn lanes, and intersection control methods per the Missouri Department of Transportation's (MoDOT) *Engineering Policy Guide* (EPG) for the following study intersections:

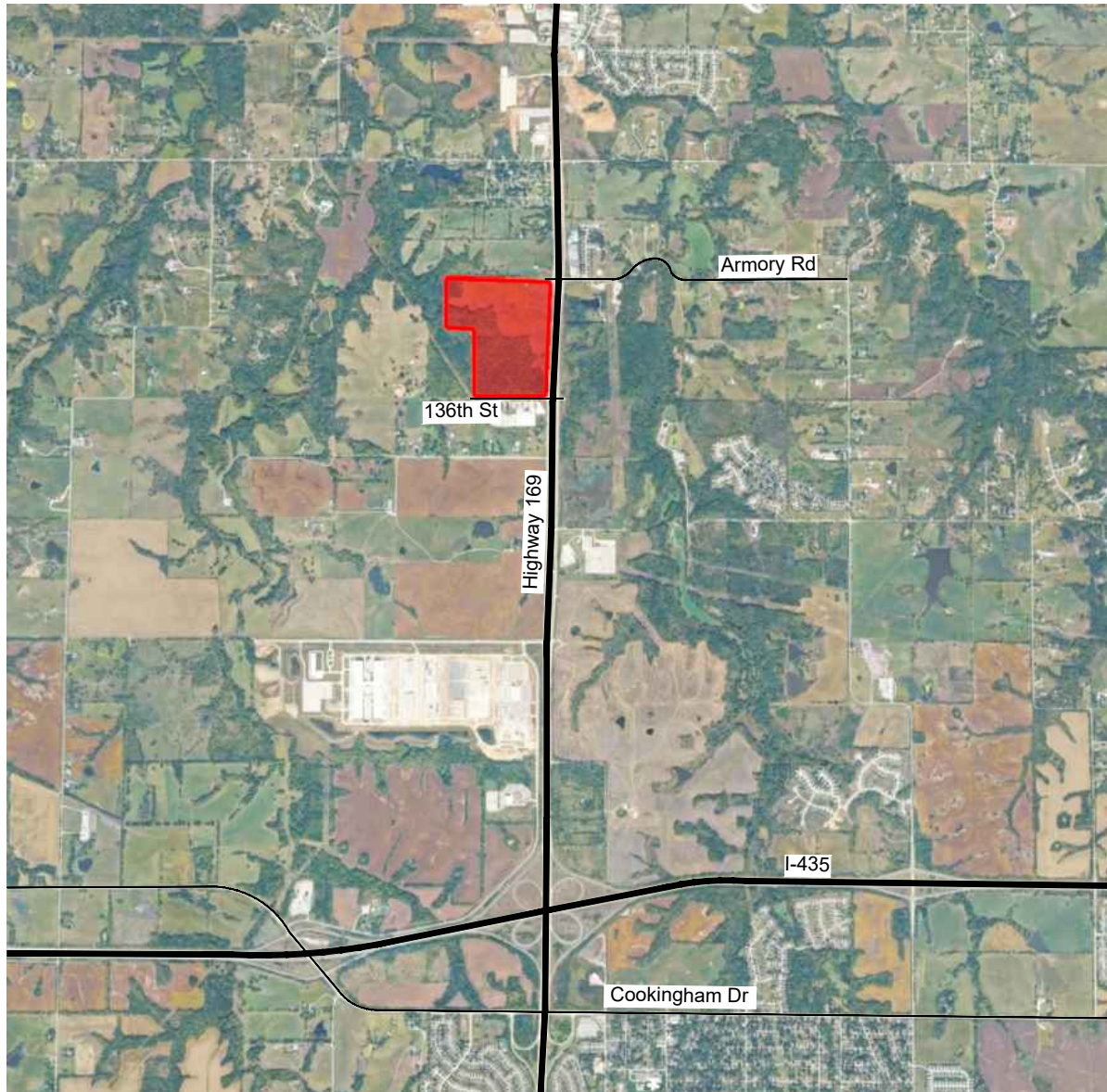
- 136th Street and northbound Highway 169
- 136th Street and southbound Highway 169
- Amory Road and northbound Highway 169
- Amory Road and southbound Highway 169

The following scenarios were analyzed considering weekday AM and PM peak hour periods:

- Existing Conditions
- Existing plus Phase 1 Conditions
- 2032 Full Build Conditions
- Future Year 2045 plus Full Build Conditions

FIGURE 1

Smithville, Missouri
Vicinity Map



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LEGEND

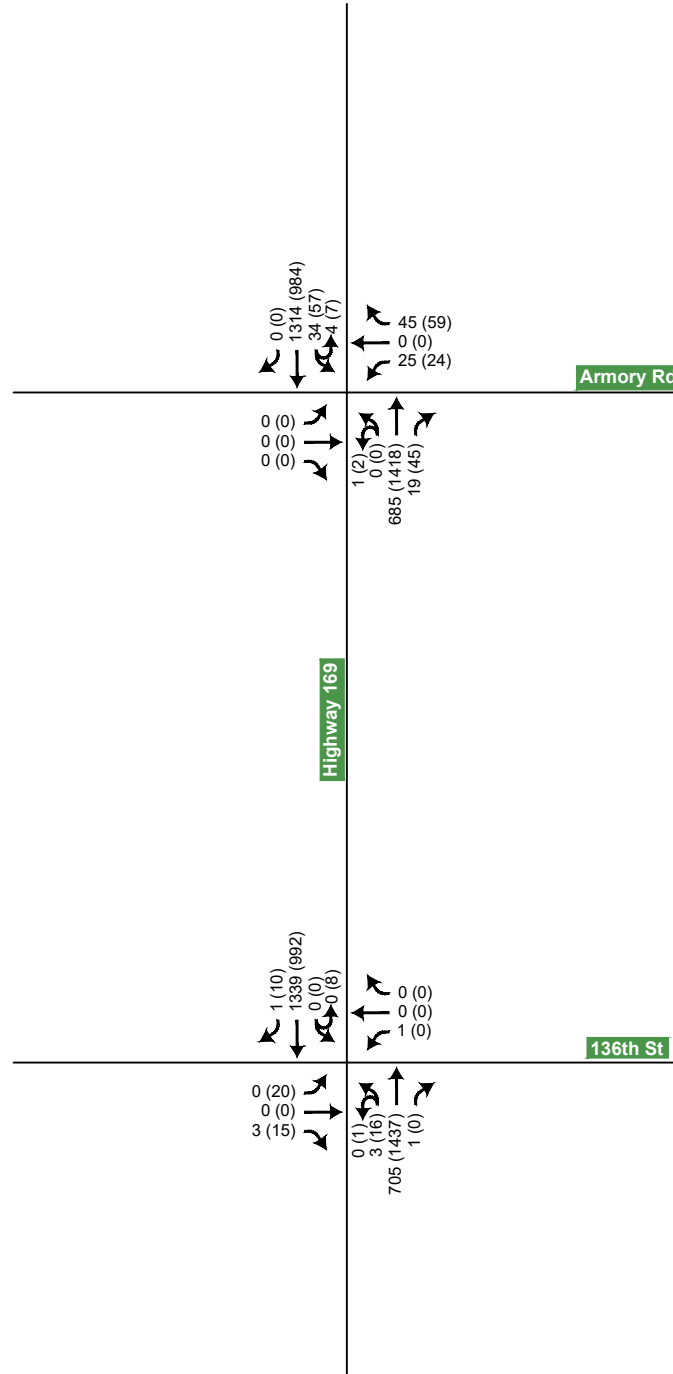


Project Area

2. DATA COLLECTION

The data collection effort included acquiring peak period turning movement counts at the study intersections.

Turning movement traffic counts were collected at the study intersections on Tuesday, May 12th, 2026, for the typical weekday AM and PM peak periods (7:00-9:00 AM and 4:00-6:00 PM). Peak hours occurred from 7:00-8:00 AM and 4:30-5:30 PM for the AM peak hour and PM peak hour, respectively. Volumes were balanced between intersections to account for minor variances. Existing peak hour traffic count data is illustrated in **Figure 2**. Traffic count data is provided in **Appendix A**.

FIGURE 2Existing Conditions
Peak Hour Volumes**LEGEND**

AM (PM) Peak Hour Volumes

3. EXISTING CONDITIONS

Existing traffic conditions were evaluated to identify any existing deficiencies and to provide a baseline for comparison purposes.

3.1 Network Characteristics

Within the study area there are three roadways that were considered during analysis: 136th Street, Amory Road, and Highway 169.

Functional classification was acquired referencing MoDOT's Functional Classification Map as well as the City of Smithville's 2030 Comprehensive Plan. Current network characteristics were determined and are summarized in Table 1.

Table 1: Existing Network Summary

Roadway	Functional Classification	Typical Section	Median Type	Posted Speed
136th Street	Local	Two-Lane	Undivided	30* mph
Amory Road	Major Collector	Two-Lane	Undivided	35 mph
Highway 169	Expressway	Four-Lane	Median Divided	65 mph

Note: No Speed Limit signing is posted along 136th Street within the project vicinity, assumed 30 mph

The intersections of 136th Street and Amory Road with Highway 169 are unsignalized, stop-controlled intersections located along a divided highway corridor with a median separating northbound and southbound traffic.

The intersection of southbound and northbound Highway 169 and 136th Street are four-leg intersections with stop control provided on the east and westbound approaches of 136th Street. Highway 169 operates with two lanes in each direction. The eastbound and westbound approaches are single-lane with combined turning movements, and no dedicated turn lanes or channelization are provided.

The intersection of southbound Highway 169 and Amory Road is a four-leg intersection with stop control provided on the east and westbound approaches of Amory Road. The west leg of the intersection serves as a driveway connection. Side street approaches are single-lane with combined turning movements, and a dedicated southbound left-turn lane is provided.

The intersection of northbound Highway 169 and Amory Road is a four-leg intersection with stop control provided on the east and westbound approaches of Amory Road. The eastbound

approach consists of a single lane with combined turning movements, while a dedicated left-turn lane is provided on the westbound approach. A dedicated left-turn lane is also provided on the northbound approach of Highway 169.

Pedestrian accommodations, including sidewalks and pedestrian ramps, are not provided within the study area.

3.2 Existing Conditions Safety Analysis

A review of reported crash data along the Highway 169 corridor within the study area, including intersections with Amory Road and 136th Street was conducted reviewing crashes from 2021 to 2025. The crash history indicates that crashes generally result in property damage only. A smaller number of crashes involved suspected minor or serious injuries, most commonly associated with intersection-related conflicts. A summary of the crash history is included in **Table 2**.

Table 2: Existing Crash Experience, Highway 169 within Study Limits

Crash Type	Fatal	Serious Injury	Minor Injury	Possible Injury	PDO	Total
Right Angle	0	2	3	2	2	9
Rear End	0	0	2	1	4	7
Sideswipe / Passing	0	0	0	0	3	3
Out of Control	0	0	2	2	4	8
Animal	0	0	1	0	10	11
Other	0	0	0	0	1	1
Total	0	2	8	5	24	39

Crash types are distributed across both segment and intersection locations, with the following key patterns observed:

- Intersection-related crashes are typically the result of right-angle and rear-end collisions, particularly at the Highway 169 and Amory Road intersection. Several right-angle crashes resulted in injury, indicating potential gap acceptance or visibility challenges for turning movements. It has been noted that the Highway 169 southbound lanes have sight distance limitations at the Amor Road intersection which might contribute to these conditions.
- Segment-related crashes are largely associated with animal strikes, particularly deer crashes, which occur under dark lighting conditions and are not typically indicative of roadway design deficiencies.

- Single-vehicle “out of control” crashes are also present and are generally characterized by departures from the roadway and impacts with fixed objects such as poles or ditches. These crashes are dispersed and do not show a clear concentration at a specific geometric feature.
- The corridor is characterized by high travel speeds and straight alignment along Highway 169 which can be associated with higher crash severity where conflicts occur, particularly at intersections.

Based on the observed crash patterns, potential improvements within the study area should focus on reducing conflict points and improving operations at intersections along Highway 169, particularly at the Amory Road intersection, where the most severe crashes have occurred. Consideration should be given to intersection control strategies or geometric modifications that reduce the likelihood of right-angle collisions and improve driver decision making for turning movements.

3.2.1 Alternative Intersection Concepts

Safety enhancements that simplify turning movements, reduce high-speed conflict exposure, and improve operational clarity at key intersections are anticipated to provide the greatest safety benefit within the study area. MoDOT has indicated that the corridor is programmed to be converted from full-access traditional intersections to a Type 4 intersection, directional median opening with downstream U-turns. These are also commonly referred to as Restricted Crossing U-Turn (RCUT) or J-turn intersections, with access limited for direct movements.

A J-turn intersection is a reduced conflict intersection type that eliminates direct left-turn and through movements from the minor street. Instead, vehicles approaching from side streets are directed to turn right onto the major roadway and complete the desired movement via a downstream U-turn at a designated median opening. This staged movement reduces driver decision complexity and limits exposure to high-speed crossing conflicts.

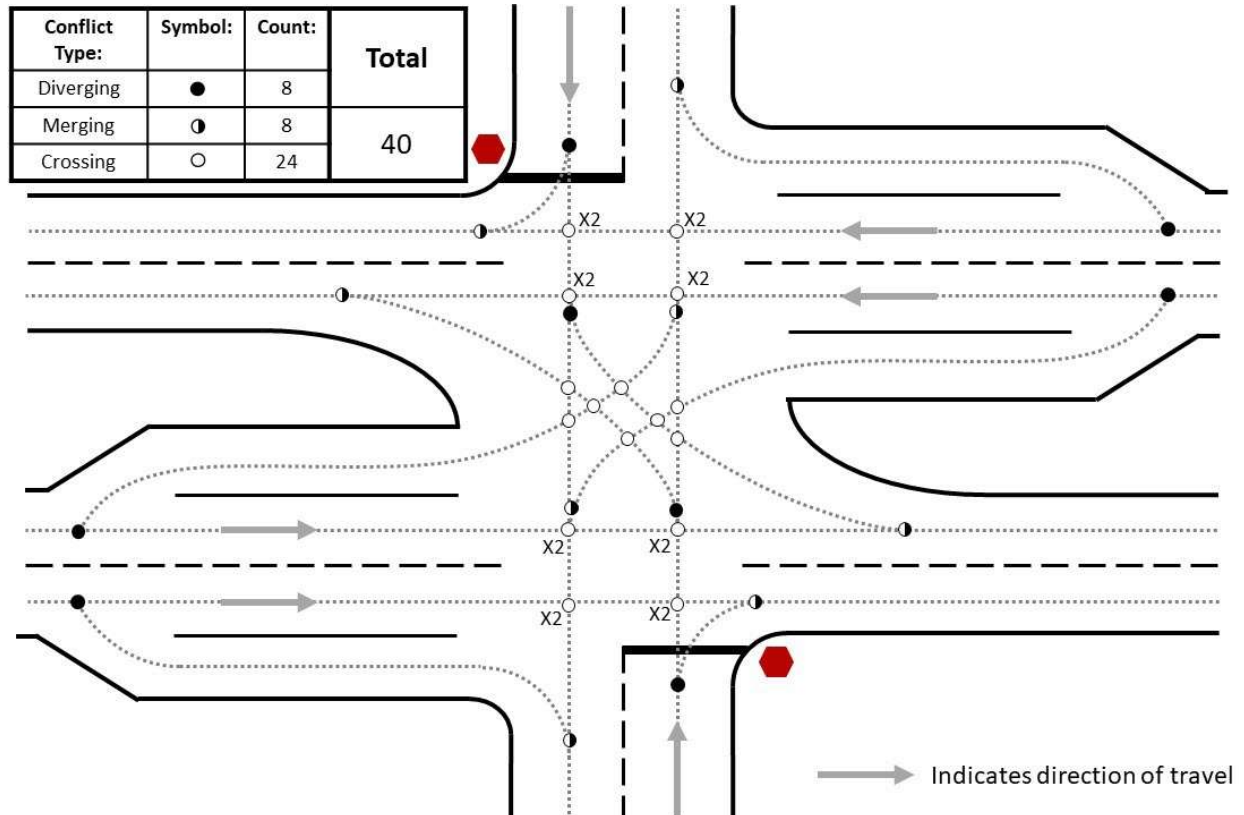
While J-turn intersections refer to the same reduced conflict intersection concept, corridor implementation is anticipated to include a combination of access configurations. These may include full J-turn intersections, as well as locations with partial access restrictions or directional median openings that allow select turning movements. As a result, access along the corridor will vary based on location-specific operational and safety considerations.

These intersection configurations are specifically intended to reduce the number of vehicle conflict points, particularly crossing conflict points, which are most commonly associated with right-angle crashes and higher severity outcomes. By restricting direct crossing and left-turn movements, these designs reassign higher-risk maneuvers into simpler right-turn and U-turn movements that reduce exposure to severe crash types. The total number of conflict points is depicted in **Table 3**.

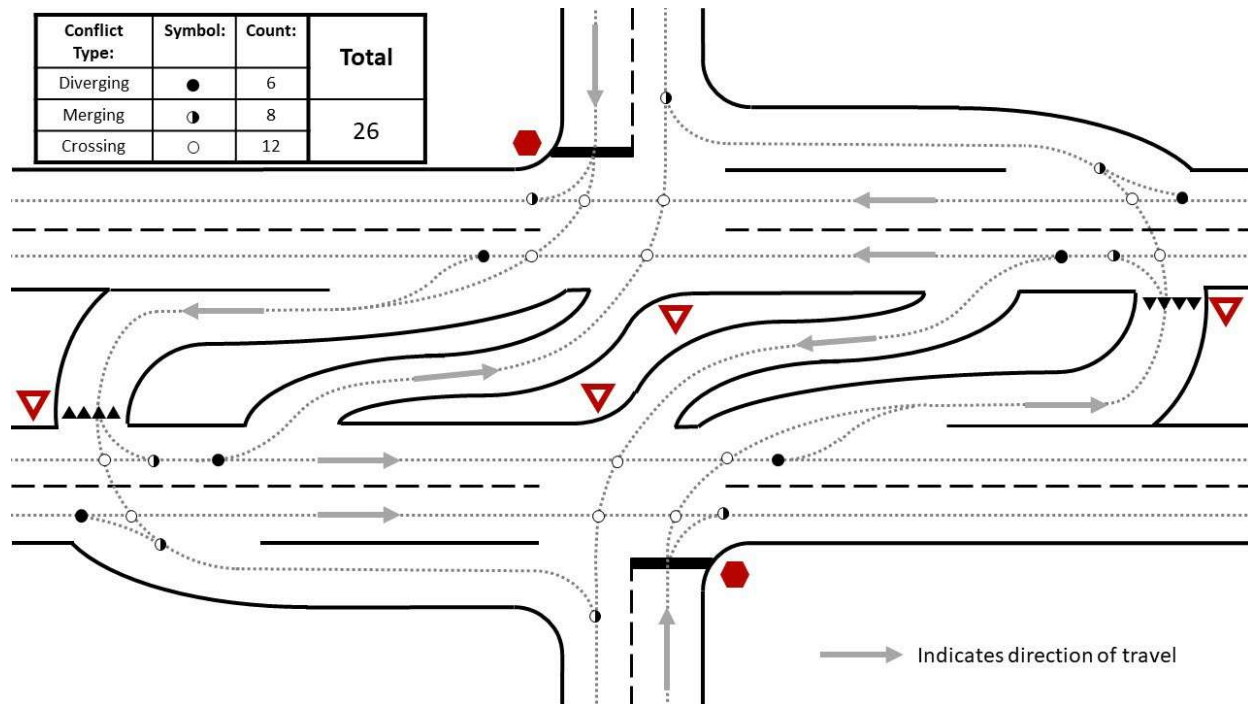
Table 3: Intersection Conflict Point Comparison

Intersection Type	Total Conflict Points	Crossing Conflict Points	Notes
Conventional Full-Movement Intersection (4-Lane Divided Highway)	40	24	Requires drivers to assess traffic in multiple directions simultaneously for crossing and left-turn movements
J-Turn Intersection	Approximately 26 (Depending on Direct Left-turn)	12	Eliminates most crossing conflicts by redirecting minor street movements to downstream U-turns

Figure 3 and **Figure 4** depict visually the number of conflict points typically associated with each type of intersection.

Figure 3: Conventional Full-Movement Intersection (4-Lane Divided Roadway)

Source: Wisconsin Department of Transportation

Figure 4: J-turn Intersection Configuration (4-Lane Divided Roadway)

Source: Wisconsin Department of Transportation

Based on the observed crash patterns and MoDOT's planned corridor configuration, future improvements should focus on reducing exposure to high-speed crossing conflicts and simplifying turning movements at key intersections. The planned implementation of J-turn intersections is consistent with addressing the angle crash patterns observed within the study area.

By limiting direct access and redistributing turning movements, the corridor is expected to transition from multi-directional conflict points to a series of simpler, sequential maneuvers. This approach reduces driver workload, improves decision-making, and minimizes the potential for severe crashes.

In addition, corridor-wide access management and consistency in intersection configuration are anticipated to improve overall operational clarity and reduce variability in driver expectations. While animal-related and isolated single-vehicle crashes will likely continue due to regional conditions, the implementation of reduced conflict intersection designs is expected to provide safety benefits by addressing the most severe and intersection-specific crash types identified in the study area.

3.3 Existing Conditions Warrant Analysis

Existing lane configuration and traffic control for the study network are illustrated in **Figure 5**.

3.3.1 Signal Warrants

Consistent with corridor planning objectives, a traditional signal warrant evaluation was not the primary control strategy considered for this corridor. The long-term operational vision for the Highway 169 corridor consists of implementing J-turn configurations to prioritize major roadway operations, reduce conflict points, and enhance safety. As such, signalization was not advanced as a preferred alternative where J-turn configurations are determined to be feasible.

3.3.2 Alternative Intersection Control Review

The feasibility of a J-turn configuration along the Highway 169 corridor is generally known to be the preferred solution for MoDOT along the corridor as these improvements were recommended and/or installed with development to the north and south of the proposed development. Based on operational characteristics of the corridor, and guidance from MoDOT resources, J-turn intersections are generally applicable where:

- Major roadway volumes are dominant
- Minor street crossing and left-turn volumes are relatively low
- There is a need to reduce right-angle crash potential
- A divided highway with median width can accommodate U-turn movements.

Based on these factors, a J-turn configuration was considered for the analysis conditions associated with any proposed scenario.

In addition to operational evaluation, proposed reduced conflict intersection configurations were reviewed for consistency with geometric design guidance provided in the Missouri Department of Transportation (MoDOT) Engineering Policy Guide (EPG). Specifically, spacing between J-turn intersections and associated median openings was considered relative to corridor operating speeds and projected traffic volumes.

Based on EPG guidance, spacing between intersections and U-turn crossover locations is typically recommended to range from approximately 1,500 to 2,000 feet along high-speed divided highways. This spacing range is intended to provide sufficient distance for weaving, storage, and driver decision-making between movements. The study area intersections along Highway 169 were evaluated within this context to confirm that proposed access configurations are consistent with acceptable design practices.

The spacing between the Highway 169 intersections at 136th Street and Amory Road generally aligns with this guidance and is considered appropriate for accommodating projected traffic volumes under Phase 1, Full Build, and Future Year conditions.

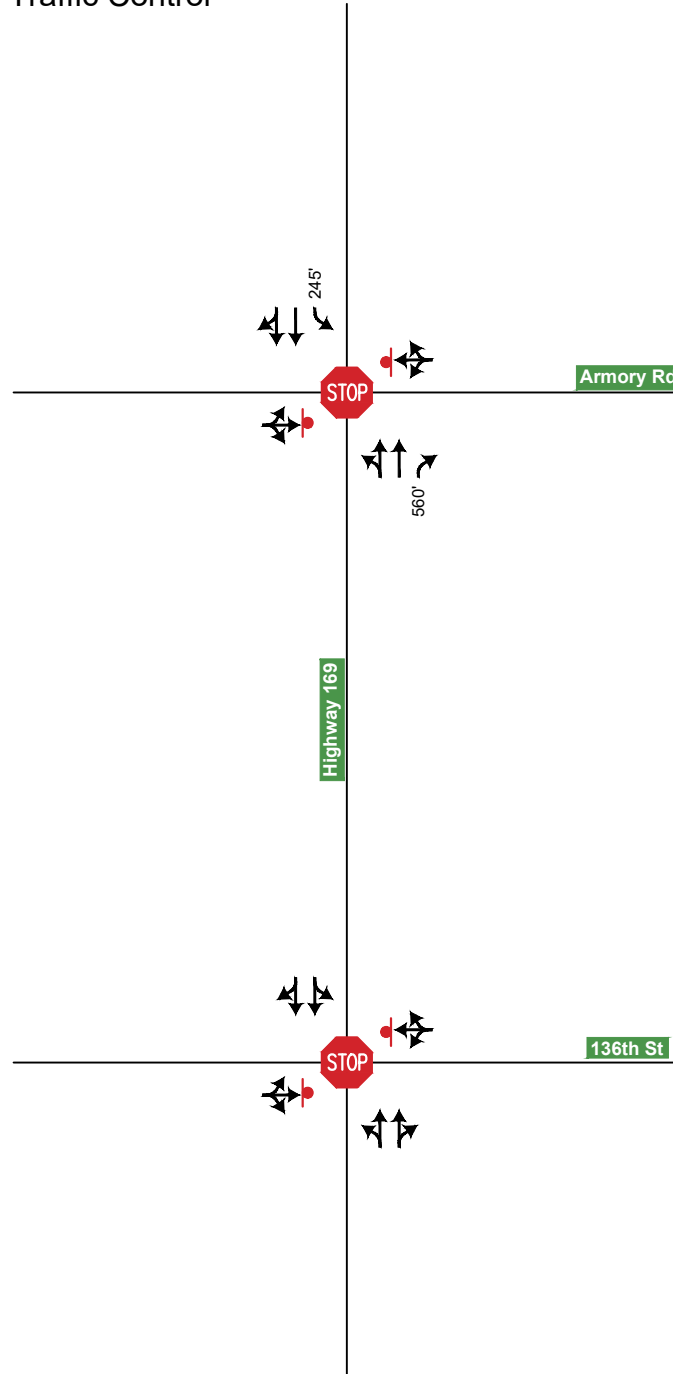
3.3.3 Turn Lane Warrants

Turn lane warrant analysis was conducted for the study area roadways following agency guidelines. Operations, presented in **Section 3.4**, were reviewed to determine if additional turn lanes are recommended. Turn lane warrant analysis sheets are provided in **Appendix B**.

Based on existing traffic volumes, there are no additional turn lanes that meet warranting criteria under MoDOT 940.9.9 for auxiliary right-turn lanes than what are currently present along Highway 169. The turning volumes at 136th Street is not at the minimum threshold to meet warrants based on the side-street volumes; however mainline volumes indicate that the minimum threshold applies; therefore, any additional turning movement volumes to the 136th Street intersection will trigger turn lane installation. At the intersection of Amory Road and Highway 169, no additional turn lane warrants are met under Existing Conditions.

FIGURE 5

Existing Conditions
Lane Configuration and Traffic Control

**LEGEND**

xx' → Lane Configuration & Storage Length

• Stop Sign

 Stop Controlled Intersection

3.4 Existing Conditions Capacity Analysis

Capacity analysis was performed for the study intersections using the existing lane configurations and traffic control. Analysis was conducted using Synchro, Version 12, based on the *Highway Capacity Manual* (HCM) delay methodologies. For simplicity, the amount of control delay is equated to a grade or Level of Service (LOS) based on thresholds of driver acceptance. The amount of delay is assigned a letter grade A through F, LOS A representing little or no delay and LOS F representing very high delay. **Table 4** shows the delays associated with each LOS grade for signalized and unsignalized intersections, respectively. Queuing analysis was conducted referencing the 95th percentile queue length. This represents the queue length that has a 5 percent probability of being exceeded during the peak hour period.

Table 4. Intersection Level of Service Criteria.

Level of Service	Average Control Delay (seconds)	
	Signalized	Unsignalized
A	< 10	< 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50
<i>Highway Capacity Manual (6th Edition)</i>		

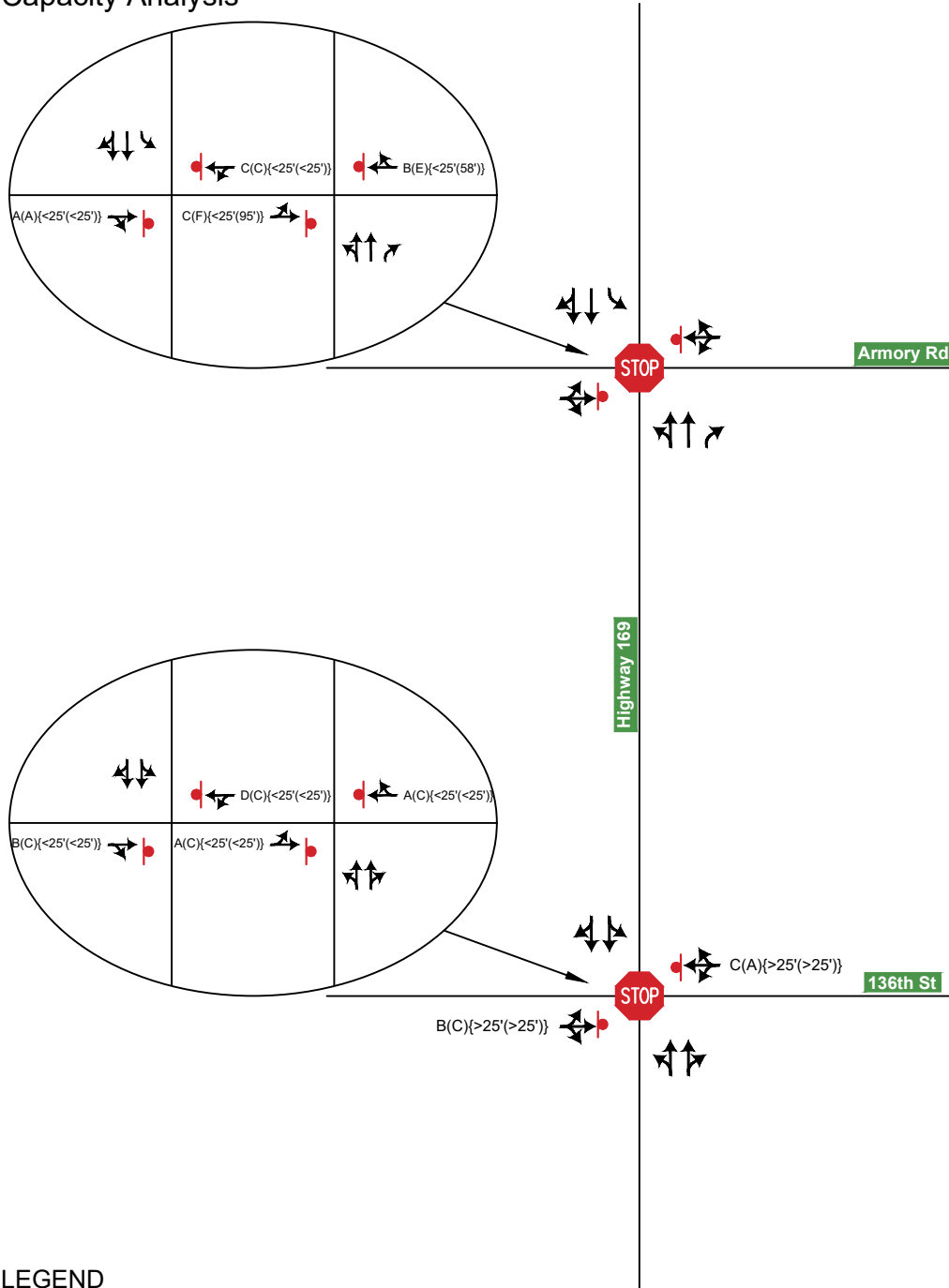
Analysis was conducted referencing the existing peak hour factors as obtained from data collection. Heavy vehicle percentages were based on existing conditions.

Under existing conditions, the study intersections generally operate within acceptable limits during both the AM and PM peak hour periods. The Highway 169 corridor intersections operate efficiently overall, with the majority of movements experiencing low to moderate delay typical of unsignalized intersections along a high-speed arterial roadway.

Unsignalized movements at all study intersections operate at LOS D or better during both the AM and PM peak hour periods, with exception of the westbound movement at Amory Road during the PM peak hour period. Minor approach delays are present at select locations, particularly for side street movements crossing or turning onto Highway 169; however, these delays are typical for unsignalized intersections along a high-volume corridor and remain within acceptable thresholds.

No movements were identified as operating worse than LOS D under existing conditions. In addition, queue lengths are minimal and do not extend beyond available storage under either peak hour condition.

The Existing Conditions capacity analysis summary is illustrated in **Figure 6**. Detailed results are provided in **Appendix B**.

FIGURE 6**Existing Conditions
Capacity Analysis**

4. PROPOSED DEVELOPMENT

The proposed development, referred to as Project Rocketship, consists of a phased buildout including industrial and commercial land uses located along the US 169 corridor near Amory Road and 136th Street. The development is anticipated to occur in multiple phases, with Phase 1 consisting primarily of industrial uses and the Full Build condition introducing additional industrial and commercial components.

4.1 Trip Generation and Distribution

To determine the impact of potential site traffic on the roadway network, expected trips associated with the proposed site were generated and applied to the study network. The Institute of Transportation Engineers (ITE) provides methods for estimating traffic volumes of common land uses in the *Trip Generation Manual (12th Edition)*.

The Phase 1 development scenario consists of:

- Manufacturing (ITE 140): 689,920 square feet
- Warehousing (ITE 150): 504,000 square feet

These uses represent the initial buildout of the site and are expected to generate a mix of employee trips, freight-related truck traffic, and supporting service trips. The manufacturing land use will be the primary driver of AM peak hour traffic, while both uses contribute to PM peak hour activity due to shift changes and daily operations.

The Full Build development scenario includes the completion of all planned land uses within the study area, consisting of:

- Additional Manufacturing (ITE 140): 188,160 square feet
- Additional Warehousing (ITE 150): 504,000 square feet
- Shopping Plaza (ITE 821): 112,000 square feet

Based on the *ITE Trip Generation Manual*, trip generation characteristics were developed for the proposed site. Trip generation characteristics expected for the site are shown in **Table 5**. Detailed ITE trip generation information is provided in **Appendix C**.

Table 5. Proposed Development Trip Generation.

Land Use	ITE Code	Average Weekday	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Manufacturing	140	2,946	352	264	88	435	129	309
Warehousing	150	696	60	46	14	76	21	55
Phase 1 Totals		3,642	412	310	102	511	147	364
Additional Manufacturing	140	803	96	72	24	119	35	84
Additional Warehousing	150	696	60	46	14	76	21	55
Shopping Plaza (40-150k)	821	7,323	178	110	68	533	261	272
Phase 2 Totals		8,822	334	228	106	728	317	411
Full Build Totals		12,464	746	538	208	1,239	464	775

Trips were distributed through the study network based on the existing gravity, anticipated land use, and review of the surrounding area. Directional trip distribution percentages expected for the site are illustrated in **Table 6**.

Table 6. Trip Distribution.

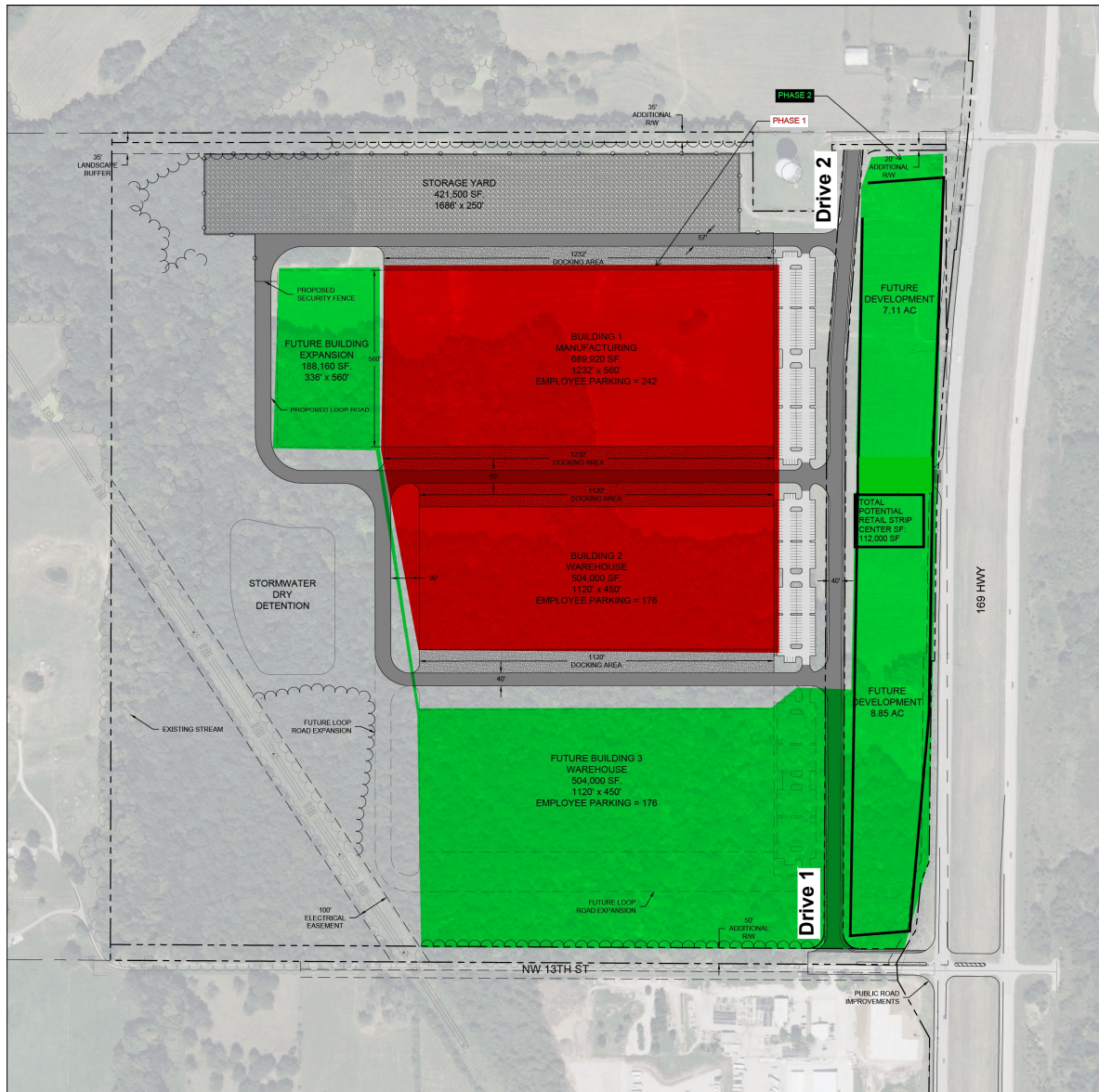
Direction	Trip Distribution
Highway 169 (North)	40%
Highway 169 (South)	58%
Amory Road	2%
TOTAL	100%

Trip generation and distribution was provided to agency staff for review. Trip generation for phases 1 and 2 will be presented in the following sections.

4.2 Access Characteristics

As shown on the site plan presented in **Figure 7** access to the proposed development is planned via a new full-access driveway along 136th Street for Phase 1 with an additional access anticipated along the north side of the site at Amory Road extension at some point in the future. The proposed driveway along 136th Street is located approximately 330 feet west of the southbound US 169 intersection, measured center-to-center. The proposed access point is aligned with an existing driveway on the south side of the roadway to provide operational consistency and improve intersection spacing

Access will ultimately be influenced by the implementation of MoDOT's planned corridor configuration, which includes conversion to RCUT and J-turn intersections. As a result, direct turning movements may be restricted, and access to the site is expected to require right-turn movements with downstream U-turns depending on final design.

FIGURE 7Site Plan
Project Rocketship**LEGEND**

-  Phase 1 Construction
-  Full Build Construction

5. EXISTING PLUS PHASE 1 CONDITIONS

Phase 1 is considered under existing conditions with the addition of site-generated traffic associated with the initial development buildout. No improvements are assumed for the No-Build condition; however, recommended improvements are evaluated under subsequent scenarios to address identified operational deficiencies along the Highway 169 corridor

5.1 Phase 1 Development Trip Generation and Distribution

Trip generation and distribution for the site was presented in **Section 4.1**. The expected trip distribution volumes for phase 1 development are shown in **Figure 8**. The resulting Existing plus Phase 1 Conditions volumes are illustrated in **Figure 9**.

5.2 Existing plus Phase 1 Conditions Warrant Analysis

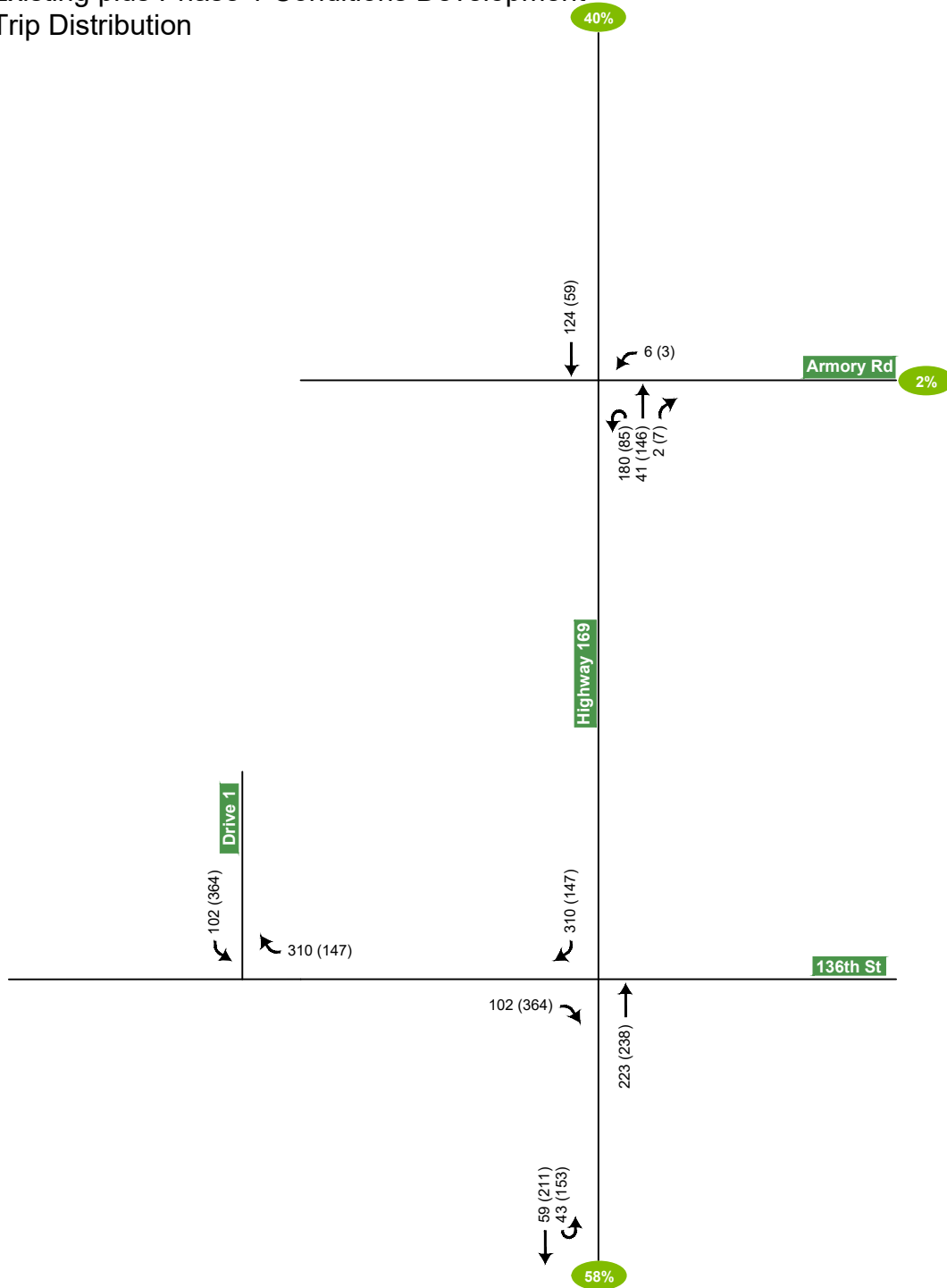
Under Existing plus Phase 1 Conditions, the results of the warrant analysis indicate that traditional signalization is not the preferred solution due to the operational constraints associated with high-speed traffic along Highway 169. Existing plus Phase 1 Conditions lane configuration and traffic control for the study network are illustrated in **Figure 10**.

5.2.1 Alternative Intersection Control Review

The feasibility of a J-turn configuration along the Highway 169 corridor is generally recognized as the preferred solution by MoDOT, as similar improvements have been recommended and implemented for developments located to the south and north along the corridor.

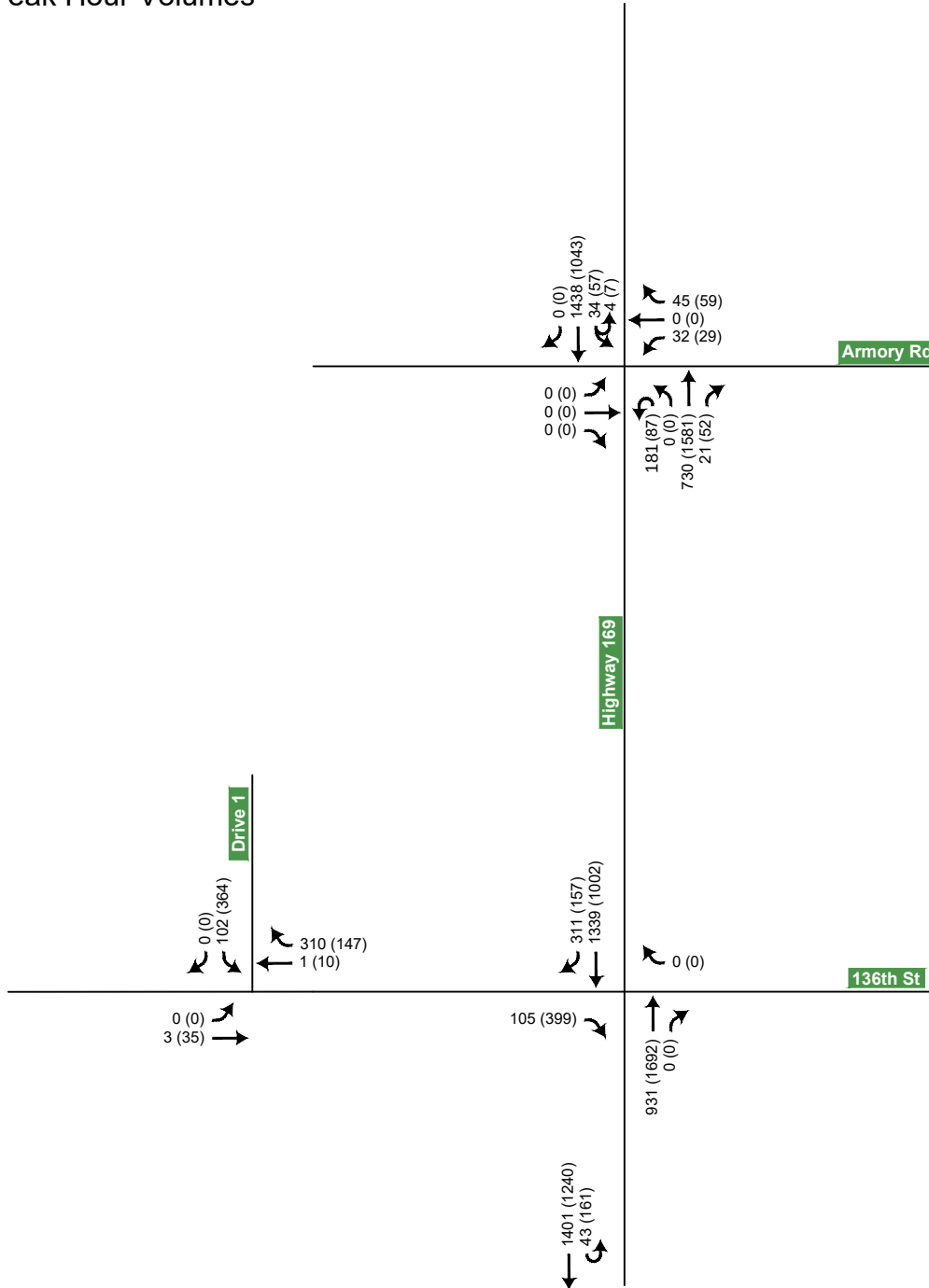
Based on the Phase 1 analysis, a J-turn configuration at the Highway 169 and 136th Street intersection was evaluated and determined to effectively address the identified operational deficiencies. This configuration removes direct crossing and left-turn movements from 136th Street, reducing delay and improving overall intersection performance.

Implementation of a J-turn at this location is consistent with MoDOT's long-term corridor vision and provides an appropriate interim improvement to support Phase 1 development while maintaining efficient operations along Highway 169.

FIGURE 8**Existing plus Phase 1 Conditions Development
Trip Distribution****LEGEND**

AM(PM) Peak Hour Trips (Car)

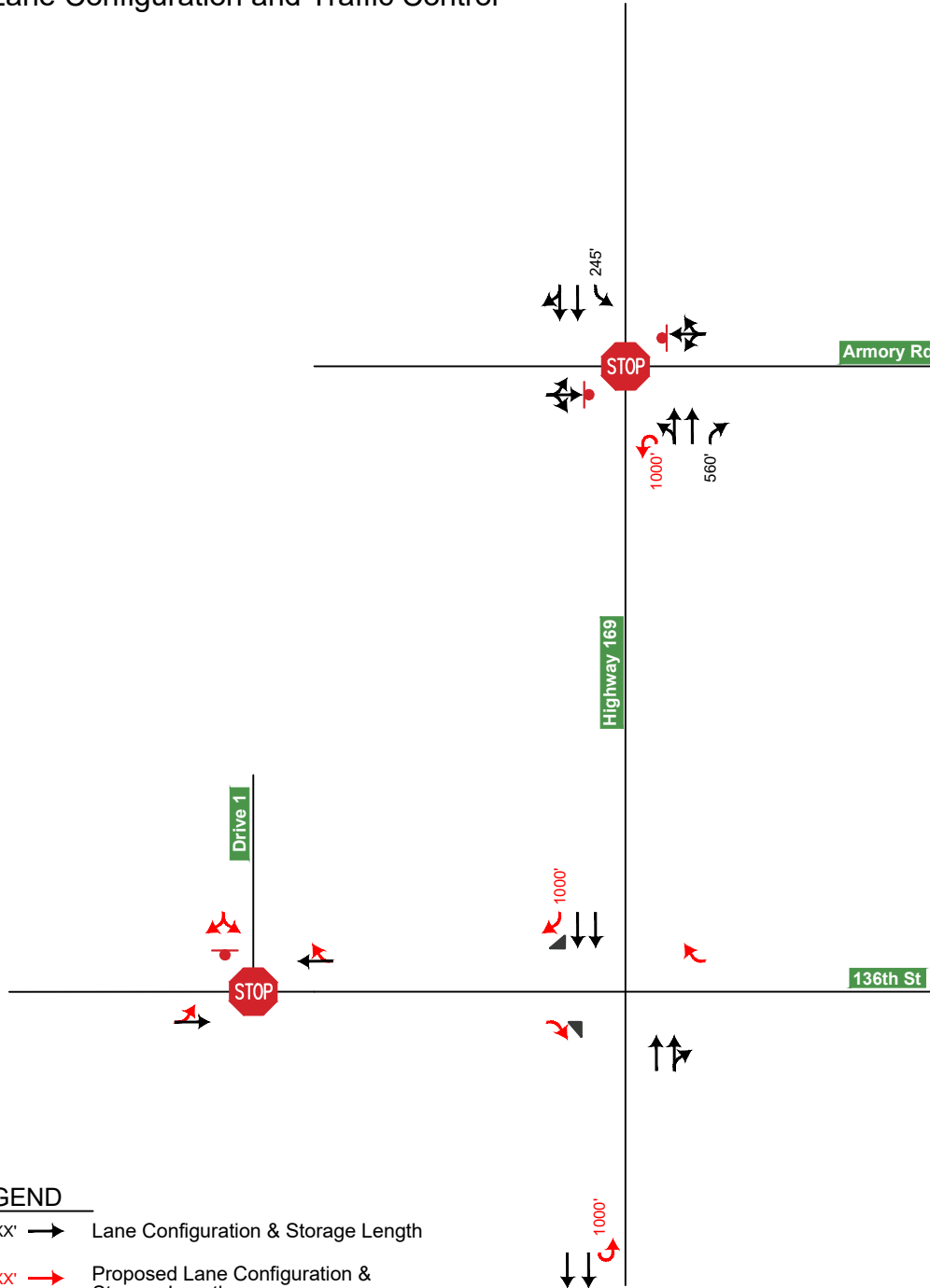
XX% To/From Car Trip Distribution Percentages

FIGURE 9Existing plus Phase 1 Conditions
Peak Hour Volumes**LEGEND**

AM (PM) Peak Hour Volumes

FIGURE 10

Existing plus Phase 1 Conditions
Lane Configuration and Traffic Control



5.3 Existing plus Phase 1 Conditions Capacity Analysis

Capacity analysis was performed for Existing plus Phase 1 Conditions using the methodologies described in **Section 3.4**. Both AM and PM peak hour conditions were evaluated using projected traffic volumes that include Phase 1 site-generated traffic added to existing background traffic. Under Phase 1 conditions without improvements, operations degrade significantly at key intersections along the Highway 169 corridor.

The Highway 169 and 136th Street intersection is the most impacted location under Phase 1 conditions. Minor street movements experience excessive delay due to limited gaps in high-speed through traffic on Highway 169. During both the AM and PM peak hours with no geometric improvements, several side-street approach movements operate at **LOS F**, with excessive delay and queuing.

Similarly, the Highway 169 and Amory Road intersection experiences increased delay under Phase 1 conditions, though not to the same extent as 136th Street. Minor approach movements are subject to delay typical of high-volume arterial crossings.

To address the identified deficiencies under Phase 1 conditions, implementation of a J-turn intersection configuration at Highway 169 and 136th Street was evaluated.

Under this configuration, direct crossing and left-turn movements from 136th Street are restricted at Highway 169, with these movements rerouted via right-turns and downstream U-turn movements in accordance with MoDOT's access management strategy.

With implementation of this improvement:

- Overall intersection operations at Highway 169 and 136th Street improve substantially.
- Mainline Highway 169 traffic continues to operate with minimal delay.
- Minor approach movements are simplified, resulting in reduced delay and improved operational reliability.
- Conflicting crossing movements are eliminated, improving both safety and consistency in operations

A weaving analysis was conducted under Phase 1 conditions to evaluate operations associated with the proposed J-turn configuration at Highway 169 and 136th Street. The analysis considered the interaction between right-turning, merging, and U-turning vehicles within the downstream weaving segments. Based on the results, the weaving sections are projected to operate at acceptable levels of service, with no operational deficiencies identified under Phase 1 traffic volumes.

While some side-street approach delay is expected to be converted into additional travel time due to the nature of rerouted movements, these conditions are consistent with reduced conflict intersection operations and are considered acceptable.

The Phase 1 analysis indicates that:

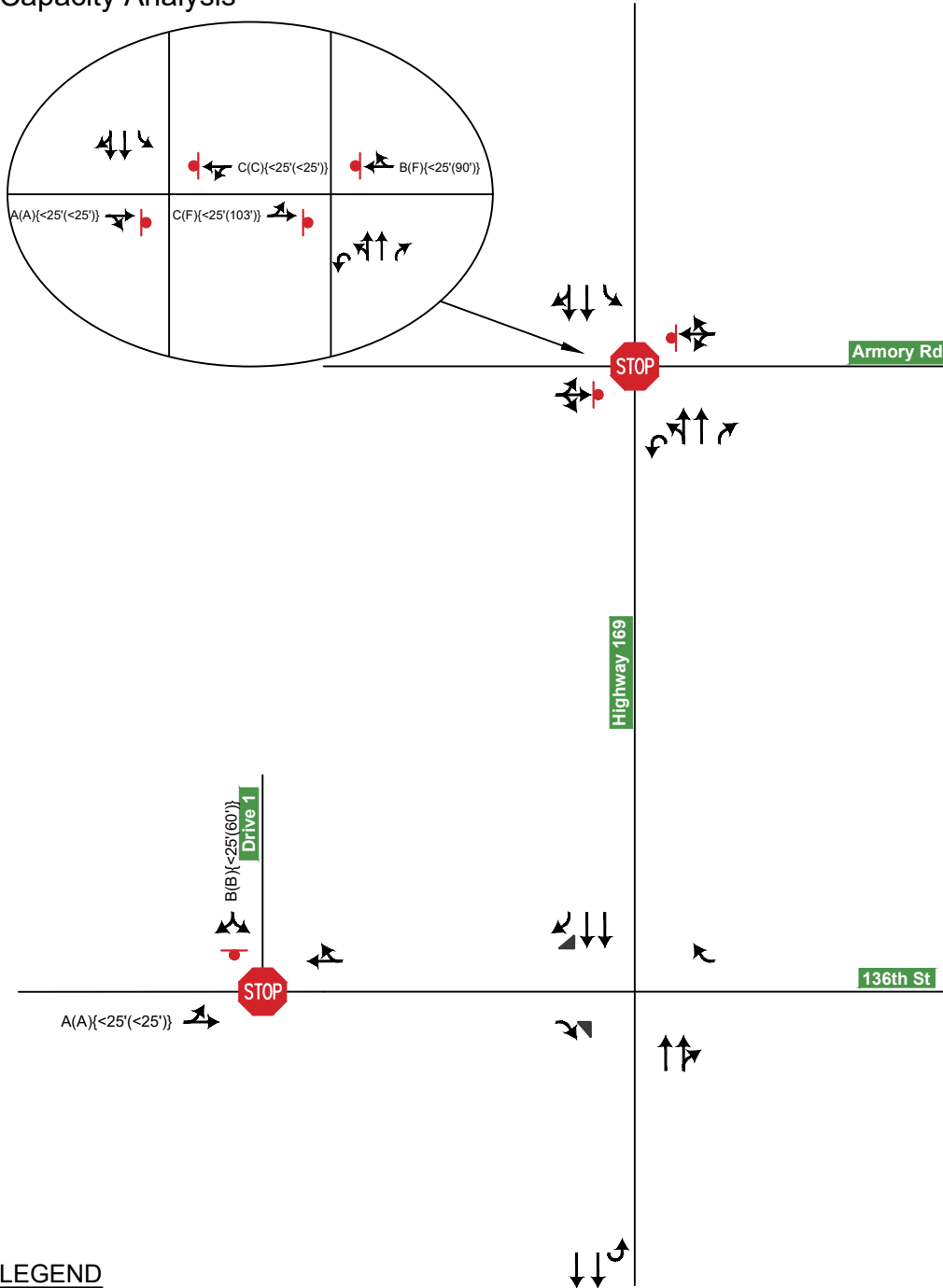
- Without improvements, full-access operation at Highway 169 intersections is not sustainable, particularly at 136th Street.
- Implementation of a J-turn intersection at Highway 169 and 136th Street resolves the most critical operational deficiencies.
- Internal site access and secondary intersections operate acceptably under Phase 1 traffic volumes.
- The proposed improvements are consistent with MoDOT's planned transition to a reduced conflict, access-managed corridor.

Based on these findings, the recommended Phase 1 improvements are necessary to support development traffic while maintaining acceptable operations along the Highway 169 corridor.

The Existing plus Phase 1 Conditions capacity analysis summary is illustrated in **Figure 11**. Detailed results are provided in **Appendix C**.

FIGURE 11

Existing plus Phase 1 Conditions Capacity Analysis



LEGEND

- Lane Configuration
- AM (PM) {AM' (PM')}
- STOP Stop Controlled Intersection
- Stop Sign

6. 2032 FULL BUILD CONDITIONS

This scenario considers the addition of Phase 2 (Full Build) development traffic to the study area network, including manufacturing, warehousing, and retail land uses. Development traffic was evaluated under a future year 2032 condition, which includes background traffic growth applied to the study area roadway network.

A growth rate of 1.5 percent per year was applied to the major roadway corridors to account for anticipated increases in regional traffic. The resulting volumes represent Full Build conditions with the proposed development and projected background traffic.

6.1 Full Build Trip Generation and Distribution

Trip generation and distribution for the site was presented in **Section 4.1**. Under Full Build conditions, the Phase 2 trip distribution was refined to better reflect the proposed site layout and internal circulation patterns. Traffic for the proposed development as a whole was reallocated between the proposed access points along 136th Street (Drive 1) and Amory Road (Drive 2) to account for anticipated parking distribution, building orientation, and primary access points for each land use. This adjustment results in a more balanced distribution of site traffic between the two access locations and provides a more representative depiction of expected operations under Full Build conditions.

The expected trip distribution volumes for full build development are shown in **Figure 12**. The resulting 2032 Full Build Conditions volumes are illustrated in **Figure 13**.

6.2 2032 Full Build Conditions Warrant Analysis

Similar to Phase 1 conditions, access management and alternative intersection control provide a more appropriate approach to accommodating projected traffic volumes

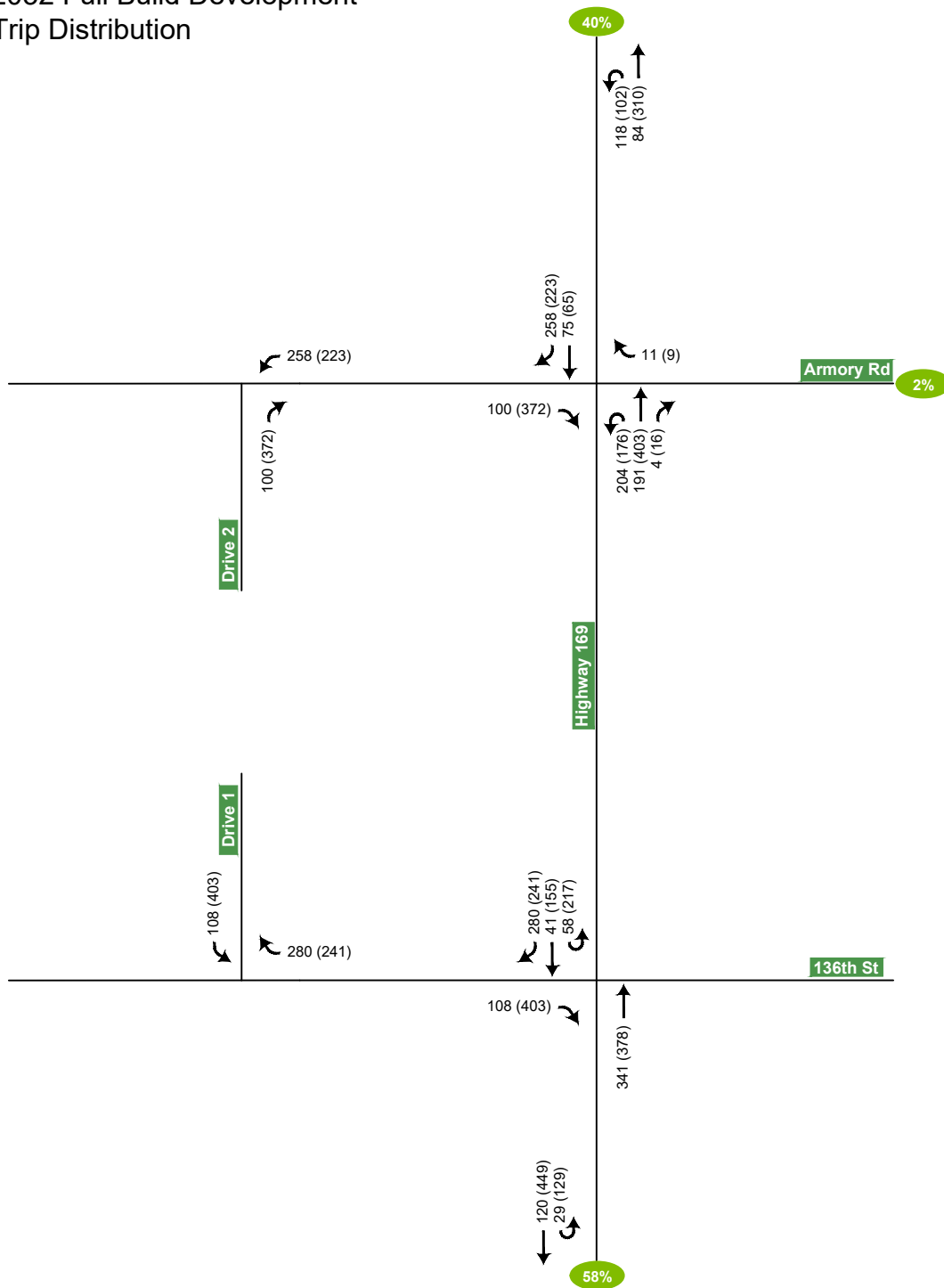
6.2.1 Alternative Intersection Control Review

A J-turn configuration along the Highway 169 corridor is generally recognized as the preferred solution by MoDOT. Under Full Build conditions, analysis indicates that additional improvements are required beyond those recommended for Phase 1 to address increased traffic demand at the Highway 169 and Amory Road intersection.

A J-turn configuration at the Highway 169 and Amory Road intersection was evaluated and determined to effectively address the projected operational deficiencies. This configuration restricts direct crossing and left-turn movements from Amory Road and reroutes traffic via right-turn and downstream U-turn movements.

Implementation of J-turn configurations at both 136th Street and Amory Road provides a consistent access management strategy along the corridor and supports MoDOT's long-term

vision for Highway 169 as a reduced conflict facility. These improvements are expected to maintain efficient traffic flow on the corridor while providing safe and reliable access to the proposed development.

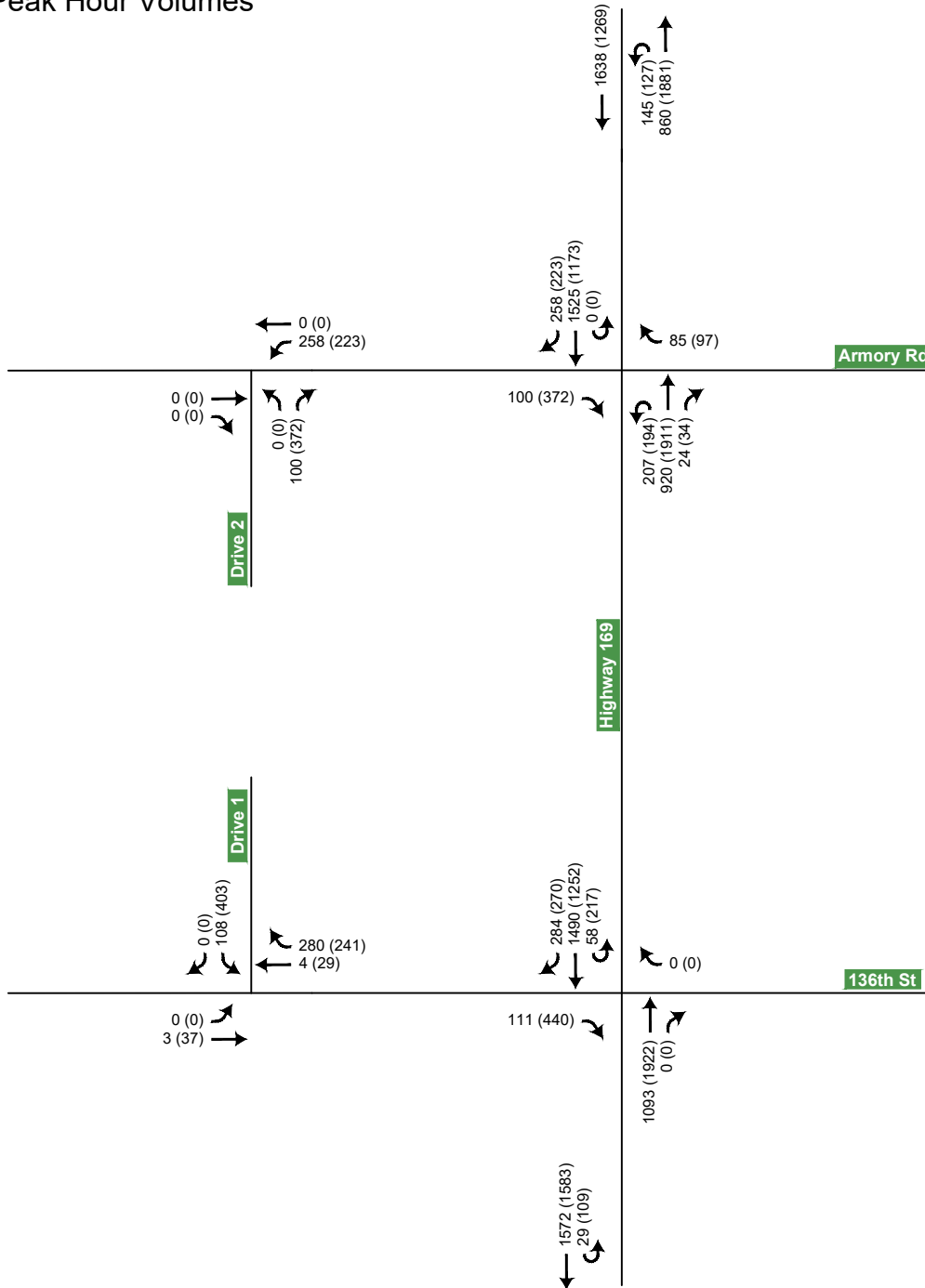
FIGURE 12**2032 Full Build Development
Trip Distribution****LEGEND**

AM(PM) Peak Hour Trips (Car)

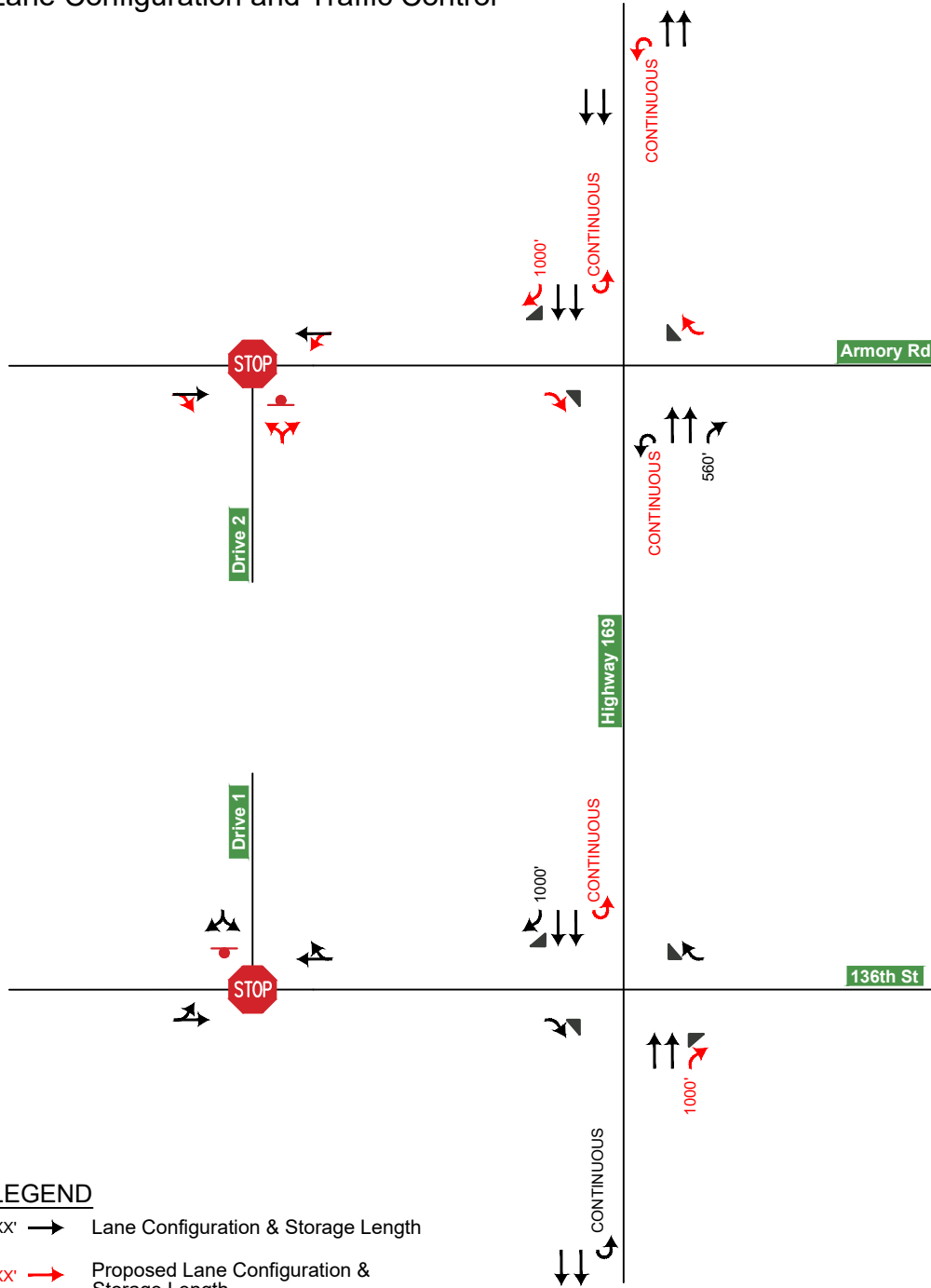
XX% To/From Car Trip Distribution Percentages

FIGURE 13

2032 Full Build Conditions
Peak Hour Volumes

**LEGEND**

AM (PM) Peak Hour Volumes

FIGURE 14**2032 Full Build Conditions
Lane Configuration and Traffic Control**

6.3 2032 Full Build Conditions Capacity Analysis

Capacity analysis was performed for 2032 Full Build Conditions using the methodologies presented in **Section 3.4**. Peak hour factors and truck percentages were not adjusted from the previous scenario.

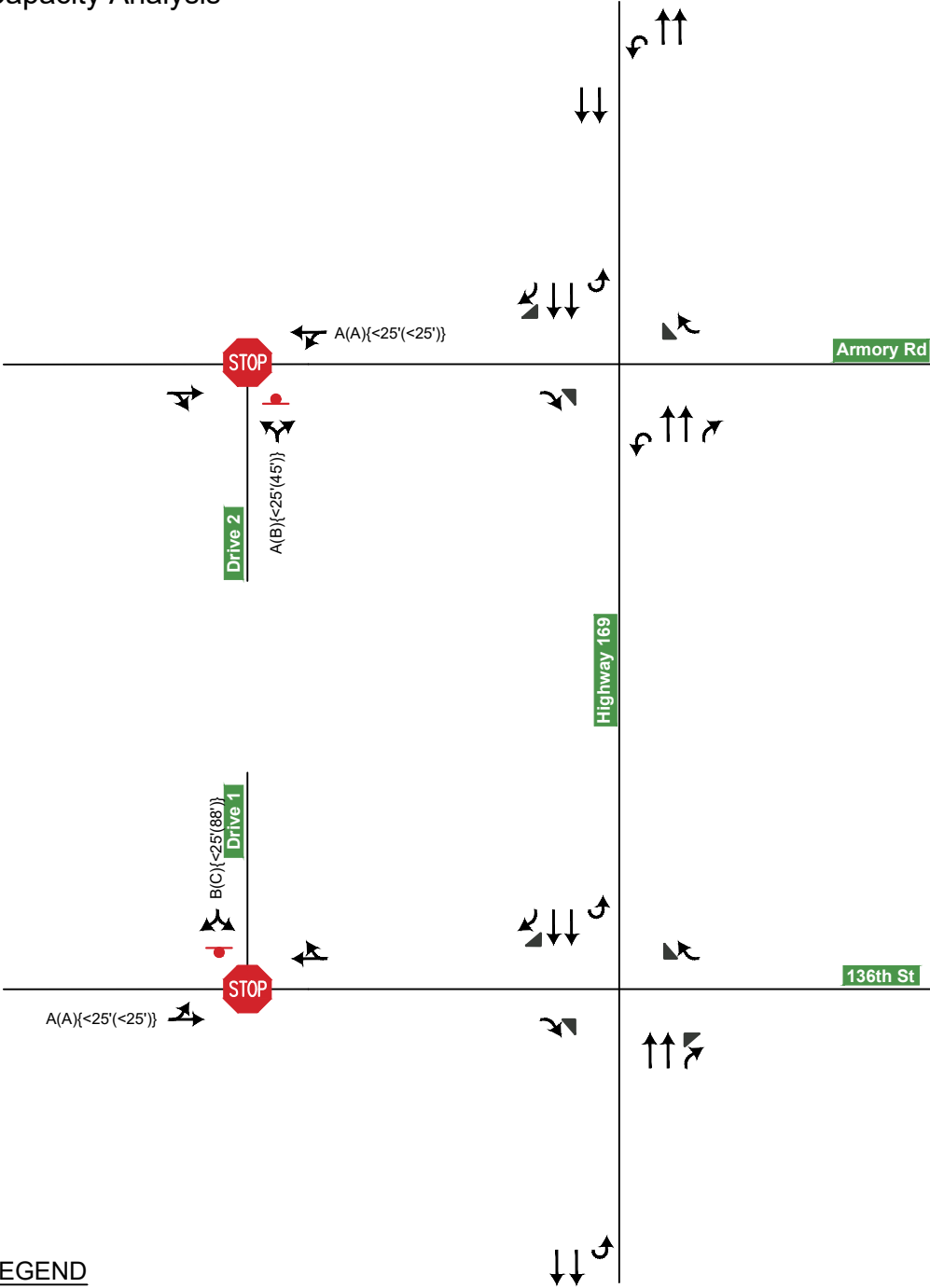
With implementation of the recommended improvements, including J-turn configurations at Highway 169 and both 136th Street and Amory Road, operations are anticipated to be acceptable.

Weaving analysis was conducted under 2032 Full Build Conditions to evaluate the operational performance of J-turn movements along the Highway 169 corridor. The analysis considered the interaction between right-turning, merging, and U-turning traffic within the weaving segments, including the effects of increased traffic associated with network expansion and background growth. Results indicate that the weaving sections continue to operate at acceptable levels of service under full build conditions, with no operational deficiencies observed.

Overall, the Full Build analysis demonstrates that the implementation of corridor-wide J-turn access management improvements provides a viable and effective solution for accommodating projected traffic demand while maintaining acceptable operations along Highway 169.

The 2032 Full Build Conditions capacity analysis summary is illustrated in **Figure 15**. Detailed results are provided in **Appendix D**.

FIGURE 15
2032 Full Build Conditions
Capacity Analysis



LEGEND

- Lane Configuration
- AM (PM) {AM' (PM') Movement LOS & {95th-Percentile Queue}
- STOP Stop Controlled Intersection
- Stop Sign

7. FUTURE YEAR 2045 PLUS FULL BUILD CONDITIONS

This scenario evaluates future conditions beyond the proposed development to consider potential changes to the surrounding roadway network. In addition to Full Build traffic associated with the development, the analysis includes assumed future roadway extensions and background traffic growth in the study area.

For this scenario, the following network assumptions were incorporated:

- An extension of Amory Road west of Highway 169, with an assumed traffic volume of approximately 2,500 vehicles per day (ADT).
- An extension of 136th Street east and west of Highway 169, with an assumed traffic volume of approximately 2,500 vehicles per day (ADT).

These assumed volumes are intended to represent a reasonable level of future connectivity and development in the surrounding area beyond currently programmed improvements that are in alignment with the City of Smithville planning documents. The purpose of this scenario is to evaluate how potential future roadway extensions and area growth may influence operations along the Highway 169 corridor and at key study intersections.

Figure 16 illustrates the expected future year 2045 plus full build development volumes.

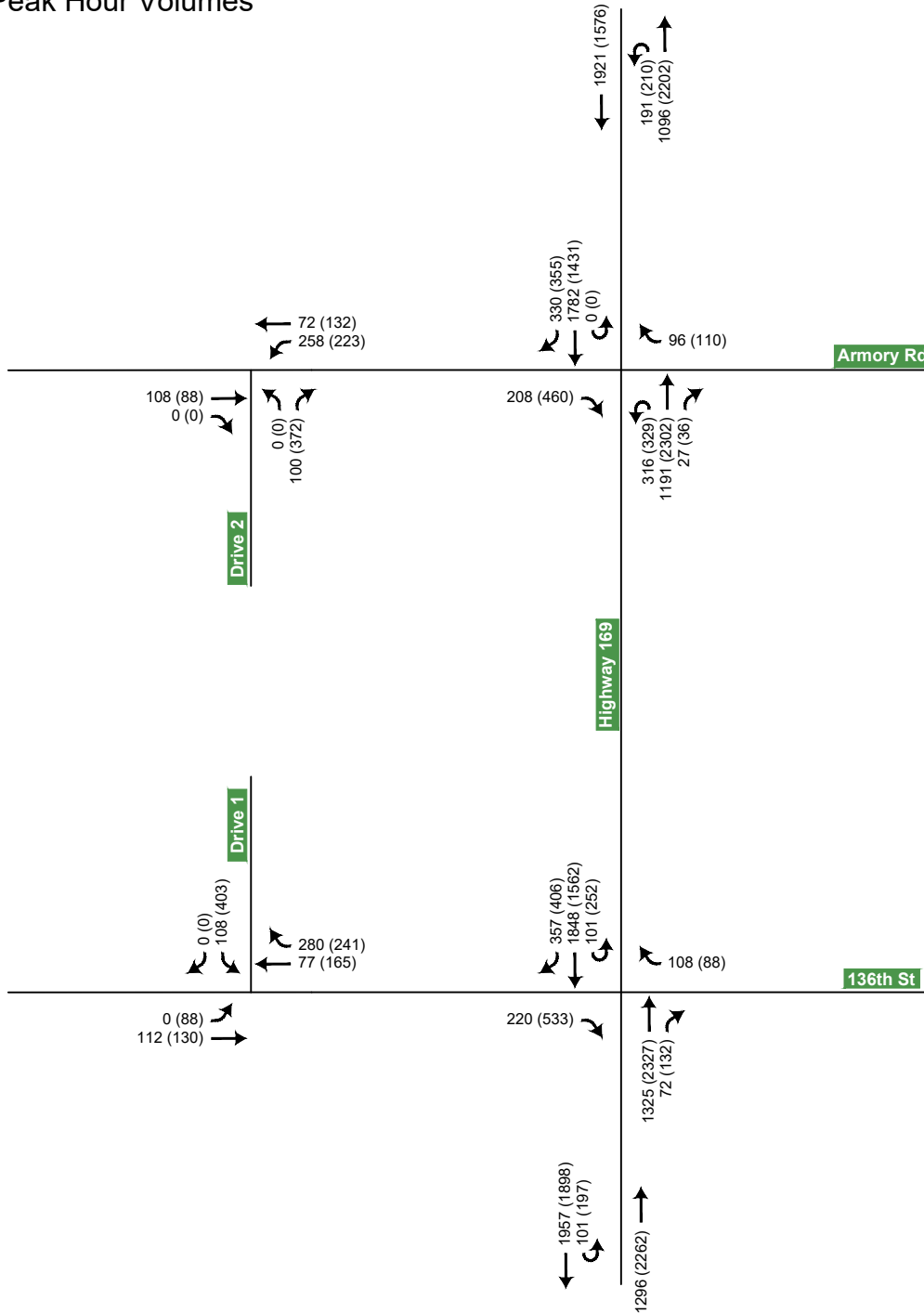
7.1 Future Year 2045 plus Full Build Conditions Geometrics

Improvements associated with Future Year 2045 conditions are consistent with MoDOT's planned transition of the Highway 169 corridor to a reduced conflict, access-managed facility. Under this scenario, geometrics reflect implementation of J-turn intersection configurations and associated median control along the corridor as developed under the 2032 Full Build Conditions.

Overall, the Future Year 2045 geometrics are intended to represent a fully developed and access-managed corridor consistent with MoDOT's long-term vision for Highway 169.

FIGURE 16

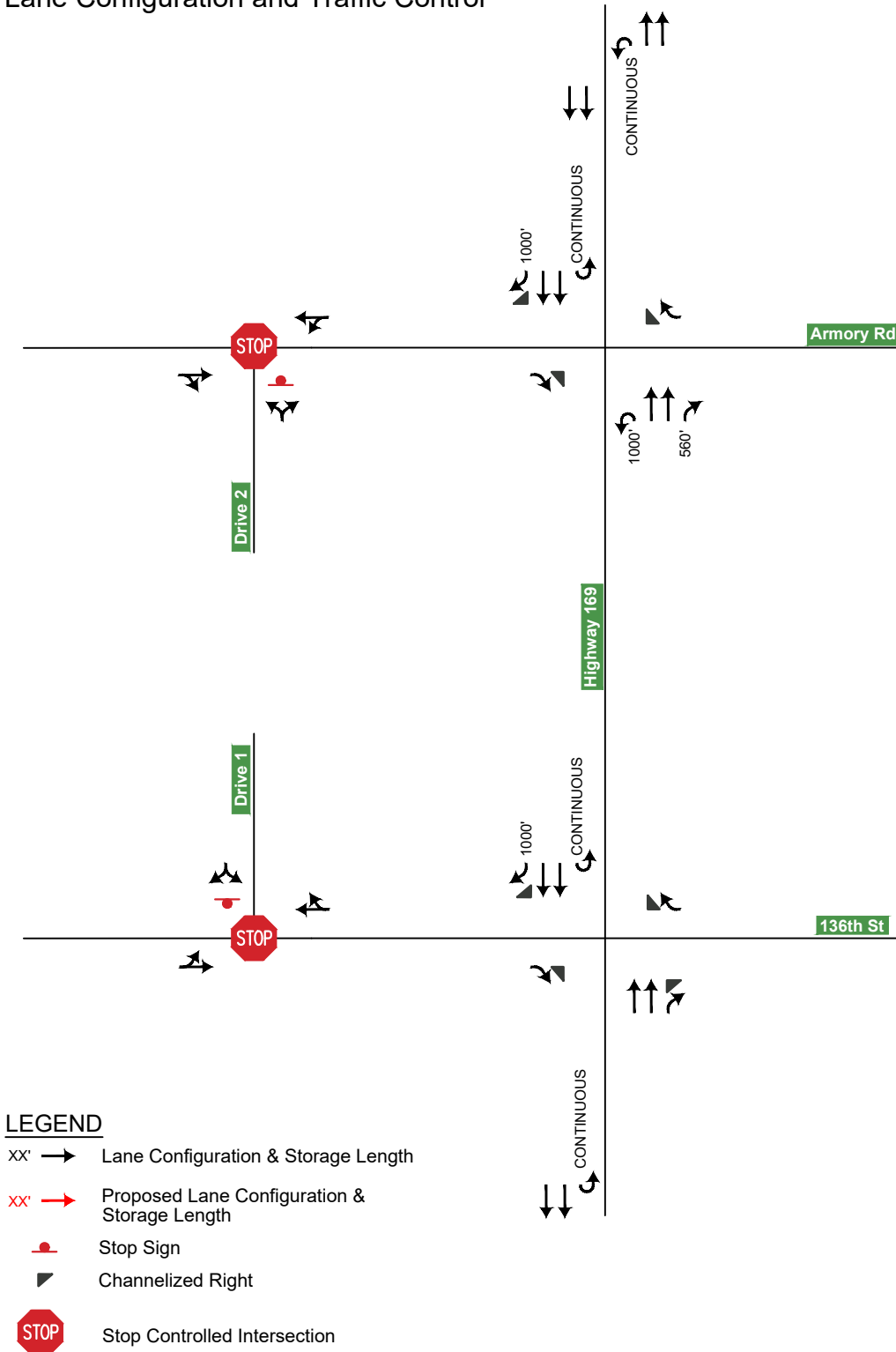
Future Year 2045 plus Full Build Conditions
Peak Hour Volumes

**LEGEND**

AM (PM) Peak Hour Volumes

FIGURE 17

Future Year 2045 plus Full Build Conditions
Lane Configuration and Traffic Control



7.2 Future Year 2045 plus Full Build Conditions Capacity Analysis

Capacity analysis was performed for Future Year 2045 plus Full Build Conditions using the methodologies presented in **Section 3.4**. Peak hour factors and truck percentages were not adjusted from the previous scenario.

With implementation of the recommended J-turn intersection configurations and corridor access management strategies, operations under Future Year conditions are expected to be acceptable.

Local roadway extensions, including Amory Road west of Highway 169 and 136th Street east of Highway 169, provide additional connectivity to the site and surrounding area. While these connections introduce additional traffic into the network, their impacts are effectively managed through implementation of J-turn intersection control along Highway 169.

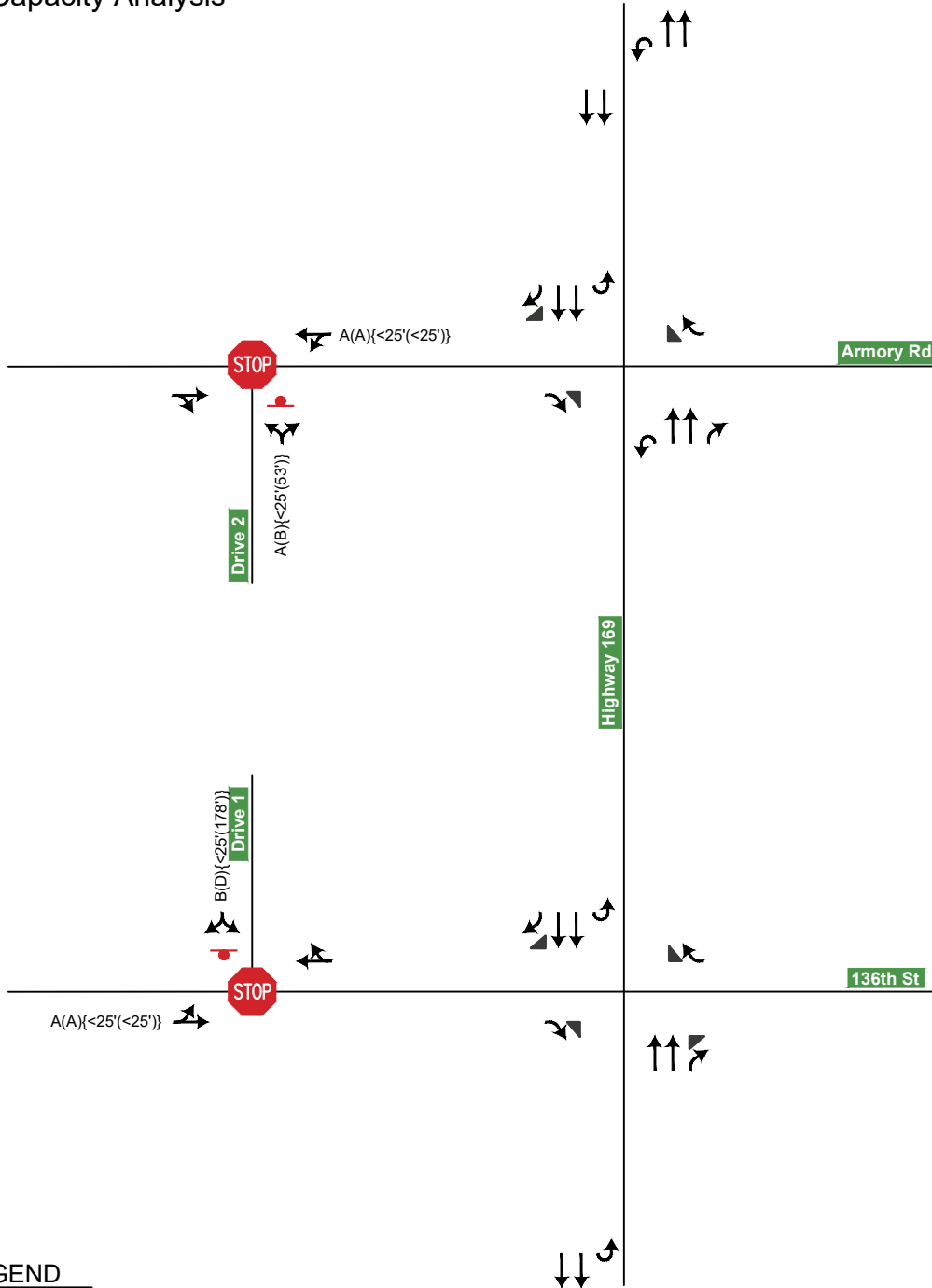
Weaving analysis was conducted under 2045 Future Year Conditions to evaluate the operational performance of J-turn movements along the Highway 169 corridor. The analysis considered the interaction between right-turning, merging, and U-turning traffic within the weaving segments, including the effects of increased traffic associated with network expansion and background growth. Results indicate that the weaving sections continue to operate at acceptable levels of service under Future Year conditions, with no operational deficiencies observed.

Overall, the Future Year 2045 analysis demonstrates that the implementation of corridor-wide J-turn access management improvements provides a viable long-term solution. This approach supports projected traffic demand, maintains efficient operations along Highway 169, and is consistent with MoDOT's long-term vision for the corridor.

The Future Year 2045 plus Full Build Conditions capacity analysis summary is illustrated in **Figure 18**. Detailed results are provided in **Appendix E**.

FIGURE 18

Future Year 2045 plus Full Build Conditions
Capacity Analysis



LEGEND

- Lane Configuration
- AM (PM) {AM' (PM')}
- Stop Controlled Intersection
- Stop Sign

8. SUMMARY

This report summarizes analysis conducted for the Project Rocket Ship development located along the Highway 169 corridor between Amory Road and 136th Street in Smithville, Missouri.

8.1 Conclusions

The general findings for this traffic impact study include the following:

- The proposed development consists of a multi-phased industrial and commercial development, including manufacturing, warehousing, and retail land uses totaling approximately 1.5 million square feet. The development is proposed to be constructed in multiple phases, with Phase 1 consisting primarily of industrial uses and Full Build conditions including additional industrial and commercial development.
- Primary access to the site is proposed via 136th Street and Amory Road. A new access point is proposed along 136th Street, aligned with an existing driveway on the south side of the roadway to provide coordinated access spacing. A secondary access connection is anticipated along Amory Road under Full Build conditions, consistent with MoDOT's Access Management Policy.
- Under existing conditions, study intersections along the Highway 169 corridor operate at acceptable levels of service, with minor delays experienced by side street movements typical of unsignalized intersections along a high-speed arterial.
- Under Phase 1 conditions without improvements, operational deficiencies are identified at the Highway 169 and 136th Street intersection, where minor street movements experience excessive delay and poor Levels of Service. These deficiencies are primarily associated with limited gaps in high-speed through traffic along Highway 169.
- Under Full Build and Future Year conditions, operations at both Highway 169 intersections (136th Street and Amory Road) degrade significantly under full-access control, with unacceptable delay and queuing observed.
- Implementation of reduced conflict intersection configurations, including J-turn intersections, is consistent with MoDOT's planned corridor strategy and results in substantial operational improvements by limiting direct crossing and left-turn movements.

8.2 Recommendations

The roadway network is not expected to operate acceptably under existing access conditions with the addition of the proposed development; however, with implementation of the following recommended improvements consistent with MoDOT's corridor vision, operations are expected to be acceptable:

Existing Conditions – Current intersection geometrics along Highway 169 are functioning acceptably, though side-street delay is high during the peak hour periods and crash experience indicates that there is a pattern of correctable crashes, though the exposure is relatively low at intersections due to the low volume.

Existing plus Phase 1 Conditions – Phase 1 development conditions necessitate operational improvements to maintain acceptable levels of service at study intersections. The following improvements are recommended as a result:

- Implementation of a J-turn intersection at Highway 169 and 136th Street to restrict direct crossing and left-turn movements.
 - Spacing of directional median openings and U-turn movements should be designed to be consistent with MoDOT EPG guidance, with a target spacing on the order of approximately 1,800 feet, or greater where feasible, to accommodate operational needs associated with projected traffic volumes along the corridor.
 - J-turn configurations should include deceleration lanes and acceleration lanes to support safe merging and improve operational performance along high-speed corridors such as Highway 169. Provision of appropriate turn lanes and storage lengths at the J-turn intersection in accordance with MoDOT design guidance.
- Construction of the proposed site access driveway along 136th Street, aligned with the existing driveway on the south side of the roadway.

2032 Full Build Conditions & Future Year 2045 plus Full Build Conditions – Under Full Build conditions, and future year conditions, additional improvements are required to maintain acceptable operations along the Highway 169 corridor, including the following:

- Implementation of a J-turn intersection at Highway 169 and Amory Road to address increased traffic demand under Full Build conditions.
 - Spacing of directional median openings and U-turn movements should be designed to be consistent with MoDOT EPG guidance, with a target spacing on the order of approximately 1,800 feet, or greater where feasible, to accommodate operational needs associated with projected traffic volumes along the corridor.

- J-turn configurations should include deceleration lanes and acceleration lanes to support safe merging and improve operational performance along high-speed corridors such as Highway 169. Provision of appropriate turn lanes and storage lengths at the J-turn intersection in accordance with MoDOT design guidance.
- Extension of Amory Road to the west of Highway 169 and construction of a secondary site access connection to Amory Road consistent with MoDOT's Access Management Policy.
- Continued coordination with MoDOT and the City of Smithville regarding long-term corridor improvements, including geometric design, access spacing, and intersection control.

APPENDIX A

Data Collection



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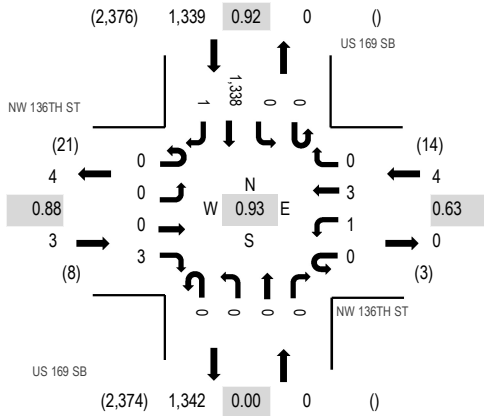
Location: 1 US 169 SB & NW 136TH ST AM

Date: Tuesday, May 12, 2026

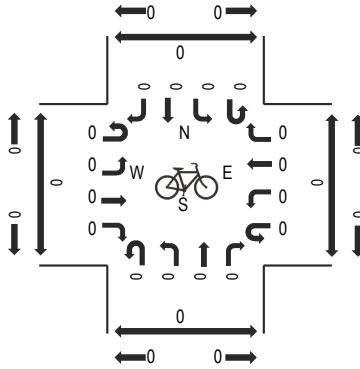
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

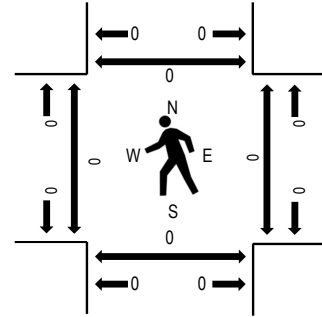
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NW 136TH ST Eastbound				NW 136TH ST Westbound				US 169 SB Northbound				US 169 SB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	329	0	330	1,346	0	0	0	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	349	0	350	1,259	0	0	0	0
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	362	0	363	1,180	0	0	0	0
7:45 AM	0	0	0	2	0	1	1	0	0	0	0	0	0	0	298	1	303	1,097	0	0	0	0
8:00 AM	0	0	1	0	0	1	3	0	0	0	0	0	0	0	234	4	243	1,052	0	0	0	0
8:15 AM	0	0	2	0	0	1	2	0	0	0	0	0	0	0	264	2	271		0	0	0	0
8:30 AM	0	0	0	2	0	0	1	0	0	0	0	0	0	0	277	0	280		0	0	0	0
8:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	253	3	258		0	0	0	0
Count Total	0	0	3	5	0	3	11	0	0	0	0	0	0	0	2,366	10	2,398		0	0	0	0
Peak Hour	0	0	0	3	0	1	3	0	0	0	0	0	0	0	1,338	1	1,346		0	0	0	0



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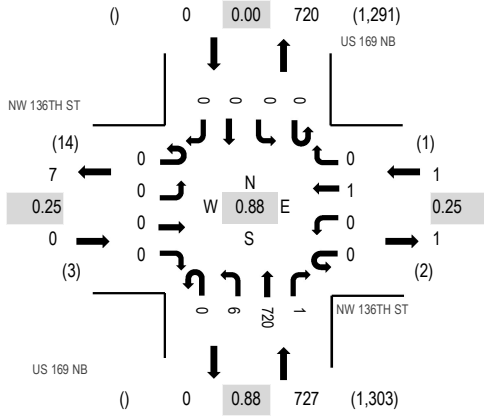
Location: 2 US 169 NB & NW 136TH ST AM

Date: Tuesday, May 12, 2026

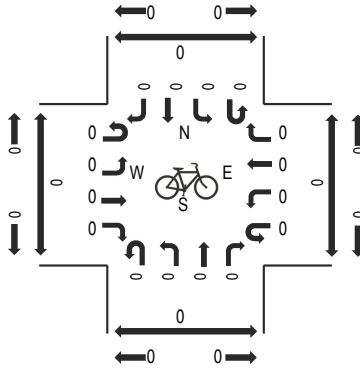
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

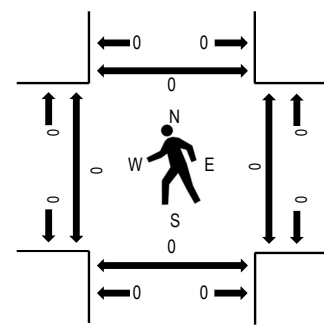
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NW 136TH ST Eastbound				NW 136TH ST Westbound				US 169 NB Northbound				US 169 NB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	1	149	0	0	0	0	0	150	710	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	169	0	0	0	0	0	169	728	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	1	182	1	0	0	0	0	184	688	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	1	205	0	0	0	0	0	207	652	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	4	164	0	0	0	0	0	168	597	0	0	0	0
8:15 AM	0	3	0	0	0	0	0	0	0	3	123	0	0	0	0	0	129		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	146	1	0	0	0	0	148		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	2	150	0	0	0	0	0	152		0	1	0	0
Count Total	0	3	0	0	0	0	1	0	0	13	1,288	2	0	0	0	0	1,307		0	1	0	0
Peak Hour	0	0	0	0	0	0	1	0	0	6	720	1	0	0	0	0	728		0	0	0	0



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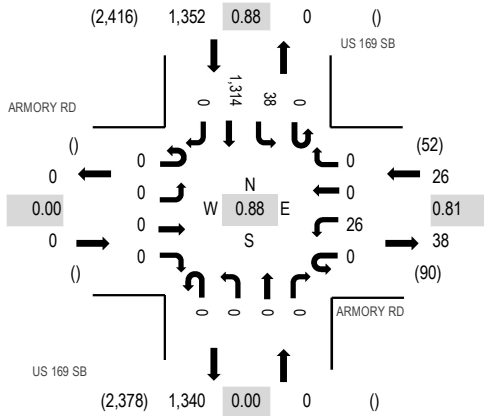
Location: 3 US 169 SB & ARMORY RD AM

Date: Tuesday, May 12, 2026

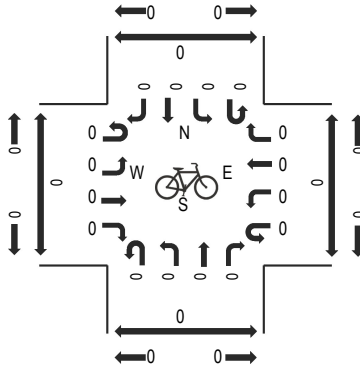
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

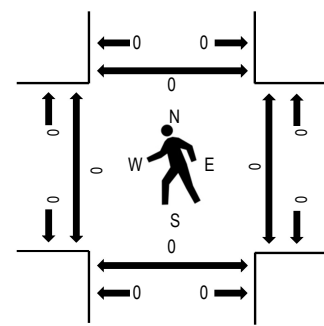
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ARMORY RD Eastbound				ARMORY RD Westbound				US 169 SB Northbound				US 169 SB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	7	327	0	338	1,378	0	0	0	0
7:15 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	9	338	0	356	1,294	0	0	0	0
7:30 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	18	368	0	391	1,213	0	0	0	0
7:45 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	4	281	0	293	1,109	0	0	0	0
8:00 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	12	237	0	254	1,090	0	0	0	0
8:15 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	11	257	0	275		0	0	0	0
8:30 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	11	267	0	287		0	0	0	0
8:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	18	251	0	274		0	0	0	0
Count Total	0	0	0	0	0	52	0	0	0	0	0	0	0	90	2,326	0	2,468		0	0	0	0
Peak Hour	0	0	0	0	0	26	0	0	0	0	0	0	0	38	1,314	0	1,378		0	0	0	0



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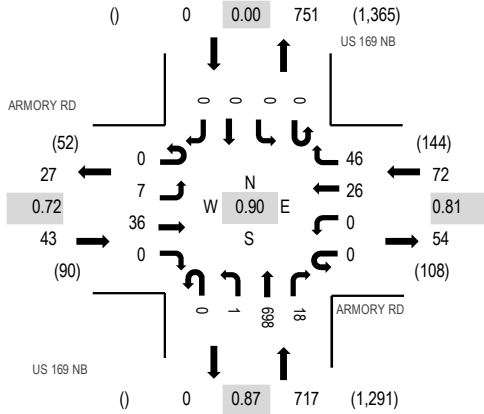
Location: 4 US 169 NB & ARMORY RD AM

Date: Tuesday, May 12, 2026

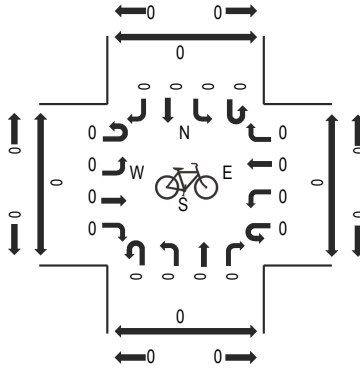
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

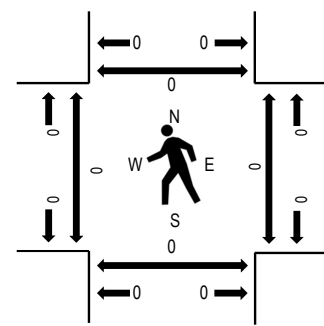
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ARMORY RD Eastbound				ARMORY RD Westbound				US 169 NB Northbound				US 169 NB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	7	0	0	0	4	9	0	0	143	6	0	0	0	0	169	813	0	0	0	0
7:15 AM	0	3	6	0	0	0	9	17	0	0	166	3	0	0	0	0	204	832	0	0	0	0
7:30 AM	0	0	18	0	0	0	5	7	0	0	175	5	0	0	0	0	210	792	0	0	0	0
7:45 AM	0	1	3	0	0	0	7	12	0	1	201	5	0	0	0	0	230	759	0	0	0	0
8:00 AM	0	3	9	0	0	0	5	10	0	0	156	5	0	0	0	0	188	712	0	0	0	0
8:15 AM	0	1	10	0	0	0	8	17	0	0	125	3	0	0	0	0	164		0	0	0	0
8:30 AM	0	2	9	0	0	0	8	14	0	0	143	1	0	0	0	0	177		0	0	0	0
8:45 AM	0	2	16	0	0	0	5	7	0	0	151	2	0	0	0	0	183		0	0	0	0
Count Total	0	12	78	0	0	0	51	93	0	1	1,260	30	0	0	0	0	1,525		0	0	0	0
Peak Hour	0	7	36	0	0	0	26	46	0	1	698	18	0	0	0	0	832		0	0	0	0



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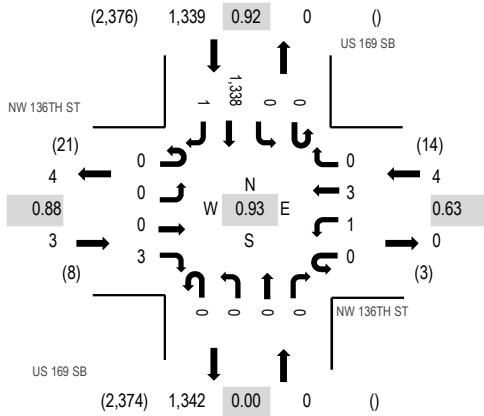
Location: 1 US 169 SB & NW 136TH ST AM

Date: Tuesday, May 12, 2026

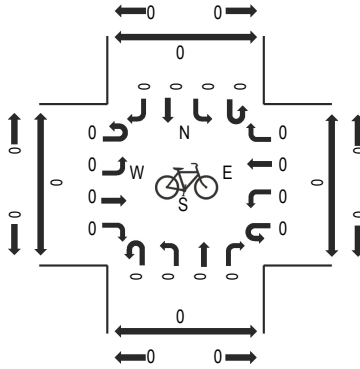
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

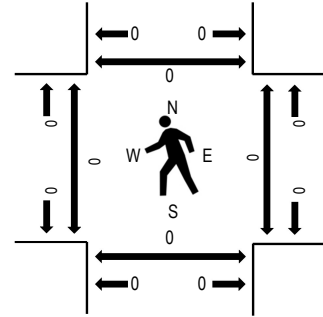
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NW 136TH ST Eastbound				NW 136TH ST Westbound				US 169 SB Northbound				US 169 SB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	329	0	330	1,346	0	0	0	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	349	0	350	1,259	0	0	0	0
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	362	0	363	1,180	0	0	0	0
7:45 AM	0	0	0	2	0	1	1	0	0	0	0	0	0	0	298	1	303	1,097	0	0	0	0
8:00 AM	0	0	1	0	0	1	3	0	0	0	0	0	0	0	234	4	243	1,052	0	0	0	0
8:15 AM	0	0	2	0	0	1	2	0	0	0	0	0	0	0	264	2	271		0	0	0	0
8:30 AM	0	0	0	2	0	0	1	0	0	0	0	0	0	0	277	0	280		0	0	0	0
8:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	253	3	258		0	0	0	0
Count Total	0	0	3	5	0	3	11	0	0	0	0	0	0	0	2,366	10	2,398		0	0	0	0
Peak Hour	0	0	0	3	0	1	3	0	0	0	0	0	0	0	1,338	1	1,346		0	0	0	0



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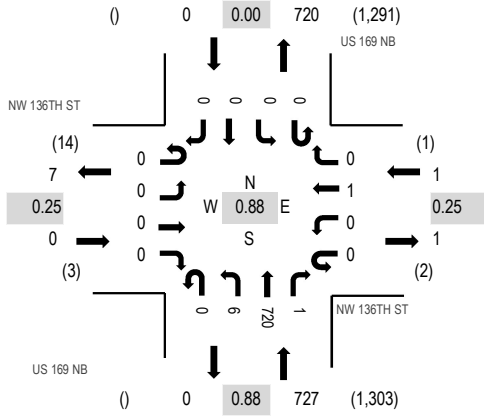
Location: 2 US 169 NB & NW 136TH ST AM

Date: Tuesday, May 12, 2026

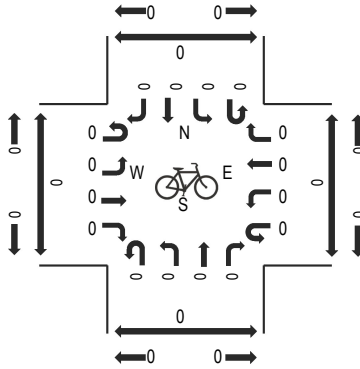
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

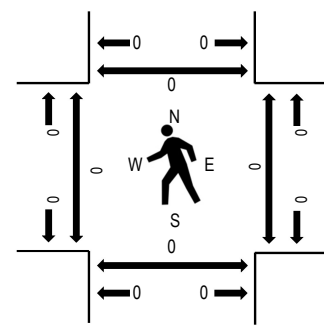
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NW 136TH ST Eastbound				NW 136TH ST Westbound				US 169 NB Northbound				US 169 NB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	1	149	0	0	0	0	0	150	710	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	169	0	0	0	0	0	169	728	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	1	182	1	0	0	0	0	184	688	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	1	205	0	0	0	0	0	207	652	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	4	164	0	0	0	0	0	168	597	0	0	0	0
8:15 AM	0	3	0	0	0	0	0	0	0	3	123	0	0	0	0	0	129		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	146	1	0	0	0	0	148		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	2	150	0	0	0	0	0	152		0	1	0	0
Count Total	0	3	0	0	0	0	1	0	0	13	1,288	2	0	0	0	0	1,307		0	1	0	0
Peak Hour	0	0	0	0	0	0	1	0	0	6	720	1	0	0	0	0	728		0	0	0	0



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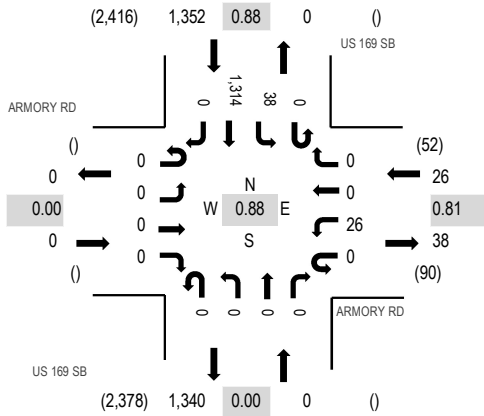
Location: 3 US 169 SB & ARMORY RD AM

Date: Tuesday, May 12, 2026

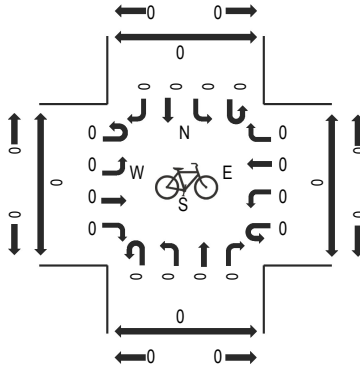
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

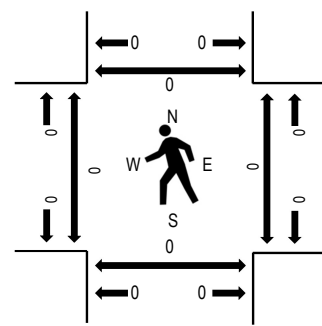
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ARMORY RD Eastbound				ARMORY RD Westbound				US 169 SB Northbound				US 169 SB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	7	327	0	338	1,378	0	0	0	0
7:15 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	9	338	0	356	1,294	0	0	0	0
7:30 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	18	368	0	391	1,213	0	0	0	0
7:45 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	4	281	0	293	1,109	0	0	0	0
8:00 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	12	237	0	254	1,090	0	0	0	0
8:15 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	11	257	0	275		0	0	0	0
8:30 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	11	267	0	287		0	0	0	0
8:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	18	251	0	274		0	0	0	0
Count Total	0	0	0	0	0	52	0	0	0	0	0	0	0	90	2,326	0	2,468		0	0	0	0
Peak Hour	0	0	0	0	0	26	0	0	0	0	0	0	0	38	1,314	0	1,378		0	0	0	0



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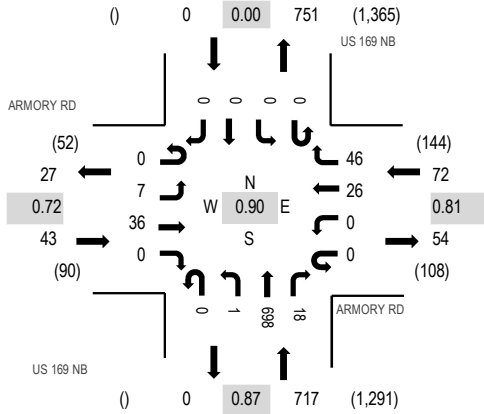
Location: 4 US 169 NB & ARMORY RD AM

Date: Tuesday, May 12, 2026

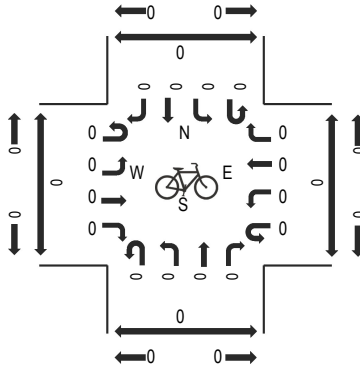
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

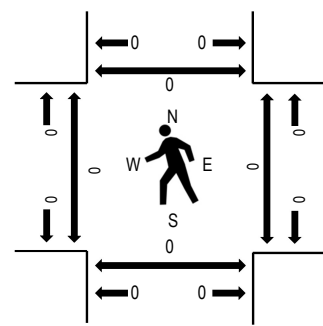
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

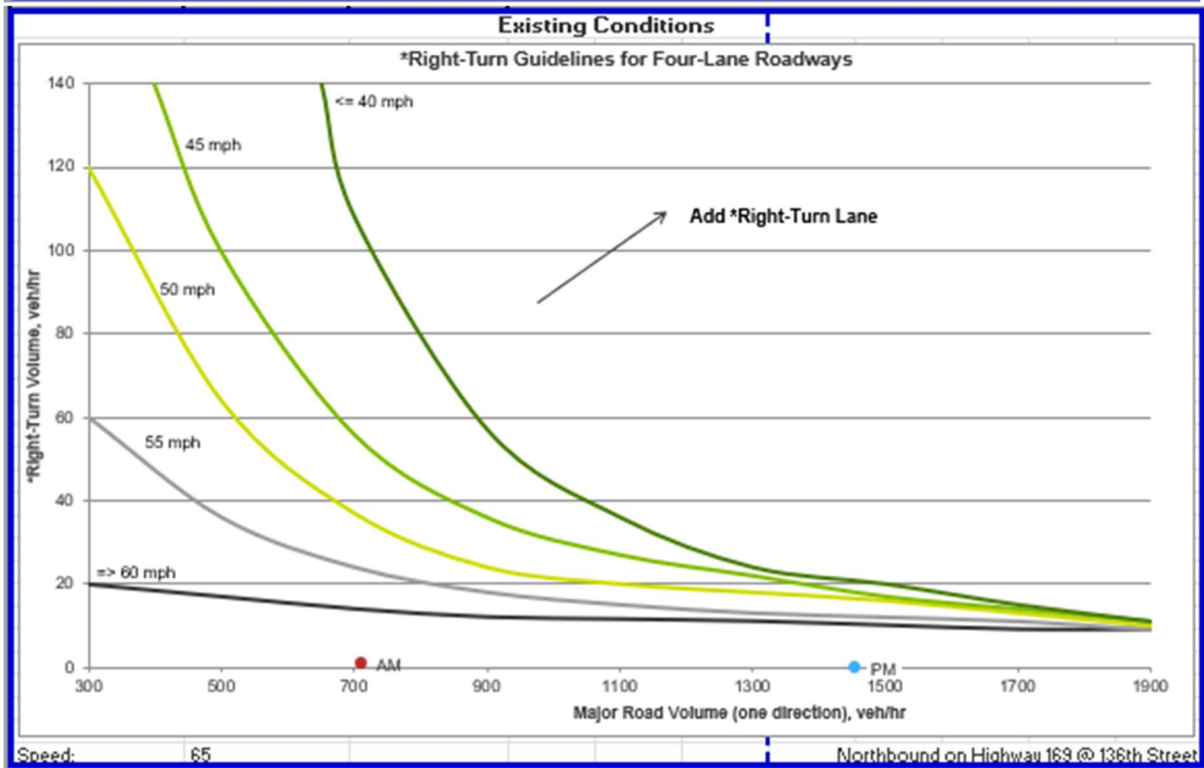
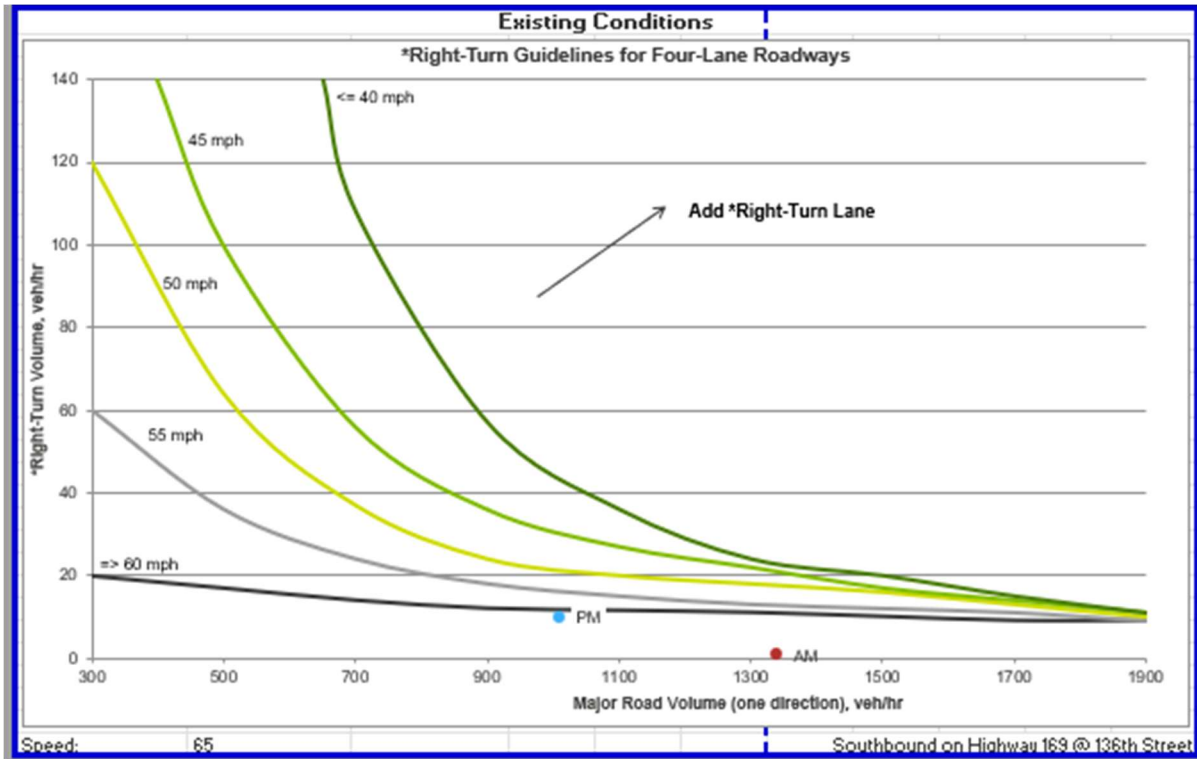
Traffic Counts - Motorized Vehicles

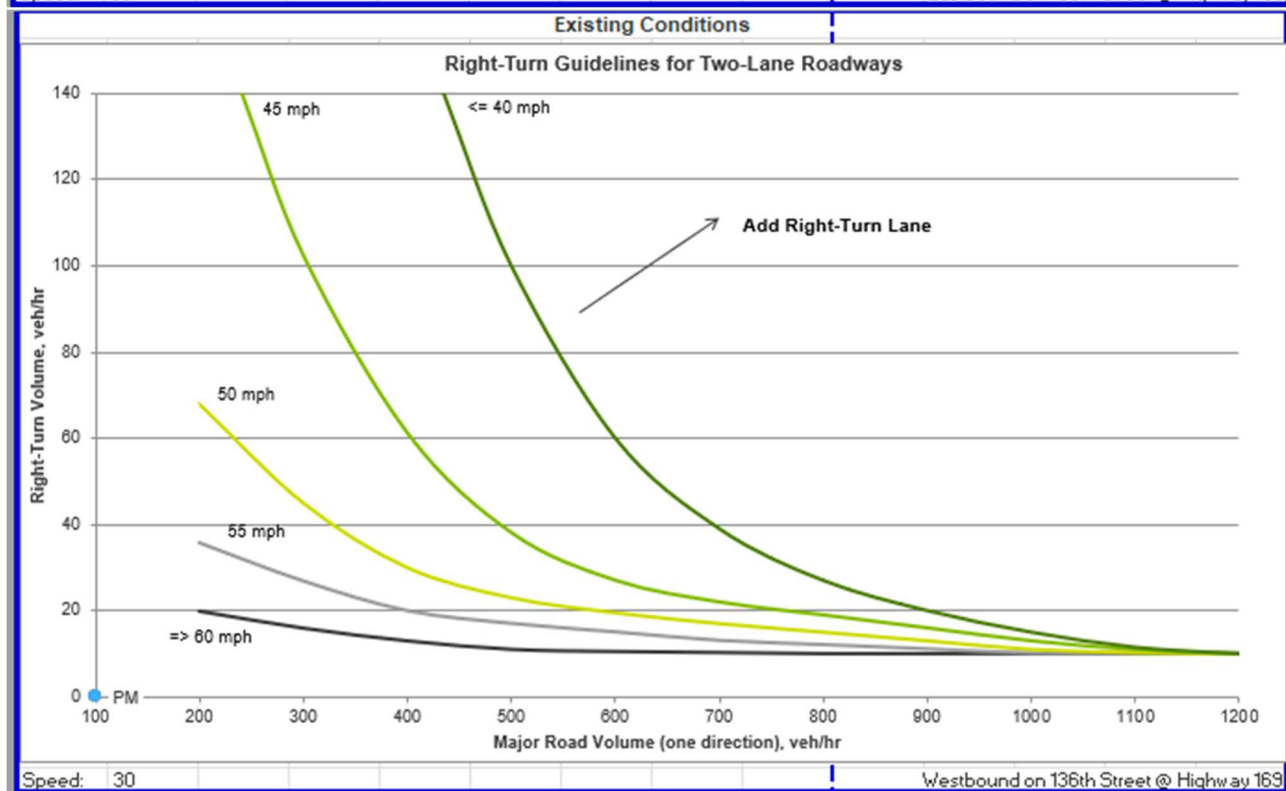
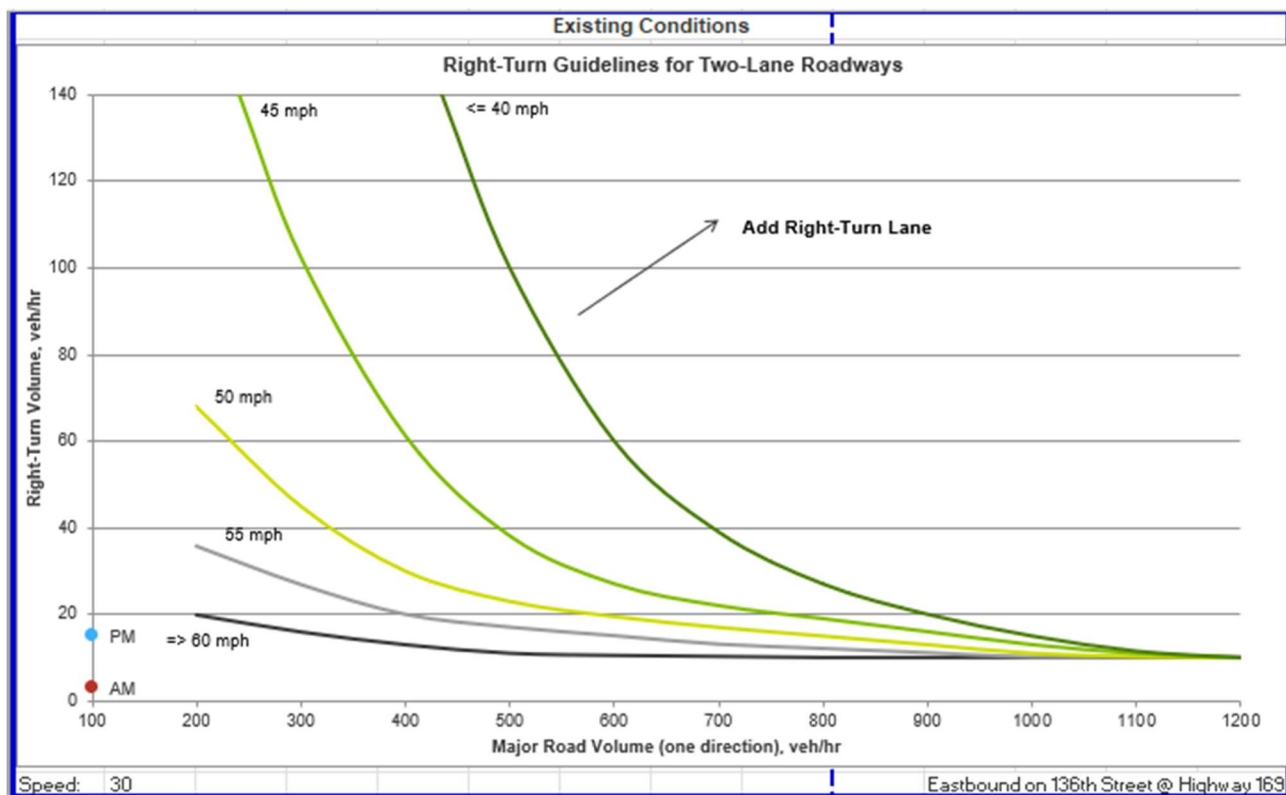
Interval Start Time	ARMORY RD Eastbound				ARMORY RD Westbound				US 169 NB Northbound				US 169 NB Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	7	0	0	0	4	9	0	0	143	6	0	0	0	0	169	813	0	0	0	0
7:15 AM	0	3	6	0	0	0	9	17	0	0	166	3	0	0	0	0	204	832	0	0	0	0
7:30 AM	0	0	18	0	0	0	5	7	0	0	175	5	0	0	0	0	210	792	0	0	0	0
7:45 AM	0	1	3	0	0	0	7	12	0	1	201	5	0	0	0	0	230	759	0	0	0	0
8:00 AM	0	3	9	0	0	0	5	10	0	0	156	5	0	0	0	0	188	712	0	0	0	0
8:15 AM	0	1	10	0	0	0	8	17	0	0	125	3	0	0	0	0	164		0	0	0	0
8:30 AM	0	2	9	0	0	0	8	14	0	0	143	1	0	0	0	0	177		0	0	0	0
8:45 AM	0	2	16	0	0	0	5	7	0	0	151	2	0	0	0	0	183		0	0	0	0
Count Total	0	12	78	0	0	0	51	93	0	1	1,260	30	0	0	0	0	1,525		0	0	0	0
Peak Hour	0	7	36	0	0	0	26	46	0	1	698	18	0	0	0	0	832		0	0	0	0

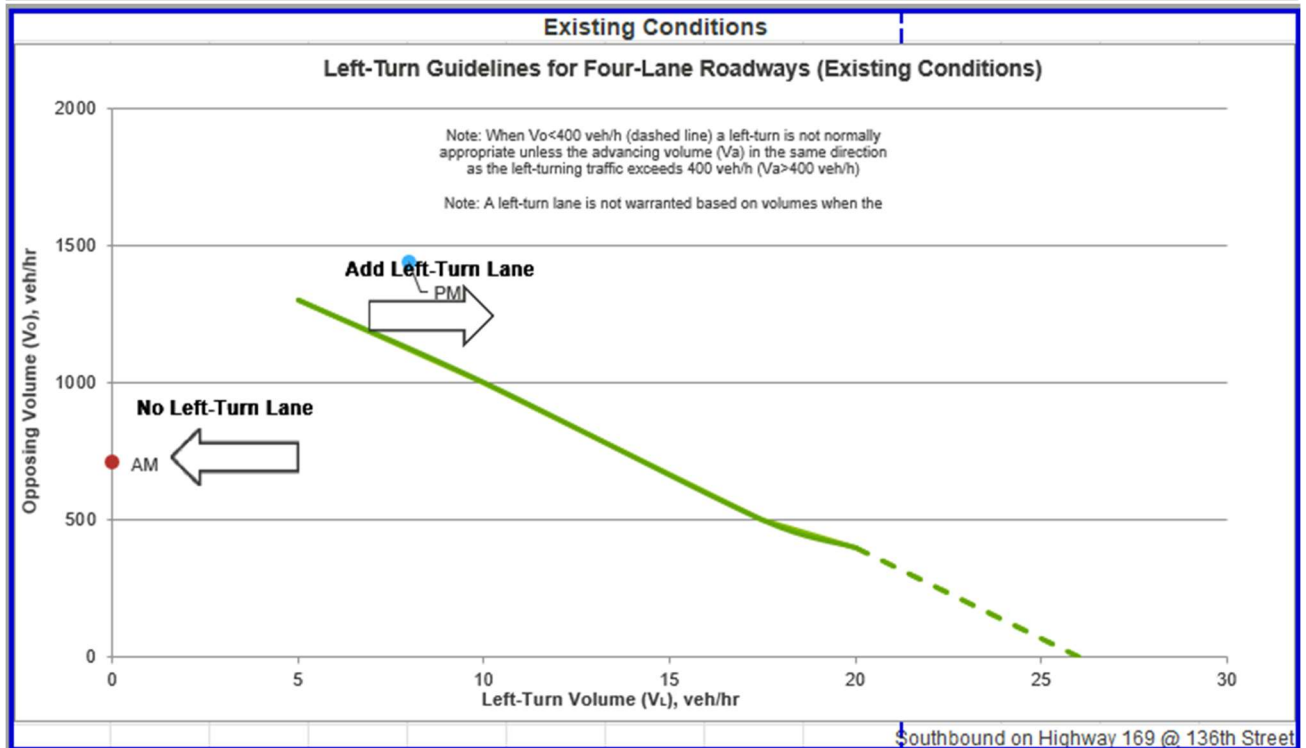
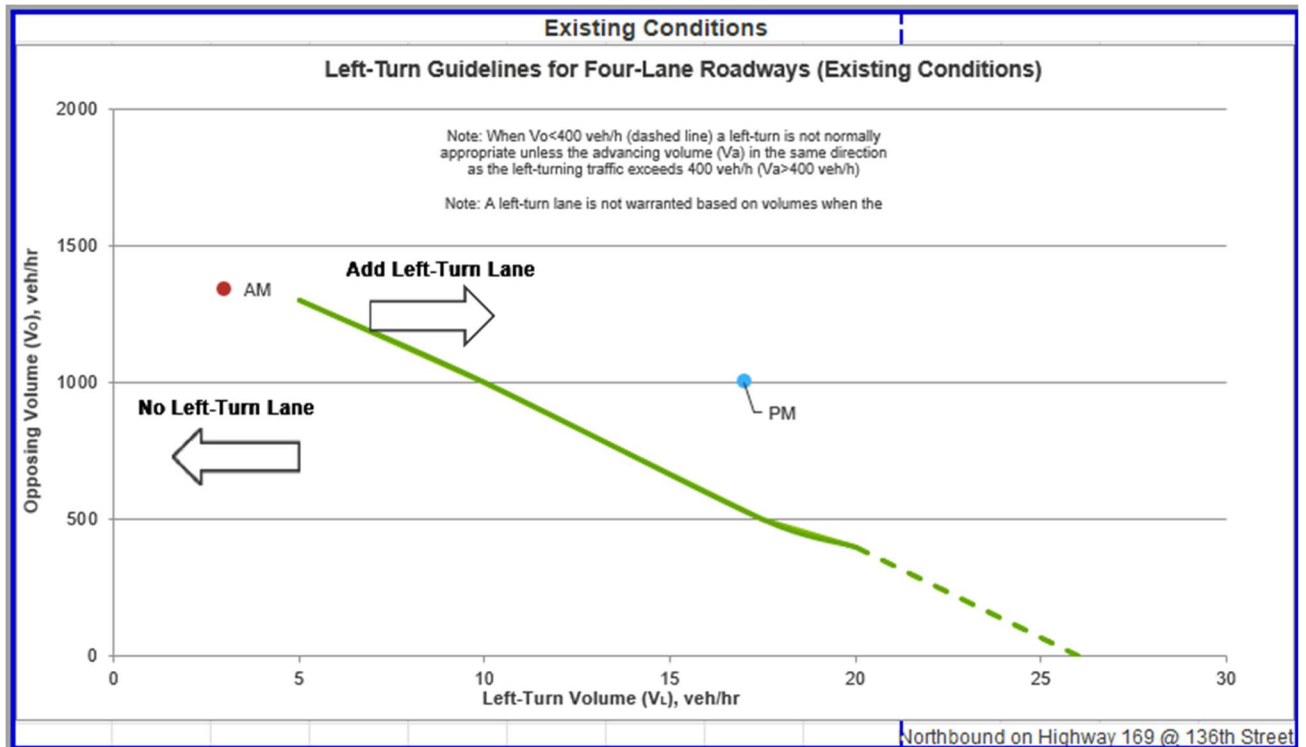
APPENDIX B

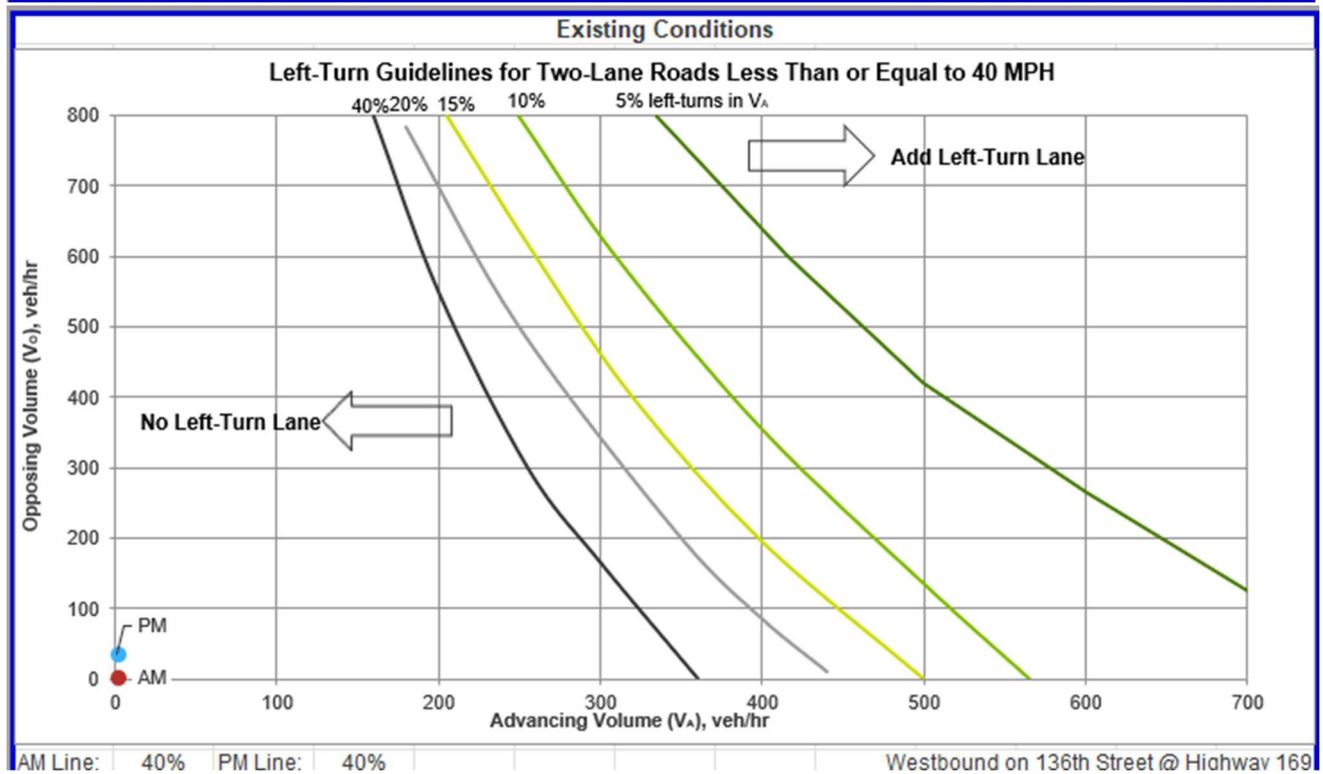
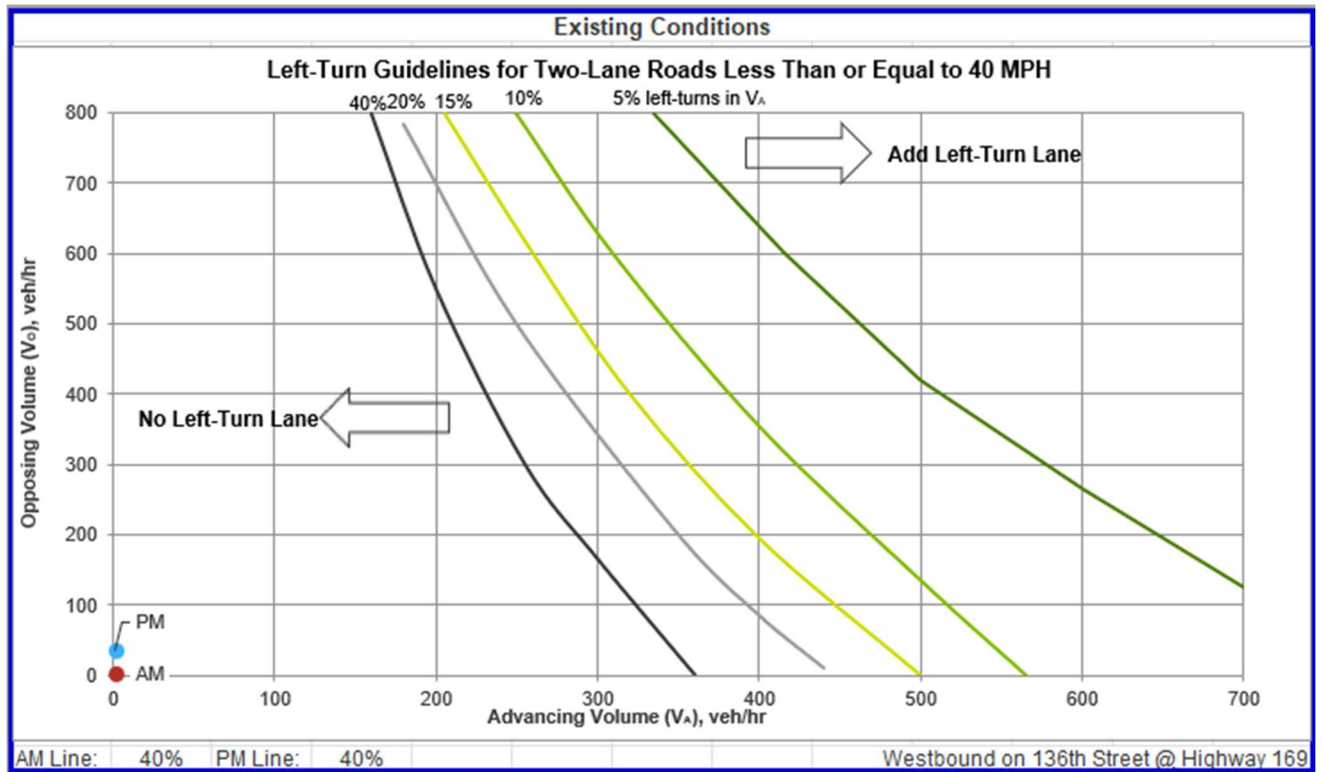
Existing Conditions

Intersection 1

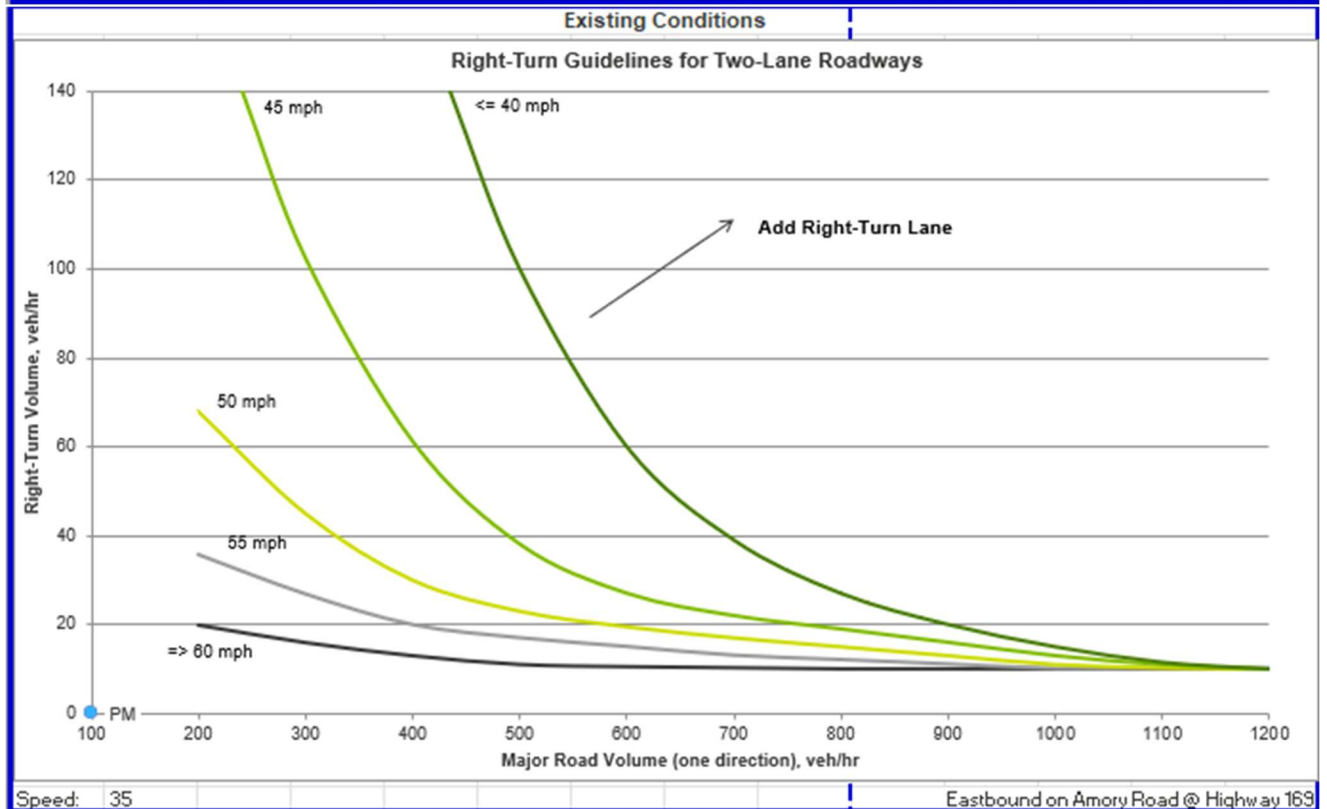
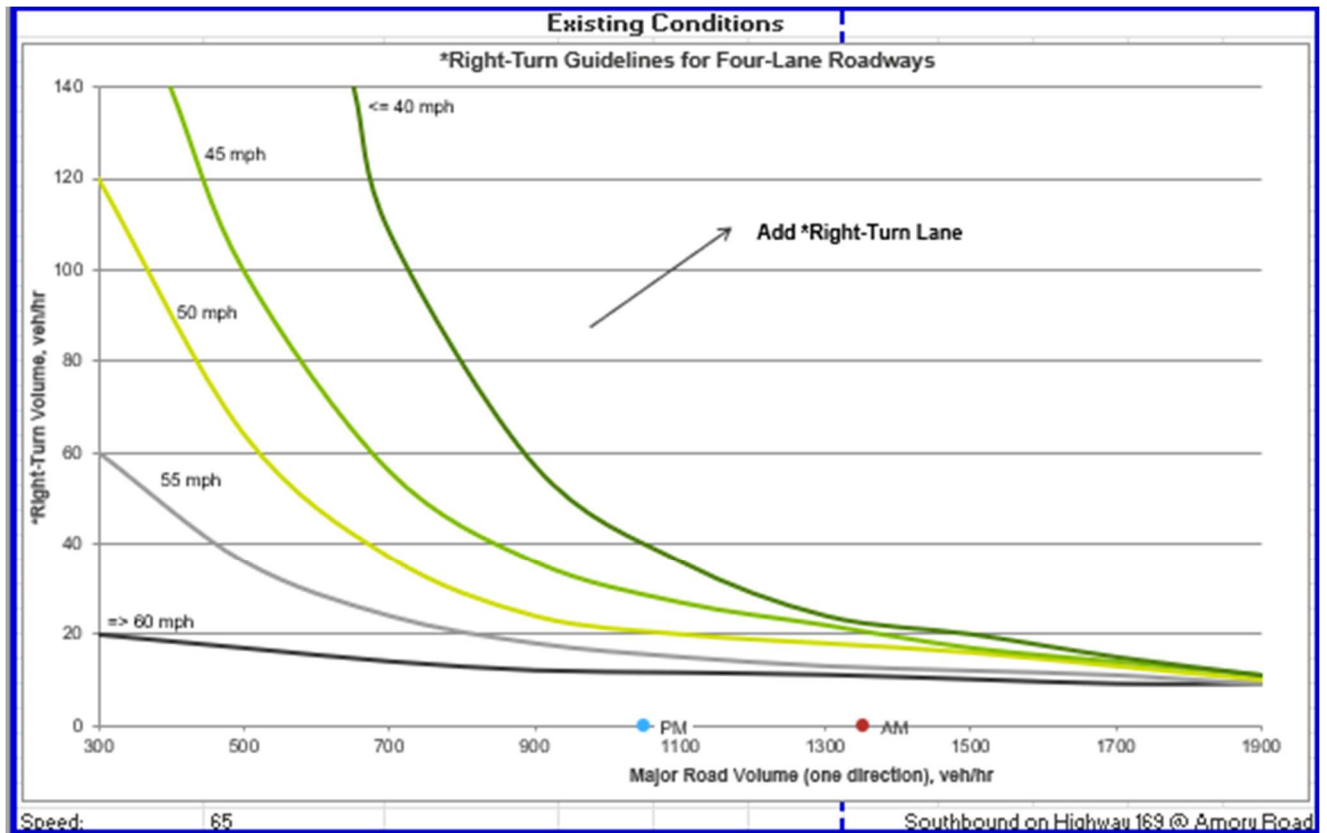


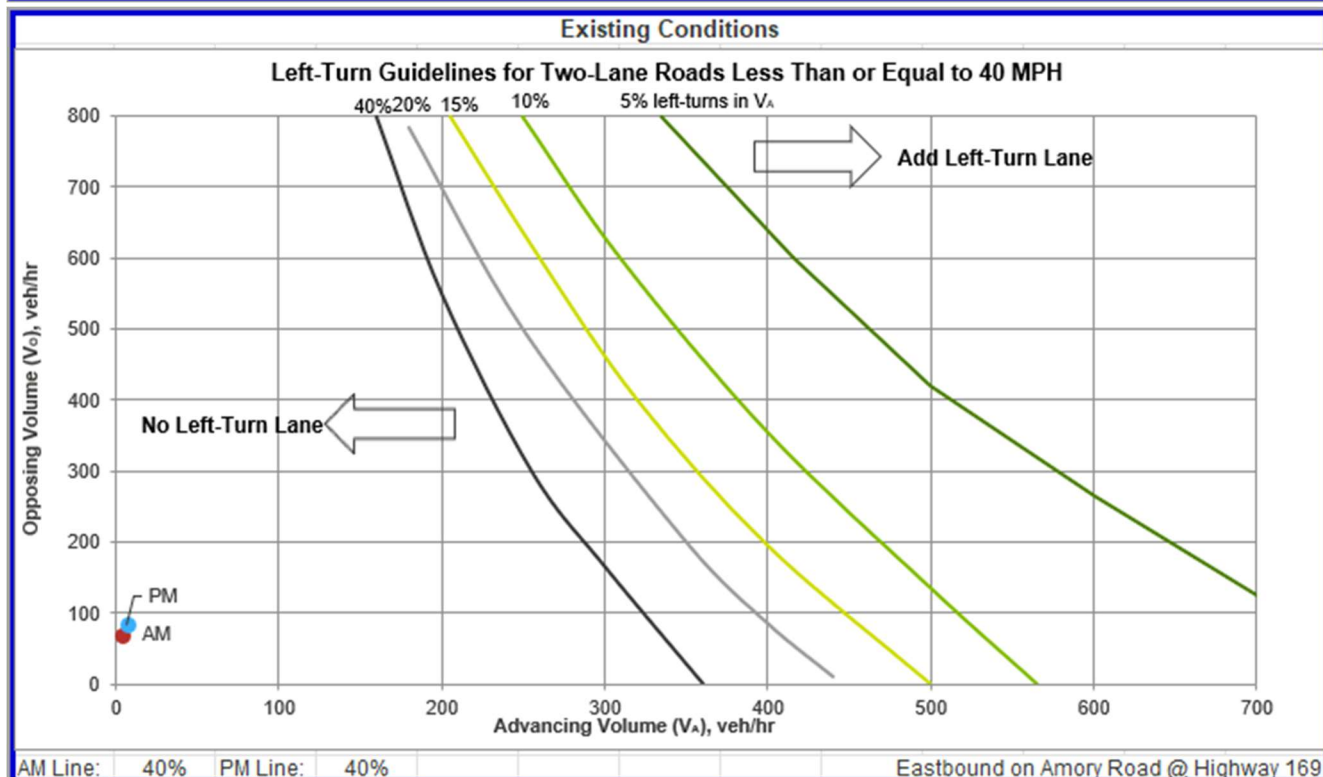
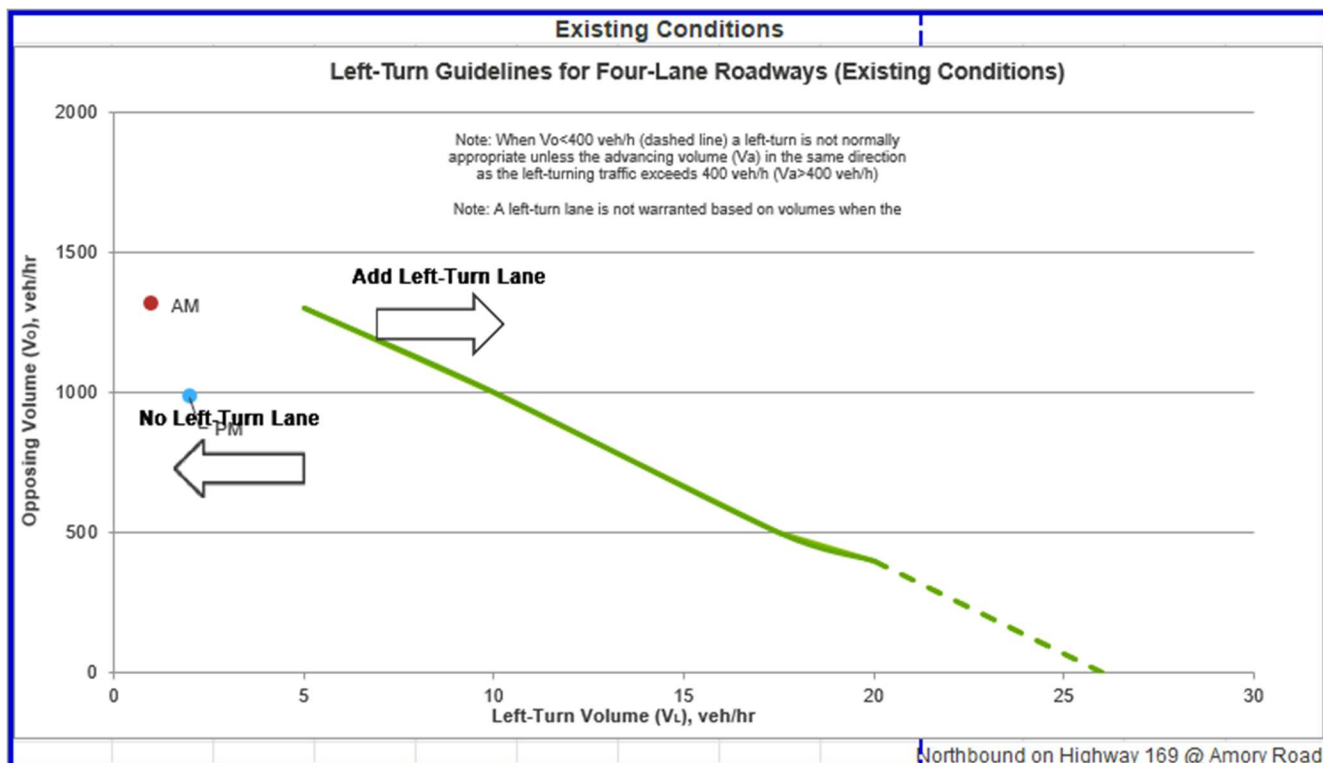


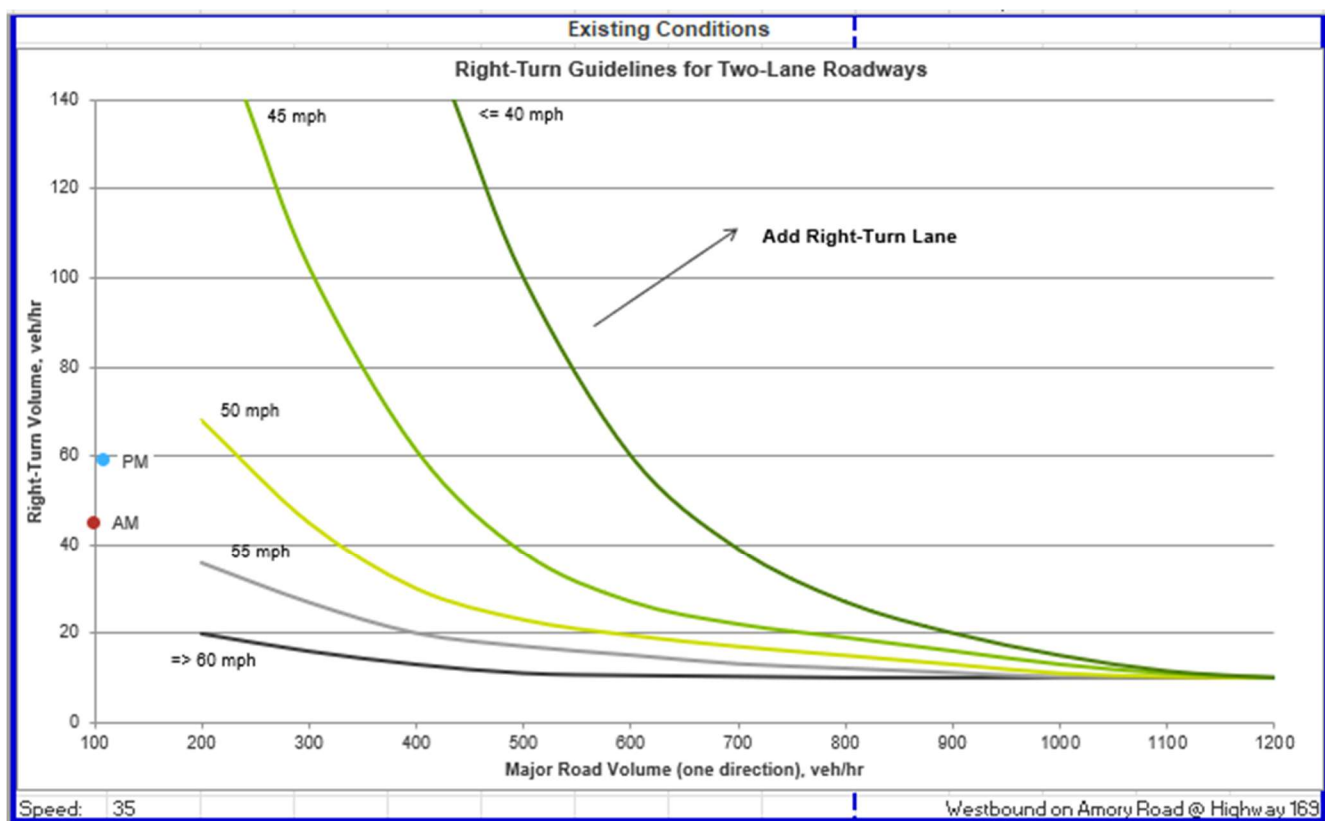
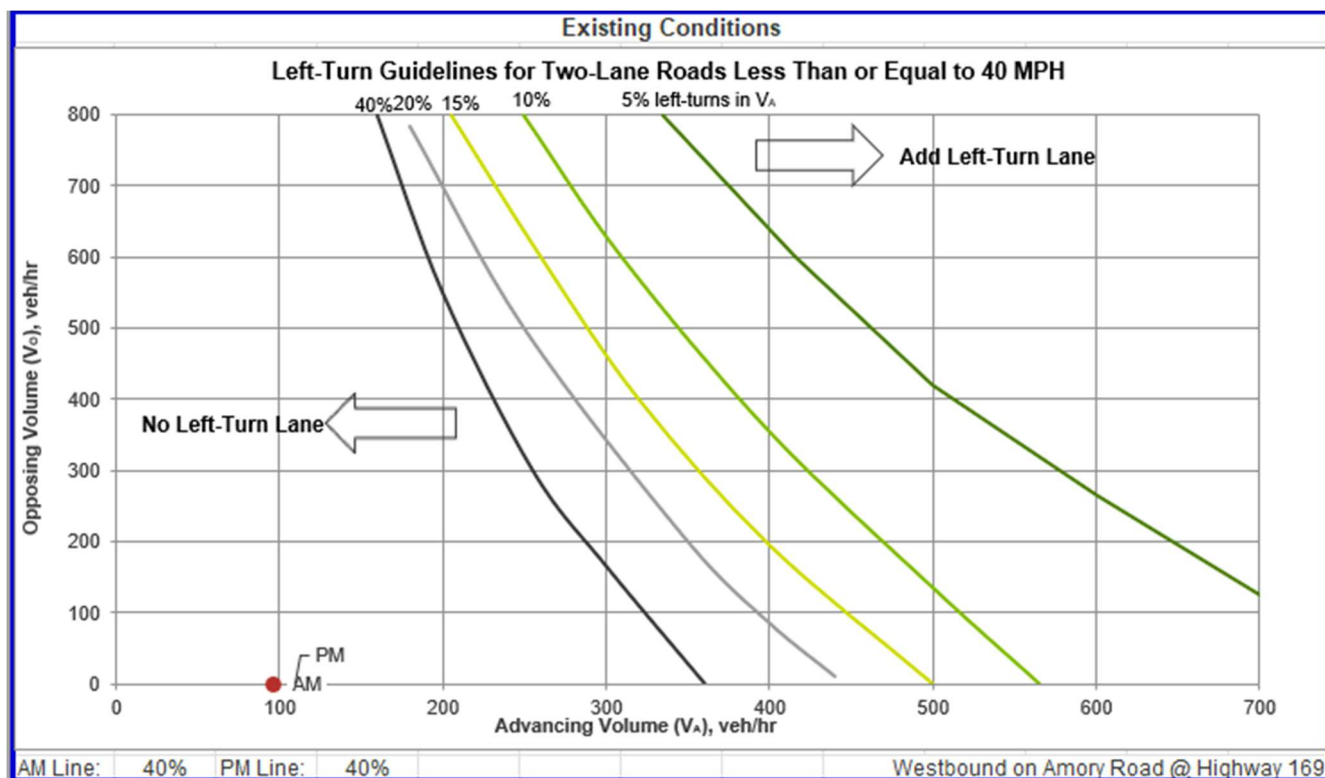




Intersection 2







Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱						↰↱	
Traffic Vol, veh/h	0	0	3	1	3	0	0	0	0	0	1339	1
Future Vol, veh/h	0	0	3	1	3	0	0	0	0	0	1339	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	1	3	0	0	0	0	0	1440	1
Major/Minor	Minor2		Minor1				Major2					
Conflicting Flow All	-	1440	720	720	1441	-	0		0	0		
Stage 1	-	1440	-	0	0	-	-		-	-		
Stage 2	-	0	-	720	1441	-	-		-	-		
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14		-	-		
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-		-	-		
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-		-	-		
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22		-	-		
Pot Cap-1 Maneuver	0	132	370	315	131	0	-		-	-		
Stage 1	0	196	-	-	-	0	-		-	-		
Stage 2	0	-	-	385	196	0	-		-	-		
Platoon blocked, %									-	-		
Mov Cap-1 Maneuver	-	132	370	313	131	-	-		-	-		
Mov Cap-2 Maneuver	-	132	-	313	131	-	-		-	-		
Stage 1	-	196	-	-	-	-	-		-	-		
Stage 2	-	-	-	382	196	-	-		-	-		
Approach	EB		WB				SB					
HCM Ctrl Dly, s/v	14.81		29.09				0					
HCM LOS	B		D									
Minor Lane/Major Mvmt	EBLn1WBLn1		SBL	SBT	SBR							
Capacity (veh/h)	370 154		-	-	-							
HCM Lane V/C Ratio	0.009 0.028		-	-	-							
HCM Ctrl Dly (s/v)	14.8 29.1		0	-	-							
HCM Lane LOS	B D		A	-	-							
HCM 95th %tile Q(veh)	0 0.1		-	-	-							

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↱				
Traffic Vol, veh/h	0	0	0	0	1	0	3	705	1	0	0	0
Future Vol, veh/h	0	0	0	0	1	0	3	705	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	0	3	820	1	0	0	0

Major/Minor	Minor2		Minor1		Major1					
Conflicting Flow All	417	828	-	-	827	410	0	0	0	
Stage 1	0	0	-	-	827	-	-	-	-	
Stage 2	417	828	-	-	0	-	-	-	-	
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-	
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-	
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-	
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-	
Pot Cap-1 Maneuver	520	305	0	0	305	590	-	-	-	
Stage 1	-	-	0	0	384	-	-	-	-	
Stage 2	583	384	0	0	-	-	-	-	-	
Platoon blocked, %								-	-	
Mov Cap-1 Maneuver	518	305	-	-	305	590	-	-	-	
Mov Cap-2 Maneuver	518	305	-	-	305	-	-	-	-	
Stage 1	-	-	-	-	384	-	-	-	-	
Stage 2	582	384	-	-	-	-	-	-	-	

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	16.84	
HCM LOS	A	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	-	-	-	305
HCM Lane V/C Ratio	-	-	-	0.004
HCM Ctrl Dly (s/v)	-	-	-	0 16.8
HCM Lane LOS	-	-	-	A C
HCM 95th %tile Q(veh)	-	-	-	0

Intersection													
Int Delay, s/veh	0.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↱			↱					↱	↱↱		
Traffic Vol, veh/h	0	0	0	26	0	0	0	0	0	38	1314	0	
Future Vol, veh/h	0	0	0	26	0	0	0	0	0	38	1314	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	230	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	0	0	30	0	0	0	0	0	43	1493	0	
Major/Minor	Minor2		Minor1				Major2						
Conflicting Flow All	-	1580	747	833	1580	-	0		0	0	0		
Stage 1	-	1580	-	0	0	-	-		-	-	-		
Stage 2	-	0	-	833	1580	-	-		-	-	-		
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14		-	-	-		
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-		-	-	-		
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-		-	-	-		
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22		-	-	-		
Pot Cap-1 Maneuver	0	108	356	261	108	0	-		-	-	-		
Stage 1	0	168	-	-	-	0	-		-	-	-		
Stage 2	0	-	-	329	168	0	-		-	-	-		
Platoon blocked, %									-	-	-		
Mov Cap-1 Maneuver	-	108	356	261	108	-	-		-	-	-		
Mov Cap-2 Maneuver	-	108	-	261	108	-	-		-	-	-		
Stage 1	-	168	-	-	-	-	-		-	-	-		
Stage 2	-	-	-	329	168	-	-		-	-	-		
Approach	EB		WB				SB						
HCM Ctrl Dly, s/v	0		20.53										
HCM LOS	A		C										
Minor Lane/Major Mvmt	EBLn1WBLn1		SBL	SBT	SBR								
Capacity (veh/h)	-		261	-	-	-							
HCM Lane V/C Ratio	-		0.113	-	-	-							
HCM Ctrl Dly (s/v)	0		20.5	-	-	-							
HCM Lane LOS	A		C	-	-	-							
HCM 95th %tile Q(veh)	-		0.4	-	-	-							

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↱	↱			
Traffic Vol, veh/h	4	34	0	0	25	45	1	685	19	0	0	0
Future Vol, veh/h	4	34	0	0	25	45	1	685	19	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	39	0	0	28	51	1	778	22	0	0	0

Major/Minor	Minor2		Minor1		Major1					
Conflicting Flow All	406	802	-	-	781	389	0	0	0	
Stage 1	0	0	-	-	781	-	-	-	-	
Stage 2	406	802	-	-	0	-	-	-	-	
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-	
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-	
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-	
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-	
Pot Cap-1 Maneuver	530	316	0	0	325	609	-	-	-	
Stage 1	-	-	0	0	404	-	-	-	-	
Stage 2	593	394	0	0	-	-	-	-	-	
Platoon blocked, %								-	-	
Mov Cap-1 Maneuver	443	316	-	-	325	609	-	-	-	
Mov Cap-2 Maneuver	443	316	-	-	325	-	-	-	-	
Stage 1	-	-	-	-	404	-	-	-	-	
Stage 2	505	394	-	-	-	-	-	-	-	

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	17.74	14.35	
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	-	-	-	325 464
HCM Lane V/C Ratio	-	-	-	0.133 0.171
HCM Ctrl Dly (s/v)	-	-	-	17.7 14.4
HCM Lane LOS	-	-	-	C B
HCM 95th %tile Q(veh)	-	-	-	0.5 0.6

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	20	15	1	16	0	0	0	0	8	992	10
Future Vol, veh/h	0	20	15	1	16	0	0	0	0	8	992	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	16	1	17	0	0	0	0	9	1055	11
Major/Minor	Minor2		Minor1				Major2					
Conflicting Flow All	-	1078	533	555	1083	-	0		0	0		
Stage 1	-	1078	-	0	0	-	-		-	-		
Stage 2	-	0	-	555	1083	-	-		-	-		
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14		-	-		
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-		-	-		
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-		-	-		
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22		-	-		
Pot Cap-1 Maneuver	0	217	491	414	216	0	-		-	-		
Stage 1	0	293	-	-	-	0	-		-	-		
Stage 2	0	-	-	483	292	0	-		-	-		
Platoon blocked, %									-	-		
Mov Cap-1 Maneuver	-	217	491	362	216	-	-		-	-		
Mov Cap-2 Maneuver	-	217	-	362	216	-	-		-	-		
Stage 1	-	293	-	-	-	-	-		-	-		
Stage 2	-	-	-	434	292	-	-		-	-		
Approach	EB		WB				SB					
HCM Ctrl Dly, s/v	19.48		22.73									
HCM LOS	C		C									
Minor Lane/Major Mvmt	EBLn1WBLn1		SBL	SBT	SBR							
Capacity (veh/h)	286 221		-	-	-							
HCM Lane V/C Ratio	0.13 0.082		-	-	-							
HCM Ctrl Dly (s/v)	19.5 22.7		-	-	-							
HCM Lane LOS	C C		-	-	-							
HCM 95th %tile Q(veh)	0.4 0.3		-	-	-							

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↱				
Traffic Vol, veh/h	28	0	0	0	0	0	17	1437	0	0	0	0
Future Vol, veh/h	28	0	0	0	0	0	17	1437	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	0	0	0	0	0	17	1466	0	0	0	0

Major/Minor	Minor2		Minor1		Major1				
Conflicting Flow All	768	1501	-	-	1501	733	0	0	0
Stage 1	0	0	-	-	1501	-	-	-	-
Stage 2	768	1501	-	-	0	-	-	-	-
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	291	121	0	0	121	363	-	-	-
Stage 1	-	-	0	0	183	-	-	-	-
Stage 2	360	183	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	291	121	-	-	121	363	-	-	-
Mov Cap-2 Maneuver	291	121	-	-	121	-	-	-	-
Stage 1	-	-	-	-	183	-	-	-	-
Stage 2	360	183	-	-	-	-	-	-	-

Approach	EB		WB		NB		
HCM Ctrl Dly, s/v	18.7		0				
HCM LOS	C		A				

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1			
Capacity (veh/h)	-	-	-	291	-		
HCM Lane V/C Ratio	-	-	-	0.098	-		
HCM Ctrl Dly (s/v)	-	-	-	18.7	0		
HCM Lane LOS	-	-	-	C	A		
HCM 95th %tile Q(veh)	-	-	-	0.3	-		

Intersection													
Int Delay, s/veh	0.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↻			↻					↻	↻↻		
Traffic Vol, veh/h	0	0	0	26	0	0	0	0	0	64	984	0	
Future Vol, veh/h	0	0	0	26	0	0	0	0	0	64	984	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	230	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	0	0	28	0	0	0	0	0	69	1058	0	
Major/Minor	Minor2		Minor1				Major2						
Conflicting Flow All	-	1196	529	667	1196	-	0		0	0			
Stage 1	-	1196	-	0	0	-	-		-	-	-		
Stage 2	-	0	-	667	1196	-	-		-	-	-		
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14		-	-	-		
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-		-	-	-		
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-		-	-	-		
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22		-	-	-		
Pot Cap-1 Maneuver	0	185	494	345	185	0	-		-	-	-		
Stage 1	0	258	-	-	-	0	-		-	-	-		
Stage 2	0	-	-	415	258	0	-		-	-	-		
Platoon blocked, %									-	-	-		
Mov Cap-1 Maneuver	-	185	494	345	185	-	-		-	-	-		
Mov Cap-2 Maneuver	-	185	-	345	185	-	-		-	-	-		
Stage 1	-	258	-	-	-	-	-		-	-	-		
Stage 2	-	-	-	415	258	-	-		-	-	-		
Approach	EB		WB				SB						
HCM Ctrl Dly, s/v	0		16.37										
HCM LOS	A		C										
Minor Lane/Major Mvmt	EBLn1WBLn1		SBL	SBT	SBR								
Capacity (veh/h)	-		345	-	-	-							
HCM Lane V/C Ratio	-		0.081	-	-	-							
HCM Ctrl Dly (s/v)	0		16.4	-	-	-							
HCM Lane LOS	A		C	-	-	-							
HCM 95th %tile Q(veh)	-		0.3	-	-	-							

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↱	↱			
Traffic Vol, veh/h	7	57	0	0	24	59	2	1418	45	0	0	0
Future Vol, veh/h	7	57	0	0	24	59	2	1418	45	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	65	0	0	27	67	2	1611	51	0	0	0

Major/Minor	Minor2		Minor1		Major1					
Conflicting Flow All	824	1667	-	-	1616	806	0	0	0	
Stage 1	0	0	-	-	1616	-	-	-	-	
Stage 2	824	1667	-	-	0	-	-	-	-	
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-	
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-	
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-	
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-	
Pot Cap-1 Maneuver	265	96	0	0	103	325	-	-	-	
Stage 1	-	-	0	0	161	-	-	-	-	
Stage 2	333	152	0	0	-	-	-	-	-	
Platoon blocked, %								-	-	
Mov Cap-1 Maneuver	155	96	-	-	103	325	-	-	-	
Mov Cap-2 Maneuver	155	96	-	-	103	-	-	-	-	
Stage 1	-	-	-	-	161	-	-	-	-	
Stage 2	220	152	-	-	-	-	-	-	-	

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	105.01	38.13	
HCM LOS	F	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	-	-	-	100 200
HCM Lane V/C Ratio	-	-	-	0.73 0.472
HCM Ctrl Dly (s/v)	-	-	-	105 38.1
HCM Lane LOS	-	-	-	F E
HCM 95th %tile Q(veh)	-	-	-	3.8 2.3

APPENDIX C

Existing plus Phase 1 Conditions

TRIP GENERATION

Smithville, MO



Trip Generation - Project Rocketship													
ITE Code	Phase	Land Use	Setting/Location	Average Rate/ Fitted Curce	Density	Daily	AM Peak Hour			PM Peak Hour			
							Total	Enter	Exit	Total	Enter	Exit	
140	Phase 1	Manufacturing	General Urban/Suburban	Average Rate	689,920	s.f.	2,946	352	264	88	435	126	309
150	Phase 1	Warehousing	General Urban/Suburban	Average Rate	504,000	s.f.	696	60	46	14	76	21	55
GROSS TRIPS							3,642	412	310	102	511	147	364
DRIVEWAY VOLUMES							3,642	412	310	102	511	147	364

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱					↱	↱↱	
Traffic Vol, veh/h	0	0	0	32	0	0	0	0	0	38	1464	0
Future Vol, veh/h	0	0	0	32	0	0	0	0	0	38	1464	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	230	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	35	0	0	0	0	0	41	1591	0
Major/Minor	Minor2			Minor1			Major2					
Conflicting Flow All	-	1674	796	878	1674	-	0			0	0	0
Stage 1	-	1674	-	0	0	-	-			-	-	-
Stage 2	-	0	-	878	1674	-	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14			-	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22			-	-	-
Pot Cap-1 Maneuver	0	95	330	242	95	0	-			-	-	-
Stage 1	0	151	-	-	-	0	-			-	-	-
Stage 2	0	-	-	309	151	0	-			-	-	-
Platoon blocked, %										-	-	-
Mov Cap-1 Maneuver	-	95	330	242	95	-	-			-	-	-
Mov Cap-2 Maneuver	-	95	-	242	95	-	-			-	-	-
Stage 1	-	151	-	-	-	-	-			-	-	-
Stage 2	-	-	-	309	151	-	-			-	-	-
Approach	EB			WB			SB					
HCM Ctrl Dly, s/v	0			22.34								
HCM LOS	A			C								
Minor Lane/Major Mvmt	EBLn1WBLn1			SBL	SBT	SBR						
Capacity (veh/h)	-			242	-	-						
HCM Lane V/C Ratio	-			0.144	-	-						
HCM Ctrl Dly (s/v)	0			22.3	-	-						
HCM Lane LOS	A			C	-	-						
HCM 95th %tile Q(veh)	-			0.5	-	-						

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↱	↱			
Traffic Vol, veh/h	4	34	0	0	31	45	0	730	21	0	0	0
Future Vol, veh/h	4	34	0	0	31	45	0	730	21	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	37	0	0	34	49	0	793	23	0	0	0

Major/Minor	Minor2		Minor1		Major1					
Conflicting Flow All	414	816	-	-	793	397	0	0	0	
Stage 1	0	0	-	-	793	-	-	-	-	
Stage 2	414	816	-	-	0	-	-	-	-	
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-	
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-	
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-	
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-	
Pot Cap-1 Maneuver	523	310	0	0	319	603	-	-	-	
Stage 1	-	-	0	0	398	-	-	-	-	
Stage 2	587	389	0	0	-	-	-	-	-	
Platoon blocked, %								-	-	
Mov Cap-1 Maneuver	430	310	-	-	319	603	-	-	-	
Mov Cap-2 Maneuver	430	310	-	-	319	-	-	-	-	
Stage 1	-	-	-	-	398	-	-	-	-	
Stage 2	493	389	-	-	-	-	-	-	-	

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	17.95	14.99	0
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	-	-	-	319 443
HCM Lane V/C Ratio	-	-	-	0.129 0.187
HCM Ctrl Dly (s/v)	0	-	-	17.9 15
HCM Lane LOS	A	-	-	C B
HCM 95th %tile Q(veh)	-	-	-	0.4 0.7

Intersection

Int Delay, s/veh 2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	1	310	102	0
Future Vol, veh/h	0	3	1	310	102	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	1	337	111	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	338	0	0 173 170
Stage 1	-	-	- 170 -
Stage 2	-	-	- 3 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1221	-	- 817 874
Stage 1	-	-	- 860 -
Stage 2	-	-	- 1020 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1221	-	- 817 874
Mov Cap-2 Maneuver	-	-	- 817 -
Stage 1	-	-	- 860 -
Stage 2	-	-	- 1020 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1221	-	-	-	817
HCM Lane V/C Ratio	-	-	-	-	0.136
HCM Ctrl Dly (s/v)	0	-	-	-	10.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱					↱	↱↱	
Traffic Vol, veh/h	0	0	0	29	0	0	0	0	0	64	1078	0
Future Vol, veh/h	0	0	0	29	0	0	0	0	0	64	1078	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	230	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	32	0	0	0	0	0	70	1172	0
Major/Minor	Minor2			Minor1			Major2					
Conflicting Flow All	-	1311	586	725	1311	-	0			0	0	0
Stage 1	-	1311	-	0	0	-	-			-	-	-
Stage 2	-	0	-	725	1311	-	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14			-	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22			-	-	-
Pot Cap-1 Maneuver	0	158	454	313	158	0	-			-	-	-
Stage 1	0	227	-	-	-	0	-			-	-	-
Stage 2	0	-	-	383	227	0	-			-	-	-
Platoon blocked, %										-	-	-
Mov Cap-1 Maneuver	-	158	454	313	158	-	-			-	-	-
Mov Cap-2 Maneuver	-	158	-	313	158	-	-			-	-	-
Stage 1	-	227	-	-	-	-	-			-	-	-
Stage 2	-	-	-	383	227	-	-			-	-	-
Approach	EB			WB			SB					
HCM Ctrl Dly, s/v	0			17.8								
HCM LOS	A			C								
Minor Lane/Major Mvmt	EBLn1WBLn1			SBL	SBT	SBR						
Capacity (veh/h)	-			313	-	-						
HCM Lane V/C Ratio	-			0.101	-	-						
HCM Ctrl Dly (s/v)	0			17.8	-	-						
HCM Lane LOS	A			C	-	-						
HCM 95th %tile Q(veh)	-			0.3	-	-						

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↱	↱			
Traffic Vol, veh/h	7	57	0	0	27	83	0	1581	26	0	0	0
Future Vol, veh/h	7	57	0	0	27	83	0	1581	26	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	62	0	0	29	90	0	1718	28	0	0	0

Major/Minor	Minor2		Minor1		Major1					
Conflicting Flow All	874	1747	-	-	1718	859	0	0	0	
Stage 1	0	0	-	-	1718	-	-	-	-	
Stage 2	874	1747	-	-	0	-	-	-	-	
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-	
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-	
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-	
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-	
Pot Cap-1 Maneuver	244	85	0	0	89	300	-	-	-	
Stage 1	-	-	0	0	143	-	-	-	-	
Stage 2	311	138	0	0	-	-	-	-	-	
Platoon blocked, %								-	-	
Mov Cap-1 Maneuver	114	85	-	-	89	300	-	-	-	
Mov Cap-2 Maneuver	114	85	-	-	89	-	-	-	-	
Stage 1	-	-	-	-	143	-	-	-	-	
Stage 2	173	138	-	-	-	-	-	-	-	

Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	129.26		51.95		0	
HCM LOS	F		F			

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	
Capacity (veh/h)	-	-	-	88	189
HCM Lane V/C Ratio	-	-	-	0.793	0.632
HCM Ctrl Dly (s/v)	0	-	-	129.3	51.9
HCM Lane LOS	A	-	-	F	F
HCM 95th %tile Q(veh)	-	-	-	4.1	3.6

Intersection						
Int Delay, s/veh	8.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	10	147	364	0
Future Vol, veh/h	0	35	10	147	364	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	11	160	396	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	171	0	-	0	129	91
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1407	-	-	-	866	967
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1407	-	-	-	866	967
Mov Cap-2 Maneuver	-	-	-	-	866	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	984	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0	0		12.61		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1407	-	-	-	866	
HCM Lane V/C Ratio	-	-	-	-	0.457	
HCM Ctrl Dly (s/v)	0	-	-	-	12.6	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	2.4	

APPENDIX D

2032 Full Build Conditions

TRIP GENERATION

Smithville, MO



Trip Generation - Project Rocketship													
ITE Code	Phase	Land Use	Setting/Location	Average Rate/ Fitted Curce	Density	Daily	AM Peak Hour			PM Peak Hour			
							Total	Enter	Exit	Total	Enter	Exit	
140	Phase 1	Manufacturing	General Urban/Suburban	Average Rate	689,920	s.f.	2,946	352	264	88	435	126	309
140	Full Build	Manufacturing	General Urban/Suburban	Average Rate	188,160	s.f.	803	96	72	24	119	35	84
150	Phase 1	Warehousing	General Urban/Suburban	Average Rate	504,000	s.f.	696	60	46	14	76	21	55
150	Full Build	Warehousing	General Urban/Suburban	Average Rate	504,000	s.f.	696	60	46	14	76	21	55
821	Full Build	Shopping Plaza (40-150k)	General Urban/Suburban	Average Rate	112,000	s.f.	7,323	178	110	68	533	261	272
GROSS TRIPS							12,464	746	538	208	1,239	464	775
DRIVEWAY VOLUMES							12,464	746	538	208	1,239	464	775

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	4	280	108	0
Future Vol, veh/h	0	3	4	280	108	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	4	304	117	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	309	0	0 160 157
Stage 1	-	-	- 157 -
Stage 2	-	-	- 3 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1252	-	- 831 889
Stage 1	-	-	- 872 -
Stage 2	-	-	- 1020 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1252	-	- 831 889
Mov Cap-2 Maneuver	-	-	- 831 -
Stage 1	-	-	- 872 -
Stage 2	-	-	- 1020 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	10.04
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1252	-	-	-	831
HCM Lane V/C Ratio	-	-	-	-	0.141
HCM Ctrl Dly (s/v)	0	-	-	-	10
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection						
Int Delay, s/veh	7.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	258	0	0	100
Future Vol, veh/h	0	0	258	0	0	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	280	0	0	109
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	562	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	561	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	488	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1622	-	404	1083
Mov Cap-2 Maneuver	-	-	-	-	404	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	473	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		7.68		8.69	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1083	-	-	1622	-	
HCM Lane V/C Ratio	0.1	-	-	0.173	-	
HCM Ctrl Dly (s/v)	8.7	-	-	7.7	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.6	-	

Intersection						
Int Delay, s/veh	8.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	37	29	241	403	0
Future Vol, veh/h	0	37	29	241	403	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	32	262	438	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	293	0	-	0	203	163
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	40	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1268	-	-	-	786	882
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	982	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1268	-	-	-	786	882
Mov Cap-2 Maneuver	-	-	-	-	786	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	982	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0	0		15.19		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1268	-	-	-	786	
HCM Lane V/C Ratio	-	-	-	-	0.557	
HCM Ctrl Dly (s/v)	0	-	-	-	15.2	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	3.5	

Intersection						
Int Delay, s/veh	9.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	223	0	0	372
Future Vol, veh/h	0	0	223	0	0	372
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	242	0	0	404
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	486	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	485	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	540	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	619	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1622	-	460	1083
Mov Cap-2 Maneuver	-	-	-	-	460	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	527	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		7.61		10.29	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1083	-	-	1622	-	
HCM Lane V/C Ratio	0.373	-	-	0.149	-	
HCM Ctrl Dly (s/v)	10.3	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.8	-	-	0.5	-	

APPENDIX E

Future Year 2045 plus Full Build Conditions

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	112	77	280	108	0
Future Vol, veh/h	0	112	77	280	108	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	122	84	304	117	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	388	0	-	0	358	236
Stage 1	-	-	-	-	236	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1170	-	-	-	641	803
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1170	-	-	-	641	803
Mov Cap-2 Maneuver	-	-	-	-	641	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	904	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0	0		11.87		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1170	-	-	-	641	
HCM Lane V/C Ratio	-	-	-	-	0.183	
HCM Ctrl Dly (s/v)	0	-	-	-	11.9	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.7	

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	108	0	258	72	0	100
Future Vol, veh/h	108	0	258	72	0	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	117	0	280	78	0	109
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	117	0	757	117
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	639	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1471	-	376	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1471	-	301	935
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	421	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		6.27		9.36	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	935	-	-	1407	-	
HCM Lane V/C Ratio	0.116	-	-	0.191	-	
HCM Ctrl Dly (s/v)	9.4	-	-	8	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.7	-	

Intersection						
Int Delay, s/veh	12.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	130	165	241	403	0
Future Vol, veh/h	0	130	165	241	403	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	141	179	262	438	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	441	0	-	0	452	310
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	141	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1119	-	-	-	566	730
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	566	730
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	886	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0	0		29.85		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1119	-	-	-	566	
HCM Lane V/C Ratio	-	-	-	-	0.774	
HCM Ctrl Dly (s/v)	0	-	-	-	29.8	
HCM Lane LOS	A	-	-	-	D	
HCM 95th %tile Q(veh)	0	-	-	-	7.1	

Intersection						
Int Delay, s/veh	7.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	88	0	223	132	0	372
Future Vol, veh/h	88	0	223	132	0	372
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	96	0	242	143	0	404
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	96	0	724	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	628	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1498	-	393	961
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	532	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1498	-	324	961
Mov Cap-2 Maneuver	-	-	-	-	324	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	438	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		4.94		11.44	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	961	-	-	1131	-	
HCM Lane V/C Ratio	0.421	-	-	0.162	-	
HCM Ctrl Dly (s/v)	11.4	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	2.1	-	-	0.6	-	

PROJECT ROCKET SHIP

Smithville, Missouri

June 2026

Olsson Project No. 026-02142