GREATER MADISON mpo

Pedestrian/Bicycle Facilities, Policies, and Street Standards:

Review of Community Requirements in the Greater Madison MPO Planning Area and Recommended Best Practices

Greater Madison MPO

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May 2021

Prepared by staff of Greater Madison MPO with assistance from staff of other agencies.

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Introduction

Although the Madison urban area ranked as the second-safest among the 100 largest US metropolitan areas in the 2021 Dangerous by Design report, more than 50 pedestrians were killed locally in crashes between 2010 and 2019. Additionally, the Greater Madison MPO's (MPO) 2019 Performance Measures Report found a 9.1% increase in crash-related fatalities and serious injuries suffered by bicyclists and pedestrians during the 2015-2019 period compared to the 2014-2018 period.[1] Clearly, there is room for improvement.

Safe and connected pedestrian and bicycle networks help facilitate and encourage non-motorized or active transportation, with positive benefits on community health and vitality, reduced reliance on fossil fuels, and lower Vehicle Miles Traveled (VMT). The MPO's Regional Transportation Plan 2050 (RTP) identified the goals of creating connected livable neighborhoods and communities; improving public health, safety and security; and improving equity for users of the transportation system, all of which directly relate to the development of the non-motorized network.

This report details locally-adopted requirements along with national recommendations and best practices to help local planning and engineering staff and elected officials make informed decisions regarding development and design standards, and to give them tools to make roadways safer for all users. Recommendations for policies and design elements are from the Institute of Transportation Engineers (ITE), the National Association of City Transportation Officials (NACTO), the Federal Highway Administration (FHWA), and topic-specific organizations such as the National Complete Streets Coalition and US Access Board.

In order to facilitate community decision making regarding how these networks are designed, this report details the standards and design requirements used by Madison area cities, villages, and selected towns[2] when constructing or reconstructing transportation facilities; how these projects are funded; sidewalk snow removal policies; policies related to accessibility and the Americans with Disabilities Act (ADA); and, a discussion of equity in the context of local transportation policymaking.

The source material used to produce this report was gathered during 2020 and early 2021, and citations/links were current at the time it was drafted. Community staff are encouraged to notify the MPO of changes to the listed requirements and policies by emailing Ben Lyman at blyman@cityofmadison.com.

For purposes of this report, the terms "municipality" and "community" refer to the various levels of local government in the Greater Madison MPO Planning Area, including Dane County, Cities, Villages, and Towns. The terms "non-motorized" and "active" transportation refer to walking, bicycling, using a

[1] Page 5.

[2] Towns have generally not adopted standards for the majority of facilities included in this survey; however, at the suggestion of an MPO Citizen Advisory Committee member, requirements of some of the more urbanized towns, including the Towns of Blooming Grove, Middleton, and Westport were included. Initial scoping by MPO staff revealed that even these relatively urbanized towns have adopted few of the subject design standards due to a variety of factors, including a lack of pedestrian infrastructure. The requirements of these towns are listed in this document where they exist.

wheelchair, and all similar transportation modes that are served by sidewalks, separated paths, bike lanes, crosswalks, and similar features of the built environment.

This document contains hyperlinks to websites created and maintained by communities, businesses, and organizations other than the City of Madison and the MPO. These links are provided for the reader's convenience and reference only and are not maintained by the City of Madison or the MPO.

Complete Streets

Complete streets are streets that are designed to help people get where they want to go—whatever their mode of choice. Serving the needs of those who have historically been marginalized in the transportation planning process and underserved by the transportation system—low-income people, elderly and disabled people, and racial and ethnic minority groups – is of particular importance. Integrating community context into all planning, construction, and operations activities can help ensure that the goal of providing free-flowing thoroughfares for motor vehicles does not crowd out safety, equity, and other community priorities.

MPO policy is to support the adoption of complete streets policies by local communities, and to require that streets funded through the STBG-Urban program be designed and constructed as complete streets.[3]

One useful resource for municipalities considering a complete streets policy is the National Complete Streets Coalition's Elements of Complete Streets Policies. Additional references, case studies, and example Complete Streets Policies are listed in the References section at the end of this report.

Vision Zero

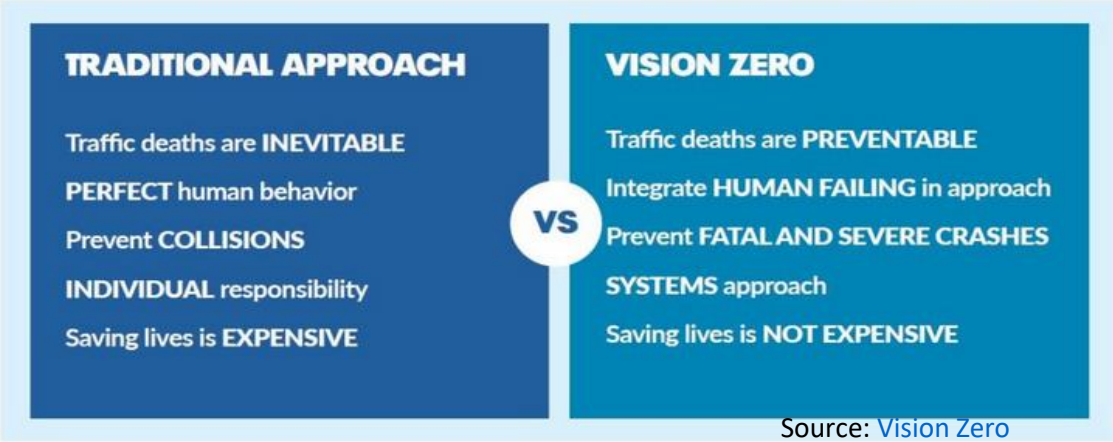
Like Complete Streets, "Vision Zero starts with the ethical belief that everyone has the right to move safely in their communities, and that system designers and policy makers share the responsibility to ensure safe systems for travel."[4] The City of Madison's Vision Zero Initiative intends "to eliminate traffic deaths and severe injuries on city streets by 2030."[5] A Vision Zero approach recognizes that human errors occur, and that by building more forgiving infrastructure communities can prevent serious and fatal crashes from occurring. Vision Zero reframes both what is possible and what is necessary to build safe transportation systems. Figure 1 highlights the key differences between Vision Zero and the traditional approach to designing infrastructure.

[3] STBG-Urban Application Screening Criteria 3: "All roadway projects must comply with the MPO's Complete Streets Policy. The State of Wisconsin's Pedestrian and Bicycle Accommodations law and associated rules in effect on May 2015 will be used as a general guide in determining compliance with the policy." Greater Madison MPO 2021-2025 Transportation Improvement Program, 3.

[4] Vision Zero Network. "What is Vision Zero?"

[5] City of Madison. "Vision Zero."

Figure 1 A New Vision for Safety



Source: Vision Zero

This report, by compiling both locally-adopted standards and national best practices, helps to realize the Vision Zero Network's policy that MPOs should "bring together key stakeholders and facilitate regional discussion of safety issues, provide safety trainings and to further embed safety in the regional culture…use their convening ability to emphasize a safety-first approach in their planning, design, and policy-setting; and bridge the gap between the state DOT and local transportation agencies."[6]

The Vision Zero Network makes two key recommendations to MPOs that are particularly relevant to this report: they should proactively share safety resources with local jurisdictions in their regions, and they should recommend speed management strategies and countermeasures in their plans and priorities and support local and state speed management efforts.[7,8]

For communities interested in pursuing Vision Zero, a good place to start is the Vision Zero Network's Core Elements of Vision Zero communities.

Speed

"As the National Transportation Safety Board reports, speed is a leading cause of fatal and serious injury crashes and is the primary determinant of the severity of injuries in a crash."[9] "For more than two decades, speeding has been involved in approximately one-third of all motor vehicle fatalities. In 2018, speeding was a contributing factor in 26% of all traffic fatalities."[10] While the Coronavirus pandemic and its resulting safer-at-home orders resulted in dramatic reductions in VMT in 2020, vehicle speeds and speeding-related crashes increased significantly – including crashes involving pedestrians and bicyclists –

[6] Vision Zero Network. *Centering Safety at Metropolitan Planning Organizations* (2017), 4.
[7] Vision Zero Network. *Centering Safety at Metropolitan Planning Organizations* (2017), 5.
[8] The MPO project scoring metrics for the Transportation Alternatives (TA) and STBG-Urban programs include the safety impact of proposed projects. TA infrastructure projects earn up to 20% of the total project score from safety improvements, and TA Safe Routes to School programs earn up to 15% of their score from safety improvements. The MPO amended its STBG-Urban project scoring metrics in May 2021, with safety composing 20% of the total project score for Roadway, Bike/Pedestrian, and Intelligent Transportation Systems projects. Given their limited ability to impact safety, Transit Infrastructure (e.g. priority lanes) projects only earn up to 5% of their score for safety considerations.
[9] https://visionzeronetwork.org/wp-content/uploads/2017/11/2017_MPO_resource_Final.pdf (p 5)
[10] https://www.nhtsa.gov/risky-driving/speeding

in the Madison area and nation-wide.[11] The Governors Highway Safety Association estimates that the pedestrian fatality rate increased 20% during the first half of 2020.[12]

The impact of speed on the severity of crashes is both intuitive and well documented. Regardless of whether a crash is caused by distracted driving, impaired driving, driver error, or bicyclist/pedestrian error, the severity of crashes is always exacerbated by speed.

Figure 2 Vehicle Speeds and Pedestrian Fatalities

Source: Vision Zero

[11] https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2021/03/26/pedestrian-fatalities-spike-during-pandemic

[12] https://www.smartcitiesdive.com/news/riskiest-states-for-cycling-streetlight-data/599846/

Streets

Block Length and Street Network Connectivity

Block length and street connectivity form the foundation of overall network connectivity. Blocks that are overly long may force out-of-direction travel, increase the risk of speeding due to infrequent controlled intersections, and limit the route options available to travelers. While long blocks may be bisected by bicycle and pedestrian routes to improve non-motorized network connectivity, this approach still limits route options for motor vehicles, which can impact EMS/Fire response times, transit routes, and other travel options. Alleys, while problematic in terms of maintenance and enforcement, can provide important secondary routes for active transportation modes and first responders, especially for properties fronting on high-volume roadways. Cul-de-sacs, which are popular with residents because they eliminate through traffic, concentrate traffic on collector and arterial streets. This design paradigm limits route options, makes trips more circuitous, and reduces the feasibility of non-motorized modes.

Figure 3 Low and High Connectivity Neighborhoods[13]

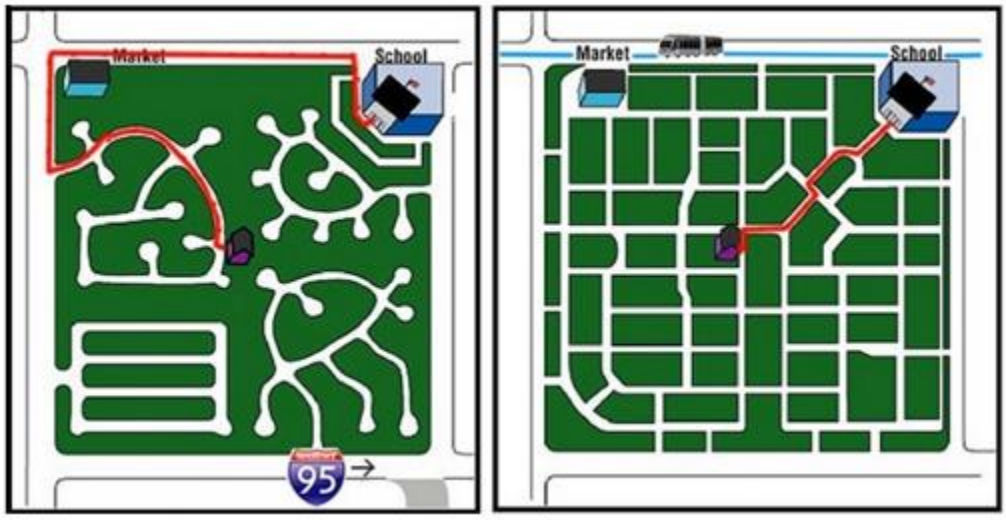


Figure 3 illustrates the how connectivity effects trip length. The low connectivity neighborhood, with its "loops and lollipops" network configuration, forces travelers to take a more circuitous route, involving higher-traffic streets. The high connectivity neighborhood allows travelers to take a much more direct path, often on lower-traffic streets.

[13] *Utah Street Connectivity Study*. A collaboration of the Wasatch Front Regional Council, Mountainland Association of Governments, Utah Transit Authority, and Utah Department of Transportation. https://www.surveymonkey.com/r/StreetConnectivityPublic

Table 1 Block Length and Network Connectivity in MPO Area Communities, Summary

Community	Block Length and Connectivity Standards
City of Fitchburg	Residential blocks should be 500-1,000 feet; use of cul-de-sacs limited, with a maximum length of 600 feet.
City of Madison	250-foot minimum between center lines of streets intersecting with local streets; cul-de-sacs generally prohibited.
City of Middleton	Blocks should be a minimum of 600 feet.
City of Monona	None specified.
City of Stoughton	Residential blocks, outside of traditional neighborhood development (TND) areas, should be 400-1,000 feet, cul-de-sacs limited to 600 feet.
City of Sun Prairie	Blocks should be 500-1,200 feet; cul-de-sacs limited to 750 feet.
City of Verona	Blocks should be 500-1,200 feet; cul-de-sacs limited to 1,000 feet.
Village of Cottage Grove	Blocks in residential areas should generally be 600-1,500 feet; cul-de-sacs limited to 500 feet.
Village of Cross Plains	Blocks should be 600-1,500 feet; cul-de-sacs limited to 1,600 feet.
Village of DeForest	Blocks should be 600-1,600 feet; use of cul-de-sacs limited, with a maximum length of 500 feet.
Village of McFarland	Blocks should generally be 400-1,500 feet; cul-de-sacs limited to 800 feet.
Village of Oregon	Residential blocks should generally be 600-1,500 feet; cul-de-sacs limited to 500 feet.
Village of Waunakee	Residential blocks should generally be 500-1,500 feet.
Village of Windsor	Blocks should be 500-1,200 feet; use of cul-de-sacs to be minimized.
All communities may require mid-block pedestrian paths for blocks longer than 900 feet (800 feet in Fitchburg).	

Recommendations

Institute for Transportation Engineers (ITE)[14]

Dense, well-connected transportation networks perform better than those that rely on a small number of high-capacity arterial facilities, in terms of both network capacity and resiliency.

[14] *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (2010), 29, 177.

Table 2 Suggested Network Connectivity Metrics - ITE

Metric	Definition	Recommendation
Link to Node Ratio	The number of links (road segments) divided by the number of nodes (intersections). Ranges from 1.0 to 2.5.	The minimum for a walkable community is 1.4-1.6.
Intersection Ratio	The number of intersections divided by the sum of intersections and dead-ends. Ranges from 0 to 1.	Above 0.75 is desirable.
Intersection Spacing	The average distance between intersections.	Maximum of 660 feet. Below 400 feet is desirable.
Intersection Density	The number of intersections in a given area.	Network connectivity rises with intersection density.
Directness	Actual travel distance divided by direct distance.	Should be no greater than 1.5.

Mid-block crossings should be considered on any block longer than 400 feet; less in more intensive urban areas.

Federal Highway Administration (FHWA)[15]

Connectivity standards and goals may include maximum distances between intersections on different types of roadways; standards for bicycle and pedestrian crossings; whether cul-de-sacs are allowed, and their maximum length.

Community Standards

Dane County

Residential blocks should generally be at least 600 feet.[16] 10-foot wide pedestrian ways are required across any block more than 900 feet in length, or where deemed essential for access to destinations.[17] Cul-de-sacs are limited to a length of 1000 feet.[18] Alleys are permitted in commercial and industrial areas, prohibited in residential areas.[19]

City of Fitchburg

Local street intersections must be a minimum of 250 feet apart at centerlines.[20] Blocks in non-industrial areas must be 500-1000 feet in length. Blocks more than 800 feet may require 10-foot wide mid-block pedestrian ways.[21] Alleys may be required by Plan Commission in commercial and industrial areas.[22] Cul-de-sacs are limited to one per 50 lots in land division, and must relate to environmental or topographic

[15] *Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks* (2016), 26.
[16] 75.19(5)(a)
[17] 75.19(5)(c)
[18] 75.19(1)(p)
[19] 75.19(1)(r)
[20] 24-8.e.6
[21] 24-8.f
[22] 24-8.a.8

features.[23] In addition, cul-de-sacs are limited to 600 feet in length and, where feasible, must include a shared-use path linking the bulb end of the cul-de-sac to a through street or public area as approved by the Plan Commission.[24]

City of Madison

Local street intersections must be a minimum of 250 feet apart at centerlines.[25] While there is no minimum block length, block dimensions must be appropriate for the planned land use, zoning, access needs, expected traffic, and topography.[26] On blocks over 900 feet in length, 10-foot wide mid-block pedestrian ways are required where essential for pedestrian access & circulation.[27]

Cul-de-sacs, which are generally prohibited, require a pedestrian connection to another public right of way.[28] Where allowed, cul-de-sacs are limited to a maximum length of 600 feet.[29] Alleys are required in mixed-use and employment districts but are prohibited in residential developments.[30]

City of Middleton

Residential blocks must be a minimum of 600 feet in length; where blocks are over 900 feet in length, or where essential for pedestrian access, a 10-foot wide mid-block pedestrian way is required.[31]

Alleys are prohibited in residential areas but are permitted in retail, commercial, and industrial districts.[32]

City of Monona

None specified.

City of Stoughton

In residential areas other than traditional neighborhood development (TND), blocks must be 400-1,200 feet in length; 10-foot wide mid-block pedestrian ways may be required on blocks over 900 feet long.[33]

Alleys, which must be paved, are allowed in commercial and industrial districts and in TND residential areas.[34] Cul-de-sacs cannot exceed 600 feet in length.[35]

City of Sun Prairie

Blocks must be 500-1,200 feet in length; where essential for pedestrian access and circulation, or on blocks longer than 900 feet, the City Council may require mid-block pedestrian ways.[36]

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[23] 24-8.a.9
[24] 24-8.d.2.a
[25] 16.23(8)(a)7.f
[26] 16.23(8)(c)1
[27] 16.23(8)(c)3
[28] 16.23(8)(a)1
[29] 16.23(8)(a)7.g
[30] 16.23(8)(a)5
[31] 19.07(5)
[32] 19.07(4)(i)
[33] 66-713
[34] 66-702
[35] 66-706(3)
[36] 16.28.030

Alleys are permitted.[37] Cul-de-sacs are limited to a maximum of 750 feet in length.[38]

City of Verona

Blocks must be 500-1,200 feet in length; where essential for pedestrian access and circulation, or on blocks longer than 900 feet, the City Council may require mid-block pedestrian ways.[39]

Alleys are permitted in commercial and industrial zones, and are only permitted in residential zones when exceptional circumstances apply.[40] Cul-de-sacs cannot exceed 1,000 feet in length.[41]

Village of Cottage Grove

Generally, blocks must be 600-1,500 feet in length in residential areas; on blocks longer than 900 feet, mid-block pedestrian ways may be required.[42]

Cul-de-sacs are limited to maximum length of 500 feet.[43]

Village of Cross Plains

Generally, blocks must be 600-1,500 feet in length in residential areas; on blocks longer than 900 feet, mid-block pedestrian ways may be required, where deemed essential by the Village Plan Commission.[44] Alleys are prohibited in residential areas unless approved by the Village Board.[45] Cul-de-sacs are limited to a maximum of 1,600 feet in length.[46]

Village of DeForest

Blocks in residential areas should be 600-1,600 feet in length; blocks over 900 feet long may, at the discretion of the Village Board, require a mid-block pedestrian way.[47]

Alleys may be constructed in commercial and industrial districts, and in planned unit developments.[48] Cul-de-sacs are only allowed where necessary, and are limited to 500 feet.[49]

Village of Maple Bluff

None specified.

Village of McFarland

Generally, blocks in residential areas should be 400-1,500 feet in length; blocks over 900 feet, may require a mid-block pedestrian way, at the discretion of the Plan Commission and Village Board.[50] Alleys

[37] 16.28.020.F.4
[38] 16.28.020.K.8
[39] 14-1-72
[40] 14-1-70(i)(1-2)
[41] 14-1-70(i)(4)
[42] 274-44
[43] 274-42.B
[44] 83.82
[45] 83.76(g)
[46] 83.79(b)
[47] 13.41
[48] 13.40(1)(f)
[49] 13.40(3)(b)
[50] 56-141

are required in commercial and industrial districts and are prohibited in residential districts, unless approved by Village Board.[51] Cul-de-sacs may not exceed 800 feet in length.[52]

Village of Oregon

Generally, blocks in residential areas should be 600-1,500 feet in length.[53] Mid-block pedestrian ways are required across any block greater than 900 feet in length, where deemed essential to provide adequate pedestrian circulation.[54] Alleys are required in commercial and industrial districts but are not permitted in residential districts.[55] Cul-de-sacs are limited to 500 feet in length.[56]

Village of Shorewood Hills

None specified.

Village of Waunakee

Generally, blocks in residential areas should be 500-1,500 feet in length; blocks over 900 feet may require a mid-block pedestrian way where deemed essential to pedestrian circulation or access to community facilities.[57] Alleys are prohibited, except in planned unit developments when maintained by a private entity.[58]

Village of Windsor

Blocks in residential areas must be 500-1,200 feet in length, and should generally be 600-900 feet.[59] The Village Board may require the construction of a shared-use path at mid-block on blocks exceeding 900 feet in length.[60] The use of cul-de-sacs is to be kept to a minimum.[61] Alleys are permitted in multi-family, commercial, and industrial districts; as well as in planned unit developments, at the discretion of the Village Board.[62]

Town of Middleton

Pedestrian paths may be required through the middle of blocks more than 900' long.[63]

Town of Westport

Generally, residential blocks must be 240-1,200 feet in length; mid-block pedestrian ways may be required on blocks exceeding 900 feet.[64] Dead end streets, allowed only when necessitated by

[51] 56-139(g)
[52] 56-139(t)
[53] 18.07(3)
[54] 18.08(8)
[55] 18.07(2)(e)
[56] 18.07(2)(l)
[57] 129-194
[58] 129-193(g)
[59] 38-484
[60] 38-485
[61] 42-33(a)
[62] 42-33(l)
[63] 15.41
[64] 10-2-72

topography, are limited to a maximum length of 1,000 feet.[65] Cul-de-sacs are to be avoided where possible and may not exceed 500 feet in length.[66]

Street Width

Street widths vary considerably based on a number of factors, most notably traffic volumes and functional classification. Arterial roads are designed primarily to accommodate a high volume of through traffic and are necessarily wider than roads of other classifications. Generally, direct access between arterials and adjacent properties is limited or prohibited. At the other end of the spectrum, local streets are designed for limited through traffic, provide direct access to adjacent properties, and are typically narrower than roads of other classifications. Generally, higher speeds require wider driving lanes, as do larger volumes of heavy truck traffic. In addition, roadway widths may vary to accommodate bicycle lanes, on-street parking, curb bump-outs, stormwater infrastructure, and other features. Wider streets tend to encourage higher vehicle speeds, while narrower streets tend to encourage slower vehicle speeds.[67]

MPO staff used information from StreetLight Data[68] to analyze speeding behavior on two sets of area roadway segments: one set of four roads with 30 mph posted speed limits, and one set of three roads with 35 mph posted speed limits. Road segments were selected to provide a variety of typical sections with the same posted speed limit. Comparison tables show the number of travel lanes in each direction, whether or not a bike lane exists, whether or not there is on-street parking, and the percent of vehicles speeding on that roadway segment. In both the 30 mph and the 35 mph groups, wider roads (more travel lanes + bike lane + parking lane) experience higher degrees of speeding. The one possible exception to this rule is Fish Hatchery Road, which is slightly wider than South Midvale Blvd, but which may appear narrower to drivers due to higher utilization of on-street parking and separate delineation of parking and bicycle lanes.

Table 3 Speeding Frequency on 30 mph Divided Roadways in the Greater Madison MPO Area

Road Segment	Lanes per Direction	Bike Lane	On-Street Parking	Pct. of Vehicles Exceeding Limit[69]
South Midvale Blvd - *Figure 4* (Cherokee Dr to Odana Rd)	2	Shared with Parking Lane	Shared with Bike Lane	10.8%
Fish Hatchery Rd - *Figure 5* (Badger Rd to Catalpa Rd)	2	Yes	Yes (striped)	7.5%
Monona Dr - *Figure 6* (Broadway to Femrite Dr)	2	Yes	No	6.1%
Grandview Blvd - *Figure 7* (Nottingham to Pelham)	1	No	Yes (unstriped)	5.8%

[65] 10-2-70(g)
[66] 10-2-70(s)
[67] Victoria Transport Policy Institute. "Speed Reductions." TDM Encyclopedia, September 2019, https://www.vtpi.org/tdm/tdm105.htm.
[68] 2020 All-Day Data.
[69] Streetlight bins speeds in 10 mph increments; this table shows speeds over 30 mph (posted speed limit).

Figure 4 South Midvale Blvd (Wright St/Fair Oaks Ave to STH 30) – three travel lanes, bike/parking lane, median

Figure 5 Fish Hatchery Rd (Badger Rd to Catalpa Rd) – two travel lanes, bike lane, median, parking lane

Figure 6 Monona Dr (Broadway to Femrite Dr) – two travel lanes, bike lane, median

Figure 7 Grandview Blvd (Nottingham Way to Pelham Rd) – one travel lane, unstriped on-street parking, median

Table 4 Speeding Comparison, 35 mph Speed Limit – Divided Roads, No Parking

Road Segment	Number of Lanes	Bike Lane	Pct. of Vehicles at Least 5 mph Over Limit[70]
East Washington Ave - *Figure* 8 (Wright St/Fair Oaks Ave to STH 30)	3	Yes	3.1%
South Whitney Way - *Figure* 9 (Science Dr to Mineral Point Rd)	3	No	2.2%
University Ave - *Figure 10* (Allen Blvd to Capital Ave)	2	Yes	1.9%

Figure 8 East Washington Ave (Wright St/Fair Oaks Ave to STH 30) – three travel lanes, bike lanes, median

[70] Streetlight bins speeds in 10 mph increments; this table shows speeds over 40 mph (5 mph above posted speed limit).

Figure 9 South Whitney Way (Science Dr to Mineral Point Rd) – three travel lanes, median

Figure 10 University Ave (Capitol Ave to Allen Blvd) – two travel lanes, bike lanes, median

Table 5 Street Width Requirements in Greater Madison MPO Area Communities (Local/Minor Streets Only)

Community	Street Width (ft)
City of Fitchburg	32-36
City of Madison	28-36
City of Middleton	32
City of Monona	33
City of Stoughton	28-34
City of Sun Prairie	33
City of Verona	36
Village of Cottage Grove	28-36
Village of Cross Plains	28
Village of DeForest	32
Village of McFarland	32
Village of Oregon	38
Village of Waunakee	28-32
Village of Windsor	22-28

Recommendations

Institute for Transportation Engineers (ITE)[71]

Appropriate street width varies based on context—the need for travel lanes, on-street parking, bike lanes, desired sidewalk width, and other factors.

Federal Highway Administration (FHWA)[72]

Consider using typologies other than functional classification to ensure appropriate facilities based on land use, mode priority, and place.[73]

National Association of City Transportation Officials (NACTO)[74]

Width should be based on roadway context, not just on functional classification. Lane widths of 10 feet are appropriate in urban settings, with a single 11-foot outside lane in each direction on designated truck or transit routes. Lanes of 9-9.5 feet in width may be appropriate in conjunction with a center turn lane. Parking lanes, 7-9 feet wide, should be demarcated with striping.

[71] *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (2010), 70-71.
[72] *Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks* (2016), 26-27.
[73] The City of Madison recently launched its Complete and Green Streets Project to develop a typology for streets based on land use context, mode priority, etc.
[74] *Urban Street Design Guide* (2013), 34-35.

Community Standards

Dane County

Roadway width should comply with official plans or maps; if not specified therein, right of way (ROW) width should meet or exceed the minimum width shown in Table 6.[75] [*Note: Dane County does not specify pavement width requirements*]

Table 6 Dane County Minimum ROW Width[76]

	Principal & Primary Arterials	Standard Arterials & Collectors	Local	Marginal Access
Minimum ROW Width	120	80	66	50

City of Fitchburg

The standard width for local residential streets is 32 feet, which may be increased by the City Engineer where necessary, for example a street serving for multifamily residential lots may be required to have a width of 36 feet.[77] The City Engineer shall determine the required width of collector and arterial streets based on anticipated land use, traffic volume, and applicable requirements.[78] The minimum width for two-way streets in mobile home parks ranges from 18 feet, if no on-street parking is allowed, to 32 feet, if parking is allowed on both sides; one-way streets must be a minimum of 14 feet wide, with an additional 7 feet provided for each parking lane.[79] Private roadways must be at least 24 feet in width.[80]

City of Madison

Minimum ROW for all proposed streets shall be the width specified in an approved plan, map, or development study. Otherwise, distributor collector and local streets will generally have a minimum pavement width of 32 feet (curb face to curb face); however, required widths for local streets may be reduced to as low as 26 feet, in very low density areas, or increased as high as 48 feet, when bicycle lanes are planned and parking will be allowed on both sides.[81]

City of Middleton

Local residential streets must be at least 32 feet wide, local industrial streets must be at least 40 feet wide, collector streets must be at least 36 feet wide, and marginal access (frontage) streets must be at least 24 feet wide.[82]

[75] 75.19(1)(k)
[76] 75.19(1)(o)
[77] 24-10(g)(2)d.1
[78] 24-10(g)(2)d.2
[79] 32-142(a)
[80] 27-433
[81] 16.23(8)(a)8.a
[82] 19.07(4)

City of Monona

Standard local streets should be 33 feet wide including curb and gutter; greater or lesser width may be approved by the Public Works Committee on a case-by-case basis.[83]

City of Stoughton

Minimum street width is 48 feet for arterial streets, 44 feet for collector streets, 38 feet for neighborhood connector streets and minor streets with parking on both sides, 34 feet for minor streets and cul-de-sacs with parking on one side, and 28 feet for minor streets and cul-de-sacs with no parking. The City may also consider other appropriate street design requirements; and, in cases where alternative requirements are identified in the Official Map or in plans produced by the City or the MPO, they may be substituted for adopted minimum street widths at the discretion of the City.[84]

City of Sun Prairie

Local and collector residential streets must be at least 33 feet wide; commercial, industrial, and other collector streets must be at least 39 feet wide; minimum street widths may be adjusted at the discretion of the City Engineer.[85]

City of Verona

The standard width is 36 feet for local streets and 40-44 feet for collector streets; these dimensions may vary based on site conditions and traffic volumes.[86]

Village of Cottage Grove

Minimum roadway widths should be as specified in the Comprehensive Master Plan, Official Map, or neighborhood study; if not otherwise specified there, minor streets should be 28-36 feet, collector streets should be 32-40 feet, and arterial streets should be 48 feet.[87] A minimum of an additional 4 feet should be provided for each bike lane, 11 feet for each combined bike/parking lane, and 13 feet when a separately striped bike lane (5 feet) and a parking lane (8 feet) will be added.[88]

Village of Cross Plains

All proposed streets and alleys should be the width specified by Comprehensive Plan, Official Map, or a neighborhood plan; if no width is specified in those documents, local, frontage, and collector streets should be a minimum of 18 feet wide and arterial streets should be a minimum of 40 feet wide, measured from curb face to curb face.[89]

Village of DeForest

Minimum width should follow that specified in the Master Plan, Official Map, or applicable development plan; if no width is specified in those documents, the minimum width from curb face to curb face is 32 feet for minor streets, 40 feet for collector streets, and 56 feet for arterial streets.[90]

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[83] 395-4.F(1)(b)
[84] 66-706
[85] 16.32.070.B
[86] Typical Roadway Detail, supplied by Eric Schulz, Assistant Public Works Director, City of Verona (12/15/2020).
[87] 274-42.A
[88] Village of Cottage Grove Comprehensive Plan (2020), 6-10.
[89] 83.79(a)
[90] 13.40(3)

Village of Maple Bluff

Village streets should have a minimum pavement width of 24 feet, unless reduced by the Village Board; streets less than 22 feet wide are not permitted.[91]

Village of McFarland

Minimum width should follow that specified in the Comprehensive Plan, Official Map, or Neighborhood Development Plan; if no width is specified in those documents, the minimum width from curb face to curb face is 32 feet for local streets, 44 feet for collector streets, 44-52 feet for arterial streets (from face of curb), with certain exceptions.[92]

Village of Oregon

Minimum width should follow that specified in the Master Plan or Official Map; if no width is specified in those documents, the minimum width from curb face to curb face is 38 feet for local streets, 42 feet for collector streets, and 50 feet for arterial streets.[93]

Village of Shorewood Hills

None specified.

Village of Waunakee

Minimum width should follow that specified in the Master Plan or Official Map; if no width is specified in those documents, the minimum width from curb to curb is 32 feet for local streets, 36 feet for collector streets, and 44 feet for arterial streets, with certain exceptions.[94]

Village of Windsor

The standard width is 44 feet for suburban collector roads, 36 feet for minor collector roads, 28 feet for suburban local roads, 24 feet for rural collector roads, and 22 feet for rural local roads.[95] Minimum width may be increased to 32 feet or greater when required under Town subdivision regulations or by state statute.[96]

Town of Middleton

Roads have a minimum width of 22 feet unless wider is required by Wis. Statute 82.50 or Town Code Chapter 15, if applicable; the minimum width for roads with one multimodal lane is 27 feet and 32 feet for roads with two multimodal lanes.[97]

Town of Westport

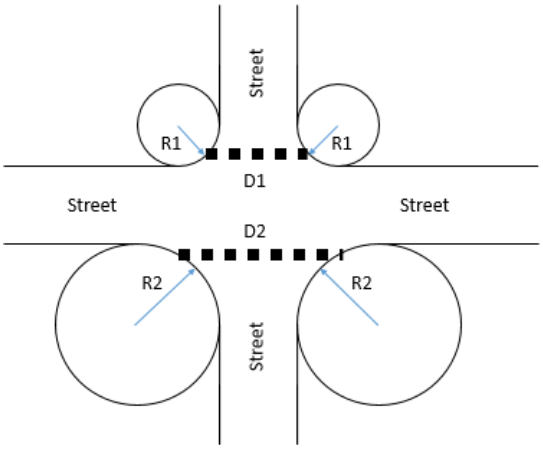
Roads have a minimum width of 22 feet unless wider is required by Wis. Statute 86.26 or applicable Town Subdivision Ordinance.[98] [*Note: Wis. 86.26 was renumbered to 82.50 in 2004*]

[91] 225-86.D(2)
[92] 56-139(w)
[93] 18.07(2)(h)
[94] 129-93(x)
[95] 42-33(c)
[96] 42-33(x)
[97] 8.02(1)(h)(ii)8.a
[98] 4-2-12(b)(8)

Curb Radius

Curb radius, the radius of the curb at street intersections, directly impacts vehicle turning speeds and pedestrian crossing distances, making it "low-hanging fruit" in terms of simple design modifications that can result in a safer transportation network for users of all modes. While considerations must be made to accommodate large vehicles, there is wide agreement among experts that this dimension should be minimized, and that it should generally not exceed 15 feet in urban areas. Only one surveyed local community meets this standard: the Village of Oregon, which uses a standard curb radius of 15 feet.

Figure 11 Curb Radius Effect on Crossing Distance



As illustrated in Figure 11, a smaller curb radius (R1) results in a shorter crossing distance (D1) than a larger curb radius (R2). This is true regardless of the width of the street being crossed. Additionally, larger curb radii enable higher vehicle turning speeds, further reducing intersection safety.[99]

[99] See the Radius of Curvature section of this report for more information about how horizontal curves impact vehicle speeds.

Table 7 Curb Radius Guidelines for Local Streets in Greater Madison MPO Area Communities, Summary

Community	Curb Radius (ft)
City of Fitchburg	20
City of Madison	20
City of Middleton	NA
City of Monona	NA
City of Stoughton	NA
City of Sun Prairie	Generally 20, may be reduced to 15
City of Verona	Per WisDOT standards; minimize
Village of Cottage Grove	25-30 generally
Village of Cross Plains	NA
Village of DeForest	20
Village of McFarland	20 generally
Village of Oregon	15 generally
Village of Waunakee	15-20 generally
Village of Windsor	25

Recommendations

Institute for Transportation Engineers (ITE)[100]

The smallest practical curb radii should be used when designing walkable urban streets.

National Association of City Transportation Officials (NACTO)[101]

Small curb radii are a requirement for compact intersections with safe turning speeds. In urban areas standard curb radii should not exceed 15 feet.

US Access Board[102]

Smaller curb radii generally provide more pedestrian space, including curb ramps, and shorter pedestrian crossing distances; benefitting all pedestrians, and potentially reducing delay for vehicles.

Community Standards

Dane County

Roads are designed in accordance with the Wisconsin Department of Transportation's Facilities Development Manual (FDM).[103] The FDM states that, while large trucks require large corner radii, the size of intersections should be kept to a minimum.[104]

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[100] *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (2010), 185.
[101] *Urban Street Design Guide* (2013), 117.
[102] *Planning and Design for Alterations* - Chapter 4 (2007).
[103] Pamela Dunphy, Deputy Commissioner, Dane County Highway Department (12/8/20).
[104] FDM 11-25-1.1

City of Fitchburg
None specified.

City of Madison
The standard curb radius for local streets is 20 feet; larger roads are designed on a case-by-case basis.[105]

City of Middleton
None specified.

City of Monona
None specified.

City of Stoughton
Curb radius is generally 15-20 feet for intersections of local streets.[106]

City of Sun Prairie
Curb radius is typically 20 feet for new development, but may be small as 15 feet where right-of-way is limited.[107]

City of Verona
The City follows the guidance in Wisconsin Department of Transportation's FDM.[108]

Village of Cottage Grove
Curb radius is generally 25-30 feet.[109]

Village of Cross Plains
None specified.

Village of DeForest
Curb radius is generally 20 feet in residential areas and 35 feet in commercial and industrial areas.[110]

Village of Maple Bluff
None specified.

Village of McFarland
Curb radius is generally 20 feet; larger where heavy truck traffic is anticipated.[111]

Village of Oregon
Curb radius is general 15 feet but may vary by roadway type.[112]

Village of Shorewood Hills
None specified.

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[105] Chris Petykowski, Principal Engineer, City of Madison (12/4/20).
[106] Kent Straus, Senior Associate, Strand Associates (1/29/21).
[107] Tom Veith, Assistant City Engineer, City of Sun Prairie (12/11/20).
[108] Eric Schulz, Assistant Public Works Director, City of Verona (12/15/20). See FDM 11-25-1.1.
[109] Kevin Lord, Village Engineer (MSA Professional Services), Village of Cottage Grove (12/4/20).
[110] Craig Mathews, Engineering & Surveying Department Manager (Vierbicher), Village of DeForest (12/7/20).
[111] Andrew Bremmer, Community & Economic Development Director, Village of McFarland (12/8/20).
[112] Elise Cruz, Director of Planning and Zoning Administrator, Village of Oregon (12/8/20).

Village of Waunakee

Curb radius is generally 15-20 feet for intersections of local streets.[113]

Village of Windsor

Standard curb radius is 40 feet for collectors, 25 feet for local streets.[114]

Town of Middleton

Pavement radius at typical intersections is 40 feet.[115]

Radius of Curvature

Radius of curvature requirements dictate the maximum horizontal curvature of roadways, and are most important for higher-speed roadways with limited stop controls, such as rural roads, limited-access highways, and certain other major urban arterials. However, the concept is also applicable to curb radii and controlling vehicle speeds through facility design. Radius of curvature, superelevation—the vertical rotation of the pavement on the approach to and through a horizontal curve—and design speed are the key determinants of whether vehicles are able to remain on the roadway through the curve. Although it directly effects safe driving speeds, this metric does not generally affect safety on typical urban local streets.

Figure 12 Radius of Curvature Guidelines for Local Streets in Greater Madison MPO Area Communities, Summary

Community	Radius of Curvature (ft)
City of Fitchburg	70
City of Madison	150
City of Middleton	200
City of Monona	NA
City of Stoughton	100
City of Sun Prairie	150
City of Verona	175
Village of Cottage Grove	100
Village of Cross Plains	150
Village of DeForest	150
Village of McFarland	100
Village of Oregon	100
Village of Waunakee	130
Village of Windsor	150

[113] Kent Straus, Senior Associate, Strand Associates (12/8/20).

[114] 42-33(c)

[115] Town of Middleton. *Design Requirements for Public Improvements* (2019)

Recommendations

Institute for Transportation Engineers (ITE)[116]

The appropriate radius of curvature for roads is context dependent; the AASHTO Green Book[117] suggests that the appropriate radius of curvature should generally be 200-510 feet for boulevards, 200-330 feet for avenues, and 200 feet for local streets.

Community Standards

Dane County

The minimum radius of curvature is 150 feet for local roads, 250 feet for standard arterials and collectors, and 450 feet for Principal and Primary Arterials.[118]

City of Fitchburg

The minimum radius of curvature is 70 feet for local streets, 250 feet for collectors, and 450 feet for arterials and highways.[119]

City of Madison

The minimum radius of curvature for local streets is 150 feet; the minimum radius of curvature for collector and arterial streets varies depending on number of lanes and speed limit (see Table 8), the City Traffic Engineer may require larger radii of curvature if special traffic conditions are likely to occur.[120]

Table 8 Minimum Radius of Curvature for Collector and Arterial Streets, City of Madison

Speed Limit	**Centerline Radius Two-Lane Roadway**	**Centerline Radius Four-Lane Roadway**
25 mph	300 feet	450 feet
30 mph	475 feet	625 feet
35 mph	700 feet	850 feet
Minimum radius of curvature for roads exceeding 4 lanes or that have speed limits above 35 mph, is determined by design criteria established in the latest edition of the AASHTO Green Book.[121]		

[116] *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (2010), 70-71.
[117] American Association of State Highway and Transportation Officials, *Policy on Geometric Design of Highways and Streets*, 7th ed. (2018).
[118] 75.19(1)(L)
[119] 24-8(d)(4)
[120] 16.23(8)(a)10
[121] American Association of State Highway and Transportation Officials, *Policy on Geometric Design of Highways and Streets*.

City of Middleton

The minimum radius of curvature is 200 feet for local residential streets, 320 feet for local industrial streets, and 450 for collectors; no minimum radius of curvature is provided for arterial streets, which are to be designed in accordance with accepted engineering standards.[122]

City of Monona

None specified.

City of Stoughton

The minimum radius of curvature is 100 feet for minor streets and 300 feet for arterial and collector streets.[123]

City of Sun Prairie

The minimum radius of curvature is 150 feet for local streets, 250 feet for collector streets, and 450 feet for arterial streets, unless smaller dimensions is approved by the City Engineer.[124]

City of Verona

The minimum radius of curvature is 175 feet for local streets, 300 feet for collector streets, and 700 feet for arterial streets.[125]

Village of Cottage Grove

The minimum radius of curvature is 100 feet for minor streets, 300 feet for collector streets, and 500 feet for arterial streets and highways.[126]

Village of Cross Plains

The minimum radius of curvature is 150 feet for local streets, 300 feet for collector streets, and 500 feet for arterial streets and highways.[127]

Village of DeForest

The minimum radius of curvature is generally 150 feet for minor streets and 500 feet for collectors.[128]

Village of Maple Bluff

None specified.

Village of McFarland

The minimum radius of curvature is 100 feet for local streets, 200 feet for collector streets, and 300 feet for arterial streets and highways.[129]

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[122] 19.07(4)
[123] 66-708
[124] 16.28.020.K
[125] 14-1-70(n)
[126] 274-42.E(1)
[127] 83.79(d)(1)
[128] Craig Mathews, Engineering & Surveying Department Manager (Vierbicher), Village of DeForest (10/9/20).
[129] 56-139(p)

Village of Oregon

The minimum radius of curvature is 100 feet for local streets, 200 feet for collector streets, and 300 feet for arterial and regional collector streets.[130]

Village of Shorewood Hills

None specified.

Village of Waunakee

The minimum radius of curvature is 130 feet for local streets, 300 feet for collector streets, and 500 feet for arterial streets.[131]

Village of Windsor

Standard curb radius is 300 feet for suburban and rural collector streets and 150 feet for minor collector, suburban local, and rural local streets.[132]

Town of Westport

The minimum radius of curvature is 150 feet for minor streets, 250 feet for collector streets, and 450 feet for arterial streets.[133]

[130] 18.07(2)(j)
[131] 129-93(p)
[132] 42-33(c)
[133] 10-2-70(o)

Sidewalks, Separated Paths, and Bike Lanes

Sidewalks are the primary type of active-transportation facility, as they are present on at least one if not both sides of most urban and many suburban streets. Streets that lack sidewalks result in pedestrians being required to walk in the roadway, which can be acceptable on local streets with low traffic volumes and speeds (Figure 13); however, this situation invites conflicts between vehicle drivers and non-motorized roadway users. Communities may allow or prohibit riding bicycles on sidewalks, and some communities build wide sidewalks in certain locations to accommodate both bicycles and pedestrians. Separated paths provide important low-stress routes and may provide access through sensitive areas such as wetlands (Figure 14), where roadways would not be appropriate, reducing the need for out-of-direction travel. Bike lanes are located within the roadway, generally at the far right of directional travel lanes, although contra-flow lanes, protected bike lanes, and other unique circumstances may result in bike lanes being located to the left of directional travel lanes. Bike lanes may be "protected" from traffic by bollards or similar devices, or physically protected from traffic by parking lanes (Figure 15).

Figure 13 Family Walking on a Street with no Sidewalk, Village of Shorewood Hills

Krystal Images Photo, © City of Madison and MPO 2020

Figure 14 Bicyclist on the Lower Yahara River Trail

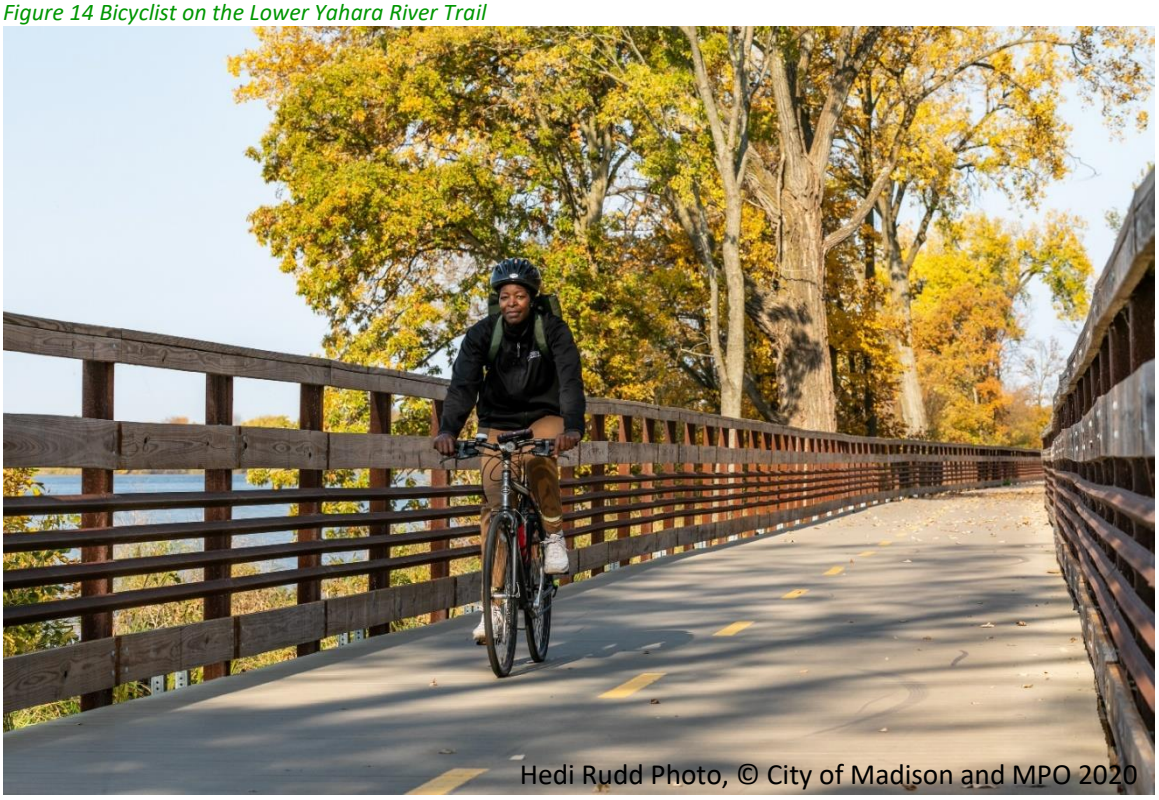

Figure 15 North Basset St. Protected Bike Lane and Sidewalk, City of Madison

Width of Bicycle and Pedestrian Facilities

Width is a key variable for bicycle and pedestrian facilities. Wider facilities are able to accommodate a greater volume of users and are better able to accommodate a variety of modes. For example, wider sidewalks are more comfortable for wheelchair users and cyclists, while also allowing those traveling by foot to walk two abreast. Wider bike lanes help to separate cyclists from motor vehicle traffic, making biking more comfortable. Table 9 details the general guidelines for sidewalk width in MPO area communities.

Table 9 Sidewalk Width Guidelines in Greater Madison MPO Area Communities, Summary

Community	Sidewalk Width (feet)
City of Fitchburg	5
City of Madison	5
City of Middleton	5
City of Monona	5
City of Stoughton	5
City of Sun Prairie	5
City of Verona	5
Village of Cottage Grove	4
Village of Cross Plains	5-6
Village of DeForest	4-5
Village of McFarland	5
Village of Oregon	5
Village of Waunakee	4-5
Village of Windsor	5

Recommendations

US Access Board[134, 135]

The Americans with Disabilities Act (ADA) calls for sidewalks to be at least 5 feet wide. However, sidewalk width may be reduced to an absolute minimum of 4 feet where site or geometric constraints preclude a wider sidewalk.

Institute for Transportation Engineers (ITE)[136]

Sidewalks should be a minimum of 5 feet wide in residential areas and 6 feet wide in commercial areas. Minimum widths of 9-10 feet are recommended in certain areas. Bicycle lanes should be at least 5 feet wide; 6 feet is recommended on streets without on-street parking, and at least 13 feet should be provided for shared bike/parking lanes.

[134] *Planning and Design for Alterations* - Chapter 5 (2007).
[135] *(Proposed) Public Rights-of-Way Access Guidelines* - Chapter R3 (2011).
[136] *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (2010), 65, 70-71, 78.

National Association of City Transportation Officials (NACTO)[137, 138]

Sidewalks should be a minimum of 5 feet wide, with at least 6 feet recommended. If directly adjacent to moving traffic, they should be a minimum of 8 feet wide, including 2 feet for hardware and snow storage. Sidewalks should generally be 5-7 feet wide in residential areas and 8-12 feet wide in downtown or commercial areas. Additional space for outdoor dining, street furniture, bicycle parking, utilities, and other amenities should be provided as appropriate.

Intersections present a particular hazard to bicyclists and pedestrians, so it is also important to consider the sufficiency of crossing facilities. Pedestrian islands should have a minimum width of 6 feet to provide an accessible waiting area; a minimum width of 8 feet is preferred. Bike queue areas should have a minimum depth of 6.5 feet; a depth of 10 feet or greater is desirable to accommodate higher volumes, as well as trailers and cargo bikes.

Community Standards

Dane County

None specified.

City of Fitchburg

The standard width is 5 feet for sidewalks and 10 feet for paths.[139]

City of Madison

Sidewalks must be 5 feet wide, except where the abutting existing sidewalk is 5 feet, 4 inches wide, when it shall match that width. No other widths are permitted except by order of City Engineer.[140] The standard width for separated paths is 10 feet but their width may vary from 8 to 17 feet depending on traffic volume.[141]

City of Middleton

Standard width for sidewalks is 5 feet.[142]

City of Monona

Standard width for sidewalks is 5 feet.[143]

City of Stoughton

Sidewalks must be at least 5 feet wide.[144] Multi-use paths must be at least 10 wide; pedestrian-only walkways must be at least 5 feet wide.[145]

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[137] *Urban Street Design Guide* (2013), 38-39, 43.
[138] *Don't Give Up at the Intersection* (2019), 11.
[139] Standard Detail Drawing 4.02, 70-71.
[140] 10.06
[141] Standard Detail Drawing 4.08 and Chris Petykowski, Principal Engineer, City of Madison (3/29/21).
[142] Shawn Stauske, Public Works Director and City Engineer, City of Middleton (1/27/2021).
[143] City of Monona Summary of Sidewalk Standards
[144] 66-712
[145] 66-711(a)

City of Sun Prairie

Sidewalks must be at least 5 feet wide; bikeways must be at least 10 feet wide.[146] Sidewalks must be a minimum of 8 feet wide along all sides of large developments fronting on streets in the Urban Commercial (UC) and Suburban Commercial (SC) districts.[147]

City of Verona

Sidewalks must be at least 5 feet wide in residential areas.[148] Common Council may require wider. In commercial or industrial areas, Board of Public Works may set width requirement.[149]

Village of Cottage Grove

Sidewalks must be at least 4 feet wide. The Village Board may require some sidewalks to be wider.[150]

Village of Cross Plains

None specified.

Village of DeForest

Standard width for sidewalks is 4 feet.[151] Standard width for pedestrian ways and multiuse paths is 5 feet and 10 feet, respectively.[152] Sidewalks in new developments must generally be at least 5 feet; the Village Board may require sidewalks of greater width in certain locations.[153]

Village of Maple Bluff

None specified.

Village of McFarland

Sidewalks must be at least 5 feet wide.[154]

Village of Oregon

Sidewalks must be at least 5 feet wide, except where existing sidewalks are wider or narrower.[155]

Village of Shorewood Hills

None specified.

Village of Waunakee

Sidewalks must generally be 5 feet wide in new developments; the Village Board may require wider sidewalks in some locations.[156] In existing residential areas, sidewalks must be at least 4 feet wide, and must be at least as wide as the existing sidewalk.[157]

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[146] 16.32.070.C.3
[147] 17.36.220.D.4.a
[148] 6-2-2(d)(7)
[149] 14-1-55
[150] 274-54
[151] 7.09.3.b
[152] 13.40.3.a
[153] 13.45.5.a and 13.45.5.b
[154] 56-139.w
[155] 8.02.2 and 8.02.7.a.3
[156] 129-150
[157] 58-47

Village of Windsor

Sidewalks must be at least 5 feet wide; the village board may require wider sidewalks in some locations.[158]

Town of Westport

None specified. Sidewalks are 5 feet wide and paths are 8 to 10 feet wide where present.[159]

Town of Middleton

Trail and Path width varies from 5 to 11 feet depending on type.[160] No sidewalks currently exist in the Town.[161]

Inclusion and Placement of Pedestrian and Bicycle Facilities

Sidewalks are generally required on both sides of all new streets constructed in area communities; however, in some instances a sidewalk may be required on only one side of a new street. This section details local rules for where sidewalks are required in new development and, where applicable, requirements for separated paths and bike lanes.

A notable barrier to the construction of sidewalks and other facilities by municipalities exists in Wisconsin state law due to a provision in the 2017 Act 59, which prohibits the use of eminent domain for pedestrian ways, bicycle lanes, and recreational facilities. This legal constraint has resulted in the construction of new streets with no provision for non-motorized transportation when the property owner was not a willing seller, such as the 2020 construction of Richard Davis Lane, between Darbo Drive and Webb Avenue, in Madison.

As shown in Table 10, most MPO area communities require sidewalks on both sides of streets in newly developed areas.

[158] 42-118
[159] Tom Wilson, Town Administrator, Town of Westport (2/9/2021).
[160] 15.49.1
[161] Barbara Roesslein, Town Clerk, Town of Middleton (2/10/21).

Table 10 Sidewalk Inclusion and Placement Requirements in MPO Area Communities - Summary

Community	Requirement
City of Fitchburg	Sidewalks on both sides of new streets
City of Madison	Sidewalks on both sides of new streets
City of Middleton	Sidewalks on both sides of new streets; paths may be required
City of Monona	NA
City of Stoughton	Sidewalks on both sides of new streets
City of Sun Prairie	Sidewalks on both sides of new streets
City of Verona	Sidewalks on both sides of new streets
Village of Cottage Grove	Sidewalks on both sides of new streets
Village of Cross Plains	As required by Village Board
Village of DeForest	Sidewalks on both sides of new streets; paths required where shown on adopted plans
Village of McFarland	As required by Village Board
Village of Oregon	Sidewalks on both sides of new streets
Village of Waunakee	Sidewalks on both sides of new streets; paths may be required where shown on adopted plans
Village of Windsor	Sidewalks on both sides of new streets

Recommendations

Institute for Transportation Engineers (ITE)[162]

Sidewalks should be universal in urban and suburban areas, including incremental development.

National Association of City Transportation Officials (NACTO)[163, 164]

Sidewalks should be provided on both sides of all streets in urban areas. In rural and suburban areas, a shared-use path may substitute for a sidewalk. Road shoulders should never be used as a substitute for sidewalks in urban areas.

For bicyclists, motor vehicle speed and volume are the most important factors to consider when selecting appropriate bicycle facilities. Even at a speed of just 20 mph, traffic volumes in excess of 1,000-2,000 vehicles per day can make cycling on shared roadways uncomfortable, and will deter many users. In locations where speeds exceed 35 mph, it is usually impossible to provide comfortable biking conditions without an off-street facility, such as a shared-use path. As shown in Table 11, to create biking conditions suitable for all ages and abilities, physical separation of cyclists from motor vehicle traffic is required on streets with speeds above 25 mph.

[162] Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010), 39.
[163] *Urban Street Design Guide* (2013), 40-41.
[164] *Designing for All Ages and Abilities* (2017), 7.

Table 11 Creating All Ages and Abilities Bike Facilities

Contextual Guidance for Selecting All Ages & Abilities Bikeways				
Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	*Any*	*Any*	**Protected Bicycle Lane, or Bicycle Path**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		*Any*	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

Source: *Designing for All Ages and Abilities*

Community Standards

Dane County

Requirements for sidewalks vary by road section as specified by County Highway Commission and affected town.[165]

[165] 75.20(4)

City of Fitchburg

Sidewalks are required on both sides of all new streets, with exceptions.[166] No new sidewalks or multi-use paths will be built in existing neighborhoods unless requested by neighborhood and agreed to by 75% of affected property owners.[167]

City of Madison

Sidewalks are required on both sides of all new streets and along existing streets on the subdivision perimeter.[168] Developers may also be required to provide off-site improvements such as bike, pedestrian, and transit improvements to existing streets.[169]

City of Middleton

Sidewalks are required on both sides of all collector streets. Sidewalks are required on one side of frontage roads. Requirements for local streets are determined by Plan Commission.[170]

City of Monona

No requirements specified.

City of Stoughton

Sidewalks are required on both sides of all new streets. If alternate requirements for a certain location, such as on-street bicycle lanes, are identified in the City's official map or plans, or in the MPO's plans, the City may substitute the alternative requirements for those listed.[171] Stoughton has adopted a policy to install sidewalks on both sides of all streets.[172]

City of Sun Prairie

Sidewalks are required on both sides of all streets in new developments, and on all streets and highways bordering or adjacent to the divided property; they may also be required along private streets.[173]

City of Verona

Sidewalks are required on both sides of all new streets and on existing streets, which serve as major pedestrian access routes to pedestrian traffic generators, such as business establishments, schools, parks multifamily residential developments, etc.[174]

Village of Cottage Grove

Sidewalks are required on both sides of all new collector streets within new subdivisions; the Village Board may require on minor streets serving gross density of at least 4 units per acre.[175]

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[166] 24-9.h
[167] Resolutions R-185-16 and R-69-17, see Appendices D and F of City of Fitchburg Bicycle and Pedestrian Plan 2017.
[168] 16.23.8.d.6.e-g
[169] 16.23.8.d.9
[170] 19.07(4), see Table 1.
[171] 66-706
[172] City of Stoughton Sidewalk Installation Policy
[173] 16.32.070.C.4
[174] 14-1-55(g)
[175] 274-54

Village of Cross Plains

Sidewalks or other pedestrian ways are required as determined by the Village Board.[176] Improvements, including sidewalks, must extend to the development boundary line.[177] Land division requires consideration of reserving future bike paths, hiking trails, walkways, and other public facilities.[178] Developers must ensure access to adjacent navigable waterways, and easements for pedestrian facilities may be required along navigable waterways.[179]

Village of DeForest

Sidewalks are required on both sides of all new collector and arterial streets, and on minor streets if designated in village plans; otherwise they are required on at least one side. Alternative pedestrian ways may be approved in lieu of sidewalks.[180] Bicycle and pedestrian trails are required where shown on adopted plans.[181]

Village of Maple Bluff

No requirements specified.

Village of McFarland

Sidewalks are required on both sides of all new major and collector streets, and may be required for other streets if the plat will significantly increase traffic volume, or if deemed necessary for safe pedestrian circulation.[182] The Village Board may require the developer to install bicycle paths and trails in accordance with Village-approved plans and specifications.[183]

Village of Oregon

Sidewalks are generally required on both sides of all streets with exceptions for roads in undeveloped or peripheral areas, abutting certain land uses, or where the Director of Public Works determines that sidewalk construction is impracticable.[184]

Village of Shorewood Hills

No requirements specified.

Village of Waunakee

Sidewalks are required on both sides of all new streets.[185] The Village Board may require construction of multi-use paths in new developments when in adopted plans.[186] The Village Board may impose special sidewalk requirements on nonresidential subdivisions.[187]

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[176] 83.98 and 83.108.b.1
[177] 83.93
[178] 83.12(c)
[179] 83.12(d)
[180] 13.45.5.a-c
[181] 13.45.6
[182] 56-108
[183] 56-118
[184] 8.02 and 18.09.b.1
[185] 129-150.a
[186] 129-160
[187] 129-197.c.3

Village of Windsor

Sidewalks are required on both sides of all roads within urban service area.[188]

Town of Middleton

Sidewalks may be required by Town Board in high-traffic areas or where necessary for pedestrian circulation.[189] Recreational trails shown on adopted plans must be dedicated at time of land platting/development.[190] No sidewalks currently exist in the Town.[191]

Town of Westport

May be required by Town Board in high-traffic areas or where necessary for pedestrian circulation.[192]

Snow Removal

Figure 16 Winnebago Street at Bashford Avenue, Madison

Krystal Images photo, © City of Madison & MPO 2020

All users benefit from well-maintained sidewalks that are clear of debris; but for some users snow, ice, and other obstacles are much more than an inconvenience. Curb cuts blocked by plowed snow and snow and ice covered sidewalks can pose insurmountable barriers to individuals with limited mobility. Communities generally require the owners or tenants to remove snow and ice from sidewalks along their properties, but these requirements vary widely between communities. Ensuring that sidewalks adjacent to public and undeveloped properties are cleared promptly can be particularly challenging.

[188] 42-118
[189] 15.28
[190] 15.46.1
[191] Barbara Rosslein, Town Clerk, Town of Middleton (2/10/2021).
[192] 10-2-55

Figure 17 Snow Covered Sidewalk - Darbo Drive Bridge at Starkweather Creek, Madison

As shown in Table 12, all area communities require that snow be promptly removed from sidewalks, usually within 24 hours following snowfall.

Table 12 Sidewalk Snow Removal Guidelines in the Greater Madison MPO Area, Summary

Community	**Sidewalk Snow Clearance Requirement**
City of Fitchburg	By 6:00 pm on the day following the event
City of Madison	By noon on the day following the event
City of Middleton	Within 24 hours following the event; every 24 hours for events longer than 24 hours
City of Monona	Within 24 hours following the event
City of Stoughton	By 9:00 am on the day following the event
City of Sun Prairie	Within 24 hours following the event, to a width of 4 feet
City of Verona	Within 24 hours following the event
Village of Cottage Grove	Within 24 hours of snowfall
Village of Cross Plains	To be kept clear
Village of DeForest	To be kept clear
Village of McFarland	Within 24 hours following the event, to a width of 4 feet
Village of Oregon	Within 24 hours following the event
Village of Waunakee	Within 24 hours following the event, to a width of 4 feet
Village of Windsor	Within 24 hours following the event; every 24 hours for events longer than 24 hours

Recommendations

Federal Highway Administration (FHWA)[193]

In areas with regular snowfall, regular plowing is critical to ensure safe year-round bicycling and walking. Bike lanes should receive the same level of winter maintenance as the rest of the street surface, and smaller vehicles should be made available to plow off-street bicycle and pedestrian facilities soon after snowfall. Property owners should be aware of their responsibility to ensure that sidewalks, walkways, and bike rack areas are accessible and clear of snow and ice.

Community Standards

Requirements listed below pertain to property owners' responsibilities for sidewalk snow and ice removal unless noted otherwise. Crosswalk ramps/openings are considered part of the adjoining sidewalk.

Dane County

No requirement specified.

City of Fitchburg

All snow and ice must be removed by 6:00 pm the day following the end of snowfall; if accumulated ice cannot be removed, it must be sprinkled with sand, salt, or other substance to enable safe passage by pedestrians.[194]

City of Madison

All snow and ice must be removed by noon the day following the end of snowfall; if accumulated ice cannot be removed, it must be sprinkled with sand, salt, or other substance to enable safe passage by pedestrians.[195]

Recommendations for bike lanes and separated paths: Bicycle Facility Maintenance Workgroup – Current State and Recommendations; Bicycle Facility Maintenance Workgroup Recommendations

City of Middleton

All snow and ice must be removed within 24 hours of the end of snowfall. If snowfall continues beyond 24 hours, snow and ice shall be removed at least once every 24 hours. If accumulated ice cannot be removed, it must be sprinkled with sand, salt, or a combination of the two until it can be removed.[196]

City of Monona

All snow and ice must be removed within 24 hours of the end of snowfall. If necessary, salt, ashes, or other material shall be used to prevent the sidewalk from being or becoming slippery.[197]

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[193] *Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks* (2016), 32-33.
[194] 27-114
[195] 10-28
[196] 8-07
[197] 395-8

City of Stoughton

All snow must be removed, and remaining ice sprinkled with a material to prevent slipping, by 9:00 am on the second day following the snowfall.[198]

City of Sun Prairie

All snow and ice must be removed within 24 hours of the end of snowfall to a width of 4 feet; ice that cannot be removed must be sprinkled with sand or salt to permit safe travel for pedestrians. Does not apply to sidewalks wider than 5 feet that are designated as bike paths or bicycle ways.[199]

City of Verona

All snow and ice must be removed within 24 hours of the end of snowfall.[200]

Village of Cottage Grove

All snow and ice must be removed within 24 hours of falling. Ice that cannot be removed must be sprinkled with a material that enable pedestrians to use the sidewalk safely.[201]

Village of Cross Plains

All snow and ice must be removed within 24 hours of the end of snowfall to a width of 4 feet. Ice that cannot be removed must be sprinkled with sand or salt to enable pedestrians to use the sidewalk safely.[202]

Village of DeForest

Sidewalks must be kept clear of snow and ice.[203]

Village of Maple Bluff

All snow and ice shall be cleared promptly each day. Ice that cannot be removed must be sprinkled with a material that enables pedestrians to use the sidewalk safely.[204]

Village of McFarland

All snow and ice must be removed within 24 hours of the end of snowfall to a width of 4 feet. Ice that cannot be removed must be sprinkled with sand or salt to enable pedestrians to use the sidewalk safely.[205]

Village of Oregon

All snow must be removed, and ice sprinkled with a material to prevent slipping, within 24 hours of the end of snowfall.[206]

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[198] 64-13
[199] 12.32.010
[200] 6-2-7
[201] 270-5
[202] 24.09
[203] 7.04(1)
[204] 192-6
[205] 53-301
[206] 8.07

Village of Shorewood Hills

All snow and ice removed within 24 hours of end of event. Ice that cannot be removed shall be sprinkled with a material that will enable pedestrians to use the sidewalk safely.[207]

Village of Waunakee

All snow and ice must be removed within 24 hours of the end of snowfall to a width of 4 feet. Ice that cannot be removed shall be sprinkled with sand or salt to permit safe travel by pedestrians.[208]

Village of Windsor

All snow and ice must be removed within 24 hours of the end of snowfall, and every 24 hours for snowfall events lasting more than 24 hours, to the full width of the sidewalk. Ice that cannot be removed must be sprinkled with sand, salt, or other suitable substance to prevent ice from being dangerous until it can be removed.[209]

Town of Blooming Grove

All snow/ice removed within 24 hours of end of event. Ice that cannot be removed must be sprinkled with sand, salt, or other suitable substance to prevent ice from being dangerous until it can be removed.[210]

Town of Westport

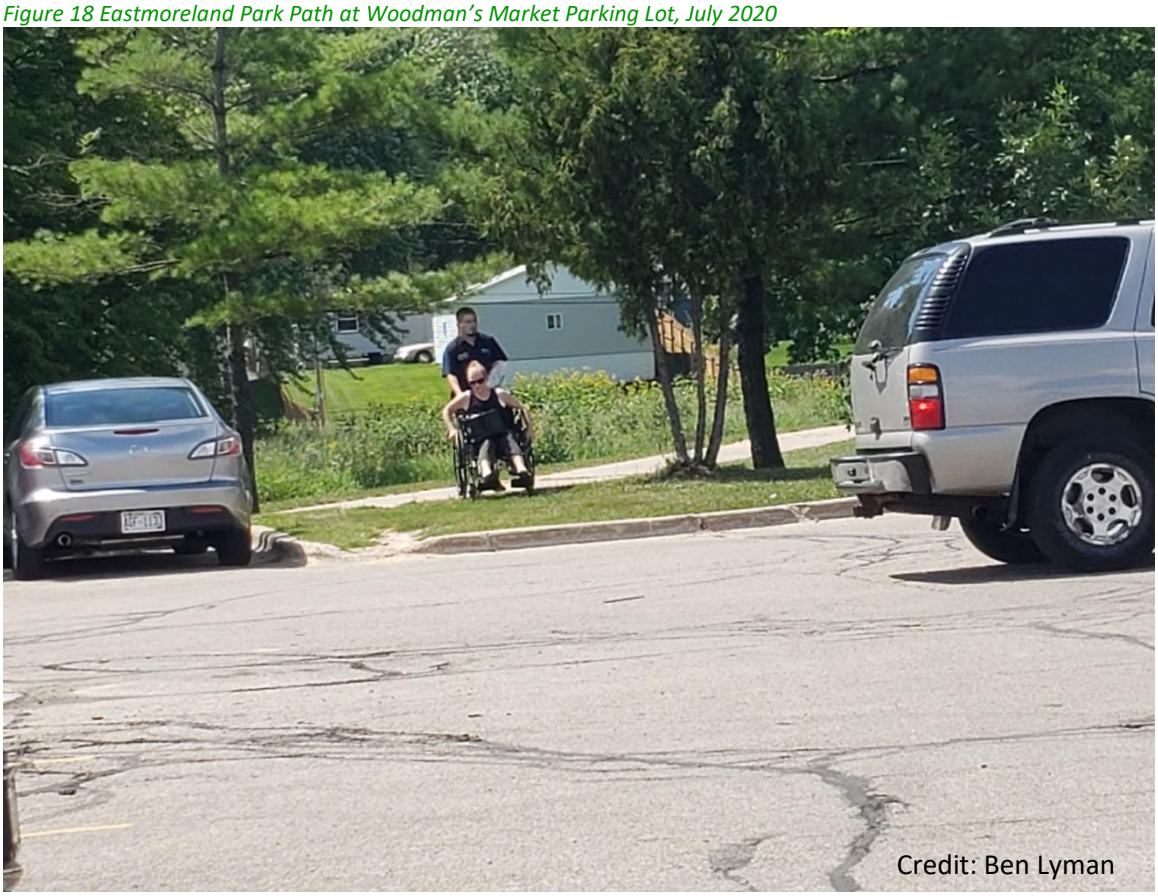
All snow and ice must be removed within 24 hours of the end of snowfall to a width of 4 feet. Ice that cannot be removed should be sprinkled with sand or salt to permit safe travel by pedestrians.[211]

[207] 11.06
[208] 58-320
[209] 42-367
[210] 6.04(1)
[211] 3-6-1

Non-motorized Internal Access and Circulation Standards

While the network of sidewalks, paths, and on-street bicycle facilities make up the bulk of the non-motorized transportation network, they do not address access and circulation within developments. Without adequate internal access and circulation standards, bicyclists and pedestrians are forced to navigate large parking lots and driveways to reach many key destinations.

Figure 18 Eastmoreland Park Path at Woodman's Market Parking Lot, July 2020



As an illustrative example of the need for internal network connections, until late 2020, there was no connection between the Eastmoreland Park Path, which connects to the Metro East Transfer Point, and the west side of Woodman's Market. Path users had to navigate an unpaved slope, an uneven curb, and a large parking lot to reach the store entrance. While a new paved connection between the parking lot and the path was constructed in the fall of 2020, there is still no clear route through the parking lot to the store. Figure 18 shows a wheelchair user on the path who had to request help from stranger to get from the path into the parking lot. Gaps in the non-motorized network such as this are often found at property lines, where adjacent developments have been constructed without due consideration for non-drivers.

Table 13 Non-motorized Internal Access and Circulation Standards, Summary

Community	Access and Circulation Standard
City of Fitchburg	NA
City of Madison	General
City of Middleton	NA
City of Monona	General
City of Stoughton	Large developments only
City of Sun Prairie	Large developments only
City of Verona	NA
Village of Cottage Grove	Large developments only
Village of Cross Plains	NA
Village of DeForest	NA
Village of McFarland	By zone or development type
Village of Oregon	NA
Village of Waunakee	By development type
Village of Windsor	General

Recommendations

Federal Highway Administration (FHWA)[212]

Safe and efficient routes linking front doors to sidewalks are critical parts of a cohesive non-motorized transportation network. Site design standards are a primary way that local governments can help ensure that people traveling by non-motorized means can safely traverse privately-owned lands between public facilities and their final destinations. Pedestrian-oriented setback requirements, parking location standards, and requirements that developers install sidewalks or other facilities for non-motorized travelers offer both place-making and safety benefits. Limiting the quantity of parking by reducing or eliminating parking minimums, or implementing parking maximums in certain areas, is another way municipalities can support their overall non-motorized networks.

Community Standards

Dane County

None specified.

City of Fitchburg

None specified.

City of Madison

There is a general requirement for conditional uses to provide internal circulation improvements, including those for pedestrians.[213] Master plans, required in the Mixed Use Center (MXC) zoning district, must detail the internal circulation of pedestrians and vehicles.[214] Separation–by paint or other means–

[212] *Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks* (2016), 5, 22-23.
[213] 28.183.6.a.5
[214] 28.066.3.a

is required between driveways and parking areas and pedestrian walkways in the Suburban Employment Center (SEC) zoning district.[215]

City of Middleton

The Plan Commission may require developers to provide for pedestrian and bike routes separated from motor vehicle traffic.[216]

City of Monona

There is a general requirement that parcels be laid out, with respect to access streets, in a way that ensures that bike, pedestrian, and motor vehicle traffic will not create undue congestion or hazards that are detrimental to neighborhood character.[217]

City of Stoughton

Conditional use or planned development applications for developments exceeding 80,000 square feet must be accompanied by a City-approved detailed neighborhood plan demonstrating the provision of multi-modal transportation components that support the objectives of the City's comprehensive plan.[218] For large retail and commercial developments, pedestrian and bicycle connections to existing and planned public pedestrian and bicycle facilities and adjacent properties are required; walkways are required from all building entrances to public sidewalks or other pedestrian/bicycle facilities.[219]

City of Sun Prairie

For commercial developments exceeding 25,000 square feet and located in the Urban Commercial (UC) and Suburban Commercial (SC) districts, 8-foot wide sidewalks are required along the entire street frontage, from sidewalks to customer entrances of buildings, and along buildings with customer entrances that abut the parking area.[220] In the Suburban Industrial (SI) district, pedestrian or bicycle connections must be provided to the public right-of-way.[221]

City of Verona

None specified.

Village of Cottage Grove

Group developments[222] must provide safe pedestrian access within the development, and connections to existing and planned pedestrian and bicycle facilities, including sidewalks, to all building entrances from public streets.[223]

Village of Cross Plains

None specified.

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[215] 28.086.4.b
[216] 8.07(4)m
[217] 480-9.H
[218] 78-205.11.f.4
[219] 78-205.11.f.6.h
[220] 17.36.220.D.4
[221] 17.36.230.D.1
[222] Includes developments involving multiple structures containing principal land uses on the same lot; combinations of 5+ residential units and multiple non-residential uses; and commercial, institutional, and office buildings or groups of buildings exceeding 40,000 square feet. 325-50(A)(1)
[223] 325-50(C)(6)(m)

Village of DeForest

None specified.

Village of Maple Bluff

None specified.

Village of McFarland

Developments in the Planned Development Infill District must plan pedestrian circulation to prevent pedestrian use of driveways and parking spaces, and must provide pedestrian access to public walkways.[224] Developments in the Planned Development District must provide for the safe and convenient movement of both vehicles and pedestrians.[225]The Village Board may impose special requirements regarding sidewalk design and construction in Commercial and Industrial subdivisions.[226]

Village of Oregon

None specified.

Village of Shorewood Hills

None specified.

Village of Waunakee

Planned Unit Developments must take into account the movement and safety of pedestrians.[227]

Village of Windsor

Developers must provide for safe and convenient circulation of motor vehicle, bicycle, and pedestrian traffic into, within, and between subdivisions.[228]

Large parking lots must have integrated pedestrian paths.[229]

Paths should be provided to accommodate safe and convenient pedestrian and bicycle travel within and between adjacent sites; pedestrian paths should be separate and distinct from vehicular travel lanes and lit for use at night.[230] Bicycle racks and amenities should be provided within all developments.[231]

[224] 62-66.e.2
[225] 62-67.a.4.c
[226] 56-144.b.3
[227] 133-895.6.a
[228] 42-33(a)
[229] 10-495(b)(6)
[230] 10-496(c)(1)
[231] 10-496(c)(2)

Cost Sharing Policy

Area communities almost always require developers to construct all roads and sidewalks in new developments at their own cost. The few exceptions to this requirement apply to larger commercial or industrial parks where improvements may be funded by special assessments or other mechanisms. A few communities may require developers to construct or fund off-site improvements, such as turning lanes, intersection capacity improvements, bus stops, or pull-outs.

Cost sharing requirements for sidewalk repair, or for the construction of new sidewalks along existing streets, vary widely among area communities. At one end of the spectrum, some communities require adjacent property owners to pay 100% of the cost of new sidewalks; at the other end of the spectrum, some communities pay the full cost these improvements with adjacent owners paying nothing. In the middle, remaining area communities split the cost of new sidewalk construction 50/50 with adjacent owners.

Two important considerations in deciding upon sidewalk funding strategies are: how they will impact public support for expansion of the sidewalk network, and the equity impacts of special assessments on property owners. One of the primary reasons that new sidewalks are opposed by homeowners in existing neighborhoods is the cost they may be required to pay for the construction of sidewalks abutting their property. This opposition often results in gaps in the sidewalk network, such as those shown in

Figure 19. Equity issues resulting from these different funding strategies are discussed in the Impacts of Funding Strategies section of this report.

Recommendations

Changing infrastructure construction funding mechanisms is typically politically difficult, as property owners who have already “paid their share” are likely to oppose paying for sidewalks or other improvements in other neighborhoods. However, some communities find that the change is worth the effort because it removes a barrier to constructing new sidewalks. In communities that use special assessments against property owners to fund all or part of sidewalk construction in existing neighborhoods, the financial impact to low- and moderate-income owners and renters should be mitigated through grants or other programs.

Whatever cost sharing scheme is adopted, community planners, engineers, and policy makers should thoughtfully engage and consult with affected neighborhood residents to promote project buy-in and to develop a sense of local ownership of the project. See the Impacts of Funding Strategies section of this report for more information and resources.

Community Standards

Dane County

None specified.

City of Fitchburg

Developers pay 100% of the cost for new streets with sidewalks.[232] The City and landowners each pay 50% of the cost for sidewalk reconstructions and repairs of sidewalks determined to be hazardous.[233]

City of Madison

In new neighborhoods, developers pay 100% of the cost for streets and sidewalks, including intersection area improvements.[234]

In existing neighborhoods, property owners pay 100% of the cost for new sidewalks (see Table 14); for sidewalk reconstruction and repair, costs are divided equally between the City and property owners.[235]

For the construction of separated paths, properties benefitting from the new paths are responsible for responsible for up to 100% of the cost.[236]

Table 14 Estimated Assessments for Typical Homeowner – Road Reconstruction and New Sidewalk, City of Madison[237]

Project Component	**Assessment**
Street improvements (curb and gutter and 4 feet of road pavement)	$ 5,500
New sidewalk installation	$ 3,500
Replace driveway apron	$ 1,500
Replace sanitary sewer lateral	$ 2,000
Total estimated assessment	$ 12,500
Less Safe Routes to School grant*	$ 1,750
Total estimated cost	$ 10,750

* The Safe Routes to School grant program provides 50% of an owner's sidewalk assessment for new installations. The goal of the program is to assist residents with assessment funding for newly constructed sidewalks. The program's scope includes projects that install sidewalk along existing streets, where the right of way was annexed prior to 1981 or where the properties were developed prior to being annexed to the City. The project must also be located in an area where the frontage is at least 70% single family or two family dwelling units. There is $100,000 allocated for 2021 projects citywide. *Source: City of Madison 2021 Bicycle and Pedestrian Capital Budget*

The City of Madison offers several programs to assist with special assessments. In addition to the Safe Routes to School grant for sidewalk construction, eligible homeowners who reside in their property, have limited household income, have limited available assets, and have at least 30% equity in the property may qualify for city financing of their assessments.[238] The Sidewalk Repair & Restoration Program allows the assessment to be paid over a five-year period. Special assessments for street reconstructions are generally paid back over an eight-year period, although in extenuating

[232] 24-9.h
[233] https://www.fitchburgwi.gov/229/Walking
[234] 16.23(9)(d)6
[235] 10.09
[236] 4.09.1
[237] "E. Dean Ave., Allis Ave., Seth Cir. And Tyler Cir. Reconstruction 2021," Public Informational Meeting, City of Madison Engineering Division (12/17/2020), 35.
[238] https://www.cityofmadison.com/engineering/documents/sidewalkBrochure031208.pdf

circumstances a 15-year period may be used.[239] At the time of this writing, the City of Madison is considering adjustments to their assessment policies.

City of Middleton

Developers pay 100% of the cost for new streets, sidewalks, and other bicycle and pedestrian facilities.[240] Property owners pay 100% of the cost for the reconstruction and repair of sidewalks along existing streets.[241]

City of Monona

The City generally pays 100% of the cost for new sidewalks in residential areas.[242]

City of Stoughton

Developers pay 100% of the cost for new streets, sidewalks, and multiuse paths.[243] The City and adjacent property owners each pay 50% of the cost for sidewalk repair, reconstruction, and the construction of new sidewalks, when required.[244]

City of Sun Prairie

Developers pay 100% of the cost for required public improvements, including streets and sidewalks.[245] Property owners are statutorily responsible for 100% of the cost for sidewalk repair and construction.[246] However, in recent years the City has paid 100% of the cost for new sidewalks and paths in existing neighborhoods—property owners have not been assessed for these types of improvements in approximately 30 years.[247]

City of Verona

Developer pays 100% of the cost for new streets, sidewalks, and other required public facilities.[248] The City pays 100% for new sidewalks in areas developed prior to sidewalk requirements. Property owners pay 100% of the cost for new sidewalks on streets reconstructed from rural highways (i.e., gravel shoulder, no curb and gutter) to standard city streets.[249] Property owners generally also pay 100% of the cost for reconstruction and repair of existing sidewalks.[250]

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[239] https://www.cityofmadison.com/sites/default/files/city-of-madison/engineering/documents/Estimated%20Schedule%20of%20Assessment%20Payments.pdf; Chris Petykowski, Principal Engineer, City of Madison (4/1/2021).
[240] 19.06(3)(d)2
[241] 8.03(1)
[242] 395-4.A
[243] 66-904
[244] 64-5
[245] 16.32.010
[246] 12.04.010.A
[247] Paul Esser, Mayor, City of Sun Prairie (1/6/2021); and, Philip Gritzmacher, Planner, City of Sun Prairie (12/4/2020).
[248] 14-1-50(a)
[249] 6-2-2(b)(1)
[250] 6-2-2(b)(2)

Village of Cottage Grove

Developers pay 100% of the cost for new streets, including sidewalks where required.[251] Costs for new sidewalks on existing streets, as well as reconstruction and repair, are generally divided equally, with the Village and property owners each paying 50%.[252]

Village of Cross Plains

Developers pay 100% of the cost for required capital facilities, including streets and sidewalks, within the boundaries of the proposed subdivision.[253] The Village pays 100% of the cost for sidewalk repair and construction in existing neighborhoods unless the Village Board directs that abutting property owners pay a portion of the cost.[254]

Village of DeForest

Developers pay 100% of the cost for sidewalks on for new streets.[255] The Village pays 100% of the cost for sidewalk repair, replacement, and the construction of new sidewalks in existing neighborhoods.[256]

Village of Maple Bluff

Property owners pay 100% of the cost for the construction of new sidewalks; repair costs may be shared between the Village and property owners as determined by the Village Board.[257]

Village of McFarland

Developers pay 100% of the cost for new streets and sidewalks, where required.[258] The Village Board may require the developer to install bicycle paths and trails.[259] Property owners' share of the cost for sidewalk repairs undertaken by the Village is determined by the Village Board following a public hearing.[260]

Village of Oregon

Developers pay 100% of the cost for new streets, including pedestrian walkways and street lights.[261] Property owners pay the cost for the construction, repair, and maintenance of sidewalks in existing neighborhoods.[262]

Village of Shorewood Hills

None specified.

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[251] 274-54.A
[252] 270-2.A
[253] 83-20.a
[254] 61.04
[255] 13.40
[256] 7.08.2
[257] 192-2
[258] 56-103(a)
[259] 56-118
[260] 53-72
[261] 18.09(9)(b)1
[262] 8.02(7)

Village of Waunakee

Developers pay 100% of the cost for new streets, including sidewalks and any other bicycle or pedestrian facilities required by the Village Board.[263, 264] Property owners in existing neighborhoods pay 100% of the cost for sidewalk construction.[265] When grade is changed by construction of curb and gutter, the Village pays 100% of the cost for new sidewalk construction. The cost of sidewalk repairs is shared evenly between property owners and the Village.[266]

Village of Windsor

Developers pay 100% of the cost for new streets, including sidewalks where required.[267, 268] The Village pays 100% of the cost of new sidewalks in existing neighborhoods.[269]

Town of Middleton

Developers pay 100% of the cost for new streets.[270] Developers must pay for streets of greater than standard width when the Town requires the addition of multimodal lanes.[271] Developers must also provide the Town with easements or deeds for pedestrian ways, where required.[272] At the discretion of the Town Board, the cost of required improvements in commercial and industrial areas may be financed through special assessments.[273]

Town of Westport

Developers pay 100% of the cost for new streets; in the case of required improvements in commercial or industrial areas, the cost of required improvements may be financed through special assessments.[274] Developers must also provide the Town with easements or deeds for pedestrian ways, where required.[275] Developers may be required, at the Town Board's discretion, to install sidewalks in certain locations; however, the Town does not currently require the construction of sidewalks.[276, 277]

[263] 129-148(a)
[264] 129-150(a)
[265] 58-46(a)(1)
[266] 58-46(a)(3)
[267] 42-85(a)
[268] 42-118
[269] Jamie Rybarczyk, Deputy Administrator and Director of Economic Development, Village of Windsor (10/1/2021).
[270] 802(1)(e)
[271] 8.02(1)(h)(ii)8.a
[272] 8.02(1)(h)(v)
[273] 15.23(1)
[274] 10-2-50(a)
[275] 4-2-12(e)
[276] 10-2-55
[277] Robert Anderson, Utility, Finance, and I.S. Manager; Deputy Clerk Treasurer, Town of Westport (2/9/2021).

Figure 19 Where the sidewalk ends – Eastmoreland neighborhood, Madison (left), and Worthington Park neighborhood, Blooming Grove (right)

As shown in Table 15, there is wide variation between MPO area communities in their cost-sharing policies for new sidewalks in existing neighborhoods.

Table 15 Cost Sharing Policy for New Sidewalks in Existing Neighborhoods in Greater Madison MPO Communities

Community	**Public/Private**
City of Fitchburg	50%/50%
City of Madison	0%/100%
City of Middleton	0%/100%
City of Monona	100%/0%
City of Stoughton	50%/50%
City of Sun Prairie	100%/0%
City of Verona	100%/0%
Village of Cottage Grove	50%/50%
Village of Cross Plains	100%/0%
Village of DeForest	100%/0%
Village of McFarland	Per Village Board
Village of Oregon	0%/100%
Village of Waunakee	0%/100%
Village of Windsor	100%/0%

Equity Considerations

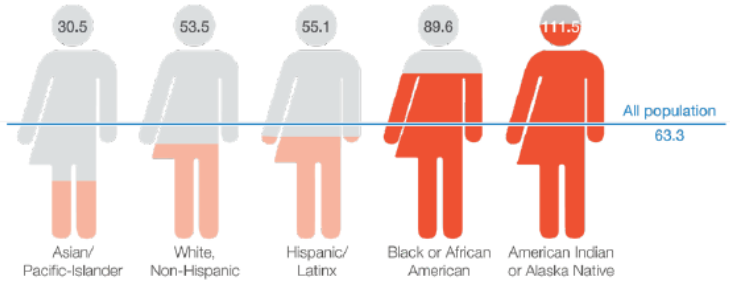
The first step toward ensuring that our transportation networks work well for all users is to understand how certain groups have been left out of transportation decision making in the past, how these past decisions continue to affect our communities, and the perspectives of historically marginalized populations on our current transportation challenges.

The following sections delve into some of the most important bicycle and pedestrian transportation-related equity issues: current disparities in pedestrian safety, the continuing impacts of redlining, funding and gentrification, and public participation and project selection. Finally, equity-related project selection criteria adopted by the MPO is described as an example of how equity considerations are currently being integrated into transportation planning in the Madison area.

Inequity in Pedestrian Safety

Race and income are both linked to pedestrian crash risk. As shown in Figure 20, Black/African American and American Indian/Alaska Native people face a far greater risk of being struck and killed while walking than do people of other racial and ethnic backgrounds.

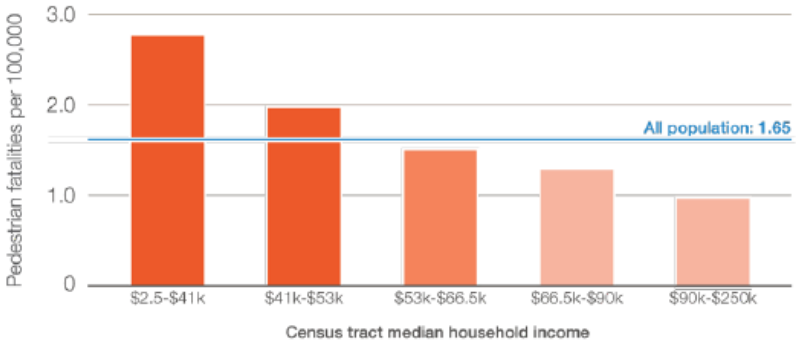
Figure 20 Relative Pedestrian Danger by Race and Ethnicity (2010-2019)



Source: Dangerous by Design

As shown in Figure 21, low-income pedestrians face a similarly elevated risk from motor vehicle crashes. There are more than twice as many pedestrian fatalities per capita in census tracts with the lowest median income as there are in census tracts with the highest median income.

Figure 21 Pedestrian Fatalities per 100,000 People by Census Tract Median Household Income, 2010-2019



Source: Dangerous by Design

Whatever the reasons for the racial and income-related disparities in pedestrian safety, change is needed to improve pedestrian safety for those who currently bear an outsized share of the risk inherent

in our current system. Part of the solution is understanding the technical aspects of how we can design our infrastructure to better protect vulnerable users, which is the focus of the earlier sections of this report. The other part is understanding non-technical aspects of the situation—how did these disparities develop, and how can we improve outreach to and understanding of historically marginalized communities so that we can serve them better in the future?

Continuing Impacts of Disinvestment

The higher levels of risk faced by low-income and minority pedestrians is due in part to the transportation infrastructure in their communities. Low-income and minority communities have often lacked the political power to push back on undesirable transportation plans and projects or to successfully advocate for new amenities.

While there have always been disparities between neighborhoods in terms of public investment, the mid-twentieth century accelerated these disparities with the growth of the modern home mortgage in the wake of the Great Depression. The Home Owners' Loan Corporation (HOLC) was established in 1933 to refinance mortgages in default and expand home-buying opportunities. HOLC soon began preparing "Residential Security" (a.k.a. "redlining") maps to help banks assess the risk associated with loans in different neighborhoods. Unfortunately, the HOLC agents who made the maps followed the "rule" that neighborhoods populated by working class people, African Americans, and immigrants presented greater risk to lenders than higher income White neighborhoods, and were generally categorized as "hazardous" or "declining", making it difficult or impossible for residents to secure home loans.[278] This lack of opportunity affected both the residents, who were unable to benefit from rising home values over time, as well as their neighborhoods, which were unable to draw new investment.

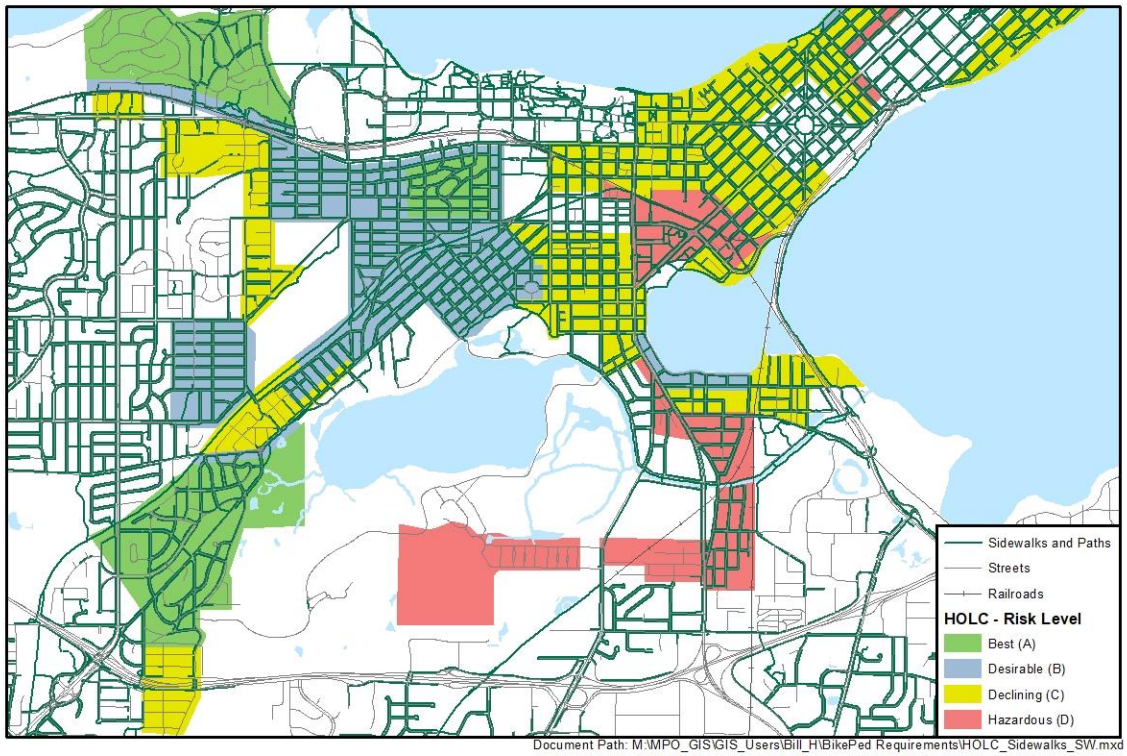
The impacts of the systemic disinvestment in working class and minority neighborhoods set in motion by the HOLC redlining maps continue to be felt today. Many of the neighborhoods classified as "hazardous" or "declining" by the HOLC Residential Security map of the Madison area continue to lag behind neighboring areas in pedestrian and bicycle infrastructure. These gaps negatively affect access to safe active transportation routes, property values, and accessibility for persons experiencing disabilities.

Figure 22 and Figure 23 show existing streets and sidewalks and the HOLC risk categories. While sidewalks are prevalent downtown and in the UW Campus area, more peripheral neighborhoods that were categorized as "hazardous" or "declining" appear to have less developed sidewalk networks. The villages of Maple Bluff and Shorewood Hills, both of which were rated "best," are notable exceptions to this pattern. As small, wealthy, lakefront villages with limited through traffic, they would likely be able to install additional sidewalks if warranted by pedestrian safety conditions.

See the Additional Maps section, beginning on page 76, for more maps comparing HOLC risk categories and the present-day active transportation system.

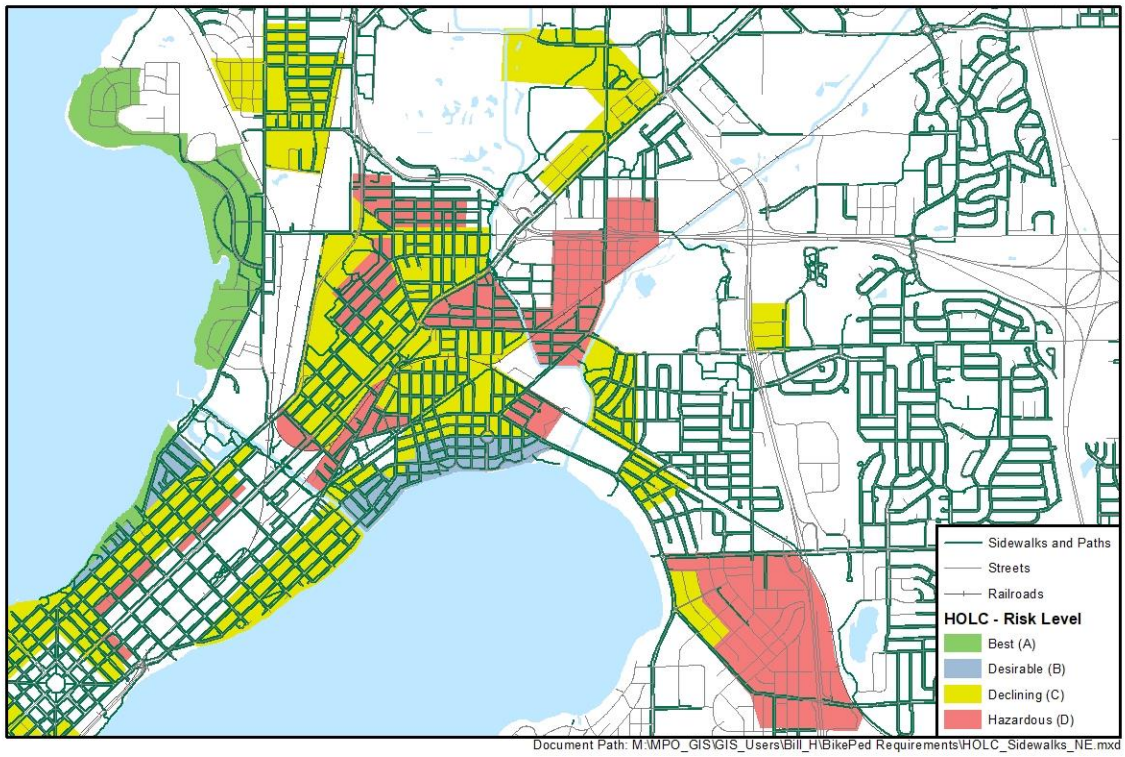
[278] Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed April 28, 2021, https://dsl.richmond.edu/panorama/redlining/#loc=12/43.076/-89.468&maps=0&city=madison-wi&text=downloads.

Figure 22 Historic HOLC Residential Security Map Zones and Existing Sidewalks - South[279]



[279] Ibid.

Figure 23 Historic HOLC Residential Security Map Zones and Existing Sidewalks - Northeast[280]



The following two maps,

Figure 24 and Figure 25, show the extent of sidewalk in Tier 1 Environmental Justice Areas (EJAs). Tier 1 EJAs are neighborhoods that have been recently identified by the MPO as having significantly higher concentrations of people from racial and ethnic minorities and low-income households than the metropolitan area at large. Many of the Tier 1 EJAs are in areas that were deemed "declining" or "hazardous" by HOLC over 80 years ago.

[280] Ibid.

Figure 24 Sidewalks in Tier 1 Environmental Justice Areas – South

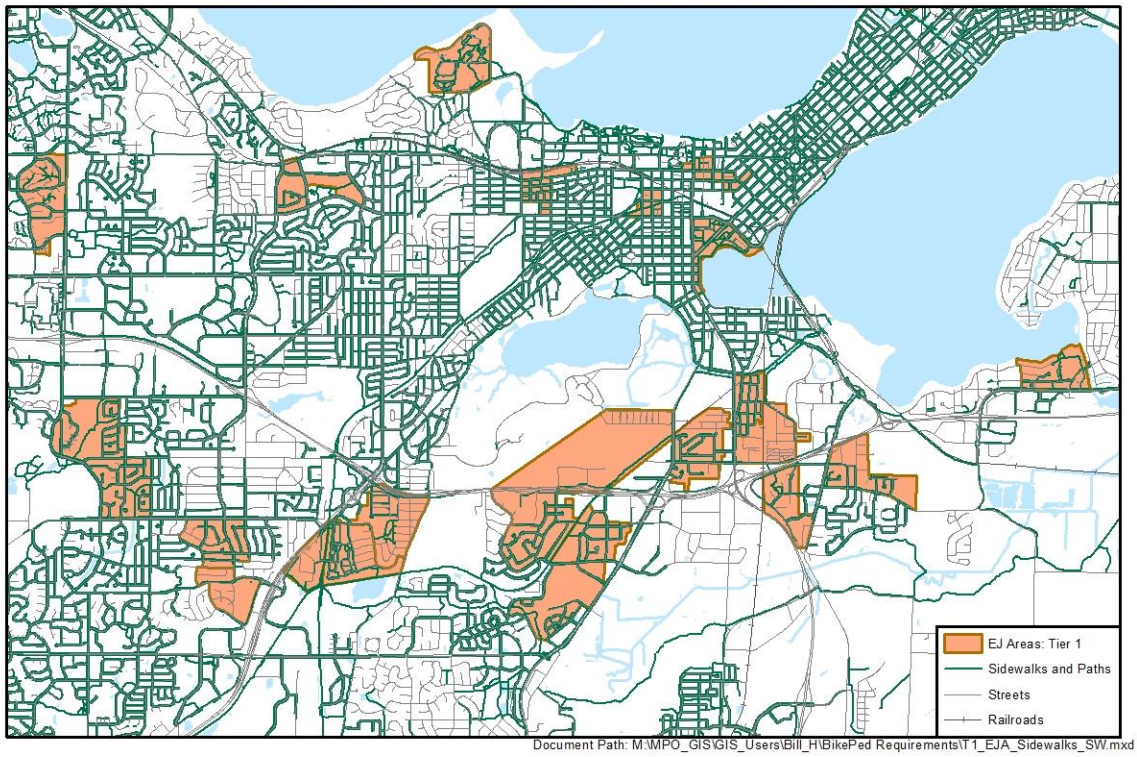
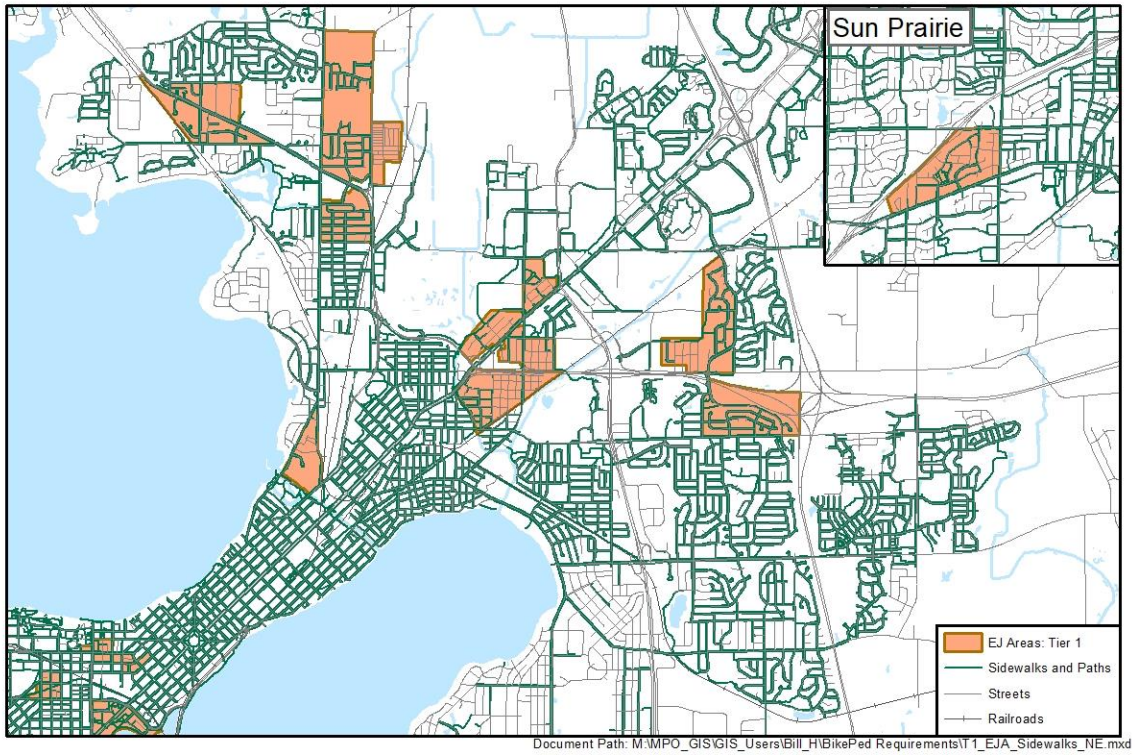


Figure 25 Sidewalks in Tier 1 EJAs – Northeast



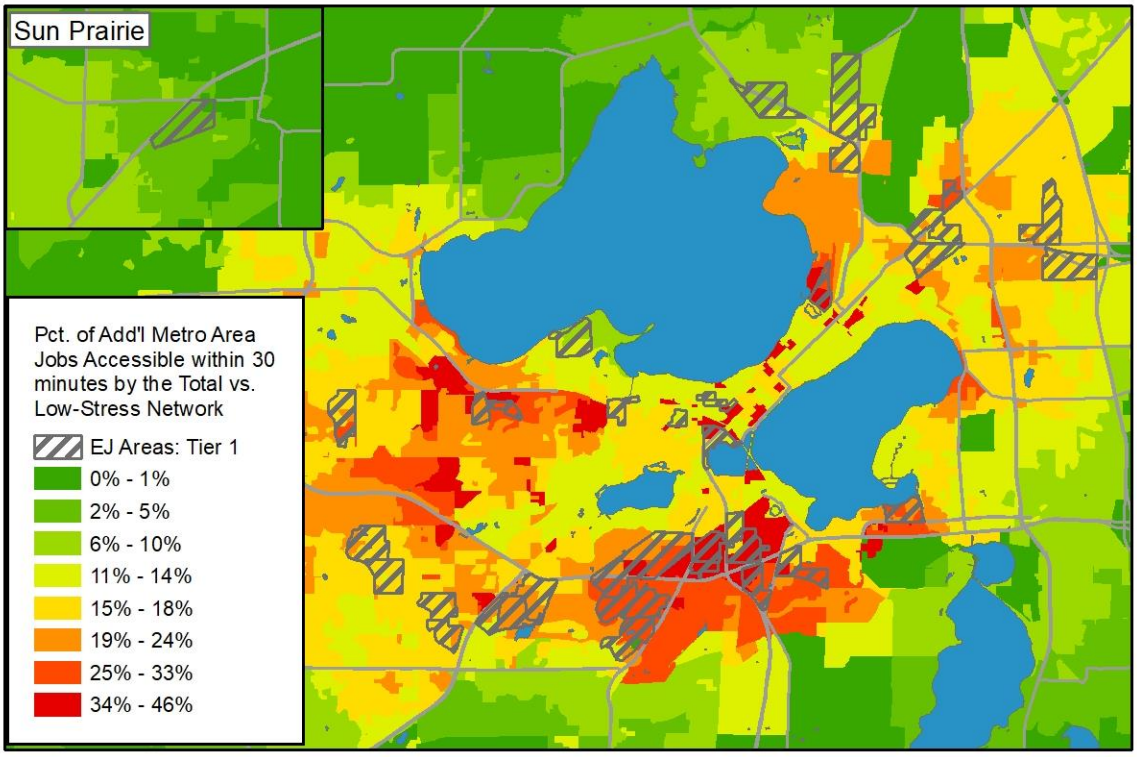
The ongoing impact of disinvestment can also be seen in the low-stress bicycle network. The low-stress network comprises roads and paths on which most people would feel comfortable riding a bike.[281] Heavily trafficked and multilane roadways that make bicycling uncomfortable create barriers in the low-stress network that dissuade people from making trips by bike.

Figure 26 shows relative low-stress job accessibility in Tier 1 EJAs. Relative low-stress job accessibility indicates how many more jobs in the MPO area would be accessible by bike within 30 minutes if all roads were low stress, as a percentage of total MPO area jobs. Green areas are those where new low-stress routes would do little to improve job accessibility, generally because those areas are beyond a 30-minute bike ride from most area jobs. Orange and red areas are those where new low-stress routes could give residents bicycle access to 19% to 46% of MPO area jobs that they cannot currently reach on the low-stress bicycle network.

Many Tier 1 EJAs are located in areas shown in orange or red on

Figure 26, indicating that the lack of appropriate bicycle infrastructure is impeding bicycle access to jobs from these areas. With proper infrastructure, residents in some of the Tier 1 EJAs in south Madison and north Fitchburg would be able to reach an additional 25% to 46% of all MPO jobs on low-stress bike routes.

Figure 26 Relative Low-Stress Job Accessibility and Tier 1 Environmental Justice Areas



[281] For more information on the methodology behind the level of traffic stress methodology, see the *MPO's Low-Stress Bicycle Network Report*.

Impacts of Funding Strategies

As described in the Cost Sharing Policy section of this report, the majority of area communities require the adjacent property owner to pay for 50-100% of the cost of sidewalk construction and repair in existing neighborhoods that lack sidewalks. This holds true, at least statutorily, for communities nationwide; however, in practice most communities do not follow through on assessing homeowners for these improvements. The most common reasons cited by communities for not using special assessments are the time required and political considerations, a desire for a more equitable funding mechanism was another common reason.[282]

Large special assessments can be a major burden on working class families. In the City of Madison, the typical assessment to the property owner for the construction of 100 feet of new sidewalk, even after receiving a 50% Safe Routes to School grant, is $1,750. A homeowner's total assessment for a typical sidewalk replacement and road reconstruction project, including sewer laterals, curb, etc. is $10,750.[283] For low-income property owners, this could be a disastrous addition to the household budget. Even spread over an 8-year period, paying the $1,343.75 annual assessment (not including interest) would require over 89 hours of work each year at a $15-per-hour job—before taxes.

Sidewalks and safe non-motorized transportation networks are important to everyone, and a more connected network benefits the whole community. Assessing improvement costs to adjacent property owners is politically expedient, and "fair" in that each property values are theoretically linked to neighborhood walkability; however, requiring adjacent property owners to pay for improvements:

- Ignores the larger benefit of a complete and interconnected non-motorized network to the entire community;
- Disproportionately impacts lower-income property owners and renters; and,
- Perpetuates the lack of those improvements where the majority of adjacent property owners cannot afford them.

In addition to the cost of the improvement, it is important to recognize that access to the active transportation network improves property values[284], which in turn increase property taxes. While providing safe transportation routes is a critical need in areas which lack those routes, planners, engineers, and policy makers should recognize that providing improved facilities—especially bike lanes—is often viewed by residents of predominantly minority areas as a sign of coming gentrification and displacement.[285]

These concerns can be mitigated through intentional consideration of the needs and concerns of those who are being asked to agree to projects adjacent to their properties, and through policies and programs intended to minimize the risk of gentrification and displacement.

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[282] Huber et. al., *Guide for Maintaining Pedestrian Facilities for Enhanced Safety Research Report* (2013), Federal Highway Administration.
[283] See Table 14 on page 54 for a list of typical assessment costs.
[284] Consider the real estate company-owned tool www.walkscore.com, which uses walk, bike, and transit access to score properties.
[285] See *Bike Lanes are White Lanes: Bicycle Advocacy and Urban Planning*, Melody L. Hoffmann, University of Nebraska Press 2016.

Preventing Gentrification and Displacement

Development activity, economic growth, and vibrant city life are usually seen as signs of a successful community, and the assumption is usually that that success will be broadly shared. However, to local residents living in underinvested areas, infrastructure improvements such as new or improved bike and pedestrian facilities may be seen as signals that their community has attracted the attention of developers and elected officials as a "hot" neighborhood. They may be concerned that the improvements to their communities are being made in order to roll out the red carpet for new residents, rather than to benefit the people who already live there. Low-income people want to see their communities improve, they just want to feel like the improvements are directed towards helping the neighborhood's current residents. In order to build trust and support within the community for infrastructure improvements, planners and active transportation advocates should reach out to community members in churches, community centers, schools, and other familiar places to collectively develop proposals to meet local needs. Planners and active transportation advocates also need to engage with residents' concerns regarding displacement and the need for affordable housing. Addressing community concerns, particularly those related to housing affordability and displacement, in conjunction with planning efforts related to active transportation can help to build community support and ensure broadly beneficial outcomes.[286]

Although the dynamic between transportation network improvements and displacement through gentrification is complex and still largely unknown, it is clear that there is a perception that network improvements cause, or at least predict, impending gentrification. Equitable development—the goal of which is to ensure communities get the investments they need while making sure that everyone benefits—offers one potential solution to the problems of gentrification and development. Mixed-income housing with convenient access to transit is a key component of equitable development. Affordable housing near transit offers low-income residents the dual benefits of lower housing and transportation costs. The increasing popularity of walkable neighborhoods with good transit access has meant that investments in bike, pedestrian, and transit networks may increase area housing costs and potentially displace vulnerable residents without government intervention to preserve or expand affordable housing through grants, developer subsidies, or other means.[287]

The City of Madison is currently grappling with these issues as housing prices soar and the stage is being set for a variety of transportation improvements, including a new bus rapid transit (BRT) system. The City's 2019 report, *Equitable Development in Madison: An assessment of factors contributing to displacement and gentrification*, provides a displacement assessment of neighborhoods within the City of Madison and its immediate surroundings, as well as strategies to stabilize neighborhoods and preserve existing affordable housing. This report can help inform other communities' assessments of and revisions to their own policies and strategies to reduce or prevent displacement and gentrification of areas that are subject to infrastructure investment. Strategies that may be appropriate for mitigating

[286] Zimmerman et al., *At the Intersection of Active Transportation and Equity: Joining Forces to Make Communities Healthier and Fairer* (2015), Safe Routes to School National Partnership.
[287] Ibid.

the impacts of improved transportation access include real estate transfer taxes, resident ownership models, homeownership programs, and commercial stabilization.[288]

Environmental Justice in the MPO's Project Selection and Prioritization Metrics

In order to ensure that projects selected for funding with federal dollars help meet the environmental justice and equity-related goals adopted in the Regional Transportation Plan[289], the MPO has engaged in reviewing and revising project scoring criteria for several funding programs in recent years. The Transportation Alternatives Program (TA or TAP) project selection criteria were revised in 2019, and the Surface Transportation Block Grant – Urban (STBG-U) criteria were revised in 2021. Changes to project scoring criteria for both funding programs included increased weight for projects improving safety and for projects improving transportation access for MPO-identified Environmental Justice Areas.[290]

The 2019 changes to TA project selection criteria for infrastructure projects increased the percentage of points earned by proximity to Environmental Justice and areas with health disparities from 4% to 12%:[291]

> Environmental Justice and Health Equity – 12%
>
> - The project improves pedestrian/bicycle access for environmental justice areas. [These include areas with concentrations of low income and minority populations and households with no motor vehicle available. See maps in Appendix D – EJ Analysis of the current *Transportation Improvement Program for the Madison Metropolitan Area & Dane County*.]
> - The project is located in an area with health disparities and limited access to active transportation options.[292]

The 2021 changes to the STBG-U project selection criteria similarly increase the percentage of points that can be earned by projects serving Environmental Justice areas; the weight of this criteria varies between 15% for bicycle and transit infrastructure projects, and 10% for road and ITS projects, all of which are increased weights from the currently-adopted 8% for bike projects and 7% for all other project types.

The City of Madison is currently drafting equity-related project selection criteria of its own.[293]

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[288] See page 23-24.
[289] RTP 2050 Chapter 4 Goals and Policies, p. 4-5.
[290] TAP criteria consider project proximity to Tier 1 EJAs; for STBG-U criteria, the MPO mapped a second tier of non-priority Environmental Justice areas.
[291] December 4, 2019 MPO Policy Board meeting packet p. 65-74.
[292] See Figure 10-3, page 122, of the Bicycle Transportation Plan.
[293] Transportation Project Scoring presentation (February 15, 2021), City of Madison Transportation Policy and Planning Board.

Accessibility – Curb Ramps and More

Sidewalks form the primary network of accessible routes for people with disabilities, and the network needs to be continuous for it to function for these users. As with many other design criteria, curb ramps which provide an accessible transition between street crossings and sidewalks must be designed for the unique context of that intersection. Sidewalk accessibility goes beyond creating infrastructure that can be navigated by wheelchair users. Ensuring that sidewalks serve the greatest possible portion of the community entails understanding and serving the needs of people at all ages, with all manner of disability, at all income levels.

Figure 27 Blind Pedestrian in Crosswalk, City of Madison

The use of audible crosswalk signals is an important component of an accessible pedestrian network. MPO staff conversations with visually-impaired persons indicate that traffic noise may obscure audible signals, and that simple buzzer-style sounds can cause confusion; signals which state "the walk signal is on to cross [street name]" are more helpful. However, these audible signals are of less use for those who are unfamiliar with the area or who do not speak English.

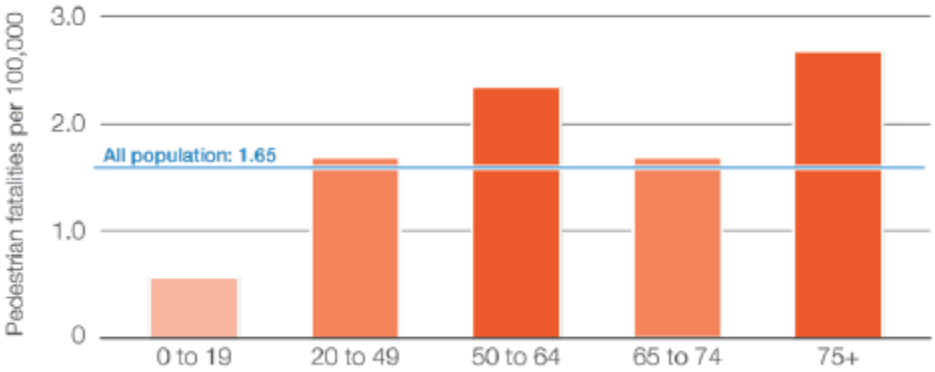
Pedestrian countdown timers should accommodate slower crossing times required by some seniors and individuals experiencing disabilities. Crossing signal timing should allow for pedestrian walking speeds of 3.5 feet per second (1.1 meter per second) or less.[294]

While the national Fatality Analysis Reporting System (FARS) does not collect complete disability information for crash victims—for example, grouping wheelchair users with skateboarders and baby carriages—it does collect information on the age of crash victims. Given that many seniors experience

[294] US Access Board, Proposed Rights-of-Way Accessibility Guidelines, R306.2.

disabilities, data on the age of crash victims helps to illuminate the disproportionate danger experienced by individuals experiencing disabilities, as shown in Figure 28.

Figure 28 Pedestrian Fatalities per 100,000 People by Age, 2010-2019



Source: Dangerous by Design

The MPO has mapped the pedestrian network in Dane County, including the presence of or need for curb cuts/ramps for accessible routes. The maps in this section show the existing sidewalk and path network (green lines) and locations lacking needed curb ramps. Red dots indicate places where there is no immediately adjacent accessible route and wheelchair users would need to backtrack; they are also used in places where a legal crosswalk meets an inaccessible curb, whether or not there is a sidewalk present. Yellow dots indicate locations where there is an immediately adjacent curb ramp—usually, in these places travelers on the sidewalk would need to descend a curb ramp perpendicular to their desired line of travel, then reorient themselves once they are in the roadway. Brown dots indicate driveway aprons serving as de facto curb ramps into legal crosswalks.

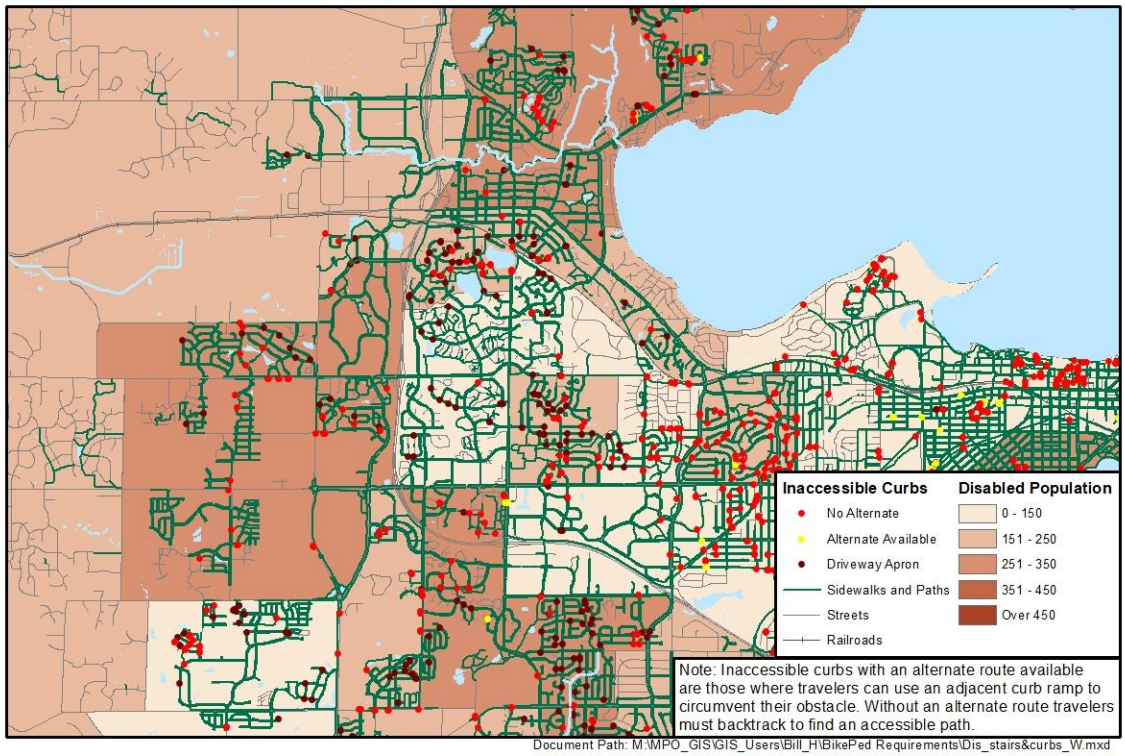
The number of persons experiencing a disability within each census tract is shown (background tone). Due to the large geographic areas for which disability information is available, it is not possible to better correlate disabled populations and areas with inaccessible networks with this data.

Areas without sidewalks, while lacking “barriers” to accessibility, force all users—including children, people experiencing disabilities, and seniors—to walk or wheelchair in the street. In contrast, a well-connected, accessible sidewalk network provides safe routes and street crossings for all, including people who experience disabilities. Provision of tactile strips at crossings, audible signals, pedestrian refuge islands, and many of the other design specifications discussed in this document all help to improve pedestrian crossing safety for at-risk users—and everyone else.

Community/Area Maps

As shown in Figure 29, clusters of inaccessible network connections exist throughout west Madison and Middleton. Red dots, representing inaccessible curbs where alternate routes are unavailable, are heavily concentrated in the UW-Madison campus area and in the near west neighborhoods between Midvale Boulevard and Rosa Road. Driveways serve as curb ramps in many locations on Madison's west and southwest sides and in some Middleton neighborhoods.

Figure 29 Inaccessible Curbs and Steps - West Madison, Middleton, and Shorewood Hills



As shown in Figure 30 and Figure 31, inaccessible curbs and steps are scattered throughout the area. The heaviest concentrations of those without adjacent alternate routes, aside from Madison's near west neighborhoods and the UW campus area, are located near the intersection of Verona Road and the Beltline Highway and extending east from there along the south side of the Beltline. The neighborhood east of US 51 and north of Cottage Grove Road has a relatively high density of driveways serving as curb ramps.

Figure 30 Inaccessible Curbs and Steps - East Madison, Cottage Grove, and Maple Bluff

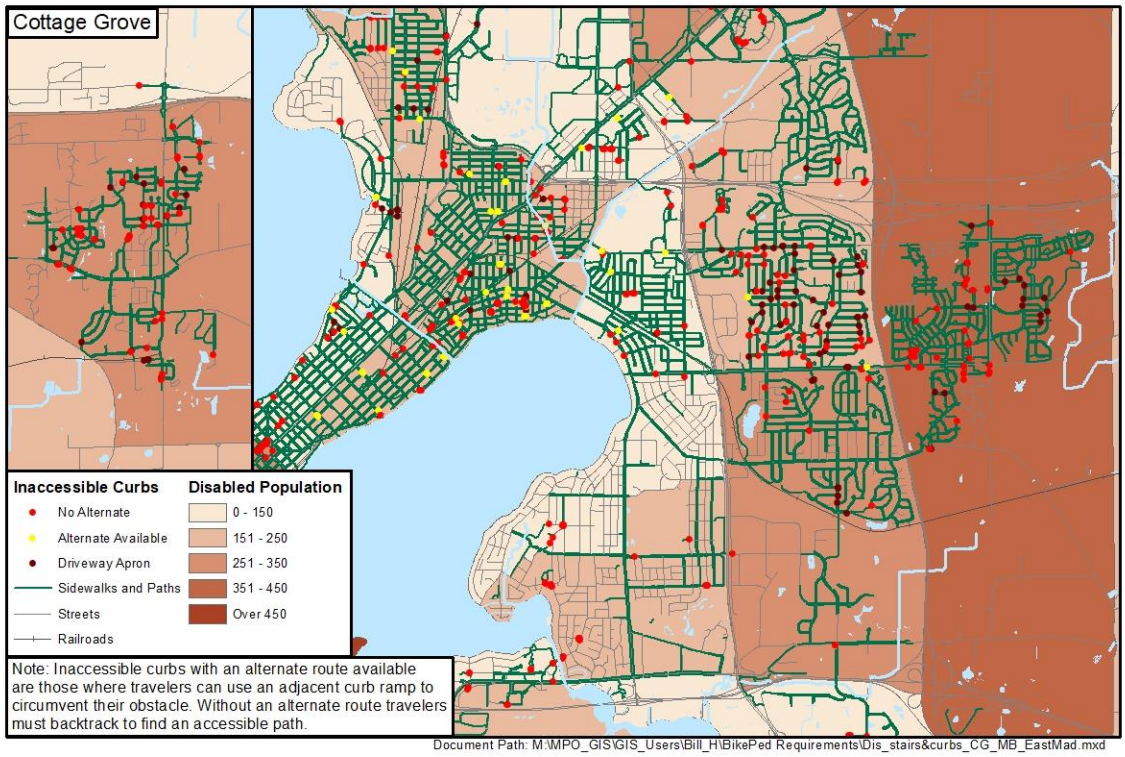


Figure 31 Inaccessible Curbs and Steps - Central Madison, North Fitchburg, and Monona

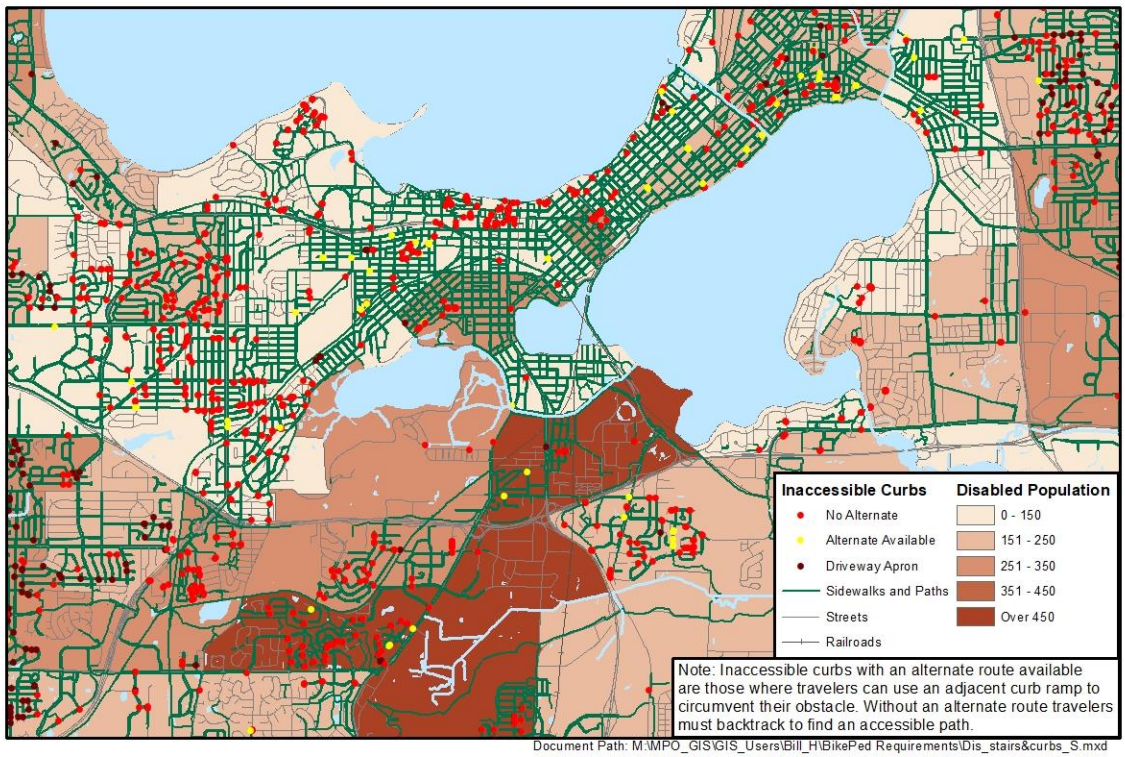
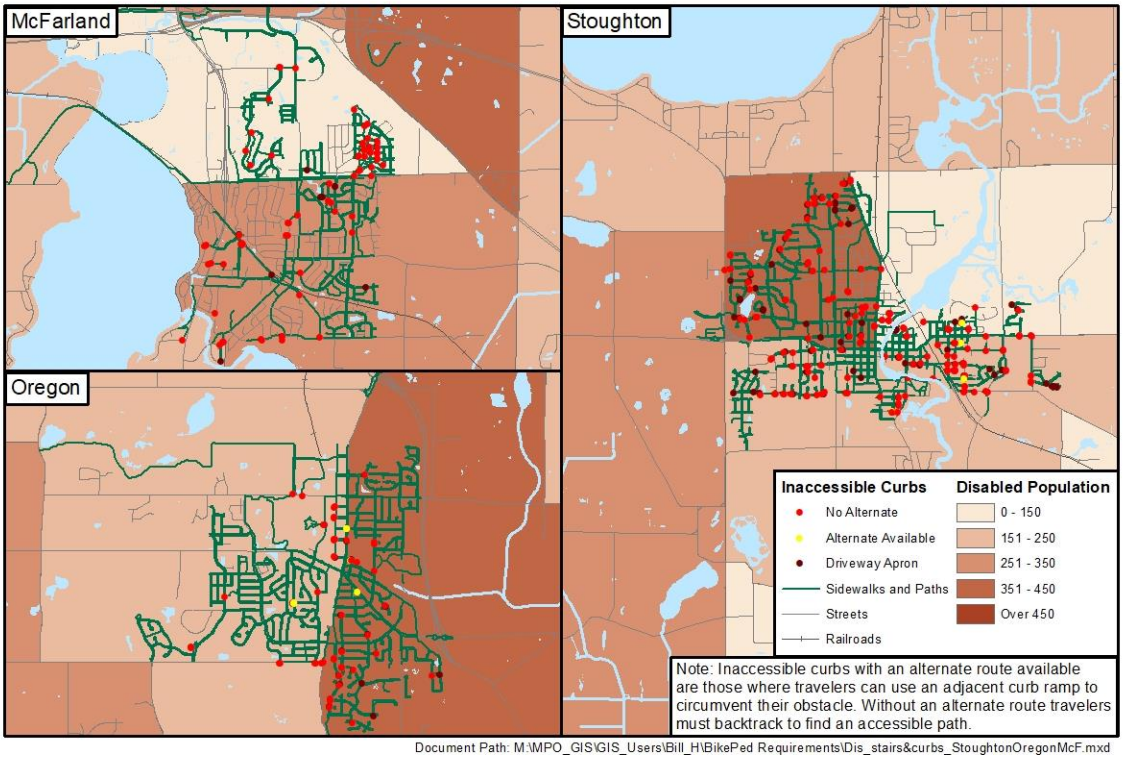


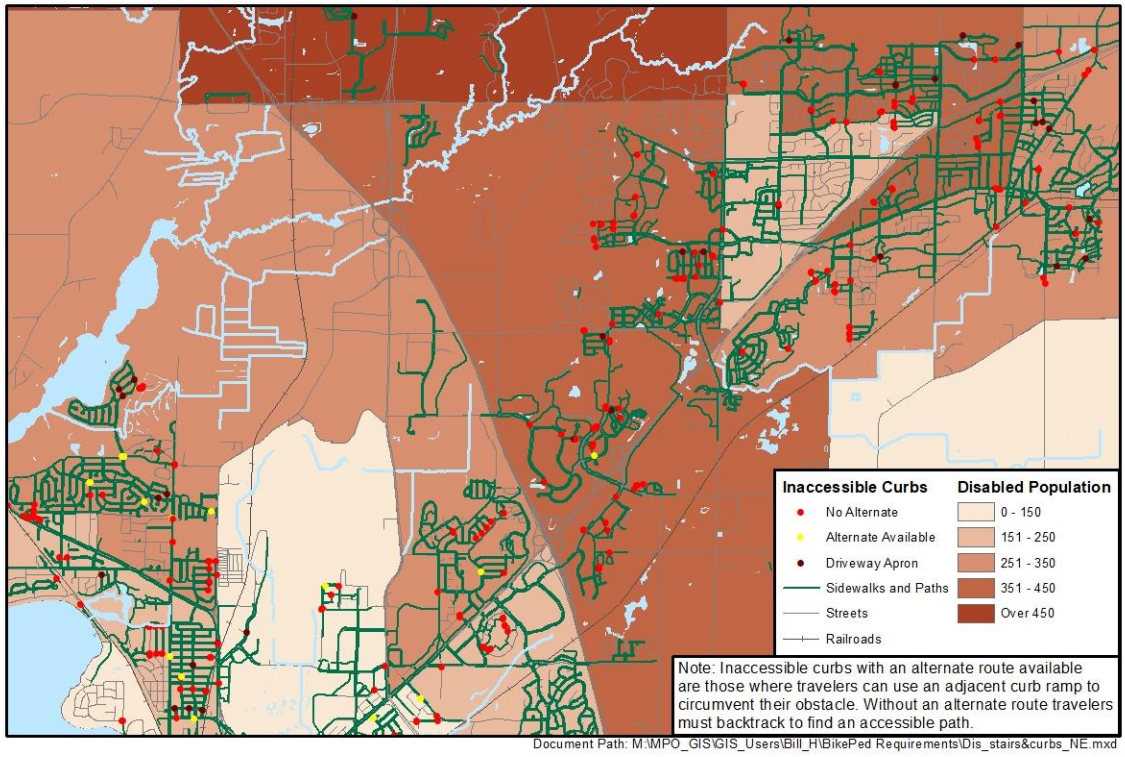
Figure 32 shows inaccessible curbs in McFarland, Stoughton, and Oregon. Stoughton appears to have the largest number of these obstacles, with smaller numbers in McFarland and Oregon. The cluster of inaccessible curbs on the northeast edge of McFarland are actually within the boundaries of the City of Madison.

Figure 32 Inaccessible Curbs and Steps - McFarland, Oregon, and Stoughton



As shown in Figure 33, inaccessible curbs and steps are scattered throughout Sun Prairie and northeastern Madison, with no major clusters.

Figure 33 Inaccessible Curbs and Steps - Northeast Madison and Sun Prairie



Driveway aprons serve as curb ramps in many locations in the neighborhoods on the City of Madison's southwestern edge, just north of Verona Road; the City of Verona has a number of these locations as well as a number of other inaccessible curbs, as shown in Figure 34. The Village of Waunakee (Figure 35) also has a mix of inaccessible curbs and driveway aprons.

Figure 34 Inaccessible Curbs and Steps – Verona, Southwest Madison, and Southwest Fitchburg

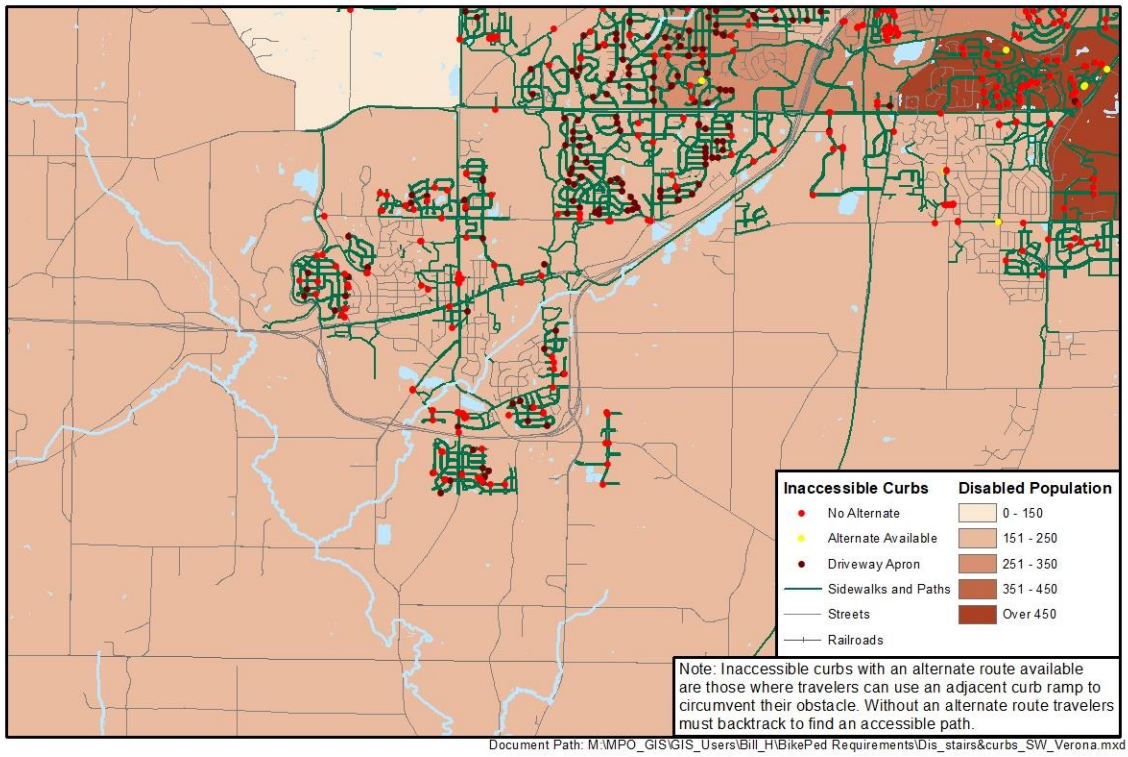
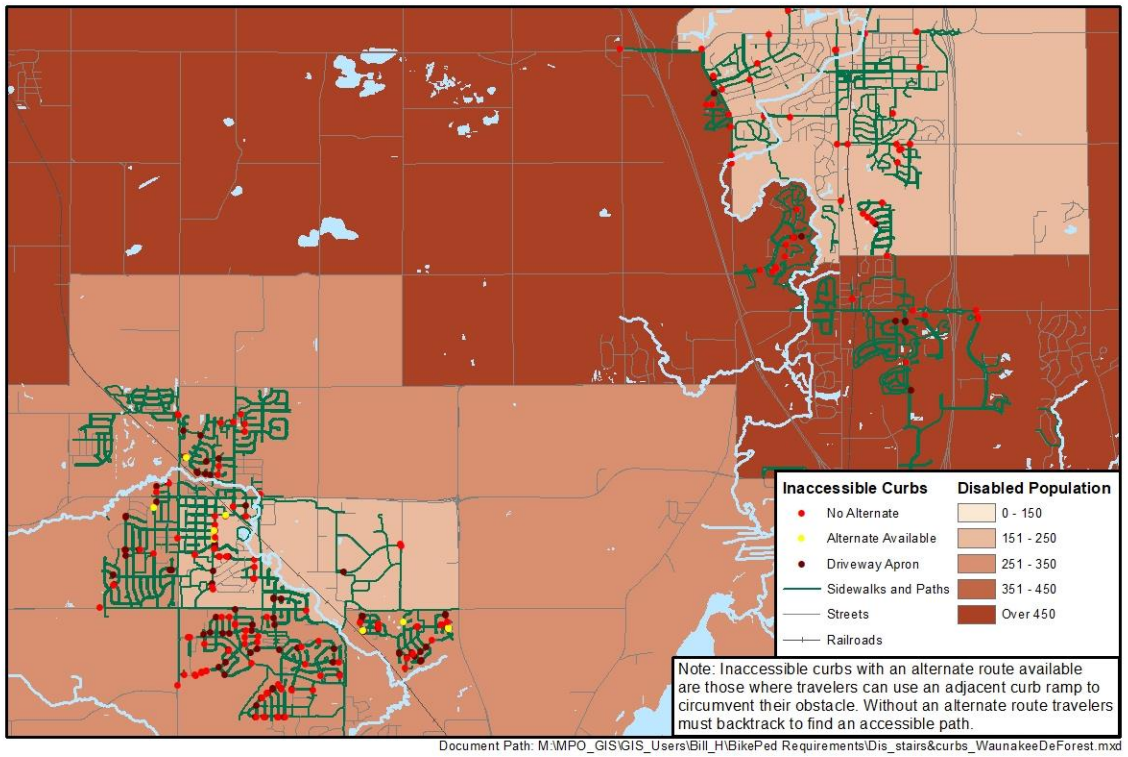


Figure 35 Inaccessible Curbs and Steps - Waunakee and DeForest



References

Communities

Dane County – Title 14 Chapter 75; WisDOT FDM 11-25-1; WisDOT SDD 9a1

City of Fitchburg – Title II Chapter 24; Title III Chapters 27, 32, and 37; Standard Detail Drawings 4.02 and 5.01; Fitchburg Walking; Resolutions R-185-16 and R-69-17, Appendices D and F of Bicycle and Pedestrian Plan; *Title III Chapter 23 Smart Code Requirements are not included in this review.*

City of Madison – Chapter 4; Chapter 10; Chapter 16; Chapter 28

City of Middleton – Chapter 8; Chapter 19

City of Monona – Chapter 395 and Attachment 1; Chapter 473; Chapter 480

City of Stoughton – Chapter 64; Chapter 66; Chapter 78

City of Sun Prairie – Title 12; Title 16; Title 17

City of Verona – Title 6 Chapter 2; Title 14 Chapter 1

Village of Cottage Grove – Chapter 270; Chapter 274

Village of Cross Plains – Chapter 24; Chapter 61; Chapter 83

Village of DeForest – Chapter 7; Chapter 13

Village of Maple Bluff – Chapter 192; Chapter 225

Village of McFarland – Chapter 53; Chapter 56; Chapter 62

Village of Oregon – Chapter 8; Chapter 18

Village of Shorewood Hills – Chapter 11

Village of Waunakee – Chapter 58; Chapter 129; Chapter 133

Village of Windsor – Chapter 38; Chapter 42

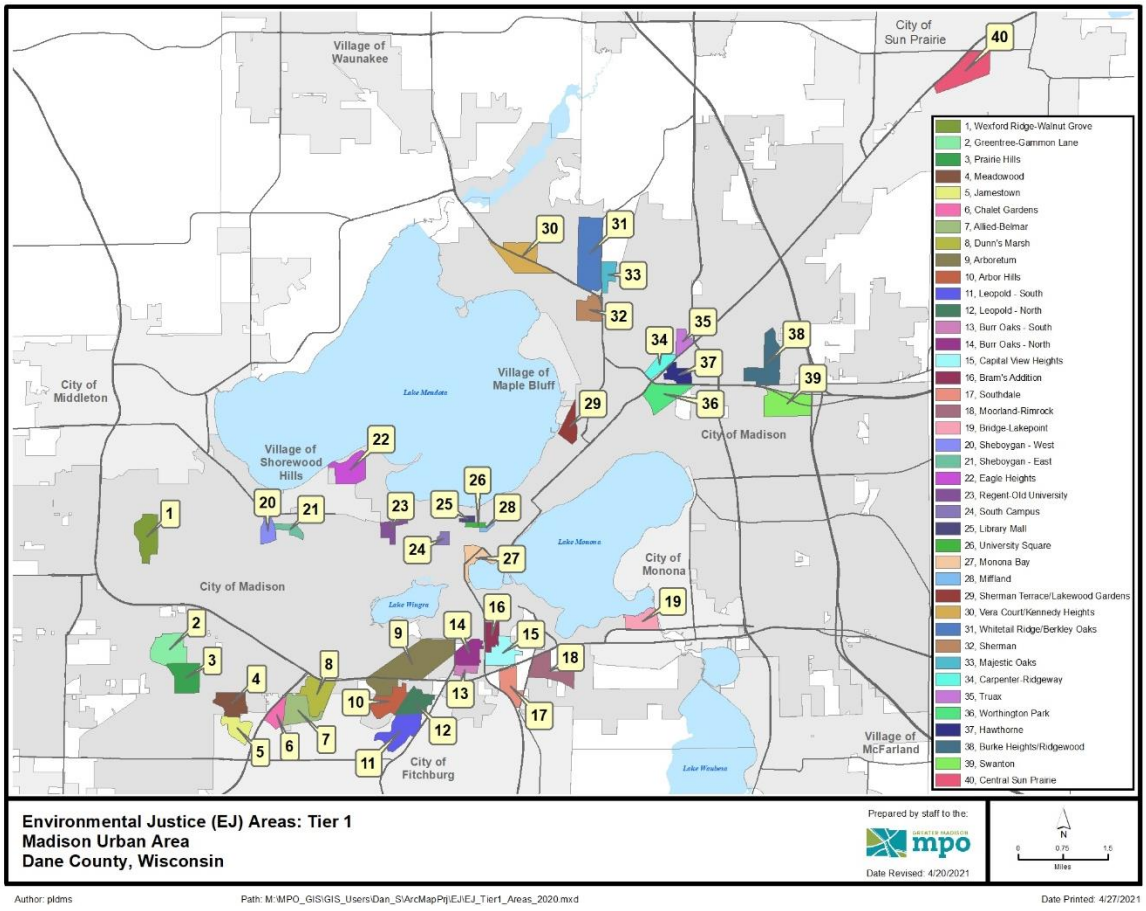
Town of Middleton – Chapter 8; Chapter 15; Wis. 82.50

Town of Westport – Title 3 Chapter 6 (3-6); Title 4 Chapter 2 (4-2); Title 10 Chapter 2 (10-2); Wis. 86-26 (renumbered to Wis. 82.50 in 2004)

WisDOT – FDM 11-25-1; WisDOT SDD 9a1; Wis. 82.50;

Tier 1 Environmental Justice Areas, Madison Urban Area – map with area labels

Figure 36 Tier 1 Environmental Justice Areas, Madison Urban Area



Recommendations and Resources

Dangerous by Design, National Complete Streets Coalition & Smart Growth America 2021

Designing for All Ages and Abilities: Contextual Guidance for High-Comfort Bicycle Facilities, NACTO 2017

Designing Walkable Urban Thoroughfares: A Context Sensitive Approach, ITE 2010

Don't Give Up at the Intersection, NACTO 2019

Ensuring and Equitable Approach to Rebalancing Streets: 14 Strategies to Manage Change with Ethics, Equity, and Empathy, Toole Design 2021

Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks, FHWA 2016

Planning and Design for Alterations, US Access Board 2007

- Chapter 4 - Design Solutions
- Chapter 5 - Model Sidewalks
- Chapter 6 - Curb Ramp Examples
- Chapter 7 - Resources

(Proposed) *Public Rights-of-Way Accessibility Guidelines*, US Access Board 2011

Urban Street Design Guide, NACTO 2013

Complete Streets Resources and References

National Complete Streets Coalition: Information including the benefits of complete streets policies, case studies, research, elements of a complete streets policy, best complete streets policies, etc. https://smartgrowthamerica.org/program/national-complete-streets-coalition/

MnDOT and the University of Minnesota guide offering in-depth reviews of complete streets policies in 11 communities (including Madison) of different sizes, and how they were implemented. *Complete Streets from Policy to Project: The Planning and Implementation of Complete Streets at Multiple Scales* https://www.lrrb.org/pdf/201330.pdf

The City of Madison's 2009 resolution affirming the City's commitment to Complete Streets: https://madison.legistar.com/LegislationDetail.aspx?ID=1068354&GUID=0D8D388F-1566-453A-8933-429A95FB294C&Options=ID%7cText%7c&Search=16250&FullText=1

Milwaukee Complete Streets Health and Equity Report (2019), providing information on how the City arrived at its complete streets policy in 2018, case studies of projects, text of the City's complete streets resolution and ordinance, etc.: https://city.milwaukee.gov/ImageLibrary/Groups/cityBikePed/2020-Images/Complete-Streets/MilwaukeeCompleteStreetsHealthandEquityReport2019.pdf

The City of Middleton's new Comprehensive Plan (2021) calls for implementing a formal complete streets policy (see page 30): https://www.cityofmiddleton.us/DocumentCenter/View/7930/2021-Comp-Plan-01-27-2021?bidId

The City of Sun Prairie's Comprehensive Plan (2019) cites a policy of continually moving towards "implementation of a Complete Streets network." See page 8-5 https://www.cityofsunprairie.com/DocumentCenter/View/9673/36184_SP_CompPlan_Vol2_CH8_Transportation_2019_07_11?bidId

Community Involvement in Project Design

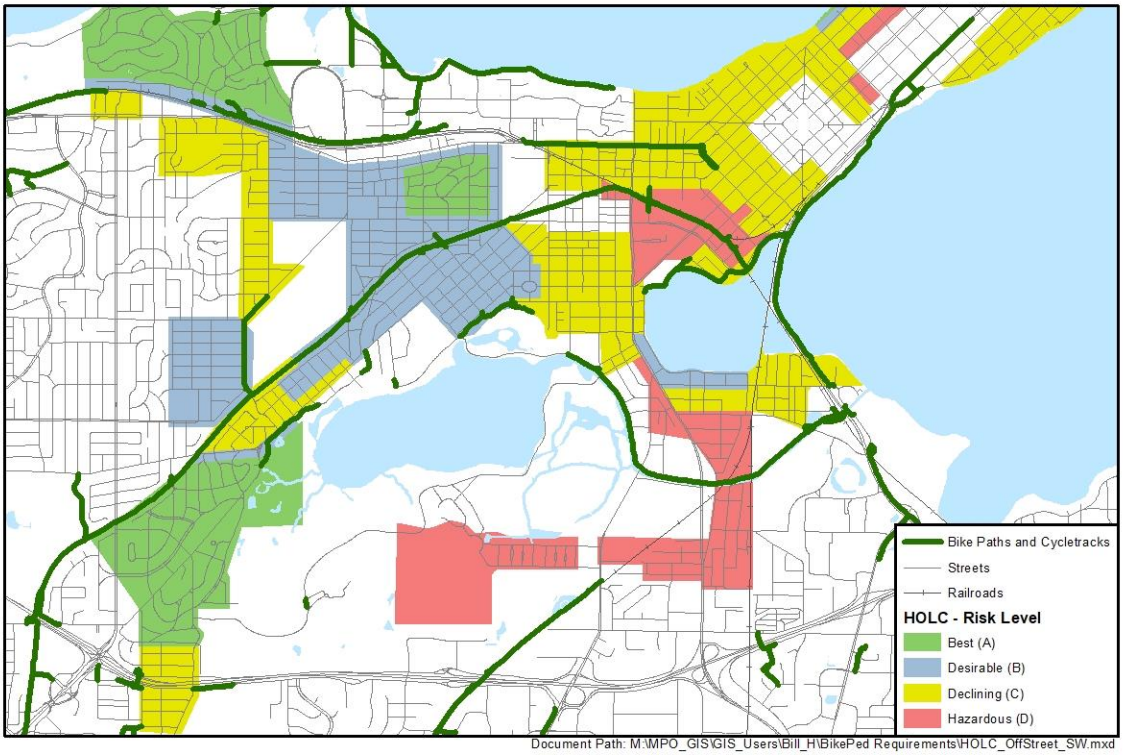
Ensuring an Equitable Approach to Rebalancing Streets, a recently released report from Toole Design, includes 14 rules for equitable street redesign and reconstruction projects that are especially important for projects likely to affect historically marginalized communities:

1. Stay current with national conversations around rebalancing streets as well as more general antiracist and transportation-related issues.
2. Value community input.
3. Be transparent about the project and the process.
4. Communicate that rebalancing streets is part of an overall response to the COVID-19 emergency and beyond.
5. Apply inclusive engagement strategies.
6. Be sensitive to the capacity of BIPOC[295] and low-income people to engage.
7. Select streets to rebalance based on previous planning efforts...provided public engagement was sufficient and equitable.
8. Establish a prioritization process centered on equity.
9. Collect data and monitor progress.
10. Do not dismiss or disrespect community members who oppose rebalancing streets.
11. Do not choose projects that require additional policing.
12. Be aware of unintended consequences.
13. Do not put implementation personnel at risk.
14. Remain humble, nimble, and be willing to make changes.

[295] Black, Indigenous, and People of Color

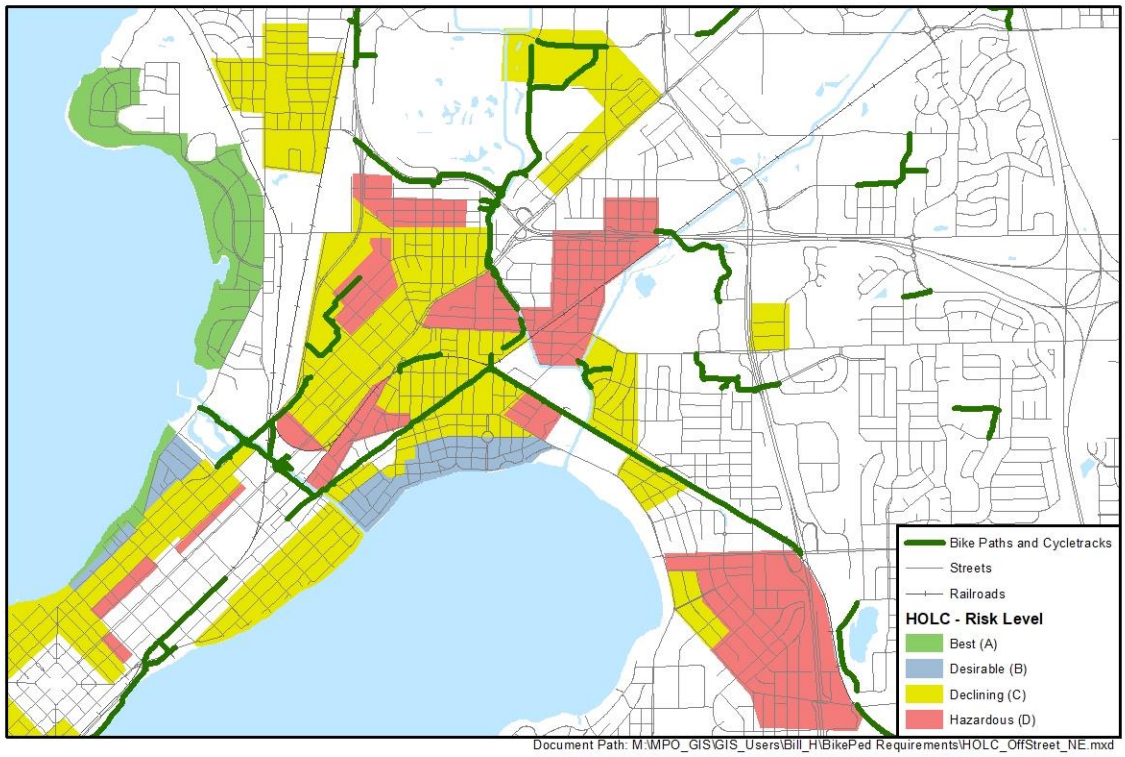
Additional Maps

Figure 37 HOLC Residential Security Map and Premium Bicycle Facilities - South [296]



[296] Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed April 28, 2021, https://dsl.richmond.edu/panorama/redlining/#loc=12/43.076/-89.468&maps=0&city=madison-wi&text=downloads.

Figure 38 HOLC Residential Security Map and Premium Bicycle Facilities - Northeast [297]



[297] Ibid.

Figure 39 HOLC Residential Security Map and Bicycle Level of Traffic Stress - South[298]

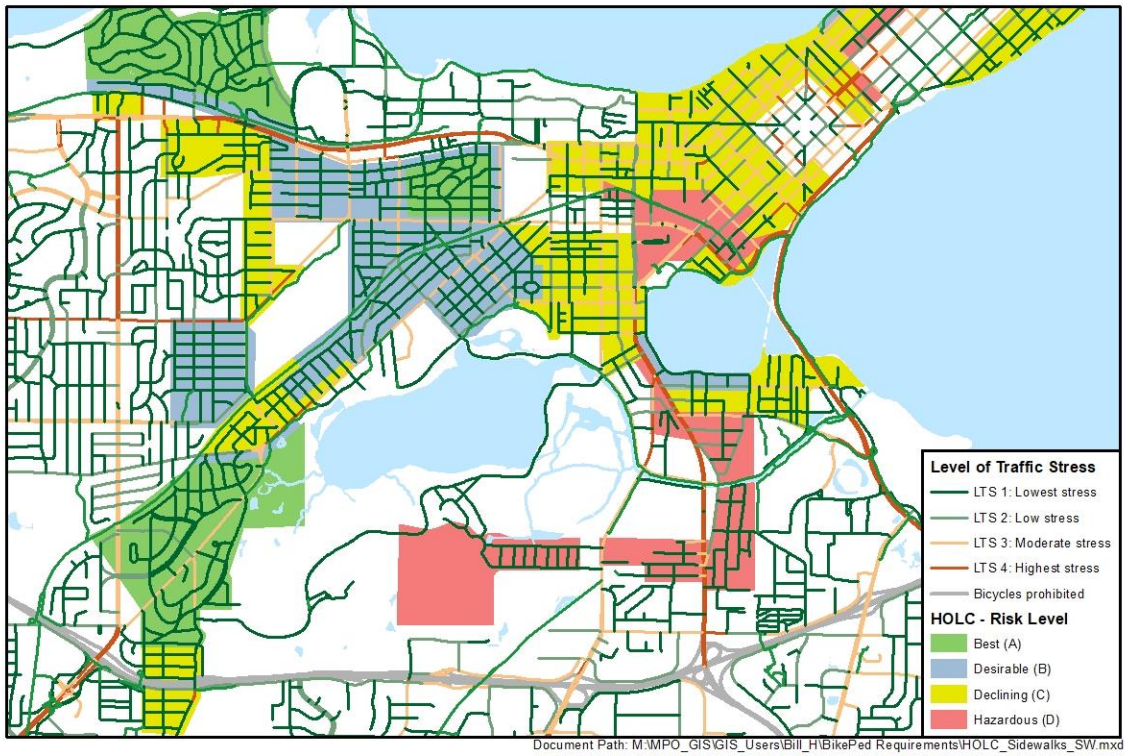
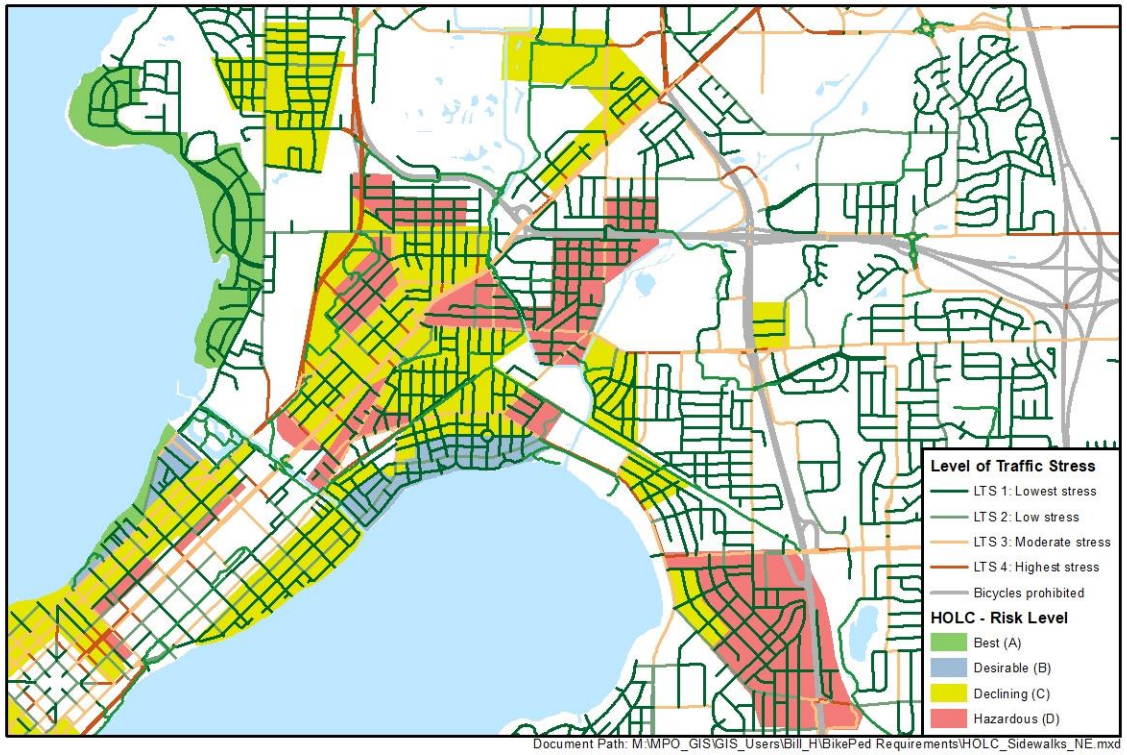


Figure 40 HOLC Residential Security Map and Bicycle Level of Traffic Stress - Northeast [299]



[298] Ibid.
[299] Ibid.