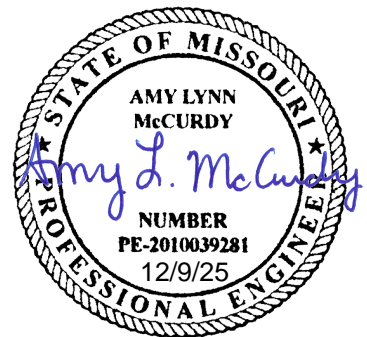


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Legacy Ridge Development  
Traffic Impact Study  
Lee's Summit, Missouri

December 9th, 2025

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Prepared by:



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## INTRODUCTION

The purpose of this traffic impact study is to assess the potential impact on traffic with the Legacy Ridge development on the southeast corner of the intersection of Hook Road and Ward Road in Lee's Summit, Missouri. The location of the development in relation to the street network is shown in Figure 1. The site plan for the development is shown in Figure 2.

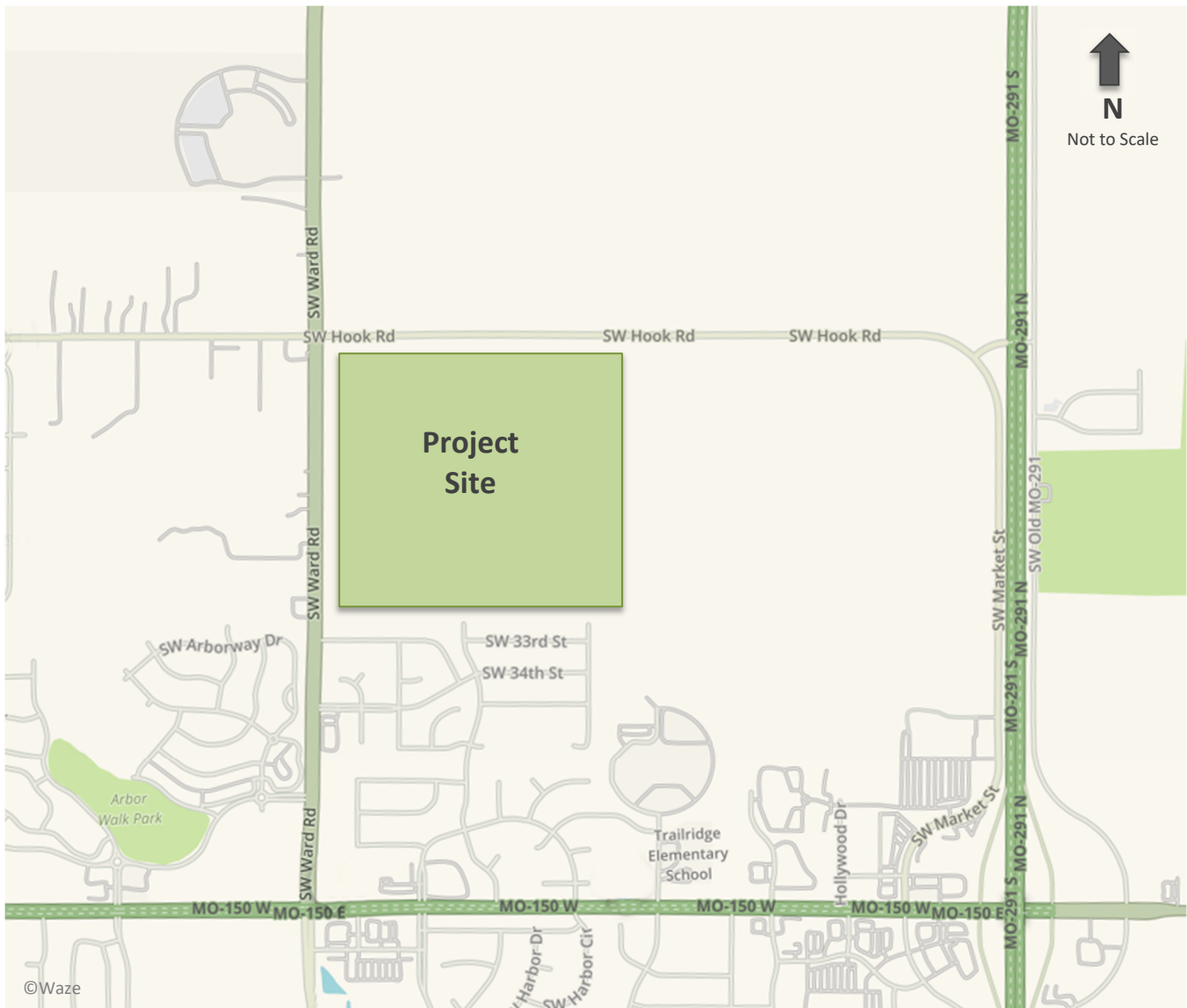


Figure 1 – Development Location



Not to Scale

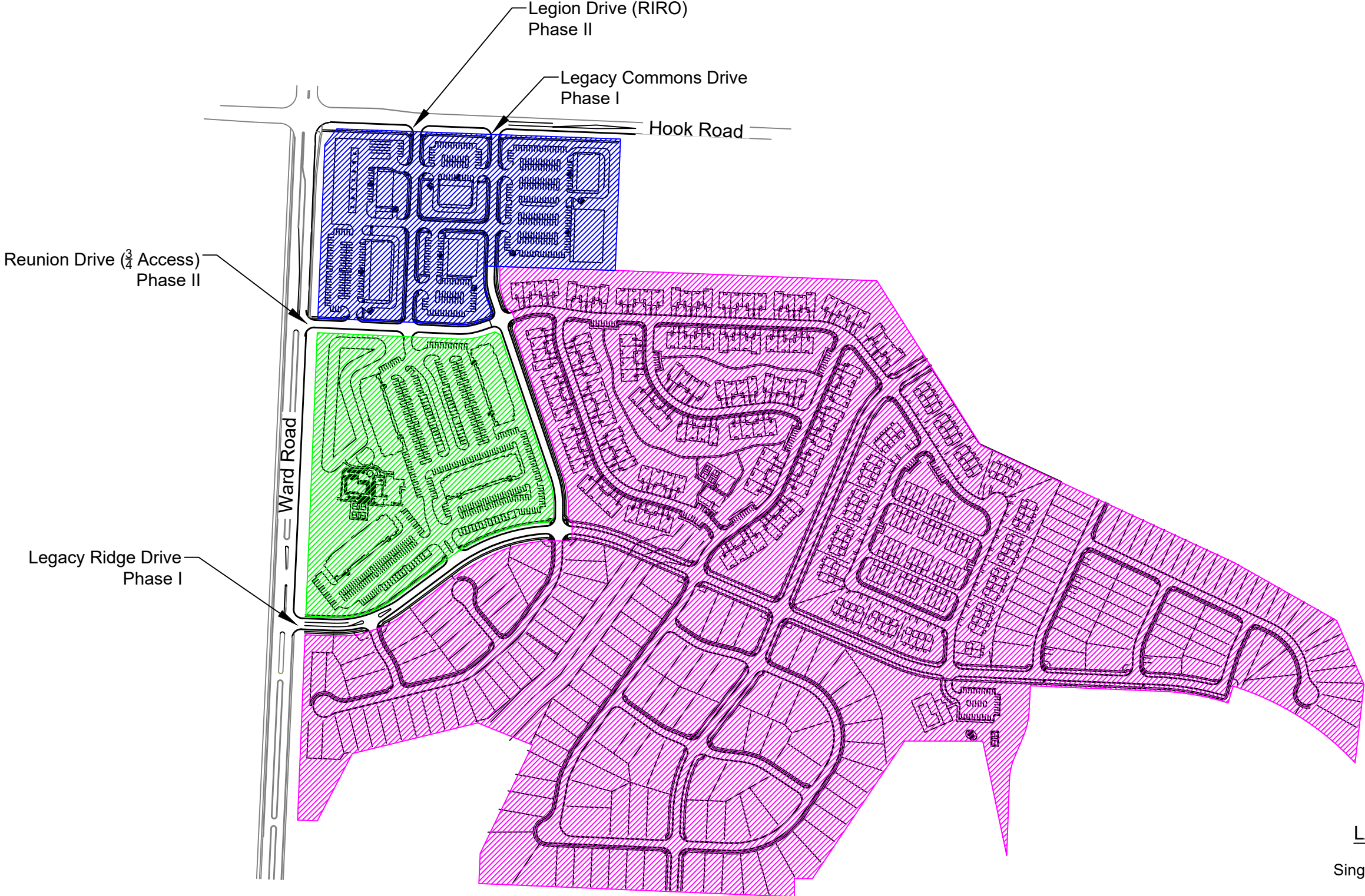


Figure 2 - Site Plan

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### EXISTING CONDITIONS

The site is in Lee's Summit, Missouri, in the southeast quadrant of the intersection Hook Road and Ward Road. The current land use of the planned development area to the north is undeveloped with low density residential to the immediate west and residential to the south.

Lee's Summit West High School is located approximately ½ mile northwest of the planned development. Trailridge Elementary School and Summit Lakes Middle School are located to the south adjacent to the existing residential community.

### Street Network and Traffic Control

The development is bordered on the north by Hook Road, on the west by Ward Road, and generally on the east by Market Street.

Hook Road is a two-lane east-west minor arterial roadway and has a posted speed limit of 45 miles per hour (mph).

Ward Road is a four-lane north-south median divided major arterial with a posted speed limit of 45 mph. The intersection of Hook Road and Ward Road is signalized with left-turn lanes on all approaches, an eastbound right-turn lane, and a westbound right-turn lane.

Market Street is an uncategorized north-south street running parallel to MO 291 with a posted speed limit of 45 mph. Market Street and Hook Road tee into southbound MO 291, which is Right-In/Right-Out (RIRO). The intersection of Market Street/Hook Road and the MO 291 access is stop-controlled with the access street stopping.

Titan Crossing (the primary access for Lee's Summit West High School) is located approximately ½ mile north of the intersection of Hook Road and Ward Road. The intersection of Titan Crossing and Ward Road is signalized and has a northbound left-turn lane and a southbound right-turn lane.

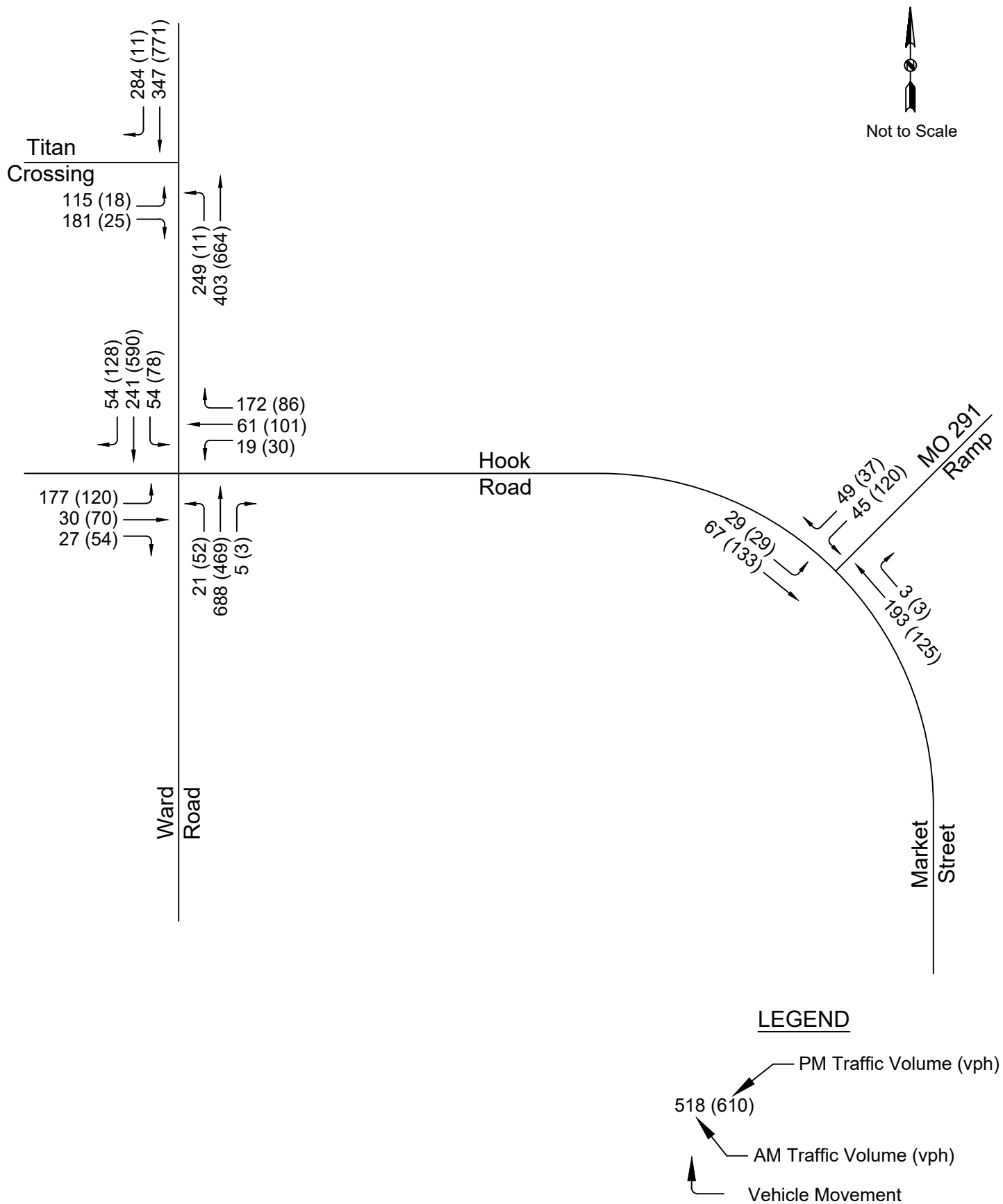
### Traffic Volumes

Intersections counted for analysis in this study were:

- Hook Road and Ward Road
- Titan Crossing and Ward Road
- Hook Road/Market Street and MO 291 access

The turning movement traffic counts were completed on Thursday, March 6th, 2025, and Tuesday, March 11<sup>th</sup>, 2025, for the peak volume time periods. Morning traffic counts were conducted from 6:00 AM until 8:00 AM and afternoon traffic counts were from 1:30 PM until 6:00 PM in order to capture the school peak period. The morning peak period was determined to be from 6:45 AM until 7:45 AM, the school peak period from 2:15 PM until 3:15 PM, and the afternoon peak period from 4:30 PM until 5:30 PM. As the traditional afternoon peak period was had higher traffic volumes than the school peak period, the analysis was completed using the afternoon peak period.

Existing traffic volumes are shown on Figure 3. Traffic counts are included in the Appendix.



**Figure 3 - Existing Traffic Volumes**

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## PROPOSED CONDITIONS

The Legacy Ridge development will be constructed in two phases. Phase I (Phase IA and IB, as shown on the phasing plan in the appendix) will consist of residential land uses only and is anticipated to be constructed in the near future. Phase II will include a mix of residential, commercial, and retail land uses and is a conceptual design only. There is no timeline for the construction of the Phase II land uses.

### Access Plan

**Phase I:** The site will be accessed via a drive on Hook Road (Legacy Commons Drive), Ward Road (Legacy Ridge Drive), and connecting to the existing Windsong Drive to the south. Both the proposed Legacy Commons Drive and Legacy Ridge Drive will be full access.

**Phase II:** The site will be accessed via an additional drive on Hook Road (Legion Drive) and on Ward Road (Reunion Drive). The Legion Drive will be a planned right-in/right-out only (RIRO) and Reunion Drive is planned as a ¾ access.

Two connections are planned for an unspecified future time period to connect to Hook Road on the east side of the development. There are no plans for access into the site from Market Street.

### Access Management and Spacing

Streets located within the functional area of an intersection (the area of an intersection where vehicles maneuver and the required vehicle storage length) can have a detrimental impact on traffic flow and on the safety of the intersection. No new driveways or intersections should be constructed within the functional area of an intersection.

The minimum upstream functional area of an access point is calculated based on the distance traveled during perception-reaction time, distance traveled during deceleration when coming to a stop, and the actual queue storage length. The minimum downstream functional area per Lee's Summit *Access Management Code (2018)* is based on AASHTO stopping sight distances and is 360 feet for a 45 mph roadway.

#### **Phase I**

##### Hook Road and Legacy Commons Drive

Legacy Commons Drive is located approximately 710 feet east of the Hook Road and Ward Road intersection (measured centerline-to-centerline). Using the limiting conditions criteria (405 feet) and the longest westbound queue length (AM peak period), the drive is outside the intersection functional area.

##### Ward Road and Legacy Ridge Drive

The Legacy Ridge Drive is located approximately 1,690 feet south of the Hook Road and Ward Road intersection. Using the limiting conditions criteria (405 feet) and the longest northbound queue length (AM peak period), the drive is outside the intersection functional area.



### ***Phase II***

#### Hook Road and Legion Drive

Legion Drive is 310 feet east of the Hook Road and Ward Road intersection. While the access would be within the downstream functional area, capacity analysis in Synchro and SimTraffic shows that all the intersections function appropriately with respect to queuing and there are sufficient gaps for the right-turning vehicles at the access point.

#### Ward Road and Reunion Drive

Reunion Drive is located approximately 680 feet south of the Hook Road and Ward Road intersection. Using the limiting conditions criteria (405 feet) and the longest northbound queue length (AM peak period), the drive is outside the intersection functional area.

### **Sight Distance**

Sight distance was measured at the proposed accesses using the methodology recommending by the American Association of State Highway and Transportation Engineers (AASHTO).

The posted speed limit is 45 mph along Hook Road and Ward Road at the proposed access points. For 45 mph, AASHTO requires a minimum intersection sight distance of 500 feet and a stopping sight distance of 360 feet.

### ***Phase I***

#### Hook Road and Legacy Commons Drive

Based on field measurements, the available stopping sight distance and the intersection sight distance is greater than 650 feet. The sight distance is adequate for the speed limit.

#### Ward Road and Legacy Ridge Drive

The measured intersection sight distance and the stopping sight distance are in excess of 500 feet and are adequate.

### ***Phase II***

#### Hook Road and Legion Drive

Based on field measurements, the available sight distance exceeds 500 feet and meets the AASHTO requirements.

#### Ward Road and Reunion Drive

The available sight distance, based on field measurements, is greater than 500 feet and is adequate for the 45 mph speed limit.

## Crash Analysis

Crash data was not available at the time of submittal and will be included in the final draft.

## Trip Generation

The expected trip generation for the development was estimated using the 11<sup>th</sup> Edition of the Trip Generation Handbook published by the Institute of Transportation Engineers. The trip generation was based on Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 AM along with Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 PM criteria.

As the Phase II site is conceptual, the trip generation assumes a mix of potential retail, commercial, and residential land uses. These uses are illustrative only, as no specific tenants have been identified at this time.

Estimates for the expected trips generated by the development are provided in Table 1.

Table 1 – Trip Generation						
	Weekday		A.M.		P.M.	
ITE Land Use Code Units	Trips In (vpd)	Trips Out (vpd)	Trips In (vph)	Trips Out (vph)	Trips In (vph)	Trips Out (vph)
210—Single-Family Detached Housing 197 dwelling units	942	942	35	103	118	70
215—Single-Family Attached Housing 241 dwelling units	893	893	30	90	83	58
<b>Phase I Total</b>	<b>1,835</b>	<b>1,834</b>	<b>65</b>	<b>193</b>	<b>201</b>	<b>128</b>
220—Multi-Family Housing (Low-Rise) 300 dwelling units	999	999	28	88	95	55
821-Shopping Plaza (w/o Supermarket) 52,800 Sq Ft	1,783	1,782	56	35	134	140
934-Fast-Food Restaurant with Drive-Through Window 6,700 Sq Ft	1,566	1,566	152	147	115	106
945-Convenience Store/Gas Station 14 Fueling Positions	1,533	1,533	113	112	129	129
<b>Phase II Total</b>	<b>5,881</b>	<b>5,880</b>	<b>349</b>	<b>382</b>	<b>473</b>	<b>430</b>
<b>Phase I &amp; II Total</b>	<b>7,716</b>	<b>7,714</b>	<b>414</b>	<b>575</b>	<b>674</b>	<b>558</b>
<b>With Internal Capture</b>	<b>6,944</b>	<b>6,943</b>	<b>373</b>	<b>518</b>	<b>607</b>	<b>502</b>

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## Trip Distribution

The trip distribution pattern was determined for the site based on the existing directional traffic pattern of the peak period and based on a general analysis of the surrounding area. The detailed distribution patterns can be found in the appendix. Based on the existing traffic patterns, the type of development, location of nearby schools, and the metropolitan population centers, the new trips were assigned onto the roadway network, as shown below for the morning and afternoon periods.

Trip distribution during the morning peak period:

- 55% to and 25% from the north
- 30% to and 50% from the south
- 5% to and 10% from the west
- 10% to and 15% from the east

Trip distribution during the afternoon peak period:

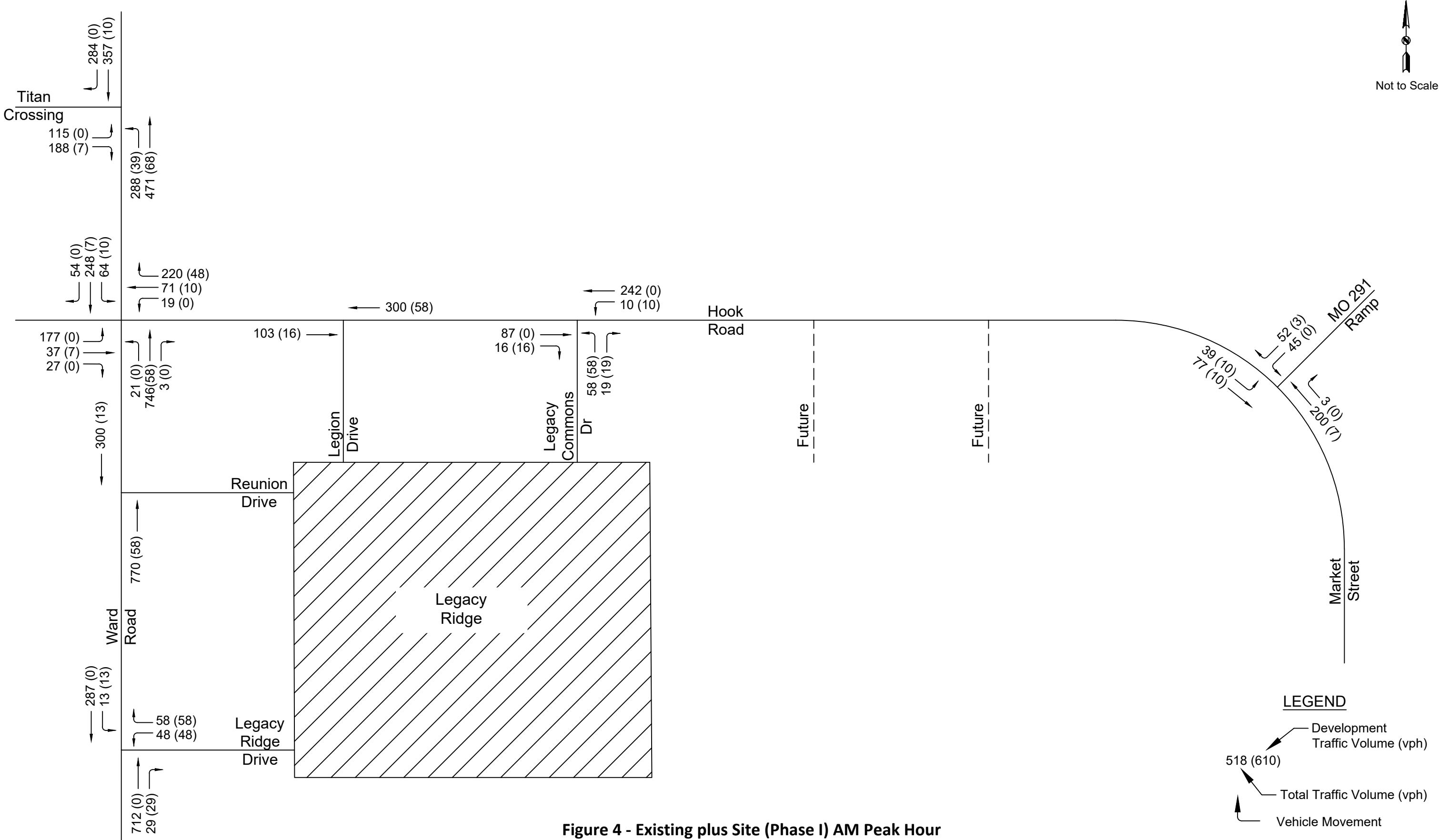
- 40% to and 45% from the north
- 45% to and 35% from the south
- 5% to and 10% from the west
- 10% to and from the east

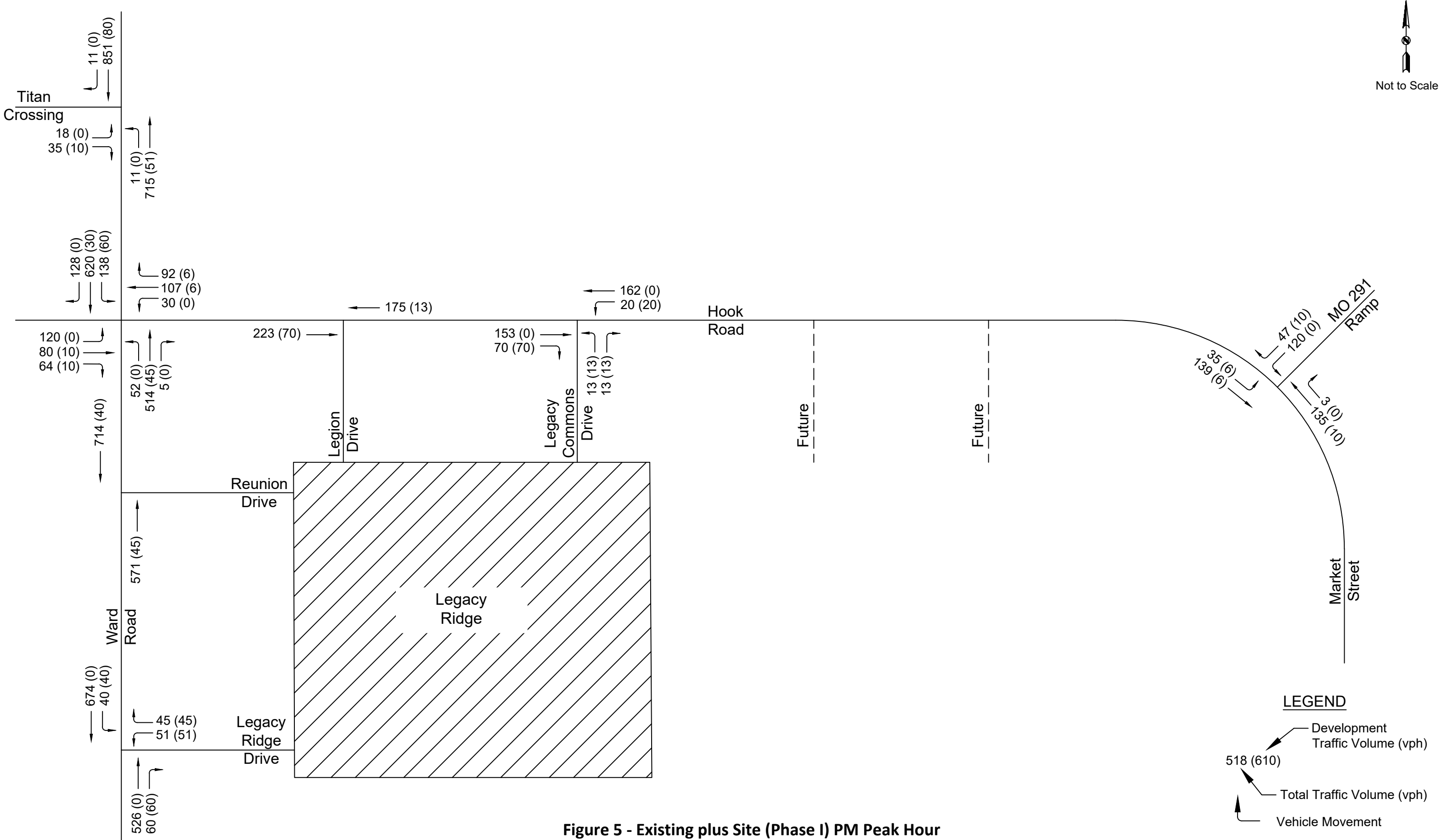
## Existing Plus Site Traffic Volumes

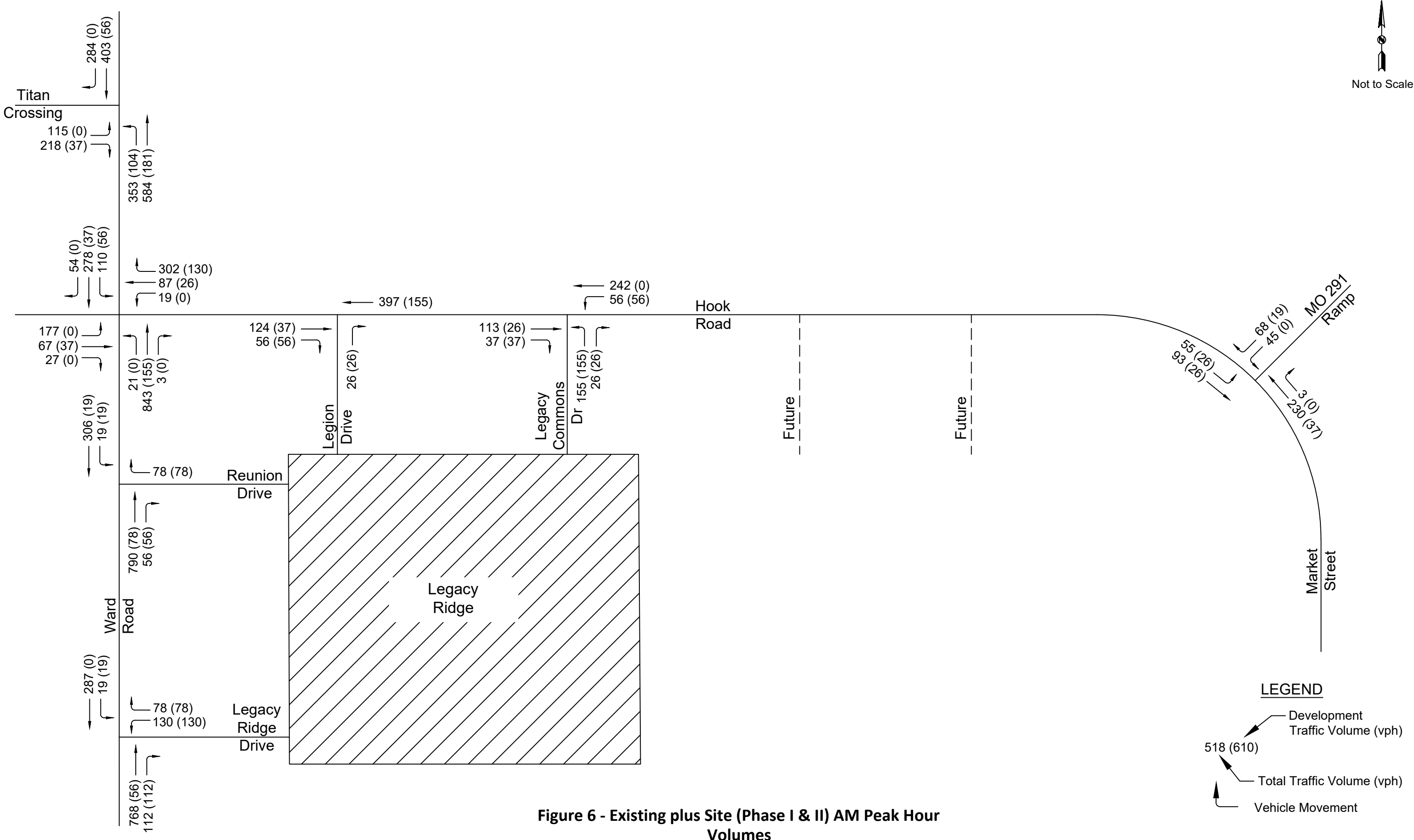
The expected development site-generated traffic volumes were added to the existing traffic scenario for Phase I and then for Phase I and II. The volumes are shown on Figures 4 through 7.

## Future Traffic Volumes

Future traffic volumes were generated at a rate of 4.15% annual growth over a twenty-year period. The calculated traffic volumes were added to the existing plus site traffic. The volumes for the future morning and afternoon peak hours are shown on Figure 8.







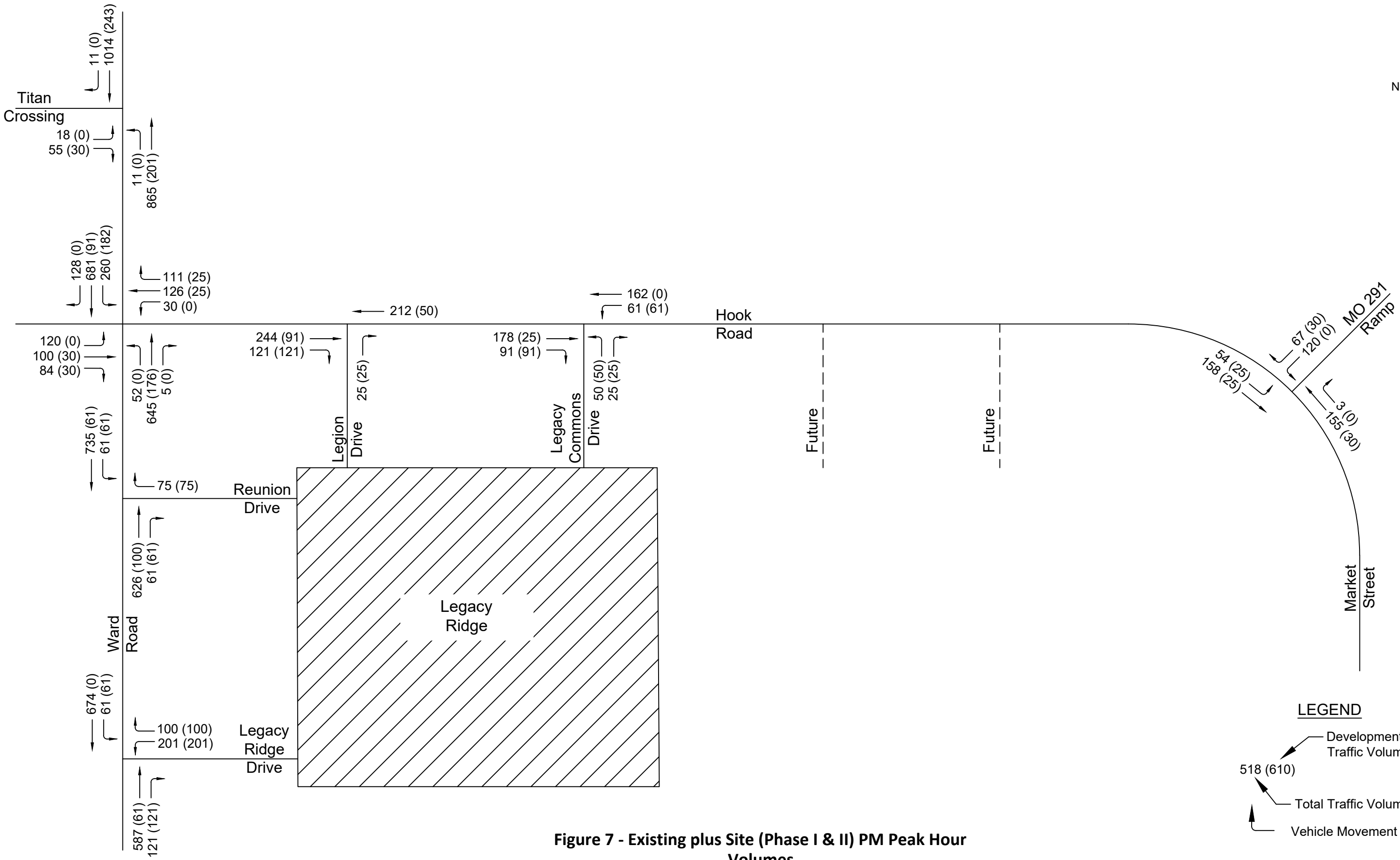
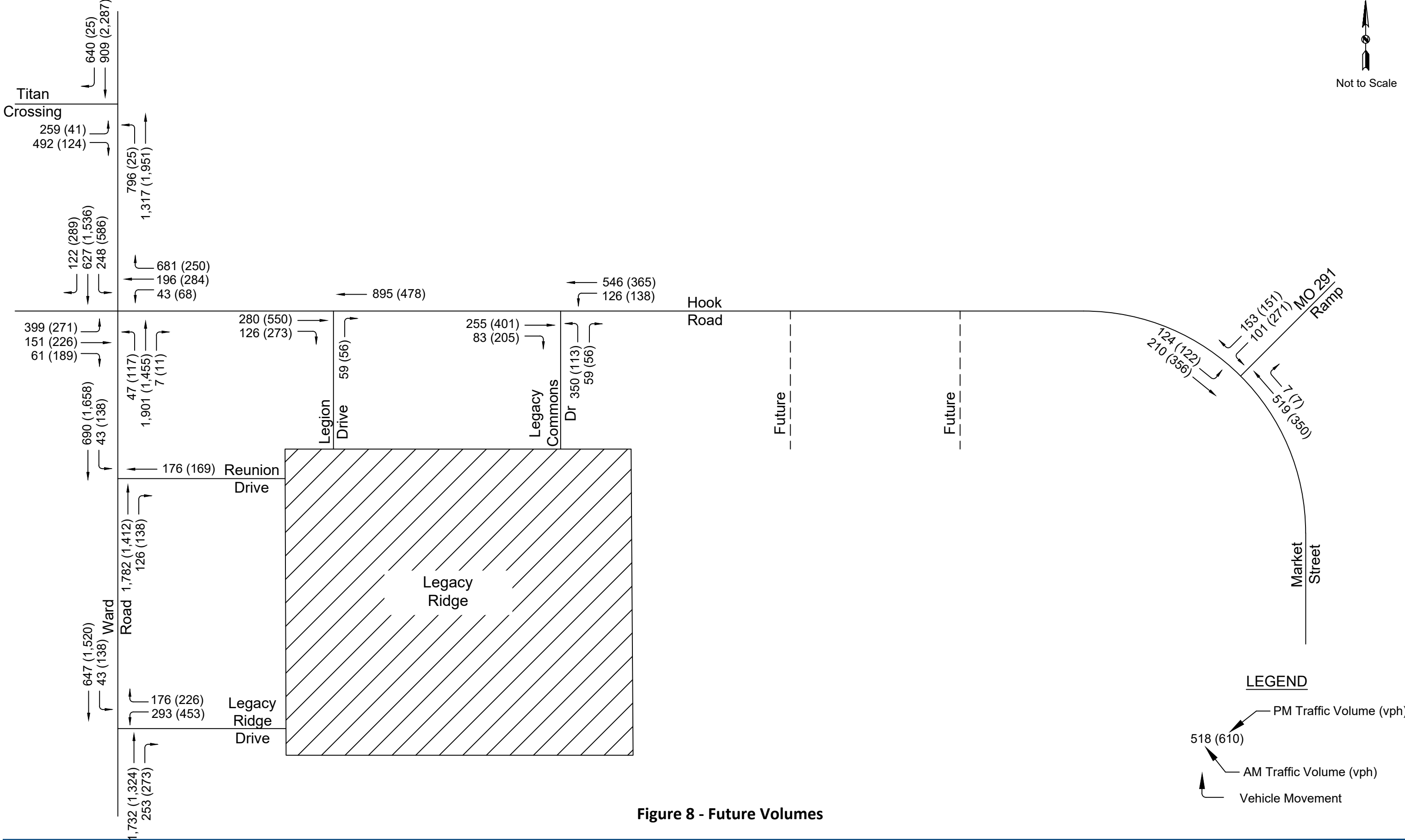


Figure 7 - Existing plus Site (Phase I & II) PM Peak Hour Volumes





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## Signal Warrant Study

It may be considered justified to install a traffic signal at a location if one or more of the traffic signal warrants listed in the 2023 MUTCD is met. The traffic signal warrants are:

- Warrant 1: Eight-Hour Vehicular Volume
- Warrant 2: Four-Hour Vehicular Volume
- Warrant 3: Peak Hour
- Warrant 4: Pedestrian Volume
- Warrant 5: School Crossing
- Warrant 6: Coordinated Signal System
- Warrant 7: Crash Experience
- Warrant 8: Roadway Network
- Warrant 9: Intersection Near at Grade Crossing

Warrants 2, 3, 4, and 7 were evaluated at the analysis intersections as part of this study.

### ***Warrant 2: Four-Hour Vehicular Volume***

The four-hour vehicular volume warrant is satisfied when the vehicles per hour on both approaches of the major street and the vehicles on the higher volume approach of the minor street for four hours fall above the 2009 MUTCD Warrant 2 curve.

### ***Warrant 3: Peak Hour***

The peak hour warrant is satisfied if either of the two following conditions are met:

A: This condition is satisfied if any of the following conditions are met for a period of one hour during an average day:

1. The total stopped time delay experience by the traffic on one minor-street approach (one direction only) controlled by a stop sign equals or exceeds: 4 vehicles-hours for a one-lane approach or five vehicle hours for a two-lane approach and
2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes and
3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

(Condition A is not being examined in this study)

B: The peak hour warrant is satisfied if the vehicles per hour on both approaches of the major street and the vehicles on the higher volume approach of the minor street for one hour fall above the 2009 MUTCD Warrant 3 curve.

#### **Warrant 4: Pedestrian Volume**

The pedestrian volume warrant is satisfied if either of the two following conditions are met:

A: The pedestrian volume warrant is satisfied if the vehicles per hour for four hours on both approaches of the major street all pedestrians crossing the major street fall above the 2009 MUTCD Warrant 4 curve.

B: The pedestrian volume warrant is satisfied if the vehicles per hour for one hour on both approaches of the major street all pedestrians crossing the major street fall above the 2009 MUTCD Warrant 4 curve.

#### **Warrant 7: Crash Experience**

The crash experience warrant is met if all of the three following conditions are met:

A: The crash experience warrant is met if alternatives and enforcement has failed to reduce crash frequency over a satisfactory trial period.

B: The crash experience warrant is met five or more correctable crashes have occurred within a 12- month period.

C: For each of any eight hours of an average day, the vehicles per hour given are 80 percent of Condition A in Table 4C-1 or the vehicles per hour in are 80 percent of Condition B in Table 4C-1 or 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours.

#### **Warrant Analysis**

Table 2 summarizes the results of the traffic signal warrant analysis.

Table 2 – Traffic Signal Warrant Analysis						
Intersection	Warrant 2: Four-Hour Vehicular Volume	Warrant 3: Peak Hour				Warrant 7: Crash Experience
		Existing	Existing Plus Site		Future	
			Phase I	Phase I & II		
Hook Rd/Market St and MO 291 access	No	No	No	No	Yes	n/a
Hook Road and Legacy Commons Drive	n/a	n/a	No	No	Yes	n/a
Ward Road and Reunion Drive	n/a	n/a	n/a	No	No	n/a
Ward Road and Legacy Ridge Drive	n/a	n/a	No	Yes	Yes	n/a

The traffic volumes are not expected to warrant a traffic signal at any of the study intersections during the existing or existing plus site conditions, except for the Legacy Ridge Drive intersection which is expected to meet the Warrant 3 criteria when Phase II is constructed. Traffic signals should not be installed based on Warrant 3: Peak Hour criteria alone, but this data can be used to act as a trigger for a full traffic signal warrant analysis in the future. The raw data and graphs from the 2023 MUTCD are included in the Appendix.

## Right-Turn and Left-Turn Lane Warrants

The need for right and left-turn lanes into the site entrances was evaluated using the City of Lee's Summit *Access Management Code*, March 2018 turning lane guidelines as part of this study for the existing plus site condition.

### **Left-Turn Warrant**

Left-turn lane guidelines per City of Lee's Summit *Access Management Code*:

16.1.B. Left-turn lanes shall be provided on all arterial streets at the intersection with other arterial and collector streets. Left-turn lanes shall be provided on minor arterial streets at the intersection with any local street or driveway where the left-turn volume is at least 20 vehicles in any hour. On major arterial streets, left-turn lanes shall be at the intersection with all connectors (an exception may be granted for a singular, existing, residential lot).

16.1.E. Left-turn lanes shall be provided at all median openings on roadways with medians.

16.1.H. The minimum length of left-turn lane should be 250 feet plus taper on an arterial street intersecting another arterial street and 200 feet plus taper on an arterial street at other locations. The minimum length of left-turn lane on collectors should be 150 feet plus taper. The minimum length of left-turn lane on connectors should meet the driveway throat length requirements.

**Phase I:** Left-turn lanes will be required westbound on Hook Road at the Legacy Commons Drive and Legacy Ridge Drive as Ward Road is a median divided arterial roadway.

**Phase I & II:** A Left-turn lane will be required southbound at Reunion Drive as Ward Road is a median divided arterial roadway.

### **Right-Turn Warrant**

Right-turn lane guidelines per City of Lee's Summit *Access Management Code*:

16.2.A. Required on arterial streets at each intersecting street or driveway where the right-turn volume on the major arterial street is or is projected to be at least 30 vehicles in any hour, or the right-turn volume on the minor arterial street is or is projected to be at least 60 vehicles in any hour. Minimum length should be 250 feet plus the taper on a major arterial at the intersection of another arterial street or 200 feet plus the taper on a minor arterial at the intersection with another arterial street or on a major arterial at the intersection of a collector and 150 feet plus the taper at other locations along arterial streets.

**Phase I:** The traffic volumes are expected to meet the right-turning volume criteria at all proposed Phase I site drives—Legacy Commons Drive and Legacy Ridge Drive.

**Phase I & II:** The traffic volumes are expected to meet the right-turning volume criteria at all proposed site drives including Legion Drive and Reunion Drive.

The raw analysis data is included in the Appendix.

## Unimproved Road Policy

The need for future improvements to Hook Road was evaluated in accordance with the City of Lee's Summit's *Unimproved Road Policy* as Hook Road is a minor arterial and is currently constructed to City interim road standards. Based on the criteria for unimproved roads versus interim roads versus urban standard, Phase I of the development doesn't meet the requirements for improvements to Hook Road as this phase consists solely of residential land uses with no commercial or retail components.

When Phase II is constructed—with its associated commercial land uses—it will trigger the requirement to upgrade Hook Road from its current interim standard to the applicant's requested modified urban standard.

## CAPACITY

The capacity analysis for the study intersections was completed using the methodology outlined in the Highway Capacity Manual, 6th Edition. The volume and capacity analysis was completed using Trafficware SYNCHRO software (latest version) and SIDRA software (latest version) for the following scenarios:

- Existing
- Existing plus Site (Phase I)
- Existing plus Site (Phase I & II)
- Future (20-year scenario)

Level of Service (LOS) is defined as the measure of the quality of traffic flow and is graded from A to F—with A being the best situation, F being the worst, and D being generally the minimum acceptable level of service. The criteria for determining level of service for signalized and unsignalized study intersections and access points are based on the average vehicle delay and is outlined in Table 3.

Table 3 – Intersection Level of Service		
Level of Service (LOS)	Average Control Delay (sec/veh)	
	Unsignalized	Signalized
A	< 10	< 10
B	< 15	< 20
C	< 25	< 35
D	< 35	< 55
E	< 50	< 80
F	≥ 50	≥ 80

## Existing Conditions

Analysis was completed for existing conditions with current roadway and lane configurations.

### Hook Road and Ward Road

All approaches operate at a LOS C or above for the morning and afternoon peak periods and the intersection has sufficient capacity for queuing vehicles. The overall LOS for the signal is a LOS B during the morning and afternoon peak periods.

### Titan Crossing and Ward Road

All approaches operate at a LOS D or above for the morning and afternoon peak periods and the intersection has sufficient capacity for queuing vehicles. The overall LOS for the intersection is a LOS B during the morning peak period and a LOS A during the afternoon peak period.

### Hook Road/Market Street and MO 291 Access

The through movements of Market Street and Hook Road are not stop-controlled and are therefore operating in a free-flow condition. The southbound movements operates at a LOS B and has sufficient capacity for queuing vehicles.

The results of the existing conditions analysis are shown for the morning and afternoon peak hours along with lane configuration and queue lengths on Figures 9 and 10.

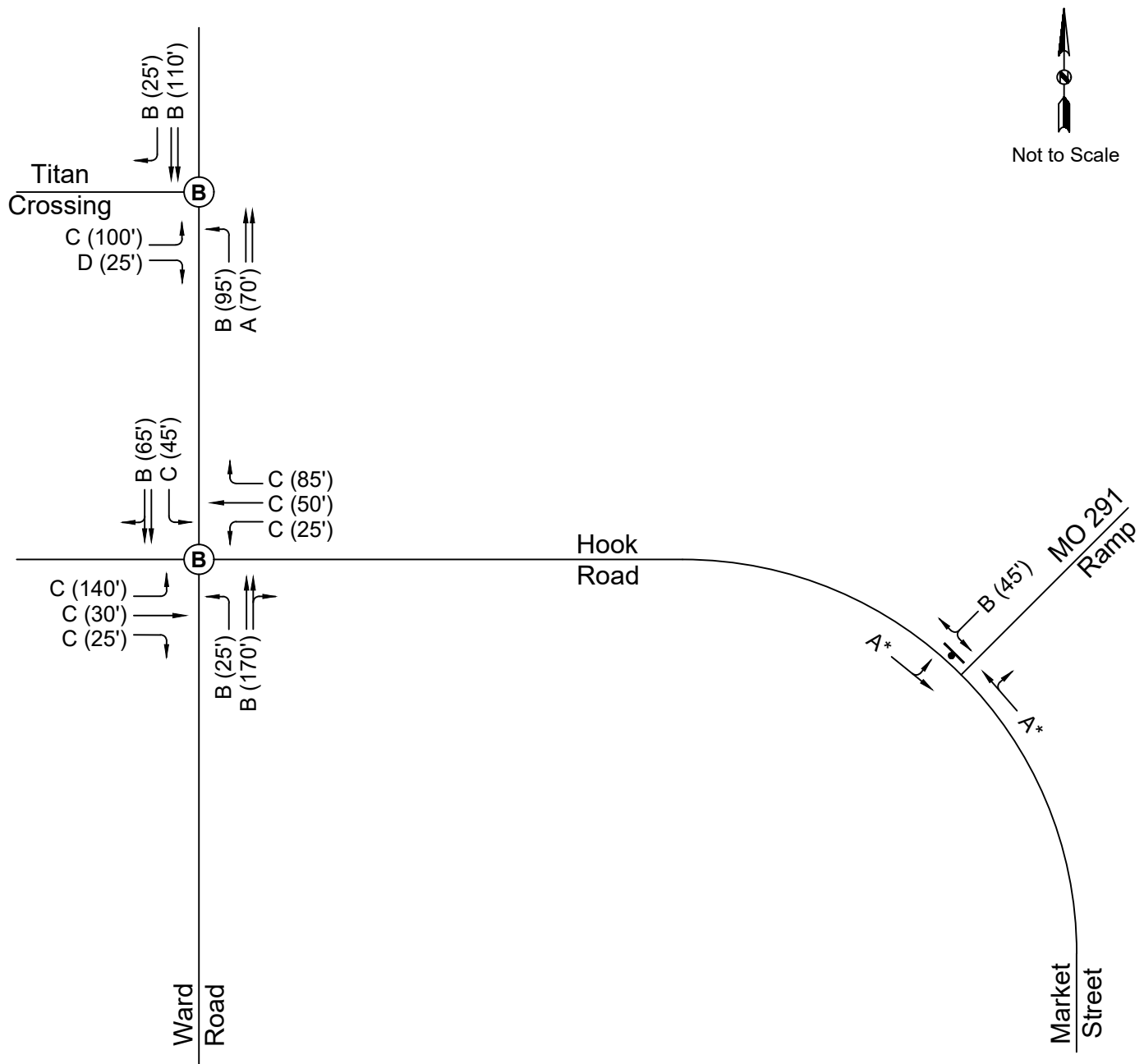
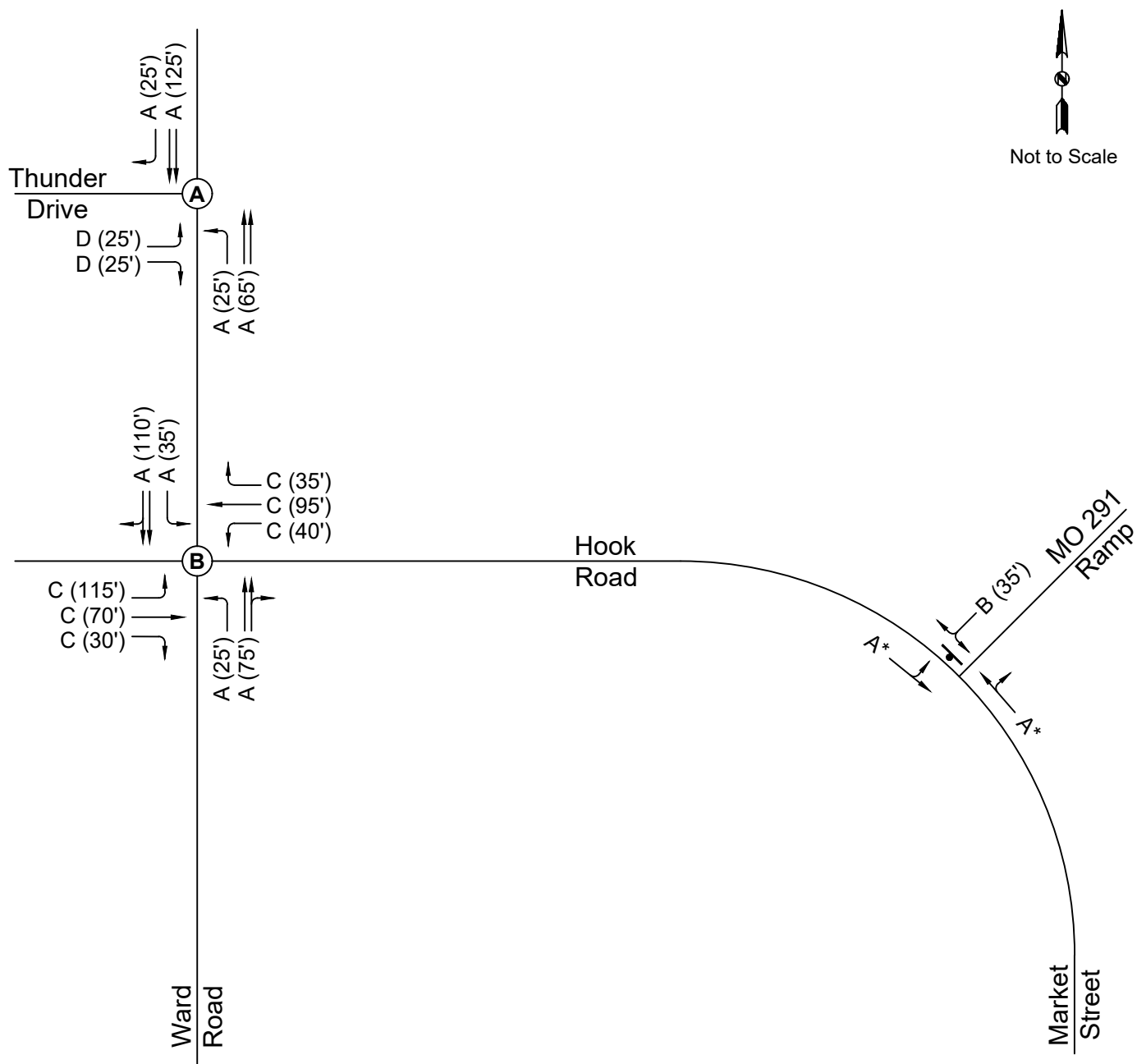


Figure 9 - Existing AM Level of Service








-  Lane Configuration
-  A Movement Level of Service
-  Signalized Intersection Level of Service
-  (XX') Required Storage Length
-  \* Capacity Per Demand

Figure 10 - Existing PM Level of Service

---

## Existing Plus Site (Phase I) Conditions

Signal timings were optimized to account for the additional traffic. Lane configurations from the existing conditions analysis were used unless otherwise noted.

### Hook Road and Ward Road

During both peak periods, the eastbound left-turn movement drops from LOS C to LOS D. All other movements continue to operate at LOS D or better and have sufficient capacity for queuing vehicles.

### Titan Crossing and Ward Road

All approaches operate at a LOS D or above for the morning and afternoon peak periods and the intersection has sufficient capacity for queuing vehicles.

### Hook Road/Market Street and MO 291 Access

All approaches continue to operate at a LOS B for the morning and afternoon peak periods, and the intersection has sufficient capacity for queuing vehicles.

### Hook Road and Legacy Commons Drive

The intersection was analyzed as a stop controlled northbound intersection with an eastbound right-turn lane and a westbound left-turn lane. All approaches operated at a LOS B or better and the intersection has sufficient capacity for queuing vehicles.

### Ward Road and Legacy Ridge Drive

The intersection was analyzed as a stop controlled westbound intersection with a northbound right-turn lane and a southbound left-turn lane. The westbound approach has a left-turn lane and a right-turn lane. All approaches operated at a LOS D or better, with the exception of the westbound left-turn lane during the morning peak period, which operates at a LOS E. The intersection has sufficient capacity for queuing vehicles.

The results of the existing plus site analysis for the morning and afternoon peak hour conditions along with lane configuration and queue lengths are shown on Figures 11 and 12.



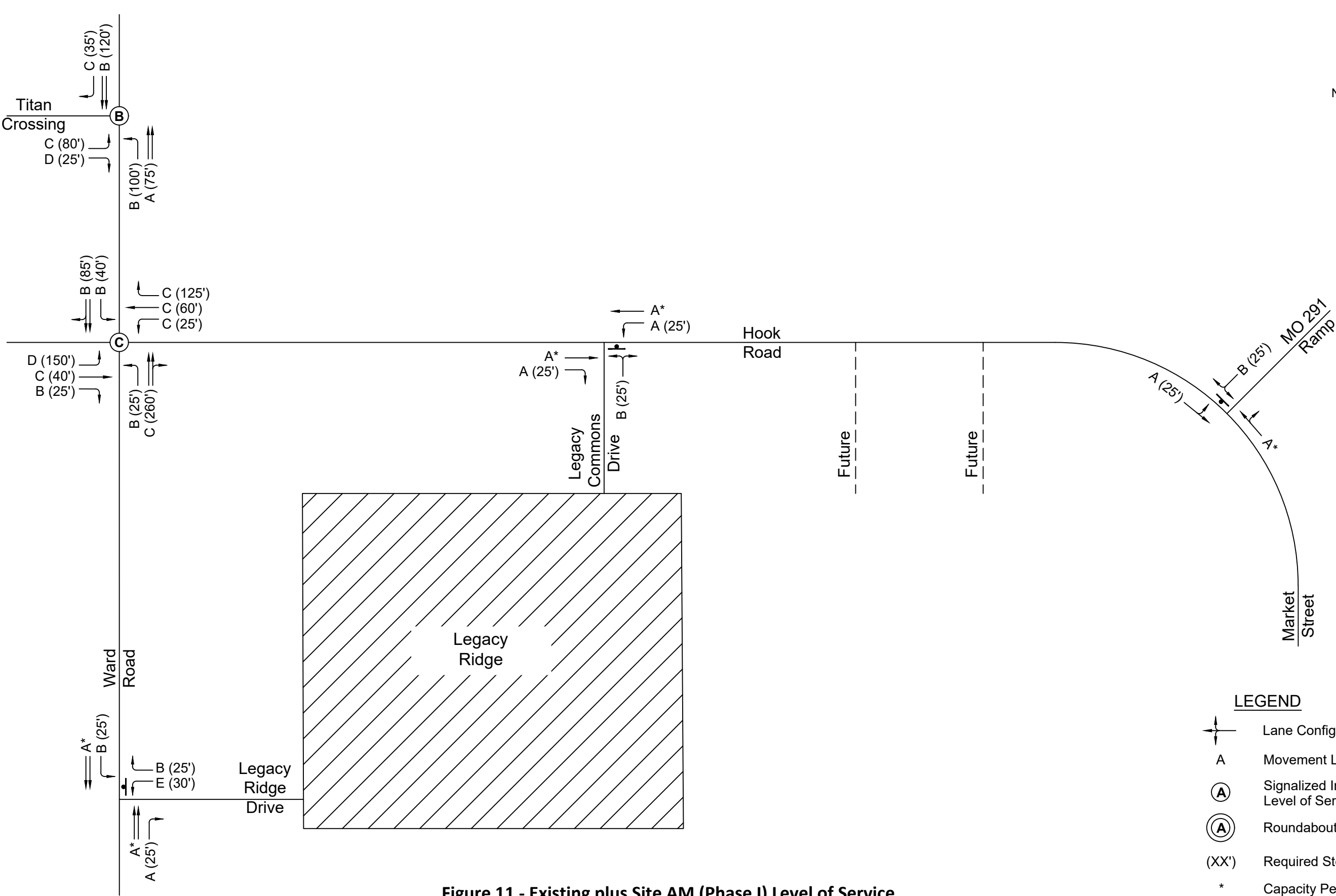


Figure 11 - Existing plus Site AM (Phase I) Level of Service

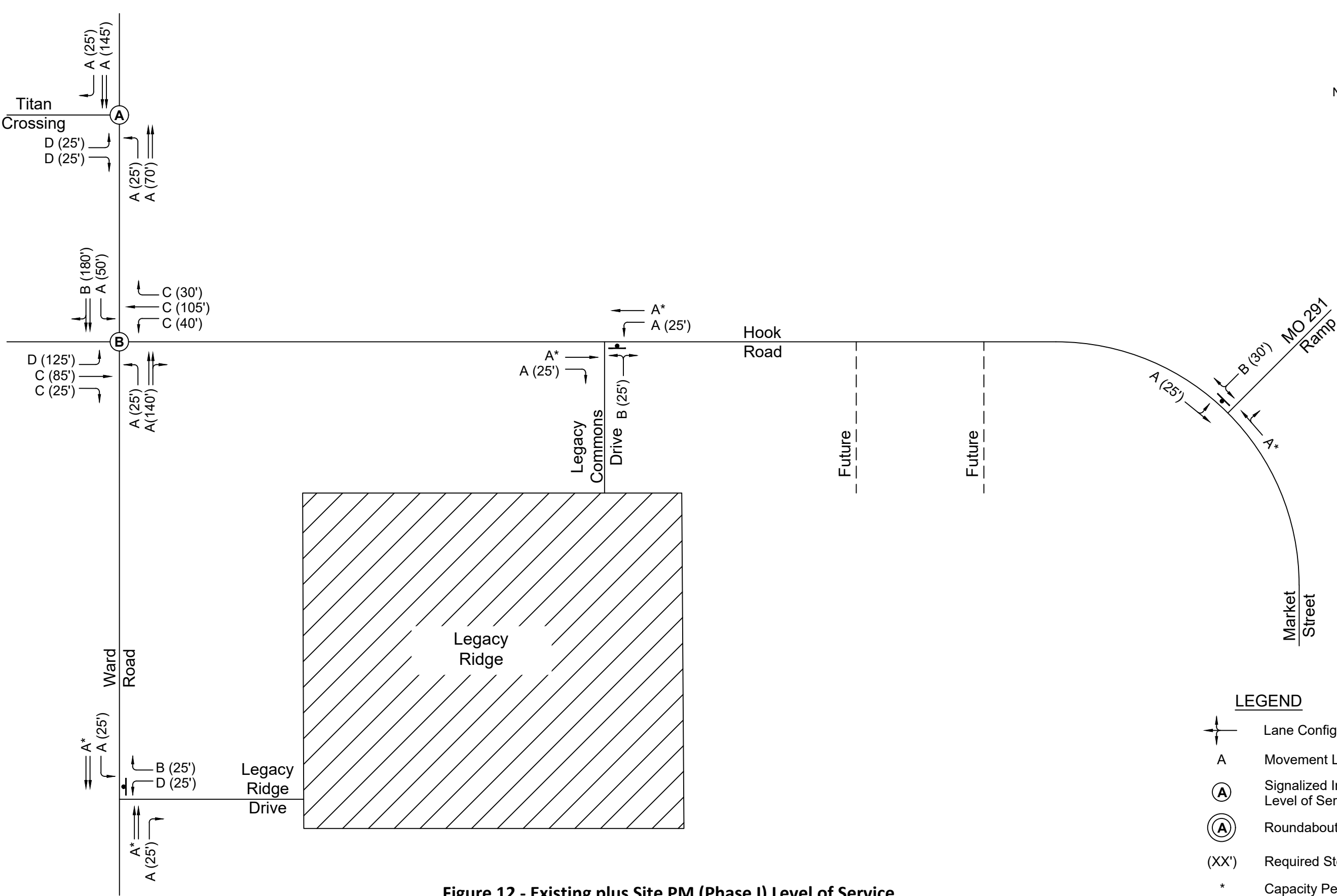


Figure 12 - Existing plus Site PM (Phase I) Level of Service

## Existing Plus Site (Phase I & II) Conditions

Signal timings were optimized to account for the additional traffic. Lane configurations from the existing and existing plus site Phase I conditions analysis were used unless otherwise noted.

### Hook Road and Ward Road

During the morning peak period, the eastbound left-turn movement drops to a LOS E. All other movements continue to operate at LOS D or better and have sufficient capacity for queuing vehicles.

### Titan Crossing and Ward Road

The additional traffic causes the westbound left-turn lane to drop to a LOS E during the morning peak period. All approaches continue to operate at a LOS D or above for the morning and afternoon peak periods and the intersection has sufficient capacity for queuing vehicles.

### Hook Road/Market Street and MO 291 Access

All approaches continue to operate at a LOS B for the morning and afternoon peak periods, and the intersection has sufficient capacity for queuing vehicles.

### Hook Road and Legion Drive (RIRO)

The intersection was analyzed as a stop controlled right-in/right-out only intersection with an eastbound right-turn lane. All approaches operated at a LOS B or better and the intersection has sufficient capacity for queuing vehicles.

### Hook Road and Legacy Commons Drive

All approaches are expected to operate at a LOS C or better and the intersection has sufficient capacity for queuing vehicles.

### Ward Road and Reunion Drive

The intersection will be designed as a ¾ access with a southbound left-turn lane and a northbound right-turn lane. The eastbound right-turn only movement will be stop-controlled. All approaches operate at a LOS B or better and the intersection has sufficient capacity for queuing vehicles.

### Ward Road and Legacy Ridge Drive

*Unsignalized:* The westbound left-turn lane is expected to operate at a LOS F during the morning and afternoon peak period.

*Signalized:* With signalization, the intersection movements operate at a LOS D or better for the morning and afternoon peak hours with sufficient capacity for vehicles to queue.

The results of the existing plus site analysis for the morning and afternoon peak hour conditions along with lane configuration and queue lengths are shown on Figures 13 and 14.

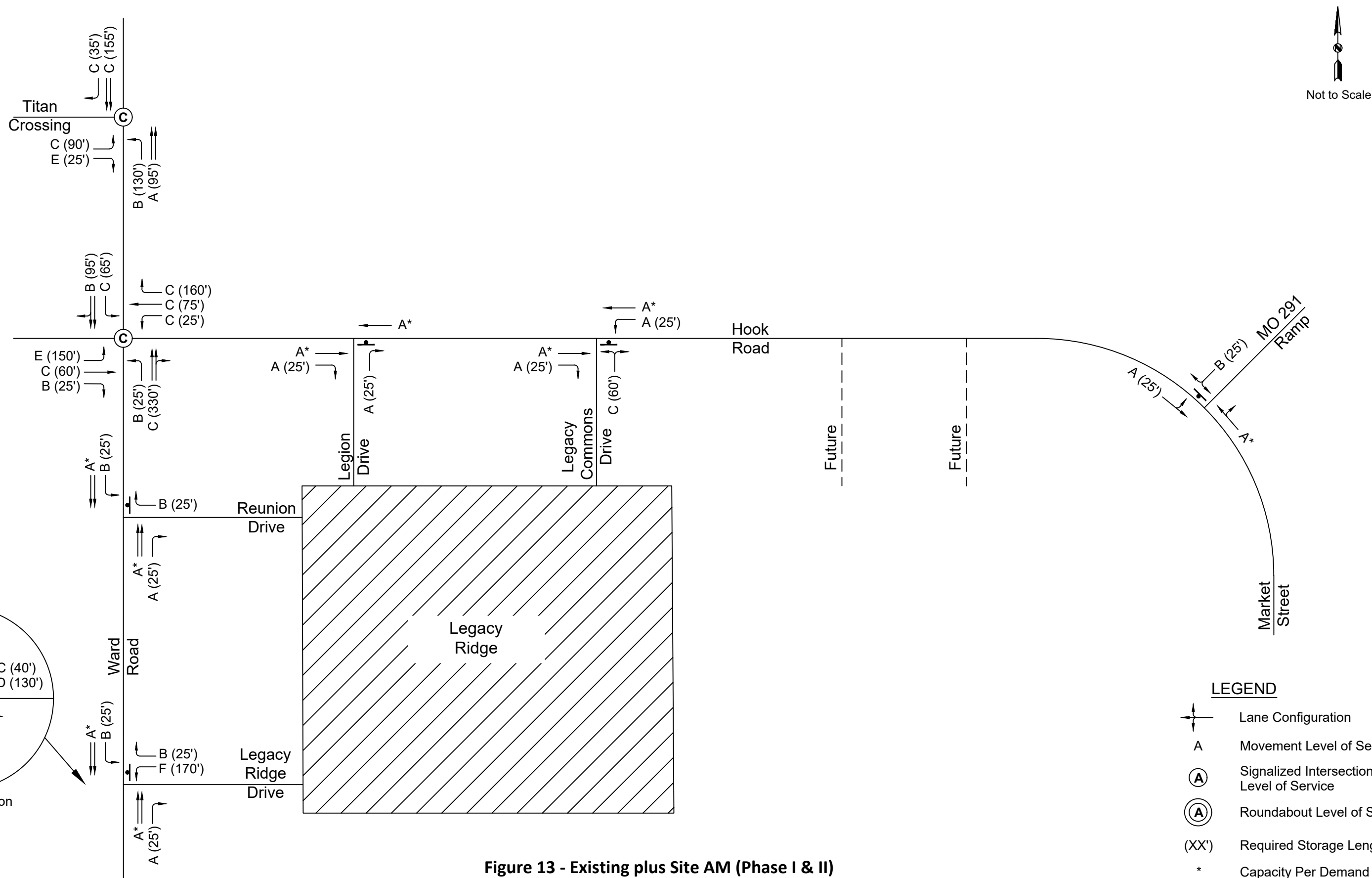
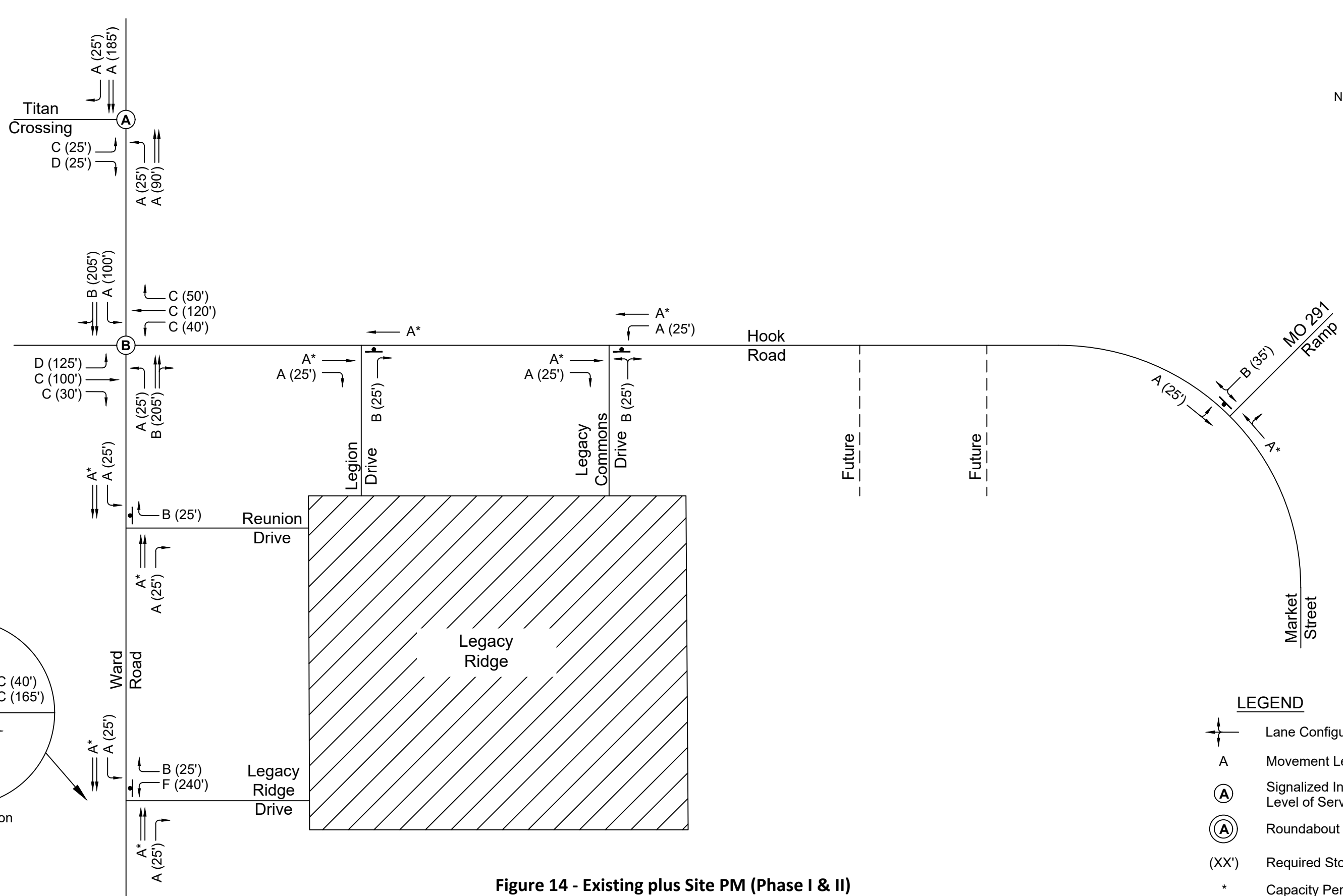


Figure 13 - Existing plus Site AM (Phase I & II)  
Level of Service



**LEGEND**

- Lane Configuration
- Movement Level of Service
- Signalized Intersection Level of Service
- Roundabout Level of Service
- Required Storage Length
- Capacity Per Demand

**Figure 14 - Existing plus Site PM (Phase I & II)  
Level of Service**

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## Future Conditions

Future analysis is intended to provide a high-level overview of increases in trips as other developments occurs and provide recommendations for reserving right-of-way for future expansion as the increase in traffic is expected trigger the need for significant improvements to surrounding infrastructure and the roadway network. Signal timings of intersection movements were optimized to account for the future traffic. An additional through lane was assumed on Hook Road and Ward Road for the future analysis – additional improvements are noted.

### Hook Road and Ward Road

*With channelized right-turns, dual eastbound left-turn lanes, and dual southbound left-turn lanes:* During the afternoon peak period, all approaches operate at a LOS D or above and the intersection has sufficient capacity for queuing vehicles.

Despite the additional capacity provided by these improvements, several movements operate at LOS F during the morning peak period due to school-related traffic demand. In a future scenario, traffic volumes are expected to be redistributed as additional high school facilities are developed, diverting a portion of these trips as the existing high school would be unable to support that large of an increase in student population.

### Titan Crossing and Ward Road

The morning peak period causes multiple movements to drop to a LOS F. As seen at the Hook Road and Ward Road intersection, the existing high school would be unable to support that large of an increase in student population.

### Hook Road/Market Street and MO 291 Access

*With signalization:* All approaches operate at a LOS D or better and the intersection has sufficient capacity for queuing vehicles.

### Hook Road and Legion Drive

All approaches operate at a LOS B or better and the intersection has sufficient capacity for queuing vehicles.

### Hook Road and Legacy Commons Drive

*With signalization:* All approaches operate at a LOS C or better and the intersection has sufficient capacity for queuing vehicles.

### Ward Road and Reunion Drive

The additional traffic causes the southbound left-turn lane and eastbound right-turn lane to drop below a LOS D.

### Ward Road and Legacy Ridge Drive

All approaches operate at a LOS D or better for the morning and afternoon peak periods and the intersection has sufficient capacity for queuing vehicles.

The results of the future analysis is shown for the morning and afternoon peak hour conditions along with lane configuration and queue lengths on Figures 15 and 16.

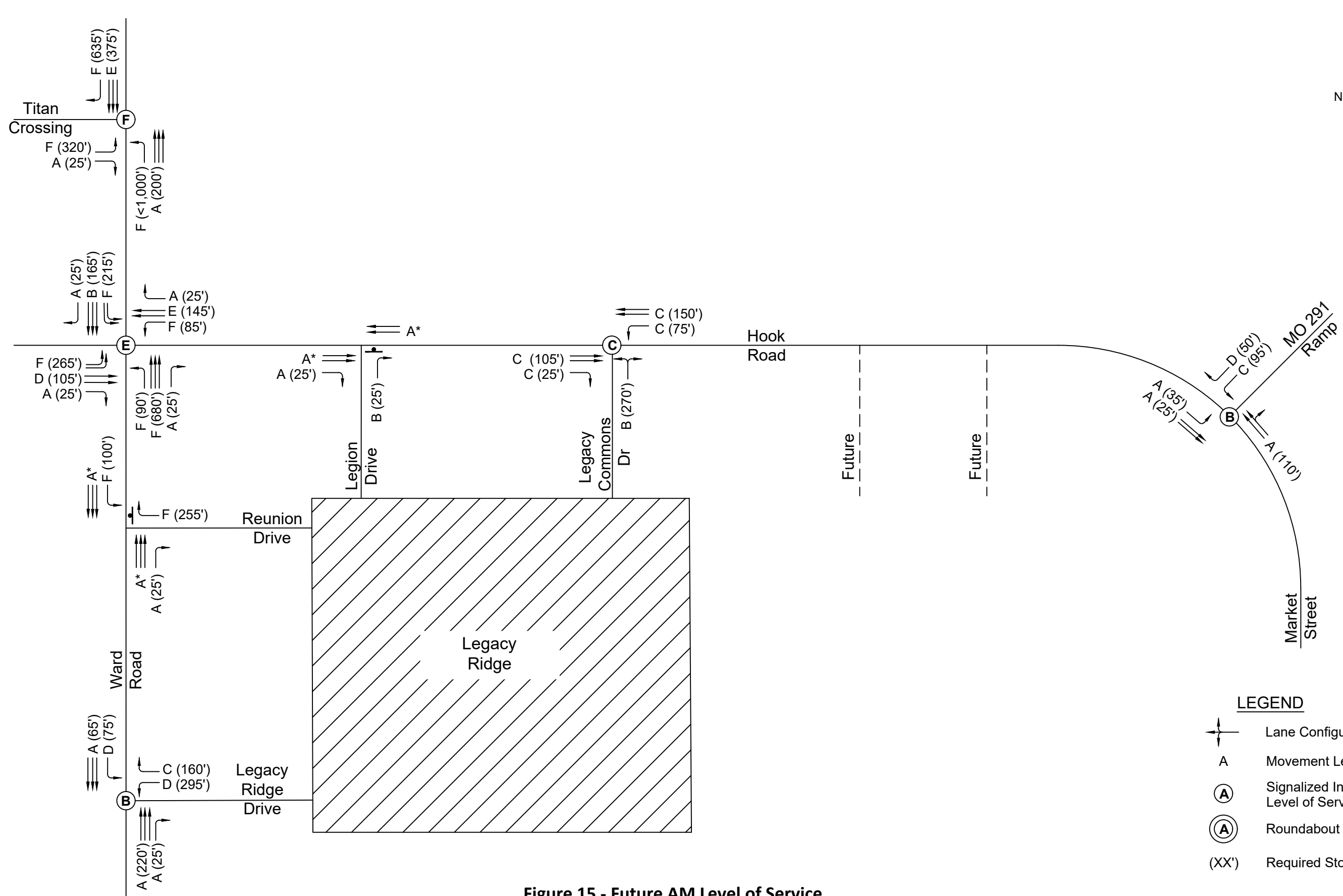
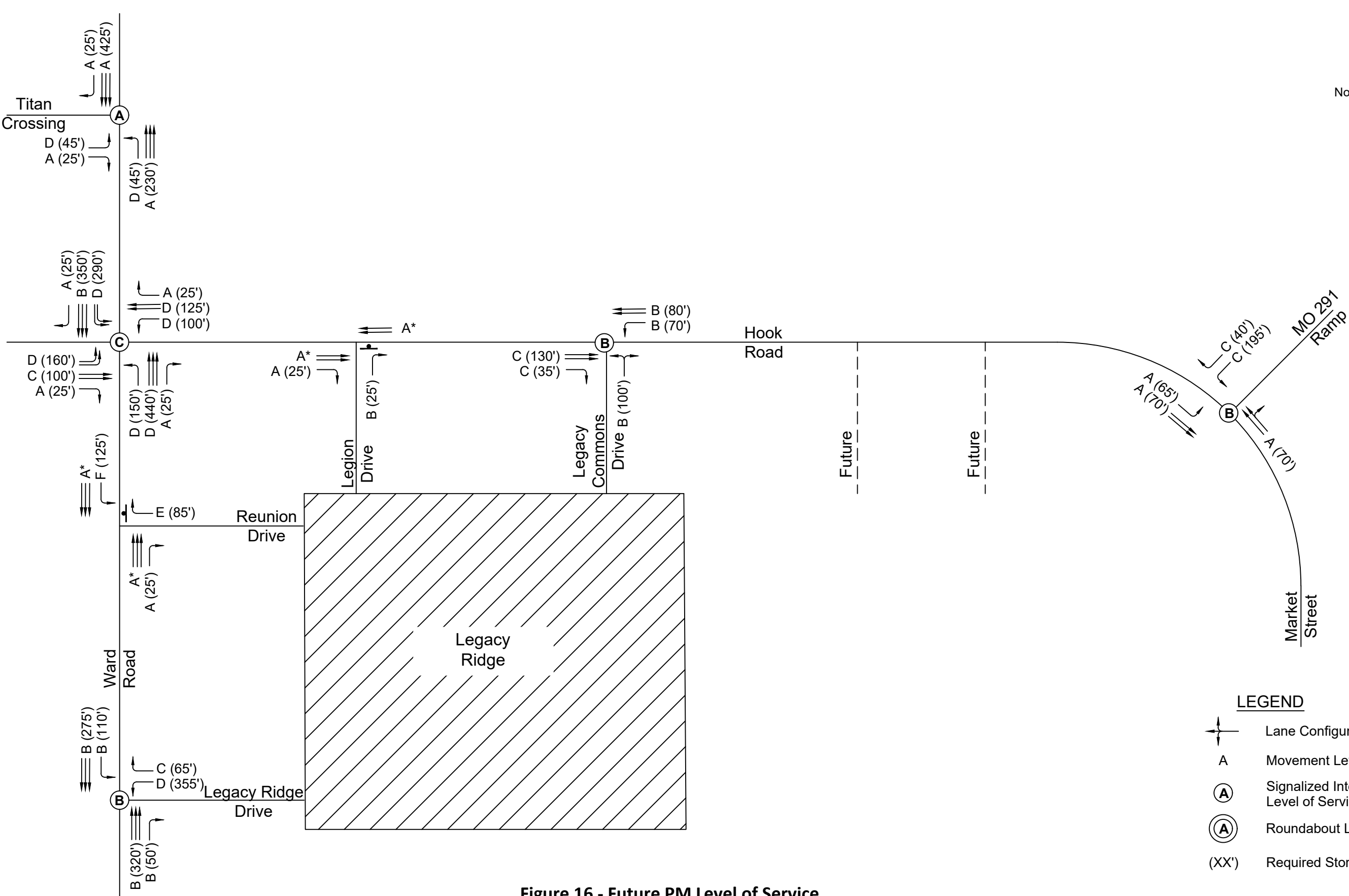


Figure 15 - Future AM Level of Service





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## RECOMMENDATIONS

This study documents the findings of the traffic analysis of the expected traffic for the Legacy Ridge development in Lee's Summit, Missouri. The study includes an analysis of the existing conditions, existing plus site conditions (two phases), and future conditions.

Based on the results of the SYNCHRO analysis, observations from the field, and engineering judgment, the following recommendations are made for Phase I of the development:

- *General:* Reserve right-of-way for future roadway widening.
- *Hook Road and Ward Road:* Update traffic signal timings as necessary
- *Titan Crossing and Ward Road:* Update traffic signal timings as necessary
- *Hook Road/Market Street and MO 291 Access:* No specific recommendations
- *Hook Road and Legacy Commons Drive:* Construct an eastbound right-turn lane (150 feet of storage), a westbound left-turn lane (200 feet of storage), and a northbound approach with a shared left/right-turn lane. The northbound approach should be stop-controlled.
- *Ward Road and Legacy Ridge Drive:* Construct a northbound right-turn lane (150 feet of storage), a southbound left-turn lane (200 feet of storage), and a westbound approach with a left-turn lane and a shared (future) through/right-turn lane. The westbound approach should be stop-controlled and right-of-way should be reserved for a future traffic signal.

Based on the results of the SYNCHRO analysis, observations from the field, and engineering judgment, the following recommendations are made for Phase I and II of the development:

- *Hook Road:* Upgrade Hook Road from its current interim standard to the applicant's requested modified urban standard.
- *Hook Road and Ward Road:* Update traffic signal timings as necessary
- *Titan Crossing and Ward Road:* Update traffic signal timings as necessary
- *Hook Road/Market Street and MO 291 Access:* No specific recommendations
- *Hook Road and Legion Drive (RIRO):* Construct an eastbound right-turn lane (150 feet of storage) and a northbound approach with a right-turn only lane. The northbound approach should be stop-controlled.
- *Ward Road and Reunion Drive (3/4 access):* Construct a northbound right-turn lane (150 feet of storage), southbound left-turn lane (200 feet of storage), and a westbound approach with a right-turn only lane. The westbound approach should be stop-controlled.
- *Hook Road and Legacy Commons Drive:* Monitor traffic increases and signalize the intersection when Warrant 1: Eight-Hour Vehicular Volume or Warrant 2: Four-Hour Vehicular Volume is met.