TRAFFIC IMPACT STUDY

REPORT FOR:

PRAIRIE WINDS OF ST. CHARLES

BRICHER ROAD WEST OF RANDALL ROAD
ST. CHARLES, ILLINOIS

PREPARED BY:

V3 Companies
7325 Janes Avenue
Woodridge, Illinois 60517

V3 Project No. 16262

February 27, 2017
Updated: March 28, 2017

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

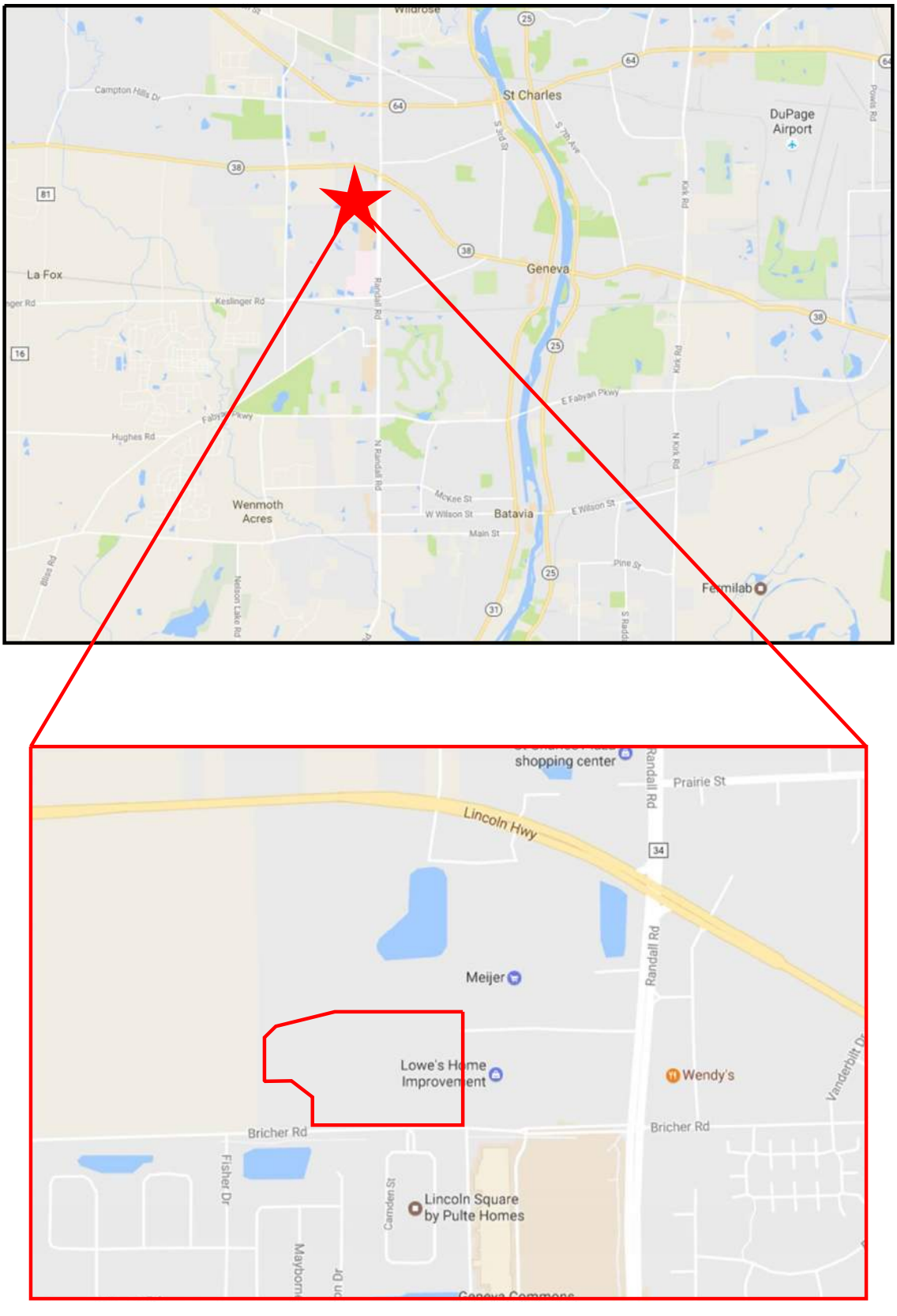
I. INTRODUCTION

V3 Companies has been retained by Executive Capital Corporation to conduct a traffic impact study for a proposed multi-family residential development located along the north side of Bricher Road and west of Randall Road in the City of St. Charles, Kane County, Illinois. The name of the proposed development is Prairie Winds of St. Charles (PW). The property is bounded by Bricher Road to the south, undeveloped land to the west, cultivated land to the north, and a retail development to the east. A site location map is included as Figure 1.

The proposed multifamily residential development will consist of 25 buildings with a total of 250 rental units. A clubhouse facility is also planned on the site. The proposed access plan consists of a full access driveway on Bricher Road that aligns with Camden Street and a second full access driveway west of Camden Street. A conceptual site plan is included as Figure 2.

The purpose of this report is to evaluate the potential traffic impacts of the proposed development which is expected to be built out in 2017. Traffic estimates are projected for 2022, which is five years beyond the opening date. The study area consists of the existing intersection of Bricher Road and Camden Street, which will align with the proposed primary site driveway, and the proposed site driveway to the west. It is assumed that new traffic generated by the proposed development will not negatively impact operations of the signalized intersections on Bricher Road to the east due to the additional capacity along the roadway and at the signalized intersections. Therefore, the intersection of Bricher Road and Randall Road is not included in this study.

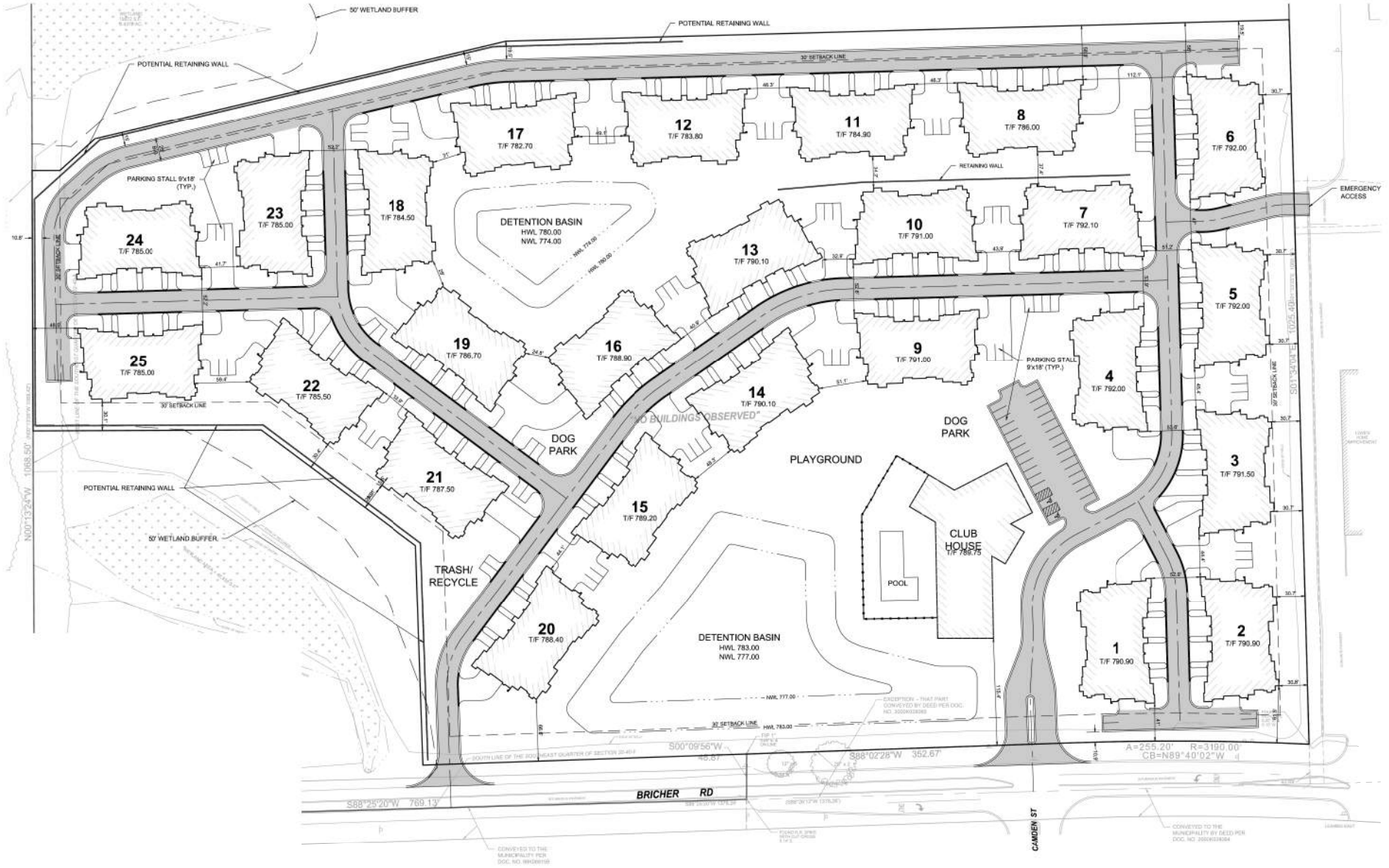
This report includes a description of existing conditions, data collection, capacity analysis, evaluation of data, and conclusions.



PRAIRIE WINDS OF ST. CHARLES

FIGURE 1
SITE LOCATION MAP

ST CHARLES ILLINOIS



NOT TO SCALE

PRAIRIE WINDS OF ST. CHARLES

FIGURE 2
CONCEPTUAL SITE PLAN

ST CHARLES ILLINOIS

II. PROJECT CONDITIONS

Land Uses

A variety of land uses exist near the project site, primarily consisting of institutional, residential, retail and service uses. The surrounding land uses are illustrated in Figure 3.

Roadway System

The characteristics of the roadways in the vicinity of the site are presented below. The existing lane configurations at the study area intersections are illustrated in Figure 4.

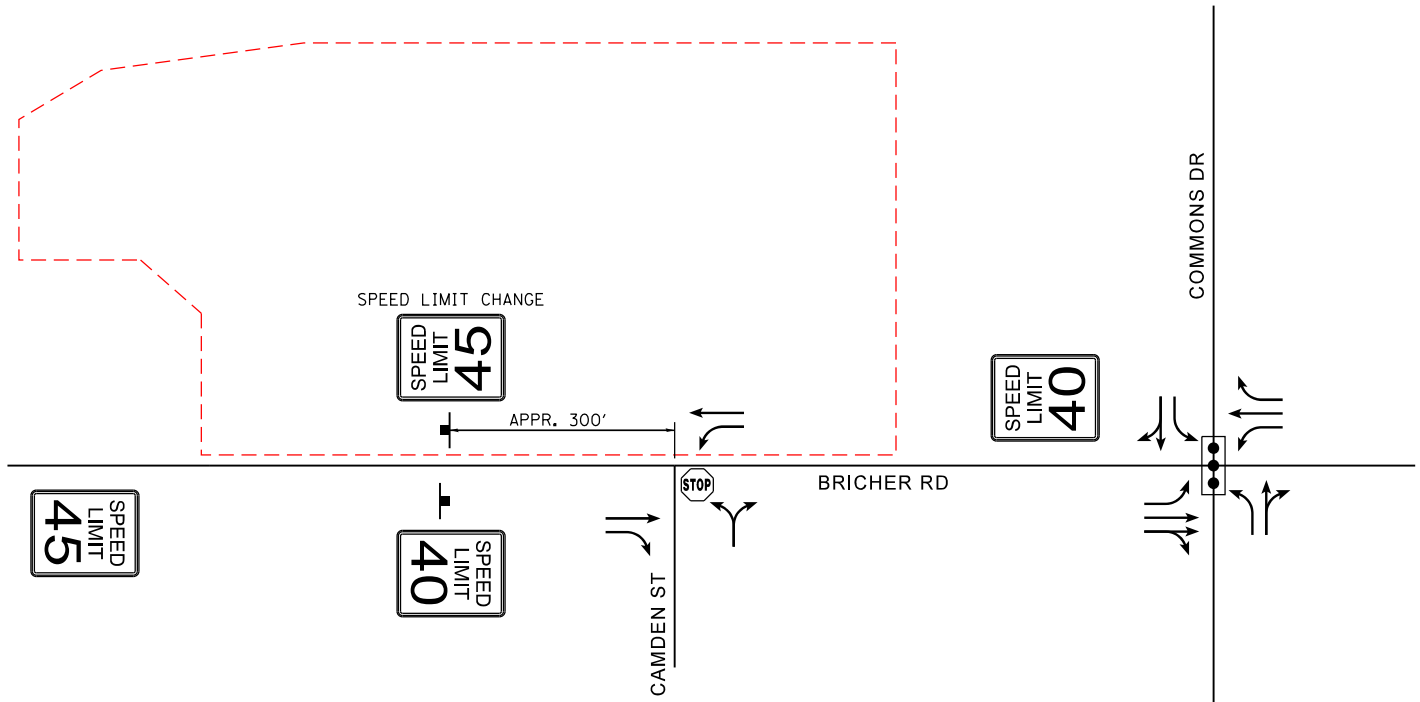
Bricher Road is a three lane major collector under the jurisdiction of the City of Geneva. A striped median is provided through the entire site frontage. The speed limit on Bricher Road changes along the site frontage, with a limit of 45 miles per hour to the west and 40 miles per hour to the east. The signs indicating the speed limit change are located approximately 300 feet west of the Camden Street intersection. A westbound left turn lane and an eastbound right turn lane are provided on the approaches to Camden Street.

Camden Street is a two lane residential street that serves the Lincoln Square subdivision. No outlets are provided on Camden Street, so all Lincoln Square traffic travels through the intersection of Bricher Road and Camden Street. The northbound approach to Bricher Road consists of a 20 foot lane with no pavement marking. Although the section is wide enough to accommodate one left turn lane and one right turn lane, the lack of roadway striping results in inconsistent usage. For the purposes of this study, the northbound approach to Bricher Road is considered to consist of one shared lane for all movements.

PRAIRIE WINDS OF ST. CHARLES

FIGURE 3
LAND USE MAP

ST CHARLES ILLINOIS



LEGEND

- TRAFFIC SIGNAL

STOP - STOP SIGN

PRAIRIE WINDS OF ST. CHARLES

FIGURE 4
EXISTING LANE CONFIGURATION

ST CHARLES ILLINOIS

Traffic Volumes

To assist in the evaluation of the traffic impact on the roadway system resulting from the proposed development, existing vehicular volumes were collected in the study area.

Vehicle counts were conducted on Wednesday, November 30, 2016 at the intersection of Bricher Road and Camden Street. The morning peak period counts occurred from 7:00 am to 9:00 am and the evening peak period counts occurred from 4:00 pm to 6:00 pm. The count periods were selected to be consistent with traditional peak hours for collector roadways and residential neighborhoods.

The traffic volumes collected indicate that the weekday peak hours occur from 7:00 am to 8:00 am and 5:00 pm to 6:00 pm. The existing peak hour vehicular volumes at the study area intersections are illustrated in Figure 5. A summary of the traffic volumes collected in fifteen minute increments is provided in Appendix A.

Proposed Development

Land Use Development

The Lincoln Square residential subdivision, managed by Pulte Homes, on the south side of Bricher Road is not currently at full occupancy. There was evidence that approximately 18 homes are occupied during the November 30, 2016 site visit. A total of 47 home lots are advertised in published maps for the Lincoln Square development. It is assumed that all homes will be constructed and fully occupied by the 2022 design year of this study. It is also assumed that the number of trips currently traveling through the intersection of Bricher Road and Camden Street will proportionally increase from the current occupancy of 18 homes to full occupancy of 47 homes as Camden Street is the only access point to Lincoln Square.

The City of St. Charles has recently approved the redevelopment of the 27-acre St. Charles Mall property located north of IL 38 and east of Randall Road, east of the proposed Prairie Winds development. The proposed mixed use development, Prairie Center, will include multi-family residential and commercial uses. It is not anticipated that this development will significantly increase traffic along Bricher Road adjacent to Prairie Winds since the roadway dead ends to the west at Peck Road and other east/west options are available for Prairie Center traffic, such as IL 38 and Prairie Street. Additional traffic that may use Bricher Road to and from Prairie Center is likely included in the background growth that was applied to the existing Bricher Road traffic and included in the future traffic analysis.

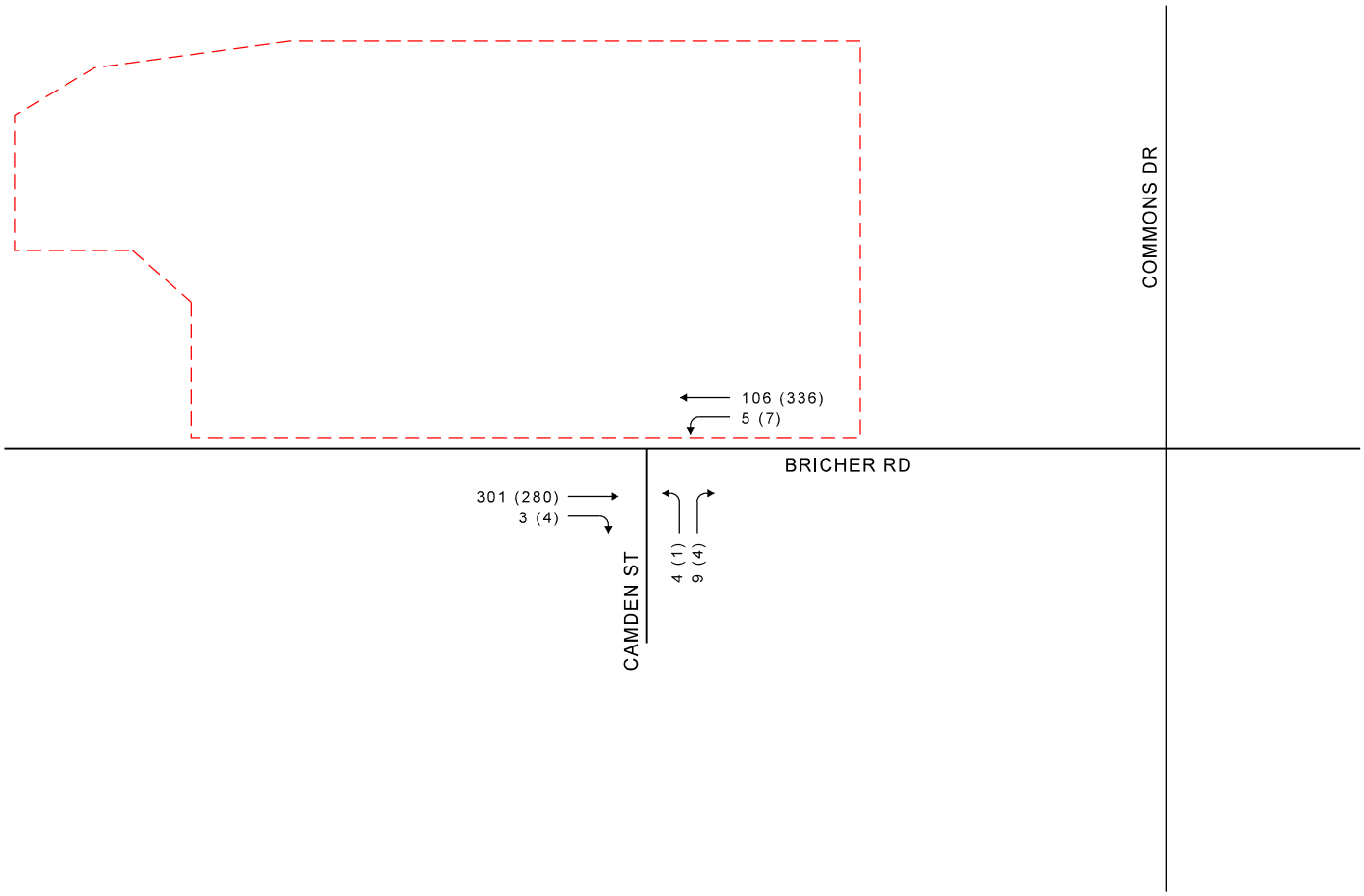
There are no other known proposed land development projects in the vicinity of the site that will impact the study area.

Roadway Development

The conceptual site plan for the proposed development includes two proposed driveways on Bricher Road. The City of St. Charles and City of Geneva have an intergovernmental agreement for access points along the north of Bricher Road. The agreement allows two full access points along the property's frontage of Bricher Road, but not within the area 270 feet east of the center line of Fischer Drive.

The primary driveway, which is aligned with Camden Street, is expected to consist of two lanes with a landscaped median. The lanes are expected to be wide enough to function as a left turn lane and a shared through/right turn lane. The secondary driveway is located approximately 500 feet west of the primary driveway, and forms a three leg intersection with Bricher Road. The secondary driveway is proposed to consist of a two lane section. It is recommended that the striped median on Bricher Road is restriped to provide eastbound left turn lanes at both the primary and secondary driveways. A right-turn lane is proposed on the westbound approach at the primary driveway. Both proposed driveways will be stop controlled on the minor legs of the intersections.

There are no other known proposed roadway projects in the vicinity of the site that will impact the study area. The anticipated future lane configuration for the study area intersections are illustrated in Figure 6.



LEGEND

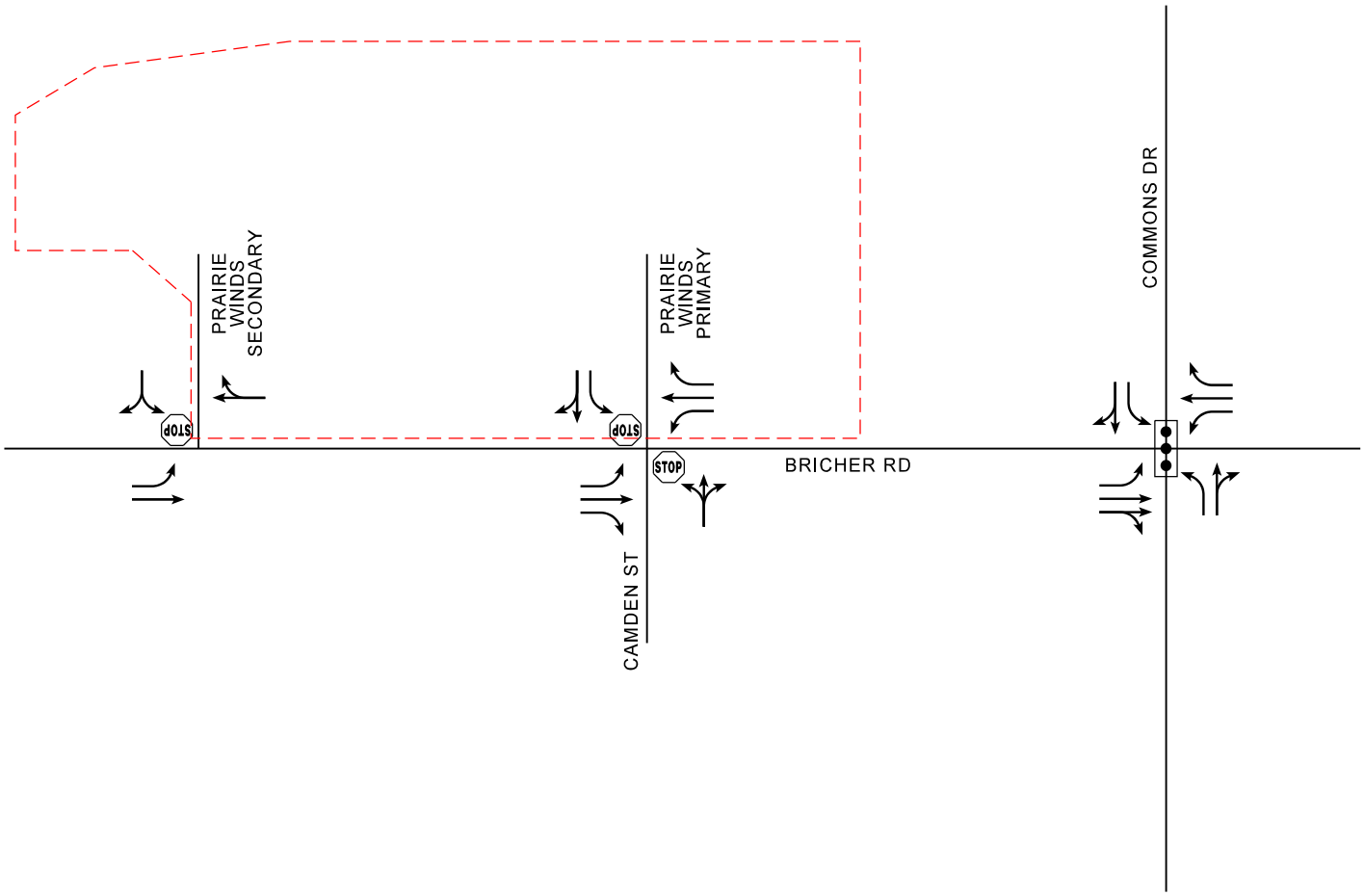
- AM PEAK HOUR
(##)- PM PEAK HOUR

AM PEAK HOUR: 7:00 AM - 8:00 AM
PM PEAK HOUR: 5:00 PM - 6:00 PM

PRAIRIE WINDS OF ST. CHARLES

FIGURE 5
EXISTING TRAFFIC VOLUMES

ST CHARLES ILLINOIS



LEGEND

- TRAFFIC SIGNAL

STOP - STOP SIGN

PRAIRIE WINDS OF ST. CHARLES

FIGURE 6
PROPOSED LANE CONFIGURATION

ST CHARLES ILLINOIS

III. TRAFFIC FORECASTS

Project Traffic Volumes

Trip Generation

The proposed site plan consists of 250 rental units. Project traffic is estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. The following land use categories are used to determine project traffic:

> Apartment (ITE Land Use Code 220) – Apartments are rental dwelling units located within the same building with at least three other dwelling units, for example, quadraplexes and all types of apartment buildings.

The Trip Generation Manual assigns trip generation rates based on a peak period and an independent variable. In this case, dwelling units is the applicable variable for apartment. The am and pm trip generation rates are selected as the average rate for weekday, peak hour of adjacent street traffic for one hour from 7 am to 9 am and 4 pm to 6 pm.

A summary of trip generation is provided in Table 1.

Table 1: Trip Generation

ITE Category Information				Daily	AM Peak Hour			PM Peak Hour		
ITE LUC	Land Use	Size	Variable	Trips	In	Out	Total	In	Out	Total
220	Apartment	250	Dwelling Units	1,663	26	102	128	101	54	155

Trip Distribution and Assignment

The direction from which traffic approaches and departs a site is a function of numerous variables, including location of residences, location of employment centers, location of commercial/retail centers, available roadway systems, location and number of access points, and level of congestion on adjacent road systems.

It is assumed that the distribution of site trips will be comparable to the distribution of existing traffic observed on Bricher Road. The directionality of traffic differs in the am and pm peak hours. During the am peak hour external trips are heavily weighted toward Randall Road to the east, which is the nearest major arterial. The directionality is more evenly split during the pm peak hour, so the directionality of project trips is assumed to be muted as well. It is assumed that traffic slightly favors traveling to and from the east of the site, as commuter traffic is likely to travel on Randall Road.

Site traffic will be split between the primary and secondary driveways. It is anticipated that more than half of the overall traffic will use the primary entrance due the location of the residential buildings on the conceptual site plan and ease of access from Bricher Road. However, a substantial number of dwelling units are located closer to the secondary entrance, which is also expected to experience significant use. A 60/40 split between the primary and secondary driveways is assumed for both peak hours.

The directional distribution and assignment of new project traffic is illustrated in Figure 7.

Background Traffic Volumes

Background traffic volumes are estimated for the year 2022, which is five years beyond the anticipated build out in 2017. These volumes account for future non-project related growth in the area. The growth rate is determined after reviewing historic average daily traffic (ADT) volumes along Bricher Road west of Randall Road that are available from IDOT. An evaluation of historic daily volumes along Bricher Road near the study area is summarized in Table 2.

Table 2: Historic IDOT ADT Growth Rates – Bricher Road

Count Year	IDOT ADT	Annual Growth Rate from Previous Count Year
2002	2150	-
2006	5900	43.6%
2010	5300	-2.5%
2014	5200	-0.5%

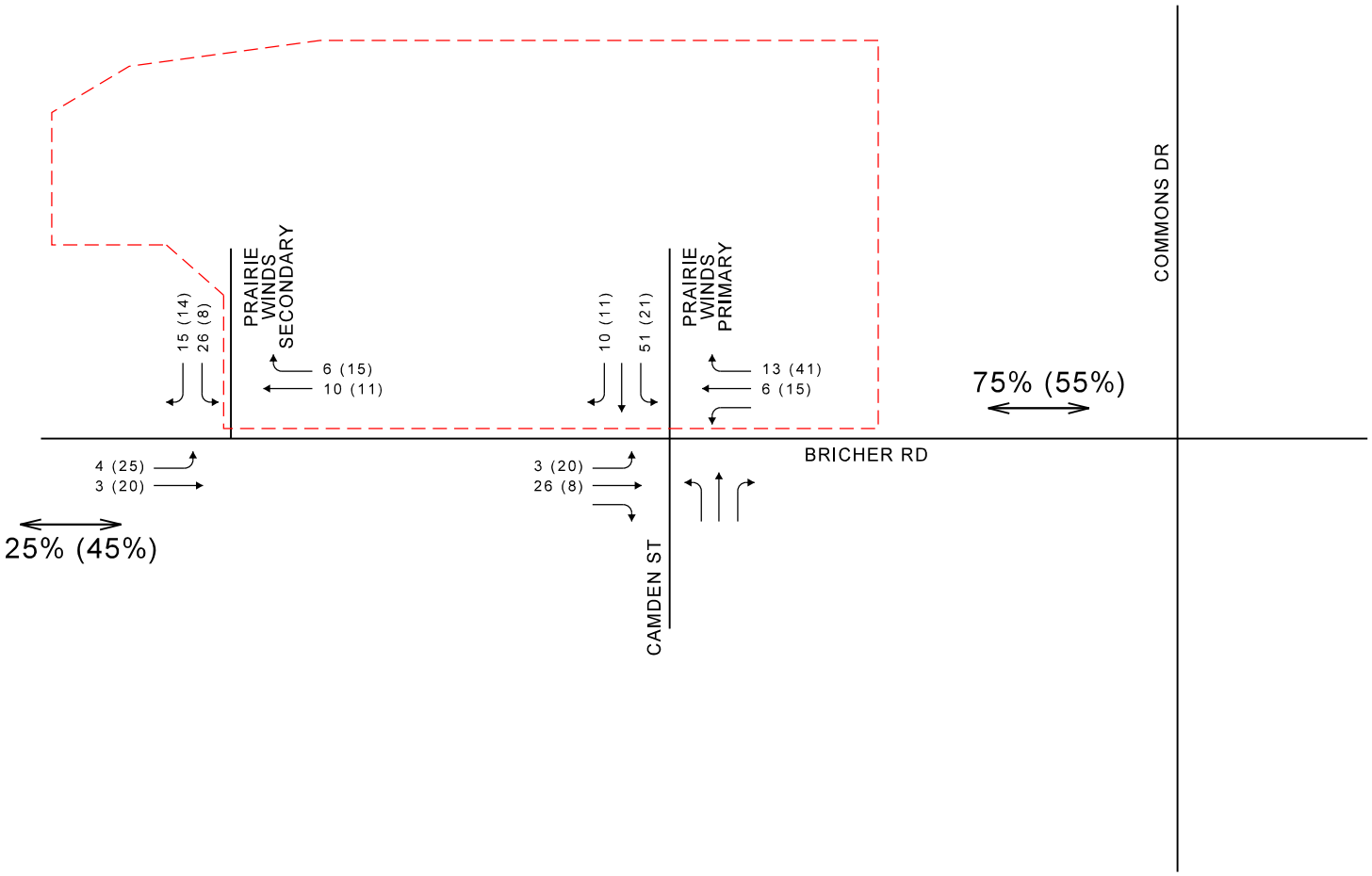
Substantial ADT growth occurred from 2002 to 2006, which coincides with the construction of several residential developments to the west of the study area. Since 2006, ADT's along Bricher Road have decreased. In order to maintain conservative analysis, a negative growth rate will not be used in this study. Instead, the annual growth rate is assumed to be one percent per year at all study area intersections. This methodology is typical in situations involving potentially negative traffic volume growth rates.

As previously stated, it is assumed that the Lincoln Square residential development to south will be fully constructed and occupied by 2022. Currently, approximately 18 of the 47 potential homes are occupied. The additional projected trips for full occupancy are included in the background condition. The distribution of the projected trips matches the distribution of existing Lincoln Square trips.

The background traffic volumes are illustrated in Figure 8.

Future Traffic Volumes

The project traffic volumes are added to the background volumes to obtain the future traffic volumes for the study intersections. Future with project traffic volumes are depicted in Figure 9.



LEGEND

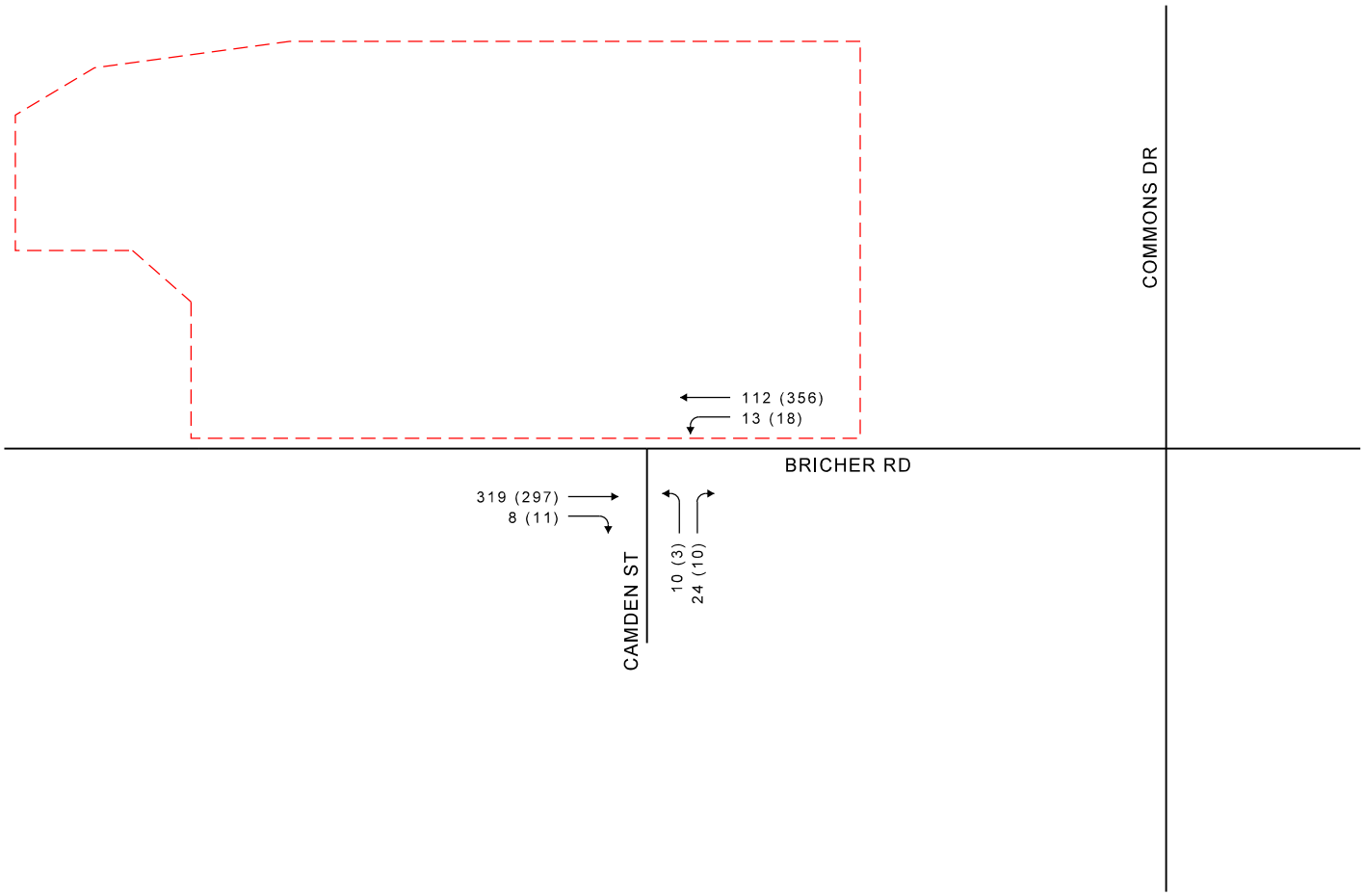
- AM PEAK HOUR
(##)- PM PEAK HOUR

AM PEAK HOUR: 7:00 AM - 8:00 AM
PM PEAK HOUR: 5:00 PM - 6:00 PM

PRAIRIE WINDS OF ST. CHARLES

FIGURE 7
PROJECT TRAFFIC VOLUMES

ST CHARLES ILLINOIS



LEGEND

- AM PEAK HOUR
(##)- PM PEAK HOUR

AM PEAK HOUR: 7:00 AM - 8:00 AM
PM PEAK HOUR: 5:00 PM - 6:00 PM

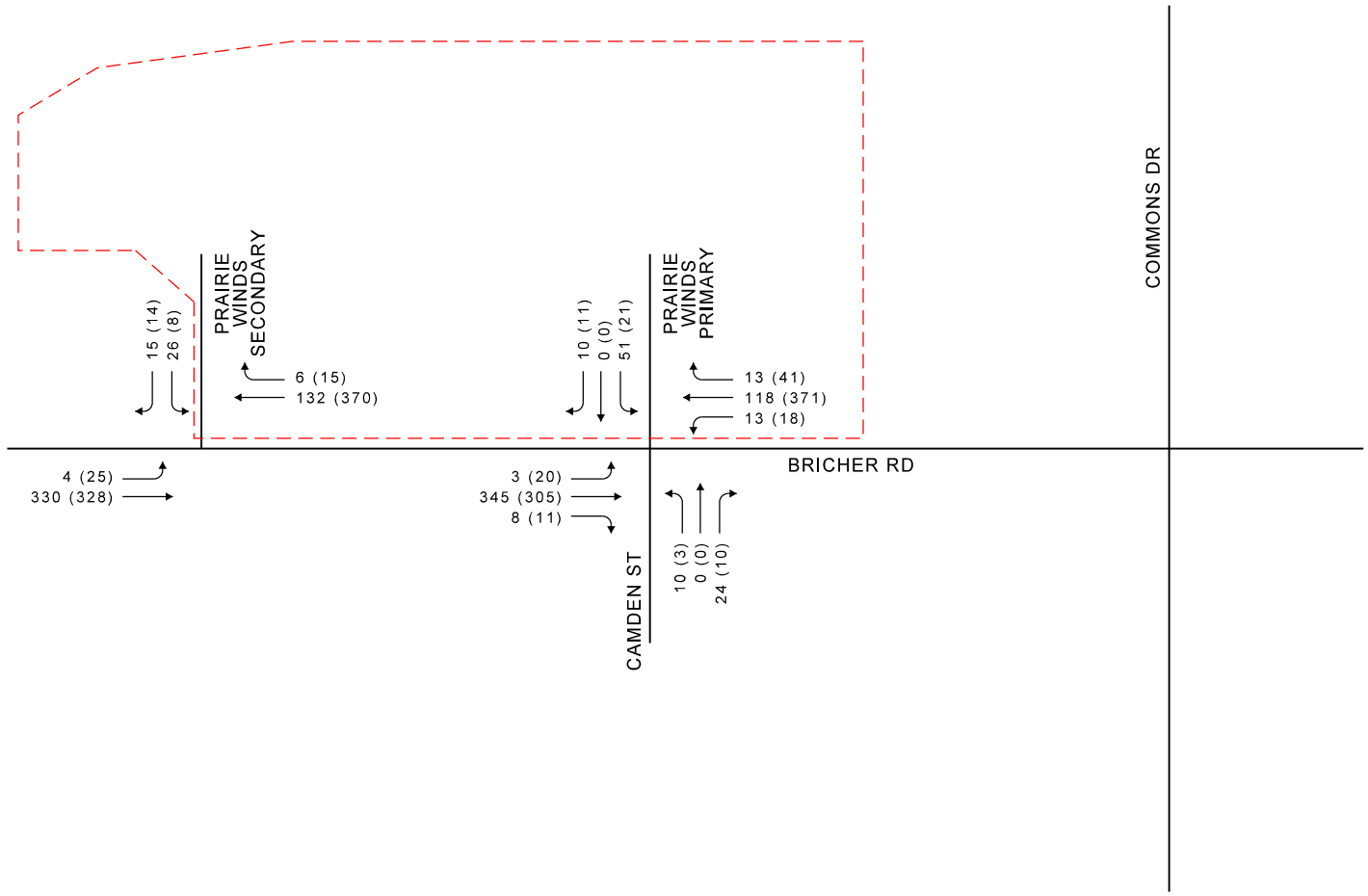
NOTE:

BACKGROUND TRAFFIC VOLUME = EXISTING TRAFFIC VOLUME (FIGURE 5) + ADDITIONAL LINCOLN SQUARE TRAFFIC + 1% GROWTH PER YEAR TO 2022

PRAIRIE WINDS OF ST. CHARLES

FIGURE 8
BACKGROUND TRAFFIC VOLUMES

ST CHARLES ILLINOIS



LEGEND

- AM PEAK HOUR
(##)- PM PEAK HOUR

AM PEAK HOUR: 7:00 AM - 8:00 AM
PM PEAK HOUR: 5:00 PM - 6:00 PM

NOTE:

FUTURE WITH PROJECT TRAFFIC VOLUME = BACKGROUND TRAFFIC VOLUME (FIGURE 8) + PROJECT TRAFFIC VOLUME (FIGURE 7)

PRAIRIE WINDS OF ST. CHARLES

FIGURE 9
FUTURE WITH PROJECT TRAFFIC VOLUMES

ST CHARLES ILLINOIS

IV. TRAFFIC ANALYSIS

Capacity Analysis

The operation of a facility is evaluated based on level of service (LOS) calculations obtained by analytical methods defined in the Transportation Research Board's Highway Capacity Manual (HCM), 2010 Edition. The concept of LOS is defined as a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

There are six LOS letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst.

The LOS of an intersection is based on the average control delay per vehicle. For a signalized intersection, the delay is calculated for each lane group and then aggregated for each approach and for the intersection as a whole. Generally, the LOS is reported for the intersection as a whole. For an unsignalized intersection, the delay is only calculated and reported for each minor movement. An overall intersection LOS is not calculated.

There are different LOS criteria for signalized and unsignalized intersections primarily due to driver perceptions of transportation facilities. The perception is that a signalized intersection is expected to carry higher traffic volumes and experience a greater average delay than an unsignalized intersection. Typically, various state and local governments adopt operating standards varying between LOS C and LOS E, depending on the area's size and roadway characteristics. The LOS criteria for signalized and unsignalized intersections are provided in Table 3.

Table 3: Level of Service Definitions for Signalized and Unsignalized Intersections

Level of Service	Signalized Intersection Control Delay (seconds/vehicle)	Unsignalized Intersection Control Delay (seconds/vehicle)
A	≤ 10	≤ 10.0
B	> 10.0 and ≤ 20.0	> 10.0 and ≤ 15.0
C	> 20.0 and ≤ 35.0	> 15.0 and ≤ 25.0
D	> 35.0 and ≤ 55.0	> 25.0 and ≤ 35.0
E	> 55.0 and ≤ 80.0	> 35.0 and ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board, *Highway Capacity Manual 2010*, National Research Council, 2010.

The study area consists of the two proposed site driveways on Bricher Road. The primary driveway aligns with Camden Street. Capacity analysis is performed with HCS 2010 (ver. 6.90). Multiple HCS 2010 scenarios are created to evaluate the existing, background, and future with project traffic volumes for the weekday am and pm peak hours. Results for the study

intersections are summarized in Table 4. Supporting analysis worksheets from HCS 2010 for the existing, background and future traffic conditions are provided in Appendices B, C and D.

Table 4: Unsignalized Intersection LOS

Intersection / Approach	AM Peak Hour						PM Peak Hour					
	Existing		Background		Future w/ Project		Existing		Background		Future w/ Project	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Bricher Road & Camden Street/Primary Driveway (East Driveway)												
NB Approach	10.4	B	10.9	B	11.4	B	10.6	B	11.0	B	11.7	B
SB Left	-	-	-	-	14.4	B	-	-	-	-	18.2	C
SB Thru/Right	-	-	-	-	8.9	A	-	-	-	-	10.5	B
EB Left	-	-	-	-	7.5	A	-	-	-	-	8.2	A
WB Left	7.9	A	8.0	A	8.0	A	7.8	A	7.9	A	8.0	A
Bricher Road & Secondary Driveway (West Driveway)												
SB Approach	-	-	-	-	11.6	B	-	-	-	-	13.1	B
EB Left	-	-	-	-	7.5	A	-	-	-	-	8.2	A

Under existing conditions, the minor movements at the intersection of Bricher Road and Camden Street experience little delay with all movements operating at LOS A or LOS B during the am and pm peak hours. Delay increases slightly for all movements in the background scenario but the levels of service do not change.

The addition of project related trips has little impact on performance of the study area intersections during the am and pm peak hours, with only slight delay increases for the existing movements in the future with project scenario. There are no changes in level of service. Likewise, the new minor movements at the two site driveways operate at LOS C or better during both the am and pm peak hours.

Therefore, it is concluded that the proposed development does not adversely impact the study area intersections on Bricher Road with the restriping of the median to provide eastbound left turn lanes at both site driveways. No other mitigation is necessary.

Queue Length Analysis

The 95th percentile queue lengths are also analyzed using HCS 2010. The applicable minor movement queue lengths for the am and pm peak hours are summarized in Table 5.

All queue storage lengths are adequate in the existing, background, and future with project scenarios. The two proposed southbound driveway approaches are expected to mirror the northbound approach of Camden Street in that the approach travel lane is the storage lane. Therefore, the storage length will be equal to the throat length within the site and there is not an applicable taper length. The queue lengths at the two proposed eastbound left turn lanes are expected to be quite short and will not be the controlling factor for storage length. Therefore the

design defers to the IDOT BRL Manual requirements for queue storage and taper lengths based on the posted speed limit of 40 miles per hour at the East Driveway and 45 miles per hour at the West Driveway. However, a variance could be considered for one or both of the driveways to allow shorter storage and taper lengths.

Table 5: 95th Percentile Queue Lengths

Intersection	Scenario	95% Queue Length (feet)							
		AM Peak Hour				PM Peak Hour			
		EB Left	WB Left	NB App.	SB Left	EB Left	WB Left	NB App.	SB Left
Bricher Road and Camden Street/ Primary Driveway	Existing	-	0	3	-	-	0	0	-
	Background	-	0	5	-	-	0	3	-
	Future with Project	0	0	5	10	3	0	3	5
	Existing Storage	N/A [2]	185	75 [1]	N/A [4]	N/A [2]	185	75 [1]	N/A [4]
	Existing Taper	N/A [2]	95	N/A [1]	N/A [4]	N/A [2]	95	N/A [1]	N/A [4]
Bricher Road and Secondary Driveway	Existing	-	-	-	-	-	-	-	-
	Background	-	-	-	-	-	-	-	-
	Future with Project	0	-	-	5	0	-	-	5
	Existing Storage	N/A [3]	-	-	N/A [4]	N/A [3]	-	-	N/A [4]
	Existing Taper	N/A [3]	-	-	N/A [4]	N/A [3]	-	-	N/A [4]

Notes:
1. Approximately 75 feet from stop bar to multi-use path crossing
2. Proposed lengths based on BLR standards for 40 speed limit - 115' Storage/132' Taper min.
3. Proposed lengths based on BLR standards for 45 speed limit - 115' Storage/156' Taper min.
4. Travel lane is the storage lane as no add lanes are proposed for SB approach

Traffic Signal Warrant Analysis

It is worthwhile to conduct a traffic signal warrant analysis given the addition of an approach to the intersection of Bricher Road and Camden Street, and an overall increase in traffic associated with the proposed development. The investigation for the need for a traffic control signal is based on the methodology established in the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD establishes nine individual warrants. Installation of a traffic signal should be further investigated at locations that meet one or more warrants. Analysis worksheets for the appropriate warrants are included in Appendix E.

Warrant 1 is the eight-hour vehicular volume warrant. Warrant 1 is met if a total of 8 hours in the day exceed the thresholds established in the MUTCD. Traditionally this warrant requires more than eight hours of data collection and substantial projections of future trips. However, additional guidance from IDOT declares that in cases involving future volumes, the eight hour vehicular volume hour can be estimated as 55 percent of the peak hour volumes. The IDOT methodology also requires a reduction of the minor approach right turn volume based on factors such as lane configuration and conflicting volumes. Ultimately, the eight-hour vehicular warrant is not met at the intersection of Bricher Road and Camden Street using 55 percent of the pm peak hour volumes.

Warrant 2 is the four-hour vehicular volume warrant. The conditions in this warrant are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal. The MUTCD establishes the thresholds for major and minor street traffic. The traffic projections in this study established only the am and pm peak hours, both of which do not meet this warrant.

Although the MUTCD describes a warrant based on peak hour volumes (Warrant 3), this warrant is intended to be used in cases that are expected to have substantial spikes in minor approach traffic, such a large office building with many employees departing at the same time. However, the projected peak hour intersection volumes do not meet Warrant 3.

Overall, the projected future volumes at Bricher Road and Camden Street/Primary Driveway do not meet the eight-hour, four-hour, or peak hour warrants. Therefore, it is concluded that a traffic signal will not be warranted at this intersection following the completion of the proposed development.

Right Turn Lane Warrant Analysis

The addition of right-turn lanes at intersections can significantly improve operations if warranted. Right turn warrant criteria is provided both by IDOT and Kane County DOT. It is likely that the KDOT criteria controls over the criteria present in the IDOT BDE and BLR, but both criteria are included in this report.

The IDOT criteria is based on only the approach volume and right turn volume, with no separate consideration for the speed limit in most cases. When the future with project volumes are plotted against the IDOT threshold, it is apparent that the volumes are well below the threshold that would require a right turn lane to be considered at either intersection. Therefore, it is concluded that right turn lanes are not required at the two proposed driveways per IDOT requirements.

Kane County DOT requirements differ from IDOT since the posted speed limit is also considered, along with the approach and right turn volumes. The posted speed limit is 40 miles per hour at the Primary Driveway and 45 mph and the Secondary Driveway. In both of these scenarios, the plotted right turn volume is below the warrant threshold. Therefore, it is concluded that right turn lanes are not required at the two proposed driveways, per Kane County DOT requirements.

Figures displaying the plotted right turn lane threshold criteria for both IDOT and Kane County DOT requirements are included as Appendix F.

It should be noted that despite falling below the criteria requiring a right turn lane, a right turn lane is proposed on the westbound approach at the Primary Driveway. The addition of the lane highlights the primary nature of this driveway and matches the lane configuration of the eastbound approach. A right turn lane is not proposed at the secondary driveway.

V. CONCLUSIONS

The purpose of this report is to evaluate the potential traffic impacts of the proposed 250 unit Prairie Winds rental community located on Bricher Street in St. Charles, Illinois. The conceptual site plan includes a primary full access driveway aligned with Camden Street, and a secondary full access driveway located approximately 500 feet to the west. It is recommended that eastbound left turn lanes be striped within the existing median at the two proposed site driveways.

Capacity analysis was conducted for existing, background, and future with project conditions during the am and pm peak hours at the intersection of Bricher Road and Camden Street, as the site driveways. Traffic was estimated to 2022, which is five years beyond the anticipated opening of the Prairie Winds development. The projects also include additional trips on Camden Street to account for future growth in the Lincoln Square development to the south.

Results of the capacity and queue analysis indicate that there are no performance issues at the study area intersection in either the am or pm peak hours. No additional roadway improvements are recommended.

Despite the addition of a fourth approach and an overall increase in traffic, the intersection of Bricher Road and Camden Street/Primary Driveway does not meet the eight hour, four hour, or peak hour traffic signal warrants. Right turn lane warrant analysis confirms that the future volumes at the proposed driveways do not meet warrants. However, a right turn lane is proposed on the westbound approach to the Primary Driveway to highlight the primary nature of this driveway and to match the configuration of the existing eastbound approach.

APPENDIX A

EXISTING TRAFFIC COUNTS

V3 Companies

7325 Janes Avenue
Woodridge, IL 60517

Project: Randall & Bricher
Location: St. Charles, Illinois
Weather: Dry
Counted by: V3

File Name : Camden and Bricher
Site Code : 16262
Start Date : 11/30/2016
Page No : 1

Groups Printed- Unshifted

	CAMDEN STREET Northbound				BRICHER ROAD Eastbound				BRICHER ROAD Westbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
07:00 AM	3	1	0	4	66	2	0	68	1	19	0	20	92
07:15 AM	0	0	0	0	104	0	0	104	0	28	0	28	132
07:30 AM	0	2	0	2	58	1	0	59	2	24	0	26	87
07:45 AM	1	6	0	7	73	0	0	73	2	35	0	37	117
Total	4	9	0	13	301	3	0	304	5	106	0	111	428
08:00 AM	0	3	0	3	41	1	0	42	1	30	0	31	76
08:15 AM	0	2	0	2	55	0	0	55	0	20	0	20	77
08:30 AM	1	0	0	1	53	0	0	53	4	31	0	35	89
08:45 AM	0	3	0	3	51	1	0	52	1	23	0	24	79
Total	1	8	0	9	200	2	0	202	6	104	0	110	321
*** BREAK ***													
04:00 PM	1	1	0	2	60	0	0	60	3	71	0	74	136
04:15 PM	0	1	0	1	55	0	0	55	0	89	0	89	145
04:30 PM	0	2	0	2	71	2	0	73	1	71	0	72	147
04:45 PM	0	0	0	0	46	0	0	46	0	65	0	65	111
Total	1	4	0	5	232	2	0	234	4	296	0	300	539
05:00 PM	1	0	0	1	79	0	0	79	0	91	0	91	171
05:15 PM	0	1	0	1	60	1	0	61	2	90	0	92	154
05:30 PM	0	2	0	2	76	3	0	79	1	86	0	87	168
05:45 PM	0	1	0	1	65	0	0	65	4	69	0	73	139
Total	1	4	0	5	280	4	0	284	7	336	0	343	632
Grand Total	7	25	0	32	1013	11	0	1024	22	842	0	864	1920
Apprch %	21.9	78.1	0		98.9	1.1	0		2.5	97.5	0		
Total %	0.4	1.3	0	1.7	52.8	0.6	0	53.3	1.1	43.9	0	45	

	CAMDEN STREET Northbound				BRICHER ROAD Eastbound				BRICHER ROAD Westbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	**3**	1	0	4	66	**2**	0	68	1	19	0	20	92
07:15 AM	0	0	0	0	**104**	0	0	**104**	0	28	0	28	**132**
07:30 AM	0	2	0	2	58	1	0	59	**2**	24	0	26	87
07:45 AM	1	**6**	0	**7**	73	0	0	73	2	**35**	0	**37**	117
Total Volume	4	9	0	13	301	3	0	304	5	106	0	111	428
% App. Total	30.8	69.2	0		99	1	0		4.5	95.5	0		
PHF	.333	.375	.000	.464	.724	.375	.000	.731	.625	.757	.000	.750	.811
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	**1**	0	0	1	**79**	0	0	**79**	0	**91**	0	91	**171**
05:15 PM	0	1	0	1	60	1	0	61	2	90	0	**92**	154
05:30 PM	0	**2**	0	**2**	76	**3**	0	79	1	86	0	87	168
05:45 PM	0	1	0	1	65	0	0	65	**4**	69	0	73	139
Total Volume	1	4	0	5	280	4	0	284	7	336	0	343	632
% App. Total	20	80	0		98.6	1.4	0		2	98	0		
PHF	.250	.500	.000	.625	.886	.333	.000	.899	.438	.923	.000	.932	.924

APPENDIX B

CAPACITY ANALYSIS WORKSHEETS
EXISTING

HCS 2010 Two-Way Stop-Control Report

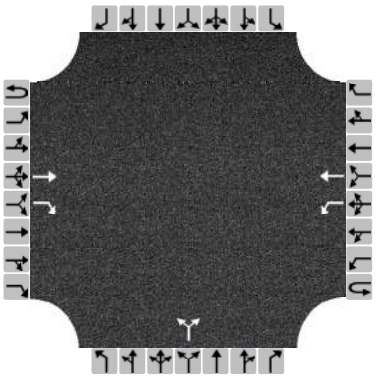
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2016
Time Analyzed	Existing - AM Peak Hour
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and Camden St
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	Camden St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		0	0	0		0	0	0
Configuration			T	R		L	T				LR					
Volume, V (veh/h)			301	3		5	106			4		9				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5					13					
Capacity, c (veh/h)						1252					674					
v/c Ratio						0.00					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						7.9					10.4					
Level of Service, LOS						A					B					
Approach Delay (s/veh)						0.3					10.4					
Approach LOS											B					

HCS 2010 Two-Way Stop-Control Report

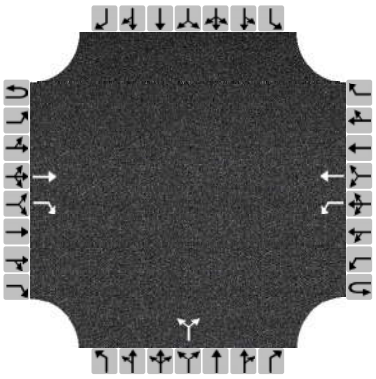
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2016
Time Analyzed	Existing - PM Peak Hour
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and Camden St
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	Camden St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		0	0	0		0	0	0
Configuration			T	R		L	T				LR					
Volume, V (veh/h)			280	4		7	336			1		4				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7					5					
Capacity, c (veh/h)						1274					651					
v/c Ratio						0.01					0.01					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						7.8					10.6					
Level of Service, LOS						A					B					
Approach Delay (s/veh)						0.2				10.6						
Approach LOS										B						

APPENDIX C

CAPACITY ANALYSIS WORKSHEETS BACKGROUND

HCS 2010 Two-Way Stop-Control Report

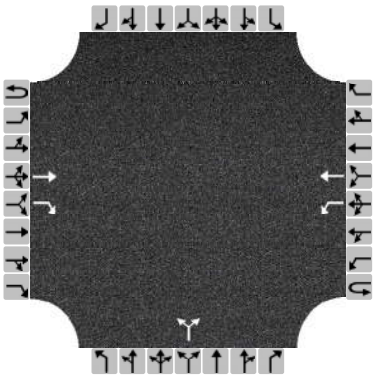
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2022
Time Analyzed	Background - AM Peak Hour
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and Camden St
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	Camden St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		0	0	0		0	0	0
Configuration			T	R		L	T				LR					
Volume, V (veh/h)			319	8		13	112			10		24				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No				No				No				No	
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						14					36					
Capacity, c (veh/h)						1226					648					
v/c Ratio						0.01					0.06					
95% Queue Length, Q_{95} (veh)						0.0					0.2					
Control Delay (s/veh)						8.0					10.9					
Level of Service, LOS						A					B					
Approach Delay (s/veh)						0.8					10.9					
Approach LOS											B					

HCS 2010 Two-Way Stop-Control Report

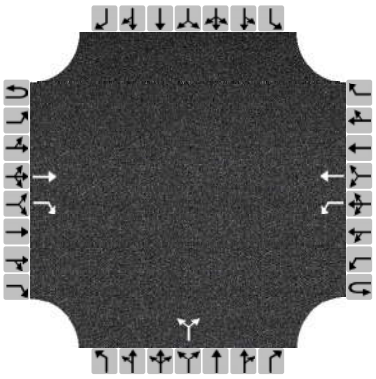
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2022
Time Analyzed	Background - PM Peak Hour
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and Camden St
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	Camden St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		0	0	0		0	0	0
Configuration			T	R		L	T				LR					
Volume, V (veh/h)			297	11		18	356			3		10				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						19					14					
Capacity, c (veh/h)						1246					615					
v/c Ratio						0.02					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						7.9					11.0					
Level of Service, LOS						A					B					
Approach Delay (s/veh)						0.4					11.0					
Approach LOS											B					

APPENDIX D

CAPACITY ANALYSIS WORKSHEETS
FUTURE WITH PROJECT

HCS 2010 Two-Way Stop-Control Report

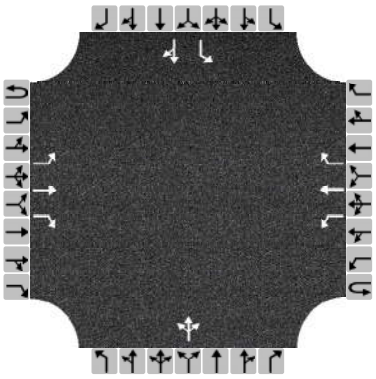
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2022
Time Analyzed	Future w/ Proj. - AM PH
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and Camden St
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	Camden St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	1	0	1	1	1		0	1	0		1	1	0
Configuration		L	T	R		L	T	R			LTR			L		TR
Volume, V (veh/h)		3	345	8		13	118	13		10	0	24		51	0	10
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		3				14					36			54		11
Capacity, c (veh/h)		1458				1199					594			439		932
v/c Ratio		0.00				0.01					0.06			0.12		0.01
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2			0.4		0.0
Control Delay (s/veh)		7.5				8.0					11.4			14.4		8.9
Level of Service, LOS		A				A					B			B		A
Approach Delay (s/veh)		0.1				0.7				11.4				13.4		
Approach LOS										B				B		

HCS 2010 Two-Way Stop-Control Report

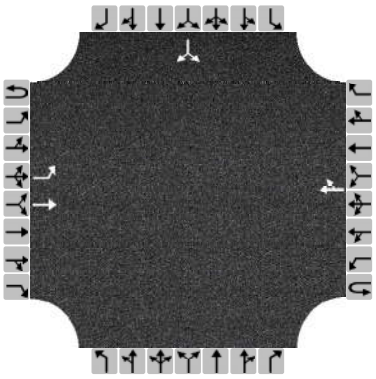
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2022
Time Analyzed	Future w/ Proj - AM PH
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and West Drive
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	West Drive
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		L	T					TR							LR	
Volume, V (veh/h)		4	330				132	6						26		15
Percent Heavy Vehicles (%)		3												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4													43	
Capacity, c (veh/h)		1429													588	
v/c Ratio		0.00													0.07	
95% Queue Length, Q_{95} (veh)		0.0													0.2	
Control Delay (s/veh)		7.5													11.6	
Level of Service, LOS		A													B	
Approach Delay (s/veh)		0.1												11.6		
Approach LOS														B		

HCS 2010 Two-Way Stop-Control Report

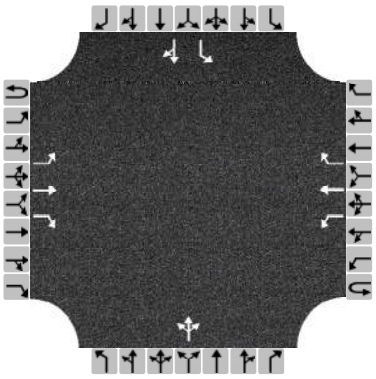
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2022
Time Analyzed	Future w/ Proj. - PM PH
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and Camden St
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	Camden St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	1	0	1	1	1		0	1	0		1	1	0
Configuration		L	T	R		L	T	R			LTR			L		TR
Volume, V (veh/h)		20	305	11		18	371	41		3	0	10		21	0	11
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		21				19					14			22		12
Capacity, c (veh/h)		1137				1238					551			294		662
v/c Ratio		0.02				0.02					0.03			0.07		0.02
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.1			0.2		0.1
Control Delay (s/veh)		8.2				8.0					11.7			18.2		10.5
Level of Service, LOS		A				A					B			C		B
Approach Delay (s/veh)		0.5				0.3					11.7			15.5		
Approach LOS											B			C		

HCS 2010 Two-Way Stop-Control Report

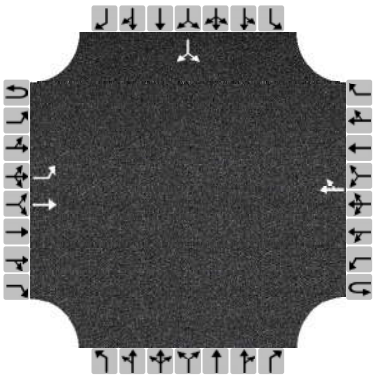
General Information

Analyst	V3 Co.
Agency/Co.	Village of St. Charles
Date Performed	12/8/2016
Analysis Year	2022
Time Analyzed	Future w/ Proj - PM PH
Intersection Orientation	East-West
Project Description	Prairie Winds

Site Information

Intersection	Bricher Rd and West Drive
Jurisdiction	St. Charles Township
East/West Street	Bricher Rd
North/South Street	West Drive
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		L	T					TR							LR	
Volume, V (veh/h)		25	328				370	15						8		14
Percent Heavy Vehicles (%)		0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		26													23	
Capacity, c (veh/h)		1165													467	
v/c Ratio		0.02													0.05	
95% Queue Length, Q_{95} (veh)		0.1													0.2	
Control Delay (s/veh)		8.2													13.1	
Level of Service, LOS		A													B	
Approach Delay (s/veh)		0.6												13.1		
Approach LOS														B		

APPENDIX E

TRAFFIC SIGNAL WARRANT ANALYSIS

Bricher Rd and Camden St./Primary Driveway
City: **St. Charles, IL**
County: **Kane**
District: **1**

State Of Illinois
Department of Transportation
Bureau of Traffic

Date: 3/28/2017

Major Bricher Rd
Minor Camden St/Primary Driveway

SUMMARY OF TRAFFIC SURVEY

	TRAFFIC FROM NORTH				TRAFFIC FROM SOUTH					TRAFFIC FROM EAST				TRAFFIC FROM WEST					
Route:	**Primary Driveway** N. of: **Bricher Rd** Going				**Camden St** S. of: **Bricher Rd** Going					**Bricher Road** E. of: **Camden St/Primary Driveway** Going				**Bricher Road** W. of: **Camden St/Primary Driveway** Going					
START TIME	**EAST** ↳	**SOUTH** ↓	**WEST** ↲	**TOTAL**	**WEST** ↰	**NORTH** ↑	**EAST** ↱	**TOTAL**	**TOTAL NORTH AND SOUTH**	**SOUTH** ↵	**WEST** ←	**NORTH** ↰	**TOTAL**	**NORTH** ↗	**EAST** →	**SOUTH** ↴	**TOTAL**	**TOTAL EAST AND WEST**	**GRAND TOTAL**
AM Peak 7:00	51	0	10	61	10	0	24	34	**95**	13	118	13	144	3	345	8	356	**500**	**595**
PM Peak 5:00	21	0	11	32	3	0	10	13	**45**	18	371	41	430	20	305	11	336	**766**	**811**
8th Hour (55% of PM)	12	0	6	18	2	0	6	7	**25**	10	204	23	237	11	168	6	185	**421**	**446**

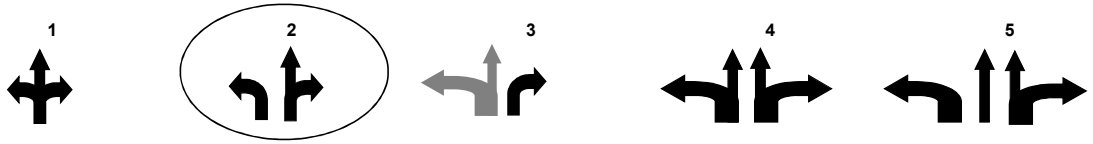
REVIEW INFORMATION

COUNTS USED: V3 Counts
COUNT DATE(S): 11/30/2016
DATA REVIEWED: 3/28/2017
REVIEWED BY: CAS

RIGHT TURN FACTORIZATION SHEET (CONT.)

LANE CONFIGURATIONS

1 2 3 4 5



Any configuration with an exclusive right turn lane (usually up to 600 ft. long)

LEFT	THROUGH	RIGHT	TOTAL (A)	0.7A	0.35A	3T	T/3	(T+L)	(T+R)	3R	3L	T/2	T/4	BASE REDUCTION
51	0	**10**	61	**43**	**21**	0	0	51	10	30	153	0	0	**20%**
21	0	**11**	32	**22**	**11**	0	0	21	11	33	63	0	0	**20%**
12	0	**6**	18	**13**	**6**	0	0	12	6	18	36	0	0	**20%**

RIGHT TURN FACTORIZATION SHEET

INTERSECTION: Bricher Rd and Camden St./Primary Driveway
MUNCIPALITY: St. Charles, IL COUNTY: Kane

		MINOR STREET STREET NAME		Camden St/Primary Driveway		CRITICAL					
		CONFIG. #		1		MAINLINE	BASE RIGHT	MAINLINE	ADJUSTED	ADJUSTED	ADJUSTED
		VOLUMES				APPROACH	TURN	CONGESTION	RIGHT TURN	RIGHT	MINOR
	HOUR	L	T	R	A	VOLUME	REDUCTION	FACTOR	REDUCTION	TURNS	STREET
DIR	BEGIN	LEFT	THROUGH	RIGHT	TOTAL	PER LANE	%	%	%		VOLUME
SB	7:00	51	0	10	61	118	20%	0%	20%	8	59
SB	5:00	21	0	11	32	371	20%	0%	20%	9	30
SB	8th Hr	12	0	6	18	204	20%	0%	20%	5	17

MAINLINE CONGESTION FACTORS	
VOLUMES	FACTOR %
0-399	0%
400-499	5%
500-599	10%
600-699	15%
700-799	20%
800-899	25%
900-999	30%
1000-1099	35%
1100-1199	40%
1200-1299	45%
1300-1399	50%
1400-1499	55%

REVIEW INFORMATION
COUNTS USED: V3 Counts
COUNT DATE(S): 11/30/2016
DATE REVIEWED: 3/28/2017
REVIEWED BY: CAS

SIGNAL WARRANT REVIEW SHEET

District #1

SRA: _____ YES (NO)

INTERSECTION: Bricher Rd and Camden St./Primary Driveway
MUNCIPALITY: St. Charles, IL
COUNTY: Kane

Speed Limit of Major Route 40 mph
Number of Lanes of Major Approach 1
Isolated Community with Population< 10,0 No
Number of Lanes of Minor Approach 1

	MAJOR	ADJ. MINOR	Check any hours which meet the following Warrants			
			WARRANT 1			
	STREET VOLUME	STREET VOLUME	A	B	WARRANT 1 A/B: 8 hrs of both	
HOUR BEGIN	(both approaches)	(higher volume approaches)	100%	100%	80% of A	80% of B
8th Hour	430	17	No	No	No	No
(55% of PM)						
Hours Met:			0	0	0	0
Volume Requirements:		MAJOR:	500	750	400	600
		MINOR:	150	75	120	60

REVIEW INFORMATION

COUNTS USED: V3 Counts
COUNT DATE(S): 11/30/2016
DATE REVIEWED: 3/28/2017
REVIEWED BY: CAS

Comments

WARRANT 1 YES (NO) N/A
Warrant 1 is met if any of the following Conditions are met:

- CONDITION A YES (NO) N/A
  Minmum Vehicular Volume
- CONDITION B (NO) N/A
  Interruption of Continuous Traffic
- CONDITION A/B (NO) N/A
  Combination of Warranrts

WARRANT 2 (NO) N/A
Four Hour Volume
(Partial Four Hour Volume Warrant Analysis Included)

WARRANT 3 NO (N/A)
Peak Hour Volume

WARRANT 4 NO (N/A)
Pedestrian Volume

WARRANT 5 YES NO (N/A)
School Crossing

WARRANT 6 NO (N/A)
Coordinated Signal System

WARRANT 7 NO (N/A)
Accidents Experience

WARRANT 8 NO (N/A)
Roadway Network

WARRANT 9 NO (N/A)
Intersection Near a Grade Crossing

TRAFFIC SIGNAL WARRANT SUMMARY

City: **St. Charles, IL** Engineer: **CAS**
County: **Kane** Date: **3/28/2017**

Major Street: **Bricher Rd** Lanes: **1** Critical Approach Speed: **40**
Minor Street: **Camden St/Primary Driveway** Lanes: **1**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☐ Yes ☑ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☑ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☐ 70% ☑ 100%

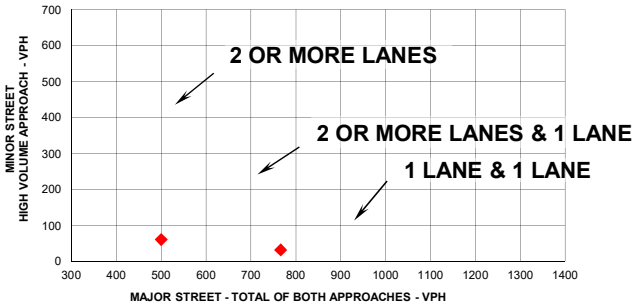
WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME
If all four points lie above the appropriate line, then the warrant is satisfied.

Applicable: ☐ Yes ☑ No
Satisfied: ☐ Yes ☑ No

Plot four volume combinations on the applicable figure below.

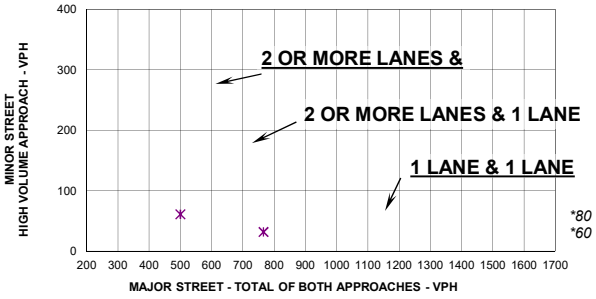
FOUR HIGHEST HOURS	Volumes	
	MAJOR STREET	MINOR STREET
7:00 AM - 8:00 AM	500	61
5:00 PM - 6:00 PM	766	32
	0	0
	0	0

FIGURE 4C-1: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor street approach with one lane.*

FIGURE 4C-2: Criteria for "70%" Volume Level

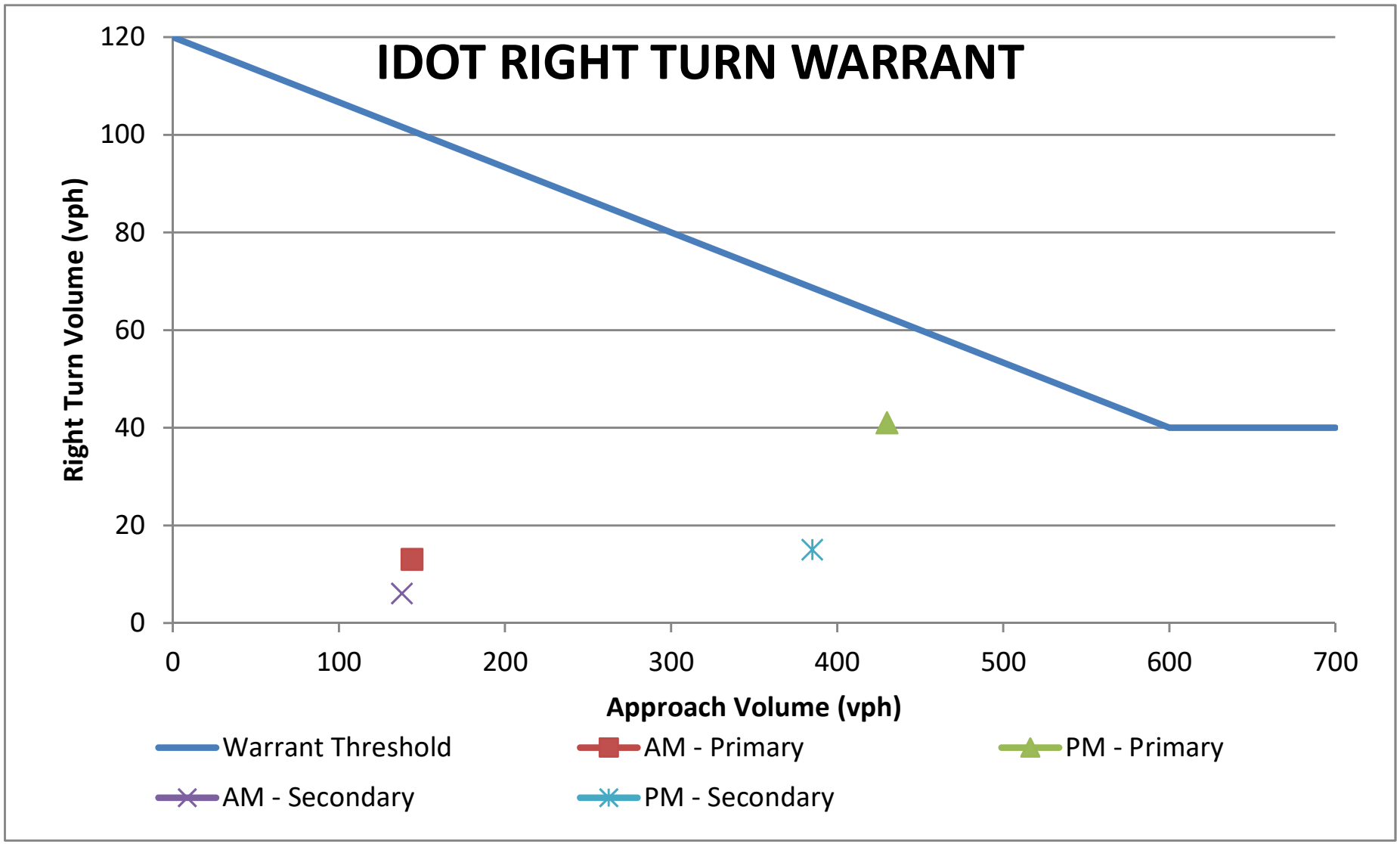


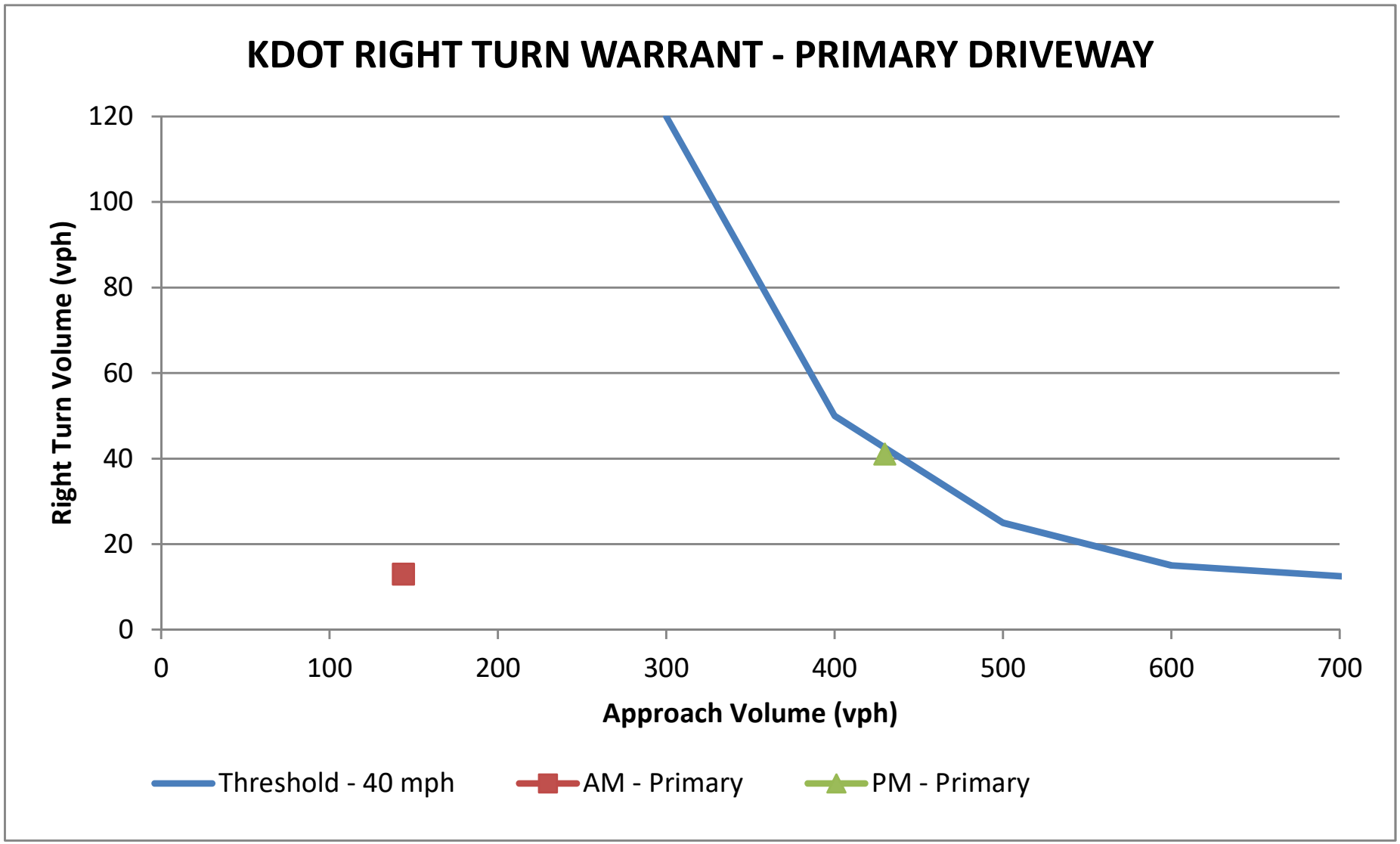
** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.*

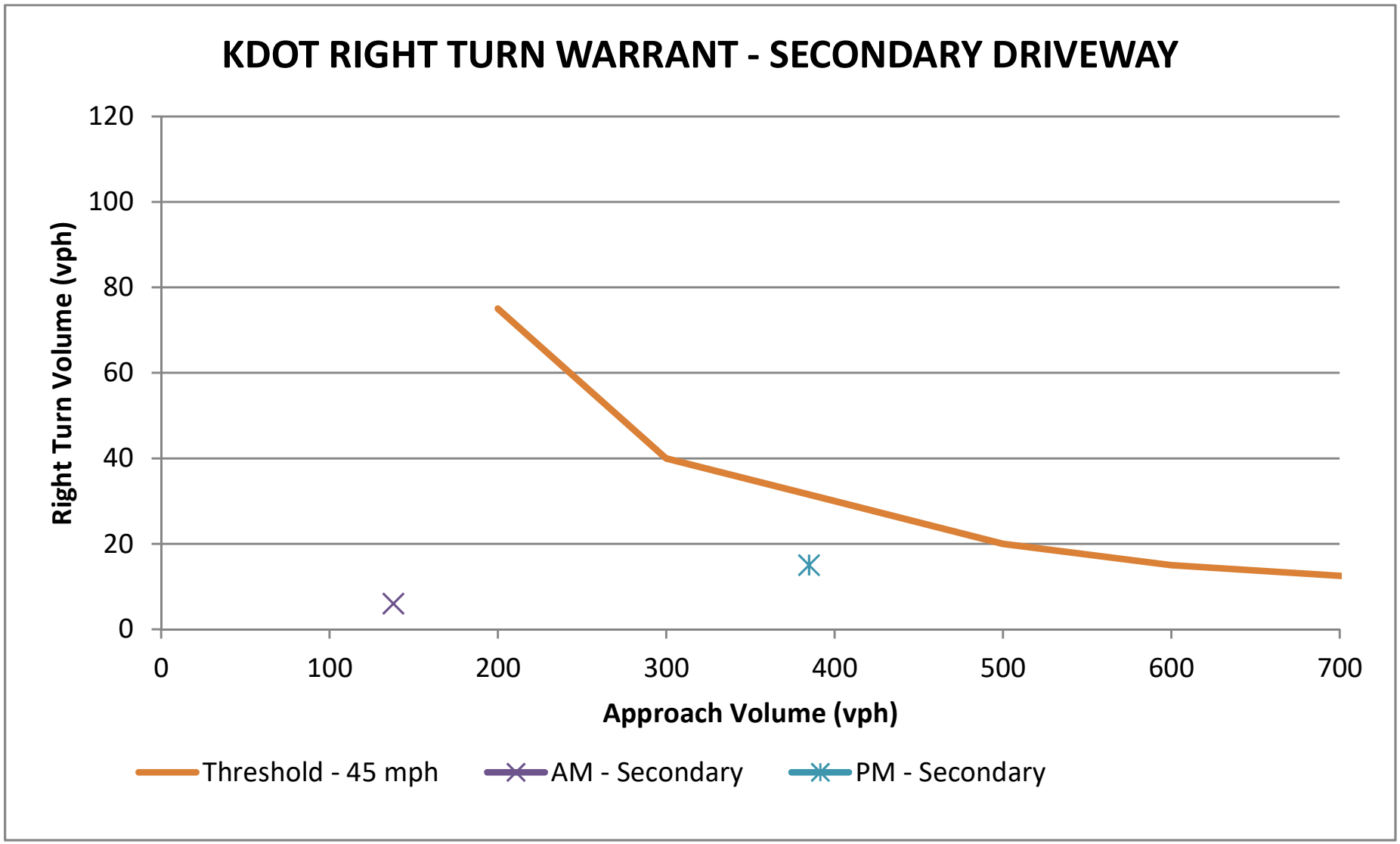
Source: Revised from NCHRP Report 457

APPENDIX F

RIGHT TURN LANE WARRANT ANALYSIS EXHIBITS


IDOT RIGHT TURN WARRANT
Right Turn Volume (vph)
120
100
80
60
40
20
0
0
100
200
300
400
500
600
700
Approach Volume (vph)
Warrant Threshold
AM - Primary
PM - Primary
AM - Secondary
PM - Secondary


KDOT RIGHT TURN WARRANT - PRIMARY DRIVEWAY
Right Turn Volume (vph)
120
100
80
60
40
20
0
0
100
200
300
400
500
600
700
Approach Volume (vph)
Threshold - 40 mph
AM - Primary
PM - Primary


KDOT RIGHT TURN WARRANT - SECONDARY DRIVEWAY
Right Turn Volume (vph)
120
100
80
60
40
20
0
0
100
200
300
400
500
600
700
Approach Volume (vph)
Threshold - 45 mph
AM - Secondary
PM - Secondary