

The project will provide a transportation facility that will provide improved safety, capacity, and facility conditions. It meets the project's purpose and need.

## **SECTION IV: IMPACTS, DOCUMENTATION AND MITIGATION**

### **General**

The project area was inventoried for environmental resources. The Environmental Resources Map, Exhibit 5, identifies all sensitive cultural, natural, physical, and socio-economic resources, in the study area. Resources potentially impacted by the proposed action or that require discussion pursuant to applicable laws and regulations are addressed in this Section. The affected resources and the mitigation proposed are discussed by environmental discipline.

Evaluation of the project area determined that the following environmental issues and resources are not involved: agricultural, natural resources, water resources and aquatic habitats, groundwater, floodplains, wetlands, special lands, and Section 4(f) lands and are therefore not discussed further in this report.

### **Part I. Socio-economic**

#### **1. Community Characteristics and Cohesion**

##### Community Characteristics and Cohesion

The project study team reviewed U.S. Bureau of the Census data from 2000 and 2011 estimates to determine community characteristics. In most cases, critical information and data from the 2011 estimates were used. However, in some cases, 2000 Census data was referenced to draw a comparison to the 2011 estimates. The data is divided into four geographic groups: the State of Illinois, Cook County, the City of Chicago and the project area. The project area is represented by the eight census tracts that are located in whole or in part of the project limits. Thus, the project area for census purposes is larger than the project limits described in the Purpose and Need. Exhibit 6 shows the location of the census tracts defined below:

- Census Tract 833000 – within the City of Chicago, generally bordered by Kinzie Street on the north, Madison Street on the south, Halsted Street on the east and Ashland Avenue on the west.
- Census Tract 280100 – within the City of Chicago, generally bordered by Kinzie Street on the north, Madison Street on the south, the Chicago River on the east and Halsted Street on the west.
- Census Tract 833100 – within the City of Chicago, generally bordered by Madison Street on the north, Van Buren Street on the south, Halsted Street on the east and Ashland Avenue on the west.
- Census Tract 281900 – within the City of Chicago, generally bordered by Madison Street on the north, Van Buren Street on the south, the Chicago River on the east and Halsted Street on the west.
- Census Tract 833300 – within the City of Chicago, generally bordered by Van Buren Street on the north, Roosevelt Road on the south, Morgan Street on the east and Racine Avenue on the west.
- Census Tract 283800 – within the City of Chicago, generally bordered by Roosevelt Road on the north, 16<sup>th</sup> Street on the south, Morgan Street on the east and Racine Avenue on the west.
- Census Tract 841900 – within the City of Chicago, generally bordered by Van Buren Street on the north, 16<sup>th</sup> Street on the south, the Chicago River on the east and Morgan Street on the west.
- Census Tract 832900 – within the City of Chicago, generally bordered by Van Buren Street on the north, Polk Street on the south, Racine Avenue on the east, and Ashland Avenue on the west.

##### *Population*

According to a U. S. Census estimate, the population of the State of Illinois was 12,790,182 in 2011. This represents a 2.99 percent increase from the State's 2000 population of 12,419,293 (See Table 12). In contrast, the population of Cook County dropped from 5,376,741 in 2000 to 5,182,969 in 2011; a decline of 3.60 percent. During the same

timeframe, the population of the City of Chicago declined by 6.74 percent. Within the project area, the population was estimated to be 27,781 in 2011 – a growth of over 72 percent from 2000.

**Table 12 Population Change (2000 to 2011)<sup>11</sup>**

Database	State of Illinois	Cook County	City of Chicago	Project Area
Census 2000	12,419,293	5,376,741	2,896,016	17,516
Census ACS 2011	12,790,182	5,182,969	2,700,741	27,781
Change (Number)	+370,889	-193,772	-195,275	+12,719
Change (Percent)	+2.99%	-3.60%	-6.74%	+72.61%

*Age*

In 2011 the estimated median age for the State of Illinois was 36.4 years of age; the median age for Cook County was 35.2 years of age; the City of Chicago was 33.0 years of age; and the project area was 30.9 years of age (See Table 13). In this case, the smaller the geographic area, the younger the median age.

**Table 13 Age Distribution<sup>12</sup>**

Age Group	State of Illinois	Cook County	City of Chicago	Project Area
Under 10	13.3%	13.0%	13.1%	5.9%
10 to 19	14.1%	13.6%	13.2%	7.3%
20 to 64	60.1%	61.5%	63.4%	81.5%
65 and over	12.4%	11.9%	10.4%	5.2%
Total	100%	100%	100%	100%
Median Age	36.4	35.2	33.0	30.9

*Home Ownership and Occupancy*

In 2011, 68.7 percent of Illinois residents owned and occupied their home. Cook County had a lesser rate at 59.8 percent, and the City of Chicago even less at 47.0 percent. However, the project area had an owner-occupancy rate of 63.6 percent (See Table 14).

**Table 14 Home Ownership and Occupancy<sup>13</sup>**

Occupancy Status	State of Illinois	Cook County	City of Chicago	Project Area
Owner-Occupied	68.7%	59.8%	47.0%	63.6%
Non Owner-Occupied	31.3%	40.2%	53.0%	36.4%
Total	100%	100%	100%	100%

*Income and Poverty*

Table 15 presents income data and poverty data for the State of Illinois, Cook County, the City of Chicago, and the project area. The median income for the State of Illinois was \$56,576; Cook County was slightly less at \$54,598; the City of Chicago was less at \$47,371. However, the project area was much higher than the other three geographical areas at \$88,903.

The 2011 U.S. Census estimate shows that 9.6 percent of Illinois citizens fell into poverty status within the past 12 months. The rate was higher in Cook County at 12.3 percent and higher still in the City of Chicago at 17.6 percent. However, the rate was much less for the project area at only 6.6 percent.

<sup>11</sup> Source: U.S. Census 2000 Decennial Census and U.S. Census, American Community Survey, 2011 5-Year Period Estimate

<sup>12</sup> Source: U.S. Census, American Community Survey, 2011 5-Year Period Estimate

<sup>13</sup> Ibid

Table 15 Income and Poverty

Income and Poverty Data	State of Illinois	Cook County	City of Chicago	Project Area
1999 Median Household Income (1999 dollars) <sup>14</sup>	\$46,590	\$45,922	\$38,625	\$50,227
<b>1999 Median Household Income (2011 dollars)<sup>15</sup></b>	\$62,897	\$61,995	\$52,144	\$67,806
2011 Median Household Income (2011 dollars) <sup>16</sup>	\$56,576	\$54,598	\$47,371	\$88,903
Poverty Status, Percent below level <sup>17</sup>	9.6%	12.3%	17.6%	6.6%

*Race and Ethnicity*

Table 16 presents a comparison of the 2011 racial composition of the State of Illinois, Cook County, and the City of Chicago along with the project area. With the exception of the City of Chicago (44.9 percent white), the majority of the population within each entity was white in 2011. The State of Illinois is comprised of 72.0 percent white population, followed by 14.5 percent black or African American population and 6.8 percent of some other race. The composition of Cook County includes 55.2 percent white population, 24.9 percent black or African American population and 11.6 percent of some other race. The City of Chicago includes 44.9 percent white population, 17.7 percent of black or African American population and 13.9 percent Asian population.

Table 16 Racial Composition<sup>18</sup>

Race	State of Illinois	Cook County	City of Chicago	Project Area
White	72.0%	55.2%	44.9%	64.1%
Black or African American	14.5%	24.9%	33.4%	16.6%
American Indian or Alaskan Native	0.2%	0.2%	0.3%	0.3%
Asian	4.6%	6.2%	5.4%	14.6%
Native Hawaiian & Other Pacific Islander	< 0.1%	< 0.1%	< 0.1%	< 0.1%
Some Other Race	6.8%	11.6%	14.2%	2.0%
Two or More Races	1.8%	1.8%	1.8%	2.4%
Total	100%	100%	100%	100%

The U.S. Census has two minimum categories for ethnicity: *Hispanic or Latino* and *Not Hispanic or Latino*. The federal government considers race and Hispanic origin to be two separate and distinct concepts. Hispanics and Latinos may be of any race. Table 17 presents a comparison of the ethnic composition of the State of Illinois, Cook County, and the City of Chicago and census tracts within the project study area. In 2011 the State of Illinois had an estimated population that was 15.5 percent Hispanic or Latino people; Cook County had a 23.6 percent population; the City of Chicago had a 28.1 percent population. Comparatively, the project area had a much less population of Hispanic or Latino population at 3.7 percent.

<sup>14</sup> Source: 2000 U.S. Census

<sup>15</sup> Source: [http://www.bls.gov/data/inflation\\_calculator.htm](http://www.bls.gov/data/inflation_calculator.htm)

<sup>16</sup> Source: U.S. Census, American Community Survey, 2011 5-Year Period Estimate

<sup>17</sup> Ibid

<sup>18</sup> Ibid

Table 17 Ethnic Composition<sup>19</sup>

Occupancy Status	State of Illinois	Cook County	City of Chicago	Project Area
Hispanic or Latino	12.3%	18.3%	20.9%	3.7%
Not Hispanic or Latino	87.7%	81.7%	79.1%	96.3%
Total	100%	100%	100%	100%

### Community Cohesion

The Circle Interchange and its interstate facilities are existing roadway facilities that travels through the project area. They have been integrated into the adjacent local neighborhoods' identities and local roadway network grid. At one time, the University of Illinois at Chicago (UIC) campus was known as the "Circle Campus" taking its name from the interchange. Expansion of UIC has resulted in considerable redevelopment of the surrounding neighborhoods, razing aging buildings and infrastructure and replacing them with institutional buildings and facilities. The UIC expansion has occurred on both sides of the I-290 corridor and (in some cases) divided the local communities and neighborhoods.

The proposed project will provide opportunities to "reintroduce" connectivity across the I-290 corridor, giving connections to the neighborhoods on both sides. These opportunities may include gateway features into the neighborhoods and communities, banner identifiers, street furnishing and landscaping, improved pedestrian and bicycle access, decorative lighting, and public art. Each neighborhood theme would make distinct identifiers of the community, while providing connection to the overall I-290 corridor area.

The proposed improvements maintain the same general alignment, same general ramp accesses, and same local cross street connections. The Preferred Alternative will not divide or cause to isolate any of the project area communities or neighborhoods. Coordination with stakeholder groups and the Project Working Group have included discussions of possibly making the new flyover ramps as "Gateway" features into downtown Chicago. Aesthetic treatments have also been discussed to provide neighborhood identifiers for UIC and Greektown, using decorative elements on bridge fascias, lighting and banners. These items were coordinated during the Aesthetics Workshop.

These improvements provide a positive effect on the community cohesion by providing:

- A Preferred Alternative that meets the transportation needs for all users.
- A Preferred Alternative that accommodates the projected traffic volumes.
- A Preferred Alternative that updates the current roadway facility to current requirements and standards.

## 2. Title VI and Environmental Justice

### Title VI

"Groups of ethnic, religious, elderly or handicapped people  **are** /  **are not** present within the project area. No groups or individuals have been, or will be, excluded from participation in public involvement activities, denied the benefit of the project, or subjected to discrimination in any way on the basis of race, color, age, sex, national origin or religion."

### Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires a heightened sensitivity for the needs and concerns of minority and low income groups during

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<sup>19</sup> Source: U.S. Census, American Community Survey, 2011 5-Year Period Estimate

project planning. According to the Census data presented, the project area does not appear to be comprised of a large population of minority or low income people:

- Race: Whites comprise 63.9 percent of the population, compared to 44.9 percent for the entire city
- Ethnicity: Non-Hispanics or Non-Latinos comprise 92.9 percent of the population.
- Income: The average median income is \$90,574, compared to \$47,371 for the entire city
- Poverty: Only about 6.2 percent of residents fell into poverty status, compared to 17.6 percent for the entire city

Based on this data, a disproportionately high and adverse impact to minority or low income populations is not anticipated for this project.

“The project area was evaluated in accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, to determine if there is a potential for disproportionate and adverse impacts to low-income or minority populations. The 2010 Census indicates that residents of the project area are 63.9% white, 17.7% black, and 13.9% Asian. The median family income for the project area is \$90,574. 6.2% of the residents are below the median family income within the project area. The Health and Human Services 2012 Poverty Guidelines for a family of four is \$23,050. Based on this demographic information and field observations of the project area, the project  will /  will not result in disproportionately adverse impacts to minority or low-income populations.”

There is Housing and Urban Development (HUD) housing located along the north side of I-290 between Throop Street and Loomis Street. The development consists of two and three story apartments and townhouses (Academy Square) and a high-rise senior housing building (318 Throop Street). Based on the noise analysis a noise barrier is proposed along the south side of Van Buren Street along the frontage of the HUD development. The noise barrier will extend from Loomis Street east for approximately 840 feet. The barrier height ranges from 14 to 23 feet. See the Environmental Resources Map, Exhibit 5 for the locations of the HUD development and noise barrier. Also, see Part V Noise and Vibration, of this report for additional information.

### **3. Public Facilities and Services**

All public lands, institutions, schools, libraries, churches, and emergency community services located in the project area were inventoried. Exhibit 5, Environmental Resources Map, illustrate these facilities and services which are within the project study area.

The UIC campus and the Illinois Medical District, are two prominent public facilities to the south and west of the interchange. The Cermak Pump Station, is located on the south side of Harrison Street between the northbound and southbound lanes of I-90/94.

The Chicago Fire Department operates the Engine 5 Station Fire House at 324 S. Des Plaines Street between Van Buren Street and Jackson Boulevard. The Chicago Police Department operates its 12<sup>th</sup> District Police Station at 100 S. Racine Avenue, near the intersection with Monroe Street, two blocks north of the project limits along I-290.

Chicago Public Schools operate Andrew Jackson Elementary School along Harrison Street, between Loomis Street and Racine Avenue. The Jane Addams Hull House Museum is located along Halsted Street between Taylor Street and Harrison Street. It is also listed on the National Register of Historic Places.

The Chicago Transit Authority operates trains and buses throughout the project limits. CTA Blue Line train service is provided in the median of I-290 and in a subway below Congress Parkway. Within the project area, the Blue Line can be accessed from the Racine Station (accessible from Loomis Street, Racine Avenue), the UIC-Halsted Station (accessible from Morgan Street, Peoria Street and Halsted Street) and shown in Exhibit 5, Environmental Resources Map, and the Clinton Station (accessible from Clinton Street). CTA Green/Pink Line train service runs above Lake

Street. The nearest stops to the project limits include the Morgan Station (five blocks west of I-90/94) and the Clinton Station (three blocks east of I-90/94). The Blue Line and Green/Pink Line Clinton Stations are separate facilities. The CTA also operates several bus routes on the following streets within the project limits: Roosevelt Road, Taylor Street, Harrison Street, Van Buren Street, Jackson Street, Madison Street, Washington Street, Des Plaines Street and Halsted Street. It has a dedicated staging area/bus stop on the northwest corner of Des Plaines Street and Harrison Street.

Although research has not shown any direct quantifiable correlation between improved pedestrian/bicycle access to transit stations and an increase in ridership, it has shown that there are definite benefits, from both a safety standpoint and a "willingness to use transit" when access improvements are made around station areas. Several studies identify the benefits to improving access around train station. Benefits include safety, more of a willingness to use transit, and improvements in health. The *Chicago Pedestrian Plan* (2012) identifies the need to improve transit station entrances located on bridges over the expressway. As part of this project, the proposed improvements will include improved pedestrian access to the Halsted Street station of the Blue Line, including wider sidewalks on both sides, bike lanes, a canopy, and improved mid-block crossing features.



Figure 6 UIC-Halsted Station (Blue Line)

Greyhound operates an intercity bus station along Des Plaines Street between Congress Parkway and Harrison Street.

In 2005, the FHWA designated the U.S. 66 Scenic Byway in Illinois. While not by definition a public facility or service, there is a portion of the U.S. 66 Scenic Byway in the project area. It is available for use and travel by the motoring public. The FHWA designates scenic byways as part of an effort to recognize, preserve and enhance selected roads throughout the United States.<sup>20</sup> The eastern terminus of the byway is at the intersection of Jackson Boulevard at Lake Shore Drive (U.S. Route 41). While the historic route of U.S. 66 stretched through eight states from this eastern terminus to Santa Monica, California, only sections in Illinois, Oklahoma, New Mexico and Arizona have been designated as scenic byways<sup>21</sup>.

Within the project limits, the U.S. 66 Scenic Byway is routed along Jackson Boulevard (eastbound) and Adams Street (westbound). No adverse impacts to this byway are anticipated as part of this project.

#### 4. Changes in Travel Pattern and Access

The existing Circle Interchange provides full connectivity for all eight system movements. In other words, both directions of I-90/94 can access both directions of I-290/Congress Parkway. The interchange area also provides partial service to multiple cross streets, including Roosevelt Road, Taylor Street, Jackson Street, Adams Street, Monroe Street, Madison Street, Washington Street, Randolph Street and Lake Street along I-90/94; plus Morgan Street and Canal Street along I-290/Congress Parkway. No permanent changes to cross street traffic patterns are anticipated.

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<sup>20</sup> Source: FHWA Scenic Byways web site at <http://www.fhwa.dot.gov/hep/byways/>

<sup>21</sup> Source: National Scenic Byways Program web site at <http://www.bywayonline.org/inventory/byways/2489>

## **Morgan Street Exit**

Access to Morgan Street will be modified. Currently, exit maneuvers are legally allowed from Ramp NW and Ramp SW. The exit maneuver is prohibited from westbound I-290, although vehicles have been observed making this exit. The proposed improvements will allow exit to Morgan only from Ramp NW while prohibiting the exit maneuvers from Ramp SW and westbound I-290. The Ramp NW exit maneuver to Morgan Street will be physically separated from Ramp SW and westbound I-290 to discourage the prohibited movements. Traffic from Ramp SW can access Morgan Street by exiting at the system ramps along I-90/94 (Kennedy Expressway), i.e. Washington Street, Madison Street, Monroe Street, Adams Street, and Jackson Street. Traffic traveling along westbound I-290 can access Morgan Street by exiting at Racine Street, which is the next exit two blocks west of Morgan Street. Adverse travel is not anticipated for these prohibited movements. The existing grid network of local city streets will provide several access points and options for the prohibited movements.

## **Ramp WN**

Ramp WN access to the Kennedy Expressway C-D road is not provided in the proposed improvement, thereby eliminating access from the system ramps to the city, i.e. Washington Street, Madison Street, Monroe Street, Adams Street, and Jackson Street. This movement is low in volume and it would be anticipated that vehicles traveling on this ramp are leaving the city and would not be exiting at the system ramps to return to the city. However, if a vehicle desired to return to the city, then the next available exit would be at Ohio Street. Adverse travel is not anticipated for the movement. The existing grid network of local city streets will provide several access points and options if a vehicle were to exit at Ohio Street.

## **Construction Access**

A Traffic Management Plan (TMP) was prepared for the project. The TMP makes recommendations for detour routing and construction staging options which will be evaluated in detail during the Phase II Design Engineering. Basic principles applied in developing these concepts for the TMP include:

### *Cross Street Bridges*

In general, cross street bridges will be closed during construction and the traffic detoured. Because of the local city grid network of streets, the detours to the next cross street in either direction will be evaluated. In most cases this would be the next cross street one block away or at most two blocks away. For cross street bridges with ramp access, the evaluation will consider detouring traffic to the nearest up or downstream interchange.

### *System Ramps*

For proposed system ramp construction, attempts will be made to maintain traffic on the existing ramps while the proposed ramp is being constructed. In instances when this is not possible, traffic will be detoured using available (existing and proposed) ramp access points and mainline interstate routes. Detours of system ramp traffic will be done along the interstate facility as practicable.

### *Mainline*

During construction, a minimum of three lanes in each direction will be maintained along I-90/94 as practicable. Similarly, two lanes of traffic in each direction will be maintained along I-290/Congress Parkway as practicable. However, there will be occasions when full lane closures may be required, such as when placing overhead structural components for the proposed bridges.

### *Pedestrians and Bicycles*

Pedestrian traffic during construction will be detoured to the next nearest parallel route. Typically due to the city grid network of streets, this will be the next block up and downstream of the location. Bicycles will be detoured to the next nearest bicycle route as defined by the City of Chicago's Bike Route Plan.

In general, proposed detour routes will be contained within the area bounded by Madison Street on the north, Roosevelt Road to the south, Racine Street to the west and Wells Street to the east, as practicable. The classification of roadways used in detours will be at least collector roads or better, as practical. Signage along the

mainline corridors will be provided well in advance to inform travelers of ramp and lane closures and direct them to the appropriate open ramps.

Additional information can be obtained from the *Circle Interchange Traffic Management Plan*, which is a separate document available at the IDOT District 1 Office in Schaumburg, Illinois.

### **Emergency Access**

Although response routes may not be changed, construction of standard shoulder widths on System Ramps will dramatically improve emergency access and potentially response times within the interchange. The wider shoulders will provide more room for emergency response vehicles to maneuver and bypass around traffic.

### **Pedestrian and Bicycle Access**

Pedestrian and bicycle access is being maintained and/or enhanced. See Section 9 below for additional discussions.

## **5. Relocations (Business and Residential)**

No relocations are anticipated as part of this project.

### **Right-of-Way Acquisition**

Construction of the proposed action will require 0.1 acres of right-of-way from one parcel and 0.2 acres of temporary easements from six parcels. The proposed right-of-way is needed for the construction of the southbound Jackson Street exit ramp. Temporary construction easements are required for grading, driveway reconstruction, site restoration, and landscaping.

All relocations and property acquisition will be conducted under the provisions of the *Uniform Relocation Assistance and Real Property Acquisition*, as amended, and the *IDOT Land Acquisition Procedures Manual*<sup>22</sup>.

## **6. Economic Impacts**

A diverse set of businesses are located within the Circle Interchange study area. These include restaurant, retail, warehouses and office spaces. No major impacts to these businesses are anticipated as part of this project. An improved Circle Interchange is anticipated to have a positive impact on business in general, in terms of increased transportation efficiency. The proposed improvements will provide congestion relief and improved accessibility to the project roadways and adjacent neighborhood communities and land uses. Improved accessibility may encourage infill and redevelopment of moribund land uses and buildings. In turn this may attract new land uses, commercial developments and employment opportunities into the adjacent communities.

No businesses will be relocated. Impacts to businesses as it relates to sales tax revenue or access changes are not expected as a result of the project. However, as part of the 0.1 acres of proposed right-of-way, 18 parking spaces will be eliminated. Compensation for the parking space loss is anticipated to be provided through the acquisition process. All property acquisition will be conducted under the provisions of the *Uniform Relocation Assistance and Real Property Acquisition*, as amended, and the *IDOT Land Acquisition Procedures Manual*<sup>23</sup>.

## **7. Land Use**

This project will not necessitate changes to land use.

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<sup>22</sup> Source: <http://www.dot.il.gov/landacq/lamanual/Land%20Acquisition%20Manual.pdf>

<sup>23</sup> Ibid

## 8. Growth and Economic Development

Located in the center of Chicago, the project area is well established. No substantial growth in the immediate vicinity is anticipated. However, this project will enhance the project area's economic stability by providing an improved transportation network.

## 9. Pedestrian and Bicycle Facilities

- Project will cause disruption or permanent changes in pedestrian or bicycle access
- Project will not cause disruption or permanent changes in pedestrian or bicycle access

Pedestrians and bicyclists are prohibited from using the expressway system. However, pedestrians and bicycles are accommodated on the cross streets surrounding the Circle Interchange. Sidewalks are provided on both sides of all cross street crossings within the project limits. Existing marked bicycle lanes or shared lanes are provided on select cross street crossings of the expressway system. Table 18 shows the existing and proposed sidewalk and bicycle accommodations for cross street crossings:

**Table 18 Bicycle and Pedestrian Accommodations (Existing Conditions)**

Cross street	Pedestrian Accommodations		Bicycle Accommodations*	
	Existing	Proposed	Existing	Proposed
Taylor Street over I-90/94	Sidewalk (11' on both sides)	16' sidewalk both sides	none	none
Harrison Street over I-90/94	Sidewalk (7' on both sides)	10' sidewalk both sides	none	Bike lane with buffer both sides
Van Buren Street over I-90/94	Sidewalk (11.5' on both sides)	12' sidewalk both sides	none	None
Jackson Boulevard over I-90/94	Sidewalk (9' on both sides)	11' sidewalk both sides	none	Bike lane with buffer (EB)
Adams Street over I-90/94	Sidewalk (12' on both sides)	21' north, 16' south sidewalks	none	Bike lane with buffer (WB)
Morgan Street over I-290	Sidewalk (7' on both sides)	10' sidewalk both sides	none	Bike lane with buffer both sides
Peoria Street over I-290	Pedestrian-only bridge	Pedestrian-only	Bicycles permitted	Bicycles permitted
Halsted Street over I-290	Sidewalk (7' on both sides)	10' sidewalk both sides	Bike lane (NB), shared lane (SB)	Bike lanes both sides
Des Plaines Street below Congress	Sidewalk (14'-16' on west, 13'-14.6' east)	14' sidewalk both sides	Bike lane with buffer (SB)	Bike lane with buffer (SB)

\*EB: eastbound; WB: westbound; NB: northbound; SB: southbound

The proposed sidewalk and bike lane facilities have been coordinated with the City of Chicago and are consistent with the City's Bicycle and Pedestrian Access plans. The proposed improvements are maintaining or improving existing pedestrian and bicycle facilities and access. The project will comply with all Americans with Disabilities Act (ADA) requirements.

Other bicycle accommodations near the project limits include bike lanes in both directions on Roosevelt Road over I-90/94, an eastbound bike lane on Washington Street over I-90/94, a southbound bike lane on Clinton Street below

Congress Parkway and a northbound bike lane on Canal Street below Congress Parkway. An existing bike lane on Jackson Boulevard, just west of the project limits, is shown in Figure 7.



**Figure 7 Jackson Boulevard Bike Lane approaching Halsted Street**  
Looking east

## **Part II. Agricultural**

### **1. Farms and Farmland Conversion**

There are no agricultural lands in the vicinity of this project.

### **2. Prime and Important Soils**

There are no prime and important farmlands, or protected Agricultural Areas in the vicinity of this project.

### **3. Severed/Landlocked Parcels**

There are no agricultural lands in the vicinity of this project. There will be no severed, uneconomical remnants, or landlocked parcels with the No-Build or the Circle Interchange Preferred Alternative.

### **4. Adverse Travel**

There are no agricultural lands in the vicinity of this project. There will be no adverse travel for farm equipment or agricultural vehicles with the No-Build or the Circle Interchange Preferred Alternative.

## **Part III. Cultural Resources**

No Historic Properties Affected - See letter from SHPO

Historic Properties Affected - See below

### **1. Archeological Properties**

Project will not affect Archeological Properties

Project will affect Archeological Properties

## 2. Historic Bridges

- Project will not affect a bridge listed in the Illinois Historic Bridge Survey
- Project will affect a bridge listed in the Illinois Historic Bridge Survey

Ten cross street structures (including two along Harrison Street) were reviewed. It was determined that the bridges are not eligible for the National Register of Historic Places because they do not retain their historical integrity and are not structurally significant.

## 3. Historic District

- Project will not affect a Historic District
- Project will affect a Historic District

## 4. Historic Buildings

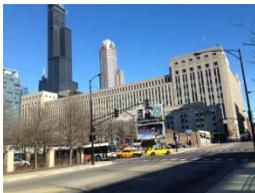
- Project will not affect any Historic Buildings
- Project will affect Historic Buildings

Five properties within the project vicinity are listed on the National Register of Historic Places<sup>24</sup>. Each is depicted in the photos in Figures 8 through 12, and Exhibit 5, Environmental Resources Map shows the location of these places. Note that the Hull House in Figure 12 has also been designated as a National Historic Landmark. No impacts are anticipated to these buildings as part of this project.

A noise analysis was completed and found that a noise barrier was warranted along the west side of Old St. Patrick's Church school. The playground for the Frances Xavier Warde School is adjacent to I-90/94. Based on the noise analysis a noise barrier is proposed at the existing right-of-way line. The barrier will be approximately 260 feet in length and six feet high. No impacts associated with the proposed noise barrier are anticipated to the Old St. Patrick's Church building which fronts along Des Plaines Street. See the Environmental Resources Map, Exhibit 5 for the location of the school and noise barrier. Also, see Part V Noise and Vibration, of this report for additional information.

A Vibration Monitoring Program will be completed for these buildings where practicable. It is anticipated that the proposed monitoring program will avoid any vibration impacts to these buildings during construction. See Part V, Noise and Vibration, of this report for additional information.

The Cultural Resource Clearance of "No Adverse Effect" was issued March 15, 2013 and was concurred upon by SHPO on March 15, 2013. See Appendix A for a copy of the correspondence.



**Figure 8 Old U.S. Post Office**  
433 W. Van Buren St.  
NRHP #347917

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<sup>24</sup> Source: National Park Service Website at <http://www.nps.gov/nr/research/>



**Figure 9 Automatic Electric Company Building**  
1001 W. Van Buren St.  
NRHP #349872



**Figure 10 Old St. Patrick's Roman Catholic Church**  
718 W. Adams St.  
NRHP #372669



**Figure 11 International Tailoring Company Building**  
847 W. Jackson Blvd.  
NRHP #357398



**Figure 12 Hull House**  
800 S. Halsted St.  
NRHP #359325

## **Part IV. Air Quality**

### **1. CO Microscale Analysis**

#### **Project Type:**

- Project does not add Through Lanes or Auxillary Turning Lanes
- Project does not involve any sensitive receptors and is not suitable for using COSIM 3.0
- Project is subject to COSIM Pre-screen
- Project is subject COSIM screening analysis

A Pre-Screen analysis was conducted at the following locations:

- Halsted Street and Harrison Street
- Halsted Street and Van Buren Street
- Morgan Street and Tilden Street

The Pre-Screen carbon monoxide analysis was completed for the above locations for the proposed project. The results from this proposed roadway improvement indicated that a COSIM air quality analysis is not required, as the results for the worst-case receptors are below the 8-hour average national Ambient Air Quality Standard for CO of 9.0 ppm which is necessary to protect the public health and welfare.

## 2. Air Quality Conformity

### Project Type:

- Project is outside of Nonattainment or Maintenance Area
- Exempt Project in Nonattainment or Maintenance Area
- Project is within a portion of a Nonattainment or Maintenance Area where CMAP is the MPO
- Project is within a Nonattainment or Maintenance area served by an MPO other than CMAP
- Project is within a Nonattainment or Maintenance area not served by an MPO
- Regionally Significant Non-Federal project within a Nonattainment or Maintenance Area.

The National Ambient Air Quality Standards (NAAQS), established by the US Environmental Protection Agency, set maximum allowable concentration limits for six criteria air pollutants. Areas in which air pollution levels persistently exceed the NAAQS may be designated as "nonattainment." States where a nonattainment area is located must develop and implement a State Implementation Plan (SIP) containing policies and regulations that will bring about attainment of the NAAQS. Areas that had been designated as nonattainment, but that have attained the NAAQS for the criteria pollutant(s) associated with the nonattainment designation, will be designated as maintenance areas.

All areas of Illinois currently are in attainment of the standards for four of the six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead.

For the eight-hour ozone and PM<sub>2.5</sub> standards, Cook, DuPage, Kane, Lake, McHenry, and Will Counties, as well as Aux Sable and Goose Lake Townships in Grundy County and Oswego Township in Kendall County, have been designated as nonattainment areas. Jersey, Madison, Monroe, and St. Clair Counties in the St. Louis area also have been designated as moderate nonattainment areas for the eight-hour ozone standard. In addition, Madison, Monroe, St Clair, and Baldwin Township in Randolph County are nonattainment for PM<sub>2.5</sub>.

The Lake Calumet area and Lyons Township in Cook County have been designated as a maintenance area for the particulate matter (PM<sub>10</sub>) standard. In addition, Oglesby and several adjacent townships in LaSalle County and Granite City Township and Nameoki Township in Madison County have been designated as maintenance areas for the PM<sub>10</sub> standard. All other areas of Illinois currently are in attainment for the ozone and PM<sub>10</sub> standards.

This project is included in the FY 2010-2015 Transportation Improvement Program (TIP) endorsed by the Metropolitan Planning Organization Policy Committee of the Chicago Metropolitan Agency for Planning (CMAP) for the region in which the project is located. Projects in the TIP are considered to be consistent with the regional transportation plan endorsed by CMAP. The project is within the fiscally constrained portion of the plan.

On October 25, 2010, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) determined that the *GO TO 2040* Comprehensive Regional Plan and the Transportation Improvement Plan conforms with the State Implementation Plan (SIP) and the transportation-related requirements of the 1990 Clean Air Act Amendments. These findings were in accordance with 40 CFR Part 93, "Determining Conformity of Federal Actions to State or Federal Implementation Plans."

The project's design concept and scope are consistent with the project information used for the TIP conformity analysis. Therefore, this project conforms to the existing State Implementation Plan and the transportation-related requirements of the 1990 Clean Air Act Amendments.

The TIP number for this project is 01-01-0019.

### 3. PM2.5 and PM10.0 Nonattainment and Maintenance Areas

#### Project-Type

- Exempt Project
- Nonexempt project that is not an Air Quality Concern
- Nonexempt project that is an Air Quality Concern

At the March 13, 2013 Tier II Consultation meeting with CMAP, the project was determined to be a project that is not an Air Quality Concern under 40 CFR 93.123(b)(1), because it does not significantly increase diesel truck traffic, therefore a hot-spot analysis is not required. Due to no significant increase in diesel traffic it has been determined that the project will not cause or contribute to any new localized PM2.5 or PM10 violations or increase the frequency or severity of any PM2.5 or PM10 violations. The meeting minutes are included in Appendix A.

### 4. Construction Related Particulate-Matter

Demolition and construction activities can result in short-term increases in fugitive dust and equipment-related particulate emissions in and around the project area. (Equipment-related particulate emissions can be minimized if the equipment is well maintained.) The potential air quality impacts will be short-term, occurring only while demolition and construction work is in progress and local conditions are appropriate.

The potential for fugitive dust emissions typically is associated with building demolition, ground clearing, site preparation, grading, stockpiling of materials, on-site movement of equipment, and transportation of materials. The potential is greatest during dry periods, periods of intense construction activity, and during high wind conditions.

The Department's Standard Specifications for Road and Bridge Construction include provisions on dust control. Under these provisions, dust and airborne dirt generated by construction activities will be controlled through dust control procedures or a specific dust control plan, when warranted. The contractor and the Department will meet to review the nature and extent of dust-generating activities and will cooperatively develop specific types of control techniques appropriate to the specific situation. Techniques that may warrant consideration include measures such as minimizing track-out of soil onto nearby publicly-traveled roads, reducing speed on unpaved roads, covering haul vehicles, and applying chemical dust suppressants or water to exposed surfaces, particularly those on which construction vehicles travel. With the application of appropriate measures to limit dust emissions during construction, this project will not cause any significant, short-term particulate matter air quality impacts.

Lastly, the Department has developed additional construction-related Special Provision and Specifications dealing with the use of cleaner diesel fuel, idling reduction requirements for construction equipment, and the installation of emission control devices on contractor vehicles. The retrofit Special Provision is found at the following link:

<http://www.dot.il.gov/desenv/pdf/80261.pdf>

The statewide idling restriction is found in Section 107.41(a) of the Department's Supplemental Specifications and Recurring Special Provisions, and ULSD is found in Section 107.41(b). See the following link:

<http://www.dot.il.gov/desenv/2013Supp.pdf>

## 5. Mobile Source Air Toxics (MSAT)

### Project-Type:

- Project is exempt
- Project has no meaningful potential MSAT effects
- Project has low meaning potential MSAT effects and is one of the following types below:
  - A minor widening project
  - A new interchange connecting an existing roadway with a new roadway
  - A new interchange connecting new roadways
  - Minor improvements or expansions to intermodal centers or other projects that affect truck traffic
- Project has high potential MSAT effects

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The US Environmental Protection Agency (USEPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The USEPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects." The IRIS can be accessed through the USEPA website. Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's "Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents." Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations or in the future as vehicle emissions substantially decrease. See research reports available through the HEI website.

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and then final determination of health impacts; each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology, which affects emissions rates over that time frame, because such information is unavailable. The results produced by the USEPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the USEPA's DraftMOVES2009 model in forecasting MSAT emissions are

highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of USEPA's guideline CAL3QHC model was conducted in an NCHRP study, available through the USEPA website, which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The USEPA and the HEI have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the USEPA, as provided by the Clean Air Act, to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards (e.g., benzene emissions from refineries). The decision framework is a two-step process. The first step requires USEPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the US Court of Appeals for the District of Columbia Circuit upheld USEPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits (e.g., reducing traffic congestion, crash rates, and fatalities plus improved access for emergency response) that are better suited for quantitative analysis.<sup>25</sup>

For each alternative in this EA, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the Preferred Alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Because the estimated VMT under each of the

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<sup>25</sup> IDOT Bureau of Design and Environment Manual, September 2010, Section 26-13.03(d), pg. 26-13.11  
<http://www.dot.il.gov/desenv/BDE%20Manual/BDE/pdf/Chapter%2026%20Special%20Environmental%20Analyses.pdf>

Alternatives are nearly the same, varying by less than four percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced near Ramp NW that would be built under Alternatives including Ramp NW as a flyover ramp. However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.<sup>26</sup>

## **Part V. Noise and Vibration**

Type I Project

Type III Project

This proposed improvement to Circle Interchange is characterized as a Type I noise project as it includes the addition of through-traffic lanes and relocation of interchange lanes or ramps. Therefore, it requires a noise analysis.

The Federal regulations, 23 CFR 772, establish noise abatement criteria (NAC) to establish noise levels where noise abatement should be evaluated. Five separate NAC based upon land use are used by the FHWA to assess potential noise impacts. A traffic noise impact occurs when design year noise levels approach or exceed the NAC or when there is a substantial increase over existing traffic noise levels. See Table 19<sup>27</sup> for NACs.

Within the Circle Interchange project area, the noise-sensitive receptors are a mixture of residential, commercial, and institutional uses. The residential and institution uses fall into Activity Category B and Activity Category C, which have an outdoor NAC of 67 dB(A). Other receptors are office, hotels, and restaurants under the Activity Category E with an exterior NAC of 72 dB(A).

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<sup>26</sup> Interim Guidance Update on Mobile Source air Toxic analysis in NEPA, December 6, 2012, Appendix B, [http://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/ajintguidmem.cfm](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/ajintguidmem.cfm)

<sup>27</sup> Based on 23 Code of Federal Regulations Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise.

**Table 19 FHWA Noise Abatement Criteria (NAC): Hourly A-Weighted Sound Level in Decibels (dB(A))**

Activity Category	L <sub>eq</sub> (h)	Evaluation Location	Description of Activity Category
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B <sup>(1)</sup>	67	Exterior	Residential.
C <sup>(1)</sup>	67	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recording studios, schools, and television studios.
E <sup>(1)</sup>	72	Exterior	Hotels, motels, offices, restaurant/bars, and other developed lands, properties or activities not included in A-D, or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing.
G	--	--	Undeveloped lands that are not permitted.
(1) Includes undeveloped lands permitted for this activity category.			

The Illinois Department of Transportation (Department) defines noise impacts as follows:

- The predicted build noise levels approach, meet, or exceed the applicable NAC in Table 19. According to Department, noise levels "approach" the NAC when they are within 1 dB(A) of the applicable NAC.
- The predicted build noise levels are substantially higher than the existing noise levels. According to Department, a substantial increase is considered to be greater than 14 dB(A), representing more than a doubling of the perceived existing noise level.

The project study area was reviewed and potential noise-sensitive receptors were grouped into Common Noise Environments (CNEs). There were 61 CNEs, translating to 84 representative noise receptors. Additional details and information regarding the noise analysis can be found in the *Circle Interchange Noise Analysis Study*, May 31, 2013, a separate document available at IDOT, District 1 Office in Schaumburg, Illinois.

### Impacts

Traffic noise levels for the Circle Interchange have been predicted with the Federal Highway Administration approved Traffic Noise Model (TNM), Version 2.5. Table 20 presents the predicted traffic L<sub>eq</sub> levels at the 84 representative receptors along the Circle Interchange. The predicted noise levels in Table 20 have been based on the AM peak-hour traffic volumes and posted speed limits for the roadways and ramps of the Circle Interchange. See Exhibit 5, Environmental Resources Map for locations of the noise receptors.

Under the proposed 2040 Build scenario, 30 receptor locations approach or exceed the FHWA NAC, and therefore warrant a noise abatement analysis. None of the receptors are considered impacted due to a substantial increase (greater than 14 dB(A) increase) in traffic noise levels.

Table 20 Predicted Traffic Noise Levels

CNE/ Receptor	Receptor	Activity Category	FHWA NAC Leq dB(A)	2012 AM Predicted Existing Leq dB(A)	2040 AM No-Build Leq dB(A)	2040 AM Proposed Leq dB(A)	Increase from Existing to Proposed Leq dB(A)	Impact Distinction Proposed Project
<b>Northwest Quadrant – Greektown</b>								
1-1	Multi-unit residences	B	67	76	76	76	0	Impact <sup>(1)</sup>
2-1	Outdoor dining area	E	72	63	63	64	1	No Impact
3-1	Multi-unit residences	B	67	65	65	65	0	No Impact
4-1	Skybridge residences	B	67	74	75	75	1	Impact
5A-1	Crown Plaza Hotel	E	72	73	73	73	0	Impact
5A-2	Office building	E	72	59	60	59	0	No Impact
5B-1	TV Studio	C	67	55	55	55	0	No Impact
6A-1	Outdoor dining	E	72	61	62	61	0	No Impact
6B-1	Multi-unit residences	B	67	61	62	61	0	No Impact
6C-1	Multi-unit residences	B	67	53	54	55	2	No Impact
7-1	Multi-unit residences	B	67	63	64	64	1	No Impact
7-2	770 Lofts	B	67	72	73	74	2	Impact
8-1	Museum rooftop terrace	C	67	67	67	68	1	Impact
8-2	Greek temple outdoor area	C	67	72	72	72	0	Impact
9-1	Offices	E	72	53	54	55	2	No Impact
10-1	Multi-unit residences	B	67	66	67	67	1	Impact
11-1	Multi-unit residences	B	67	58	58	58	0	No Impact
12A-1	Office building, west entrance	E	72	55	55	60	5	No Impact
12A-2	Office building, main entrance (east side)	E	72	65	66	66	1	No Impact
12B-1	Multi-unit residences main entrance (east side)	B	67	60	61	64	4	No Impact

CNE/ Receptor	Receptor	Activity Category	FHWA NAC Leqh dB(A)	2012 AM Predicted Existing Leqh dB(A)	2040 AM No-Build Leqh dB(A)	2040 AM Proposed Leqh dB(A)	Increase from Existing to Proposed Leqh dB(A)	Impact Distinction Proposed Project
12B-2	Multi-unit residences west balcony	B	67	67	67	68	1	Impact
13-1	Lexington College	C	67	55	56	57	2	No Impact
14-1	UIC Urban Planning	C	67	64	64	66	2	Impact
15-1	Office building	E	72	51	51	51	0	No Impact
16-1	Office building	E	72	56	57	56	0	No Impact
17-1	Multi-unit residences	B	67	63	63	64	1	No Impact
17-2	Outdoor courtyard	B	67	70	70	71	1	Impact
17-3	Multi-unit residences	B	67	74	74	75	1	Impact
17-4	Multi-unit residences	B	67	54	54	54	0	No Impact
18A-1	Multi-unit residences	B	67	67	67	68	1	Impact
18B-1	Office building	E	72	62	63	62	0	No Impact
19-1	Office building	E	72	69	69	70	1	No Impact
20A-1	Residential building east entrance	B	67	58	59	59	0	No Impact
20B-1	Outdoor dining	E	72	64	65	65	1	No Impact
20B-2	Office building	E	72	61	61	61	1	No Impact
21-1	Dance Studio	C	67	60	60	60	0	No Impact
22-1	Residential building south balcony	B	67	75	75	76	1	Impact
22-2	Residential building south balcony	B	67	75	75	76	1	Impact
22-3	Residential building south balcony	B	67	56	56	56	0	No Impact
23-1	Residential building back courtyard	B	67	56	56	56	0	No Impact
23-2	Apartment complex interior courtyard	B	67	56	56	56	0	No Impact
23-3	Residential building front door	B	67	70	70	70	0	Impact
Southwest Quadrant – UIC								

CNE/ Receptor	Receptor	Activity Category	FHWA NAC Leqh dB(A)	2012 AM Predicted Existing Leqh dB(A)	2040 AM No-Build Leqh dB(A)	2040 AM Proposed Leqh dB(A)	Increase from Existing to Proposed Leqh dB(A)	Impact Distinction Proposed Project
24-1	Jackson Academy Playfield	C	67	59	60	60	1	No Impact
25-1	Residential backyards	B	67	54	55	55	1	No Impact
26-1	UIC Student Services SE entrance	C	67	53	54	54	1	No Impact
27-1	Office building SE entrance	E	72	55	55	55	0	No Impact
28-1	UIC Pavilion SE entrance	C	67	44	44	45	1	No Impact
29-1	UIC University Towers open space	C	67	58	58	60	2	No Impact
30-1	UIC Arts and Theater	C	67	59	59	61	2	No Impact
31-1	UIC Harrison Field	C	67	64	64	65	1	No Impact
32-1	UIC dorms courtyard	B	67	63	63	65	2	No Impact
33-1	UIC outdoor tennis courts	C	67	70	70	73	3	Impact
33-2	UIC Recreation Building entrance	C	67	53	53	55	2	No Impact
34-1	UIC Plant Lab outdoor plot	C	67	67	68	69	2	Impact
34-2	UIC Roosevelt Building entrance	C	67	67	68	68	1	Impact
34-3	UIC Hull House courtyard	C	67	57	58	59	2	No Impact
<b>Southeast Quadrant</b>								
35-1	Maxwell Street Market	E	72	67	67	68	1	No Impact
35B-1	Recording Studio	D <sup>(2)</sup>	52/87	40/75	41/76	41/76	1	No Impact
36-1	Circuit Court of Cook County	C	67	60	60	63	3	No Impact
37-1	Residential building north balcony	B	67	70	71	71	1	Impact
38-1	Hotel rooftop pool	E	72	63	63	63	0	No Impact

CNE/ Receptor	Receptor	Activity Category	FHWA NAC Leqh dB(A)	2012 AM Predicted Existing Leqh dB(A)	2040 AM No-Build Leqh dB(A)	2040 AM Proposed Leqh dB(A)	Increase from Existing to Proposed Leqh dB(A)	Impact Distinction Proposed Project
<b>Northeast Quadrant</b>								
39-1	Residential building south balcony	B	67	70	70	70	0	Impact
40-1	Residential building north balcony	B	67	69	70	69	0	Impact
40-2	Residential building west balcony	B	67	71	71	71	0	Impact
40-3	Residential building south balcony	B	67	67	67	67	0	Impact
41-1	Office building west entrance	E	72	57	57	57	0	No Impact
41-2	Office building south entrance	E	72	51	51	51	0	No Impact
42-1	Haberdasher north corner balcony	B	67	75	75	75	0	Impact
42-2	Residential high- rise west balcony	B	67	72	72	72	0	Impact
43-1	Office building west entrance	E	72	53	53	54	1	No Impact
44-1	Heritage Green Park outdoor area	C	67	56	56	56	0	No Impact
45-1	St. Patrick's Church east entrance	C	67	49	50	50	1	No Impact
46-1	St. Patrick's Rectory south entrance	B	67	69	69	69	0	Impact
47-1	St. Patrick's outdoor playground	C	67	72	72	71	-1	Impact
48A-1	St. Patrick's School west entrance	C	67	66	66	65	-1	No Impact
48A-2	St. Patrick's Center for Social Concerns north entrance	C	67	65	66	65	0	No Impact
48B-1	Archdiocese of Chicago's Joseph Cardinal Bernardin Archive and Records Center	C	67	69	70	69	0	Impact
49-1	Presidential Towers west entrance	B	67	63	63	62	-1	No Impact
50-1	Office building north entrance	E	72	70	70	71	1	Impact

CNE/ Receptor	Receptor	Activity Category	FHWA NAC Leqh dB(A)	2012 AM Predicted Existing Leqh dB(A)	2040 AM No-Build Leqh dB(A)	2040 AM Proposed Leqh dB(A)	Increase from Existing to Proposed Leqh dB(A)	Impact Distinction Proposed Project
50-2	Office building west entrance	E	72	60	60	60	0	No Impact
51-1	Residential building south balcony	B	67	71	72	72	1	Impact
52-1	Office building north entrance	E	72	66	67	66	0	No Impact
52-2	Outdoor dining facing Des Plaines	E	72	52	53	53	1	No Impact
53-1	Multi-Unit Residences	B	67	61	61	62	1	No Impact

Notes:

1. Predicted traffic noise levels in **bold** will approach (within 1 dB(A)) or exceed FHWA NAC under the Proposed Project
2. Category D noise levels shown as Interior/Exterior. Exterior noise is modeled in TNM. Interior noise is estimated by applying the Building Noise Adjustment Factors as obtained from the IDOT Highway Traffic Noise Assessment Manual Table 3-1<sup>28</sup>. Receptor 35B-1 interior noise reduction is assumed to be the maximum 35 dB(A) as CNE 35B has no windows.

**Abatement Evaluation**

TNM was used to perform the noise wall feasibility and reasonability check for the 30 impacted receptors. When determining if an abatement measure is feasible and reasonable, the noise reductions achieved, number of residences benefited, total cost, and total cost per residence benefited are considered. In accordance with Department policy, noise abatement is considered feasible if it achieves a noise reduction of at least 5 dB(A) for at least one impacted receptors. It is considered reasonable if the following are met:

- It is cost effective (base value \$24,000 per benefitted receptor, adjusted for consideration of absolute noise levels, increase in noise levels, and new alignment/construction date)
- It achieves a Noise Reduction Design goal of at least 8 dB(A) for at least one benefitted receptor
- The views of the benefitted receptors have been appropriately considered

Thirty noise walls were evaluated for the impacted receptors. All noise walls were modeled along the existing right-of-way. Eight CNEs achieved noise reduction goals and could feasibly be built. However, several potential noise walls were found not feasible for engineering and constructability reasons. Noise walls along both sides of the Congress Parkway would not be feasible because of structural concerns. Table 21 summarizes the analysis findings.

**Table 21 Potential Circle Interchange Noise Barriers: Noise Reduction Design Goal Analyses**

CNE	Receptor Description	Potential Barrier Location	Potential Barrier Height (feet)	Potential Barrier Length (feet)	Noise Reduction Leq dB(A)	Barrier Recommendation
1-1	Multi-unit Residences	ROW, at top of slope Lake to Randolph	25	400	0	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained

<sup>28</sup> <http://www.dot.il.gov/environment/HTNAManual.pdf>

CNE	Receptor Description	Potential Barrier Location	Potential Barrier Height (feet)	Potential Barrier Length (feet)	Noise Reduction Leq dB(A)	Barrier Recommendation
4-1	Skybridge Residences	ROW at top of slope Washington to Madison	25	390	0	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
5A-1	Hotel	ROW at top of slope Madison to Monroe	25	400	0	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
7-2	770 Lofts	ROW at top of slope, Jackson to Van Buren	24	360	8	<b>8- dB(A) Noise Reduction Goal Achieved</b>
8-1	Museum rooftop terrace	ROW at top of slope Jackson to Van Buren	25	425	0	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
8-2	Greek temple outdoor area	ROW at top of slope Van Buren to Halsted	25	105	5	Feasible but not Reasonable: 8-dB(A) Noise Reduction Goal not obtained (Feasible reduction of 5-dB(A) at impacted receptor)
10-1	Multi-unit residences	ROW at top of slope Halsted to Peoria	25	560	1	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
12B	Multi-unit Residences	On top of retaining wall adjacent to Ramp NW, from Peoria St to the Rice Building.	24	422	13	<b>8- dB(A) Noise Reduction Goal Achieved</b>
14-1	UIC Urban Planning	ROW at top of slope Peoria to Morgan	25	575	0	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
17-2	Outdoor courtyard	In front of open space, between buildings	6	70	9	<b>8- dB(A) Noise Reduction Goal Achieved</b>
17-3	Multi-unit residences	ROW at top of slope Peoria to Morgan	25	575	0	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
18A-1	Multi-unit residences	ROW at top of slope West of Morgan	25	340	0	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
22-1	East Multi-unit residences	ROW at top of slope Racine to Loomis	23	380	8	<b>8- dB(A) Noise Reduction Goal Achieved</b>
22-2	West Multi-unit residences	ROW at top of slope Racine to Loomis	23	380	10	<b>8- dB(A) Noise Reduction Goal Achieved</b>

CNE	Receptor Description	Potential Barrier Location	Potential Barrier Height (feet)	Potential Barrier Length (feet)	Noise Reduction Leq dB(A)	Barrier Recommendation
23-3	Multi-unit residences	ROW at top of slope	14	550	8	8- dB(A) Noise Reduction Goal Achieved
33-1	UIC outdoor tennis courts	ROW at top of slope South of Harrison	16	325	8	8- dB(A) Noise Reduction Goal Achieved
34-1	UIC Plant Lab	ROW Taylor to Roosevelt	25	800	4	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
34-2	UIC Roosevelt Building	ROW Taylor to Roosevelt	25	800	3	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
37-1	Residential building	Along south edge of Congress Parkway structure	12	550	NA	Not Feasible: Congress Parkway structure would not support the load
39-1	Residential building	Along north edge of Congress Parkway structure	10	525	NA	Not Feasible: Congress Parkway structure would not support the load
40-1	Residential building	ROW at top of slope Van Buren to Jackson	25	410	1	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
40-2	Residential building	ROW at top of slope Van Buren to Jackson	25	410	2	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
40-3	Residential building	ROW at top of slope Van Buren to Jackson	25	410	0	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
42-1	Haberdasher	ROW at top of slope Jackson to Adams	25	420	1	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
42-2	Residential high-rise	ROW at top of slope Jackson to Adams	25	420	0	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
46-1	St. Patrick's Rectory	ROW at top of slope Adams to Monroe	25	400	1	Not Feasible and Reasonable: 8- dB(A) Noise Reduction Goal not obtained
47-1	St. Patrick's playground	ROW at top of slope Adams to Monroe	6	260	8	8- dB(A) Noise Reduction Goal Achieved

CNE	Receptor Description	Potential Barrier Location	Potential Barrier Height (feet)	Potential Barrier Length (feet)	Noise Reduction Leq dB(A)	Barrier Recommendation
48B-1	Archives and Record Center	ROW at top of slope Adams to Madison with gap at Monroe	25	780	3	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
50-1	Office Building North Entrance	ROW at top of slope south of Washington	25	280	1	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained
51-1	Residential building	ROW at top of slope Washington to Randolph	25	360	2	Not Feasible and Reasonable: 8-dB(A) Noise Reduction Goal not obtained

The eight locations found to achieve the noise reduction design goal and to be feasible were then evaluated for their economic reasonability. Economic reasonability is the cost-effective evaluation of the noise barrier. This considers the overall cost of the noise barrier, the number of benefited receptors, and the cost-effectiveness (cost per benefited receptor).

Key assumptions for the evaluation of economic reasonability under Department noise policies (IDOT, 2011)<sup>29</sup> include:

- The current unit cost used by the Department to determine the construction cost for noise barriers is \$25 per square foot. The cost of right-of-way acquisition for the purpose of noise barrier construction also should be included if acquisition is needed solely for noise barrier construction.
- A benefited receptor is considered any sensitive receptor that receives at least a 5 dB(A) traffic noise reduction as a result of the noise barrier, regardless of whether the receptor was identified as impacted.
- In the case of multi-unit dwellings (i.e., condominiums, townhouses, apartments and duplexes), each residential unit should be counted as one receptor. A unit also can be considered benefited if the residents of that unit have access to an exterior common use area that would receive a 5 dB(A) traffic noise reduction. Second floor units can be counted as benefited receptors if the noise barrier provides at least a 5 dB(A) traffic noise reduction at the second floor elevation.

The estimated build cost of each noise abatement measure may not exceed the allowable noise abatement cost, based on a cost-per-benefited-receptor comparison. The base value for the allowable noise abatement cost is \$24,000 per benefited receptor. Other reasonableness factors shall be considered to potentially adjust the allowable noise abatement base value cost of \$24,000 per benefited receptor. The three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of \$37,000 per benefited receptor.

If the estimated build cost of noise abatement per benefited receptor is less than the adjusted allowable noise abatement cost per benefited receptor, then the noise abatement measure achieves the cost-effective reasonableness criterion. Generally, the evaluation should provide traffic noise reductions to as many impacted receptors as possible and/or provide as much noise reduction as possible while remaining within the economic reasonability criterion.

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<sup>29</sup> <http://www.dot.il.gov/environment/HTNAManual.pdf>

The evaluation of economic reasonability is presented in Table 22 for those walls found to be feasible and that would achieve the noise reduction design goal. All but one location was found reasonable. The UIC Outdoor Courts location's cost per benefited receptor (\$32,500) exceeded the adjusted allowable cost per benefited receptor (\$24,500). Therefore, a Cost Averaging analysis was completed following the Department noise policies (IDOT, 2011)<sup>30</sup>. The results are presenting in Table 23.

**Table 22 Circle Interchange Noise Barriers: Barrier Reasonableness**

CNEs	Wall Length (feet)	Wall Height (feet)	Total Wall Square Footage	Total Noise Wall Cost <sup>(1)</sup>	Total Benefited <sup>(2)</sup> Receptors	Noise Wall Cost per Benefited Receptor <sup>(3)</sup>	Adjusted Allowable Cost per Benefited Receptor <sup>(4)</sup>	Recommendation <sup>(5)</sup>
7-2 (770 Lofts)	360	24	8,640	\$216,000	20	\$10,800	\$25,000	Reasonable
12B (400 S Green St.)	422	24	10,128	\$253,200	68 <sup>(9)</sup>	\$3,724	\$24,000	Reasonable
17-2 (Outdoor Courtyard)	70	6	420	\$10,500	180 <sup>(6)</sup>	\$58	\$25,000	Reasonable
22-1 and 22-2	380	23	8,740	\$218,500	17	\$12,853	\$26,000	Reasonable
23-1 and 23-3	550	14	7,700	\$192,500	200 <sup>(7)</sup>	\$963	\$24,055	Reasonable
Combined 22 and 23	840	14-23	14,400	\$360,000	217	\$1,659	\$24,258	Reasonable
33 (UIC Outdoor Courts)	325	16	5,200	\$130,000	4	\$32,500	\$24,500	Not Reasonable
47 (Old St. Patrick's)	260	6	1,560	\$39,000	21 <sup>(8)</sup>	\$1,857	\$24,048	Reasonable

Notes:

- Noise wall cost based on \$25 per square foot construction cost
- A benefited receptor is defined as receiving at least a 5 dB(A) traffic noise reduction
- Total noise wall cost divided by total number of benefited receptors
- Total Adjusted Allowable Cost per Receptor
- Reasonability Criterion is passed if Noise Wall Cost per Benefited Receptor is less than the Adjusted Allowable Cost per Benefited Receptor
- Outdoor Courtyard is assumed to be the exterior common area for the residential building to the west (933 W Van Buren St Condos), which has a total of 180 residential units.
- Outdoor Courtyard (23-1) is assumed to be the exterior common buildings for all residences within the property, which has a total of 200 residential units.
- CNE 47, the Old St. Patrick's wall, includes 20 benefited receptors from the Francis Xavier Warde School's classrooms (CNE 48A), which receive a 5 db(A) benefit from the wall. This is in addition to the playground's 1 benefited receptor.
- 400 S Green St main door assumed to be the exterior common area of the building, which has 67 units. 1 ground floor office also benefited. Other store fronts in the 400 S Green St building are retail or vacant, and therefore not benefited (NAC Category F). The Rice Building defines its primary entrance as the east entrance, and is therefore not benefited.

<sup>30</sup> <http://www.dot.il.gov/environment/HTNAManual.pdf>

Table 23 Circle Interchange Noise Barriers: Cost Averaging

CNEs	Total Benefited <sup>(1)</sup> Receptors	Total Noise Wall Cost <sup>(2)</sup>	Noise Wall Cost per Benefited Receptor <sup>(3)</sup>	Adjusted Allowable Cost per Benefited Receptor <sup>(4)</sup>	Ratio of Wall Cost to Adjusted Allowable <sup>(5)</sup>	Cumulative Estimated Build Cost per Benefited Receptor	Cumulative Adjusted Allowable Cost per Benefited Receptor	Recommendation
17-2 (Outdoor Courtyard)	180	\$10,500	\$58	\$25,000	0.002	\$58	\$25,000	Cost-Effective Stand Alone
Combined 22 and 23 <sup>(6)</sup>	217	\$360,000	\$1,659	\$24,258	0.068	\$933	\$24,594	Cost-Effective Stand Alone
47 (Old St. Patrick's)	21	\$39,000	\$1,857	\$24,048	0.077	\$980	\$24,567	Cost-Effective Stand Alone
12B (400 S Green St.)	68	\$253,200	\$3,724	\$24,000	0.155	\$1,364	\$24,488	Cost-Effective Stand Alone
7-2 (770 Lofts)	20	\$216,000	\$10,800	\$25,000	0.432	\$1,737	\$24,508	Cost-Effective Stand Alone
33 (UIC Outdoor Courts)	4	\$130,000	\$32,500	\$24,500	1.327	\$1,978	\$24,508	Cost-Effective Cumulative

Notes:

1. A benefited receptor is defined as receiving at least a 5 dB(A) traffic noise reduction
2. Noise wall cost based on \$25 per square foot construction cost
3. Total noise wall cost divided by total number of benefited receptors
4. Total Adjusted Allowable Cost per Receptor from Table 7.2 of the *Circle Interchange Noise Analysis Study*
5. Ratio of wall cost cannot exceed two times the adjusted allowable noise abatement cost per benefited receptor
6. CNE 22 and 23 have been combined as their locations are adjacent to each other and one continuous wall would be constructed at this location.

**Viewpoint Solicitation and Tally of Benefitted Noise Receptors**

Per Table 23, there are six locations where noise walls are proposed, involving seven CNEs and 510 benefited receptors. Note that CNE 22 and 23 were combined because these locations are adjacent to each other and one wall would be constructed for both CNEs. The first solicitation of viewpoints was mailed to all benefited receptors March 21, 2013. With the exception of CNE 12B-1 (Green Street Lofts), the initial solicitation did not receive the required 33.33 percent (1/3) response rate, therefore second solicitations were sent via certified mail on May 1 and May 3, 2013. UIC provided a favorable response to the noise wall at a May 14, 2013 meeting. Minutes of the meeting are included in Appendix A.

With the second solicitation, the response threshold considers responses actually received, regardless of whether it meets the 33.33 percent level. Therefore, the tally result is based on the majority of the actual responses received.

For the six noise wall locations, the viewpoint polling of the benefited receptors resulted in the majority of the responses to the affirmative from the seven groups of benefited receptors. Therefore, noise walls will be included as part of the Preferred Alternative's proposed improvements.

**Likelihood Statement**

Based on the traffic noise analysis and noise abatement evaluation conducted, highway traffic noise abatement measures are likely to be implemented based on preliminary design. The noise barriers determined to meet the feasible and reasonable criteria are identified in Table 23. If it subsequently develops during final design that constraints not foreseen in the preliminary design or public input substantially change, the abatement measures may need to be modified or removed from the project plans. A final decision of the installation of the abatement measure(s) will be made upon completion of the project's final design and the public involvement process.

## **Coordination with Local Government Officials for Undeveloped Lands**

The Circle Interchange project study area is highly urbanized and developed. There are no large tracts of undeveloped lands. However, there are locations which have potential for redevelopment, including the Old Post Office Building which spans across the Congress Parkway and the parking lot at 765 W. Adams Street (north of CNE 07), where a 30-story high-rise building is proposed. Based on coordination with the City of Chicago, there is not an identified redevelopment plan for the Old Post Office. Additionally, the parking lot re-development at 765 W. Adams Street has not been permitted. Therefore, per Department noise policy, coordination with the property owners is not required.

The University of Illinois at Chicago (UIC) has a Master Plan which shows redevelopment of some of the university property adjacent I-290 and I-90/94. Coordination with UIC has found that the Master Plan is a long range conceptual plan and there are not any near term implementation plans or implementation funding for the properties adjacent to the project area. However, there is an open grassed area bounded by I-290, Harrison Street, Peoria Street and Halsted Street. The UIC Master Plan shows institutional buildings and classrooms at this location. Due to this, noise contours were developed and provided to UIC to promote development that will be compatible with the proposed project's noise levels.

## **Construction Noise and Vibration**

### ***Construction Noise***

Construction noise varies greatly depending on the equipment being used, the condition of the equipment, and the activities being conducted. Noise levels also depend on the time and duration of the construction activity. Noise from stationary and mobile construction equipment is primarily from the engine and exhaust. Mobile construction equipment rarely travels at high speeds where wind noise and tire noise are critical.

Trucks and machinery used for construction of the proposed project will produce noise that may affect some land uses and activities during the construction period. Residences, businesses, and public institutions along the alignment will at some time experience perceptible construction noise from implementation of the proposed project. Potential construction noise will be most noticeable at locations near construction activities, and during nighttime construction. The construction period for the proposed project is anticipated to occur from approximately November 2013 to October 2017.

Any potential construction noise impacts will be considered temporary or short-term impacts. Construction activities will include reasonable abatement measures to avoid excessive construction noise impacts.

Abatement of construction noise could be accomplished by construction staging, sequencing of operations, or alternative construction methods. Typically, the construction methods to be used for a project are determined in the final engineering design. To minimize or eliminate the effect of construction noise, mitigation measures have been incorporated into the Illinois Department of Transportation's Standard Specifications for Road and Bridge Construction as Article 107.35.

Additional details of potential construction noise abatement strategies are included in the *Circle Interchange Noise Analysis Study*, May 31, 2013, which is a separate document available at IDOT, District 1 Office in Schaumburg, Illinois. Construction noise abatement will be determined during the design phase. The proposed project could include, but not be limited to, the following construction noise abatement:

### ***Construction Staging***

- Construct noise barriers, which were identified as feasible and reasonable, during the initial construction phases, to the extent reasonable and where possible, reduce construction noise.
- Install permanent or temporary noise walls, temporary stock piles, or equipment enclosures for noisy equipment, such as shields or heavy curtains.
- Route construction traffic away from sensitive receptors.
- Operate construction equipment as far from sensitive receptors as feasible.

### *Sequence of Operations*

- Conduct louder operations during the day, and not during the night when people are more sensitive to noise.
- Conduct multiple, loud construction operations at one time. The total noise level from multiple activities will not substantially increase the noise level. However, it will reduce the total duration of that noise level.
- If construction would occur during special events at adjacent public institutions, louder construction activities could be limited during those events.

### *Alternative Construction Methods*

- Evaluate alternative pile driving methods to implement when practicable, as this is a major noise contributor.
- Evaluate quieter demolition methods.
- Use special muffler systems or enclose equipment, i.e. sound curtains.

### **Construction Vibration**

Vibration during construction is dependent on the equipment being used, the condition of the equipment, and the activities being conducted. Construction activities typically associated with vibration include pile driving, blasting, pavement breaking, or earth moving in close proximity to sensitive receptors. Construction vibration impacts generally would not approach levels that can damage nearby structures.

The Old St. Patrick's Church is a historic structure that is located near the Circle Interchange. Methods to minimize construction vibration are being investigated and will be included if determined to be appropriate, to ensure that it will not damage the church. A Vibration Monitoring Program will be implemented that includes the following activities:

#### *Vibration Monitoring Program*

- Conduct Building Condition Surveys prior to start of construction activities, as access allows and practicable
- Install Vibration Monitoring equipment to establish baseline conditions, as access allows and practicable
- Contractor to complete a Pre-Construction Condition Survey
- Provide monitoring during Construction
- Complete Post-Construction Surveys

Other potential abatement measures that could be considered when practicable include the following:

#### *Construction Staging*

- Route construction traffic away from sensitive receptors.
- Operate equipment as far from sensitive receptors as feasible.

#### *Sequence of Operations*

- Conduct vibration operations during the day and not during the night, when people are much more sensitive to vibration.
- Conduct vibration operations one at a time - vibration levels may be much less if generated independently.

#### *Alternative Construction Methods*

- Evaluate alternative pile driving methods to implement when practicable, as this is a major noise and vibration contributor.
- Evaluate demolition methods that reduce impact.
- Do not use vibratory equipment for soil stabilization or packing near sensitive receptors.

## **Part VI. Natural Resources**

### **1. Upland Plant Communities**

There are no upland plant communities in the vicinity of this project.

### Proposed Mitigation

No impacts to upland communities are anticipated as part of the proposed project.

## 2. Wildlife Resources

There are no wildlife resources in the vicinity of this project. The Biological Resources Review Clearance was issued July 2, 2012. See Appendix A for copy of the correspondence.

### Proposed Mitigation

No impacts to wildlife resources are anticipated as part of the proposed project.

## 3. Threatened and Endangered Species

### A. Federally-listed Species

There are no federally listed species in the vicinity of this project.

### Impacts

- No Effect
- May Effect
  - Informal Consultation
  - Formal Consultation

### B. State-Listed Species

There are no state-listed species in the vicinity of this project.

### IDNR Consultation results

- Closed
  - Date June 27, 2012
  - Per the EcoCAT submittal, the IDNR concluded that adverse effects are unlikely. Therefore, consultation under 17 ll. Adm. Code Part 1075 is terminated. See Appendix A for copy of the correspondence.
- Open

### Incidental Take Authorization

- Yes
- No

## Part VII. Water Quality/Resources/Aquatic Habitats

### Stream Characteristics

There are no water quality resources or aquatic habitats in the vicinity of this project.

### **Proposed Mitigation**

No impacts to water quality resources or aquatic habitats are anticipated as part of the proposed project.

### **Part VIII. Groundwater Resources**

There are no groundwater resources in the vicinity of this project.

### **Proposed Mitigation**

No impacts to groundwater resources are anticipated as part of the proposed project.

### **Part IX. Floodplains**

There are no floodplain resources in the vicinity of this project.

### **Floodplain Finding if significant encroachment**

- No
- Yes

The proposed project is not expected to cause an increase in flood heights and flood limits. As such, the improvements are not expected to result in any adverse impacts on the natural and beneficial floodplain value; they will not result in any notable change in flood risks or damage; and they do not have potential for interruption or termination of emergency service or emergency evacuation routes.

### **Part X. Wetlands**

There are no wetland resources in the vicinity of this project. A wetland survey was not required. The Biological Resources Review Clearance was issued July 2, 2012. See Appendix A for copy of the correspondence.

### **Proposed Mitigation**

- On-site
- Off-site
- Wetland Bank

### **Description**

No impacts to wetland resources are anticipated as part of the proposed project.

### **Part XI. Special Waste**

A Preliminary Environmental Site Assessment (PESA) was completed for the Circle Interchange project on November 29, 2012 by the Illinois State Geological Survey (ISGS) in accordance with the Manual for Conducting Preliminary Environmental Site Assessments for Illinois Department of Transportation Infrastructure Projects (Erdmann et al. 2012). The PESA identified over 360 sites with the project area and its vicinity. 248 sites were listed as Recognized Environmental Conditions (RECs) that may be indicative of releases or potential releases of

hazardous substances on, at, in, or to the proposed project. 43 of the remaining sites were associated with de minimis conditions, four sites did not contain RECs or de minimis conditions, and 71 were adjoining but not on the project, but were identified on the environmental database. De minimis represents conditions that generally do not present a threat to human health or the environment.

Further studies may be required if the project will require land acquisition or linear excavation from or adjacent to a property with RECs. It is the responsibility of Phase II to determine if any of the sites or right-of-way adjacent to the site will be impacted with the proposed work and/or if any right-of-way will be required at any of the locations.

## **Part XII. Special Lands**

### **1. Section 4(f)**

- DeMinimis
- Programmatic
- Individual

There are no Section 4(f) resources in the vicinity of this project.

### **2. Section 6(f)**

There are no Section 6(f) resources in the vicinity of this project.

### **3. Open Space Lands Acquisition and Development (OSLAD) Act Lands**

There are no OSLAD resources in the vicinity of this project.

### **4. Illinois Natural Area (INAI) Sites**

There are no INAI resources in the vicinity of this project.

### **5. Nature preserves**

There are no natural preserve resources in the vicinity of this project.

### **6. Land & Water Reserves**

There are no land and water reserve resources in the vicinity of this project.

## **Part XIII. Indirect and Cumulative Impacts**

### **Indirect Impacts**

According to *40 CFR 1508.8*, Indirect Impacts are defined as "caused by an action and are later in time or further removed in distance but still reasonably foreseeable". For indirect impacts, the assessment includes reasonably foreseeable impacts to resources through 2040.

An improved Circle Interchange is anticipated to have a positive impact on local and regional economics and businesses in general, in terms of increased transportation efficiency. The proposed improvements will provide congestion relief and improved accessibility to the project roadways and adjacent neighborhood communities and

land uses. Improved accessibility may indirectly encourage infill and redevelopment of moribund land uses and buildings. It may also indirectly attract new land uses, commercial developments and employment opportunities into the adjacent communities.

### **Cumulative Impacts**

The Council on Environmental Quality (CEQ 1997) defines a cumulative impact as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). CEQ further defines cumulative effects as “caused by an action and are later in time or further removed in distance but still reasonably foreseeable” (40 CFR 1508.8). The cumulative impact analysis considers the effects of past, present, and future actions and recognizes while many actions may have individually small impacts, the accumulated effect of these actions needs to be assessed.

For cumulative analysis, the proposed project will provide opportunities to “reintroduce” community connectivity across the I-290 corridor, giving connections to the neighborhoods on both sides. These opportunities may include gateway features into the neighborhoods and communities, banner identifiers, street furnishing and landscaping, improved pedestrian and bicycle access, decorative lighting, and public art. Each neighborhood theme would make distinct identifiers of the community, while providing connection to the overall I-290 corridor area. Cumulatively, these aesthetic features could spur future actions to strengthen and better define the individual neighborhoods and communities and become more cohesive with the UIC developments and other potentially larger redevelopment endeavors.

### **Environmental Commitments**

#### **Construction Noise**

To address construction noise impacts voiced by project stakeholders and adjacent residents and businesses, several mitigation measures will be implemented. These items will be incorporated into the Design Engineering contract plans or included as Special Provisions to the contract documents. These measures include

#### *Sequence of Operations*

- Conducting multiple, loud construction operations at one time. The total noise level from multiple activities will not substantially increase the noise level. However, it will reduce the total duration of that noise level.
- If construction would occur during special events at adjacent public institutions, louder construction activities could be limited.

#### *Alternative Construction Methods*

- Evaluating quieter demolition methods.
- Use special muffler systems or enclose equipment, i.e. sound curtains.

#### **Construction Vibration**

Similarly, to address construction vibration impacts voiced by project stakeholders and adjacent residents and businesses, several mitigation measures will be implemented. These items will be incorporated into the Design Engineering contract plans or included as Special Provisions to the contract documents. These measures include

#### *Implement the Vibration Monitoring Program, which includes the following steps:*

- Conducting Building Condition Surveys prior to start of construction activities, as access allows and practicable
- Installing Vibration Monitors to establish baseline conditions
- Contractor will complete a Pre-Construction Condition Survey
- A monitoring and action plan will be implemented during construction
- Complete Post-Construction Surveys when construction activities are completed

### *Sequence of Operations*

- Conducting vibration operations one at a time - vibration levels may be much less if generated independently.

### *Alternative Construction Methods*

- Evaluating demolition methods that reduce impact.
- Prohibit the use of vibratory equipment for soil stabilization or packing near sensitive receptors.

## **Permits/Certifications Required**

The following permit is anticipated:

### **National Pollutant Discharge Elimination Systems (NPDES)**

It is anticipated that this project will result in the disturbance of one or more acres of total land area. Accordingly, it is subject to the requirement for a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from the construction site. Permit coverage for the project will be obtained either under the IEPA General Permit for Stormwater Discharges from Construction Site Activities (NPDES Permit No. 1LR10) or under an individual NPDES permit. Requirements applicable to such a permit will be followed, including the preparation of a Stormwater Pollution Prevention Plan. Such a plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site. It shall also describe and ensure the implementation of practices that will be used to reduce the pollutants in discharges associated with construction site activity and to assure compliance with the terms of the permit.

## **Public Involvement**

Several meetings have been held with project stakeholders. A Project Working Group (PWG) was established among the stakeholders, including people representing neighborhoods, residents, business interests, and public agencies such as CDOT, CTA, and the University of Illinois at Chicago, among others. There have been four PWG meetings, a PWG Aesthetics Workshop, several one-on-one stakeholder meetings, and a Vibration Workshop.

Coordination with the public has been provided through an Open House Public Meeting on August 30, 2012, an Open House Public Hearing on April 3, 2013, and a second Open House Public Hearing anticipated for late June 2013.

Project information has also been made available via project newsletters and the project website:

[www.circleinterchange.org](http://www.circleinterchange.org).

Minutes of the meetings and other coordination documents are available in the *Circle Interchange Combined Design Report, Volume 3*, which is a separate document available at IDOT, District 1 Office in Schaumburg, Illinois.

The following is a summary of the public involvement meetings which have been held:

### **Project Working Group (PWG) Meetings**

#### *PWG Meeting #1*

The first PWG meeting was held the morning of August 16, 2012. The meeting included a presentation on the study process, schedule, public outreach program, PWG roles and responsibilities, and two workshops. During the workshop portions of the meeting, attendees were asked to identify transportation issues and concerns in the study area, potential interchange concepts and alternatives evaluation criteria.

#### *PWG Meeting #2*

The second PWG meeting was held on the morning of October 26, 2012. The meeting included an overview of PWG #1 and the public meeting, outlined data collection efforts, described the alternatives development and evaluation process, and an overview of the seven alternatives carried forward for consideration. The meeting concluded with a

question-and-answer session, followed by an opportunity for PWG participants to view and discuss all of the alternatives considered with project study team members.

### *PWG Meeting #3*

The third PWG meeting was held on the morning of December 11, 2012. The meeting included an overview of PWG Meeting #2 and highlighted conceptual local street modifications and aesthetic enhancements. The presentation was followed by a group workshop that encouraged participants to identify corridor themes and streetscape elements that are desirable in each neighborhood. After a break, the project study team presented an analysis of the remaining interchange alternatives (A-7.1c and A-15.4) and identified Alternative A-7.1c as the Recommend Alternative. PWG members had the opportunity to discuss aesthetic enhancements of the overall interchange along with the proposed Ramp NW flyover that is included in the Recommended Alternative.

### *PWG Design Charrette*

The PWG Design Charrette was held on the morning of January 22, 2013. The Charrette focused on establishing detailed visions for key areas for the Circle Interchange study area. Four stations were established to discuss specific elements: 1) the interchange area, including the landscaping and Accident Investigation Site; 2) Peoria Street; 3) Halsted Street and Harrison Street; and 4) the other cross streets including Taylor Street, Van Buren Street, Jackson Boulevard, Adams Street, Morgan Street, Des Plaines Street and the four corners atop the "box" of the interchange.

Each PWG member received a Ratings Booklet, which included images of standard Department treatments, existing streetscape styles in the Chicago area, and proposed aesthetic themes including form liner options for piers, retaining walls and potential noise walls. PWG members also received a Design Charrette Booklet with images of existing conditions in key interchange areas, as well as renderings highlighting proposed improvements to be complete as part of the Circle Interchange study.

### *PWG Meeting #4*

The fourth PWG meeting was held on March 1, 2013 and included a presentation and general discussion. The presentation included an overview of PWG Meeting #3, a detailed summary of the Preferred Alternative, aesthetic elements, noise analysis, anticipated construction sequencing and next steps. The presentation was followed by a wide-ranging group discussion that touched on several topics regarding the Preferred Alternative: increase in overall green space, changes in traffic flow along northbound I-90/94, separation of the northbound C-D road, travel times, southbound I-90/94 access, Peoria Street, city street cross sections, aesthetics, potential noise walls and construction sequencing.

### **Vibration Workshop**

A vibration workshop was held on May 17, 2013 with representatives from buildings adjacent to the Circle Interchange project area. Several of the buildings are over a century old and have existing foundation concerns. The purpose of the meeting was to acknowledge the concern of construction vibration, introduce a vibration monitoring program and to seek input from the representatives. Next steps were identified during the presentation. These include obtaining building information, performing building condition surveys, installing monitors, incorporating the Construction Monitoring Plan into contract documents, conducting pre-construction surveys and implementing the Construction Monitoring Plan. The Vibration Workshop was attended by 41 representatives.

### **Public Informational Meeting**

The Public Informational Meeting (PIM) was held during the evening of August 30, 2012. The meeting was an open house format with a continuous audio-visual presentation, exhibit boards for review, concept maps for stakeholders to sketch ideas and an opportunity to participate in a transportation survey. Five representative concept alternatives were presented at the meeting, including the following:

- **Preliminary Concept #1** – Based on Alternative A-1 (refined into A-1.1 and A-1.2)
- **Preliminary Concept #2** – Based on Alternative A-2
- **Preliminary Concept #3** – Based on Alternative A-8

- **Preliminary Concept #4** – Based on Alternative A-11
- **Preliminary Concept #5** – Based on Alternative A-7, which was refined into several A-7 series alternatives including the Preferred Alternative (A-7.1c).

Prior to the PIM, display ads were published in five local newspapers to announce the meeting and provide details, as follows:

- Chicago Sun Times (August 23<sup>rd</sup> and August 26<sup>th</sup>)
- The Chicago Journal (August 16<sup>th</sup>)
- The Greek Star (August 16<sup>th</sup> and August 23<sup>rd</sup>)
- The Chicago Reader (August 23<sup>rd</sup>)
- UIC News (August 29<sup>th</sup>)

Other meeting outreach efforts included a postcard invitation to over 2,600 identified stakeholders, an e-blast invitation to stakeholders, a newsletter to stakeholders, and a press release issued by the Department. The meeting was also announced on local websites, including the Greektown Chamber of Commerce, Hispanic American Construction Industry Association, Special Service Area #16, Chicago Metropolitan Agency for Planning, Medical District and the University Village Association.

A media briefing was held prior to the PIM that included a presentation and a question-and-answer session with the Project Team.

The meeting sign-in sheet included 59 people in attendance. Ten comment forms were received and 13 people participated in the survey. A number of groups sent representatives to this Public Informational Meeting, and a number of private engineering and construction firms attended as well. The media was also invited to attend the public meeting, including a pre-meeting question and answer session with Department staff.

The comment period ending date was September 13, 2012 with 10 comment forms, two letters and 16 web inquires submitted. Comments were also posted directly on the preliminary concept exhibits. Given the preliminary nature of the information presented at the PIM, comments touched on a wide range of subjects. These included specific issues pertaining to the preliminary concepts, general statements on project needs, and inquiries on further public involvement, among others.

### **Public Hearing #1**

The Preferred Alternative was presented to the public at Public Hearing #1 (PH #1) on April 3, 2013. PH #1 was conducted in an open house format, with interested persons able to visit anytime between 4:00 PM and 7:00 PM. Attendees had the opportunity to view an audio-visual presentation, participate in a question and answer session, review exhibits and provide comments on the Preferred Alternative including aesthetic enhancements to the Circle Interchange itself and the surrounding city streets. Attendees were also able to examine results of technical studies, and meet with the Department and study team representatives on a one-on-one basis.

Prior to the public hearing, display ads were published in three local newspapers to announce the meeting and provide details, as follows:

- Chicago Sun Times (March 21<sup>st</sup>)
- The Greek Star (March 21<sup>st</sup> and March 28<sup>th</sup>)
- UIC News (March 30<sup>th</sup>)

Other meeting outreach efforts included electronic advertisement on the Chicago Sun Times website from March 21<sup>st</sup> through August 3<sup>rd</sup>, a postcard invitation to over 4,500 identified stakeholders, an e-blast invitation to stakeholders, a newsletter to stakeholders, and a press release issued by the Department. The meeting was also announced on local websites, including the Greektown Chamber of Commerce, Hispanic American Construction Industry

Association, Special Service Area #16, the Chicago Metropolitan Agency for Planning, Medical District and the University Village Association.

A media briefing was held prior to the public hearing that included a presentation and a question-and-answer session with the Project Team.

The public hearing was attended by 173 people. Eleven comment forms were submitted during the hearing. Thirty-five question and answer forms were filled out, read aloud, and responded to in the question-and-answer sessions. Sixteen comments were provided to the court reporter in the exhibit room. Additional comments were received via the website, mail and phone calls during the comment period, which ended April 17, 2013. In all, 127 comments were received. The major topics covered include the following:

- Building impacts (24 comments)
- Noise impacts (23 comments)
- Support for the Project (16 comments)
- Public involvement (13 comments)
- Property value concerns (12 comments)
- Recommend another alternative (10 comments)
- Other comments discussed safety, pollution, implementation, visual impacts, pedestrian and bicycle concerns.

Residents from the Green Street Lofts building (400 S. Green Street) expressed concerns over the proposed location of Ramp NW in proximity to their building. The residents discussed these concerns with the Department and project team staff in the question-and-answer sessions as well as the open house portion of the hearing. The Department increased coordination with Green Street Lofts following the hearing and as a result, revised the alignment of Ramp NW to increase the distance between it and the loft building.

### **Green Street Lofts and Sangamon Lofts Meetings**

#### *Green Street Lofts and Sangamon Lofts #1*

The first meeting with the Green Street Lofts and Sangamon Lofts was held on April 19, 2013. It included a presentation that began by acknowledging these issues: the close proximity of Ramp NW to the buildings, concerns over foundations and vibrations, safety, noise, air quality and light pollution from headlights. The presentation also reviewed Alternatives A-7.1c and A-15.4, including the December 2012 versions and the versions shown at Public Hearing #1 and why the versions are different. The presentation then described the on-going refinements to Alternative A-7.1c in response to the residents' concerns. The meeting concluded with a detailed question-and-answer session. The meeting was attended by five representatives from Green Street Lofts, two representatives from Sangamon Lofts, a representative each from Dearborn Engineering, Alderman Fioretti's office, and the West Loop Community Association.

#### *Green Street Lofts and Sangamon Lofts #2*

The second meeting with Green Street Lofts and Sangamon Lofts was held on May 3, 2013. It included a presentation with an alternatives development update, a discussion on foundation and retaining walls, vibration monitoring, noise, and aesthetic treatments. A detailed question-and-answer session was held with the attendees. The attendees included five representatives from Green Street Lofts and three representatives from Sangamon Lofts. One representative each attended from Alderman Fioretti's office and Alderman Solis's office.

## **Agency Coordination**

Coordination has been made with the following agencies and copies of the coordination documents and minutes of the one-on-one meetings are contained in the *Circle Interchange Combined Design Report, Volume 3*, which is a separate document available at IDOT, District 1 Office in Schaumburg, Illinois.

- U.S. Army Corp of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- Illinois Department of Agriculture
- Illinois Department of Natural Resources
- Illinois Environmental Protection Agency
- Illinois Historic Preservation Agency
- Illinois Natural History Survey
- Illinois State Geological Survey
- Cook County
- City of Chicago
- Chicago Department of Transportation
- Chicago Metropolitan Agency for Planning
- Chicago Transit Authority
- University of Illinois at Chicago

Coordination efforts have occurred with several resource agencies regarding clearances for biological resources (threatened and endangered species), wetlands, and cultural resources. In addition, twelve FHWA/IDOT Coordination Meetings have been held. Minutes of these meetings and copies of the clearances are included in Appendix A.

## **SECTION V. COMMENTS**

All comments received from the Public Meeting and Public Hearing #1 have been cataloged and inventoried. The Department has drafted responses addressing these comments received. The responses strived to address a variety of issues ranging from noise and vibration, construction staging, geometric designs, development of alternatives, outreach provided, and aesthetics. In some instances, the Department has held additional meetings to respond to specific comments and concerns. As a result, meetings were held with the Green Street and Sangamon Lofts Condominium Board members and a Vibration Workshop was conducted. As the project continues, project coordination will continue.

Additional information can be found in the *Circle Interchange Combined Design Report, Volume 3*, a separate document available at IDOT, District 1 Office in Schaumburg, Illinois.

## **SECTION VI. APPENDICES**

Appendix A contains Exhibits, Relevant Coordination, and FHWA/IDOT Coordination Meeting Minutes.

## **SECTION VII. REFERENCES**

*Go To 2040 Comprehensive Regional Plan*, Chicago Metropolitan Agency for Planning, 2010.

U.S. Census 2000 Decennial Census and U.S. Census, American Community Survey, 2011 5-Year Period Estimate

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Illinois Department of Transportation, Division of Highways, Bureau of Design and Environment. June, 2011. Highway Traffic Noise Assessment Manual. Springfield, IL.

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