Traffic and Parking Impact Study
Proposed Mixed-Use Development

Oak Park, Illinois

Prepared by

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.

October 29, 2015 – Revised January 22, 2016

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1.
Introduction

This report summarizes the methodologies, results and findings of a traffic and parking impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed mixed-use transit oriented development (TOD) to be located in downtown Oak Park, Illinois. The site is located in the southeast corner of the signalized intersection of Harlem Avenue (IL 43) and South Boulevard and is bisected by Maple Avenue. The site contains two public parking lots providing a total of approximately 133 spaces with the westerly lot restricted to pay by space and permit parking and the easterly parking lot restricted to permit parking only.

The plans call for the removal of the two existing surface parking lots to develop the site with 263 apartment units with a 398-space parking garage and approximately 10,000 square feet of retail space. Up to 250 spaces within the parking garage will be dedicated to the residents of the development while the remaining 148 parking spaces (15 more than existing conditions) will be open to the public

It should be noted that as part of the development, the section of Maple Avenue that bisects the two public parking lots will be vacated and a cul-de-sac will be created at the north end of the Maple Avenue. A private alley will be developed along the southern property line between the cul-de-sac and the existing north-south alley.

Pedestrian accessibility to the residential portion of the development will be provided off South Boulevard. The pedestrian entrances for the retail portion of the site will be located along South Boulevard and Harlem Avenue.

The following sections of this report present the following.

- Existing roadway conditions including vehicle, pedestrian, and bicycle traffic volumes for the weekday morning, weekday evening, and Saturday midday peak hours
- A detailed description of the proposed development
- Vehicle trip generation for the proposed development
- Directional distribution of development-generated traffic
- Future transportation conditions including access to and from the development.

Traffic capacity analyses were conducted for the weekday morning, weekday evening, and Saturday midday peak hours for the following two conditions.

1. Existing Condition - Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.

2. Future Condition – The future projected traffic volumes include the existing traffic volumes increased by 2.5 percent to reflect background growth, traffic to be generated by the currently under construction Forest/Lake mixed-use development, traffic to be generated by the recently approved Oak Park Station (Westgate/Lake Street) development and the traffic estimated to be generated by the proposed subject development.

The purpose of this study is to:

1. Examine existing vehicle, pedestrian, and bicycle traffic conditions to establish a base condition

2. Determine the vehicle trips to be generated by the proposed development and then determine its impact on the surrounding neighborhood street network

3. Recommend improvements to effectively mitigate and accommodate the projected traffic conditions resulting from the proposed development.

2.
Existing Conditions

Transportation conditions in the vicinity of the site were inventoried to obtain a basis for projecting future conditions. Four components of existing conditions were considered:

1. The geographic location of the site

2. The characteristics of the adjacent roadway system, including lane geometry, traffic orientation (e.g. one-way street pairings) and intersection traffic controls

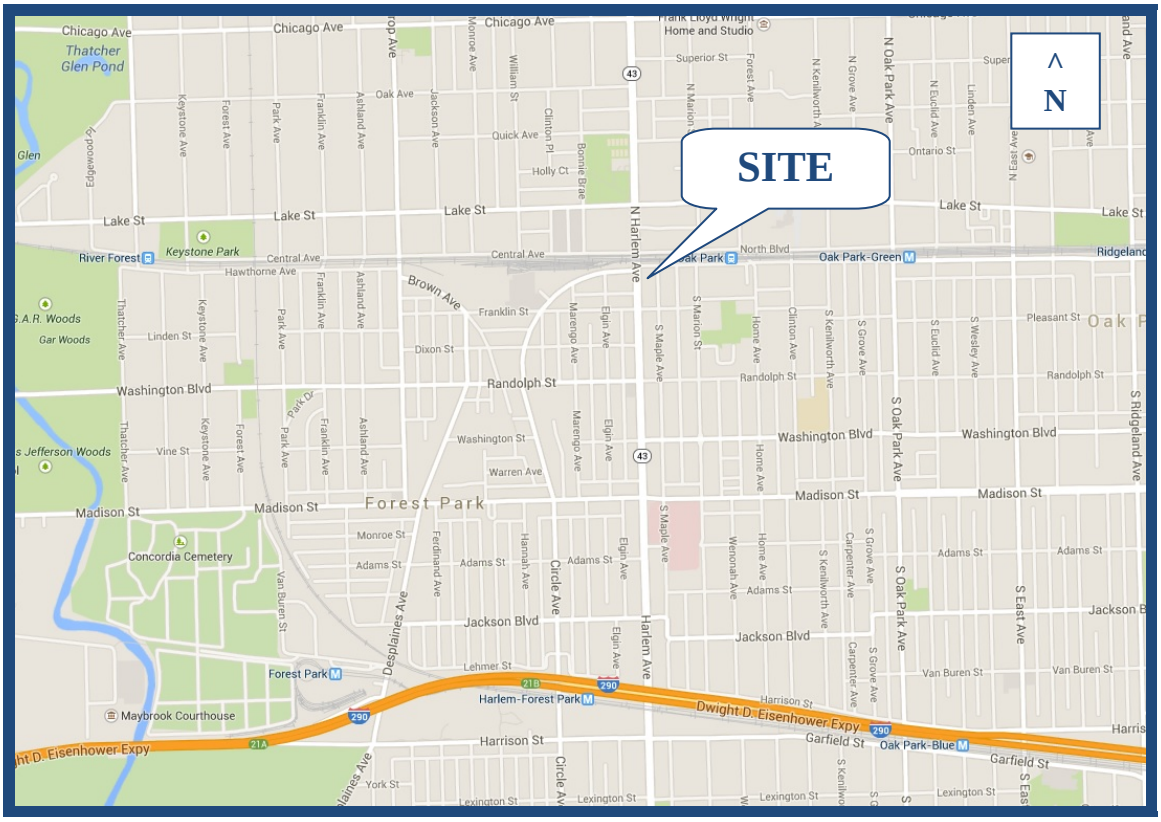
3. The weekday peak-hour vehicle, bicycle, and pedestrian traffic volumes at the study intersections

4. The locations and availability of alternative modes of transportation, including public transportation, bicycle lanes, and pedestrian amenities

Site Location

The development site is located on the site of parking lots 108 and 115 in downtown Oak Park, Illinois. The site is located in the southeast corner of the signalized intersection of Harlem Avenue (IL 43) and South Boulevard and is bisected by Maple Avenue. The site is bordered to the north by the Oak Park Metra and Green Line "El" station, retail buildings to the east and multi-family residential to the south.

Figure 1 shows the site location with respect to the surrounding roadway system. **Figure 2** shows an aerial view of the site area, identifying the site location and study area.



Site Location **Figure 1**

Aerial View of the Site Area **Figure 2**

Existing Roadway System Characteristics

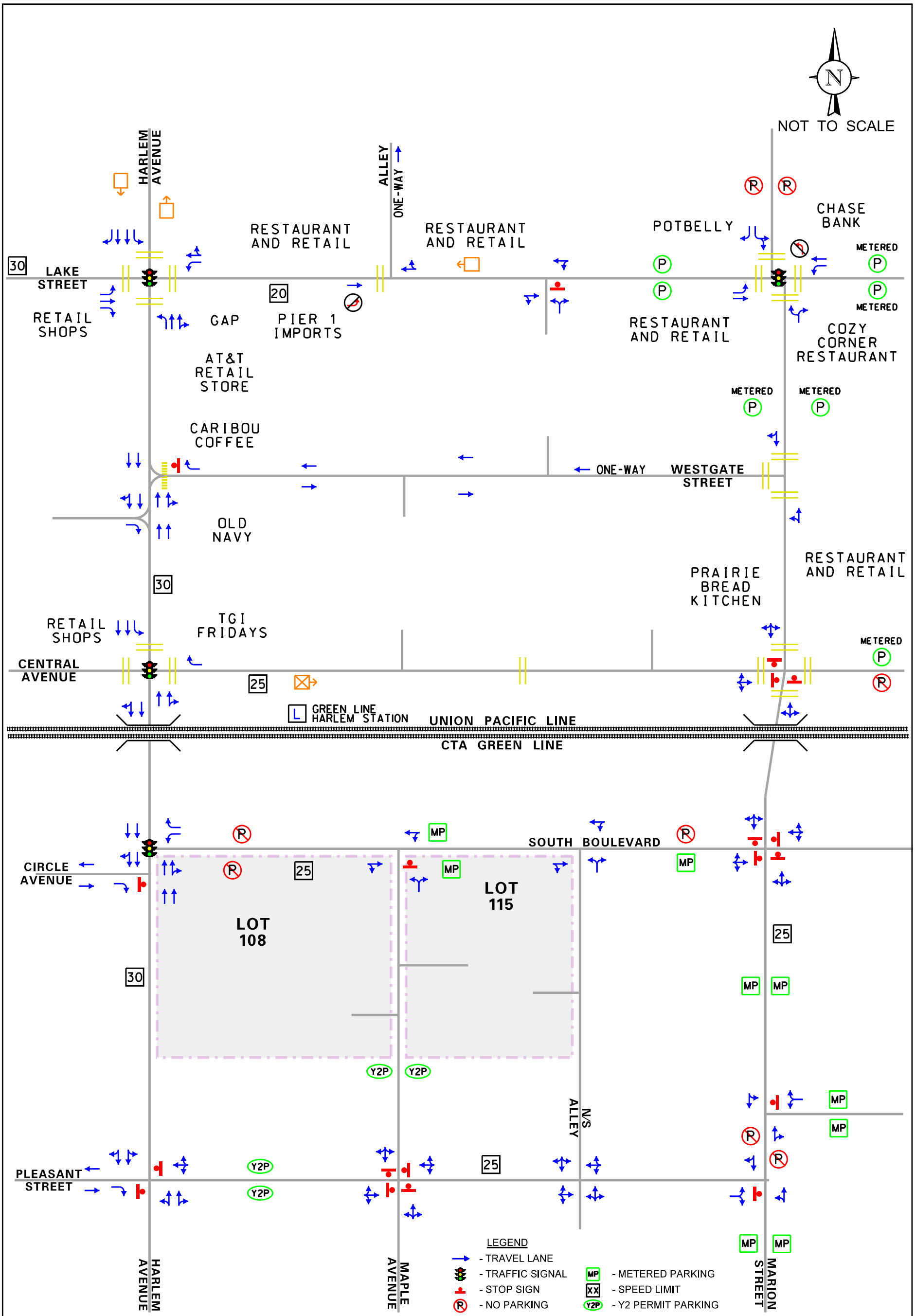
The characteristics of the existing roads that surround the proposed development are illustrated in **Figure 3** and described below. All roads are under the jurisdiction of the Village of Oak Park unless otherwise noted.

Harlem Avenue (IL 43) is a north-south arterial roadway that provides two travel lanes in each direction within the vicinity of the site. On-street parking is prohibited on both sides of the road. At its signalized intersection with Lake Street, Harlem Avenue provides one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane on the north approach. The south approach provides one excusive left-turn lane, one through lane, and one shared through/right-turn lane. At its signalized intersection with South Boulevard, southbound left-turn movements onto South Boulevard are prohibited. Northbound left-turn movements onto Circle Avenue are also prohibited. No exclusive turn lanes are provided at its unsignalized intersection with Pleasant Street/Franklin Street. Harlem Avenue has a posted speed limit of 30 mph, and carries an average daily traffic (ADT) volume of 36,900 vehicles. Harlem Avenue is under the jurisdiction of the Illinois Department of Transportation (IDOT) and is classified as a Strategic Regional Arterial (SRA) route.

South Boulevard is an east-west road that provides one travel lane in each direction within the vicinity of the site. At its signalized intersection with Harlem Avenue, South Boulevard provides one exclusive left-turn lane and one exclusive right-turn lane. South Boulevard is under all way stop control at its intersection with Marion Street. No exclusive turn lanes are provided at its unsignalized intersections with Maple Street or Marion Street. South Boulevard has a posted speed limit of 25 mph and provides metered parking on both sides of the road.

Maple Avenue is a north-south two-lane road that extends from South Boulevard south to Jackson Boulevard where it is diverted to the west. Maple Avenue is under all-way stop control at its intersection with Pleasant Street and under stop sign control at its intersection with South Boulevard. One-hour on-street parking is allowed on both sides of the road from 10:00 AM to 5:00 PM Permit parking (Y2) is allowed on both sides of the road from 11:00 PM to 10:00 AM.

Marion Street is a north-south local road that provides one travel lane in each direction within the vicinity of the site. Marion Street is under all-way stop control at its intersection with South Boulevard and provides a shared left/through/right-turn lane on both approaches. At its offset signalized intersection with Lake Street, Marion Street provides one exclusive left-turn lane and one exclusive right-turn lane on its north approach and one shared through/right-turn lane on its south approach with northbound left turns prohibited. At its unsignalized all-way stop controlled intersection with North Boulevard, Marion Street provides one shared left-turn/through/right-turn lane on both approaches. No exclusive turn lanes are provided at its intersections with the east and west approaches of Pleasant Street. Within the vicinity of the site, Marion Street is designed as a pedestrian friendly road with brick pavers, intersection chokers, and wide sidewalks. Marion Avenue has a posted speed limit of 25 mph, and metered on-street parking is provided on both sides of the road.



PROJECT:	TITLE:	
Proposed Travel Center Chicago, Illinois	EXISTING ROADWAY CHARACTERISTICS	KLOA Job No: 15-093 Figure: 3

Pleasant Street is an east-west two lane road in the vicinity of the site. At its unsignalized intersection with Harlem Avenue, Pleasant Street is under stop sign control and provides a shared left/through/right-turn lane. The eastbound approach is Franklin Street in Forest Park and is restricted via signage to right-turns out only. Four-hour on-street parking Monday through Friday from 10:00 AM to 5:00 PM is allowed on both sides of the street. Permit parking (Y2) is allowed on both sides of the street from 9:00 PM to 10:00 AM. Pleasant Street has a posted speed limit of 25 mph.

Lake Street is an east-west road that provides one travel lane in each direction along downtown Oak Park. On-street metered parking is provided on both sides of the road. At its signalized intersection with Harlem Avenue, Lake Street provides one exclusive left-turn lane and one shared through/right-turn lane on its east approach and one excusive left-turn lane, one through lane, and one exclusive right-turn lane on its west approach. At its signalized intersection with Marion Street, Lake Street provides one exclusive left-turn lane and one shared through/right-turn lane on both approaches. Lake Street has a posted speed limit 20 mph and carries an ADT volume of 10,800 vehicles. Lake Street is under the jurisdiction of Village of Oak Park east of Harlem Avenue, and under IDOT jurisdiction west of Harlem Avenue.

North Boulevard is an east-west road that provides one travel lane in each direction in the vicinity of the site. At its signalized intersection with Harlem Avenue, North Boulevard is restricted to right-turns only. The east approach is Central Avenue and is restricted to eastbound traffic allowing left, through and right-turn movements at its intersection with Harlem Avenue. North Boulevard is under all way stop control at its intersection with Marion Street and has a posted speed limit of 25 mph.

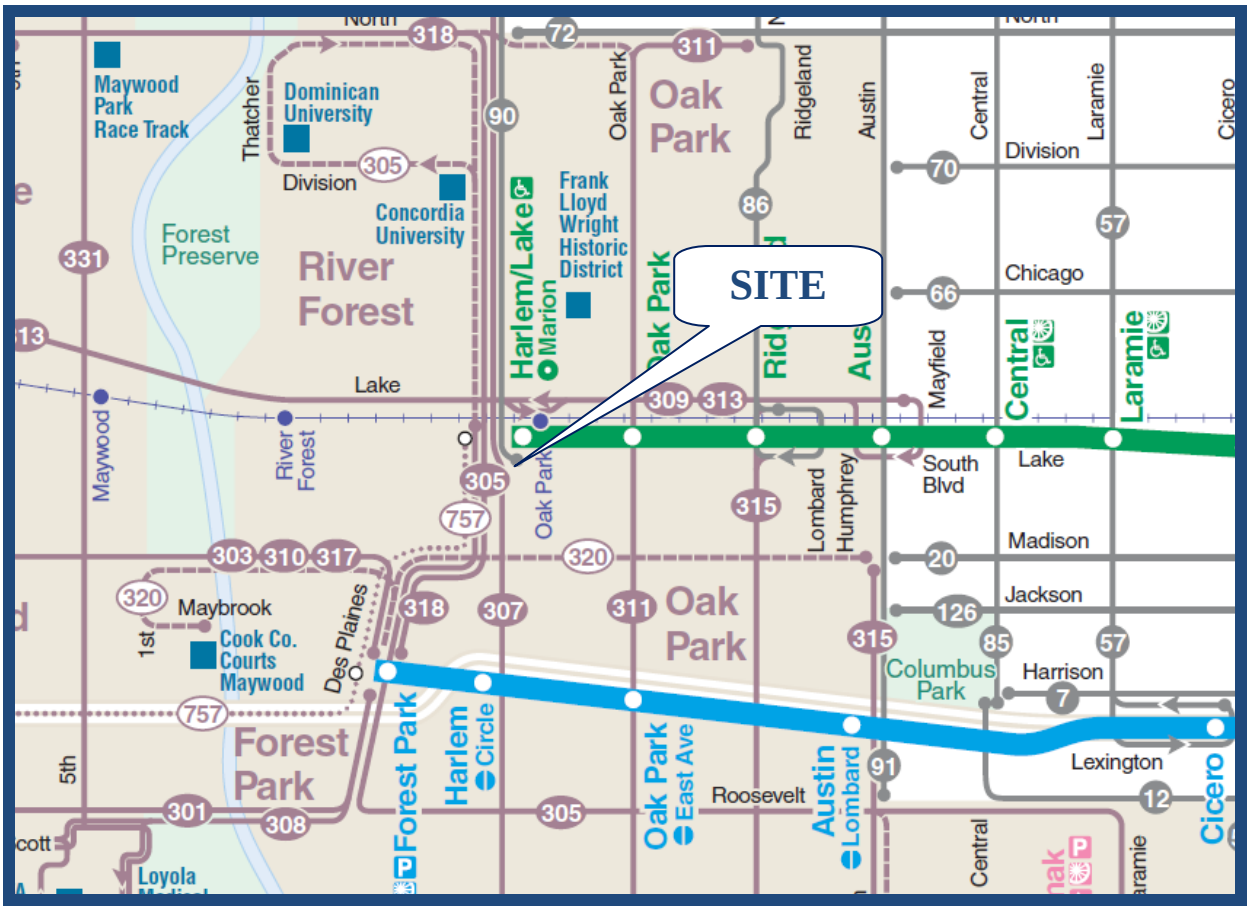
Alternative Modes of Transportation

Accessibility to and from the area is enhanced by the various alternative modes of transportation serving the area as summarized below and illustrated in **Figure 4**.

Public Transportation. The immediate area is served by the commuter rail and rapid transit lines as outlined below.

- *CTA Green Line* provides rapid transit rail service between Oak Park (Harlem Avenue) and Ashland Avenue/63rd Street. The Harlem station is located approximately 100 feet northwest from the site. Service is provided seven days a week and on holidays.

- *Metra Union Pacific-West Line* provides commuter rail service between the Ogilvie Transportation Center in the Loop and Elburn, Illinois. The site will be located directly south of the station (50 feet). Service is provided seven days a week, and on holidays.



CTA Transit Map **Figure 4**

The following bus routes also serve the immediate area:

- *CTA Route Number 90 – Harlem* primarily runs along Harlem Avenue providing service from the Harlem Green Line station to the Harlem Blue Line station north of Higgins Road. Service is provided seven days a week. There is a bus stop on the north side of South Boulevard at its intersection with Harlem Avenue

- *PACE Route Number 305 – Cicero/River Forest* serves the communities of Cicero and Forest Park and provides service to the CTA Blue and Green lines and the Union Pacific –West commuter line. Service is provided seven days a week. There are bus stops on the northwest and southeast quadrants of the intersection of Harlem Avenue and South Boulevard.

- *PACE Route Number 307 – Harlem* provides service between 63rd Street and Archer Avenue in Summit and The village Hall in Elmwood Park. It serves the Metra BNSF Line Harlem Station, Morton West High School, CTA Blue Line Harlem Station (Forest Park Branch), Oak Park Hospital, CTA Green Line Harlem Station, Metra UP-West Line Oak Park Station and the Metra MD-West Line Elmwood Park Station. Service is provided seven days a week. There are bus stops on the northwest and southeast quadrants of the intersection of Harlem Avenue and South Boulevard.

- *PACE Route Number 309 – Lake Street* primarily runs along Lake Street and North Avenue between the Union Pacific-North line Elmhurst Station and the Austin Avenue CTA Green Line station. Local stops are provided at the Harlem CTA Green line station. Service is provided seven days a week.

- *PACE Route Number 313 – St. Charles Road* runs from Downers Grove to the Oak Park CTA Green line station. It also serves the communities of Lombard, Villa Park, Elmhurst, Berkeley, Bellwood, Maywood, and River Forest. Service is provided seven days a week.

- *PACE Route Number 318 – West North Avenue* primarily runs along North Avenue and Harlem Avenue from the Walmart Northlake Common Shopping Center to the Forest Park CTA Blue Line Station. Local Stops are provided at the Harlem CTA Green Line station. Service is provided seven days a week. There are bus stops on the northwest and southeast quadrants of the intersection of Harlem Avenue and South Boulevard.

- *Pace Route Number 757 – Northwest Connection* primarily runs between Harlem Avenue/Circle Boulevard in Forest Park and the Pace Northwest Transportation Center in Schaumburg. It serves the CTA Green Line Harlem Station, CTA Blue Line Forest Park Transit Center, Pace Northwest Point - Elk Grove Park-n-Ride, Woodfield Mall, Streets of Woodfield and the Pace Northwest Transportation Center. Morning trips serve the Woodfield Corporate Center upon request. Service is provided Monday through Friday.

Bicycle Routes. In 2008, the Village of Oak Park developed a comprehensive bicycle plan highlighting proposed facilities, programs, and improvements that could be made along Oak Park roadways to foster bicycle use. In the plan, Forest Avenue, Lake Street, North Boulevard, and South Boulevard are all proposed as bicycle routes. A 2014 study, in association with the Active Transportation Alliance will expand upon the proposed bicycle plan including potential Divvy service.

Pedestrian Facilities. All of the roads in the immediate area generally have sidewalks on both sides of the roads. In addition, crosswalks are provided at all of the study area signalized intersections and high visibility (continental-style) crosswalks are provided at the intersection of Pleasant Street and Maple Avenue (north-south direction). The intersection of Harlem Avenue and South Boulevard is equipped with countdown pedestrian signals.

Mode-sharing Facilities. A car sharing station with two spaces is located within Lot 108.

Harlem Avenue and South Boulevard Improvements

The intersection of Harlem Avenue with South Boulevard was studied by IDOT as part of the railroad bridge replacement project. Currently Harlem Avenue provides two lanes in each direction at its intersection with South Boulevard and the bridge carrying the Metra and "El" trains is supported by columns in the middle of the road.

With the proposed project, the bridge will be reconstructed to remove the columns and Harlem Avenue will be widened to provide two 10-foot lanes in each direction and an exclusive southbound to eastbound left-turn lane at its intersection with South Boulevard. These intersection geometric improvements together with signal modifications to provide a left-turning phase will allow for increased capacity and more efficient operations for vehicles and pedestrians. No funding for this project has been allocated.

Existing Traffic Volumes

Manual turning movement vehicle, pedestrian, and bicycle traffic counts were conducted during the weekday morning (7:00 to 9:00 A.M.) and the evening (4:00 to 6:00 P.M.) peak periods on Thursday, April 30, 2015 and on Saturday, May 2, 2015 during the midday peak period (12:00 to 2:00 P.M.) at the following intersections:

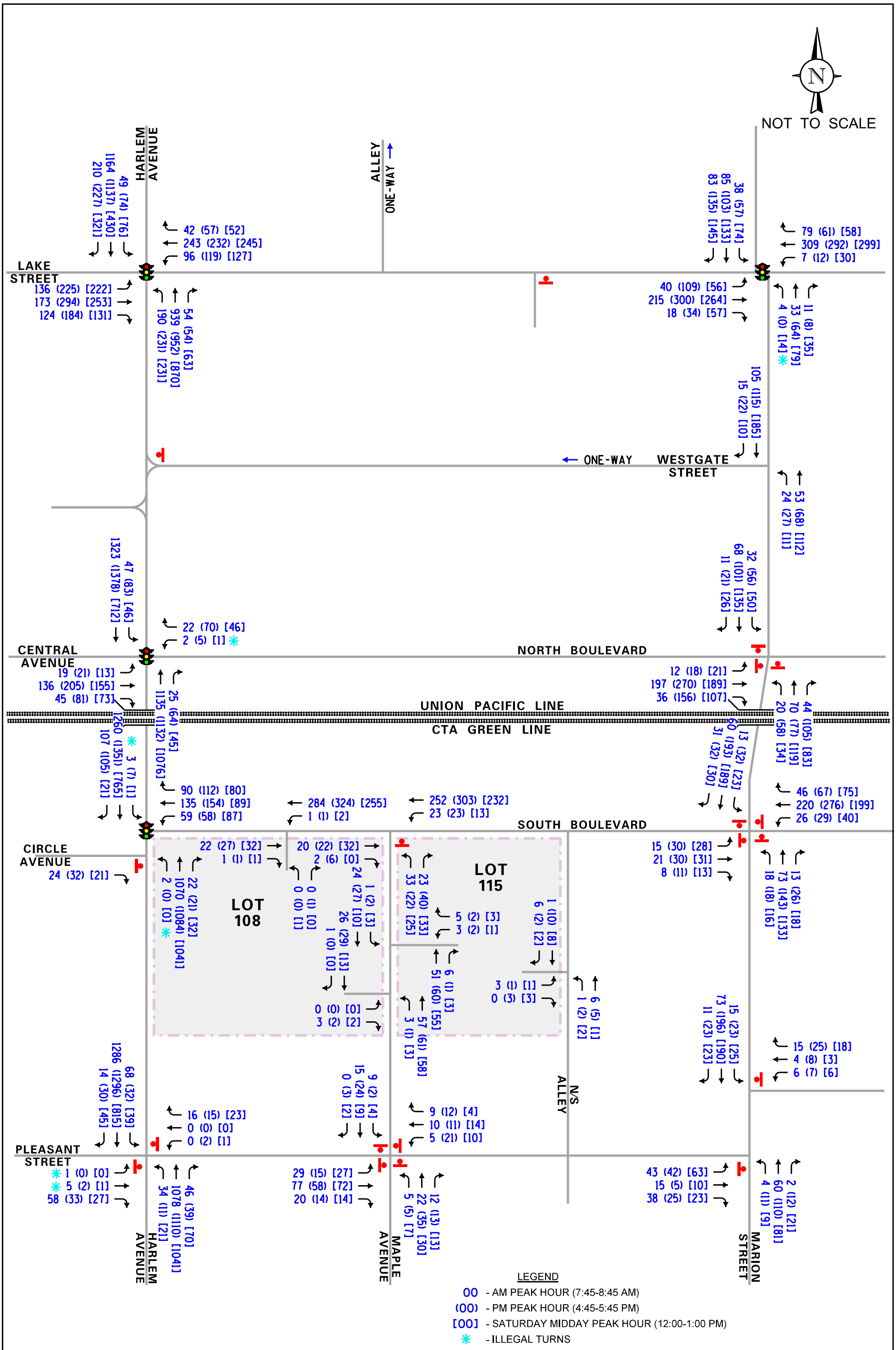
1. Harlem Avenue with Pleasant Street/Franklin Street
2. Maple Avenue with South Boulevard
3. Marion Street with South Boulevard
4. Marion Street with Pleasant Street
5. Maple Avenue with Pleasant Street

Additionally, traffic counts were conducted at the surface parking lot access drives that currently occupy the site and their respective intersections with Maple Avenue, Lake Street and the alley east of Lot 115. Previous counts conducted in October 2014 at the intersections of Harlem Avenue with South Boulevard/Circle Avenue, Lake Street and Lake Street with Marion Street were also utilized and adjusted to reflect current traffic conditions.

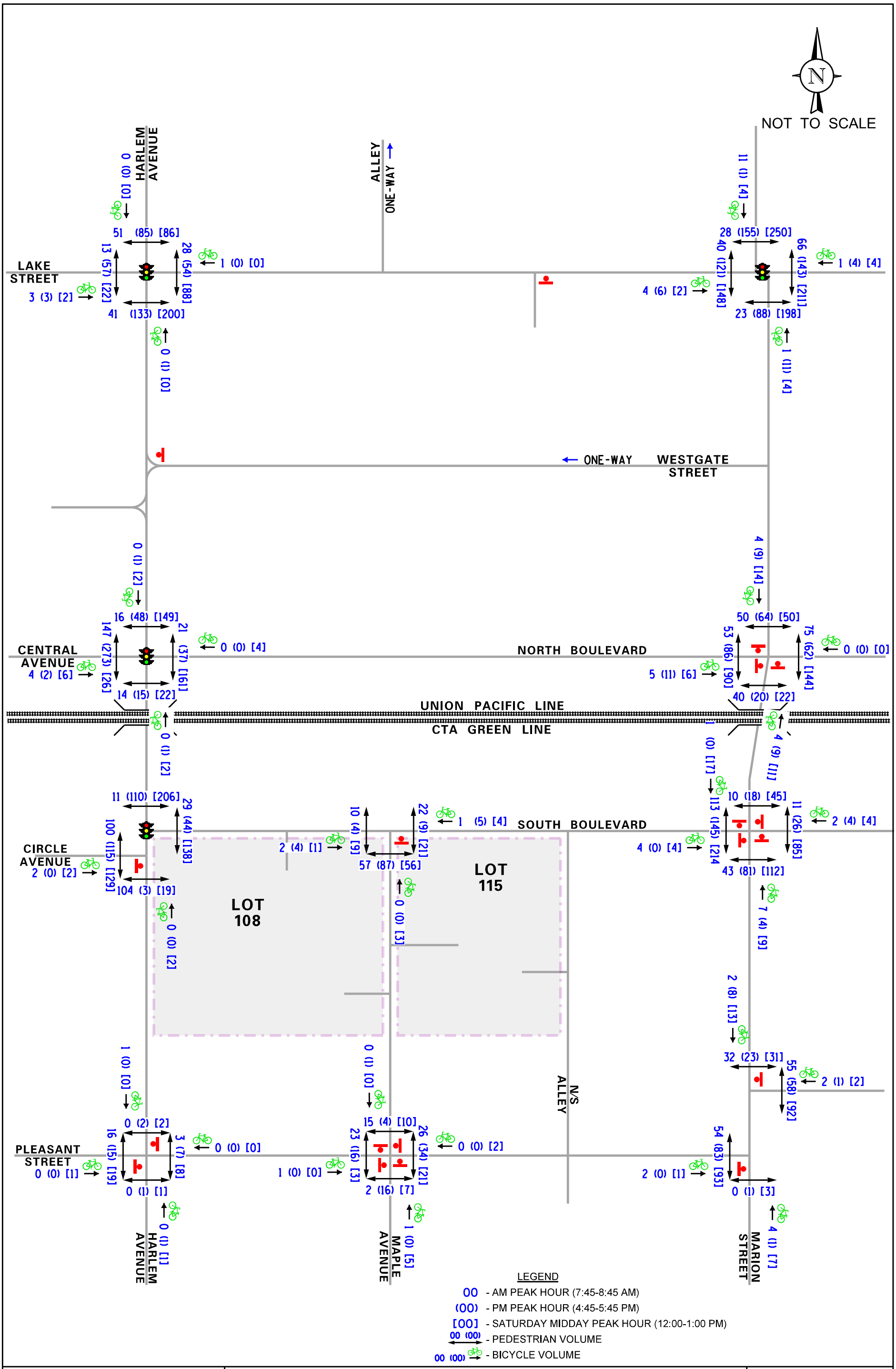
From the manual turning movement count data, it was determined that the weekday morning peak hour generally occurs between 7:45 and 8:45 A.M., the weekday evening peak hour generally occurs between 4:45 and 5:45 P.M., and the Saturday midday peak hour generally occurs between 12:00 and 1:00 P.M. These three respective peak hours will be used for the traffic capacity analyses and are presented later in this report.

The existing peak hour vehicle traffic volumes are shown in **Figure 5**.

The existing peak hour pedestrian and bicycle traffic volumes are shown in **Figure 6**.



PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	EXISTING TRAFFIC VOLUMES	KLOA Job No: 15-093 Figure: 5



PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	EXISTING PEDESTRIAN AND BICYCLE TRAFFIC VOLUMES	KLOA Job No: 15-093 Figure: 6

3.
Traffic Characteristics of the South Boulevard Development

To evaluate the impact of the subject development on the area roadway system, it was necessary to quantify the number of vehicle trips the overall site will generate during the weekday morning, weekday evening, and Saturday midday peak hours and then determine the directions from which this traffic will approach and depart the site.

Proposed Site and Development Plan

The site is located within downtown Oak Park and is occupied by two surface parking lots. The site is divided by Maple Avenue and bounded on the north by South Boulevard and on the south by multi-family residential. The west parcel (Lot 108) currently contains a total of 53 spaces and the east parcel (Lot 115) currently contains 80 spaces.

The plans call for removing the existing surface public parking lots (approximately 133 spaces) and developing the site with 263 apartment units and approximately 10,000 square feet of ground floor retail. As part of the development, the section of Maple Avenue that bisects the two public parking lots will be vacated and a cul-de-sac will be created at the north end of Maple Avenue. Furthermore, an east-west alley will be provided along the southern property line connecting the cul-de-sac with the north-south public alley.

Off-Street Parking

The development will provide approximately 398 parking spaces in a parking garage of which 250 spaces will be dedicated to the residents of the development while the remaining 148 parking spaces will be open to the public. The entrance to the garage will be located on South Boulevard approximately 270 feet east of Harlem Avenue. The access drive will provide one inbound lane and one outbound lane with outbound movements under stop sign control.

Loading

The development will provide two loading docks on the south side of the east building that will be accessed via the existing north-south alley. Trucks will approach the site from the north on the north-south alley and backup onto the loading docks. Trucks will then exit southeast towards the north-south alley and travel south to Pleasant Street.

Directional Distribution of Development Traffic

The directional distribution of how traffic will approach and depart the site was estimated based on a combination of existing travel patterns and the orientation and physical restrictions of the surrounding roadway system.

The estimated directional distribution for the proposed development was established and is illustrated in **Figure 7**.

Development Traffic Generation

The estimates of vehicle traffic to be generated by the proposed mixed use development are based on number of residential units and square footage of the retail space. The volume of traffic generated is typically estimated using data published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*. However, the ITE trip rates are based on suburban rates where the primary mode of transportation is the automobile. The location of the site within downtown Oak Park and its proximity to the train stations and PACE/CTA bus routes and other modes of transportation (i.e. car sharing facilities) fit the criterion of a Transit Oriented Development (TOD) that results in less dependence on automobile use. Based on a review of the census data (included in the Appendix), approximately 40 percent of the residents currently use other modes of transportation. As such, a 40 percent reduction factor was applied to the estimated traffic to be generated by the residential use. For the retail use and in order to reflect the mixed-use nature of the development, its location within downtown Oak Park and proximity to other retail destinations, the estimated trips were reduced by 20 percent. The public parking trip generation was based on the observed trip generation of the existing parking lots currently occupying the site. **Table 1** summarizes the estimated number of peak hour trips to be generated by the proposed development.

NOT TO SCALE

HARLEM AVENUE
20%
5%

ALLEY
ONE-WAY

LAKE STREET
25%
15%

5%
10%

ONE-WAY WESTGATE STREET

CENTRAL AVENUE

NORTH BOULEVARD

UNION PACIFIC LINE
CTA GREEN LINE

40%
10%
10%

30%

SOUTH BOULEVARD

CIRCLE AVENUE

SITE

N/S ALLEY

PLEASANT STREET

HARLEM AVENUE
30%

MAPLE AVENUE

MARION STREET
20%

LEGEND
00% - PERCENT DISTRIBUTION

PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	ESTIMATED DIRECTIONAL DISTRIBUTION	KLOA Job No: 15-093 Figure: 7

Table 1
ESTIMATED DEVELOPMENT-GENERATED TRAFFIC VOLUMES

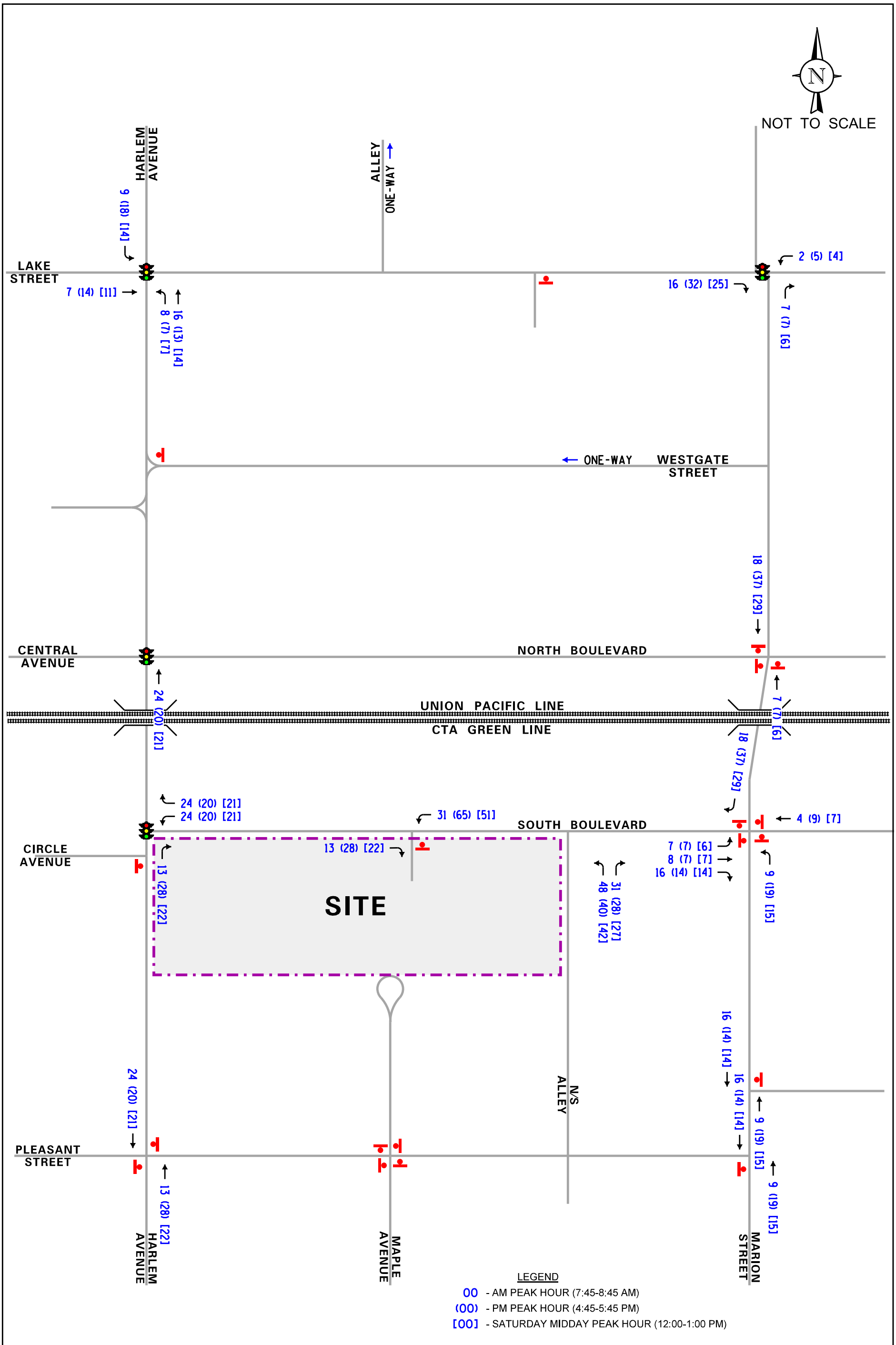
			Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
Land Use	LUC#	Density	In	Out	In	Out	In	Out
Apartment	220	263 Units	27	106	105	57	64	64
		40% Reduction[1]	(-11)	(-42)	(-42)	(-23)	(-26)	(-26)
		Apartment Subtotal	*16*	*64*	*63*	*34*	*38*	*38*
Retail	826	10,000 sf	4	3	20	25	21	20
		20% Reduction[2]	(-1)	(-1)	(-4)	(-5)	(-4)	(-4)
		Retail Subtotal	*3*	*2*	*16*	*20*	*17*	*16*
Public Parking		148 spaces	25	13	14	14	18	15
	Total New Trips		**44**	**79**	**93**	**68**	**73**	**69**

1 - Trip Generation reduced by 40 percent based on census data to account for other modes of transportation
2 - Trip Generation reduced by 20 percent to account for the urban nature of the adjacent area

Development Traffic Assignment

The peak hour traffic volumes projected to be generated by the proposed development (refer to Table 1) were assigned to the area streets based on the directional distribution analysis (Figure 7).

Figure 8 (Condition I) shows the assignment of the development-generated traffic volumes without the proposed improvements by IDOT to the intersection of Harlem Avenue and South Boulevard. This will require site traffic traveling southbound on Harlem Avenue to turn left at North Boulevard and access the site from the east on South Boulevard. **Figure 9** (Condition II) shows the assignment of the development-generated traffic assuming the planned bridge modifications and improvements to the intersection of Harlem Avenue and South Boulevard which will allow southbound traffic on Harlem Avenue to turn left onto South Boulevard to access the site.



PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	ESTIMATED SITE TRAFFIC ASSIGNMENT (CONDITION 1)	KLOA Job No: 15-093 Figure: 8

N

NOT TO SCALE

HARLEM AVENUE

ALLEY ONE-WAY

LAKE STREET

9 (18) [14]

7 (14) [11]

8 (7) [7]

16 (13) [14]

2 (5) [4]

7 (7) [6]

ONE-WAY WESTGATE STREET

16 (32) [25]

CENTRAL AVENUE

NORTH BOULEVARD

24 (20) [21]

UNION PACIFIC LINE

CTA GREEN LINE

16 (32) [25]

2 (5) [4]

24 (20) [21]

24 (20) [21]

15 (33) [26]

SOUTH BOULEVARD

4 (9) [7]

CIRCLE AVENUE

29 (60) [47]

7 (7) [6]

8 (7) [7]

16 (14) [14]

13 (28) [22]

SITE

48 (40) [42]

31 (28) [27]

9 (19) [15]

16 (14) [14]

16 (14) [14]

N/S ALLEY

24 (20) [21]

9 (19) [15]

9 (19) [15]

PLEASANT STREET

13 (28) [22]

HARLEM AVENUE

MAPLE AVENUE

MARION STREET

LEGEND

00 - AM PEAK HOUR (7:45-8:45 AM)

(00) - PM PEAK HOUR (4:45-5:45 PM)

[00] - SATURDAY MIDDAY PEAK HOUR (12:00-1:00 PM)

PROJECT:

Proposed Mixed-Use
Oak Park, Illinois

TITLE:

ESTIMATED SITE TRAFFIC ASSIGNMENT
(CONDITION 2)

KLOA

Job No: 15-093

Figure: 9

4.
Total Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes, traffic estimated to be generated by background developments in the area, and the traffic estimated to be generated by the proposed subject development.

Other Development Traffic

In addition to the traffic that will be generated by the proposed development, traffic from the Forest and Lake (currently under construction) and the recently approved Oak Park Station mixed-use development was also included and is shown in **Figure 10**.

Maple Avenue Traffic Reassignment and Background Growth

As discussed previously, the site is currently occupied by two surface parking lots that are bisected by Maple Avenue. With the closure and vacation of Maple Avenue through the site, the traffic that currently uses Maple Avenue to travel between South Boulevard and Pleasant Street was reassigned to the adjacent roadway system. **Figure 11** shows the existing reassigned traffic volumes. Further, in order to account for the increase in traffic not attributable to any particular nearby development and based on the 2040 Chicago Metropolitan Agency for Planning (CMAP) population and employment projections, the existing traffic volumes were increased by 0.5 percent for five years. The reassigned expanded traffic volumes are shown in **Figure 12**.

Total Projected Traffic Volumes

The total projected traffic volumes include the existing traffic volumes, background traffic growth, traffic from other developments, reassigned Maple Avenue traffic and the traffic estimated to be generated by the proposed subject development. **Figure 13** shows the total projected traffic volumes under Condition I. **Figure 14** shows the assignment of the development-generated traffic assuming the planned bridge modifications and improvements to the intersection of Harlem Avenue and South Boulevard (Condition II).

N

NOT TO SCALE

HARLEM AVENUE

ALLEY ONE-WAY

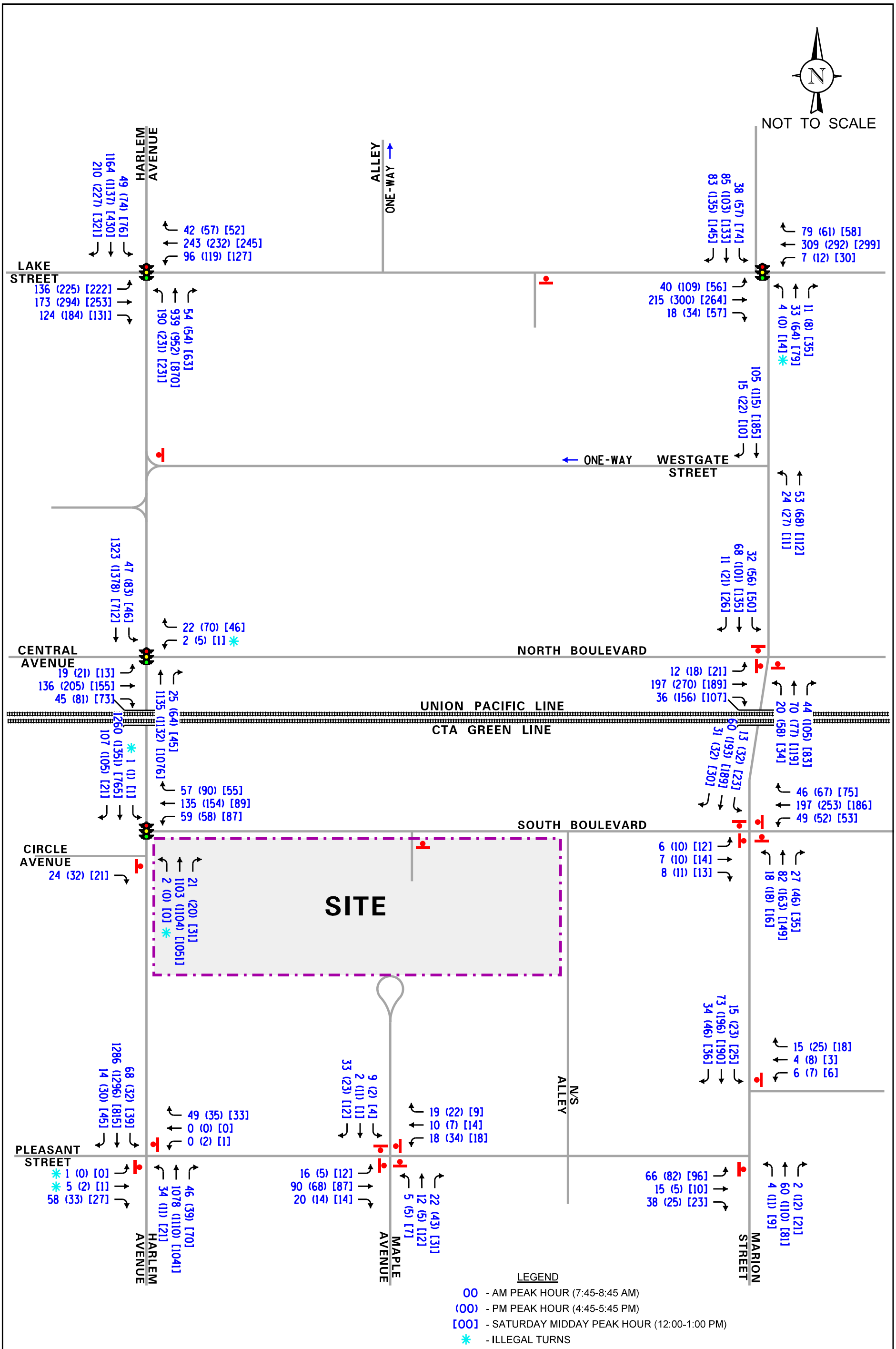
LAKE STREET

13 (36) [36]
1 (4) [3]
2 (4) [5]
3 (4) [5]
10 (17) [19]
9 (25) [26]
15 (25) [24]
4 (15) [14]
19 (32) [37]
11 (2) [22]
20 (21) [26]
ONE-WAY
WESTGATE STREET
2 (8) [7]
2 (7) [7]
7 (8) [10]
4 (19) [14]
10 (17) [19]
1 (4) [3]
2 (8) [7]
CENTRAL AVENUE
8 (8) [10]
NORTH BOULEVARD
7 (7) [8]
30 (30) [36]
5 (15) [13]
4 (19) [14]
4 (22) [15]
UNION PACIFIC LINE
CTA GREEN LINE
22 (24) [28]
8 (6) [8]
10 (17) [19]
22 (24) [28]
SOUTH BOULEVARD
CIRCLE AVENUE
8 (41) [29]
SITE
5 (15) [13]
32 (4) [47]
N/S ALLEY
8 (6) [8]
PLEASANT STREET
8 (41) [29]
5 (15) [13]
HARLEM AVENUE
MAPLE AVENUE
MARION STREET

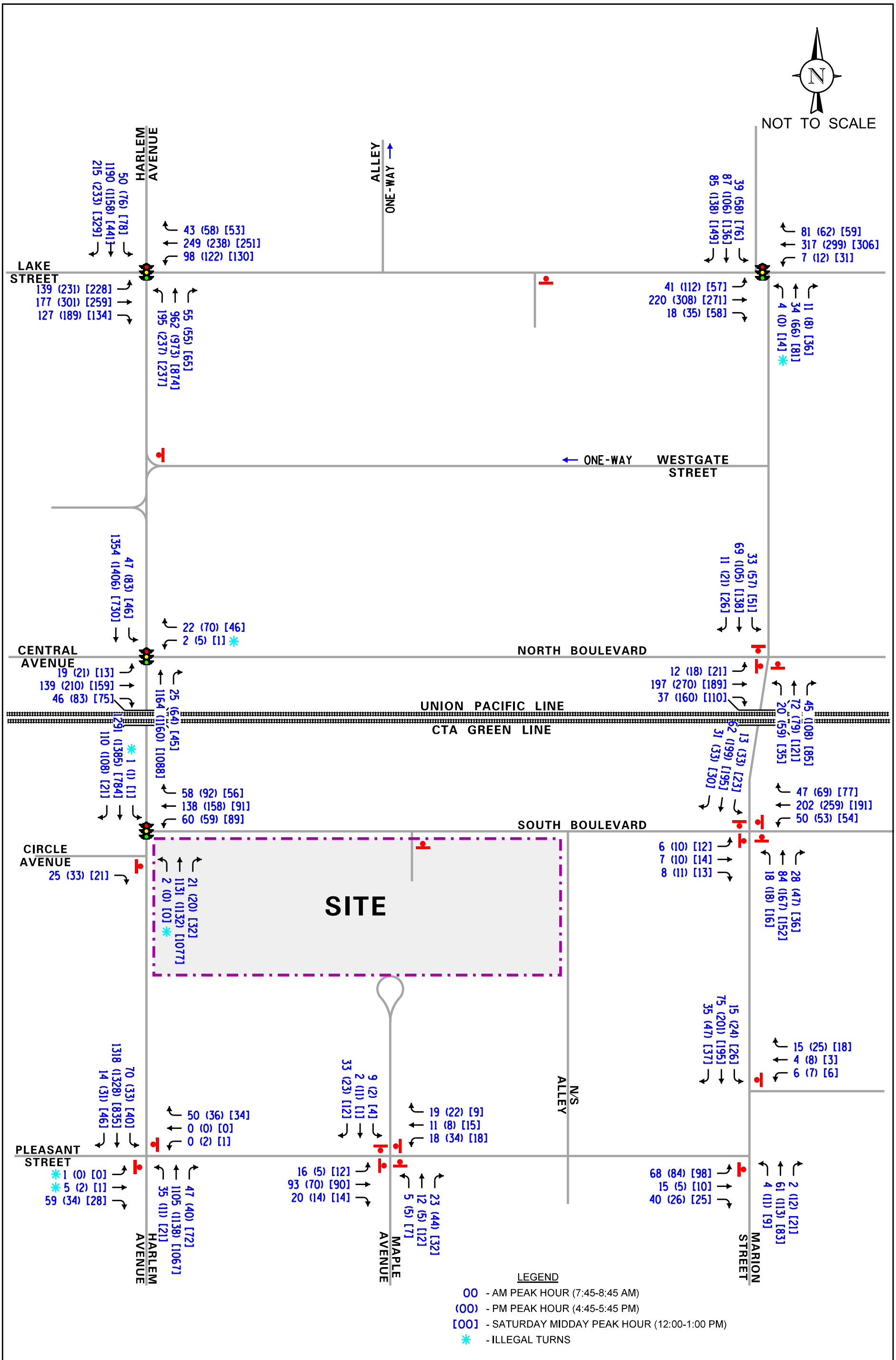
LEGEND

00 - AM PEAK HOUR (7:45-8:45 AM)
(00) - PM PEAK HOUR (4:45-5:45 PM)
[00] - SATURDAY MIDDAY PEAK HOUR (12:00-1:00 PM)

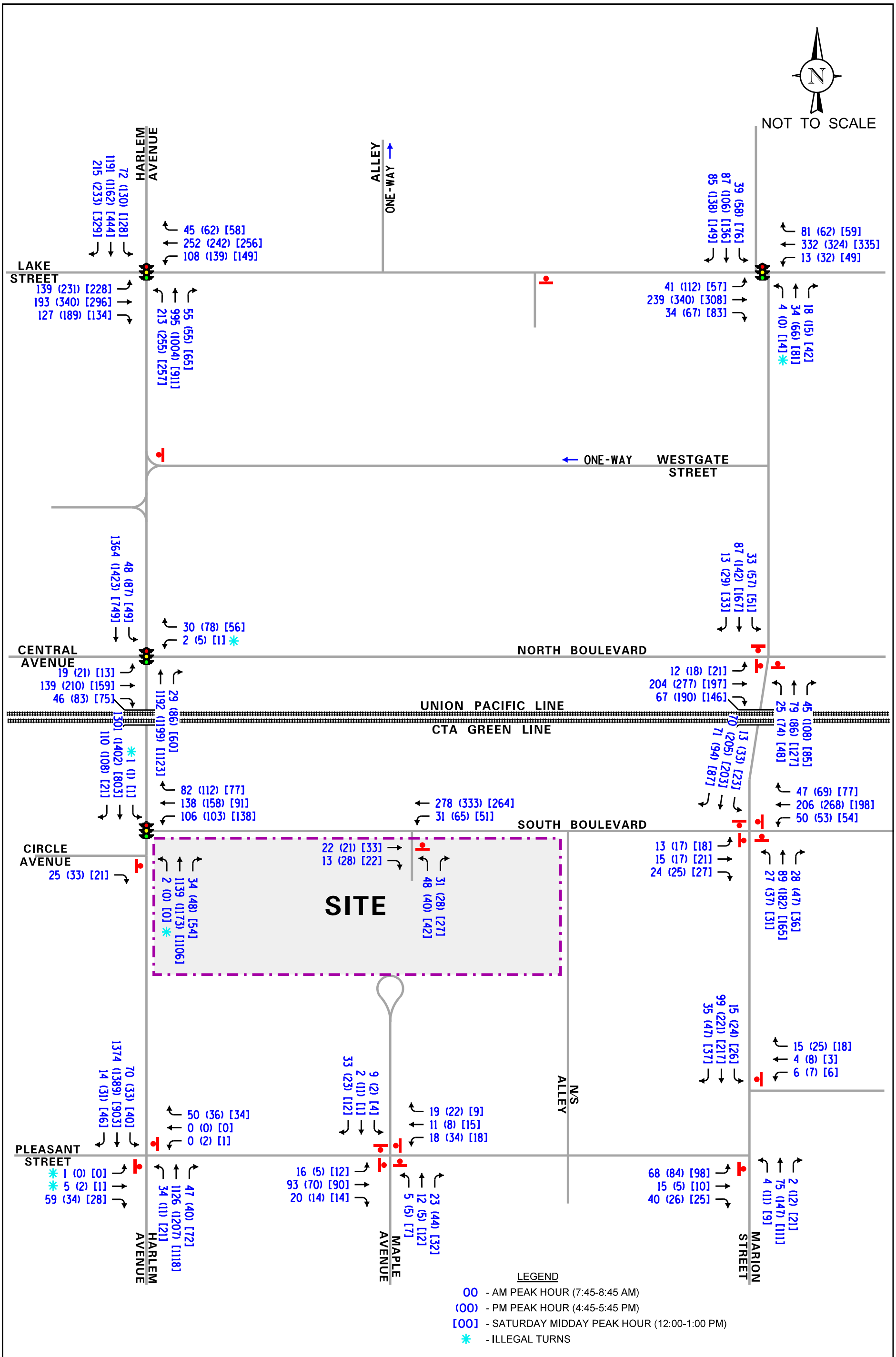
PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	WESTGATE/LAKE & FOREST/LAKE DEVELOPMENTS TRAFFIC ASSIGNMENT	KLOA Job No: 15-093 Figure: 10



PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	EXISTING REASSIGNED TRAFFIC VOLUMES	KLOA Job No: 15-093 Figure: 11



PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	REASSIGNED EXPANDED TRAFFIC VOLUMES (2.5% GROWTH RATE)	KLOA Job No: 15-093 Figure: 12



PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	TOTAL PROJECTED TRAFFIC VOLUMES (CONDITION 1)	KLOA Job No: 15-093 Figure: 13

NOT TO SCALE

HARLEM AVENUE

ALLEY ONE-WAY

LAKE STREET

139 (231) [228]
186 (326) [285]
134 (203) [145]

215 (233) [329]
1200 (1180) [458]
63 (112) [114]

45 (62) [58]
252 (242) [256]
108 (139) [149]

213 (255) [257]
995 (1004) [911]
55 (55) [65]

41 (112) [57]
239 (340) [308]
18 (35) [58]

87 (106) [136]
85 (138) [149]
39 (58) [76]

81 (62) [59]
332 (324) [335]
13 (32) [49]

4 (0) [14] *
34 (66) [81]
18 (15) [42]

ONE-WAY WESTGATE STREET

CENTRAL AVENUE

19 (21) [13]
139 (210) [159]
46 (83) [75]

1380 (1455) [774]
48 (87) [49]

30 (78) [56]
2 (5) [1] *

1192 (1199) [1123]
29 (86) [60]

82 (112) [77]
138 (158) [91]
106 (103) [138]

278 (333) [264]
15 (33) [26]

NORTH BOULEVARD

UNION PACIFIC LINE
CTA GREEN LINE

SOUTH BOULEVARD

CIRCLE AVENUE

25 (33) [21]

SITE

32 (29) [43]
29 (60) [47]

2 (0) [0] *
1139 (1173) [1106]
34 (48) [54]

48 (40) [42]
31 (28) [27]

12 (18) [21]
204 (277) [197]
67 (190) [146]

71 (110) [142]
13 (29) [33]
33 (57) [51]

25 (74) [48]
79 (86) [127]
45 (108) [85]

55 (62) [62]
70 (205) [203]
13 (33) [23]

13 (17) [18]
25 (25) [31]
24 (25) [27]

47 (69) [77]
206 (268) [198]
50 (53) [54]

27 (37) [31]
89 (182) [165]
18 (39) [26]

PLEASANT STREET

1374 (1389) [903]
14 (31) [46]
60 (25) [30]

1 (0) [0] *
5 (2) [1] *
59 (34) [28]

34 (11) [21]
1126 (1207) [1118]
47 (40) [72]

33 (23) [12]
2 (11) [1]
9 (2) [4]

16 (5) [12]
83 (62) [80]
20 (14) [14]

5 (5) [7]
12 (5) [12]
23 (44) [32]

N/S ALLEY

99 (221) [217]
35 (47) [37]
15 (24) [26]

15 (25) [18]
4 (8) [3]
6 (7) [6]

58 (76) [88]
15 (5) [10]
40 (26) [25]

4 (11) [9]
75 (147) [111]
2 (12) [21]

HARLEM AVENUE

MAPLE AVENUE

MARION STREET

50 (36) [34]
0 (0) [0]
0 (2) [1]

19 (22) [9]
11 (8) [15]
18 (34) [18]

LEGEND

00 - AM PEAK HOUR (7:45-8:45 AM)
(00) - PM PEAK HOUR (4:45-5:45 PM)
[00] - SATURDAY MIDDAY PEAK HOUR (12:00-1:00 PM)
* - ILLEGAL TURNS

PROJECT:	TITLE:	
Proposed Mixed-Use Oak Park, Illinois	TOTAL PROJECTED TRAFFIC VOLUMES (CONDITION 2)	KLOA Job No: 15-093 Figure: 14

5.
Traffic Analysis and Recommendations

Capacity analyses were performed for the key intersections included in the study area to determine the ability of the existing street system to accommodate existing and future traffic demands. Analyses were performed for the existing and total projected peak hour traffic conditions.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM), 2010* and using Synchro/SimTraffic 9 software.

The analysis for the traffic-signal controlled intersections were accomplished using existing signal timing data provided by IDOT to determine the average overall vehicle delay, levels of service, and queue lengths.

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 (LOS) A is the highest grade (best traffic flow and least delay), LOS E represents saturated or at-capacity conditions, and LOS F is the lowest grade (oversaturated conditions, extensive delays).

The *Highway Capacity Manual* definitions for LOS and the corresponding control delay for both signalized and unsignalized intersections are shown in **Table 2**. A summary of the level of service/delay results for both existing and future conditions with and without the planned improvements at the intersection of Harlem Avenue with South Boulevard are presented in **Table 3**, **4** and **5**, respectively.

A discussion of the intersections and recommendations follows.

Table 2
LEVEL OF SERVICE CRITERIA

Signalized Intersections

Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	>10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	>35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	>55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor and the cycle length is long. Most cycles fail to clear the queue.	>80.0

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.

Table 3
CAPACITY ANALYSES RESULTS—EXISTING CONDITIONS

	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Midday Peak Hour	
Intersection	LOS	Delay	LOS	Delay	LOS	Delay
Harlem Avenue with South Boulevard[1]	B	15.0	B	17.7	B	19.4
Harlem Avenue with North Boulevard[1]	B	13.8	C	34.1	C	20.0
Harlem Avenue with Lake Street[1]	D	43.4	D	50.5	C	30.6
Lake Street with Marion Street[1]	C	29.6	D	38.3	D	50.6
Harlem Avenue with Circle Avenue[2]	B	10.2	B	10.3	B	10.2
Harlem Avenue with Pleasant Street/Franklin Street[2]	B	13.3	D	33.1	C	19.8
South Boulevard with Maple Avenue[2]	B	11.8	B	11.8	B	10.9
Marion Street with South Boulevard[3]	B	11.7	C	19.5	B	13.8
Marion Street with North Boulevard[3]	A	9.2	B	14.5	B	11.4
Marion Street with Pleasant Street[2]	B	12.8	C	19.8	C	20.3
Pleasant Street with Maple Avenue[3]	A	8.0	A	7.7	A	7.8

LOS = Level of Service
Delay is measured in seconds.
1 – Signalized Intersection
2 – Unsignalized Intersection
3 – All-way stop control

Table 4
CAPACITY ANALYSES RESULTS—FUTURE CONDITIONS (CONDITION I)

	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Midday Peak Hour	
Intersection	LOS	Delay	LOS	Delay	LOS	Delay
Harlem Avenue with South Boulevard[1]	B	17.7	C	22.2	C	24.6
Harlem Avenue with North Boulevard[1]	B	14.8	D	35.2	C	21.7
Harlem Avenue with Lake Street[1]	D	51.6	E	60.3	D	37.8
Lake Street with Marion Street[1]	C	30.9	D	42.1	E	58.2
Harlem Avenue with Circle Avenue[2]	B	10.1	B	11.0	B	10.2
Harlem Avenue with Pleasant Street/Franklin Street[2]	B	14.9	D	30.1	C	21.2
South Boulevard with Access Drive[2]	B	13.2	C	17.0	B	13.8
Marion Street with South Boulevard[3]	B	14.0	D	27.7	C	19.6
Marion Street with North Boulevard[3]	A	9.7	C	18.3	B	13.3
Marion Street with Pleasant Street[2]	C	15.4	E	35.8	D	29.0
Pleasant Street with Maple Avenue[3]	A	8.0	A	7.7	A	7.8

LOS = Level of Service
Delay is measured in seconds.
1 – Signalized Intersection
2 – Unsignalized Intersection
3 – All-way stop control
Condition I - Does not include IDOT's proposed improvements to Harlem Avenue

Table 5
CAPACITY ANALYSES RESULTS—FUTURE CONDITIONS (CONDITION II)

	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Midday Peak Hour	
Intersection	LOS	Delay	LOS	Delay	LOS	Delay
Harlem Avenue with South Boulevard[1]	D	39.7	D	48.5	D	53.9
Harlem Avenue with North Boulevard[1]	D	48.3	E	57.3	C	34.0
Harlem Avenue with Lake Street[1, 4]	E	68.4	E	79.4	D	36.7
Lake Street with Marion Street[1]	C	30.9	D	41.6	E	56.4
Harlem Avenue with Circle Avenue[2]	B	11.4	B	12.4	A	9.5
Harlem Avenue with Pleasant Street/Franklin Street[2]	B	14.9	B	11.6	C	20.4
South Boulevard with Access Drive[2]	B	13.0	C	16.6	B	13.0
Marion Street with South Boulevard[3]	B	13.5	D	25.3	C	18.1
Marion Street with North Boulevard[3]	A	9.6	C	17.5	B	12.9
Marion Street with Pleasant Street[2]	B	14.8	D	31.2	D	27.2
Pleasant Street with Maple Avenue[3]	A	7.9	A	7.6	A	7.7

Condition II – Includes IDOT's proposed improvements to Harlem Avenue
LOS = Level of Service
Delay is measured in seconds.
1 – Signalized Intersection
2 – Unsignalized Intersection
3 – All-way stop control
4 – LOS and delays deteriorate from Condition I due to the change in phasing at the intersection of Harlem Avenue with North and South Boulevards and maintaining the same offsets as under existing conditions. If the improvements on the intersection of Harlem Avenue with North and South Boulevard are implemented, IDOT will reoptimize the timings and offsets along Harlem Avenue and the LOS and delay designation will be better than what is shown.

Discussion and Recommendations

As can be seen, all of the intersections within the study area are operating at acceptable LOS. Under future conditions and assuming background growth, the traffic to be generated by other developments and the traffic to be generated by the proposed development, all of the studied intersection will continue operating at acceptable levels of service. Based on the results of the traffic simulation, traffic flow along the studied intersections will be very similar to existing conditions with minimal increases in the queues experienced along the studied segments. A discussion of some of the key intersections is provided below

Harlem Avenue and South Boulevard

The results of the capacity analysis indicate that this signalized intersection is currently operating at an overall acceptable LOS B during all three peak hours. However, it is important to note that during the evening peak hour, traffic along Harlem Avenue and South Boulevard is very heavy with backups observed on northbound Harlem Avenue. These backups have an impact on the ability of South Boulevard westbound traffic to make a right-turn movement onto Harlem Avenue and as such, westbound traffic on South Boulevard backed up periodically up to and sometimes beyond Maple Avenue. However, it was also observed that these queues typically cleared with most cycles and as such outbound traffic from Maple Avenue was able to turn left. All of these observed backups were also corroborated on the numerous simulation runs conducted as part of the analyses.

Under future conditions with or without the planned improvements at this intersection, the intersection will continue to operate at an overall acceptable LOS with the overall delay at this intersection still within acceptable industry standards during all three peak hours. Further inspection of the simulation runs indicate that, consistent with observations of existing conditions, westbound traffic on South Boulevard will queue up periodically to Maple Avenue/proposed access drive. However, the simulation also indicated that these queues will generally clear with every cycle length allowing vehicles to turn left out of the proposed access drive. Based on a review of the projected traffic volumes and on the proposed plans, the development will be adding less than two percent of the total traffic volumes indicating that the proposed development will have a limited impact on traffic conditions at this intersection. It is important to note that the LOS presented on Table 5 could be better given that if the improvements are implemented, IDOT would reoptimize the timings and offsets along the Harlem Avenue corridor.

Harlem Avenue and North Boulevard/Central Avenue

The results of the capacity analysis indicate that this intersection is currently operating at an acceptable level of service during all three peak hours under existing conditions and will continue to do so under Condition I future conditions. Under Condition II, the intersection will operate at a lower LOS designation due to the change in phasing and utilizing the same offsets as under existing conditions. However, if the improvements are implemented, IDOT will reoptimize the timings and offsets along the Harlem Avenue corridor and the LOS and delay designation will be better than what is shown. Based on a review of the capacity analyses and the

simulation runs, the westbound queues on North Boulevard will be less than 200 feet and as such will not block or have a negative impact on the proposed North Maple Street intersection with North Boulevard.

Harlem Avenue and Lake Street

The results of the capacity analysis indicate that this intersection is currently operating at an overall acceptable Level of Service D and C during all three peak hours in the present condition. However, it is important to note that during the morning and evening peak hours, traffic along Harlem Avenue and Lake Street was very heavy with backups observed on southbound Harlem during the morning peak hour and on both directions along Harlem Avenue and Lake Street during the evening peak hour. It was observed that some of the backups along Lake Street specifically the segment between Harlem Avenue and Marion Street were due to conflicts with the left-turning movements in and out of the parking lot full ingress/egress access drive. Further, Harlem Avenue backs up in the northbound direction at its intersection with Lake Street with queues extending past South Boulevard. Conversely, Harlem Avenue backs up in the southbound direction consistently with queues almost extending to Lake Street. All of these observed backups were also observed on the numerous simulation runs conducted as part of the analyses.

Under future conditions, the intersection will continue to operate at an overall acceptable level of service with the overall delay at this intersection still within acceptable standards during all three peak hours. Further inspection of simulation runs indicate that, consistent with observations of existing conditions, westbound traffic on Lake Street will continue to queue up to and sometimes past North Maple Street. Based on a review of the projected traffic volumes and on the proposed plans, the development is adding less than two percent of the total traffic volumes further confirming that the proposed development will have a limited impact on traffic conditions at this intersection.

Lake Street and Marion Street

The results of the capacity analysis indicate that this intersection is currently operating at an acceptable Level of Service C during the weekday morning and Level of Service D during the weekday evening and Saturday midday peak hours. Under future conditions, the intersection will continue to operate at the same level of service with minimal increases in the overall delay during the morning and evening peak hours. During the Saturday midday peak hour, the intersection will operate at a level of service E under both future scenarios. However, it should be noted that based on a review of the projected traffic volumes and based on the proposed plans, the development traffic will amount to less than one percent at this intersection therefore indicating that the proposed development will have a limited impact on traffic conditions at this intersection. As such, no geometric or signal timing improvements will be necessary in conjunction with this development.

Harlem Avenue with Circle Avenue

The results of the capacity analysis indicate that this unsignalized intersection is currently operating at an acceptable LOS during all three peak hours under existing conditions and will continue to do so under future conditions. Based on a review of the capacity analyses and the simulation runs, the eastbound queues on Circle Avenue will be less than 100 feet. No additional geometric improvements are necessary at this intersection in conjunction with the proposed development.

Harlem Avenue with Pleasant Street/Franklin Street

This unsignalized intersection is currently operating at acceptable LOS during all three peak hours. Under future conditions and taking into account the reassignment of traffic as a result of the vacation of Maple Avenue, the intersection will continue operating at an acceptable LOS. As such, no geometric or traffic control improvements will be necessary in conjunction with the proposed development.

South Boulevard with Maple Avenue/Access Drive

The results of the capacity analyses indicate that this unsignalized intersection is currently operating at an acceptable LOS during all three peak hours. As previously indicated, westbound queues on South Boulevard at its intersection with Harlem Avenue periodically backed up to and sometimes beyond Maple Avenue.

Under future conditions, Maple Avenue will be vacated and the access drive will be located approximately 270 feet east of Harlem Avenue (40 feet farther east than current location of Maple Avenue). Based on the results of the capacity analyses, the access drive will operate at acceptable LOS during all three peak hours. Further inspection of the simulation runs indicate that, consistent with observations of existing conditions, although westbound traffic on South Boulevard will queue up periodically to the proposed access drive, these queues will also generally clear with every cycle length allowing vehicles to turn left out of the proposed access drive. Based on a review of the projected traffic volumes and the results of the capacity analyses, an exclusive left-turn lane into the site will not be necessary.

Marion Street with South Boulevard

The results of the capacity analysis indicate that this unsignalized intersection is currently operating at an acceptable LOS during all three peak hours. Under both future conditions, the intersection will continue to operate at an overall acceptable LOS. As such, no geometric or traffic control improvements will be necessary in conjunction with this development.

Marion Street with North Boulevard

The results of the capacity analysis indicate that this unsignalized intersection is currently operating at an acceptable LOS during all three peak hours. Under both future conditions, the intersection will continue to operate at an overall acceptable LOS. As such, no geometric or traffic control improvements will be necessary in conjunction with this development.

Marion Street with Pleasant Street

This intersection is currently operating at acceptable levels of service and will continue to do so under future conditions except during the weekday evening peak hour where the west approach will operate at a LOS E for Condition I. However, it is important to note that the delay experienced is only 0.8 seconds above the threshold for the acceptable industry standard of LOS D. The additional traffic that will traverse this intersection as result of the development and the vacation of Maple Avenue will have a limited impact on traffic conditions. As such, no geometric or traffic control improvements will be necessary at this intersection in conjunction with the proposed development.

Pleasant Street with Maple Avenue

This unsignalized intersection is currently operating at an acceptable LOS and will continue to do so in the future. The intersection, given the proposed vacation of Maple Avenue at its intersection with South Boulevard will experience a minor reduction in traffic and the section of Maple Avenue just north of Pleasant Street will only experience local traffic generated by the existing residential buildings along its stretch. As such, the provision of a cul-de-sac on the north end of Maple Avenue will have a positive impact on the intersection and on Maple Avenue. Therefore, no additional geometric or traffic control improvements will be necessary at this intersection in conjunction with the proposed development.

Truck Access

As previously indicated, the development will provide two loading docks on the south side of the east building that will be accessed via the existing north-south alley. Trucks will approach the site from the north on the north-south alley and backup onto the loading docks. Trucks will then exit southeast onto the north-south alley and drive south towards Pleasant Street. It is important to note that the alley between South Boulevard and the new east-west alley should be clear of all obstructions (i.e. garbage dumpsters, etc.). Copies of the AutoTurn diagrams are included in the Appendix.

6.
Parking Analysis

Existing Parking Characteristics

The site, as previously indicated, is currently occupied by two surface parking lots that provide pay by space and metered parking. Lot 108 (westerly parking lot) provides 53 parking spaces that are limited to pay by space and permit parking. Lot 115 (easterly parking lot) provides 80 parking spaces that are restricted to permit parking only.

Parking Requirements of Proposed Development per Village Code

A review of the Village of Oak Park Zoning Ordinance indicates that a multi-unit residential development should provide the following parking ratios.

- 1.0 parking spaces per studio unit
- 1.25 parking spaces per one-bedroom apartment unit
- 1.5 parking spaces per two-bedroom unit
- 2.0 parking spaces per three-bedroom unit

In addition, the retail component should provide one space per 500 square feet of retail space.

The proposed development will have approximately 31 studio units, 162 one-bedroom units, 68 two bedroom units and two three-bedroom units with approximately 10,000 square feet of retail. Based on the above and the requirements of the Village of Oak Park this translates into 340 residential spaces and 20 retail spaces for a total of 360.

TOD Parking Characteristics

Based on the proposed plans, the development will be providing 398 parking spaces contained within a parking garage. Approximately 250 parking spaces (a ratio of 0.95 space per unit) will be allocated for residential use with the remaining spaces available for public use. The parking supply ratio of 0.95 space per unit for the proposed apartment building is consistent with parking demand/requirements at TOD developments which are much lower than the parking demand of mixed-use 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 Census 2010 data, as well as on an analysis prepared by the Center for Transit-Oriented Development in cooperation with the Center for Neighborhood Technology, the following is a breakdown of the vehicle ownership within close proximity to the Harlem Green Line Station and other vehicle ownership characteristics.

- Auto ownership of owned homes within ¼ mile of train station = 1.37 vehicles

- Auto ownership of rental units within ¼ mile of train station = 0.70 vehicles

- Seventy-nine (79) percent of the areas' renter households within ¼ mile of the train station have one vehicle or no vehicle at all.

KLOA, Inc. also reviewed previous parking surveys conducted at condominium developments 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 supports the assertion that TOD developments have lower parking demands than developments located farther away from public transportation and that the proposed number of parking spaces for the residential portion of the development will be adequate.

With regards to the retail portion of the development, it should be noted that given the type and size of the proposed retail component, it is anticipated that the majority of the customers will be already in the area (i.e. pedestrians and residential areas within close proximity) and as such will not have a heavy parking demand. Furthermore, the proposed development is proposing to provide 148 public spaces which is an increase of 15 public spaces over current conditions.

7.
Conclusion

Based on the preceding analyses and recommendations, the following conclusions have been made.

- The site of the proposed development is located within downtown Oak Park and within close proximity to alternate modes of transportation.

- The amount of traffic that will be generated by the proposed development will be reduced due to the availability of public transportation serving the area.

- The results of the capacity analyses indicate that the studied intersections are and will continue operating at an overall acceptable level of service with minimal increases in delays.

- The results of the traffic simulation validated the observed queues under existing conditions and indicated that under future conditions, traffic will continue flowing very similarly to existing conditions.

- The proposed access system will provide maximum access flexibility for residents and customers entering and departing the site.

- The future improvements to the bridge on Harlem Avenue proposed by IDOT will improve the traffic operations at the intersection of Harlem Avenue and South Boulevard and will improve access to the site.

- The proposed parking supply of 250 spaces for the residents of the proposed development and 148 parking spaces open to the public (15 more than under existing conditions) will be adequate in accommodating the parking demand of the development.