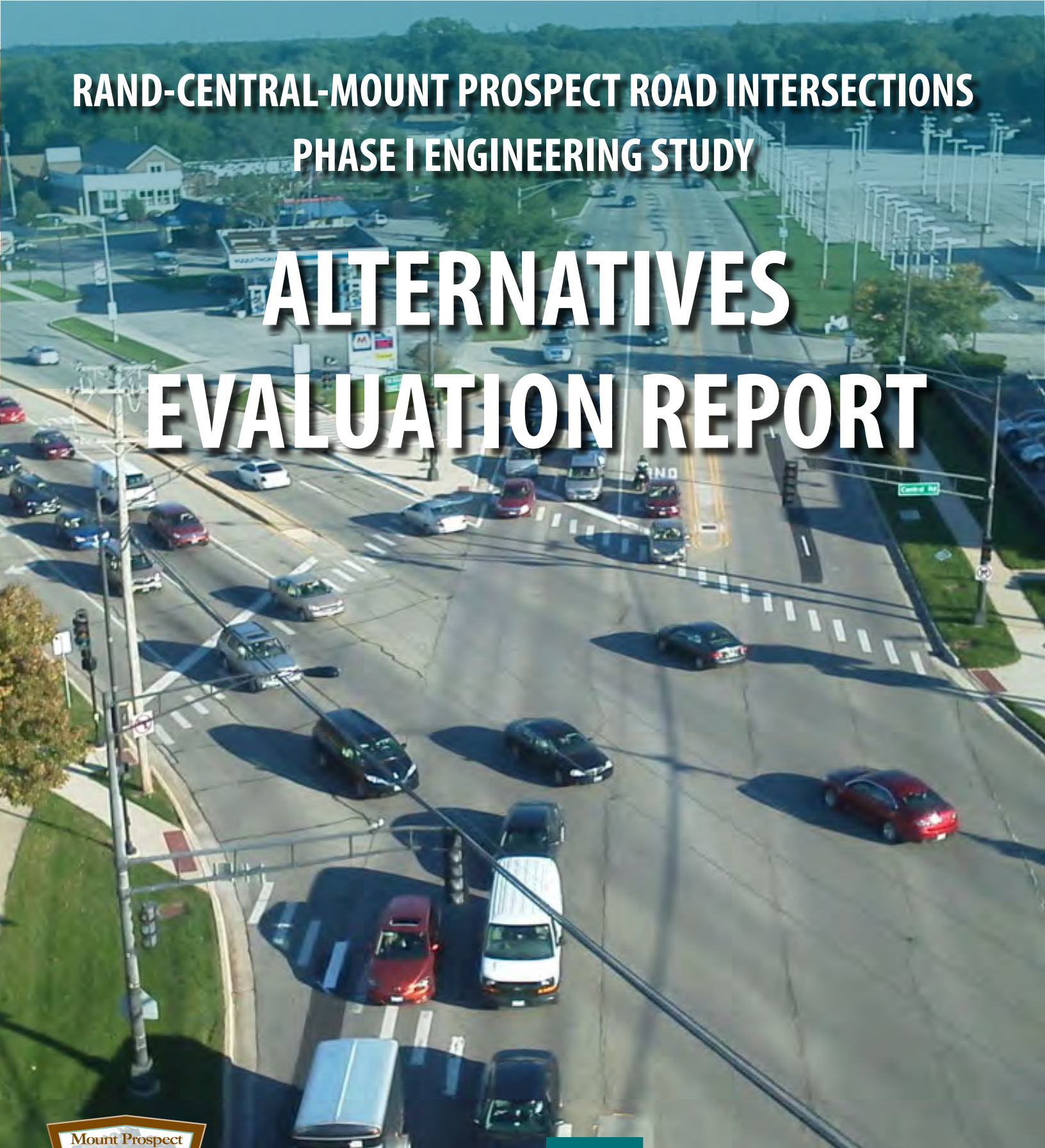
RAND-CENTRAL-MOUNT PROSPECT ROAD INTERSECTIONS

PHASE I ENGINEERING STUDY

ALTERNATIVES EVALUATION REPORT



VILLAGE OF MOUNT PROSPECT
1700 W. CENTRAL ROAD
MOUNT PROSPECT, IL 60056

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 WEST HIGGINS ROAD | SUITE 600
ROSEMONT, IL 60018

Rand-Central-Mount Prospect Road Intersections
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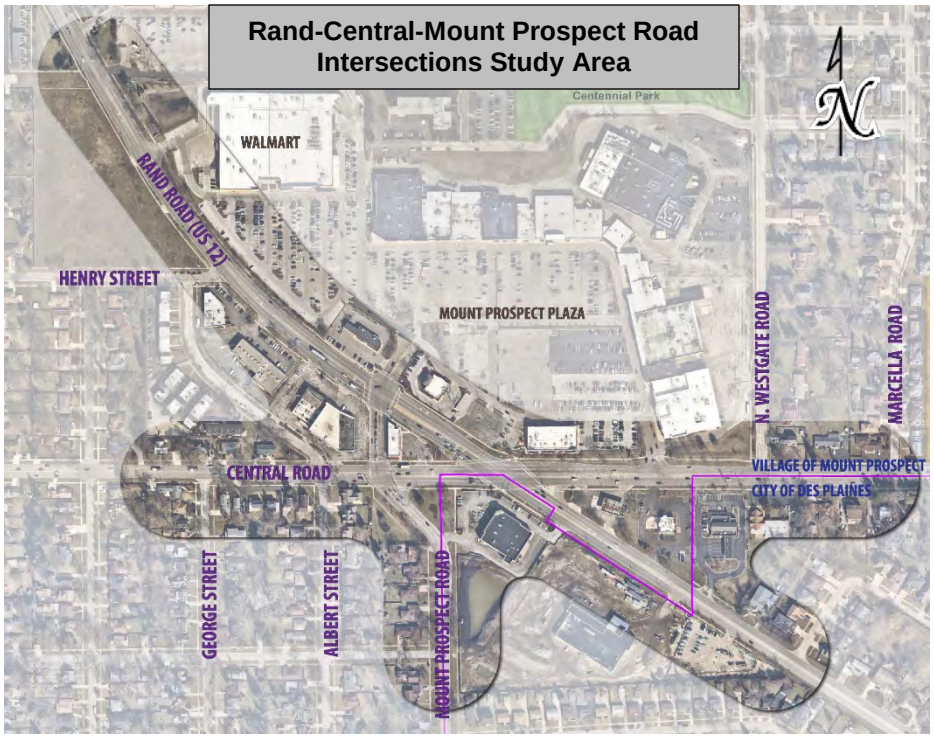
Executive Summary

The purpose of this Alternatives Evaluation Report (AER) is to provide a comparative evaluation of the alternatives considered for the proposed improvement of the Rand Road (US 12), Central Road, and Mount Prospect Road intersections, and the evaluation results to date. The study area is shown in the figure below.



The previous Rand Road Corridor Plan (RRCP) was jointly funded and completed by the Regional Transportation Authority (RTA) and the Village of Mount Prospect in early 2017 from Camp McDonald Road to Central Road. The RRCP provided a framework for near-term and long-term improvement priorities, and identified the Rand-Central-Mount Prospect Road Intersections as a near-term improvement priority.

After completion of the RRCP, the Village selected Christopher B. Burke Engineering, Ltd. (CBBEL) to initiate Phase I Engineering and Environmental Studies (Phase I Study), which is the first step in the Federal Project Development process. The Phase I Study includes a more detailed look at the purpose and need for improvements, a full range of potential improvements alternatives, environmental surveys, public involvement, identification of the preferred alternative, and coordination with the Illinois Department of Transportation (IDOT) and the Federal Highway Administration (FHWA) to secure Phase I Engineering Design Approval. With Phase I Design Approval granted by IDOT and FHWA, the project is eligible for federal funding assistance opportunities for Phase II Engineering and Construction.

The initial part of the Phase I Study included a detailed analysis of traffic data (existing and project year 2040) and a detailed review of crash data to determine existing deficiencies and to establish a baseline condition for analysis of potential alternatives. An initial Public Information Meeting was also held on August 11, 2017 to get further input from project stakeholders on travel concerns and needs in the study area, and potential improvement considerations. Through this upfront analysis and initial stakeholder coordination, the purpose and need for improvements was clarified, and a range of potential alternatives for consideration was identified. The Public Information Meeting summary is included in Appendix 4. The following Build Alternatives were identified for the comparative evaluation:

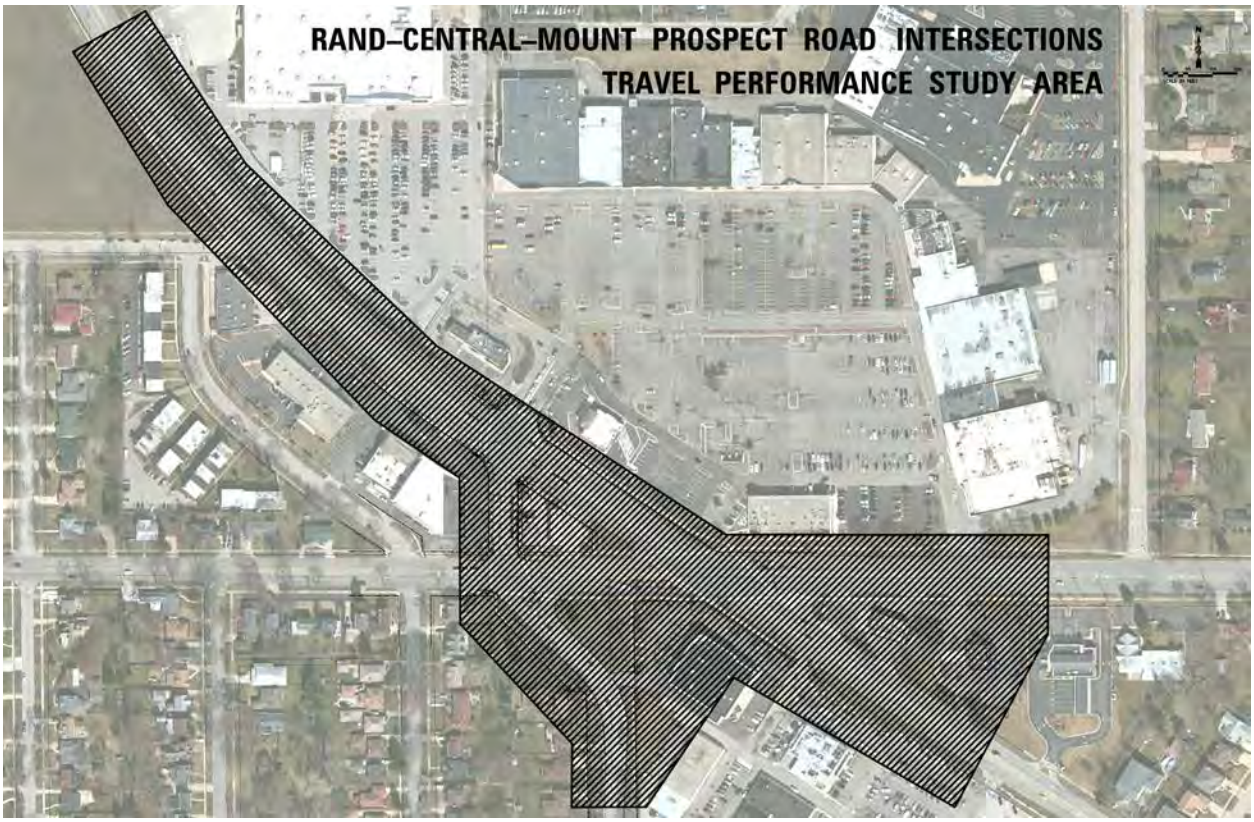
- Alternative 1: Add Auxiliary Lanes on Mount Prospect Road at Central Road and on Central Road at Rand Road
- Alternative 2: Modify Plaza Main Exit to Southbound Right-Out Only
- Alternative 2B: Alternative 2 plus Add New Traffic Signal at SE Plaza Access Drive
- Alternative 2C: Alternative 2B plus Add Dual Left Turn Lanes on Rand at Central in both directions
- Alternative 2D: Alternative 2B with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 2E: Alternative 2C with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 3: Relocate Main Plaza Exit/Entrance
- Alternative 3B: Alternative 3 plus Add New Traffic Signal at SE Plaza Access Drive
- Alternative 3C: Alternative 3B plus Add Dual Left Turn Lanes on Rand at Central in both directions
- Alternative 3D: Closely Spaced Intersection Concept with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 3E: Alternative 3 with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 3F: Alternative 3C with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 4: No Left Turns at Rand and Central Intersection
- Alternative 5: Grade Separation at Rand and Central Intersection
- Alternative 6: Modern Roundabout with Rand Road Underpass

A concept drawing of each alternative is provided in Appendix 1.

Evaluation Approach

To comparatively evaluate the range of alternatives, an alternative evaluation table was developed and is included in Appendix 2. Travel demand within the study area was evaluated for existing and projected year 2040 conditions to determine existing and future travel performance. The existing traffic was obtained by actual field traffic counts in 2017, and the 2040 traffic projections were prepared by CMAP based on the projected population and

employment growth in the project area. The existing and year 2040 traffic volumes are provided in Appendix 3. Synchro and SimTraffic traffic models were prepared for existing conditions calibrated to observed field conditions and projected year 2040 (No-Build) traffic volumes. A baseline conditions model was built from the year 2040 No-Build model including the addition of a second southbound thru lane on Mount Prospect Road at Central Road to be completed this summer (2018). The alternatives were compared against this baseline conditions traffic model for the evaluation. Synchro was used to determine signalized intersection traffic performance measures including level of service (LOS) and delay. SimTraffic was used to analyze transportation performance through the overall network, and the study area used for the network-scale analysis is shown in the figure below.



The alternatives evaluation criteria used for the comparison include:

- Overall Study Area: Total delay, travel time, average speed, fuel used, queuing thru upstream signals (to indicate potential for blocked intersections), and overall length of queuing
- Arterials (Average Travel Time in Seconds): Time to pass through the study area for eastbound and westbound Central Road, northwest- and southeast-bound Rand Road, and northbound Mount Prospect to Rand Road and southbound Rand to Mount Prospect Road

- Signalized Intersections: Level of Service and Average Delay in Seconds at intersections with traffic signals (to indicate individual intersection performance)
- Planning Level Construction Cost

Summary of Results and Preliminary Preferred Alternative

In comparison to the baseline condition (2040 with Central/Mount Prospect Improvement), Alternatives 4, 5, and 6 would not provide overall traffic operations improvements, and had the highest estimated construction cost of all alternatives considered. On this basis, these alternatives are ***not recommended*** to be considered further because they provided limited benefit when compared to their high cost and impacts.

Alternatives 1, 2, and 3 and their variations remained under consideration and were further coordinated with project stakeholders as these alternatives would provide lower evening rush hour total delay and travel time compared to the baseline condition with relatively low impacts and cost. Alternatives 1, 2, and 3 were discussed with the Mount Prospect Plaza managing company (i.e.; RAMCO) on March 14, 2018, and the meeting summary is included in Appendix 4. It was acknowledged that Alternative 1 provides operational benefits, but does not address the intersection queuing as well as Alternatives 2 and 3, and therefore is not viewed as favorable. RAMCO indicated that Alternative 3, which completely relocates the Main Plaza Entrance, presents many challenges as the access is stipulated via separate leases for each store within the Plaza. If Alternative 3 is chosen, a condemnation process may be necessary for each store based on all the required agreements between parties. RAMCO preferred Alternative 2 with a traffic signal at the Southeast Plaza Entrance to improve internal Plaza circulation and balance the loss of the through/ left turn lane at the Mount Prospect Road exit, which is Alternative 2B.

Alternatives 3D, 3E, and 3F were developed to further investigate a key concern of completely removing blocked intersections at the Rand-Central-Mount Prospect intersection triangle. Alternatives 3D, 3E, and 3F are ***not recommended*** as optimizing the traffic signal timing to clear blocked intersections results in longer clearance intervals which create a longer cycle length and additional delay.

Alternative 2D and 2E were also developed to investigate revising timings to remove blocked intersections from Alternative 2B and 2C, respectively. These performed much better than the Alternative 3 variations described above in that the Alternative 2D total delay and travel time is similar to baseline conditions, and Alternative 2E reduces total delay and travel time over baseline conditions with the added benefit of removing the potential for blocked intersections at the triangle with the longer clearance intervals.

The alternatives carried forward for further consideration were presented to the Village Board Committee of the Whole on April 24, 2018. Following the presentation in coordination with Village staff, the preliminary preferred alternative is Alternative 2B/2D with the potential variation of Alternative 2C/2E. Alternative 2B includes adding right turn lanes on northbound

and southbound Mount Prospect Road at Central Road and on eastbound Central Road at Rand Road, modifying the southbound Main Plaza egress to a right-out only, and adding proposed traffic signals at the existing Walmart Entrance on Rand Road and at the Southeast Plaza Entrance on Central Road to balance the loss of the Main Plaza southbound combined left/thru lane. Both proposed traffic signals meet traffic signal warrants, and the preliminary traffic signal warrant analyses are included in Appendix 5. Alternative 2B reduces overall study area PM total delay by approximately 30% over baseline conditions. Alternative 2D has the same geometry as 2B, but rebuilds the existing three controller traffic signal system to a single controller and retimes the intersections to remove blocked intersections.

The potential variation of Alternative 2C would add dual left turn lanes on Rand Road at Central Road. Alternative 2C reduces overall study area PM total delay by almost 45%, and has the lowest PM total delay and travel time of the alternatives studied. Alternative 2E has the same geometry as 2C, but rebuilds the existing three controller traffic signal system to a single controller and retimes the intersections to remove blocked intersections. Alternative 2C/2E is presented as an option dependent on cost and impacts. These alternatives were coordinated with the City of Des Plaines on May 16, 2018. The City expressed support for the project, and provided the Village with Phase II bike path plans along the southwest side

of Rand Road south of Central Road which may influence the design of the potential dual left turn lanes. The meeting summary is included in Appendix 4.

Next Steps

Further coordination of Alternatives 2B, 2C, 2D, and 2E in consideration of the input received from the Village Board, City of Des Plaines, and RAMCO, is planned with Walmart, the Cook County Division of Transportation and Highways (CCDOTH), IDOT, and FHWA. Based on this coordination, the preferred alternative will be identified with detailed engineering plans and studies developed and coordinated with IDOT and FHWA for review and approval of the Phase I Study. Completion of the Phase I Study is anticipated by the end of 2018 or early 2019.

Rand-Central-Mount Prospect Road Intersections

Alternatives Evaluation Report

I. Introduction

Previously, the Rand Road Corridor Plan (RRCP) was jointly funded and completed by the Regional Transportation Authority (RTA) and the Village of Mount Prospect in early 2017 as a feasibility study of general improvement needs and priorities along the Rand Road corridor from Camp McDonald Road to Central Road. The RRCP provided a framework for near-term and long-term improvement priorities, and identified the Rand-Central-Mount Prospect Road Intersections as a near-term improvement priority.

Building on the planning efforts summarized in the RRCP, the Rand-Central-Mount Prospect Road Intersections preliminary engineering and environmental study (Phase I Study) takes a fresh look at the study area to determine an improvement plan that addresses traffic deficiencies related to congestion, mobility, access, safety, and pedestrian/ bicycle accommodations. Some of the reoccurring concerns heard are that long back-ups at the intersections cause poor vehicular mobility and access to and from adjacent businesses and restaurants. In addition, congestion causes erratic driver behavior with associated safety concerns and pedestrian/ bicycle accessibility concerns.

The purpose of this report is to provide a comparative evaluation of the range of alternatives for the Rand-Central-Mount Prospect Road Intersections Phase I Study. Based on existing and projected year 2040 no-build safety and traffic analyses, and public feedback received at the Public Information Meeting and through the online questionnaire, a full range of alternatives was developed to address transportation issues within the study area. Project goals include reducing delay and queues through the intersection, improving access to and from adjacent commercial and residential areas, and upgrading pedestrian/bicycle accommodation near the triangle intersections.

The concept range of alternatives were formulated and discussed with Village of Mount Prospect (Village) staff in September 2017. The initial range of alternatives was presented to the Village Administrator and Community Development Director in December 2017.

Traffic signal timing was optimized for each Alternative to minimize total travel time and delay within the system and for specific arterial movements, and directly leads to reduced queuing and block intersections. Based on additional Village input, alternatives were added to study completely removing the potential for blocked intersections. In these cases (Alternative 2C, 2D, 3D, 3E, and 3F), traffic signal timings were optimized to clear blocked intersections with the result that the longer clearance intervals create a longer cycle length and additional delay.

The preliminary preferred alternatives were presented to the Mount Prospect Plaza ownership (RAMCO) in March 2018. RAMCO indicated their preference for Alternative 2 with

a traffic signal at the SE Plaza to minimize impacts to the development and improve internal circulation.

The year 2040 is the current regional planning horizon. Therefore, all alternatives were evaluated based on year 2040 traffic projections. The range of alternatives evaluated include:

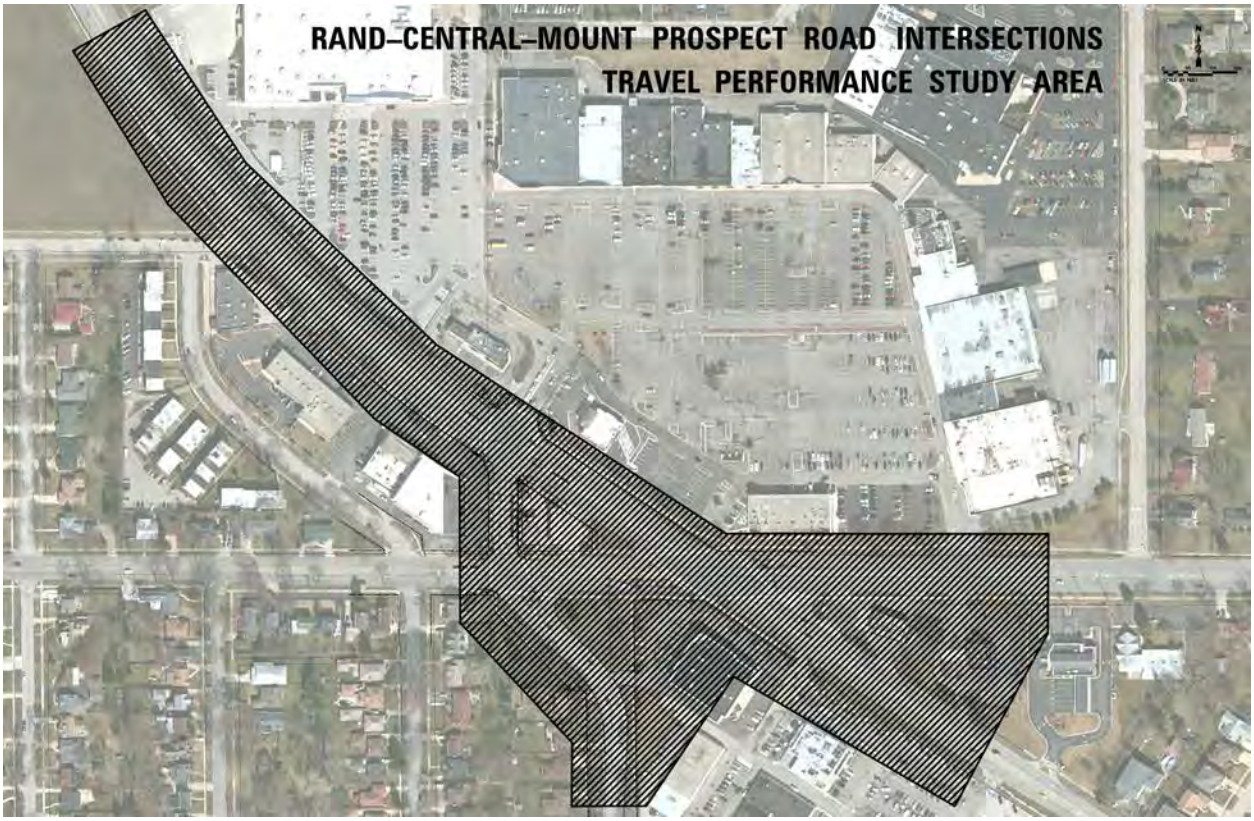
- Alternative 1: Add Auxiliary Lanes on Mount Prospect Road at Central Road and on Central Road at Rand Road
- Alternative 2: Modify Plaza Main Exit to Southbound Right-Out Only
- Alternative 2B: Alternative 2 plus Add New Traffic Signal at SE Plaza Access Drive
- Alternative 2C: Alternative 2B plus Add Dual Left Turn Lanes on Rand at Central in both directions
- Alternative 2D: Alternative 2B with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 2E: Alternative 2C with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 3: Relocate Main Plaza Exit/Entrance
- Alternative 3B: Alternative 3 plus Add New Traffic Signal at SE Plaza Access Drive
- Alternative 3C: Alternative 3B plus Add Dual Left Turn Lanes on Rand at Central in both directions
- Alternative 3D: Closely Spaced Intersection Concept with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 3E: Alternative 3 with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 3F: Alternative 3C with upgraded traffic signal equipment to eliminate intersection blocking
- Alternative 4: No Left Turns at Rand and Central Intersection
- Alternative 5: Grade Separation at Rand and Central Intersection
- Alternative 6: Modern Roundabout with Rand Road Underpass

A concept drawing of each alternative is provided in Appendix 1.

II. Evaluation Approach

To comparatively evaluate the range of alternatives, an alternative evaluation table was developed and is included in Appendix 2. The alternatives evaluation traffic performance was assessed using the Synchro and SimTraffic computer modeling tools, and compared against a baseline conditions described in the following section. Synchro was used to determine signalized intersection traffic performance measures including level of service (LOS) and

delay. SimTraffic is a traffic analysis tool within the Synchro framework used to analyze transportation performance through the overall network by simulating vehicles through the network. The study area used for the network-scale analysis is shown in the figure below.



The alternatives evaluation criteria used for the comparison include:

- Overall Study Area: Total delay, travel time, average speed, fuel used, queuing thru upstream signals (to indicate potential for blocked intersections), and overall length of queuing
- Arterials (Average Travel Time in Seconds): Time to pass through the study area for eastbound and westbound Central Road, northwest- and southeast-bound Rand Road, and northbound Mount Prospect to Rand Road and southbound Rand to Mount Prospect Road
- Signalized Intersections: Level of Service and Average Delay in Seconds at intersections with traffic signals (to indicate individual intersection performance)
- Planning Level Construction Cost

III. Baseline Condition

The current regional planning horizon for all projects in the Chicago Metropolitan area desired to be eligible for federal funding is the year 2040. On this basis, 2040 traffic conditions are required to be evaluated as part of the Phase I Study. Two scenarios were evaluated in this regard; the 2040 No-Build scenario, which assumes no improvements to these intersections by the year 2040 other than normal required roadway maintenance. The year 2040 traffic projections obtained from the Chicago Metropolitan Agency for Planning (CMAP) are included in Appendix 3.

The 2040 No-Build scenario does not address the project purpose and need discussed above. Total delay and travel time increase compared to existing conditions due to projected increases in traffic by the year 2040. There will also be a Substantial increase to specific arterial movement travel time including Northwest (NW) Rand Rd and northbound (NB) Mount Prospect to Rand.

The Village of Mount Prospect, in coordination with IDOT, will be resurfacing and restriping the Central/Mount Prospect intersection during the Summer of 2018 in conjunction with the IDOT Central Road resurfacing program. Specific elements include:

- Change southbound (SB) right turn lane (RTL) to combined Thru/RTL on Plaza Access at Rand.
- Change SB RTL to Thru on Mount Prospect at Central.

Advantages

- Total delay, travel time, and queuing decrease compared to 2040 No-Build.
- Decrease to many arterial movement travel times including northwest (NW) Rand Rd, northbound (NB) Mount Prospect and Rand, eastbound (EB) Central, and westbound (WB) Central.

Disadvantages

- Although it provides some level of cost effective improvement, it does not address the overall project purpose and need.
- Specific arterial movement travel times increase over 2040 No-Build to balance roadway approaches that are overcapacity, including southeast (SE) Rand, and SB Rand and Mount Prospect.

Although this interim improvement decreases total delay and travel time for the network, the travel time reduction benefit is not seen for specific arterial movements including SE Rand, and SB Rand and Mount Prospect, due to signal optimization giving additional timing to WB

and EB Central, NW Rand, and NB Mount Prospect and Rand. However, this interim improvement, analyzed with the 2040 traffic projections, is the baseline condition against which all Build Alternatives are compared.

IV. Alternatives Analysis and Results

A description of each Build Alternative considered and a summary of the analysis results is provided below. A schematic of each Build Alternative considered is included in Appendix 1. The results of the completed evaluation, using the Synchro and SimTraffic simulation computer analysis program is included in Appendix 2 with the comparative evaluation criteria shown in the first column. For ease of reference, queue exhibits showing resulting queue lengths directly follow each alternative in Appendix 1.

Alternative 1: Add Auxiliary Lanes on Mount Prospect Road at Central Road and on Central Road at Rand Road

With reference to the Alternative 1 exhibits in Appendix 1, Alternative 1 includes providing the following additional turn lanes:

- Add SB RTL on Mount Prospect at Central.
- Add NB RTL on Mount Prospect at Central.
- Add EB RTL on Central at Rand.

Advantages

- Total delay, travel time, and queuing decrease compared to the Baseline Condition.
- No new traffic signals.

Disadvantages

- SB Mount Prospect queue at Central Road intersection still backs into Rand.
- NB Mount Prospect and Rand PM travel time, and EB and WB Central AM travel time increases over Baseline Conditions due to additional timing benefit given to other movements.

Summary

Improves overall transportation network; however, some other alternatives provide larger reduction in total delay and travel time. Alternative 1 was carried forward for further evaluation and stakeholder coordination.

Alternative 2: Modify Plaza Main Exit to Southbound Right-Out Only

In addition to Alternative 1, convert the SB Plaza exit at the Rand Road and Mount Prospect Road intersection to a RTL only to remove the split phase at the intersection and give more timing to other movements. Specific elements include:

- Alternative 1 improvements plus change SB Plaza to Right-Out only (remove thru/ left turn lane (LTL)).
    - Egress Plaza traffic was re-assigned to the new signalized intersection near the existing Walmart entrance.
- Install new traffic signal northwest on Rand Road near the existing Walmart entrance.
- Add WB dual LTL's on Walmart Entrance at Rand.

Advantages

- Total delay, travel time, queuing, and many arterial movement travel times decrease compared to Alternative 1.
- Removes Alternative 1 disadvantage of travel time increases for NB Mount Prospect and Rand PM, and EB Central AM.

Disadvantages

- New traffic signal proposed, impacts internal circulation of Plaza.
- SB Mount Prospect queue still backs into Rand, but is confined to Rand RTL instead of through the intersection since the SW Plaza thru movement has been removed.
- WB Central AM peak hour travel time still increases over Baseline Condition due to additional timing benefit given to other movements.

Summary

Improves overall transportation network; however, Alternative 3 provide larger reduction in total delay and travel time. The Mount Prospect Plaza ownership has indicated their preference to Alternative 2 with a traffic signal at the SE Plaza entrance (Alternative 2B). Alternative 2 was carried forward for further evaluation and stakeholder coordination.

Alternative 2B: Alternative 2 plus Add New Traffic Signal at SE Plaza Access Drive

In addition to Alternative 2, install new traffic signal at the existing SE Plaza access on Central Road located east of the Rand Road intersection. The location meets warrants for a proposed traffic signal.

Advantages

- Improves plaza accessibility by reducing queues within plaza.

Disadvantages

- Total delay, travel time, and mainline queuing increase slightly compared to Alternative 2.
- WB Central Road travel time increases compared to Alternative 2.

Summary

Alternative 2B compensates for Plaza's loss of main egress at Mount Prospect Road by improving SE Plaza accessibility at the cost of Central Road user travel time. The Mount Prospect Plaza ownership has indicated their preference to Alternative 2B. Alternative 2B was carried forward for further evaluation and stakeholder coordination.

Alternative 2C: Alternative 2B plus Add Dual Left Turn Lanes on Rand at Central in both directions

In addition to Alternative 2, add dual left turn lanes on Rand Road at the Central Road intersection.

Advantages

- Decreases all arterial travel times compared to baseline conditions and decreases most arterials comparted to Alternative 2B.
- Lowest evening rush hour total delay, travel time, and mainline queuing.

Disadvantages

- Requires proposed ROW and additional temporary easements for business access for approximately 850 feet southeast of Central Road on Rand Road.
- Design exceptions needed for the NW approach of Rand Road for LTL storage and taper lengths.

Summary

Widening and resurfacing Rand Road approximately 850 feet southeast and northwest through the Mount Prospect intersection to accommodate an additional left turn lane results in adjacent property impacts and traffic signal work at both Rand-Central and Rand-Mount Prospect intersections. Alternative 2C was carried forward for further evaluation and stakeholder coordination.

Alternative 2D: Alternative 2B with upgraded traffic signal equipment to eliminate intersection blocking

In addition to Alternative 2B, retime intersections to remove potential for blocked intersections. The longer clearance intervals create longer cycle lengths (150 seconds), and additional delay and queueing outside the triangle intersection.

Advantages

- Removes blocked intersections within the closely spaced triangle intersections.

Disadvantages

- Total delay, travel time, and mainline queuing increases compared to Alternative 2B and is comparable to baseline conditions.

Summary

Alternative 2D addresses a key concern of blocked intersection at cost to total travel time and delay through the network. Alternative 2D was carried forward for further evaluation and stakeholder coordination if traffic signals are modified to one controller optimized to minimize blocked intersection.

Alternative 2E: Alternative 2C with upgraded traffic signal equipment to eliminate intersection blocking

In addition to Alternative 2C, retime intersections to remove potential for blocked intersections. The longer clearance intervals create longer cycle lengths (150 seconds), and additional delay and queueing outside the triangle intersection.

Advantages

- Removes blocked intersections within the closely spaced triangle intersections.
- Providing dual lefts reduces queues at Rand Road and Central Road, and reduces total delay, travel time, and mainline queuing compared to the baseline condition.

Disadvantages

- Requires proposed ROW and additional temporary easements for business access for approximately 850 feet southeast of Central Road on Rand Road.
- Design exceptions needed for the NW approach of Rand Road for LTL storage and taper lengths.

Summary

Alternative 2E addresses a key concern of blocked intersection and is the only "revised signal timing" alternative which reduces total travel time and delay through the network compared to the baseline condition. Alternative 2E was carried forward for further evaluation and stakeholder coordination if traffic signals are modified to one controller optimized to minimize blocked intersection.

Alternative 3: Relocate Main Plaza Exit/Entrance

In addition to Alternative 1, remove the existing Plaza Access at the Rand Road and Mount Prospect Road intersection and relocate it further northwest along Rand Road as a right-in, right-out only access point. Specific elements include:

- Alternative 1 plus relocate Plaza access further northwest on Rand, as a right-in, right-out only access point.
    - A concept modern roundabout (RAB) within the plaza is shown to improve overall circulation within the plaza. Further evaluation would be required to determine acceptability, parking impacts and reconfiguration requirements, and cost.
- Install new traffic signal at the existing Walmart entrance.
    - SEB (thru/ left turning) Plaza traffic was re-assigned to the new signalized intersection near the existing Walmart entrance and NWB (right turning) Plaza traffic was re-assigned to the new plaza entrance.
    - SB Rand Road traffic entering the plaza was re-assigned to the Walmart entrance signalized intersection. NB Rand Road traffic entering the plaza was re-assigned to the new plaza entrance.
- Add WB dual LTL's on Walmart Entrance at Rand.

Advantages

- Second lowest total delay, travel time, and queuing of alternatives analyzed for the PM peak hour (after Alternative 2C).
- Reduces arterial movement travel times compared to Alternative 2, and partially alleviates Alternative 2 disadvantage of WB Central AM travel time increases over Baseline Conditions.

Disadvantages

- New traffic signal proposed, impacts internal circulation of Plaza.

- Added cost to reconfigure Plaza access.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).
- Requires ROW from Plaza and Century Supply Co.
- SB Mount Prospect queue still backs into Rand RTL.

Summary

Improves overall transportation network, and provides the greatest reduction in total delay and travel time compared to Alternative 1 and 2. Alternative 3 was carried forward for further evaluation and stakeholder coordination.

Alternative 3B: Alternative 3 plus Add New Traffic Signal at SE Plaza Access Drive

In addition to Alternative 3, add a proposed traffic signal at the SE Plaza access on Central Road, east of Rand Road. Specific elements include:

- Alt 3 improvements plus install new traffic signal at the existing SE Plaza access on Central Road located east of the Rand Road intersection. The location meets warrants for a proposed traffic signal.
- Install new traffic signal aligned with Henry Street (in lieu of at the existing Walmart entrance).
    - A new concept RAB within the plaza is shown for reference to improve overall circulation within the plaza. Further evaluation would be required to determine acceptability, parking impacts and reconfiguration requirements, and cost.

Advantages

- Improves plaza accessibility by reducing queues within plaza.

Disadvantages

- Total delay, travel time, and mainline queuing increases compared to Alternative 3.
- EB and WB Central Road travel time increases compared to Alternative 3.
- Added cost to reconfigure Plaza access.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).
- Requires ROW from Plaza and Century Supply Co.

Summary

Alternative 3B compensates for Plaza's loss of main entrance at Mount Prospect Road by improving SE Plaza accessibility at the cost of Central Road user travel time. Alternative 3B was carried forward for further evaluation and stakeholder coordination.

Alternative 3C: Alternative 3B plus Add Dual Left Turn Lanes on Rand at Central in both directions

In addition to Alternative 3B, add dual LTL's on Rand Road at Central Road and at the new WB Plaza exit across from Henry. Specific elements include:

- Alt 3B improvements plus add dual left turn lanes on Rand Road at Central Road intersection.
- Dual left turn lanes at WB Henry St./ Mall Entrance.
    - A new concept RAB within the plaza is shown for reference to improve overall circulation within the plaza. Further evaluation would be required to determine acceptability, parking impacts and reconfiguration requirements, and cost.

Advantages

- Improves Rand-Central intersection and northwest-bound (NWB) and southeast-bound (SEB) LT movement LOS compared to Alternative 3.
- Decreases SE Rand Rd and WB Central Rd travel time compared to Alternative 3.

Disadvantages

- Requires proposed ROW in all four quadrants, and additional temporary easements needed for business access approximately 850 feet southeast of Central Road on Rand Road.
- Design exceptions needed for the NW approach of Rand Road for LTL storage and taper lengths.
- Increases total delay and travel time compared to Alternative 3 due to additional traffic signal at SE Plaza.
- Added cost to reconfigure Plaza access.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).

Summary

Widening and resurfacing Rand Road approximately 850 feet southeast and northwest through the Mount Prospect intersection to accommodate an additional left turn lane results in adjacent property impacts and traffic signal work at both Rand-Central and Rand-Mount Prospect intersections. Alternative 3C was carried forward for further evaluation and stakeholder coordination.

Alternative 3D: Closely Spaced Intersection Concept with upgraded traffic signal equipment to eliminate intersection blocking

Relocate Mount Prospect Road east instead of relocating the Mount Prospect Plaza northwest to function like the Rand-IL 83-Kensington Road closely spaced intersection. The longer clearance intervals create longer cycle lengths (150 seconds), and additional delay and queueing outside the triangle intersection.

Advantages

- Removes blocked intersections within the closely spaced triangle intersections.

Disadvantages

- Total delay, travel time, and mainline queuing increases compared to Alternative 3.
- EB and WB Central Road travel time increases compared to Alternative 3.
- Added cost to reconfigure Plaza access to right-in right-out only.
- Requires ROW from Plaza and Century Supply Co.

Summary

Alternative 3D addresses a key concern of blocked intersection at cost to total travel time and delay through the network. Alternative 3D is not recommended as it does not meet the purpose and need to reduce total travel time and delay.

Alternative 3E: Alternative 3 with upgraded traffic signal equipment to eliminate intersection blocking

In addition to Alternative 3, retime intersections to remove potential for blocked intersections. The longer clearance intervals create longer cycle lengths (150 seconds), and additional delay and queueing outside the triangle intersection. To reduce created queue lengths, additional specific elements include:

- Add NWB and SEB dual left turn lanes on Rand Road at Central Road.
- Add exclusive NB left turn lane on Mount Prospect Road at Central Road.

- Install new traffic signal at the existing Walmart entrance.

Advantages

- Removes blocked intersections within the closely spaced triangle intersections.

Disadvantages

- Total delay, travel time, and mainline queuing increases compared to Alternative 3.
- Added cost to reconfigure Plaza access to right-in right-out only.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).
- Requires ROW from Plaza and Century Supply Co.

Summary

Alternative 3E addresses a key concern of blocked intersection at cost to total travel time and delay through the network. Alternative 3E is not recommended as it does not meet the purpose and need to reduce total travel time and delay.

Alternative 3F: Alternative 3C with upgraded traffic signal equipment to eliminate intersection blocking

Alternative 3E with a proposed traffic signal at the SE Plaza entrance.

Advantages

- Removes blocked intersections within the closely spaced triangle intersections.

Disadvantages

- Total delay, travel time, and mainline queuing increases compared to Alternative 3E.
- EB and WB Central Road travel time increases compared to Alternative 3E.
- Added cost to reconfigure Plaza access to right-in right-out only.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).
- Requires ROW from Plaza and Century Supply Co.

Summary

Alternative 3F addresses a key concern of blocked intersection at cost to total travel time and delay through the network. In addition, the alternative compensates for Plaza's loss of main entrance at Mount Prospect Road by improving SE Plaza accessibility at the cost of Central

Road user travel time. Alternative 3F is not recommended as it does not meet the purpose and need to reduce total travel time and delay.

Alternative 4: No Left Turns at Rand and Central Intersection

In addition to relocating the existing plaza entrance as shown with Alternative 3, remove LTL's on Rand Road at Central Road to give more time to the thru movements. Extend the SE Plaza Access south across Central Road to Rand Road to accommodate left turning vehicles from WB Central to SEB Rand and from NWB Rand to WB Central. Specific elements include:

- In addition to Alternative 1, relocate Plaza access further northwest on Rand to align with Henry Rd.
- Install new traffic signal at relocated Plaza access and at SE Plaza access point on Central.
    - Ingress and egress plaza traffic is re-assigned to the new signalized plaza entrance.
    - A new concept RAB within the plaza is shown for reference to improve overall circulation within the plaza. Further evaluation would be required to determine acceptability, parking impacts and reconfiguration requirements, and cost.
- Add EB RTL on Henry Rd at Rand.
- No left turns allowed at Rand-Central intersection.
- Left turns occur prior to main intersection on short legs of Mount Prospect and SE Plaza, so LTL queues can't back into the other 2 intersections.
- Add SB LTL on Mount Prospect at Central.
- Add NB LTL on Mount Prospect at Central.
- Relocate Burger King across from the SE Plaza Entrance.
- Construct/Extend SE Plaza Entrance to Rand Road.

<u>Advantages</u>

- Additional time taken from LT's given to Central Road and Mount Prospect Road movements. Improves thru movements at the Rand-Central intersection.

<u>Disadvantages</u>

- Minimal benefits compared to baseline conditions.

- Increased total delay and travel time compared to baseline conditions due to large NWB to WB LT movement at Rand-Central needing to go through 2 additional signals.
- 3 new proposed traffic signals, impacts internal circulation of Plaza.
- Added cost to reconfigure Plaza access.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).
- Requires ROW from Plaza, Century Supply Co., Burger King.
- Business relocation (Burger King).
- SB Mount Prospect queue backs into Rand RTL.

Summary

Alternative 4 is not recommended as it provides minimal benefit compared to 2040 No-Build with significant impacts and costs.

Alternative 5: Grade Separation at Rand and Central Intersection

Lower Rand Road and construct a Central Road overpass. Reconstruct the north section of Mount Prospect Road to lower the connection to Rand Road and extend the SE Plaza access road to Rand Road. Provide a barrier median on Rand Road from Henry Street to the new SE Plaza access Roadway with the goal of improving travel times by removing 2 existing signals at Rand-Mount Prospect and at Rand-Central. Specific elements include:

- New bridge carrying Central Road over Rand Road.
- Relocate Plaza access further northwest on Rand to align with Henry Rd.
- Install new traffic signal at relocated Plaza access.
- Add EB LTL on Plaza Ent at Rand.
- Add WB dual LTL's at Plaza Ent at Rand.
- Add an additional RTL on Rand at Mount Prospect.
- Change SB RTL to Thru on Mount Prospect at Central.
- Add SB RTL on Mount Prospect at Central.
- Add dual NB RTL's on Mount Prospect at Central.
- Relocate Burger King across from the SE Plaza Entrance.
- Construct/Extend SE Plaza Entrance to Rand Road.

- Short legs of Mount Prospect and SE Plaza function as entrance/exit ramps.
- Add EB RTL on Central at SE Plaza Entrance.
- Add NB dual LTL's on SE Plaza Ent at Central.
- Add SB dual RTL's on SE Plaza Ent at Rand.

Advantages

- Central Road and Rand Road thru movements' LOS and travel time improve.
- Queuing at Rand and Central intersection eliminated.
- Greatest improvement for the AM peak hour.

Disadvantages

- Less improvement for the PM peak hour due to high traffic volume for SEB Rand to SB Mount Prospect (movement carries all SB Mount Prospect, and EB and WB Central turning vehicles).
- While removing 1 existing traffic signal, also adding 2 new proposed traffic signals, impacts internal circulation of Plaza.
- Added cost to reconfigure Plaza access.
- Potentially added cost to reconfigure internal Plaza circulation if desired (i.e.; RAB and parking reconfiguration).
- Requires ROW from Plaza, Century Supply Co., Burger King.
- Business relocation (Burger King).
- Cost prohibitive (very high relative capital cost and future maintenance cost for bridge).
- SB Mount Prospect queue backs into Rand RTL.

Summary

Total delay and travel time is lowest compared to the other alternatives for the AM peak hour travel period, however Alternative 5 provides similar benefits to Alternative 1 for the PM peak hour and is significantly more expensive. Alternative 5 is not recommended due to high cost with similar benefits to other alternatives.

Alternative 6: Modern Roundabout with Rand Road Underpass

The concept of a modern roundabout (RAB) at the Rand-Central-Mount Prospect Road intersections was considered in two different forms. A RAB was initially considered at the

Rand-Central intersection. Based on the high circulating volume (approximately 2,300 pc/h), the RAB would operate as a poor LOS F. In addition, a minimum 250-foot diameter inscribed circle would be required which is shown on the Alternative 6 Exhibit in Appendix 1 as a dashed line. Based on the operational complexity, impacts, and deficient performance, a RAB at the Rand-Central intersection was dismissed.

A variation of Alternative 6 was also considered with a Rand Road underpass and a "dog-bone" RAB to accommodate Mount Prospect and Central Roadway users and Rand Road turning vehicles. Based on the primary objective to determine if a RAB concept was practical, a detailed geometric evaluation was not completed, but specific elements of this Alternative 6 concept would include:

- New bridge carrying Central Road over Rand Road.
- Relocate Plaza access further northwest on Rand and install a new traffic signal at this location.
    - A new concept RAB within the plaza is shown for reference to improve overall circulation within the plaza. Further evaluation would be required to determine acceptability, parking impacts and reconfiguration requirements, and cost.
- Acquisition of the Burger King property across from the SE Plaza Entrance.
- Construct/Extend SE Plaza Entrance to Rand Road.
- Install new traffic signal at SE Plaza for NWB Rand to WB or EB Central or SB Mount Prospect turning vehicles.
- Provide a "dog-bone" RAB at grade above Rand Road underpass.

<u>Advantages</u>

- Queuing at Rand and Central intersection eliminated.

<u>Disadvantages</u>

- Both multi-lane RAB concepts fails due to circulating traffic volumes.
- 2 new proposed traffic signals (or RABs), impacts internal circulation of Plaza.
- Property impacts with business relocation (Burger King, Mattress Firm).
- Impacts access and internal circulation to all businesses adjacent to intersections.
- Cost prohibitive (initial capital, future bridge maintenance) with IDOT cost participation unlikely.

Summary

Alternative 6 is not recommended due to high traffic volumes, operational complexity, impacts, deficient performance, and cost.

V. Summary of Results and Preliminary Preferred Alternatives

In comparison to the baseline condition (2040 with Central/Mount Prospect Improvement), Alternatives 4, 5, and 6 would not provide overall traffic operations improvements, and had the highest estimated construction cost of all alternatives considered. On this basis, these alternatives are ***not recommended*** to be considered further because they provided limited benefit when compared to their high cost and impacts.

Alternatives 1, 2, and 3 and their variations remained under consideration and were further coordinated with project stakeholders as these alternatives would provide lower evening rush hour total delay and travel time compared to the baseline condition with relatively low impacts and cost. Alternatives 1, 2, and 3 were discussed with the Mount Prospect Plaza managing company (i.e.; RAMCO) on March 14, 2018, and the meeting summary is included in Appendix 4. It was acknowledged that Alternative 1 provides operational benefits, but does not address the intersection queuing as well as Alternatives 2 and 3, and therefore is not viewed as favorable. RAMCO indicated that Alternative 3, which completely relocates the Main Plaza Entrance, presents many challenges as the access is stipulated via separate leases for each store within the Plaza. If Alternative 3 is chosen, a condemnation process may be necessary for each store based on all the required agreements between parties. RAMCO preferred Alternative 2 with a traffic signal at the Southeast Plaza Entrance to improve internal Plaza circulation and balance the loss of the through/ left turn lane at the Mount Prospect Road exit, which is Alternative 2B.

Alternatives 3D, 3E, and 3F were developed to further investigate a key concern of completely removing blocked intersections at the Rand-Central-Mount Prospect intersection triangle. Alternatives 3D, 3E, and 3F are ***not recommended*** as optimizing the traffic signal timing to clear blocked intersections results in longer clearance intervals which create a longer cycle length and additional delay.

Alternative 2D and 2E were also developed to investigate revising timings to remove blocked intersections from Alternative 2B and 2C, respectively. These performed much better than the Alternative 3 variations described above in that the Alternative 2D total delay and travel time is similar to baseline conditions, and Alternative 2E reduces total delay and travel time over baseline conditions with the added benefit of removing the potential for blocked intersections at the triangle with the longer clearance intervals.

The alternatives carried forward for further consideration were presented to the Village Board Committee of the Whole on April 24, 2018. Following the presentation in coordination with Village staff, the preliminary preferred alternative is Alternative 2B/2D with the potential variation of Alternative 2C/2E. Alternative 2B includes adding right turn lanes on northbound and southbound Mount Prospect Road at Central Road and on eastbound Central Road at Rand Road, modifying the southbound Main Plaza egress to a right-out only, and adding proposed traffic signals at the existing Walmart Entrance on Rand Road and at the Southeast Plaza Entrance on Central Road to balance the loss of the Main Plaza southbound combined left/thru lane. Both proposed traffic signals meet traffic signal warrants, and the preliminary traffic signal warrant analyses are included in Appendix 5. Alternative 2B reduces overall study area PM total delay by approximately 30% over baseline conditions. Alternative 2D has the same geometry as 2B, but rebuilds the existing three controller traffic signal system to a single controller and retimes the intersections to remove blocked intersections.

The potential variation of Alternative 2C would add dual left turn lanes on Rand Road at Central Road. Alternative 2C reduces overall study area PM total delay by almost 45%, and

has the lowest PM total delay and travel time of the alternatives studied. Alternative 2E has the same geometry as 2C, but rebuilds the existing three controller traffic signal system to a single controller and retimes the intersections to remove blocked intersections. Alternative 2C/2E is presented as an option dependent on cost and impacts. These alternatives were coordinated with the City of Des Plaines on May 16, 2018. The City expressed support for the project, and provided the Village with Phase II bike path plans along the southwest side of Rand Road south of Central Road which may influence the design of the potential dual left turn lanes. The meeting summary is included in Appendix 4.

VI. Next Steps

Further coordination of Alternatives 2B, 2C, 2D, and 2E in consideration of the input received from the Village Board, City of Des Plaines, and RAMCO, is planned with Walmart, the Cook County Division of Transportation and Highways (CCDOTH), IDOT, and FHWA. Based on this coordination, the preferred alternative will be identified with detailed engineering plans and studies developed and coordinated with IDOT and FHWA for review and approval of the Phase I Study. Completion of the Phase I Study is anticipated by the end of 2018 or early 2019.

Appendix 1: Range of Alternatives Exhibits

Alternative 1: Add Auxiliary Lanes on Mount Prospect Road at Central Road and on Central Road at Rand Road

ALTERNATIVE 1:
AUXILARY LANES

N

0 50 100 150
SCALE IN FEET

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

ADD SB RTL

MOUNT PROSPECT ROAD

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

CENTRAL ROAD

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB RTL

ADD EB RTL

ALTERNATIVE 1: AUXILARY LANES

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 2: Modify Plaza Main Exit to Southbound Right-Out Only

ALTERNATIVE 2:
PLAZA SB R–O ONLY

N

0 50 100 150
SCALE IN FEET

NEW TRAFFIC SIGNAL TO
ACCOMMODATE LT FROM PLAZA

SB RT ONLY FROM PLAZA

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD SB RTL

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

CENTRAL ROAD

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB RTL

ADD EB RTL

ALTERNATIVE 2:
PLAZA SB R-O ONLY

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 2B: Alternative 2 plus Add New Traffic Signal at SE Plaza Access Drive

ALTERNATIVE 2B:
PLAZA SB R–O ONLY
PLUS SE PLAZA SIGNAL

N

0 50 100 150
SCALE IN FEET

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

RAND ROAD

SB RT ONLY FROM PLAZA

NO RIGHT TURN FROM
NB MOUNT PROSPECT
TO EB RAND

ADD SB RTL

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB LTL

ADD NB RTL

ADD EB RTL

SE PLAZA ENTRANCE

CENTRAL ROAD

PR TRAFFIC SIGNAL

ALTERNATIVE 2B:
PLAZA SB R–O ONLY
WITH SE PLAZA SIGNAL

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 2C: Alternative 2B plus Add Dual Left Turn Lanes on Rand at Central in both directions

ALTERNATIVE 2C:
ALT 2B PLUS
DUAL LEFTS ON RAND AT CENTRAL

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

SB RT ONLY FROM PLAZA

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

ADD DUAL SEB LEFT TURN LANES

SE PLAZA ENTRANCE

ADD SB RTL

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB LTL

ADD NB RTL

ADD EB RTL

ADD DUAL NWB
LEFT TURN LANES

CENTRAL ROAD

PR TRAFFIC SIGNAL

RAND ROAD

MOUNT PROSPECT ROAD

CENTRAL ROAD

N

0 50 100 150
SCALE IN FEET

ALTERNATIVE 2C:
ALT 2B WITH DUAL LEFT TURN LANES ON RAND AT CENTRAL

Alternative 2D: Alternative 2B with upgraded traffic signal equipment to eliminate intersection blocking

ALTERNATIVE 2D:
ALT 2B PLUS
REVISED SIGNAL TIMINGS

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

SB RT ONLY FROM PLAZA

NO RIGHT TURN FROM
NB MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD SB RTL

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

CENTRAL ROAD

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB LTL

ADD NB RTL

ADD EB RTL

SE PLAZA ENTRANCE

CENTRAL ROAD

PR TRAFFIC SIGNAL

N

0 50 100 150
SCALE IN FEET

ALTERNATIVE 2D: PLAZA SB R–O ONLY, REVISED TS TIMINGS, AND SIGNAL AT SE PLAZA ENT

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 2E: Alternative 2C with upgraded traffic signal equipment to eliminate intersection blocking

ALTERNATIVE 2E:
ALT 2C PLUS
REVISED SIGNAL TIMINGS

N

0 50 100 150
SCALE IN FEET

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

SB RT ONLY FROM PLAZA

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD DUAL SEB LEFT TURN LANES

SE PLAZA ENTRANCE

ADD SB RTL

CENTRAL ROAD

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB RTL

ADD EB RTL

CENTRAL ROAD

PR TRAFFIC SIGNAL

ADD NB LTL

ADD DUAL NWB
LEFT TURN LANES

ALTERNATIVE 2E:
ALT 2D PLUS DUAL LTL'S ON RAND AT CENTRAL

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 3: Relocate Main Plaza Exit/Entrance

ALTERNATIVE 3:
RELOCATE PLAZA ACCESS

N

0 50 100 150
SCALE IN FEET

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

PR FRONTAGE ROAD

R102.93'

REMOVE PLAZA
ENTRANCE/EXIT

RELOCATE RIGHT-IN RIGHT-OUT
FURTHER NORTH AWAY FROM
MOUNT PROSPECT ROAD

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD SB RTL

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

CENTRAL ROAD

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB RTL

ADD EB RTL

ALTERNATIVE 3:
RELOCATE PLAZA ACCESS

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 3B: Alternative 3 plus Add New Traffic Signal at SE Plaza Access Drive

ALTERNATIVE 3B:
ALT. 3 PLUS ADD SE PLAZA SIGNAL

N

0 50 100 150
SCALE IN FEET

PR TRAFFIC SIGNAL

90'

REMOVE PLAZA
ENTRANCE/EXIT

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD SB RTL

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

CENTRAL ROAD

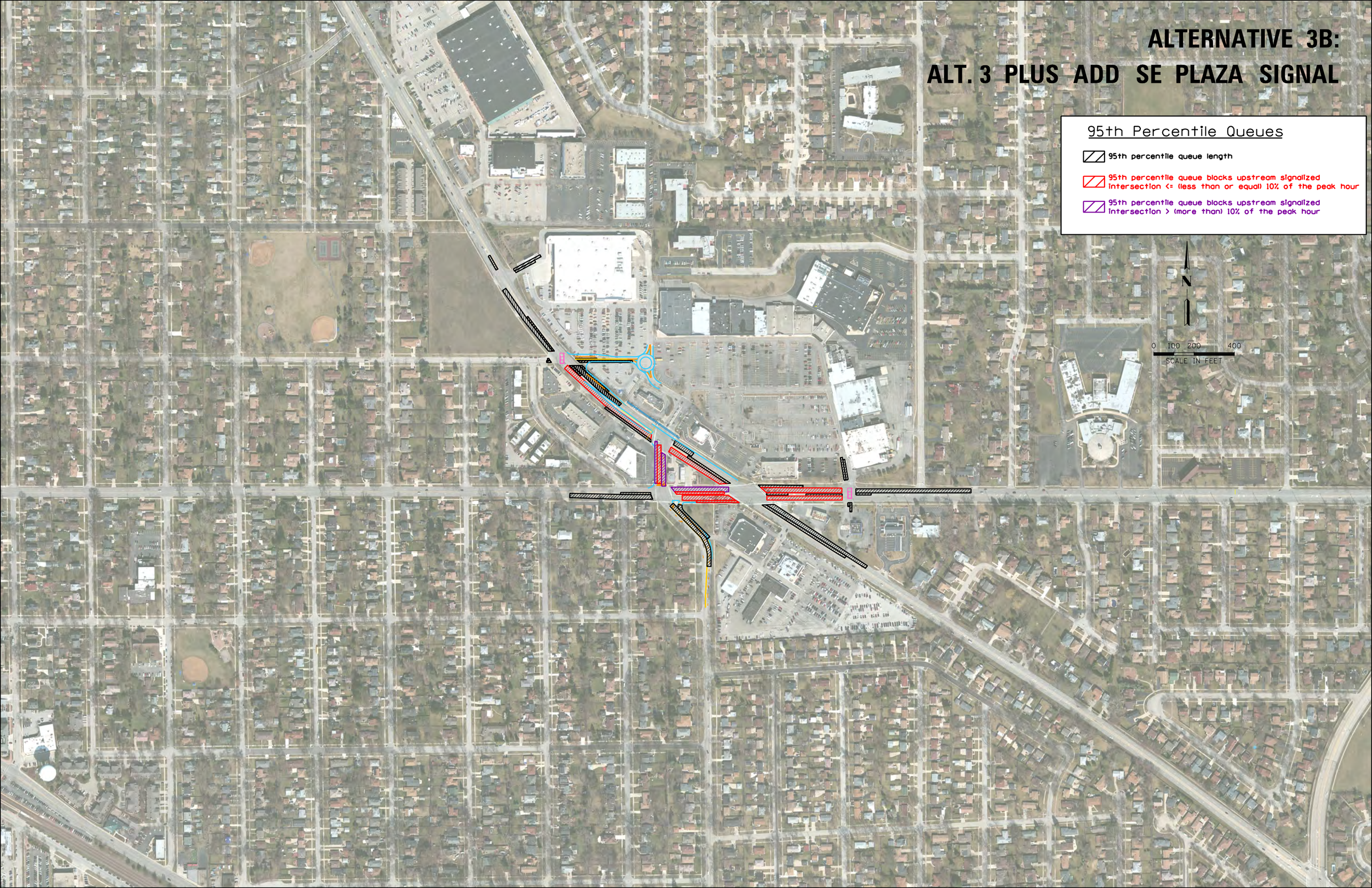
2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB RTL

ADD EB RTL

PR TRAFFIC SIGNAL

ALTERNATIVE 3B:
ALT. 3 PLUS ADD SE PLAZA SIGNAL



Alternative 3C: Alternative 3B plus Add Dual Left Turn Lanes on Rand at Central in both directions

ALTERNATIVE 3C:
DUAL LEFTS ON RAND AT CENTRAL

N

0 50 100 150
SCALE IN FEET

90'

PR TRAFFIC SIGNAL

REMOVE PLAZA
ENTRANCE/EXIT

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

ADD DUAL SEB LEFT TURN LANES

ADD SB RTL

ADD DUAL NWB LEFT TURN LANES

NO LEFT TURN FROM
SB MOUNT PROSPECT
TO EB CENTRAL

ADD NB RTL

ADD EB RTL

PR TRAFFIC SIGNAL

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

RAND ROAD

MOUNT PROSPECT ROAD

CENTRAL ROAD

ALTERNATIVE 3C:

DUAL LEFTS ON RAND AT CENTRAL & WB HENRY STREET

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 3D: Closely Spaced Intersection Concept with upgraded traffic signal equipment to eliminate intersection blocking

ALTERNATIVE 3D:
CLOSELY SPACE INTERSECTION

N

0 50 100 150
SCALE IN FEET

BAND ROAD

MOUNT PROSPECT ROAD

CENTRAL ROAD

PR TRAFFIC SIGNAL

PR TRAFFIC SIGNAL

PR TRAFFIC SIGNAL

RELOCATE MOUNT
PROSPECT ROAD

ALTERNATIVE 3D:
CLOSELY SPACED INTERSECTIONS

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

2 SB LANES BETWEEN HENRY & MOUNT PROSPECT RD

2 EB THRU LANES

ROUTE 83

Alternative 3E: Alternative 3 with upgraded traffic signal equipment to eliminate intersection blocking

ALTERNATIVE 3E:
RELOCATE PLAZA ACCESS
NO BLOCKED INTERSECTIONS

N

0 50 100 150
SCALE IN FEET

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

PR FRONTAGE ROAD

R102.93'

REMOVE PLAZA
ENTRANCE/EXIT

RELOCATE RIGHT-IN RIGHT-OUT
FURTHER NORTH AWAY FROM
MOUNT PROSPECT ROAD

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD DUAL SEB LEFT TURN LANES

SE PLAZA ENTRANCE

ADD SB RTL

CENTRAL ROAD

CENTRAL ROAD

ADD NB RTL

ADD EB RTL

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB LTL

ADD DUAL NWB
LEFT TURN LANES

ALTERNATIVE 3E:
ALT 3 WITH DUAL LEFTS ON RAND AT CENTRAL AND REVISED TIMINGS

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 3F: Alternative 3C with upgraded traffic signal equipment to eliminate intersection blocking

ALTERNATIVE 3F:
RELOCATE PLAZA ACCESS
NO BLOCKED INTERSECTIONS
PLUS SE PLAZA SIGNAL

N

0 50 100 150
SCALE IN FEET

WALMART ENTRANCE

PROPOSED DEVELOPMENT
UNDER PERMIT REVIEW

PR TRAFFIC SIGNAL

PR FRONTAGE ROAD

R102.93'

REMOVE PLAZA
ENTRANCE/EXIT

RELOCATE RIGHT-IN RIGHT-OUT
FURTHER NORTH AWAY FROM
MOUNT PROSPECT ROAD

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

MOUNT PROSPECT ROAD

ADD DUAL SEB LEFT TURN LANES

SE PLAZA ENTRANCE

ADD SB RTL

CENTRAL ROAD

CENTRAL ROAD

ADD NB RTL

ADD EB RTL

PR TRAFFIC SIGNAL

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB LTL

ADD DUAL NWB
LEFT TURN LANES

ALTERNATIVE 3F:
ALT 3C WITH REVISED TIMINGS

Alternative 4: No Left Turns at Rand and Central Intersection

ALTERNATIVE 4:
NO LT's AT RAND–CENTRAL

N

0 50 100 150
SCALE IN FEET

PR TRAFFIC SIGNAL

90'

REMOVE PLAZA
ENTRANCE/EXIT

NO RT FROM NB
MOUNT PROSPECT
TO EB RAND

RAND ROAD

NO LEFT TURNS AT INTERSECTION

ADD SB RTL

MOUNT PROSPECT ROAD

CENTRAL ROAD

2 SB THRU LANES
(PERMIT IMPROVEMENTS)

ADD NB RTL

PR TRAFFIC SIGNAL

RELOCATE BURGER KING

PR TRAFFIC SIGNAL

ALTERNATIVE 4:
NO LT's AT RAND–CENTRAL

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 5: Grade Separation at Rand and Central Intersection

ALTERNATIVE 5: RAND–CENTRAL GRADE SEPARATION

N

0 50 100 150
SCALE IN FEET

PR TRAFFIC SIGNAL

REMOVE PLAZA ENTRANCE/EXIT

RT ONLY FROM NB MOUNT PROSPECT TO SB RAND

RAND ROAD

MOUNT PROSPECT ROAD

CENTRAL ROAD

CENTRAL ROAD BRIDGE/ RAND ROAD UNDERPASS

ADD NB RTL

2 SB THRU LANES (PERMIT IMPROVEMENTS)

PR TRAFFIC SIGNAL

RELOCATE BURGER KING

RT ONLY FROM SB ACCESS RD TO NB RAND

ALTERNATIVE 5: RAND–CENTRAL GRADE SEPARATION

95th Percentile Queues

95th percentile queue length

95th percentile queue blocks upstream signalized intersection <= (less than or equal) 10% of the peak hour

95th percentile queue blocks upstream signalized intersection > (more than) 10% of the peak hour

N

0 100 200 400

SCALE IN FEET

Alternative 6: Modern Roundabout with Rand Road Underpass

ALTERNATIVE 6: ROUNDABOUT

N

0 50 100 150
SCALE IN FEET

PR TRAFFIC SIGNAL

REMOVE PLAZA ENTRANCE/EXIT

RAND ROAD UNDERPASS

NWB RAND EXIT

WB CENTRAL ENTRANCE

SB MP, EB CENTRAL ENTRANCE

MULTI–LANE ROUNDABOUT FOOTPRINT AT RAND–CENTRAL (FOR REFERENCE ONLY – FAILS)

250'

WB CENTRAL EXIT

EB CENTRAL EXIT

SEB RAND EXIT

PR TRAFFIC SIGNAL (OR ADDITIONAL RAB)

RELOCATE BURGER KING

NB EXIT ONLY

SB MP EXIT

RAND ROAD

MOUNT PROSPECT ROAD

CENTRAL ROAD

Appendix 2: Evaluation Summary Table

ALTERNATIVES EVALUATION SUMMARY TABLE

Evaluation Criteria	Existing and Baseline Conditions						Alternatives													
	Existing Conditions		2040 No Build Conditions		Mount Prospect at Central Restriping (2040 Volumes) [Comparison Baseline]		2040 Alt 1 Aux. Lanes		2040 Alt 2 Plaza SB RT Only		2040 Alt 2B Alt 2 + New Traffic Signal at SE Plaza		2040 Alt 2C Alt 2B + Dual LTL's on Rand at Central		2040 Alt 3 Relocate Plaza Access		2040 Alt 3B Alt 3 + New Traffic Signal at SE Plaza		2040 Alt 3C Alt 3B + Dual LTL's on Rand at Central	
Overall Study Area	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Total Delay (hours)	84.7	143.7	151.7	246.8	115.5	215.8	93.9	154.7	85.4	149	85.9	151.1	80	121.6	83.1	130.8	95	157.9	95.4	133.4
Travel Time (hours)	147.6	226.3	217	333.2	182.4	303.8	160.9	242.6	150.8	236.2	153.6	241	148.2	211.2	150.7	218.8	162.2	248	163.4	223.6
Avg Speed (mph)	15	13	13	10	13	10	15	13	16	13	16	13	16	15	16	14	15	13	15	14
Fuel Used (gal)	90.4	125.5	107.7	153.5	101.5	147.3	97.4	133.9	93.8	130.7	95.9	134.1	95.2	127.6	95.7	128.7	98.3	136.4	99.1	131.5
Queuing thru Upstream Signals[2]	5	4	7	5	4	7	3	4	3	7	3	7	3	5	3	4	3	6	3	4
Overall Length of Queuing[3]	2	4	4	8	4	7	3	4	2	4	2	5	2	3	2	4	3	6	3	4
Arterials (Avg Travel Time - Seconds)																				
EB Central Rd	120.4	77.3	126.6	86.1	80.2	83.2	79.5	69.4	78.7	64.6	56.3	62.6	53.5	57.3	67.4	65	137.9	89.5	124.8	79.8
WB Central Rd	59.4	100.2	61.5	130.1	62.5	105.1	82.4	114.7	78.1	96.2	70.5	102.6	67.9	82.4	68.4	95.4	79.2	108.7	81.1	87.4
NW Rand Rd	122.9	162.7	124.1	225	135.2	162.4	134.3	151.3	127	152.6	133.1	156.5	133.8	153.1	131.3	146.3	128.9	154.3	129.6	148.9
SE Rand Rd	105	120.9	116.7	130.6	156.5	277.8	141.5	120.5	115.5	152.4	126.6	172.5	119.3	119.2	145.8	135.5	106	156.7	105.7	126.2
NB Mt Prospect & Rand	138.3	189.9	420	278.6	184.2	151.1	130	138	126.4	151.7	122.3	120	126.2	126.2	111.4	130.8	121.6	163.1	119.3	135.7
SB Rand & Mt Prospect	103.9	133.3	116.3	153.1	121.6	186.5	108.5	102.9	101.2	132.1	94.4	144.4	94	126.8	102.8	117.2	97.9	138.6	99.3	131.1
Signalized Intersections (Avg Delay - Seconds)																				
Central Rd at Mount Prospect Rd	C - 21.3	D - 35.8	C - 23.8	D - 45.9	C - 23.9	C - 32.6	C - 22.0	C - 25.3	C - 21.9	C - 27.2	C - 27.5	C - 26.2	C - 28.2	C - 27.2	C - 21.3	C - 26.6	C - 22.5	C - 28.9	C - 23.4	C - 29.0
Central Rd at Rand Rd	C - 31.5	C - 28.7	D - 38.4	C - 32.4	C - 29.2	C - 32.9	C - 26.9	C - 28.6	C - 25.6	C - 32.7	B - 19.6	C - 29.5	C - 23.8	C - 31.2	C - 25.1	C - 32.2	C - 21.5	C - 28.7	C - 23.6	C - 27.2
Central Rd at SE Plaza Entrance	—	—	—	—	—	—	—	—	—	—	A - 9.0	A - 8.6	A - 7.9	A - 8.5	—	—	C - 23.7	C - 21.8	C - 25.3	C - 23.7
Rand Rd at Walmart Entrace	—	—	—	—	—	—	—	—	A - 4.4	B - 12.3	A - 4.8	B - 13.1	A - 4.8	B - 13.1	A - 3.4	B - 10.5	—	—	—	—
Rand Rd at Henry Rd	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	A - 6.3	B - 18.4	A - 6.3	B - 14.1
Rand Rd at Mount Prospect Rd	B - 19.6	C - 34.5	C - 20.7	D - 41.4	C - 26.6	C - 32.1	C - 21.4	C - 29.0	B - 13.4	B - 16.0	B - 12.5	B - 14.7	B - 12.5	B - 14.7	B - 11.2	B - 10.7	B - 10.9	B - 10.2	B - 10.9	B - 10.6
Rand Rd at SE Plaza Entrance	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Planning Level Construction Cost [1]	—	—	—	—	—	—	$1 - 2 M		$1.5 - 2.5 M		$2 - 3.5 M		$3.5 - 5 M		$2.5 - 3.5 M		$3 - 4.5 M		$4 - 5.5 M	

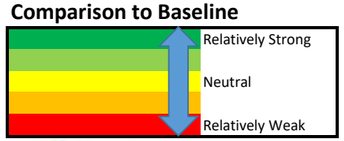
Notes:

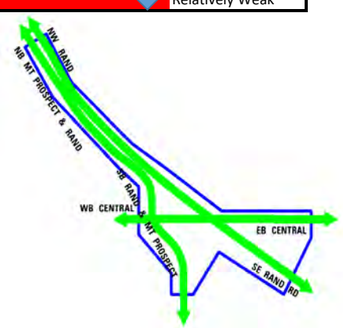
1. Does not include potential costs for internal plaza circulation improvements (i.e.; roundabout and parking reconfiguration).

2. Values converted to a 1 through 10 scale representing the amount of vehicles affected by the blocking of signalized intersections. A value of 1 indicates a low number of affected vehicles while a value of 10 indicates a high number of affected vehicles.

3. Values converted to a 1 through 10 scale representing the total queue lengths of each movement within the project study area. A value of 1 indicates a short total queue length and a value of 10 indicates a long total queue length.

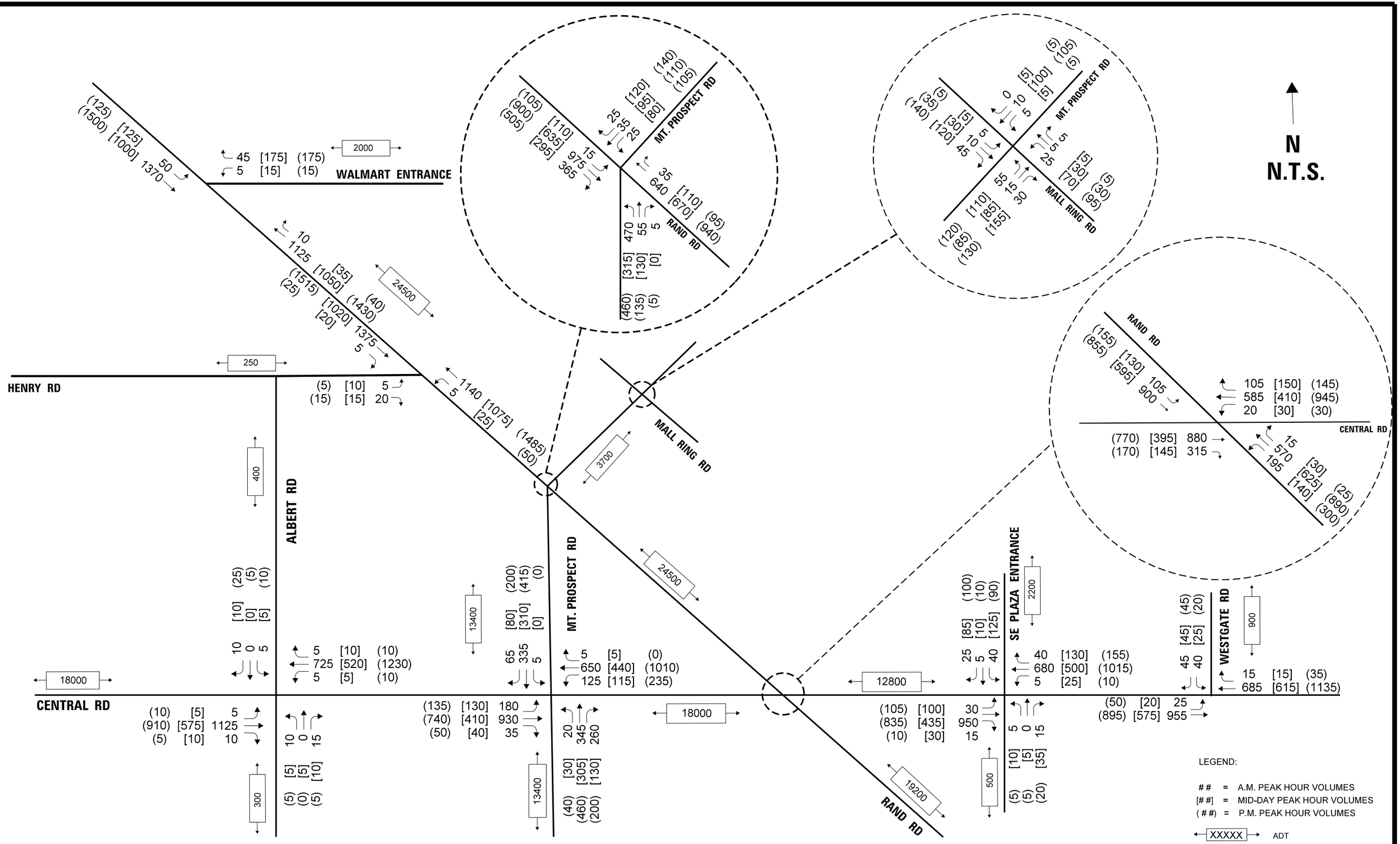
Comparison to Baseline





Evaluation Criteria	Alternatives (continued)															
	2040 Alt 2D Alt 2B w/ Revised Signal Timings (1 controller)		2040 Alt 2E Alt 2C w/Revised Signal Timings (1 controller)		2040 Alt 3D Closely Spaced Intersection Concept (1 controller)		2040 Alt 3E Alt 3 + Dual LTL's on Rand at Central w/Revised Signal Timings (1 controller)		2040 Alt 3F Alt 3C w/ Revised Signal Timings (1 controller)		2040 Alt 4 Rand-Central No LT's		2040 Alt 5 Rand-Central Grade Separation		2040 Alt 6 Roundabout	
Overal Study Area	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Total Delay (hours)	131.8	218.9	96.8	165.3	133.8	244.9	123.8	232.9	126.8	290.8	119	224.4	53.2	150.9	300+	300+
Travel Time (hours)	198.2	307.4	163.4	253.4	201.2	334.3	194.3	322.2	196.7	377.6	191.4	315.5	134	252.3	300+	300+
Avg Speed (mph)	12	10	15	12	12	9	13	10	13	10	14	10	21	14	10-	10-
Fuel Used (gal)	106.6	149.5	98.1	137.4	106.4	150.9	107.8	153	108.7	164	111.2	157.5	101.9	147.3		
Queuing thru Upstream Signals[2]	1	3	1	1	4	10	1	4	1	4	7	4	1	5		
Overall Length of Queuing[3]	7	10	5	8	4	10	3	7	3	9	6	8	1	5		
Arterials (Avg Travel Time - Seconds)																
EB Central Rd	81.6	91.7	82.7	91.9	112.2	108.9	155.6	100.7	160.8	103.1	121.9	38.8	49.9	60.2	100+	100+
WB Central Rd	79.6	154.9	80	163.7	106.1	211.5	71.4	160.3	95.9	298.2	193.9	67.6	54.1	97.6	100+	100+
NW Rand Rd	152.1	175.4	145.1	173.5	150.1	178.5	144.7	193.8	144.8	210.4	139.4	221.8	111.4	127.2	111.4	127.2
SE Rand Rd	129.2	201.7	130.9	137.4	153	284.5	156.1	234.7	134.9	258.3	115.7	265.9	80.4	117.5	80.4	117.5
NB Mt Prospect & Rand	120.6	240.9	121.3	195.6	121.7	155	118.6	140.7	118.8	156	120.5	147.2	54.8	100.7	—	—
SB Rand & Mt Prospect	103.5	149.1	105.2	113.7	132.2	258	132.6	197.8	112.3	222.1	102.3	260.9	92.7	217.8	92.7	217.8
Signalized Intersections (Avg Delay - Seconds)																
Central Rd at Mount Prospect Rd	D - 49.2	D - 40.8	D - 49.5	D - 39.5	D - 51.0	D - 42.6	D - 48.3	C - 34.4	D - 48.3	C - 34.1	C - 32.5	C - 26.5	C - 31.3	D - 41.1	F - 100+	F - 100+
Central Rd at Rand Rd	B - 19.8	D - 45.4	C - 24.0	D - 38.6	C - 28.5	D - 36.2	C - 29.2	D - 49.7	C - 22.0	D - 38.2	C - 26.9	C - 21.9	—	—	—	—
Central Rd at SE Plaza Entrance	C - 26.7	E - 55.7	C - 28.1	E - 55.9	C - 34.6	E - 70.8	—	—	C - 32.3	E - 55.5	C - 25.2	C - 20.4	B - 13.1	C - 24.6	B - 13.1	C - 24.6
Rand Rd at Walmart Entrace	A - 3.8	A - 9.9	A- 3.8	A - 9.9	A - 4.4	B - 10.5	A - 3.9	B - 10.8	A - 3.9	B - 11.2	—	—	—	—	—	—
Rand Rd at Henry Rd	—	—	—	—	—	—	—	—	—	—	A - 5.4	B - 16.4	A - 7.0	B - 15.2	A - 7.0	B - 15.2
Rand Rd at Mount Prospect Rd	C - 28.1	B - 17.8	C - 28.1	B - 17.8	C - 23.3	D - 35.5	C - 25.8	D - 40.6	C - 25.3	D - 41.8	B - 11.3	B - 12.8	A - 3.6	A - 1.3	—	—
Rand Rd at SE Plaza Entrance	—	—	—	—	—	—	—	—	—	—	A - 4.9	A - 3.0	A - 6.5	B - 11.7	A - 6.5	B - 11.7
Planning Level Construction Cost [1]	$3 - 4.5 M		$4 - 5.5 M		$4 - 5.5 M		$3.5 - 5 M		$4 - 5.5 M		$5.5 - 7 M		$25+ M		$25+ M	

Appendix 3: Existing and 2040 Traffic Projections



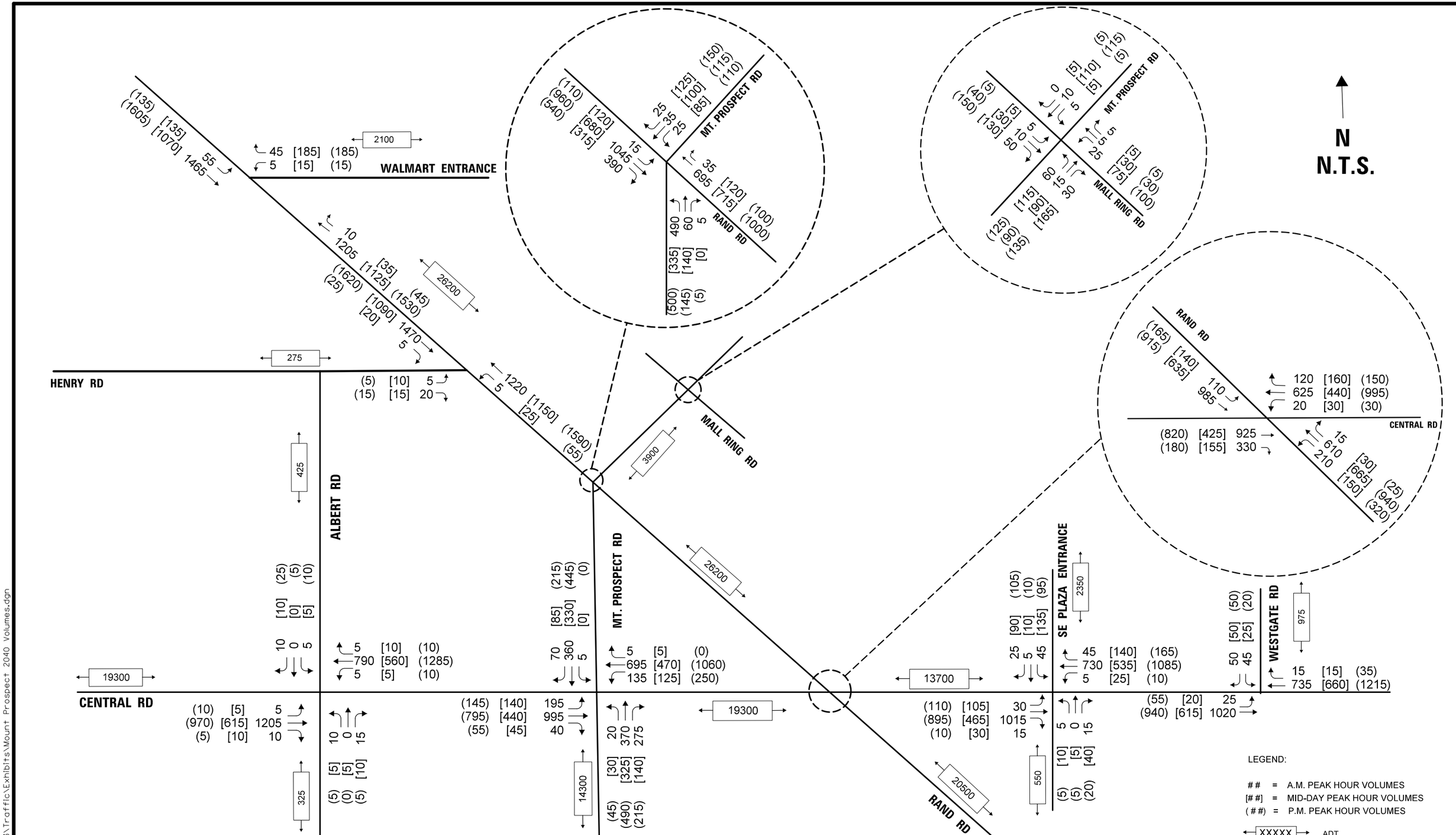
CHRISTOPHER B. BURKE
ENGINEERING, LTD.
9575 West Higgins Road
Suite 600, Rosemont, Illinois 60018
(847) 823-0500

VILLAGE OF MOUNT PROSPECT, ILLINOIS

EXISTING VOLUMES - BALANCED

DESIGN	EAJ
DRAWN	ME
CHECKED	EAJ
SCALE:	NTS
DATE:	9/13/2017
PROJECT NO.	170133
SHEET	1 OF 1
DRAWING NO.	

N:\MOUNTPROSPECT\170133\Traffic\Exhibits\Mount Prospect Existing Volumes_Balanced.dgn



CHRISTOPHER B. BURKE
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9575 West Higgins Road
Suite 600, Rosemont, Illinois 60018
(847) 823-0500

VILLAGE OF MOUNT PROSPECT, ILLINOIS

2040 VOLUMES

DESIGN	ME
DRAWN	ME
CHECKED	FN
SCALE:	NTS
DATE:	8/29/2017

PROJECT NO. 170133
SHEET 1 OF 1
DRAWING NO.

N:\MOUNTPROSPECT\170133\Traffic\Exhibits\Mount Prospect 2040 Volumes.dgn

Appendix 4: Stakeholder Coordination

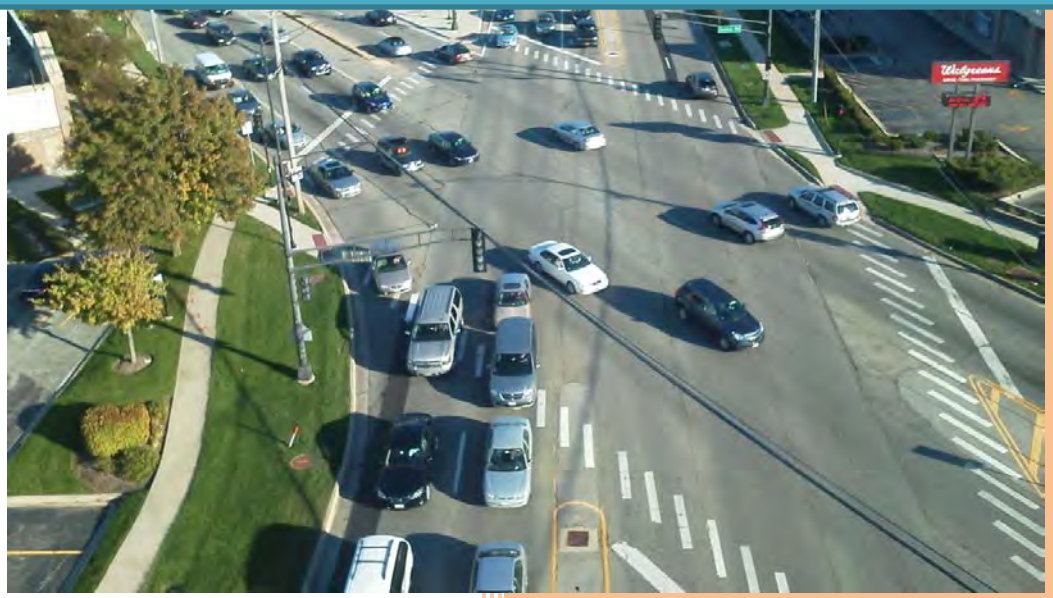
1) Public Information Meeting #1 Summary,
August 10, 2017

2) Mount Prospect Plaza Coordination Meeting with RAMCO Gershenson Properties Trust,
March 14, 2018

3) City of Des Plaines Coordination Meeting,
May 16, 2018

Rand-Central-Mount Prospect Road Intersections Phase I Engineering Study

Rand-Central-Mount Prospect Road Intersections Phase I Engineering Study Public Information Meeting #1 Summary



August 10, 2017

Christopher B. Burke Engineering, Ltd.

1 Executive Summary....2
2 Meeting Notifications....3
2.1 Village Newsletter and Website....3
2.2 Postcard....5
3 Public Information Meeting Summary....6
3.1 Attendees....6
3.2 Photographs....6
4 Comments....10

1 EXECUTIVE SUMMARY

The Public Information Meeting (PIM) #1 for the Rand-Central-Mount Prospect Road Intersections Phase I Study was held on Thursday, August 10th, 2017 between 6:00 and 8:00 p.m. in an open house format at the Village Hall Community Room, 50 S. Emerson Street, Mount Prospect, Illinois, 60056. The purpose of the meeting was to explain the project objective, the Phase I Engineering process, and to seek public input on the transportation issues and needs within the Rand-Central-Mount Prospect Road study area.

The Village of Mount Prospect (Village) is the lead agency for the Phase I Engineering and Environmental Study to address the need for transportation related improvements to the closely spaced intersections involving Rand Road, Central Road, and Mount Prospect Road, with the goals to improve safety and traffic operations.

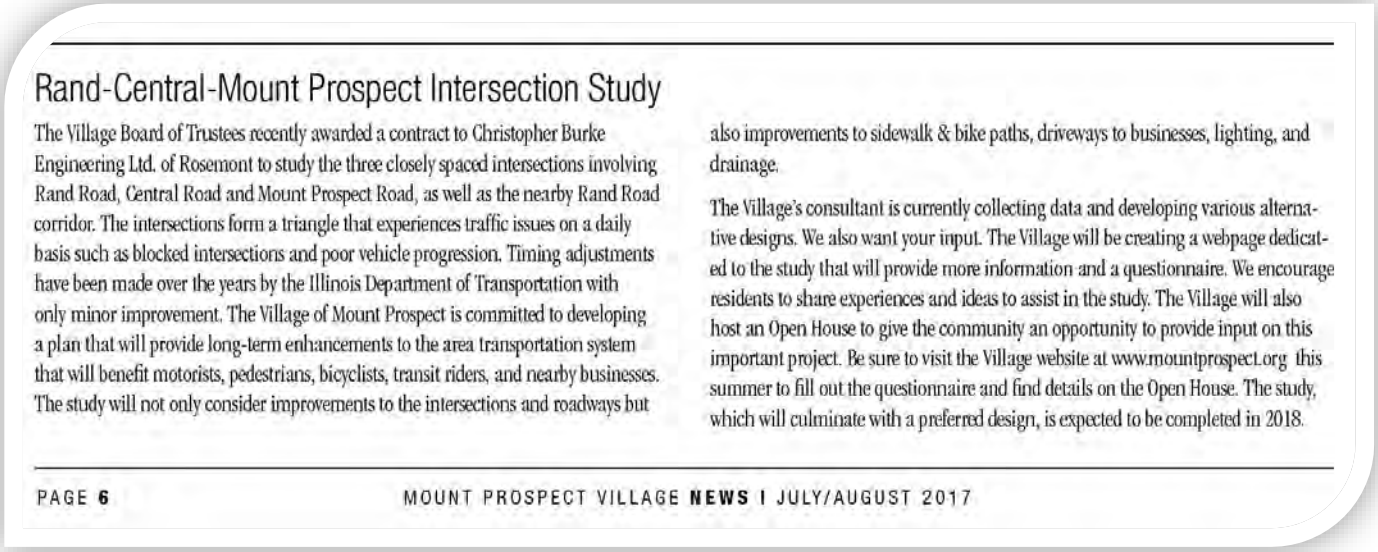
The Village and consultant study team provided information regarding the study schedule, project process, data collection, and the public involvement opportunities. Attendees had the opportunity to review exhibits, provide comments, and meet with Village and project study team representatives. All material presented at the PIM were posted to the project website (www.mountprospect.org/rand-central-mp-study) following the meeting.

The meeting was attended by 43 people. A total of 126 questionnaires were received by the close of the 2-week comment period, August 25, 2017.

2 MEETING NOTIFICATIONS

2.1 VILLAGE NEWSLETTER AND WEBSITE

The Village included a notice in the July/August 2017 edition of the Mount Prospect Village newsletter.



Rand-Central-Mount Prospect Intersection Study

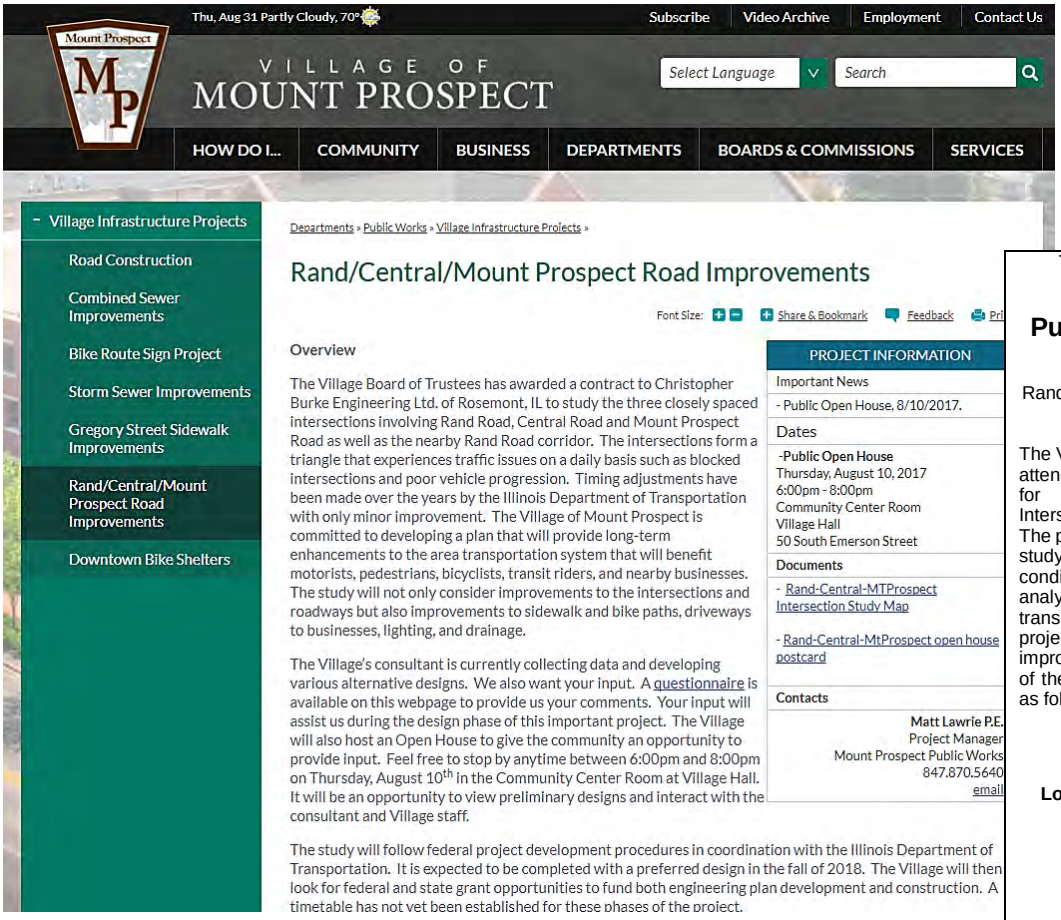
The Village Board of Trustees recently awarded a contract to Christopher Burke Engineering Ltd. of Rosemont to study the three closely spaced intersections involving Rand Road, Central Road and Mount Prospect Road, as well as the nearby Rand Road corridor. The intersections form a triangle that experiences traffic issues on a daily basis such as blocked intersections and poor vehicle progression. Timing adjustments have been made over the years by the Illinois Department of Transportation with only minor improvement. The Village of Mount Prospect is committed to developing a plan that will provide long-term enhancements to the area transportation system that will benefit motorists, pedestrians, bicyclists, transit riders, and nearby businesses. The study will not only consider improvements to the intersections and roadways but also improvements to sidewalk & bike paths, driveways to businesses, lighting, and drainage.

The Village's consultant is currently collecting data and developing various alternative designs. We also want your input. The Village will be creating a webpage dedicated to the study that will provide more information and a questionnaire. We encourage residents to share experiences and ideas to assist in the study. The Village will also host an Open House to give the community an opportunity to provide input on this important project. Be sure to visit the Village website at www.mountprospect.org this summer to fill out the questionnaire and find details on the Open House. The study, which will culminate with a preferred design, is expected to be completed in 2018.

PAGE 6 MOUNT PROSPECT VILLAGE **NEWS** I JULY/AUGUST 2017

In addition, an announcement was posted on the Village website a month before the Public Information Meeting, and a screenshot is included on the following page. The project website is www.mountprospect.org/rand-central-mp-study. The study area questionnaire was also provided on the website for stakeholders to submit comments prior to or after the meeting.

The Display Ad ran in the Mount Prospect Journal on Thursday, August 4, 2017, and is included on the following page.



The Village of Mount Prospect has scheduled a

Public Information Meeting

for the
Rand-Central-Mount Prospect Intersections
Phase I Engineering Study

The Village of Mount Prospect invites you to attend the initial Public Information Meeting for the Rand-Central-Mount Prospect Intersections Phase I Engineering Study. The purpose of this meeting is to present the study process, study schedule, existing conditions including traffic and safety analyses, and seek public input on the transportation issues and needs within the project study area, and potential improvements to be considered. The details of the initial Public Information Meeting are as follows:

Date: August 10, 2017
Time: 6:00 p.m. to 8:00 p.m.
Location: Village of Mount Prospect

Village Hall
Community Room
50 S. Emerson Street
Mount Prospect, IL 60056

Open House Format

The meeting will be conducted in an open house format and interested persons may attend at any time between 6:00 pm and 8:00 pm. Attendees will have the opportunity to review exhibits, provide input on transportation issues and needs in the study area, and meet with Village staff and engineering consultant representatives.

For additional information, please visit the project website at: www.mountprospect.org/rand-central-mp-study

Questions about the meeting can be directed to the Public Works Department at (847) 870-5640 or publicworksdept@mountprospect.org

2.2 POSTCARD

A postcard was sent to property owners near the project corridor as well as other interested stakeholders. 1,244 postcards were sent out the week of July 24, 2017.

We want your input . . .

The Village of Mount Prospect is holding a public information meeting for the **RAND-CENTRAL-MOUNT PROSPECT INTERSECTIONS PHASE I ENGINEERING STUDY**. The study area consists of the Rand Road, Central Road, and Mount Prospect Road interconnected triangle intersections and adjacent sections of each roadway. **The purpose of the meeting is to seek public input on the transportation issues and concerns of the Rand-Central-Mount Prospect Intersections study area and potential improvements to be considered.**

Thursday, August 10, 2017 6:00 p.m. – 8:00 p.m.	Village of Mount Prospect Village Hall Community Room 50 S. Emerson Street Mount Prospect, IL 60056

The meeting will be conducted in an open house format, and interested persons may visit anytime between 6:00 and 8:00 p.m. Attendees will have the opportunity to review exhibits, provide comments, and meet with Village Staff and engineering consultant representatives.

For more information and to take a brief survey, visit the project website at **www.mountprospect.org/rand-central-mp-study**. Questions about the meeting can be directed to the Public Works Department at (847) 870-5640 or publicworksdept@mountprospect.org.

Mount Prospect
MP

Village of Mount Prospect
50 S. Emerson Street
Mount Prospect, IL 60056

3 PUBLIC INFORMATION MEETING SUMMARY

The Public Information Meeting #1 for the Rand-Central-Mount Prospect Road Intersections Phase I Engineering Study was held on Thursday, August 10, 2017 between 6:00 and 8:00 p.m. at the Village Hall Community Room, 50 S. Emerson Street, Mount Prospect, IL 60056. The purpose of the meeting was to explain the project objective, the Phase I Engineering process, and to seek public input on the transportation issues and needs within the Rand-Central-Mount Prospect Road study area. The meeting was conducted in an open house format. Two sets of exhibits were provided back-to-back in the community room in a clockwise directional flow with projections of the existing traffic modeling provided in the back-left part of the room, and 3 sets of aerial roll plots provided in the back-right part of the room to add comments focusing on issue and need areas within the study area. Tables and chairs were set up in the front-right part of the room for attendees to write their comments and submit to the comment box. A two-week comment period was provided from August 10 through August 25, 2017. Comment forms could be submitted to the comment box that night, or filled later and emailed to the project email address, rand-central-mp-study@cbbel.com, faxed to (847) 823-0520 c/o Emily Anderson, or mailed to the address provided on the back of the comment form. In addition to the comment forms available at the meeting, comments could also be submitted via the questionnaire link on the project website at www.mountprospect.org/rand-central-mp-study.

The Village is the lead agency for the Phase I Engineering and Environmental Study to address the need for transportation related improvements to the closely spaced Rand Road, Central Road, and Mount Prospect Road intersections.

The Village and the consultant study team provided information regarding the study schedule, project process, data collection, and the public involvement opportunities. Attendees had the opportunity to review exhibits, provide comments, and meet with Village and project study team representatives. A project brochure was provided to meeting attendees and is included in Attachment A.

3.1 ATTENDEES

The meeting was attended by 43 people including public officials, local business representatives, residents near the corridor and within adjacent neighborhoods, roadway users, and involved agencies and organizations.

Media represented include Richard Mayer, Mount Prospect Journal. A news article was published in the Journal on August 16, 2017 regarding the Public Information Meeting, and is included as Attachment B.

3.2 PHOTOGRAPHS

Photographs from the Public Information Meeting:


EXIT
Project Location


STATION 3
STATION 4


Project Development Process
PHASE I
PHASE II
PHASE III


STATION 4
SUBMIT YOUR COMMENTS HERE



4 COMMENTS

A total of 126 written comments were received by the close of the 2-week comment period, August 25, 2017. Additional location-specific comments were provided on aerial plots. Common topics included:

- Concern that NB Mount Prospect Road at Rand Road vehicles queue into and block WB Central Road traffic,
- Some stakeholders recommended retiming signals so NB vehicles have green lights at both Central and Rand at the same time,
- Concern toward the circular nature of blocked intersections: NB Mount Prospect blocks WB Central Road, which then blocks SB Rand Road, which then blocks NB Mount Prospect Road,
- Some stakeholders recommended a roundabout, removing one of the 3 roadway legs, or relocating the property at the center of the triangle,
- Concern that SB Plaza at Rand Road vehicles queue in the exclusive RTL to go Thru,

- Some stakeholders recommended turning the SB Plaza at Rand exclusive RTL into combined Thru/Right,
- Concern that the internal circulation of the Plaza performs poorly,
- Some stakeholders recommended removing the Plaza exit and adding traffic signal at Walmart access or SE Plaza access instead,
- Concern that SB Mount Prospect Road at Central Road vehicles queue in the exclusive RTL to go Thru,
- Some stakeholders recommended turning the SB Mount Prospect at Central exclusive RTL into combined Thru/Right
- Concern that pedestrians have difficulty accessing restaurants and shopping
- Some stakeholders recommended adding more sidewalks and better crosswalks and timing to be more pedestrian friendly

Comments are included as Attachment C.

MEETING SUMMARY

Meeting Date: March 14, 2018 at 10:00 a.m.

Location: Mount Prospect Village Hall

Project: Rand-Central-Mount Prospect Phase I Engineering Study

SN. 17-00166-00-CH

Purpose: Mount Prospect Plaza Coordination Meeting

Attendees: See attached sign-in sheet

A coordination meeting was held at the Village of Mount Prospect on March 14, 2018 at 10 a.m. for the Rand-Central-Mount Prospect Phase I Engineering Study to discuss the Phase I study and preliminary results with the Mount Prospect Plaza ownership (i.e.; RAMCO Gershenson Properties Trust).

Meeting material distributed included discussion points and the Range of Alternative Concept Evaluation White Paper. Sketches of the alternatives were displayed for discussion purposes. The SimTraffic computer traffic modeling of the alternatives was used to facilitate discussions. Below is a summary of meeting discussion points, with any action items noted:

1) The Phase I Engineering Study is intended to address the need for transportation related improvements to the closely spaced intersections involving Rand Road, Central Road, and Mount Prospect Road, with the goal to improve congestion, mobility, access, safety, and non-motorized accommodations.

2) A public information meeting was held on August 10, 2017 to explain the project objective and gain public input on existing transportation issues. The existing conditions SimTraffic was shown at the coordination meeting which reflects stakeholder input that exiting the Plaza at Mount Prospect Road and Rand Road is difficult. Queues also develop at the SE Plaza entrance located near Lifetime Fitness. The 2040 No-Build was shown which shows the existing traffic problems getting worse due to the increase of projected traffic volumes. RAMCO asked if the projected traffic volumes reflected anticipated changes in autonomous vehicles. CBBEL explained that the Chicago Metropolitan Agency for Planning (CMAP) is the 3rd party agency responsible for providing traffic volume projections for northeastern Illinois, and they are considering potential future mode shifts with their travel demand projections. In discussion with CMAP, it is uncertain what effects autonomous vehicles may have on traffic volumes in the future, but agencies such as CMAP and the Federal Highway Administration (FHWA) are evaluating this issue. Currently, there are many divergent opinions on whether traffic volumes will increase or decrease as a result.

3) An interim permit project is anticipated later this year to resurface and restripe Mount Prospect Road at Central Road. Currently, the southbound (SB) movement on the north leg of Mount Prospect Road at Central Road is an exclusive right turn lane (RTL) and a combined thru/left turn lane (LTL). The exclusive RTL will be restriped to a combined thru/RTL and the south receiving end of Mount Prospect Road will be restriped as two lanes with the lane drop further south. No work is proposed at the Mount Prospect Road/ Plaza and Rand Road intersection as part of this project as it would increase IDOT involvement in the approval process. The Plaza SB exit similarly has an exclusive RTL and combined thru/LTL. Vehicles exiting the Plaza are queuing in the RTL to go straight. With this interim permit project, the Plaza may now restripe the RTL to a combined thru/RTL for these vehicular movements. The Village will coordinate with the Plaza as the resurfacing and restriping project progresses as this provides a good benefit to the Plaza egress. The Central Road resurfacing project is expected to start in June. RAMCO agreed that this would be a good interim solution and would like all three representatives included in future coordination with Bridget Goggin as the main contact.

4) For the Phase I Engineering Study, a full range of alternatives were comparatively evaluated and results were summarized in the white paper previously provided by the Village. Alternatives 1, 2, and 3 show incremental better network improvements with Alternative 3 having the best overall network improvement. Alternative 3 was identified as the overall most cost-effective of these alternatives. RAMCO indicated that relocating the Plaza entrance/exit presents many challenges as the access is stipulated via separate leases for each store within the Plaza. If Alternative 3 is chosen, a condemnation process may be necessary based on all the required agreements between parties. Alternative 2 as shown does not have a traffic signal at the SE Plaza entrance. RAMCO prefers Alternative 2 modified with a traffic signal at the SE Plaza entrance as this would minimize site impacts, however further research is necessary to determine what agreements would be necessary with each leaser to convert the access to a right-out only. A proposed traffic signal meets warrants at the SE Plaza.

5) Sub-alternatives were further studied for Alternative 3 to build upon the best-performing alternative. Alternative 3B investigated how adding a traffic signal at the SE Plaza would affect the network performance. The queues within the plaza are better managed, however the network delay and travel time increases due to the introduction of a new traffic signal. While the proposed traffic signal relocated along Rand Road is shown in various locations for the alternatives with a range of impacts to the Walmart parking field, based on recent development plans with the vacant parcel across from Walmart, it is likely that the proposed traffic signal will be located at the existing Walmart access at the loading docks opposing a new proposed development.

6) RAMCO asked whether roundabouts were feasible at the interconnected triangle intersections. Multi-lane roundabout (RAB) had been considered at all three intersections. The Rand-Central intersection which would require at least a triple lane RAB, and the high circulating volume within the RAB (approximately 2,300 pc/h) resulted in operational complexity, property impacts, and deficient performance, therefore a RAB at the Rand-Central intersection was dismissed. In addition, a “dog-bone” double RAB covering both Mount Prospect at Central Road and Mount Prospect at Rand Road was considered. Similarly, the multi-lane RAB has a large footprint resulting in significant property and access impacts to adjacent businesses, and deficient traffic performance. Rand Road and Central Road west of Rand Road are

under IDOT jurisdiction. IDOT District 1 does not have any constructed multi-lane RABs in their system due to the issues described above and high truck volumes on state routes.

7) CBBEL described the next steps for the Phase I Engineering Study process. Coordination with Walmart is pending to gain their feedback on the alternatives discussed today. RAMCO plans to contact the Walmart management to discuss the project and help set up that meeting. Once a preferred alternative is determined, a public hearing is anticipated in the fall to present the preferred alternative, and Design Approval from IDOT and FHWA is anticipated by the end of 2018. After Phase I, Phase II is the detailed design phase with contract plan preparation and land acquisitions and usually takes 18-24 months.

The meeting adjourned at approximately 11:00 a.m.

Submitted by: Emily T. Anderson, P.E., CFM (CBBEL)

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Meeting Register

Project: Phase I Engineering; Rand-Central-Mount Prospect
Meeting Date/Time: Mount Prospect Plaza Coordination Meeting
March 14, 2018 / 10:00 a.m.
Location: Village of Mount Prospect
50 S Emerson St, Mt Prospect, IL 60056

ATTENDEES:

NAME	REPRESENTING	EMAIL
1. EMILY ANDERSON	CBBEL	eanderson@cbbel.com
2. MATT LAWRIE	MP ENGINEERING	mlawrie@mountprospect.org
3. Nellie Becklier	VofMP VMO	nbecklier@mountprospect.org
4. BRIDGET GOGGIN	RAMCO	bgoggin@RGPT.com
5. Ed Eickhoff	Ramco	eeickhoff@rgpt.com
6. ROSS GALLENSTINE	RAMCO	RGALLENSTINE@RGPT.COM
7. Bill Cooney	MP Community Development	bcooney@mountprospect.org
8. Sean Dorsey	MP Dir. of Public Works	sdorsey@mountprospect.org
9. Mike Matkovic	CBBEL	mmatkovic@cbbel.com
10.		
11.		
12.		
13.		
14.		
15.		

MEETING SUMMARY

Meeting Date: May 16, 2018 at 10:00 a.m.

Location: Des Plaines City Hall

Project: Rand-Central-Mount Prospect Phase I Engineering Study
SN. 17-00166-00-CH

Purpose: City of Des Plaines Coordination Meeting

Attendees: Derek Peebles, City of Des Plaines – dpeebles@desplaines.org
Jon Duddles, City of Des Plaines – jduddles@desplaines.org
Matt Lawrie, Village of Mount Prospect - mlawrie@mountprospect.org
Jeff Wulbecker, Village of Mount Prospect – jwulbecker@mountprospect.org
Mike Matkovic, CBBEL – mmatkovic@cbbel.com
Emily Anderson, CBBEL – eanderson@cbbel.com

A coordination meeting was held at the City of Des Plaines (City) on May 16, 2018 at 10 a.m. for the Village of Mount Prospect (Village) led Rand-Central-Mount Prospect Road Intersections Phase I Engineering Study to discuss the Phase I Study and preliminary results with the City.

The Alternatives Evaluation Report was distributed prior to the meeting. An agenda was provided and roll plots of Alternatives 2B/2D and 2C/2E were displayed for discussion purposes. Below is a summary of meeting discussion points, with any action items noted:

1) The Phase I Engineering Study is intended to address the need for transportation related improvements to the closely spaced intersections involving Rand Road, Central Road, and Mount Prospect Road, with the goal to improve congestion, mobility, access, safety, and non-motorized accommodations.

2) IDOT is resurfacing Central Road from Arlington Heights Road to Rand Road later this year. As part of that project, IDOT will also resurface and restripe Mount Prospect Road at Central Road. Currently, the southbound (SB) movement on the north leg of Mount Prospect Road at Central Road is an exclusive right turn lane (RTL) and a combined thru/left turn lane (LTL). The exclusive RTL will be restriped to a combined thru/RTL and the south receiving end of Mount Prospect Road will be restriped as two lanes with the lane drop further south. The Central Road resurfacing project is expected to start in June.

3) A public information meeting was held on August 10, 2017 to explain the project objective and gain public input on existing transportation issues. The 2040 No-Build

was shown which shows the existing traffic problems getting worse due to the increase of projected traffic volumes.

4) For the Phase I Engineering Study, a full range of alternatives were comparatively evaluated and results were summarized in the Alternatives Evaluation Report. Alternatives 1, 2, and 3 all show better network improvements, and variations on Alternative 2 (2B/2C/2D/2E) have arising as a consensus-building based on feedback from the Mount Prospect plaza ownership indicated that relocating the Plaza entrance/exit (for Alternative 3) presents many challenges as the access is stipulated via separate leases for each store within the Plaza. If Alternative 3 is chosen, a condemnation process may be necessary based on all the required agreements between parties. Proposed traffic signals meet warrants at the SE Plaza and Walmart Entrances.

5) Alternative 2C/2E installs dual left turn lanes on Rand Road at Central Road. As shown, roadway widening would occur to the west. The City indicated that they are in Phase II for a proposed eight-foot wide side path along the southwest side of Rand Road up to Central Road based on the City bike path plan. Phase I has been approved, and Michael Matkovic requested the Phase I study. The City indicated that it is a tight corridor and the path was reduced from 10 feet to 8 feet in this area to fit within the existing ROW.

   Action Items: CBBEL will look at whether the dual left turn lanes can be widened to the east instead of to the west to accommodate the proposed bike path. CBBEL will update the aerial to reflect the newly built Advocate Medical Site.

   POST MEETING NOTE: The City provided the bike path plan and profile, Advocate Medical Site Plan, and right turn deceleration lane concept after the meeting via email.

6) The City showed a zoom-in of the Des Plaines proposed bike network map. Other than the gap being completed as part of the Rand Road southwest side path, a proposed bike route is also planned on Mount Prospect Road to close the gap between Wisconsin Drive and Central Road.

   Action Item: CBBEL will look at a potential bike path connection along Mount Prospect Road as part of the Phase I Study.

7) CBBEL described the next steps for the Phase I Engineering Study process. Coordination with Walmart is pending to gain their feedback on the Walmart Entrance traffic signal. Once a preferred alternative is determined, a public hearing is anticipated in the fall to present the preferred alternative, and Design Approval from IDOT and FHWA is anticipated by the end of 2018.

The meeting adjourned at approximately 11:00 a.m.

Submitted by: Emily T. Anderson, P.E., CFM (CBBEL)

Appendix 5: Preliminary Preferred Alternative Traffic Signal Warrant Analysis

Christopher B. Burke Engineering, Ltd. (CBBEL) has conducted traffic control warrant analyses for the Rand-Central-Mount Prospect Road Intersections Phase I Study preliminary preferred alternative on behalf of the Village of Mount Prospect. The traffic signal warrant analyses were completed at two proposed traffic signal locations: Rand Road (an SRA route) and Walmart Entrance and at Central Road and Southeast (SE) Plaza Entrance (Figure 1). The Phase I Study alternative currently building consensus is Alternative 2B/2C/2D/2E which includes modifying the main plaza entrance on the north approach of Rand Road and Mount Prospect Road to a right-out only and redistributing the through and left turn volumes to the two proposed traffic signals. For the traffic signal warrant analysis, year 2023 traffic volumes were redistribution with 50% of the affected traffic exiting the shopping center at the Walmart Entrance and the other 50% exiting at the SE Plaza Entrance (Figure 2).

Rand Road and Walmart Entrance Traffic Volumes and Traffic Signal Warrant Analysis

In addition to the redistributed year 2023 Plaza volumes, the intersection of Rand Road and Walmart Entrance also included site-generated volumes from the proposed development currently under permit review on the west approach.

At Rand Road and Walmart Entrance, more stringent SRA requirements are used for the traffic signal warrant analysis which increase the Warrant 1B requirements for the side street volume from 100 vph to 150 vph for all 8 hours. The proposed lane configuration at the Walmart Entrance and planned development is an exclusive left turn lane and a combined thru/ right turn lane. The base right turn reduction rate used is 60%, and reduced right turn volume was calculated using the IDOT right turn reduction formula. The reduced volumes are shown for the redistributed design year 2023 traffic volumes, Figure 2.

Using IDOT's SRA criteria, a traffic signal is warranted at the intersection of Rand Road and Walmart Entrance based on Warrant 1B (8-hour Interruption of Continuous Traffic).

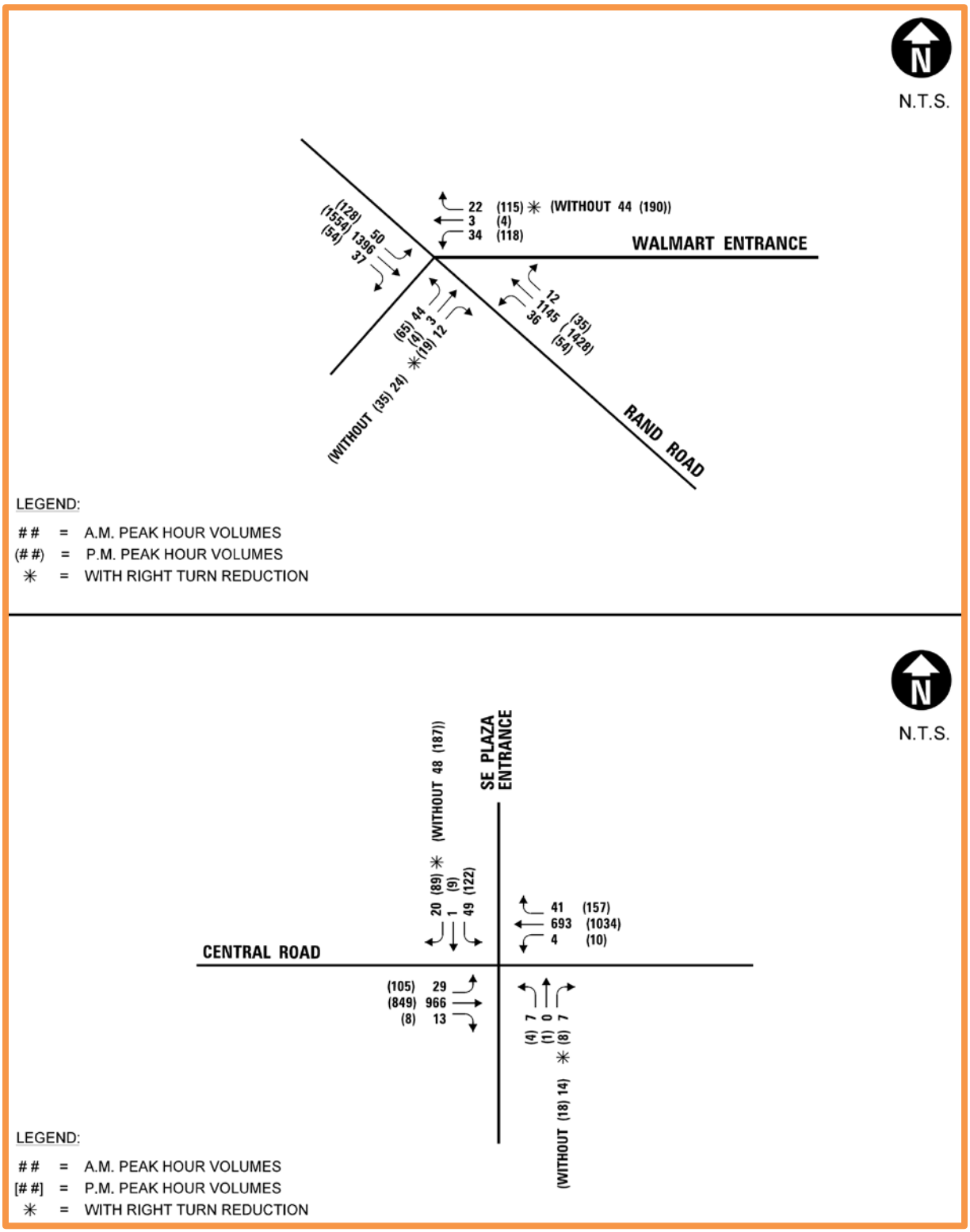
Central Road and SE Plaza Entrance Traffic Volumes and Traffic Signal Warrant Analysis

At Central Road and SE Plaza Entrance, standard traffic signal warrant analysis criteria was used. The proposed lane configuration at the SE Plaza Entrance and Burger King is an exclusive left turn lane and a combined thru/ right turn lane.

The traffic signal warrant analysis concluded that a traffic signal is warranted at the intersection of Central Road and SE Plaza based on Warrant 1B (8-hour Interruption of Continuous Traffic), Warrant 2 (4-hour Vehicular Volume), and Warrant 3B (Peak Hour Volume).

Figure 1: Preliminary Preferred Alternative Geometry

Figure 2: Redistributed Year 2023 Peak Hour Vehicular Volumes



TEAPAC[Ver 9.01.01] - MUTCD Warrant Analysis

Conditions Used for Warrant Analysis	2009 MUTCD

Intersection # 1	
Major Street Direction	NorthSouth
Number of Lanes in North-South direction	3
Number of Lanes in East-West direction	2
Approach speed on major street is greater than 40 mph	No
Isolated community has population less than 10,000	No
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to improve conditions	No
Number of accidents correctable by a signal	0
Peak hour stop sign delay for worst minor approach (veh-hours)	0
Number of accidents correctable by a multi-way stop	0
Peak hour average delay for all minor approaches (sec/veh)	0

TEAPAC[Ver 9.01.01] - Warrant Analysis for Traffic Signal

Warrant 1A Analysis - 8-Hour Minimum Vehicular Volume

Start Time	1645	1545	1445	1215	1745	1315	1100	1000	Req.
Minor Volume	237	208	202	200	199	193	180	141	200
Major Volume	3253	3018	2418	2305	2788	2200	2193	1952	600
Warrant Met?	Yes	Yes	Yes	Yes	No	No	No	No	8

Number of 1-hour periods meeting the warrant	4
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 1A IS NOT MET <<

Warrant 1B Analysis - 8-Hour Interruption of Continuous Traffic

Start Time	1700	1500	1600	1800	1300	1200	1100	1400	Req.
Minor Volume	233	211	200	198	197	195	180	167	100
Major Volume	3230	2521	3136	2566	2217	2257	2193	2240	900
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Number of 1-hour periods meeting the warrant	10
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 1B IS MET <<

TEAPAC[Ver 9.01.01] - Warrant Analysis for Traffic Signal

Warrant 1A Analysis (80%) - 8-Hour Minimum Vehicular Volume

Start Time	1630	1730	1230	1530	1430	1130	1330	1030	Req.
Minor Volume	233	214	203	195	194	181	173	164	160
Major Volume	3229	2973	2304	2873	2310	2245	2206	2100	480
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Number of 1-hour periods meeting the warrant 8

Warrant 1B Analysis (80%) - 8-Hour Interruption of Continuous Traf

Start Time	1645	1545	1245	1445	1745	1145	1045	1345	Req.
Minor Volume	237	208	205	202	199	183	178	163	80
Major Volume	3253	3018	2245	2418	2788	2274	2154	2204	720
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Number of 1-hour periods meeting the warrant 10

Warrant 1C Analysis - 8-Hour Combination of Warrants

80% of Warrants 1A and 1B are met	Yes
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to reduce delays	No

>> WARRANT 1C IS NOT MET <<

Warrant 2 Analysis - 4-Hour Vehicular Volume

Start Time	1630	1730	1230	1530	1430	1130	1330	1030	Req.
Minor Volume	233	214	203	195	194	181	173	164	———
Minor Reqrmt	115	115	115	115	115	115	115	115	<--
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	4

Number of 1-hour periods meeting the warrant	9
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 2 IS MET <<

TEAPAC[Ver 9.01.01] - Warrant Analysis for Traffic Signal

Warrant 3A Analysis - Peak Hour Delay

Start Time	1715	1615	1515	1215	1315	1115	1415	1015	Req.
Minor Volume	219	213	211	200	193	179	174	153	150
Total Volume	3343	3464	2891	2505	2393	2404	2455	2159	800
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1

Number of 1-hour periods meeting the warrant	8
Signal will not seriously disrupt progressive traffic flow	Yes
Delay for worst minor approach (must be at least 5 veh-hours)	0

>> WARRANT 3A IS NOT MET <<

Warrant 3B Analysis - Peak Hour Volume

Start Time	1715	1615	1515	1215	1315	1115	1415	1015	Req.
Minor Volume	219	213	211	200	193	179	174	153	———
Minor Reqrmt	150	150	150	150	150	150	150	150	<--
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1

Number of 1-hour periods meeting the warrant	8
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 3B IS MET <<

Warrant 7 Analysis - Crash Experience

80% of Warrant 1A or 1B is met	Yes
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to reduce accidents	No
Number of correctable accidents (must be 5 or more per year)	0

>> WARRANT 7 IS NOT MET <<

Summary of MUTCD Traffic Signal Warrant Analysis

Warrant 1A 8-Hour Minimum Vehicular Volume	NOT MET
Warrant 1B 8-Hour Interruption of Continuous Traffic	MET
Warrant 1C 8-Hour Combination of Warrants	NOT MET
Warrant 2 4-Hour Vehicular Volume	MET
Warrant 3A Peak Hour Delay	NOT MET
Warrant 3B Peak Hour Volume	MET
Warrant 7 Crash Experience	NOT MET

>> Traffic Signal Warrant is MET <<

TEAPAC[Ver 8.62.01] - MUTCD Warrant Analysis

Conditions Used for Warrant Analysis	2009 MUTCD

Intersection # 1

Major Street Direction	EastWest
Number of Lanes in North-South direction	2
Number of Lanes in East-West direction	3
Approach speed on major street is greater than 40 mph	No
Isolated community has population less than 10,000	No
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to improve conditions	No
Number of accidents correctable by a signal	0
Peak hour stop sign delay for worst minor approach (veh-hours)	0
Number of accidents correctable by a multi-way stop	0
Peak hour average delay for all minor approaches (sec/veh)	0

TEAPAC[Ver 8.62.01] - Warrant Analysis for Traffic Signal

Warrant 1A Analysis - 8-Hour Minimum Vehicular Volume

Start Time	1715	1215	1615	1430	1115	1315	1815	1530	Req.
Minor Volume	224	216	212	204	200	183	177	139	200
Major Volume	2139	1186	2006	1439	1164	1175	1193	1382	600
Warrant Met?	Yes	Yes	Yes	Yes	Yes	No	No	No	8

Number of 1-hour periods meeting the warrant	5
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 1A IS NOT MET <<

Warrant 1B Analysis - 8-Hour Interruption of Continuous Traffic

Start Time	1715	1215	1615	1115	1515	1415	1315	1815	Req.
Minor Volume	224	216	212	200	196	188	183	177	100
Major Volume	2139	1186	2006	1164	1779	1376	1175	1193	900
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Number of 1-hour periods meeting the warrant	10
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 1B IS MET <<

TEAPAC[Ver 8.62.01] - Warrant Analysis for Traffic Signal

Warrant 1A Analysis (80%) - 8-Hour Minimum Vehicular Volume

Start Time	1745	1145	1245	1645	1445	1545	1345	1045	Req.
Minor Volume	247	219	211	204	201	199	174	168	160
Major Volume	1897	1233	1163	2089	1513	1951	1282	1036	480
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Number of 1-hour periods meeting the warrant 8

Warrant 1B Analysis (80%) - 8-Hour Interruption of Continuous Traf

Start Time	1800	1200	1700	1500	1600	1300	1100	1400	Req.
Minor Volume	238	222	220	205	197	193	184	181	80
Major Volume	1676	1235	2163	1641	1994	1152	1107	1317	720
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Number of 1-hour periods meeting the warrant 10

Warrant 1C Analysis - 8-Hour Combination of Warrants

80% of Warrants 1A and 1B are met Yes
Signal will not seriously disrupt progressive traffic flow Yes
Trials of other remedies have failed to reduce delays No

>> WARRANT 1C IS NOT MET <<

Warrant 2 Analysis - 4-Hour Vehicular Volume

Start Time	1800	1200	1700	1500	1600	1300	1100	1400	Req.
Minor Volume	238	222	220	205	197	193	184	181	———
Minor Reqrmt	115	128	115	115	115	147	158	115	<--
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	4

Number of 1-hour periods meeting the warrant 8
Signal will not seriously disrupt progressive traffic flow Yes

>> WARRANT 2 IS MET <<

TEAPAC[Ver 8.62.01] - Warrant Analysis for Traffic Signal

Warrant 3A Analysis - Peak Hour Delay

Start Time	1730	1230	1630	1130	1430	1530	1330	1030	Req.
Minor Volume	237	231	220	206	204	183	160	153	150
Total Volume	2275	1407	2281	1453	1655	2087	1404	1166	800
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1

Number of 1-hour periods meeting the warrant	8
Signal will not seriously disrupt progressive traffic flow	Yes
Delay for worst minor approach (must be at least 5 veh-hours)	0

>> WARRANT 3A IS NOT MET <<

Warrant 3B Analysis - Peak Hour Volume

Start Time	1730	1630	1430	1530	1230	1130	1330	1030	Req.
Minor Volume	237	220	204	183	231	206	160	153	———
Minor Reqrmt	150	150	203	150	305	277	274	370	<--
Warrant Met?	Yes	Yes	Yes	Yes	No	No	No	No	1

Number of 1-hour periods meeting the warrant	4
Signal will not seriously disrupt progressive traffic flow	Yes

>> WARRANT 3B IS MET <<

Warrant 7 Analysis - Crash Experience

80% of Warrant 1A or 1B is met	Yes
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to reduce accidents	No
Number of correctable accidents (must be 5 or more per year)	0

>> WARRANT 7 IS NOT MET <<

Summary of MUTCD Traffic Signal Warrant Analysis

Warrant 1A 8-Hour Minimum Vehicular Volume	NOT MET
Warrant 1B 8-Hour Interruption of Continuous Traffic	MET
Warrant 1C 8-Hour Combination of Warrants	NOT MET
Warrant 2 4-Hour Vehicular Volume	MET
Warrant 3A Peak Hour Delay	NOT MET
Warrant 3B Peak Hour Volume	MET
Warrant 7 Crash Experience	NOT MET

>> Traffic Signal Warrant is MET <<

TEAPAC[Ver 8.62.01] - Warrant Analysis for Multi-way Stop

Warrant A Analysis - Interim Measure for Signal

If signal warrants are met, a temporary multi-way stop is allowed

>> WARRANT A IS MET <<

Warrant B Analysis - Crash Experience

Number of correctable accidents (must be 5 or more per year) 0

>> WARRANT B IS NOT MET <<

Warrant C Analysis - 8-Hour Minimum Vehicular Volume

Start Time	1730	1200	1630	1430	1300	1100	1530	1000	Req.
Minor Volume	251	250	236	216	214	205	200	142	200
Major Volume	2024	1235	2045	1439	1152	1107	1887	987	300
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	8

Average minor volume for 8 highest minor hours	214
Average major volume for 8 highest minor hours	1485
Delay for all minor approaches (must be at least 30 sec/veh)	0

>> WARRANT C IS NOT MET <<

Warrant D Analysis - 8-Hour Combination of Warrants

Start Time	1230	1730	1630	1130	1430	1530	1330	1030	Req.
Minor Volume	257	251	236	234	216	200	176	165	160
Major Volume	1150	2024	2045	1219	1439	1887	1228	1001	240
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8

Average minor volume for 8 highest minor hours	217
Average major volume for 8 highest minor hours	1499
Number of correctable accidents (must be 4 or more per year)	0
Delay for all minor approaches (must be at least 24 sec/veh)	0

>> WARRANT D IS NOT MET <<

Summary of MUTCD Multi-way Stop Warrant Analysis

Warrant A Interim Measure for Signal	MET
Warrant B Crash Experience	NOT MET
Warrant C 8-Hour Minimum Vehicular Volume	NOT MET
Warrant D 8-Hour Combination of Warrants	NOT MET

>> Multi-way Stop Warrant is MET <<