

Section 5: Transportation

With growth, travel demand on IL 47 will increase and the roadway will need to be widened. The Illinois Department of Transportation (IDOT) has primary responsibility for IL 47. The municipalities will make land use decisions that will affect traffic on IL 47. These land use decisions also can help manage access to IL 47 and provide an ancillary roadway network that can alleviate traffic impacts.

The section begins with current conditions and forecasts for IL 47. Roadway expansion plans to address the growth and traffic forecasts are then presented. The discussion then leads to the issues associated with providing for alternative forms of transportation (bicycling, transit and walking), access management and roadway connectivity. Information is provided about where workers in the Corridor live and residents in the Corridor work. The work commuter has the most important impact on the transportation system. Finally, the planning challenges associated with transportation and tools for addressing these challenges are presented.

Current Conditions & Forecasts

Figure 5.1: Average Daily Traffic (2008) shows the number of lanes and average daily traffic on IL 47. The existing configuration of IL 47 ranges from 2 to 6 lanes within a right-of-way ranging from 56 feet to 230 feet wide¹. The 2030 traffic forecast, prepared by the Chicago Metropolitan Agency for Planning (CMAP) is based on regional population and employment growth.

Year 2009 travel speeds, as shown in **Figure 5.2: IL 47 Travel Speeds (2009)**, were calculated by CMAP using average daily traffic information and speed data collected by IDOT. Travel speeds are lower in developed areas and higher in undeveloped areas. As development continues to occur, travel speeds will decrease.

IL 47 is an important truck freight corridor as shown in **Figure 5.3: IL 47 Truck and Rail**. This figure illustrates that IL 47 carries a significant volume of truck traffic. As a percentage of ADT, truck traffic is highest in the following IL 47 locations:

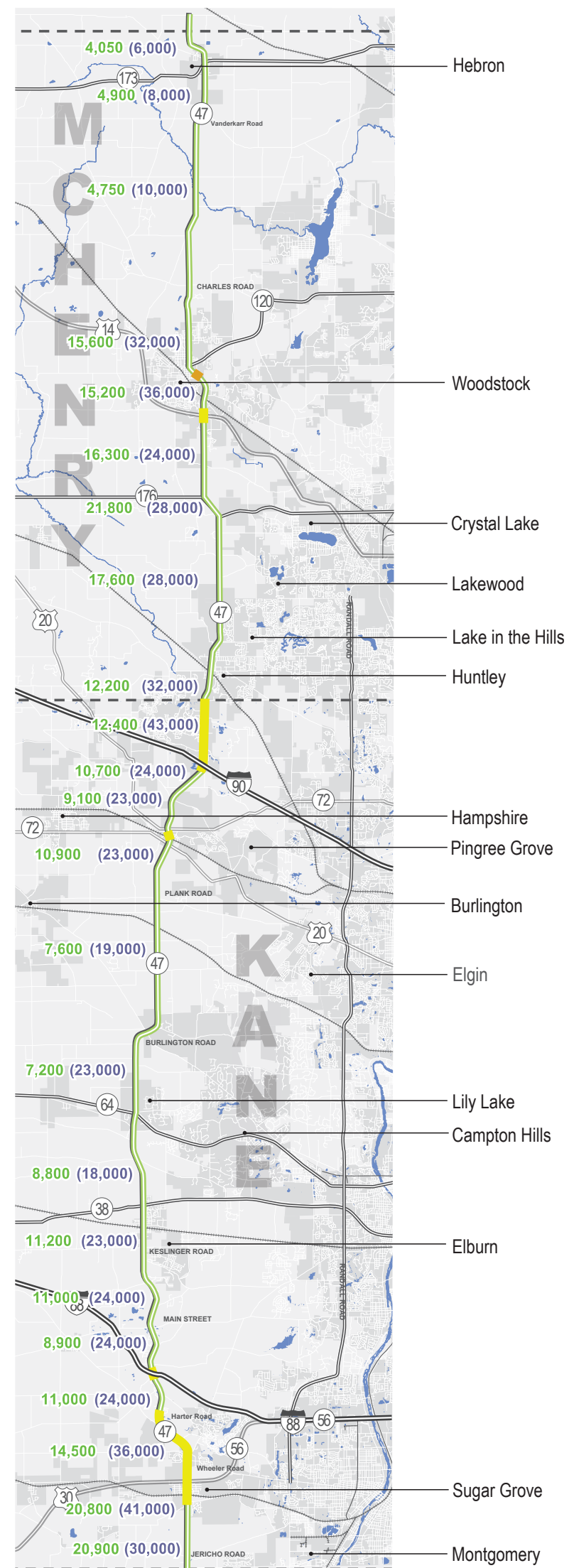
- At and south of IL 173
- At IL 72
- Between Plank Road and IL 64
- Between I-88 and US 30

Truck traffic data includes local and through traffic. Through traffic includes trucks using IL 47 to bypass more congested roads in the Chicago metropolitan area. Local truck traffic serves businesses in the Corridor. The economic success of the Corridor requires the accommodation of truck traffic. Land use controls need to consider truck loading areas. A comprehensive roadway network should accommodate local truck traffic with bypasses and designated truck routes for through truck traffic. Accommodating trucks at these two scales is important.

Roadway Plans

Figure 5.4: Roadway Expansion Plans shows capacity improvements that are planned through 2030 along and across IL 47. The plans are taken from the Kane County and McHenry County long range transportation plans and the IDOT 2010-2015 Highway Improvement Program (HIP). The roadway expansion cannot occur fast enough to keep pace with the growth due to limited government resources for roadway expansion.

**Figure 5.1:
Average Daily Traffic (2008)**



Legend

- Municipality
- Unincorporated Area
- Average Daily Traffic**
- XX Current*
- (XX) 2030 Forecast**
- Current Number of Lanes**
- || 2 Lanes
- || 3 Lanes
- || 4 Lanes

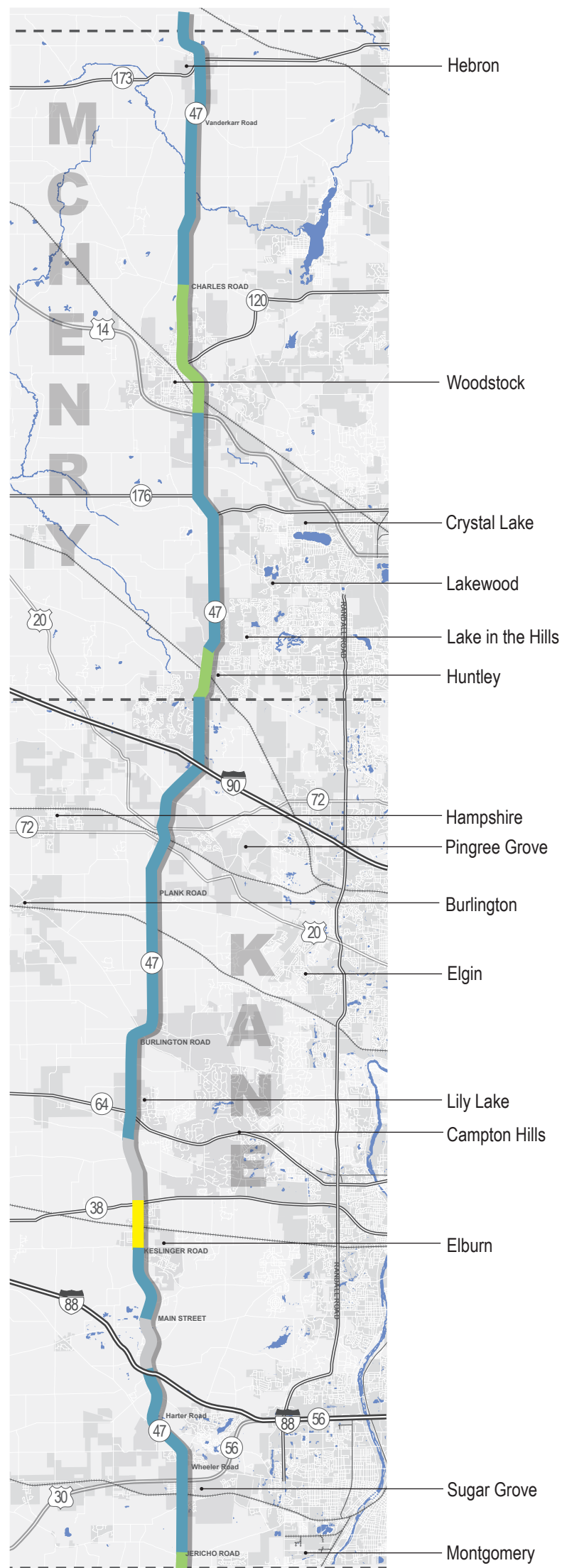
Source:

*Illinois Department of Transportation, 2008.

**Chicago Metropolitan Agency for Planning, 2009.

¹ Illinois Department of Transportation: Strategic Regional Arterial, Illinois 47, 1995

**Figure 5.2:
IL 47 Travel Speeds (2009)**



Legend

- Municipality
- Unincorporated Area
- Average Travel Speed***
- 25 mph or slower
- 26 - 40 mph
- 40 mph or faster
- No data

Source:

*Chicago Metropolitan Agency for Planning, 2009. Average travel speed is the mode speed within a 10 mph-range for speed data collected by IDOT.

The Village of Huntley provides an example of how new development can address traffic congestion. To mitigate traffic congestion, Huntley identifies the need for transportation improvements with new development through the use of traffic impact studies. As part of the development approval process, the Village requires that a developer provide the identified roadway improvements. This partnership increases the speed at which capacity improvements are made.

According to CMAP population and traffic forecasts, the most growth in the Corridor will be between the Village of Huntley and the City of Woodstock and between I-88 and US 30 in Sugar Grove. Half interchanges currently exist at I-90 and I-88 and full interchanges are proposed. Current and future traffic projections for the interchanges are shown in **Table 5.1: Current and Future Traffic, I-90 at IL 47 and I-88 at IL 47**. The Year 2030 traffic projections took into consideration that Prairie Parkway is constructed in Kendall and DeKalb Counties to the west of IL 47. The forecasts show a significant increase in traffic on IL 47 and the interchanges.

**Table 5.1:
Current and Future Traffic, I-90 at IL 47
and I-88 at IL 47**

Current and Future Traffic I-90, IL 47			
IL 47	Average Daily Traffic		% Increase
	Current	2030	
North of I-90	12,400	43,000	71%
South of I-90	10,700	24,000	55%
I-90			
East of IL 47	34,600	63,000	45%
West of IL 47	26,050	60,000	57%
Tollway Ramps			
To I-90 East	7,900	19,000	58%
From I-90 West	9,700	22,000	56%
To I-90 West	N/A	5,000	N/A
From I-90 East	N/A	5,000	N/A

Sources:
Chicago Metropolitan Agency for Planning. Year 2030 Traffic Forecast Data Request. January 26, 2009.
Illinois Department of Transportation. "Average Daily Traffic." 2007. Retrieved March 2009.
<<http://www.gettingaroundillinois.com/default.aspx?q=aadt>>
Illinois Tollway. 2007 Traffic Data Report for the Illinois Tollway System. 2008.

Current and Future Traffic I-88, IL 47			
IL 47	Average Daily Traffic		% Increase
	Current	2030	
North of I-88	8,900	24,000	63%
South of I-88	11,000	24,000	54%
I-88			
East of IL 47	25,210	65,000	61%
West of IL 47	28,670	65,000	56%
Tollway Ramps			
To I-88 West	1,780	6,000	70%
From I-88 East	1,680	6,000	72%
To I-88 East	N/A	6,000	N/A
From I-88 West	N/A	6,000	N/A

Sources:
Chicago Metropolitan Agency for Planning. Year 2030 Traffic Forecast. January 26, 2009.
Illinois Department of Transportation. Average Daily Traffic, 2007. Retrieved March 2009.
<<http://www.gettingaroundillinois.com/default.aspx?q=aadt>>
Illinois Tollway. 2007 Traffic Data Report for the Illinois Tollway System, 2008.

IDOT schedules capital and maintenance projects annually in a six-year program. The Villages of Huntley and Sugar Grove have been working with IDOT to pursue improvements on IL 47 at I-90 and I-88, respectively. **Figure 5.4** includes the following capacity and traffic signal modernization improvements on IL 47:

- Charles Road to US 14 – Phase 1 Preliminary Engineering (Fall 2009)
- IL 176 – Traffic Signal Modernization (2011-2015)
- Reed Road to Kreutzer Road – Land Acquisition, Additional Lanes, Bridge Replacement (2010)
- Interchange Reconstruction I-90 at IL 47 (2011-2015)
- IL 47 at Plank Road – Intersection Reconstruction (2011-2015)
- IL 47 at Plato Road – Channelization, Traffic Signal Installation (2011-2015)
- IL 47 at Main Street – Intersection Improvement, Traffic Signal Installation (2011-2015)

Right-of-Way and Cross-Sections

The IDOT *Strategic Regional Arterial, Illinois Route 47 Final Report* (SRA report) prepared in 1995 identified typical cross-sections and needed right-of-way widths. Four cross-section types ranging from 4 to 6 lanes vary in right-of-way width from 80 to 170 feet were proposed as shown in **Figure 5.5: IL 47 SRA Cross-Sections (IDOT 1995)**. The cross-sections vary in width based on the median and parkway widths and number of lanes.

Land use along IL 47 has changed since the SRA report was prepared 15 years ago. The development context zones are not consistent with the cross-sections proposed in the SRA report. As shown in **Figure 3.3: Existing and Future Development Context Zones**, much of the Corridor is proposed as suburban or urban rather than rural.

Some adjustments to the cross-sections also may be warranted. For example, the Historic Municipalities have constrained rights-of-way that may not fit the typical cross-section. Roadway design at these locations may require a different approach such as narrower travel lanes or on-street parking. Also, the cross-sections in the SRA report do not identify space for pedestrians, bicyclists, and transit. In addition, some municipalities expressed a need for more right-of-way to accommodate utilities including water, sewer, and fiber-optic cable.

Acquiring additional right-of-way is challenging. Purchasing additional right-of-way after the preliminary engineering phases can add considerable cost and delay to a project. The rising cost of land to purchase right-of-way may slow the pace of improvements or hinder the acquisition of enough right-of-way to accommodate all users of the Corridor.

Railroad Crossings

Figure 5.3 shows six railroads crossing IL 47, three are overpasses and three are at-grade. All six lines carry freight traffic and three of these lines carry commuter rail traffic to the communities of Woodstock, Elgin, and Elburn. The Union Pacific Northwest (UP-NW) Line is one of the busiest commuter rail lines in the Metra system and passes through Woodstock and across IL 47. The Union Pacific West (UP-W) Line terminates just east of IL 47 in Elburn. The Milwaukee District West (MD-W) Line terminates approximately five miles east of IL 47 at Big Timber Road in Elgin.

Three communities (Huntley, Pingree Grove, and Sugar Grove) have identified an interest in future commuter rail service and identified likely locations for commuter rail stations in their comprehensive plans. A study is underway to consider extending Metra service west from Elgin through Huntley to Marengo. No efforts currently are underway to consider commuter extension to the other two municipalities.

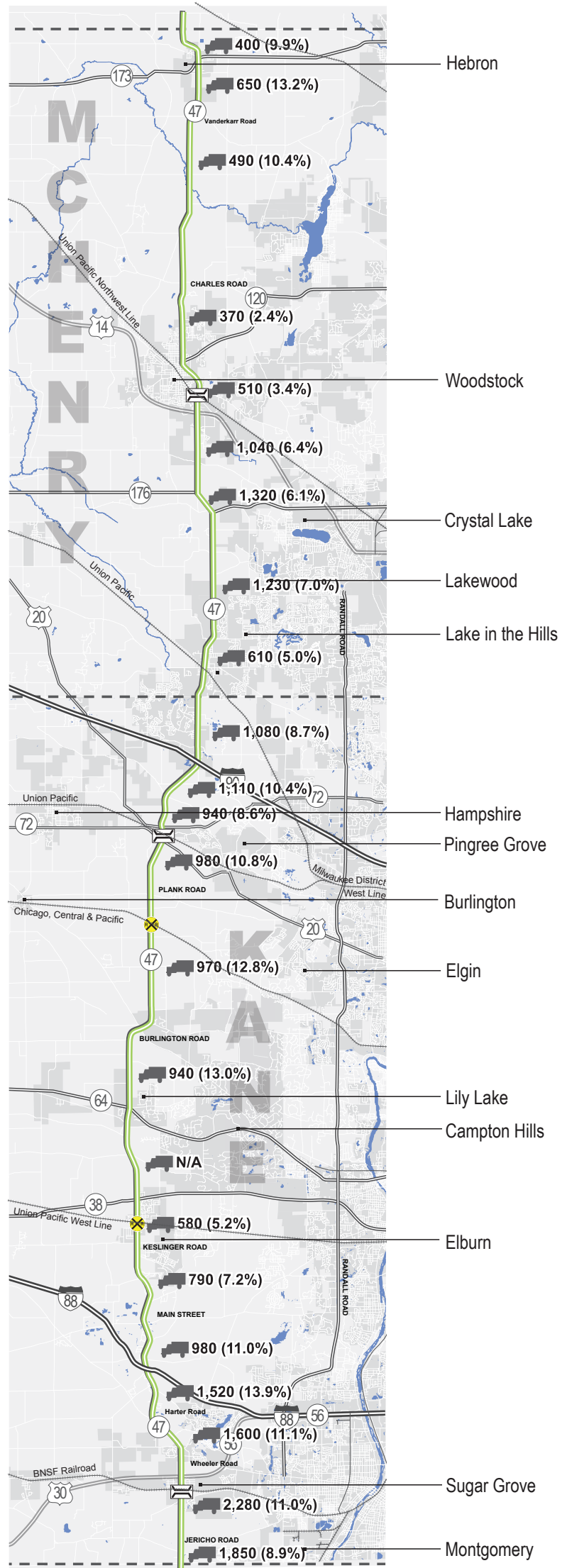
Elburn has identified a need for a grade separated railroad crossing on IL 47, and the grade separated rail road crossing in Sugar Grove will need to be reconstructed when IL 47 is widened in the future. Overpasses are expensive to construct and require coordination from multiple agencies and the railroad. Regardless of whether the crossing is at-grade or an overpass, increasing the width of IL 47 will present significant costs.

Access and Connectivity

Access Management

Providing access to IL 47 is under the jurisdiction of IDOT. The IL 47 SRA Report provided an access policy guide that identifies where and how access to IL 47 should be allowed and signals should be located. These guidelines will improve the carrying capacity of IL 47 and reduce traffic congestion. Municipalities can help in this regard by developing land use plans that also include an overall access management plan. Access management plans can reduce access points that create conflict and congestion for moving traffic as cars attempt to enter or exit driveways.

Figure 5.3: IL 47 Truck and Rail



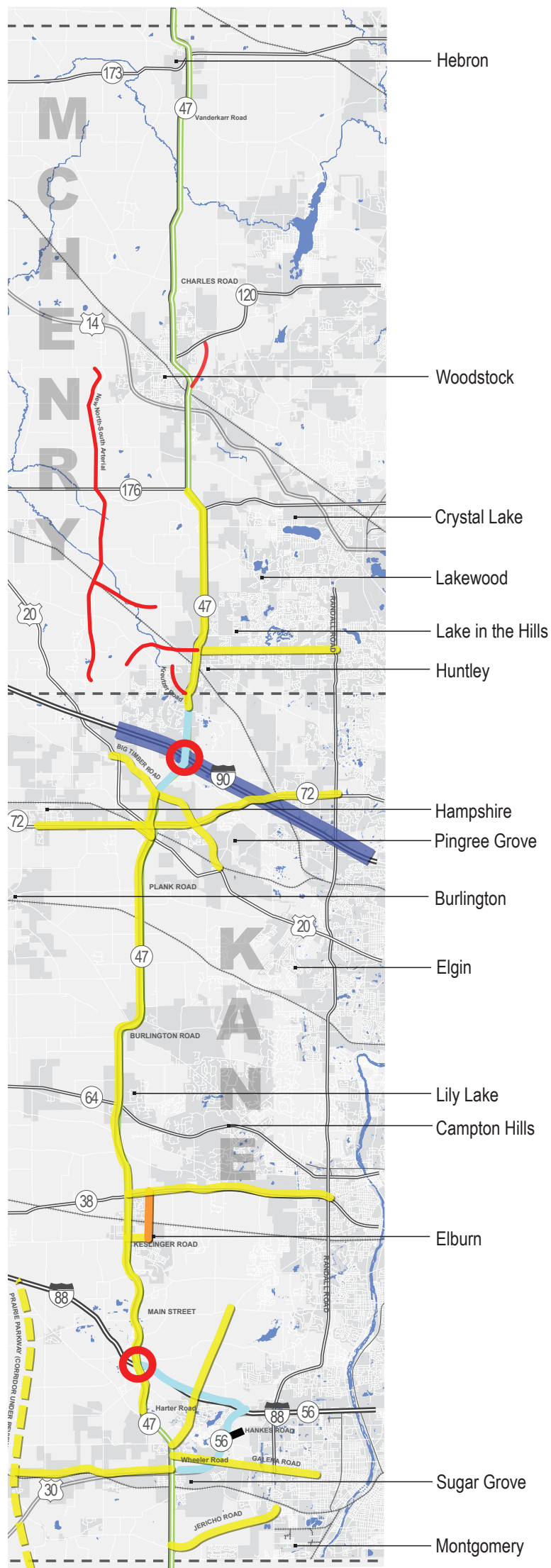
Legend

- Municipality
- Unincorporated Area
- 🚛 Truck Traffic*
- XX Current Volume
- (XX%) Percent of Total Traffic
- Railroad Crossings**
- ⚡ Grade
- 🚂 Overpass

Source:

*Illinois Department of Transportation. Traffic Count Database System. 2008.

**Figure 5.4:
Roadway Expansion Plans**



Legend

- Municipality
- Unincorporated Area
- Roadway Expansion***
- ▬ New 2-Lane Road
- ▬ 2 Lanes improved to 4
- ▬ 4 Lanes improved to 6
- ▬ 6 Lanes improved to 8
- Half interchange improved to full interchange

*Source:

Kane County 2030 Plan, McHenry County 2020 Plan

Parallel Roadways

Figure 5.6: Roadway Network and Classification System shows the proposed roadway network of collectors and arterials as proposed in municipal, Kane County and McHenry County plans. The network of collectors and arterials identified on this figure illustrates a lack of major roadways parallel to IL 47. A lack of parallel roads near IL 47 results in congestion as motorists must rely on IL 47 for north-south travel.

Creating roadways parallel to IL 47 would lessen the strain on IL 47. As municipalities grow, roadway jurisdiction is transferred to municipal control. This provides an opportunity for municipalities to make parallel roadway connections. A transportation plan can assist in identifying the need parallel roadways.

Roadway Connectivity

A connected roadway network is important in reducing dependence on IL 47. This is accomplished by ensuring that adjoining subdivisions have roadway connections and cul-de-sacs and gated communities are minimized. A roadway network low in connectivity results in trips that require longer travel distances. Local roads are built by developers as a condition of land subdivision or development. A transportation plan can provide guidance on creating a connected roadway network. A connected roadway network can shorten travel distances and thereby make walking and bicycling more feasible.

Roadway Grid

Large commercial developments often are located at major roadway intersections and generate large amounts of traffic. These “big box” developments often occur without full consideration of traffic impacts created by the development. A means of alleviating the traffic congestion on the main roadways is necessary.

Traditional development or subdivision regulations required the construction of minor or collector roads approximately every quarter mile parallel to a major road. This resulted in a roadway grid that dispersed traffic through areas with high traffic volumes and lessened congestion on the major roads. Developers have avoided the roadway grid because of the associated costs. However, the practice results in a lack of roads to disperse traffic from the main roadways. It also should be noted that this practice imposes an economic costs on the motorists who experience congestion on the main roadways.

Alternative Forms of Transportation

Bus Transit

IL 47 is a key north-south roadway that connects the municipalities in the Corridor. Traffic levels will increase as growth occurs. The Corridor should be planned with bus service in mind. As traffic levels increase there will be a need to accommodate those who cannot drive. The provision of bus service can provide an important alternative means of transportation. While current land use and population along the Corridor does not justify bus service, the forecasted growth should provide an opportunity to provide bus service.

Planning strategies for bus transit can be found in the Kane County *Land Resource Management Plan*, the Kane County *Long-Range Transportation Plan*, and the Kane County *Transit Opportunity Assessment Study*. The strategies include recommendations for roadway construction practices that are supportive of bus transit including identification of areas where municipalities have the potential to encourage transit service. Some municipalities identify locations where transit improvements are encouraged. However, there has been minimal planning of land use that would encourage compact development supportive of transit service.

**Figure 5.5:
IL 47 Cross-Sections (IDOT 1995)**



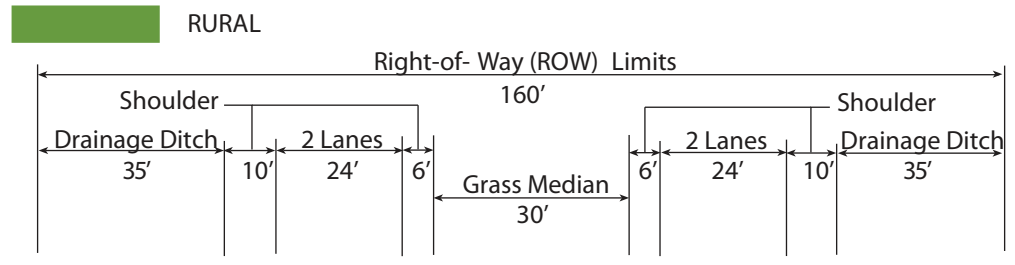
Legend

- Municipality
- Unincorporated Area

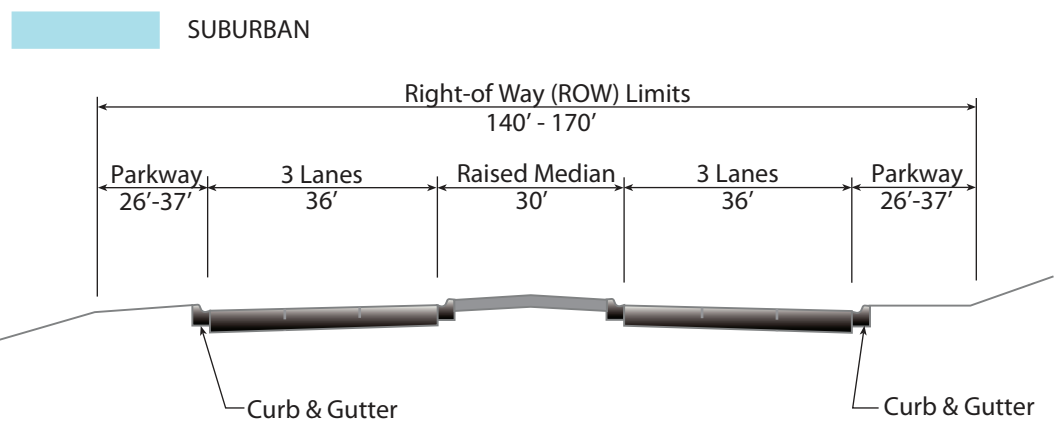
*Source:

Strategic Regional Arterial Final Report, Illinois Department of Transportation.

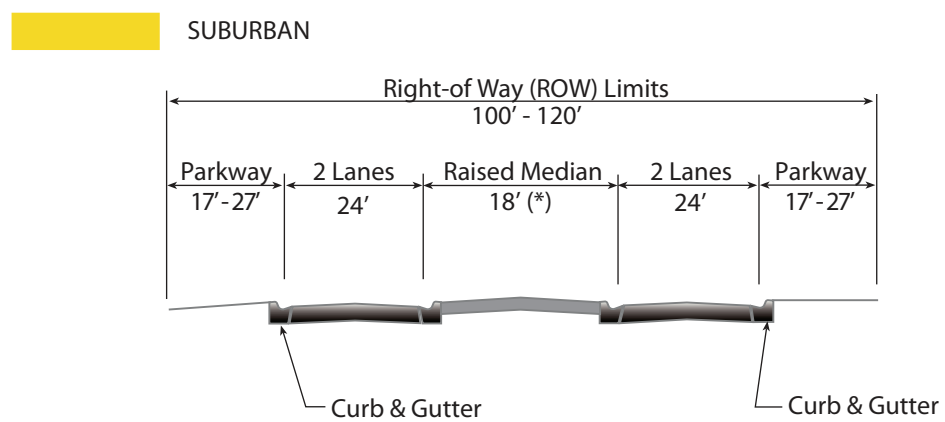
The proposed cross-sections are based on the IDOT *Strategic Regional Arterial, Illinois Route 47 Final Report*, dated August 1995. These cross-sections may no longer reflect current conditions and planned land use. SRAs have widely varying characteristics and features and may change from one segment of a route to another. IDOT provides further guidelines for the SRA network in its Bureau of Design and Environment (BDE) Manual.



EXCEPTION: Drainage ditch varies between 55' and 70' from Bliss Road to south of Blackberry Creek. Total ROW width in this segment ranges 200' - 230'.

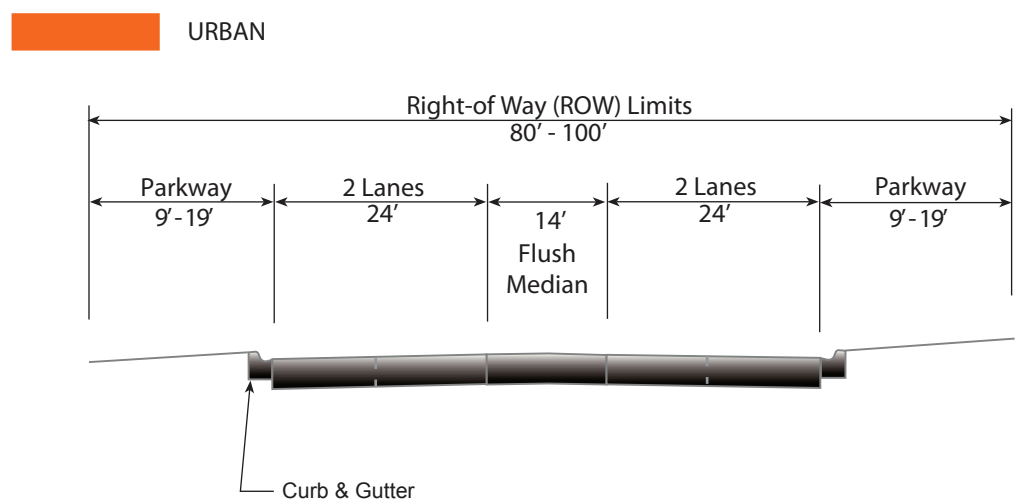


EXCEPTION: 2 lanes in each direction between Powers Road and Kreutzer Road for a roadway width of 24' and total ROW width of 140'.



EXCEPTION: Parkway width varies between 57' and 82' from IL Route 56 to Bliss Road. Total ROW width in this segment ranges 180'-230'.

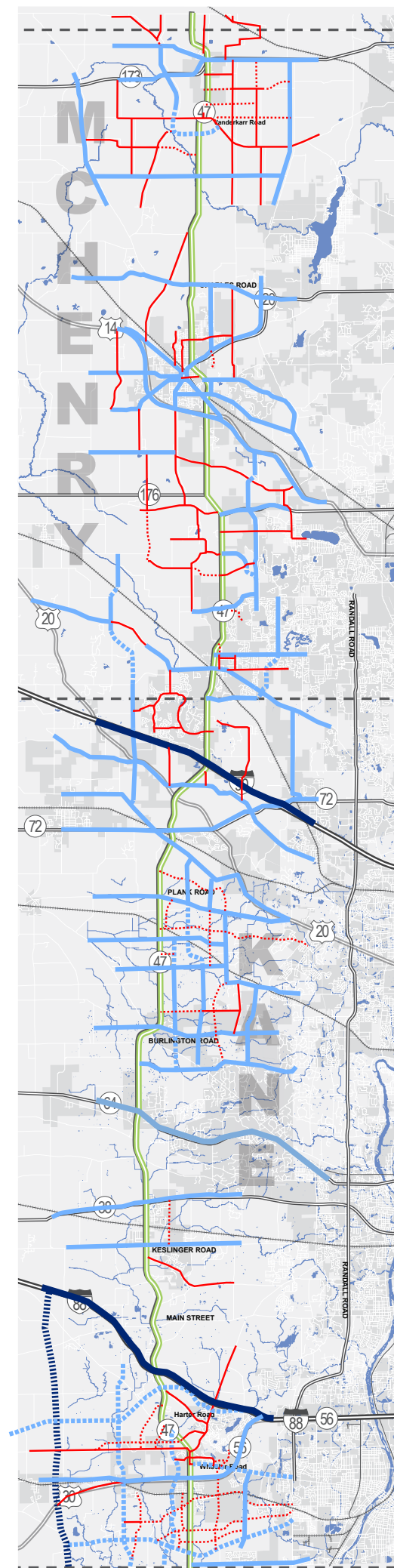
(*) - NOTE: The IDOT Bureau of Design and Environment Manual has since revised the median standards to 18' to 22'.



URBAN

The Alternative Alignment (bypass) proposed for this segment in the SRA Report has since been abandoned and is not included in the Kane County Transportation Plan or the Elburn Comprehensive Plan.

**Figure 5.6:
Roadway Network and
Classification System**



Legend

- Municipality
- Unincorporated Area
- Roadway Classification***
- Collector
- - - Proposed Collector
- Arterial
- - - Proposed Arterial
- Tollway (I-88, I-90)
- - - Proposed Tollway (Prairie Parkway)

*Source:

Strategic Regional Arterial Final Report, Illinois Department of Transportation. Kane County 2030 Transportation Plan. McHenry County 2020 Unified Plan.

Comprehensive and Transportation Plans: Elgin, Hampshire, Huntley, Lakewood, Lily Lake (under revision), Montgomery, Pingree Grove, Sugar Grove, Woodstock.

Additional plans/maps: Campton Hills (under revision), Elburn (subarea plan), Hebron, Lake in the Hills. Not shown: Burlington

Bicycle Facilities

Figure 5.7: Active Transportation shows existing and proposed bicycle facilities along the Corridor. Currently, the only existing trail crossing is the Great Western Trail which crosses IL 47 at an overpass north of IL 64 in Lily Lake. Kane and McHenry County bicycle trail plans identify more than 15 proposed crossing opportunities. The existing overpass at the Great Western Trail will also require improvements to accommodate IL 47 expansion. As IL 47 is expanded, 4- or 6-lane cross-sections will create barriers along these proposed trails that could adversely impact trail connectivity in the Corridor.

In 2007, the Illinois General Assembly enacted Public Act 95-0665, the Illinois Complete Streets law. The bill established that “in or within one mile of an urban area, bicycle and pedestrian ways shall be established in conjunction with the construction, reconstruction, or other change of any State transportation facility,” with some exceptions. In 2010, IDOT revised its Bureau of Design and Environment (BDE) Manual to incorporate this new law. IDOT will accommodate bicycles and pedestrians in highway improvements unless the project meets one of these exceptions or local agencies refuse to contribute to their match or maintenance requirement. Generally, IDOT increased its cost participation from 50% for a portion of total costs to 80% for all permissible costs for bicycle and pedestrian accommodations. For shoulders, wide outside lanes or bridge projects IDOT will pay 100% of the costs.

The BDE Manual also outlines the local agencies’ participation in the process, provides a new bicycle facility selection table that considers such issues as vehicle speeds and volumes for appropriate accommodations, and indicates that a high-level review will be required when issues arise that preclude the establishment of sidewalks and bikeways. As future improvements to IL 47 are made, extensive cooperation and coordination will be needed between IDOT and the municipalities to implement IDOT’s policy.

Pedestrian Facilities

Currently, pedestrian crossings on IL 47 are only provided in the historically developed areas of Elburn, Hebron, Huntley, and Woodstock. Pedestrian needs at roadway intersections are important to consider early in the planning process before preliminary engineering plans are prepared. Crossing opportunities are present at every signalized intersection and additional crossings may occur at unsignalized locations. It is important to identify these locations and pursue intersection designs that accommodate pedestrian crossings.

IL 47, at some time in the future, will likely become a bus corridor. Whenever a bus stop is placed, there will be a need to accommodate pedestrians. Bus stops are generally placed near signalized intersections. By their very nature, bus stops are pedestrian crossing locations.

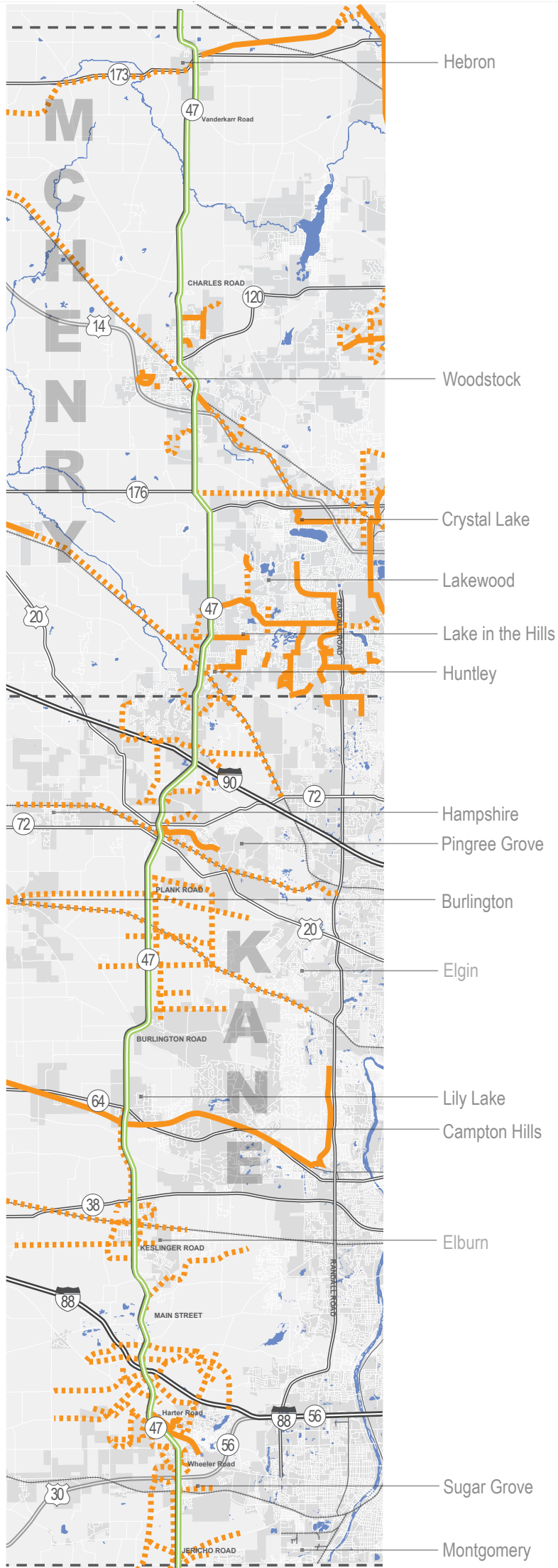
When IDOT is preparing engineering studies, they may identify sidewalks as part of the cross-section if requested by the municipality. However, the construction of sidewalks is left to the municipalities. IDOT currently is updating their policy in regard to providing sidewalks with IDOT projects.

Many of the municipalities impose the construction of sidewalks as a condition of development. While this reduces the cost burden to municipalities, often times this results in a fragmented sidewalk network with gaps. Cooperation and coordination of IDOT and the municipalities is required to develop a comprehensive pedestrian plan.

Where Workers Live and Residents Work

Regional Centers and Historic Municipalities were analyzed using U.S. Census 2000 data to identify work commute trends. Two travel patterns were analyzed: 1) where workers in these municipalities live and 2) where residents in these municipalities work.

**Figure 5.7:
Active Transportation**



Legend

- Municipality
- Unincorporated Area
- Bicycle Facilities**
- Existing Trail
- Planned Trail

Source:

*Kane County GIS, McHenry County GIS, McHenry County Division of Transportation

**Figure 5.8:
Where Workers Live**

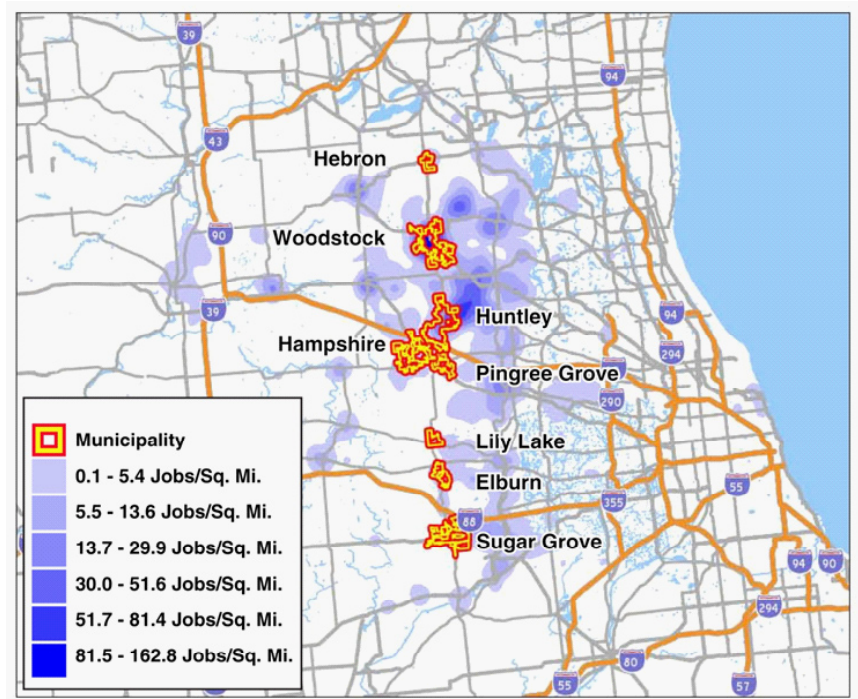


Figure 5.8 Where Workers Live shows that many workers live in or near the Corridor. East-west travel is the dominant direction of work commute travel. Corridor workers live primarily in the Fox Valley, but also come from as far east as the Schaumburg area. Many workers come from the west including Rockford, Belvidere, DeKalb and Marengo.

Source: U.S. Census Bureau, Center for Economic Studies

**Figure 5.9:
Where Residents Work**

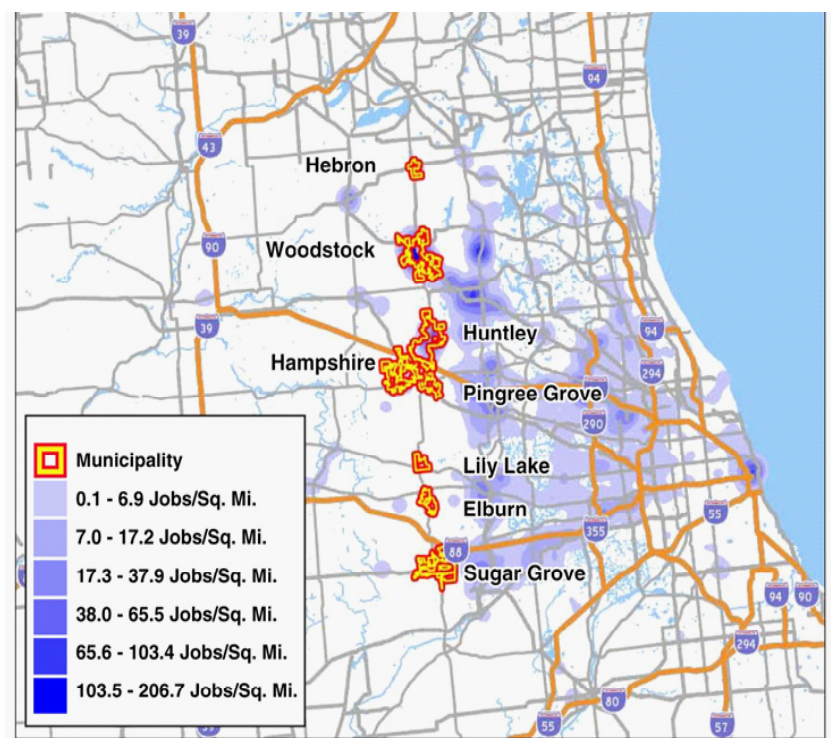


Figure 5.9 Where Residents Work shows that many Corridor residents travel east to work. Jobs are concentrated in eastern McHenry and Kane Counties and much of DuPage County. This east-west travel pattern suggests reliance on I-88 and I-90 for the work commute. Downtown Chicago also appears as an employment center. This suggests that the Metra Union Pacific Northwest Line, the Metra BNSF Railway, and the Metra Union Pacific West Line are major commuter corridors in addition to Interstate travel.

Source: U.S. Census Bureau, Center for Economic Studies.

These commuter trends suggest that while IL 47 is an important north-south road, east-west travel is and will continue to be influential in regional growth. This is reflected in commuting patterns as well as where workers choose to live. The intersections of IL 47 with major east-west state highways and Interstates are where most municipalities already have focused economic development efforts. Municipalities that focus their economic development efforts at these development nodes are likely to capture the commercial, retail, and employment growth that is both forecast and desired.

The length of the work commute is influenced by distance, travel speed, and congestion. Bringing jobs and housing closer together can reduce commute times. In addition, the clustering of land use can promote alternative forms of transportation including bicycling, walking, and the use of transit.

Planning Challenges and Tools

The previous discussion identified several transportation planning challenges as growth occurs. These challenges are presented below. Several tools have been identified that can address these transportation planning challenges and provide municipalities with a means of alleviating future traffic congestion. The Toolbox for IL 47 provides detail on each of these tools.

Planning Challenge #13:

Proposed right-of-way needs and cross-sections have been identified in the IL 47 SRA report prepared by IDOT. These proposed rights-of-way and cross-sections may no longer be appropriate based on the development context zones identified by Corridor municipalities.

Tool:

- Cross-Section Alternatives

Planning Challenge #14:

As part of its new bicycle and pedestrian policy, IDOT will study the needs and appropriate accommodations for bicycles and pedestrians for a future reconstruction of IL 47. Municipalities are expected to take an active role in working with IDOT in providing these facilities. As local and regional bicycle plans are key components in the evaluation of bicycle needs on state routes, an overall plan to accommodate bicycles and pedestrians in the corridor should be developed.

Tools:

- Access Management Plan
- Collector Roadway Grid
- Connections Between Subdivisions
- Corridor Planning Council
- Cross-Access Agreements
- Frontage Roads and Rear Access Roads
- Limit New Signals
- Link Long Range Land Use and Transportation Plans
- Parallel Collectors
- Roadway Design Guidelines
- Transportation Plan
- Transportation Impact Study
- Truck Route Alternatives

Planning Challenge #15:

Municipal plans do not identify where potential bus transit opportunities are desired or identify areas for compact-mixed land use that that would support transit along IL 47.

Tools:

- Complete Streets Policy
- Identify Locations for Growth Nodes
- Transit Plan

Planning Challenge #16:

There are no plans to accommodate bicycles and walking on IL 47. IDOT will accommodate bicycles and pedestrian in the right-of-way when it is feasible, but municipalities are expected to take an active role in providing facilities. An overall plan to accommodate bicycling and pedestrians in the Corridor should be developed.

Tools:

- Bicycle Plan
- Bike Lanes/Sidepaths
- Complete Streets Policy
- Multi-Modal Level of Service (LOS)
- Pedestrian Crosswalk
- Pedestrian Plan
- Site Design Guidelines