

MEMORANDUM TO: John McFarland
Chicago Capital Holdings

FROM: Javier Millan
Senior Consultant

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Principal

DATE: July 28, 2014

SUBJECT: Traffic Impact Study
Proposed Mixed-Use Development
Western Springs, Illinois

This memorandum summarizes the results of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) in connection with a proposed mixed-use development to be located in Western Springs, Illinois. The site is located in the southeast quadrant of the intersection of Burlington Avenue and Wolf Road and is proposed to contain 52 apartment units and 4,000 square feet of ground floor retail. The building will provide a total of 63 parking spaces of which 52 spaces will be designated for residential use and will be accessed off the alley and 14 spaces will be designated for the retail use and will be accessed off Wolf Road.

The purpose of this study was to examine background traffic conditions, assess the impact the proposed development will have on traffic conditions in the area and determine if any roadway or access improvements are necessary to accommodate traffic generated by development.

The sections of this report present the following.

- Existing roadway conditions
- A description of the site development
- Directional distribution of the development generated traffic
- Vehicle trip generation for the development
- Future traffic conditions including access to the site
- Traffic analyses for the weekday morning and evening peak hours
- Recommendations with respect to adequacy of the site access system and adjacent roadway network

Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on a field visit conducted by KLOA, Inc. in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices and existing peak hour vehicle and pedestrian volumes.

Site Location

The site, which is currently occupied by a vacant commercial building, is located in the southeast quadrant of the intersection of Wolf Road and Burlington Avenue in Western Springs, Illinois. Land uses in the area consist of the Burlington Northern – Santa Fe (BNSF) railroad and the Western Springs Village Hall to the north, the Berak Service auto care center and single family homes to the east, the Western Springs Baptist Church to the south and various commercial properties and the Western Springs Metra station to the west.

Figure 1 shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site area.

Area Roadways

The roadway characteristics in the vicinity of the site are illustrated in **Figure 3** and described in the following paragraphs.

Wolf Road is a north-south arterial roadway that provides one travel lane in each direction within the vicinity of the site and borders the site on the west. At its intersection with Burlington Avenue, Wolf Road provides one exclusive left-turn lane and one shared through/right-turn lane on its south approach and one shared left-turn/through/right-turn lane on the north approach. Given the BNSF railroad tracks crossing Wolf Road just north of Burlington Avenue, the south approach is under stop sign control while the north approach is uncontrolled. At its intersection with Hillgrove Avenue, Wolf Road provides one exclusive left-turn lane and one shared through/right-turn lane on its north approach and one shared left-turn/through/right-turn lane on the south approach. The north approach is under stop sign control and the south approach is uncontrolled. Parking is prohibited on both sides of the road within the vicinity of the site. Wolf Road has a posted speed limit of 30 mph, an average daily traffic (ADT) volume of 10,700 vehicles and is under the jurisdiction of the Cook County Highway Department (CCHD).



Figure 1

3

Site Location

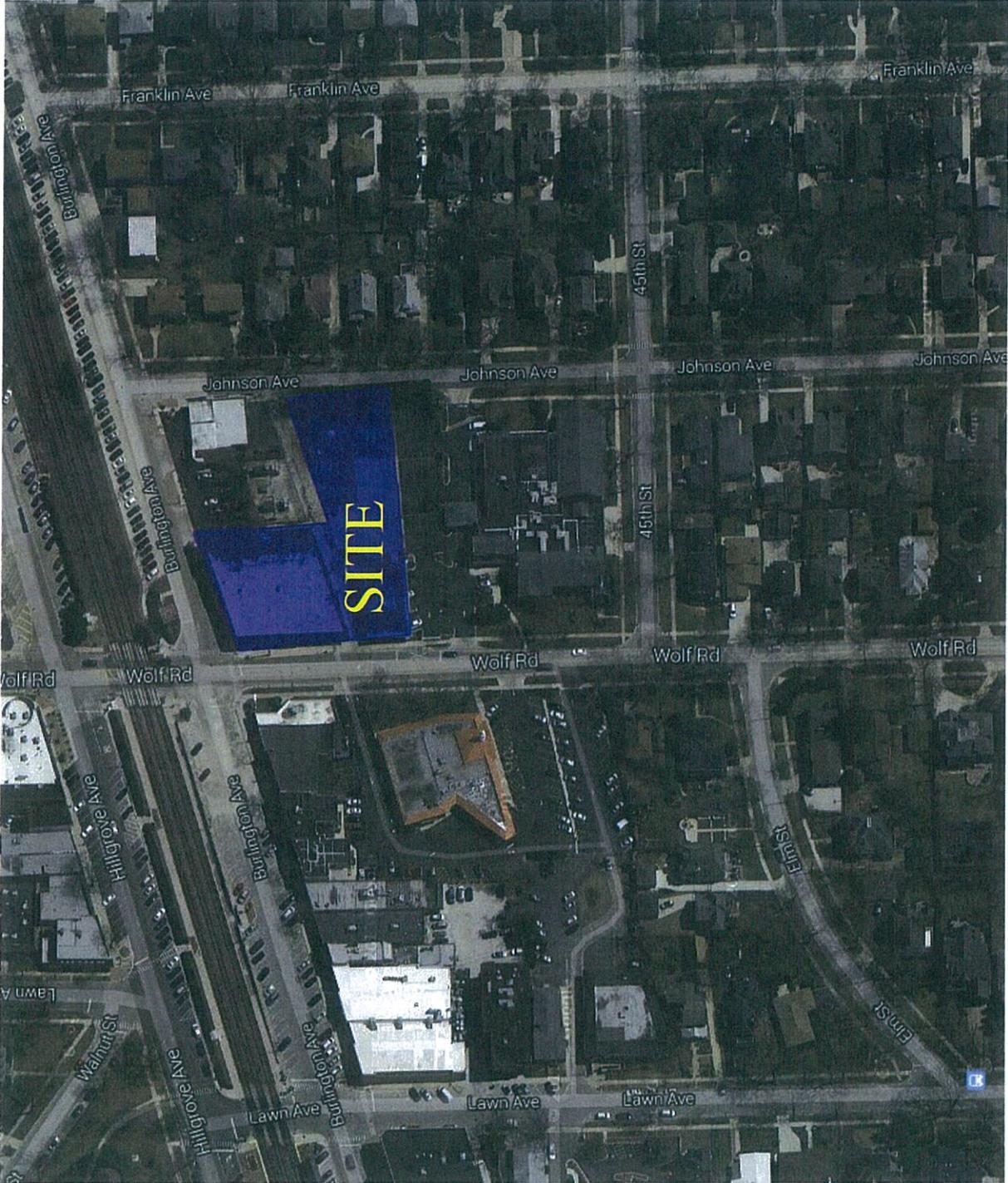
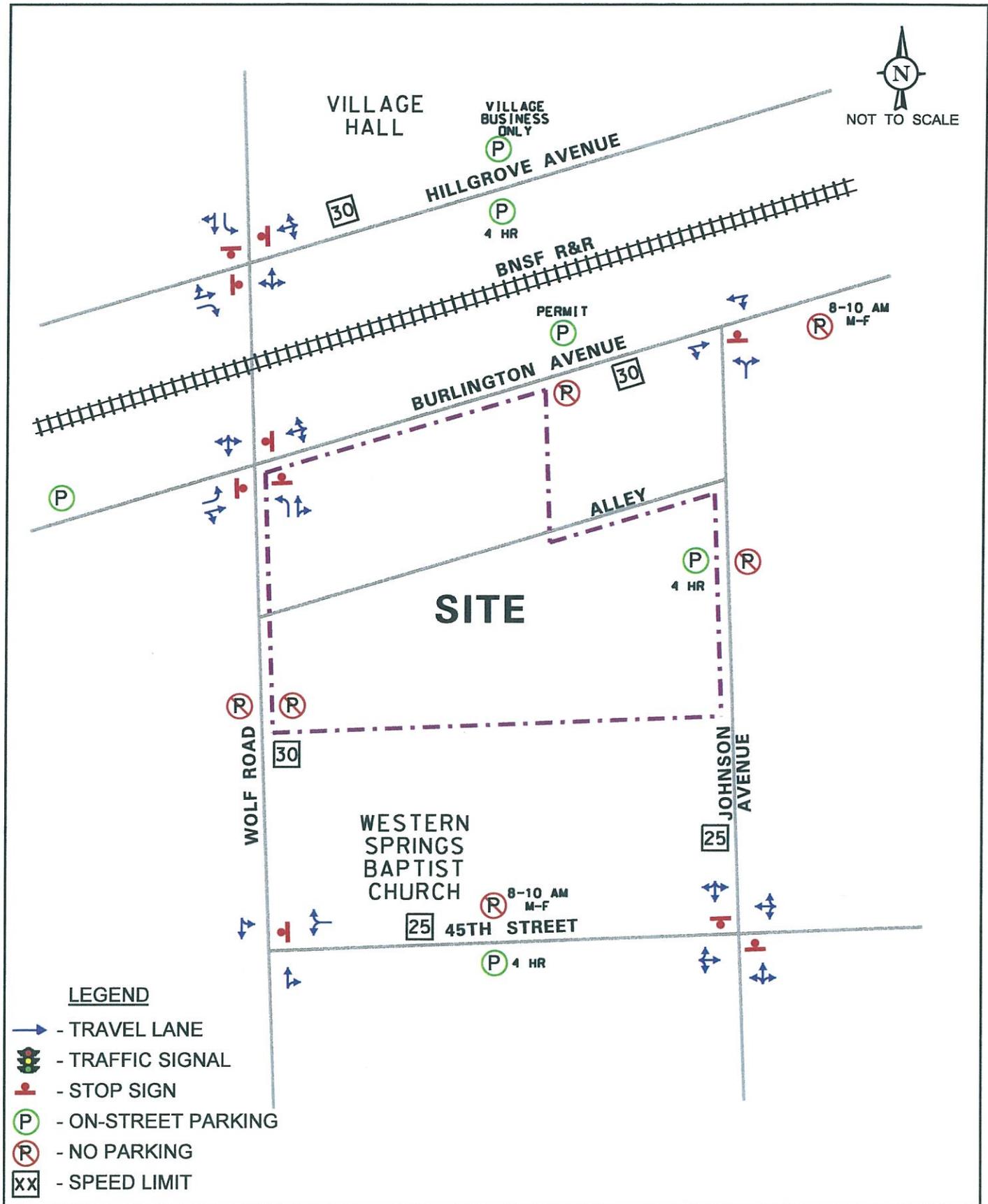


Figure 2

Aerial View of Site Location



LEGEND

- TRAVEL LANE
- TRAFFIC SIGNAL
- STOP SIGN
- ON-STREET PARKING
- NO PARKING
- SPEED LIMIT

PROJECT:
 Proposed Mixed-Use
 Development
 Western Springs, Illinois

TITLE:
 Existing Street Characteristics



Figure: 3

Burlington Avenue is an east-west local road that runs parallel to and on the south side of the BNSF railroad tracks and borders the site to the north. Burlington Avenue provides one travel lane in each direction with permit parking provided on the north side of the road. On-street parking is not allowed Monday through Friday from 8:00 to 10:00 A.M. on the south side of the road. Permit angle parking from 5:00 A.M. to 6:00 P.M. Monday through Friday is provided on the north side of the road. At its unsignalized intersection with Wolf Road, Burlington Avenue provides one exclusive left-turn lane and one shared through/right-turn lane on the west approach and one shared left-turn/through/right-turn lane on the east approach with both approaches under stop sign control. No exclusive turn lanes are provided on either approach at its unsignalized intersection with Johnson Avenue, Burlington Avenue provides one shared through/right-turn lane on its west approach and one shared left-turn/through lane on its east approach. Burlington Road has a posted speed limit of 30 mph and is under the jurisdiction of the Village of Western Springs.

Johnson Avenue is a north-south road that provides one travel lane in each direction and runs along the eastern border of the proposed site. Free four-hour parking is allowed on the west side of the road. No parking is allowed on the east side of the road. At its unsignalized intersection with Burlington Avenue, Johnson Avenue is under stop sign control and provides one shared left-turn/right-turn lane. At its unsignalized intersection with 45th Street, Johnson Avenue is under stop sign control and provides one shared left-turn/through/right-turn lane on both approaches. Johnson Avenue has a posted speed limit of 25 mph and is under the jurisdiction of the Village of Western Springs.

45th Street is an east-west road that provides one travel lane in each direction. Free four-hour parking is provided on the south side of road. On-street parking is not allowed on the north side of the road Monday through Friday from 8:00 to 10:00 A.M. At its unsignalized intersection with Wolf Road, 45th Street is under stop sign control and provides one shared left-turn/right-turn lane. No exclusive turn lanes are provided on either approach at its unsignalized intersection with Johnson Avenue. 45th Street has a posted speed limit of 25 mph and is under the jurisdiction of the Village of Western Springs.

Hillgrove Avenue is an east-west two-lane road that runs parallel to and on the north side of the BNSF railroad tracks. Free four-hour parking is provided on the south side of the road and restricted to “Village Business Only” on the north side of the road within the study area. At its intersection with Wolf Road, Hillgrove Avenue provides one exclusive right-turn lane and one shared left-turn/through on its west approach and one shared left-turn/through/right-turn lane on its east approach. Both approaches are under stop sign control. Hillgrove Avenue has a posted speed limit of 30 mph and is under the jurisdiction of the Village of Western Springs.

Public Transportation

The area is served by two modes of public transportation: A Metra commuter rail station and a Pace Bus line. The following summarizes the services provided by both modes to the area.

- The Burlington Northern – Santa Fe Western Springs Metra station is located one block west of the site and provides service from Aurora to Union Station in Chicago. The line provides 48 inbound trains and 48 outbound trains on weekdays. The first inbound train departs Aurora at 4:30 A.M. with the last train departing at 11:20 P.M. Approximately two inbound trains cross Wolf Road during the morning peak hour and approximately five outbound trains during the evening peak hour.
- *Pace Bus Route 669 – Western Springs-Indian Head Park* primarily runs along Wolf Road and extends south to the Brittany Court and Flagg Creek residential communities. A local stop is provided at the Western Springs Metra Station, one block west of the site. This line provides weekday service but does not run on weekends or holidays. In addition to Brittany Court and Flagg Creek, Route 669 also serves Wilshire Green, Indian Head Park and Ridgewood Park.

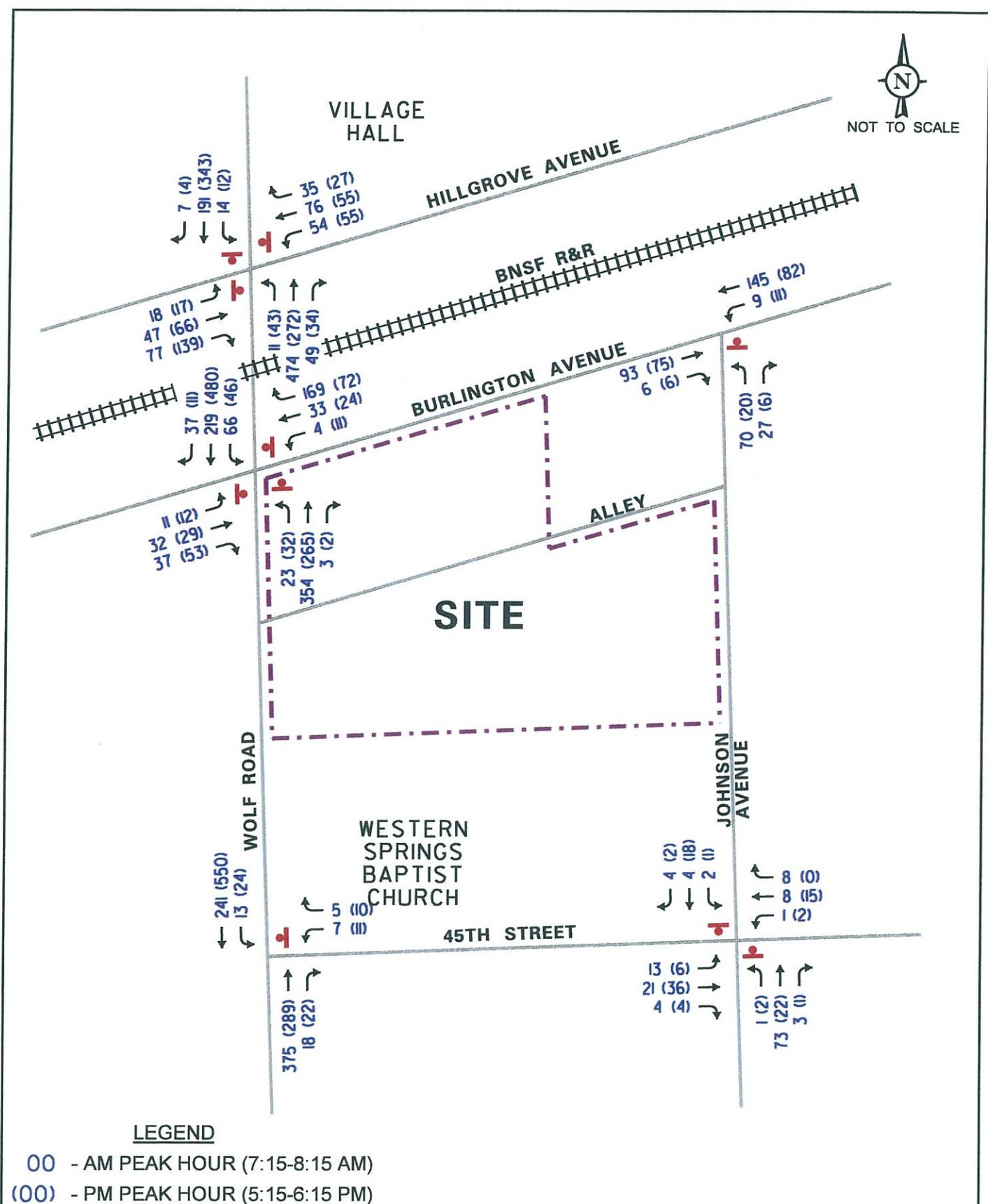
All of the roads within the immediate area generally have sidewalks on both sides. Continental style crosswalks are provided at the intersections of Wolf Road with Burlington Avenue, Johnson Avenue with Burlington Avenue and Johnson Avenue with 45th Street. No crosswalks are provided at the intersection of Wolf Road with 45th Street.

Existing Traffic Volumes

In order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted manual peak period vehicle and pedestrian counts at the following intersections.

- Wolf Road with Burlington Avenue
- Wolf Road with 45th Street
- Wolf Road with Hillgrove Avenue
- Johnson Avenue with Burlington Avenue
- Johnson Avenue with 45th Street

The traffic counts were conducted on Thursday April 3, 2014 during the weekday morning (6:30 to 9:00 A.M.) and evening (4:00 to 6:30 P.M.) peak periods. Based on the results of the traffic counts, it was determined that the morning peak hour of traffic occurs from 7:15 to 8:15 A.M. and the evening peak hour of traffic occurs from 5:15 to 6:15 P.M. **Figure 4** shows the existing peak hour traffic volumes and **Figure 5** shows the existing pedestrian volumes.



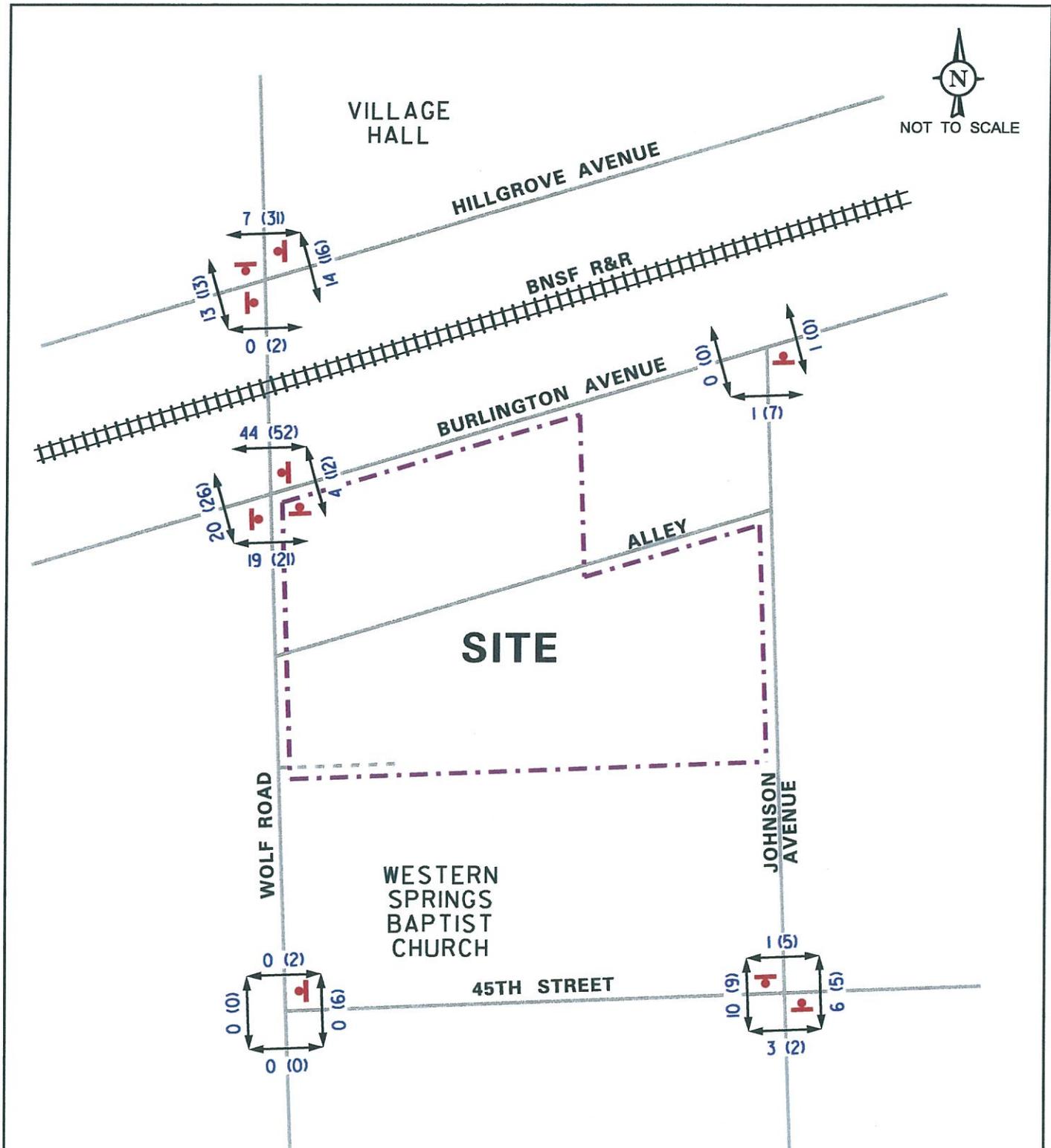
LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (5:15-6:15 PM)

PROJECT:
 Proposed Mixed-Use
 Development
 Western Springs, Illinois

TITLE:
 Existing Traffic Volumes





LEGEND

00 - AM PEAK HOUR (7:15-8:15 AM)

(00) - PM PEAK HOUR (5:15-6:15 PM)

00 (00) - PEDESTRIAN VOLUME

PROJECT:

Proposed Mixed-Use
Development
Western Springs, Illinois

TITLE:

Existing Pedestrian Traffic Volumes



Job No: 14-071

Area Traffic Observations

Traffic flow in the area was observed during the peak periods. Below is a summary of these observations.

- The railroad gates were lowered for crossing trains 12 times during the morning peak hour for an average downtime of approximately 65 seconds per crossing and 16 times during the evening peak hour for an average downtime of approximately 55 seconds per crossing.
- Morning peak hour:
 - Normal queues on the northbound and southbound direction were observed to be three to four vehicles.
 - Back-ups were observed to generally extend six to ten vehicles back from the railroad tracks during a train crossing. Three times during the morning peak hour, back-ups reached 15 cars in length or longer.
 - On one occasion during the morning peak hour, northbound traffic was observed extending all the way to 45th Street.
 - On the north approach, southbound queues were also observed extending five to ten cars back with peak back-ups of 12 to 15 vehicles.
 - Once the railroad gates were raised after a train crossing, it generally took two to four minutes for queues to dissipate and traffic operations to return to normal.
 - After the longest back-ups it would take five to seven minutes for traffic operations to return to normal.
- Evening peak hour:
 - Normal queues on the northbound and southbound direction were observed to be three to four vehicles.
 - Northbound back-ups on Wolf Road were typically five to ten vehicles. On two occasions during the evening peak hour, queues were observed extending 15+ cars in length.
 - Southbound back-ups were observed extending at least 12 cars in length during the train crossings.
 - Back-ups typically dissipated in two to four minutes with a typical queue after a train crossing.
 - After the longest back-ups it would take five to seven minutes for traffic operations to return to normal.
- Back-ups on Burlington Avenue were typically minimal, occasionally extending four to six vehicles on the east approach with no significant back-ups observed on the west approach.
- Back-ups on Hillgrove Avenue were observed extending four to eight vehicles on the west approach, especially during the afternoon peak hour. No significant back-ups were observed on the east approach.

Traffic Characteristics of the Proposed Development

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed development, including the directional distribution and volumes of traffic that it will generate.

Proposed Development Plan

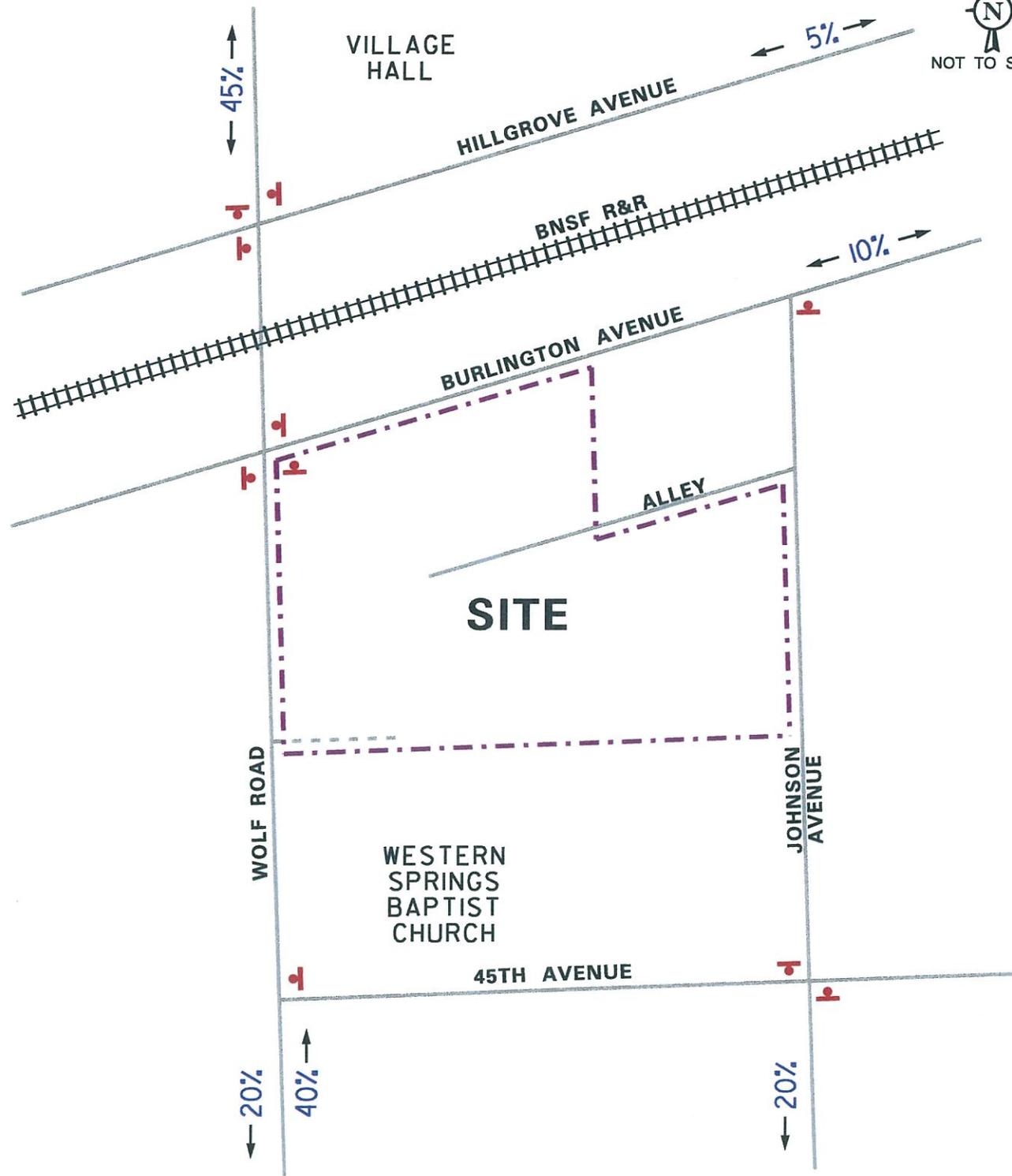
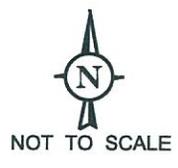
As proposed, the development will contain 52 dwelling units and 4,000 square feet of ground floor retail. The site will provide 52 on-site, covered parking spaces designated for residents and 14 spaces designated for the retail portion of the site. Access to the proposed development will include a garage access off Wolf Road approximately 150 feet south of Burlington Avenue that will serve retail customers and three access points off the alley that bisects the site and will serve the residents. It should be noted that as part of the proposed plans, the intersection of the alley with Wolf Road will be eliminated.

Directional Distribution of Site Traffic

The directional distribution of future site-generated trips on the external roadways is a function of several variables, including the operational characteristics of the roadway system and the ease with which drivers can travel over various sections of the road system without encountering congestion. The directional distribution for the proposed development was based on the existing travel patterns, as determined from the traffic counts. **Figure 6** shows the results of the directional distribution analysis.

Site Traffic Generation

The peak hour traffic volumes that will be generated by the proposed residential development were estimated based on trip generation rates provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition. However, the trip rates assume that the primary mode of transportation is the automobile. The location of the site within close proximity to the Western Springs downtown area, its proximity to the train station and the Pace Bus Route 669 fit the criteria of a transit oriented development (TOD) that results in less dependence on automobile use. Based on inspection of Census 2010 data, approximately 40 percent of the residents in the immediate area use other means of transportation to commute to work. As such, the estimated trips by the future residents of the proposed development were reduced by 40 percent. Although it is expected that a large portion of the customer traffic for the retail portion of the site will be captured by the pedestrian activity in the area, no reduction was applied to the retail generation of the development. **Table 2** shows the estimated peak hour traffic to be generated by the proposed mixed-use development.



LEGEND

00% - PERCENT DISTRIBUTION

PROJECT:
Proposed Mixed-Use
Development
Western Springs, Illinois

TITLE:
Estimated Directional Distribution

KLOA
Job No: 14-071

Table 2
PROJECTED SITE-GENERATED TRAFFIC VOLUMES

ITE Land Use Code	Land Use	Size	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Total Daily Trips	
			In	Out	In	Out	In	Out
220	Apartments	52 Units	6	23	30	16	219	219
		40 percent reduction ¹	(-2)	(-9)	(-12)	(-6)	(-88)	(-88)
		Subtotal	4	14	18	10	131	131
826	Specialty Retail	4,000 s.f.	<u>1</u>	<u>1</u>	<u>5</u>	<u>6</u>	<u>88</u>	<u>88</u>
		Total	5	15	23	16	219	219

¹Trip generation reduced by 40 percent to account for proximity to train station

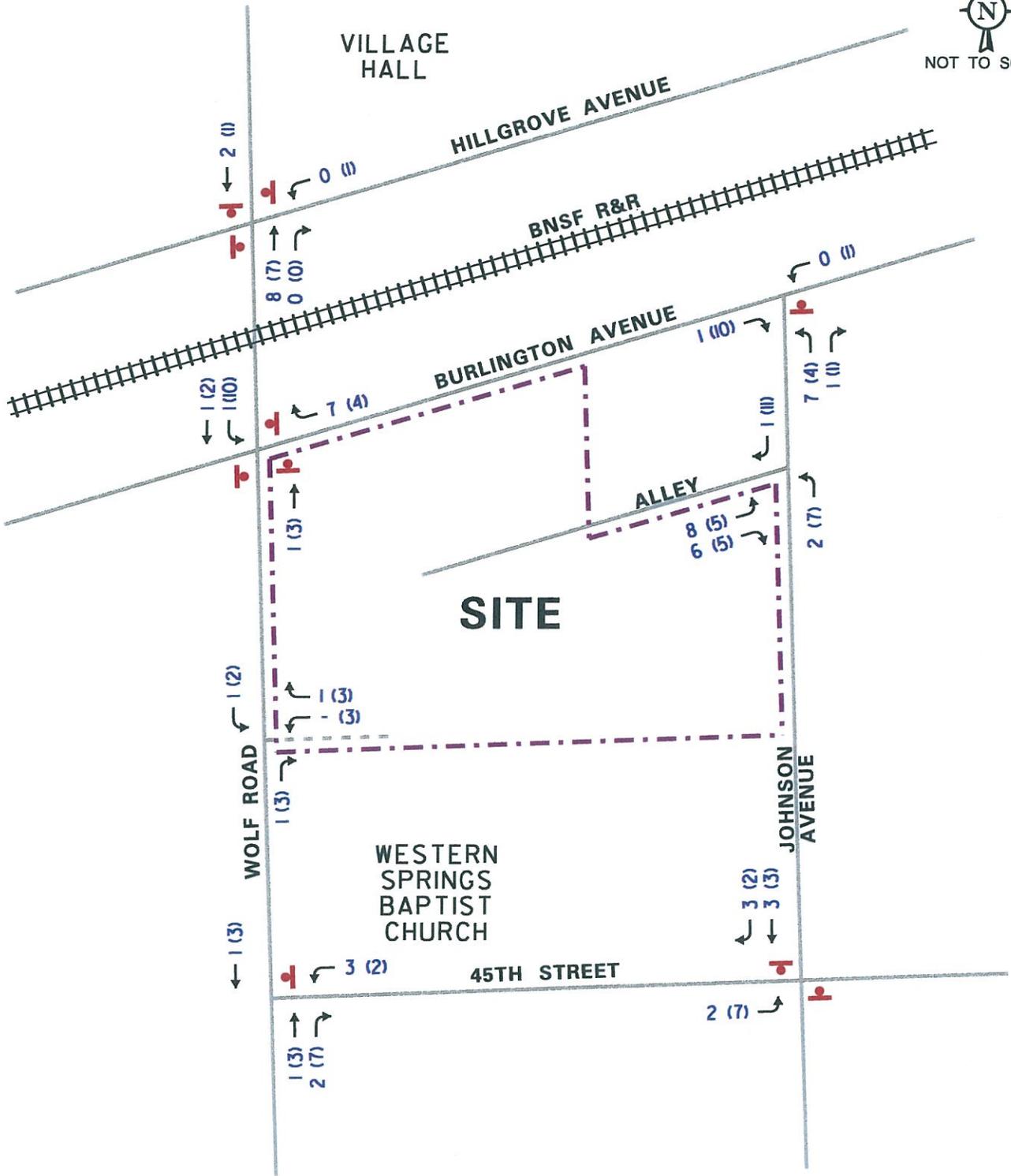
Projected Traffic Volumes

The estimated peak hour traffic volumes that will be generated by the proposed development were assigned to the roadway system in accordance with the previously described directional distribution. **Figure 7** illustrates the development generated traffic volumes. To account for other growth in the area the existing traffic volumes were increased by 0.5 percent per year for five years (2.5 percent). **Figure 8** shows the total peak hour volumes which formed the basis for the analysis of future conditions.

Traffic Analysis

Traffic analyses were performed for the intersections within the study area to determine the operation of the existing roadway system, evaluate the impact of the proposed development and determine the ability of the existing roadway system to accommodate projected traffic demands. Analyses were performed for the existing and the projected traffic volumes.

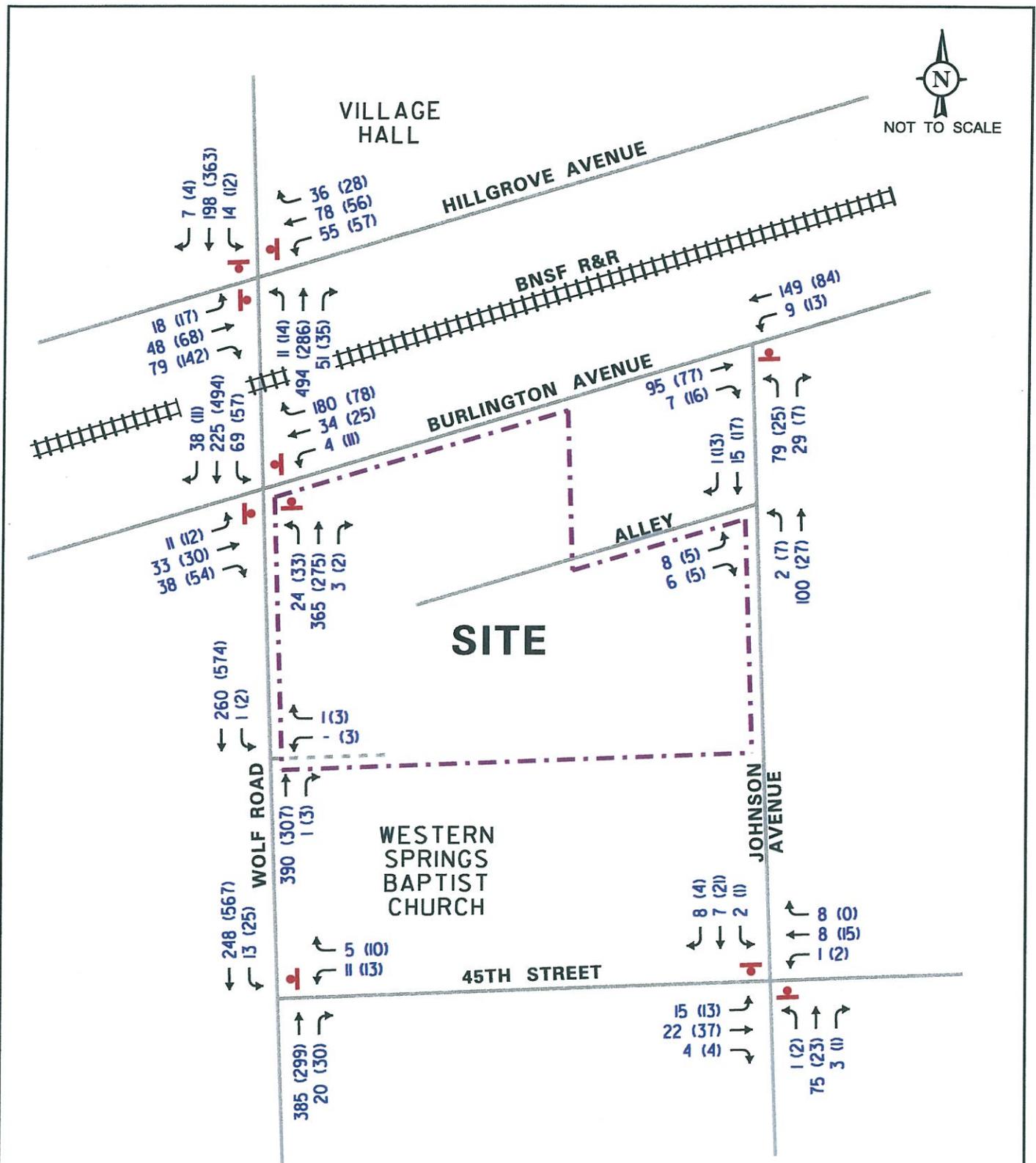
The traffic analyses were performed using Synchro 8 computer software, which is based on the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 2010. The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter grade from A to F based on the average control delay experienced by vehicles passing through the intersection. Control delay is that portion of the total delay attributed to the traffic signal or stop sign control operation and includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Level of Service A is the highest grade (best traffic flow and least delay), Level of Service E represents saturated or at-capacity conditions and Level of Service F is the lowest grade (oversaturated conditions, extensive delays).



LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (5:15-6:15 PM)

<p>PROJECT: Proposed Mixed-Use Development Western Springs, Illinois</p>	<p>TITLE: Estimated Site-Generated Traffic Volumes</p>	<p>KLOA Job No: 14-071 Figure: 7</p>
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LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (5:15-6:15 PM)

PROJECT:
Proposed Mixed-Use Development
Western Springs, Illinois

TITLE:
Total Projected Traffic Volumes



For two-way stop controlled (TWSC) intersections, levels of service are only calculated for the approaches controlled by a stop sign (not for the intersection as a whole).

The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for unsignalized intersections are shown in the Appendix. Also in the Appendix are tables exhibiting ICU level of service and the corresponding intersection capacity utilization percentage and the ICU to HCM LOS compatibility. The results of the capacity analysis are summarized in **Tables 3 and 4**.

Table 3
CAPACITY ANALYSIS RESULTS—EXISTING TRAFFIC CONDITIONS

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS	Delay	LOS	Delay
Wolf Road with Hillgrove Avenue ¹	B	--	B	--
Wolf Road with Burlington Avenue ¹	B	--	C	--
Wolf Road with 45 th Street	B	12.3	B	14.9
Johnson Avenue with Burlington Avenue	B	10.5	A	9.7
Johnson Avenue with 45 th Avenue	A	9.9	A	9.5

LOS = Level of Service

Delay = Seconds

¹Note: Because these intersections provide three approaches under stop sign control with the fourth approach uncontrolled, HCS delay cannot be calculated. The operation of these intersections is based on a critical volume to saturation flow (v/s) evaluation also known as the Intersection Capacity Utilization (ICU) method.

Table 4

CAPACITY ANALYSIS RESULTS—FUTURE TRAFFIC CONDITIONS

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS	Delay	LOS	Delay
Wolf Road with Hillgrove Avenue ¹	B	--	B	--
Wolf Road with Burlington Avenue ¹	B	--	C	--
Wolf Road with 45 th Street	B	13.6	C	15.8
Wolf Road with Access Drive	B	10.7	B	14.1
Johnson Avenue with Burlington Avenue	B	10.7	A	9.7
Johnson Avenue with 45 th Avenue	A	10.0	A	9.7
Johnson Avenue with Alley	A	8.9	A	8.7

LOS = Level of Service

Delay = Seconds

¹Note: Because these intersections provide three approaches under stop sign control with the fourth approach uncontrolled, HCS delay cannot be calculated. The operation of these intersections is based on a critical volume to saturation flow (v/s) evaluation also known as the Intersection Capacity Utilization (ICU) method.

Traffic Evaluation

The following summarizes how the intersections are projected to operate and identify any roadway and traffic control improvements necessary to accommodate the development traffic, if any.

Wolf Road with Hillgrove Avenue/Burlington Avenue

Because of the traffic control configuration of the intersections of Wolf Road with Hillgrove Avenue and Burlington Avenue, given the BNSF railroad crossing, the intersections could not be analyzed using HCM procedures. These intersections are designed to allow the approach that is crossing the BNSF train tracks (located between Hillgrove Avenue and Burlington Avenue) to operate free flow in order to clear its respective intersections. Given this geometric configuration and the HCM procedures limitations, the intersection was analyzed using the intersection capacity utilization (ICU) level of service. The ICU indicates how much reserve capacity is available or how much an intersection is overcapacity. Based on the ICU analysis, the intersection is and will continue utilizing only approximately 50 to 65 percent of the capacity of the intersection. It should be noted that the proposed development will increase traffic at these intersection by approximately one percent in the morning peak hour and two percent during the evening peak hour. Therefore the intersection is and will continue operating efficiently and with minimal delays under normal traffic conditions.

It should be noted that neither the HCM nor ICU methodology take into consideration the railroad crossing and the delays it creates. A simulation model using the SimTraffic software was created to replicate existing conditions. Using the observations made during the traffic counts, average crossing time and frequency of a crossing event were input into the model. Based on a review of the existing conditions, the model showed queues comparable to what was observed at both Hillgrove Avenue with Wolf Road and Burlington Avenue with Wolf Road. Additionally, it took similar time for queues to dissipate after a railroad crossing event (approximately 3-5 minutes) thus validating the model. When the site traffic is added to the model in the projected condition, traffic operations continued to operate very similarly as before, indicating that the site traffic will have minimal impact on the area roadway network during a train crossing.

Wolf Road and 45th Street/Johnson Avenue and Burlington Avenue/Johnson Avenue and 45th Street

These intersections are operating at an acceptable level of service during both the morning and evening peak hour in the existing condition. In the future condition, with the addition of background and site traffic, these intersections will continue to operate at an acceptable level of service with increases in delay of one second or less. As such, the proposed development will have a limited impact on these intersections. It is recommended, that continental-style crosswalks be provided at the intersection of Wolf Road and 45th Street.

Site Access

Access to the proposed development will be provided via an access drive off Wolf Road and three access drives off the alley that runs parallel to Burlington Avenue. The alley currently extends from Johnson Avenue to Wolf Road. However, as previously indicated and as part of the development, the alley intersection with Wolf Road will be eliminated and an access drive to the parking garage will be provided.

The access drive off Wolf Road will be located approximately 150 feet south of Burlington Avenue and will serve the commercial traffic. It is recommended that a flashing light and convex mirrors be installed around this access drive to increase safety and to warn motorists and pedestrians of exiting traffic from this access drive.

The three access drives off the alley will serve the traffic to be generated by the residential component of the development.

Inspection of the capacity analyses and the results of the traffic simulations indicate that the access drives will operate at an acceptable level of service during both the morning and evening peak hours. As mentioned previously, Simtraffic modeling indicates that northbound queues on Wolf Road during a railroad crossing event will extend past the proposed access drive as it currently does during existing conditions. In order to ensure efficient ingress/egress accessibility is maintained it is recommended that "Do Not Block" signage be posted at the access drive.

Parking

Parking for the proposed development will be provided via 63 covered parking spaces. As proposed, the number of parking spaces will be allocated as follows:

- 52 parking spaces for apartments
- 14 parking spaces for the retail land use

TOD Parking Characteristics

Parking demand/requirements at a Transit Oriented Development (TOD) similar to this proposed development are much lower than the parking demand of developments located far away from public transportation. Based on a 2008 report titled Effects of TOD on Housing, Parking and Travel, published by the Federal Transit Administration (FTA), the Transportation Research Board (TRB) and the Transit Development Corporation, typically TOD residents are almost twice as likely to not own a car and own almost half the number of cars of other households.

Based on a review of the 2010 Census data, as well as on an analysis prepared by the Center for Transit-Oriented Development in cooperation with the Center for Neighborhood Technology, approximately twenty-four (24) percent of household units within ¼ mile of the train station do not own a vehicle.

KLOA, Inc. also reviewed previous parking surveys conducted at condominium developments (which typically have higher auto ownership) in Evanston within close proximity to transit stations to determine their parking characteristics. Based on these surveys, the peak parking demand ranged from 0.90 to 1.05 spaces per dwelling unit with an average peak parking demand of 0.95 parking spaces per unit. KLOA, Inc. also reviewed a study conducted by the University of California Transportation Center of 31 different TOD sites in California and Oregon. The surveys indicated that the average peak parking demand was 1.0 parking space per unit. Therefore, all of this data validates the fact that TOD developments do have lower parking demands than developments located farther away from public transportation.

In addition to the Census data and the TOD surveys, KLOA, Inc. also reviewed the Institute of Transportation Engineers (ITE) *Parking Generation Manual*, 4th Edition. Based on the manual, the weekday peak parking demand for a 52-unit apartment will be approximately 36 parking spaces without any adjustments for proximity to train station and the downtown area.

Future Parking Demand Evaluation

Based on the above, **Table 5** presents a summary of the estimated peak parking demand for the proposed development based on the three aforementioned sources.

Table 5

ESTIMATED PEAK PARKING DEMAND

Land Use	Estimated Peak Parking Demand Per:	
	TOD Surveys	ITE Rates
52 Apartments	52 spaces (1.0 space per unit)	27 spaces (0.52 space per unit) ¹

1 - ITE peak parking demand adjusted to reflect that approximately 24 percent of households within close proximity do not own a vehicle.

As can be seen, the projected peak parking demand for the proposed development will range from 27 to 52 parking spaces. As such, the provision of 52 parking spaces for the residential portion of the development appears to be adequate. Furthermore, ability to share the use of the 14 spaces during the evening hours will provide the residents with additional parking if needed. Guest parking demand during the day can easily be accommodated by the available on-street parking within close proximity to the site. These on-street parking spaces have a time limit ranging between two hours and four hours. In order to accommodate overnight guest parking demand, it is recommended that up to ten spaces on the north side of Burlington Avenue should be designated for overnight guest parking between 6:00 P.M. and 5:00 A.M. This restriction will not conflict with the use of the space by commuters between 5:00 A.M. and 6:00 P.M. on weekdays.

Based on the proposed plan, some of the commercial parking demand will be accommodated by the proposed 14 parking spaces with any additional parking demand accommodated by the existing on-street parking spaces. Given its proximity to other businesses in the area, it is anticipated that the additional demand be accommodated by the accessible parking spaces along Burlington Avenue west of Wolf Road. This will allow for synergy with other commercial uses within the downtown area.

Best Parking Practices

As it was previously mentioned, the proximity of the Western Springs Metra train station and the Pace Bus Route 669 stops to the site as well as its location within the downtown area qualifies the project as a TOD.

Best practices with respect to parking policies that are supportive of Smart Growth and TOD's include strategies that promote walking, biking and the use of public transit while reducing or eliminating the need for private automobiles. These strategies include the following:

- Incorporate transit-friendly parking design behind street-facing retail
- Manage/limit the amount of parking provided
- Reserve parking space for carsharing services
- Allow for retail parking to be shared/used by the residential land use
- Provide enclosed, secured storage facilities for bicycles
- Unbundle parking by separating parking costs from unit leases, which provides economic incentives for tenants to opt out of parking and make better use of alternative travel modes

Carsharing programs provide participants with convenient and flexible access to centrally-owned and maintained vehicles. Carsharing offers an alternative to individual car ownership, which effectively increases the number of users per vehicle and contributes to lower auto ownership rates and reduced parking demand. According to recent North American studies and carsharing member surveys, each carsharing vehicle removes an average of 15 privately-owned cars from the community.

The incorporation of the above-noted strategies into a development is recognized by the U.S. Green Building Council in the form of credits towards LEED certification of the project.

Conclusion

Based on the preceding evaluation the following is concluded.

- The proposed development is well located with respect to the area roadway system.
- The location of the proposed development in close proximity to the train station will reduce the amount of traffic that will be generated.
- The additional traffic that will be generated by the proposed development will have a limited impact on the traffic operations of the adjacent intersections.
- The results of the capacity analyses indicate that the studied intersections are and will continue operating at current levels of service.
- The proposed access system will provide maximum access flexibility for residents and customers entering and departing the site.
- To improve safety of pedestrians and traffic, convex mirrors and warning lights should be provided at the garage access drive off Wolf Road. Additionally, "Do Not Block" signage should be posted to ensure the access drive remains accessible when queues spill back from Burlington Avenue during a train crossing.
- Continental-style crosswalks should be provided at the pedestrian crossing at the intersection of Wolf Road with 45th Street.
- The proposed number of parking spaces will be adequate in accommodating the parking demand of the residential land uses and the retail portion of the development.
- Up to ten parking spaces should be designated for guest overnight parking within the Metra parking spaces along Burlington Avenue between 6:00 P.M. and 5:00 A.M. on weekdays and all day on weekends.

Appendix

LEVEL OF SERVICE CRITERIA

Unsignalized Intersections

Level of Service	Average Total Delay (SEC/VEH)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: *Highway Capacity Manual, 2010.*

ICU PEAK HOUR ADJUSTMENT FACTOR

Level of Service	ICU Percentage
A	$\leq 55.0\%$
B	> 55.1% to 64.0%
C	> 64.1% to 73.0%
D	> 73.1% to 82.0%
E	> 82.1% to 91.0%
F	> 91.1% to 100.0%
G	> 100.1% to 109.0%
H	> 109.1%

Source: *Intersection Capacity Utilization: Evaluation Procedures for Intersections and Interchanges*, 2003.

ICU vs. HCM LOS COMPATIBILITY

Given ICU LOS	Resulting HCM LOS
F or worse	F normally D or E possible with special timings
E or better	E or better
D or better	D or better (depends on cycle length) v/c ratios < 0.80

Source: *Intersection Capacity Utilization: Evaluation Procedures for Intersections and Interchanges*, 2003.