

Brown County Planning and Land Services



A Model Ordinance for Pedestrian- and Bicycle-Friendly Site Design in the Green Bay Metropolitan Area

July 17, 2012

**A Model Ordinance
for Pedestrian- and Bicycle-Friendly Site Design in the
Green Bay Metropolitan Area**

**Brown County Planning and Land Services Department
July 17, 2012**

**Prepared by the
Brown County Planning and Land Services Department**

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A Model Ordinance for Pedestrian- and Bicycle-Friendly Site Design in the Green Bay Metropolitan Area

The local municipalities in Brown County have the ability to ensure that site plans have properly designed and coordinated pedestrian access and circulation within the proposed site plan. The development should properly and conveniently link public sidewalks and trails to stores, commercial buildings, residential facilities, and schools. Site planning shall provide for pedestrian orientation that takes into consideration any unique circumstances of the site and adjoining properties, in accordance with the following requirements. When reviewing site plans to retrofit sites that are existing with poor and moderate connectivity design this document offers suggestions and recommendations to help Brown County municipalities to have a strong pedestrian connectivity level.

This document is divided into six sections. The first section includes general site design standards, the second includes zoning and subdivision planning for site plans, the third section includes establishing pedestrian orientation for site plans, the fourth section includes retrofitting pedestrian orientation on existing sites with moderate pedestrian access, the fifth section includes establishing pedestrian orientation for new developments and maintaining pedestrian orientation on sites with excellent pedestrian access, and the sixth section includes definitions. For simplicity when comparing the six sections, examples of large retail developments, small retail developments, multi-family residential sites, and schools were used to describe each section.

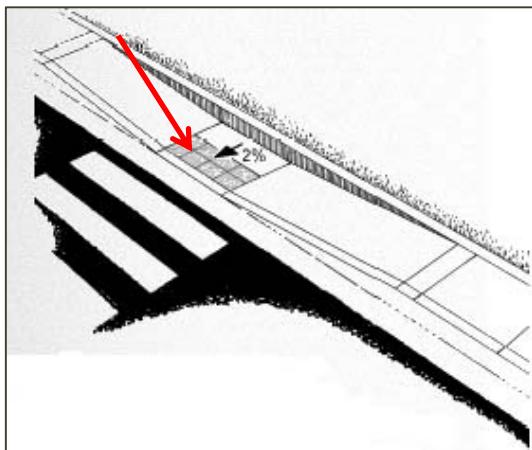
The purpose of this document is to help municipalities create developments that can be easily and safely reached by people of all ages and physical abilities.

GENERAL SITE DESIGN STANDARDS

I. PEDESTRIAN ACCESS WITHIN A SITE AND TO A SITE

Providing pedestrian access to a business, residential, or school site provides health, environmental, and economic benefits. Pedestrian access can be provided through the simple design of sidewalks in appropriate locations that directly and effectively connect a street and existing sidewalk system to a building entrance. The following are concepts that should be included when developing a new site plan or retrofitting a site that has poor pedestrian connectivity.

1. All pedestrian facilities should meet ADA Standards for Accessible Design and the applicable requirements of the State of Wisconsin Building Code.
2. Curb ramps (or curb cuts) with detectable warnings should be provided wherever a curb is part of a path of travel.



The above illustration and photograph demonstrate curb cuts and a change in surface material and color to allow ease of pedestrian access into a crosswalk. The detectable warnings are designed to inform visually impaired pedestrians that they are approaching a street.

3. Whenever physically possible, sidewalks should follow parallel to adjacent streets, with exceptions made to preserve natural features or to provide visual interest.

The photograph to the right demonstrates a sidewalk that follows a curved street and provides access to buildings and the street.



4. Continuous, uninterrupted internal pedestrian walkways should be provided from existing or proposed public sidewalks to the customer entrance of all buildings on the site and connect pedestrians to transit stops, street crossings, building entry points, and community spaces on or adjoining the site.

The photograph to the right shows how a walkway can be included in a parking lot to connect a public sidewalk to the storefront.



The photograph to the left demonstrates a large retail facility parking lot with no obvious pedestrian access from the street. Pedestrians must walk through the parking lot while interacting with motor vehicles.

5. When it is not possible for a building entry to be next to the sidewalk, the entry door and sidewalk should be made easily accessible with a pedestrian walkway.

The photograph to the right demonstrates a building that is set back from the street with a walkway that connects to the street-fronted sidewalk.



- a. Front building entrances and secondary entrances should be oriented to existing and planned street-fronted sidewalks.



The photograph to the left demonstrates a school with a sizable setback from the street; however, the school's entrance is directly connected to the street's sidewalk system using the connection shown in the photo.

- b. On-site pedestrian facilities should be designed to create the shortest, most direct route possible to connect the sidewalk to the front entrance of the building. Pedestrian access points should be clearly identifiable so as to minimize pedestrians cutting across landscape features or through parking lots that have no pedestrian pathways.



The above graphic demonstrates a large retail facility that has numerous pedestrian connections. This is a hypothetical model depicting a “best case” scenario by providing direct pedestrian connections to the storefront from the public sidewalks while also providing convenient vehicular access from an adjacent major street.

- c. If trails or sidewalks are adjacent to buildings, pedestrian access should be provided between the building entrance and the trail or sidewalk.

The photograph to the right depicts a pedestrian and bicycle trail that connects between the rear of a bicycle store and the Fox River State Recreational Trail. The trail provides convenient access between the commercial site and the state trail.





The photograph to the left depicts a business that has recognized a trail located at the back of the business. The business has included an outdoor dining area that works as a second entrance for pedestrians and cyclists using the adjacent trail.

6. Sidewalks and walkways should be designed to provide connections between the street, parking areas, and buildings.



The photograph to the left demonstrates a street-fronted sidewalk that provides pedestrian access among a street parking area, an internal parking lot, and a small retail facility.

7. Opportunities to place sidewalks or walkways within utility easements should be capitalized upon whenever possible. However, it may be necessary for these sidewalks/walkways to be removed and replaced in order to allow utility repair and maintenance.

The photograph to the right demonstrates a multi-use trail located within a utility easement. Other types of easements can be used such as drainage easements or underground gas easements.



8. Retaining walls adjacent to sidewalks should be screened with landscaping or be designed with an attractive face.



The above photograph to the left demonstrates a concrete retaining wall along a sidewalk without any ornamentation. The photograph to the right demonstrates an aesthetically pleasing decorative retaining wall between a parking lot and a pedestrian walkway.

9. To encourage pedestrian circulation, seating should be provided near public service entrances. Benches or other seating should be provided in medium and larger parking lots, particularly in areas near bus stops, and on long pedestrian trails or sidewalks.

The photograph to the right demonstrates a seating area along a pedestrian way, located between a retail facility and a parking area.



10. To further encourage pedestrian circulation, items such as “sandwich board” signs, planters, and newspaper/vending machines should be located so that at least 5 feet of clear space is available for pedestrian movement.



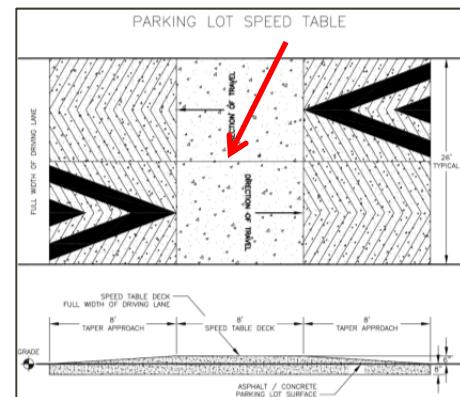
The photograph to the left shows how cluttered a sidewalk can become when many “sandwich board” signs and planters are placed near each other.

11. All pedestrian crosswalks should be distinguished by the use of durable, low maintenance surface materials such as lightly scored and/or colored concrete to enhance pedestrian safety and the attractiveness of the crosswalks.

The photograph to the right demonstrates a crosswalk with a colored pattern that identifies the pedestrian crosswalk. The material provides a smooth surface that allows pedestrians with various mobility needs to easily cross.

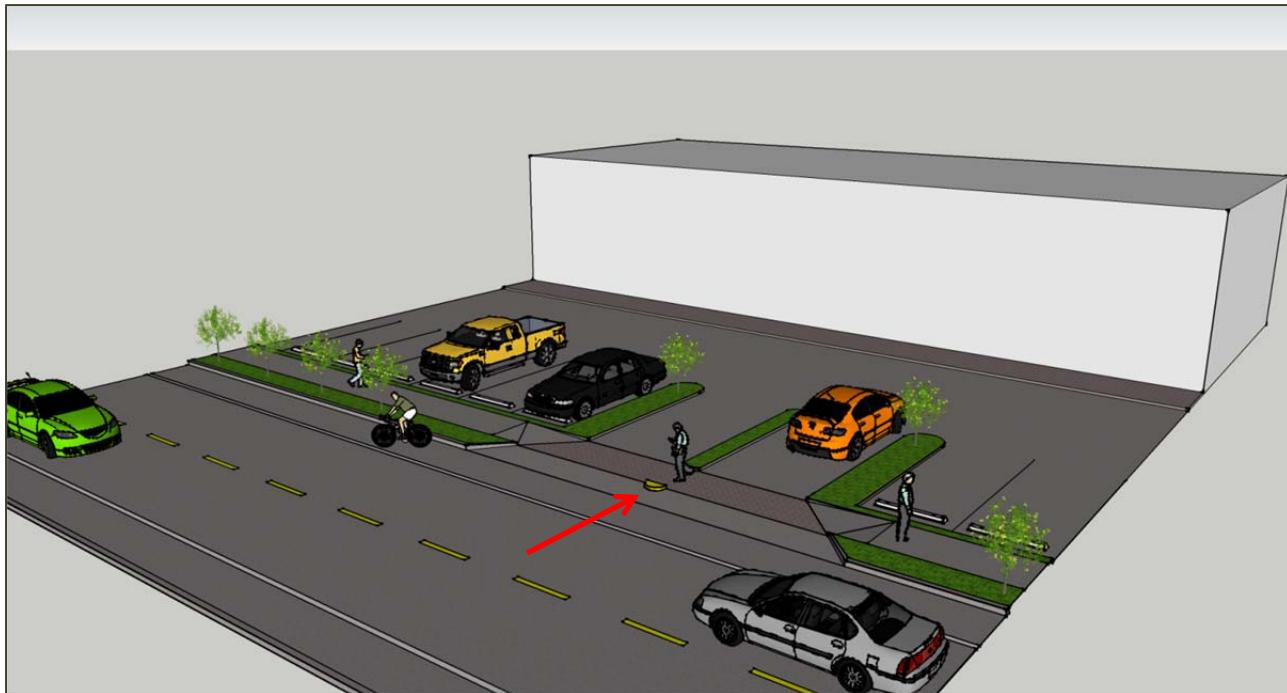


12. Speed tables should be used to slow vehicles and improve the visibility and safety of pedestrians within parking lots. Speed tables should be required at mid-block pedestrian crossings in high volume pedestrian areas, particularly where pedestrians enter or exit the main entry to a building and where pedestrians access adjacent walkways.



The above photograph and diagram demonstrate a speed table. Unlike a speed bump, a speed table is wide and requires a motor vehicle to slow down to mount and dismount the speed table. The slowed motor vehicle speed allows more time for pedestrians and motor vehicle drivers to see each other and avoid an accident.

13. To maintain pedestrian comfort and calm the speed of entering and exiting traffic, driveways to parking areas with high traffic volumes should provide pedestrian islands to create a break between entrance and exit travel ways. Curb ramps or curb cuts with detectable warnings must be provided wherever a curb is part of a path of travel.



The above illustration demonstrates a pedestrian island that can be used as a refuge or waiting point for pedestrians crossing larger drive lanes.

II. BUILDING LOCATION AND POSITIONING ON THE SITE

New building placement is crucial to the success of efficient and effective pedestrian connection design. The scale and volume of the building also plays a role, but if easy access is not taken into consideration during the early development stages of site planning, the end result is a costly pedestrian design retrofit or loss of pedestrian connectivity options. Building location and entrance design can establish a convenient and safe connection between the building and existing or nearby pedestrian facilities.

The site design process should address street adjacency, efficient pedestrian access, bicycle parking, and motor vehicle parking area access in the following ways:

1. Buildings should be located close to the abutting street (or streets if located on a corner lot) to provide direct and uninterrupted connections between the building and the sidewalk. Whenever possible, buildings should be oriented so primary entrances have direct access to the sidewalk.

The photograph to the right demonstrates a site that was designed with convenient pedestrian access. The building is adjacent to the sidewalk and allows for direct connections to the entrances.



2. Buildings should be positioned to accommodate parking areas on the side and the rear of the building whenever possible to avoid conflicts between motor vehicles and pedestrians.



The above photograph on the left demonstrates buildings that are situated next to a street with street-fronted entrances and parking at the side and rear of the building. The photograph on the right demonstrates a building situated away from the street with parking at the front, which pushes the building away from the street and sidewalk and forces pedestrians to contend with parking lot traffic when traveling between the sidewalk and building entrance.

3. Sidewalks or trail connections should be developed on sites with more than one building to allow pedestrians to easily and safely travel between the buildings.



The above photograph identifies a pedestrian walkway between buildings that provides access to an entryway for each of the buildings.

4. Safe pedestrian passage across drive lanes and alleys should be established to maintain pedestrian flow and safety. Methods of facilitating pedestrian flow and safety across drive lanes include speed tables, pedestrian refuge areas, and clearly marked crosswalks.



The above photograph identifies a pedestrian crosswalk that includes clearly marked crosswalks, a refuge area in the center of the street, and "pedestrian crossing" signage to improve pedestrian visibility to drivers.

- When a building cannot be adjacent to a street, the building should be oriented so that the primary entrance is easily visible for pedestrians entering the property. Pedestrians should also be able to identify a safe and convenient connection to the entrance that encourages the use of sidewalks, rather than cutting across a parking lot or through landscaping.

The photograph to the right demonstrates an opportunity that was missed in the site planning stage. The picture shows two disabled parking spaces that connect to the storefronts. The design could have included a paved connection between the parking area and the sidewalk as well as a direct pedestrian connection to the walkway in front of the building.

The graphic below shows a simple retrofit that could accommodate pedestrians as well as disabled motorists. By rearranging a few parking spaces along the sidewalk, a pedestrian walkway could be added allowing for a safer environment.



III. BICYCLE PARKING LOCATIONS

Bicycle parking areas should be visible and easily accessible from public streets. Bicycle parking areas are essential in the effort to promote bicycling. People are discouraged from bicycling if adequate parking is not available. In order for bicycle parking to be used, the parking area should be easily visible and have access to the main entry of the building.



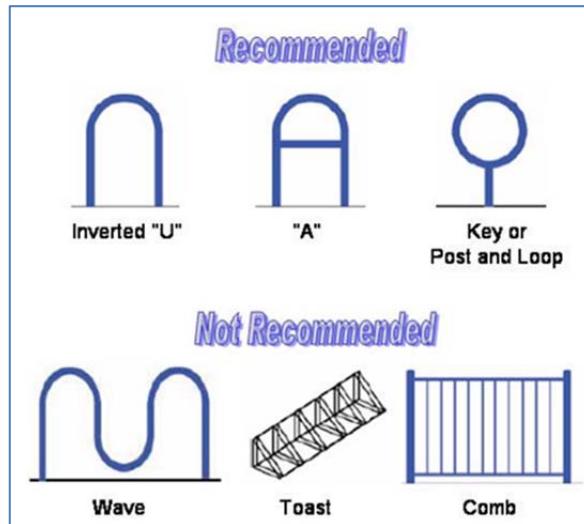
The above photograph identifies a bicycle parking area in a bump-out along a sidewalk. The bicycle parking area is not in the way of pedestrian traffic, and the bump out minimizes the chances of a passing motor vehicle driving into the area where pedestrians park bicycles.

1. Site plans should include bicycle parking areas near the building entrance. The bicycle parking areas should be located in a highly visible and sheltered area and should not impede the travel of customers trying to access the storefront.



The above photograph identifies an artistically designed bicycle parking area separate from the motor vehicle parking lot, with direct access to a walkway connecting to the main entry to the building.

2. Bicycle parking areas should have sufficient parking spaces on sturdy bicycle racks, in a volume adequate to serve the building. Examples of bicycle parking space requirements and bicycle rack designs are shown in the table and illustration below.



Bicycle Parking Space Requirements	
Type of Establishment	Minimum # of Parking Spaces
Primary or Secondary School	10% of the number students plus 3% of the number of employees
College or University Classroom	6% of the number of students plus 3% of the number of employees
Dorms, Fraternities & Sororities	1 space per 3 students
Shopping Center	5% of the number of automobile spaces
Commercial Street	1 space per 3,000 sq. ft. of commercial space
Sport and Recreational Center	12% of the number of automobile spaces
Office Building	10% of the number of automobile spaces
Government Building	10% of the number of automobile spaces
Movie Theater or Restaurant	5-10% of the number of automobile spaces
Manufacturing Plant	4% of the number of automobile spaces
Multi-Unit Housing	1 space per 2 apartments
Public Transit Station (Transit way)	20 spaces minimum
Other Land Uses	5-10% of the number of automobile spaces

Source: *Bicycle Facility Planning: A Resource for Local Governments*, American Planning Association.

3. Bicycle parking should be in areas that are well lighted and protected from rain and other weather.



Both of the photographs provided show examples of bicycle parking areas that keep the bicycles protected from the elements.

- Bicycle parking areas should be kept clear of obstructions in order to provide optimal safety and desired use of the parking area.



The above photographs demonstrate bicycle parking that is clear of obstructions and is near public amenities and destinations.

The photograph to the right demonstrates obstructed bicycle parking. The garbage can renders one side of the adjacent bicycle rack useless while the grey barrier limits the ability of the adjacent bicycle rack to be used effectively.



The photograph to the left is a good example of why the placement and design of a bicycle rack is critical to its use. Comb racks are not recommended for the reason shown. Bicycles will be placed inside the rack because there is no place to lock the bicycle frame to the bicycle rack to securely store it. These types of racks do not offer much support for the bicycle either. If one bicycle falls it will create a domino effect knocking over all of the bikes.

The placement of the rack is also not effective. Half of the rack is rendered useless because of the bush on the opposite side. The rack could have been rotated 90 degrees to allow bicycles to be parked on both sides of the rack.

IV. PARKING LOT DESIGN

Parking lot design should include detailed information about pedestrian access to and through the development, including access to adjoining sites that share parking. Demarcation shall be done by using a combination of various paving surface materials, landscaping, or safety and directional lighting.

1. Parking areas should be designed to minimize breaks in the pedestrian environment and create safe and comfortable passage for pedestrians.



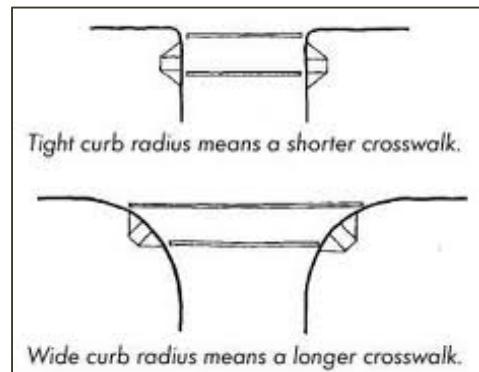
The above photograph to the left demonstrates a walkway that can become partially blocked by the overhang of vehicles parked adjacent to the walkway. The photograph to the right demonstrates a walkway with railing and landscaping barriers that prevent motor vehicles from parking too close to the walkway.

2. Where rear-of-building parking is provided, a second entrance should be provided in the rear of the building (as shown to the right) that is accessible from the parking lot.



3. To maintain pedestrian comfort and calm the speed of traffic, parking lot turning radii should be tight, which also allows for shorter pedestrian crossings.

The above illustration demonstrates how a tight curb radius means a shorter crosswalk.



4. In sites with high traffic volumes where pedestrian traffic will also be high (such as shopping centers or schools), traffic calming techniques should be provided throughout the parking lot area for pedestrian safety. Speed tables should be required at pick-up/drop-off zones in front of building entrances and at other marked pedestrian crossing points.



The above photograph demonstrates a motor vehicle dismounting a speed table, which requires the motor vehicle to slow down.

5. When adjoining parking areas are interconnected for vehicular access, pedestrian access should be provided along the front of buildings and between buildings.



The above image shows how multiple retail buildings can be connected by using a walkway (shown by the red arrow) that allows pedestrians to move between the two buildings. The blue arrow identifies a drive-through lane that interrupts a pedestrian walkway. A colored crosswalk would improve pedestrian safety at the drive-through lane crossing point.

6. Stop or yield signs should be provided where vehicular travel ways intersect with pedestrian travel ways.



The above photograph and illustration demonstrates how signage can be used to improve awareness of pedestrian crossing areas and marked crosswalks.

7. Parking lots should be designed to provide safe and convenient pedestrian access.

- a. In small lots, this can be achieved by providing a sidewalk at the perimeter of the lot.



The above photograph demonstrates a pedestrian walkway that accesses the building from the end of the parking lot.

- b. In medium and large lots, pedestrian walkways or corridors within the parking area can provide pedestrian connections between the property line and the front entry of the building. The connection can provide a dual use for automobile users traveling between their vehicle and the front of the building.

The photographs to the right and below demonstrate pedestrian corridors within large- and medium-sized parking lots. The picture to the right shows a large pedestrian walkway that guides pedestrians directly to the front entrance of the building, while the photo below shows a simple sidewalk in a large parking lot that provides pedestrians a safe route to and from their vehicles.

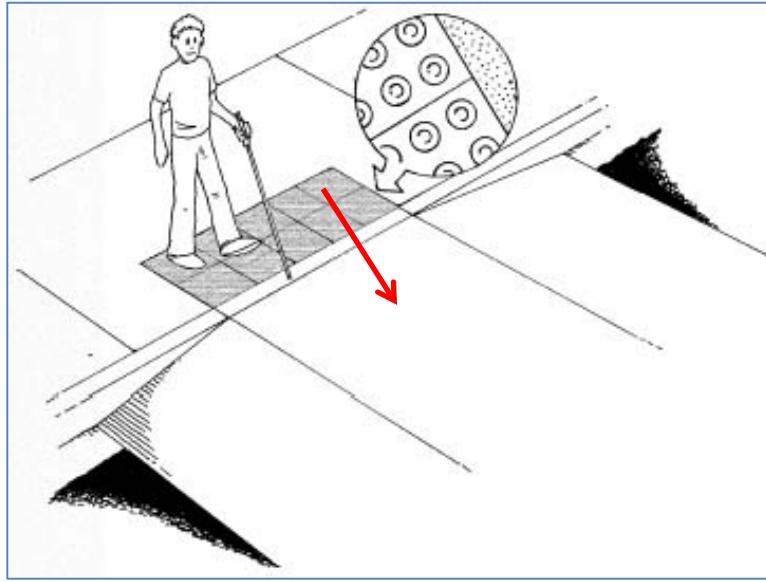


- c. Within parking lots, pedestrian corridors should be easily identifiable through the use of different paving material, paving color, or through painting areas that provide a clear visual separation between parking and pedestrian areas.



The above photograph demonstrates a pedestrian walkway that leads to the main entry of a retail facility. The walkway has been striped to designate it as a pedestrian walkway.

- d. Consider raised or curbed walkways and speed tables to maximize pedestrian visibility and safety at pedestrian crossings.



The above photograph and illustration demonstrate a pedestrian crosswalk that is raised by a speed table. The speed table forces drivers to drive slowly and elevates the height of pedestrians, which improves pedestrian visibility and safety.

8. In medium and larger parking lots, walkways adjacent to the building should be provided along all building facades that offer parking. The walkways will allow pedestrians to safely access the storefronts.



The above photograph demonstrates a large retail facility with a walkway along the front that is situated between the building and parking area.

- a. If local requirements do not exist, a planting area should be located between the walkway and the parking lot area to separate vehicles and pedestrians. The landscaping should be designed to have pedestrian walkways that pass through the landscaping and to the building.



The above photograph depicts landscaping that separates a walkway from an adjacent parking area.

9. In high volume parking lots, one-way traffic flow should be considered to improve vehicular predictability and pedestrian safety.



The above photograph demonstrates a school site with a one-way traffic pattern in front of the building.

10. Winter snow storage areas should be located so as not to block sidewalks or prevent safe pedestrian circulation.



The above photograph shows snow that has been removed from a parking lot and pushed into the path of a pedestrian walkway.

SUMMARY: ZONING AND SUBDIVISION PLANNING FOR SITE PLANS

Pedestrian access should be a part of every community's zoning and subdivision ordinances. A few simple additions to integrate pedestrian infrastructure is all that is needed to incorporate sidewalks, pedestrian crossings, accessibility, and maintenance. Zoning and subdivision ordinances should address, at minimum, the following:

Sidewalks and Walkways

A well designed sidewalk and walkway system should efficiently connect streets, parking areas, and building entrances together. Sidewalks and walkways should create complete and direct connections to buildings and should not be interrupted by parking areas. Building entryways should be adjacent to or visible from sidewalks and walkways, and walkways should be provided within sites to allow people to easily and safely travel between adjacent buildings. Finally, seating, signage, and other amenities should be provided to increase the ease and appeal of walking, but the placement of these amenities should not inhibit the use and function of sidewalks or walkways.

Pedestrian Crossings

Safe pedestrian crossings should be created at crosswalks on streets and on driving lanes within parking lots. The use of traffic calming features such as bump-outs, colored crosswalks, pedestrian refuges, and speed tables should be used to balance pedestrian visibility and safety with vehicular circulation. The use of shortened pedestrian crossings should be used particularly in areas with higher traffic volumes.

Accessibility

All pedestrian facilities should meet ADA Standards for Accessible Design and the applicable requirements of the State of Wisconsin Building Code. Walkways should have detectable warnings to assist visually impaired pedestrians, and raised walkways should be used to improve pedestrian visibility to motor vehicle drivers.

Maintenance

The owner of any sidewalk, pedestrian crossing, and parking lot should be responsible for maintaining the sidewalks and walkways adjacent to and within their property. During the summer, maintenance should include debris removal, sidewalk repair, and sidewalk replacement. During the winter, maintenance should include snow and ice removal.

Building Location on the Site

When locating a building on a property, the building should be oriented toward the street abutting the adjacent sidewalks and/or walkways. The building location should also accommodate parking areas on the side and rear of the building to allow for direct and uninterrupted pedestrian connections between adjacent sidewalks and building entrances. When addressing access to existing buildings that are set back from the street, retrofitting sites with easily identifiable pedestrian walkways that have few or no driving lane crossings will help increase accessibility within the site.

APPENDIX A: ESTABLISHING PEDESTRIAN ORIENTATION FOR SITES WITH POOR PEDESTRIAN ACCESS

A1. PEDESTRIAN MOVEMENT FOR LARGE RETAIL DEVELOPMENTS



- (A) Close to adjacent neighborhood, but no direct pedestrian connection exists between the retail building and the neighborhood.
- (B) There is no pedestrian connection between the street sidewalk and the retail building.
- (C) The building being set back on the lot forces pedestrians to walk through a large parking area to reach the storefront.
- (D) The traffic generated by the small retail uses in front of the large use creates additional hazards for pedestrians who are trying to reach the large use.

Retrofit Solutions

- A lack of sidewalk connections between the building and street sidewalk makes it difficult and dangerous to reach the building without a motor vehicle.

- Solution: Add a pedestrian walkway that connects the street sidewalk to the storefronts to avoid situations like the one shown to the right.



- Building setbacks with large parking lots and no pedestrian access creates a barrier.
- Solution: A sidewalk connection along the boundary of the parking lot would help to connect the building with a safe walkway for pedestrians.



- Small businesses are often placed next to or near large retail developments, and the traffic generated by the small businesses can make a large parking lot's complicated traffic pattern even more unpredictable and hazardous.
 - Solution: Establish a safe and easily understood motor vehicle circulation pattern through the use of curbing and landscaping.
 - Solution: Clearly identify pedestrian access points and design pedestrian corridors that have few or no interruptions to create safe, comfortable, and convenient pedestrian access routes.

- Solution: Use traffic calming devices such as speed tables to identify and minimize the danger of conflict points between pedestrians and motor vehicles.

Site Redesign Solutions

- To maximize pedestrian accessibility and safety while providing convenient access for customers who drive to the site, the buildings could have been placed toward the front of the lot and the parking could have been placed behind the buildings. An example of how this could have been achieved is shown below.



- Creating a pedestrian-oriented entrance at the front and a second entrance in the back for patrons arriving by motor vehicle creates a safer environment for pedestrians accessing the stores.



- Redesign the site to create predictable internal traffic patterns between the large and small businesses.



- Connect the existing neighborhoods by designing a direct and convenient walkway to the storefronts.

A2. PEDESTRIAN MOVEMENT FOR SMALL RETAIL DEVELOPMENTS

Figure A2

Small Retail Development Designed With Low Pedestrian Accessibility

- (A) The existing adjacent sidewalk network was not utilized for pedestrian access to the storefronts.
- (B) The building is situated such that a pedestrian has to walk across a drive aisle and through parking spots to access the businesses.



Retrofit Solutions

- The small retail development site is not fronted on the street, creating the need for pedestrians to walk through the parking lot.



- Solution: In an ideal situation, the small retail development should have fronted the street. However, in a retrofit scenario as shown above, a convenient and well defined connection between the existing street sidewalk and the building should be established.
- No connections to the parking in the rear of the building forces patrons to walk in drive lanes.
 - Solution: If space permits, provide walkways on the sides of the building to allow the patrons parking in the rear lots to safely access the storefronts without walking in a drive lane.
- The existing site design does not have an area designated for bicycle parking.
 - Solution: Provide a reasonable number of bicycle stalls in a location that is quickly identifiable and connects to the sidewalk system. One method of doing this could be to convert one or two parking stalls to bicycle parking with appropriate bicycle racks.

Site Redesign Solutions

- Moving the building forward on the site helps to create a pedestrian friendly design with sidewalk access points as well as access points on the opposite side of the building for people arriving in their automobiles.



A3. PEDESTRIAN MOVEMENT FOR MULTI-FAMILY DEVELOPMENTS

Figure A3

Multi-Family Site Designed With Low Pedestrian Accessibility

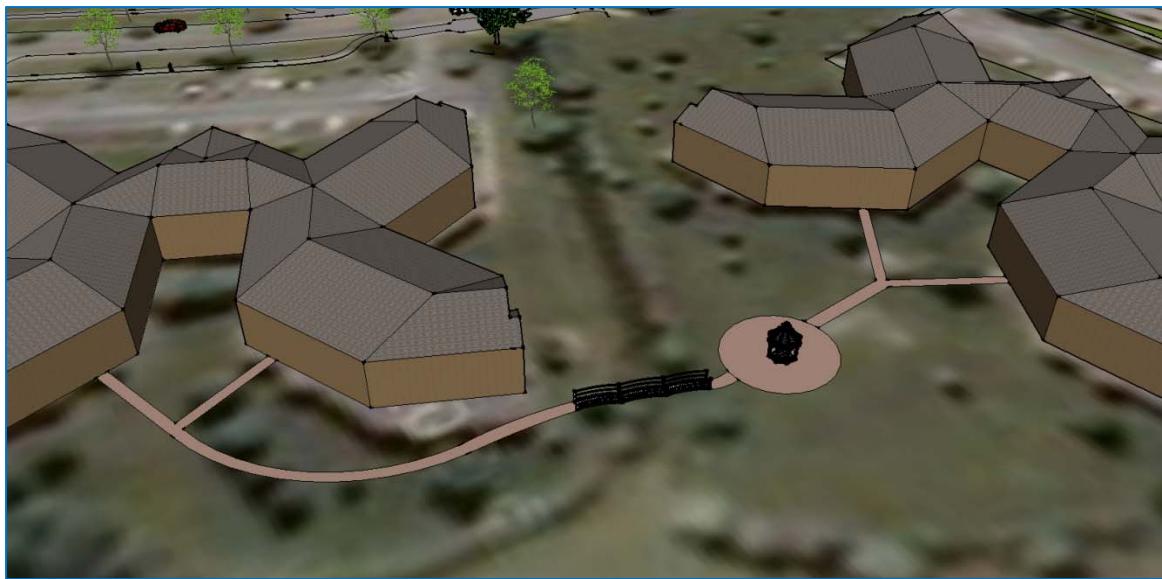


Retrofit Solutions

- Multi-family development sites often have large parking lots that interrupt pedestrian passage.
 - Retrofit solution: Using the existing design, pedestrian connections can be made between the building and the street at both ends of the parking lots.
 - Retrofit solution: An additional pedestrian connection can be made through the center of the parking lot, providing direct access to the main entrance of the multi-family site.



- The two adjacent buildings on the site are only connected by a street-fronted sidewalk system. Passage between the buildings is limited due to a drainage way between the buildings.
 - Solution: Provide pedestrian connections between adjacent multi-family residential buildings at the street-fronted sidewalks and develop an internal sidewalk system to directly connect the adjacent buildings.
 - Solution: Connect the internal sidewalk system to a pedestrian bridge crossing over the drainage way.



Site Redesign Solutions

- If the sites had originally been designed to conveniently accommodate pedestrians, the buildings would have been located adjacent to the street with direct connections to the street-fronted sidewalks.



- Combining the surface parking lots into one shared parking lot reduces the number of driveways interrupting the sidewalks.
- Moving the parking lot between the buildings allows the parking lot to be used by tenants from both buildings.

A4. PEDESTRIAN MOVEMENT FOR SCHOOLS



Retrofit Solutions

- School sites are often built next to developing residential areas because of the existing and projected demand for school capacity in these areas.
 - Solution: A sidewalk connection between the school site and the developing residential area should be established.
 - Solution: Include sidewalks (shown in yellow in the picture below) at the locations shown below to provide connections between the current and future homes and the school site. The proposed sidewalks will also connect to a multi-use trail (shown in green in the picture) that is planned along the main road.
 - To improve pedestrian safety and visibility on the school site, speed tables should be installed at the pedestrian crossings shown in red in the picture below.



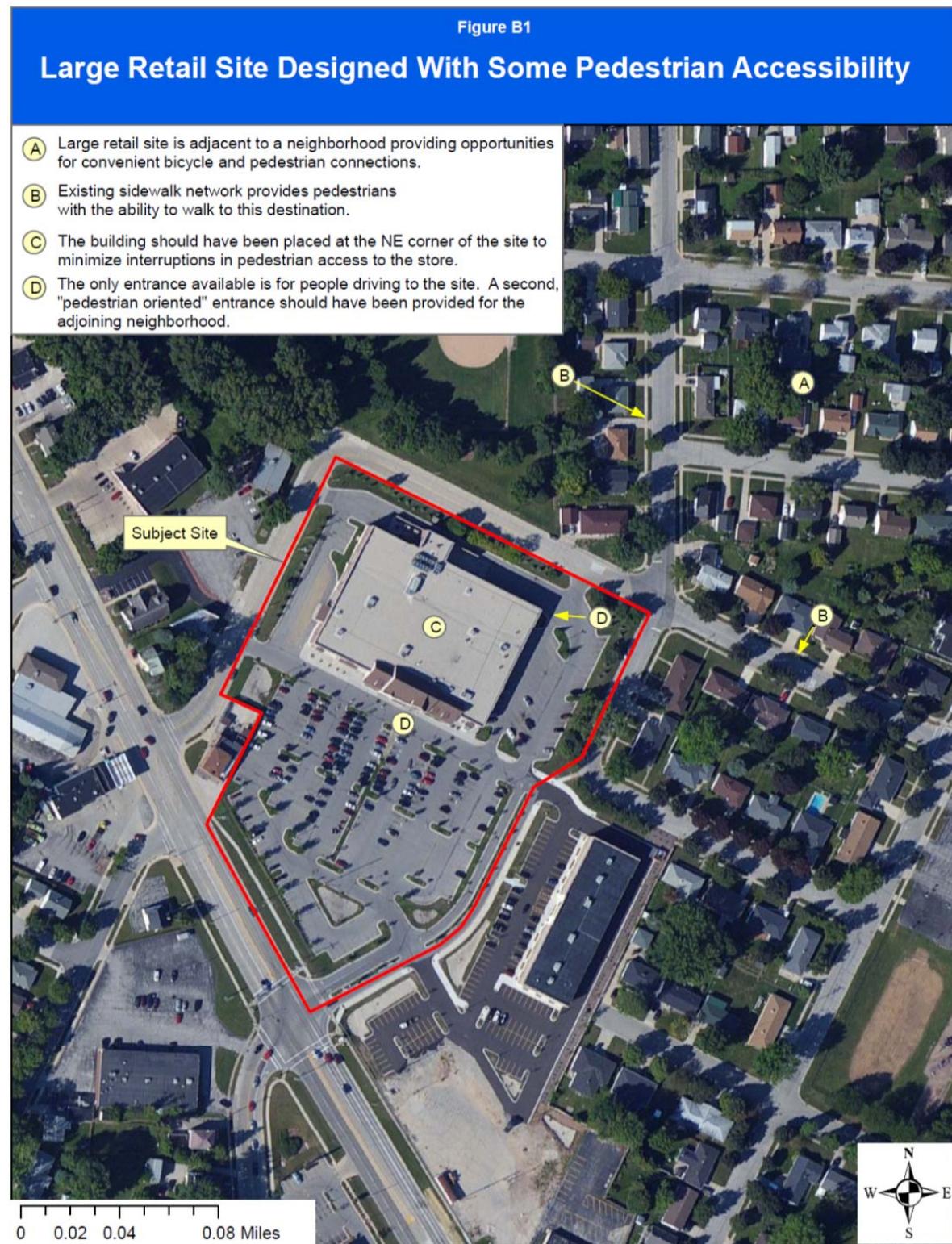
- A large building setback with parking lots in front of the building and little pedestrian access creates a barrier when connecting the school site to sidewalks or trails.
 - Solution: Create a sidewalk connection either through the parking lot or around the boundary of the parking lot that minimizes or avoids interaction between pedestrians and motorists.
- School structure placement on the site disrupts the safe and efficient flow of pedestrian traffic.
 - Solution: Design separate areas for motor vehicle traffic and pedestrian traffic.
 - Solution: When pedestrian traffic must cross vehicular drive lanes, provide clearly marked and identifiable pedestrian crossings.

Site Redesign Solutions

- Develop parking in the rear of school sites to allow pedestrians to have uninterrupted access to the school entrances.
- The school should be placed on the site so the building entry points are easily identified by pedestrians.

APPENDIX B: RETROFITTING PEDESTRIAN ORIENTATION ON EXISTING SITES WITH MODERATE PEDESTRIAN ACCESS

B1. PEDESTRIAN MOVEMENT FOR LARGE RETAIL DEVELOPMENTS



Retrofit Solutions

- A more complete sidewalk system could be provided.
 - The sidewalk on the west side of the site could be extended and connected to the storefront sidewalk.

Site Redesign Solutions

- The building's placement on the site is not positioned to allow the adjacent neighborhood a direct connection to the store entrance. As shown in the image below, the building should have been placed at the northeast corner of the site with an additional entrance designed specifically for pedestrians.



The image to the left shows the building's pedestrian entrance that faces the adjacent neighborhood.

- Moving the building to the northeast corner of the site eliminates a driveway entrance that had been interrupting pedestrians' ability to access the front of the store without encountering conflicts with vehicles. This could also reduce the amount of "cut through" traffic that utilizes the neighborhood streets to access the site.
- The site redesign also incorporates a direct pedestrian walkway from the sidewalk along the major street. The image to the right shows the new walkway connecting the storefront to the sidewalk.



- The redesign of the site also incorporates a sidewalk on the west side of the property (red arrow). The site includes colored crosswalks (yellow arrow) at the pedestrian/vehicle conflict points, and the site has a large area in front of the store that visually alerts drivers that it is a high pedestrian use area (blue arrow).



B2. PEDESTRIAN MOVEMENT FOR SMALL RETAIL DEVELOPMENTS



Retrofit Solutions

- Small retail developments can benefit from their close proximity to adjacent neighborhoods by providing destinations within a walkable distance. To accomplish this, a complete sidewalk network should be present.



- Provide a sidewalk on the north end of the lot as shown by the arrow above. This sidewalk will also allow a connection to be made at the storefronted sidewalk at the building's north end as shown to the right.



- The small retail development site is located along a signed bicycle route that encourages people to travel to the small retail facility by bike.
 - This is a positive element of this site; however, the site does not have any designated bicycle parking. A method of establishing bicycle parking could be to reserve at least one existing parking space adjacent to the storefronts for bicycle parking.

Site Redesign Solutions

- If the site was redesigned, the building should be pushed forward on the site to front the street. This would allow the storefronts to be directly connected to the sidewalks and would create a pedestrian-friendly atmosphere.
- Moving the parking to the rear of the building would help to hide the cars and create a buffer between the stores and the backyards of the adjacent homes.
- A redesign of this site should incorporate space for bicycle parking. This area should be visible and conveniently located while also meeting the recommendations made earlier in this document.

B3. PEDESTRIAN MOVEMENT FOR MULTI-FAMILY DEVELOPMENTS

Figure B3
Multi-Family Site Designed With Some Pedestrian Accessibility

- (A) Extending the sidewalk network along the street would allow for a pedestrian connection to the building.
- (B) Underground parking in this situation helps reduce the need for a larger lot.
- (C) A connection to the building entrance will be possible once the sidewalk is extended along the street.
- (D) Visitor parking in back keeps the building near the street and the proposed sidewalk and minimizes conflicts between pedestrians and drivers.



Retrofit Solutions

- The multi-family site has the beginning of a sidewalk for a future connection. The connection cannot be completed because there is not a street-fronted sidewalk to connect to.
 - Solution: Extend and connect the street-fronted sidewalk system with the building's pedestrian entrance.



Site Redesign Solutions

- The site plan for this multi-family development is designed well with the exception of the missing sidewalk. It is important that sidewalks be installed at the time the site is being developed so that retrofit situations like this can be avoided.

B4. PEDESTRIAN MOVEMENT FOR SCHOOLS

Figure B4

School Site Designed With Some Pedestrian Accessibility



Retrofit Solutions

- School sites built next to residential areas create opportunities for convenient connections between the neighborhood and the school. This school site plan was done well, but one additional sidewalk could be included at the southwest corner to create a second uninterrupted connection for pedestrians traveling between the sidewalk and school.

Site Redesign Solutions

- School sites need pick-up and drop-off areas for children who are bused and for children who are dropped off by their parents. The drawback to this site is the design and layout of the parking areas and the drive lanes.
 - There are a number of driveways that interrupt the flow of pedestrian traffic before they are able to reach the sidewalk connection on the south side of the site.
 - Using one-way driving patterns can help to increase the predictability of vehicular movements.



APPENDIX C: ESTABLISHING PEDESTRIAN ORIENTATION FOR NEW DEVELOPMENTS AND MAINTAINING PEDESTRIAN ORIENTATION ON EXISTING SITES WITH EXCELLENT PEDESTRIAN ACCESS

Because this section of the ordinance features site plans with excellent pedestrian access, there is no or minimal need to identify solutions for improvement. Thus, the descriptions identify the components of each site plan that create an excellent pedestrian environment.

C1. PEDESTRIAN MOVEMENT FOR LARGE RETAIL DEVELOPMENTS



- (A) The site is within walking distance of the surrounding residential areas.
- (B) Local sidewalk network provides direct connections to retail uses for pedestrians.
- (C) This retail development offers an entrance designed specifically for pedestrians.
- (D) The grocery store also acts as a regional destination where a separate entrance is dedicated to motorists.

- A. The large retail development site lies in close proximity to existing residential neighborhoods, which provides convenient pedestrian access.
- B. The site was located in a neighborhood setting where a complete sidewalk network exists. The buildings were situated to accommodate pedestrians from the adjacent residential developments.
- C. The pedestrian entrance offers an opportunity for pedestrians to conveniently access the large retail store. The location of the pedestrian entrance allows for few conflicts between vehicular and pedestrian traffic, which creates a safer situation for both pedestrians and drivers.

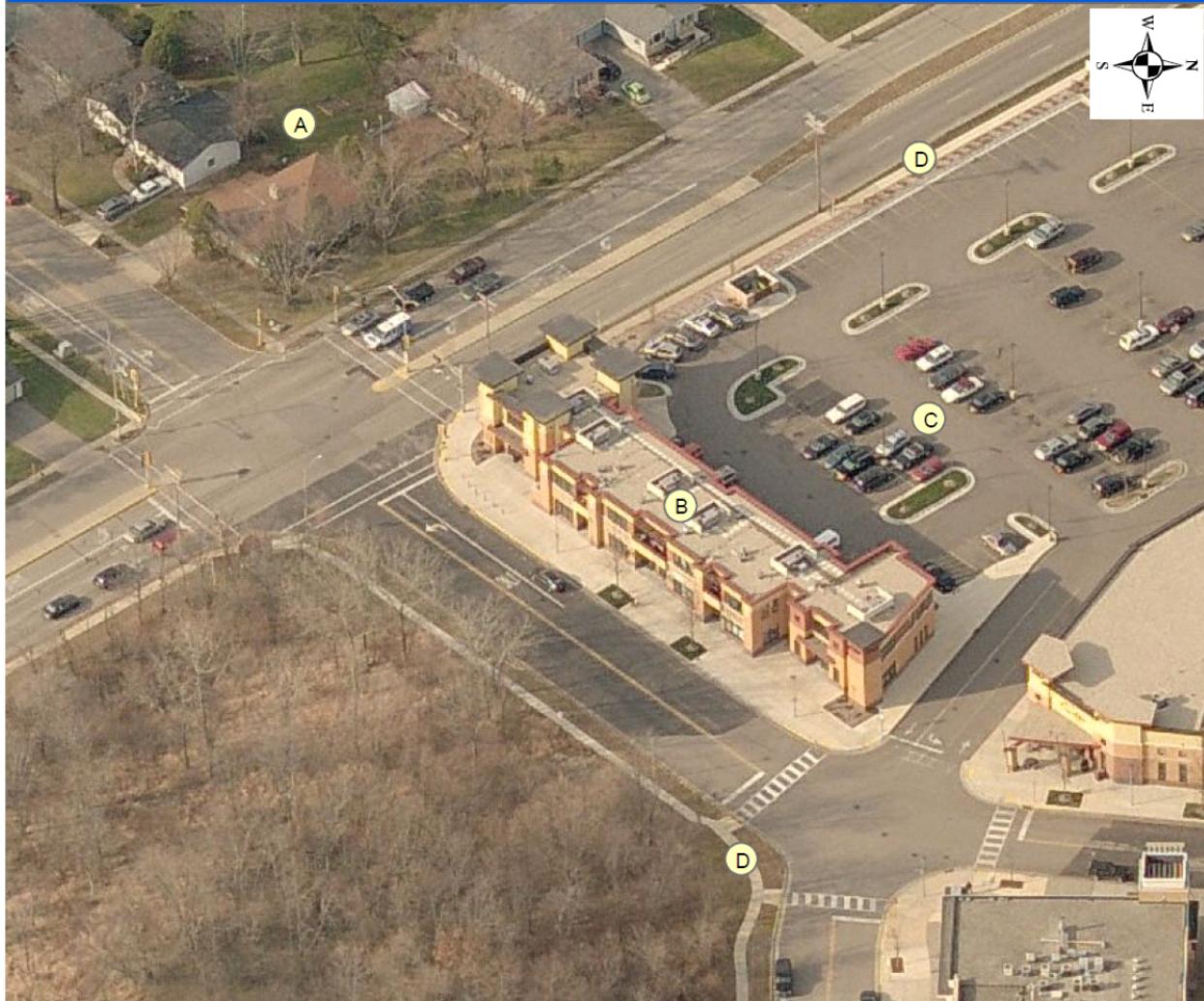


- D. The site is located along a main road that provides convenient access to a large grocery store for regional customers. Accommodating regional and local customers is critical to the success of this and other large retail developments.

C2. PEDESTRIAN MOVEMENT FOR SMALL RETAIL DEVELOPMENTS

Figure C2

Small Retail Site Designed With High Pedestrian Accessibility



- (A) Close proximity to adjacent neighborhoods here and to the southwest.
- (B) The location of the building on the site is ideal for this type of development because the parking lot is shared with a regional anchor store and it is located near residential neighborhoods that have access for walking trips.
- (C) The use of shared parking allows for the development to exist on a smaller lot.
- (D) Adequate pedestrian facilities exist around and on site to provide a high level of pedestrian access.

- A. The small retail development site lies in close proximity to existing residential neighborhoods, which provides convenient pedestrian access.
- B. The building location is ideal, allowing for street-fronted design on one side with a parking area on the other. Also, a large sidewalk is provided on all sides of the building to accommodate pedestrians, and each business has entrances that face the front sidewalk and rear parking lot.
- C. The small retail development's parking lot is shared among the various tenants and with the large retail development. The shared parking stalls allow the small retail development to exist on a smaller lot because all parking stalls are not used at the same time by the various tenants.
- D. The building and sidewalks are directly connected to the street sidewalk system, which allows pedestrians to easily and safely reach the building entrances.



C3. PEDESTRIAN MOVEMENT FOR MULTI-FAMILY DEVELOPMENTS

Figure C3

Multi-Family Site Designed With High Pedestrian Accessibility

- (A) Sidewalks abut this property, which makes the entrance easily accessible for pedestrians.
- (B) Underground parking allows this building to be placed on a small compact site while still meeting the parking needs of the intended use.
- (C) Direct access to a regional trail system.
- (D) Bus Stops next to buildings that can be reached without having to cross traffic.



- A. Sidewalks and a walking trail abut the multi-family site on three sides, maximizing access for pedestrians.
- B. Underground parking areas allow the multi-family building to be placed on a smaller site without a shortage of parking stalls and minimize conflicts between pedestrians and motorists. The aboveground parking area also does not block pedestrian access because it is situated at the side of the building.
- C. The site is adjacent to a regional trail system on one side, which makes recreation opportunities readily available. Trail users do not have to cross traffic to access the trail, and the trail connects to destinations such as the waterfront and natural spaces.
- D. There is a bus stop near the multi-family residential site, and a street-fronted sidewalk system connects to a nearby bus stop. Having quick and convenient access to mass transit allows pedestrians to expand their travel opportunities throughout the region.

C4. PEDESTRIAN MOVEMENT FOR SCHOOLS

Figure C4

School Site Designed With High Pedestrian Accessibility



- A. The school site lies in close proximity to existing residential neighborhoods, which provides safe and convenient pedestrian access.
- B. The school site and adjacent residential neighborhoods are connected by an extensive sidewalk network with minimal missing sections.
- C. The main entrance to the school is oriented to the street sidewalk system in front of the building and to the side of the building with minimal need to cross driving lanes.
- D. The internal student pickup/drop off areas are designed to prevent pedestrians from having to cross driving lanes. Students who are picked up and dropped off also have immediate access to the sidewalk system along the front and side of the school.