



# Chapter six

## Transportation

### Introduction

Mobility; moving people and things from one place to another is essential to the economic, social and cultural success of Crystal Lake. Safe and convenient modes of transportation are a necessary standard for a good quality of life. The United States, in general, is an auto-dominated society. The end of the second World War allowed people to enjoy the freedom of open roads and home ownership in the suburbs. The Interstate System, started for national defense, has provided much needed links across the country. Before the freedom of the automobile, rail travel was the most common way to get across the county. A hundred years before the interstate system was established, rail lines crossed the US, and 1869 saw the completion of the first Transcontinental Railroad. Rail moved goods and people across the country more efficiently than the previous mode.

Today we rely heavily on roadways and rail lines to get us to our local destinations. Interconnected street networks utilize a hierarchy of road types to organize traffic and destinations. Roadways in Crystal Lake are classified into six categories; alleys, local streets, minor collectors, major collectors, minor arterials and major arterials. The standards for access, sight visibility, speed limits, and roadway design all vary depending on the roadway classification. Crystal Lake maintains a logical street network to efficiently move people and goods throughout the City.

Metra's Northwest Line serves Crystal Lake and several other surrounding communities including, Harvard, Woodstock, Cary and McHenry. The City has two Metra Rail Stations that utilize the Union Pacific Rail lines. Numerous commuters use this line, which travels northwest/southeast to its final destination at Ogilvie Transportation Center in Downtown Chicago. The Regional Transit Asset Management System (RTAMS) most recent data from 2006 estimates almost 2,000 people daily using Metra from the Crystal Lake stops alone. This number has increased steadily in the recent years. In 2010, Metra estimated over 820,000 riders on the

Northwest Line for the month of December. Although the train is not the dominant form of transportation in the area, it has a significant amount of users. Improvements to the areas surrounding the two train stations should focus on improving and increasing ridership.

What does the future of transportation look like? Across the country talks of high speed rail and light rail are underway. The State of Arizona currently has a 20-mile long light rail system that connects 5 cities. Amtrack's Acela Express is the Country's first high speed rail service and runs between Boston and Washington D.C. connecting 9 states and 14 cities. Both of these systems operate in heavily populated areas. So what about the future for Crystal Lake? Surface streets will likely be the primary means of transportation. The City should explore and create a conducive environment for increasing bus service and Metra train service. In addition to cars and trains, the City also provides a network of sidewalks and bike/multi-use paths.

## Main Goal

The overall goal for the City's Transportation plan is to, "Provide a comprehensive transportation system to safely and efficiently serve current and future land uses, considering travel by road, rail, public transportation, bicycle and foot." This goal can be accomplished through the implementation of many key elements.

## Key Elements

The intent of this plan chapter is to increase the ease of, and broaden the options for, moving about our city, and to create logical extensions of the existing transportation network. This chapter of the Comprehensive Plan focuses on the following key elements:

- 6.1 Roadways
- 6.2 Metra Rail Service
- 6.3 Alternative Modes of Transportation
- 6.4 Transit Oriented Development

## Roadway Classifications

The Engineering Division has established a hierarchy of streets throughout the City. The following list describes and illustrates the roadway system. Cross-sections for major and minor arterial roadways are determined on a case-by-case basis depending on specific site conditions. All of these standard cross-sections are encouraged to be modified in conservation designed developments as well as other locations where it benefits the environment.

### ➤ Major Arterial

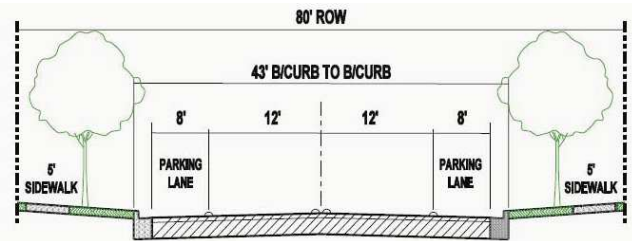
These routes serve regional transportation needs for traffic entering and exiting the city and between major activity centers within the City. These are typically Illinois Department of Transportation (IDOT) or McHenry County Department of Transportation (MCDOT) routes. Refer to the City's standard cross section details in the Appendix of the UDO. Examples: Route 31, Route 14. The right-of-way width required for a Major Arterial is generally 120-170 feet.

➤ Minor Arterial

These routes interconnect and supplement the major arterial routes, accommodate moderate trip lengths, and service activity centers. Refer to the City’s standard cross section details in the Appendix. Examples: Ackman Road, Lucas Road. The right-of-way width required for a Minor Arterial is 100-120 feet.

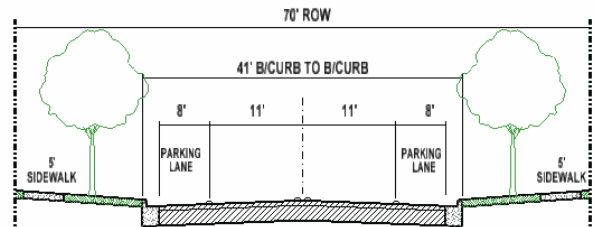
➤ Major Collector

These routes serve as intermediate links between major arterials and points of origin or destination by providing access and traffic circulation within residential neighborhoods and commercial areas. These roadways are usually under the City’s jurisdiction for ownership and maintenance. Refer to the City’s standard cross section details in the Appendix. Examples: McHenry Avenue, Golf Course Road. The minimum right-of-way width required for a Major Collector is 80 feet and 100 feet or more may be required for a rural cross-section with ditches.



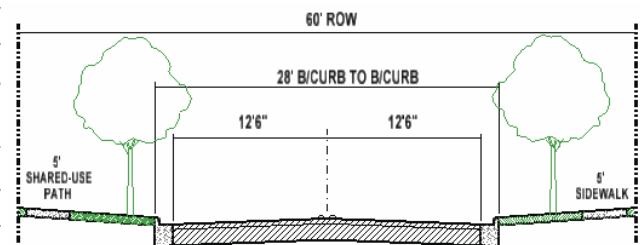
➤ Minor Collector

These roads connect smaller access streets and residences to the main roadway network (major collectors and arterials). Refer to the City’s standard cross section details in the Appendix. Examples: Crystal Ridge Drive, Barlina Road. The minimum right-of-way width required for a Minor Collector is 70 feet and 100’ or more may be required for a rural cross-section with ditches.



➤ Local Street

These roads serve to provide access to residential neighborhoods and commercial areas. Refer to the City’s standard cross section details in the Appendix. Examples: Caroline Street, Memorial Drive. The minimum right-of-way width required for a Local Street is 60 feet; additional right-of-way, and/or municipal easements may be required if a rural cross section is utilized, or within manufacturing areas or business parks.

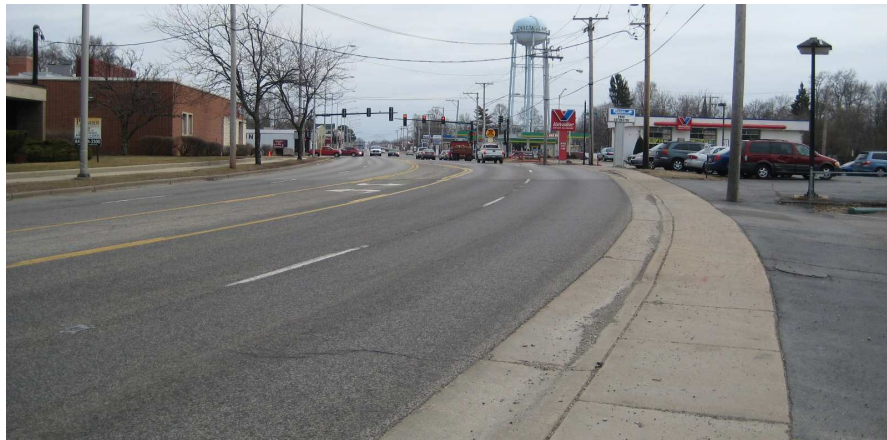


➤ Alley

An alley (residential or commercial) is a very low volume road designed to provide access to the rear or side of a lot including refuse handling and fire access. Refer to the City’s standard cross section details in the Appendix. Alleys are not typical and the cross-section would be established by the developer for specific site conditions.

## Key Elements, Actions and Indicators

### 6.1 Roadways



#### Goal:

**Maintain existing roadway infrastructure network, encourage maintenance and implement improvements as necessary to facilitate safe and efficient pedestrian and automobile travel.**

The roadway network that runs through Crystal Lake is made up of roads under the jurisdiction of the City, the County, the State, Townships and private owners. The City is responsible for the roadways under its jurisdiction including, maintenance, snow plowing, safety, traffic control and lighting. In addition to motorized vehicles utilizing the roads, bicyclists and pedestrians also need to be accommodated. A new term was coined by IDOT that describes streets designed to safely move pedestrians, bicyclists, motorists, and transit riders of all ages and abilities, Complete Streets. Complete Streets was proposed as a way to ensure that roadways could be used safely by everyone and not solely dominated by vehicles. The City supports the idea of having complete streets and recommends sidewalks and bike facilities or multi-use trails along all roadways. The City also utilizes count-down pedestrian walk signals, some with audible tones, that assist people with disabilities in crossing signalized intersections.

Maintenance of the city roadways is handled by both the Engineering Division and the Public Works Department. The City fills potholes, repairs tripping hazards on sidewalks, performs street sweeping, trims trees and removes brush from sight lines and resurfaces travel lanes on an as needed basis. This routine maintenance keeps the city streets safe.

The typical cross-sections illustrated on the previous page can be modified through review. In instances where a site is within a Conservation Overlay, Watershed Zoning District or a conservation subdivision, alternative cross-sections are strongly encouraged, which minimize impervious pavement surfaces and utilize natural water conveyance systems. The following illustrations show the use of native vegetation, permeable pavement, biofiltration swales and rain gardens, all which convey and filter stormwater. Further techniques are outlined in the Crystal Lake Watershed Stormwater Management Design Manual.



Permeable Pavement, David Herron, Examiner.com



Rain Garden Walter Wright, Reimagining Cleveland



Bioswale www.rivanna-stormwater.org

	Supporting Actions	Success Indicators
6.1a	Ensure maintenance of existing roadways, and provide adequate facilities to serve new growth.	<p>The funding of the street resurfacing program.</p> <p>The completion of roadway connections as planned.</p> <p>The completion of capital improvement projects.</p>
6.1b	Require new development to pay for its fair share of all transportation modes.	The construction of new streets, sidewalks and like facilities with all new development.
6.1c	Improve site design concepts to reduce traffic congestion and reliance on automobiles.	<p>Increase in the construction of mixed-use projects.</p> <p>Increase the number of sites that provide bicycle and pedestrian corridor links through neighborhoods and to other services.</p>
6.1d	Coordinate efforts with government agencies on a regional basis to improve transportation beyond the City limits.	<p>Implementation of joint roadway projects with the City and another agency.</p> <p>Implementation of transportation planning with conservation groups.</p>
6.1e	Support alternative roadway cross-sections that improve safety, reduce pavement width and provide facilities for pedestrians, bicyclists and transit riders.	<p>The construction of bio-swales, rain gardens and permeable pavement in roadway projects.</p> <p>The increase in the number of alternative roadway cross-sections constructed.</p>



Smart Growth America

## Key Elements, Actions and Indicators

### 6.2 Metra Rail Service



laffy4K's photostream, Flickr.com

#### Goal:

**Promote the City's two Metra Stations including the development of increased residential density and commercial opportunities adjacent to them.**

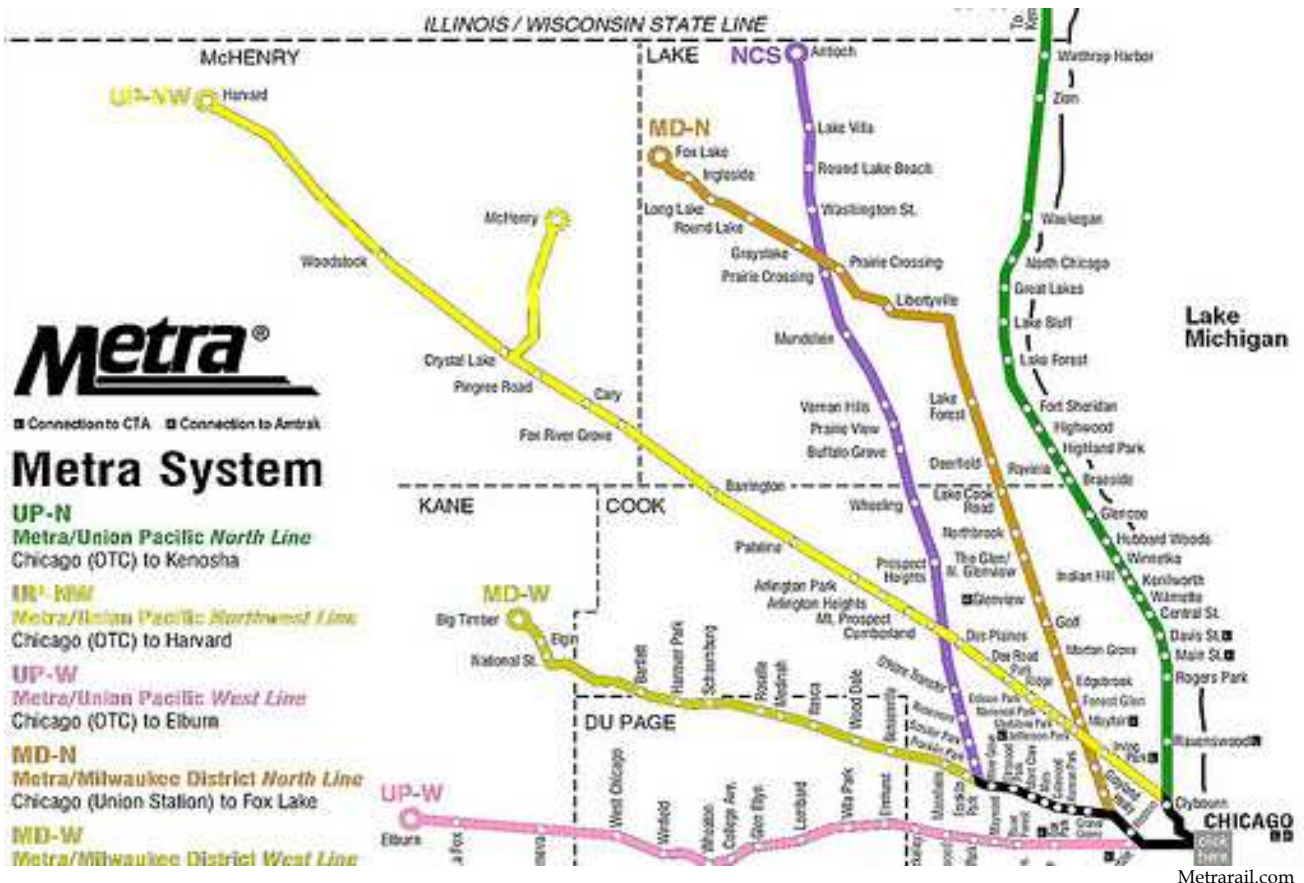
Passenger rail transportation is provided through Metra on their northwest line, which includes two train stations in Crystal Lake. Downtown Crystal Lake has one of the Metra stations while the other is along Pingree Road in the Crystal Lake Business Center. Successful transit stations offer a convenient location for riders to park and destination services when you arrive. Downtown is the ideal location for the train station because it offers several parking lots easily accessed, as well as destination services including retail shopping, restaurants, and arts and culture for those coming to Crystal Lake. The Pingree Road station is located near residential development and a business park and is accessible from regional arterials like Route 14, Route 31, and Rakow Road. The business park contains service uses and several medical offices providing both the employees who use the train for work and destinations for other riders coming to Crystal Lake. The parking lot at the Pingree Road station was recently expanded to accommodate the ridership demand. The Crystal Lake stations have some of the highest ridership on this line.

Increase in ridership occurs when more services are offered at the stations, additional parking is added to accommodate more riders and when land uses surrounding the stations allow for more destinations for riders. The City works closely with Metra to increase ridership at these two stations.



Railpictures.net

	Supporting Actions	Success Indicators
6.2a	Work with Metra to enhance ridership by increasing the services provided at stations and the number of parking spaces.	The increase of parking lots or spaces in close proximity to the Metra Station for commuter parking.  Metra’s expansion of station services.  The number of new businesses that open within 1/4 mile of the Metra stations.
6.2b	Encourage complementary land uses around stations to offer additional conveniences to riders and to reduce vehicle trips on roadways.	The increase of retail, service and office uses near the Downtown and Pingree Road stations.  The increase of residential uses around the Downtown and Pingree Road stations.
6.2c	Make accommodations for alternative modes of transportation at the Metra Stations.	Increase of bicycle facilities and sidewalks.  Increase in area for loading and stacking for PACE, Dial-a-Ride, or taxi services.



## Key Elements, Actions and Indicators

### 6.3 Alternative Modes of Transportation



Rick Langlois, picasaweb.google.com



Crystal Lake Park District



Www.dot.il.gov/saferoutes

#### Goal:

**Encourage alternative modes of transportation throughout the City to provide a complete transportation system.**

Alternative modes of transportation can be biking and walking or using bus, train or carpool services. Anytime someone can get out of a single-occupancy car and use an alternative mode of transportation, it helps the environment and reduces their carbon footprint. The City supports a variety of alternative modes of transportation. This section focuses on bicycling and walking and bus transportation.

Bicycling and walking are non-polluting alternatives to the automobile. Crystal Lake has both on-street and off-street bike and multi-use trails. The City's trails connect with McHenry County Conservation District's Prairie Trail, a regional multi-use path, which travels through Crystal Lake for part of its 26-mile stretch through 2 counties. The City is in the process of drafting a Bicycle Facility Master Plan. This plan illustrates numerous routes across the city with current or proposed future multi-use paths. This Master Plan would be used by staff to prioritize and schedule projects.

Currently, the City is using this plan to construct improvements through the Safe Routes to School program. Safe Routes to School is a federally funded program administered by IDOT that enables and encourages walking and biking to and from school for children in Kindergarten through 8th grade. The City worked with District 47 to establish a school travel plan. The City has applied for grant funding to begin constructing some of these identified routes. Each year, the City can review the plan with the school district, make changes as necessary and apply for grant funding for the highest priority trails.

Sidewalks, typically constructed along roadways, also provide links throughout the City. City ordinances require sidewalk planning during the subdivision platting process. In several auto dominated areas of the City, sidewalks are lacking. City staff will



© City of Crystal Lake, 2010



look for ways to have sidewalks installed in these locations. The City has a sidewalk program that repairs damaged sidewalks that pose a tripping hazard. Although much of the City is designed around automobile travel, sidewalks are important, necessary links for people to get to their destinations.

PACE Bus provides fixed bus routes, dial-a-ride and van pool services throughout the Chicago Metro region. Two PACE fixed bus routes have a stop at the Downtown Crystal Lake Metra Station. Individual dial-a-ride and vanpool services also make PACE transit convenient and available to most everyone. The two PACE fixed route bus stops at the Downtown Crystal Lake Metra Station provide a needed link between the bus and train transit services.

	Supporting Actions	Success Indicators
6.3a	Create and implement an integrated city-wide multi-modal transportation system.	<p>Increase in the number of links constructed, i.e. sidewalk, bike lanes and multi-use paths to destinations such as schools, shopping or medical offices.</p> <p>Increase in sidewalk installation or connections made by developers during new development requests.</p> <p>The number of multi-modal designed subdivision developments (grid street network, sidewalks, and alternative street cross-sections).</p>
6.3b	Continue to work with PACE to offer bus service to City residents. Encourage site designs that help increase ridership and facilitate bus movement.	<p>Increase in the number of bus pullouts or bus stop locations at destinations (offices, retail, service uses, etc.).</p> <p>Increase in the frequency of the bus service around Crystal Lake.</p>
6.3c	Establish a Safe Routes to School plan and continually update the plan.	<p>An annual review of the Safe Routes to School Travel Plan with School District 47.</p> <p>Increase the annual number of miles constructed of sidewalks and paths.</p> <p>Increase grant funding money received to construct safe route eligible projects.</p>

## Key Elements, Actions and Indicators

### 6.4 Transit Oriented Development



#### Goal:

**Promote the development of Transit-Oriented Development through education, ordinance standards and assistance to developers.**

Transit Oriented Development (TOD) is the link between land use decisions and transportation systems. TOD includes vital, walkable, neighborhoods; housing, shopping and transportation choices; and access to jobs, services and cultural and recreational destinations. Creating a successful TOD area requires a careful balance between the uses and transportation options, it is more than simply development near transit stops.

The land uses around TOD predict its success or failure. Retail uses are typically the most sought after since major retailers can draw people to the area. The retail needs to be the right fit for the people in that area. Other uses such as service, office and housing should be interspersed with retail. Also building too much retail can have a negative affect on the surrounding area. If there are too many vacant storefronts , the area could look blighted and detract from property values and the property owners ability to lease out the remaining spaces. TOD is typically successful when density either in housing or in jobs is provided. This density provides the population which uses the transportation services. Getting the proper mix of uses and high quality users will mean the success of the TOD.

TOD can be a key to cutting energy consumption. A United States Environmental Protection Agency (EPA) study titled, Location Efficiency and Housing Type—Boiling it Down to BTU's, (Jonathan Rose Companies, LLC with support from US EPA, 2010) establishes a concept called, "location efficiency," which analyzes the difference between conventional subdivision development and transit oriented development. The study examined national data of the relationship between housing and energy consumption through four main scenarios; conventional suburban development verses TOD, green building and energy star verses conventional construction, single-family verses multi-family housing style, and green verses conventional automobiles. It was found that the biggest impact in reducing energy consumption was going from a conventional subdivi-

sion development to a transit oriented development. A 39% energy consumption reduction was found for typical single-family detached houses with a TOD, this figure increases to 50% for multi-family housing. The graph exhibit illustrates the results from this study.



Location Efficiency: Household and Transportation Energy Use by Location

TOD is an efficient, economical and environmentally preferred method of development. The City has two train stations that would lend themselves to TOD. The exploration of TOD project developers and the promotion of TOD construction projects are two main goals the City should work towards.

	Supporting Actions	Success Indicators
6.4a	Work with developers to construct TOD projects.	The construction of new TOD projects. The rehabilitation of existing sites into TOD projects. The approval of variations within a project to accomplish TOD principles.
6.4b	Promote TOD as a preferred method of development in select locations.	The inclusion of standards for TOD within the UDO. The number of TOD project developers recruited using Economic Development strategies.

Transportation plays a major role in quality of life and affects land uses. Crystal Lake’s goal is to create a balance so that transportation and land uses work together creating usable areas. The roadway network around residential areas should be local streets with a main collector promoting walkability and safety. Whereas areas around TOD should promote alternative methods of transportation and access via major arterials.