Legistar #150588

To: Chairperson and Public Safety and Transportation Committee
From: Matthew Lew, PE, Civil Engineer
Through: Carl Goldsmith, Director of Public Works
Date: December 29, 2015
Subject: January Meeting Item 1—Downtown Traffic Study

As part of the Metra Station improvements project, Park Avenue was temporarily converted into a southbound one way street from St. Charles Rd to McGuire Dr. The Village contracted KLOA, a traffic engineering consultant, to determine if the street should remain a one way street permanently. Local businesses and the Lombard Town Centre support this permanent traffic pattern change. As part of the study, existing traffic and parking conditions were analyzed with the previous and current conditions. The study supported retaining the one-way traffic flow along with other recommendations.

- Permanently retain one-way Park Ave traffic flow between St. Charles Rd and McGuire Dr
- Allocate two spaces (shown in red box below) on northeast corner of Park/McGuire with No Parking (Nov 15 to Apr 15) for snow storage similar to existing signage on McGuire Dr

As part of the report, maintenance items will also be addressed including pavement markings, optimized traffic signal timings, and enhanced signage.

Staff recommends approval of study and staff recommendations.

Park Avenue Study Area

Image courtesy of Google Maps

Traffic Evaluation Study
for
Park Avenue Traffic Flow Conversion
Lombard, Illinois

Prepared for

Prepared by

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

December 3, 2015

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List of Figures and Tables

Figures

Tables

1.
Introduction

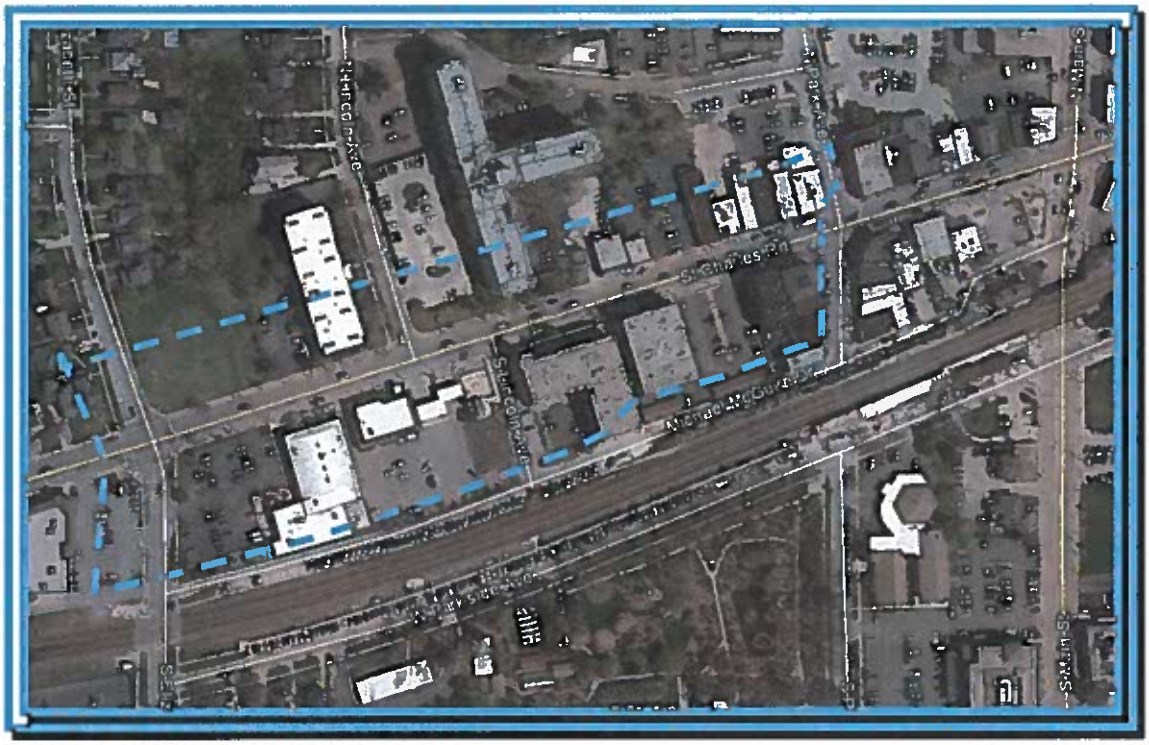
This study presents the methodologies, findings, and recommendations of a traffic assessment conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) to evaluate the adequacy of the existing traffic patterns on Park Avenue between St. Charles Road and Michael McGuire Drive in downtown Lombard, Illinois.

Park Avenue, during the reconstruction of the Lombard Metra train station, was converted from two-way traffic between St. Charles Road and Michael McGuire Drive to one-way southbound traffic. In addition, the on-street parking along the east side of the street was converted from parallel parking to angled parking. Recently, the work on the train station has been completed and the Village has been requested by various business owners to maintain the traffic patterns and parking on Park Avenue as they currently are.

The study area for this analysis is Main Street to the east, St. Charles Road to the north, Elizabeth Street to the west and Michael McGuire Drive to the south. **Figure 1** shows the study area.

The specific objectives of the study are to:

- Examine existing traffic conditions and peak period traffic flow
- Identify traffic problems and deficiencies
- Determine what impact the current traffic patterns on Park Avenue is having on the traffic circulation and parking particularly on Lincoln Avenue and Elizabeth Street
- Evaluate whether a traffic signal is warranted and needed at the intersection of St. Charles Road and Park Avenue.



AERIAL VIEW OF STUDY AREA **Figure 1**

2.
Existing Roadway System

Transportation conditions in the vicinity of the site were inventoried based on various field visits. The roadway system, public transportation and on-street parking serving the downtown Lombard is summarized below.

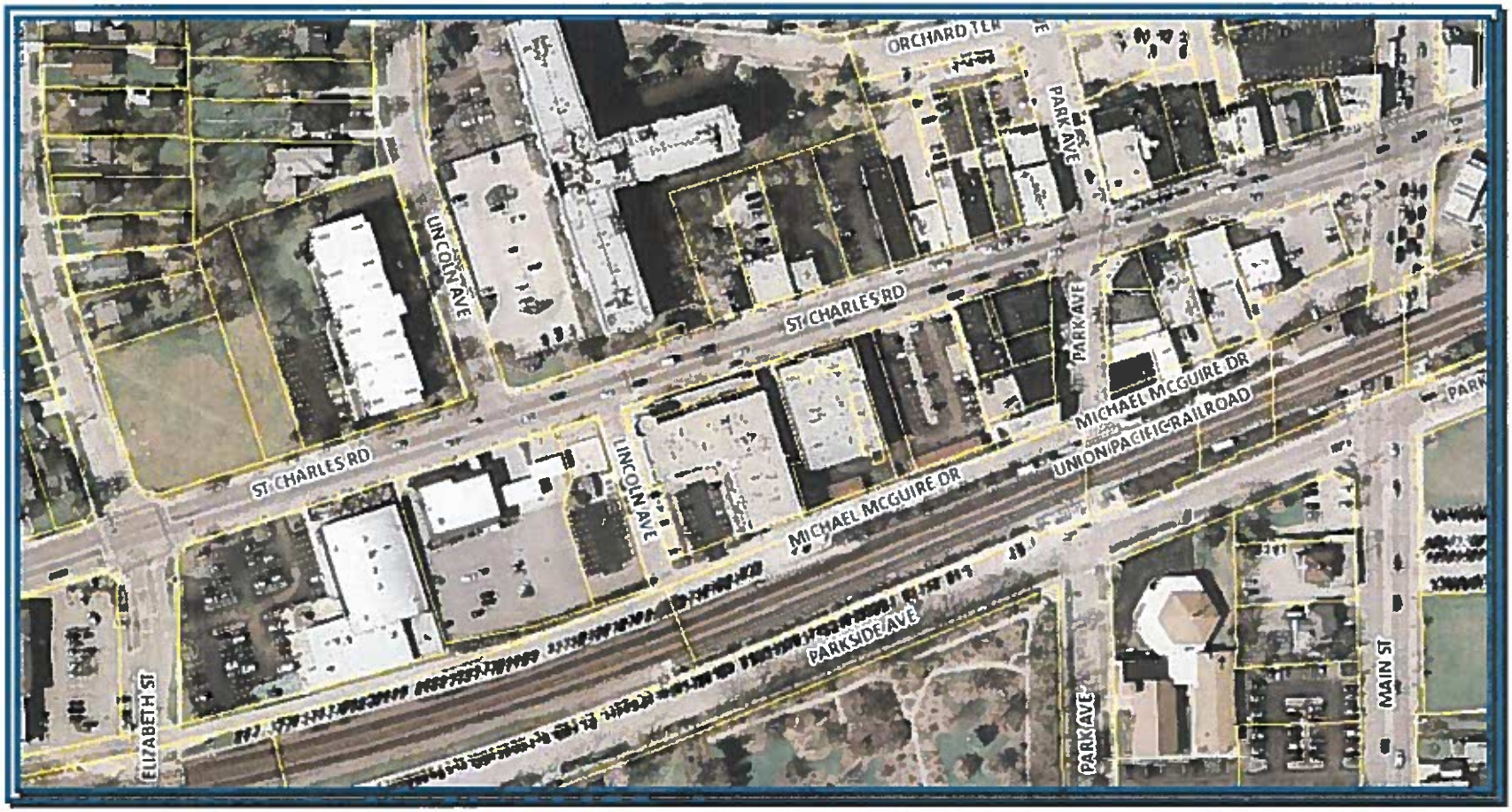
Area Overview and Land Uses

The study area is primarily commercial with some newer multi-family residential buildings buffering St. Charles Road to the south. Further north, south and west are more traditional single family neighborhoods. The Metra Union Pacific West Line is located south of Michael McGuire Drive and runs parallel to St. Charles Road.

Area Roadway System

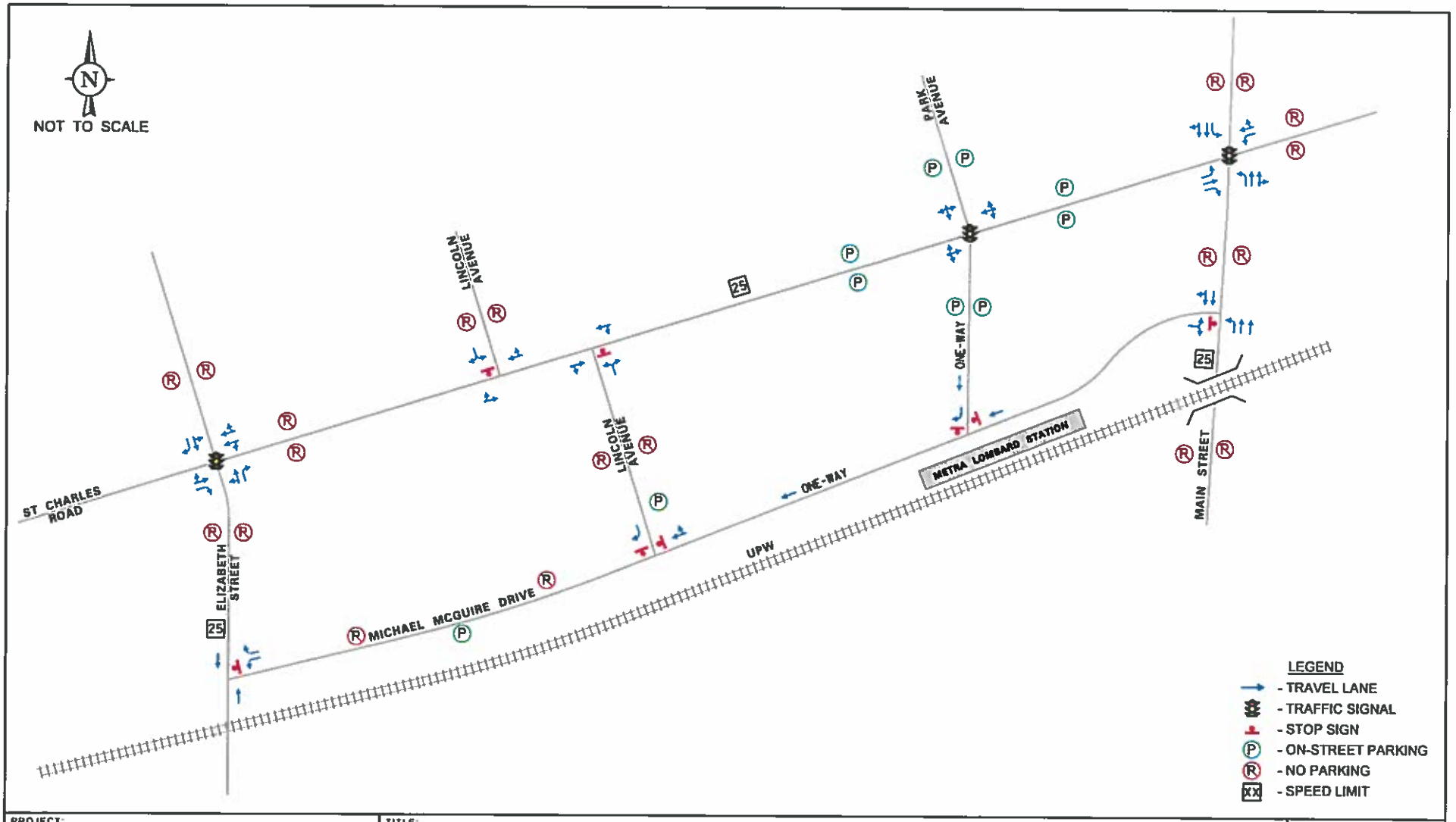
The primary roads in the study area that serve the Lombard downtown area and surrounding land uses are described below and shown in **Figure 2**. The lane usages, traffic controls, parking conditions, and bus stops on these roads is shown in **Figure 3**.

St. Charles Road is an east-west arterial that runs from Klein Road in Wayne Township east to its terminus at 5th Avenue in Maywood, Illinois. At its signalized intersection with Elizabeth Street, St. Charles Road provides one through/left-turn lane and an exclusive right-turn lane on the west approach. A combined through/right-turn lane and a combined through/left-turn lane are provided on the east approach. St. Charles Road, immediately east of Elizabeth Street, narrows down to provide one lane in each direction with a parking lane on both sides of the road. No exclusive turning lanes are provided at its unsignalized intersection with Lincoln Avenue and at its signalized intersection with Park Avenue. At its signalized intersection with Main Street, St. Charles Road provides an exclusive left-turn lane, a through lane and an exclusive right-turn lane on the west approach. The east approach provides an exclusive left-turn lane and a combined through/right-turn lane. On-street parking is provided on both sides of the road. St. Charles Road in the vicinity of the site has a posted speed limit of 25 mph and carries an average daily traffic (ADT) of approximately 13,300 vehicles.



Downtown Lombard Map

Figure 2



PROJECT:	TITLE:	
Park Avenue Evaluation Lombard, Illinois	EXISTING ROADWAY CHARACTERISTICS	KLOA Job No: 15-225 Figure: 3

Elizabeth Street is a two-lane north-south residential roadway. At its signalized intersection with St. Charles Road, Elizabeth Street provides a combined through/left-turn lane and an exclusive right-turn lane on both approaches. Elizabeth Street has a posted speed limit of 25 mph. On-street parking between St. Charles Road and Michael McGuire Drive is prohibited.

Lincoln Street is a two-lane north-south residential roadway. At its unsignalized intersection with St. Charles Road, Lincoln Street is offset by approximately 100 feet. Both approaches are under stop sign control at their intersection with St. Charles Road. At its unsignalized all-way stop control intersection with Michael McGuire Drive, Lincoln Street is restricted to right turns only give the one-way westbound designation of Michael McGuire Drive.

Park Avenue is a two-lane north-south roadway with on-street parking provided on both sides of the street. At its signalized intersection with St. Charles Road, Park Avenue currently provides a combined left/through/right-turn lane on the north approach.

Main Street is a north-south minor arterial that runs from North Avenue south to its terminus at Majestic Drive. At its signalized intersection with St. Charles Road, Main Street provides an exclusive left-turn lane, a through lane and a combined through/right-turn lane on both approaches. Main Street north of St. Charles Road narrows down to one lane in each direction. Main Street has a posted speed limit of 25 mph and carries an ADT of approximately 11,500 vehicles north of St. Charles Road and 15,400 south of St. Charles Road.

Michael McGuire Drive is an east-west road that allows two-way traffic from Main Street to approximately 160 feet west. Further west, the road is restricted to one-way westbound traffic only. The road is under all-way stop control at its intersections with Park Avenue and Lincoln Street. At its unsignalized intersection with Elizabeth Street, Michael McGuire Drive is under stop sign control and is widened to provide an exclusive left-turn lane and an exclusive right-turn lane.

Public Transportation

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

- *The Metra Union Pacific West Line-Lombard Metra station* is located on the south side of Michael McGuire Drive and provides service from Elburn to Ogilvie Transportation Center in Chicago. The line provides 29 inbound and outbound trains daily on weekdays and 10 inbound and outbound trains on Saturdays. The first weekday inbound train departs the Elburn station at 4:480 A.M. with the last train departing at 10:25 P.M. The first weekday outbound train departs the Ogilvie Transportation Center at 5:53 A.M. with the last train departing at 11:40 P.M.

- *Pace Bus Route 674- Southwest Lombard* runs parallel to a portion of the Union Pacific West Line with a stop on the northeast corner of the intersection of Parkside Avenue with Park Avenue. This line provides weekday rush hour service between southwestern Lombard and the Metra UP - West Line Lombard Station. It also serves the Yorktown Condominiums, The Covington, Cove Landing, Clover Creek, Point West, International Village, Royal Glen, the Glen Ellyn Apartment Homes and the Metra UP - West Line Lombard Station.

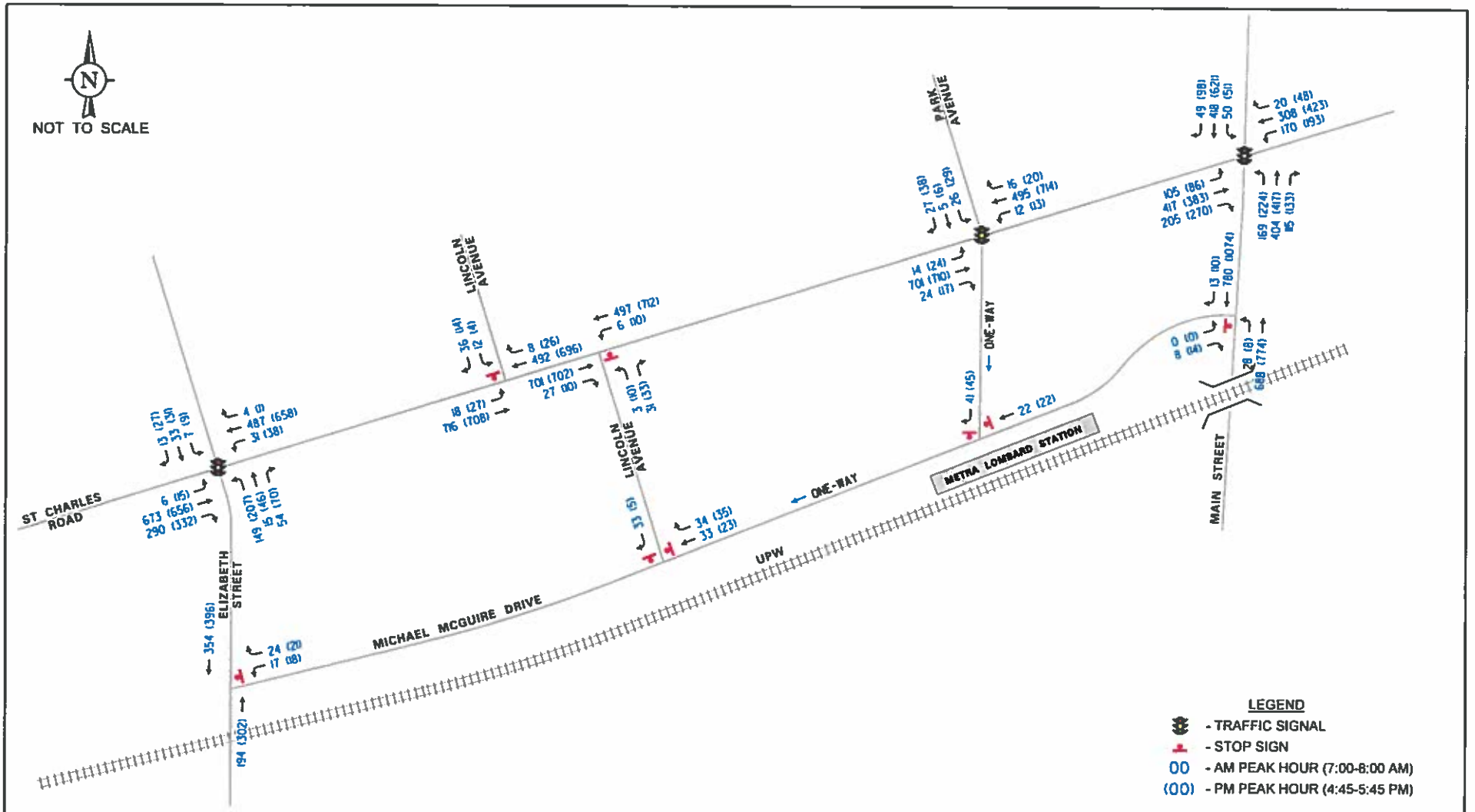
3.
Current Traffic and Parking Conditions

Traffic and pedestrian counts were conducted on Tuesday September 15, 2015 during the morning (7:00 to 9:00 A.M.) and evening (4:00 to 7:00 P.M.) peak commuter periods at the intersections shown below.

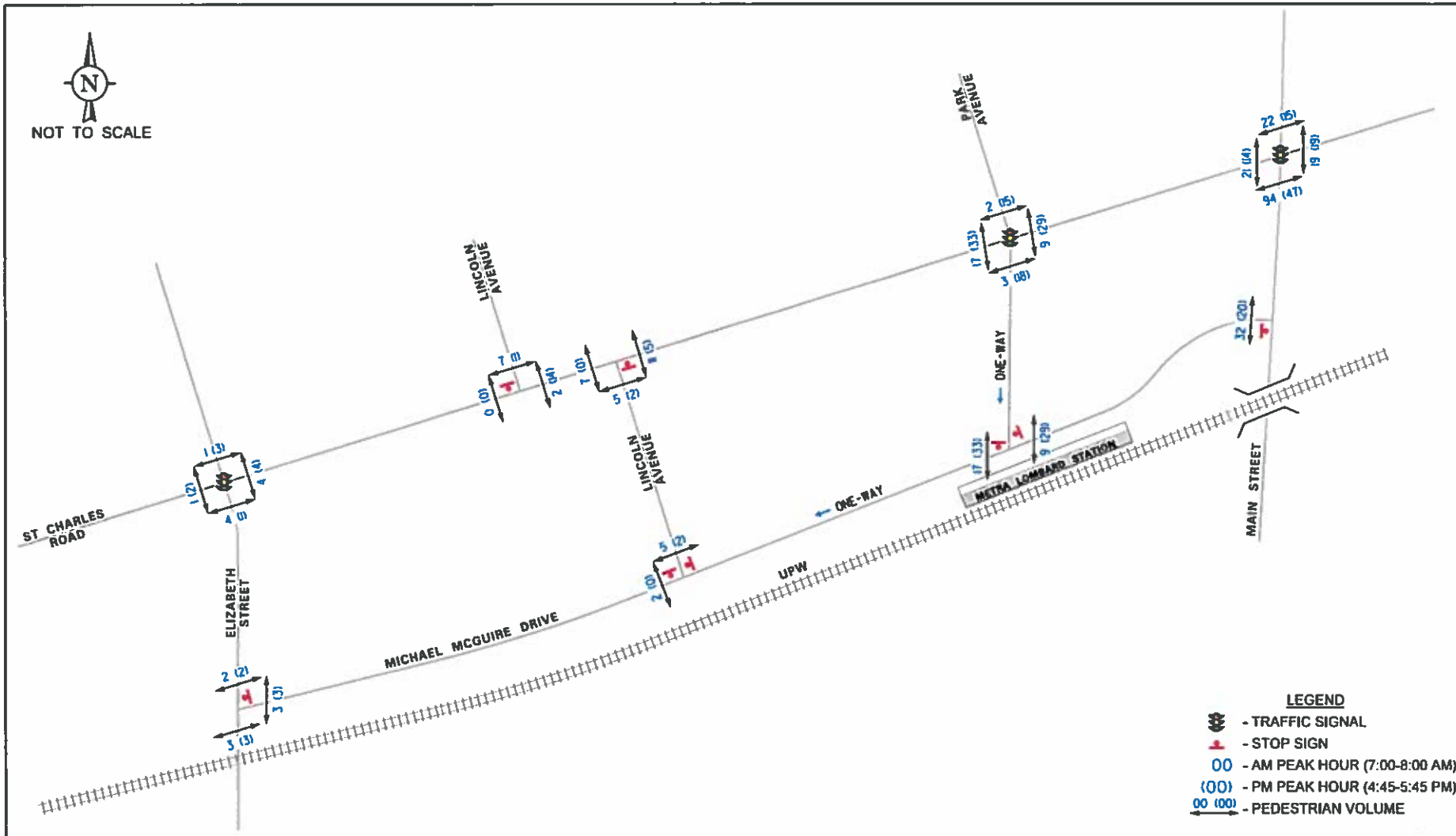
St. Charles Road with
- Main Street
- Park Avenue
- Lincoln Street (North and South Legs)
- Elizabeth Street

Michael McGuire Drive with
- Main Street
- Park Avenue
- Lincoln Street
- Elizabeth Street

These hours were chosen to coincide with key traffic, pedestrian and Metra commuter periods. Based on the results of the traffic counts, the weekday morning peak hour occurs from 7:00 to 8:00 A.M. while the weekday evening peak hour occurs from 4:45 to 5:45 P.M. The existing weekday morning and evening peak-hour traffic volumes are shown in **Figure 4**. **Figure 5** shows the existing weekday morning and evening peak hour pedestrian volumes.



PROJECT:	TITLE:	
Park Avenue Evaluation Lombard, Illinois	EXISTING TRAFFIC VOLUMES	KLOA Job No: 15-225 Figure: 4



PROJECT:	TITLE:	
Park Avenue Evaluation Lombard, Illinois	EXISTING PEDESTRIAN TRAFFIC VOLUMES	KLOA Job No: 15-225 Figure: 5

Observations of Existing Traffic Conditions

In addition to the traffic counts, KLOA, Inc. observed traffic conditions during the morning and evening peak hours. The following is a summary of our observations.

General Observations

- Traffic flow along St. Charles Road was fairly efficient with some isolated back-ups observed during the morning and evening peak hours
- Very little pedestrian traffic was observed along all of the studied intersections as the majority of the parking for commuters is located east of Main Street.
- All of the roads intersecting St. Charles Road and Michael McGuire Drive operated efficiently with minimal queues and delays.

Morning Peak Period

- Eastbound traffic on St. Charles Road sometimes queues from Park Avenue west to almost Lincoln Avenue (north leg).
- On average traffic flowed fairly well with traffic being progressed through all of the studied intersections.
- No excessive queues were observed in the westbound direction at any of the studied intersections

Evening Peak Period

- Westbound traffic on St. Charles Road very often queues from Park Avenue east to Main Street and sometimes beyond Main Street.
- This back up of traffic occurs due to the short distance between intersections and the interruption created by a pedestrian pushing the ped button to cross St. Charles Road.
- No excessive queues were observed in the eastbound direction at any of the studied intersections.

Current Conditions Parking Inventory

In addition to the traffic counts, KLOA, Inc. also inventoried the amount and type of parking available in the study area per block and per side. **Figure 6** shows an aerial of the available on-street parking within the study area. **Table 1** presents a summary of the on-street parking inventory and their regulation.

PROJECT:	TITLE:	
Park Avenue Evaluation Lombard, Illinois	PARKING LOCATIONS AND RESTRICTIONS	KLOA Job No: 15-225 Figure: 6

Table 1
ON-STREET PARKING INVENTORY (CURRENT CONDITIONS)

Block	Side	Capacity	Parking Regulation
St. Charles between Main and Park	North	11	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
	South	4	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
St. Charles between Park and Lincoln (North Leg)	North	19	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
	South	16	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
St. Charles between Lincoln and Elizabeth	North	3	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
	South	8	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
Michael McGuire between Main and Park	North	0	
	South	0	
Michael McGuire between Park and Lincoln	North	5	10 min. 5 AM - 6 PM M-F except Holidays
	South	15	Permit Parking 5 AM – 11 A.M. M-F except Holidays (Free parking after 11 AM & all day Sat, Sun & Holidays
Michael McGuire between Lincoln and Elizabeth	North	0	
	South	51	Permit Parking 5 AM – 11 A.M. M-F except Holidays (Free parking after 11 AM & all day Sat, Sun & Holidays
Park Ave. between St. Charles and Michael McGuire	East	8 (1 – 30 min)	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
	West	9	2-hr Customer Only 8 AM - 6 PM except Sundays and Holidays
Lincoln Ave. between St. Charles and Michael McGuire	East	9	The Shops At Lincoln Place – Customer Parking Only
	West	0	
Elizabeth Street between St. Charles Road and Michael McGuire Drive	East	0	
	West	0	

Current Conditions Traffic Operations

Traffic analyses were performed for the study area intersections to determine the operation of the roadway system under existing conditions and to serve as a basis for comparison to traffic conditions prior to the Park Avenue one-way southbound conversion. Analyses were performed for the morning and evening peak hour periods of a typical weekday when school was in session.

The traffic analyses were accomplished using the Synchro/SimTraffic 9 computer software, which generally follows the methodologies outlined in the Transportation Research Board's Highway Capacity Manual (HCM), 2010. The methodologies use traffic controls, traffic volumes, and roadway characteristics to determine the average control delay and levels of service for vehicles at an intersection.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is a qualitative term developed to express the operating conditions along streets and at intersections. Alpha designations from A to F are assigned 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 until resumption of free flow speed. Level of service A is the highest grade (best traffic flow, least delays), level of service E represents saturated or at-capacity conditions, and level of service F is the lowest grade (oversaturated conditions, extensive delays). Typically, level of service D is the lowest acceptable grade for peak-hour conditions in a suburban environment such as Lombard.

For signal-controlled intersections, levels of service are calculated for lane groups, intersection approaches, and the intersection as a whole. For all-way stop controlled (AWSC) intersections, an intersection level of service is calculated based on the weighted average of the delay on each of the approaches (the approach delay consists of the weighted average of the delay on each lane of the approach). 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). Level of service F at TWSC intersections occurs when there are not enough suitable gaps in the flow of traffic on the major (uncontrolled) street to allow minor-street traffic to safely enter the major street flow or cross the major street.

The Highway Capacity Manual criteria for levels of service and the corresponding control delay for signalized and unsignalized intersections are shown in **Table 2**. **Table 3** summarizes the results of the traffic analyses for the morning and evening peak hour traffic for existing conditions. The capacity analysis worksheets are in the Appendix.

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
CURRENT CONDITIONS

Intersection	Weekday A.M. Peak Hour LOS	Weekday A.M. Peak Hour Delay	Weekday P.M. Peak Hour LOS	Weekday P.M. Peak Hour Delay
Signalized Intersections				
St Charles Rd / Main Street	C	28.8	D	37.0
St. Charles Rd / Park Avenue	A	6.3	A	7.9
St. Charles Road / Elizabeth Street	B	15.7	B	16.4
Unsignalized Intersections				
St. Charles Rd / Lincoln Avenue (south leg)	C	15.0	C	17.4
St. Charles Rd / Lincoln Avenue (north leg)	C	16.7	C	16.4
Michael McGuire Dr / Main Street	A	9.6	A	9.2
Michael McGuire Dr / Park Avenue	A	8.7	A	8.9
Michael McGuire Dr / Lincoln Avenue	A	7.0	A	6.9
Michael McGuire Dr / Elizabeth Street	B	11.6	B	12.6

LOS – Level of Service

The traffic analysis results indicate that all of the study area intersections operate at acceptable levels of service during the weekday morning and evening peak hours. However, there are a few traffic movements at some of the intersections evaluated that experience longer delays or queuing than desirable. The traffic analysis results for the signalized intersections in the study area are discussed below.

St. Charles Road/Main Street

Overall this intersection operates at level of service C and D during the weekday morning and evening peak hours, respectively. However, as previously indicated, the northbound left-turn movement experiences long delays and queues especially during the evening peak hour. These queues are partially attributed to the westbound queue that is experienced on St. Charles Road at its intersection with Park Avenue as a result of pedestrians pushing the ped button to cross St. Charles Road. It should also be noted that based on our field observations, it appears that the intersection is operating on 100 second cycle length during the morning peak hour and a 120 second cycle length during the evening peak hour.

St. Charles Road/Park Avenue

This intersection operates at a level of service A during both peak hours. However, the intersection appears to operate on a different cycle length that the intersection to the east (St. Charles Road/Main Street) and the intersection to the west (St. Charles Road/Elizabeth Street). This difference in the cycle lengths makes it more difficult to coordinate the traffic signals along St. Charles Road. In addition, when a pedestrian pushes the button to cross St. Charles Road it was observed that very often the traffic signal would turn red for St. Charles Road while the east-west movements on St. Charles Road at its intersection with Main Street had the green phase. It is recommended that the traffic signal be adjusted to run on the same cycle lengths as the intersections to the east and to the west and to be better coordinated.

St. Charles Road/Elizabeth Street

This intersection operates at level of service B during both peak hours. Based on our field observations, the intersection appears to be operating on a cycle length of approximately 100 seconds during the morning and evening peak hours. Given the existing lead phase for westbound traffic, queues in the westbound direction are minimal and are processed through the intersection efficiently.

All of the unsignalized intersections are currently operating at acceptable levels of service with minimal queues and delays.

4.
Traffic Conditions Prior to Park Avenue One-Way Southbound Conversion

In order to determine how traffic volumes in the area have changed given the Park Avenue one-way southbound conversion, previous traffic counts conducted by KLOA, Inc. along the St. Charles Road corridor were referenced and are shown in **Figure 7**. Based on a review of the "prior to" traffic count, traffic volumes along St. Charles Road have remained fairly constant with little change. This is also validated by the fact that boardings and alightings at the Lombard Metra station between 2006 and 2014 have remained steady.

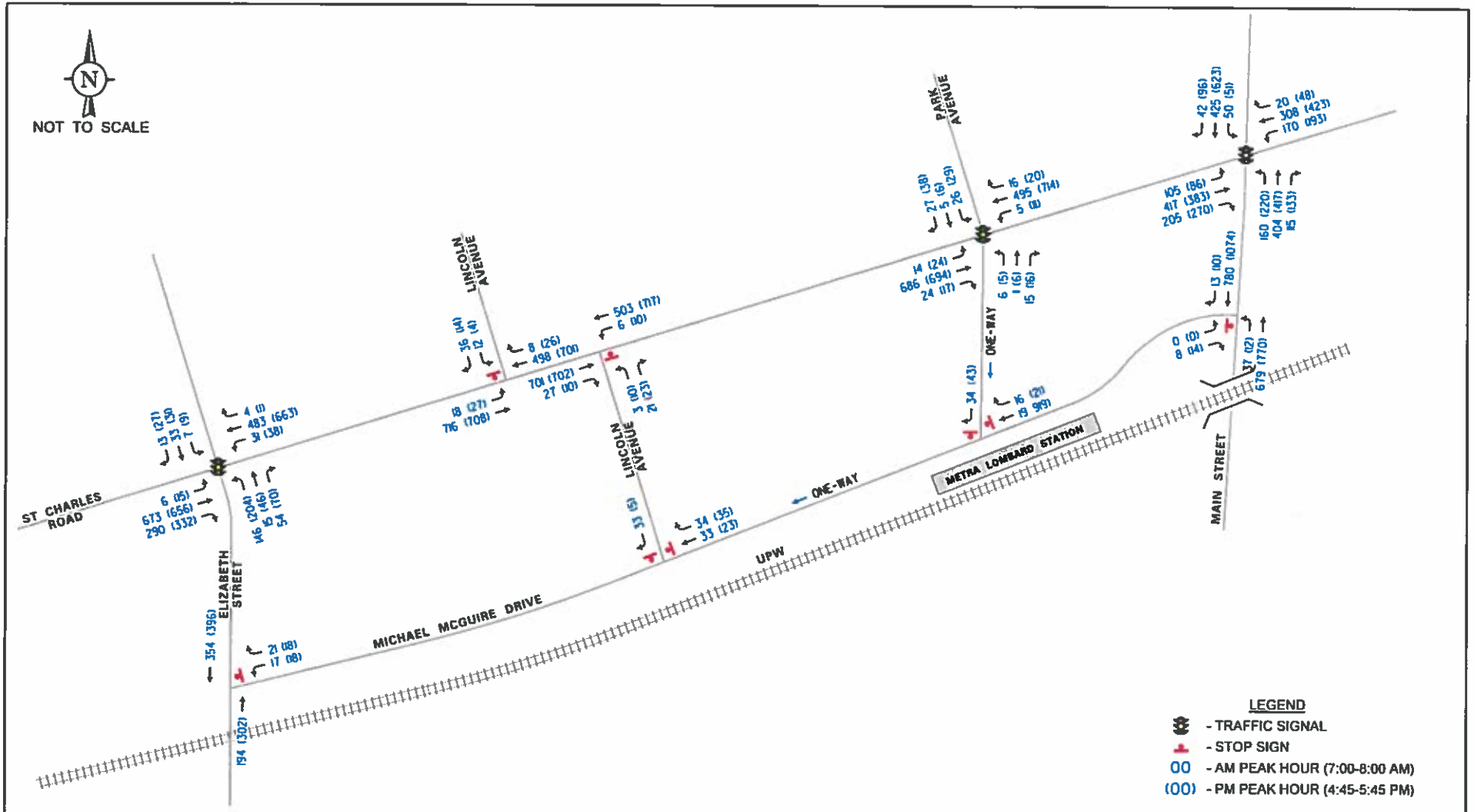
Parking Inventory Prior to Park Avenue One-Way Southbound Conversion

Based on a review of historical aerial imagery, the biggest difference in the amount of on-street parking occurred on Park Avenue between St. Charles Road and Michael McGuire Drive where approximately six parking spaces were available on the east side instead of the current eight spaces.

Traffic Operations

Traffic analyses were performed for the study area intersections to determine the operation of the roadway system prior to the Park Avenue one-way southbound conversion. **Table 4** summarizes the results of the traffic analyses for the weekday morning and evening peak hour periods prior to the Park Avenue one-way southbound conversion. The capacity analysis worksheets are in the Appendix.

The traffic analysis results indicate that all of the study area intersections operated at acceptable levels of service during the weekday morning and evening peak hours. Similar to existing conditions, there were a few traffic movements at some of the intersections that experience longer delays or queuing than desirable.



PROJECT:	TITLE:	
Park Avenue Evaluation Lombard, Illinois	ESTIMATED TRAFFIC VOLUMES PRIOR TO PARK AVENUE ONE-WAY SOUTHBOUND CONVERSION	KLOA Job No: 15-225 Figure: 7

Table 4
CAPACITY ANALYSES RESULTS
CONDITIONS PRIOR TO PARK AVENUE ONE-WAY SOUTHBOUND CONVERSION

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS	Delay	LOS	Delay
Signalized Intersections				
St Charles Rd / Main Street	C	29.0	D	36.9
St. Charles Rd / Park Avenue	A	6.5	A	8.3
St. Charles Road / Elizabeth Street	B	15.6	B	16.2
Unsignalized Intersections				
St. Charles Rd / Lincoln Avenue (south leg)	C	15.1	C	17.9
St. Charles Rd / Lincoln Avenue (north leg)	C	16.8	C	16.5
Michael McGuire Dr / Main Street	A	9.7	A	9.2
Michael McGuire Dr / Park Avenue	A	8.7	A	9.0
Michael McGuire Dr / Lincoln Avenue	A	6.9	A	6.8
Michael McGuire Dr / Elizabeth Street	B	11.7	B	12.8

LOS – Level of Service

As can be seen, all of the studied intersection were operating at the same levels of service as they are currently operating with minimal changes in the overall delay. Furthermore, a review of the traffic simulations indicate that the same queues observed along the St. Charles Road corridor were experienced before the conversion. Lastly, given that Park Avenue between St. Charles Road and Michael McGuire Drive is only 165 feet long and carries a limited amount of traffic, the additional northbound traffic that is currently experienced on Elizabeth Street at its intersection with St. Charles Road has had very little impact on is operation.

5.
Signal Warrant Analysis

KLOA, Inc. examined the intersection of St. Charles Road and Park Avenue to determine if a traffic signal is warranted. Installation of a traffic signal requires that one or more of the nine (9) signal warrants outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD 2009) is met. For the purposes of this evaluation, Warrant 3 – Peak Hour Volumes was examined using the weekday morning and evening peak hour traffic volumes at this intersection under current conditions.

Warrant 3 (Peak Hour Vehicular Volume) is intended for application when traffic conditions are such that for a minimum of one hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street. It should be noted that the threshold value of minor street traffic varies depending on the major street traffic volume and number of travel lanes. This signal warrant is primarily used in cases where a high volume of traffic is discharged over a short time.

Figure 8 shows the signal warrant analysis for Warrant 3 – Peak Hour Volumes.

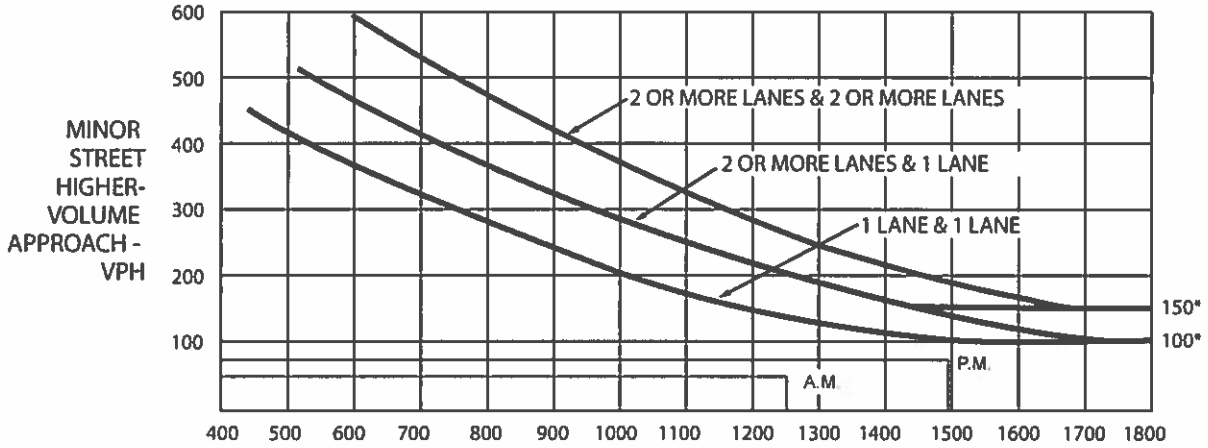
Although a traffic signal is not warranted at this location, it is KLOA, Inc.'s opinion that the signal should be maintained for the following reasons:

- The signal allows safe passage to pedestrians crossing Main Street that are destined to the Lombard Metra train station and to the downtown shops.

- The traffic signal creates east-west gaps in the through traffic stream that allows vehicles from various access dives on St. Charles Road and other roads (i.e. Lincoln Avenue) to exit.

- The traffic signal is used as a flashing red during downtown events as a traffic calming measure.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

PROJECT:	TITLE:	KLOA
Park Avenue Evaluation Lombard, Illinois	WARRANT 3, PEAK HOUR	Job No: 15-225 Figure: 8

6.
Discussion and Recommendations

As previously indicated and based on the results of the capacity analyses, all of the studied intersections are operating at acceptable LOS under existing conditions and were also working at the same levels of service prior to the Park Avenue one-way southbound conversions. However, there were some instances during the peak hours in which traffic along St. Charles Road queued to and beyond the available distance between blocks.

In order to help alleviate these problems and improve the efficiency with which motorists travel along St. Charles Road, KLOA optimized the intersection's cycle lengths and offsets using the Synchro/SimTraffic 9.0 modeling software. Based on the model, consideration should be given to the following improvements:

- The traffic signals along the St. Charles Road study area need to be coordinated and optimized.

- Our preliminary analysis shows a 100 second cycle length to be optimal. A progression and offset synchronization is needed by the contractor maintaining the signals in order to ensure the most appropriate offsets are provided.

- The shorter cycle length will allow vehicles to be processed through the intersections more efficiently and reduce the chances for building queues on all approaches while still maintaining appropriate Walk and flashing Don't Walk pedestrian times.

- The traffic signal at Park Avenue should be coordinated better with the traffic signal at Main Street in such a way that when a pedestrian pushes the ped button on Park Avenue, the call is placed on hold until the northbound and southbound movements on Main Street are under the green ball.

By virtue of these adjustments and reoptimization, the capacity analyses and traffic simulations showed a vast improvement in the St. Charles Road traffic flow. **Table 5** summarizes the results of the traffic analyses for the weekday morning and evening peak hour periods utilizing a cycle length of 100 seconds and modified offsets.

Table 5
CAPACITY ANALYSES RESULTS
OPTIMIZED CYCLE LENGTHS AND OFFSETS

	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
Intersection	LOS	Delay	LOS	Delay
Signalized Intersections				
St Charles Rd / Main Street	C	25.3	C	27.3
St. Charles Rd / Park Avenue	A	3.5	A	4.7
St. Charles Road / Elizabeth Street	B	14.8	B	17.1
Unsignalized Intersections				
St. Charles Rd / Lincoln Avenue (south leg)	C	15.2	C	17.8
St. Charles Rd / Lincoln Avenue (north leg)	C	17.2	C	16.8
Michael McGuire Dr / Main Street	A	9.6	A	9.3
Michael McGuire Dr / Park Avenue	A	8.7	A	8.9
Michael McGuire Dr / Lincoln Avenue	A	7.0	A	6.9
Michael McGuire Dr / Elizabeth Street	B	11.6	B	12.6

LOS – Level of Service

7.
Conclusion

This report evaluated the adequacy of the existing traffic patterns on Park Avenue between St. Charles Road and Michael McGuire Drive in downtown Lombard, Illinois.

Park Avenue, during the reconstruction of the Lombard Metra train station, was converted from two-way traffic between St. Charles Road and Michael McGuire Drive to one-way southbound traffic. In addition, the on-street parking along the east side of the street was converted from parallel parking to angled parking.

Based on the data collected, field observations and the analyses performed, the following is concluded.

- Traffic volumes within the downtown Lombard area have remained consistent with very little change.

- The conversion of Park Avenue to one-way southbound only has increased the number of on-street parking spaces available in front of various stores.

- Given this conversion, the intersection experiences less conflicting movements therefore improving its efficiency.

- The northbound traffic that has been displaced to Elizabeth Street or Lincoln Avenue (south leg) has had very little impact on their operation and the intersections are operating at acceptable levels of service.

- Although a traffic signal at the intersection of St. Charles Road and Park Avenue is not warranted under existing conditions, the existing traffic signal should remain in order to:

    - Satisfy driver expectation
    - Provide safe passage to pedestrians crossing Main Street that are destined to the Lombard Metra train station and to the downtown shops
    - Create gaps in the east-west direction that allows vehicles from various access dives on St. Charles Road and other roads (i.e. Lincoln Avenue) to enter and exit.

- In order to improve the traffic flow along St. Charles road consideration should be given to the following modifications:

    - All three signalized intersections should run on 100 second cycle length during the morning and evening peak hours.
    - A progression and offset synchronization is needed by the contractor maintaining the signals in order to ensure the most appropriate offsets are provided.
    - The traffic signal at Park Avenue should be coordinated better with the traffic signal at Main Street in such a way that when a pedestrian pushes the ped button on Park Avenue, the call is placed on hold until the northbound and southbound movements on Main Street are under the green ball.

Appendix