

Memorandum

To: Sean Dorsey, Director of Public Works
From: Kelly Conolly, P.E.
Peter Wojtkiewicz, P.E., PTOE
Date: October 15, 2018
Re: Mount Prospect Downtown Transportation Study
ADDENDUM #1

Sam Schwartz Consulting (*Sam Schwartz*) was retained by the Village of Mount Prospect to update its Downtown Transportation Study (March 2018) to reflect the proposed residential development, Maple Street Lofts, to be located along Maple Street between Prospect Avenue and Lincoln Street. The following memorandum serves as an addendum to the March report, documenting new data collection and *Sam Schwartz's* methodology for traffic demand forecasting and analyses for this study. Recommended improvements are documented to improve the functionality of the existing local transportation system and mitigate anticipated traffic-related impacts resulting from the proposed development.

Study Area

The study area for the original transportation study generally included the downtown Mount Prospect intersections on either side of the railroad tracks from IL 83 to School Street, both signalized and unsignalized locations, as well as at Mount Prospect Road. To evaluate the proposed development, the study area was expanded for this addendum to include the following additional intersections:

1. Maple Street with Lincoln Street
2. Maple Street with the commuter parking lot driveway
3. Lincoln Street with the commuter parking lot driveway
4. Prospect Avenue with (future) Elm Street
5. Lincoln Street with (future) Elm Street

Existing Traffic Volumes

Sam Schwartz conducted field visits to collect relevant information pertaining to the site, the surrounding street network, traffic volumes, traffic controls, lane geometry, and infrastructure at the study intersections. The Village of Mount Prospect collected new morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period traffic counts in September 2018 to supplement previous counts collected in May 2017.

The Existing Traffic volume diagrams for the weekday AM and PM peak hours are shown in **Figure 1**. Counts indicate the peak hour of traffic occurs 7:15 to 8:15 AM and 5:00 to 6:00 PM. It should be noted that northbound Maple Street was closed just north of Lincoln Street for

construction from 7:30 to 9:00 AM during the morning counts so that all vehicles intending to enter the commuter parking lot from the west/south entered using the Lincoln Street driveway rather than the Maple Street driveway. Review of the existing peak hour traffic volumes indicates the following:

- Traffic on Prospect Avenue has decreased approximately 5 to 7 percent in the morning and evening peak hours, respectively, since the previous counts were collected in 2017. This may be in part attributable to the closure of the mill shop, Parenti & Raffaelli, Ltd., on Prospect Avenue and its relocation outside of downtown. Thus, traffic generated by Parenti & Raffaelli was generally eliminated from the study area.
- The existing 280-space commuter surface parking lot generate 185 trips (mostly inbound) during the morning peak hour and 130 peak hour trips (all outbound) during the evening peak hour.

Additionally, the Appendix includes the Average Daily Traffic (ADT) map available from the Illinois Department of Transportation (IDOT). Daily traffic flow on the street network through and surrounding downtown indicates the primary traffic pattern avoids Northwest Highway through downtown, choosing to use Central Road and Mount Prospect Road to bypass the downtown area, and presumably, the delays experienced crossing IL 83/railroad tracks. This is indicated by the much lower traffic volumes on the segment of Northwest Highway between Central Road and Mount Prospect Road when compared to north of Central Road and south of Mount Prospect Road.

Signal and Railroad Crossing Characteristics

Peak period traffic congestion through the downtown area is caused by large traffic volumes crossing the Union Pacific (UP) railroad tracks at-grade, interrupted by a high number of commuter trains during the same peak period times, as well as emergency vehicles. The only two railroad crossings in the downtown area are IL 83 and Emerson Street. The traffic delays are compounded by the condition that the IL 83 and Emerson Street railroad gates remain down while Metra passengers board and alight the train, increasing the time traffic is stopped and significantly decreasing the efficiency of the three interconnected traffic signals along IL 83 and at Emerson Street and Northwest Highway.

Data pulled from the IL 83 with Northwest Highway and Prospect Avenue signal controller shows that the crossing gates are down 32 to 34 of the peak 90-minute traffic periods. This signal and railroad crossing information is summarized in **Table 1**.

Table 1: Mount Prospect Railroad Crossing Summary

Location	Average Daily Traffic		# of Signal Phases	Cycle Length		No. of Train Interruptions		Min Gate Down	
	N/S Route	E/W Route		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
IL 83 @ Northwest Hwy & Prospect Ave	13,900	10,900	10	160	170	17	14	34	32

Maple Street Lofts Development Plan

A residential development is proposed on Maple Street between Prospect Avenue and Lincoln Street. The site is currently occupied by a 280-space commuter parking lot. The adjacent site was formerly home to Parenti & Raffaelli, Ltd. Mill shop, which currently sits vacant on the site. The proposed site consists of the following:

- 257 residential units in two apartment buildings with a total of 306 residential parking spaces
- 10,000 square feet of ground-floor retail
- 66 townhomes with two parking spaces per unit
- 250 public parking spaces in a three-story parking structure
- On-street parking along Prospect Avenue, (future) Elm Street, and other internal streets

Elm Street will be a new public street extending through the site from Prospect Avenue to Lincoln Street. A new street will also extend east from Maple Street. Access to the uses on the site will be provided via these new streets and a series of driveways on Lincoln Street that directly serve the rear-loaded townhomes.

As part of the development plan, the Village is planning to relocate 100 commuter parking permits from the Maple Street facility to the Village Hall parking garage in an effort to balance the additional traffic generated by the residential units. Commuters residing north of the tracks will be directed to the Village Hall parking garage to reduce traffic across the tracks during peak periods. This initiative will also remove trips coming to and leaving from the Maple Street Lofts site during peak hours. The remaining approximately 180 commuter parking spaces will be reserved in the new public parking garage on the site. The other parking spaces will be available to the public, including customers of the retail component of the site, as well as other existing businesses and events.

Trip Generation

The estimate of traffic to be generated in the future condition is based upon proposed land use type and size. The Institute of Transportation Engineer's (ITE) Trip Generation, 10th Edition was used to identify traffic generated by the Maple Street Lofts development concept. **Table 2** summarizes the peak hour trip generation estimates, as well as the applicable Land Use Code reference.

The data for the residential units, the apartments in particular, indicate they will be transit-oriented dwellings with a lower vehicular traffic demand than traditional suburban units. Many of the trips expected to be generated by the site in the morning and evening peaks will be person-trips oriented to and from the Metra station.

The table also summarizes the commuter parking trips that are currently entering and exiting the surface lot on the site and the portion that will no longer be using the Maple Street facility as they are relocated to the Village Hall parking garage. Note that the total trips never equal the number of parking spaces because the table shows the peak one-hour period and the trips are disbursed across a two to three-hour window, not all arriving or departing in the same hour.

Table 2: Vehicular Trip Generation

Land Use / Size	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Maple Street Lofts						
Mid-Rise Residential with Ground-floor Retail – 257 units + 10,000 SF	20	55	75	65	30	95
Low-Rise Multifamily Housing (Townhouse) – 66 DU (LUC 221)	<u>5</u>	<u>25</u>	<u>30</u>	<u>25</u>	<u>15</u>	<u>40</u>
New Residential/Retail Trips	25	80	105	90	45	135
Commuter Parking						
Existing 280 spaces	170	15	185	0	130	130
Relocation of 100 permits	-40	0	-40	0	-45	-45
Commuter Parking Trips	130	15	145	0	85	85

New Trip Assignment

The directional distribution of site-generated traffic is a function of several variables, including existing travel patterns, characteristics of the area street network, and characteristics of the surrounding neighborhoods. The resulting percentages are a best estimate using engineering judgment, familiarity with the area, and logical travel paths to likely origins and destinations for site users. The new residential/retail trips were assigned to the street network according to the directional distribution and are shown in **Figure 2**.

The existing commuter trips captured in the traffic counts were assumed to remain on the street network to present a conservative worst-case scenario. However, 40 to 45 trips during the peak hour will actually be reassigned to the Village Hall parking garage and no longer enter or exit the site. The development-generated traffic was added to the existing traffic volumes to develop near-term future traffic conditions. The resulting Future Traffic volumes are shown in **Figure 3**.

Capacity Analysis

The operational effectiveness of transportation facilities is measured in terms of Level of Service (LOS). LOS ranges from LOS A to LOS F, with LOS A being the best level of operation for an intersection and LOS F being the worst. LOS A represents free-flow conditions where motorists experience a high level of comfort and convenience. LOS E represents saturated or at-capacity conditions, and LOS F represents oversaturated conditions.

LOS at a signalized intersection is defined in terms of average control delay (measured in seconds per vehicle), which is the portion of total delay experience by a motorist that is attributable to the traffic signal. LOS A describes operations with minimal delays (up to 10 seconds per vehicle), while LOS F describes operations with delays in excess of 80 seconds per vehicle. At intersections with long cycle lengths, the quantity of red time that is allocated to an approach or movement may near or exceed that 80-second threshold, increasing the likelihood of poor LOS. The LOS criteria for signalized intersections, as defined in the Highway Capacity Manual, Sixth Edition (HCM), are provided in **Table 3**.

Table 3: LOS Criteria for Signalized Intersections

Level of Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 20.0 seconds
C	> 20.0 and ≤ 35.0 seconds
D	> 35.0 and ≤ 55.0 seconds
E	> 55.0 and ≤ 80.0 seconds
F	> 80.0 seconds

Transportation Research Board. *Highway Capacity Manual*, 2010.

For unsignalized intersections, total delay is defined as the total elapsed time from the moment a vehicle stops at the back of the queue until the vehicle departs from the stop bar on the stop-sign controlled approach. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The LOS thresholds for unsignalized intersections, which differ from those for signalized intersections, are summarized in **Table 4**.

Table 4: LOS Criteria for Unsignalized Intersections

Level of Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds

Transportation Research Board. *Highway Capacity Manual*, 2010.

Synchro 9 traffic analysis software was used to analyze the study intersections for the weekday peak hours under both existing traffic conditions and projected future traffic conditions with the addition of site-generated traffic. The capacity analysis results from Synchro provide average vehicle delays and LOS for each study intersection. SimTraffic, the traffic simulation module of the Synchro software package, was also used to develop traffic simulations for the existing and future scenarios to further inform traffic operations and to assist in determining the effectiveness of the existing roadway system. Traffic signal timings for the signalized intersections were obtained from IDOT's system and verified in the field. Summaries of the capacity analysis results under existing and future projected conditions are presented in **Table 5**.

Table 5: Intersection Level of Service Comparison

Intersection/Lane	Existing		Future		Notes
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
IL 83 at Northwest Hwy (s)					
Eastbound L	B	B	B	B	
Eastbound TR	C	C	C	C	
Westbound L	C	D	D	D	
Westbound TR	D	D	D	D	
Northbound L	A	A	A	A	
Northbound TR	A	A	A	A	
Southbound L	F	E	F	E	
Southbound TR	D	D	D	D	
Overall Intersection	C	C	C	C	
IL 83 at Prospect Ave (s)					
Eastbound L	F	F	F	F	
Eastbound TR	D	D	D	D	
Westbound L	E	E	E	E	
Westbound T	E	E	E	E	
Westbound R	E	E	E	E	
Northbound L	E	E	E	E	
Northbound TR	E	E	E	E	
Southbound L	C	C	C	C	
Southbound TR	A	A	A	A	
Overall Intersection	D	D	D	D	
Emerson St at Northwest Hwy (s)					
Eastbound L	A	A	A	A	
Eastbound TR	A	A	A	A	
Westbound L	A	A	A	A	
Westbound T/R	A	A	A	A	
Northbound L	C	C	C	C	
Northbound TR	C	C	C	C	
Southbound L	C	C	C	C	
Southbound TR	C	C	C	C	
Overall Intersection	B	B	B	B	
Emerson St at Prospect Avenue					
Eastbound L/T	C	C	C	C	
Eastbound R	C	C	C	C	
Westbound LT	B	B	B	C	
Westbound R	B	B	B	C	
Northbound	A	A	A	A	
Southbound	A	A	A	A	
Minor Approach	C	C	C	C	
Maple St at Northwest Hwy					
Eastbound	A	A	A	A	
Westbound	A	A	A	A	
Northbound LTR	B	C	C	C	
Southbound LTR	C	C	C	C	
Southbound Approach/Overall	C	C	C	C	
Maple St at Prospect Ave					
Westbound	A	A	A	A	
Northbound Approach	B	B	B	B	
Maple Street at Lincoln Street					• Maintain AWSC
Eastbound	A	A	A	A	
Westbound	A	A	A	A	
Northbound	A	A	A	A	
Southbound	A	A	A	A	
Overall Intersection	A	A	A	A	

Table 5: Intersection Level of Service Comparison (Con't.)

Intersection/Lane	Existing		Future		Notes
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
Elm Street at Prospect Ave Westbound L Northbound Approach	n/a	n/a	A A	A A	• TWSC
Elm Street at Lincoln Ave Eastbound L Southbound Approach	n/a	n/a	A A	A A	• TWSC
School St at Northwest Hwy Eastbound L Southbound Approach	A B	A C	A B	A C	
School St at Prospect Ave Westbound L Northbound Approach	A A	A A	A A	A A	
Mount Prospect Rd at Northwest Hwy (s) Eastbound L Eastbound TR Westbound L Westbound TR Northbound L Northbound TR Southbound L Southbound TR Overall Intersection	D F E E A A E E D	D F F E B A E E D	D F E E A A E E D	D F F E A A E E D	• Future condition shown with improvements planned by IDOT
Mount Prospect Rd at Prospect Ave (s) Eastbound L Eastbound R Northbound T Northbound L Southbound TR Overall Intersection	F C D E A D	F C D E A D	F C D E A D	F C D E A D	• Future condition shown with improvements planned by IDOT • Village should study eastbound dual left-turn lanes

(s) Signalized intersection.
 (AWSC) All-way Stop Control intersection.
 (TWSC) Two-way Stop Control intersection.

Existing Traffic Operations

All unsignalized intersections operate at LOS C or better. There are several movements and lane groups under traffic signal control that currently operate below LOS D during the peak hours. Signalized traffic movements or lane groups that currently operate at LOS E or LOS F include the following:

IL 83 and Northwest Highway

- The southbound left-turn movement operates at LOS F during the AM peak hour and LOS E during the PM peak hour as it is under protected-only phasing.

IL 83 and Prospect Avenue

- The eastbound left-turn movement operates at LOS F during the AM and PM peak hour.
- All westbound movements operate at LOS E during the AM and PM peak hour.
- All northbound movements operate at LOS E during the AM and PM peak hour.

Mount Prospect Road and Northwest Highway

- The eastbound through movements operates at LOS F during the AM and PM peak hour.

- The westbound left-turn movements operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The westbound through movements operate at LOS E during the AM and PM peak hours.
- All southbound movements operate at LOS E during the AM and PM peak hour.

Mount Prospect Road and Prospect Avenue

- The eastbound left-turn movement operates at LOS F during the AM and PM peak hour.
- The northbound left-turn movements operate at LOS E during the AM and PM peak hours.
- Long queues were noted on eastbound Prospect Avenue at Mount Prospect Road. Synchro analysis shows the 95th percentile for the eastbound left queue to be approximately 275 feet during the AM Peak which is longer than the 150 feet of storage currently provided.

Projected Future Traffic Operations

The capacity analysis results show that almost all approaches and lane groups would operate at the same LOS as existing conditions and none would change beyond LOS D that are not already under LOS D, showing the increase in traffic is limited in its impact to LOS street operations.

Alternatives Evaluation

The overall purpose of the Downtown Transportation Study is to improve transportation conditions in the downtown. Through an alternatives evaluation, numerous improvement scenarios have been evaluated in the last several years. As detailed in the March report, however, traffic operations and the railroad signal system in the downtown area are complicated and highly interconnected, making a silver bullet solution difficult. Instead, the evaluation indicates several incremental improvements will overall result in marked operational improvements. Below is a brief summary of the alternatives studied and the outcome of those evaluations:

Feasibility of At-Grade Crossing

All railroads, including the Union Pacific Railroad (UPRR), are generally opposed to any new at-grade crossings due to safety and maintenance issues. In the case of Mount Prospect, the UPRR has stated that for a new at-grade crossing, they would like to see three existing crossings closed. The Illinois Commerce Commission (ICC) is the final authority for the authorization of any at-grade crossing in the state, and the UPRR will have significant input with the ICC for a crossing on their line. The ICC also would prefer to close crossings rather than open new crossings and even has a Crossing Closure Incentive Program to provide incentives for communities to close at-grade crossings. Considering these policies and that the crossing would require approval or permitting from ICC, UPRR, IDOT, and Metra, permitting a new at-grade crossing would need significant political support to be approved by those agencies. Physically, the analysis of a third at-grade crossing at Maple Street shows it is feasible with right-of-way acquisition, roadway and sidewalk realignment, and modifications (loss of parking) to the existing Metra parking lot. It also improves traffic operations and delay for through and turning movements at the IL 83 signalized intersections. The cost analysis projected a cost of approximately \$5 million.

Feasibility of Underpass

The Downtown Transportation Study evaluated an underpass at School Street but determined substantial impact to resident and business access along Northwest Highway, Prospect Avenue,

and School Street due to clearance needed under the tracks and maximum allowed slopes. In addition, a grade-separated crossing also requires approval from ICC, UPRR, and IDOT and UPRR policy for adding a grade-separated crossing is to attempt to eliminate one at-grade crossing. A detailed cost analysis has not been completed for this alternative but would be expected at \$20 million or more.

Closure of Prospect Avenue

Long traffic signal cycle lengths at two of three signalized intersections along Northwest Highway and IL 83 are required because the current signal sequences require safety clear-out phases. Those long cycles cause all movements to experience lengthier delays than if the cycle length were shorter. In 2016, *Sam Schwartz* studied the elimination of several signalized phases at IL 83 and Prospect Avenue which would significantly improve the downtown traffic signal system but would require that Prospect Avenue be closed with cul-de-sacs at its current intersection with IL 83. The shorter cycle lengths would improve LOS at the IL 83/Northwest Highway intersection, as well as other intersections on the closed loop system. However, this alternative was not received well by key stakeholders and the public.

Traffic Management Center

Sam Schwartz previously looked at cost estimates for the Village to construct a Traffic Management Center (TMC), similar to Lake County's PASSAGE system, that would provide advanced real-time management of signalized intersections on certain systems in the Village. Our basic analysis in 2016 estimated a cost for a TMC that could easily exceed \$1.5 million to convert several closed systems and cost approximately \$150,000 annually in staffing and maintenance.

Move Train Station/Platforms

The Metra station in Downtown Mount Prospect is a key component in attracting residents and businesses to the area. However, the current location of the station and loading platform parallel to Northwest Highway between IL 83 and Maple Street causes traffic operational problems. The Downtown Transportation Study evaluated relocation options that would allow trains to be parked in the station and a clear zone set between the front of the engine and the IL 83 and/or Emerson crossings, potentially allowing the gates to reopen while the train is loading. Platform relocation either eastward or westward would require moving the train station depot to a point near the center of the relocated platform. To provide the same width between the railroad tracks and Northwest Highway that exists at the current depot location, significant land acquisition and the realignment of Northwest Highway would be required. *Sam Schwartz* estimates that either an eastbound or westward relocation would require a minimum land acquisition of 1.0 acre and a cost of \$12-14 million. It would also move the Metra station from the heart of downtown.

Move Inbound Trains

In discussions between the Village, UPRR, and Metra, Metra is open to instructing eastbound train engineers to hit a certain pre-determined mark with the last engine to maintain the required clear zone that allows the railroad gates at the IL 83 crossing to return to the upright position once the train passes through the IL 83 crossing. This operational change may decrease the time gates are closed up to 11 minutes during the peak 90-minute morning rush period and 4 minutes during the peak 90-minute evening rush. Moving the inbound trains may require that the south platform

be extended eastward approximately 250 feet. The cost analysis projected a cost of approximately \$900,000.

Relocation of Fire Station out of Downtown

The Village is currently in the process of relocating its Police and Fire Department from its downtown Station 13 location on Northwest Highway. According to the department's information, there are approximately 4,500 emergency responses per year out of that station. Considering that two units typically respond to each call, there are at least 2,000 traffic interruptions per year caused by the pre-emptions. Observations and signal controller information indicate there is, on average, one call during both the morning and evening peak hours, which impacts traffic for approximately two minutes on each occurrence and is typically compounding or lengthening an already occurring traffic interruption. Relocation of the station so that emergency vehicles may avoid IL 83/Northwest Highway congestion would allow normal coordination plans to run for approximately 10 more minutes at programmed offsets by eliminating the transition period.

The following **Table 6** was compiled to illustrate the estimated incremental improvements that both moving inbound trains and relocating the fire station will have on the peak 90-minute periods of traffic.

Table 6: IL 83/Emerson Railroad Crossing Summary

	Morning (7:00-8:30)				Evening (4:30-6:00)			
	Train		Emergency Vehicle		Train		Emergency Vehicle	
	No. of Interruptions	Gates in Down Position (min)	No. of Interruptions	Estimated Transition Period (min)	No. of Interruptions	Gates in Down Position (min)	No. of Interruptions	Estimated Transition Period (min)
Existing Condition	17	34	1	10	14	32	1	10
<u>Improvements</u>								
Relocation of Fire Station			-1	-10			-1	-10
Move inbound trains		<u>-11</u>				<u>-4</u>		
Total (Projected Condition)	17	23	0	0	14	26	0	0

Pedestrian Push-Button Signals

The current traffic signals at IL 83/Northwest Highway/Prospect Avenue and Emerson Street/Northwest Highway have one pedestrian push button on each corner. When pressed, the button calls for both crossings from the corner to be activated. This causes a false call in the unused direction which can create unnecessary green time for minor approaches and corresponding delays for major approaches. Morning pedestrian calls account for 22 seconds of delay per signal cycle (160 seconds total) and afternoon calls account for 16 seconds of delay

per cycle (170 seconds total). By adding several push buttons and posts to these signalized intersections, pedestrians will be able to choose the crosswalk they intend to use, reducing the false calls and giving back green time to the highest traffic demand. The required process would be to submit plans and specifications to IDOT permits for approval and meetings with IDOT have indicated they are supportive of the improvement. IDOT Traffic Operations Department would handle coordination with ICC before IDOT ultimately issues the permit for construction. This is seen as a low-cost (approximately \$65,000) improvement that would benefit traffic operations during 25 to 30 percent of the peak hour (five to six cycle lengths).

Mount Prospect Road and Prospect Avenue

This intersection is slated to be improved by IDOT and the signal timing may be adjusted by IDOT or one of their timing consultants after construction in the next five years. No street widening/capacity improvements are planned at this time. Field observations noted long queues eastbound on Prospect Avenue at Mount Prospect Road. The traffic volume distribution estimates approximately 10-20 vehicles will be added to the eastbound movements in the peak hours at that intersection under future conditions. Synchro analysis estimates this could lengthen the queue approximately 20-35 feet or one to two vehicles during the peaks.

To accommodate the queues, *Sam Schwartz* evaluated the operational improvements of adding dual eastbound left-turn lanes on Prospect Avenue at the signal and the analysis shows the capacity improvement would reduce average delay by approximately 20 seconds and reduce eastbound queues by approximately 100 feet. The addition of dual lefts would require that Mount Prospect Road be widened (to approximately 35 feet) across the railroad tracks to accept the turning vehicles. Widening across the tracks is an expensive improvement considering a proposed crossing improvement would need to proceed through an ICC and IDOT approval process and involve train signal pre-emption equipment coordination. However, in the past, both IDOT and ICC have authorized geometric capacity improvements for existing railroad crossings.

Signalization at Prospect Avenue/Emerson Street

As part of the analysis, *Sam Schwartz* modeled the intersection of Emerson Street and Prospect Avenue under traffic signal control to test the operations compared to three-way stop sign control. The advantage of signalization is that the track clearance phasing will guarantee passage for both northbound traffic crossing the tracks through Northwest Highway and southbound traffic crossing the tracks through Prospect Avenue. The disadvantage, however, is that signalization will not significantly improve intersection LOS operations and it will degrade LOS at the Emerson Street and Northwest Highway intersection as more time will be required to be dedicated to clearance track phases, thus increasing the cycle lengths, for example from 85 seconds to 170 seconds in the PM period to match IL 83. The Emerson/Northwest Highway cycle length currently runs at half the length of the IL 83 signal cycles which has significantly reduced delays and queuing at the intersection.

Move Permit Parking

As part of the development plan, the Village is planning to relocate 100 commuter parking permits from the Maple Street facility to the Village Hall parking garage in an effort to reduce traffic demand in the immediate site area and balance the additional traffic generated by the residential units. The Village will target permit holders that live north of Northwest Highway to relocate to the

Village Hall parking garage where there is excess capacity and no need to cross the UP railroad tracks. This will reduce traffic crossing the tracks by 40 to 45 vehicles during the peak hour which will result in lower delays and shorter queues, particularly on IL 83 and Emerson Street. It also has the potential to offset over 30 percent of the traffic generated by the development, as summarized in **Table 7**.

Table 7: Net New Trips to/from Site

Land Use / Size	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
New Residential/Retail Trips	25	80	105	90	45	135
Relocation of 100 permits	-40	0	-40	0	-45	-45
Net Vehicular Trips	-15	80	95	90	0	90

Recommendations

The evaluation indicates several incremental improvements will overall result in marked operational improvements. *Sam Schwartz* offers the following recommendations as incremental, near-term projects to improve traffic operations in the downtown area that have a high cost-benefit ratio (or are already planned).

- The Village should continue to work with Metra to instruct engineers on eastbound (inbound) trains to hit a certain pre-determined mark with the last engine to maintain a clear zone that would allow the railroad gates at the IL 83 crossing to return to the upright position while the train is loading in the station but has passed through the IL 83 crossing. This operational change will reduce the duration gates are in the down position by 11 minutes in the peak morning period and 4 minutes in the peak evening period. Metra may require that the south platform be ultimately extended approximately 250 feet east.
- Pedestrian posts and pushbuttons should be installed at the intersections of IL 83 with Northwest Highway and Prospect Avenue and the intersection of Northwest Highway with Emerson Street to improve the operational efficiency by eliminating unused green time caused by false pedestrian calls. This would benefit traffic operations during 25 to 30 percent of the peak hour (5-6 cycle lengths), and could reduce delay caused by unused vehicle green time up to 22 seconds per cycle length.
- Relocation of the police and fire station will minimize pre-emption calls through the critical cluster of signalized intersections, particularly during the peak 90-minute morning and evening rush periods, reducing signal offset transitions by approximately 10 minutes.
- Neighborhood traffic control surrounding the Maple Street Lofts site should be provided as follows:
 - The intersection of Maple Street with Lincoln Street should remain under all-way stop sign control.

- The Elm Street (future) approaches at both Prospect Avenue and Lincoln Street should be under stop sign control, with Prospect Avenue and Lincoln Street remaining free flow (two-way stop controlled).
- The new east-west street that will intersect Maple Street should also be under stop sign control with Maple Street remaining free flow.
- As part of the development plan, the Village should relocate 100 permit parkers from the Maple Street facility to the Village Hall parking lot. In order for this to benefit traffic operations and eliminate trips crossing the railroad tracks, the relocated parkers will need to reside north of the railroad tracks. This relocation can offset over 30 percent of the peak hour development-generated traffic to and from the site.
- As more pedestrian activity will occur at the intersection of Prospect Avenue and Maple Street with the development of the site, staff should evaluate pedestrian crossing placement and signage at the intersection in coordination with site plan development.
- Staff should continue to monitor traffic volumes and speeds on surrounding neighborhood streets in the future and consider traffic calming measures as warranted as part of the Village's traffic calming program.

Additionally, the following longer-term alternatives have merit and should continue to be evaluated by the Village:

- In the long-term, the Village should pursue discussions with legislative representatives, the UPRR, and the Illinois Commerce Commission to determine if there is flexibility in the UPRR policy that requires three existing at-grade crossings be eliminated for one new at-grade crossing to be considered.
- The Village should further study the intersection of Prospect Avenue with Mount Prospect Road to determine the costs and implications of widening Mount Prospect Road over the railroad tracks to accept dual eastbound left-turn lanes from Prospect Avenue.

Figures

Figure 1: Existing Traffic

Figure 2: New Site-Generated Traffic

Figure 3: Future Traffic



Not to Scale

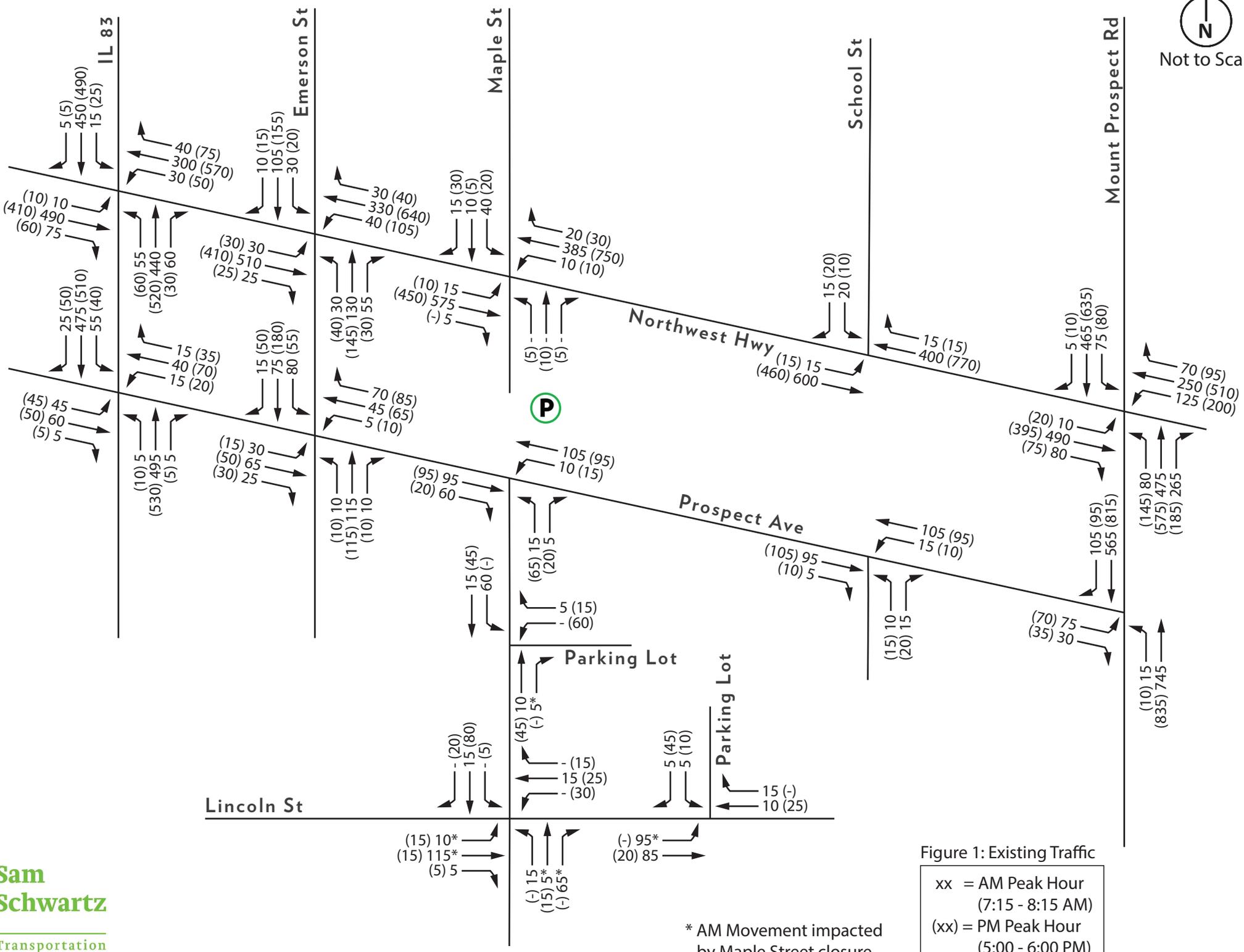


Figure 1: Existing Traffic

xx = AM Peak Hour
 (7:15 - 8:15 AM)

(xx) = PM Peak Hour
 (5:00 - 6:00 PM)

* AM Movement impacted by Maple Street closure



Not to Scale

