



I-43 North South Freeway Corridor  
Silver Spring Drive to WIS 60  
Milwaukee and Ozaukee Counties, Wisconsin

## **PURPOSE AND NEED STATEMENT**

WisDOT I.D. 1229-04-01

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U.S. Department  
of Transportation  
**Federal Highway  
Administration**

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# 1 PURPOSE AND NEED FOR THE PROPOSED PROJECT

The Wisconsin Department of Transportation (WisDOT) and the Federal Highway Administration (FHWA) initiated the Interstate-43 (I-43) North-South Freeway Corridor Study in northern Milwaukee County and southern Ozaukee County to address emerging pavement and structural needs, safety needs, design deficiencies and growing travel demand. The formal announcement of the I-43 North-South Freeway Corridor Study was published in the *Federal Register* April 6, 2012.

Section 1.0 describes the purpose of the proposed project and the need for improvements being considered in the I-43 North-South Freeway Corridor. Purpose and need factors encompass improvements intended to correct existing problems, and problems that may occur later during the project's 30-year planning period, ending in the year 2040. This section highlights these problems in the corridor in detail.

Together, the purpose and need for improvements in the I-43 North-South Freeway Corridor will shape the range of alternatives developed and evaluated, leading to the preferred alternative. The alternatives evaluation process determines the most appropriate solution(s) to identified and anticipated problems. The preferred alternative will be selected, in part, based on how well it satisfies the study's purpose and need.

## 1.1 Project Location

The I-43 North-South Freeway Corridor study-area encompasses approximately 14 miles of I-43 from Silver Spring Drive in the City of Glendale (south limit) to WIS 60 in the Village of Grafton (north limit). See Exhibit 1-1. Other municipalities in the study area include the Villages of River Hills, Fox Point, and Bayside; the City of Mequon; and the Town of Grafton.

There are seven existing interchanges in the corridor: Silver Spring Drive, Good Hope Road, Brown Deer Road (WIS 100), County Line Road, Mequon Road (WIS 57/167), Pioneer Road (County C) and WIS 60.

WisDOT and FHWA considered a number of factors to determine the project limits including projected future traffic volumes, design deficiencies, crash rates and other freeway features. Specific examples of features considered include: the I-43 lane-drop from six lanes to four lanes just north of Silver Spring Drive, and north of WIS 60, where the freeway becomes less urbanized. The project limits are consistent with how FHWA determines project termini (23 CFR 771.111(f)). That is, the project:

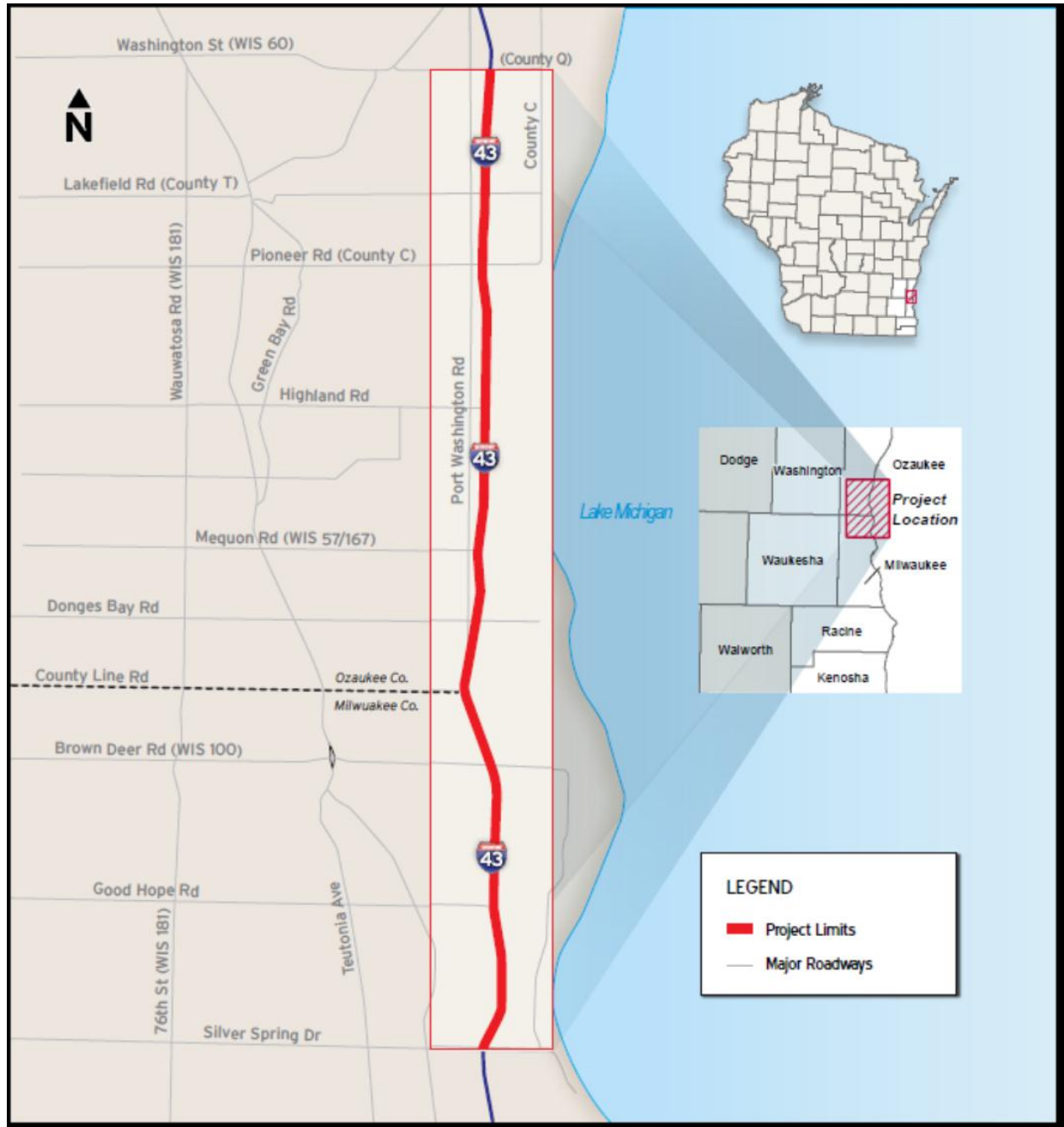
- Connects logical termini and is sufficiently long enough to address environmental matters on a broad scope;
- Has independent utility or independent significance. That is, a proposed action is usable and a reasonable expenditure even if no additional transportation improvements in the area are made; and



- Does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.



Exhibit 1-1: I-43 North-South Freeway Corridor Project Limits



## 1.2 Purpose of the Proposed Project

The purpose of the proposed project is to address needed improvements to the study-area freeway corridor, consistent with local and regional transportation and land use planning objectives. The proposed I-43 North-South Freeway Corridor project will provide a safe and efficient transportation system to serve existing and future traffic demand while minimizing impacts to the natural, cultural and built environment to the extent feasible and practicable.

## 1.3 Need for the Proposed Action

The need for the transportation improvements in the I-43 North-South Freeway Corridor is demonstrated through a combination of factors, including:

- Pavement, freeway design and geometric deficiencies
- Safety
- Existing and future traffic volumes
- Regional land use and transportation planning
- System linkage and route importance

The remainder of Section 1 discusses these factors. The need for the proposed improvements sets the stage for developing and evaluating possible alternatives.

### 1.3.1 Pavement, Freeway Design and Geometric Deficiencies

This section describes the existing I-43 North-South Freeway Corridor and its pavement, design and geometric deficiencies. Exhibit 1-2 and Exhibit 1-3 summarize some of the key substandard road elements along the corridor discussed in greater detail.

I-43 consists of six travel lanes with a narrow, barrier-separated median at Silver Spring Drive. Going north, I-43 narrows to four travel lanes just south of Bender Road. Between Bender Road and Good Hope Road, the median ranges from 22 to 48 feet wide with either a concrete barrier or beam guard, and narrow curbed shoulders. Between Good Hope Road and County Line Road, the freeway features a varying concrete and/or grassed median with a concrete barrier or cable guard in the center and flush paved shoulders. The remainder of the study-area freeway north of County Line Road has a wide grassed median between 60 and 70 feet, with paved shoulders ranging from six to eleven feet.

Seven service interchanges<sup>1</sup> are located on the study-area freeway system. Interchanges in the corridor are generally two miles apart in Milwaukee County, and between three to four miles apart in Ozaukee County. The greatest distance between interchanges is four miles between Mequon Road and Pioneer Road (County C)<sup>2</sup>. Several more local and county trunk highways

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<sup>1</sup> Service interchanges connect freeways with surface streets and cross roads.

<sup>2</sup> AASHTO's general rule of thumb for interchange spacing is a minimum of 1 mile for freeways in urban areas and 2 miles in rural areas. The I-43 North-South Freeway corridor is considered an urban freeway.

cross over or under the study-area freeway system. Union Pacific Railroad tracks pass over I-43 just north of Bender Road and run parallel along the east side of the freeway north of Donges Bay Road.

Port Washington Road (County W) serves as a frontage road on the east side of I-43 from Silver Spring Drive to Daphne Road. From Montclair Avenue to Green Tree Road, Jean Nicolet Road serves as a frontage road on the west side of I-43.

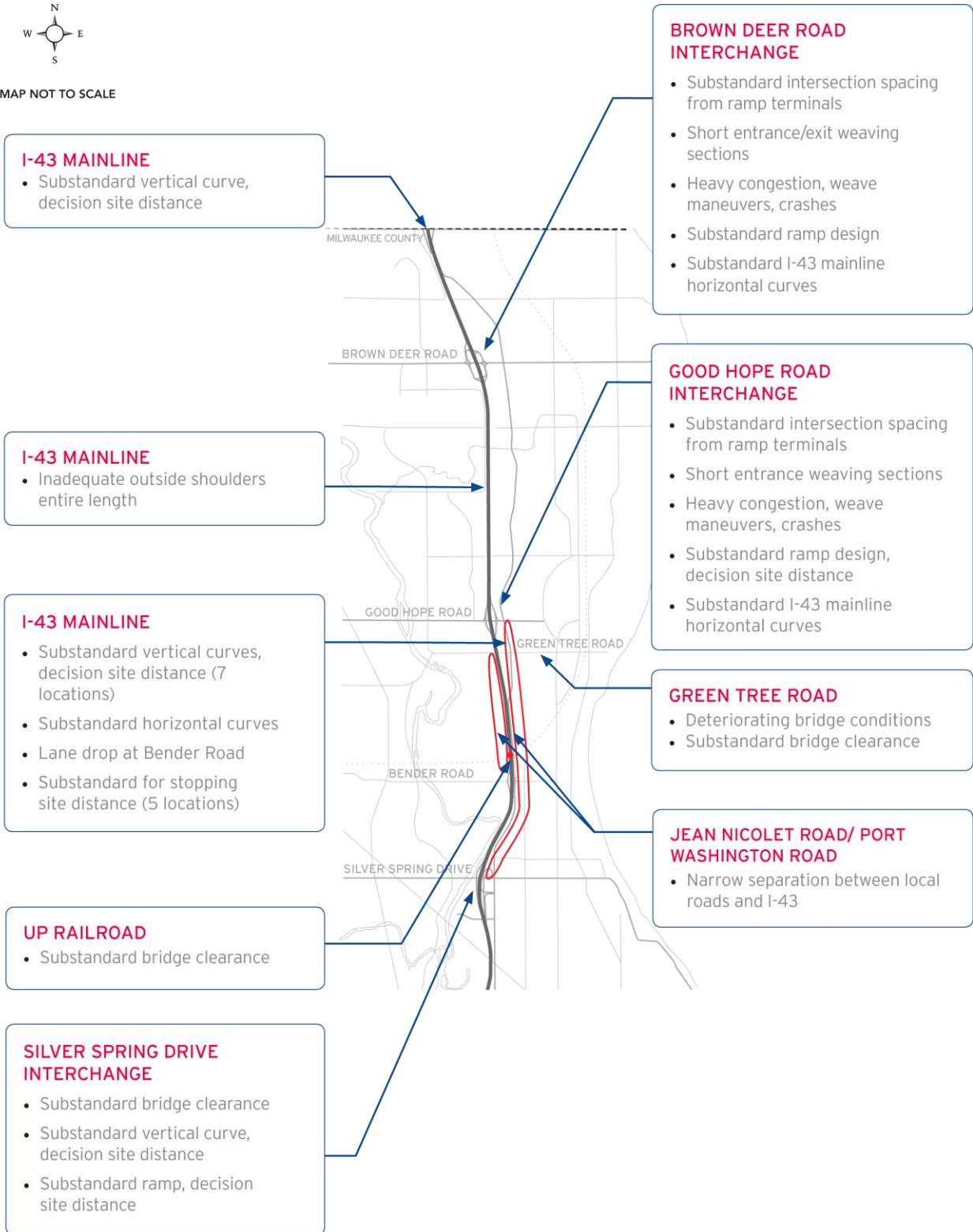




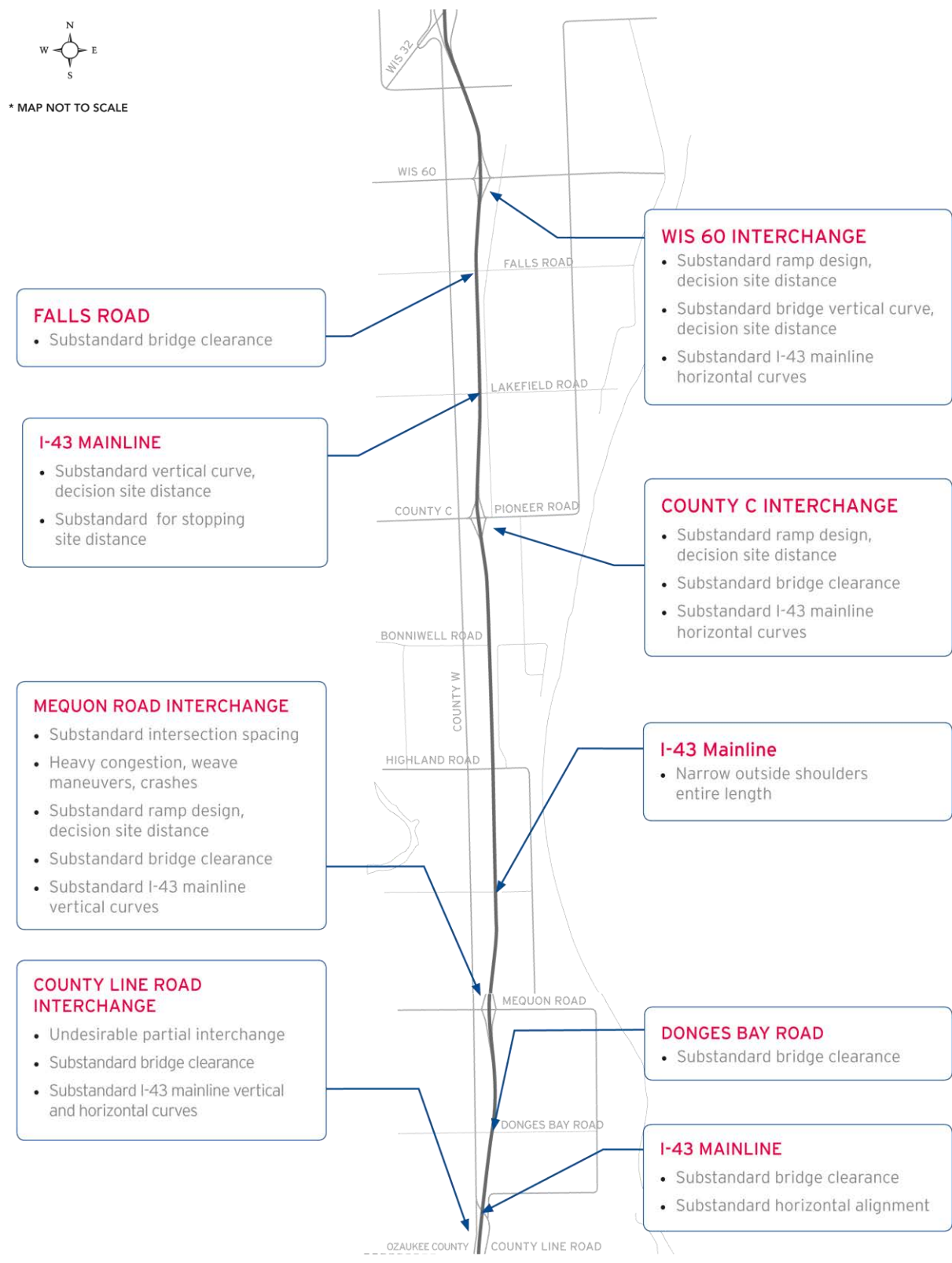
**Exhibit 1-2: I-43 Existing Substandard Road Elements, Milwaukee County**



\* MAP NOT TO SCALE



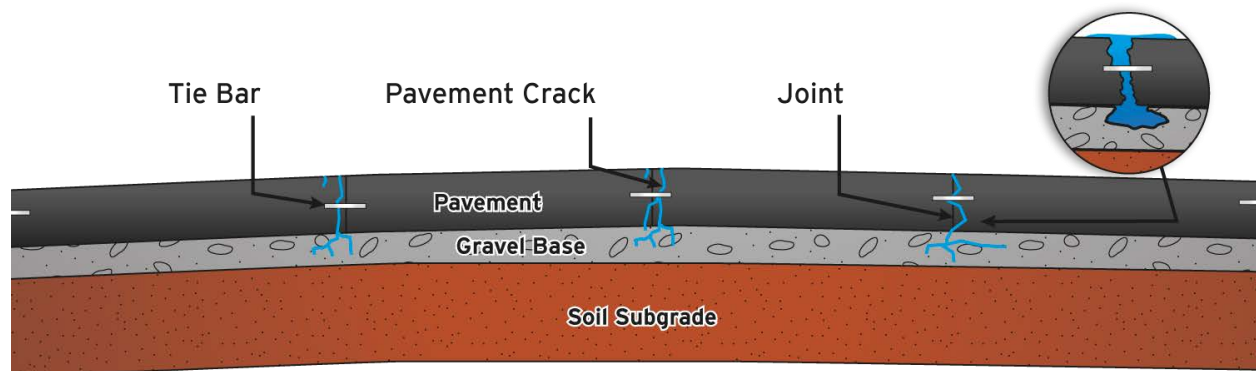
**Exhibit 1-3: I-43 Existing Substandard Road Elements, Ozaukee County**



### *Pavement Condition*

WisDOT evaluation indicates that I-43's pavement has exceeded its life-expectancy. The study-area freeway system was originally constructed between the mid-1950s and mid-1960s. Over the years, concrete pavement will eventually begin to wear and crack. As water enters into the pavement, it rusts the tie bars that hold the slabs of concrete together (Exhibit 1-4). Water also runs through the cracks to the gravel base under the pavement, washing out the finer gravel material. This leaves a void under the pavement, which provides a less stable base for the pavement. Heavy trucks and hot and cold temperature extremes add to the stresses on the pavement.

#### **Exhibit 1-4: Basic Pavement Components**

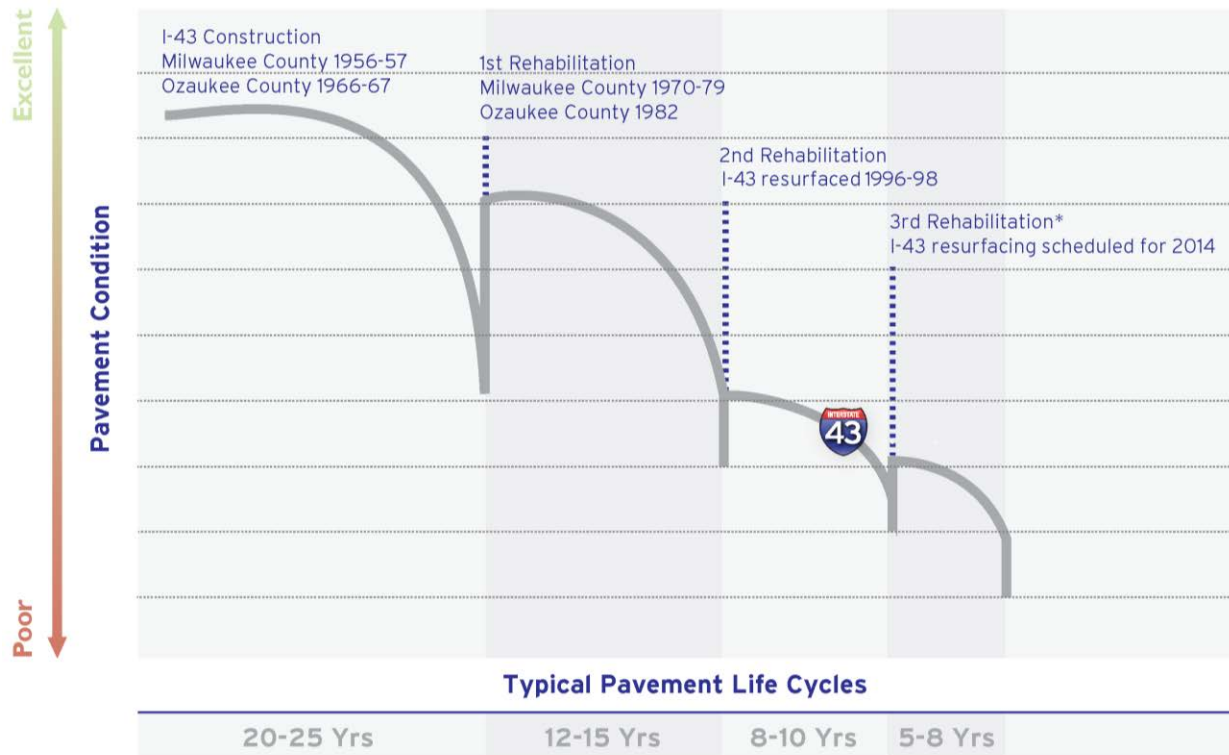


WisDOT resurfaced I-43 with a layer of asphalt pavement in Milwaukee County in the late-1970s, and in Ozaukee County in the early-1980s. This returned the roadway to a smooth riding surface, but did not address the cracks in the original pavement or possible voids in the gravel base under the pavement. WisDOT reconstructed I-43 between Silver Spring Drive and Bender Road in the early 1990s with the reconstruction of the Silver Spring interchange.

WisDOT resurfaced I-43 from Bender Road to WIS 60 once again in the late 1990s, and plans to overlay this segment again in 2014. The planned 2014 resurfacing will extend the life and drivable condition of the pavement for a few years until I-43 is reconstructed.

Each resurfacing has a shorter and shorter life span because the original pavement, still in place after more than 55 years, provides a less effective base as it continues to crack and deteriorate (Exhibit 1-5). A condition called faulting is occurring in the joints that cross the roadway. Faulting is when the slabs of concrete are pushed up at slightly different elevations, making for an uneven driving surface. The asphalt overlay shows signs of chipping away in the joints between the lanes, resulting in a V-shaped depression in the roadway.

**Exhibit 1-5: Pavement Life**



 = Current I-43 Pavement Conditions

\* Many states decide to reconstruct in place of further rehabilitations

**Bridge Condition**

The bridges on the study-area freeway system are generally in fair or good condition as measured by the FHWA’s National Bridge Inventory. One exception is the Green Tree Road bridge over I-43, which has a rating of 4 on a scale of 0 to 9. A rating of 4 is defined as “meets minimum tolerable limits to be left in place as is.” The Port Washington Road bridge crossing over I-43 has a rating of 5 (fair condition) and the rest have a rating of 6 (good condition) or higher.

Over the next ten years, the condition of several of these bridges will likely further deteriorate, even with routine maintenance and there will come a point when it becomes more cost effective to simply replace the bridges. Replacement also provides the opportunity to bring the basic design of the bridges up to current standards, including vertical clearance, discussed in greater detail later in this section.

### *Freeway Design Deficiencies*

This section describes various design related deficiencies that exist along the I-43 North-South Corridor including road separation, access control, interchange design, lane continuity and ramp design.

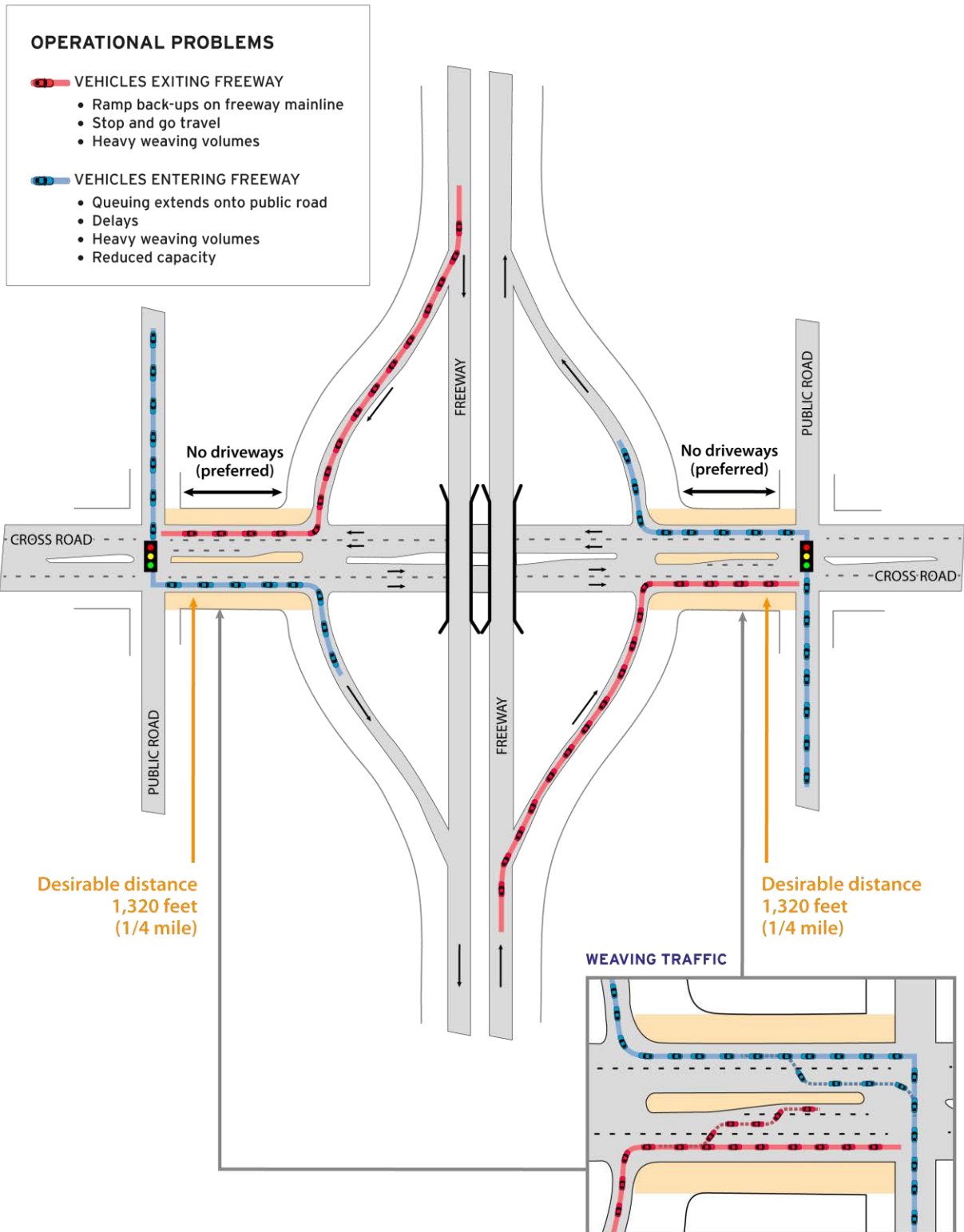
#### *Freeway/Outer Road Separation*

The distance between I-43 and the parallel local service roads is severely deficient in some areas. Between Silver Spring Drive and Green Tree Road, Port Washington Road and Jean Nicolet Road are only about 28 feet from I-43, with some areas as close as 22 feet as measured from the edge of travel lanes. Both WisDOT and the American Association of State Highway and Transportation Officials (AASHTO) follow federal interstate standards to establish guidelines for freeway design. WisDOT design standards call for a desirable 85-foot separation between arterials and frontage roads in urban areas. AASHTO recommends outer separation widths between 80-150 feet, although much narrower widths may be used in urban areas where retaining walls are employed. Retaining walls can provide a measure of safety in such conditions; however they are present only along a portion of this section.

#### *Access Control*

In order for interchanges to operate efficiently, WisDOT has developed standards to control access between ramps and local roads and driveways. For example, when a local road intersection is close to a ramp terminal, high traffic volume can cause substantial queuing, weaving and overall poor operations (see Exhibit 1-6). WisDOT standards call for a desirable distance of 1,320 feet between a ramp terminal and an adjacent crossroad intersection to maintain interchange function.

### Exhibit 1-6: Substandard Access Control



A good example of how substandard spacing impacts traffic operations is at Good Hope Road. The Port Washington Road/Good Hope Road intersection is 300 feet east of the interchange northbound off- and on ramps. The short distance between the intersection and the I-43 entrance and exit ramps cause traffic queues.

Table 1-1 identifies interchanges and the distance to the nearest crossroad intersection, many of which are less than 1,320 feet.

**Table 1-1: Existing Distances from Interchange Ramp Terminals to Nearest Roadway Intersection**

I-43 Cross Road Interchange	Nearest Roadway Intersection to the West / North	Ramp Terminal to Intersection (feet)	Nearest Roadway Intersection to the East / South	Ramp Terminal to Intersection (feet)
Silver Spring Drive	Milwaukee River Parkway	1000'	Silver Spring Drive (Ramp terminals intersect Port Washington Road)	600'-800'
Good Hope Road	Pheasant Lane	475'	Port Washington Road	300'
Brown Deer Road	Spruce Road	1700'	Port Washington Road	800'
Port Washington Road	Ravine Lane	650'	Laramie Lane	150'
County Line Road	Pheasant Lane	360'	Port Washington Road	420'
Mequon Road	Port Washington Road	400'	San Marino Drive	830'
County C	Port Washington Road	530'	Lake Shore Drive	1550'
WIS 60	Port Washington Road	1200'	Washington Street	360'

Source: WisDOT

Similar operational issues with interchanges can occur when local driveways are too close to ramp terminals. The locations listed below have driveways within 1,320 feet of an interchange ramp terminal.

- Silver Spring Drive
  - Right-in/right-out driveway to businesses, south side of Silver Spring, west of Port Washington Road
- Brown Deer Road
  - Two right-in/right-out driveways to businesses, south side of Brown Deer Road, west of Port Washington Road
  - Five right-in/right-out driveways to businesses, north side of Brown Deer Road, west of Port Washington Road
- WIS 60
  - Right-in/right-out driveway to businesses, south side of WIS 60, east of Port Washington Road
  - Right-in/right-out driveway to businesses, north side of WIS 60, east of Port Washington Road

### Partial Interchange

Reconstructing the County Line Road interchange to a full-service interchange will also be evaluated. The County Line Road interchange at the Milwaukee/Ozaukee County line is a partial interchange providing access to County Line Road via Port Washington Road as a northbound exit from I-43. The only access from County Line Road to I-43 is via a southbound entrance ramp. AASHTO guidance recommends all service interchanges on interstate routes provide full access (AASHTO, 2005). That is, all interchanges should serve all traffic movements. The County Line Road interchange does not provide an intuitive path to return to I-43 northbound. Drivers, especially those unfamiliar with the area, expect to be able to re-enter the freeway at the same location they exit. The 2005 AASHTO guidance states: “To prevent wrong-way movements, all freeway interchanges with non-access-controlled highways should provide ramps to serve all basic directions.”

### Lane Continuity

Lane continuity implies that drivers following a particular route do not need to change lanes or exit to remain on the route. Just south of Bender Road, I-43 drops one through-lane going north and adds one through-lane going south. The lane drop contributes to the reduced level of service on the freeway.

### Ramp Design Deficiencies

Several of the I-43 North-South Freeway interchange ramps have a number of design deficiencies that impact overall level of service and safety. Some key deficiencies are discussed below.

#### **RAMP TAPER RATE**

Adequate merging distance is often measured by a ramp’s taper length, which should be between 50:1 and 70:1 for a freeway entrance ramp (the merge lane becomes 1 foot narrower every 50 feet) based on AASHTO standards. Using these criteria, several ramps on the study corridor are considered deficient (Table 1-2). While the existing ramps on I-43 are a taper type of ramp, AASHTO guidance calls for a preferable parallel type ramp (see Exhibit 1-7), which allows vehicles more distance to get up to speed before entering traffic, or to slow down outside of active traffic lanes to exit the freeway.

**Table 1-2: Deficient Ramp Tapers**

Location	Taper Length
Good Hope Road	
Northbound entrance ramp	30:1
Southbound entrance ramp	25:1
Brown Deer Road (WIS 100)	
Northbound entrance ramp	No taper, served by auxiliary lane



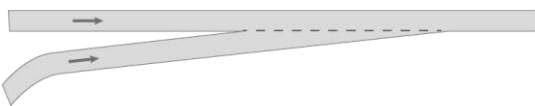
Location	Taper Length
Mequon Road (WIS 167)	
Northbound entrance ramp	35:1
Southbound entrance ramp	45:1
Pioneer Road (County C)	
Northbound entrance ramp	45:1
Southbound entrance ramp	40:1
WIS 60	
Northbound ramp	45:1
Southbound ramp	30:1

Source: WisDOT

**Exhibit 1-7: Entrance and Exit Ramp Types**

**ENTRANCE RAMP**

Taper Type

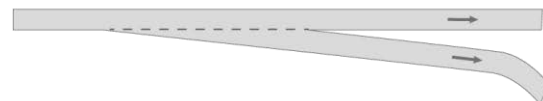


Parallel Type



**EXIT RAMP**

Taper Type



Parallel Type



**ACCELERATION/DECELERATION LANES**

Ramp design includes careful consideration for adequate deceleration lanes on exit ramps and acceleration lanes on entrance ramps. Deceleration lanes allow drivers to safely stop at the end of a ramp. Acceleration lanes allow drivers to get up to speed and enter the freeway at the same speed as the freeway traffic. It is a safety concern when there is a difference in speed, or speed differential.

The required length of the acceleration/deceleration lanes varies, depending on the tightness of curves on the ramp. An entrance ramp that has a gradual curve allows drivers to accelerate on the ramp, and therefore, the length of the acceleration lane need not be as long as an entrance ramp that has tighter curves.

The Good Hope Road and Brown Deer Road interchanges have substandard ramp lengths that make it difficult to merge into I-43 traffic, hence reducing the queue space to enter the freeway when the interchanges are congested. The Brown Deer Road interchange also has substandard curves within its loop ramps, which creates an inadequate acceleration lane. Currently, the Brown Deer Road interchange has the most design deficiencies and has the highest crash rate reported in the corridor.

Several of the entrance and exit ramps listed in Table 1-3 have inadequate acceleration and deceleration lengths based on AASHTO freeway design guidelines.

**Table 1-3: Ramp Acceleration and Deceleration Lengths**

Connecting Highway	Ramp <sup>1</sup>	Approximate Existing Acceleration / Deceleration Length (Feet)	AASHTO Recommended Minimum Acceleration / Deceleration Length (Feet)
Silver Spring Drive	NB On*	925	180
	NB Off*	1,020	300
	SB On*	1035	300
	SB Off*	745	350
Good Hope Road	NB On	460	1,020
	NB Off	280	405
	SB On	415	1,020
	SB Off*	425	240
Brown Deer Road	NB On*	>1,020	1,020
	NB On Loop	600	1,100
	NB Off	30	405
	NB Off Loop*	600	430
	SB On*	930	180
	SB On Loop	800	910
	SB Off	30	430
	SB Off Loop	800	430
Port Washington Road	NB Off*	>480	480
County Line Road	SB On	400	1,100
Mequon Road	NB On	425	820
	NB Off	50	390
	SB On	1,460	1,620
	SB Off	35	490
Pioneer Road (County C)	NB On	475	1,000
	NB Off	65	390
	SB On	430	1000
	SB Off	30	390
WIS 60	NB On	510	820
	NB Off	30	390
	SB On*	1,200	820
	SB Off	60	340

<sup>1</sup> Non-deficient ramps noted by asterisk\*

## RAMP LANE WIDTH

According to WisDOT guidelines, single-lane curbed freeway ramps should have a 22-foot width measured from face-of-curb to face-of-curb. Locations of curbed ramps with a substandard width of less than 22 feet are listed below:

- Good Hope Road SB-On – 19 feet wide
- Brown Deer Road NB-Off (SE Quad) – 20 feet wide
- Brown Deer Road NB-On (SE Quad) – 20 feet wide
- Brown Deer Road NB-Off (NE Quad) – 20 feet wide
- Brown Deer Road NB-On (NE Quad) – 19 feet wide
- Brown Deer Road SB-Off (NW Quad) – 20 feet wide
- Brown Deer Road SB-On (NW Quad) – 20 feet wide
- Port Washington Road NB-Off – 19 feet wide

### *Geometric Design Deficiencies*

Freeways must meet the minimum values for several controlling design criteria, such as freeway alignment, cross slopes, sight distances, lane and shoulder widths and vertical clearances. The design standards developed for the controlling criteria are based on guidelines in the American Association of State Highway and Transportation Officials (AASHTO's) *A Policy on Geometric Design of Highways and Streets* (2001), AASHTO's *A Policy on Design Standards – Interstate System* (2005), and WisDOT's *Facilities Development Manual*. These standards are the basis for evaluating the study-area freeway system for acceptability, function, and safety.

### Horizontal Alignments

Horizontal alignment refers to the curvature of the road at a given design speed. Design speed is the maximum speed that can be safely maintained over a specific section of the highway. It is affected by factors such as highway type, topography, adjacent land use, and driver expectations. To account for a wide range of actual vehicle running speeds, the design speed is generally 5 miles per hour (mph) greater than the posted speed limit. Several locations in the study area have substandard geometric features that equate to design speeds that are less than the recommended design speed. Exhibit 1-2 and Exhibit 1-3 call out the I-43 mainline locations that are below the minimum recommended design speed based on horizontal and vertical alignment.

### Vertical Alignments

Vertical alignment refers to the grade or steepness of a roadway. In general, the flatter the road, the safer it is to drive on. However, WisDOT and AASHTO guidelines recommend a slight grade on freeways to ensure that water properly drains off the roadway. Table 1-4 shows the sections in the study area that do not meet the recommended percent grade guidelines.

**Table 1-4: Vertical Alignment – Substandard Locations**

Location	Existing Percent Grade	Maximum Percent Grade Recommended
I-43 at Silver Spring Drive	3.3	3.0
I-43 North of Silver Spring Drive	3.4 to 3.64	3.0
		<b>Minimum Grade Recommended (percent)</b>
I-43 South of Calumet Road	0.25	0.5
I-43 North of Brown Deer Road	0.37	0.5
I-43 SB - South of County Line Road	0.02	0.5
I-43 NB – South of County Line Road	0.20	0.5
I-43 South of Donges Bay Road	0.33	0.5
I-43 North of Donges Bay Road	0.20	0.5
Mequon Road NB Off-Ramp to I-43	0.42	0.5
Mequon Road SB On-Ramp to I-43	0.16	0.5
I-43 South of Highland Road	0.00	0.5
I-43 North of Highland Road	0.40	0.5
I-43 at Bonniwell Road	0.03	0.5
I-43 South of County C	0.34	0.5
I-43 South of County C	0.25	0.5
I-43 at County C	0.07	0.5
I-43 North of County C	0.00	0.5
County C SB On-Ramp to I-43	0.31	0.5
County C SB Off-Ramp to I-43	0.47	0.5
County C NB On-Ramp to I-43	0.42	0.5
I-43 South of Lakefield Road	0.00	0.5
I-43 at WIS 60	0.00	0.5
WIS 60 SB On-Ramp to I-43	0.41	0.5
WIS 60 SB Off-Ramp to I-43	0.26	0.5

Source: WisDOT

### Cross Slope

In addition to vertical alignment, the roadway should have a crown that allows water to drain to the side of the road. Freeways are typically designed with a minimum 2 percent crown, or cross slope, to let water drain (the elevation of the road slopes down 2 feet for every 100 feet of road, or approximately 0.25 inches for every 1 foot). Some mainline pavement in the study-area freeway system was originally constructed with less than the minimum 2 percent cross slope (Table 1-5).

**Table 1-5: I-43 Percent Cross Slopes**

Location	Percent Cross Slope
I-43 from Daphne Road to Green Tree Road	1.3 to 1.4
I-43 northbound and southbound from Green Tree Road to County Line Road	1.0
I-43 northbound and southbound from County Line Road to WIS 60	1.5

Source: WisDOT

### Stopping Sight Distance

Stopping sight distance (SSD) is the minimum distance required by a driver traveling at a given speed to stop after sighting an object in its path.<sup>3</sup> Minimum SSD is based on the design speed of a roadway. On hill crests, sight is obstructed by the roadway between the driver and an object. At the bottom of a hill, sight is restricted at night because headlights do not fully illuminate the roadway ahead. On curves, a median barrier may reduce stopping sight distance. Exhibit 1-2 and Exhibit 1-3 identify areas along I-43 where the minimum recommended design speed is not met for SSD.

### Decision Sight Distance

Decision sight distance (DSD) provides a driver sufficient time for safe decision making. While SSD is the minimum distance required to bring a vehicle to a complete stop, DSD gives the driver sufficient time to detect an object, recognize its threat potential, select an appropriate speed and path, and perform the required action safely and efficiently. These decisions most commonly occur prior to exits, and at major forks and lane drops. The minimum DSD is based on AASHTO and WisDOT's design criteria. Exhibit 1-2 and Exhibit 1-3 identify areas along I-43 that do not meet AASHTO or WisDOT's minimum standard for DSD.

### Cross Section Elements

A roadway's cross section refers to the ditches, shoulders, median, and travel lanes that make up the roadway. The width of travel lanes and width of shoulders on both the inside and outside of the travel lanes are key elements of freeway design. Narrow inside shoulders result in distressed vehicles having to cross over lanes of traffic to reach a safe area on the outside shoulder. In addition, shoulders provide room for drivers to avoid crashes and give space for snow storage and emergency vehicle access. WisDOT and AASHTO policy for roadways with three or more lanes calls for 12-foot inside and outside shoulders. For two-lane roadways, policy calls for 6-foot inside and 12-foot outside shoulders. Locations with substandard inside or outside shoulders are listed below:

<sup>3</sup> Stopping sight distance differs from vertical alignment or grade. Stopping sight distance can be inadequate even if the vertical alignment is adequate and vice versa. A crest in the road or median barriers can interfere with the driver's line of sight around a curve and affect stopping sight distance. Vertical grade measures the steepness of a roadway. A gradual transition to a steep grade may not affect the driver's line of sight.

- I-43 NB and SB– Silver Spring Drive to Bender Road- outside shoulders 10 feet wide
- I-43 NB and SB – Bender Road to Green Tree Road – outside shoulder 8.5 feet wide
- I-43 NB and SB – Green Tree Road to Good Hope Road – outside shoulder 8 feet wide
- I-43 NB and SB – Good Hope Road to Brown Deer Road – outside shoulder 10 feet wide
- I-43 NB and SB – Near Brown Deer Road – outside shoulder ranges from 0-6 feet wide
- I-43 NB and SB – County Line Road to STH 60 – outside shoulder 10-11 feet wide

### Vertical Clearance

Vertical clearance is the distance between the top of a roadway and the bottom of a bridge over it. Adequate vertical clearance is required to prevent tall trucks from hitting overpasses. Minimum vertical clearance requirements differ based on the type of roadway. Since interstate highways are part of the National Highway System, they require a minimum 16-foot clearance to accommodate oversized vehicles. WisDOT and AASHTO guidelines call for a 16-foot, 4-inch clearance to allow for a 3- to 4-inch asphalt overlay in the future.

Table 1-6 lists the bridges in the study area that do not meet the vertical clearance criteria.

**Table 1-6: I-43 North-South Freeway, Substandard Vertical Clearances**

Location	I-43	Structure Number	Existing Vertical Clearance (feet-inch)	Minimum Vertical Clearance Required for Reconstructed Bridge (feet-inch)
I-43 NB over Silver Spring Drive	Over	B-40-583	16'	16'-3"
I-43 NB-Off over Silver Spring	Over	B-40-586	15'-9"	16'-3"
Railroad Bridge over I-43	Under	B-40-24	14'-8"	16'-4"
Green Tree Road over I-43	Under	B-40-149	14'-11"	16'-4"
County Line Road over I-43	Under	B-40-338	14'-7"	16'-4"
Port Washington Road over I-43	Under	B-45-17	14'-9"	16'-4"
Donges Bay Road over I-43	Under	B-45-18	15'	16'-4"
I-43 NB over Mequon Road (WIS 57/167)	Over	B-45-19	14'-10"	16'-4"
I-43 SB over Mequon Road (WIS 57/167)	Over	B-45-20	14'-10"	16'-4"
Pioneer Road over I-43	Under	B-45-22	15'	16'-4"
Falls Road over I-43	Under	B-45-25	15'-1"	16'-4"
WIS 60 over I-43	Under	B-45-15	16'-2"	16'-4"

Source: WisDOT



### 1.3.2 Safety

The frequency and severity of crashes help define highway safety. WisDOT maintains a database of crashes that occur annually on the state highway system. This section describes the nature of crashes on the I-43 North-South Freeway Corridor and overall crash rates compared the statewide average crash rate. Congestion and geometric and design deficiencies contribute to crashes in the corridor.

#### *Mainline Crashes*

Table 1-7 shows the total number of crashes (not including deer/other animal crashes) on the I-43 North-South Freeway Corridor mainline from 2006 to 2010. In those five years, a total of 1,087 crashes were reported between Silver Spring Drive and WIS 60. Seventy-two percent were property damage crashes and 27 percent were injury or fatality crashes. Truck crashes<sup>4</sup> accounted for approximately 11 percent of the total crashes in 2006-2010.

**Table 1-7: I-43 Total Number of Crashes**

Year	Property Damage Only	Crashes with Injuries	Crashes with Fatalities	Total
2006	132	52	3	187
2007	176	64	1	241
2008	176	60	0	236
2009	136	57	0	193
2010	177	53	0	230
<i>Total</i>	<i>797</i>	<i>286</i>	<i>4</i>	<i>1,087</i>

Source: WisDOT, 2012

Exhibit 1-8 and Exhibit 1-9 show the numbers and types of crashes from interchange to interchange between 2006 through 2010 in Milwaukee and Ozaukee counties. Crashes on I-43 from Silver Spring Drive to Good Hope Road show that almost a third of the total 312 crashes were rear-end crashes (110 northbound crashes and 44 southbound crashes) and another 56 crashes (34 northbound and 22 southbound crashes) were side-swipe crashes. Rear-end and side-swipe crashes indicate congestion as well as inadequate acceleration/deceleration lanes, weaving and substandard ramp spacing. Just north of Silver Spring Drive and south of Bender Road, I-43 northbound drops from three to two lanes, causing traffic congestion most severely in the afternoon rush hour with 110 northbound rear-end crashes reported.

Exhibit 1-8 shows a high number of rear-end crashes between Good Hope Road and Brown Deer Road. More than a third of the total 310 crashes in this section of I-43 were rear-end crashes (43 northbound crashes and 90 southbound crashes) and another 47 crashes (22 northbound and 25 southbound) were side-swipe crashes. Unlike the Silver Spring Drive to

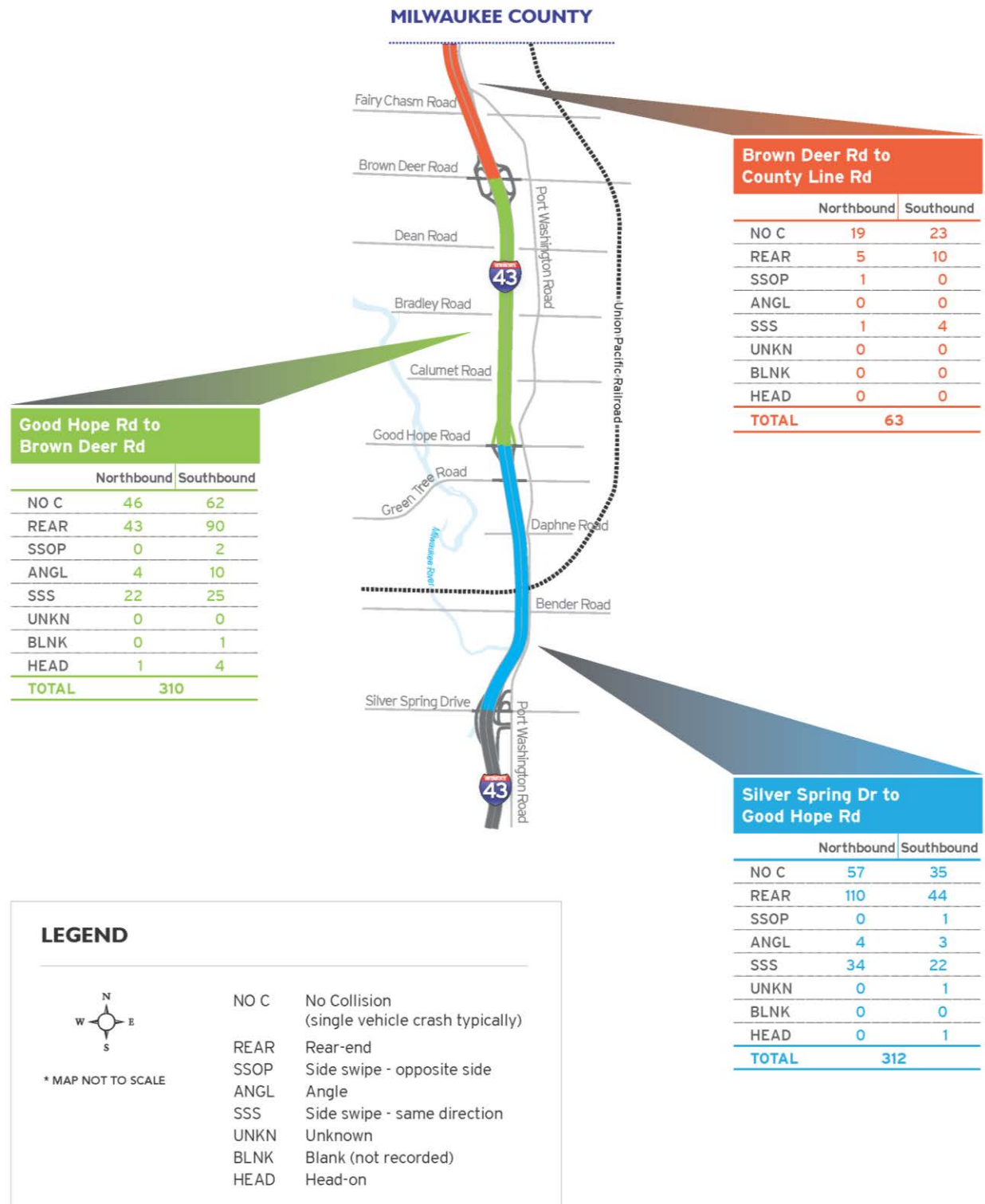
<sup>4</sup> Includes all vehicles requiring a Commercial Driver's License, that is, trucks that weigh more than 26,000 pounds (medium-duty trucks, heavy-duty trucks, and tractor-trailers) and passenger busses with 16 or more seats (including the driver)



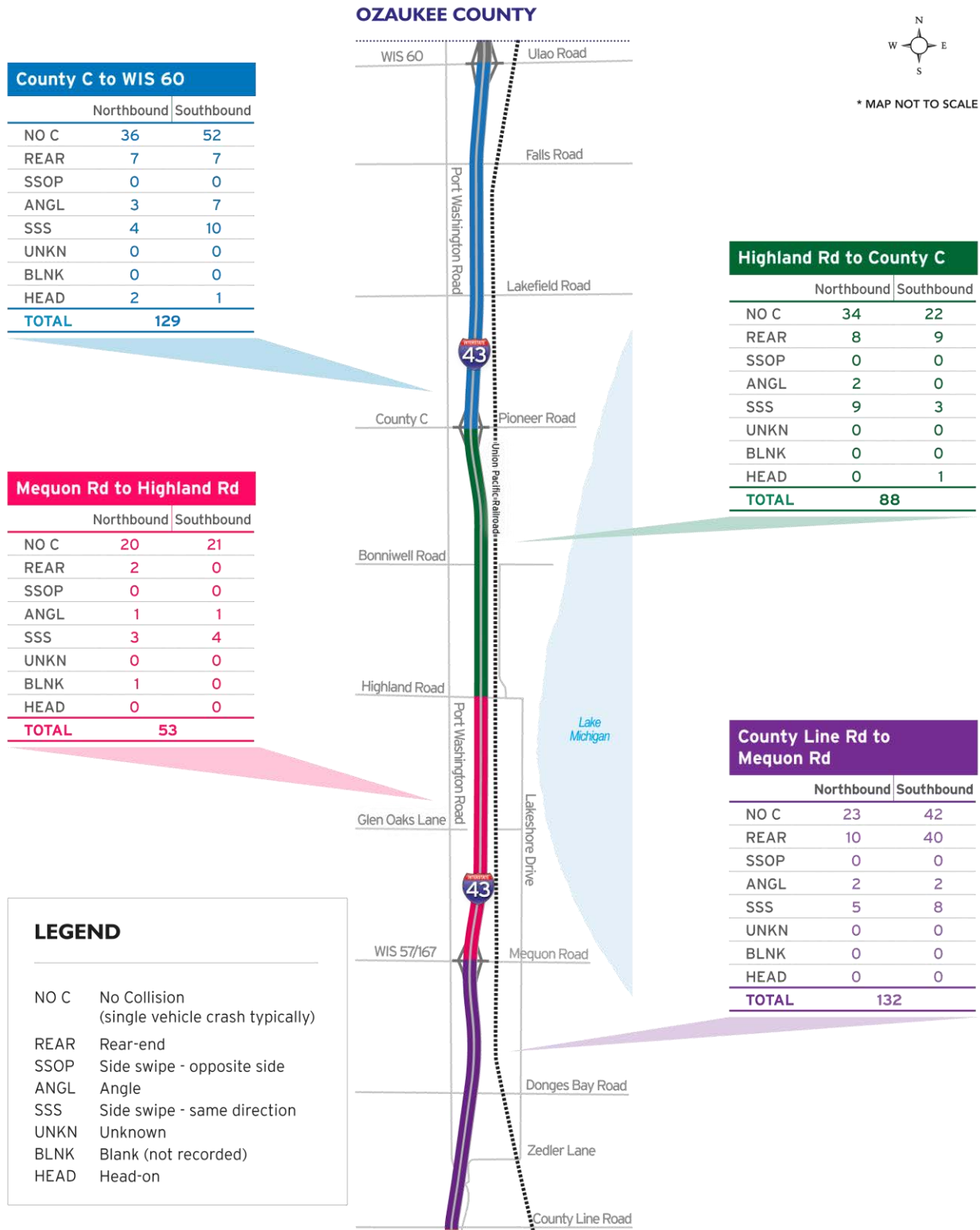
Good Hope Road section, this section presents more rear-end and side-swipe crashes in the southbound direction, reflecting heavy congestion in the morning peak hours.



**Exhibit 1-8: I-43 Crash Types (2006-2010), Milwaukee County**



**Exhibit 1-9: I-43 Crash Types (2006-2010), Ozaukee County**



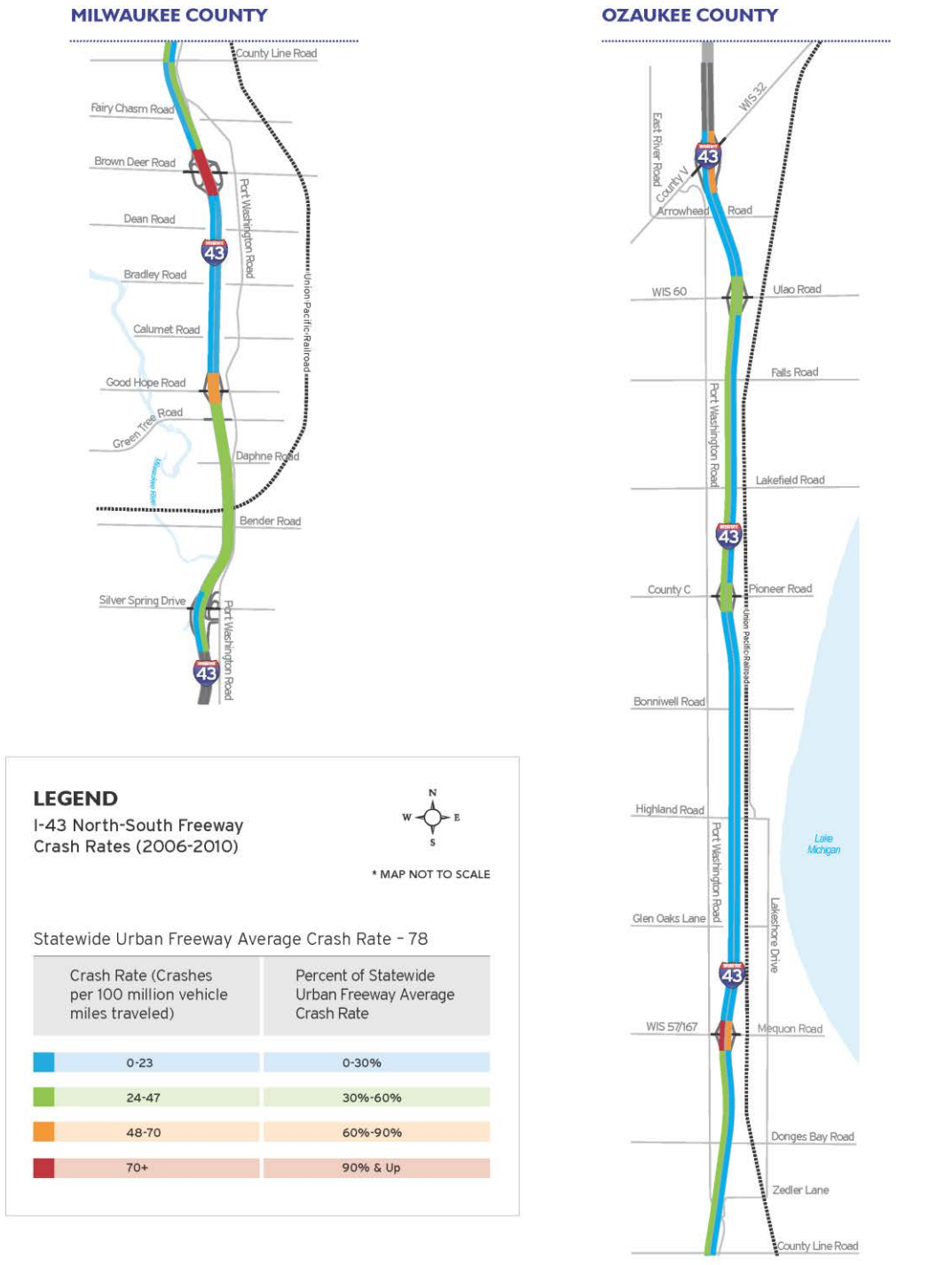
While Exhibit 1-9 does not show a large number of crashes from County Line Road to Mequon Road, the southbound rear-end crashes here are four times what they are in the northbound direction. Public comments received at an August 2012 Public Information Meeting confirmed congestion during the morning rush hour in the southbound lanes near Mequon Road, resulting in traffic backing up on the mainline freeway.

### *Crash Rates*

WisDOT uses crash data and traffic volume to develop statewide average crash rates for urban and rural highways. These statewide average crash rates are the basis to evaluate the safety of the I-43 North-South Freeway Corridor. Crash rates are calculated as crashes per 100 million vehicle miles traveled.

Exhibit 1-10 shows the crash rates in the corridor for the years 2006 to 2010 compared to the statewide urban freeway crash rate. The segments with the highest rates occur near the Brown Deer Road interchange in Milwaukee County and the Mequon Road interchange in Ozaukee County. The higher crash rates at these interchanges reflect the combined traffic congestion discussed above and geometric deficiencies discussed in sections below. Freeway design deficiencies and increasing traffic congestion are expected to continue to push crash rates toward and beyond the statewide average.

**Exhibit 1-10: I-43 Annual Average Crash Rate Summary**



### *Service Interchange Crashes*

Table 1-8 summarizes crashes that have occurred on interchange ramps between 2006 and 2010. The crash data indicate a higher number of crashes associated with interchanges with substandard design and/or heavier traffic in Milwaukee County (Silver Spring Drive, Good Hope Road and Brown Deer Road). The higher number of crashes at Silver Spring may be more related to heavier traffic congestion where I-43 transitions from a 6-lane to a 4-lane facility. Ramp crashes on the Good Hope Road southbound ramp correlates with poor level of service in this area as shown in Exhibit 1-13, substandard design and heavy morning southbound traffic.

**Table 1-8: I-43 Ramp Crash Data**

Interchange	Direction <sup>1</sup>	Property Damage	Injury	Interchange Total
Silver Spring Drive	NB	21	9	71
	SB	26	7	
	Unknown	7	1	
Good Hope Road (County PP)	NB	6	1	49
	SB	29	7	
	Unknown	5	1	
Brown Deer Road (WIS 100)	NB	15	11	49
	SB	13	4	
	Unknown	6	0	
Port Washington & County Line Road (County W)	NB	2	1	3
	SB	0	0	
	Unknown	0	0	
Mequon Road (WIS 167)	NB	2	3	16
	SB	5	3	
	Unknown	1	2	
Pioneer Road (County C)	NB	6	3	19
	SB	8	1	
	Unknown	1	0	
Washington Street (WIS 60)	NB	3	1	12
	SB	5	3	
	Unknown	0	0	
TOTAL		161	58	

<sup>1</sup>NB=northbound  
SB=southbound

Source: WisDOT

### 1.3.3 Existing and Future Traffic Volumes

This section describes the existing and projected future traffic volumes and operations in the study-area freeway system. Roadways are typically designed to accommodate volumes projected to occur 20 to 25 years in the future. For this study, 2040 is used as the “design year”.

Traffic volume is not the only factor that indicates how congested a roadway is, especially during heavy travel periods. Therefore, in addition to traffic volume, the term “level of service”

(LOS) is used in this section<sup>5</sup>. Exhibit 1-11 illustrates the various levels of service. FHWA guidance calls for freeways to provide LOS C, but LOS D is acceptable in isolated urban areas. The I-43 North-South Freeway Corridor will experience increased traffic growth and associated declining levels of service through the year 2040.

### *Existing Traffic Volumes*

On an average weekday, traffic volumes on I-43 range from over 85,000 vehicles per day (vpd) near Silver Spring Drive to 49,000 (vpd) at the north project limits at WIS 60 (see Table 1-9).

**Table 1-9: I-43 Existing and Future Average Weekday Traffic**

Freeway Segment	2010 Existing (vpd)	2040 Future (vpd)	2010-2040 Traffic Growth (percent)	2010-2040 Annual Growth Rate (percent)
STH 60--CTH C	49000	65000	33	0.9
CTH C--Mequon	53620	68000	27	0.8
Mequon--County Line	54940	75000	37	1.0
County Line--Brown Deer	60560	84000	39	1.1
Brown Deer--Good Hope	75000	104000	39	1.1
Good Hope--Silver Spring	85460	112500	32	0.9
Average growth			32	
Average growth rate				0.93

Source: SEWRPC

Heaviest traffic volumes are typically associated with morning peak hour (7 a.m.-8 a.m.) and evening peak hour commute times (4:30 p.m.-5:30 p.m.). Exhibit 1-12 summarizes the existing overall freeway level of service, showing that just over 60 percent of the corridor operates at LOS C or better during the peak morning travel time. Exhibit 1-13 and Exhibit 1-14 illustrate traffic operations by location throughout the study-area corridor for the morning and evening peak hour level of service. In general, morning level of service decreases as traffic travels southbound from Ozaukee County and peak hour traffic volumes increase, indicating a heavy morning commute into Milwaukee County. Level of service is worst from the Good Hope Road interchange to where a third southbound lane picks up just south of Bender Road.

During the evening peak hour travel time, 70 percent of the I-43 corridor operates at LOS C or better (Exhibit 1-12). As Exhibit 1-14 shows, sections of I-43 with LOS D occur in both the northbound and southbound lanes in Milwaukee County, but northbound lanes also exhibit LOS E. This pattern indicates that evening travel may spread out over non-peak travel times, or traffic is finding an alternate route.

<sup>5</sup> Level of service (LOS) is the measure of a roadway's congestion using rankings ranging from A to F. Freeway level of service is based on the number of cars per hour per lane mile, with level of service A exhibiting free-flow traffic and level of service F exhibiting severe congestion that approaches gridlock.



**Exhibit 1-11: Various Levels of Service**



**Level of Service A**



**Level of Service D**



**Level of Service B**



**Level of Service E**



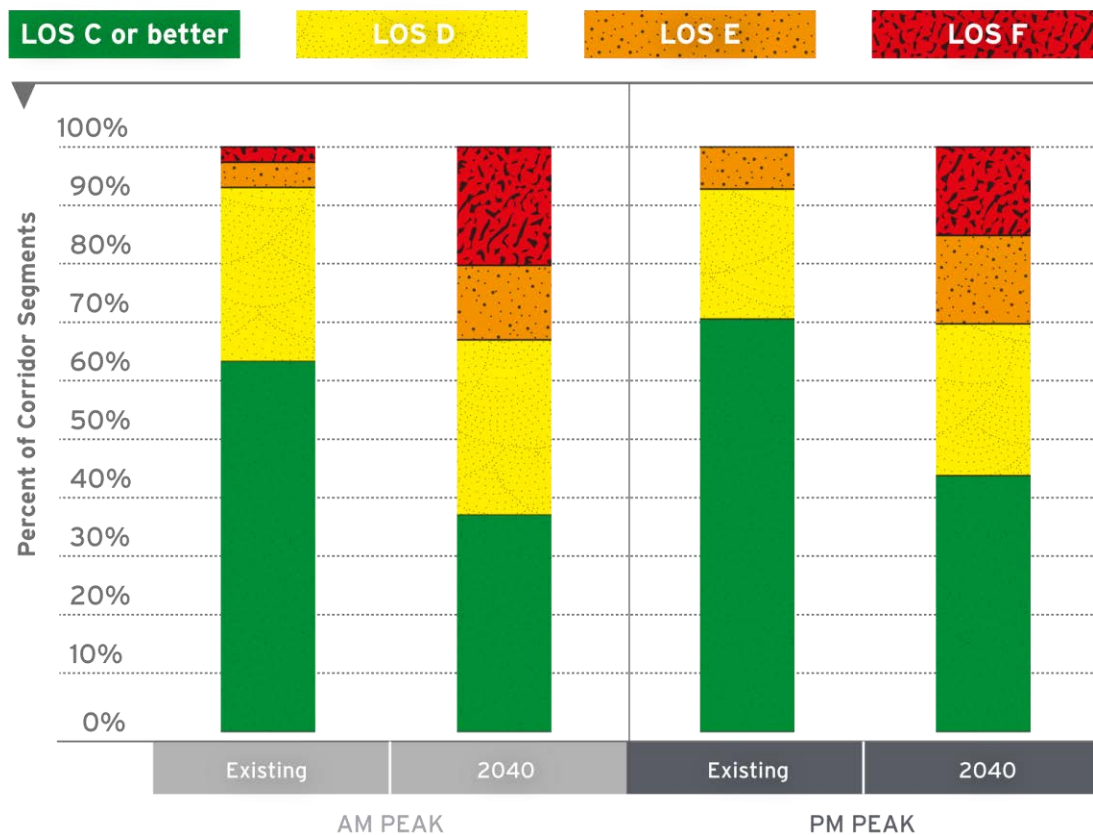
**Level of Service C**



**Level of Service F**

Exhibit 1-12: I-43 North-South Freeway Corridor Level of Service

## I-43 LOS



Source: SEWRPC and WisDOT

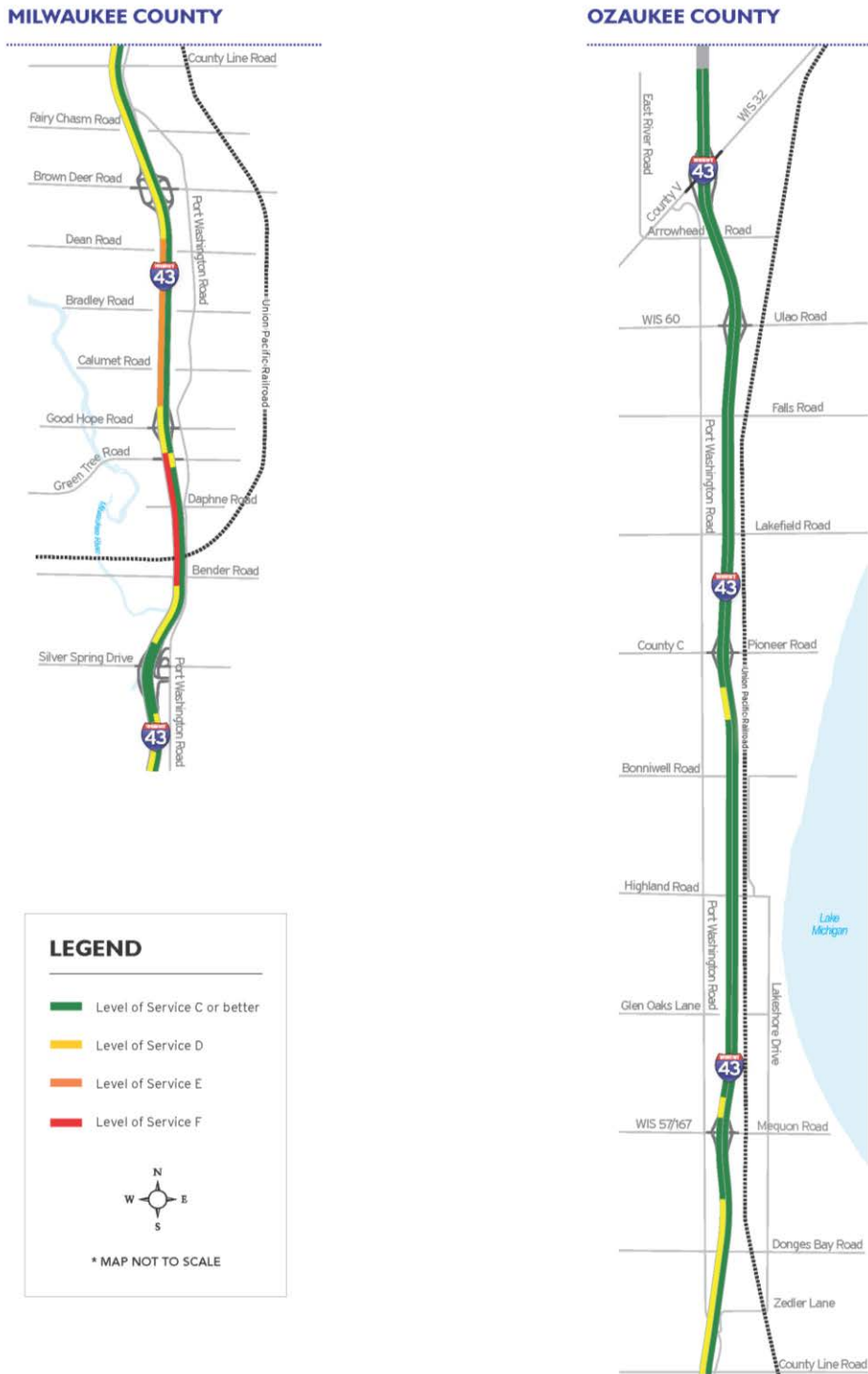
### Future Traffic Volumes

According to SEWRPC projections, traffic in the study-area corridor is expected to increase on average about 32 percent between 2010 and 2040, or just under 1% growth per year (Table 1-9). Level of service in the corridor is expected to decline by 2040 (see Exhibit 1-12). Over 60 percent of I-43 would operate at LOS D or worse during the peak morning travel time. Notably, 20 percent of the corridor would operate at LOS F. Exhibit 1-15 shows that, again, congestion is associated with the heavy southbound morning peak hour traffic, with sections of the freeway operating at LOS E and F as far north as Pioneer Road (County C).

During the 2040 evening peak hour, northbound lanes throughout the study-area corridor in Milwaukee and Ozaukee counties and most of the southbound lanes in Milwaukee County operate at LOS D or worse (Exhibit 1-16). As expected, congestion is worst in Milwaukee County where traffic volumes are highest.



**Exhibit 1-13: I-43 Existing Traffic Operations, Morning Peak Hours (7-8 a.m.), Milwaukee and Ozaukee Counties**



**Exhibit 1-14: I-43 Existing Traffic Operations, Evening Peak Hours (4:30-5:30 p.m.), Milwaukee and Ozaukee Counties**

**MILWAUKEE COUNTY**



**LEGEND**

- Level of Service C or better
- Level of Service D
- Level of Service E
- Level of Service F

\* MAP NOT TO SCALE

**OZAUKE COUNTY**

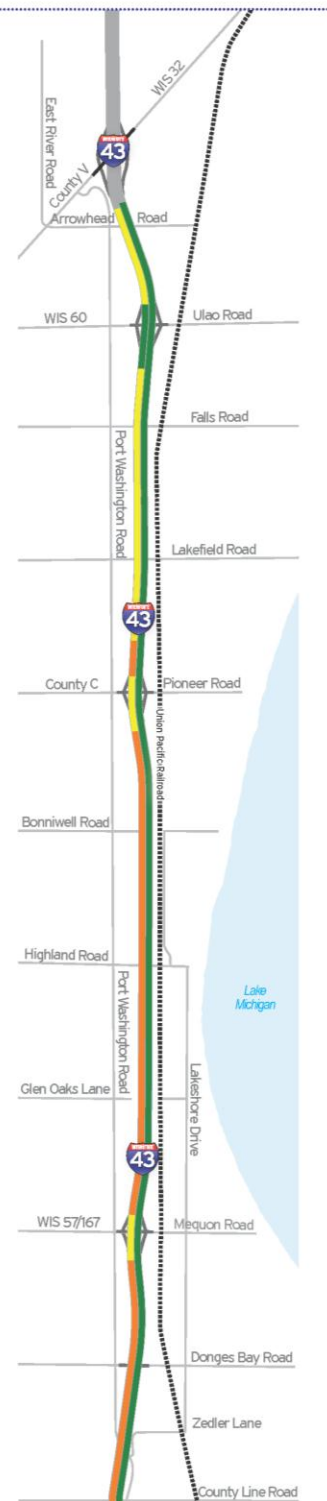


**Exhibit 1-15: I-43 Future (2040) LOS, Morning Peak Hours (7-8 a.m.), Milwaukee and Ozaukee Counties**

**MILWAUKEE COUNTY**



**OZAUKEE COUNTY**



**LEGEND**

- Level of Service C or better
- Level of Service D
- Level of Service E
- Level of Service F

\* MAP NOT TO SCALE

Build Morning Peak Hours (7-8 a.m.)

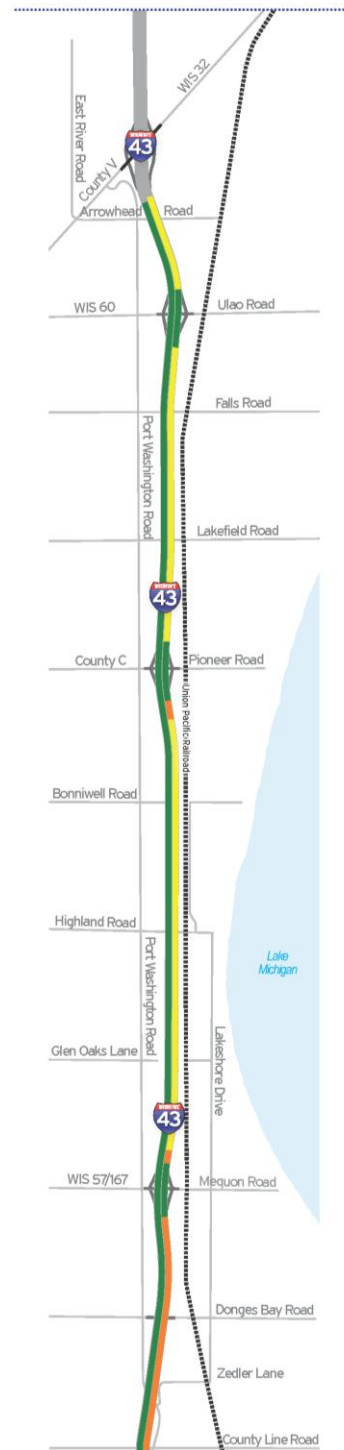


**Exhibit 1-16: I-43 Future (2040) LOS, Evening Peak Hours (4:30-5:30 p.m.), Milwaukee and Ozaukee Counties**

**MILWAUKEE COUNTY**



**OZAUKEE COUNTY**



**LEGEND**

- Level of Service C or better
- Level of Service D
- Level of Service E
- Level of Service F

\* MAP NOT TO SCALE

Buildway Evening Peak Hours (4:30-5:30 p.m.)



### 1.3.4 Land Use and Transportation Planning

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) is the official planning agency for southeastern Wisconsin. SEWRPC's principal responsibility is to prepare an advisory comprehensive plan for the physical development of the region, including a regional land use plan, which is the basis of all other plan elements, including transportation. The implementation of plan recommendations, including the determination as to how much they are implemented, is the responsibility of local, state or other federal resource agencies, based on additional planning, programming and engineering/environmental studies.

Adopted regional and statewide plans and studies relevant to the I-43 North-South Freeway Corridor Study are summarized below.

#### *A Regional Freeway System Reconstruction Plan for Southeastern Wisconsin – SEWRPC Planning Report No. 47 (May 2003)*

SEWRPC prepared a regional freeway system plan to address the anticipated need to reconstruct the southeast Wisconsin freeway system over the next 30 years. SEWRPC conducted the study in the context of the 2020 regional land use and transportation system plans. The 2020 regional transportation system plan proposed modernization and limited expansion of the southeastern Wisconsin freeway system.

The Southeastern Wisconsin Regional Freeway System Advisory Committee made several freeway system recommendations for updates to the 2020 regional transportation system plan. The current 2035 regional transportation plan incorporates the Committee's recommendations, which include:

- Improve freeway system service interchanges:
  - Lengthen and widen ramp tapers.
  - Convert multi-point exits to single point exits.
  - Provide selected auxiliary lanes to address closely spaced interchanges.
- Improve freeway mainline:
  - Improve freeway horizontal and vertical curvature, grades, and vertical clearance to meet standards.
  - Provide full inside and outside shoulders.

In addition to the recommendation for six lanes throughout the study area, the 2003 regional freeway system plan also provides the following conceptual design recommendations:

- Reconstruct interchanges at Pioneer Road (County C), WIS 60, Mequon Road (WIS 57/167), Brown Deer Road (WIS 100), and Good Hope Road (County PP) for improved ramp geometry and better operations. Investigate reconfiguration of Brown Deer Road interchange to diamond style interchange.
- Add a new interchange at Highland Road.

- At the recently reconstructed Silver Spring Interchange, construct new pavement with substandard shoulders and preserve existing bridges and retaining walls since this freeway segment was recently reconstructed.
- Add auxiliary lanes between interchanges. Also, consider relocating northbound exit ramp to Port Washington Road further north.

***2035 Regional Land Use Plan for Southeastern Wisconsin – SEWRPC Planning Report No. 48 (June 2006)***

SEWRPC completed its most recent regional land use plan in 2006. Table 1-10 shows key growth projections in Milwaukee and Ozaukee counties between 2000 to 2035. The projections strongly influence transportation planning. In both counties, vehicle miles traveled (VMT) increases at a faster rate than population, households or employment. While Ozaukee County is experiencing greater growth in all these categories, Milwaukee County still contains a significantly higher percentage of the region's population and employment.

**Table 1-10: Growth Projections**

Growth Factors	Percent Increase (2000-2035)		Percent of Region (2035)	
	Milwaukee County	Ozaukee County	Milwaukee County	Ozaukee County
Population	7.1	22.8	44.3	4.4
Households	13.2	29.4	46.2	4.3
Employment	<0.1	21.5	45.7	4.5
Urban Land Use	5.2	11.5	27.7	7.2
Vehicle Miles Traveled	16.0	42.7	n/a	n/a

Source: 2035 Regional Land Use Plan for Southeastern Wisconsin (Tables 28, 30, 31 and 35)

Source: 2035 Regional Transportation System Plan for Southeastern Wisconsin (Table 107)

***A Regional Transportation System Plan for Southeastern Wisconsin: 2035 – SEWRPC Planning Report No. 39 (June 2006) and Review, Update and Reaffirmation of the Year 2035 Regional Transportation Plan – SEWRPC Memorandum Report No. 197 (June 2010)***

SEWRPC completed an interim review and update of its 2035 regional transportation plan, which affirmed much of the plan, with minor modifications and updates. The transportation system plan forecasts traffic growth and transportation demand based on the regional land use plan data including population, household and employment growth. The plan recommends freeway and surface arterial street improvements to address traffic congestion unlikely to be alleviated by future land use, systems management, demand management, bicycle and pedestrian facilities and public transit measures that are proposed in the plan. Based on the plan's identified transportation needs, the 2035 regional transportation system recommends improvements to the I-43 North-South Freeway Corridor and incorporates the findings from the 2003 Southeast Freeways Plan.



The 2035 regional transportation system plan also recognizes that the 127 miles of freeway widening proposed in the plan, including the I-43 North-South Freeway Corridor will undergo preliminary engineering and environmental impact studies by WisDOT. The plan acknowledged that during preliminary engineering, alternatives will be considered, including spot improvements and rebuilding to modern design standards, with and without additional lanes. The no-build alternative will also be considered. The plan further acknowledged that only at the conclusion of preliminary engineering would a determination be made as to how the freeway would be reconstructed.

### ***SEWRPC 2011-2014 Transportation Improvement Program for Southeastern Wisconsin (February 2011)***

In accordance with the 1990 Clean Air Act Amendments, proposed highway improvements must be included in an approved Transportation Improvement Program (TIP). The TIP lists state and local highway, public transit, and other transportation improvement projects proposed for implementation over a 4-year period. Transportation projects receiving U.S. Department of Transportation (which includes FHWA) funds should be included in the transportation improvement program. The I-43 North-South Corridor Study is included in the amendment to the 2011-2014 TIP as TIP No. 787: “Preliminary engineering for reconstruction of IH 43 from Silver Spring Drive to STH 60 in Ozaukee and Milwaukee Counties (14.11 mi)”.

### ***Connections 2030: Statewide Long-Range Transportation Plan (October 2009)***

Adopted in October 2009, Connections 2030 is WisDOT’s long-range, statewide multimodal transportation plan that serves as a vision for all transportation modes over the next 20 years. The plan identifies priority corridors throughout the state. These corridors all serve critical economic and population centers, are significant transportation corridors, have significant travel and economic development growth, and serve an important role for other transportation modes. The I-43 North-South Freeway Corridor is a priority corridor, connecting Milwaukee to Green Bay. The long range plan recommended studying I-43 reconstruction between the Marquette Interchange in Milwaukee County and WIS 57 in Ozaukee County.

### ***Wisconsin Administrative Code TRANS 75***

Wisconsin Administrative Code TRANS 75 (implemented in December 2010) states that WisDOT “shall include bikeways and sidewalks in all new highway construction and reconstruction projects funded in whole or in part from state funds or federal funds . . .” TRANS 75 complies with the U.S. Department of Transportation (U.S. DOT) “Complete Streets” policy.<sup>6</sup>

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<sup>6</sup> “The United States Department of Transportation (DOT) is providing this Policy Statement to reflect the Department’s support for the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use. Legislation and regulations exist that require inclusion of bicycle and pedestrian policies and projects into transportation plans and project development. Accordingly, transportation agencies should plan, fund, and implement improvements to their walking and bicycling networks, including linkages to transit.” From United States Department of Transportation

I-43 and the interchange ramps in the study area are exempt from TRANS 75 requirements because bicycles and pedestrians are prohibited on these roadways. However, any local roadways reconstructed as part of this project would be subject to TRANS 75 requirements.

WisDOT will accommodate local pedestrian and bicycle facilities, where practicable and consistent with TRANS 75 and U.S. DOT policy, as part of the alternatives development process.

### 1.3.5 System Linkage and Route Importance

Interstate 43 is a part of the National Interstate System and is identified in the state's Connections 2030 plan as a system-level priority corridor linking south-central and eastern Wisconsin. Priority corridors are "critical to Wisconsin's travel patterns and support the state's economy".<sup>7</sup> The National Highway System is a priority system of highways that have been identified and designated to 1) ensure connectivity to the national defense highway network and other important regional transportation routes; and 2) provide a high level of safety, design, and operational standards. I-43 is also a designated federal/state "long truck route" allowing longer commercial vehicles to use the freeway.

The 190-mile long I-43 corridor connects I-39/I-90 in Beloit at the Wisconsin/Illinois border, to US 41/US 141 in Green Bay in northeastern Wisconsin (Exhibit 1-17). The freeway is a gateway to popular tourist locations in northern Wisconsin and links major industrial centers in south-central Wisconsin, Milwaukee, and Green Bay.

In the Milwaukee metropolitan area, I-43/I-894 is part of a bypass around the City of Milwaukee for through-traffic and provides an important freeway connection for several Milwaukee County communities. I-43 is concurrent with I-94 and US 41 between the Mitchell Interchange and the Marquette Interchange, serving as part of the north-south freeway link between Chicago and Milwaukee.

According to SEWRPC's 2003 regional freeway reconstruction plan, I-43 serves a substantial amount of through-traffic in southeastern Wisconsin. That is, over 15% of weekday trips are defined as travel with neither end of the trip located within the county in which the freeway segment is located. The I-43 study area also serves substantial inter-county traffic, meaning that trips have an origin in one county and destination in another county. Inter-county trips account for over 20% of weekday traffic.

In addition to serving through trips, the study-area freeway system is an important commuter route for the approximately 480,000 employees (478,760 – 2010 County Business Patterns) who work in Milwaukee and Ozaukee Counties.

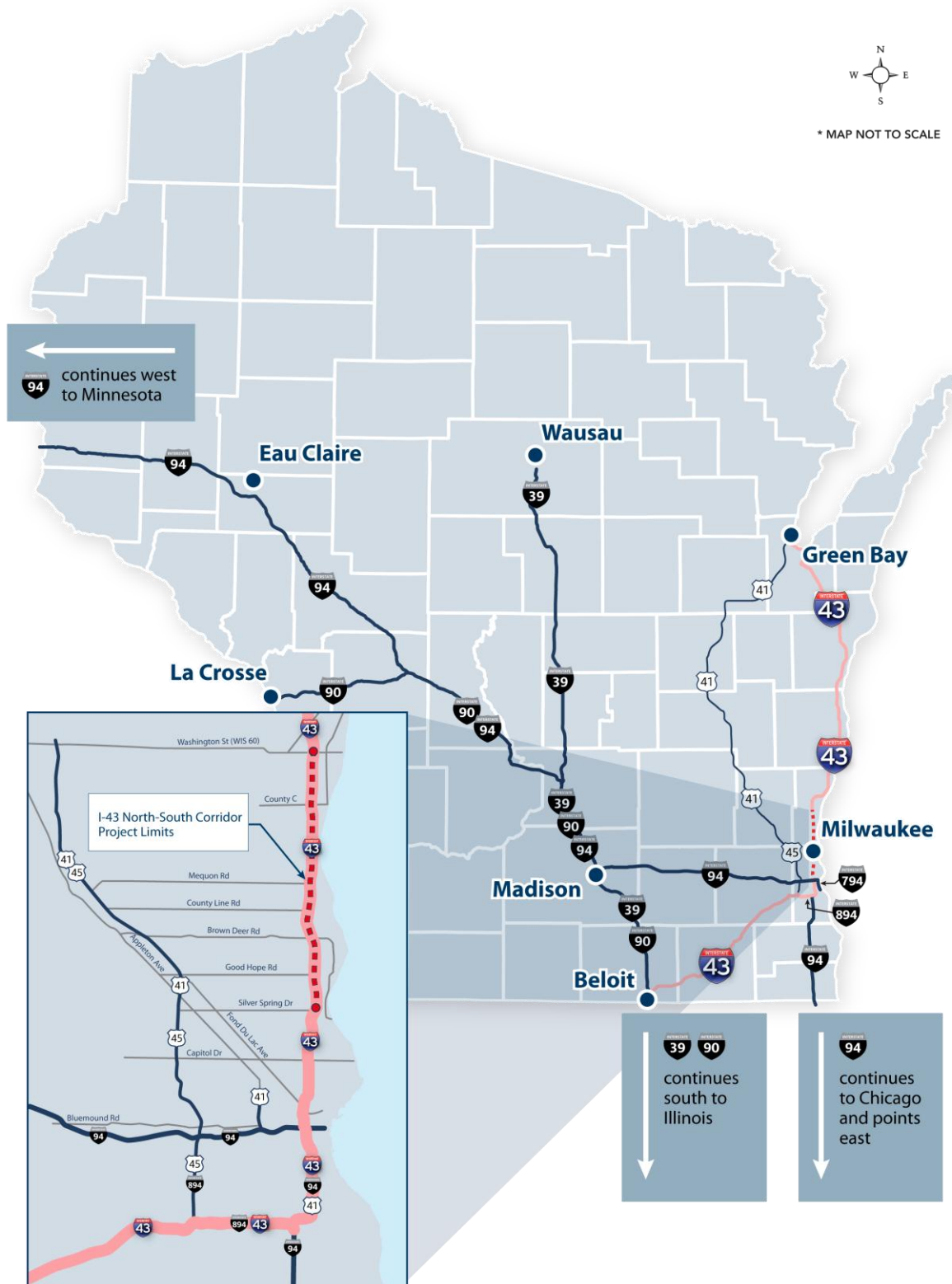
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Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations, signed on March 11, 2010 and announced March 15, 2010.

<sup>7</sup> <http://www.dot.wisconsin.gov/projects/state/2030-maps.htm>



Exhibit 1-17: System Linkages



As a major north-south route through eastern Wisconsin, I-43 serves a network of connecting highways that carry traffic between Lake Michigan on the east, and destinations to the west (see Table 1-11 and Exhibit 1-17).

**Table 1-11: Connecting Highways to I-43**

Connecting Highway	Average Daily Traffic (2010)	Regional Connections from I-43
Silver Spring Drive (County E)	21,500-42,200	Links I-43 to US 41/45, City of Glendale, Village of Whitefish Bay and Milwaukee's west side
Good Hope Road (County PP)	27,600 (2007)	Links I-43 to US 41/45, Milwaukee's west side, the Village of Fox Point, and the City of Glendale
Brown Deer Road (WIS 100)	23,300 (2009)	Links I-43 to US 45/41, Milwaukee's northwest side, Village of Brown Deer, Village of Bayside, and Village of River Hills
County Line Road (County Q)	5,200	Links I-43 to Milwaukee's northwest side and City of Mequon
Mequon Road (WIS 57/167)	28,700	Links I-43 to US 41/45, City of Mequon, and Village of Germantown
Pioneer Road (County C)	12,900	Links I-43 to Village of Cedarburg
WIS 60	15,600	Links I-43 to Village of Grafton, Village of Jackson, US 45 and US 41

Source: WisDOT

### ***Intermodal Linkage***

In addition to highway system linkages, the I-43 North-South Freeway Corridor provides important connections to air, rail, inter-city bus, and water transportation in southeastern Wisconsin.

### ***Airport Access***

Wisconsin's two international airports include Austin Straubel International Airport (GRB), located north of the study area in Green Bay, and General Mitchell International Airport (GMIA), located south of the study area in Milwaukee. I-43 is an important access route for passengers arriving and departing from these airports.

### ***Inter-city Bus Access***

Indian Trails, Jefferson Lines, Lamers, and Greyhound bus companies utilize the study-area freeway system to provide inter-city bus service.

### ***Local Bus Access***

Milwaukee County Transit Service (MCTS) uses I-43 for express bus service. In Milwaukee County, express buses connect northern Milwaukee county communities and the University of Wisconsin-Milwaukee and downtown Milwaukee. MCTS also operates the Ozaukee County

Express, providing service between Port Washington in Ozaukee County and downtown Milwaukee.

### Passenger Train Access

An Amtrak Station is located at GMIA and at the Milwaukee Intermodal Station approximately seven miles south of the study area in downtown Milwaukee. I-43 provides a freeway access route for those in the study area to the Amtrak services.

### Port Access

Interstate 43 is part of the highway network serving the Port of Milwaukee, about eight miles south of the study area on Lake Michigan. The port is a regional transportation and distribution center with a primary market that includes Wisconsin, northern and western Illinois, and Minnesota. The Lake Express Ferry operates out of the port, providing service between Milwaukee, Wisconsin and Muskegon, Michigan. I-43 also provides interstate access to Manitowoc, Wisconsin where the Badger Ferry provides service to Ludington, Michigan.

### **1.3.6 Environmental Aspects**

As noted in subsection 1.2, the purpose of the proposed action also includes minimizing impacts to the natural and built environment to the extent feasible and practicable. Avoiding and minimizing impacts to existing development and environmental resources is strongly considered by WisDOT and FHWA in development, evaluation, and refinement of the alternatives for implementing purpose and need.

The USACE, a cooperating agency to this project, may adopt this EIS to fulfill their agency responsibilities pursuant to the National Environmental Policy Act of 1969 and in compliance with 40 CFR 1500-1508. For projects affecting resources protected under the Clean Water Act, the development of alternatives must consider the Section 404(b)(1) *Guidelines for Specification of Disposal Sites for Dredged or Fill Material* administered by USEPA and USACE (1977). These guidelines state that dredged or fill material should not be discharged into aquatic ecosystems, including wetlands, unless no practicable alternatives can be demonstrated; such discharge will not have unacceptable adverse impacts; and all practical measures to minimize negative effects are undertaken.

### **1.3.7 Summary of Need**

The purpose of the proposed I-43 North-South Freeway Corridor project is to provide a safe and efficient transportation corridor to meet identified needs. Key needs summarized below include:

- Correct freeway deficiencies. The I-43 North-South Freeway Corridor exhibits a number of pavement, design and geometric deficiencies.
  - The pavement has been rehabilitated and resurfaced twice since initial construction in the 1950s and 1960s. These improvements help extend pavement life, but underlying deterioration continues to undermine its useful life. The planned pavement resurfacing in

- 2014 is expected to maintain the driving surface for a short period time before complete reconstruction is scheduled.
- All the interchanges have substandard distances between ramp terminals and local intersections. Three interchanges have substandard distances between ramp terminals and local driveways.
  - All interchanges have substandard ramp design.
  - 10 locations along the freeway mainline have substandard horizontal or vertical curves
  - 24 areas along the freeway mainline have a substandard vertical alignment
  - Nearly the entire length of the freeway mainline has a substandard cross slope
  - Six locations have substandard stopping sight distance and 14 locations have substandard decision sight distance
  - Twelve locations have substandard vertical clearance under bridges
- Improve highway safety. The character of crashes and related crash rates reflect the design deficiencies and traffic congestion along the freeway corridor. The highest number of crashes occur in the more congested parts of the freeway corridor in Milwaukee County, between Good Hope Road and Silver Spring Drive. The highest crash rates occur at interchanges with substandard ramp design.
  - Growing traffic volumes and declining traffic operations. While traffic operations in Milwaukee County are poor in many sections of the freeway now, the poor operations are expected to expand over virtually the entire corridor in Milwaukee County and into Ozaukee County by the year 2040.
  - Support regional land use and transportation plans. The SEWRPC regional plans have identified the need to address improvements to the I-43 North-South Freeway Corridor to accommodate anticipated land use and travel patterns.
  - Maintain a vital link within the highway network and with other transportation modes. The I-43 North-South Corridor is a critical transportation corridor linking several economic activity areas and the highway network within and beyond Wisconsin. The freeway corridor also provides access to multiple transportation modes, including regional airports, intercity and local bus service, passenger rail, ferry service and the Port of Milwaukee.
  - Avoid and minimize impacts to the natural, cultural and built environment. The I-43 North-South Freeway Corridor travels through both heavily developed and rural areas. Important natural resources throughout the corridor include wetlands, waterways, floodplains and managed open space. Many neighborhoods and commercial areas adjacent to the corridor will be sensitive to noise, air quality and local access impacts. Cultural resources including parks, recreation areas, historic resources and potential archeological resources are also present. These resources will influence the project as alternatives are developed to address the project's purpose and need.

## 1.4 Local Government, Public and Agency Input

### 1.4.1 Public Meetings

WisDOT provided an opportunity for the public to review exhibits that illustrated the need for the project and to speak with the project team at public information meetings held in August 2012. In general, those who spoke with the study team at the workshops or submitted written comments at, or after the meeting concurred with the need to reconstruct the study-area freeway system. Public comments included safety concerns at the Brown Deer Road, Good Hope Road and Mequon Road interchanges, and along I-43 just north of Silver Spring Drive where the freeway tapers from three to two lanes, causing traffic backups. Concerns over noise along the freeway were expressed, especially in Milwaukee County. Also, freeway drainage and flooding problems in the area around Nicolet High School were noted as concerns for residents. Public comments supporting or opposing a new interchange at Highland Road were roughly evenly split.

### 1.4.2 Stakeholder Meetings

WisDOT held stakeholder meetings in July and August 2012 to gather input from local governments and major retail, medical services, and a high school in the study area. The stakeholders were in favor of capacity expansion, while avoiding or minimizing the socioeconomic and environmental impacts. Stakeholders noted traffic concerns with afternoon backups north of Silver Spring Drive at the point where I-43 tapers from three to two lanes, and the morning traffic backups just south of Pioneer Road in Ozaukee County. Others noted areas of congestion are near the interchanges at Good Hope Road, Brown Deer Road, and Mequon Road. In general, the stakeholders were in favor of a new interchange at Highland Road.

Other areas of concern the stakeholders identified are drainage and storm water management, pedestrian and bicycle accommodations, park-n-ride lot location, proximity to water utilities, and noise impacts, especially in the Milwaukee County portion of the project.

### 1.4.3 Agency Scoping Meeting

WisDOT and FHWA held an agency scoping meeting in August 2012 to discuss the corridor, purpose and need factors, the environmental process and the schedule. The participants included representatives from SEWRPC, the City of Mequon, the City of Glendale, USEPA, U.S. Army Corps of Engineers (USACE), DNR, North Shore Water Commission and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP). Overall, agencies had concerns about storm water and emphasized that WisDOT and FHWA follow the hierarchy of avoid, minimize, and mitigate impacts of the project.

## 1.5 Relationship to Other Proposed Actions

WisDOT plans a pavement overlay project in 2014 for I-43 between Bender Road and WIS 32. The project will maintain the driving surface until the freeway can be reconstructed, pending the outcome of this study. Between WIS 32 and the north Ozaukee County line, WisDOT plans to rehabilitate nine of the bridges in 2014. The remaining bridges within these limits will likely be rehabilitated in 2019 or 2020. The existing concrete pavement within these limits will undergo a pavement rehabilitation in 2020. Conversations with other municipalities did not identify significant local projects in the study area at this time.