# *IL 38 Feasibility Study Report*

IL Route 38 (Roosevelt Road) Feasibility Study
(I-355 to IL 83)
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RS&H

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# ACRONYMS AND ABBREVIATIONS

3R – Resurfacing, Restoration, Rehabilitation
ADT – Average daily traffic
BDE – Bureau of Design and Environment
CMAP – Chicago Metropolitan Agency for Planning
CTA – Chicago Transit Authority
ESR – Environmental survey request
FHWA – Federal Highway Administration
HSM – Highway Safety Manual
IDOT – Illinois Department of Transportation
INAI – Illinois Natural Areas Inventory
LOS – Level of service
MPH – Mile per hour
NCHRP – National Cooperative Highway Research Program
RI/RO – Right-in/right-out
ROW – Right-of-way
SRA – Strategic Regional Arterial
TWLTL – Two-way left-turn lane
V/C – Volume to capacity ratio

# EXECUTIVE SUMMARY

This feasibility study investigated potential improvements along the IL 38 corridor from I-355 to IL 83 (4.3 miles in length). IL 38 is a low speed (35 mph) five to seven lane roadway with either a flush or mountable center median from I-355 through Summit Avenue. The existing average daily traffic (ADT) varies from 38,200 vehicles per day at the I-355 interchange to 47,900 vehicles per day at the IL 83 interchange. By year 2050 the ADT is projected to increase to 42,000 vehicles per day at the I-355 interchange and to 56,300 vehicle per day at the IL 83 interchange. The feasibility study found that overall, IL 38 in the existing 2022 traffic simulations operated at acceptable levels of service which was confirmed through field observations.

A total of 1,639 crashes occurred along IL 38 over the five-year analysis period (2016 through 2020). Approximately 51% of all crashes (839 crashes) occurred at signalized intersections, 47% (773 crashes) occurred along the segments between the signalized intersections, and 2% (27 crashes) occurred on the I-355 interchange ramps. Rear end and turning type crashes made up 79 percent of crashes on the corridor. There were four fatal crashes and 38 A-Injury crashes in total. Bike and pedestrian crashes were more predominant on this corridor than expected at 29 crashes, 4 of which resulted in a fatality and 10 resulted in an A-injury. Three intersections within the study limits are rated Safety Tier Critical: Lincoln Street, Euclid Avenue, and Villa Avenue. **This feasibility study identified safety as the primary need on the IL 38 corridor.**

The observed safety concerns can be attributed to the high number of uncontrolled full access points. In this 4.3-mile segment, there are 114 full access driveways and 19 full access unsignalized intersections. In addition, there are 14 signalized intersections, some of which allow for the permissive left-turn movement opposing two to three lanes of oncoming traffic. Field observations taken on August 5, 2022, confirmed the lack of access management and number of potential conflict points as contributing factors to the safety concerns of the corridor. The field observations found that mainline IL 38 traffic flow was stable and maneuvering and lane changes could be made with ease. Several pedestrians were observed crossing the five to seven lanes of pavement at unmarked mid-block locations where limited safe refuge in the median is provided. Other identified characteristics that can contribute to crashes along IL 38 included lack of traffic control, lack of positive and adequate channelization at signalized intersections, and gaps in pedestrian and bicycle accommodations within the study limits.

While the corridor would benefit from some intersection capacity improvements, the study's recommendation is to address the immediate safety needs with a 3R (Resurfacing, Restoration, Rehabilitation) type improvement. Because the IL 38 corridor is highly urbanized and built out, corridor long right-of-way (ROW) takes, severe parking impacts, and displacements were considered impracticable. The intent is to fit the proposed cross-section within the existing ROW where possible. However, intersection lane configurations that accommodate 2050 demand are included for consideration by a future Phase I study.

Identified improvements along the IL 38 corridor that would address the needs of the corridor are detailed along with considerations and benefits in **Table E-1**. These improvements include:

- **Corridor wide access management** – Targets the overall and specific types of crashes experienced along this corridor including rear end and turning type crashes through the implementation of a 16-foot raised, non-traversable median. Three-quarter access points at un-signalized intersection were provided where applicable.
- **Protected left-turn movements at signalized intersections**
- **Signal retiming at signalized intersections**
- **Improved bike and pedestrian accommodations** – Targets the higher-than-normal number and severity of bike and pedestrian crashes on IL 38 by providing a 10-foot-wide sidewalk and/or multi-use path on the south side of the roadway and a sidewalk with a minimum width of seven feet where located at the back of curb or a width of five feet where a parkway can be accommodated on the north side of the road. Narrower lanes and the proposed raised median that may serve as pedestrian refuge provides a shorter crossing distance across IL 38. High intensity marked crosswalks should be used to enhance visibility at all proposed marked crosswalks and pedestrian signals with push buttons should be provided at all signalized intersections. If a future Phase I study determines that an unsignalized crosswalk is warranted, the appropriateness of selecting pedestrian crossings at uncontrolled locations should be analyzed according to TRA-23: Guidelines for Establishing Pedestrian Crossings.
- **Bus stop location evaluation** - It is recommended that bus stop locations be evaluated for appropriate placement in future Phase I studies. Each near-side, far-side, and mid-block bus stop locations have their advantages and disadvantages. Proper bus stop location can improve visibility of pedestrians and reduce conflicts with vehicles and should be coordinated with Pace during Phase I studies.
- **Lighting** - The existing lighting system should be considered for upgrades based on photometrics completed in Phase I studies.
- **Drainage** – The existing drainage system should be evaluated in Phase I studies. Within or adjacent to the study area flooding incidents occurred on IL 83 between I-355 and Finley Road and at the intersection of Edgewood Avenue. Flooding incidents were predominant at the eastbound IL 38 to southbound IL 83 interchange ramp.

The estimated cost of the 3R roadway improvements is $28.0 million with 2.4 acres of proposed ROW. It is also anticipated that temporary easements will be required at each of the 114 driveways. The ROW shown within this feasibility study is based on parcel data, not Phase I or Phase II level accuracy. The proposed ROW will be determined during the Phase I study and ROW verification.

*TABLE E-1: IL 38 3R PROPOSED IMPROVEMENTS, PHASE I CONSIDERATIONS, AND BENEFITS*

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Access Management | Implement a 16-foot raised, non-traversable median. | | Corridor wide | Significantly reduces the number of full access points by converting the 230 driveways to right-in/right-out only. Targets the overall and specific types of crashes experienced along this corridor including rear end and turning type crashes. Potential reduction in total corridor crashes by 39% and corridor rear end and left turn crashes by 41% and 42%, respectively. |
| | Three-quarter access points at un-signalized intersections were provided where applicable. | | Between signalized intersections. Generally 500 to 600 foot spacing | Making a U-turn at a median opening to get to the opposite side of a busy highway is approximately 25% safer than a direct left turns from a side street or other access point. |
| | Narrow all lanes to 11-feet | When right-of-way is verified consider through lane widths greater than 11-feet where practical | Corridor wide | Reduces right-of-way and parking impacts along the corridor. However, reducing the lane width to 11-feet may potentially increase sideswipe crashes along the corridor by <5%. |
| Intersection Improvements | Protected/permissive left-turn phasing to protected only. | The feasibility study utilized the 95th percentile queues for the proposed storage lengths. Red-time queues will have to be evaluated in Phase I. | IL 38 approaches at all signalized intersections | Potential reduction in overall and severity of turning type crashes at signalized intersections by 34% to 70%. Also targets angle type crashes related to the left turn movement by up to 100%. |

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Intersection Improvements | | Proposed added auxiliary lanes or lane reconfiguration of sideroad approaches When right-of-way is verified, the addition of turn lanes where practical should be considered. | Main Street Westmore-Meyers Road Summit Avenue | Potential reduction in crashes related to that turn movement by 33%. Improves queue management on side roads. |
| | Turn bay lengths and tapers extended to meet BDE guidelines and existing year traffic volumes | The intersection's turn bay lengths should be extended where possible and practical to accommodate year 2050 traffic volumes. | All intersections | Improves queue management. Properly designed turn bay lengths allow for proper queue storage reducing the potential for vehicles to queue into the adjacent through lane. Also allows for adequate time for the vehicle to come to a complete stop at the back of queue. Targets rear end type crashes, however, reduction potential unknown. |
| | Modernize traffic signals to current standards including high-visibility back plates and one signal head per lane. | | All signalized intersections | This improvement helps with left-turn on arrow only implementation and improves visibility of the traffic signals. |
| | Traffic signals coordination. Optimize corridor offsets and progression while managing delays and queueing on side roads | The intersection signal timing, corridor offsets, and progression should be optimized for design hourly traffic volumes. | All signalized intersections. | Improves queue management. Properly timed traffic signals better meet driver expectancy and can target red light running and driver frustration. |

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Bike and Pedestrian Accommodations | Access management features of narrower lanes and the proposed raised median | | Corridor wide | Raised medians may reduce pedestrian crashes by 45% and pedestrian fatalities by 78%. Reduces the time a pedestrian has to wait to cross the road by allowing pedestrians to cross one direction of traffic at a time and provides a safe waiting area in the median. |
| | Provide a 10-foot-wide multi-use path along the south side and a sidewalk on the north side of the roadway. | Multi-use path and sidewalk location should be evaluated in Phase I studies. | Corridor wide | Installing a multi-use path has 25% potential reduction in vehicle-bicycle crashes. Installing sidewalk has 40% potential reduction in vehicle-pedestrian crashes. |
| | High intensity marked crosswalks should be used to enhance visibility | | All marked crosswalks | Improves crosswalk visibility for motorists and pedestrians and increases motorists stopping rate. Potential reduction of 40% in vehicles-pedestrian crashes. May reduce other types of crashes by 19%. |
| | Pedestrian signals with push buttons and countdown timers | Consider accessible pedestrian signal (APS) and/or automated detection | All signalized intersections | Decreases conflicts between pedestrians and motorists and decreases the number of pedestrians trapped in the intersection during the conflicting phase. Potential reduction in vehicle-pedestrian crashes by up to 70% and all crash types by up to 9%. |

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Bike and Pedestrian Accommodations | | If Phase I studies should evaluate the appropriateness of pedestrian crossings at uncontrolled locations and should be analyzed according to TRA-23: Guidelines for Establishing Pedestrian Crossings during Phase I studies. | Corridor wide | Targets the pedestrian crash experience noted along the corridor. |
| Bus Stop location evaluation | - | It is recommended that bus stop locations be evaluated for appropriate placement. | All bus stop locations | Proper bus stop location can improve visibility of pedestrians and reduce conflicts with vehicles. Each stop location has its advantages and disadvantages. Studies have shown that far-side transit stop locations may have a 45% reduction in transit related crashes, whereas near-side transit stop locations may have a 38%-85% increase in transit related crashes. |
| Lighting | - | The existing lighting system should be upgraded based on photometrics completed in Phase I studies. | Corridor wide | Targets all users of the roadway with potential to reduce night-time related crashes. |
| Drainage | - | The existing drainage system should be evaluated for potential improvements in the Phase I studies. | Corridor wide | Within the study area flooding incidents occurred on IL 83 between I-355 and Finley Road and at the intersection of Edgewood Avenue. Flooding incidents were predominant at the eastbound IL 38 to southbound IL 83 interchange ramp. |

# 1. INTRODUCTION

## A. Description and Location of Project

The Illinois Department of Transportation (IDOT) has initiated a feasibility study of potential improvements on Illinois Route 38/Roosevelt Road (IL 38). The intent of the project is to investigate access management, safety, and capacity improvements along the IL 38 corridor. The overall Feasibility study area is along IL 38 from I-355 to Illinois Route 83 (IL 83) located in the Villages of Glen Ellyn, Lombard, Villa Park, and Oakbrook Terrace, as well as unincorporated DuPage County, see **Exhibit 1, Location Map**.

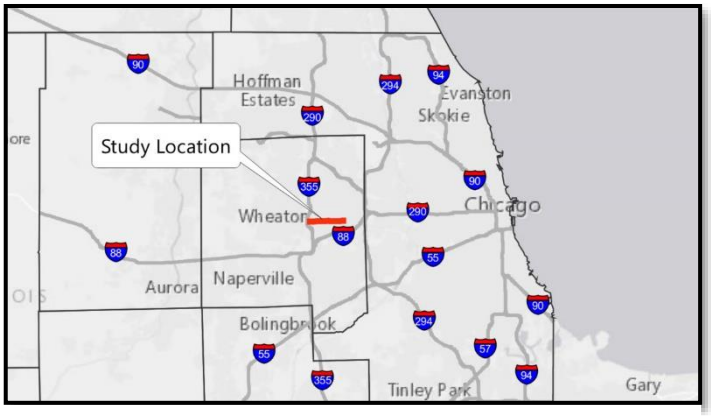


*FIGURE 1: GENERAL PROJECT LOCATION*

## B. History of Project

IDOT has received several complaints regarding safety along the IL 38 corridor. Several locations along the corridor have been identified as Safety Tier Critical.

## C. Discussion of Design Criteria Used

The IL 38 corridor within the study limits is highly urbanized and built out. This feasibility study assumes 3R design criteria for the proposed improvements. Access management should be considered along this corridor per *BDE Manual Section 46-2.03 Access Management.*

# 2. EXISTING CONDITIONS

## A. Project Limits

The overall feasibility study area is along the IL 38 corridor from I-355 to IL 83, see **Exhibit 1, Location Map**. The overall length of the study area is 4.3 miles.

## B. Description of Project Area

IDOT has jurisdiction and maintains IL 38 within the study limits. IL 38 is an IDOT Strategic Regional Arterial (SRA 506) that functions as a non-access controlled, suburban, principal arterial. IL 38 is on the National Highway System, and is a designated State maintained Class II truck route. There are currently no parking provisions or bicycle accommodations along IL 38. The posted speed limit for IL 38 is 35 miles per hour from Briar Street to Villa Avenue, and 45 mph at both the west and east ends of the study limits near I-355 and IL 83. One Pace Bus route has stops along a majority of IL 38 within the study limits, Route 301 – Forest Park CTA Station. Pace Bus Route 313 – Lake St and Austin Blvd. (SE) runs along Westmore-Meyers Road and intersects with stops at IL 38.

Several exhibits are provided to describe the project area. These exhibits include the following:

- **Exhibit 2, Functional Classification Map**
- **Exhibit 3, Jurisdiction Map**
- **Exhibit 4, Designated Truck Route Map**
- **Exhibit 5, Posted Speed Limit Map**
- **Exhibit 6, Bus Stop and Route Map**

## C. Land Use

The IL 38 corridor, within the study limits, is highly urbanized and built out. Immediately adjacent to IL 38, the land use is mainly commercial, see **Exhibit 7, Land Use Map.** Near the I-355 interchange at the western project limits there are several multi-family complexes, including apartments and condominiums, located near, and having access to IL 38. Chapel Hill Gardens Cemetery lies at the eastern project limit near IL 83. Another small cemetery, Trinity Lutheran Cemetery, is also located on the IL 38 corridor in the northeast quadrant of the IL 38 and Westmore-Meyers Road intersection. Glenside Fire Protection District covers the north and portions of the south side of IL 38 near I-355 and portions of the south side near Main Street; York Center Fire Protection District covers a large portion south of IL 38 and small portion north of IL 38 between Highland Avenue and Ardmore Avenue; and the Oakbrook Terrace Fire Protection District covers the large portion of area south of IL 38 and a smaller portion north of IL 38 between Ardmore Avenue and IL 83. All other areas are covered by municipal Fire Departments. Elmhurst Hospital is located about a mile and half east of IL 83, the eastern project limit, however the hospital does not have direct access to IL 38. There are other medical facilities located within a half mile of IL 38 within the study limits but do not have emergency facilities. There are several schools that service the surrounding residential areas, including the National University of Health Science, Glenbard East High School, and Willowbrook High School to name a few. School bus routes were not evaluated as part of this feasibility study.

## D. Existing Bicycle and Pedestrian

Chicago Metropolitan Agency for Planning (CMAP) coordination regarding bicyclist and pedestrians is contained in **Appendix B - Coordination**. CMAP provided insight on the existing and planned bicycle trails and bike routes in the vicinity of the project. See **Exhibit 8, Bike and Trails Map** for existing and proposed trail and bikeway plans.

Illinois Prairie Path runs parallel to and is approximately one- and one-half miles north of IL 38. It is a network of 61 miles of rail-to-trails paths. The main stem is located closest to the project area, is 15 miles long, and connects Wheaton to the Forest Park Blue Line station. This trail generates significant north-south traffic to and from the trail with a measurable amount of bike activity on IL 38, which can be seen using the heat maps provided on Strava, an internet service for tracking physical exercise. Other nearby facilities include the beginning of the Great Western Trail and Salt Creek Greenway Trial.

Both Villa Park and Lombard have plans to add or improve pedestrian and bicycle accommodations in the area of the IL 38 study corridor including bicycle lanes and multi-use paths that would terminate at or cross IL 38 in this area.

CMAP recommended the following improvements along IL 38 to better accommodate the existing and future planned uses in the area. More details of their recommendation can be found in **Appendix B - Coordination**:

- Provide a continuous sidewalk on one side of IL 38 and a continuous multi-use path along the other.
- Remediation of crosswalk conflict issues such as smaller turning radii and bringing the crosswalks closer to the parallel road.
- Implement safety and streetscape intervention such as restriping crossings to be more visible, adding pedestrian refuge islands, and improving crossing timings at signalized locations.

In general, sidewalks are provided on both sides of IL 38 along the corridor with crosswalks and pedestrian signals at the signalized intersections. However, locations exist where there are gaps in these facilities. These gaps are identified as follows, from west to east along the corridor:

- The I-355 interchange acts as a barrier for bicyclists and pedestrians as there are no bike or pedestrian accommodations along IL 38 from the western study area limit through International Drive on the south side and through Finley Road on the north side.
- Crosswalks are not provided on all approaches at several signalized intersections where sidewalk is present.
- There are no sidewalks for portions of IL 38 between Westmore Meyers Road and Michigan Avenue, along the south side IL 38 from Ardmore Avenue through Euclid Avenue, and both sides of IL 38 from Euclid Avenue through the IL 83 interchange. There are bus stops at several locations where there is no sidewalk.

There were 29 bicyclist and pedestrian related crashes on the corridor from 2016-2020. Four (4) of these crashes resulted in a fatality and 10 resulted in an A-injury.

See **Section G Existing Safety Performance/Crash Analysis** for additional information.

## E. Conditions on Existing Highway Network

### Typical Sections

The typical section of IL 38 is two to three lanes in each direction, outside curb and gutter, and mostly flush or mountable medians ranging from approximately 12 to 16 feet wide. There is barrier median on IL 38 from Summit Avenue through the IL 83 interchange. Auxiliary lanes for left-turning movements are present at nearly all public street intersections, however, IL 38 between Highland Avenue and Fairfield Avenue and some shorter segments west of Main Street have a two-way left-turn lane where intersections are closely spaced, and driveway density is higher. Sidewalks are present intermittently on both sides of the street. See **Exhibit 9, Existing Typical Sections**.

### Extent of Access Control/Access Management

With the existing typical section of IL 38, the existing access management along the IL 38 corridor is summarized in **Table 1** and shown in **Exhibit 10, Existing Access Management.**

***TABLE 1: EXISTING ACCESS MANAGEMENT***

| Access Point Type | Quantity |
|---|---|
| Driveway – Full | 114 |
| Driveway – Right-in/Right-out (RI/RO) | 38 |
| Signalized Intersection | 14 |
| Unsignalized Intersection – Full | 19 |
| Unsignalized Intersection – RI/RO | 1 |

There are 186 points of access along the 4.3-mile stretch of IL 38.

The average driveway density is 35 driveways per mile.

Corridors with a density between 20-40 driveways per mile have up to a 74% increase in crashes. (NCHRP 3-52).

## F. Existing Traffic and Capacity Deficiencies

There are a total of 14 signalized intersections located on the IL 38 corridor and all were included in the analysis. A map showing the study area and traffic analysis locations is included in **Exhibit 11, Traffic: Study Locations Map.** Details of the traffic analysis can be found in the *Existing and 2050 No Build Traffic Operations Analysis* provided as a supplemental report document.

The study's traffic analysis locations were analyzed for the following conditions:

- 2022 Existing Year – Evaluates the current travel conditions in the study area.
- 2050 Future Year No Build – Evaluates 2050 travel conditions assuming no geometric changes are made to the network.

The lane configurations and traffic control at each of the signalized intersections are shown in **Exhibit 12, Traffic: Existing Conditions Lane Configurations**.

The existing average daily traffic (ADT) varies from 38,200 vehicles per day at the I-355 interchange to 47,900 vehicles per day at the IL 83 interchange. CMAP was coordinated with for 2050 projected ADTs along the corridor. Their correspondence is in **Appendix B – Correspondence**. By year 2050 the ADT varies from 42,000 vehicles per day at the I-355 interchange to 56,300 vehicle per day at the IL 83 interchange. Existing and future 2050 ADT for the corridor are shown in **Exhibit 13, Traffic: Existing and Future Average Daily Traffic (ADT).**

Annual growth rates ranged from 0.3% to 0.6% along IL 38 and 0.2% to 1.0% along the side roads; these growth rates are typical of a built-up urbanized area. Existing AM and PM peak hour volumes are shown on **Exhibit 14, Traffic: Existing Conditions Peak Hour Volumes** and 2050 projected AM and PM peak hour volumes are shown on **Exhibit 15, Traffic: Year 2050 AM (PM) Peak Hour Volumes**.

Results of the intersection operations analysis for the 14 signalized intersections on the IL 38 corridor are summarized in **Table 2**. **Exhibit 16, Traffic: Existing Conditions Level of Service (LOS)** and **Exhibit 17, Traffic: 2050 No Build Level of Service (LOS)** show the LOS by lane group and overall intersection.

In existing conditions, signalized intersections along the IL 38 corridor from I-355 to IL 83 generally operates at overall acceptable LOS D or better. Some locations and individual movements operate below LOS D; however, traffic simulation models of the intersections noted favorable progression and queueing along the IL 38 corridor. The follow summarizes key points of the Existing IL 38 operations.

- All 14 signalized intersections operate overall at LOS D or better in the AM peak and PM peak hours.
- Observations of the max volume-to-capacity (V/C) ratio at each location indicate that there are no intersections with one or more lane groups operating near, at, or over capacity (V/C ratio greater than 0.875).
- Observations of the individual lane group LOS at all locations show several movements with LOS E or F. Overall, the delays for these movements remain under 100 seconds/vehicle except for the westbound left-turn movement at IL 38 and the commercial entrance at 100 E Roosevelt Road and the westbound left-turn movement at IL 38 and Summit Avenue.
- IL 38 is an SRA, thus LOS criteria for the shared and exclusive through movements on the IL 38 approaches is LOS C or better. This criterion is not met at the IL 38 and Finley Road intersection.
- The traffic signal cycle lengths are long, ranging from 140 to 150 seconds for the corridor. Generally, the movements operating at LOS E occur on the side road approaches or for left-turn lane movements. The higher delays can be attributed to the higher cycle length, higher volumes on IL 38 given green priority over the side road approaches, and the IL 38 corridor characteristics of being an SRA and interconnected system with actuated-coordinated timing, which generally favors mainline IL 38.

By 2050, the corridor begins to experience higher levels of delay and congestion. The following summarizes key points of the 2050 No Build IL 38 operations as it compares to the existing conditions.

- All intersections continue to operate overall at LOS D or better in the AM and PM peak hours.
- In 2050, three (3) intersections have at least one lane group with a V/C ratio above 0.875 and below 1.0, or near or at capacity. None (0) of those 3 intersections have a V/C that is greater than 1.000, or over capacity, in either of the peak hours.
- Nine (9) intersections have at least one lane group that operates at LOS F. IL 38 at Ardmore Avenue is the only intersection with a lane group that experiences over 100 seconds/vehicle of delay.
- By 2050, one additional intersection will not meet LOS criteria of C or better for SRA route approaches. This additional intersection is IL 38 at Westmore-Meyers Road.

*TABLE 2 EXISTING AND 2050 NO BUILD AM AND PM PEAK HOUR OVERALL INTERSECTION LEVEL OF SERVICE (LOS)*

| ID | Intersection | Existing | | | | 2050 No Build | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM | | PM | | AM | | PM | |
| | | LOS (Delay) | V/C | LOS (Delay) | V/C | LOS (Delay) | V/C | LOS (Delay) | V/C |
| 1 | I-355 Southbound Ramps | C (22.6) | 0.70 | C (20.5) | 0.70 | C (23.7) | 0.72 | C (21.9) | 0.71 |
| 2 | I-355 Northbound Ramps | C (26.3) | 0.77 | B (19.3) | 0.67 | C (27.4) | 0.79 | B (19.5) | 0.70 |
| 3 | Finley Road | C (29.7) | 0.71 | D (40.9) | 0.79 | C (32.6) | 0.74 | D (45.5) | 0.84 |
| 4 | CE (345 W Roosevelt Road) | A (3.7) | 0.51 | A (6.1) | 0.51 | A (3.3) | 0.56 | A (5.8) | 0.56 |
| 5 | Main Street | C (32.1) | 0.76 | D (36.3) | 0.83 | D (37.8) | 0.85 | D (41.4) | 0.93 |
| 6 | Highland Avenue | B (16.0) | 0.67 | C (26.2) | 0.78 | B (16.3) | 0.71 | C (29.2) | 0.87 |
| 7 | Fairfield Avenue | A (7.1) | 0.47 | B (13.3) | 0.73 | B (13.7) | 0.52 | B (16.1) | 0.82 |
| 8 | CE (800 W Roosevelt Road) | A (2.8) | 0.45 | A (8.5) | 0.66 | A (3.7) | 0.49 | B (10.4) | 0.73 |
| 9 | Westmore-Meyers Road | D (35.8) | 0.79 | D (35.8) | 0.84 | D (45.2) | 0.96 | D (42.5) | 0.94 |
| 10 | CE (102-298 Roosevelt Rd) | A (3.7) | 0.36 | A (7.7) | 0.59 | A (3.5) | 0.42 | A (8.8) | 0.62 |
| 11 | Ardmore Avenue | B (19.6) | 0.63 | C (24.3) | 0.66 | C (21.9) | 0.71 | C (25.6) | 0.72 |
| 12 | CE (100 E Roosevelt Road) | A (3.6) | 0.47 | B (12.6) | 0.52 | A (4.9) | 0.54 | B (13.5) | 0.63 |
| 13 | Summit Avenue | C (26.6) | 0.78 | C (30.7) | 0.83 | C (28.1) | 0.89 | D (35.6) | 0.91 |
| 14 | Villa Avenue | A (9.8) | 0.67 | B (11.2) | 0.67 | B (14.5) | 0.71 | B (15.3) | 0.70 |
| *V/C* | | *< 0.750* | | *0.750 – 0.875* | | *0.875- 1.00* | | *≥1.00* | |
| *Level of Service* | | *A - C* | | *D* | | *E* | | *F* | |

*ID - Intersections numbered for reference. See **Exhibit 11, Traffic: Study Locations Map**.*

*LOS (Delay) – Level of Service (Delay in seconds/vehicle)*

*V/C – Volume/Capacity – Value shown is maximum V/C of all lane groups at the intersection*

### Traffic Signal Warrant

At the request of District One's Bureau of Traffic, a traffic signal warrant analysis was completed for the intersection of IL 38 and Surrey Drive. The traffic signal warrant analysis used 2022 traffic counts provided by IDOT and taken on August 16, 2022.

The traffic warrant analysis was performed according to:

- The Manual on Uniform Traffic Control Devices, 2009 Edition
- Signal warrant procedures provided by the Bureau of Traffic

The traffic warrant analysis found that a traffic signal is not warranted at Surrey Drive. The detailed traffic signal warrant analysis is included in **Appendix C - Surrey Drive Traffic Signal Warrant Analysis.**

## G. Existing Safety Performance/Crash Analysis

Crash history was evaluated throughout these limits and include 14 signalized intersections, four interchange ramps, and thirteen segments from 2016 to 2020. A summary is provided; however, details of the crash analysis can be found in *Crash Analysis Report* provided as a supplemental report document.

### Safety Tier

Categorizes roadway segments and intersections in Illinois based on their level of safety performance and opportunity for improvement, providing a rating for relative comparison. Safety Tier ratings from lowest to highest tier include Low, Medium, High, and Critical. The Critical Safety Tier indicates that an intersection has a higher crash rate and more crashes resulting in an injury when compared to other intersections in the state. Overall, 17 intersections and 7 segments were identified as Safety Tier locations (2020).

Three intersections within the study limits are rated Critical:

- Lincoln Street,
- Euclid Avenue,
- Villa Avenue.

Segments of IL 38 in the study area have Safety Tier designations ranging from Low to High. Safety Tier ratings along IL 38 are shown in **Exhibit 18, 2020 Safety Tier Locations**.

**Exhibit 19, Historical Crash Data Heat Maps** show the frequency of crashes in each year and the locations of K and A-injury type crashes. A total of 1,639 crashes occurred on IL 38 within the study limits over the five-year analysis period from 2016 through 2020. Approximately 51% of all crashes occurred at signalized intersections, 47% occurred along segments between the signalized intersections, and 2% occurred on the I-355 interchange ramps. The locations with the most reported crashes are shown below, along with their respective ratings in the Safety Tier mapping.

1. Segment from I-355 Northbound Ramps to Finley Road, 140 crashes (Safety Tier rating: Low, Medium)
2. Westmore-Meyers Road intersection, 128 crashes (Safety Tier: High)
3. Main Street intersection, 111 crashes (Safety Tier: High)
4. Segment from Commercial Entrance at 800 W. Roosevelt Road to Westmore-Meyers Road, 106 crashes (Safety Tier: Not listed)
5. Segment from Westmore-Meyers Road to Commercial Entrance at 102-298 E. Roosevelt Road Commercial Entrance, 93 crashes (Safety Tier: Medium, High)
6. Finley Road intersection, 90 crashes (Safety Tier: Not listed)

Table **3** summarizes the total crash history in the study area by severity of the most severe injury incurred in each crash. There were four fatalities and 38 A-Injuries in total. The overall incidence of reported injuries is 28 percent of all crashes, which is about equal to the national average (Source: Traffic Safety Facts Annual Report, 2021, https://cdan.nhtsa.gov/tsftables/tsfar.htm), but slightly higher than the Illinois average of 21%. The overall fatality rate of 0.2 percent of all crashes is about equal to the IDOT reported average for 2015-2019 (Source: https://www.idot.illinois.gov/transportation-system/safety/Illinois-Roadway-Crash-Data). If 2020 data is not included (due to the atypical traffic that year, and to better compare to available averages), then the fatality rate drops to 0.14 percent, or roughly half of the state average.

***TABLE 3: CRASH SUMMARY BY SEVERITY***

| Crash Severity | Year | | | | | Total | % of Total Crashes |
|---|---|---|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2019 | 2020 | | |
| K (Fatality) | 0 | 0 | 1 | 1 | 2 | 4 | 0.2% |
| A-Injury (Incapacitating) | 10 | 8 | 5 | 10 | 5 | 38 | 2.3% |
| B-Injury (Non-incapacitating) | 45 | 31 | 24 | 44 | 19 | 163 | 9.9% |
| C-Injury (Reported, not apparent) | 58 | 61 | 61 | 46 | 35 | 261 | 15.9% |
| PDO (Property damage only) | 267 | 294 | 249 | 223 | 140 | 1173 | 71.6% |
| **Total** | **380** | **394** | **340** | **324** | **201** | **1639** | **100.0%** |

The following provides a summary of key take-aways of the crash analysis performed for the IL 38 Feasibility study area. **Exhibit 19, Historical Crash Data Heat Maps** show the frequency of crashes in each year and the locations of K and A-injury type crashes.

- Crashes were evenly distributed throughout the corridor. However, the crash totals were highest at six locations, three signalized intersections and three segments. The intersections are Westmore-Meyers Road, Main Street, and Finley Road; the segments are I-355 to Finley Road, CE 800 Roosevelt Road to Westmore-Meyers Road, and Westmore-Meyers Road to CE 102-298 Roosevelt Road. Together, these six locations accounted for 41% of all crashes.
- Crashes within the corridor were predominantly rear end and turning collisions, collectively accounting for 79% of the total. These crash types are common in a busy urban corridor with many commercial entrances and side streets, and frequent traffic signals (three per mile on average).
- The incidence of injuries (30% of all crashes) and the frequency of serious injuries and fatalities (less than 3%, combined) are equal or nearly equal to state averages. If 2020 data is excluded, then the fatality rate drops to 0.14 percent, or about half of the state average.
- A total of 77% of crashes occurred in dry conditions, which is on par with the state average. The proportion of wet/snow/ice crashes do not suggest any deficiency; in fact, the data show a reduction in wet-pavement crashes after 2018, suggesting that the resurfacing completed that year through most of the corridor has already improved skid resistance.
- Despite the lack of street lighting along the corridor, the rate of night-time crashes is typical; lack of lighting is not a significant cause of crashes recorded.
- The three intersections rated "Critical" in the Safety Tier report were evaluated. Euclid Avenue and Villa Avenue have been improved during the analysis period with geometric or control

modifications that have resulted in a reduction in crashes. The third location (Lincoln Street) is unsignalized, and the number and severity of crashes, while not exceptionally high, are likely related to general congestion, proximity to Main Street, and substandard geometry.

Twenty-nine (29) crashes involving pedestrians or bicyclists occurred on the corridor over the five-year analysis period. This accounted for 1.8% of all crashes, which is lower than average (2.2%). However, all fatal crashes were pedestrian or bicyclist crashes, which is very much higher than average (16%). Of the 29 pedestrian and bicyclist crashes, four (4) resulted in a fatality and 10 resulted in an A-injury. **Exhibit 20, Bike/Pedestrian Historical Crash Data Heat Map 2016-2020,** show the frequency of bike and pedestrian crashes and the locations of K and A-injury type crashes.

A general study of the IL 38 corridor initially reveals that the area within the study limits is highly developed commercially. Most of the corridor is directly adjacent to many businesses and restaurants. This commercial density may be a factor in why there are many pedestrians present along the corridor. Overall, the most common contributing cause was one party being under the influence of alcohol and/or drugs and failure to yield the right-of-way. The segments and intersections below have the highest bicycle and pedestrian crash densities compared to others along the corridor.

- Segment – Commercial Entrance 102-298 Roosevelt Road to Ardmore Avenue; 5 crashes
- Segment – I-355 to Finley Road; 3 crashes
- Segment – Summit to Villa Avenue; 3 crashes
- Intersection – Highland Avenue; 3 crashes

## H. Environmental Resources

An environmental survey request (ESR) was not submitted as part of this feasibility study. However, a desktop survey of publicly available information regarding environmental resources was inventoried to aid a future Phase I study. See **Exhibits 21, Environmental Resources**

- There are no publicly owned parks and/or recreational areas (Section 4(f) properties) immediately adjacent to the IL 38 corridor.
- Floodplains and waterways – Sugar Creek crosses IL 38 just west of Westmore-Meyers Road intersection.
- There are no wetlands immediately adjacent to IL 38.
- There are no historic properties, listed/or eligible for the National Register of historic places within the study limits.
- Special Waste Sites – this corridor has a land use that is mainly commercial/industrial.
- Endangered Species Locations – because this corridor is highly urbanized and built out, nothing is anticipated. This will have to be further evaluated in a future Phase I ESR submittal.
- Natural Areas – there are no Illinois Natural Areas Inventory (INAI) sites within the study limits. However, on the western limit of the project, just west of the I-355 ramps is the East Branch Riverway owned by the Forest Preserve District of Cook County.
- There are two cemeteries located on the IL 38 corridor: Trinity Lutheran Cemetery, is also located on the IL 38 corridor in the northeast quadrant of the IL 38 and Westmore-Meyers Road intersection; and Chapel Hill Gardens Cemetery lies at the eastern project limit near IL 83.

## I. Drainage

Flood incident reports were reviewed for the IL 38 corridor between I-355 and IL 83. There have been 5 reported flooding incidents within the study limits since 1987. At IL 38 and Edgewood Avenue there was one flooding incident reported with unknown depth but passable. There was also a report of a collapsing manhole at this location which resulted in a cold patch temporary repair while awaiting a permanent repair. At the intersection of IL 38 and Finley Road an incident was reported where water was coming from the parking lot in the southeast quadrant and moving in the eastbound lanes of IL 38. An isolated incident during construction was also reported just west of Finley Road regarding flooding and gravel in the construction site causing flat tires and axle problems. Finally, water was reported on the pavement on a section of IL 38 between Finley Road and I-355. Adjacent to the study area, at the IL 38 and IL 83 interchange, flooding incidents were reported 4 times predominantly on the eastbound IL 38 to southbound IL 83 ramp with water completely covering the ramp.

A structure located along IL 38 in the eastbound direction, right side, approximately 485 feet east of the I-355 bridge in Glen Ellyn has required recurring repairs by maintenance over the last ten or more years. It was noted by the IDOT hydraulics unit that during heavy rain events, hydrostatic pressure will lift the top off the structure, offset it, and erode the backfill material around it. The backfill material subsequently then ends up going into the storm system. An image of this structure is shown in **Figure 2**.


***FIGURE 2: DRAINAGE STRUCTURE – IL 38 EASTBOUND, RIGHT SIDE, 485 FEET EAST OF I-355***

# 3. PROPOSED IMPROVEMENTS – 3R (RESURFACING, RESTORATION, REHABILITATION)

IL 38 is a low speed (35 mph) five to seven lane roadway typically with a flush or mountable center median. The existing average daily traffic (ADT) varies from 38,200 at the I-355 interchange to 47,900 vehicles per day at the IL 83 interchange. The feasibility study found that the existing 2022 traffic

simulations operated at acceptable levels of service except for a few locations. This was unexpected given the high traffic demand and crash experienced on IL 38.

The observed operational and safety concerns on IL 38 corridor can be attributed to the high number of uncontrolled full access points that are not accounted for in the traffic simulations. In this 4.3-mile segment, there are over 100 full access driveways and 19 full access unsignalized intersections. In addition, there are 14 signalized intersections with some allowing unprotected left-turn movements that cross two to three lanes of oncoming traffic with very high volumes. Field observations taken on August 5, 2022, found that mainline IL 38 traffic flow was stable and maneuvering and lane changes could be made with ease. Several pedestrians were observed crossing the five to seven lanes of pavement at unmarked mid-block locations where limited refuge to stand is provided. Other identified characteristics that can be attributed to crashes along IL 38 included lack of control and positive and adequate channelization at signalized intersections and gaps in pedestrian and bicycle accommodations within the study limits.

According to the Federal Highway Administration (FHWA) Safety portal[1], corridor access management is a proven safety countermeasure and when done correctly can enhance safety for all modes, facilitate walking and biking, and reduce trip delay and congestion. The FHWA developed a Technical Summary on corridor access management to assist with decisions pertaining to corridor access management.

The FHWA website also contains a Primer for public consumption: "Safe Access is Good for Business"[2]. This Primer summarizes access management and its effect on business activity and local economy. It provides a focus on economic concerns that may arise in response to proposed

**Benefits of Corridor Access Management[1]**

- Making a U-turn at a median opening to get to the opposite side of a busy highway is approximately 25% safer than a direct left turns from a side street or other access point.
- Indirect turn intersections reduced crashes by 20% and by 35% when the indirect turn intersection was signalized.
- The HSM summarizes the crash reduction effects of indirect left turns as follows:
  - Total: 14 - 51%
  - PDO: 5 - 11%
  - Fatal/Injury: 31 – 36%
  - Rear end: 9 – 16%
  - Right Angle: 33 – 36%
- Adding an exclusive left-turn lane reduces total crashes by 7 – 44% and fatal/injury crashes by 6 – 55%.
- Adding an exclusive right-turn lane reduces total crashes by 4 – 14% and fatal/injury crashes by 9 – 23%.
- Converting a two-way left-turn lane (TWLTL) to a non-traversable median reduces total crashes by 15 – 57% and injury crashes by 33 – 48%.
- Raised medians may reduce pedestrian crashes by 45% and pedestrian fatalities by 78%.
- Installation of non-traversable median reduces right-angle crashes along a corridor by 38%.
- Corridor access management can reduce total corridor crashes by 39% and corridor rear end and left turn crashes by 41% and 42%, respectively.
- Proper access control can reduce crashes by as much as 50% while increasing capacity by 23 – 45%.

[1] Intersection Proven Safety Countermeasure | Technical Summary: Corridor Access Management, FHWA, https://safety.fhwa.dot.gov/intersection/cam/fhwasa15005.pdf

[2] Safe Access is Good for Business, FHWA, Report No. FHWA-HOP-06-107, August 2006, https://ops.fhwa.dot.gov/publications/amprimer/access_mgmt_primer.htm

access changes and includes discussion on impacts on business activity, freight and deliveries, parking for customers, and property value. Some of the key takeaways of the primer include:

- A national study, *NCHRP Report 420: Impacts of Access Management Techniques*, conducted in the late 1990s looked at nearly 40,000 crashes and data from previous studies to determine the crash rate associated with adding access points to major roads. It found that an increase from 10 to 20 access points per mile on major arterial roads increases the crash rate by about 30%.
- Well managed arterials can operate at speeds up to 15 to 20 miles per hour faster than poorly managed roadways.
- Several before and after studies conducted in Florida, Iowa, Minnesota, and Texas along highways that incorporated access management found that the vast majority of business do as well or better after the access management projects were completed. Additionally, it was found with businesses surveyed after these projects that there no reports of an adverse impact on the property value.
- Studies have shown that making a u-turn at a median opening to get to the opposite side of a busy highway is about 25% safer than a direct left turn from a side street or other access point.

In 2017, IDOT conducted a study in Northeast Illinois to identify crash patterns and median treatments that reduce collision rates in the local area. This study included 18 corridors across 5 counties in Illinois, Cook, Will, DuPage, Lake, and McHenry. The main focus of the study was on 4-lane raised curb medians and 5-lane flush medians. The corridors studied included a mix of transportation demands and traffic volumes. Overall, the study found that crash rates for most crash types were lower for corridors with barrier medians. The key findings of the study are summarized in **Figure 3** which is a snapshot of a brochure on the study completed by the Department.

Reduction in crosswalk pedestrian crashes after the installation of a median refuge island:

46%

The IDOT *Bicycle and Pedestrian Accommodations Study* is a supplement to Bureau of Design & Environment (BDE) Policy and is guidance for incorporation of bicycle and pedestrian accommodations along Illinois roadways. This study can be found on IDOT's website at https://idot.illinois.gov/travel-information/recreation/trails-paths-streets/index. The provides information on the performance of and identifies opportunities to implement various 'innovative' bicycle and pedestrian strategies. IL 38 is an ideal candidate for median refuge islands, pedestrian signal heads at all signalized intersections, and crosswalk enhancements. **Figure 4** through **Figure 6** show the benefits of the pedestrian improvements according to the study. According to research conducted as part of this study Median refuge islands are one of the Federal Highway Administration's nine proven safety counter measures for reducing vehicle-pedestrian crash frequency and severity. Adding a median refuge island has been shown to lower pedestrian crashes by 46% at marked crossing locations and by 39% at unmarked crossing locations. The installation of median refuge islands also creates an area where additional lighting can be implemented if desired, further increasing the visibility and safety of crossing pedestrians. Pedestrian signals provide positive guidance to pedestrians crossing the street where conflicting traffic may impact the safety of pedestrians. Crosswalk enhancements include the use of high visibility marking patterns and are intended to improve the visibility of the crosswalk and focus motorist attention toward the crosswalk and

pedestrian. Research conducted for the study found that the use of high visibility markings had a 37% to 48% reduction in crashes. Additionally, the research revealed that sight distance of the crosswalks were seen 200 feet sooner than standard transverse crosswalks.

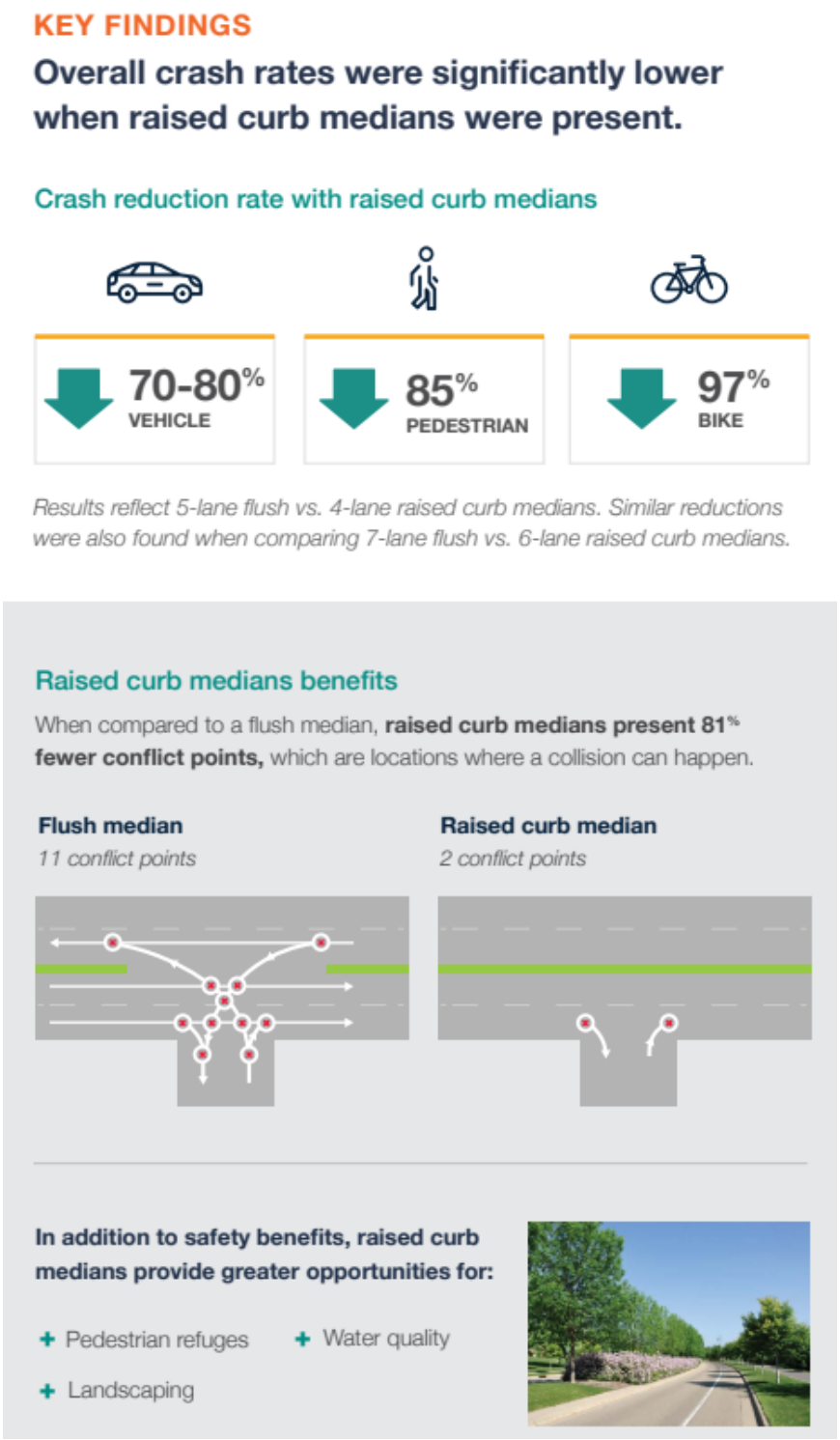


***FIGURE 3: KEY FINDINGS - BUILDING SAFER ROADS: STUDYING MEDIAN SAFETY AND CRASH REDUCTION IN NORTHEASTERN ILLINOIS, CONDUCTED BY IDOT***

| | Benefits | Considerations |
|---|---|---|
| SAFETY | • Allows pedestrians to cross one direction of traffic at a time<br>• Provides safe waiting area in median<br>• Provides space to potentially improve lighting at pedestrian crossings.<br>• Reduces pedestrian crashes | • Continuous medians may encourage higher vehicle speeds<br>• May induce a false sense of security in crossing pedestrians |
| OPERATIONS | • Reduces the time a pedestrian has to wait to cross the road | • May interfere with truck and bus turns, depending on the road geometry<br>• May replace/eliminate a turn lane for vehicles |
| MAINTENANCE | | • May lead to increased maintenance costs for landscaping |

*FIGURE 4: MEDIAN REFUGE ISLAND BENEFITS & CONSIDERATIONS, IDOT - BICYCLE & PEDESTRIAN ACCOMMODATIONS STUDY*

| | Benefits | Considerations |
|---|---|---|
| SAFETY | • Decreases conflicts between pedestrians and motorists when used in conjunction with countdown timers<br>• Decreases number of pedestrian trapped in the intersection during the conflicting phase<br>• Automated pedestrian detection can increase usage and compliance rates<br>• Accessible pedestrian signals (APS) that are properly aligned with crosswalks achieve high usage rates with visually impaired individuals | • Pedestrian signals alone may not achieve significant safety benefits<br>• Consider the use of additional enhancements such as countdown timers, automated detection, and APS<br>• Ensure the latest APS standards are followed, as outdated APS equipment may lead to confusion by visually impaired individuals |
| OPERATIONS | • Provides continuous movement of pedestrian traffic and vehicular traffic<br>• Countdown timers result in faster walking speeds<br>• Automated detectors may advance the cycle once the pedestrian has crossed | • Low pushbutton activation rates may require pedestrians to wait for a subsequent cycle to cross legally<br>• Pedestrian clearance interval and signal timing depends on walking speeds of slowest pedestrian |
| MAINTENANCE | • Improved use with common signal maintenance | • Snow and other debris may obstruct and hinder access to improperly placed detectors or push buttons |

*FIGURE 5: PEDESTRIAN SIGNALS BENEFITS & CONSIDERATIONS, IDOT - BICYCLE & PEDESTRIAN ACCOMMODATIONS STUDY*

| | Benefits | Considerations |
|---|---|---|
| SAFETY | • Improves crosswalk visibility for motorists and pedestrians<br>• Improves crosswalk detection for pedestrians with visual or cognitive impairments<br>• Decreases crashes<br>• Increases motorist stopping rates | • Improper application by some governing agencies (using color or crosswalk line variations prohibited in the MUTCD), designing for aesthetics instead of safety<br>• Potential improper usage by pedestrians<br>• Increases dependency on maintenance (alternative materials must be properly maintained) |
| OPERATIONS | • Controls the flow of pedestrians and vehicles in a similar manner as a traditional crosswalk<br>• Maintains the expected pedestrian travel pattern | • Potential improper usage by pedestrians<br>• Potential motorist confusion with alternative markings<br>• Slight decrease in motorist speeds |
| MAINTENANCE | • Potentially lowers maintenance costs if more durable materials are used | • Additional cost and effort to maintain alternative materials (color, texture, paving) |

*FIGURE 6: CROSSWALK ENHANCEMENTS BENEFITS & CONSIDERATIONS, IDOT - BICYCLE & PEDESTRIAN ACCOMMODATIONS STUDY*

The Crash Modification Factors Clearinghouse (cmfclearinghouse.org) was also investigated for studies and potential crash reduction for potential improvements along the IL 38 corridor. The CMF Clearinghouse rates each CMF using a Star Quality Rating on a scale of 1 to 5, where a 5 indicates the highest or most reliable rating. The following summarizes the crash reduction potentials as found through the website:

- Install shared path – 25% reduction in vehicle-bicycle crashes, all severities (2 stars)
- Install sidewalk – 40% reduction in vehicle-pedestrian crashes, all severities (4 stars)
- Install high-visibility crosswalk – 40% reduction in vehicle-pedestrian crashes, all severities (2 stars). May also reduce other types of crashes (such as rear ends and turning type crashes) by 19% (2 stars)
- Install pedestrian countdown timer – 7-9% reduction in crashes (5 stars); 55-70% reduction in vehicle-pedestrian crashes (3 stars)
- Protected/permissive to protected-only left turn phasing
    - 50%-100% reduction in angle type crashes (2-4 stars)
    - 34%-70% reduction in left turn crashes (3 stars)
    - 9% reduction up to 1-2% increase in all crash types (3 stars)
    - 25%-43% reduction in crashes with severities, however a potential reduction of 2% or up to 36% increase in property damage only crashes (3 stars)
- Install right turn lane – 30% reduction in rear end type crashes caused by right turn vehicles (3 stars)
- Install left turn lane – 33% reduction is all crash types and severities (not rated as this is an HSM CMF)
- Improve left turn lane offset to create positive offset – 33-38% reduction in crashes, all types, severities (3 stars)
- Convert 12-foot lanes to 10-foot lanes – 15% - 32% increase in crashes, all types and severities (3 stars)
- Far-side transit stop locations – 45% reduction in transit related crashes; Near-side transit stop

location 38%-85% increase in transit related crashes (4 stars)

### Proposed Typical Section

To address safety and the access management issues along the corridor, the recommended improvements generally consist of a 16-foot raised barrier median, two to three 11-foot lanes in each direction, curb and gutter, and a 10-foot-wide sidewalk/shared-use path at the back of curb on the south side of the roadway and a sidewalk with a minimum width of seven feet where located at the back of curb or a width of five feet where a parkway can be accommodated on the north side of the road , visually represented in **Exhibit 22, Proposed Typical Sections**. The intent is to fit the proposed cross-section within the existing ROW where possible.

This feasibility study proposes a center island at the ¾ access points that varies in width from 16 feet down to 2 feet. The feasibility study's assumption was that the 2-foot section would be a 1-foot-wide barrier portion with a 1-foot gutter flag on the through lane side and no gutter on the turn lane side resulting in a 10-foot left-turn lane edge-to-edge (11 feet face-to-face). A future Phase I, study should have this design reviewed by the various Bureaus for comment/approval. The Department has approved medians less than 4 feet wide on past projects. Contract 60V55 (IL 132 from Munn Road to Deerpath Drive) is one example of a reduced median design.

### Proposed Extent of Access Control/Access Management

The raised median effectively makes all driveways in the corridor right-in, right-out (RI/RO) only. Three-quarter access points, controlled at the median, are provided between signalized intersections, and are generally proposed at a 500 foot to 600 foot spacing. With access management measures implemented, the number of full access, unsignalized intersections is reduced to three, with six three-quarter access intersections, and eleven RI/RO only. The proposed access management is summarized in **Table 4** and shown in **Exhibit 23, Proposed Access Management**.

***TABLE 4: PROPOSED ACCESS MANAGEMENT***

| Access Point Type | Quantity | |
|---|---|---|
| | Existing | Proposed |
| Driveway – Full | 114 | - |
| Driveway – RI/RO | 38 | 151 |
| Driveway – ¾ | - | 1 |
| Signalized Intersection | 14 | 14 |
| Unsignalized Intersection – Full | 19 | 3 |
| Unsignalized Intersection – ¾ | - | 6 |
| Unsignalized Intersection – RI/RO | 1 | 11 |

### Description of Signalized Intersections

At all signalized intersections in the study area, the IL 38 east-west approaches are converted from protected/permissive left-turn phasing to protected only phasing. Additionally, turn lane storage lengths and tapers were extended, where feasible, to ensure queuing may be contained within the turn lane and

IDOT BDE guidelines for turn lane lengths are met.

IL 38 is part of an interconnected system within the limits of this study. The interconnected system details are in the *Existing and 2050 No Build Traffic Operations Analysis* provided as a supplemental report under a separate cover. Since IL 38 is an SRA and part of a large, interconnected corridor, the following signal timing conditions were assumed:

- Signal control type – Actuated-coordinated with IL 38, eastbound and westbound through phase, set as the referenced phase.
- Cycle length – The existing cycle lengths as provided in the SCAT characteristics were maintained.
- Offsets – Offsets were optimized to promote progression along the IL 38 corridor while balancing phasing to provide reasonable or balanced queuing on IL 38 and side streets.

The 3R Build lane configuration with modified geometry highlighted in red in **Exhibit 24, 3R Build Conditions – Lane Schematic.** The lane configuration at the signalized intersections remained consistent with the existing condition except for at the signalized commercial entrance at 100 W Roosevelt Road and at Villa Avenue where an exclusive U-turn lane was added to the westbound direction.

With these proposed modifications, level of service achieved along the corridor is similar to existing conditions, see **Exhibit 25, 3R Build Conditions – Level of Service (LOS).**

*TABLE 5: EXISTING AND EXISTING YEAR 3R IMPROVEMENTS AM AND PM PEAK HOUR OVERALL INTERSECTION LEVEL OF SERVICE (LOS)*

| ID | Intersection | Existing | | | | Existing Year 3R Improvements | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM | | PM | | AM | | PM | |
| | | LOS | V/C | LOS | V/C | LOS | V/C | LOS | V/C |
| 1 | I-355 Southbound Ramps | C (22.6) | 0.70 | C (20.5) | 0.70 | C (21.5) | 0.70 | B (18.9) | 0.70 |
| 2 | I-355 Northbound Ramps | C (26.3) | 0.77 | B (19.3) | 0.67 | C (24.5) | 0.77 | B (17.2) | 0.67 |
| 3 | Finley Road | C (29.7) | 0.71 | D (40.9) | 0.79 | D (37.2) | 0.74 | D (43.4) | 0.82 |
| 4 | CE (345 W Roosevelt Road) | A (3.7) | 0.51 | A (6.1) | 0.51 | A (4.6) | 0.53 | A (8.4) | 0.63 |
| 5 | Main Street | C (32.1) | 0.76 | D (36.3) | 0.83 | D (36.0) | 0.80 | D (41.5) | 0.86 |
| 6 | Highland Avenue | B (16.0) | 0.67 | C (26.2) | 0.78 | B (19.7) | 0.77 | C (27.4) | 0.85 |
| 7 | Fairfield Avenue | A (7.1) | 0.47 | B (13.3) | 0.73 | A (7.9) | 0.48 | B (18.1) | 0.76 |
| 8 | CE (800 W Roosevelt Road) | A (2.8) | 0.45 | A (8.5) | 0.66 | A (2.7) | 0.45 | B (10.5) | 0.69 |
| 9 | Westmore-Meyers Road | D (35.8) | 0.79 | D (35.8) | 0.84 | D (42.4) | 0.92 | D (44.3) | 0.87 |
| 10 | CE (102-298 Roosevelt Rd) | A (3.7) | 0.36 | A (7.7) | 0.59 | A (3.3) | 0.36 | A (7.3) | 0.59 |
| 11 | Ardmore Avenue | B (19.6) | 0.63 | C (24.3) | 0.66 | B (19.1) | 0.63 | C (23.7) | 0.66 |
| 12 | CE (100 E Roosevelt Road) | A (3.6) | 0.47 | B (12.6) | 0.52 | A (4.2) | 0.47 | B (12.6) | 0.52 |
| 13 | Summit Avenue | C (26.6) | 0.78 | C (30.7) | 0.83 | C (26.0) | 0.78 | C (31.1) | 0.84 |
| 14 | Villa Avenue | A (9.8) | 0.67 | B (11.2) | 0.67 | A (9.7) | 0.67 | B (11.1) | 0.67 |
| *V/C* | | *< 0.750* | | *0.750 – 0.875* | | *0.875- 1.00* | | *≥ 1.00* | |
| *Level of Service* | | *A - C* | | *D* | | *E* | | *F* | |

*ID - Intersections numbered for reference. See **Exhibit 11, Traffic: Study Locations Map**.*

*LOS (Delay) – Level of Service (Delay in seconds/vehicle)*

*V/C – Volume/Capacity – Value shown is maximum V/C of all lane groups at the intersection*

## A. Other Alternatives Considered

While the corridor would benefit from some intersection capacity improvements, the study's recommendation is to address the immediate safety needs with a 3R (Resurfacing, Restoration, Rehabilitation) type improvement. Because the IL 38 corridor is highly urbanized and built out, corridor long right-of-way (ROW) takes, severe parking impacts, and displacements were considered impracticable. However, intersection lane configurations that accommodate 2050 demand is included for consideration by a future Phase I study once the existing ROW is further defined.

### Design Year 2050 Considerations

During Phase I, the intersections' turn bay lengths should be extended where possible and practical to accommodate year 2050 traffic volumes. In addition, when right-of-way is verified, the addition of turn lanes where practical should also be considered.

The lane configuration at the signalized intersections were modified to meet 2050 demands with a focus on managing queueing on the corridor. The 2050 Build Lane configuration with modified geometry highlighted in red in **Exhibit 26, 2050 Build Reconstruction Conditions – Lane Schematic.**

With these proposed modifications level of service achieved along the corridor is shown in **Exhibit 27, 2050 Reconstruction Build – Level of Service (LOS).**

## B. Estimate of Costs

The estimated cost of the 3R roadway improvements is $28.0 million with 2.4 acres of proposed ROW.

***TABLE 6: 3R IMPROVEMENTS COST ESTIMATE***

| Item | Cost |
|---|---|
| Excavation and Earthwork | $768,000 |
| Removals | $3,057,000 |
| Drainage | $1,059,000 |
| Pavement Patching, Resurfacing and Widening | $7,967,000 |
| Curb & Gutter, Medians | $1,819,000 |
| Driveways and Sidewalk/Multi-Use Path | $2,692,000 |
| **Sub Total** | **$17,434,000** |
| Erosion Control and Landscaping (2%) | $349,000 |
| Pavement Markings (1.5%) | $262,000 |
| Traffic Control and Protection (10%) | $1,743,000 |
| Roadway Lighting* | $360,000 |
| Traffic Signals and Interconnect | $3,195,000 |
| **Sub Total** | $23,343,000 |
| Contingencies (20%) | $4,669,000 |
| **Construction Total** | **$28,012,000** |
| Right-of-Way (Est. 2.4 Ac.), Easements (TBD) | ** |
| **Total Cost** | |
| Less local portion | ** |
| **Total IDOT Cost** | |

*Subject to Lighting Assessment in Phase I

**To be determined in Phase I

# 4. COORDINATION ACTIVITIES

Primary coordination activities were contained to IDOT District 1 Geometrics Study Unit and Bureau of Traffic. CMAP was also coordinated with for future ADT volumes and the bicycle and pedestrian accommodations along the corridor and adjacent facilities. The coordination with CMAP is included in **Appendix B**.

# 5. PUBLIC INVOLVEMENT ACTIVITIES

Public Involvement activities were not undertaken by this feasibility study. A future Phase I study will have to coordinate with the Department regarding the appropriate level of public involvement for the proposed improvements.

# 6. CONCLUSIONS/RECOMMENDATIONS

This feasibility study evaluated what potential improvements could be implemented to address existing safety concerns within the IL 38 corridor from I-355 to IL 83 (4.3 miles in length). The following summarizes the findings of the study:

- A total of 1,639 crashes occurred along IL 38 over the five-year analysis period (2016 through 2020). Approximately 51% of all crashes (839 crashes) occurred at signalized intersections, 47% (773 crashes) occurred along the segments between the signalized intersections, and 2% (27 crashes) occurred on the I-355 interchange ramps.
- Rear end and turning type crashes made up 79 percent of crashes on the corridor.
- There were four fatal crashes and 38 A-Injury crashes in total.
- Three intersections within the study limits are rated Safety Tier Critical: Lincoln Street, Euclid Avenue, and Villa Avenue.
- Bike and pedestrian crashes were more predominant on this corridor than expected at 29 crashes, 4 of which resulted in a fatality and 10 resulted in an A-injury.
- Overall, the existing 2022 traffic simulations operated at acceptable levels of service except along the IL 38 corridor.
- The observed safety concerns of the corridor can be attributed to the high number of uncontrolled full access points and large gaps in pedestrian and bicycle accommodations. In this 4.3-mile segment, there are 114 full access driveways and 19 full access unsignalized intersections. In addition, there are 14 signalized intersections, some of which allow for the permissive left-turn movement opposing two to three lanes of high-volume oncoming traffic.
- Field observations taken on August 5, 2022, confirmed the lack of access management and number of potential conflict points as contributing factors to the safety concerns of the corridor. The field observations found that mainline IL 38 traffic flow was stable and maneuvering and lane changes could be made with ease. Several pedestrians were observed crossing the five to seven lanes of pavement at unmarked mid-block locations where limited refuge to stand is provided. Other identified characteristics that can be attributed to crashes along IL 38 included lack of control and positive and adequate channelization at signalized intersections and gaps in pedestrian and bicycle accommodations within the study limits.

While the corridor would benefit from some intersection capacity improvements, the study's recommendation is to address the immediate safety needs with a 3R (Resurfacing, Restoration, Rehabilitation) type improvement. Because the IL 38 corridor is highly urbanized and built out, corridor long right-of-way (ROW) takes, severe parking impacts, and displacements were considered impracticable. The intent is to fit the proposed cross-section within the existing ROW where possible. However, intersection lane configurations that accommodate 2050 demand are included for consideration by a future Phase I study.

Identified improvements along the IL 38 corridor that would address the needs of the corridor include:

- **Corridor wide access management** – Targets the overall and specific types of crashes experienced along this corridor including rear end and turning type crashes through the implementation of a 16-foot raised, non-traversable median. Three-quarter access points at un-signalized intersection were provided where applicable.

- **Protected left-turn movements at signalized intersections**
- **Signal retiming at signalized intersections**
- **Improved bike and pedestrian accommodations** – Targets the higher-than-normal number and severity of bike and pedestrian crashes on IL 38 by providing a 10-foot-wide sidewalk and/or multi-use path on the south side of the roadway and a sidewalk with a minimum width of seven feet where located at the back of curb or a width of five feet where a parkway can be accommodated on the north side of the road. Narrower lanes and the proposed raised median that may serve as pedestrian refuge provides a shorter crossing distance across IL 38. High intensity marked crosswalks should be used to enhance visibility at all proposed marked crosswalks and pedestrian signals with push buttons should be provided at all signalized intersections. If a future Phase I study determines that an unsignalized crosswalk is warranted, the appropriateness of selecting pedestrian crossings at uncontrolled locations should be analyzed according to TRA-23: Guidelines for Establishing Pedestrian Crossings.
- **Bus stop location evaluation** - It is recommended that bus stop locations be evaluated for appropriate placement in future Phase I studies. Each near-side, far-side, and mid-block bus stop locations have their advantages and disadvantages. Proper bus stop location can improve visibility of pedestrians and reduce conflicts with vehicles and should be coordinated with Pace during Phase I studies.
- **Lighting** - The existing lighting system should be considered for upgrades based on photometrics completed in Phase I studies.
- **Drainage** – The existing drainage system should be evaluated in Phase I studies. Within the study area flooding incidents occurred on IL 83 between I-355 and Finley Road and at the intersection of Edgewood Avenue. Flooding incidents were predominant at the eastbound IL 38 to southbound IL 83 interchange ramp.

The estimated cost of the roadway improvements is $28.0 million with approximately 2.4 acres of proposed ROW.

The feasibility study drafted the recommended improvements based off publicly available parcel data and aerial imagery. It is recommended to do full topo survey with plat level boundary work early in Phase I to verify detailed design elements, such as grades at ROW, to reduce impacts and determine the need for temporary construction easements where possible once a future Phase I study performs a topographical survey and better defines the existing ROW. Additional capacity improvement may be considered once the ROW is defined.

*TABLE 7: IL 38 3R PROPOSED IMPROVEMENTS, PHASE I CONSIDERATIONS, AND BENEFITS*

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Access Management | Implement a 16-foot raised, non-traversable median. | | Corridor wide | Significantly reduces the number of full access points by converting the 230 driveways to right-in/right-out only. Targets the overall and specific types of crashes experienced along this corridor including rear end and turning type crashes. Potential reduction in total corridor crashes by 39% and corridor rear end and left turn crashes by 41% and 42%, respectively. |
| | Three-quarter access points at un-signalized intersections were provided where applicable. | | Between signalized intersections. Generally 500 to 600 foot spacing | Making a U-turn at a median opening to get to the opposite side of a busy highway is approximately 25% safer than a direct left turns from a side street or other access point. |
| | Narrow all lanes to 11-feet | When right-of-way is verified consider through lane widths greater than 11-feet where practical | Corridor wide | Reduces right-of-way and parking impacts along the corridor. However, reducing the lane width to 11-feet may potentially increase sideswipe crashes along the corridor by <5%. |
| Intersection Improvements | Protected/permissive left-turn phasing to protected only. | The feasibility study utilized the 95th percentile queues for the proposed storage lengths. Red-time queues will have to be evaluated in Phase I. | IL 38 approaches at all signalized intersections | Potential reduction in overall and severity of turning type crashes at signalized intersections by 34% to 70%. Also targets angle type crashes related to the left turn movement by up to 100%. |

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Intersection Improvements | | Proposed added auxiliary lanes or lane reconfiguration of sideroad approaches When right-of-way is verified, the addition of turn lanes where practical should be considered. | Main Street Westmore-Meyers Road Summit Avenue | Potential reduction in crashes related to that turn movement by 33%. Improves queue management on side roads. |
| | Turn bay lengths and tapers extended to meet BDE guidelines and existing year traffic volumes | The intersection's turn bay lengths should be extended where possible and practical to accommodate year 2050 traffic volumes. | All intersections | Improves queue management. Properly designed turn bay lengths allow for proper queue storage reducing the potential for vehicles to queue into the adjacent through lane. Also allows for adequate time for the vehicle to come to a complete stop at the back of queue. Targets rear end type crashes, however, reduction potential unknown. |
| | Modernize traffic signals to current standards including high-visibility back plates and one signal head per lane. | | All signalized intersections | This improvement helps with left-turn on arrow only implementation and improves visibility of the traffic signals. |
| | Traffic signals coordination. Optimize corridor offsets and progression while managing delays and queueing on side roads | The intersection signal timing, corridor offsets, and progression should be optimized for design hourly traffic volumes. | All signalized intersections. | Improves queue management. Properly timed traffic signals better meet driver expectancy and can target red light running and driver frustration. |

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Bike and Pedestrian Accommodations | Access management features of narrower lanes and the proposed raised median | | Corridor wide | Raised medians may reduce pedestrian crashes by 45% and pedestrian fatalities by 78%. Reduces the time a pedestrian has to wait to cross the road by allowing pedestrians to cross one direction of traffic at a time and provides a safe waiting area in the median. |
| | Provide a 10-foot-wide multi-use path along the south side and a sidewalk on the north side of the roadway. | Multi-use path and sidewalk location should be evaluated in Phase I studies. | Corridor wide | Installing a multi-use path has 25% potential reduction in vehicle-bicycle crashes. Installing sidewalk has 40% potential reduction in vehicle-pedestrian crashes. |
| | High intensity marked crosswalks should be used to enhance visibility | | All marked crosswalks | Improves crosswalk visibility for motorists and pedestrians and increases motorists stopping rate. Potential reduction of 40% in vehicles-pedestrian crashes. May reduce other types of crashes by 19%. |
| | Pedestrian signals with push buttons and countdown timers | Consider accessible pedestrian signal (APS) and/or automated detection | All signalized intersections | Decreases conflicts between pedestrians and motorists and decreases the number of pedestrians trapped in the intersection during the conflicting phase. Potential reduction in vehicle-pedestrian crashes by up to 70% and all crash types by up to 9%. |

| Improvement | Description | Phase I Consideration | Location | Benefit |
|---|---|---|---|---|
| Bike and Pedestrian Accommodations | | If Phase I studies should evaluate the appropriateness of pedestrian crossings at uncontrolled locations and should be analyzed according to TRA-23: Guidelines for Establishing Pedestrian Crossings during Phase I studies. | Corridor wide | Targets the pedestrian crash experience noted along the corridor. |
| Bus Stop location evaluation | - | It is recommended that bus stop locations be evaluated for appropriate placement. | All bus stop locations | Proper bus stop location can improve visibility of pedestrians and reduce conflicts with vehicles. Each stop location has its advantages and disadvantages. Studies have shown that far-side transit stop locations may have a 45% reduction in transit related crashes, whereas near-side transit stop locations may have a 38%-85% increase in transit related crashes. |
| Lighting | - | The existing lighting system should be upgraded based on photometrics completed in Phase I studies. | Corridor wide | Targets all users of the roadway with potential to reduce night-time related crashes. |
| Drainage | - | The existing drainage system should be evaluated for potential improvements in the Phase I studies. | Corridor wide | Within the study area flooding incidents occurred on IL 83 between I-355 and Finley Road and at the intersection of Edgewood Avenue. Flooding incidents were predominant at the eastbound IL 38 to southbound IL 83 interchange ramp. |