Rand-Central-Mount Prospect Intersection Improvements

Phase I Engineering Project Status Presentation

April 24, 2018

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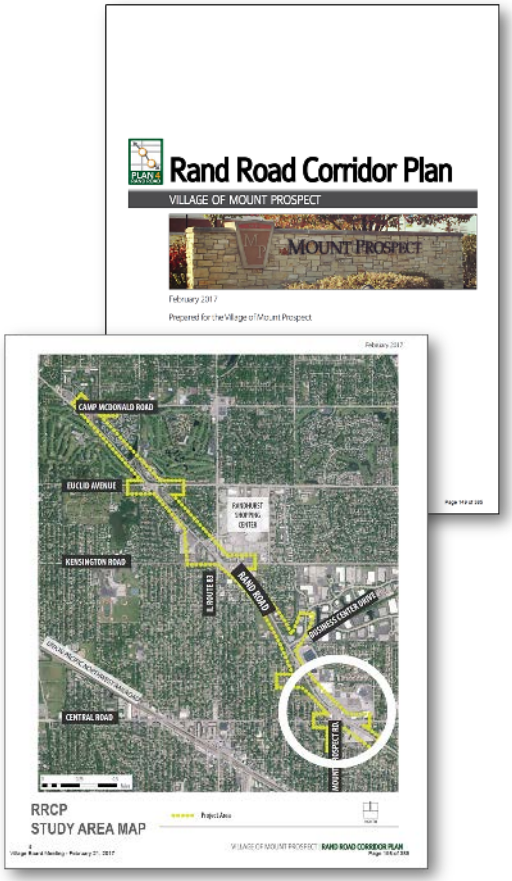
Project Location



www.mountprospect.org/rand-central-mp-study

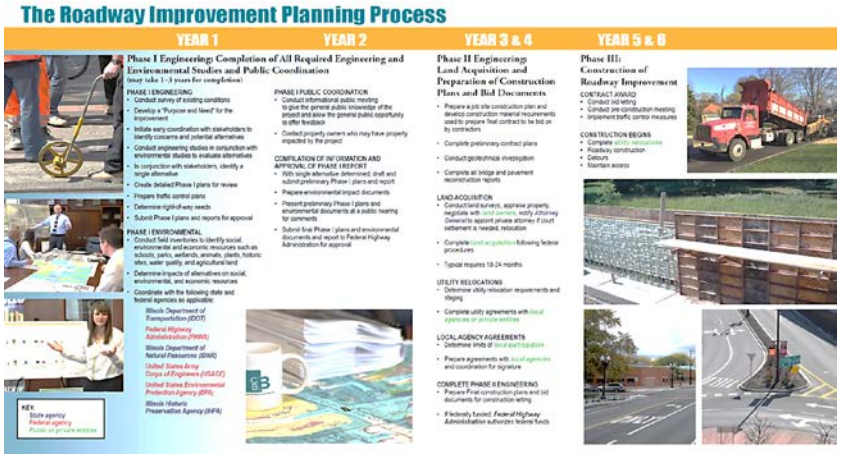
Project Development Process

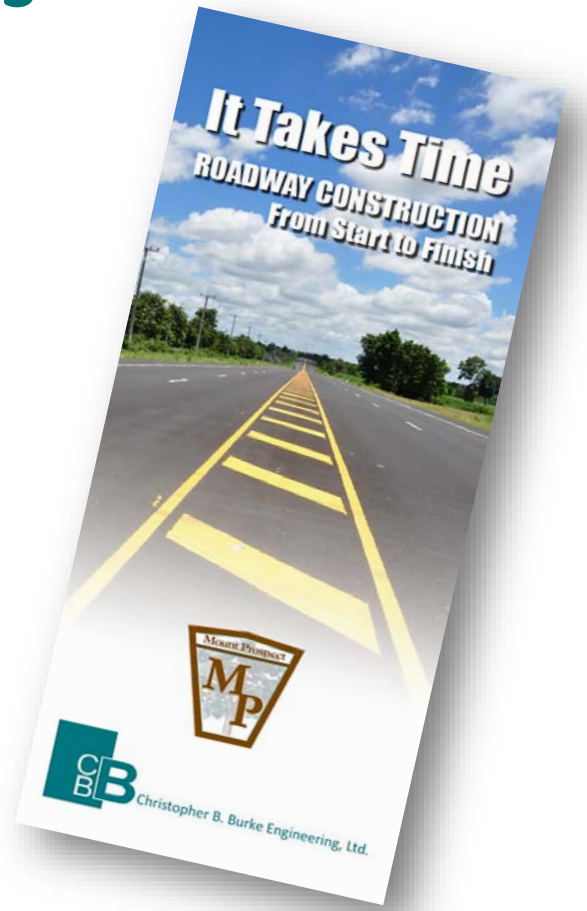
WE ARE HERE

PHASE I
Preliminary Engineering & Environmental Studies
(ongoing, completion by end 2018)

PHASE II
Contract Plan Preparation & Land Acquisition
(TBD, typically 18 to 24 months)

PHASE III
Construction
(TBD, typically one construction season depending on scope)





IDENTIFY TRANSPORTATION CONCERNS → PURPOSE AND NEED → IDENTIFY ALTERNATIVES → ALTERNATIVES EVALUATIONS → PREFERRED ALTERNATIVE

Identify Issues and Concerns

The purpose of this project is to provide an improved transportation system to address access, safety, mobility, and pedestrian/bicycle accommodation deficiencies within the Rand-Central-Mount Prospect Road intersections study area.

Mobility

- Reduce travel delays

Safety

- Increase travel safety for drivers, pedestrians, and bicyclists

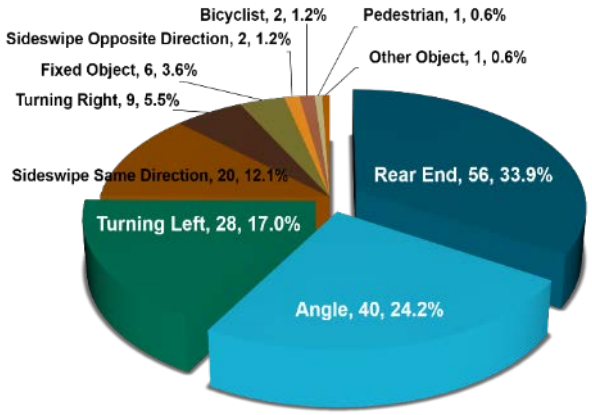
Access

- Improve access to Mount Prospect Plaza and adjacent businesses

Pedestrian/Bicycle Accommodations

- Improve bike and pedestrian facilities

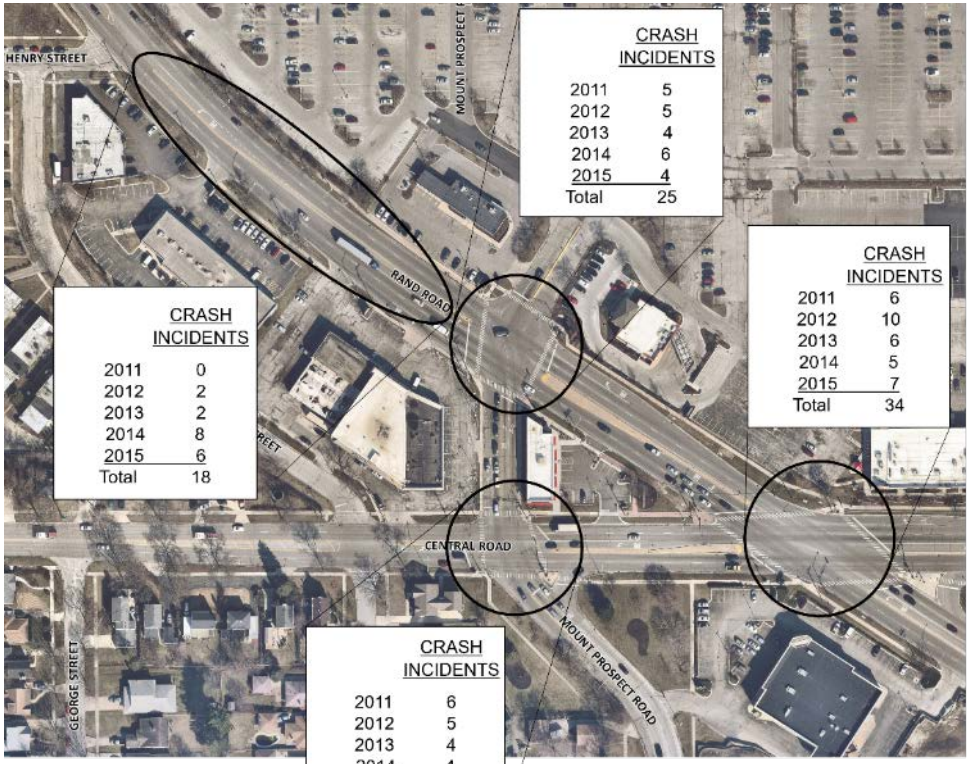
Crash Analysis



165 crashes in five year period (2011-2015) resulting in **58** injuries and no fatalities.

41% (68) of crashes within the study area are angle or left turning crash type. Angle and left turning crashes can be attributed to the skew of Rand Road, traffic signal timing, and high traffic turning volumes at the intersections.

34% (56) of crashes within the study area are rear end crash type. Rear end crashes within the study area can be attributed to congestion and excessive queuing from intersections.



Predominate Crash Locations

Traffic Analysis

- Establish Synchro/SimTraffic Computer Simulation Models
- Existing Conditions
- Field Calibrate/Validate
- 2040 No-Build Conditions
- Incorporate Interim Project at Central/Mount Prospect
- Established Baseline Condition for Comparison of Alternatives

Vehicle Color Legend
Through Vehicle
Right Turn Vehicle
Left Turn Vehicle
Vehicle Exiting Simulation

Shown at 4x speed

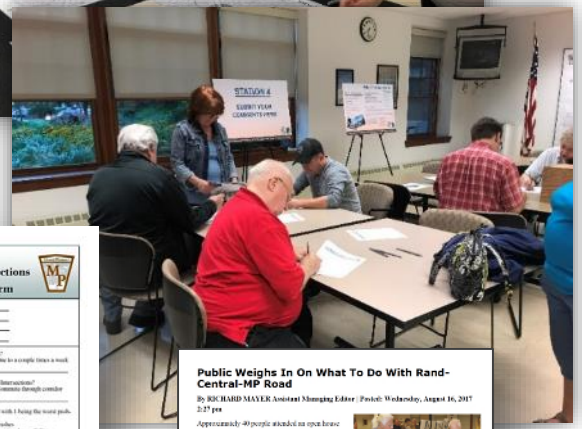
2040 No-Build - PM

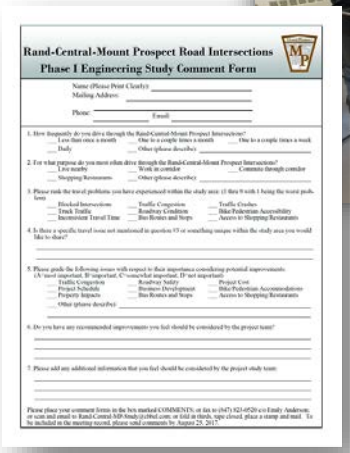
(TO BE ADDED MONDAY)

IDENTIFY TRANSPORTATION CONCERNS → PURPOSE AND NEED → IDENTIFY ALTERNATIVES → ALTERNATIVES EVALUATIONS → PREFERRED ALTERNATIVE

Public Information Meeting August 10, 2017

- More than 1,200 invitations sent
- 43 people attended
- 126 written comments during and after the meeting
- What we heard:
  - Back-ups at triangle intersections blocks adjacent intersections
  - Poor Plaza internal circulation
  - SB Plaza at Rand Thru blocks RTL
  - SB Mount Prospect at Central blocks RTL
  - Pedestrians have difficulty accessing restaurants and shopping




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


Public Weighs In On What To Do With Rand-Central-MP Road

By RICHARD MAYER Assistant Managing Editor | Posted: Wednesday, August 16, 2017 2:27 pm

Approximately 40 people attended an open house Thursday at Mount Prospect Village Hall to provide input on improving traffic flow at the busy intersections of Rand, Mount Prospect and Central roads.

Many in attendance said they favor closing off the entrance to Mount Prospect Plaza at Mount Prospect and Rand roads, installing a stoplight at the Walmart entrance farther north on Rand and closing off the small portion of Mount Prospect Road between Central and Rand.

Some complained about traffic flow, explaining it is difficult to drive to certain places in that area when traffic becomes so backed up, especially during morning and evening rush hours.

The village along with Christopher Burke Engineering is conducting a study of the intersection and adjacent sections of each roadway.

In addition to the open house, the village is seeking input on other potential improvements in that area through an online survey which can be found on the village website. That survey will be available through Aug. 25, Mount Prospect Public Works Director Sean Dorsey said.

Dorsey said open house participants referred to village officials and Burke that the timing of the intersection's stoplights could be modified.

Burke displayed a series of boards for the public providing information on the input they have already gathered.

According to a traffic study conducted earlier this year, approximately 24,500 cars utilize Rand Road to and from Central Road daily. Between 13,000-16,000 travel Central in that area daily and about 13,400 can be counted on Mount Prospect Road daily.

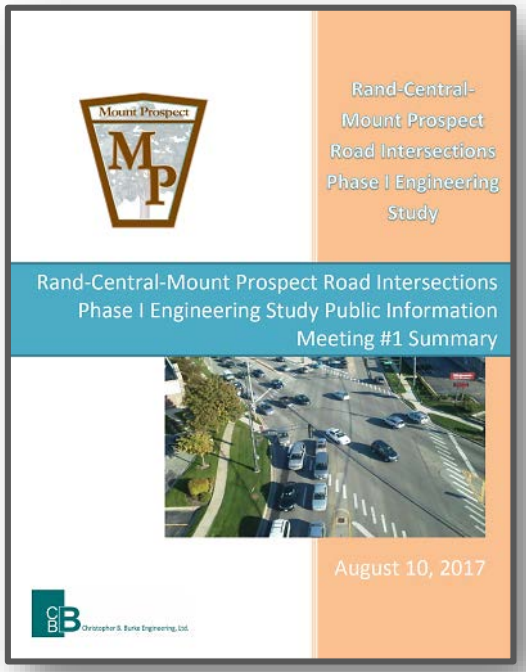
Making Suggestions

Mount Prospect residents Roberta Hamann (center) and John Kontac (right), who live near the area under the microscope, attend the open house last week to provide their input and suggestions on what needs to be done to improve the Rand-Central-Mount Prospect area. They agreed that access to Mount Prospect Plaza at Mount Prospect and Rand roads should be closed off to relieve traffic congestion.

Project Purpose and Need

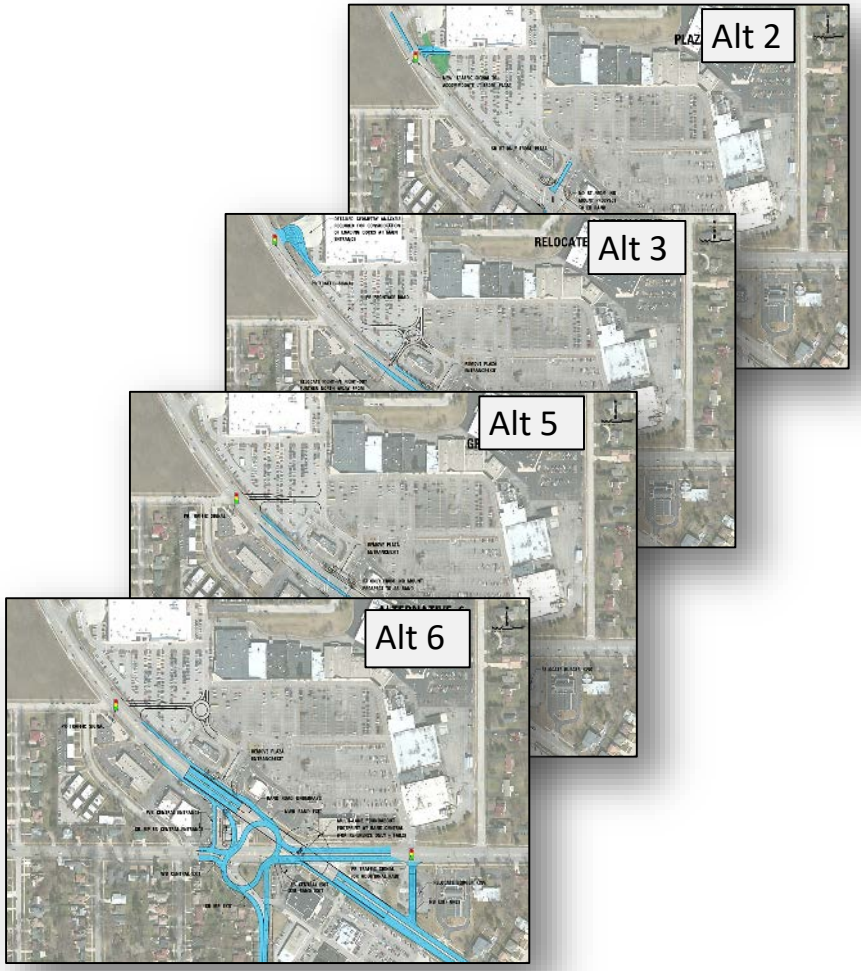
Based on technical analysis and stakeholder input, the purpose and need for improvements includes:

- ❑ Improve Mobility/Access
  - Reduce the overall study area total delay and travel time, and reduce arterial travel times through the corridor.
- ❑ Remove Blocked Intersections
  - Reduce queuing through upstream signals and overall length of queuing.
- ❑ Improve Safety
  - Improved intersection operations with reduced queuing and congestion improves safety
- ❑ Improve Ped-Bike Accommodations



Range of Alternatives

- ❑ *15 Build Alternatives Identified for Evaluation and Comparison*
- ❑ *Improvement Elements Include:*
- ❑ *Additional Turn Lanes*
- ❑ *Modified Main Plaza Entrance with Restricted Movements*
- ❑ *Close and Relocate Main Plaza Entrance*
- ❑ *New Traffic Signals*
- ❑ *Rand Road Underpass*
- ❑ *Modern Roundabout*
- ❑ *Variations/Combinations*



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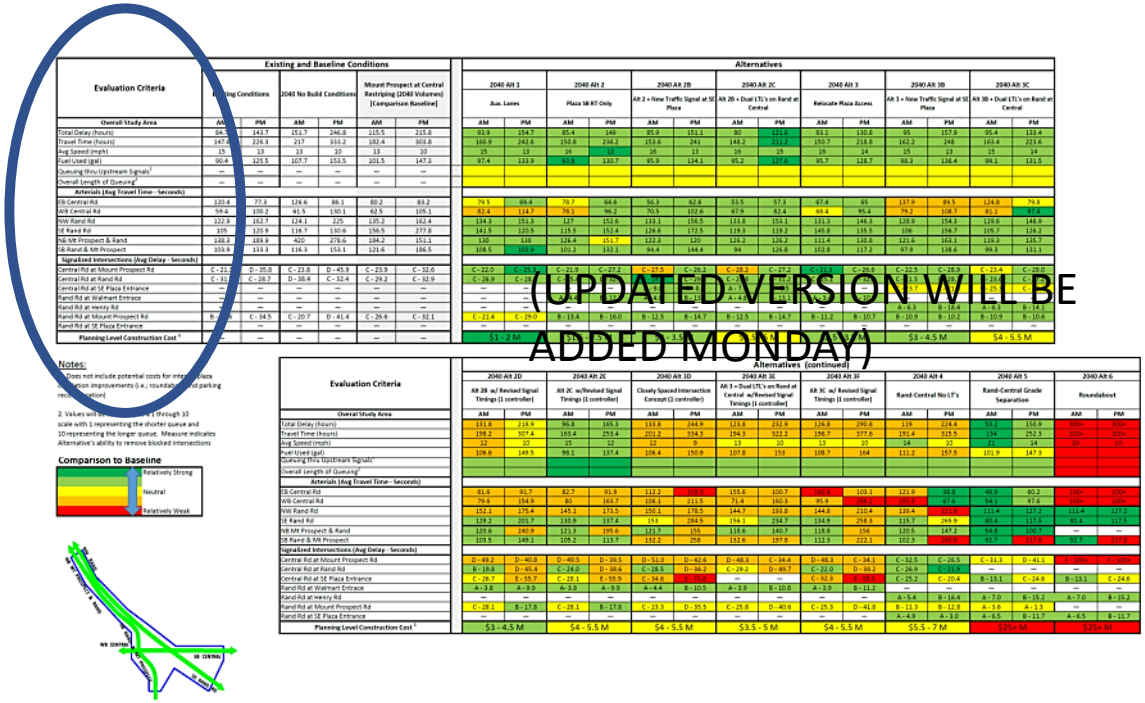
Alternatives Evaluation Process

1. Existing Conditions – Establish SYNCHRO Model and Calibrate
2. 2040 “No-Build” – Effects of No Improvements
   - Higher traffic volume increases total delay, travel time, back-ups, blocked intersections
   - Effects of Interim Improvement at Central/Mount Prospect (Adding 2nd southbound thru lane on Mount Prospect Road)
3. Baseline Conditions for Alternatives Evaluation

Alternatives Evaluation Criteria

- **Overall Study Area:**
  - Total delay
  - Travel time
  - Average speed
  - Fuel used
  - Queuing thru upstream signals (blocked intersections)
  - Overall length of queuing
- **Arterials (Rand, Central, Mount Prospect):**
  - Travel time through the study area
- **Signalized Intersections:**
  - Level of Service (overall and by movement)
  - Average Delay (overall and by movement)
- **Planning Level Construction Cost**



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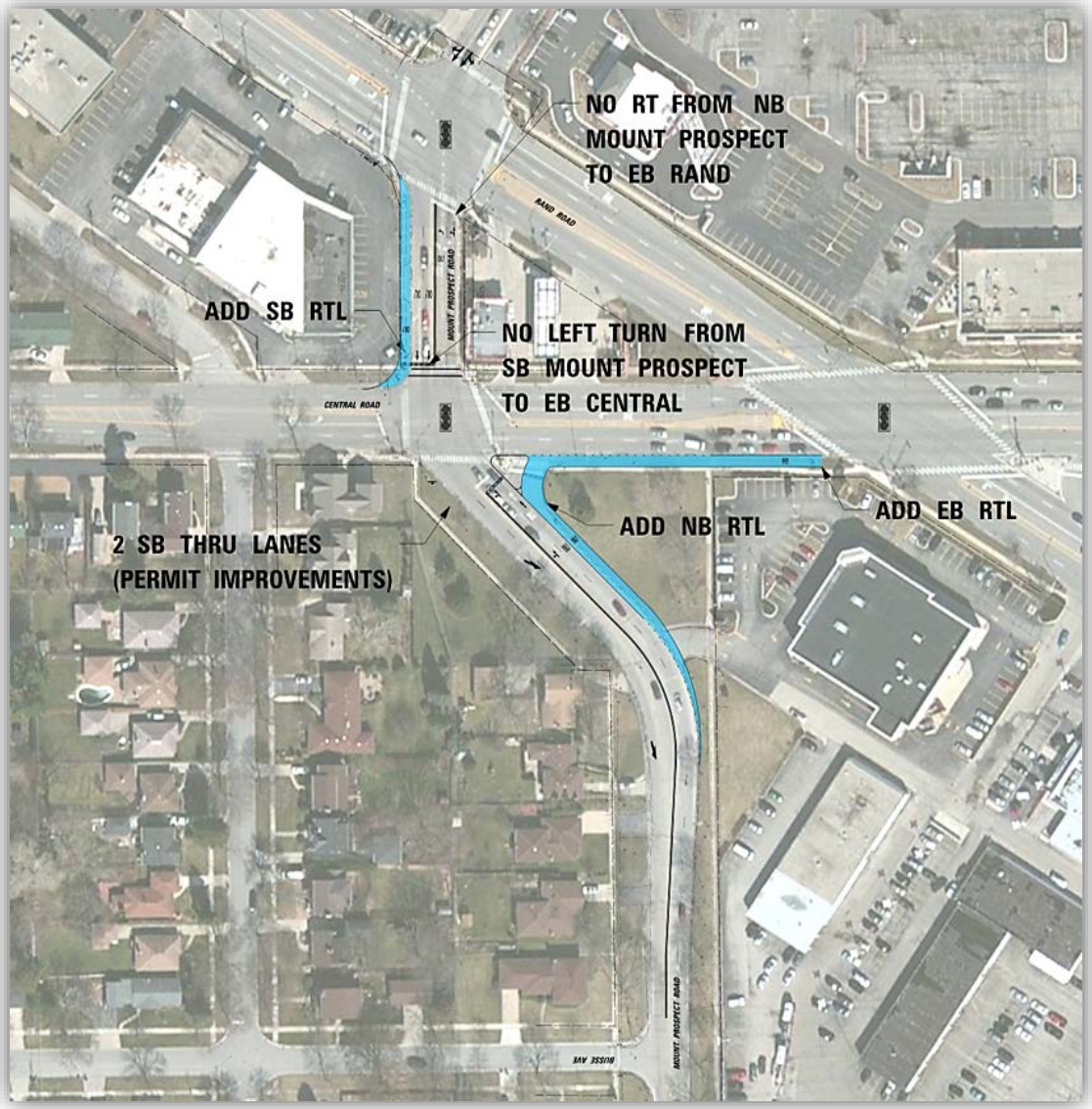
Alternatives Evaluation Results

- Alternatives 4, 5, and 6 ***Dismissed*** due to limited benefit, high cost, property impacts, and adverse access impacts
- Alternatives 1, 2, and 3 (and their variations) ***Carried Forward*** for further evaluation

Alternatives Evaluation Results



Alternative 1

- Add 3 right turn lanes
- Advantages: Total delay, travel time, and queuing decrease compared to baseline
- Disadvantages: Southbound Mount Prospect queue still backs into Rand, property impacts to Century Supply Co.
- Approx. $1 – 2 M

Alternatives Evaluation Results

Alternative 2/ 2B-2E

- 2: Add Plaza right-out only ($1.5-2.5 M)
- 2B: Add Add New SW Plaza signal ($2-3.5 M)
- 2C: Add Dual LTL's on Rand at Central ($3.5-5 M)
- 2D/2E: Revise 2B/2C timing to clear intersections (+$0.5M)
- Removing potential for blocked intersections increases total delay, travel time, queue length

Alternatives Evaluation Results

Alternative 2/ 2B-2E

- Advantages: 2/2B/2C/2E reduce total delay, travel time, queuing compared to baseline
- Disadvantages: requires ROW, impacts access
- Mount Prospect Plaza coordination indicated preference for 2B
- Conclusion: Alternative 2B/2C/2E provide transportation benefit and are consensus building

Alternatives Evaluation Results

Alternative 3/ 3B-3F

- 3: Relocate Plaza Access ($2.5-3.5 M)
- 3B: Add Add New SW Plaza signal ($3-4.5 M)
- 3C: Add Dual LTL's on Rand at Central ($4-5.5 M)
- 3D: Closely spaced intersection mimics Rand-IL 83-Kensington
- 3E/3F: Revise 3B/3C timing to clear intersections (+$0.5M)

Alternatives Evaluation Results

Alternative 3/ 3B-3F

- Advantages: 3/3B/3C reduce total delay, travel time, queuing compared to baseline
- Disadvantages: requires ROW, impacts access and internal circulation of Plaza, complicated land acquisition
- 3D/3E/3F removes blocked intersections but increases total delay, travel time, queuing over baseline
- Conclusion: 3/3B/3C provide transportation benefit, but are not consensus building

Alternatives Evaluation Take-Aways

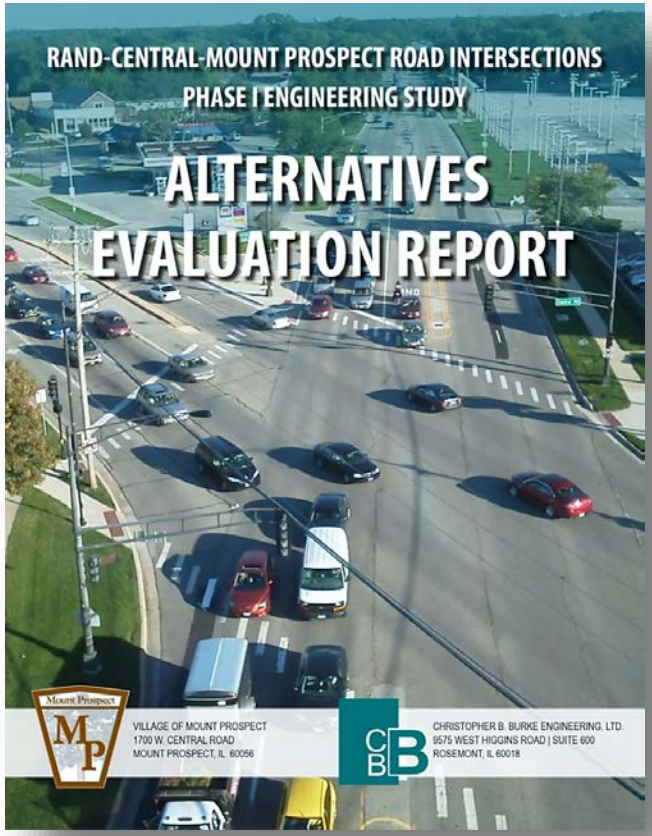
- Alternatives 1, 2, and 3 (and their variations) ***Carried Forward*** for coordination as these improve study area transportation performance with relatively low cost and impacts
- A new traffic signal at the SE Plaza balances Plaza access change, but adds delay for Central Road users
- Dual left turn lanes on Rand Road at Central Road provides a notable transportation improvement, but increase cost and impacts
- Retiming intersections to remove blocked intersections requires 1 controller (cost increase), increases clearance intervals resulting in longer peripheral queue lengths

Next Steps

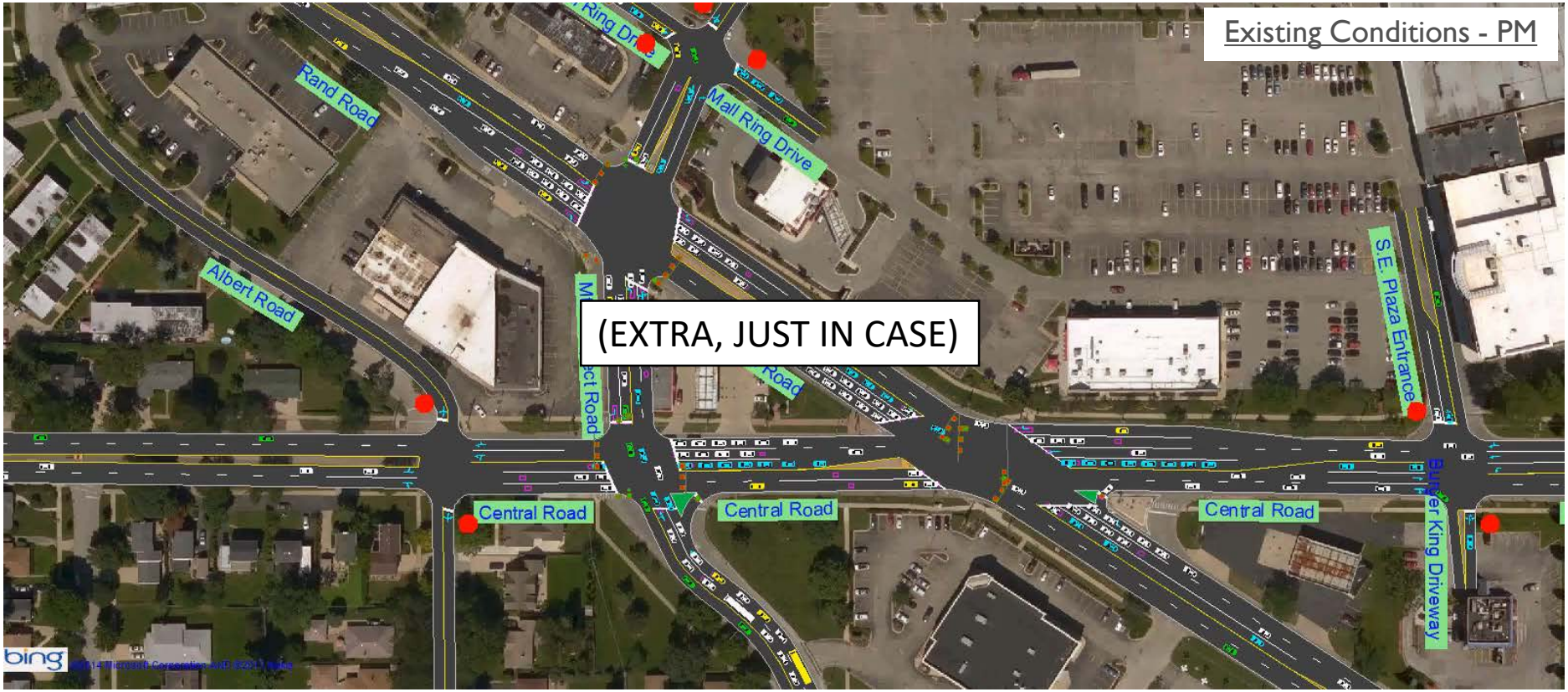
- Additional Stakeholder Coordination:
  - Walmart (Ongoing)
  - Other Businesses
  - IDOT, CCDOTH, Des Plaines
- Public Information Meeting (July 2018)
- Identify Preferred Alternative
- Prepare Detailed Proposed Improvement Plans for IDOT Review & Approval
- Submit Phase I Engineering Reports to IDOT & FHWA for Review/Approval
- Phase I Design Approval Targeted for End of 2018

Thank You!

Questions?



Existing Conditions - PM



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