

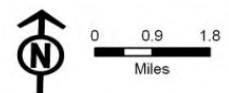
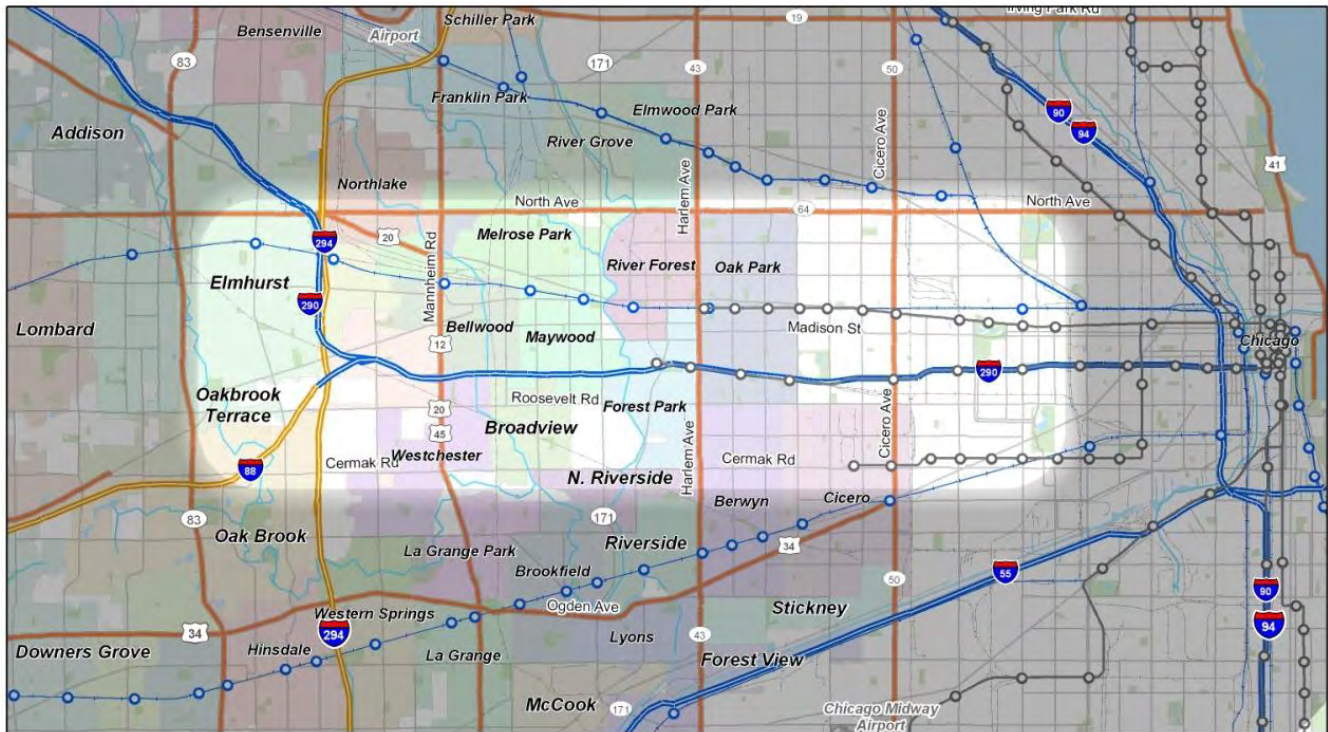
I-290 Phase I Study – Purpose & Need Summary (Draft)

November 24, 2010

❖ Purpose

The purpose of this proposed action is to improve mobility, safety, modal connections and opportunities, and facility condition in the I-290 Eisenhower Expressway multi-modal corridor.

Exhibit 1 – I-290 Phase I Study Area



❖ Improve Local and Regional Travel

“Improve local and regional travel” addresses the need to develop transportation system improvements in the study area that improve regional travel, local travel, and access to regional jobs.

Regional Travel

- There is substantial travel and congestion in the study area. One of the primary factors causing congestion is that demand exceeds the available capacity. I-290 generally carries between 188,000 and 210,000 vehicles per day on six and eight lane freeway sections, respectively (note: 2040 estimated traffic under development). Based on a maximum expected capacity of 138,000 vehicles per day, the mainline traffic volume is up to 136% percent of its available capacity in the six lane section.
- I-290 Mainline congestion at Level of Service (LOS) D or worse occurs up to 17 hours per weekday in both the eastbound and westbound directions.
 - *Exhibit 2 presents the existing I-290 average daily LOS.*
 - 97% of the I-290 mainline performs at LOS D or worse during the peak hours of 6-9 AM and 4-6 PM.
 - 100% of ramp junctions perform at LOS D or worse during the peak hours.
 - Morning and evening peak commute periods experience the highest congestion, with morning peak period speeds averaging 25.8 mph and afternoon peak period speeds averaging 32.9 mph on I-290 from west of Mannheim Road to east of Cicero Avenue in 2010 (note: 2040 travel speeds under development).

Local Travel

- 7 of 10 I-290 interchanges have failing movements. The, Harlem Avenue, Austin Boulevard, 1st Avenue and Cicero Avenue interchanges carry high amounts of traffic and do not have sufficient capacity for the peak travel movements that are currently being made.
- *Exhibit 3 presents a map indicating the interchanges with failing movements*
- Parallel arterial roadways near I-290 are congested or very congested during peak travel times. The five nearest east-west “through” arterial streets (North Avenue, Lake Street, Madison Street, Roosevelt Road, and Cermak Road), experience congested or very congested conditions along 92% of their length through the study area.
 - *Exhibit 4 presents a congestion summary of the nearest east-west parallel arterials. The level of congestion is based upon the volume of traffic in comparison to available roadway capacity.*
- The CTA and Pace bus routes that use these arterials and I-290, experience delays and service reliability impacts due to the congestion.

Improve Access to Employment

- Capacity constraints and congestion limit the ability of the existing transportation system to serve traditional and reverse commute markets.
- Traditional commute workers traveling from W/NW Cook & DuPage County to Chicago face heavy congestion along roadways in the study area. For example, 60% eastbound I-290 operates at LOS F in the morning peak period and 71% of westbound I-290 operates at LOS F in the afternoon peak.
- Reverse and other commute workers traveling from Chicago to the W/NW suburbs face heavy congestion along roadways study area, and more reverse and other commute transit options are needed. For example, 80% of westbound I-290 operates at LOS F in the morning peak period and 65% of eastbound I-290 operates at LOS F in the afternoon peak. The Cook-DuPage Corridor Travel Market Analysis found that there are limited transit options for workers in Cook County who live east of Cicero Avenue to access jobs in western Cook and eastern DuPage counties.
- Within the study area, all of the interstate segments and approximately 92% of the parallel arterial street segments are congested (see *Exhibit 4*)
- Traffic congestion on I-290 and along the major arterial roads in the study area results in longer access times to regional jobs from the study area (and conversely, longer access times to the center of the study area from regional residences)
- Approximately one-third of auto work trips from the study area are local, using the congested local network.
 - *Exhibit 5 & Exhibit 6 present maps of the travel times and corresponding number of regional jobs accessible by auto and transit.*

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Exhibit 2 - I-290 Average Daily Level of Service

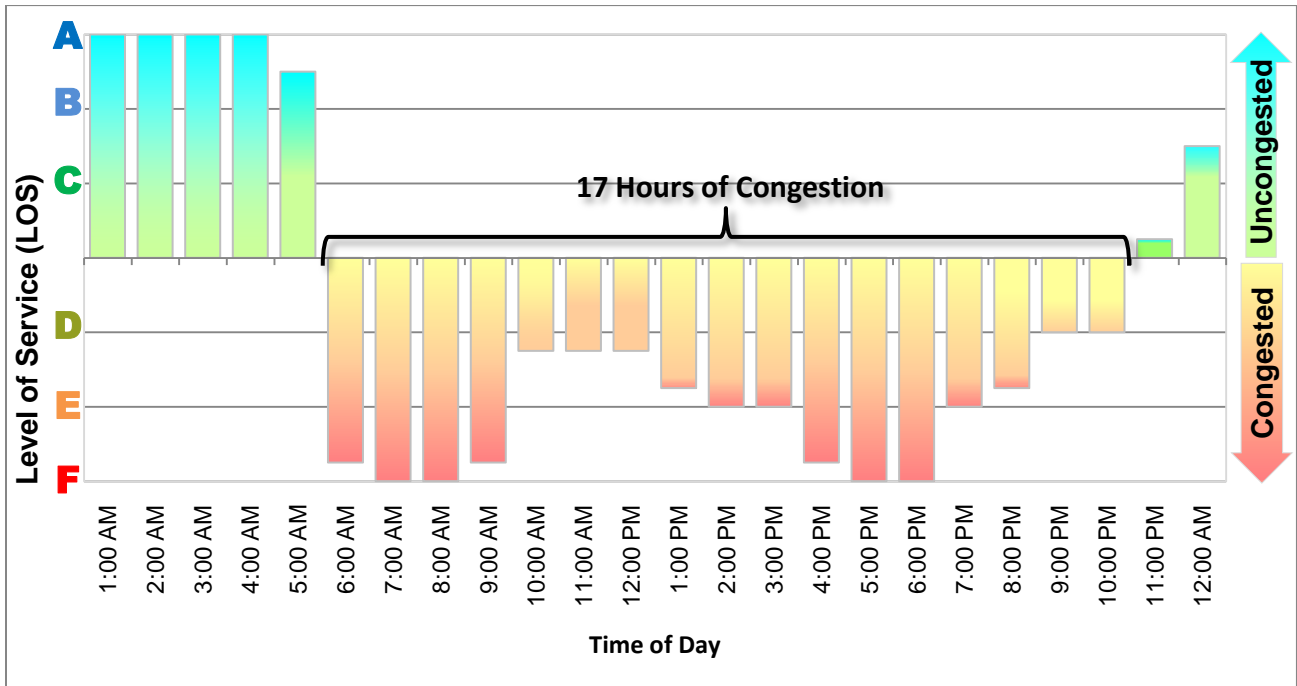


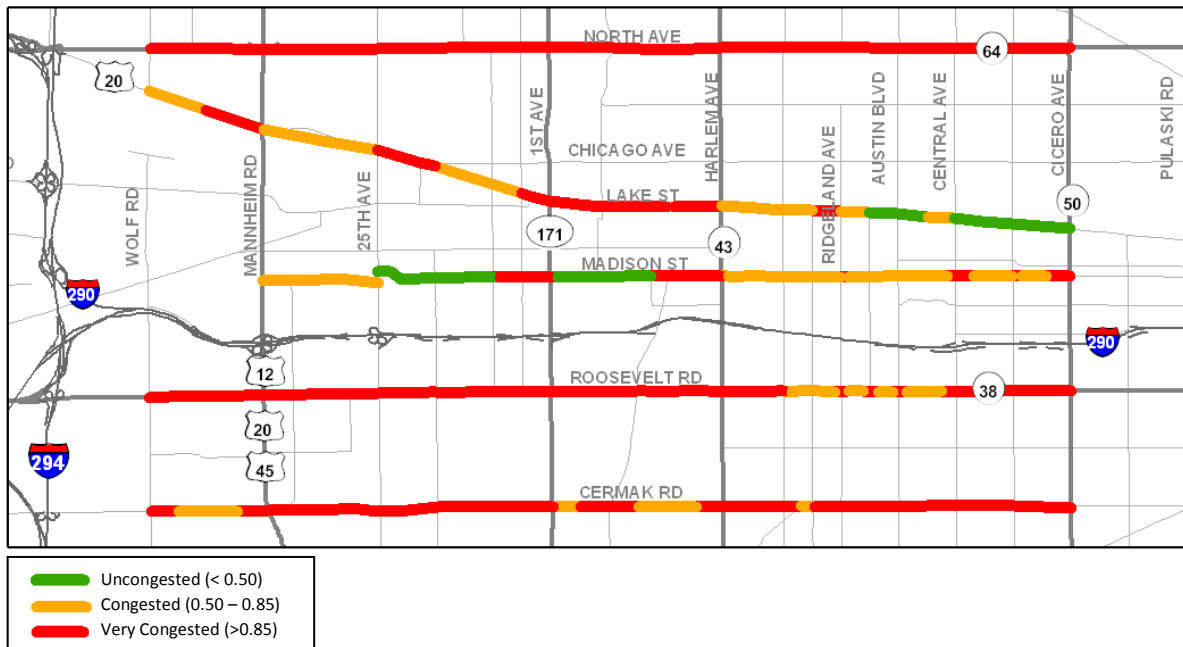
Exhibit 3 – Existing Interchange Operations



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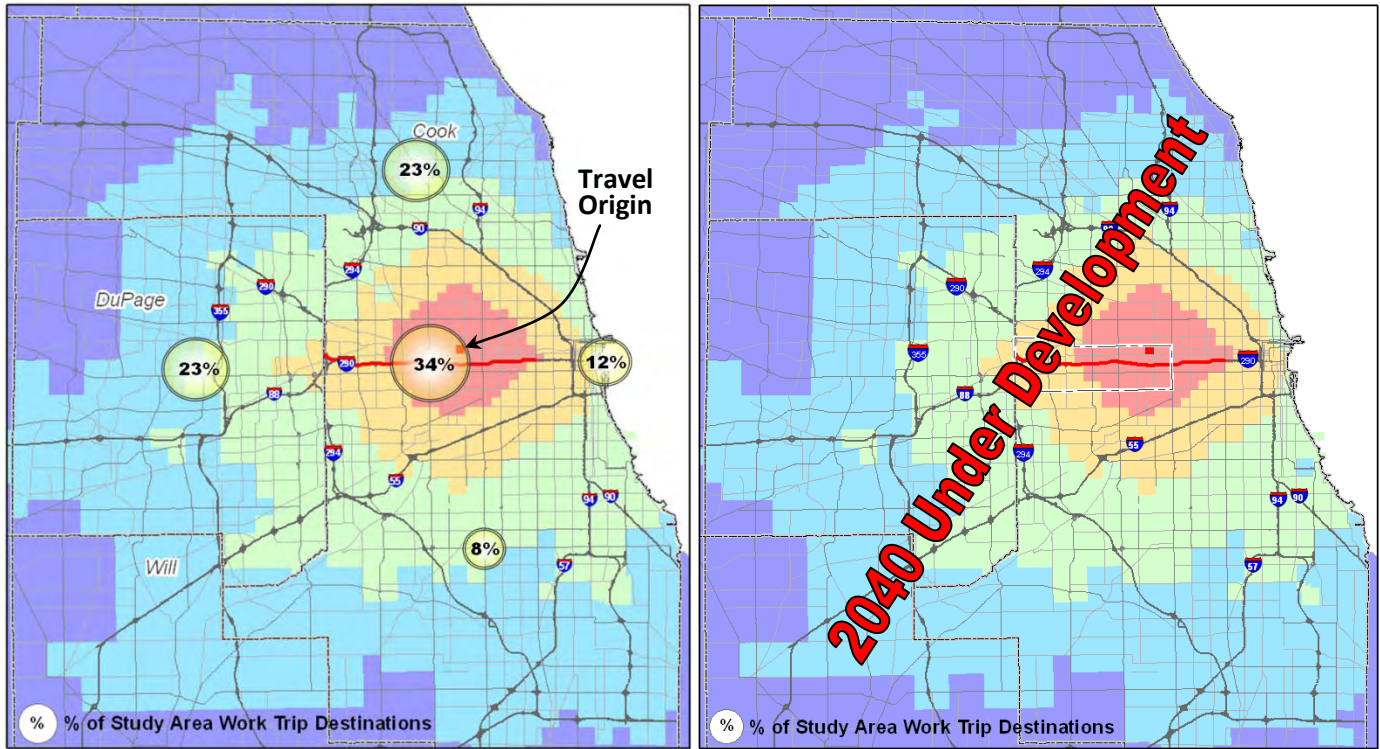
Exhibit 4 - Parallel Arterial PM Peak Period Congestion



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Exhibit 5 - Regional Work Trip Accessibility from the Study Area - Auto

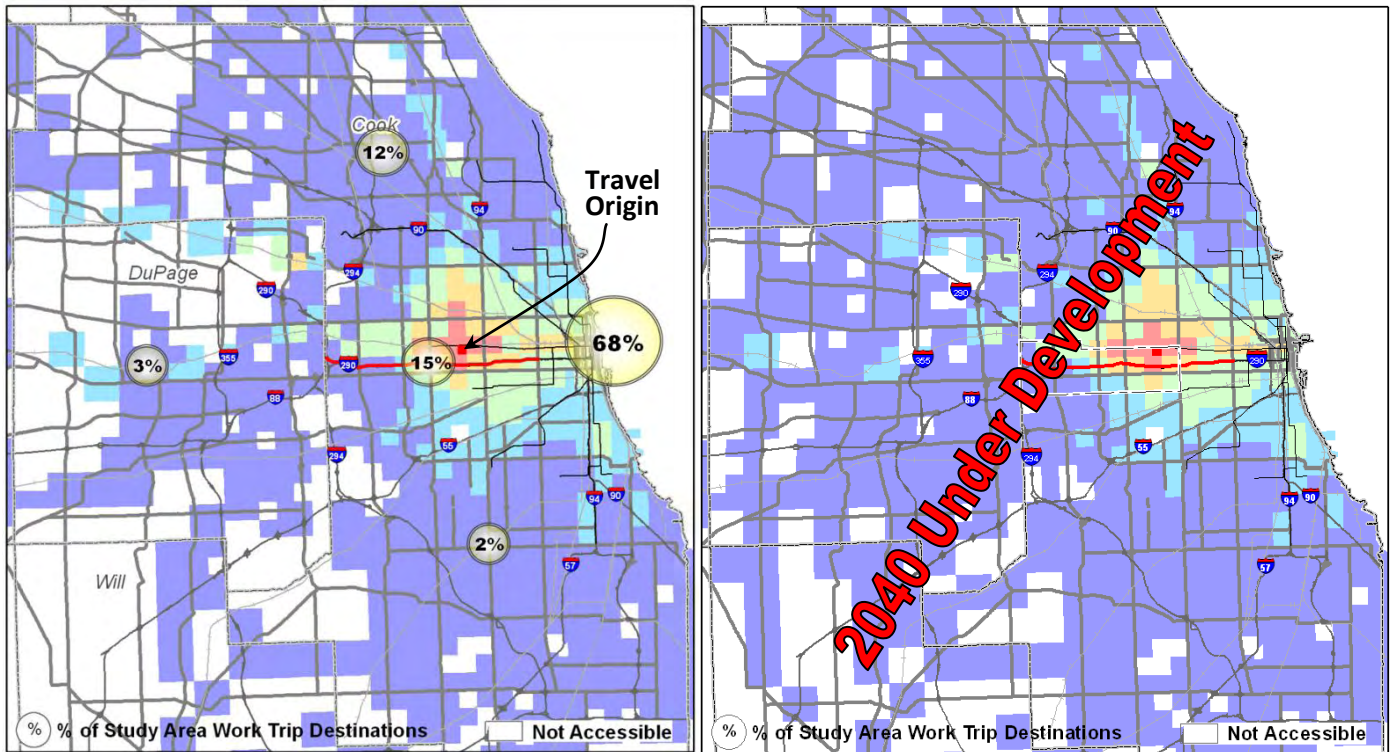


Auto Travel Time Existing Network	Number of Work Trips by Auto from the Study Area		
	2010	2040 Baseline	Change
Up to 15 Minutes	63,000	Under development	%
15 – 30 Minutes	126,000	Under development	%
30 – 45 minutes	118,000	Under development	%
45+ Minutes	27,000	Under development	%

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Exhibit 6 - Regional Work Trip Accessibility from the Study Area - Transit



Auto Travel Time Existing Network	Number of Work Trips by Transit from the Study Area		
	2010	2040 Baseline	Change
Up to 15 Minutes	1,789	Under development	%
15 – 30 Minutes	2,284	Under development	%
30 – 45 minutes	11,687	Under development	%
45+ Minutes	9,510	Under development	%

❖ Improve Safety for All Users

“Improve safety for all users” addresses the need to develop a transportation system improvement that contributes to reducing the overall frequency and severity of vehicular crashes in the I-290 study area, and also contributes to reducing conflicts between vehicles and pedestrians & bicyclists on facilities that accommodate these modes.

Crash analysis performed for the needs analysis is based on the 2006-2008 reporting period.

- Some sidewalks and pedestrian ramps in the I-290 study area do not meet ADA accessibility standards.
- There are limited bicycle accommodations with desirable safety characteristics, with five major crossings of I-290 (Wolf Road, Mannheim Road, 1st Avenue, Harlem Avenue, and Cicero Avenue) rated as “Not Recommended for Bicycle Travel” by IDOT’s Bicycle Map.
- I-290 experienced crash rates up to 61% higher than comparable Chicago-area freeway facilities.
 - *Exhibit 7 presents a crash rate comparison of I-290 and other Chicago-area expressways, measured in crashes per million vehicles per mile.*
- The predominant crash types on I-290 were rear-end (65%) and same-direction side swipe crashes (20%).
 - In the eastbound direction, study area crash hot spots (where crash frequency is higher than the overall average along I-290) are located from west of Mannheim to 1st Avenue, and from DesPlaines Avenue to Harlem Avenue.
 - In the westbound direction, project crash hot spots are located from Laramie Avenue to Austin Boulevard and from East Avenue to the CSX RR Overpass.
 - *Exhibit 8 presents a chart of the mainline crash distributions, injuries, 5% crash locations, and crash hot spots.*
 - Congested stop-and-go driving conditions, lack of available capacity for the traffic demand, and roadway design deficiencies contribute to rear-end crashes. Frequent lane-changing and weaving movements contribute to same direction sideswipe crashes, with most occurring during congested conditions.

Exhibit 7 - Crash Rates of Chicago Area Expressways

Chicago Area Expressway Crash Rates

Crashes per Million Vehicles per Mile

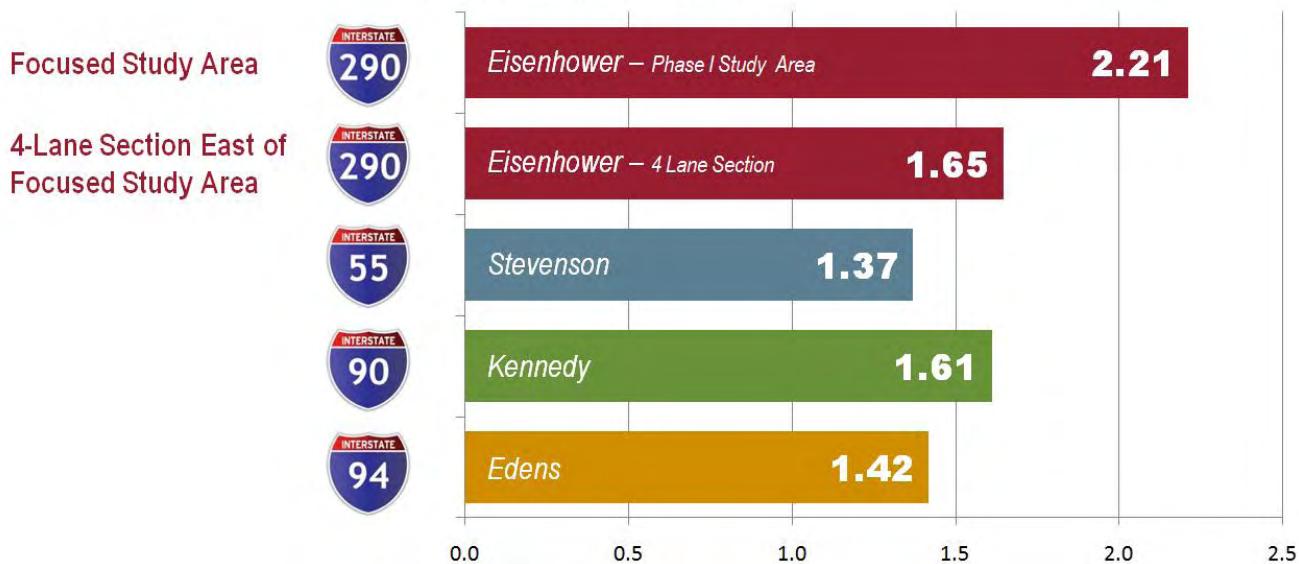
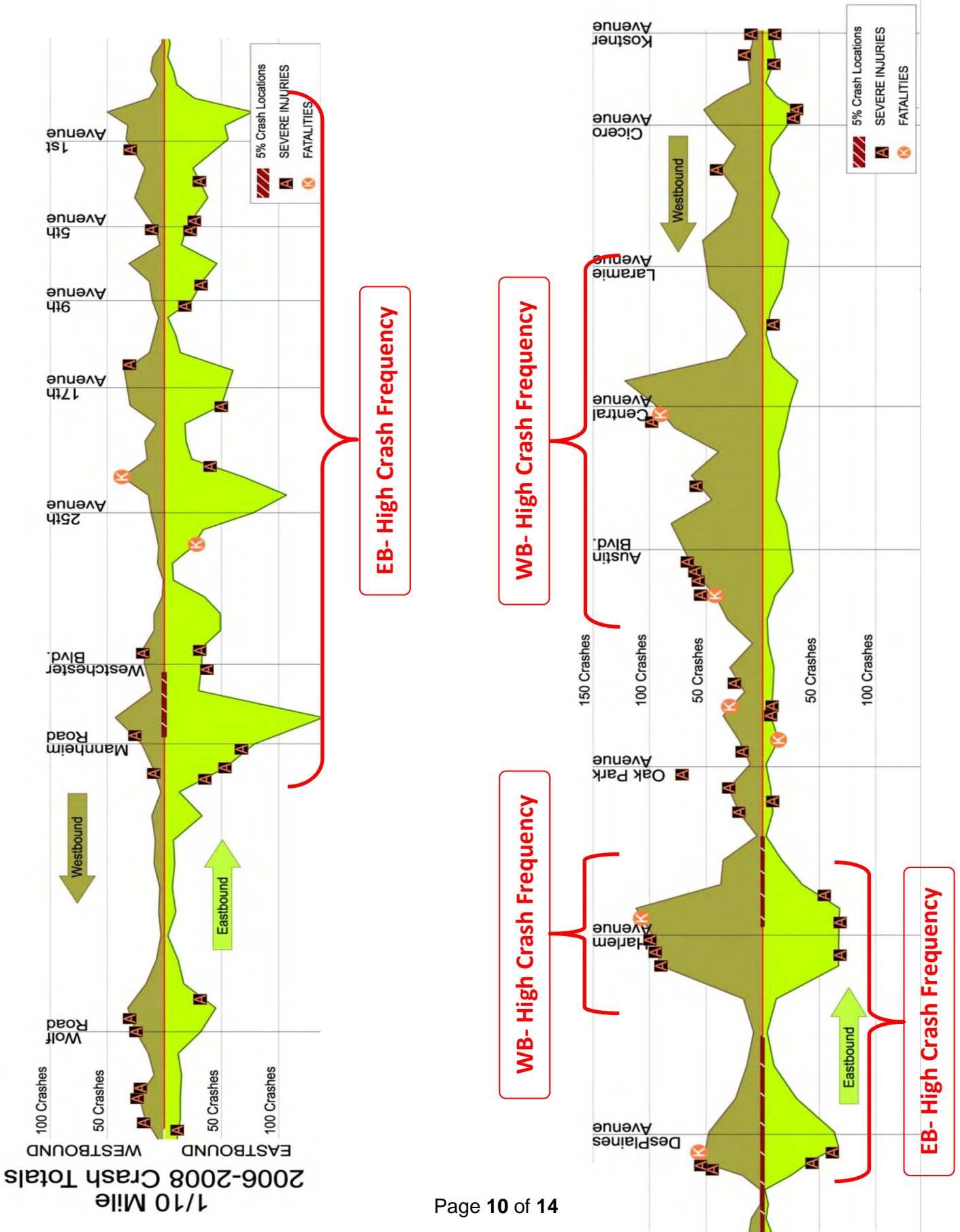


Exhibit 8 - I-290 Mainline Crash & Injury Locations



❖ Improve Modal Connections & Opportunities

“Improve modal connections and opportunities” addresses the need to develop transportation system improvements that improve transit connections including non-motorized connections to transit. The study area has a well developed and utilized public transportation system with public transit carrying 21% of study area home-to-work travel, compared to 12% for the Chicago region overall. Usage of the existing transit facilities within the study area is higher than for the region as a whole; however, deficiencies with the existing facilities hamper transit provision.

➤ *Exhibit 9 presents a map of the existing public transit facilities in the study area.*

Given the multi-modal nature of the existing corridor, and the potential for improving and enhancing all modes as part of the I-290 Phase I study, IDOT is working closely with stakeholders and transit agencies in the planning process. As the transportation needs are considered, and alternatives are developed, there may be direct impacts to transit facilities that will require mitigation by IDOT, which also opens up the possibility for additional enhancements by the transit agencies. In other cases, there may be no direct impact to transit facilities, which would not require mitigation. These types of improvements would be the responsibility of individual transit agencies. However, this also presents an opportunity for joint agency planning, which would coordinate the design and scheduling of transit improvements, thus ensuring a seamless and comprehensive long term vision for the corridor

▪ Improve Transit Connections

– CTA Blue Line station access is in need of improvement.

- Up to 67% of total weekday station entries involve pedestrian access trips. Three of the existing CTA Blue Line station entrances are located in congested I-290 interchanges: Harlem, Austin, and Cicero. The pedestrian environment is deficient due in part to pedestrian/vehicle conflicts & narrow sidewalks.

- Bicycle access across I-290 is difficult due to lack of designated bicycle lanes, insufficient lane width, or inadequate shoulders. Adequate bicycle parking is not available at 4 of the 5 study area CTA Blue Line station locations.

➤ *Exhibit 10 presents a map of the existing bicycle crossings of I-290.*

- Bus routes serving stations at Harlem Avenue, Oak Park Avenue, Austin Boulevard, and Cicero Avenue must stop in traffic lanes to access station entrances, blocking through traffic in the curb lane. Some bus transfers require riders to cross four lanes of traffic to the opposite side of the bridge to reach these station entrances.

- CTA intermediate stations at Harlem Avenue, Oak Park Avenue, Austin Boulevard, and Cicero Avenue are non-ADA compliant, with substandard platform widths and/or ramp/elevator access.

– Auto access to the CTA Forest Park park-and-ride facility is congested due to inefficient traffic layout and poor operations along Des Plaines Avenue. Access to parking is also constrained due to limited capacity.

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- Improve Non-Motorized Connections
 - There is limited pedestrian and bicycle access across the I-290 corridor with only two of 21 dedicated multi-use crossings of I-290 with appropriate design features; adequate crossings are only located at Home and LaVergne Avenues.
 - As mentioned in the “Improve Safety” section, sidewalks near and across I-290 are not ADA compliant.

Exhibit 9 - Study Area Public Transit Map

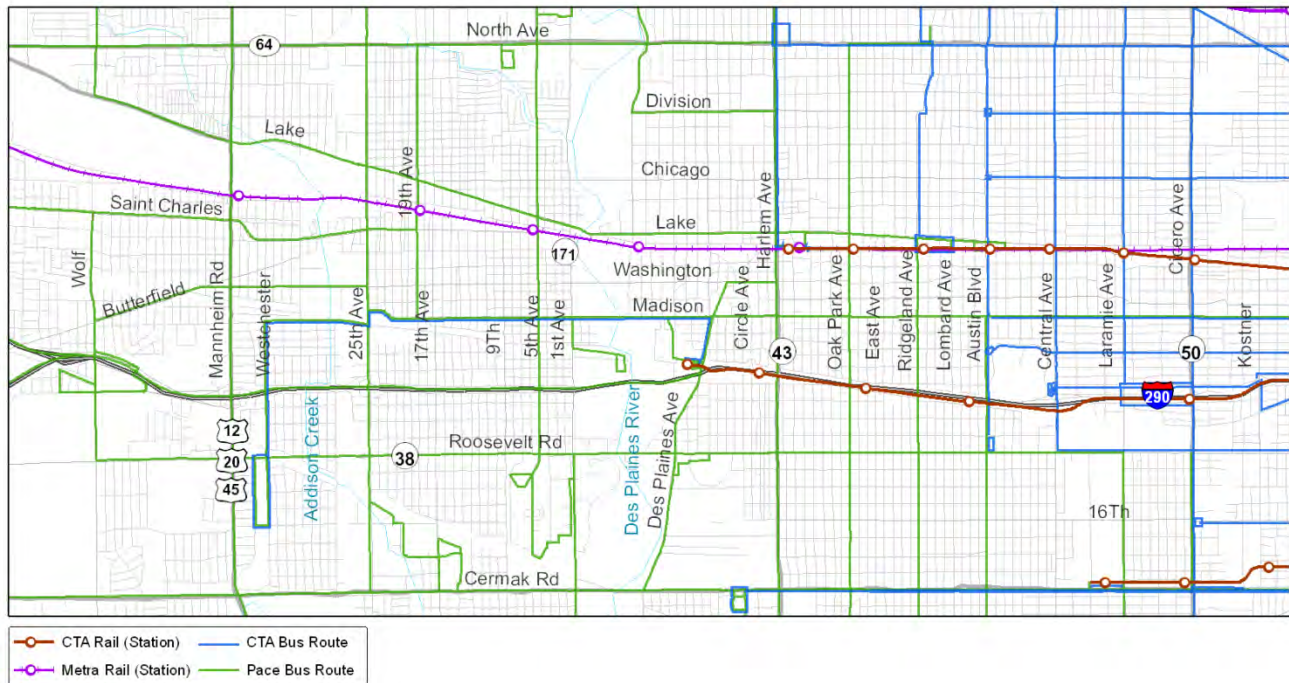


Exhibit 10 – Existing Bicycle Crossings of I-290



❖ Improve Facility Condition/Design

The “Improve Facility Condition/Design” need addresses the deficiencies in pavement and structure condition, the deficiencies in meeting current design standards, and addresses drainage deficiencies.

- The original design & construction of I-290 occurred over 50 years ago and now presents maintenance and functional issues relating to its age.
 - The original pavement base was designed for the estimated traffic through the year 1975, and has exceeded its anticipated service life by over 30 years.
 - *Exhibit 11 presents a typical cross-section of the existing I-290 mainline pavement in the study area.*
 - 12 of the 26 bridge structures over I-290 were determined to be functionally obsolete¹.
 - *Exhibit 12 presents a typical cross-section of the existing I-290 mainline pavement in the study area.*
 - Geometric design does not meet current standards.
 - Over 80% of mainline shoulder widths are too narrow according to current standards.
 - Ramp departure angles at interchanges are too sharp and the recovery areas at ramp gores do not meet current standards. Profile grades and vertical curves for a majority of cross streets over I-290 do not meet current standards.
 - Only two structures over I-290 meet the desirable 16’ vertical clearance height.
 - The drainage system has deficiency issues relating to age of the system, inadequacy of the trunk sewer to convey the 100 year storm without overtopping, and freeboard requirements for bridge structures crossing waterways.

¹ Functional obsolescence bridge ratings are based on the adequacy of the existing bridge to carry the current traffic volumes, the corresponding approach roadway widths, bridge geometry and condition, and vertical clearances.

Exhibit 11 - Existing I-290 Mainline Typical Pavement Cross-section

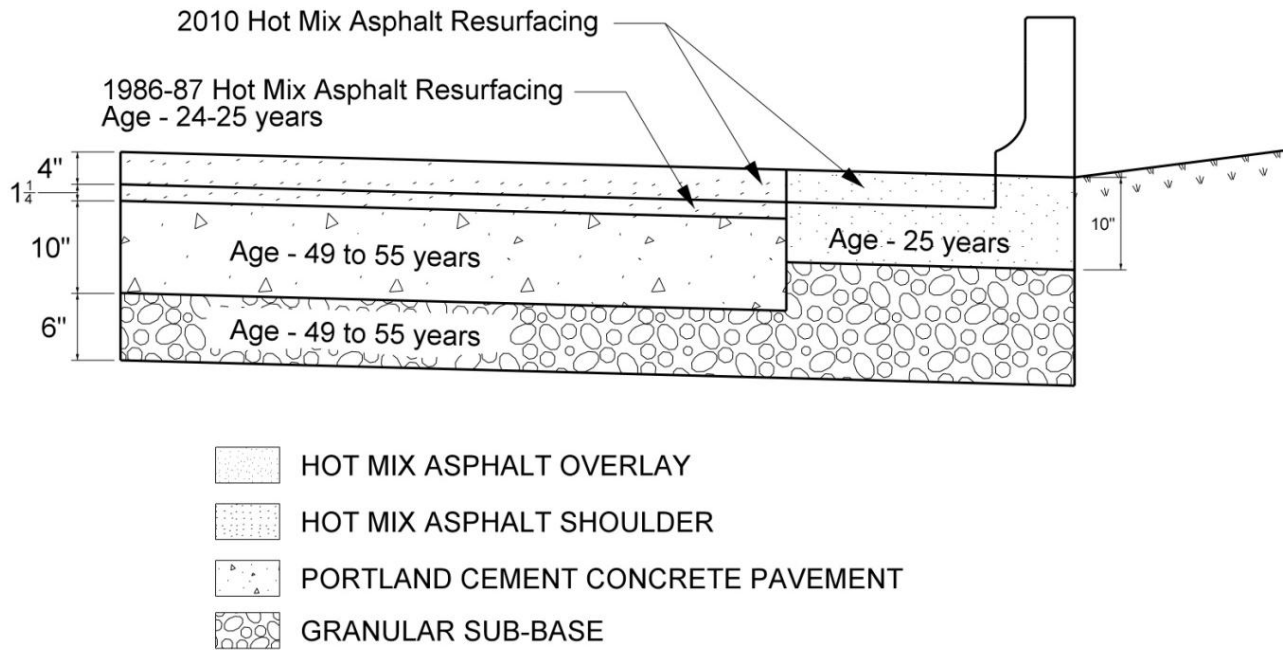


Exhibit 12 - Functionally Obsolete Bridges over I-290

