Feasibility Study
Central Tri-State Tollway (I-294) at Irving Park Road (IL-19)

Contract RR-18-4383MP
Final Report – March 2021

Prepared for:

Illinois Tollway

Prepared by:

Christopher B. Burke Engineering
DAMA Consultants
Gasperec Elberts Consulting
M Squared Engineering
OSEH
Orion Engineers
Patrick Engineering
TranSmart

EXECUTIVE SUMMARY

This Feasibility Study was initiated by the Illinois Tollway (Tollway) in November 2018 to evaluate opportunities for additional access to the Central Tri-State Tollway (CTS – I-294) to/from the south at Irving Park Road (IL 19), since the existing CTS at Irving Park Road interchange provides access to/from the north only. Although additional CTS access at this location has been contemplated in the past, removal of the O'Hare Oasis Pavilion as part of the CTS improvements prompted discussions between the Tollway and the Village of Schiller Park about additional CTS access for nearby industrial, commercial and residential areas, and opportunities for development and/or redevelopment within the O'Hare Oasis site and adjacent areas along the Mannheim Road corridor.

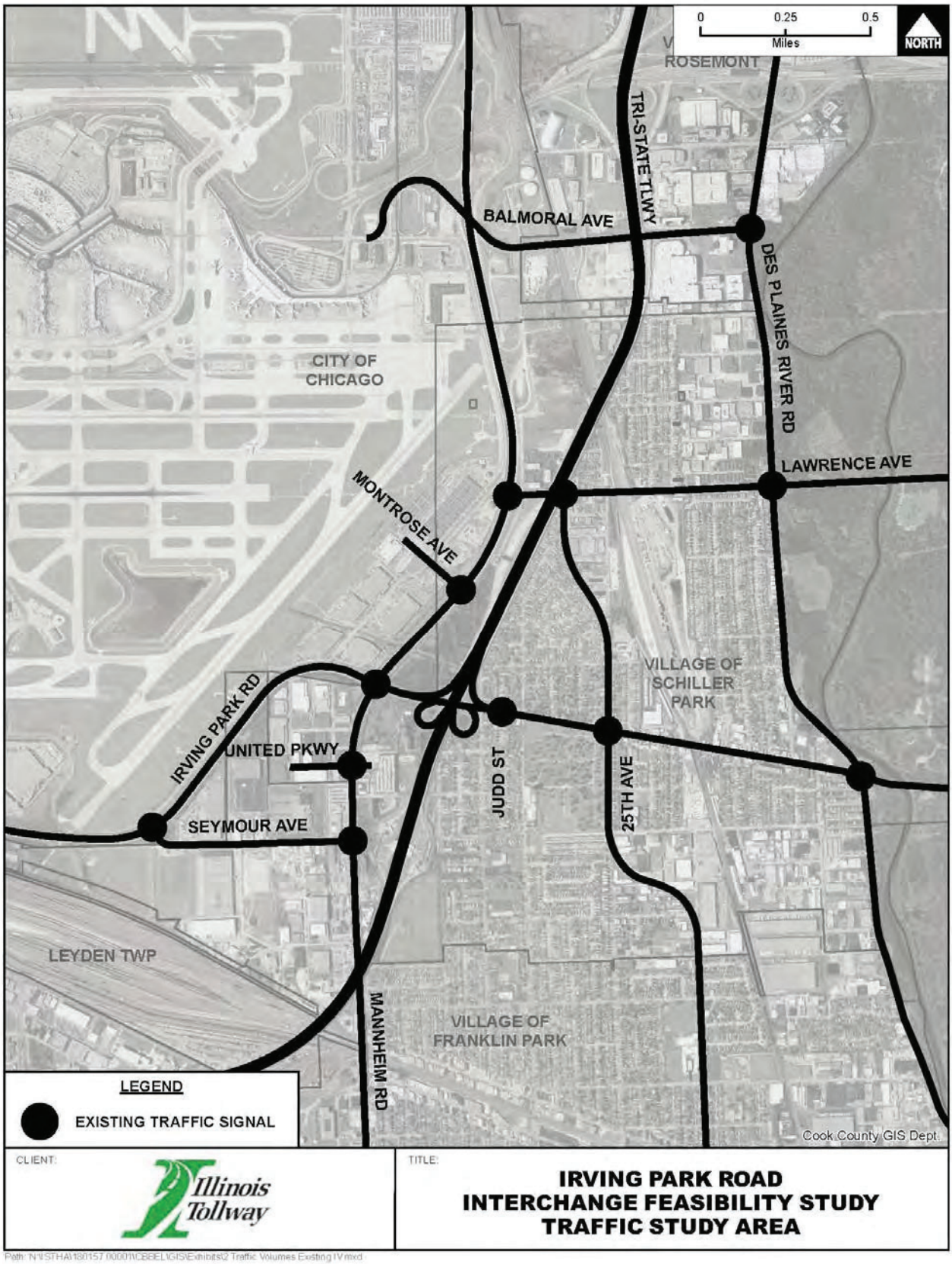
The Feasibility Study was completed through a basic four step process as described below.

Step 1	**SCOPING**: Scoping meetings were held with the Tollway and the Village Schiller Park to discuss an initial range of alternatives to consider and the required analysis.
Step 2	**LEVEL 1 ANALYSIS**: A preliminary analysis of study area travel patterns (origins and destinations) and traffic projections for the new entrance and exit ramps was prepared for the initial interchange concepts for coordination with key stakeholders. Based on the analysis results and stakeholder input, the objective was to evaluate the feasibility and/or acceptability of the initial interchange concepts to be carried forward for Level 2 Analysis.
Step 3	**TRAFFIC COUNTS AND PROJECTIONS**: Traffic counts were obtained at the main signalized intersections within the study area as shown in **Figure 1**, with traffic projections (daily traffic and peak hour) completed for 2020 No-Build conditions (with planned Tollway system improvements) and for each interchange concept advanced to the Level 2 Analysis.
Step 4	**LEVEL 2 ANALYSIS**. Based on the results of the Level 1 Analysis and stakeholder input received, the Level 2 Analysis included a more detailed analysis of traffic effects within the study area for each interchange concept carried forward, with the objective to identify the alternative(s) that best provides the desired CTS access improvements with the least adverse traffic effects.

The Level 1 Analysis, Traffic Projections, and Level 2 Analysis were prepared as independent Technical Memoranda during the course of the Feasibility Study for ongoing review and coordination purposes. These individual documents are summarized in this report, but they are also available in the project files as separately bound documents.

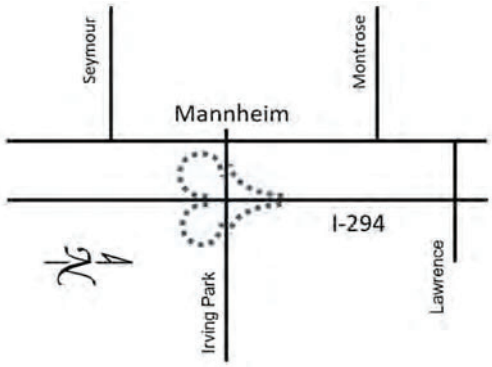
The Feasibility Study process was iterative with the objective to evaluate and compare interchange improvement concepts with respect to their ability to provide improved CTS access and the resulting effects on shifting travel demand and operations. Coordination occurred with key project stakeholders throughout the Feasibility Study process to seek input on the analysis results, which included the Tollway, the Village of Schiller Park, the Village of Franklin Park, and the Illinois Department of Transportation (IDOT) who has jurisdiction over multiple roadways in the study area. If a viable alternative(s) can be identified based on the completed analysis and coordination with the key stakeholders, further project development may proceed beyond the Feasibility Study.

Figure 1. Traffic Study Area



As further discussed in **Section III**, based on the Level 1 Analysis results and the stakeholder input received, many of the initial interchange concepts were dismissed from further consideration based on comparatively poor performance, impacts, and/or high cost, whereas the remaining concepts were advanced along with additional identified concepts for more detailed review as part of the Level 2 Analysis. The base interchange concepts considered in the Level 1 and Level 2 Analysis are shown in **Appendix A**. Additional variations of these base concepts (i.e.; Interchange Concepts 4H, 4I, and 5A-5E) were also analyzed as part of the Level 2 Analysis but were not graphically developed due to similarities with other concepts. The interchange concepts evaluated as part of the Level 2 Analysis are shown in **Table 1**.

Table 1. Interchange Concepts Analyzed in Detail

<table>
<tr><td colspan="2">Existing – Baseline Conditions
 
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 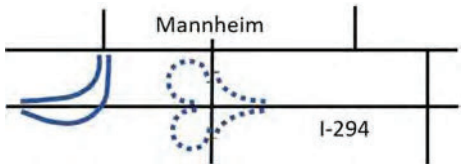
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 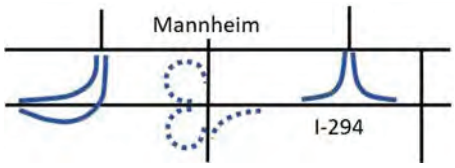
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 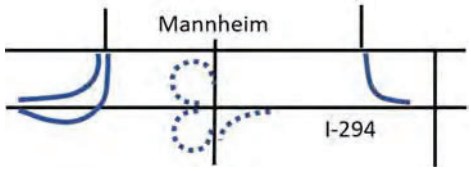
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 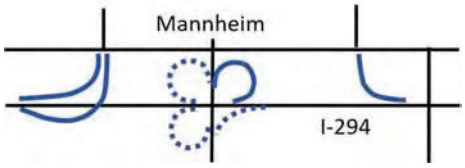
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 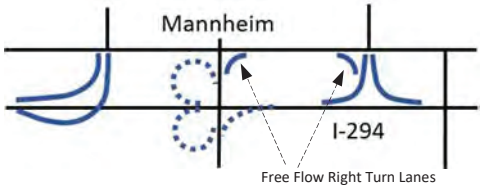
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 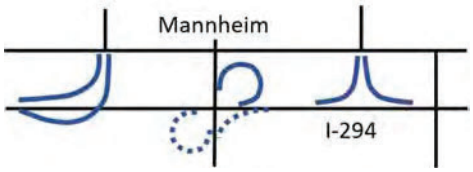
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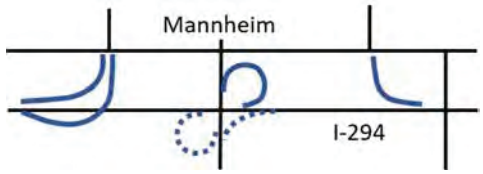
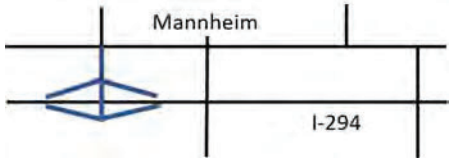
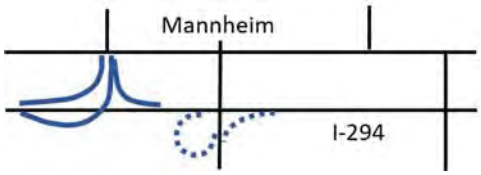
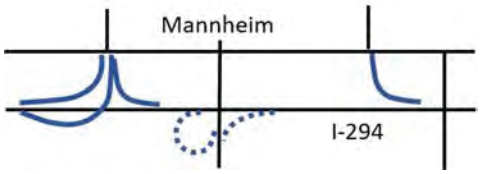
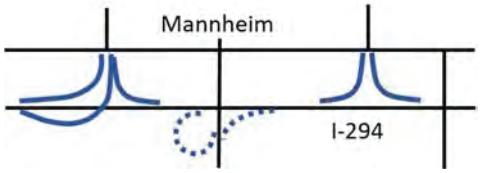
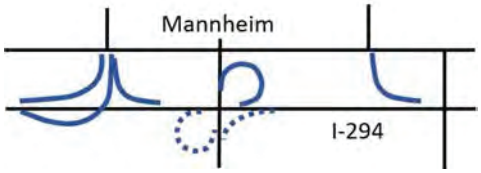
Table 1. Interchange Concepts Analyzed in Detail

Concept 4I 	Concept 5A 
Concept 5B 	Concept 5C 
Concept 5D 	Concept 5E 

The objective of the Level 2 analysis was to evaluate the effect of each interchange concept compared to existing conditions. The Level 2 analysis included AM and PM peak hour intersection capacity analysis using Synchro for the 12 signalized intersections within the study area shown in **Figure 1**.

Separate traffic projections were prepared each interchange concept evaluated in the Level 2 Analysis. In order to factor in the regional effects of other planned Tollway improvements, the traffic projections included the completion of the IL 390 Extension and I-490, including the planned access from I-490 to Irving Park Road near Taft Avenue. Based on the completed Level 2 analysis that is summarized in the tables in **Appendix D**, and the input received from key stakeholders, the conclusions reached include the following:

For all interchange concepts:

- There would be an overall reduction in travel demand along River Road based on rerouting of traffic from the Balmoral Avenue interchange to the new interchange at Mannheim/Seymour.
- With new CTS access to/from the south at Mannheim/Seymour, a notable reverse freight movement that currently occurs at the Balmoral interchange (i.e.; northbound CTS exit that reenters southbound CTS to exit at Irving Park Road) would be alleviated.
- The Irving Park Road at 25th Avenue intersection would remain at LOS D/E (am/pm) for all interchange concepts, however, the average delay and eastbound/westbound queuing will increase due to increased travel demand thru the intersection, such that intersection improvements would be warranted.

Interchange Concepts 4C, 4H, 4I, 5A, 5B, 5C, 5D, and 5E result in adverse traffic effects to the study area roadways with no practical improvement opportunities, and therefore were dismissed from further consideration. The location of where these adverse effects occur varies based on the interchange concept, but include:

- The westbound approach to the Mannheim/Irving intersection
- The westbound approach to the Mannheim/Lawrence intersection with westbound queues that extend to 25th Avenue
- Extensive queuing on the westbound approach at the Mannheim/Montrose intersection
- Poor intersection Level of Service and extensive queuing at the Mannheim/Seymour intersection.

Interchange Concepts 4D, 4E, 4F, and 4G are the best at providing new CTS access to/from the south with the least adverse effects to the study area roadway network, and with notable positive effects. These concepts would result in notable improvements to the westbound approach to the Mannheim Road/Irving Park Road intersection based on rerouting of traffic and elimination of the existing weave condition. These concepts would also improve operations along River Road at the intersections with Balmoral Avenue, Lawrence Avenue, and Irving Park Road.

However, Interchange Concept 4F would require right-of-way acquisition from the City of Chicago in the northeast corner of the Mannheim/Irving Park intersection and would create a shorter weave condition within the CTS southbound CD roadway. Additionally, Interchange Concepts 4E and 4F would not provide a southbound entrance at Montrose Avenue that is viewed as desirable based on the truck traffic from the adjacent industrial and commercial areas and based on providing relief to the Mannheim/Irving intersection and the Balmoral Avenue interchange. On this basis, Interchange Concepts 4D and 4G provide the best balance between providing the desired new CTS access to/from the south, with many operational benefits and minimal adverse operational effects within the study area roadway network. The only difference between Interchange Concepts 4D and 4G is whether or not free flow right turn lanes are provided for the westbound approach at Mannheim/Irving and the northbound approach at Mannheim/Montrose, so it is referred to as Interchange Concept 4D/4G.

For the Irving Park Road at 25th Avenue intersection, based on the analysis of various intersection improvement alternatives as described in Section V, the most practical improvement scenario includes adding northbound and southbound right turn lanes, which would improve the pm intersection LOS from E to D, with relatively minor impacts to adjacent properties. Interchange Concept 4D/4G and the recommended improvements to the Irving Park Road at 25th Avenue intersection are shown in **Figure 2** and **Figure 3** respectively.

Next Steps

Based on coordination with key project stakeholders, there is a general understanding that Concept 4D/4G has the best potential to improve overall accessibility in the study area, with other network benefits and minimal adverse impacts, and therefore forms the basis for a future Phase I Engineering Study. The Feasibility Study included a comparative analysis based on 2020 traffic with planned Tollway access and capacity improvements, whereas a future Phase I Engineering Study will need to consider 2050 traffic projections. On this basis, a future Phase I Engineering Study would also include an updated evaluation of alternatives, more detailed analysis across multiple disciplines including detailed geometric studies, drainage studies, environmental studies, and more broad-based public involvement.

Figure 2. Recommended Interchange Concept 4D/4G

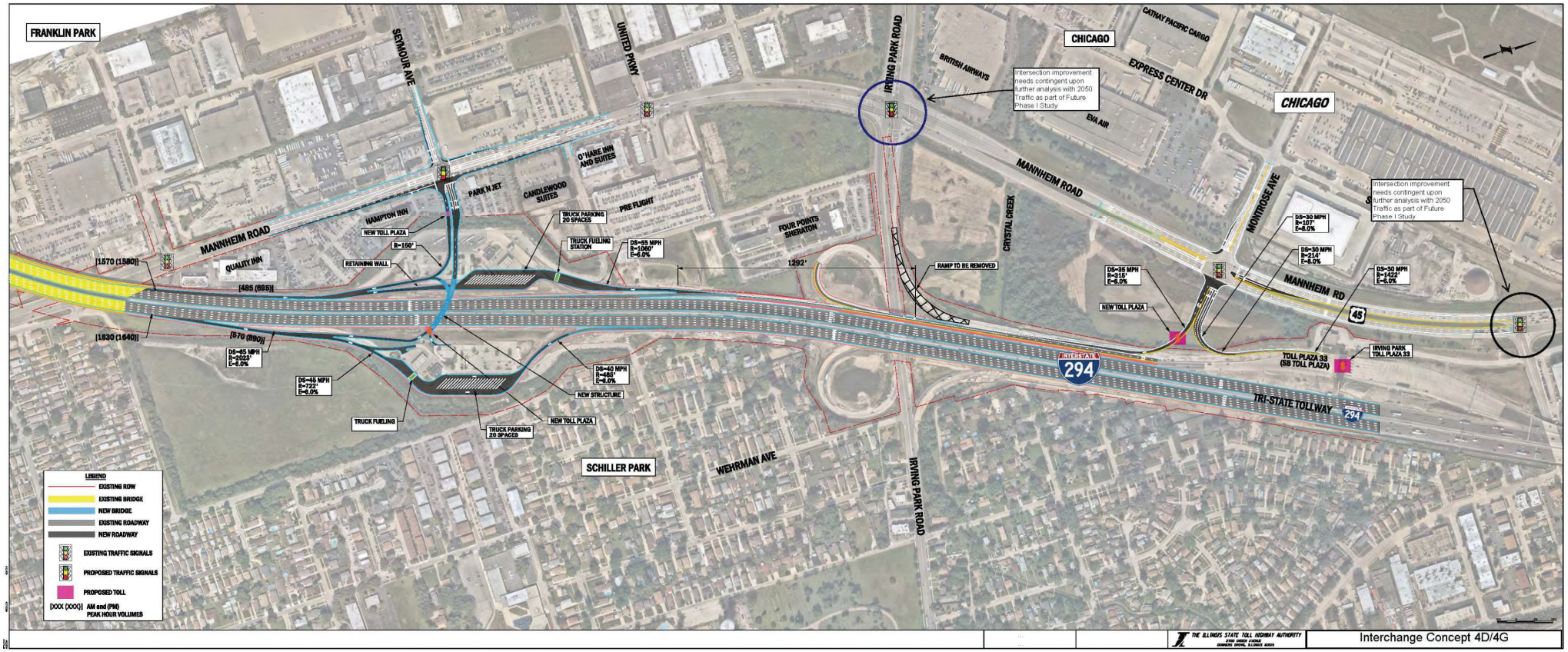


Figure 3. Recommended Irving Park Road at 25th Avenue Intersection Improvement

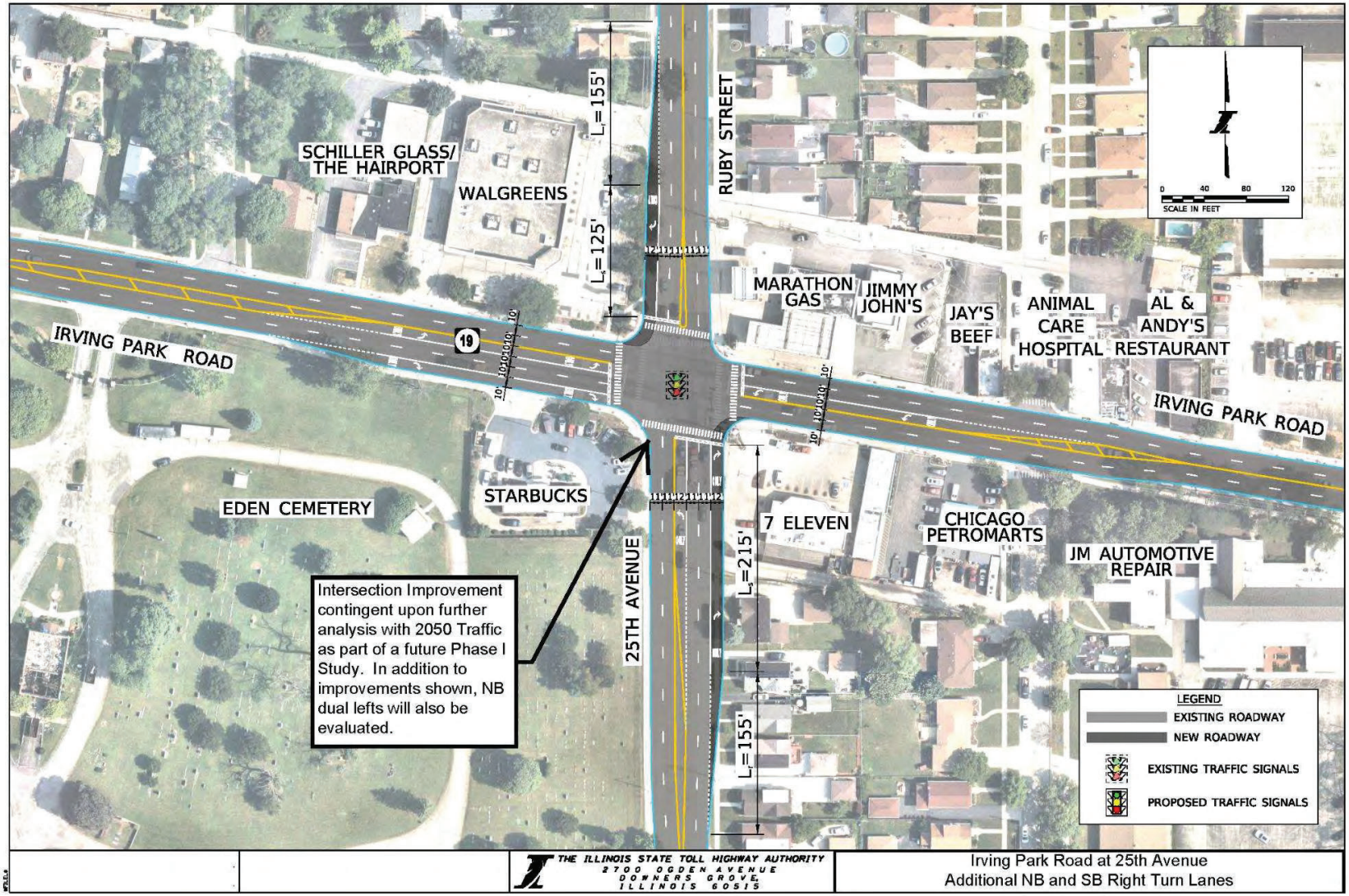


TABLE OF CONTENTS

I. INTRODUCTION

This report presents the results of the Feasibility Study concerning potential I-294 (Central Tri-State, CTS) access improvements in the vicinity of Irving Park Road (IL 19). The Feasibility Study objective is to evaluate and compare potential interchange concepts with respect to the ability to provide improved access to the area, and the resulting effects on area travel demand and traffic flow, to determine if there is a viable alternative(s) for which further project development beyond the Feasibility Study can be pursued.

Based on the planned improvements along this section of the CTS, the O'Hare Oasis Pavilion over the CTS south of Irving Park Road has been removed. Although additional CTS access to/from the south at Irving Park Road has been contemplated in the past, removal of the O'Hare Oasis Pavilion prompted discussions between the Illinois Tollway (Tollway) and the Village of Schiller Park about potential opportunities to provide additional CTS access to/from the south at or near Irving Park Road for nearby industrial, commercial and residential areas, and opportunities for development and/or redevelopment within the O'Hare Oasis site and adjacent areas along the Mannheim Road (US 12/45) corridor. Currently, the nearest CTS access to/from the south occurs at Balmoral Avenue, 1.5 miles north of Irving Park Road, and at North Avenue, 4.5 miles south of Irving Park Road.

The study area extends along the CTS from Toll Plaza 33 on the North to the Canadian Pacific Bensenville Yard Bridge on the south. The core of the study area is predominantly located within the Village of Schiller Park, in Cook County IL., but also includes areas of the Village of Franklin Park and the City of Chicago (adjacent to O'Hare Airport) as shown in **Figure 4**. Other key stakeholders include the Illinois Department of Transportation (IDOT) who has jurisdiction over several potentially affected arterial roadways in the study area, including Irving Park Road, Mannheim Road (US 12/45), Des Plaines River Road, and Lawrence Avenue. In addition, based on early study coordination, PACE and Cook County has also expressed a desire for improved CTS access to/from the south near Irving Park Road to service home to work trips near the O'Hare Airport area that they have identified as an underserved demand.

The planned I-490 improvements by the Tollway will provide additional CTS access to/from the south via Franklin Avenue with a planned extension to Irving Park Road near Taft Avenue. These planned I-490 improvements are assumed as in place as part of the detailed traffic projections that were developed for the study, which is discussed further in **Section IV**.

The Feasibility Study was completed through a basic four step process as shown in **Figure 5**. The Feasibility Study process was iterative with the objective to evaluate and compare interchange improvement concepts with respect to their ability to provide improved CTS access and the resulting effects on shifting travel demand and operations. Coordination occurred with key project stakeholders throughout the Feasibility Study process to seek input on the analysis results, which included the Tollway, the Village of Schiller Park, the Village of Franklin Park, and IDOT who has jurisdiction over multiple roadways in the study area. If a viable alternative(s) can be identified based on the completed analysis and coordination with the key stakeholders, further project development may proceed beyond the Feasibility Study.

Figure 4. Feasibility Study Location Map

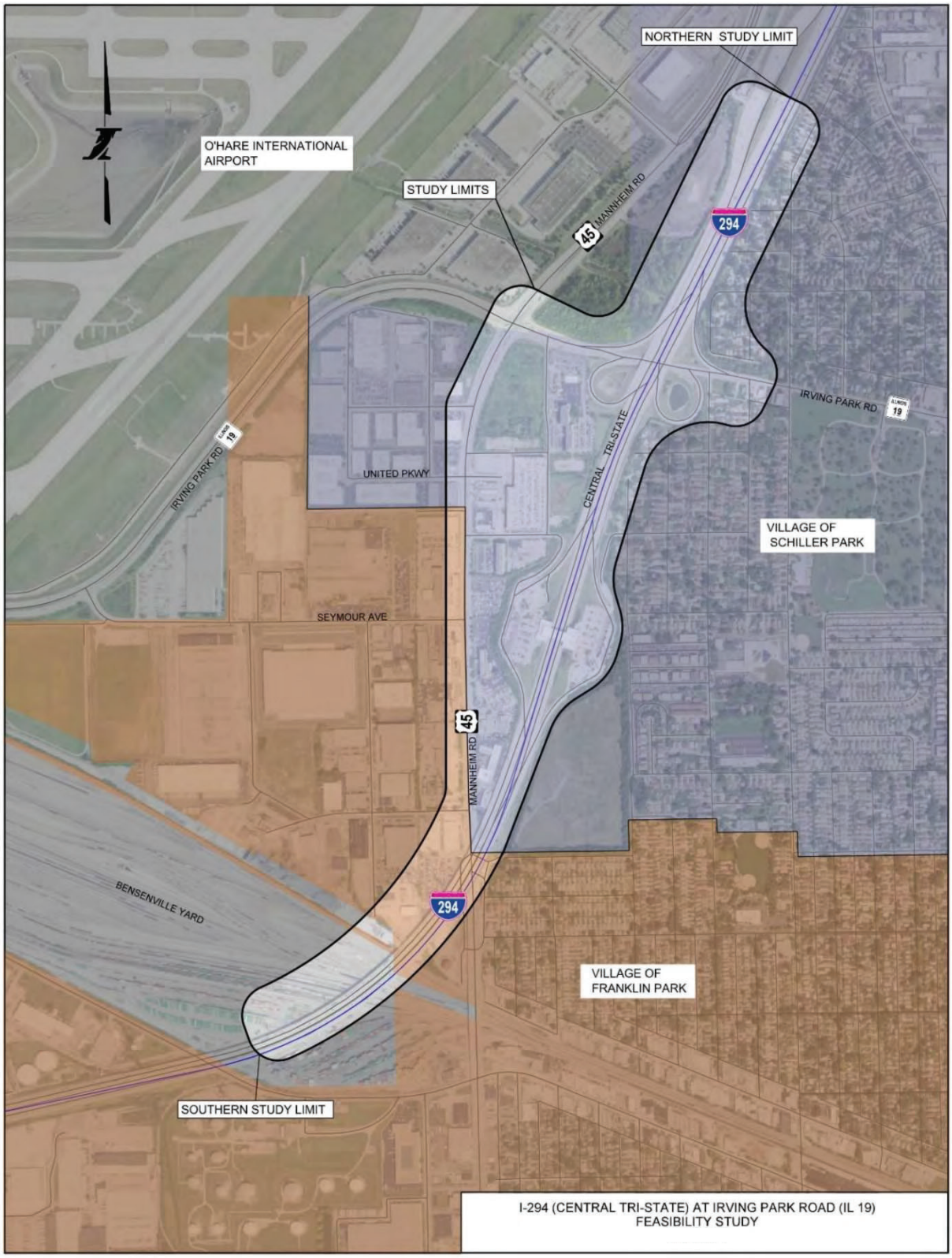
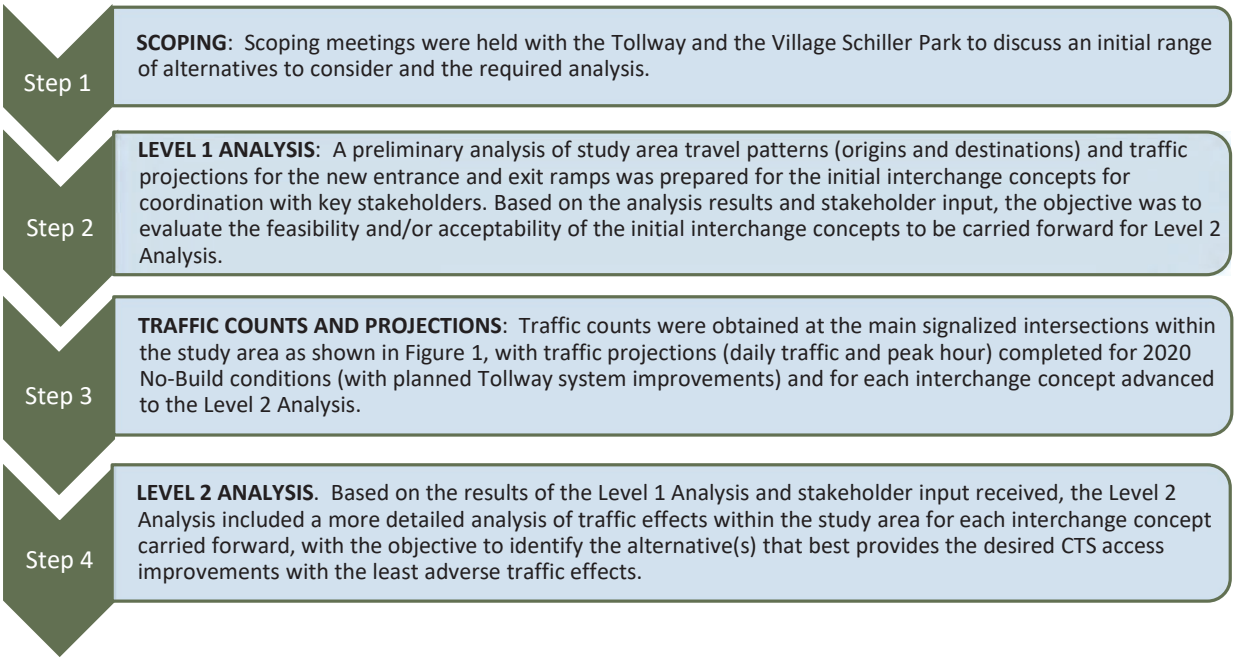


Figure 5. Feasibility Study Process



The Level 1 Analysis, Traffic Projections, and Level 2 Analysis were prepared as independent Technical Memoranda during the course of the Feasibility Study for ongoing review and coordination purposes. These individual documents are summarized in this report, but they are also available in the project files as separately bound documents.

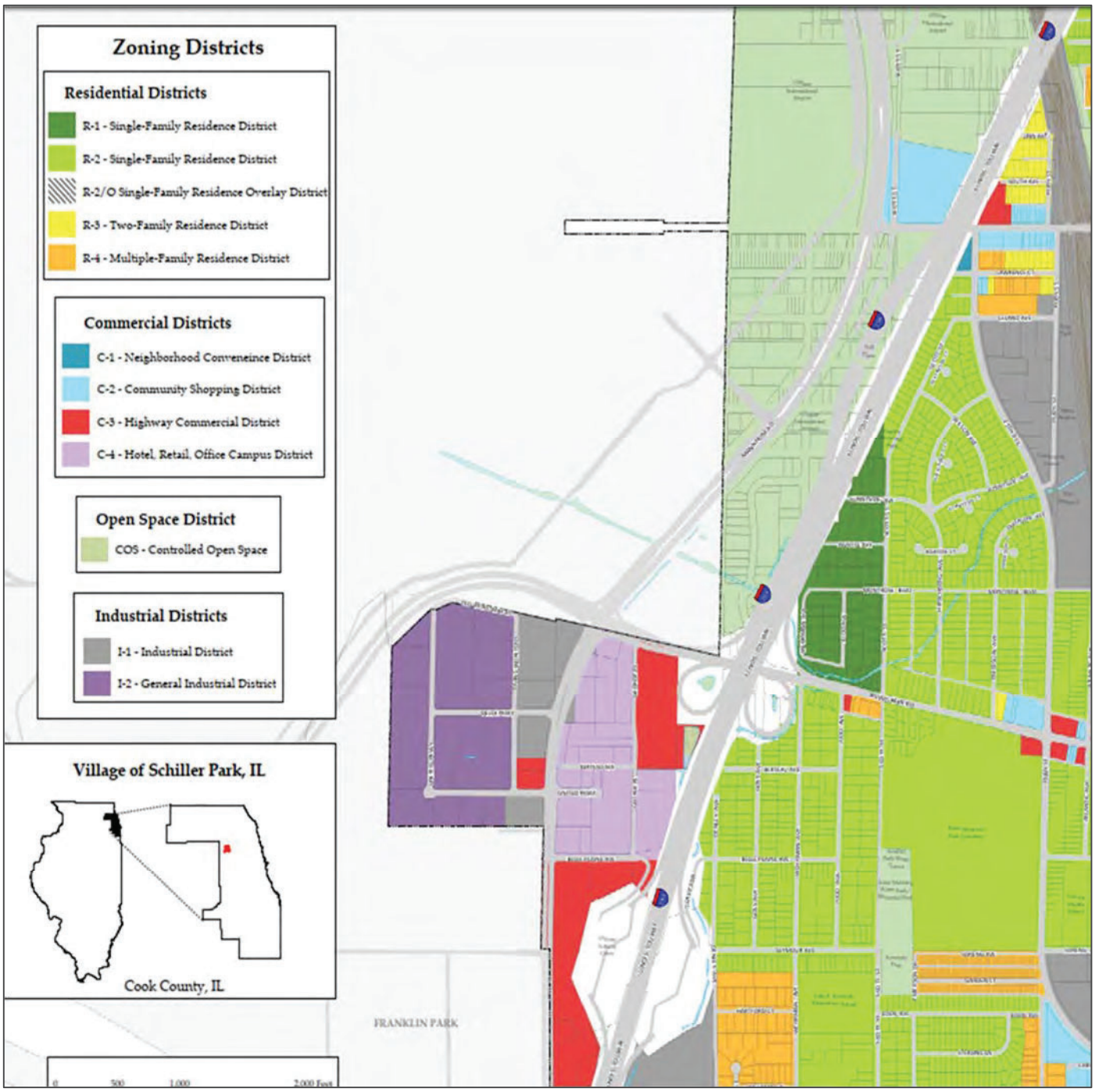
II. EXISTING CONDITIONS

The study area is unique with respect to the mixed industrial, commercial, and residential adjacent land use, and its location with respect to transportation resources and facilities, and environmental resources. Although the Feasibility Study was primarily focused on evaluating transportation performance measures, the following description of existing socio-economic and environmental conditions is provided for context. A detail analysis of socio-economic and environmental resources would be completed as part of a future Phase I Engineering Study.

A. Adjacent Land Use

The area surrounding the project study limits consists of various types of land uses. West of the CTS, land uses include: Highway commercial district (directly adjacent to the interstate), hotel/retail/office district and industrial districts along Mannheim Road. Land usage east of the CTS is predominantly comprised of residential district and some undeveloped land, zoned as industrial district. The Village of Schiller Park zoning map is shown in **Figure 6** with additional land use features shown in **Figure 7**.

Figure 6. Schiller Park Zoning Map



Some major features in the landscape are highlighted below:

- Hotels – The Sheraton O'Hare is located at the southwest corner of the existing Irving Park Road and the CTS. Other hotels and entertainment venues found between Belle Plaine Avenue and Waveland Avenue are Candlewood Suites, Hampton In, Quality Inn and Bella Sera Banquets.
- Airport parking - Several Parking structures and parking lots can be found in the vicinity of the study area. Directly southwest of the Sheraton O'Hare hotel is "Pre-Flight Airport Parking", a 4-level parking garage structure. South of Bell Plaine Avenue and east of Mannheim Road is two other lots "Park N Jet" Parking lot and "Routes Airport Parking".
- Car Rental Services and Undeveloped land - Several car rental companies operate along Mannheim road on the east and west. Undeveloped land can be found at the southeast corner of Mannheim Road and Irving Park Road and south east of O'Hare Oasis, which is zoned as "Hotel/Retail/Office Campus District" and "Industrial District" respectively. The area west of the CTS between Lawrence Ave and Irving Park is zoned as "Controlled Open Space" for clear view air side field.
- Residences – the area east of the CTS is zoned as Single-Family Residence District, therefore residences are predominantly seen from south of Lawrence Ave to O'Hare Oasis and east of I-294.

B. Environmental Setting

Figure 7 shows the overall environmental resources in the core study area which are further described below.

Forest Preserves

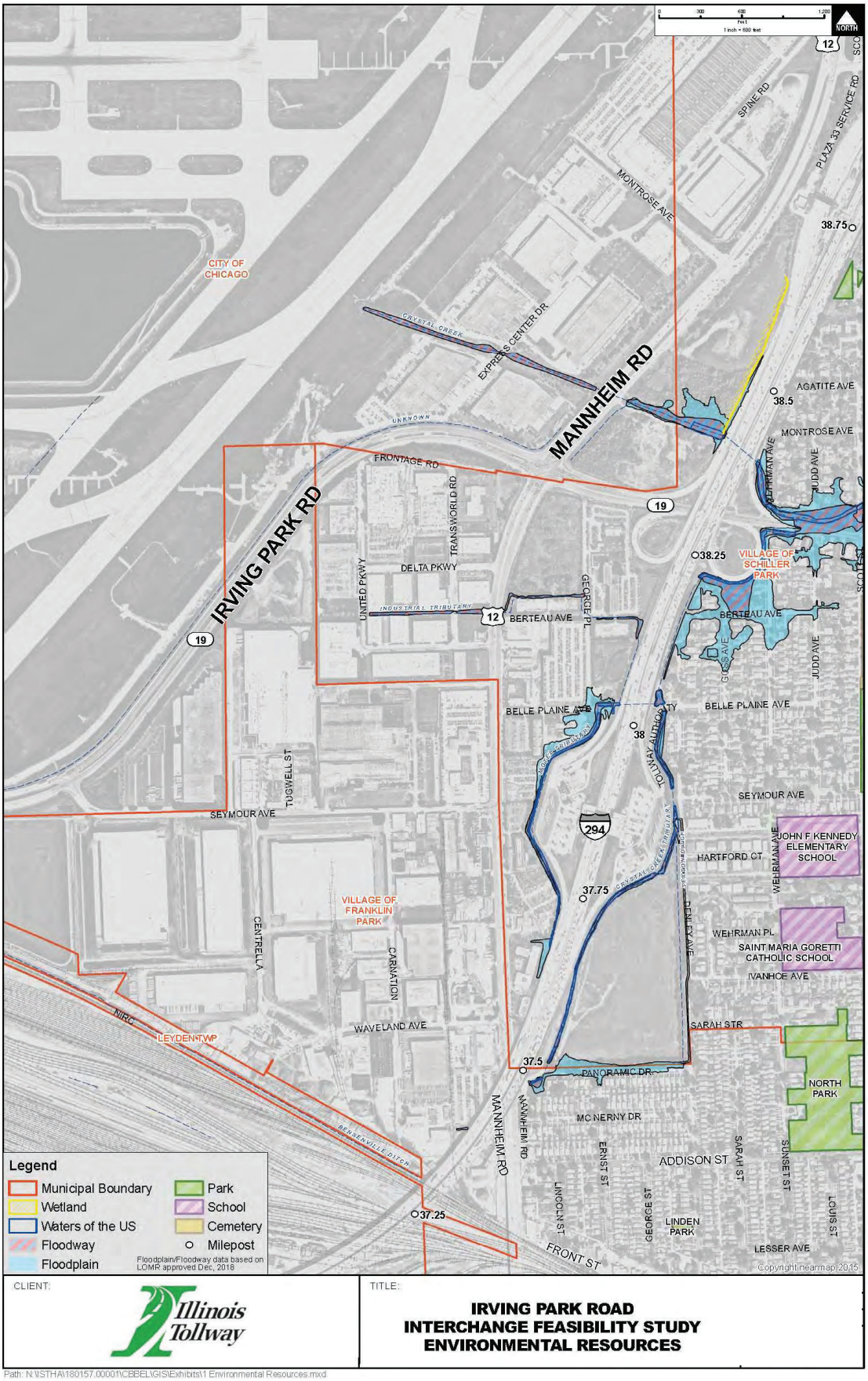
The eastern boundary of Schiller Park is shaped by the path of the Des Plaines River, starting on the north at Foster Avenue and moving south for roughly 2.2 miles. At Irving Park Road, the Village boundary extend beyond east of the river path to include the Schiller Woods West and South Forest Preserves, owned and maintained by the Forest Preserve District of Cook County.

Floodways and Floodplains

As shown in **Figure 7**, there are three different watersheds located in the Village of Schiller Park. These are, Silver Creek, Crystal Creek and Des Plaines River watershed. A substantial percentage of the Village's floodplain and floodway boundaries reside within the Crystal Creek Watershed which also includes parts of the City of Chicago, Village of Rosemont, Village of Franklin Park, the Village of Bensenville and unincorporated Cook County.

In a joint effort by the Illinois Department of Natural Resources and the Villages of Schiller Park and Franklin Park, an evaluation of the Crystal Creek Floodplain has been completed in order to reduce the existing footprint of the floodplain and floodway. The Federal Emergency Management Agency (FEMA) recently issued a letter of Map Revision (LOMR) for the Crystal Creek floodplain. The new map of the Crystal Creek Floodplain Boundary took effect on December 7th of 2018.

Figure 7. Study Area Environmental Resource



Wetlands/Waters of the US (WOUS)

As shown in **Figure 7**, although field delineations were not completed as part of the Feasibility Study, based on a review of available database information, there are several Wetlands/Waters of the US (WOUS) that are known to be present within the project area, within the Des Plaines River watershed. Two freshwater pond habitats are present directly adjacent to the CTS as shown. The first freshwater pond wetland is located at the south west corner of the Irving Park Road and the CTS interchange, south of the southbound exit loop ramp. The second freshwater pond wetland within the project vicinity is located east of the CTS, just south of the O'Hare Oasis. In addition, known WOUS resources within the project area include Crystal Creek, Motel Tributary, and the Crystal Creek Tributary. A detailed inventory of Wetlands/WOUS, including field delineations, will be completed as part of a future Phase I Study.

Special Waste

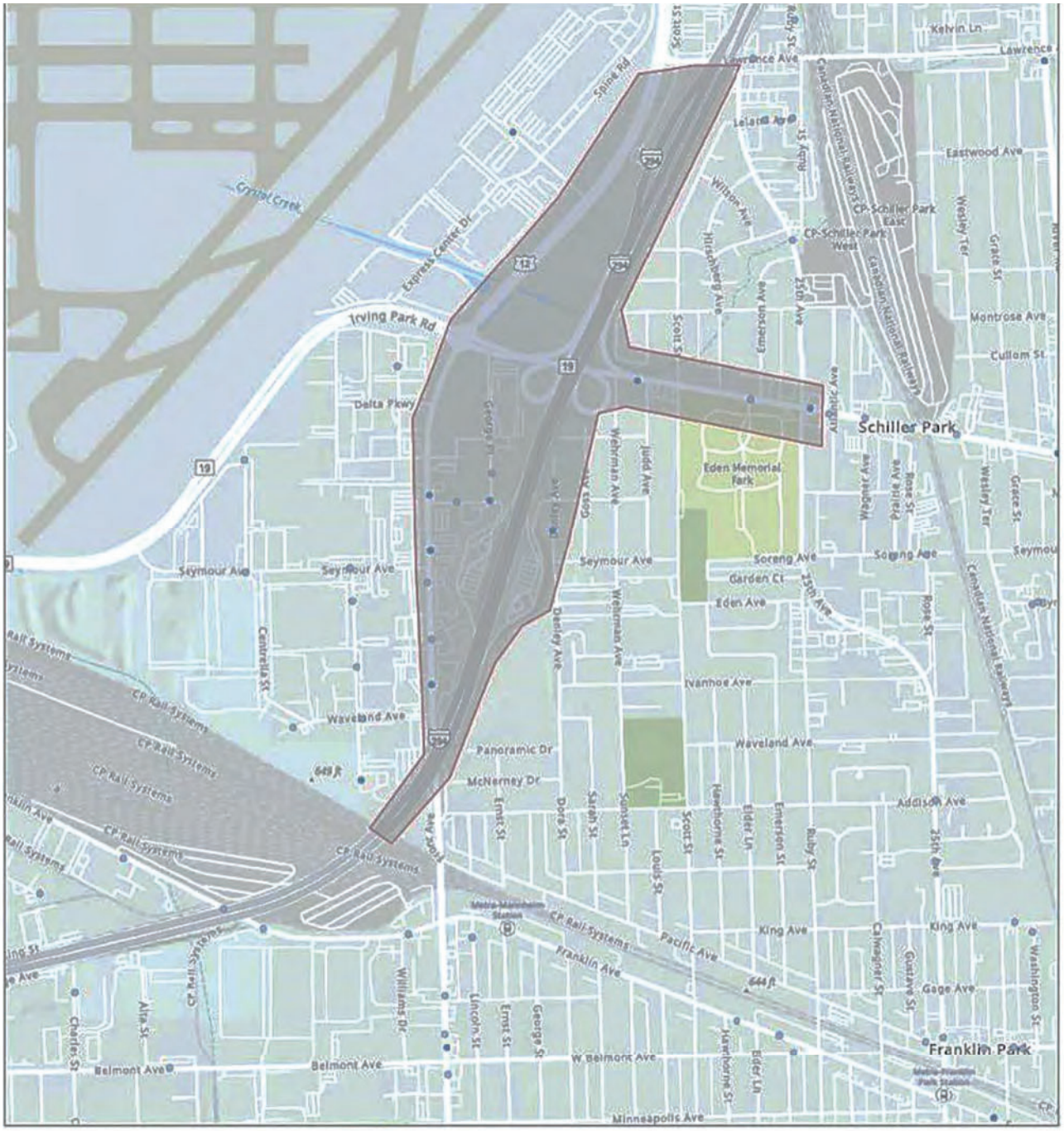
Due to the heavily industrialized zoning within the project location, special waste is a potential issue for future project implementation. An initial database search was completed for known underground storage tanks (USTs) in the study area, which is summarized in **Table 2**, and shown in **Figure 8**. Potentially impacted properties were identified as part of the CTS Phase I Environmental Site Assessment. Table 2 is considered an initial screening for purposes of the Feasibility Study. A full Environmental Site Assessment, including analysis of potential impacts and remedial measures will be required as part of a future Phase I Engineering Study.

Table 2. Known Underground Storage Tanks in the Study Area *

Mannheim Road	
Alamo Rent A Car - 3800 Mannheim Rd.	Airway Rent A Car Co. - 4025 Mannheim Rd.
Penske Truck Leasing Company – 3900 N Mannheim Rd.	Thrifty Car Rental -3901 Mannheim Rd.
Enterprise Rent- A-Car - 4025 Mannheim Rd.	O'Hare BP – 4111,4121,4131,4141, 4201, N Mannheim Rd.
Irving Park Road	
Edens Memorial Park - 9851 Irving Park Rd.	Marathon Car Care – Irving Park Road and 25th St, 9754 Irving Park Rd, Schiller Park, IL
Shell Gas Station – 10051 W Irving Park Rd.	
Denley Road	
O'Hare Oasis (East) – Tri State Tollway Northbound – 4050 Denley Rd.	Mobil Oil Corp A4G – 4050 Denley Rd.
Belle Plaine Avenue	
Celli Truck Center -10328 Belle Plaine Ave.-a	Northwest Mack Co -10328 Belle Plaine Ave.-b
Kazanova Cartage Co -10328 Belle Plaine Ave.-c	
George Place	
Northwest Cab Co – 4109 George Pl	**O'Hare Oasis (West)** – Tri State Tollway SB – Exxon Mobil Oil Corp. 4100 George Pl.

** Source: https://epa.maps.arcgis.com/apps/webappviewer/index.html*

Figure 8. Known Underground Storage Tanks in the Study Area



Public Lands (4f)/Resources

Kenney Park which is located north and south of Seymour Avenue at Scott Street includes the Anna Montana Water Park/Memorial Pool and is considered Section 4(f) by the FHWA. Additional 4(f) lands include North Park maintained within the Franklin Park, Park District. There are no historical sites in the immediate project vicinity.

C. Stormwater Management Setting

The Village of Schiller Park is currently a part of the Environmental Protection agency Municipal Separate Storm Sewer Systems (MS4) program. With a goal of reducing the amounts of pollutants found in stormwater run-off, the Village through a series of operations, educates, tracks and reports illicit discharges and runoff to the Illinois Environmental Protection Agency (IEPA).

Within the project vicinity, there are both closed drainage systems and open ditch drainage sections. The closed drainage systems are predominantly found within the commercial, residential and industrial districts surrounding the CTS, including the O'Hare Oasis. Open ditch sections are found along the CTS on the east and the west. There are seven (7) outfalls within the Village of Schiller Park; all draining toward Crystal Creek. Four of these outfalls are close in proximity to the project location. See **Figure 9** for a summary of the Village's outfalls.

In addition, there are eight bridges or culverts in the study area that carry the CTS over roadways or water features. SN 016-2681 and SN 016-9785 carry the CTS over the Bensenville Yard in Franklin Park while SN 016-2744 carries the expressway over the Sister stream. SN 016-9783 and SN 016-9782 are structures that enable crossing of Irving Park Road. Slightly further north, SN 016-2745 provides grade separation between the Tollway and Crystal Creek. Finally, SN 016-9781 and SN 016-9780 cross Lawrence avenue.

D. Transportation Setting

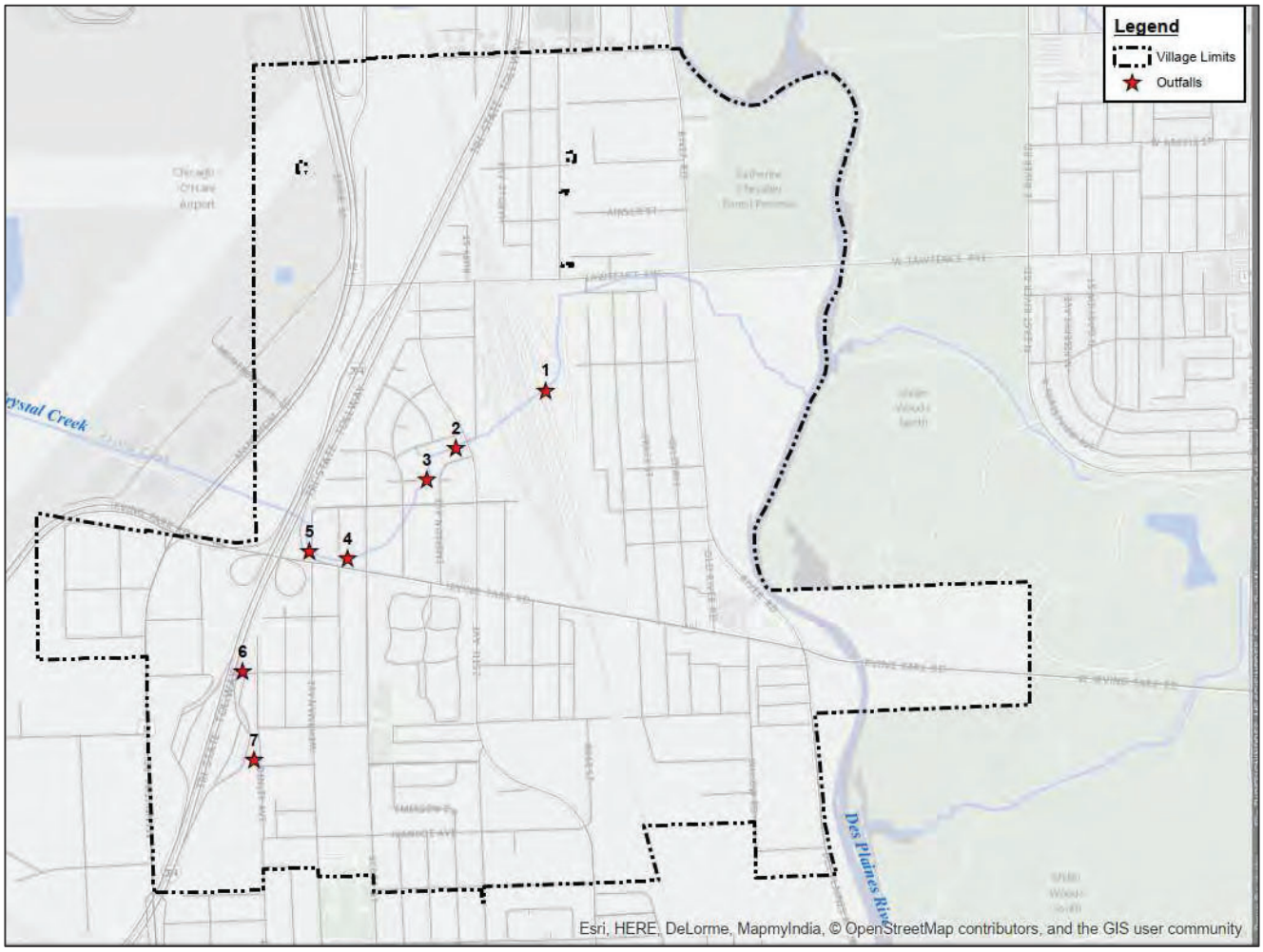
The following captures existing roadway characteristics of major roadways within project study area:

Central Tri-State Tollway

Starting at the Bensenville yard and moving north along the project corridor, the existing CTS is four lanes in each direction with a center median barrier and outside shoulders. Construction is ongoing to widen this section of the CTS to five lanes in each direction. The CTS is grade separated over Mannheim Road and Irving Park Road. The O'Hare Oasis is located just south of Irving Park Road. As part of ongoing CTS construction and widening, the O'Hare Oasis pavilion over the CTS was removed in 2019, however, the existing O'Hare Oasis fuel stations and mini marts remain for northbound and southbound traffic.

The existing CTS at Irving Park Road interchange is a partial cloverleaf interchange which allows southbound traffic to exit to eastbound and westbound Irving Park Road. Eastbound and westbound traffic on Irving Park Road can go northbound on the CTS. However, there is no movement permitted for northbound CTS to exit either eastbound or westbound at Irving Park Road, or for eastbound and westbound traffic on Irving Park Road to go southbound on the CTS. Posted speed limit along I-294 is 55 MPH with a minimum speed of 45 MPH.

Figure 9. Stormwater Outfall Location Map



Noise walls can be found along the east side of the CTS northbound Lanes, within the study area at the following locations:

- Between Mannheim road underpass and O'Hare Oasis exit ramp.
- From O'Hare Oasis entrance ramp to Irving Park Road northbound loop entrance ramp.

Between Irving Park Road northbound entrance ramp to Lawrence Avenue underpass.

<u>Mannheim Road West 12/North 45 (From CTS overpass to Montrose Avenue)</u>

IDOT recently completed widening and reconstruction of Mannheim Road from Irving Park Rd to Higgins Rd. It added capacity in each direction, making it a 3-lane roadway with turn lanes at intersections. With this improvement IDOT extended uniform section of 3-lanes of Mannheim Rd all the way to Higgins Rd on the north. Mannheim Rd has urban section with curb and gutter on both sides of the roadway. Existing posted speed limit north of Irving Park Rd is 50 mph and south of Irving Park is 40 mph. Median type within the study area varies from grass median to raised median

to painted median. Sidewalk located along east side of Mannheim Road from southern project limit terminates at United Parkway, there is no sidewalk north of United Parkway.

There are five locations where Mannheim Rd is signalized within study area, below are the locations:

- Mannheim Road at Waveland Avenue
- Mannheim Road at Seymour Drive
- Mannheim Road at United Parkway
- Mannheim Road at Irving Park Road
- Mannheim Road at Montrose Ave

Irving Park Road (From Seymour Avenue to Ruby St/25th Ave)

Irving Park Rd is a state road in east-west direction, portion of the road is within the municipality of Schiller Park, and some portion of it falls under Village of Franklin Park. The study limits along Irving Park from Seymour Ave on the west to Ruby St/25th Ave on the east for a total of 1.5 miles. Irving Park Road has two travel lanes on each direction, west of Mannheim Rd, it has rural section setup with shoulders on inside and outside, grass median and posted speed limit of 55 mph for westbound lanes. East of Mannheim Rd, it has urban setup with curb and gutter and raised median up to Judd Avenue. East of Judd Avenue median changes from raised to painted. Auxiliary lane is added along both directions underneath the CTS Bridge. There are four locations where Mannheim Rd is signalized within study area, below are the locations:

- Irving Park Road at Seymour Avenue
- Irving Park Road at Mannheim Road
- Irving Park Road at Judd Avenue
- Irving Park Road at Ruby St/25th Ave

Seymour Avenue (From Irving Park Road to Mannheim Road)

Seymour Avenue is local road falls under jurisdiction of Village of Franklin Park. It is short segment 3000' long connecting Irving Park Road and Mannheim Road. Roadway has urban setup with curb and gutter on both sides of the roadway. Seymour Avenue is 2 lanes in each direction, however, moving eastward, the roadway transitions from two travel lane to one travel lane in each direction. Roadway is signalized at west and east terminal and has All-Way Stop sign at the intersection of Centrella Street.

Public Transportation

There are several PACE Bus routes in the immediate vicinity of the project study area. These include Route 895 (95th Street – Rosemont -Schaumburg Express), a nonstop express service via the CTS from 95th Street on the south to Balmoral Avenue on the north.

Route 332 (River Road – York Road) travels along Irving Park Road west of the CTS and turning on Seymour Avenue and Mannheim Road on its way to and from the Rosemont CTA Station. The Route has the following minor stops within the project corridor. Seymour Avenue at Melrose Avenue, Seymour Avenue at Tugwell Street and Seymour Avenue at Carnation Street. Along Mannheim road,

it makes stops at Seymour Avenue, Belle Plaine Avenue, United Parkway and Montrose Avenue. Route 330 (Mannheim Road – LaGrange Roads) operates along Mannheim Road from Historic U.S. 66 on the south to W. Zemke Blvd on the north. Specifically, within the project corridor, minor stops are made at the intersections of Mannheim Road and Waveland Avenue, Seymour Avenue, United Parkway and Montrose Avenue. Additional routes operating in the Village of Schiller Park include Route 326 (West Irving Park) and Route 303 (Forest Park – Rosemont).

III. LEVEL 1 ANALYSIS

The traffic analysis approach for the Feasibility Study includes a stepped process with Level 1 including an initial evaluation of travel demand patterns (origins and destinations) and traffic projections for the new entrance and exit ramps included with the various interchange concepts. This information, in addition to other input from project stakeholders, was used to evaluate the feasibility and/or acceptability of the initial interchange concepts and to determine if they should be carried forward for further traffic analysis in Level 2. For the interchange concepts carried forward, the Level 2 Analysis included intersection capacity analysis using Synchro, for a.m. and p.m. peak hours, for the signalized intersections shown in **Figure 1** as further discussed in **Section V**.

Interchange Concepts Considered

The Level 1 Analysis included an initial high-level evaluation of interchange concepts for coordination with project stakeholders and to get their early input. The Level 1 Analysis included eight (8) initial interchange concepts, including initial concepts prepared by the Tollway's Design Corridor Manager (DCM) prior to initiation of the Feasibility Study with additional and/or modified concepts identified as part of the upfront project scoping activities. The Level 1 Interchange Concepts 1, 2, 3A, 3B, 4A, 4B, 4C, and 4D are described below and shown in **Appendix A**.

- Concept 1: Includes reconstructing existing Irving Park Road interchange to provide all northbound access at Irving Park Road and all southbound access via connection to the Mannheim Road/Seymour Avenue signalized intersection.
- Concept 2: Similar to Concept 1 with all southbound access via connection to the Mannheim Road/United Parkway signalized intersection.
- Concept 3A: Reconstruct existing Irving Park Road interchange to provide all movements to/from north and south along the CTS via a single point interchange design. This concept also depicts likely improvement needs along Irving Park Road based on preliminary traffic projections.
- Concept 3B: Modification of Concept 3A to provide all movements at Irving Park Road via a tight diamond interchange design, with maximum retained functionality and development potential within the northbound and southbound oasis areas. This concept also depicts likely modified improvement needs along Irving Park Road based on preliminary traffic projections.
- Concept 4A: Maintains existing Irving Park Road interchange and provides new CTS access to/from the south via connection to the Mannheim Road/Seymour Avenue signalized intersection with a sweeping flyover ramp for the northbound exit to maintain functionality of the northbound oasis area. A southbound exit to Mannheim Road is also provided to

relieve the existing weaving and queuing along Irving Park Road caused by the southbound exit to westbound Irving Park Road ramp.

- Concept 4B: Modification of Concept 4A to provide a more direct northbound exit ramp away for the residential area to the east, that also maintains functionality of the northbound oasis area.
- Concept 4C: Further modification of Concept 4B that would allow northbound exit to the northbound oasis and then cross access to Mannheim Road. This concept also demonstrates how truck parking would be provided and further shows the likely improvement needs that would be required along Mannheim Road based on preliminary traffic projections.
- Concept 4D: Further modification of Concept 4C that includes removal of the existing southbound CTS to westbound Irving Park Road ramp (based on the known operational issues it causes) and replaces that movement with a new southbound exit to the Mannheim Road/Montrose Avenue signalized intersection thru the existing Toll Plaza 33. This concept also includes providing an additional southbound entrance to the CTS via the Mannheim/Montrose intersection.

The Level 1 interchange concepts were developed to provide desired access improvements and were comparatively evaluated with respect to anticipated traffic benefits, traffic impacts (rerouting effect), likely improvements needed to existing infrastructure, potential property impacts, and stakeholder input.

Preliminary Traffic Projections

The Level 1 traffic analysis included an initial high-level evaluation of travel demand patterns (origins and destinations) and traffic projections for the new entrance and exit ramps included with the initial interchange concepts. The results of the Level 1 Analysis, and the input provided by project stakeholders, were used to evaluate the feasibility and/or acceptability of the initial interchange concepts and to determine if they should be carried forward into the Level 2 Analysis.

For the Level 1 analysis, the traffic projections were prepared by the Tollway's traffic consultant (CDM Smith) and took into consideration the effects of tolling on the new ramps being considered and for the overall tollway system. For purposes of this Feasibility Study, and to be compatible with collected traffic counts, the Tollway traffic projections are based on the year 2020. However, to factor in the regional effects of other planned Tollway system improvements, the year 2020 projections include completion of the IL 390 extension and I-490 including planned Taft Avenue access. The effect of these improvements will be to reduce the ramp traffic volumes that have origins and destinations to and from the west, as well as potentially reducing other background traffic volumes on the roadway network in the study area. Although the I-490 improvements will not actually be in place by the year 2020, this analysis provides the best projection of the future ramp volumes for the interchange concept being considered based on these planned, programmed, and reasonably foreseeable improvements. This scenario is referred to as the 2020 N0-Build scenario, which is the baseline condition for comparison of the effect of the interchange concepts.

Traffic projections were prepared for three base interchange concepts as follows:

- New CTS ramps to/from south at Irving Park Road

- New CTS ramps to/from south connecting to the existing signalized intersection at Mannheim Road/Seymour Road
- New CTS southbound ramps connecting to the existing signalized intersection at Mannheim Road/Montrose Avenue

Level 1 Analysis Approach

The first level in the analysis of projected new ramp volumes was an evaluation of origins and destinations associated with the new ramps. The direction of travel to and from the new ramps is important for evaluating likely traffic volume increases on the adjacent roadway network due to the new ramps. **Exhibit B-1** and **Exhibit B-2 (Appendix B)** shows an example of the analysis results for the Irving Park Road base interchange concept. The same analysis was completed for the other base interchange concepts as well. As shown on **Exhibit B-1**, the analysis demonstrates that most of the traffic using the new ramps will have origins and destinations east of the CTS corridor along Lawrence Avenue and Irving Park Road, as well as Mannheim Road. **Exhibit B-3** shows the effects of this base interchange concept on other access points along the CTS, in both daily ramp volumes and 2-hour ramp volumes (divide by 2 for peak hour). These exhibits demonstrate that a majority of the traffic using the new ramps for this base interchange concept is not new Tollway traffic. For this base interchange concept, Irving Park Road would experience an increase in traffic, whereas the adjacent CTS interchanges at Balmoral Avenue and I-490 would see traffic reductions.

The principle conclusion is that new ramps with an Irving Park Road base interchange concept will cause a general shift in travel patterns near the CTS and within a larger area east of the CTS. For this base interchange concept, traffic volumes will increase along Irving Park Road and Lawrence Avenue, whereas traffic volumes will decrease on Des Plaines River Road due to reduced demand at the Balmoral Avenue interchange. The results of this analysis are what led to the proposed Level 2 Traffic Study Area shown on **Figure 1**. For the interchange concepts carried forward to Level 2 analysis, each intersection shown in **Figure 1** will be analyzed for existing conditions and 2020 Build conditions to show the positive or negative effect on intersection performance and to identify potential improvement needs, which is further discussed in **Section V**.

The next step in the Level 1 analysis was to determine the projected ramp traffic volumes for the base interchange concepts and the distribution of this traffic on the roadway network in the study area. **Exhibits B-4** thru **B-7** shows the percentage distribution, the projected 2020 Build peak hour traffic volumes and the total daily traffic volumes associated with each base interchange concept.

It is important to note that **Exhibits B-4** thru **B-7** only show the traffic volumes and origins/destinations associated with the ramps, as additive volumes, and does not show the associated reductions in other volumes or movements, which will be identified and evaluated in the Level 2 analysis. For example, **Exhibit B-7** shows the ramp traffic associated with hybrid Interchange Concept 4D, as additional traffic. Although the compatibility of this concept with Plaza 33 may require further evaluation, the objective of this hybrid concept is to test the effects of eliminating the southbound CTS exit to westbound Irving Park and relocating that movement to the Mannheim Road/Montrose Avenue intersection. This concept would eliminate the operational and safety issues associated with the heavy weave condition on the westbound approach to the Mannheim Road/Irving Park Road intersection and would also result in a considerable reduction in the

westbound left turns at this intersection, with the majority of that traffic being converted to southbound thru movements.

Level 1 Analysis Results

Table 3 summarizes the Level 1 Analysis results with respect to relative advantages and disadvantages and overall feasibility and/or acceptability of each interchange concept. The factors considered included anticipated traffic benefits, traffic impacts (added travel demand, rerouting effect), likely improvements needed to existing infrastructure, and resulting potential property impacts. The preliminary conclusions reached on whether the interchange concept is favored to be carried forward to the Level 2 Analysis, and why, are also stated.

Table 3. Results of the Level 1 Analysis

Interchange Concept	Advantages	Disadvantages	Level 1 Analysis Conclusion
Concept 1	• NB access to Irving Park Road • Remove SB exit to WB Irving Park • NB Oasis redevelopment maximized • Removal of loop ramps provides detention areas	• Likely impacts Bensenville Bridge • Reconstruction of Irving Park Road and CTS Bridge due to elimination of loop ramps and widening required for EB left to NB CTS • SB access to WB and EB Irving Park Road concentrate at Mannheim/Seymour intersection and more circuitous • NB Oasis requires difficult truck turn around for exiting Oasis • No direct NB access to Mannheim Road • Likely residential impacts in SE quadrant at Irving Park	**Not Carried Forward** based on: • Potential residential impacts • Reconstruction of CTS bridge and Irving Park • No direct access to Mannheim Road from NB CTS
Concept 2	• Same as Concept 1, plus: • SB Oasis redevelopment maximized.	• Reconstruction of Irving Park Road and CTS Bridge due to widening required for EB left to NB CTS • SB access to WB and EB Irving Park Road concentrate at Mannheim/United Way intersection and more circuitous • NB and SB Oasis requires difficult truck turn around for exiting Oasis • Likely residential impacts in SE quadrant at Irving Park • No direct NB access to Mannheim Road • Connection to United Parkway would impact existing multi-story parking garage	**Not Carried Forward** based on: • Potential residential impacts • Reconstruction of CTS bridge and Irving Park • No direct access to Mannheim Road from NB CTS • Connection at United Parkway not desirable
Concept 3A	• NB access to Irving Park Road • NB and SB Oasis redevelopment maximized • Removal of loop ramps provides detention areas • Minimizes traffic impacts to Mannheim Road	• Highest comparative traffic impacts to Irving Park Road • Greatest comparable reconstruction of Irving Park Road and CTS Bridge due to widening required for EB and WB left turns at SPUI interchange • NB and SB Oasis requires difficult truck turn around for exiting Oasis	**Not Carried Forward** based on: • Highest traffic impact to Irving Park Road with retention of the SB exit to WB Irving Park

Table 3. Results of the Level 1 Analysis

Interchange Concept	Advantages	Disadvantages	Level 1 Analysis Conclusion
	• Provides new pedestrian access through I-294 with new I-294 bridge over Irving Park Road	• Likely residential impacts in SE quadrant at Irving Park • Likely impacts to Bensenville Bridge • No direct NB access to Mannheim Road	• No direct access to Mannheim Road from NB CTS. • Likely residential impacts • Greater degree of Reconstruction of CTS bridge due to SPUI structure
Concept 3B	• Provides full access to/from the north and south at Irving Park Road • NB and SB Oasis redevelopment maximized with difficult truck turn arounds eliminated. • Minimizes traffic impacts to Mannheim Road • Provides new pedestrian access through I-294 with new I-294 bridge over Irving Park Road • Loop ramp areas available for Storm Water Management	• Highest comparative traffic impacts to Irving Park Road • Reconstruction of Irving Park Road and CTS Bridge due to widening required for EB and WB left turns at diamond interchange • Complex braiding of ramps between Irving Park and Oasis • Likely residential impacts in SE quadrant at Irving Park • Likely requires widening along the Bensenville Yard Bridge in SB direction • No direct NB access to Mannheim Road	**Not Carried Forward** based on: • Highest traffic impact to Irving Park Road with retention of the SB exit to WB Irving Park • No direct access to Mannheim Road from NB CTS. • Likely residential impacts • Greater degree of Reconstruction of CTS bridge due to diamond interchange configuration
Concept 4A	• Avoidance of residential property impacts • No impact to the Irving Park Road interchange including the I-294 bridge over Irving Park Road • Provides direct access to Mannheim Road • Comparatively less traffic impacts along Irving Park Road	• High flyover NB exit ramp next to residential area • Minimizes redevelopment potential in the SB Oasis due to ramps • Likely impacts to Bensenville Bridge • Heavy SB exit volume destined for SB Mannheim Road, passing thru truck fueling station to bypass Irving Park intersection • Would not allow NB stop at Oasis and then crossover to Mannheim • Highest comparative traffic impacts to Mannheim Road would require improvements (not shown) • Traffic impacts at Mannheim/Irving intersection with little ability for geometric improvements	**Not Carried Forward** based on: • High flyover NB exit ramp next to residential area • Impacts to Bensenville Bridge • Heavy SB exit volume destined for SB Mannheim Road, passing thru truck fueling station to bypass Irving Park intersection • Would not allow NB stop at Oasis and then crossover to Mannheim
Concept 4B	• Avoidance of residential property impacts • No impact to the Irving Park Road interchange including the I-294 bridge over Irving Park Road	• Minimizes redevelopment potential in the SB Oasis due to ramps • Potential Impacts to Bensenville Bridge • Heavy SB exit volume destined for SB Mannheim Road passing thru truck	**Not Carried Forward** based on: • Impacts to Bensenville Bridge • Heavy SB exit volume destined for SB

Table 3. Results of the Level 1 Analysis

Interchange Concept	Advantages	Disadvantages	Level 1 Analysis Conclusion
	• Provides direct access to Mannheim Road • Comparatively less traffic impacts along Irving Park Road, although still notable traffic increases	fueling station to bypass Irving Park intersection • Would not allow NB stop at Oasis and then crossover to Mannheim • Highest comparative traffic impacts to Mannheim Road would require improvements (not shown) • Traffic impacts at Mannheim/Irving intersection with little ability for geometric improvements	Mannheim Road passing thru truck fueling station to bypass Irving Park intersection • Would not allow NB stop at Oasis and then crossover to Mannheim
Concept 4C	• Avoidance of residential property impacts • No impact to the Irving Park Road interchange including the I-294 bridge over Irving Park Road • Provides direct access to Mannheim Road • Comparatively less traffic impacts along Irving Park Road, although still notable traffic increases • Redevelopment potential within mainly NB Oasis area	• Minimizes redevelopment potential in the SB Oasis due to ramps • Highest comparative traffic impacts to Mannheim Road would require improvements (shown with limits TBD) • Traffic impacts at Mannheim/Irving intersection with little ability for geometric improvements	**Carry Forward** for Level 2 analysis based on: • Direct access to/from Mannheim Road and the industrial area • Redevelopment potential within mainly NB Oasis area • NB exit ramp is not adjacent to residential area • Less traffic impact to Irving Park Road than Concept 3A or 3B
Concept 4D	• Avoidance of residential property impacts • Eliminates SB exit to WB Irving Park and associated operational issues with existing WB weave • Reduces WB to SB left turn at Mannheim Road by providing SB entrance at Seymour and Montrose • Balances travel demand on Lawrence and Irving Park with much less traffic impact to Irving Park Road than Concept 3A or 3B • Direct NB access to Mannheim Road and the industrial area • Redevelopment potential within mainly NB Oasis area	• Minimizes redevelopment potential in the SB Oasis due to ramps • Mannheim Road would require improvements at both Seymour and Montrose (shown with limits TBD). • Requires further review by Tollway for feasibility of SB exit thru Plaza 33	**Carry Forward** for Level 2 analysis based on: • Eliminates SB exit to WB Irving Park and existing weave • Reduces WB to SB left turn at Mannheim Road • Balances travel demand on Lawrence and Irving Park with less traffic impact to Irving Park Road than Concept 3A or 3B • Direct NB access to Mannheim Road and the industrial area • Redevelopment potential within mainly NB Oasis area

As a result of the completed Level 1 Analysis, Interchange Concepts 1, 2, 3A, 3B, 4A, and 4B were recommended to be dismissed from further consideration, largely due to the adverse effect to traffic operations along Irving Park Road and/or the extent of improvements required along Irving

Park Road and the CTS. Interchange Concepts 4C and 4D were recommended to be carried forward for more detailed evaluation as part of the Level 2 Analysis.

The results of the Level 1 analysis were summarized in the Level 1 Analysis Technical Memorandum (L1TM) which was discussed with the Village of Schiller Park, the Village of Franklin Park, and PACE in February 2019, and was the subject of the IDOT Workshop held on May 14, 2019. The focus of the discussion included an overview of each interchange concept, the relative advantages and disadvantages, and potential additional interchange concepts to be considered. Based on the stakeholder input received during this coordination, additional interchange concepts were identified for development and evaluation as part of the Level 2 Analysis as further discussed in **Section IV** and **Section V**. Summaries of these workshops and meetings are included in **Appendix H** for reference. In addition, IDOT provided formal comments to the Tollway via letter dated July 25, 2019. A formal response to the IDOT comments was provided on October 8, 2019. The IDOT comments, and the response to IDOT comments are also included in **Appendix H** for reference.

Based on the Level 1 Analysis results and stakeholder input, Interchange Concepts 4C and 4D were carried forward, and 10 addition interchange concepts or variations were also identified for further analysis. For each interchange concept carried forward, the Level 2 analysis will include completion of 2020 Build traffic projections as discussed in **Section IV**, for each of the 12 signalized intersections shown on **Figure 1**, and completion of AM and PM peak hour capacity analysis using Synchro for existing conditions as well as 2020 Build conditions, which will be used to identify intersection improvement needs that may be required.

IV. TRAFFIC PROJECTIONS

The 12 interchange concepts identified for Level 2 Analysis are shown in **Table 4**.

Table 4. Level 2 Analysis Interchange Concepts

Existing – Baseline Conditions

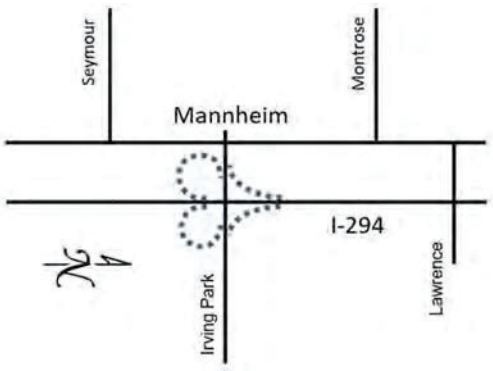
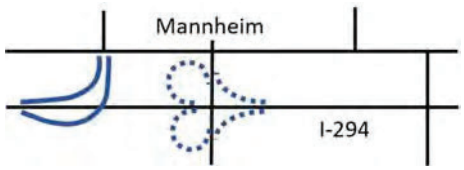
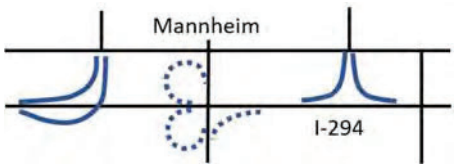
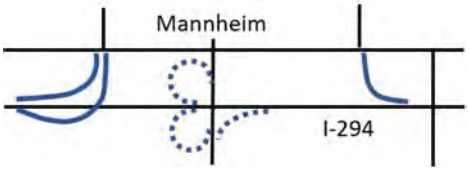
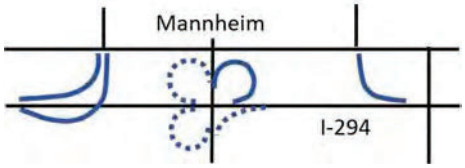
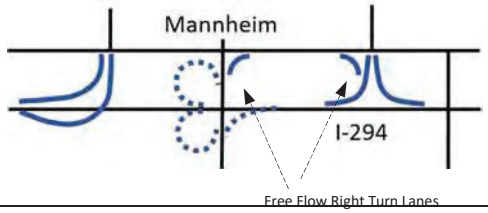
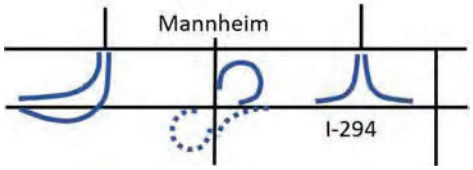
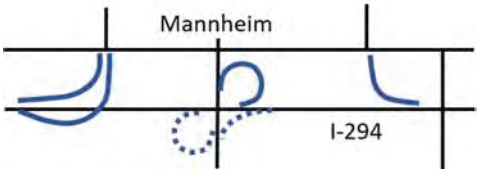
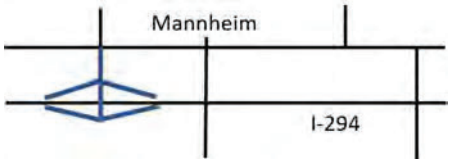
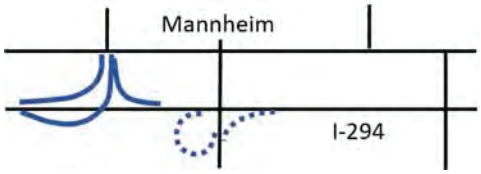
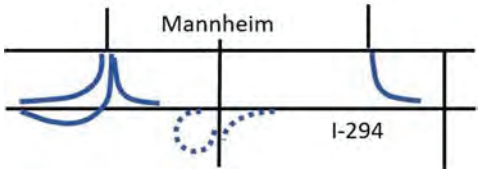
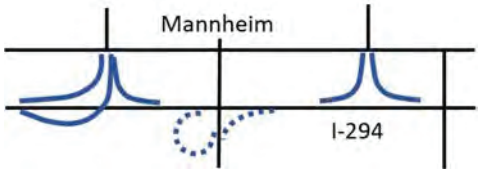
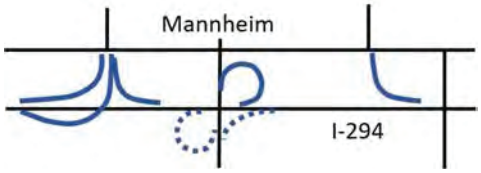


Table 4. Level 2 Analysis Interchange Concepts

Concept 4C 	Concept 4D 
Concept 4E 	Concept 4F 
Concept 4G 	Concept 4H 
Concept 4I 	Concept 5A 
Concept 5B 	Concept 5C 
Concept 5D 	Concept 5E 

The range of interchange concepts considered includes various ramp configurations that add and/or modify CTS access along Mannheim Road at Montrose Avenue, Irving Park Road and Seymour Avenue. The evaluation of these interchange concepts demonstrated the relative effects of the proposed access improvements at the 12 signalized intersections within the study area as shown in **Figure 1**.

For the Level 2 Analysis, traffic projections were prepared by the Tollway's traffic consultant (CDM Smith) and took into consideration the effects of tolling on the new ramps being considered and for the overall tollway system. This study was conducted using a refined version of the regional travel demand model that was developed for the CTS alternatives analysis for the purposes of planning and feasibility analysis.

Based on the primary objective to evaluate the relative traffic effects of the interchange concepts considered compared to existing conditions, and to be compatible with the newly completed traffic counts and other recent traffic data, the Tollway traffic projections are based on the year 2020. To factor in the regional effects of other planned Tollway system improvements, the year 2020 projections include completion of the IL 390 extension and I-490, including planned access to Irving Park Road near Taft Avenue. This scenario is referred to as the 2020 Build scenario. It is acknowledged that if an Interchange Concept is identified that has agency consensus to proceed into Phase I Engineering, year 2050 traffic projections would be required. However, the relative effect of the Interchange Concepts considered as compared to existing conditions would be similar for 2020 and 2050 traffic.

The first step was development of traffic projections and distributions for the following base ramp scenarios as shown in **Appendix C**:

- Existing southbound CTS exit ramp to westbound Irving Park Road. (**Exhibit C-1**)
- New CTS ramps to/from the south connecting to the existing signalized intersection at Mannheim Road/Seymour Avenue. (**Exhibit C-2** - southbound entrance ramp, **Exhibit C-3** northbound exit ramp)
- New CTS ramps to/from the south at Seymour Avenue with the existing southbound CTS exit ramp to westbound Irving Park Road relocated north to Mannheim Road/Montrose Avenue. (**Exhibit C-4** – relocated southbound exit ramp)
- New CTS ramp from the south connecting to Seymour Avenue, removal of the southbound to westbound exit at Irving Park Road, and a new southbound exit and southbound entrance at Montrose Avenue. (**Exhibit C-5** – southbound entrance ramp)

The results of the traffic modeling completed by CDM Smith included estimated daily ramp volumes and average weekday distribution to and from the ramps as shown in **Exhibits C-1 thru C-5**. Separate distribution results were also provided for the AM and PM peak periods, as shown in **Exhibits C-6 thru C-10**. For new ramps, the AM and PM peak hour ramp volumes were calculated as 8% of the projected daily volume provided based on review of the existing CTS ramps daily and hourly volumes, and through coordination with the Tollway. For existing ramps, the latest available AM and PM peak hour volumes from the Tollway's 2017 Traffic Data Report were used as shown in **Exhibits C-12 and C-13**, whether the ramp is remaining in place or proposed to be relocated depending on the Interchange Concept.

Because of the IL-390 and I-490 improvements included in the 2020 Build Scenario models, including access to Irving Park Road near Taft, the traffic modeling shows that most of the traffic utilizing the proposed ramps comes from the east and/or is rerouting from the Balmoral interchange. Estimated reductions in average daily traffic at the Balmoral Interchange resulting from new access to/from the south at Irving Park Road are shown in **Exhibit C-11**. (Effects would be similar as new access shifts from directly at Irving Park Road to Seymour Avenue and/or Montrose Avenue.) As part of the traffic analysis, the reduction in traffic (i.e. benefits) along Balmoral Avenue and River Road due to this rerouting of traffic from the Balmoral interchange was also evaluated.

To further understand how new CTS access effects travel patterns within or adjacent to the study area, CDM Smith also provided AM and PM select link analysis for existing conditions and the base ramp scenarios. **Exhibits C-14 thru C-24** include the select link analysis results for PM only. The objective with the select link analysis was a more detailed look at the effects for all 12 Interchange Concepts considered at the selected signalized intersections within the study area. The select link analysis results were only used to evaluate traffic distributions and to determine the percentage increase or decrease of traffic along a link. The select link volumes were not used.

For example, the select link analysis was utilized to estimate traffic shifts/effects along River Road at Balmoral, Lawrence and Irving Park Road for the various interchange concepts. **Exhibit C-14** shows the PM select link results for the existing northbound CTS exit ramp at Balmoral Avenue for 2020 No Build, and **Exhibit C-22** shows the select link results for the same ramp at Balmoral Avenue with the proposed new northbound exit ramp added at Seymour Avenue. A comparison of the two figures shows the relative effects/reductions along Balmoral Avenue and River Road within the broader study area. This percentage shift was applied to the traffic count data to determine "proposed condition" intersection traffic volumes.

For the 12 Level 2 interchange concepts considered, development of the peak hour traffic assignments for each intersection in the study area required interpretation of the above traffic projections, the distribution of traffic for the associated ramps, and factoring in the select link analysis. **Table 5** provides additional traffic assignment factors that were considered in developing the AM and PM peak hour volumes at each intersection.

Table 5. AM and PM Peak Hour Traffic Assignment Factors

Interchange Concept	Description	Traffic Assignment Factors
4C	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • Maintains existing ramps at Irving Park	• Based on CDM Smith peak hour distribution of traffic (**Exhibits C-7 and C-8**). • All traffic to/from nodal centroid at 25th/Lawrence would utilize Mannheim/Lawrence. • Traffic to/from nodal centroid at 25th/Irving was split between 25th and Irving Park. • A majority of traffic to/from nodal centroid at Irving/Mannheim would likely utilize Seymour to/from Irving Park, with a small portion utilizing Montrose. • Utilized CDM Smith select link analysis to assign traffic shifts along River Road. Estimated that 67% of the traffic reduction to/from CTS at Balmoral utilizes River Road. That reduction was split equally between Irving Park, Lawrence, and River Rd.

Table 5. AM and PM Peak Hour Traffic Assignment Factors

Interchange Concept	Description	Traffic Assignment Factors
4D	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • New SB Exit and SB Entrance Ramps at Montrose/Mannheim • Removes existing SB exit ramp to WB Irving Park	• Based on CDM Smith peak hour distribution of traffic with additional SB Entrance Ramp (**Exhibits C-9 and C-10**). • Per CDM Smith traffic distribution, providing ramps at Montrose attracts more traffic along Lawrence. • Traffic from Mannheim south of Irving Park Road would likely utilize ramps at Seymour, traffic along Lawrence would utilize ramps at Montrose, and traffic along Irving Park Road would split between Montrose and Seymour. • Based on CDM Smith modeling, traffic utilizing the existing SB to WB exit at Irving Park Road would relocate to SB Montrose exit, and travel SB along Mannheim. (**Exhibit C-6**) At the Mannheim/Irving Park intersection, WB to SB lefts would be reduced and the SB thru movement would be higher. • Utilized CDM Smith select link analysis to assign traffic shifts along River Road. Estimated that 67% of traffic reduction to/from CTS at Balmoral utilizes River Road. That reduction was split between Irving Park, Lawrence, and River Rd, with a larger shift coming from Lawrence.
4E	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • New SB Exit Ramp at Montrose/Mannheim • Removes existing SB exit ramp to WB Irving Park	• Traffic patterns utilizing ramps at Seymour would be the same as 4C. • Per CDM Smith traffic distribution, providing the SB exit ramp at Montrose increases EB traffic along Lawrence. • Per CDM Smith modeling, traffic utilizing the existing SB to WB exit at Irving Park Road would relocate to SB Montrose exit, and travel SB along Mannheim. (**Exhibit C-6**) At the Mannheim/Irving Park intersection, WB to SB lefts would be reduced and the SB thru movement would be higher. • Utilized CDM Smith select link analysis to assign traffic shifts along River Road. Estimated that 67% of traffic reduction to/from CTS at Balmoral utilizes River Road. That reduction was split equally between Irving Park, Lawrence, and River Rd.
4F	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • New SB Exit Ramp at Montrose/Mannheim • Replaces existing SB exit ramp to WB Irving Park with WB to SB loop entrance ramp	• Traffic patterns utilizing the SB exit ramp at Montrose would be the same as 4E. • Traffic patterns utilizing ramps at Seymour would be the same as 4E except for WB traffic along Irving Park noted below. – Traffic along WB Irving Park Road destined to SB 294 would utilize new loop entrance ramp and avoid Mannheim/Irving Park intersection and Seymour entrance ramp. • Traffic impacts along River Road would be the same as 4E.
4G	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • New SB Exit and SB Entrance Ramps at Montrose/Mannheim • Provides free flow right turn at WB Irving Park to NB Mannheim and NB Mannheim to SB Entrance Ramp • Removes existing SB exit ramp to WB Irving Park	• Traffic patterns would be the same as 4D.
4H	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • New SB Exit and SB Entrance Ramps at Montrose/Mannheim	• Traffic patterns utilizing ramps at Seymour would be the same as 4D except for WB traffic along Irving Park noted below. – Traffic along WB Irving Park Road destined to SB 294 would utilize new loop entrance ramp and avoid Mannheim/Irving Park intersection and Seymour entrance ramp.

Table 5. AM and PM Peak Hour Traffic Assignment Factors

Interchange Concept	Description	Traffic Assignment Factors
	• Replaces existing SB exit ramp to WB Irving Park with WB to SB loop entrance ramp • Removes existing SB exit to EB Irving Park loop ramp	• Traffic patterns utilizing the ramps at Montrose would be the same as 4D with additional traffic noted below. – Traffic utilizing the existing SB to EB exit at Irving Park Road would relocate to SB Montrose exit, and travel SB along Mannheim to Irving Park Road. At the Mannheim/Irving Park intersection, SB to EB lefts would increase dramatically. • Traffic impacts along River Road would be the same as 4D.
4I	• New NB Exit and SB Entrance Ramps at Seymour/Mannheim • New SB Exit Ramp at Montrose/Mannheim • Replaces existing SB exit ramp to WB Irving Park with WB to SB loop entrance ramp • Removes existing SB exit to EB Irving Park loop ramp	• Traffic patterns utilizing ramps at Seymour would be the same as 4F. • Traffic patterns utilizing the ramps at Montrose would be the same as 4F with additional traffic noted below. – Traffic utilizing the existing SB to EB exit at Irving Park Road would relocate to SB Montrose exit, and travel SB along Mannheim to Irving Park Road. At the Mannheim/Irving Park intersection, SB to EB lefts would increase dramatically. • Traffic impacts along River Road would be the same as 4E.
5A	• Eliminates all existing ramps at Irving Park Road • New full diamond interchange at Seymour/Mannheim	• Traffic patterns utilizing the NB exit and SB entrance ramps at Seymour would be the same as 4C. • Existing peak hour ramp volumes were utilized for ramp relocations. • Traffic utilizing the existing SB to WB exit at Irving Park Road would relocate to the SB Seymour exit, and travel SB along Mannheim. At the Mannheim/Irving Park intersection, WB to SB lefts would be reduced. • Traffic utilizing the existing WB to NB entrance at Irving Park would relocate to the NB Seymour entrance, increasing the WB to SB left at Mannheim/Irving and SB to EB left at Mannheim/Seymour. • Traffic utilizing the existing SB to EB exit ramp at Irving Park would relocate to SB Seymour exit, travel north along Mannheim to Irving Park Road, increasing the NB to EB right turn volumes dramatically at Mannheim/Irving Park. • Traffic utilizing the existing EB to NB entrance ramp at Irving Park would relocate to the NB Seymour entrance, increasing EB to SB right turns while decreasing EB thrus and decreasing NB to EB right turns at Mannheim/Irving Park. • Traffic impacts along River Road would be the same as 4C.
5B	• Eliminates existing SB exit ramps at Irving Park Road • New partial diamond interchange at Seymour/Mannheim	• Traffic patterns utilizing the NB exit and SB entrance ramps at Seymour would be the same as 4C. • Existing peak hour ramp volumes were utilized for ramp relocations. • Traffic utilizing the existing SB to WB exit at Irving Park Road would relocate to the SB Seymour exit, and travel SB along Mannheim. At the Mannheim/Irving Park intersection, WB to SB lefts would be reduced. • Traffic utilizing the existing SB to EB exit ramp at Irving Park would relocate to the SB Seymour exit, travel north along Mannheim to Irving Park Road, increasing the NB to EB right turn volumes dramatically at Mannheim/Irving Park. • Traffic impacts along River Road would be the same as 4C.
5C	• Eliminates existing SB exit ramps at Irving Park Road • New partial diamond interchange at Seymour/Mannheim	• Traffic patterns utilizing the NB exit and SB entrance ramps at Seymour would be the same as 4C. • Existing peak hour ramp volumes were utilized for ramp relocations. • Traffic utilizing the existing SB to WB exit at Irving Park Road would split 50/50 between the new SB Seymour exit and new SB Montrose exit and travel SB along Mannheim.

Table 5. AM and PM Peak Hour Traffic Assignment Factors

Interchange Concept	Description	Traffic Assignment Factors
	• New SB Exit Ramp at Montrose/Mannheim	• Traffic utilizing the existing SB to EB exit ramp at Irving Park would split 50/50 between the new SB Seymour exit and new SB Montrose exit. – Estimated 40% of EB traffic exiting at Montrose would utilize Lawrence Ave and 60% would utilize Irving Park – Estimated all EB traffic exiting at Seymour would travel NB on Mannheim to EB Irving Park. • Traffic impacts along River Road would be the same as 4C.
5D	• Eliminates existing SB exit ramps at Irving Park Road • New partial diamond interchange at Seymour/Mannheim • New SB Exit and SB Entrance Ramps at Montrose/Mannheim	• Traffic patterns utilizing the NB exit and SB entrance ramps at Seymour would be the same as 4D. • Traffic patterns utilizing the SB entrance ramp at Montrose would be the same as 4D. • Traffic patterns utilizing the SB exit ramps at Montrose and Seymour would be the same as 5C. • Traffic impacts along River Road would be the same as 4D.
5E	• Eliminates existing SB exit ramps at Irving Park Road • New partial diamond interchange at Seymour/Mannheim • New SB Exit Ramp at Montrose/Mannheim • Replaces existing SB exit ramp to WB Irving Park with WB to SB loop entrance ramp	• Traffic patterns utilizing the NB exit and SB entrance ramps at Seymour would be the same as 4C. • Traffic patterns utilizing the SB entrance ramp at Irving Park would be the same as 4F. • Traffic patterns utilizing the SB exit ramps at would be the same as 5C. • Traffic impacts along River Road would be the same as 4C.

The existing and projected peak hour traffic volumes at each of the 12 signalized intersections in the study area are shown in **Appendix C**, **Exhibits C-25 thru C-49**. The existing peak hour traffic volumes are shown on **Exhibit C-25**. **Exhibits C-26 thru C-37** show the resulting peak hour traffic effects (increase/decrease) for each interchange concept. **Exhibits C-38 thru C-49** show the resulting peak hour traffic assignments at each of the 12 signalized intersections in the study area for each interchange concept, that was utilized in the AM and PM Synchro analysis completed for each intersection.

V. LEVEL 2 ANALYSIS

A detailed analysis was conducted in Level 2 for the 12 interchange concepts carried forward from the Level 1 Analysis. The configuration of all 12 Level 2 interchange concepts included are shown in **Table 4**, however concepts plans were only prepared for Interchange Concepts 4C, 4D, 4E and 4F only as shown in **Appendix A**. Other concepts were studied at schematic level mainly due to overlapping improvement features, and poor analysis results.

The objective of the Level 2 analysis was to show the effect of each interchange concept relative to existing conditions. Depending on the interchange concept and the location, the effects at each intersection varied with respect to traffic increases (impact), traffic decreases (benefit), and/or modified travel patterns (i.e.; thru vs. turn).

Capacity analysis was conducted for AM and PM peak hour for 12 signalized intersections using Synchro within the study area. The 12 signalized intersections were along Mannheim Road, Irving Park Road, Lawrence Avenue and/or Des Plaines River Road, which are all IDOT jurisdiction roadways. Peak hour traffic counts were obtained for each of these intersections as required to complete the Level 2 Analysis. Although some intersections are projected to experience an increase in traffic, other intersections would experience a reduction in traffic and/or a change in travel patterns through the intersection. For intersections on IDOT jurisdiction roadways, the Level 2 Analysis utilized existing intersection cycle lengths provided by IDOT, as available, with modified phasing. In order to compare the effect of the interchange concept with existing conditions, the configuration of each study area intersection was maintained as existing and not modified for Level 2 Analysis.

Interchange Concept 4G is a modification of Interchange Concept 4F with free flow right turn lanes to minimize property acquisition required with a westbound to southbound loop ramp. The free flow right turn lanes would require some widening of northbound Mannheim Road and would require a southbound entrance ramp at Mannheim/Montrose. Based on the analysis results as discussed below, a southbound entrance at Montrose is not recommended due to impacts at Mannheim/Lawrence and therefore a concept plan for Interchange Concept 4G was not prepared.

Northbound Exit Ramp Profile

Each interchange concept includes a new northbound CTS exit to the Mannheim/Seymour intersection. A concept profile evaluation for this ramp was prepared and is included in **Appendix F**. The concept design for the new northbound exit ramp would be a free-flowing one-way northbound exit ramp that crosses over the CTS. Since both Mannheim Road and the CTS are near elevation 640, the clearance over the CTS will require a minimum ramp elevation of approximately 662.5 (16.5’ clearance plus 6’ superstructure depth) resulting in a 4.65% downgrade on the westbound approach to the Mannheim/Seymour intersection that would cut through the existing west side oasis embankment. The concept design for the northbound exit also assumes the ability for motorists to first make a stop at the east side oasis followed by the crossover connection, which would limit the ramp location and elevation considerations. Because of the elevation differential, and providing access control along the new ramps, redevelopment opportunities within the west oasis area would likely require regrading of the entire area. Other important considerations with respect to the alignment and profile of these ramps is the truck parking requirements and the desire for pedestrian access across the CTS in this area. The concept ramps shown in **Appendix F** include 20 truck parking stalls on each side of the oasis area.

Northbound Exit Ramp over Motel Ditch

Similarly, each interchange concept would cross over Motel Ditch between the CTS and Mannheim Road. A preliminary hydraulic analysis was completed for enclosing the existing Motel Ditch that runs thru the west side oasis area. Based on the analysis results, twin 4’ (H) x 7’ wide box culverts would be required for conveyance of Motel Ditch as shown on the concept profile. Further analysis would be required as part of a future Phase I Engineering to determine any additional requirements for compensatory storage, stormwater detention, and permitting.

Level 2 Analysis Approach

For the interchange concepts carried forward, the Level 2 analysis included AM and PM peak hour intersection capacity analysis using Synchro for 12 signalized intersections within the study area as shown on **Figure 1**. The 12 signalized intersections were along Mannheim Road, Irving Park Road, Lawrence Avenue and/or Des Plaines River Road, which are all IDOT jurisdiction roadways.

The objective of the Level 2 analysis was to show the effect of each interchange concept relative to existing conditions. Depending on the interchange concept, the effects at each intersection varied with respect to traffic increases (impact), traffic decreases (benefit), and/or modified travel patterns (i.e.; thru vs. turn).

Additional peak hour traffic counts were obtained for each of these intersections as required to complete the Level 2 Analysis. Although some intersections would experience an increase in traffic, other intersections would experience a reduction in traffic and/or a change in travel patterns through the intersection. For intersections on IDOT jurisdiction roadways, the Level 2 Analysis utilized existing intersection cycle lengths provided by IDOT, as available, with modified phasing.

With exception of the Mannheim/Seymour and Mannheim/Montrose intersections, the existing configuration of each study area intersection was not modified with the Level 2 Analysis in order to compare the effect of the interchange concept to existing conditions. For the Mannheim/Seymour intersection, the proposed configuration was the same for all interchange concepts considered as shown in **Appendix A**. For the Mannheim/Montrose intersection, the proposed configuration had two variations as shown in **Appendix A** depending on whether a CTS southbound exit and/or entrance was provided at this intersection. The proposed intersection configurations are also shown in the Synchro analysis results in **Appendix I**.

Level 2 Analysis Key Findings and Conclusions

The Level 1 Analysis demonstrated that additional CTS access to/from the south in the study area will increase travel demand in the study area to/from the east along Irving Park Road and Lawrence Avenue, and by rerouting of traffic from nearby interchanges such as Balmoral Avenue. The results of the Level 2 Analysis show that the additional travel demand generated and the effect on intersection capacity within the study area, varies substantially based on the interchange concept.

The amount of information generated as a result of analyzing each study area intersection for existing conditions and for each interchange concept, for AM and PM peak hours of travel, is substantial. The individual Synchro analysis summaries are included in **Appendix I**. A summarized comparison of the Synchro analysis results at each study area intersection, for AM and PM peak hour, for each interchange concept considered, is provided in **Appendix D**. In general, the primary conclusions reached included the following:

For all interchange concepts:

- There would be an overall reduction in travel demand along River Road based on rerouting of traffic from the Balmoral Avenue interchange to the new interchange at Mannheim/Seymour.
- With new CTS access to/from the south at Mannheim/Seymour, a notable reverse freight movement that currently occurs at the Balmoral interchange (northbound CTS exit that reenters southbound CTS to exit at Irving Park Road (refer to **Appendix C**, **Exhibits C-14 and C-21**) would be alleviated.

- The Irving Park Road at 25th Avenue intersection operates at LOS D/E (am/pm) under existing conditions. Although the LOS remains at D/E for all interchange concepts, the average delay and eastbound/westbound queuing worsens such that intersection improvements would be warranted.

Interchange Concepts 4C, 4D, 4G, 4H, 4I, 5A, 5B, 5C, 5D, and 5E result in adverse effects to the study area roadways with no practical improvement opportunities. The location of where these adverse effects occur varies based on the interchange concept, but include:

- The westbound approach to the Mannheim/Irving intersection.
- The westbound approach to the Mannheim/Lawrence intersection with increased westbound approach queues.
- Poor intersection Level of Service and extensive queuing at the Mannheim/Seymour intersection (5A-5E only).

Interchange Concepts 4D-4I and 5C-5E would require right-of-way acquisition from the City of Chicago in the northeast corner of the Mannheim/Irving Park intersection and/or east of the Mannheim/Montrose intersection.

Interchange Concepts 4H, 4I, and 5E with the WB Irving Park to SB CTS loop ramp, would potentially impact the existing Crystal Creek floodplain and floodway.

Providing a southbound entrance from Montrose Avenue (Interchange Concepts 4D, 4G, 4H, and 5D) pulls additional traffic along Lawrence Avenue with only a minor reduction in traffic along Irving Park Road. This results in a reduction in overall intersection LOS from B/C (AM/PM) to C/D with additional westbound queues at Mannheim/Lawrence intersection that extend to 25th Avenue with no practical improvement alternatives.

Interchange Concepts 4E and 4F provide CTS access to/from south with the least adverse effects to the study area roadway network, and with notable positive effects. Both concepts would result in notable improvements to the westbound approach to the Mannheim Road/Irving Park Road intersection based on rerouting of traffic and elimination of the existing weave condition. Both concepts would also improve operations along River Road at the intersections with Balmoral Avenue, Lawrence Avenue, and Irving Park Road.

In addition, although the Level 2 Analysis shows the CTS southbound CD roadway weave with Interchange Concept 4F to operate at LOS B for AM and PM, further analysis would be required to ensure acceptable geometry and operations. On this basis, Interchange Concepts 4E and 4F provide the best balance between providing the desire new CTS access to/from the south, with the least adverse effects to the study area roadway network.

Table 6 summarizes the Level 2 Analysis results and the recommendation for each Interchange Concept considered.

Table 6. Level 2 Analysis Results and Preliminary Recommendation

Interchange Concept	Results and Preliminary Recommendation
All	Des Plaines River Road • Overall Intersection LOS improves at Balmoral, Lawrence, and Irving Park Irving Park/Judd • Not including IDOT planned improvements (i.e.; added WB LTL at Judd), the WB queue during AM and PM will increase, but LOS remains B and C respectively Irving Park/25th • PM Intersection LOS remains at E with a slight increase in average delay and a more substantive increase in EB and WB queues, warranting consideration of intersection improvements
Concept 4C	Mannheim/Seymour • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection • Overall intersection queuing is increased with new east leg, however the SB thru queue is decreased with modified intersection timing Mannheim/Irving • The WB to SB left turn queue length increases substantially during AM and PM • Increase in the WB approach volume will exacerbate the existing WB approach weave condition, with no practical improvement opportunities ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to adverse effects on WB approach to Mannheim/Irving intersection with no practical improvement opportunities.*
Concept 4D	Mannheim/Seymour • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection • Overall intersection queuing is increased with new east leg, however the SB thru queue is decreased with modified intersection timing Mannheim/Irving • With SB to WB exit ramp relocated to Montrose, the WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated • AM average delay is improved by 7.8 sec, but AM and PM LOS remain at E • SB approach queue is increased by 200' Mannheim/Montrose • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection, with the SB exit ramp queue at 250' Mannheim/Lawrence • LOS worsens to C (AM) and D (PM) with an increase in WB approach queue length that extends to 25th Avenue ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts). Although positive operational effects at Mannheim/Irving with elimination of the WB approach weave, and the relatively minor effects along Mannheim at*

Table 6. Level 2 Analysis Results and Preliminary Recommendation

Interchange Concept	Results and Preliminary Recommendation
	Seymour, Montrose, this concept results in an increase in WB approach queue at Mannheim/Lawrence with limited improvement opportunities.
Concept 4E	Mannheim/Seymour • LOS worsens from B to C for AM and PM with addition of east/4th leg of intersection • Overall intersection queuing is increased with new east leg, however the SB thru queue is decreased with modified intersection timing Mannheim/Irving • With SB to WB exit ramp relocated to Montrose, the WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated • AM average delay is improved by 7.2 sec, but AM and PM LOS remain at E • SB approach queue is increased by 200' Mannheim/Montrose • Added intersection delay during AM and PM, and LOS worsens from B to C during PM with addition of east/4th leg of intersection ***Recommendation: Carry Forward** based on the positive operational effects at Mannheim/Irving with elimination of the WB approach weave, and the relatively minor effects along Mannheim at Seymour, Montrose, and Lawrence.*
Concept 4F	Mannheim/Seymour • LOS worsens from B to C for AM and PM with addition of east/4th leg of intersection • Overall intersection queuing is increased with new east leg, however the SB thru queue is decreased with modified intersection timing Mannheim/Irving • With SB to WB exit ramp relocated to Montrose, the WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated • AM average delay is improved by 7.2 sec, but AM and PM LOS remain at E • SB approach queue is increased by 200' • WB loop ramp will require right-of-way acquisition from the City of Chicago • WB loop ramp creates a Type A ramp weave on CTS CD roadway that operates at LOS B in AM and PM Mannheim/Montrose • Added intersection delay during AM and PM, and LOS worsens from B to C during PM with addition of east/4th leg of intersection ***Recommendation: Carry Forward** based on the positive operational effects at Mannheim/Irving with elimination of the WB approach weave, and the relatively minor effects along Mannheim at Seymour, Montrose, and Lawrence.*
Concept 4G	Mannheim/Seymour • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection

Table 6. Level 2 Analysis Results and Preliminary Recommendation

Interchange Concept	Results and Preliminary Recommendation
	• Overall intersection queuing is increased with new east leg, however the SB thru queue is decreased with modified intersection timing <u>Mannheim/Irving</u> • With SB to WB exit ramp relocated to Montrose, the WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated • AM average delay is improved by 10.0 sec, but AM and PM LOS remain at E • SB queue is increased by 200' <u>Mannheim/Montrose</u> • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection, with the SB exit ramp queue at 250' • Freeflow NB RT lane provides minimal benefit <u>Mannheim/Lawrence</u> • LOS worsens to C (AM) and D (PM) with an increase in WB approach queue length that extends to 25th Avenue ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts). Although positive operational effects at Mannheim/Irving with elimination of the WB approach weave, and the relatively minor effects along Mannheim at Seymour, Montrose, this concept results in an increase in WB approach queue at Mannheim/Lawrence with limited improvement opportunities.*
Concept 4H	<u>Mannheim/Seymour</u> • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection, with minimal increase in total queuing <u>Mannheim/Irving</u> • Intersection LOS F during AM and PM due to extensive increase in SB approach traffic (thru and LT) with SB exit and entrance located at Montrose <u>Mannheim/Montrose</u> • LOS worsens to F (AM) and E (PM) • With both CTS SB exits relocated to Montrose, the WB approach queue exceeds 800' <u>Mannheim/Lawrence</u> • LOS worsens to C (AM) and D (PM) with an extensive increase in WB approach queue length that extends to 25th Avenue ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to the LOS F at Mannheim/Irving (AM and PM) and Mannheim/Montrose (AM), extensive queuing on WB approach at Mannheim/Montrose, and the extensive increase in WB approach queue at Mannheim/Lawrence that extends to 25th Avenue with no practical improvement opportunities.*
Concept 4I	<u>Mannheim/Seymour</u> • LOS worsens from B to C for both AM and PM with addition of east/4th leg of intersection, with minimal increase in total queuing

Table 6. Level 2 Analysis Results and Preliminary Recommendation

Interchange Concept	Results and Preliminary Recommendation
	Mannheim/Irving • Intersection LOS F during AM and PM due to extensive increase in SB approach traffic (thru and LT) with SB exit and entrance located at Montrose Mannheim/Montrose • LOS worsens to E during PM • With both CTS SB exits relocated to Montrose, the WB approach queue exceeds 800‘ ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to the LOS F at Mannheim/Irving (AM and PM) with no practical improvement opportunities, LOS E during PM at Mannheim/Montrose, and the extensive queuing on WB approach at Mannheim/Montrose.*
Concept 5A	Mannheim/Seymour • Intersection LOS worsens to F (AM) and E (PM) due to consolidation of existing and new CTS ramps to a new interchange connected to this intersection • Extensive intersection queuing at 1,000‘ for WB Dual LT (AM) and 1,280‘ for SB Dual LT (AM) Mannheim/Irving • Intersection LOS worsens to F for AM and PM with no practical improvement opportunities • AM(PM) WB LT queue increases to 1,050’(610’) respectively with elimination of WB to NB entrance ramp • With SB CTS exit ramps relocated to Seymour, AM(PM) NB Dual RT volume increases from 400(435) to 755(900) respectively, with NB RT queue changing from 47’(150’) to 141’(132’) respectively. Partially mitigated by EB Irving Park to NB CTS loop ramp volume also being relocated to Seymour ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to the LOS F at Mannheim/Irving (AM and PM), and LOS F and E during AM and PM respectively and extensive queuing at Mannheim/Seymour, with no practical improvement opportunities.*
Concept 5B	Mannheim/Seymour • Intersection LOS worsens to E (AM) and D (PM) • Extensive intersection queuing at 900‘ for WB Dual LT (AM) and 476‘ for SB Dual LT (PM) Mannheim/Irving • Intersection LOS remains at E, however average delay increases 11 sec in AM and 9 sec in PM • With SB CTS exit ramps relocated to Seymour and the NB CTS entrance ramps retained, AM(PM) NB Dual RT volume increases from 400(435) to 1,060(1,200) respectively, with an extensive increase in the NB RT queue from 47’(150’) to 339’(790’) respectively • The WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated

Table 6. Level 2 Analysis Results and Preliminary Recommendation

Interchange Concept	Results and Preliminary Recommendation
	Recommendation: Dismiss from further consideration *(in favor of other interchange concepts) due to the LOS E and D during AM and PM respectively and extensive queuing at Mannheim/Seymour, and the extensive increase in NB RT queuing at Mannheim/Irving with no practical improvement opportunities.*
Concept 5C	<u>Mannheim/Seymour</u> • Intersection LOS worsens to D (AM) and C (PM) with WB approach queue increase <u>Mannheim/Irving</u> • Intersection LOS remains at E, however average delay increases 10 sec in AM and 5 sec in PM • With SB CTS exit ramps relocated to both Seymour and Montrose, and the NB CTS entrance ramps retained, AM(PM) NB Dual RT volume increases from 400(435) to 800(960) respectively, with a substantial increase in the NB RT queue from 47'(150') to 273'(651') respectively • The WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated <u>Mannheim/Montrose</u> • Added intersection delay during AM and PM, and LOS worsens from B to C during PM with addition of east/4th leg of intersection ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to the adverse effect at Mannheim/Seymour with no practical improvement opportunities.*
Concept 5D	<u>Mannheim/Seymour</u> • Intersection LOS worsens to D (AM) and C (PM) with addition of east/4th leg of intersection, and WB approach queue increases <u>Mannheim/Irving</u> • Intersection LOS remains at E, however average delay increases 10 sec in AM and 5 sec in PM • With SB CTS exit ramps relocated to both Seymour and Montrose, and the NB CTS entrance ramps retained, AM(PM) NB Dual RT volume increases from 400(435) to 800(960) respectively, with a substantial increase in the NB RT queue from 47'(150') to 273'(651') respectively • The WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated <u>Mannheim/Lawrence</u> • LOS worsens to C (AM) and D (PM) with an extensive increase in WB approach queue length that extends to 25th Avenue ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to the adverse effects at Mannheim/Seymour and Mannheim/Irving, and the extensive increase in WB approach queue at Mannheim/Lawrence that extends to 25th Avenue with no practical improvement opportunities.*

Table 6. Level 2 Analysis Results and Preliminary Recommendation

Interchange Concept	Results and Preliminary Recommendation
Concept 5E	Mannheim/Seymour • Intersection LOS worsens to D (AM) and C (PM) with addition of east/4th leg of intersection, and WB approach queue increases Mannheim/Irving • Intersection LOS remains at E, however average delay increases 10 sec in AM • With SB CTS exit ramps relocated to both Seymour and Montrose, and the NB CTS entrance ramps retained, AM(PM) NB Dual RT volume increases from 400(435) to 800(960) respectively, with a substantial increase in the NB RT queue from 47'(150') to 273'(399') respectively • The WB to SB LT volume and queue is substantially reduced and the WB approach weave is eliminated ***Recommendation: Dismiss from further consideration*** *(in favor of other interchange concepts) due to the adverse effects at Mannheim/Seymour and Mannheim/Irving with no practical improvement opportunities.*

Based on the Level 2 Analysis results, the preliminary recommendation was that Interchange Concepts 4E and 4F be carried forward into a future Phase I Engineering study. The Level 2 analysis was summarized in the Level 2 Analysis Technical Memorandum (L2TM) that was provided to the Village of Schiller Park and IDOT for review and comment in November 2019, with additional analysis data provided in December 2019. The Village of Schiller Park concurred with the L2TM findings. IDOT provided formal comments to the Tollway via letter dated March 12, 2020 which is included in **Appendix H**.

Based on reviews of the Level 2 Analysis results completed by IDOT, the Village of Schiller Park, and the Tollway, and further discussion, southbound access to the CTS from the Mannheim/Montrose intersection was identified as desirable. Based on this input, a general understanding was identified that Interchange Concept 4D/4G is preferred over Interchange Concept 4E or 4F since it provides enhanced southbound access to the CTS with the additional access point at the Mannheim/Montrose Avenue intersection, and otherwise provides very similar overall traffic benefits in the study area as compared to Interchange Concept 4E and 4F, with specific operational benefits at the Mannheim/Irving Park Road intersection, with minimal adverse effects.

The effects of Interchange Concept 4D/4G on the Irving Park Road at 25th Avenue intersection as compared to Interchange concepts 4E and 4F are comparatively similar. **Appendix E** includes the results of the Synchro analysis completed for existing conditions and various intersection improvement scenarios based on increased travel demand thru the Irving Park Road at 25th Avenue intersection for Interchange Concept 4E and 4F, which is a similar effect for all interchange concepts considered. Based on the analysis results, the most practical improvement scenario includes adding northbound and southbound right turn lanes. The overall existing intersection LOS of D/E (AM/PM) would remain (compared to existing conditions), with a slight increase in the average delay based on the overall increase in travel demand thru the intersection. Relatively minor impacts to adjacent

properties and longer eastbound and westbound queues are likely. Mitigating the additional queue lengths would require additional eastbound and westbound thru lanes, however, this would likely result in substantial impacts to adjacent properties and is therefore not recommended. Concept plans for these two intersection improvement scenarios are included in **Appendix E**.

A formal response to the IDOT comments was provided by the Tollway via letter dated July 9, 2020, which is included in **Appendix H**. The Tollway letter acknowledges the general understanding of Interchange Concept 4D/4G which therefore forms the basis for a future Phase I Engineering Study, if pursued. The letter also acknowledges that the L2TM included a comparative analysis based on 2020 traffic (with planned Tollway access and capacity improvements), and a future Phase I Engineering Study will need to consider 2050 traffic projections. A future Phase I Engineering study may also require an updated evaluation of alternatives and will require more detailed analysis across multiple disciplines including detailed geometric studies, drainage studies, environmental studies, and more broad-based public involvement.

Interchange Concept 4D/4G is shown on **Figure 2** and in **Appendix A**, and the recommended intersection improvement at Irving Park Road/25th Avenue is shown on **Figure 3** and in **Appendix E**.

VI. CONCLUSIONS

Based on the results of the Level 1 Level 2 analysis, and stakeholder input received via workshops, coordination meetings, and formal reviews, Interchange Concept 4D/4G was shown to effectively provide the desired CTS access to/from the south for the study area, as well as southbound access to/from the Mannheim/Montrose intersection for adjacent industrial/commercial areas. In addition to providing the improved CTS access, Interchange Concept 4D/4G would result in the following overall traffic operations benefits in the study area:

- Overall reduction in travel demand along River Road based on rerouting of traffic from the Balmoral Avenue interchange to the new interchange at Mannheim/Seymour.
- Alleviate the existing reverse freight movement that currently occurs at the Balmoral interchange (northbound CTS exit that reenters southbound CTS to exit at Irving Park Road).
- The WB to SB LT volume and queue at the Mannheim Road/Irving Park Road intersection is substantially reduced and the WB approach weave is eliminated providing a notable safety improvement.
- Mannheim Road/Irving Park Road intersection LOS remains at E for AM and PM, but the AM average delay is reduced from 66.0 sec to 56.0 (with free flow WB right turn lane).

Level of Service at the Mannheim Road/Lawrence Avenue intersection is reduced from B/C (Existing AM/PM) to C/D (AM/PM), with an increase in the WB approach queue length. Further evaluation of the Mannheim Road/Lawrence Avenue intersection will be required for Interchange Concept 4D/4G as part of a future Phase I Engineering Study.

For the Irving Park Road/25th Avenue intersection, based on the analysis results, the most practical improvement scenario includes adding northbound and southbound right turn lanes. The overall existing intersection LOS of D/E (AM/PM) would remain, with a slight increase in the average delay based on the overall increase in travel demand thru the intersection, which is a similar effect for all

interchange concepts considered. Further evaluation of the Irving Park Road/25th Avenue intersection will be required as part of a future Phase I Engineering Study.

Concept Level Construction Cost Estimate

Based on the general understanding that Interchange Concept 4D/4G has the best potential to accomplish the desired access improvements, with notable benefits and minimal adverse traffic effects in the study area, a concept level construction cost estimate, based on 2019 data, was prepared, which is included in **Appendix G**. The concept level construction cost estimate totals $25.8 million and includes Interchange Concept 4D/4G and the recommended improvements at the Irving Park Road at 25th Avenue intersection.

VII. PROJECT COORDINATION

The Feasibility Study process was a stepped and iterative process as shown in **Figure 5** with the objective to evaluate and compare interchange improvement concepts with respect to their ability to provide improved CTS access and the resulting effects on shifting travel demand and operations. As noted, coordination occurred with key project stakeholders throughout the Feasibility Study process to seek comment on the analysis results and input on the analysis process and interchange concepts to be considered. The key project stakeholders included the Tollway, the Village of Schiller Park, the Village of Franklin Park, and IDOT, but input was also received from PACE and Cook County at the Schiller Park Workshop. The coordination was facilitated by separate independent progress Technical Memoranda that were prepared to summarize the Level 1 Analysis, Traffic Projections, and the Level 2 Analysis results. Summaries of the Feasibility Study workshops and coordination meetings, as well as relevant transmittals and correspondence is provided for reference in **Appendix H**.

VIII. NEXT STEPS

With completion of the Feasibility Study, and the achieved general understanding among the key project stakeholders (Tollway, Village of Schiller Park, Village of Franklin Park, and IDOT) that Interchange Concept 4D/4G has the best potential to accomplish the desired CTS access improvements, with notable benefits and minimal adverse traffic effects in the study area, the next step in the overall project develop process would be initiation of a Phase I Engineering Study.

As noted, Interchange Concept 4D/4G will require property acquisition from the City of Chicago for the area east of the Mannheim/Montrose intersection. If a future Phase I Engineering Study is pursued, early coordination with the City of Chicago will be required.

Since the comparative analysis in the Feasibility Study was based on 2020 traffic projections (with planned Tollway access and capacity improvements), a future Phase I Engineering will need to consider 2050 traffic projections, and would include an updated evaluation of alternatives, more detailed analysis across multiple disciplines including detailed geometric studies, drainage studies, environmental studies, and more broad-based public involvement. Funding for a future Phase I Engineering Study and a completion schedule has not currently been identified.