I-290

Environmental Impact Statement

West of Mannheim Road to East of Cicero Avenue

Purpose and Need

~~April~~September 2011

Draft

Illinois Department of Transportation

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1.0 Purpose of and Need for Action

Interstate 290 (I-290) Eisenhower Expressway provides the primary east-west roadway access to the Chicago central business district. It serves northwest Cook County and DuPage County, connecting to the Reagan Memorial Tollway (I-88) and the Tri-State Tollway (I-294) on the west, and I-90/94 (Kennedy and Dan Ryan Expressways) on the east. A parallel CTA rail transit facility is co-located in the east half of the I-290 study area, serving passenger travel between Forest Park and Chicago.

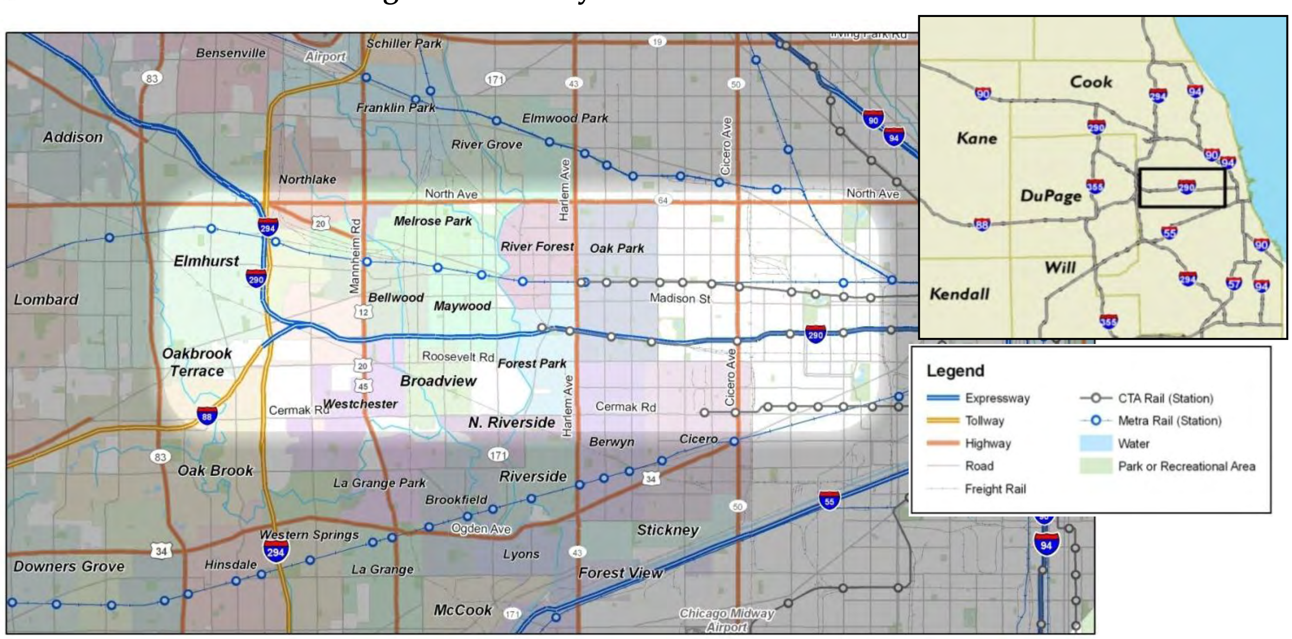
1.1 Project Purpose

The purpose of this proposed action is to provide an improved transportation facility along the I-290 Eisenhower Expressway multi-modal corridor. The specific needs identified for the project include: improve mobility for regional and local travel, improve access to employment, improve safety, improve modal connections and opportunities, and improve facility deficiencies.

1.2 Study Area

The I-290 study area **(Figure 1-1)** is centered along I-290 in Cook County. The study area extends west to east along I-290 from approximately 1 ½ miles west of US 12/20/45 (Mannheim Road) to approximately two miles east of IL Route 50 (Cicero Avenue), and north to south from North Avenue to the Metra Burlington Northern Santa Fe (BNSF) commuter rail line to the south. The study area includes adjacent transit and freight railroads, interchanges, cross streets and other parallel and crossing features that are within or in close proximity to I-290. This study is also using a regional transportation model for the purpose of incorporating the entire regional transportation network into the study analyses and findings.

Figure 1-1 - Study Area



The logical termini for the I-290 Environmental Impact Statement study have been identified as I-290 west of Mannheim Road to I-290 east of Cicero Avenue. These rational end points were selected to address reconstruction required to replace the 50+ year pavement and bridges along I-290, which represents the oldest section of pavement in the region's expressway system. The western terminus of the study is defined as the eastern limit of the recently (2001) reconstructed I-290/I-88 system interchange. In addition to new full depth pavement, the interchange reconstruction incorporated ramp, C-D Road, and I-290 mainline modifications to address interchange operations in the I-88/I-290 merge. The eastern terminus was selected because it is the location where I-290 currently tapers from three to four lanes going eastbound and from four to three lanes going westbound. The existing 8-lane pavement section on I-290 east of Cicero Avenue is much newer than in the existing six-lane section having been fully reconstructed in 1987. The 9-mile study area length, extending from the eastern limit of the I-88 & I-290 system connection in the west to the eight lane section in the east, shall not preclude staged construction scenarios.

This project and its logical termini have independent utility and significance because addressing the identified needs within these limits is considered reasonable and usable if addressed as a stand-alone improvement, including replacing the original 50+ year old pavement and bridges, and operational and safety improvements.

Improvements to this section of I-290 are included in the Chicago Metropolitan Agency for Planning's (CMAP) GoTo2040 Comprehensive Regional Plan, along with other proposed fiscally constrained transportation projects, and therefore do not restrict the consideration of other transportation improvements. Furthermore, this study shall consider a range of transportation alternatives and modes that may address the project purpose and need.

These termini will be reassessed as appropriate during the alternatives phase of the study.

Population and employment forecasts were developed for the I-290 Study for the year 2040 planning horizon. These forecasts were developed based on a no-build, or baseline condition. The no-build condition assumes that all fiscally constrained projects and improvements in the Chicago Metropolitan Agency for Planning's (CMAP) GoTo2040 Comprehensive Regional Plan will be implemented except improvements within the I-290 study area. The 2040 population and employment forecasts were developed based on a trend and market-based constraint scenario. **Table 1-1** presents the estimated study area population and employment for the year 2010 based on CMAP data and the year 2040 based on the I-290 no build scenario.

Table 1-1 – Study Area Population and Employment

Study Area	2010 CMAP	2040 I-290 No Build
Population	312,955	329,500
Employment[1]	105,344	151,100

[1] I-290 No build forecast uses the U.S. Bureau of Economic Analysis definition of employment. CMAP forecasts use the Illinois Department of Employment Security definition.

1.3 Project Background

The Eisenhower Expressway (I-290), originally constructed as the Congress Expressway, was one of the first multi-modal facilities constructed in the United States. First opened to traffic in the mid to late 1950s, this facility was designed and constructed according to early standards that were newly created for the interstate highway system.

During the original construction of the Eisenhower Expressway, the Chicago Transit Authority (CTA) Garfield Park rapid transit branch was removed and replaced with what is now known as the "Blue Line" Forest Park branch. This heavy rail transit line was constructed parallel to the Eisenhower Expressway, running along the south side of the roadway or within the median. The freight railroad, owned by Baltimore & Ohio Chicago Terminal Railroad and now operated by CSX Transportation, was also relocated adjacent to the CTA tracks from east of Des Plaines Avenue to Central Avenue. The CSX Altenheim Subdivision includes the right-of-way for three tracks, including two continuous tracks and a third intermittent track.

Since its original construction, I-290 has undergone periodic resurfacing and maintenance throughout the corridor. In 2001, the Hillside Interchange Reconstruction Project, located on the west end of the study area, was completed. This project removed the single lane bottleneck at I-88's connection with I-290 and improved connections with Mannheim Road. In 2010, 27 miles of I-290 from Thorndale Avenue to I-90/94 were resurfaced and 37 bridges were repaired.

The Eisenhower Expressway Multimodal Corridor is identified as a fiscally constrained priority project in the Chicago Metropolitan Agency for Planning (CMAP) GoTo2040 Comprehensive Regional Plan.

1.4 Project Need

A Transportation System Improvement(s) is needed in the study area to address the following needs:

1. Improve Regional and Local Travel
2. Improve Access to Employment
3. Improve Safety for All Users
4. Improve Modal Connections and Opportunities
5. Improve Facility Deficiencies

These five principal needs were identified in the technical analysis documented in the Existing Transportation System Performance Report, and through stakeholder and public input.

1.4.1 Improve Regional and Local Travel

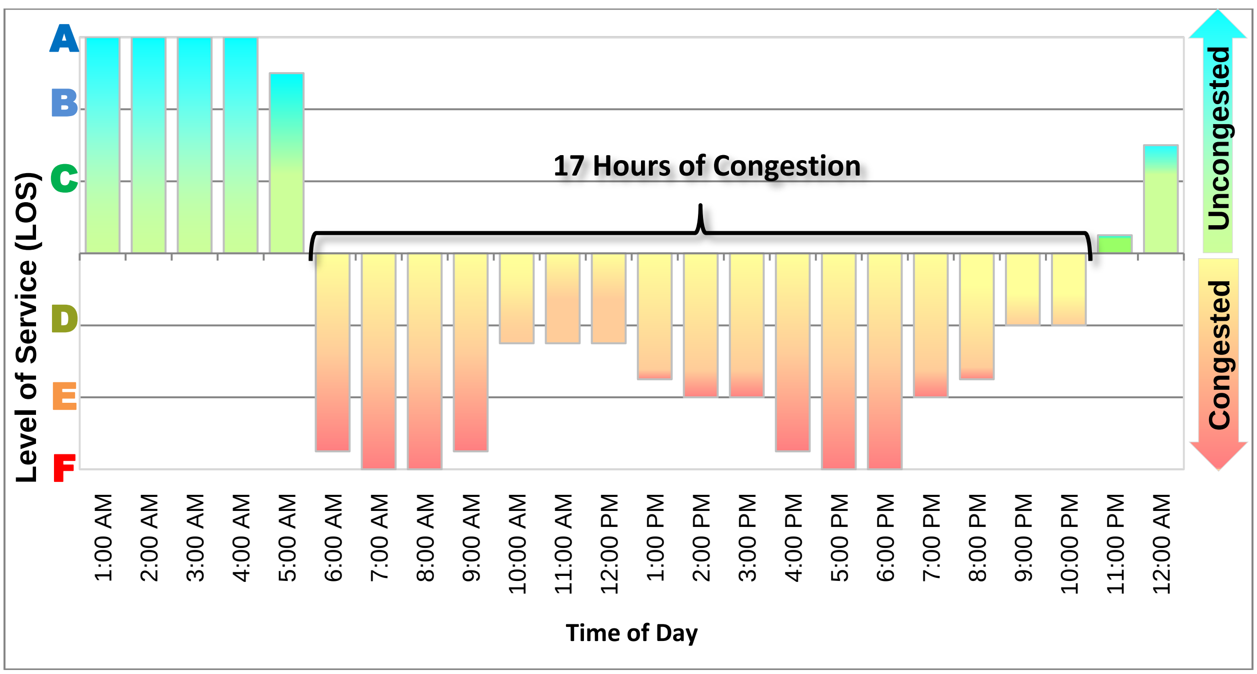
"Improve regional and local travel" addresses the identified need to improve mobility, or the movement of people and goods, within the region and the study area. For this study, regional travel is considered as travel through the corridor that begins and ends outside the study area. Local travel is travel that either begins, ends or occurs entirely within the study area.

1.4.1.1 *Improve Regional Travel*

There is substantial travel and congestion in the study area that reduces the corridor's ability to serve regional travel. One of the primary factors contributing to congestion in the corridor is that traffic demand exceeds the capacity on I-290. I-290 generally carries between ~~188,000~~192,500 and ~~210~~208,000 vehicles per day, including approximately 5 percent trucks, on its six and eight lane freeway sections, respectively, according to 2009 traffic counts. Based on the existing calculated ideal capacity of 138,000 and 187,000 vehicles per day for orderly traffic flow[2], the existing mainline traffic exceeds its capacity by ~~136~~39 percent in the six-lane section between Austin Avenue and Mannheim Road. Estimated year 2040 traffic on I-290 is projected to increase by a total of 3 percent over the existing traffic volumes. This relatively small forecasted increase in traffic reflects both the lack of available capacity on I-290 to accommodate additional traffic, and the fully developed land uses throughout the corridor.

Level of Service (LOS) is a congestion measure represented by six levels-of-service, ranging from A to F. LOS A represents the best (free flow) operating conditions and LOS F the worst (breakdown) condtions. For urban freeways (such as the Eisenhower Expressway), IDOT Policy indicates LOS C is desirable for interstate freeway operations. In comparison, traffic operations analysis of the existing I-290 mainline[3] revealed that it experienced congested conditions, LOS D or worse, for 17 hours per day in the eastbound and westbound directions (**Figure 1-2**) in 2009.

Figure 1-2 - Mainline Periods of Congestion in the Study Area (2009)



The morning and afternoon peak travel periods along the I-290 mainline and its ramp junctions experience the highest congestion, with nearly the entire mainline (97 percent) operating at LOS

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[2] From 2000 Highway Capacity Manual, Exhibit 13-6 using volume at 10% of ADT at LOS E

[3] Existing Roadway Operations, I-290 Preliminary Engineering and Environmental (Phase I) Study, July 2010.

D or worse. This indicates that the facility is operating at capacity or in breakdown conditions with low travel speeds and periods of stop and go flow. Estimated travel speeds on I-290 averaged 24.8 mph during the morning and afternoon peak periods in 2010, and are projected to be 22.1 mph for the 2040 no-build scenario.

This severe traffic congestion on I-290 impacts regional travel, both for eastbound travel towards Chicago, Chicago's central business district, I-90/94 Kennedy, and Dan Ryan Expressways, as well as for westbound travel heading towards suburban Cook County, DuPage County, I-88 Reagan Memorial Tollway, I-294 Tri-State Tollway, and the I-290 Extension. This severe traffic congestion impacts through traffic, daily commuters, and commercial vehicles alike.

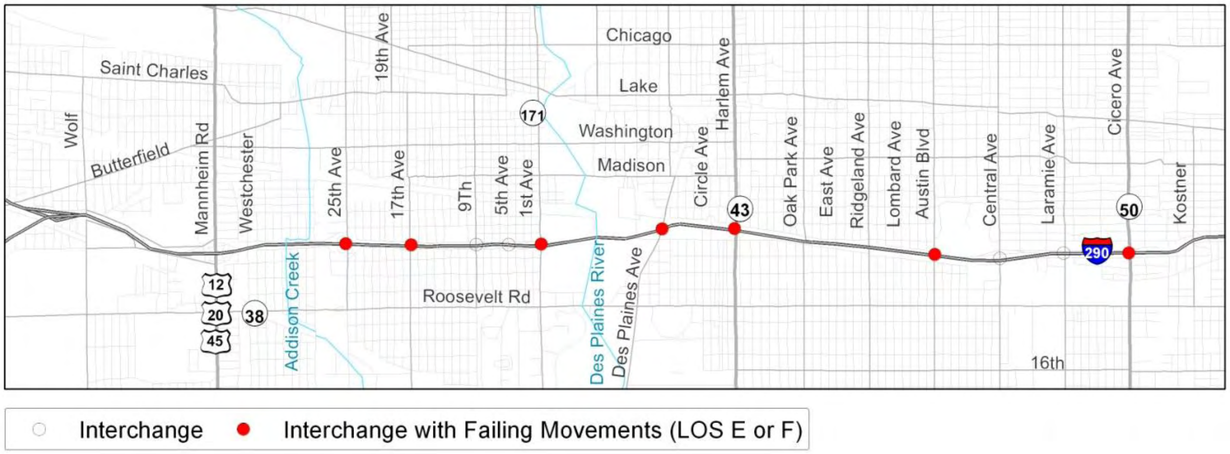
1.4.1.2 Improve Local Travel

Local travel, which is regarded as travel that either begins, ends, or occurs entirely within the study area, is negatively affected by mainline I-290 congestion, poor I-290 interchange operations and congested arterials.

I-290 interchange operations are negatively affected by the abilityinability of vehicles to efficiently perform "movements" at the ramp/cross-street intersections. These movements include left turns, right turns, and through-intersection travel. When an interchange cannot adequately convey the traffic volumes at an intersection, the movements will become congested, cause backups, and begin to operate at very low levels of service. For arterial highways, IDOT policy indicates LOS D being acceptable in urban areas. Seven out of teneleven I-290 interchanges in the study area currently have one or more movements that are failing (LOS E or F). Identified factors affecting intersection operations include traffic demand exceeding design capacity, inadequate turn lane storage length, overburdened signal timing and phasing, and constrained intersection geometry.

Inadequate turn lane storage is a problem at two-thirds of the I-290 interchange intersections analyzed. Queues for traffic waiting to make a turn consistently spill over into the through lanes during peak periods, adding to the congested conditions. Many of the interchange intersections within the study area have constrained geometry that further hampers operations. Constrained intersection layouts, including tight turning radii, force larger turning vehicles, such as trucks and buses, to slow down dramatically before entering into the turn, and force trucks to make wide right turns to avoid obstacles veeringand veer towards oncoming traffic. Austin Boulevard, 1st Avenue, Cicero Avenue, and Harlem Avenue experience high traffic volumes that exceed their current design capacities. The I-290 interchange intersections with these arterials are inadequately sized to handle the high through traffic volumes at peak periods. **Figure 1-3** identifies the interchange locations with failing movements.

Figure 1-3 - I-290 Interchanges with Failing Movements



I-290 mainline traffic congestion causes traffic to divert to study area collector and arterial streets, placing additional burden on the local road network. Arterial streets in the study area include North Avenue, Lake Street, Madison Street, Roosevelt Road, Cermak Road, Mannheim Road, 1st Avenue, Harlem Avenue, and Cicero Avenue. The performance of these arterial streets was evaluated based on volume to capacity (v/c) ratios. In the volume to capacity ratio, the volume, "v," is the number of vehicles using the roadway, and the capacity, "c," is the number of vehicles the roadway can accommodate just before breakdown occurs. When the volume of vehicles (v) on a street reaches its breakdown capacity (c), the ratio is equal to one, and when volume to capacity ratio exceeds 1 (v/c > 1), operations become very unstable with closely spaced vehicles moving at slow, variable speeds. Minor disruptions within the traffic stream cannot be dissipated and result in operations that deteriorate to LOS F.

Figure 1-4 summarizes the 2010 PM peak period volume to capacity (v/c) analysis for arterial streets, based on the I-290 ~~no build~~existing conditions travel model results. In 2010, 68 percent of the study area arterials operated at very congested conditions with v/c ratios greater than 0.90, corresponding to a Level of Service E and F[4].

[4] Transportation Research Board, Highway Capacity Manual, Special Report 209

Figure 1-4 – 2010 Existing Arterial PM Peak Period Volume to Capacity Ratios

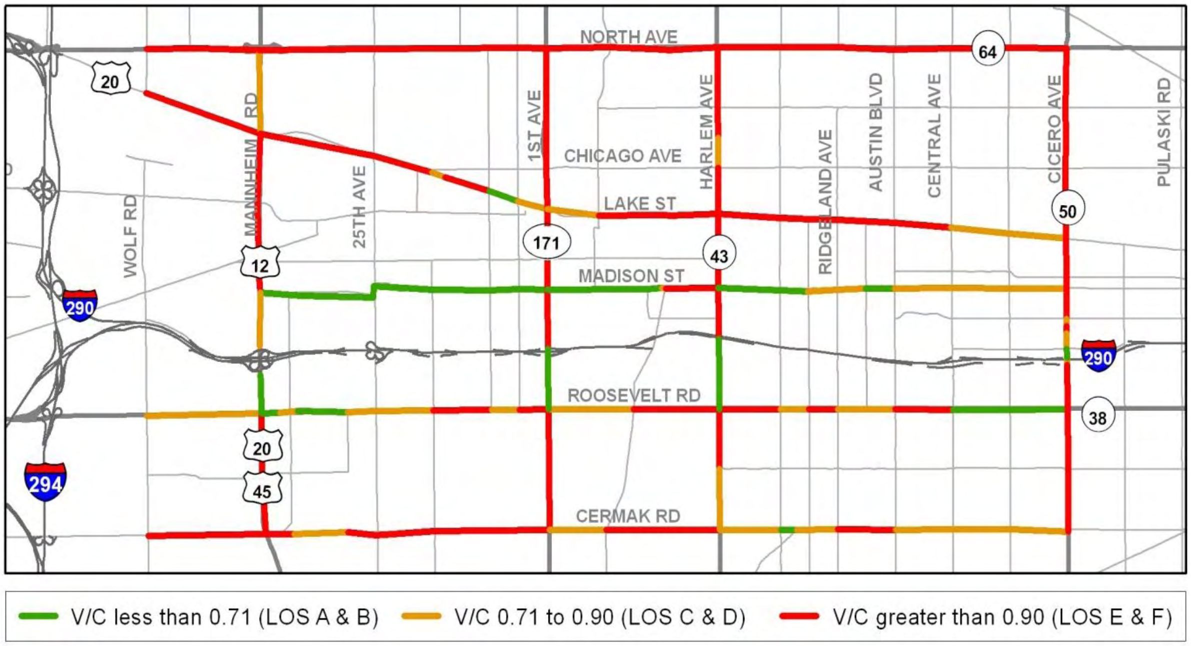
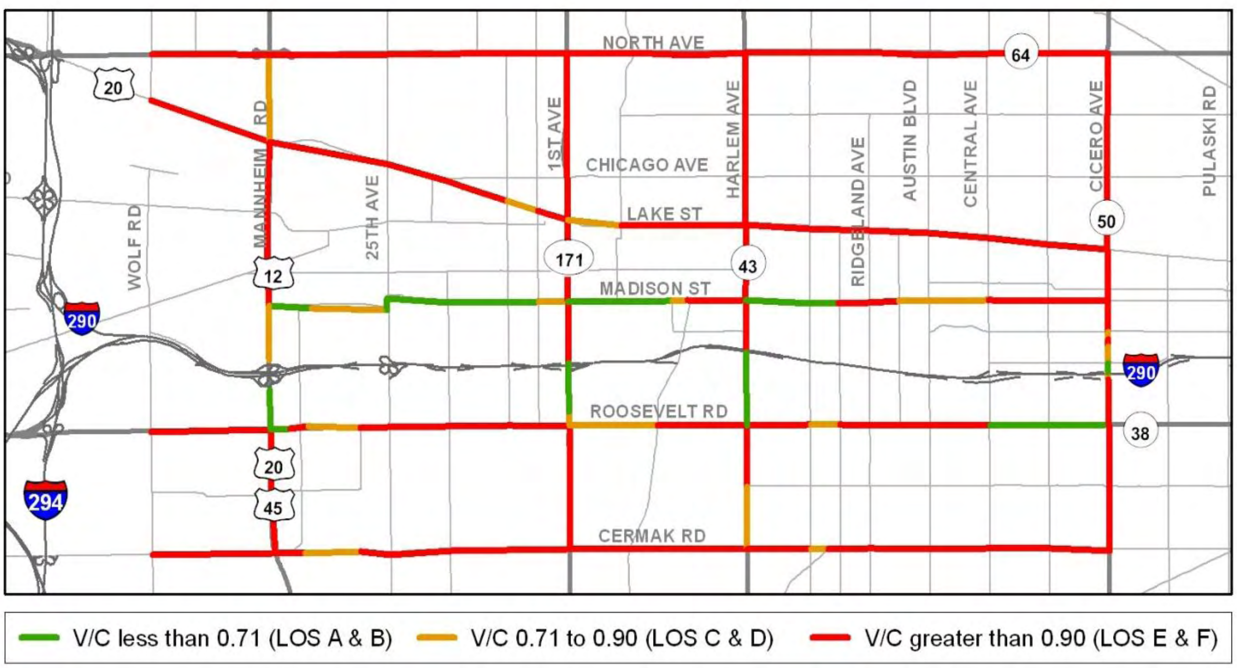


Figure 1-5 summarizes the 2040 no build PM peak period v/c analysis. In 2040, 77 percent of the study area arterials are projected to be operating under very congested conditions.

Figure 1-5 - 2040 No Build Arterial PM Peak Period Volume to Capacity Ratios



1.4.2 Improve Access to Employment

"Improve access to employment" addresses the need to improve mobility for workers who reside in, work within, or travel through the study area, as well as the needs of regional employers. Traffic congestion on I-290 and the major arterial roads in the study area, and the inability to adequately accomodate additional traffic, limit the ability of these facilities to serve additional growth in the traditional commute (from the west towards Chicago's central business district), reverse commute (from east of Cicero Avenue towards western Cook, DuPage and Kane counties), and other smaller commuter travel markets. Traffic congestion on I-290 and parallel routes negatively impacts bus transit travel times and reliability, and the ability to make modal connections, as well as access to transit by automobile. The following operational characteristics affect mobility and the ability of local and regional workers' access to employment:

- Within the study area, all of I-290 and approximately 91 percent of the parallel arterial street sections are congested during peak travel times.
- 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~~that begin in the study area ~~are local~~end in the study area and are hampered by the congested local network.

Traditional Commute: Traditional commute travelers (those travelers heading 'inbound' to Chicago from western and northwestern Cook County, DuPage County, and Kane County to Chicago during the morning peak period, and 'outbound' from Chicago in the evening) experience heavy congestion along roadways in the study area. For example, 60 percent of eastbound I-290 in the study area currently operates at LOS F in the morning peak period, and 71 percent of westbound I-290 in the study area operates at LOS F in the afternoon peak. The Regional Transportation Authority's (RTA) 2005 Cook-DuPage Corridor Travel Market Analysis found that traditional commuters are well served by the existing transit network and have access to virtually all destinations within Chicago via a combination of commuter rail, rapid transit and bus. Of Cook-DuPage travel markets ~~with~~within the I-290 study area, thirty-three percent of the traditional commute work trips use public transit.

Reverse Commute: Reverse and other commute workers traveling from Chicago to west and northwest Cook, DuPage and Kane Counties also experience heavy congestion along study area roadways. For example, 80 percent of westbound I-290 in the study area operates at LOS F in the morning peak period and 65 percent of eastbound I-290 in the study area operates at LOS F in the afternoon peak period. The Cook-DuPage Corridor Travel Market Analysis found that: there are limited transit options to jobs in western Cook and eastern DuPage counties for workers in Cook County who live east of Cicero Avenue, that reverse commuters come from areas with less automobile ownership than the Cook-DuPage region as a whole, and that more reverse and other commute transit options are needed. Of Cook-DuPage travel markets with the I-290 study area, fifteen percent of the reverse commute work trips use public transit.

Study Area Access to Jobs: Heavy traffic congestion on I-290 and major arterial roads in the study area constrains connectivity to and from the study area in all directions (east-west and north-south). This results in longer travel times for highway trips from or to the study area, especially during peak periods, with traffic congestion continuing into the future. As seen in **Figure 1-6** below, the 2010 and 2040 auto travel time contours from a central point in the study area show similar contours but diminishing auto accessibility between 2010 and 2040, indicating that traffic congestion will continue into the future. Job accessibility from the study area is depicted in **Table 1-2**. For example, using the 2010 highway network there are 449,000 regional 2040 jobs accessible within 15-30 minutes by automobile for a trip that begins from within the study area, versus 302,000 regional ~~2040~~ jobs accessible within 15-30 minutes for the 2040 no build scenario; a decrease of approximately 33 percent. This indicates that accessibility to regional jobs decreases between 2010 and 2040 as traffic congestion increases.

Figure 1-6 - 2010 & 2040 AM Peak Period Auto Travel Time Contours

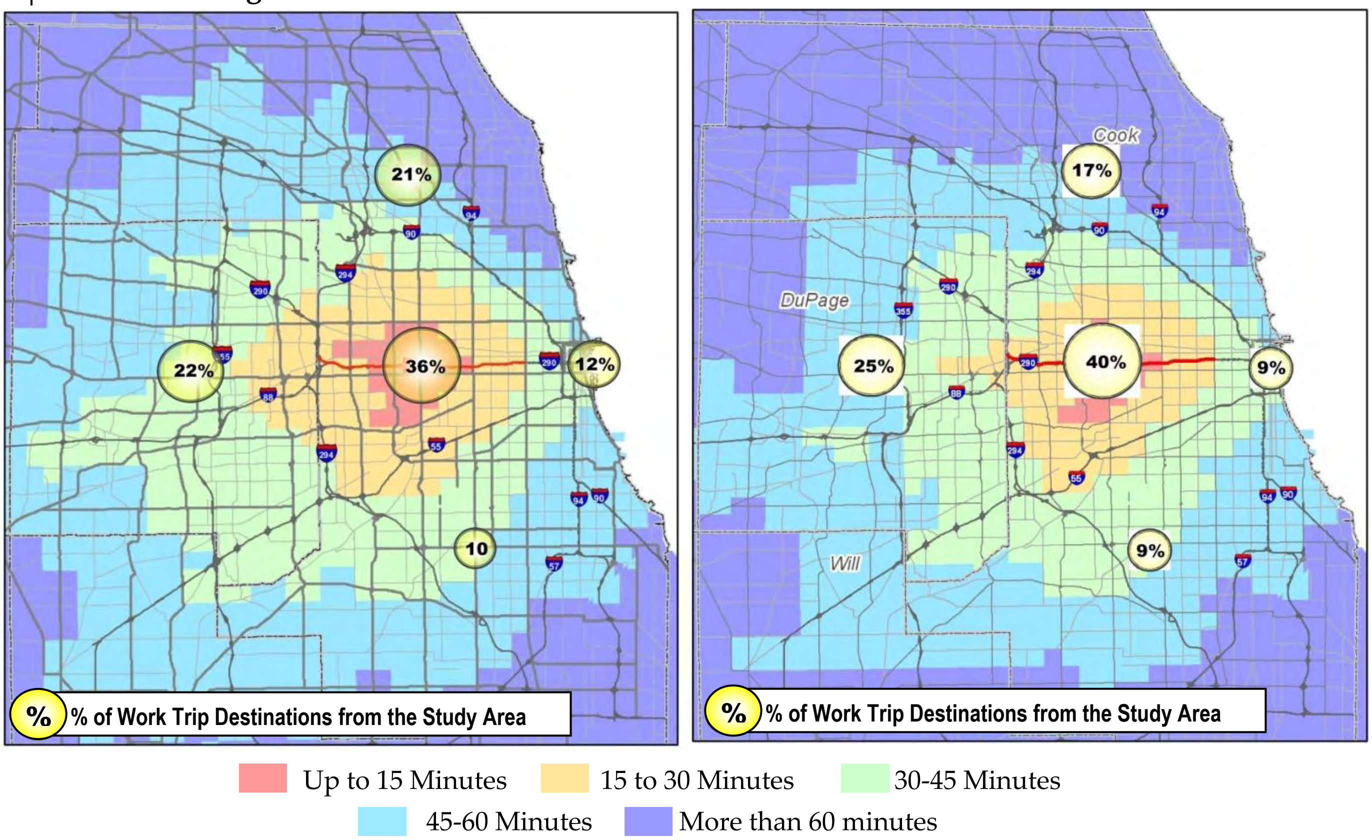


Table 1-2 – Regional 2040 Jobs Accessible by Auto from the Study Area

Auto Travel Time	2010 Network	2040 No Build Scenario	Change
Up to 15 Minutes	107,000	79,000	-26%
15 – 30 Minutes	449,000	302,000	-33%
30 – 45 minutes	1,601,000	1,391,000	-13%
45 – 60 Minutes	1,760,000	1,613,000	-8%

Transit travel time to jobs includes in-vehicle (travel in the rail or bus vehicle) and out-of-vehicle travel time (access time, wait times, egress times). **Figure 1-7** illustrates the 2010 and 2040 no build morning peak period transit travel time contours from a central location in the study area. As seen in this figure, transit travel time time contours from a central point in the study area are similar between 2010 and 2040. Job accessibility from the study area via transit is depicted in **Table 1-3**. As seen in this table, there is very little difference (less than 1%) in accessibility from the I-290 study area to work opportunities in the region for transit trips under 45 minutes. This can be attributed to the majority of the CTA rail and bus service in the greater I-290 corridor remaining stable between 2010 and 2040. However, for transit trips of between 45 minutes and 60 minutes, a 12 perent increase between 2010 and 2040 in the number of jobs accessible is forecasted, mainly due to the transit expansion projects identified in the ~~GO TO 2040~~GoTo2040 Comprehensive Regional Plan outside the study area.

Figure 1-7 - 2010 & 2040 AM Peak Period Transit Travel Time Contours

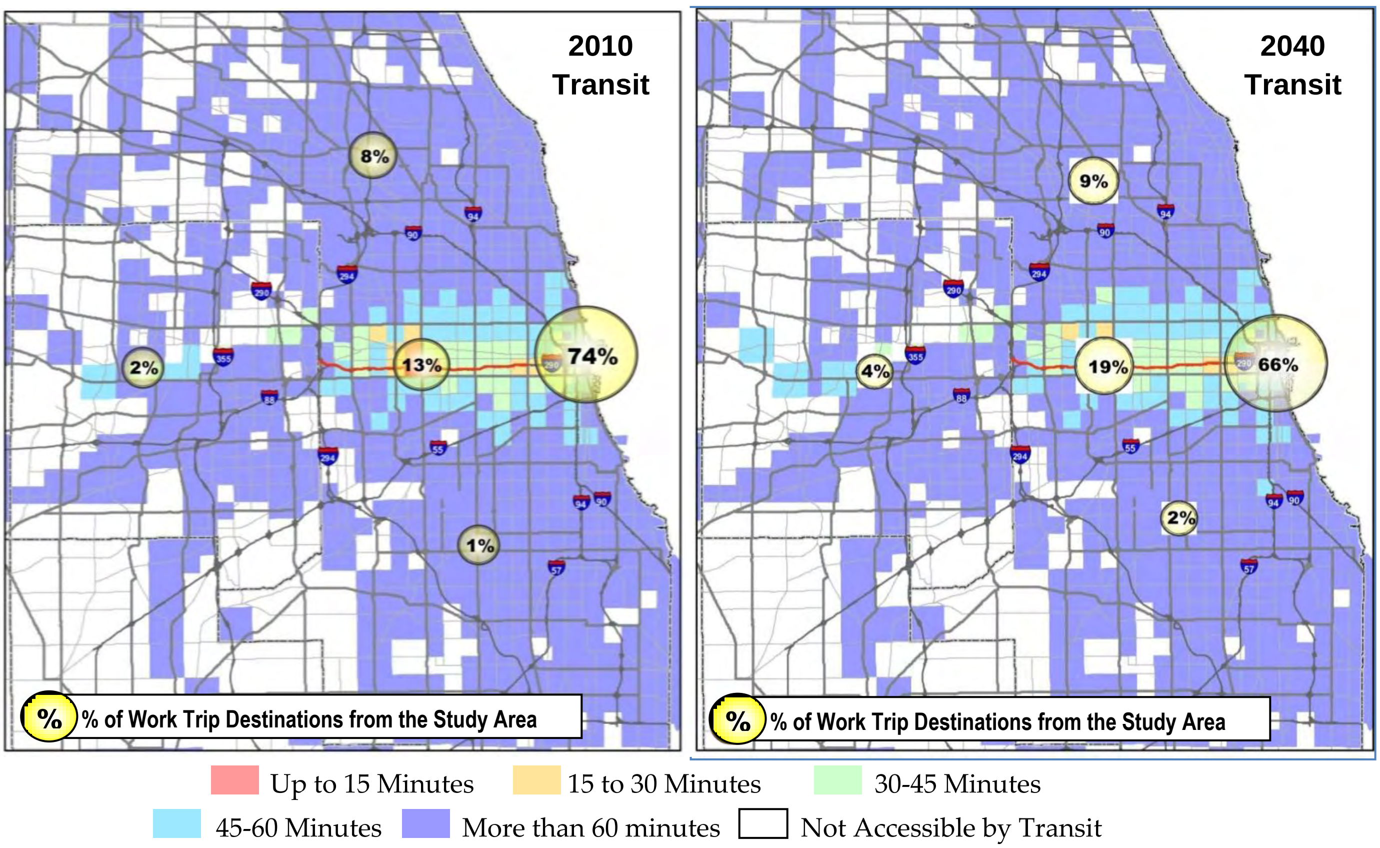


Table 1-3 – Regional 2040 Jobs Accessible by Transit from the Study Area

Transit Travel Time	2010 Network	2040 No Build Scenario	Change
Up to 15 Minutes	4,000	4,000	0%
15 – 30 Minutes	57,000	57,000	0%
30 – 45 minutes	796,000	786,000	-1%
45 – 60 Minutes	477,000	534,000	12%

1.4.3 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 was performed for the 2006-2008 reporting period, the most recent data available when the analysis was performed.

1.4.3.1 Address Pedestrian-Vehicle Conflicts on Cross Streets

There were 16 reported pedestrian crashes on I-290 cross streets during the 2006-2008 crash analysis period. Thirteen of these crashes (81 percent) had reported injuries, including 2 Type A (incapacitating) injuries. Typically, pedestrian crashes have a much higher injury rate than crashes involving motor vehicles only; studies indicate that pedestrians are ten times more likely to be injured in a crash than motor vehicle occupants, and that about 40 percent of pedestrians who receive medical attention after a crash are hospitalized[5]. The need for improving safety is addessed by reducing pedestrian-vehicle conflicts at cross streets.

1.4.3.2 Address High Comparative Crash Rates

I-290 from west of Mannheim Road to east of Cicero Avenue experienced crash rates from 34 percent to 61 percent higher than comparable Chicago-area freeway sections, measured in crashes per million vehicles per mile. See **Figure 1-8** for a comparison of I-290 and similar facilities' crash rates.

The crash rates vary along I-290 within the study area, with some sections experiencing much higher crash rates than others. The section of I-290 between Central Avenue and Austin Boulevard had crash rates of 800 crashes per mile (3.5 crashes per million vehicles per mile – this measure considers traffic volumes), which was the highest of any sub-section of the four highway facilities studied. This high crash rate is attributed to extended periods of congestion and abrupt driving maneuvers due to the imposed traffic weave at the thru-lane drop associated with the mandatory left lane exit to Austin Boulevard. Of the 26 sub-sections evaluated for the four highway facilities, the I-290 study area contained the five highest sections (based on crash rates per mile), and the eight highest sections (based on crash rates per million vehicles per mile). In comparison to similar facilities, this analysis indicates that within the study area, I-290 is problematic in both overall crash experience as well as at several crash "hot spot" locations.

[5] New York City Pedestrian Safety Study and Action Plan, August 2010; Report RD-99-078 (Injuries to Pedestrians and Bicyclists), Federal Highway Administration

Figure 1-8 - Comparison of Chicago Freeway Mainline Crash Rates (2006-2008)

1.4.3.3 Address High Frequency of Crashes

The overall predominant crash type along I-290 is rear end (64 percent overall on a 24-hour basis) with 94 percent of rear end crashes occurring during the peak congested travel periods between 6 AM to 11 PM. During congested periods, rear end collisions represent 71 percent of all crashes. National studies, as well as local observance of the I-290 corridor, indicate congestion as a primary cause of rear-end crashes due to erratic, stop and go traffic conditions with reduced space (headway) between vehicles that requires increased driver attentiveness to react to those conditions. The lack of available capacity to accommodate the travel volumes leads to congested conditions that contribute to rear end crashes.

The other two prevalent crash types on the I-290 mainline are same-direction sideswipe and fixed object collisions off the roadway, which represent approximately 20 percent and 11 percent of overall crashes. Many same-direction sideswipes can be corellated to areas where there are numerous lane-changing and weaving movements, such as near entrance and exit ramps. Most of the same-direction sideswipes are also occurring during congested conditions.

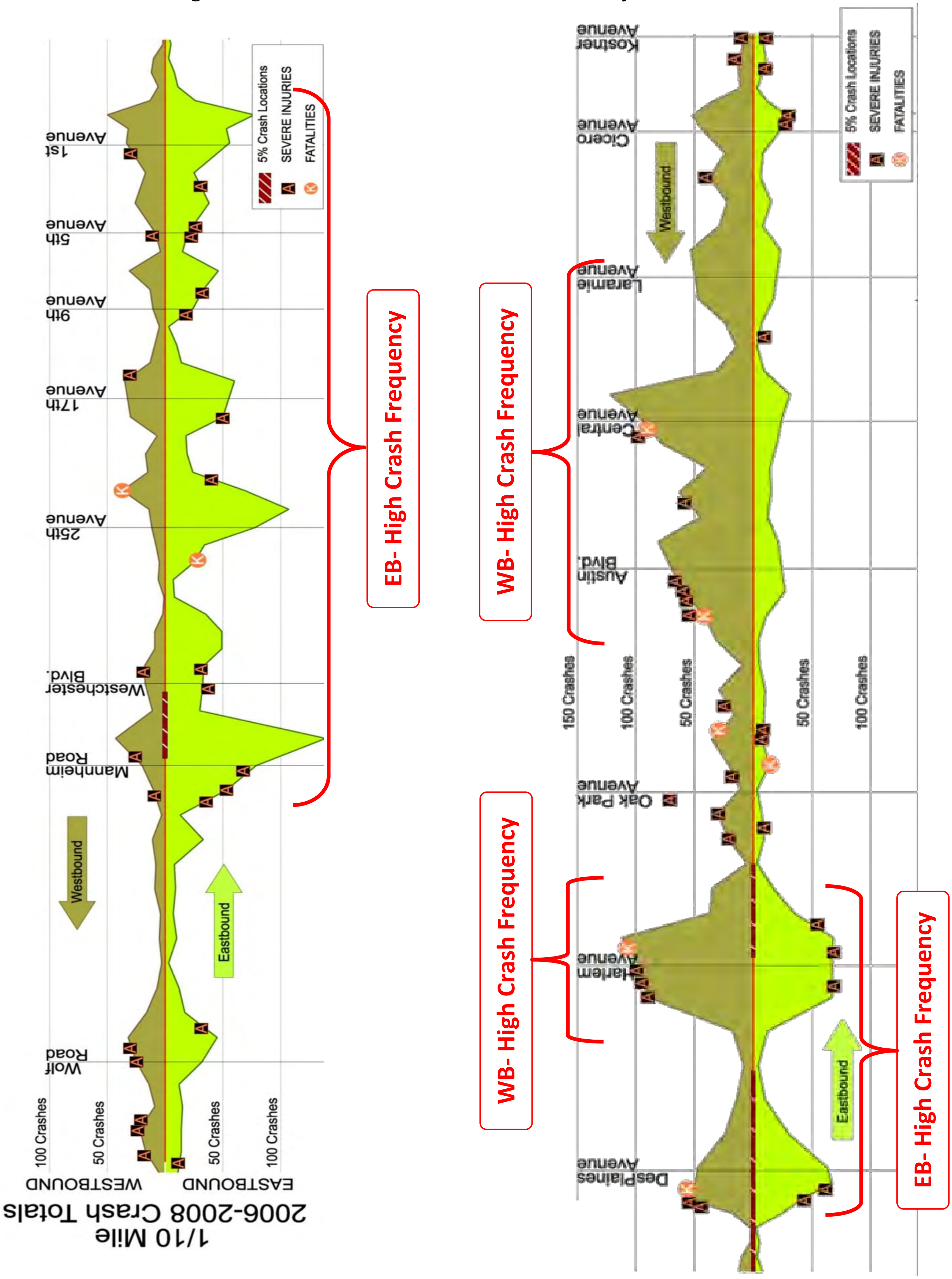
Figure 1-9 shows a graphic view of the crash distributions that indicates crash "hot spots," or spikes in crash activity along I-290. Also shown are the ~~location~~locations of fatal (Type K) and incapacitating injury (Type A) crashes as well as locations identified in IDOT's 2009 5 percent Report[6]. There were 9 Type K and 58 Type A crashes on I-290 within the 2006-2008 reporting period; 56 percent of Type K crashes and 55 percent of Type A crashes occurred during the uncongested period between 11 PM and 6 AM. 33 percent of these severe crashes involved a collision with a fixed object, 27 percent involved a rear end collision, and 12 percent involved a same direction sideswipe.

[6] The "5% Report" is a federally mandated crash report. Each state is required to report on a minimum of 5 percent of the locations on its highway system with the most severe safety needs. 23 U.S.C 148(c)(1)(D)

In the eastbound direction of I-290, the highest incidence of crashes occurs in the vicinity of Mannheim Road. Because there are no mainline connections to or from Mannheim Road in the eastbound direction, these crashes are attributed to congestion-related traffic backups due to the collector-distributor road merge east of Mannheim Road and the lane drop prior to 25th Avenue. A second high spike in crashes occurs in relationship to the 25th Avenue interchange. Here, a short auxiliary lane connection between two closely spaced loop ramps introduces a complicated traffic weaving condition that increases the potential of an incident. Many of the remaining EB crash spikes correlate to ~~interchange ramp exit and entrance locations.~~areas adjacent to and immediately upstream and downstream of interchange ramps where vehicles are exiting and entering the expressway.

In the westbound direction of I-290, the highest incidence of crashes occurs between east of Central Avenue and the Austin Boulevard left hand entrance ramp. Here, traffic experiences severe congestion for extended periods of time each day due to four lanes of heavy traffic merging into three, as well as weaving traffic from the Central Avenue entrance ramp and Austin Boulevard entrance and exit ramps. Harlem Avenue also experiences a high occurrence of crashes that correlate to the left hand exit and entrance ~~ramps~~ramp locations.

Figure 1-9 -Mainline 3-Year Crash Totals at Every 1/10 Mile

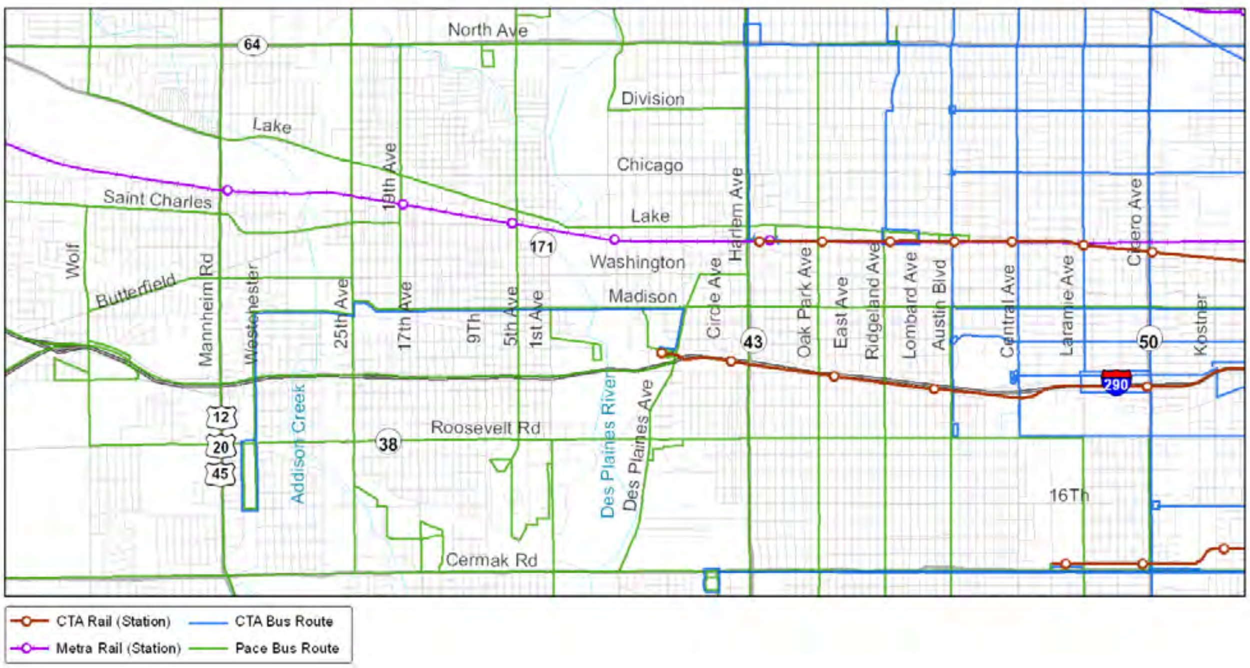


1.4.4 Improve Modal Connections and Opportunities

"Improve modal connections and opportunities" addresses the need to ~~develop transportation systems that~~ improve connections between all modes, including non-motorized connections to transit, and improving opportunities to better accommodate all transportation modes through cooperation and joint planning with transit providers.

The study area has a well developed and utilized public transportation system that carries 21 percent of study area home-to-work travel, compared to 12 percent for the Chicago region overall (see **Figure 1-10**). Although usage of the existing transit facilities within the study area is higher than for the region as a whole, deficiencies with the existing facilities hamper optimum provision of transit services.

Figure 1-10 - Map of Existing Public Transit Facilities



1.4.4.1 Improve Access to Transit

Improve pedestrian access to transit: Up to 67 percent of total weekday station entries involve pedestrian access trips. Three of the existing CTA Blue Line station entrances in the study area are located within congested I-290 interchanges: Harlem, Austin, and Cicero. Pedestrian conflicts occur due in part to heavy traffic volumes and narrow sidewalks.

Improve bicycle access to transit: 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 four of the five CTA Blue Line station locations; only the Forest Park station has indoor and sheltered bicycle spaces available. Thus, non-motorized access to CTA rapid transit facilities is ~~made more difficult~~inconvenient for many existing and potential users.

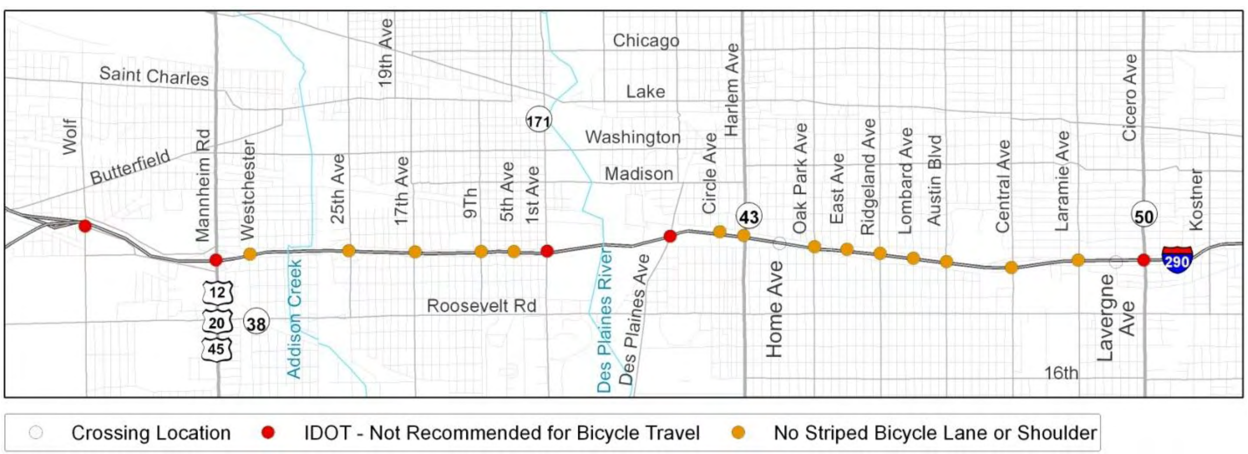
Improve bus transfer connections: Approximately 33 percent of total weekday station entries for the five CTA Blue Line stations in the study area transfer from CTA and Pace bus routes. The Harlem, Oak Park, Austin, and Cicero CTA Blue Line stations are located on the overpasses over I-290. The bus routes serving these stations must stop on the bridge, blocking traffic in the curb lane. In addition, depending on their direction of travel, these bus transfers require pedestrians to cross to the opposite side of the bridge to reach these CTA Blue Line station entrances. Therefore, access to bus-to-rapid transit transfers sometimes requires riders to cross four lanes of ~~through~~arterial traffic.

Improve vehicular access to transit: CTA and Metra park-and-ride facilities are limited and constrained. The only CTA Blue Line park-and-ride facility ~~on the Blue Line~~ in the study area is at the Forest Park terminal station, which operates at 85 percent capacity[7]. Access to the CTA and Village of Forest Park park-and-ride facilities is constricted by the congested traffic patterns at the I-290 Des Plaines Avenue interchange, with backups caused by traffic waiting to enter the westbound I-290 ramp. The closely-spaced traffic signals on Des Plaines Avenue and left turns required for egress/ingress for both Pace and CTA bus operations also results in delays to transit operations.

1.4.4.2 Improve Non-Motorized Connections

There is limited pedestrian and bicycle access across the I-290 corridor. Only two out of 21 existing crossings of I-290, Home and Lavergne Avenues, are dedicated for pedestrian/bicycle use. Five major street crossings of I-290 (Wolf Road, Mannheim Road, 1st Avenue, Des Plaines Avenue, and Cicero Avenue) are designated "Not Recommended for Bicycle Travel" by IDOT's Bicycle Map. The remainder of the I-290 street crossings do not have shoulders or dedicated bicycle lanes that would provide safer, more comfortable operating zones for bicyclists. **Figure 1-11** presents the existing bicycle crossings of I-290 in the study area, including those which are considered to be unsuitable.

Figure 1-11 - Bicycle Crossings of I-290



1.4.4.3 Improve Multi-modal Opportunities

The Cook-DuPage Corridor Study and the *Existing Transportation System Performance Report* identified several opportunities for improving transit facilities and services in the study area. These opportunities included the renewal of the existing rail and bus infrastructure in the study area, and potential new transit services and facilities to better serve the reverse commute and provide more convenient direct access to jobs for study area residents. This project will

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[7] CTA parking utilization as reported by RTA (www.rtams.org). Based on 1051 space parking capacity (2000 count).

coordinate with the transit agencies and other stakeholders in the planning, design, and potential construction of future transit opportunities.

1.4.5 Improve Facility Deficiencies

Improve facility deficiencies highlights the need to address the deficiencies in condition of the pavement and structures, to address deficiencies of the existing transportation system in meeting current design standards, to address deficiencies related to pedestrian, bicycle and transit facilities, and to address drainage deficiencies.

1.4.5.1 Address Pavement Age

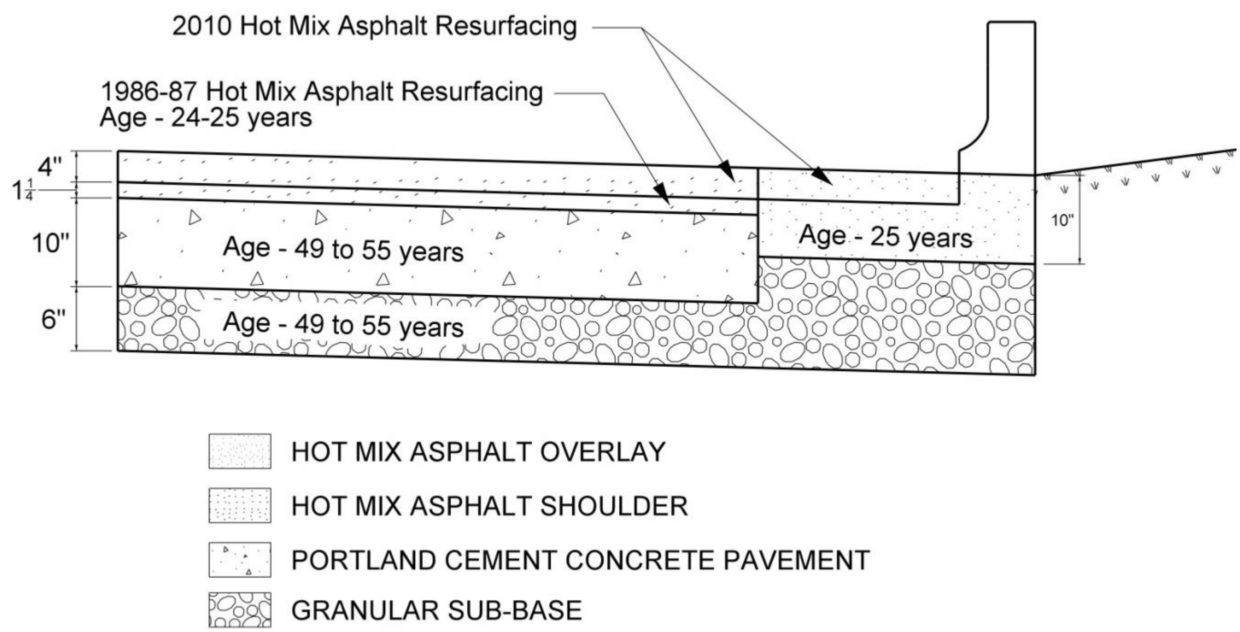
The existing pavement along I-290 in the study area was installed in the 1950's as part of the original construction. The existing portland cement concrete pavement and sub-base are now over 50 years old, exceeding their typical service life by approximately 30 years. The original interstate system policy, which I-290 was constructed under, required the pavement to handle projected auto and truck traffic to the year 1975; this was later revised to a 20-year design period for new interstate pavements by federal legislation.[8]

Figure 1-12 below depicts the existing pavement structure and its construction and rehabilitation history.

A rehabilitation project was initiated in 2010 to provide pavement resurfacing and to perform minor bridge repairs, representing a fourth resurfacing since the original construction. This resurfacing only replaced the top layer of asphalt and does not address the continued deterioration of the underlying pavement structure. A continuance of this maintenance and rehabilitation cycle for the foreseeable future is expected to result in increased failures in the pavement base and will require more frequent resurfacings to provide an acceptable riding surface.

[8] "A Policy on Design Standards---Interstate System", AASHTO, 5th edition; 23 USC 109 (b)

Figure 1-12 - I-290 Pavement Construction History through 2010

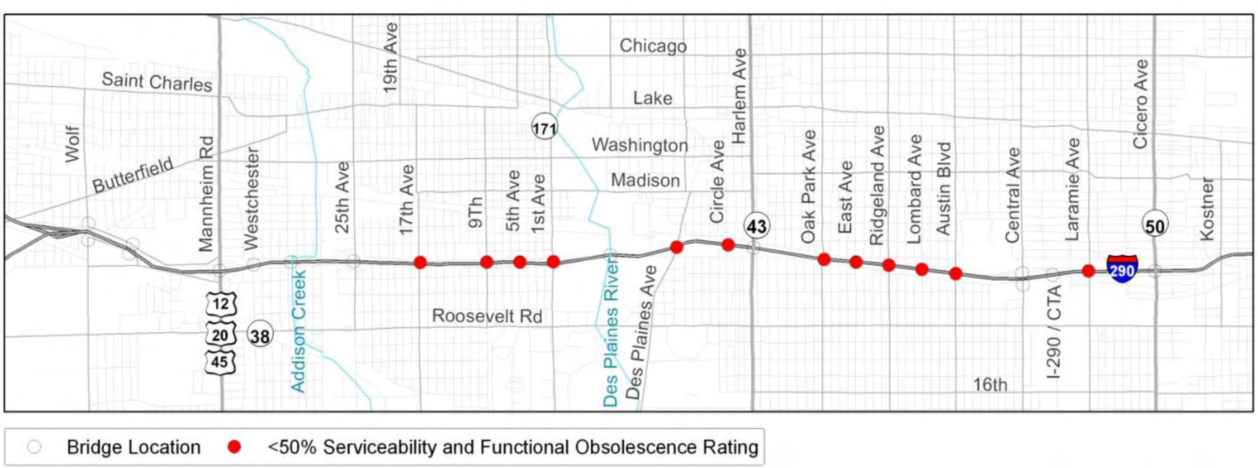


1.4.5.2 Address Structure Deficiencies

There are three components to the sufficiency rating system for evaluating bridge structures: structural adequacy, serviceability and functional obsolescence, and essentiality for public use.

All of the 26 bridge structures over I-290 in the study area are currently rated as structurally adequate and are essential for public use. However, as shown in **Figure 1-13,** there are 12 bridges that rate below 50 percent for serviceability and functional obsolescence, indicating a deficiency in the current design and geometric suitability of these bridges. The bridge repairs performed in 2010 did not address the bridges' functional obsolescence.

Figure 1-13 - Functionally Obsolete Bridges over I-290

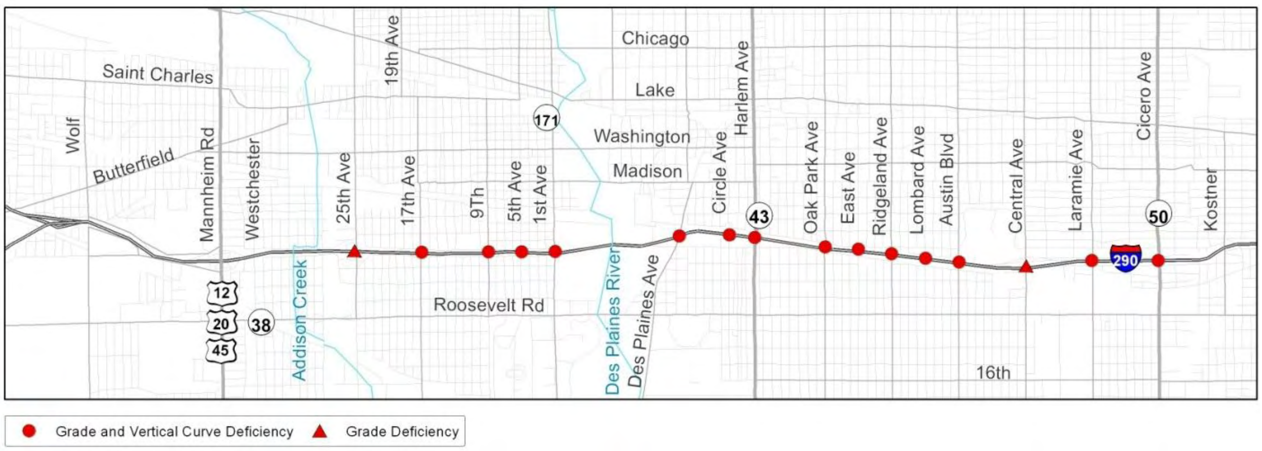


1.4.5.3 Address Geometric Deficiencies

Since the original construction of I-290, state and federal design standards for highway facilities have been updated to promote better operations and improved safety~~, and increased durability~~

~~performance.~~ for the autos and trucks using the facility. Numerous deficiencies in meeting current design policy were identified for the I-290 mainline and along cross roads and interchanges in the study area. Shoulder widths are inconsistent along I-290, with over 80 percent of the mainline within the study area not meeting the minimum required ~~minimum~~ shoulder widths of 10' for left and right shoulders. Approximately one-third of all exit ramp departure angles are too abrupt, and over 80 percent of ramp recovery zones (gore areas) are too short. Almost all of the existing cross roads over I-290 do not meet current standards for profile grades and vertical curves. **Figure 1-14** presents the crossroad bridges that have grades or vertical curve geometry that does not meet current design standards. Approximately 90 percent of interchange intersection turning radii are too sharp, resulting in vehicles, especially trucks, having difficulty navigating these intersections.

Figure 1-14 - Existing Crossroad Vertical Geometry Deficiencies



Of the bridges that cross over I-290 in the study area, only two (CSX Railroad and Harlem Avenue) exceed a sixteen foot vertical roadway clearance over I-290. Low vertical clearances inhibit the ability to move oversized highway freight items through the I-290 corridor and increase the potential for crashes involving trucks hitting the low beams of overhead bridges.

1.4.5.4 Address ADA Ramp and Sidewalk Deficicencies

Sixty percent of crossroad intersections and thirty-five percent of frontage road intersections near I-290 in the study area have at least one pedestrian ramp that is not in compliance with current Americans with Disabilities Act (ADA) standards. The existing sidewalks in the study area, providing access to the CTA Blue line stations, are narrower than the 8' to 10' recommended width for major pedestrian traffic generators[9] and contain obstructions. Improvement of ADA compliance and high-traffic sidewalk widths addresses pedestrian safety needs, especially for persons with disabilities.

1.4.5.5 Address Drainage Deficiencies

Analysis of the existing drainage system revealed several drainage deficiencies. The drainage system and facilities were built during the original construction of the Eisenhower Expressway,

[9] Pedestrian Safety Guide and Countermeasure Selection System (FHWA)

and are over 50 years old. Existing inlet spacing along I-290 is not designed for a 50 year storm event. Also, detailed hydrologic analysis of the I-290 trunk sewer system has determined that the western trunk line will be overtopped by a 100 year rain event, as was evidenced by the July 2010 storm that flooded and forced closures of I-290 and CTA.

The existing I-290 bridges over the Des Plaines River and Addison Creek do not meet current design criteria for providing a minimum 2′ of clearance between the low beam elevation and the 50-year natural high water elevation. In addition, the Addison Creek bridge does not meet the minimum 3′of freeboard between the existing edge of pavement and the 50-year headwater elevation.