PLANNING STUDY REVIEW

DATE: September, 2014
NAME OF REQUESTING CITY OR AGENCY: City of Blaine, MN
NAME OF CONTACT PERSON: Bryan Schafer, Community Development Director

NAME OF STUDY OR PLAN: Parkside North EAW (August 2014)

IS PROJECT ON OR ADJACENT TO A COUNTY HIGHWAY? Yes
NAME OF ADJACENT COUNTY ROADWAY(s): CSAHs 14 and 17

OTHER INFORMATION:

The EAW is to include a revised TIA (September 4, 2014) as Appendix H. This TIA supersedes drafts dated March 7, and June 18, 2014.

Please email completed form to Jack.forslund@co.anoka.mn.us

Anoka County
TRANSPORTATION DIVISION
Highway

Douglas W. Fischer, PE
County Engineer

September 15, 2014

Bryan Schafer
Community Development Director
City of Blaine
10801 Town Square Drive NE
Blaine, MN 55449

RE: Review – Parkside North Environmental Assessment Worksheet (EAW)

Dear Bryan,

Thank you for providing us the opportunity to comment on the Environmental Assessment Worksheet (EAW) for the proposed Parkside North development located in the southeastern quadrant of the intersection of County State Aid Highway (CSAH) 14 and CSAH 17 in the City of Blaine.

Of particular interest to the Department is the analysis of the transportation system to identify impacts and needed improvements. In April of this year we reviewed a draft Traffic Impact Analysis (TIA) report (March 7, 2014) prepared by Kimley-Horn and Associates, Inc. (KHA). In our review, we identified several questions and/or concerns that should be further addressed (letter is attached). A revised TIA report produced by KHA (June 18, 2014) addressed several of our concerns identified in the letter, but some questions still remained. In discussions with KHA and the City of Blaine, the majority of these issues were addressed and are represented in the updated TIA dated September, 2014 (attached). Items still to be addressed include design considerations such as intersection storage lengths, signalization, etc. and whether a third thru-lane is needed on CSAH 17.

As the development advances, the city should coordinate with Anoka County's Design Supervisor, Gina Pizzo to ensure consistency with our guidelines and standards.

Thank you again for allowing us the opportunity to comment on the Parkside North EAW. We hope to continue coordinating our efforts with the City of Blaine to improve transportation as the area continues to grow.

Sincerely,

Jack Forslund

Jack Forslund, PTP
Multimodal Planning Manager

Attachments:
- Anoka County Highway Department comment letter (April 22, 2014)
- Traffic Analysis Update Memorandum from KHA (September 4, 2014

cc:
- File copy I:\Planning\PLANS\2014 Plan Reviews\Blaine\2014\Parkside North EAW\2014-09 AnCo Comments Letter on Parkside North EAW.docx
- Douglas W. Fischer, County Engineer
- Andrew Witter, Assistant County Engineer
- Jane Rose, Traffic Engineering Manager
- Curt Kobilarcsik, Engineering Program Manager
- Gina Pizzo, Engineering Design Supervisor

COUNTY OF ANOKA

TRANSPORTATION DIVISION

HIGHWAY DEPARTMENT
1440 BUNKER LAKE BLVD. NW, ANDOVER, MINNESOTA 55304
(763) 862-4200 FAX (763) 862-4201

April 22, 2014

Daniel Schluender
Assistant City Engineer
City of Blaine
10801 Town Square Drive NE
Blaine, MN 55449

RE: Planning Document Review - Traffic Analysis for the Finn Farm Development

Dear Dan,

We have reviewed the traffic impact analysis report (March 7, 2014) prepared by Kimley-Horn and Associates, Inc. for the mixed-use development proposed for southeast quadrant of the intersection of CSAH 14 (125th Avenue NE) and CSAH 17 (Lexington Avenue) in Blaine. Provided in this letter are our comments on the traffic analysis for the proposed development, including the identification of questions or concerns that should be further addressed. The specific comments generally follow the order that the information was provided in the report.

Intersection or Access Spacing

The traffic analysis evaluated the existing intersections of CSAH 14 with 17, and CSAH 17 with Lever Street. The development site plan (Figure 1) shows that there will be two additional intersections on the County system. However, on Figures 7, 10, 11 there is an additional intersection that is not shown on the site plan. This difference should be resolved. Also, it is not clear where exactly these new access points will be located in relation to the existing adjacent intersections. Because access spacing has an impact on travel safety and mobility, we have developed the Anoka County Highway Department Access Spacing Guidelines, which identifies appropriate distances between intersections based on roadway types and characteristics. When new intersections or access points are proposed for Anoka County these guidelines need to be considered in order for the County to maintain or improve the safety of our roadway system. Provided as an exhibit to this letter are the Anoka County Highway Department Access Spacing Guidelines. These can also be accessed via the county's website (www.anokacounty.us).

Future Traffic Growth Assumptions

The analysis used traffic projection numbers developed using information contained from the 2030 Anoka County Transportation Plan, the City of Blaine Comprehensive Plan, and the Met Council Regional Travel Demand Model. Development traffic was generated using rates from *Trip Generation Manual by the Institute of Transportation Engineers (ITE) 9th Edition*. The analysis, which focused on peak travel periods, assumed reasonable pass-by trips and/or linked trips for the development. It is not clear in the report that the rates represent the peak hour– hour of adjacent roadway traffic, not the peak-hour for

development generated traffic. This should be referenced in Table 1.

Traffic Distribution and Assignment

The distribution and assignment of future traffic to the site was developed for both retail trips and residential trips, which is appropriate as these two trip-types typically have different distribution patterns from one another. Retail trips typically are much shorter distances and tend to be located closer to where the people live while residential or work trips tend to be longer.

The distribution of retail trips seems reasonable as it was based on the projected population near the development. For work/residential trips, the basis for the distribution isn't clear. It seems to be entirely based assumptions. A better way to develop the distribution is to use the referenced Regional Travel Demand Model and do a select-link analysis for work trips to/from the area. Another way to obtain trip distribution information is to use available information from the U.S. Census, specifically the Longitudinal Employer–Household Dynamics (LEHD) dataset that can be accessed via the tool OnTheMap via the internet (http://onthemap.ces.census.gov/). Using this tool, you can select a nearby residential area and see the number and distribution of work-trips, which should be similar to what would be expected for the residents of the proposed development.

In determining the distribution and assignment of residential trips, please use as a basis either LEHD data or Regional Travel Demand Model information.

Traffic Analysis

An intersection operations analysis for the PM peak travel period was performed for five different scenarios including,

- 2014 Existing Conditions
- 2020 No-Build and Build Conditions, and
- 2030 No-Build and Build Conditions

In addition to the exhibits showing turning movement traffic volumes at the intersections, it would be helpful to have an exhibit showing intersection geometry as well as traffic control at the intersections (differentiating between existing, new, proposed, etc.). Other information to display graphically include: roadway functional classification and speed limits.

The intersection analysis was performed using the software package Synchro/SimTraffic to evaluate travel delay and vehicle queuing. The tables in the report show the levels of service (LOS) for the overall intersection as well as the individual turning movements. It would be helpful if you could also show the corresponding turning movement traffic volumes in this table to get a sense of the how many travelers are represented by the different LOS values.

For the Build scenarios (2020 and 2040), the traffic control for the intersections is as follows:

Traffic signals were assumed at the intersections of:

- CSAH 14 with CSAH 17 (existing)
- CSAH 14 with Lever Street (new signal)
- CSAH 17 with 123rd Avenue (new intersection and signal)

Side street stop-control intersections for the build scenarios are located at:

- CSAH 14 with the north entrance/exit located approximately 1,300 east of CSAH 17
- CSAH 17 with the west entrance/exit located approximately 1,200 feet south of CSAH 14

As earlier mentioned, the locations of the two new access points for the development were not clearly defined in the report so it was necessary to approximate their location. All new access points on the County roadway system should be compared with the Anoka County Highway Department Access Spacing Guidelines to show how well they conform. If they do not fall within the guidelines, an explanation should be provided.

Roadway Segment LOS
No analysis was performed on the roadway segments away from the intersections. Existing and projected daily traffic volumes are shown on Figure 4, but the corresponding LOS has not been presented. Please present the LOS for daily traffic levels on CSAHs 14 and 17. The daily traffic thresholds should be based on the Highway Capacity Manual or similar technical sources. The primary information of interest is the change in LOS between the scenarios. As a reference, Anoka County uses 10,000 and 32,000 as the daily capacity thresholds for 2-lane and 4-lane divided roadways, respectively.

Intersection LOS
An operations analysis was completed for three of the five intersections that are on the County roadway system. The two side street stop-control intersections identified above were not analyzed.

In the analysis of the three intersections, it revealed that all turning movements (as well as the overall intersection) would operate at an acceptable LOS during the P.M. peak-hour for all but the 2030 Build Scenario. In this scenario, the intersection of CSAH 17 and 14 is at LOS D, while the left-turn movements from the eastbound and westbound approaches will operate at LOS E. However, this is contradicted in the text on page 24 stating: "this outcome imminent regardless of the construction of Finn Farms." Based on the provided tables, this condition only occurs under the 2030 Build Scenario. This should be clarified. Also, the side street stop control intersections into the development should also be analyzed, particularly to show the impact on the operation of CSAHs 14 and 17.

Vehicle Queuing
The report did not contain any tables on the queuing analysis, however these were provided upon our request. In reviewing the results, the 95 percent and maximum queue lengths approach or exceed storage for eastbound left-turning movements at CSAH 14 (125th Ave) at Lever Street and at CSAH 17 (Lexington Ave.) at 123rd Avenue for the 2020 Build Scenario. Please include queuing tables within the report and also identify how the queuing problems will be addressed.

Conclusion:
In reviewing the analysis, several items were noted that should be further addressed. These include:

- Determine whether the proposed intersection spacing in is conformance with the Anoka County Highway Department Access Spacing Guidelines
- Determine the distribution and assignment of residential trips using as a basis LEHD data and/or Regional Travel Demand Model information
- Add the roadway functional classifications and posted speed-limits to Figure 4 – AADT Map
- Include an exhibit showing intersection geometry as well as traffic control at the intersections (differentiating between existing, new, proposed, etc.)
- Include the corresponding turning movement traffic volumes in Tables 4 - 8 to get a sense of the how many travelers are represented by the different level of service values
- Present the level of service for daily traffic levels on CSAHs 14 (125th Avenue) and 17 (Lexington Avenue)

- Analyze the side street stop control intersections into the development to show the impact on the operation of CSAHs 14 (125th Avenue) and 17 (Lexington Avenue)
- Include tables with intersection queuing information in the report
- Identify how the queuing problems (max queue exceeding storage) will be addressed

Sincerely,

Jack Forslund, PTP
Multimodal Planning Manager

Attachment: Anoka County Highway Department Access Spacing Guidelines

Xc: File: CSAH 17/Plats + Developments/2014
File: CSAH 14/Plats + Developments/2014
Jane Rose, Traffic Engineering Manager
Andrew Witter, Assistant County Engineer
Curt Kobilarcsik, Engineering Program Manager
Gina Pizzo, Engineering Design Supervisor

Anoka County Highway Department Access Spacing Guidelines

Roadway Type	Route Speed (MPH)	Intersection Spacing (Nominal[4])		Signal Spacing	Private Access [1]
		Full Movement Intersection	Conditional Secondary Intersection [2]		
Principal Arterial	50 - 55	1 mi.	1/2 mi.	1 mi.	Subject to conditions for all roadway types and speeds
	40 - 45	1/2 mi.	1/4 mi.	1/2 mi.	
	< 40	1/8 mi.	300 - 660 feet[3]	1/4 mi.	
Arterial Expressway	50 - 55	1 mi.	1/2 mi.	1 mi.	
Minor Arterial	50 - 55	1/2 mi.	1/4 mi.	1/2 mi.	
	40 - 45	1/4 mi.	1/8 mi.	1/4 mi.	
	<40	1/8 mi.	300 - 660 feet[3]	1/4 mi.	
Collector and Local	50 - 55	1/2 mi.	1/4 mi.	1/2 mi.	
	40 - 45	1/8 mi.	N/A	1/4 mi.	
	<40	1/8 mi.	300 - 660 feet[3]	1/8 mi.	
Specific Access Plan		By adopted plan/agreement/covenant on land			

(1) Private access refers to residential, commercial, industrial and institutional driveways. Reference Anoka County's Development Review Manual for specifics on private access.

(2) Conditional secondary access is defined as right-in/out.

(3) Access spacing may be determined by planning documents approved by the county (e.g., Lino Lakes I-35E AUAR)

(4) Any spacing deviations shall have a detailed traffic study completed by the requesting agency, AND approved by the County Engineer.

Kimley»Horn

September 4, 2014

Suite 238N
2550 University Avenue West
St. Paul, Minnesota
55114

Mr. Jack Forslund, PTP
Multimodal Planning Manager
County of Anoka
Highway Department

Mr. Alan Roessler
Paxmar, LLC
5160 Viking Boulevard
Anoka, MN 55303

CC: Dan Schluender
Don Jensen
Kent Roessler

Re: Parkside North (Finn Farm)
SWC 125th Avenue and Lexington Avenue – Blaine, Minnesota
Traffic Impact Analysis - Update

Dear Mr. Forslund:

Kimley-Horn and Associates was retained by Paxmar Development, LLC to perform a traffic analysis to assess the impacts of a proposed 135 acre mixed use development of the Parkside North property, located on the southeast corner of Lexington Avenue and 125th Avenue in Blaine, Minnesota. The proposed development for the site includes a mixture of low, middle, and high density residential, along with commercial development. Detail of the proposed site plan for the development is provided in **Figure 1**. The anticipated build-out year for the proposed development is 2020.

The study area for the proposed development extends from Lexington Avenue on the west to a proposed extension of Lever Street on the east, and from 123rd Avenue (a proposed extension of Woodland Parkway NE) on the south to 125th Avenue at the north. The site context of the proposed development is provided in **Figure 2.**

EXECUTIVE SUMMARY

This report provides an analysis and evaluation of the existing and future (2020 and 2030) traffic operations of the proposed Parkside North development. The analysis includes level of service, vehicle delay, queue length and turning movement volumes. These measureable results were reported from the SYNCHRO V8 and SimTraffic model.

This report finds the prospective Parkside North development does not present adverse impacts on the roadway network. The intersection performance in the Build and No-Build is comparable at Lexington Avenue and 125th Avenue intersection. The supporting results of the analysis indicate all intersections operate with a LOS of D or better. The total retail and residential traffic anticipated on Lever Street is 55 vehicles in the PM peak period. These vehicles create a maximum queue equivalent to 3 vehicles in length at the north and south ends of Lever Street.

STUDY AREA

The study area for this analysis includes the following roadways and intersections:

Roadways:

- 125th Avenue
- Lexington Avenue
- 123rd Avenue
- Lever Street

Intersections:

- 125th Avenue / Lexington Avenue
- 125th Avenue / Lever Street
- 123rd Avenue / Lexington Avenue
- 123rd Avenue / Lever Street

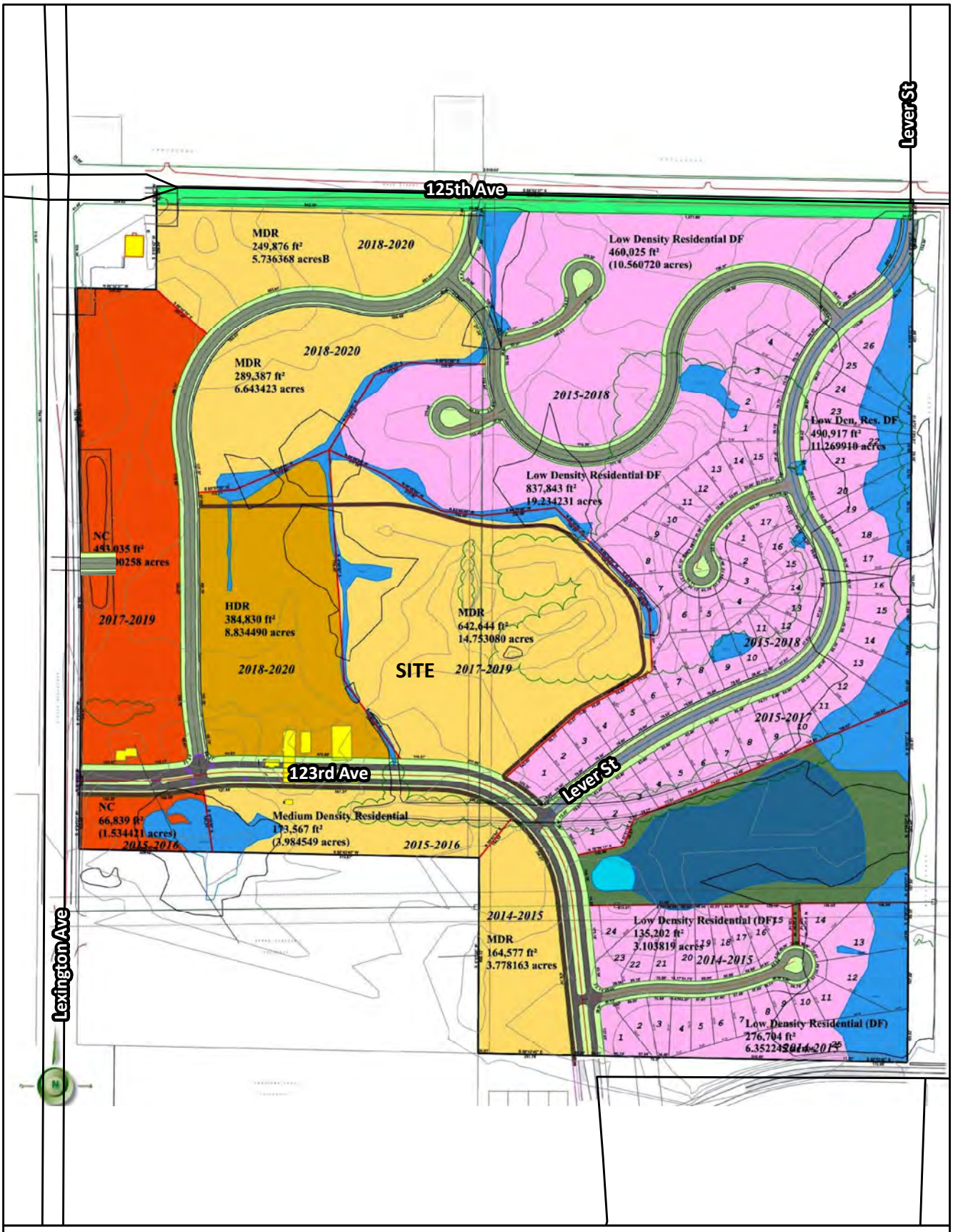


FIGURE 1: Site Conceptual Plan Map with Development Phasing (January 2014)

Kimley»Horn

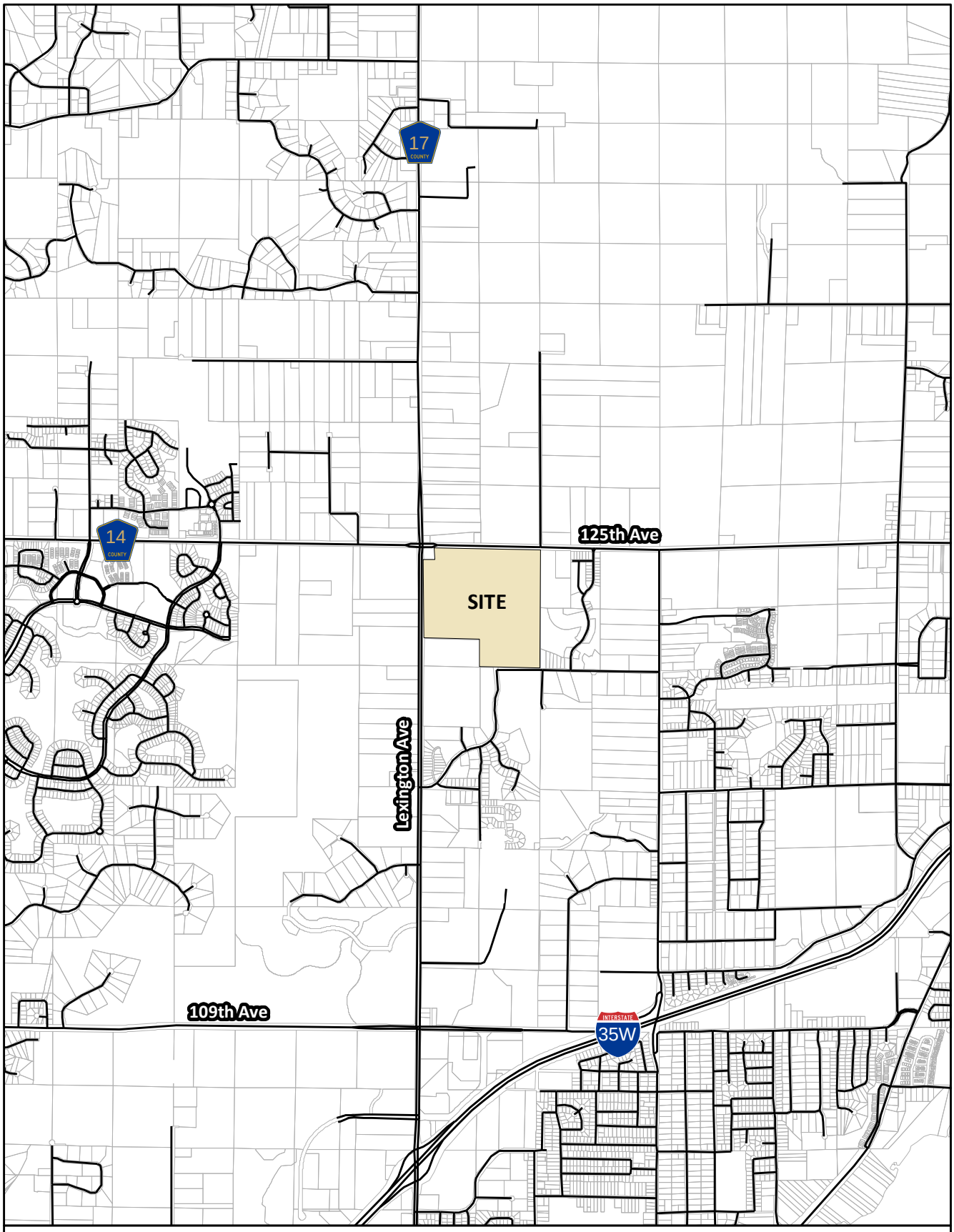


FIGURE 2: Site Context

Kimley»Horn

125th Avenue is a two-lane undivided principal arterial roadway that operates with an east-west orientation. The section of 125th Avenue analyzed has a posted speed limit of 55 mph.

Lexington Avenue is a four-lane minor arterial that is divided to the north and south of 125th Avenue. Lexington Avenue has a north-south orientation, and has a posted speed limit of 55 mph in the study area.

The planned 123rd Avenue is a future Minnesota State Aide (MSA) route connecting Lakes Parkway to Woodland Parkway, and is located south of 125th Avenue. The two-lane roadway was analyzed operating in an east-west orientation adjacent to the site. This route provides a western access point off Lexington Avenue to the development site. This roadway was assumed to have a posted speed limit of 30 mph.

Lever Street, an existing MSA route, is a two-lane street that currently exists only to the north of 125th Avenue. Lever Street will be extended south of 125th Avenue as part of the Parkside North development, providing a northeastern access to the development site. The street will generally have a north-south orientation, and will connect in the south to 123rd Avenue (Woodland Parkway). This roadway was assumed to have a posted speed limit of 30 mph.

EXISTING TRAFFIC CONDITIONS

Currently only two of the four study intersections exist. These are the intersections of 125th Avenue and Lexington Avenue, and 125th Avenue and Lever Street. The control type and lane geometry for these intersections are provided in the following section and shown in **Figure 3**.

125th Avenue and Lexington Avenue

125th Avenue and Lexington Avenue is a signal controlled intersection with the following lane geometry:

Lexington Avenue

- Northbound – Two exclusive left-turn lanes, three through lanes, and one exclusive right-turn lane.
- Southbound – One exclusive left-turn lane, three through lanes, and one exclusive right-turn lane.

125th Avenue

- Eastbound – One exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- Westbound – One exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.

125th Avenue and Lever Street

125th Avenue and Lever Street is a T-intersection with stop control for the southbound Lever Street approach. The lane geometry at this intersection is as follows:

Lever Street

- Southbound – One shared lane allowing left and right-turn movements.

125th Avenue

- Eastbound – One shared through lane allowing left-turn movements, and one through passing lane.
- Westbound – One through lane and one exclusive right-turn lane.

Existing site traffic was determined from turning movement counts collected by Traffic Data Inc. on February 4th, 2014 at the intersections of 125th Avenue and Lexington Avenue, 125th Avenue and Lever Street, and Lexington Avenue and Woodland Parkway. The existing 2014 turning movement volumes used can be found in **Figure 4**.

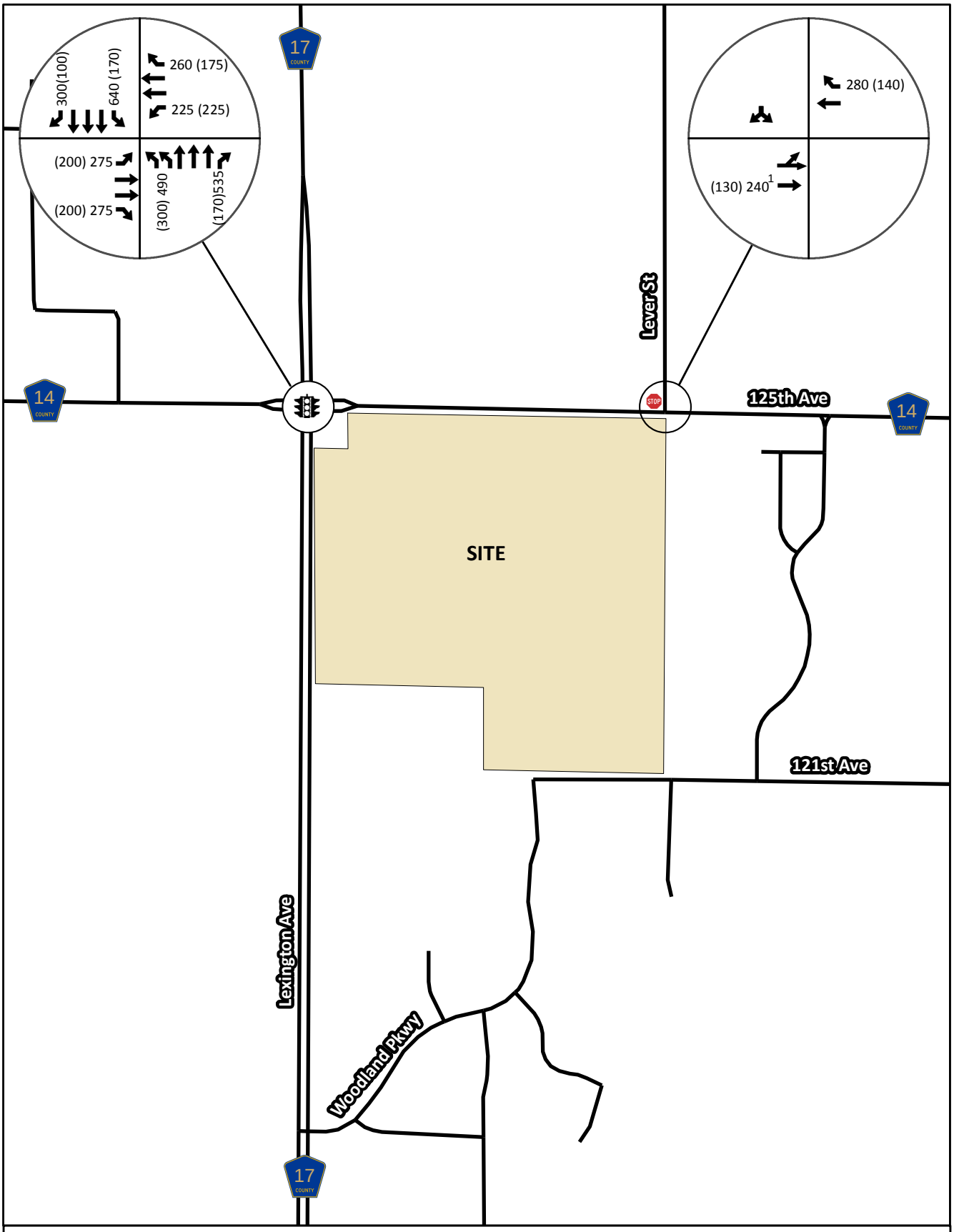


FIGURE 3: 2014 Existing Lane Geometry

Footnote: 1 Add/drop passing lane length and taper length

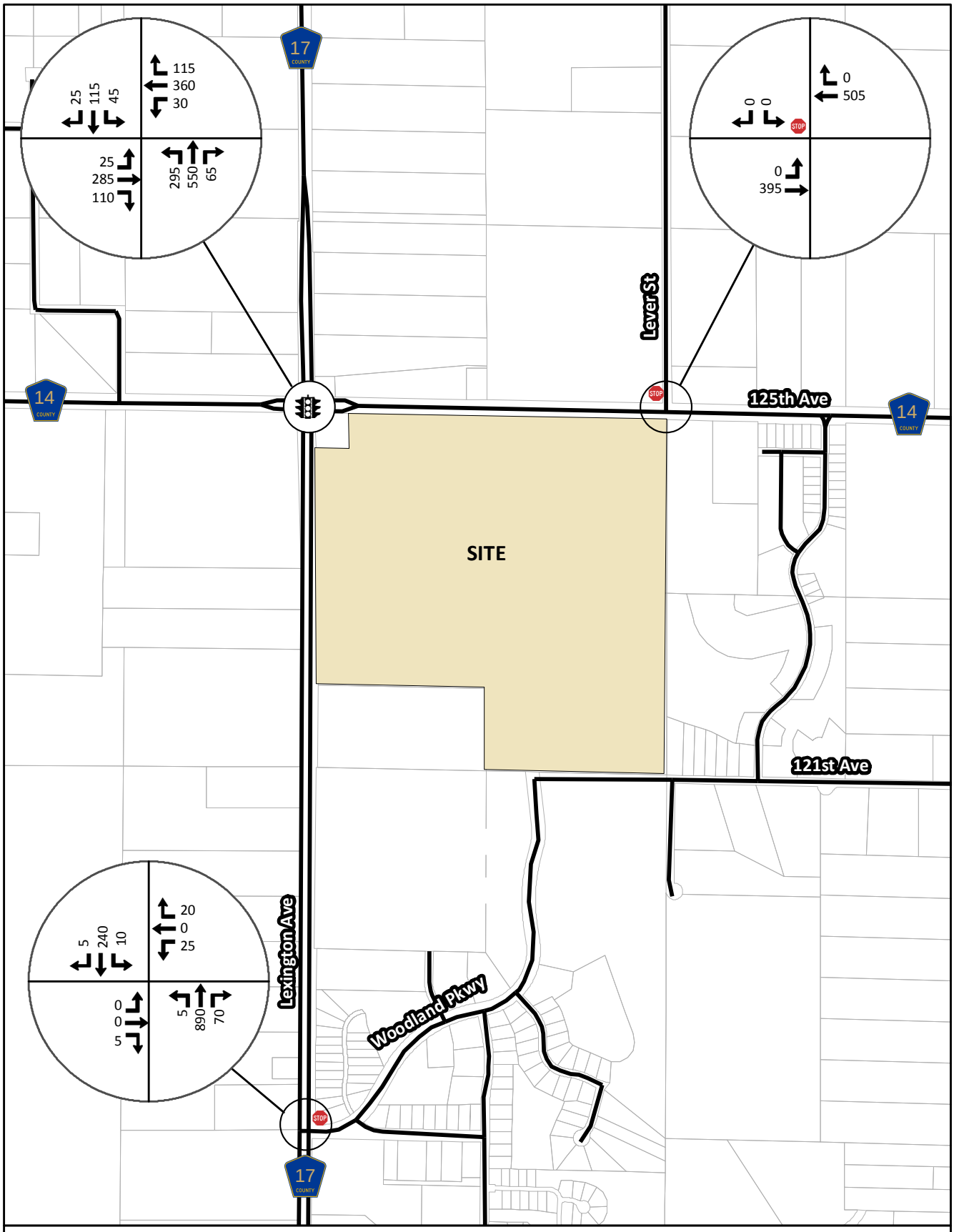


FIGURE 4: 2014 PM Peak Hour - Existing Conditions

Kimley»Horn

FUTURE TRAFFIC CONDITIONS

Future conditions include the construction of four new intersections. The new intersections are located at 123rd Avenue and Lexington Avenue, 123rd Avenue and Lever Street, "Parkside North Street" east of Lexington Avenue, and the commercial driveway access south of 125th Avenue. In addition to the four new intersections, it is anticipated that the 125th Avenue and Lever Street intersection will undergo significant modifications to meet the forecasted traffic volumes.

123rd Avenue and Lexington Avenue

123rd Avenue and Lexington Avenue is a signal controlled intersection with the following lane geometry:

123rd Avenue

- Eastbound – One exclusive left-turn lane and one shared through/right lane.
- Westbound – One exclusive left-turn lane and one shared through/right lane.

Lexington Avenue

- Northbound – One exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- Southbound – One exclusive left-turn lane, three through lanes, and one exclusive right-turn lane.

123rd Avenue and Lever Street

123rd Avenue and Lever Street is a T-intersection with stop control for the southbound Lever Street approach. The lane geometry at this intersection is as follows:

123rd Avenue

- Eastbound – One shared through/left lane.
- Westbound – One shared through/right lane.

Lever Street

- Southbound – One shared left/right turn lane.

"Parkside North Street" at 125th Avenue

The "Parkside North Street" is a T-intersection with stop control for the northbound exit from the site with the following lane geometry:

125th Avenue

- Eastbound – One exclusive right-turn lane.

"Parkside North Street"

- Northbound – One exclusive right-turn lane.

Commercial Driveway Access at Lexington Avenue

The commercial driveway access is a T-intersection with stop control for the westbound exit from the site with the following lane geometry:

Lexington Avenue

- Northbound – One exclusive right-turn lane.

125th Avenue and Lever Street

125th Avenue and Lever Street is a signal controlled intersection with the following lane geometry:

125th Avenue

- Eastbound – One exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.
- Westbound – One exclusive left-turn lane, two through lanes, and one exclusive right-turn lane.

Lever Street

- Northbound – One exclusive left-turn lane and one shared through/right-turn lane.
- Southbound – One exclusive left-turn lane and one shared through/right-turn lane.

Each of the intersection control types, lane geometry and storage lengths for the future traffic condition locations are shown in **Figure 5**.

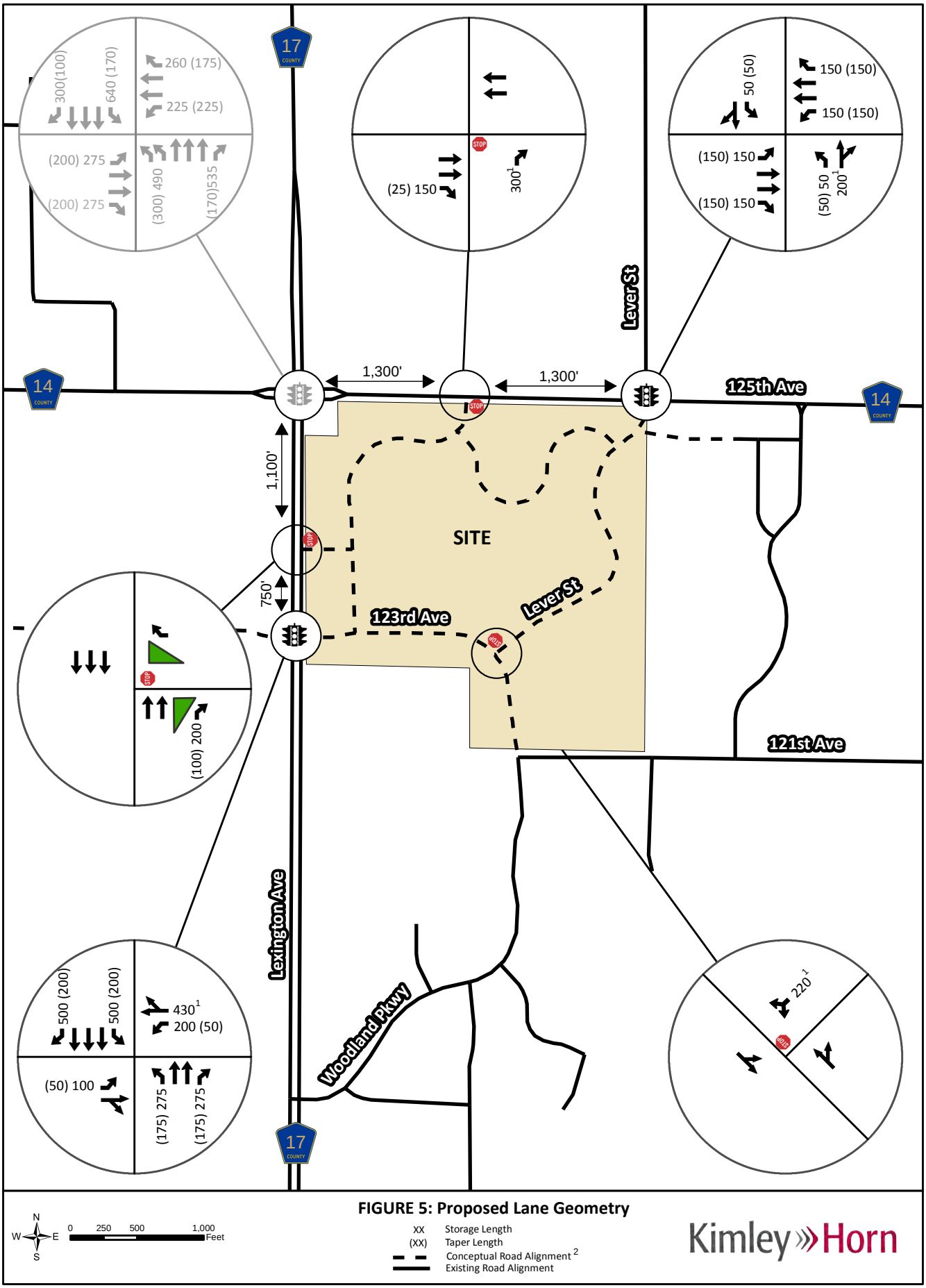


FIGURE 5: Proposed Lane Geometry

Kimley»Horn

Footnotes:
[1] Distance to nearest side street
[2] Conceptual roadway alignment internal to the site per January 2014 layout

The Anoka County Highway Department has developed a set of Access Spacing Guidelines for the recommended distances between intersections. These spacing guidelines, shown in **Table 1**, are based on the adjacent roadway classification and posted speeds.

Table 1: Anoka County Highway Department Access Spacing Guidelines

Roadway Type	Route Speed (MPH)	Intersection Spacing (Nominal[4])		Signal Spacing	Private Access [1]
		Full Movement Intersection	Conditional Secondary Intersection [2]		
Principal Arterial	50 - 55	1 mi.	1/2 mi.	1 mi.	Subject to conditions for all roadway types and speeds
	40 - 45	1/2 mi.	1/4 mi.	1/2 mi.	
	< 40	1/8 mi.	300 - 660 feet[3]	1/4 mi.	
Arterial Expressway	50 - 55	1 mi.	1/2 mi.	1 mi.	
Minor Arterial	50 - 55	1/2 mi.	1/4 mi.	1/2 mi.	
	40 - 45	1/4 mi.	1/8 mi.	1/4 mi.	
	<40	1/8 mi.	300 - 660 feet[3]	1/4 mi.	
Collector and Local	50 - 55	1/2 mi.	1/4 mi.	1/2 mi.	
	40 - 45	1/8 mi.	N/A	1/4 mi.	
	<40	1/8 mi.	300 - 660 feet[3]	1/8 mi.	
Specific Access Plan		By adopted plan/agreement/covenant on land			

As noted previously four new intersections will be constructed as part of the Parkside North development, three of the four are additions to the County roadway system. The intersection of 123rd Avenue and Lexington Avenue is spaced approximately 1,850' or one-third of a mile south of 125th Avenue. This distance is below the guidelines specified by the County of 2,640'. However, the proposed intersection is located to match future alignment with the 123rd Avenue City right-of-way to the west. The commercial access driveway is approximately at the mid-way point between 125th and 123rd Avenue, measuring 1,100' south from 125th Avenue. This distance is slightly below the guidelines specified by the County of 1,320'. An exclusive free flow right turn lane into the site has been modeled to maintain northbound traffic flow as reported in the SimTraffic modeling. The intersection of 125th Avenue and "Parkside North Street" is spaced approximately 1,300' east of Lexington Avenue. This distance is shorter than the recommended spacing guidelines specified by the County of 2,640'. An exclusive right turn lane has been modeled in order to maintain eastbound traffic flow and provide a dedicated location for vehicles executing right turns.

The intersection of 125th Avenue and Lever Street is anticipated to become signalized in future conditions. The signal spacing is 2,600' between the intersections of Lexington and Lever. This distance is approximately one-half of the recommended distance by the County of 5,280' for a principal arterial with posted speeds of 50-55 miles per hour. The signalization of this intersection is based in part on conversations with the City of Blaine and providing full access to the residential developments north and south of 125th Avenue.

FUTURE TRAFFIC VOLUMES

Traffic Growth

In order to determine a growth rate in the area, two sources of data were utilized: forecasted average annual daily traffic (AADT) growth from the Anoka County Comprehensive Plan and forecasted population growth from the Metropolitan Council's Regional Demand Model.

The average forecasted AADT from the City of Blaine's Comprehensive Plan indicates a growth rate of approximately 4.9%. However, some of this growth is associated with the assumed development on the proposed Parkside North site. After removing the estimated daily trips generated by the site on adjacent roadways, the calculated growth rate reduces to 4%. **Figure 6** shows roadway classifications with the reported AADT's from 2008 and the forecasted 2030 vehicles per day. **Figure 7** shows the roadway classifications and presents the segment level of service based on AADTs in the *Generalized Average Daily Traffic Volume Thresholds* table from the City of Blaine Comprehensive Plan. The second source for determining the growth factor was forecasted population data from the Regional Demand Model for the transportation analysis zones (TAZs) surrounding the study area. These zones indicated an average annual population growth rate of approximately 3.7%. Taken together, an annual exponential growth rate of 4% was determined to be a reasonable growth rate for traffic in the analysis area.

This growth rate of 4% was applied to existing traffic volumes to obtain estimates for the future Build year of 2020 and the horizon year of 2030. The forecasted traffic volumes were rounded to the nearest multiple of 5 for reporting and analysis.

In the future year (2020 and 2030) Build scenarios there are two off-site residential developments that were accounted for in the overall area traffic analysis. The future off-site vehicle turning movement volumes were adjusted accordingly to take into account expected traffic patterns at the intersections of 125th Avenue and Lever Street, and 123rd Avenue and Lexington Avenue. The development density anticipated north of Parkside North of 3 units per acre was provided by the City of Blaine. This calculates out to approximately 1,200 single family homes in the northeast quadrant of 125th Avenue and Lexington Avenue by the year 2030. For the development west of Parkside North, 600 new households were assumed based on estimated population growth by 2030 within the TAZ. Using the total number of single family households in off site development the PM peak hour trips were calculated based on the *Trip Generation Manual by the Institute of Transportation Engineers* (ITE) *9th Edition*.

The extension of public infrastructure, such as sanitary sewer and water mains, to support these off-site developments is contingent upon the roadway right-of-way dedication along 123rd Avenue and Lever Street through the Parkside North parcel. Due to the need for major public services before starting housing construction, the off-site developments were only incorporated into the year 2020 and 2030 Build scenarios.

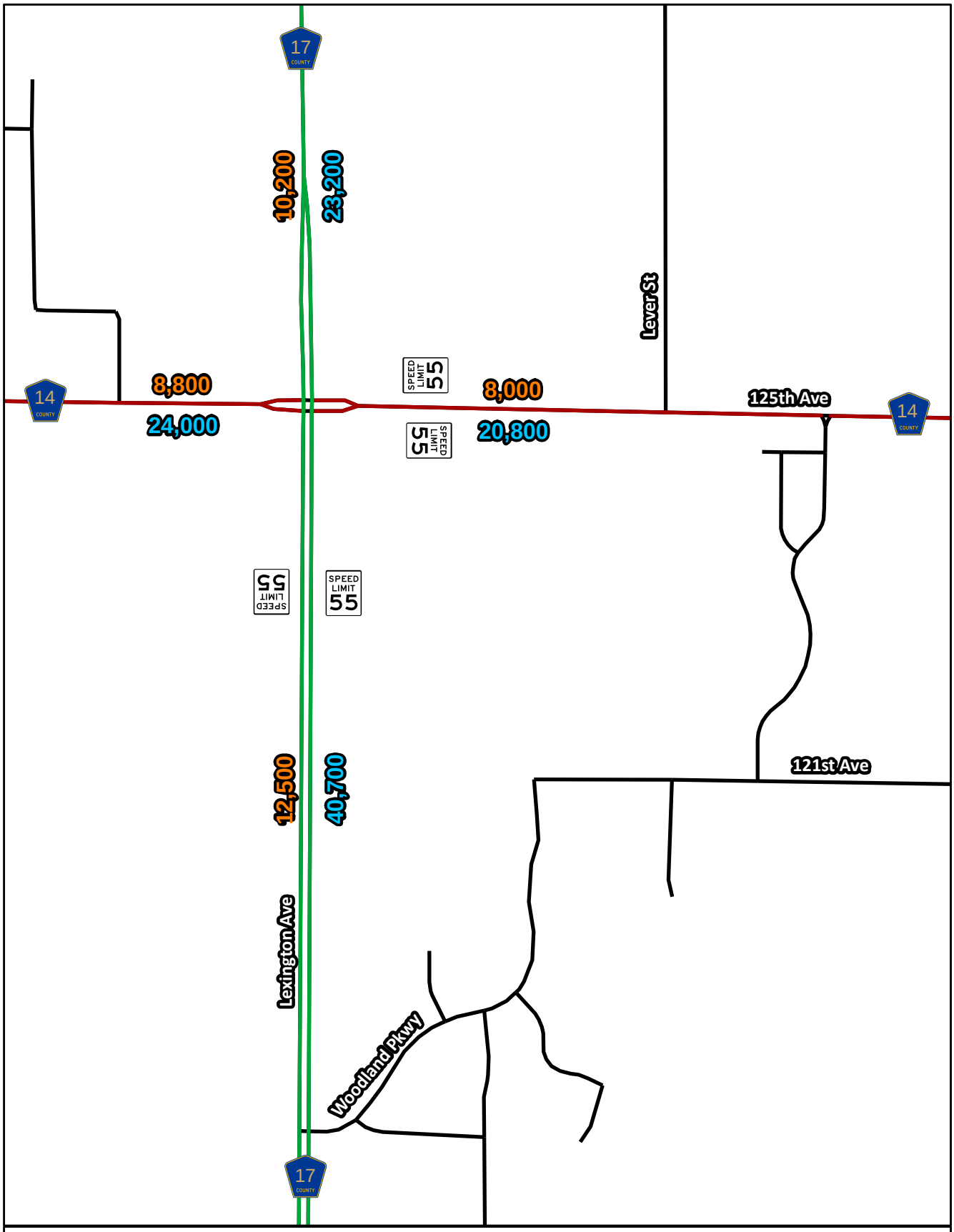
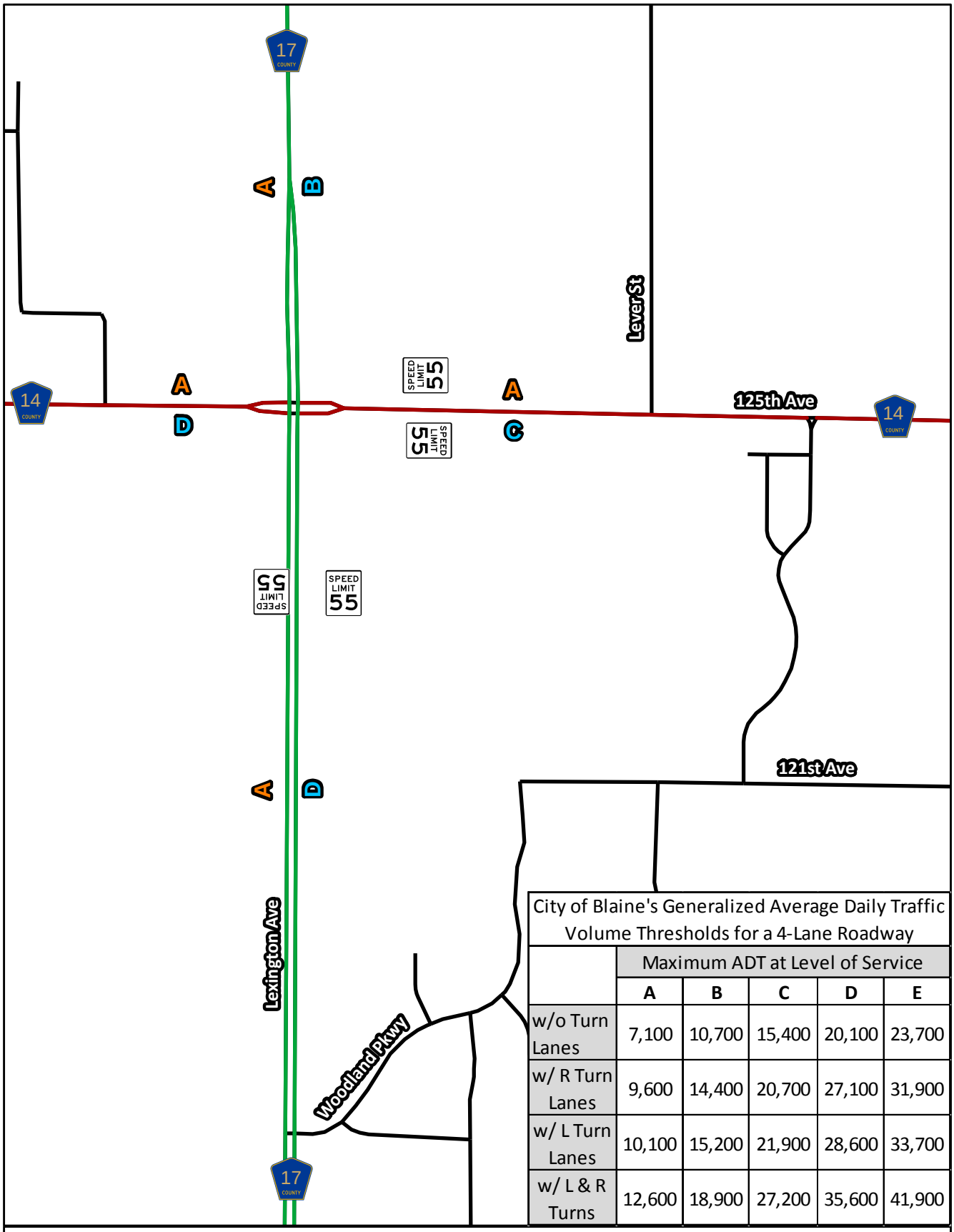


FIGURE 6: AADT Map



City of Blaine's Generalized Average Daily Traffic Volume Thresholds for a 4-Lane Roadway

	Maximum ADT at Level of Service				
	A	B	C	D	E
w/o Turn Lanes	7,100	10,700	15,400	20,100	23,700
w/ R Turn Lanes	9,600	14,400	20,700	27,100	31,900
w/ L Turn Lanes	10,100	15,200	21,900	28,600	33,700
w/ L & R Turns	12,600	18,900	27,200	35,600	41,900

FIGURE 7: Daily Traffic LOS Map

Kimley»Horn

PROJECTED SITE TRAFFIC

Trip Generation

Trip generation for the proposed development was based on the PM peak hour trip generation calculations from the 9th edition of the *Trip Generation Manual by the Institute of Transportation Engineers* (ITE). The proposed development is composed of a variety of land uses, including both retail and residential uses. The retail land uses and their associated land use code within the site include the following: Supermarket (code 850), Specialty Retail Center (code 826), Automobile Parts Sales (code 843), Pharmacy/Drugstore without drive-through (code 880), and Fast-Food Restaurant with drive-through (code 934). The residential land uses on the development site include the following: Single-Family detached housing (code 210), Residential Condominium/Townhouse (code 230), and Apartments (code 220). A complete table of the land uses and the corresponding trips generated by each can be found in **Table 2** below.

Table 2: Trip Generation (PM Peak Hour)

Code	Land Use Description	Units	No.	Daily	PM					Pass-By				Net New Trips		
				Total Trips	PM Trips Enter (%)	PM Trips Exit (%)	PM Trips Enter	PM Trips Exit	Total PM Trips	Pass-By Trips (%)	Pass-By Enter	Pass-By Exit	Total Pass-By Trips	Total Enter	Total Exit	Total PM Trips
	Retail															
850	Supermarket	1ksf	42	4,296	51%	49%	205	195	400	36%	75	70	145	130	125	255
826	Specialty Retail Center	1ksf	17	746	44%	56%	20	25	45	0%	0	0	0	20	25	45
843	Automobile Parts Sales	1ksf	10	596	49%	51%	30	30	60	0%	0	0	0	30	30	60
880	Pharmacy/Drugstore w/o Drive-Through	1ksf	12	1,082	49%	51%	50	50	100	53%	25	30	55	25	20	45
934	Fast-Food Restaurant w/ Drive-Through	1ksf	5	2,680	52%	48%	90	85	175	49%	45	40	85	45	45	90
	Residential															
210	Single-Family Detached Housing	DU	241	2,360	63%	37%	145	85	230	0%	0	0	0	145	85	230
230	Residential Condominium/Townhouse	DU	116	732	67%	33%	45	25	70	0%	0	0	0	45	25	70
220	Apartment	DU	160	1,094	65%	35%	70	35	105	0%	0	0	0	70	35	105
				13,586			655	530	1,185		145	140	285	510	390	900

Note - Peak Hour of Adjacent Traffic was used for trip generation

Pass-by trips were taken into account for the supermarket, pharmacy/drugstore without drive-through, and fast-food restaurant with drive-through land uses. The percentage of pass by trips for each land use was obtained from the *Trip Generation Manual 9th Edition* by ITE. The percentages of pass-by trips used are as follows:

- 36% for supermarket land use
- 53% for pharmacy/drugstore without drive-through land use
- 49% for fast-food restaurant with drive-through land use

Pass-by trips were assigned to the network at two intersections with access to the development site, drawing from three different approaches. The pass-by trips were distributed proportionally at each of the three approaches based on the total volume at the approach, i.e. the approach with the heaviest total volume was assigned the largest portion of the total pass-by trips. Trips were assigned at the intersection of 123rd Avenue and Lexington Avenue, drawing from both the northbound and southbound approaches. Pass-by trips were also assigned to the eastbound approach at the access road on the north side of the development on 125th Avenue between Lexington Avenue and Lever Street.

No internal capture was incorporated into the trip generation for this development. Additionally, the trip generation was unchanged between the anticipated full build-out year 2020 and the year 2030 Build scenario.

Trip Distribution

Traffic to and from the site can be grouped into two primary categories: residential trips and retail trips. New trips to the on-site retail (non-pass-by trips) can be expected to draw primarily from the immediate surroundings given the characteristics of the site as a neighborhood retail center. In other words, excluding trips that are simply passing by the site en route to a destination outside of the study areas, new retail trips are expected to originate within approximately a two to three mile radius of the site. Residential trips, on the other hand, are much more regionally connected, with a strong draw to the central business districts of the Twin Cities. Due to these different trip characteristics, a retail and residential site distribution assumptions were developed.

Retail Trips

For new retail trips, a two-mile capture radius was placed around the site, and TAZs with a significant portion within this area were selected for analysis. These TAZs were then subdivided based on likely routing along the existing and proposed roadway network to and from the site. The percentage of the forecasted 2030 population contained within each subdivision is provided in **Figure 8**. These values were then applied to the trip generation estimates to develop the retail trip assignment values discussed in the next section.

Residential Trips

Unlike retail trips, which are typically fairly evenly split between inbound and outbound trips, around 65% of all residential trips are typically inbound during the PM peak hour, due in part to students and workers returning home. Given the strong influence of these commute trips, I-35 W, which provides the most direct access to nearly all freeways in the regional system, can be expected to have a strong draw. The nearby commercial corridor of Central Avenue is likely another significant draw for residential trips in the area. Off-site single-family home development is expected north and west of the proposed Parkside North development, however the associated residential trips will be concentrated on Lexington Avenue or 125th Avenue. Additionally, as Lexington Avenue to the north and 125th Avenue to the east do not provide the most direct access to many major regional transportation facilities, residential trips to and from these areas are likely minimal.

Based on these assumptions, residential distribution percentages were developed, as shown in **Figure 9.** These values were then applied to the trip generation estimates to develop the residential trip assignment values discussed in the next section.

Trip Assignment

Just as regional origins and destinations vary based on trip purpose, the on-site origins and destinations differ between the retail and residential trips. Individual vehicles were therefore assigned to the network using two methods, as discussed below.

Retail Trips

The proposed retail development on site is located at the western side of the site, with direct right-in right-out access on Lexington Avenue and indirect access via 123rd and 125th Avenues. After applying the distribution percentages discussed above to the total retail trip generation, routing to the site was determined based on high-level estimates of driver behavior, taking into account site visibility and assumptions of local knowledge.

Residential Trips

As the concentration of households varies around the site, some general assumptions were made regarding access to each of the residential areas. Using the calculated percentage of trips by each residential development type, vehicles were assigned to the network based on convenience and estimated travel times to and from the general distribution zones.

Total site traffic assigned to the network under the Build scenarios is provided in **Figure 10**, broken down by residential and retail trips.

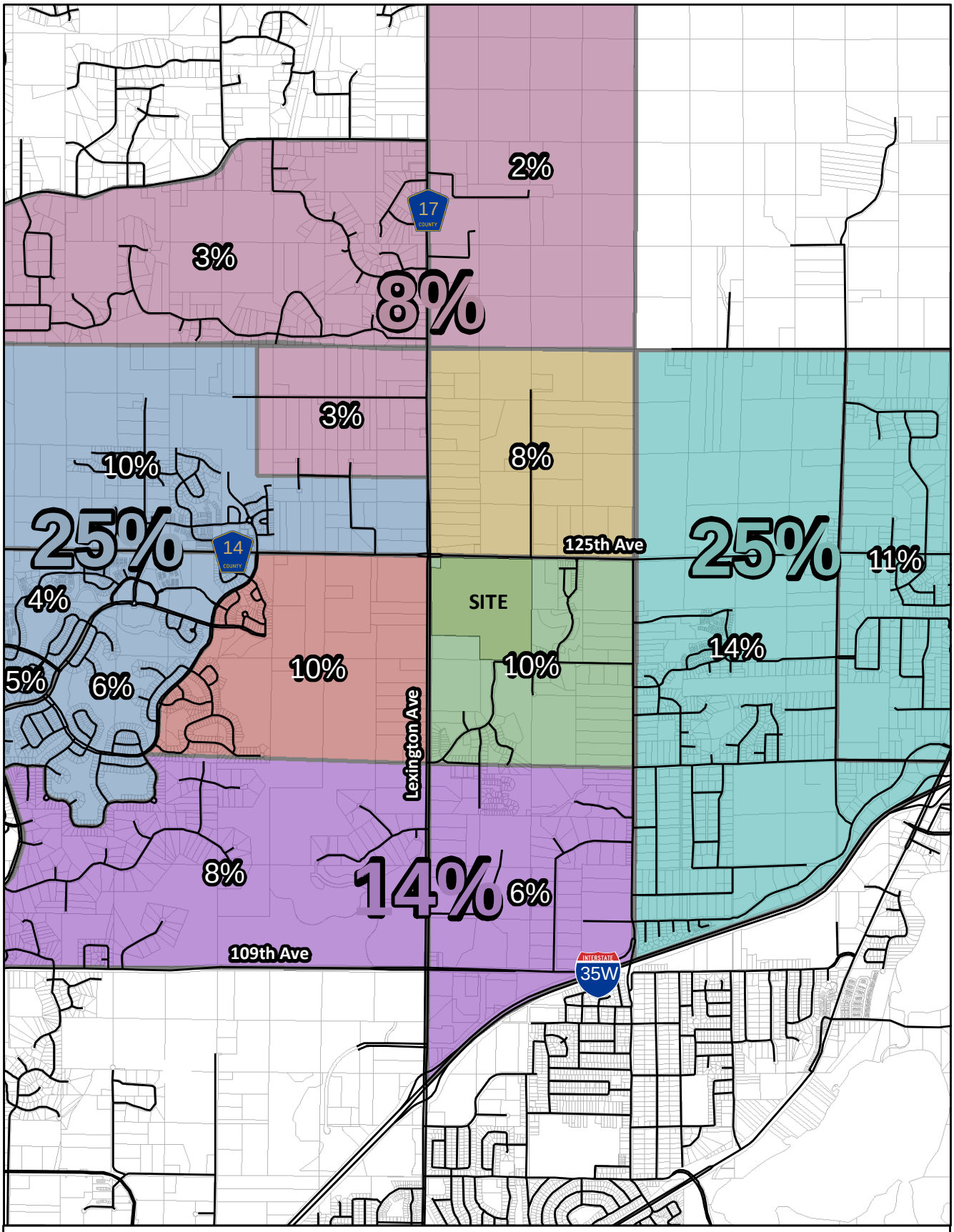


FIGURE 8: Retail Trip Distribution

Kimley»Horn

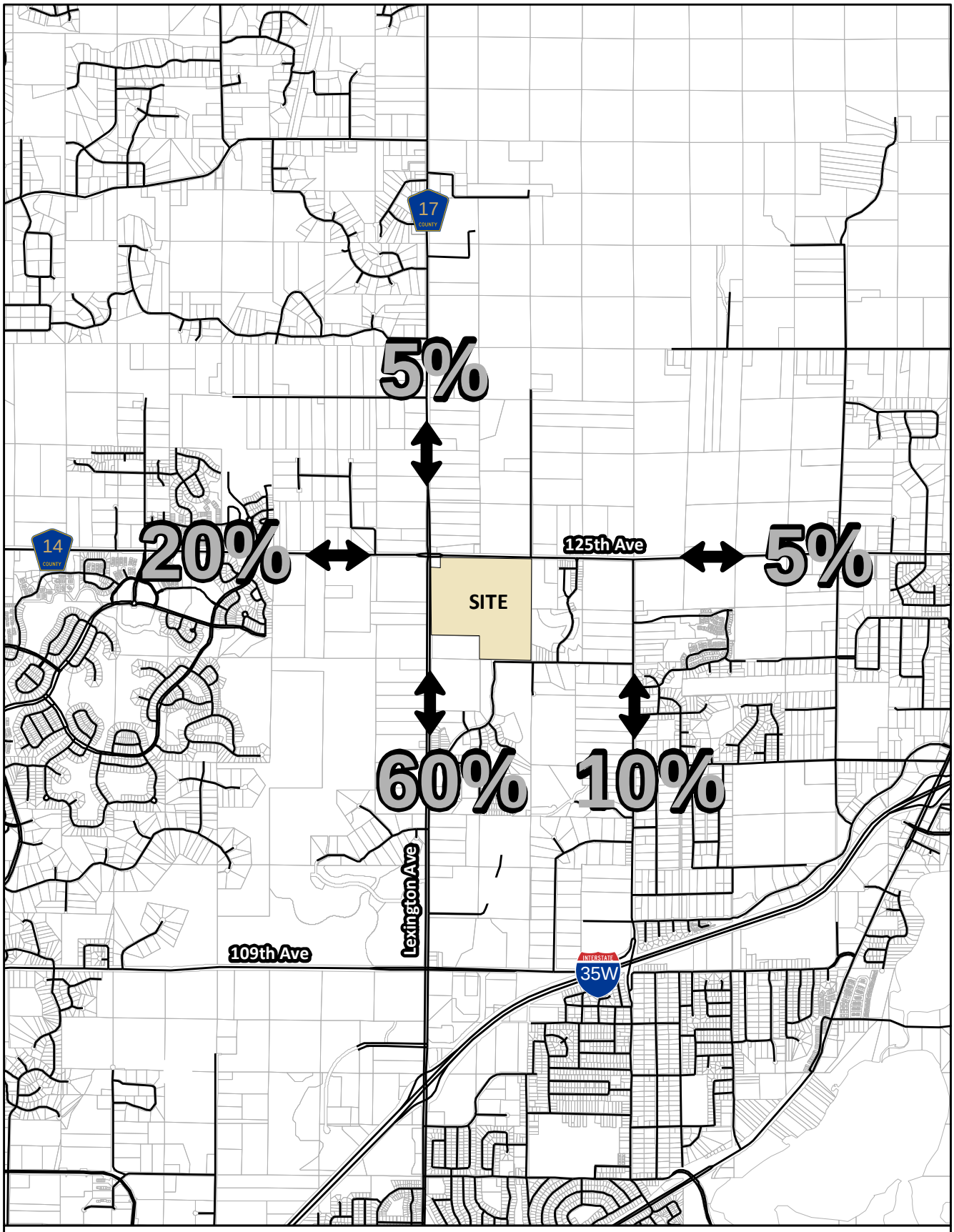


FIGURE 9: Residential Trip Distribution

Kimley»Horn

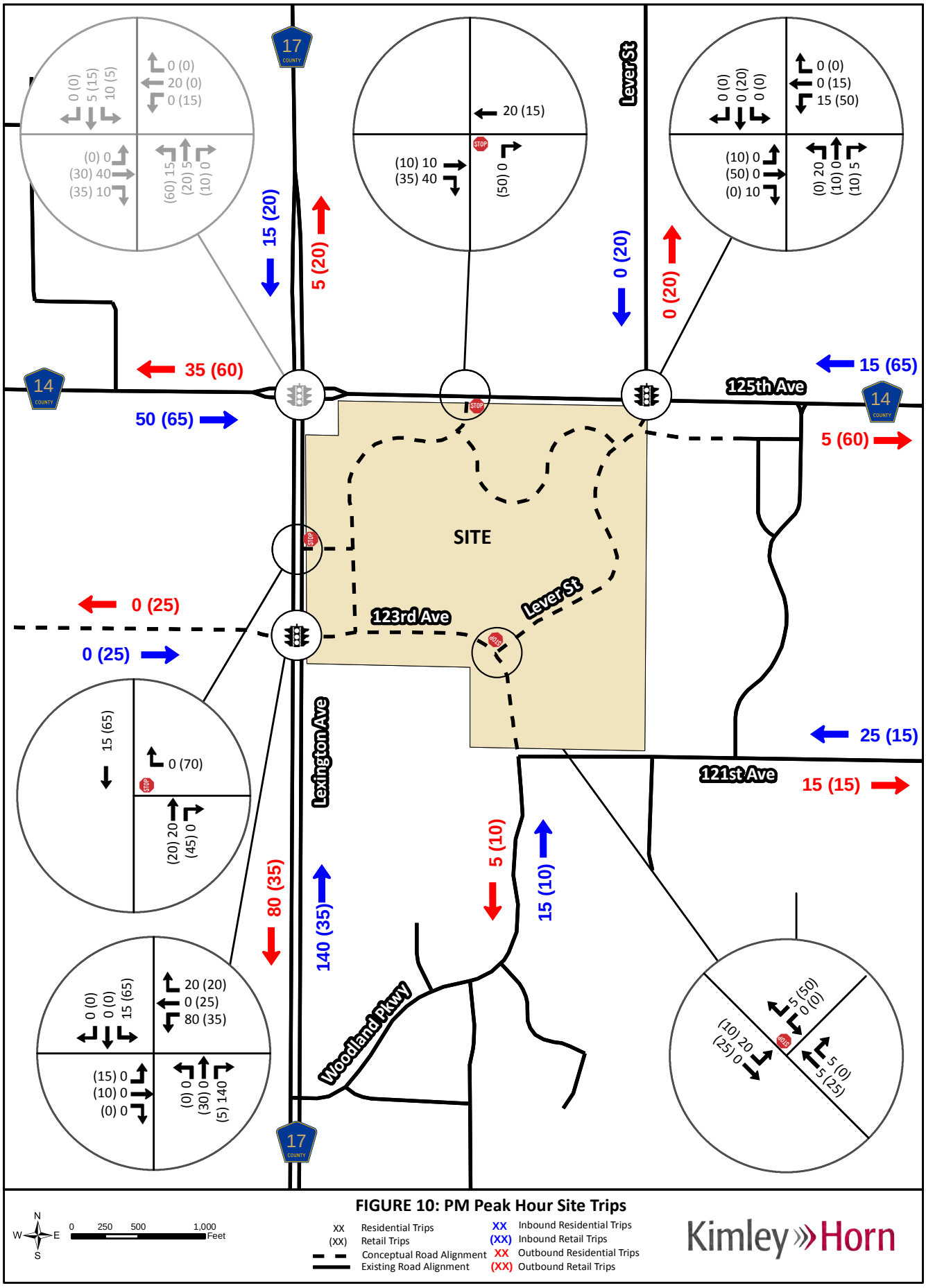


FIGURE 10: PM Peak Hour Site Trips

TRAFFIC ANALYSIS

The purpose of this traffic analysis is to discover the possible traffic impacts associated with the new Parkside North development. Capacity analyses for the intersections within the study area were performed for PM peak periods for five scenarios:

- Year 2014 Existing Conditions
- Year 2020 No-Build Conditions
- Year 2030 No-Build Conditions
- Year 2020 Build Conditions
- Year 2030 Build Conditions

Figure 4 displays the traffic volumes for the year 2014 Existing Conditions scenario. **Figure 11** provides the projected traffic volumes for the 2020 No-Build Conditions. **Figure 12** presents the projected traffic volumes for the year 2030 No-Build Conditions. **Figure 13** and **Figure 14** present the projected Build condition traffic volumes with project trips for year 2020 and year 2030, respectively.

Level of Service (LOS)

Level of Service (LOS) analyses were performed using *Synchro 8* and *SimTraffic 8* software. Both programs utilize methodologies contained in the *Highway Capacity Manual* to determine the operating characteristics of a roadway network. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a specified period under prevailing roadway, traffic, and control conditions. Level of Service is defined as a qualitative measure that describes operational conditions and motorist's perception within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with LOS A representing free-flow conditions and LOS F representing roadway failure. LOS D is typically recognized by MnDOT and other agencies as the minimum threshold value for satisfactory level of service.

The *Highway Capacity Manual* defines delay as "the additional travel time experienced by a driver, passenger, or pedestrian", whereas control delay is defined as "the component of delay that results when a control signal causes a lane group to reduce speed or stop; it is measured by comparison with the uncontrolled condition". Control delay is the principal service measure for evaluating LOS at signalized intersections and unsignalized intersections. Note that LOS for both signalized and unsignalized intersections are measured in seconds of delay per vehicle traveling through the intersection. **Table 3** and **Table 4** list the level of service thresholds for signalized and unsignalized intersections, respectively.

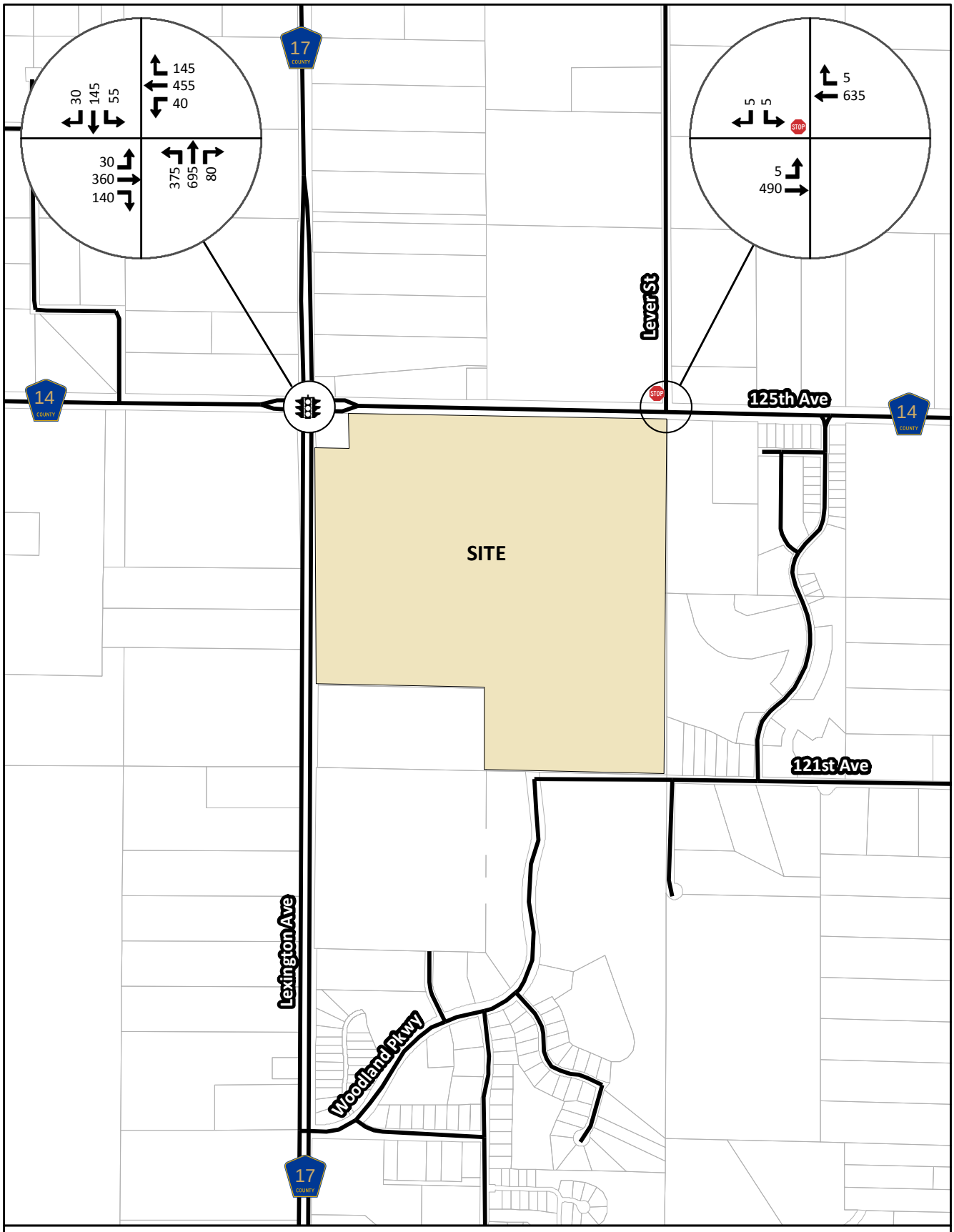


FIGURE 11: 2020 PM Peak Hour - No Build Conditions

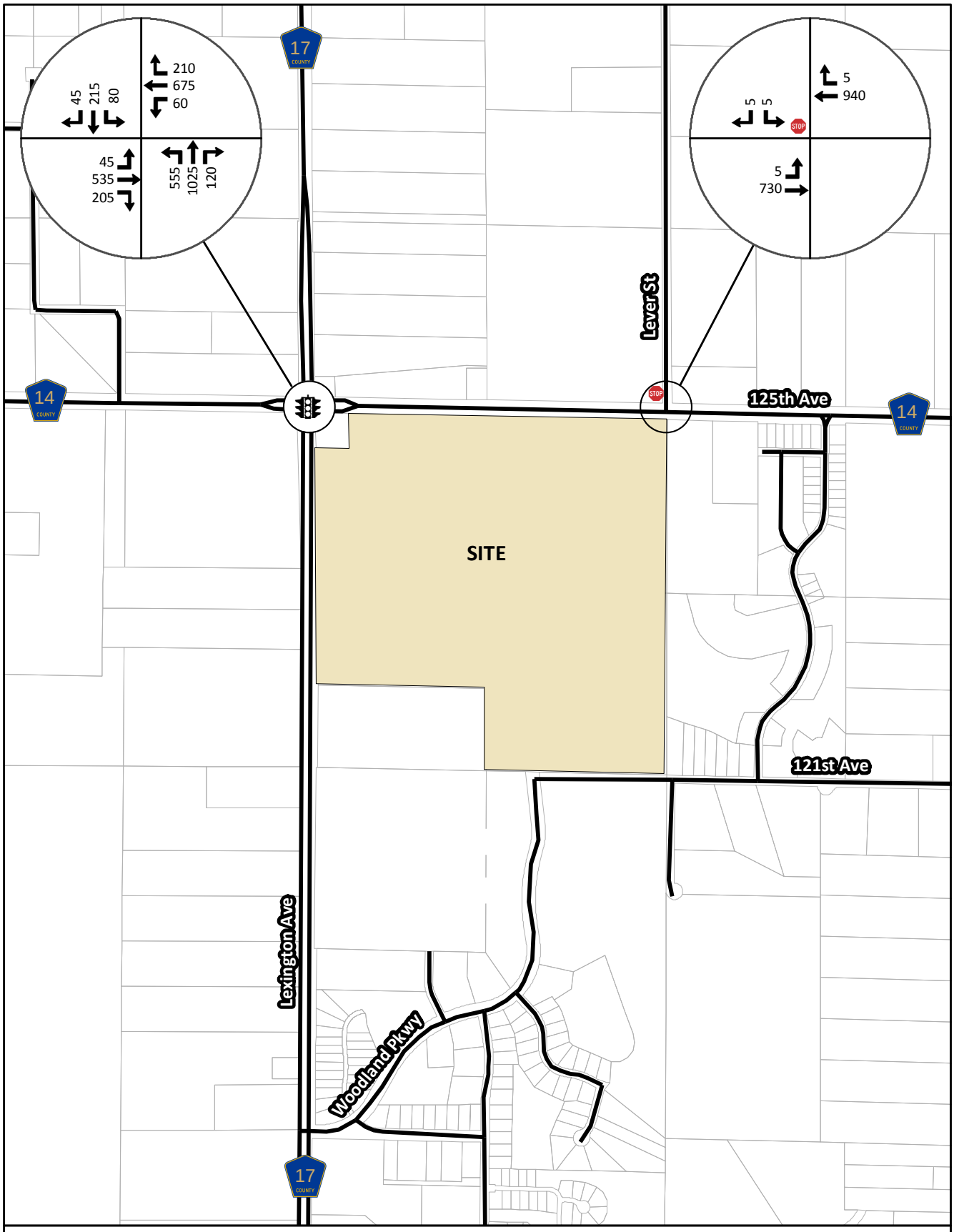


FIGURE 12: 2030 PM Peak Hour - No Build Conditions

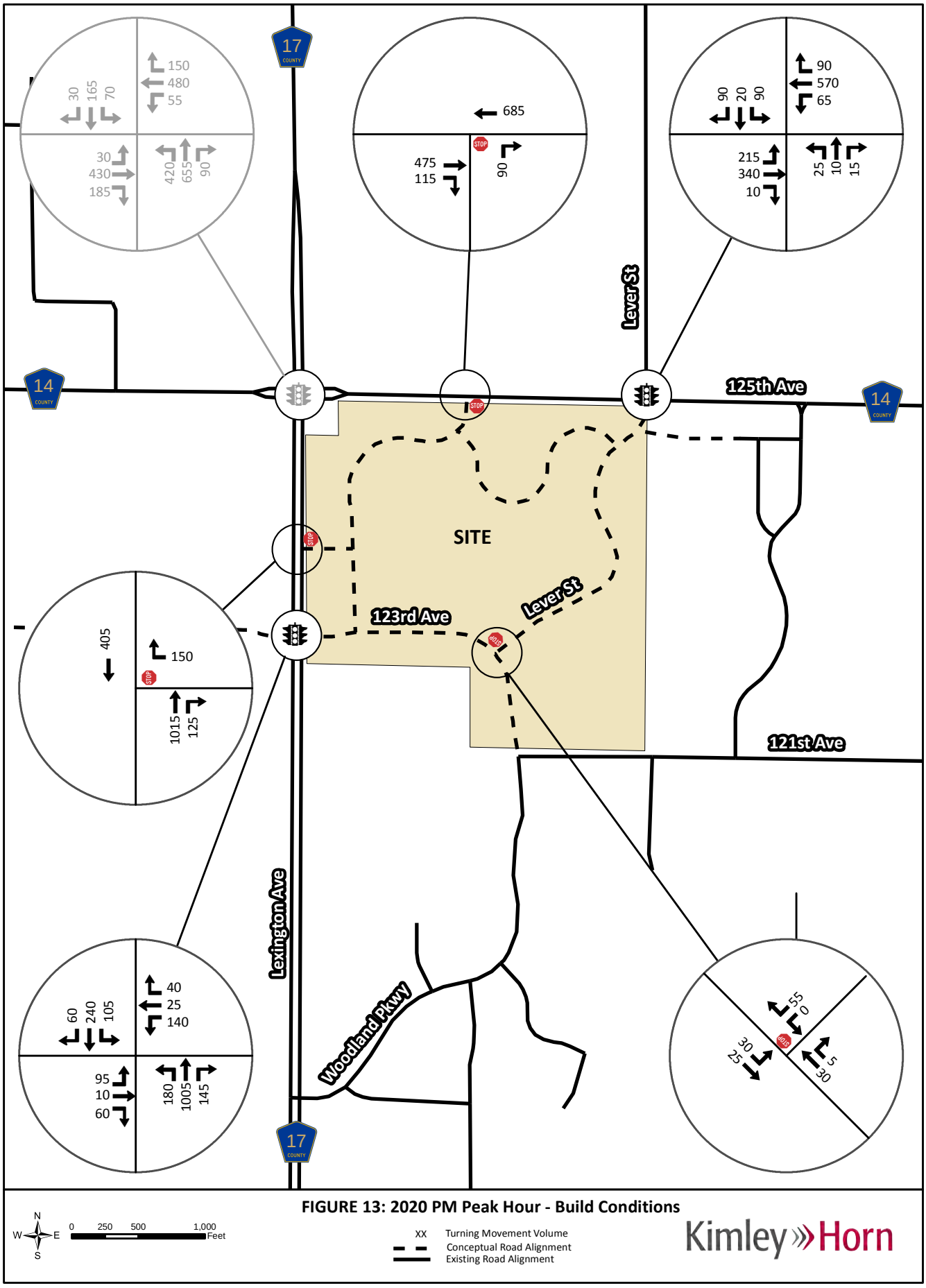


FIGURE 13: 2020 PM Peak Hour - Build Conditions

N W E S 0 250 500 1,000 Feet

XX Turning Movement Volume
Conceptual Road Alignment
Existing Road Alignment

Kimley»Horn

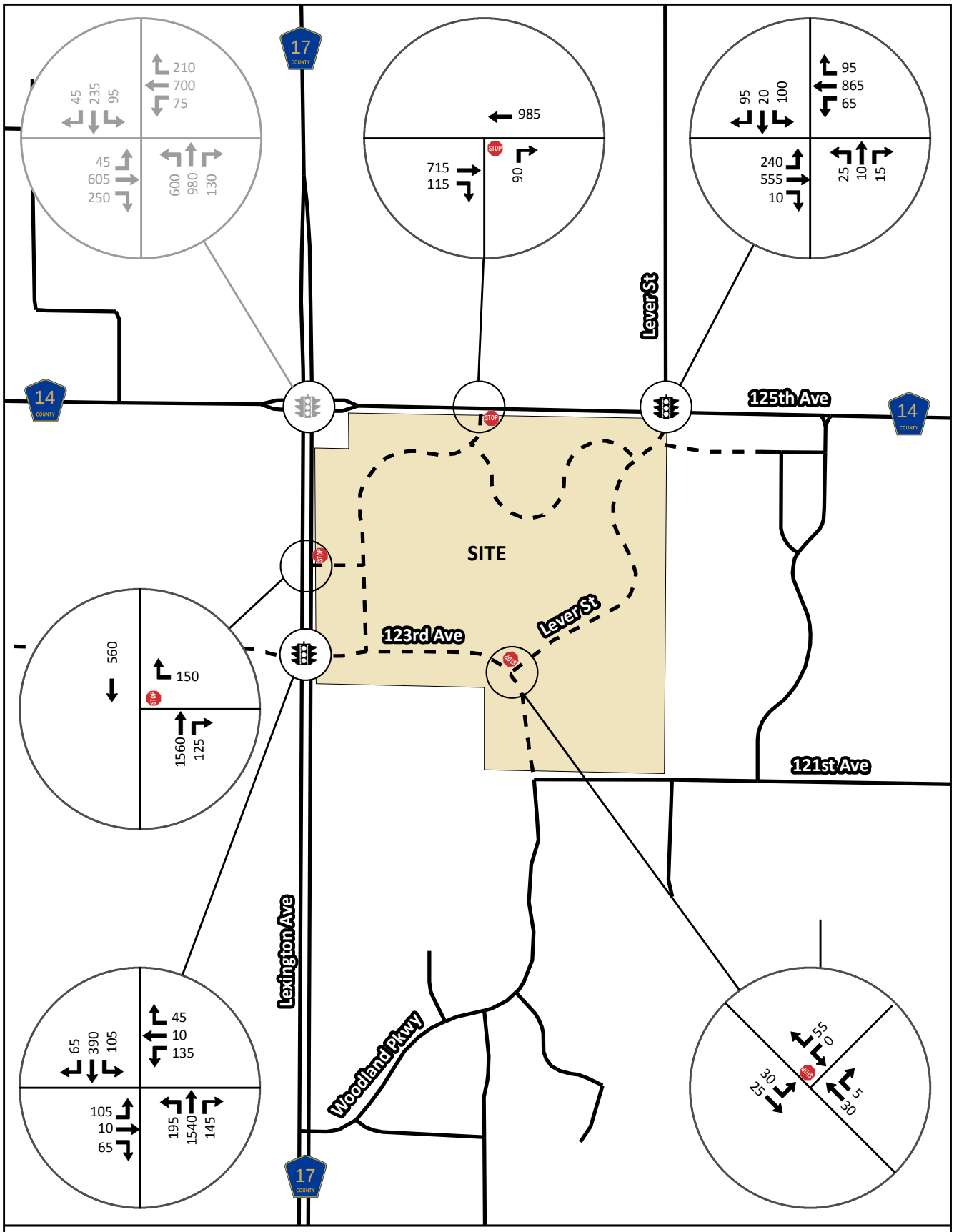


FIGURE 14: 2030 PM Peak Hour - Build Conditions

N
W E
S

0 250 500 1,000 Feet

XX Turning Movement Volume
Conceptual Road Alignment
Existing Road Alignment

Kimley»Horn

Table 3: Level of Service Criteria for Signalized Intersections

LOS Criteria for Signalized Intersections	
LOS	Control Delay per Vehicle (s/veh)
A	< 10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80

Highway Capacity Manual 2010; s/veh = seconds per vehicle

Table 4: Level of Service Criteria for Unsignalized Intersections

LOS Criteria for Unsignalized Intersections	
LOS	Control Delay per Vehicle (s/veh)
A	< 10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Highway Capacity Manual 2010; s/veh = seconds per vehicle

Queuing

Additional analysis was completed to assess the impacts of vehicle queuing. *SimTraffic* was used to obtain 95th percentile queue lengths to evaluate whether queuing is a contributing factor to delays and degraded traffic operations under the various scenarios. The 95th percentile queue is equal to the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed, it is based on statistical calculations. This is a calculated value that is typically used to estimate storage length requirements. **Tables 5-6** on the next page show the 2020 – Build and 2030 – Build storage, 95th percentile queue and max queue lengths. The queue results under 2020 and 2030 conditions indicate there are two eastbound and one southbound left turn lane storage lengths near or beyond capacity at the intersections of, 125th Avenue at Lever Street and 123rd Avenue at Lexington Avenue,. The recommended mitigations for these locations are to construct the 125th and 123rd Avenue eastbound left-turn storage lengths to 250' and 150', respectively, and extend the 125th Avenue southbound left-turn to 100'.

Table 5: 2020 – Build Storage and Queue Lengths

Intersection	Control	Approach	Storage (ft)		95% Queue		Max Queue	
			Left	Right	Left	Right	Left	Right
Lexington & 125th	Signal	EB	275	275	46	56	61	82
		WB	225	260	88	74	101	99
		NB	490	535	194	50	237	70
		SB	640	300	104	33	129	50
123rd & Lever	OWSC	EB	0	0	-	-	-	-
		WB	0	0	-	-	-	-
		NB	0	0	-	-	-	-
		SB	0	0	14	-	26	-
125th & Lever	Signal	EB	150	150	167	15	205	25
		WB	150	150	65	47	78	57
		NB	50	0	42	0	57	0
		SB	50	0	70	0	88	0
Lexington & 123rd	Signal	EB	100	0	94	0	120	0
		WB	200	0	127	0	162	0
		NB	275	275	157	57	189	66
		SB	500	500	110	33	144	50

Table 6: 2030 – Build Storage and Queue Lengths

Intersection	Control	Approach	Storage (ft)		95% Queue		Max Queue	
			Left	Right	Left	Right	Left	Right
Lexington & 125th	Signal	EB	275	275	91	72	124	85
		WB	225	260	151	180	240	196
		NB	490	535	313	77	337	97
		SB	640	300	139	45	172	67
123rd & Lever	OWSC	EB	0	0	-	-	-	-
		WB	0	0	-	-	-	-
		NB	0	0	-	-	-	-
		SB	0	0	18	-	34	-
125th & Lever	Signal	EB	150	150	206	18	239	30
		WB	150	150	79	53	92	62
		NB	50	0	37	0	50	0
		SB	50	0	82	0	93	0
Lexington & 123rd	Signal	EB	100	0	113	0	127	0
		WB	200	0	171	0	204	0
		NB	275	275	200	56	233	76
		SB	500	500	127	39	138	52

Traffic Modeling

Traffic modeling and simulation were performed on the traffic network surrounding the study area for Existing, No-Build, and Build scenarios. The results of five *SimTraffic* simulation runs were averaged to obtain the delay and associated LOS by movement and the 95th percentile queue length by movement at each study intersection.

2014 Existing Traffic Operations

The current signal timing parameters at the intersection of 125th Avenue and Lexington Avenue, obtained from the City of Blaine, were used in the 2014 existing conditions model. The performance results for the 2014 Existing Conditions scenario are provided in **Table 7**.

Table 7: 2014 PM Peak Hour LOS – Existing Conditions

Intersection	Control	Approach	Operations by Movement						Overall Intersection
			Left		Through		Right		
			Volume	LOS	Volume	LOS	Volume	LOS	LOS
Lexington & 125th	Signal	EB	25	D	285	C	110	A	C
		WB	30	D	360	C	115	A	
		NB	295	C	550	B	65	A	
		SB	45	D	115	C	25	A	
125th & Lever	T-Intersection	EB	0	A	395	A	-	-	A
		WB	-	-	505	A	0	A	
		NB	-	-	-	-	-	-	
		SB	0	A	-	-	0	A	

Under existing conditions in 2014, both of the analyzed intersections in place performed at overall LOS C or better. The poorest performing movements are the eastbound, westbound, and southbound left-turning movements, which all operate at LOS D. The queuing under the current conditions is minimal and does not create any vehicle spillback, thru-lane or turn lane blockage.

Future No-Build Traffic Operations

Under the 2020 and 2030 No-Build scenarios, timing splits on the traffic signal at the intersection of Lexington Avenue and 125th Avenue were optimized to accommodate the increased traffic volumes at the intersection. The performance results for the 2020 and 2030 No-Build scenarios are provided in **Table 8** and **Table 9**, respectively.

2020

Table 8: 2020 PM Peak Hour LOS - No-Build Conditions

Intersection	Control	Approach	Operations by Movement						Overall Intersection
			Left		Through		Right		
			Volume	LOS	Volume	LOS	Volume	LOS	LOS
Lexington & 125th	Signal	EB	30	D	360	C	140	A	C
		WB	40	D	455	C	145	A	
		NB	375	D	695	B	80	A	
		SB	55	D	145	C	30	A	
125th & Lever	T-Intersection	EB	5	A	490	A	-	-	A
		WB	-	-	635	A	5	A	
		NB	-	-	-	-	-	-	
		SB	5	B	-	-	5	A	

2030

Table 9: 2030 PM Peak Hour LOS - No-Build Conditions

Intersection	Control	Approach	Operations by Movement						Overall Intersection
			Left		Through		Right		
			Volume	LOS	Volume	LOS	Volume	LOS	LOS
Lexington & 125th	Signal	EB	45	D	535	D	205	A	C
		WB	60	D	675	D	210	B	
		NB	555	D	1025	C	120	A	
		SB	80	D	215	C	45	B	
125th & Lever	T-Intersection	EB	5	A	730	A	-	-	A
		WB	-	-	940	A	5	A	
		NB	-	-	-	-	-	-	
		SB	5	C	-	-	5	A	

Similar to the results from the 2014 existing conditions, in the 2020 and 2030 No-Build conditions at both of the existing intersections operate with a LOS of C or better. Without building the Parkside North development, the traffic patterns and heaviest movements are consistent with those in the existing conditions. The largest change in LOS is seen on the northbound left turn at Lexington Avenue and 125th Avenue, where 375 and 555 northbound left turns are served in 2020 and 2030, respectively. This turning movement includes 500 foot dual left turn lanes and is the most critical movement for the operations of Lexington Avenue and 125th Avenue. It should be noted that the high PM peak hour volumes are present in the Existing and No-Build conditions before Parkside North trip generations have been applied.

Build Traffic Operations

All site generated traffic was added to the roadway network in the 2020 and 2030Buildscenarios. The internal roadway structure of the development site was loaded with the retail/commercial and residential generated traffic. Traffic signals at 123rd Avenue and Lexington Avenue, and 125th Avenue and Lever Street were incorporated to the analysis and optimized for future conditions. The timing splits on the traffic signal at Lexington Avenue and 125th Avenue were optimized to accommodate the increased traffic volumes and change in traffic patterns associated with the development site. Assumed intersection traffic control, such as signals and stop control, were included in the analysis based on the roadway forecasted AADTs, long range development projections, and direction from the City of Blaine. Model results have been reported in **Table 10** and **Table 11** below.

2020

Table 10: 2020 PM Peak Hour LOS – Build Conditions

Intersection	Control	Approach	Operations by Movement						Overall Intersection
			Left		Through		Right		
			Volume	LOS	Volume	LOS	Volume	LOS	LOS
Lexington & 125th	Signal	EB	30	D	430	C	185	A	C
		WB	55	D	480	C	150	A	
		NB	420	D	655	C	90	A	
		SB	70	D	165	C	30	A	
123rd & Lever	T-Intersection	EB	-	-	-	-	-	-	A
		WB	0	A	-	-	55	A	
		NB	-	-	30	A	5	A	
		SB	30	A	25	A	-	-	
125th & Lever	Signal	EB	215	C	340	A	10	A	B
		WB	65	B	570	A	90	A	
		NB	25	B	10	B	15	A	
		SB	90	B	20	B	90	A	
Lexington & 123rd	Signal	EB	95	C	10	B	60	A	B
		WB	140	C	25	C	40	B	
		NB	180	C	1005	A	145	A	
		SB	105	C	240	A	60	A	
Lexington & RI/RO	Right-In/ Right-Out	EB	-	-	-	-	-	-	A
		WB	-	-	-	-	150	A	
		NB	-	-	1015	A	125	A	
		SB	-	-	405	A	-	-	
125th & RI/RO	Right-In/ Right-Out	EB	-	-	475	A	115	A	A
		WB	-	-	685	A	-	-	
		NB	-	-	-	-	90	A	
		SB	-	-	-	-	-	-	

2030

Table 11: 2030 PM Peak Hour LOS – Build Conditions

Intersection	Control	Approach	Operations by Movement						Overall Intersection
			Left		Through		Right		
			Volume	LOS	Volume	LOS	Volume	LOS	LOS
Lexington & 125th	Signal	EB	45	E	605	D	250	A	D
		WB	75	E	700	D	210	B	
		NB	600	D	980	C	130	A	
		SB	95	D	235	D	45	B	
123rd & Lever	T-Intersection	EB	-	-	-	-	-	-	A
		WB	0	A	-	-	55	A	
		NB	-	-	30	A	5	A	
		SB	30	A	25	A	-	-	
125th & Lever	Signal	EB	240	C	555	A	10	A	B
		WB	65	C	865	B	95	A	
		NB	25	C	10	C	15	A	
		SB	100	C	20	C	95	B	
Lexington & 123rd	Signal	EB	105	D	10	C	65	A	B
		WB	140	D	25	C	40	C	
		NB	195	D	1540	B	145	A	
		SB	105	D	390	B	65	A	
Lexington & RI/RO	Right-In/ Right-Out	EB	-	-	-	-	-	-	A
		WB	-	-	-	-	150	A	
		NB	-	-	1560	A	125	A	
		SB	-	-	560	A	-	-	
125th & RI/RO	Right-In/ Right-Out	EB	-	-	715	A	115	A	A
		WB	-	-	985	A	-	-	
		NB	-	-	-	-	90	A	
		SB	-	-	-	-	-	-	

Under the Build conditions in 2020 and 2030 there are acceptable levels of service for each of the six intersections analyzed. Of the proposed intersections with direct access or internal to the development a minimum LOS of B was achieved. The lowest operating intersection analyzed in the network under the Build conditions was reported at Lexington Avenue and 125th Avenue, with a LOS D. As seen in the existing and No-Build conditions, the turning volumes on the eastbound and westbound movements are high regardless of the construction of the Parkside North development.

A closer look at the operations at internal intersections on the site indicates that there are no significant delays reported from the future development trips. The internal T-intersection of Lever Street and 123rd Avenue will have approximately 90 vehicles turning from or onto Lever Street in the year 2030. Each of these vehicles will be traveling on a city street with residential driveway access immediately off of the roadway. With only 90 trips in the peak hour, there is expected to be adequate spacing between traveling vehicles on Lever Street for residents to execute a left turn into

their driveways or reverse out of the driveway. Another potential factor for causing delays to the access of the residential homes is the queue length for southbound vehicles at Lever Street and 123rd Avenue. The analysis assumed a single lane in the southbound direction for shared left and right turns. Based on the 2030 Build analysis, completed using the SimTraffic modeling software, the 95th percentile queue is 53 feet and the maximum queue at this location does not exceed 58 feet. This distance is approximately the distance of three single occupancy vehicles and would not have an adverse impact by blocking any of the residential driveways.

At the opposite end of Lever Street at 125th Avenue, a second access point to the Parkside North development is proposed. This location was assumed to meet future needs for a traffic signal and was modeled accordingly. In the 2030 analysis, approximately 50 and 95 vehicles are anticipated to exit and enter the site from this intersection, respectively. Of the 95 vehicles entering the site from this intersection, slightly more than one-half will continue down Lever Street to the residential neighborhood. Those vehicles traveling northbound on Lever Street exiting the site in the PM peak period create a 95th percentile queue length of 37 feet and a maximum queue length of 50 feet. This distance is equivalent to approximately 3 single occupancy vehicles and shows no significant impacts to residential home access.

RECOMMENDATIONS

The following improvements are recommended in order to maintain acceptable traffic conditions in the study area through 2030:

- Construct the eastbound left storage bay at 125th Avenue & Lever Street to 250'
- Construct the eastbound left storage bay at 125th Avenue & Lever Street to 100'
- Construct the eastbound left storage bay at 123rd Avenue & Lexington Avenue to 150'
- Traffic signal improvements at:
    - Lever Street/Main Street
    - 123rd Avenue/Lexington Avenue
- Dedicated deceleration lanes for turning vehicles accessing the site
- Signal timing modifications at the existing 125th Avenue and Lexington Avenue intersection

SUMMARY

The roadways of Lexington Avenue and 125th Avenue surrounding the Parkside North development have considerable existing and future vehicle traffic under the No-Build conditions. These peak hour volumes and average annual daily trips are reflected in the reported turning movement counts and Anoka County Comprehensive Plan. Incorporating the Parkside North retail/commercial and residential development into the traffic network does not result in adverse impacts on the roadway system operations. Additionally, the operations of several critical access drives and internal intersections created by the development have been reported with high levels of service (A and B). The anticipated amount of retail and residential traffic and vehicle queuing along Lever Street has no expected adverse impacts to residences accessed from Lever Street. However, as the street layout of the development plat continues, it will be a design goal to minimize the number of driveways accessed off of Lever Street. Constructing a westbound left turn opening at the north retail/commercial access (¾ access) would significantly reduce the retail and residential traffic impacts on Lever Street.