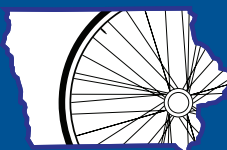


# Complete Streets Strategies

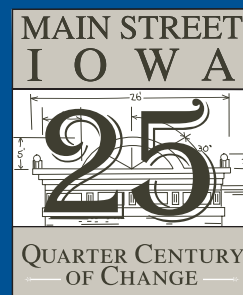


TO INCREASE  
*bicycling*  
AND  
*walking*



IOWA  
BICYCLE  
COALITION

IOWA  
*economic* DEVELOPMENT



# INTRODUCTION

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# Complete Streets

## *Introduction*

This publication provides examples of strategies that increase walking and bicycling within a community, and highlights unique considerations for historic commercial districts. Historic commercial districts are a habitual destination for residents to utilize services, eat, and shop, and are a key asset to build upon to improve the conditions for walking and bicycling community-wide. Connecting destinations like schools, parks, and shops with walking and bicycling facilities increases the opportunities to make frequent trips by foot or bicycle.

Iowa communities are well-positioned to take advantage of complete streets strategies to achieve long-term benefits. The increasing senior population will benefit from having easier access to services through independent, non-automotive transportation. Communities seeking to attract families with children will become attractive places to live or establish a business by demonstrating that kids can easily walk to school or a nearby park. Iowa's growing trail networks are planting the seeds for a culture of bicycling, but on-street accommodations for bicyclists are needed to ensure that community destinations are easy to get to by bicycle, and transportation needs can be met in addition to recreation. Other Midwestern communities like Madison, Wisconsin and Minneapolis, Minnesota have proven that colder climates aren't a deterrent to walking and biking, and Iowa communities can realize similar benefits.

Americans have become increasingly dependent on the automobile for mobility. Often, it is the only means to access some destinations. According to the National Household Travel Survey, 65% of automobile trips are less than 3 miles. A similar 3-mile trip by bicycle takes only 20 minutes. Making destinations easily accessible by foot or bicycle improves safety for all users of the transportation system, decreases traffic congestion and demand for parking, and supports the health and wellness of citizens.

Implementation of complete streets strategies is most successful when the city government has a supportive role, partnering and education occurs amongst various local organizations, and input is utilized from the public. This publication can be utilized by any community member, local business or Main Street volunteer that seeks to further understand how improvements can be made to become a more bicycle and pedestrian-friendly community.

# COMPLETE STREETS APPROACH

Complete streets is a new approach to our network of streets and roads in our transportation system. A street that is complete is accessible for all users of the transportation system. This includes pedestrians, bicyclists, transit users, disabled users, automobile users, and freight. Unfortunately, many of the streets in our communities are “incomplete” with a monolithic focus on the automobile as the only way to get from point A to point B.

In areas with complete streets, you find sidewalks, curb ramps, crosswalks, bicycle lanes or facilities, transit stops, and automobile lanes. All users, regardless of age or ability, can access the same destinations by using different modes of transportation.

In 2000, the Federal Highway Administration (FHWA) adopted a guidance that states, “...bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met.

1. The costs are excessive (defined as more than 20% of project costs),
2. There is an absence of need (including future need),
3. Bicyclists or pedestrians are prohibited from traveling by law.”

Since 2000, a number of communities across the United States have adopted their own complete streets policies. These policies are often similar to the FHWA guidance but actually require implementation of complete streets.

A good policy does not dictate the precise elements of a complete street but allows designers to engineer the best safety solutions within the context of the project. There is no “cookie cutter” approach to complete streets. For example, a quiet, low-traffic, residential street may very well be complete as it is. It does not need a bike lane for safe bicycling, and crosswalks may not need paint to improve pedestrian safety. This same street design may be as safe for bicyclists and pedestrians on high-speed arterial roadways.

Historic commercial districts are particularly suited for complete streets. With stores near each other, shoppers are encouraged to walk from store to store rather than drive to each. Traffic moves at a slower pace because of frequent intersections and traffic controls. Vehicle storage is an issue in these districts. Free parking may bring customers to your door but also consumes a lot of space. Inviting bicycle and pedestrian facilities may encourage more people to shop, dine, or do business without using an automobile. *The Five E’s: A Strategy for Increasing Walking and Bicycling.*

A national strategy has been developed to increase walking and bicycling called the Five E’s:

- Engineering
- Education
- Encouragement
- Enforcement
- Evaluation

Engineering addresses the built environment with roads, streets, sidewalks, and signs. Education teaches safety to users of the transportation system. Encouragement represents programs that increase the popularity of bicycling and walking. Enforcement represents exercises from the police to help citizens follow traffic law. Finally, Evaluation assigns metrics to our transportation system to measure success.

Complete streets do not prescribe “one size fits all” facilities. A complete street in a neighborhood may require sidewalks and shared roadway bicycle facilities. A complete street along a highway may require a separated trail. It is up to community leaders to apply the latest and best design standards to safely serve bicyclists and pedestrians.



*A newly installed bike lane on Ingersoll Avenue in Des Moines. The city has adopted a complete streets policy and working to incorporate elements in road projects.*

# BICYCLE ELEMENTS

Bicycle should be considered vehicles and may use the existing roadways. Communities that have a connected gride street system are ideal for bicycling. There are ways to enhance bicycle routes and fill gaps that prevent bicycle transporation.

## *Shared Roadway*

Up to 85% of city streets are complete as they are today. As long as they provide a safe riding surface free of debris and potholes, the standard residential street is comfortable to bicyclists. Roads that are part of a grid system with low traffic speeds and volumes are perfect for bicycling. As speeds increase, more treatment may be required to accommodate bicyclists.

## *Wide Outside Lane*

Some communities are installing a wide outside lane to accommodate bicyclists. A normal lane is 10-12 feet wide. A wide outside lane is 14-15 feet wide. This allows for a motor vehicle and bicycle to share the same lane side by side.

## *Signed Bicycle Routes*

Communities can sign routes that bicyclists may prefer to use. It is encouraged to use signs that point to destinations. Some signs note the time and distance it takes to travel to the destination by bicycle at 9 mph (downtown, 1 mile, 9 minutes).

Some signed bicycle routes may connect two segments of a trail. A new, experimental treatment is the bike breadcrumb. This is a street marking showing a bicycle and an arrow directing bicyclists to the connecting trail.

## *Sharrows*

Sharrows are a new treatment recently recommended in the Manual for Uniform Traffic Control Devices (MUTCD). A sharrow is a shared roadway with a pavement marking guiding bicyclists where to ride. It is a bicycle symbol with two chevrons above it. Sharrows act like bike lanes but can be placed on roadways where there isn't enough room for bike lanes. Studies have shown motorists give bicyclists more room when sharrows are present.

Sharrows are generally placed 4' from the curb or 11' from the curb if on-street parking exists. These distances are a minimum and sharrows may be placed closer to the centerline if warranted.



*A bicyclist shares the lane of traffic with other motor vehicles on the Mississippi River Trail near Wapello.*



*The motorist and bicyclist share the lane laterally in this wide outside lane in Coralville.*



*A sharrow is placed along 33rd Avenue in Cedar Rapids as part of a complete streets component to the street upgrade.*

# BICYCLE ELEMENTS



*A bike lane in use in Des Moines.*

## ***Bike Lanes***

Bike lanes are a traffic lane for the exclusive use of bicyclists. Bike lanes are generally 5' wide with a curb and 4' wide if no curb exists. Bike lanes are only separated from motor vehicle traffic by a strip of paint, so bicyclists may freely exit the lane to make turns or avoid debris. Bike lanes should be used with caution against parked cars because opening doors or backing cars can create conflicts for bicyclists.

Bike lanes should be dashed or signed if ending or if traffic will merge through the bike lane to access a turning lane. Bike lanes do not provide protection for cyclists, and people should be on the lookout for bicyclists and automobiles. Bike lanes should only be one-way facilities following the flow of traffic and should be placed on the right side of the roadway between parked vehicles and moving traffic. Consult the Manual For Uniform Traffic Control Devices (MUTCD) for more information on the installation of bike lanes.



*A low-traffic residential street has been converted to a bicycle boulevard.*

## ***Bicycle Boulevard***

A bicycle boulevard is a city street that uses traffic calming to prioritize bicycle traffic. At the most basic level of a bicycle boulevard, a street can be signed to encourage and connect bicycle traffic. As the complexity of traffic calming increases, a bicycle boulevard can change the rights of way for stop or yield signs, use speed humps or traffic circles, or employ traffic diversion. The bicycle boulevard restricts through traffic on streets but does not restrict traffic access. Typically, local traffic use is encouraged but through traffic speeding through neighborhoods is discouraged.

## ***Trails***

A trail or path is a multi-use facility for non-motorized transportation. Trails are best used when they connect areas not already connected by the streets system. They are usually enjoyable and scenic.

Trails that run along roads with frequent driveways and intersections are not recommended. Turning conflicts are similar to frontage roads, and the right-of-way for bicyclists and pedestrians are ambiguous.

Trails can be expensive but provide great enjoyment to users of all ages. Multiple funding sources are available for trails, but demand and competition for funding is high.



*Underpasses are effective solutions, but expensive.*

## ***Overpasses and Underpasses***

Sometimes, the safest route for bicyclists and pedestrians is to use a tunnel or bridge to bypass a busy roadway. These facilities are typically expensive and require large land footprints. Communities need to evaluate the ease of use for users – if it takes a lot of energy to ride/walk up and over a bridge, users may not use it and cross at undesirable locations.

Security is a major consideration for underpasses. Users should be able see the ingress and egress portions of the underpass for increased security.

# PEDESTRIAN ELEMENTS

Sidewalks and crosswalks are prerequisites for increasing walking in a community. There is more communities can do to improve the walking experience and safety for its residents. It's also important to note safe and convenient walking facilities help increase tourism and create a pleasant experience for pedestrians utilizing the shops and services of a historic commercial district.

## Sidewalks



*Wide sidewalks are essential elements for downtown streets.*

Walking to and through the historic commercial district's destinations should be both comfortable and safe while traveling between destinations. In the wintertime, programs are needed to ensure property owners clear snow and ice to reduce liability and increase use of sidewalks.

Sidewalks should be as wide as possible in historic commercial districts to accommodate frequent and heavy pedestrian traffic. Parking, roadway width and storefront setbacks can influence how much room may be available.

Sidewalks that are close to the street and moving traffic are uncomfortable for for the pedestrian and can pose safety issues. Efforts should be made to provide a buffer between the street and sidewalk. In a historic commercial district, street furniture, amenities, landscaping, bicycle parking, and lighting can be used as long as it leaves pedestrians enough space. Depending on the area in the community, bike lanes, paved shoulders, parked cars, or grass can all serve as a buffer.



*High visibility crosswalk markings create driver awareness.*

Sidewalks are necessary for pedestrian traffic and serve as an exclusive area for people to walk. If sidewalks are not built, pedestrians usually walk in the street. Walking in the street is an uncomfortable experience and unsafe for children.

Communities should establish programs that inspect sidewalks for repair or replacement annually. Sidewalk infill programs help prioritize how to phase in new sidewalks to be installed in areas where they are completely lacking.



*Many communities use unique surfaces, like brick, for a crossing. Be sure your crosswalk is visible to motorists.*

Walking to and through the

## Crosswalks

Crosswalks serve a dual purpose. They show pedestrians safe crossing areas, and they create motorist awareness of a pedestrian crossing. Crosswalks are typically located at intersections but can be placed in the middle of a block.

There are three types of common crosswalks: the unmarked crosswalk, the two-line marked crosswalk, and high visibility crosswalks. Most crosswalks in residential areas are unmarked, and they serve users well.

The continental-style crosswalk marking provides increased visibility for pedestrians and awareness for motorists. Using blocks of paint rather than lines, there is more surface area for motorists to recognize.

It is not recommended to combine perpendicular sidewalks into one crossing. Instead, each sidewalk should have its own ramp to the curb. This keeps a tighter radius in the corner and stops traffic from driving over the crosswalk area.

# PEDESTRIAN ELEMENTS

## ***Crosswalk Signs***

Crosswalks should be signed to create awareness. Typically, a “crossing ahead” sign is used followed by a crossing with an arrow pointing to the crosswalk. Sometimes, it may be noted a crosswalk is a certain distance from the sign.

## ***In-Street Crosswalk Signs***

A sign has been developed that has proven evidence of slowing automobiles at critical crosswalks. The in-street sign is no bigger than a pair of centerlines but channelizes traffic enough to reduce speeds. The sign is bolted to the pavement on a flexible pole. Some communities remove the sign during the winter and some leave them in place.

## ***Raised Crosswalks***



*A raised pedestrian crosswalk on the University of Iowa campus.*

## ***Countdown Indicators***

Indicators that count down remaining walk time can be added to the Walk/Don't Walk light at crosswalks. Countdown indicators have been successful in reassuring the pedestrian how long they have left to cross. Countdown indicators should be considered at every traffic signal location.

## ***Bump-Outs***

Long crosswalks leave pedestrians exposed in the intersection for long distances. Pedestrians enjoy shorter crossing distances if at all possible. One way to shorten the crosswalk is the bump out the curb.

Bump-outs can be created in the empty space between the curb to the beginning of the traffic through lane. If you bump out the curb area you shorten the crosswalk.

Bump-outs can be done with mid-block crosswalks. In addition to the shorter crosswalk, more visibility exists for the pedestrian. A bump-out is much better than requiring the pedestrian to cross between two parked cars.



*A high visibility crosswalk sign with arrow creates awareness for a crosswalk with heavy pedestrian traffic to the Oelwein downtown.*

Crosswalk visibility can be increased by raising the crosswalk. By creating a crosswalk six inches higher than the grade of the pavement can create a traffic calming effect. Ramps leading to raised crosswalks are snow plow and fire truck friendly. Raised crosswalks are especially beneficial in school zones because the children are more visible than they would be at street level.

## ***Signalized Intersection Crosswalks***

Many communities have traffic signals at intersections. Most have a push button for pedestrian activation or some means to detect pedestrians present at the crosswalk. It is important that signals are adjusted to the current estimate of pedestrian speed of four feet per second. Activation should comply with the Americans with Disabilities Act (ADA).



*A bump-out in the Oelwein downtown area shortens the pedestrian crosswalk and narrows the traffic lane enough to slow cars.*

# TRAFFIC CALMING

Another technique to help improve the pedestrian and bicyclist experience is traffic calming. This typically utilizes engineering to make traffic move at a more consistent and safe speed. Some traffic calming techniques can be as simple as reconfiguring the lanes. Some may require more invasive engineering.

## Road Diet



*Davenport reconfigured a four-lane road to a three-lane road diet. The center turn lane helps reduce collisions. The remaining space is used for bike lanes.*

A road diet converts an existing four-lane roadway into a three-lane roadway. There is a lane of traffic for each direction and a two-way, center turn lane for left-turning traffic. Often, there is space leftover for a paved shoulder or bike lane.

A road diet improves safety for motorists. Turning traffic does not block a lane of through-traffic, so collisions are reduced. Through traffic travels at a more consistent speed. A road diet often moves the same amount of traffic with little additional wait time.

Communities are often resistant to the road diet concept, but after testing the configuration, many communities do not want to return to a four-lane configuration.



*A speed hump is effective at reducing traffic speeds. Generally, speed humps are compatible with snow removal and truck traffic.*

## Speed Humps

Speed humps are longer and more gradual than the speed bumps of yesteryear. Speed humps are snowplow and fire truck friendly. Most of all, they slow down vehicles.

## Traffic Circles and Roundabouts

Traffic circles are small islands in the middle of an intersection. Roundabouts are larger circles that provide one-way circular flow to an intersection. Both will slow down through traffic and allow left-turning traffic to follow around the circle before turning. The result is slower intersection speeds.

## Traffic Diverters

Sometimes through-traffic is the program. Using a traffic diverter, automobiles can only make right turns or exit a street but not enter from the diverted location. This reduces the through-traffic to neighborhood traffic only. Automobiles are not prohibited, but they have to enter only through the diverted access. Diverters can accommodate bicyclists with pass-through areas.



*An in-street crosswalk sign can also slow traffic for critical pedestrian crossings.*



# BICYCLE PARKING STRATEGIES

Motorists expect parking when they reach their destination, and bicyclists should, too. In smaller communities, bicycle theft may not be a big enough threat to motivate for secure bicycle parking. Organized bicycle parking is typically a problem, and bicycle parking can prevent bicycles from parking in pedestrian areas or becoming trip hazards.

## ***Inverted-U Bike Rack***

Bicyclists prefer to secure the front wheel and frame of their bike to the bicycle parking rack. The Inverted U-type bicycle rack is generally acceptable for this purpose. The Inverted U is bolted or cemented into the pavement. The Inverted U rack may be mounted on rails so it can be moved for snow removal.



*The Inverted U bike rack is effective for short-term bike parking.*

## ***Wave Rack***

The Wave-type bicycle rack is common. Bicyclists have a more difficult time understanding how to lock their bicycle to this type of rack. If bicyclists don't use the rack as intended, the capacity may be much lower than planned.



*The wave rack is common. There are issues with bikes occupying more than one space or not holding the bike by the frame.*

## ***Long-Term Bike Parking***

Long-term bicycle parking is usually more secure, lighted, and protected from weather. This may be a simple overhang to protect from rain to an indoor parking room. Some of the best long-term bicycle parking areas take advantage of unused areas inside buildings or parking lots.

## ***Bike Locker***

A bike locker can facilitate long-term storage. This is especially useful in downtown living situations where you cannot store your bicycle inside. A bicycle locker is a a keyed or coin-operated storage facility that protects bicycles from weather and provides additional security for long-term storage.



*A bike locker can be beneficial to persons living downtown with limited storage.*

It is generally discouraged to use bicycle racks that hold a bicycle by the wheel rather than the frame. It is difficult to secure the frame. A resourceful bicycle thief can leave the front wheel and take the remaining frame and wheel.

Creative bicycle racks are encouraged, but be sure bicyclists will recognize bicycle parking rather than public art. Bicycle parking can be incorporated into zoning and site planning of new buildings.

# ENCOURAGEMENT AND EDUCATION

Engineering is not a sole solution. Encouragement, education, and enforcement activities can help more people start using bicycles. Programs like Bike to Work Week or Safe Routes to School can encourage people to travel by bicycle for everyday activities.

Education activities like a community-wide bicycle rodeo can help kids understand how to use bicycles safely. A pedestrian rodeo can also be developed to teach pedestrian safety.

Enforcement activities like speed enforcement can improve safety for bicyclists, pedestrians, and motorists. The presence of the squad car in trouble areas can be a great asset to addressing traffic issues. Law enforcement strategies should be well publicized and include frequent follow-up to maintain traffic behaviors.

Encouragement strategies can have a variety of tactics, but the ultimate goal is to encourage more use of bicycles for transportation and recreation.

## *Shop by Bike*

Shop By Bike programs have been widely successful. Participants are encouraged to use their bicycles for shopping. If they make purchases at participating stores, they are given a card with a punch or stamp that documents the purchase. When the card is full, they can be turned in for prizes like community gift certificates. This type of program is very measurable and there may be grant funding to initiate.



*Iowa City bicyclist rides to work during Bike to Work Week.*

can interact with their peers and gain exercise. Free workshops are available from the Iowa Bicycle Coalition and can help establish a community Safe Routes to School program. The Iowa DOT offers competitive grants to established local programs to implement improvements such as sidewalks and educational programs.



*A walking school bus in Manly, Iowa.*



*A police officer helps with a bike rodeo in Coralville, Iowa.*

## *Bike to Work Week*

The third week of May is declared Bike to Work Week by the League of American Bicyclists. Bike to Work Week is aimed at adult workers and encourages them to ride their bicycles to work at least once during this week to promote alternative transportation. Many communities set up commuter breakfasts or after work parties for bike commuters. Communities of any size can establish a Bike to Work Week campaign. Free materials are available to help promote the event from the Iowa Bicycle Coalition.

## *Safe Routes to School*

A Safe Routes to School program encourages kids to walk or ride bicycles to school. In 1972 kids walking or bicycling made up 62% of elementary students. Sadly, kids walking or bicycling have dropped to about 15%. Programs have been designed to make it safe, like walking school buses or bike trains. Kids

# ADDITIONAL RESOURCES

## *National Resources*

### **National Complete Streets Coalition**

<http://www.completestreets.org/>

### **The Five E's, Bicycle Friendly Community, League of American Bicyclists**

[http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities/bfc\\_five-Es.php](http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities/bfc_five-Es.php)

### **Shared Roadways and Wide Outside Lanes, Bicycle and Pedestrian Information Center**

<http://www.bicyclinginfo.org/engineering/facilities-roadways.cfm> <http://www.bicyclinginfo.org/engineering/facilities-widelanes.cfm>

### **San Francisco's Shared Lane Pavement Marking**

[http://www.sfmta.com/cms/uploadedfiles/dpt/bike/Bike\\_Plan/Shared%20Lane%20Marking%20Full%20Report-052404.pdf](http://www.sfmta.com/cms/uploadedfiles/dpt/bike/Bike_Plan/Shared%20Lane%20Marking%20Full%20Report-052404.pdf)

### **Manual for Uniform Traffic Control Devices (MUTCD)**

<http://mutcd.fhwa.dot.gov>

### **PedSafe: Pedestrian Safety Guide and Countermeasure Selection System**

<http://www.walkinginfo.org/pedsafe>

### **Traffic Calming**

<http://www.trafficcalming.org/>

### **Association of Pedestrian and Bicycle Professions (APBP)**

<http://www.apbp.org>

### **Bike Month**

<http://www.bikeleague.org/programs/bikemonth/>

### **National Center for Safe Routes to Schools**

<http://www.saferoutesinfo.org>

## *Iowa Resources*

### **Iowa Safe Routes To School Encouragement and Education Program**

<http://www.iowasaferoutes.org>

### **Iowa DOT Safe Routes To School**

<http://www.iowadot.gov/saferoutes/>

### **Iowa Department of Economic Development Transportation Resources**

<http://iowalifechanging.com/community/resources/transportation.aspx>

### **Iowa Department of Transportation Systems Planning**

[http://www.iowadot.gov/systems\\_planning/bicycle\\_pedestrian\\_planning.html](http://www.iowadot.gov/systems_planning/bicycle_pedestrian_planning.html)

### **Free Education Materials from the Iowa DOT**

<http://www.iowadot.gov/iowabikes/freebies.htm>

### **Iowa Bicycle Coalition**

<http://www.IowaBicycleCoalition.org>



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