Statement of Purpose

The Wisconsin Department of Transportation (WisDOT), on behalf of the Federal Highway Administration (FHWA), is responsible for conducting an environmental review for proposed transportation projects. Transportation projects vary in type, size and complexity, and their potential to affect the environment. Transportation project effects can vary from very minor to significant impacts to the natural and built environment. To account for the variability of project impacts, three basic "classes of action" are allowed for compliance as a part of the National Environmental Policy Act (NEPA) and Wisconsin Environmental Policy Act (WEPA) processes to fulfill requirements of 42 USC 4332, Wis. Stat. 1.12 and Trans 400.

1. An *Environmental Impact Statement (EIS)* is prepared for projects where it is known that the action will have a significant effect on the environment.
2. An *Environmental Assessment (EA)* is prepared for actions in which the significance of the environmental impact is not clearly established.
3. *Categorical Exclusions (CEs)* are issued for actions that do not individually or cumulatively have a significant effect on the environment.

Following an appropriate level of agency review and public involvement to solicit input from all affected public, WisDOT proposes that this project will not have significant environmental impacts, and has prepared an Environmental Assessment to document the NEPA process.

For Environmental Assessment Documents, a Finding of No Significant Impact (FONSI) is issued by FHWA when environmental analysis and interagency review during the EA process find a project to have no significant impacts on the quality of the environment. Significance is determined by context (area and setting of the project) and intensity (degree of impact or effect on a resource). If it is determined that there will be no significant impacts, FHWA will approve the Final EA and issue a FONSI statement to conclude the process and document the decision.

Organization and Content of this Document

WisDOT uses a series of worksheets to investigate, evaluate, and report the environmental effects of proposed transportation actions. The worksheets are comprised of Basic Sheets and Factor Sheets as a framework for preparing the EA. All Basic Sheets must be completed, while Factor Sheets are completed only if the specific resource they address is affected by the project in a way that warrants further discussion, whether negatively or positively.

The environmental document needs to be considered in its entirety. In other words, to completely understand the reasons that one alternative is chosen over another, the entire document must be considered.

The environmental document represents a process of consideration of potential impacts related to potential final design and construction. It is used to help decide the best option for final design and construction that has the least impacts on the environment while considering cost and engineering issues. Only preliminary engineering, or a level of engineering necessary to complete the environmental document, is allowed to occur during the NEPA phase of project development. Final engineering and construction can only occur after an environmental document has been completed.

BASIC SHEETS DEFINED

This section of the Environmental Assessment (EA) is called the "Basic Sheets." It contains background information for the study, defines the purpose and need and describes all of the alternatives that were studied to address the purpose and need. This section also provides information on public involvement, environmental factors, a summary of impacts, and other information pertinent to the EA.

ENVIRONMENTAL EVALUATION OF FACILITIES DEVELOPMENT ACTIONS

Wisconsin Department of Transportation (WisDOT)
DT2094 1/2016
BASIC SHEET 1 – PROJECT SUMMARY

Project ID 1007-10-02 Construction ID 1007-12-78, -79, -80	Project Termini US 12/18 Interchange	Funding Sources *(check all that apply)* ☒ Federal ☒ State ☐ Local Estimated Project Cost & Funding Source (state and/or federal). Year of Expenditure (YOE) dollars include delivery cost. $84.1M – $90.8M (see **Appendix A**)
Route Designation *(if applicable)* I-39/90 National Highway System (NHS) Route ☒ Yes ☐ No	Nearest Community City of Madison and Town of Blooming Grove	Real Estate Acquisition Portion of Estimated Cost (YOE) $2.0M
Project Title Illinois State Line – Madison	Section / Township / Range Sections 14, 23, 25, and 26/T7N/R10E	Utility Relocation Portion of Estimated Cost (YOE) $0.1M
County Dane		
Bridge Number(s) *(if applicable)* Old: B-13-458/462/463 (widen) C-13-044 (Culvert Extensions) New: B-13-XXX (4)	For an ER, indicate the date funding was authorized to begin preliminary engineering. For an EA, indicate the date the Process Initiation Letter was accepted by FHWA. 12/21/2017 (updated)	

Right of Way Acquisition	Acres*
Fee	4.0
TLE	0.5
PLE	0.0

* Note: An additional 3.66 acres of WisDOT owned land will be converted to highway right-of-way

Functional Classification of Existing Route (FDM 3-5-2)	Urban	Rural
Freeway/Expressway	☒	☐
Principal Arterial	☐	☐
Minor Arterial	☐	☐
Major Collector		☐
Minor Collector		☐
Collector	☐	
Local	☐	☐
No Functional Class	☐	☐

WisDOT Project Classification (FDM 3-5-2)	
Resurfacing	☐
Pavement Replacement	☐
Reconditioning	☐
Expansion	☐
Bridge Rehabilitation	☐
Bridge Replacement	☐
"Majors" Project (there are both state and federal majors)	☒
SHRM	☐
Reconstruction	☐
Preventive Maintenance	☐
Safety	☐
Other – Describe:	☐

☐ FHWA Draft Type 2c Categorical Exclusion (CE)/WisDOT Draft Environmental Report (ER). **No significant impacts indicated by initial assessment.**
☒ FHWA/WisDOT Draft Environmental Assessment (EA). **No significant impacts indicated by initial assessment.**

John A. Vesperman — (Print – Preparer Name, Title, Company/Organization)
WISDOT - SWR Engineering Chief
John A Vesperman — (Signature, Title)
11/06/2018 — (Date – m/d/yy)

(Signature – Director, Bureau of Technical Services)
11-7-2018 — (Date – m/d/yy)
Michael Adams — (Signature, Title)
11/13/2018 — (Date – m/d/yy)

☒ Region ☐ Aeronautics ☐ Rails & Harbors ☒ FHWA ☐ FAA ☐ FTA ☐ FRA

☐ FHWA Final Type 2 Categorical Exclusion (CE)/WisDOT Final Environmental Report (ER). It has been determined **no significant impacts will occur** and a Public Hearing is not required.

After reviewing and addressing substantive public comments, updating the Draft CE/ER or Draft EA and coordinating with other agencies, it is determined this action:

☐ **Will NOT significantly affect** the quality of the human environment. This document is a Final CE/Final ER.
☐ **Will NOT significantly affect** the quality of the human environment. This document is a Final EA/Finding of No Significant Impact.
☐ **Has potential to significantly affect** the quality of the human environment. Draft Environmental Impact Statement (EIS) required.

(Print – Preparer Name, Title, Company/Organization) (Date – m/d/yy)

(Signature – Director, Bureau of Technical Services) (Date – m/d/yy)

(Signature, Title) (Date – m/d/yy)
☐ Region ☐ Aeronautics ☐ Rails & Harbors

(Signature, Title) (Date – m/d/yy)
☐ FHWA ☐ FAA ☐ FTA ☐ FRA

BASIC SHEET 2 – TABLE OF CONTENTS, ABBREVIATIONS/ACRONYMS, DOCUMENT DESCRIPTION

1. Table of Contents

Basic Sheets

Factor Sheets

Appendices

2. Abbreviations and Acronyms

AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos Containing Material
ACS	American Community Survey
ADT	Average Daily Traffic
AIN	Agricultural Impact Notice
AIS	Agricultural Impact Statement
BMP's	Best Management Practices
CARPC	Capital Area Regional Planning Commission
CE	Categorical Exclusion
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CY	Current Year
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
Decibel (dBA)	a unit of measurement for sound level in a frequency which the human ear responds to
DHV	Design Hourly Volume
D/J	Dingell-Johnson, authorizes the Secretary of Interior to provide financial assistance for state fish restoration and management plans and projects
DOE	Determination of Eligibility, for the National Register of Historic Places
EA	Environmental Assessment
EAB	Emerald Ash Borer beetle
ECIP	Erosion Control Implementation Plan
EIS	Environmental Impact Statement
EJSCREEN	Environmental Justice Screening and Mapping Tool
Endangered Species	Species identified by either state or the federal government as likely to be in danger of becoming extinct through a significant portion of or all of its range
EO	Executive Order
EPA	Environmental Protection Agency
ER	Environmental Report
ERP	Wisconsin Environmental Repair Program
FAA	Federal Aviation Administration
FDM	Facilities Development Manual
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GIS	Geographic Information System
GP	General Permit
Hazmat	Hazardous Material
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
HMA	Hazardous Materials Assessment
HPZ	High Potential Zone
I-39/90	Interstate Highway 39 and 90, also known as the mainline
IEA	Indirect Effects Analysis
LOP	Letter of Permission
LOS	Level of Service, refers to the overall quality of traffic flow at an intersection or mainline section
LUST	Leaking Underground Storage Tank
LWCF	Land and Water Conservation Fund, established by Congress in 1964 to fulfill a bipartisan commitment to safeguard our natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans
MATPB	Madison Area Transportation Planning Board
mi	mile
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
N/A	Not Applicable

NLC	Noise Level Criteria
NEPA	National Environmental Policy Act
NHI	National Heritage Inventory
NHL	National Historic Landmark
NHS	National Highway System
NLEB	Northern Long-eared Bat
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
PCN	Pre-Construction Notification
PHFS	Primary Highway Freight System
PIM	Public Involvement Meeting
PLE	Permanent Limited Easement
ppm	parts per million
P/R	Pittman-Robertson, where excise tax revenue from the sale of firearms and ammunition products be apportioned to State Fish and Game Agencies on a variety of projects related to wildlife, conservation efforts and shooting programs
ROA	Range of Alternatives
ROD	Record of Decision
RPC	Regional Planning Commission
RTP	Regional Transportation Plan
R/W	Right-of-Way
Section 106	Section 106 of the National Historic Preservation Act, requires Federal agencies to take into account the effects of their undertakings on historic properties
Section 4(f)	Section 4(f) of the Department of Transportation Act dealing with impacts on historic properties, parks, and wildlife refuges.
SHPO	State Historic Preservation Office
SHWIMS	Wisconsin Department of Natural Resources Solid and Hazardous Waste Information System
SPILLS	Wisconsin Spills List
STIP	Statewide Transportation Improvement Program
TAFIS	Traffic Analysis Forecasting Information System
TCGP	Wisconsin Pollutant Discharge Elimination System Transportation Construction General Permit
TDM	Travel Demand Model
Threatened Species	Species identified by either the state or federal government as likely to be in danger of becoming endangered in the foreseeable future
TIP	Transportation Improvement Program
TFS	Traffic Forecasting Section
TLE	Temporary Limited Easement
TMDL	Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.
US 12/18	United States Highway 12 and 18, also known as the Madison Beltline
US 51	United States Highway 51, also known as Stoughton Road
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USCG	United States Coast Guard
UST	Underground Storage Tank
VHS	Viral Hemorrhagic Septicemia
WEPA	Wisconsin Environmental Policy Act
WIS 30	Wisconsin State Highway 30
WisDOT	Wisconsin Department of Transportation
WisDOT BTS	Wisconsin Department of Transportation, Bureau of Technical Services
WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollutant Discharge Elimination System
YOE	Year of Expenditure

3. Environmental Document Statement

This environmental document is an essential component of the National Environmental Policy Act (NEPA) and Wisconsin Environmental Policy Act (WEPA) project development process, which supports and complements public involvement and interagency coordination.

The environmental document is a full-disclosure document which provides a description of the purpose and need for the proposed project, the existing environment, analysis of the anticipated beneficial or adverse environmental effects resulting from the proposed action and potential mitigation measures to address identified effects. This document also allows others the opportunity to provide input and comment on the proposed action, alternatives and environmental impacts. Finally, it provides the decision maker with appropriate information to make a reasoned choice when identifying a preferred alternative.

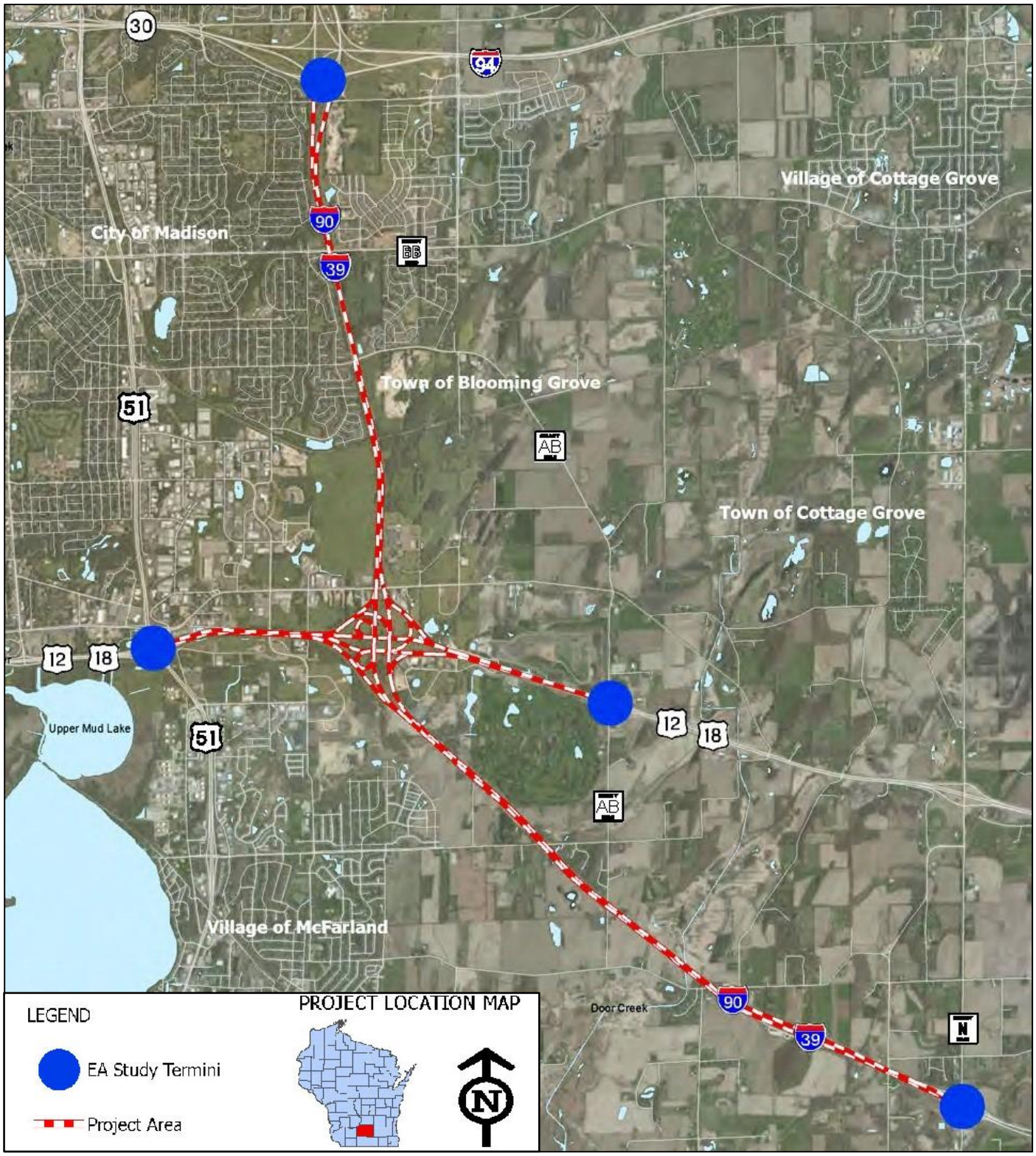
This environmental document must be read entirely so the reader understands the reasons that one alternative is selected as the preferred alternative over other alternatives considered.

1. Purpose and Need

Background Information and Project Termini

The system interchange discussed in this document, commonly referred to as the Beltline Interchange (BIC), is located at the confluence of Interstates (I) 39/90 and United States Highways (US) 12/18 (Madison Beltline) in the city of Madison in Dane County, Wisconsin. The project location is shown in **Figure 1** and in **Appendix B**.

Figure 1 – Project Location Map



The southern terminus identified for the project is the interchange of I-39/90 and Dane County Highway (County) N, and to the north the project terminus is identified as the I-39/90 and I-94/Wisconsin State Highway (WIS) 30 system interchange (Badger Interchange). The western terminus is identified as the US 12/18 and US 51 (Stoughton Road) interchange while the eastern terminus is identified at the US 12/18 intersection with County AB. The study termini are consistent with Federal Highway Administration's (FHWA) regulations outlined in Title 23 of the Code of Federal Regulations part 771 (23 CFR 771.111(f)). The project termini identified are of sufficient length and have logical termini such that all social, environmental and technical aspects can be analyzed independently of other projects and studies and does not preclude future consideration of alternatives for other transportation improvements.

I-39, I-90, US 12 and US 18 are routes of national, state and regional importance. Each is included in the National Highway System (NHS), which consists of roadways important to the nation's economy, defense and mobility[1]. I-39 and I-90 are part of the Dwight D. Eisenhower National System of Interstate and Defense Highways authorized by the Federal Aid Highways Act of 1956.[2]

WisDOT and FHWA currently have an ongoing I-39/90 Expansion Project[3] extending 45 miles to the south of the US 12/18 (Beltline) interchange that involves reconstructing the existing 4-lane divided interstate highway to a 6-lane divided highway, with an 8-lane divided highway in the Janesville area. Reconstruction of interchanges and grade separated crossings within the corridor was included to address roadway and capacity deficiencies.

The US 12/18 (Beltline) interchange was initially included in the 2008 Environmental Assessment (EA) and 2010 Finding of No Significant Impact (FONSI) for the reconstruction and expansion of I-39 in south-central Wisconsin (WisDOT ID 1001-07-00). The preferred alternative was developed with the primary purpose of modifying the interchange to accommodate the 4-lane to 6-lane expansion of I-39/90.

In 2014, a Re-evaluation and Supplementation of Environmental Assessment (WisDOT ID 1001-10-02) of the 2010 EA/FONSI was prepared to address design changes and additional impacts throughout the I-39/90 corridor. During this process, it was determined the Preferred Alternative as evaluated in the 2010 EA/FONSI no longer met the needs of the interchange at US 12/18 and a stand-alone Environmental Assessment would be prepared for the US 12/18 (Beltline) interchange with new alternatives that were developed so as not to preclude the development of alternatives for the adjacent transportation systems.

As the Beltline Interchange design progressed, the project limits extended further north and east to incorporate the necessary design changes dictated by the traffic analysis. Due to the expanded study limits and unique characteristics of the area that include park and recreation areas, a large wetland complex, multiple waterways, and cultural and historic resources, the decision was made in December 2014 by WisDOT, with FHWA concurrence, that an Environmental Impact Statement (EIS) should be prepared for the Beltline Interchange rather than an EA.

In December 2017, WisDOT and FHWA revisited the scope of the Beltline Interchange project with consideration given to Performance-Based Practical Design in an effort to reduce impacts and enable significant savings in the estimated cost of the interchange. This was partially due to re-prioritization of WisDOT's Major Transportation Project program. This revisited scope will provide an opportunity to improve safety and operations as it affects Interstate travel through the interchange, while utilizing the remaining life of the infrastructure. FHWA and WisDOT have prepared this EA for the proposed improvement project.

Purpose:

The purpose of the I-39/90 and US 12/18 (Beltline) interchange project is to accommodate I-39/90 traffic levels with a focus on safety issues that affect interstate travel through the US 12/18 interchange and ensure compatibility with the I-39/90 reconstruction project south of the US 12/18 to the Illinois State Line.

Need:

Four components make up the need for the US 12/18 (Beltline) interchange project.

1. Safety Issues
2. Interchange Traffic and Operations as they would affect I-39/90
3. Interchange Geometrics
4. Connection to the I-39/90 Project from south of the Beltline Interchange to the Illinois State Line

[1] http://www.fhwa.dot.gov/planning/national_highway_system
[2] http://www.gpo.gov/fdsys/pkg/STATUTE-70/pdf/STATUTE-70-Pg374.pdf
[3] https://projects.511wi.gov/i-39-90/

The needs for the US 12/18 (Beltline) interchange project listed above and further described below reflect the needs within the project termini. However, it is not WisDOT and FHWA's intention to address all project needs. The purpose statement above is focused on traffic and safety issues on I-39/90 through the US 12/18 interchange and compatibility with the I-39/90 reconstruction project south of the US 12/18 interchange to the Illinois State Line. The needs that will be addressed, either fully or substantially, are those that impact the safety and operations of the I-39/90 mainline and fall within the Beltline interchange traffic operations area of influence (see **Figure 7**). Alternatives development is focused on satisfying the purpose of the US 12/18 (Beltline) interchange project.

Safety
Safety has been evaluated for the US 12/18 (Beltline) interchange project by quantifying the number of crashes and their locations during the period from 2011 to 2015. The crash analysis included the following area:

- Southern Limit: Along I-39/90 to the County AB overpass
- Northern Limit: Along I-39/90 to the Milwaukee Street overpass
- Western Limit: Along US 12/18 to the US 51/Stoughton Road overpass
- Eastern Limit: Along US 12/18 to 1,000 feet west of the intersection with County AB

The north limit was located at the Milwaukee Street overpass to reduce the inclusion of crashes in the vicinity of the I-94/WIS 30 (Badger) Interchange. The east limit was placed to reduce the inclusion of crashes caused by the US 12/18 intersection with County AB. The south limit was located at County AB to match the Meta-Manager segment end point. Meta-Manager is a WisDOT data management system that provides safety data (along with other information) for roadway segments. New segments are identified when roadway characteristics change. The Meta-Manager segment south of the Beltline Interchange extends to the County AB overpass. The County AB overpass is near the northern end point of Project 1007-10-01 to the south.

During the five-year period (2011-2015) that was analyzed, 242 crashes occurred on the I-39/90 mainline, 127 crashes occurred on US 12/18, 153 crashes occurred within a ramp merge or diverge area on I-39/90, 68 crashes occurred within a ramp merge or diverge area on US 12/18, and 60 crashes occurred on ramps; totaling 650 crashes in the interchange.

Table 1 shows the total crashes and the severity of those crashes. "KAB" crashes are those that result in a fatality (K), incapacitating injury (A), or other non-incapacitating injury evident at the crash scene (B). Type "C and PDO" crashes indicate a possible injury that was not clearly evident at the crash scene (C) and crashes that result in property damage only (PDO).

Table 1 - Summary of Total Crashes and Severity (2011-2015)

	Total Crashes	KAB Crashes (1)	C and PDO Crashes (2)
I-39/90 Mainline	242	42	200
US 12/18	127	21	106
I-39/90 Merge/Diverge Areas	153	27	126
US 12/18 Merge/Diverge Areas	68	9	59
Ramps	60	8	52
Total	650	107	543

(1) 'KAB' designates crashes that resulted in a fatality or incapacitating injury or other injury evident at the crash scene
(2) 'C' crashes indicate a possible injury but was not evident at the crash scene, 'PDO' crashes indicate property damage only

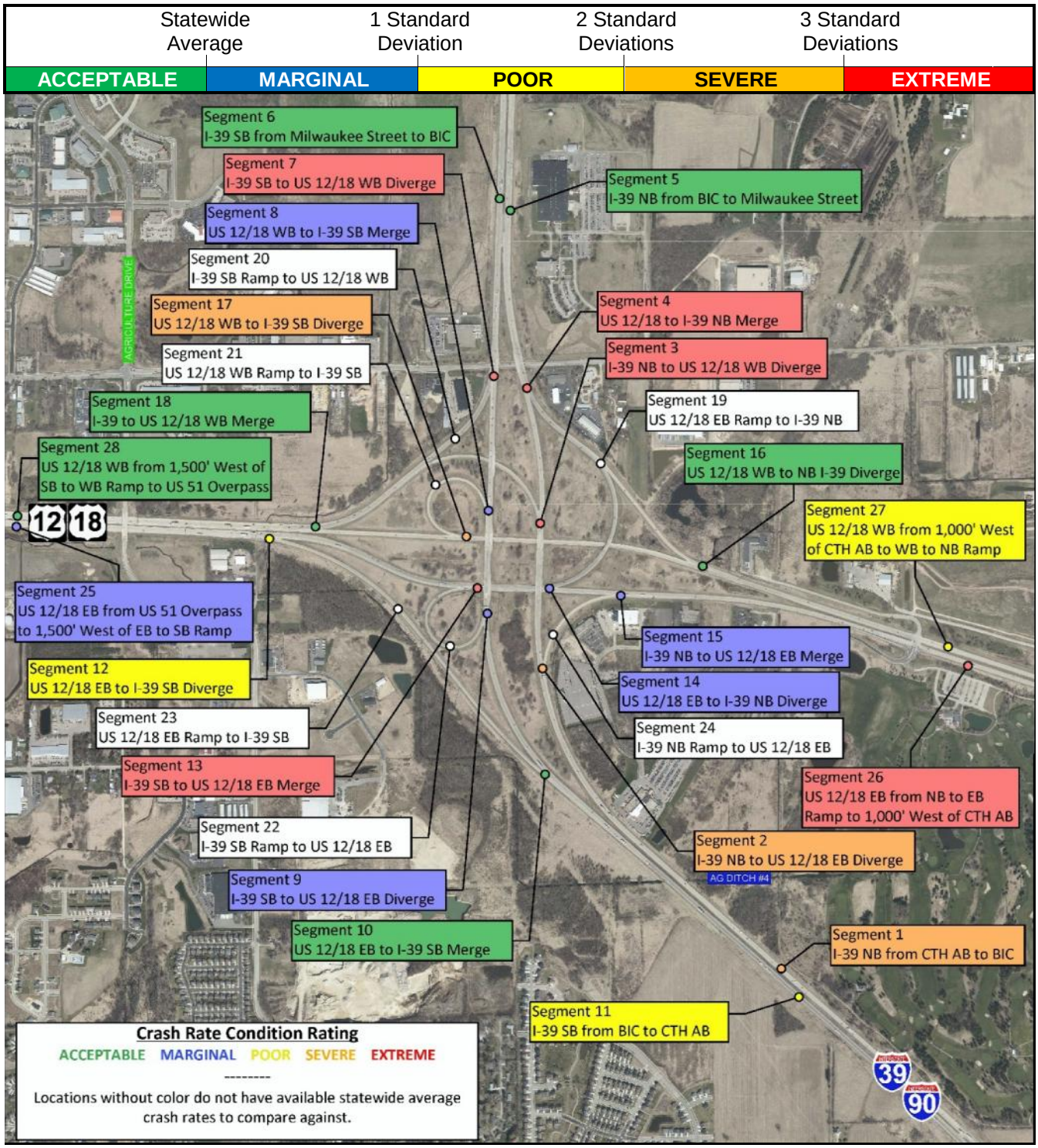
Crash rates are calculated based on the number of reported crashes for a given length of roadway over a set study period, taking into account the total volume of traffic using the study segment. In this way, crash rates can be used to compare the safety performance of a roadway compared to other similar roadways. For the purpose of analyzing crashes within the Beltline interchange, the interchange was separated into 28 segments, identified as mainline segments, merge/diverge areas, and ramp segments. Dividing the Beltline interchange in this manner allowed the crashes to be grouped according to the influence area where they occurred and allowed the calculated crash rates to be compared against statewide averages for similar segments.

The crash statistics from this 5-year analysis period show that a crash occurred in the study area on average once every three days and a KAB crash occurred on average once every two and a half weeks.

In addition to the five-year period crash analysis discussed above, a preliminary crash hot-spot location analysis was conducted for the Beltline interchange. The analysis identified locations with total crash rates or KAB crash rates above the statewide average for similar roadway facilities. Since WisDOT does not maintain statewide average crash rates specific to system interchanges, the crash rates at the Beltline interchange were compared against merge/ diverge rates calculated from the 55 interchanges on the 288-mile I-94 corridor from the Minnesota State Line to the Waukesha County Line.

Figure 2 shows the rating system used for comparing crash rates and identifies the crash rating for all segments within the Beltline interchange. Instead of needing to understand what crash rate numbers mean, the ratings provide plain language terms to translate complex crash rate data into common descriptions.

Figure 2 – Crash Rating Summary



Note: About 68% of the data falls within 1 standard deviation, 95% within 2 standard deviations, and 99.7% within 3 standard deviations. Crash rates are expressed in crashes per hundred million vehicle miles traveled.

Ratings indicate the level of crashes based on the number of standard deviations above the statewide average, where the worse the condition rating, the more closely the location warrants attention to the crash history. The standard deviation is used to measure the amount of variation in a set of data. The higher the number of standard deviations, the farther away the given segment is from the average crash rate for a similar segment.

Additional details concerning the safety analysis and crash rates can be found in the memorandum titled *WisDOT ID: 1007-10-02 Beltline Interchange Safety Analysis*, dated October 20, 2017, with concurrence provided by FHWA on March 13, 2018.

Table 2 provides additional information concerning the typical crash pattern and details for each high-crash rate location. Locations identified as "Acceptable" in **Figure 2** with a crash rate below the statewide average are not included in this table of high crash locations.

An asterisk is included for each location that includes a geometric deficiency, as described later in **Figure 11**.

Table 2 – Summary of High-Crash Rate Locations

Location	Prevalent Crash Pattern	Additional Details
Extreme: Locations with a total crash rate or KAB crash rate more than 3 standard deviations above the statewide average rate for similar facilities ** A geometric deficiency is present within this segment; see "Interchange Geometrics" section and **Figure 11** for additional information*		
3) I-39/90 NB to US 12/18 WB Diverge*	32 Crashes Run Off Road – 66% Sideswipe – 13% Rear End – 13%	52% of run off road crashes occurred during slippery roadway conditions. 2 of the 4 sideswipe collisions involved vehicles changing lanes. Common citations were "failure to keep control" and "inattentive driving".
4) US 12/18 to I-39/90 NB Merge*	32 Crashes Run Off Road – 56% Sideswipe – 31%	56% of all crashes occurred during slippery roadway conditions. 7 of 10 sideswipe collisions involved vehicles "changing lanes" or "merging". Common citation for all crashes was "failure to keep control".
7) I-39/90 SB to US 12/18 WB Diverge*	62 Crashes Sideswipe – 66% Rear End – 24%	27 of 41 sideswipe collisions involved vehicles "changing lanes" or "merging". A citation for "improper turn" was given at 29% of crashes.
13) I-39/90 SB to US 12/18 EB Merge*	22 Crashes Rear End – 68% Sideswipe – 18%	59% of crashes occurred on weekdays during the afternoon's busiest commuter travel period.
26) US 12/18 EB from BIC to 1,000 feet west of County AB	48 Crashes Angle – 67% Rear End – 10% Run Off Road – 10%	85% of crashes occurred at the Millpond Road intersection. In addition, 46% of crashes occurred during the afternoon's busiest commuter travel period.
Severe: Locations with a total crash rate or KAB crash rate between 2 and 3 standard deviations above the statewide average rate for similar facilities **A geometric deficiency is present within this segment; see "Interchange Geometrics" section and **Figure 11** for additional information*		
1) I-39/90 NB from County AB to BIC Segment	50 Crashes Run Off Road – 52% Rear End – 28%	58% of run off road crashes occurred during slippery roadway conditions. 8 of the 14 rear end crashes involved vehicles noted as "slowing."
2) I-39/90 NB to US 12/18 EB Diverge*	19 Crashes Sideswipe – 47% Run Off Road – 32% Rear End – 21%	50% of the run off road crashes occurred during slippery roadway conditions. 69% of sideswipe and rear end collisions involved vehicles noted as "slowing", "changing lanes", or "merging". Common citations were for "following too close" and "too fast for conditions".
17) US 12/18 WB to I-39/90 SB Diverge*	5 Crashes Sideswipe – 60% Rear End – 20% Run Off Road – 20%	4 of the 5 reported crashes occurred on weekdays during the morning's busiest commuter travel period.

Poor: Locations with a total crash rate or KAB crash rate between 1 and 2 standard deviations above the statewide average rate for similar facilities		
11) I-39/90 SB from BIC to County AB	43 Crashes Run Off Road – 47% Rear End – 26%	60% of the run off road crashes occurred during slippery roadway conditions. 10 of the 11 rear end crashes occurred on Friday and Sunday, during the weekend's busiest traffic periods.
12) US 12/18 EB to I-39/90 SB Diverge	23 Crashes Rear End – 65% Run Off Road – 22%	10 of 15 rear end crashes occurred weekdays during the afternoon's busiest commuter travel period.
27) US 12/18 WB from 1,000 feet west of County AB to BIC	11 Crashes Angle – 45% Rear End – 45%	73% of crashes occurred at the Millpond Road intersection. In addition, 55% of crashes occurred during the afternoon's busiest commuter travel period.
Marginal: Locations with a total crash rate or KAB crash rate less than 1 standard deviation above the statewide average rate for similar facilities **A geometric deficiency is present within this segment; see "Interchange Geometrics" section and **Figure 11** for additional information*		
8) US 12/18 WB to I-39/90 SB Merge*	2 Crashes Run Off Road – 50% Rear End – 50%	The run off road crash occurred during slippery roadway conditions. The rear end crash occurred on a Sunday afternoon.
9) I-39/90 SB to US 12/18 EB Diverge*	4 Crashes Sideswipe – 50% Rear End – 25% Run Off Road – 25%	The run off road crash occurred during slippery roadway conditions. The sideswipe and rear end crashes occurred during the Friday and weekday travel periods.
14) US 12/18 EB to I-39/90 NB Diverge*	3 Crashes Rear End – 67% Run Off Road – 33%	The rear end crashes involved slowing vehicles during the morning and evening's busiest commuter travel periods.
15) I-39/90 NB to US 12/18 EB Merge*	3 Crashes Rear End – 67% Run Off Road – 33%	The rear end crashes occurred weekdays during the morning and evening's busiest commuter travel periods on dry roadway conditions.
25) US 12/18 EB from US 51 Overpass to BIC	38 Crashes Rear End – 68% Sideswipe – 18% Run Off Road – 13%	61% of crashes occurred weekdays during the afternoon's busiest commuter travel periods. 62% of rear end crashes and 86% of sideswipe crashes occurred during the peak travel period.
Locations without a comparable statewide average crash rate that experienced a high number of crashes or a high crash rate compared to the rest of the interchange. - Locations 19 and 20 experienced a high number of crashes compared to the rest of the BIC - Locations 22 and 24 experienced a high crash rate compared to other areas within the BIC - Locations 21 and 23 are not included below as their crash data did not suggest inclusion as a "high crash location" **A geometric deficiency is present within this segment; see "Interchange Geometrics" section and **Figure 11** for additional information*		
19) US 12/18 EB Ramp to I-39/90 NB Segment*	23 Crashes Run Off Road – 61% Sideswipe – 17% Rear End – 17%	86% of the run off road crashes occurred during slippery roadway conditions. 50% of rear end and sideswipe crashes occurred weekdays during the afternoon's busiest commuter travel period.
20) I-39/90 SB Ramp to US 12/18 WB Segment*	24 Crashes Sideswipe – 46% Run Off Road – 46%	64% of vehicles involved in run off road crashes did so on dry roadway conditions. Common citations were "inattentive driving" and "failure to keep control".
22) I-39/90 SB Ramp to US 12/18 EB Segment*	5 Crashes Run Off Road – 80%	All of the run off road crashes occurred on weekends with 50% of those during slippery roadway conditions.
24) I-39/90 NB Ramp to US 12/18 EB Segment*	2 Crashes Run Off Road – 100%	Both of the crashes involved motorists losing control during slippery roadway conditions.

"Run Off Road" includes all crashes in which there was no vehicle-to-vehicle contact. The vehicle involved generally struck a fixed object such as traffic sign or guardrail, or entered the ditch.

The purpose of the I-39/90 and US 12/18 interchange project is to accommodate I-39/90 traffic levels with a focus on safety issues that affect interstate travel through the US 12/18 interchange. This project will consider improvements to high priority safety needs within the interchange's safety area of influence as supported by cost-effective benefits, with an emphasis on safety needs that are expected to impact I-39/90. **Table 3** identifies the merge, diverge, and freeway segments located along I-39/90 where crashes will have a direct impact on interstate operations. Also identified are ramp segments that are expected to have an indirect impact on interstate operations. Crashes along these exit ramps may potentially cause backups onto the interstate.

Table 3 - Crash Locations that Impact I-39/90

Segment	Crash Rating
Direct Impact	
Segment 1: I-39/90 NB from County AB to BIC Segment	**Severe**
Segment 2: I-39/90 NB to US 12/18 EB Diverge	**Severe**
Segment 3: I-39/90 NB to US 12/18 WB Diverge	**Extreme**
Segment 4: US 12/18 to I-39/90 NB Merge	**Extreme**
Segment 5: I-39/90 NB from BIC to Milwaukee Street	**Acceptable**
Segment 6: I-39/90 SB from Milwaukee Street to BIC	**Acceptable**
Segment 7: I-39/90 SB to US 12/18 WB Diverge	**Extreme**
Segment 8: US 12/18 WB to I-39/90 SB Merge	**Marginal**
Segment 9: I-39/90 SB to US 12/18 EB Diverge	**Marginal**
Segment 10: US 12/18 EB to I-39/90 SB Merge	**Acceptable**
Segment 11: I-39/90 SB from BIC to County AB Segment	**Poor**
Indirect Impact	
Segment 20: I-39/90 SB Ramp to US 12/18 WB Segment	**No Comparable Rate**
Segment 22: I-39/90 SB Ramp to US 12/18 EB Segment	**No Comparable Rate**
Segment 24: I-39/90 NB Ramp to US 12/18 EB Segment	**No Comparable Rate**

The following locations with a safety rating of "poor" or worse will not be addressed by the improvements within the range of alternatives for this project. Improvements at these locations are outside the scope of this project since the locations are not along I-39/90 nor are they along an exit ramp within the Beltline Interchange that could potentially cause backups onto the interstate.

- Segment 12: US 12/18 EB to I-39/90 SB Diverge
- Segment 17: US 12/18 WB to I-39/90 SB Diverge
- Segment 26: US 12/18 EB from BIC to 1,000 feet west of County AB
- Segment 27: US 12/18 WB from 1,000 feet west of County AB to Beltline Interchange

Traffic and Operations

Traffic volumes through the US 12/18 (Beltline) interchange have increased over time with changes in land use, economic development and increases in population. Traffic forecasts for the Beltline interchange project are based on how traffic has grown in the past, as well as how future land use plans will affect traffic in the future. Local municipalities develop future land use plans that describe their long-term expectations regarding how urban and rural areas will change in the future. Municipal land use plans are balanced across the region and incorporated into the Dane County Travel Demand Model (TDM), which models how new development and changes in redeveloped areas impact the transportation system.

The TDM traffic growth is based on changes to socio-economic trends, like employment and households. **Figure 3** shows the 2050 forecasted jobs and household data for Dane County.[4] The year 2050 is used as the horizon year for the TDM, as opposed to the project design year of 2040. Results from the Dane County TDM and historical trends are combined to produce future year AADT forecasts. The Beltline Interchange forecast was developed in 2015 using the most recent TDM version available at that time.

Figure 3 – Dane County Socio-Economic Forecasts (2010 – 2050)

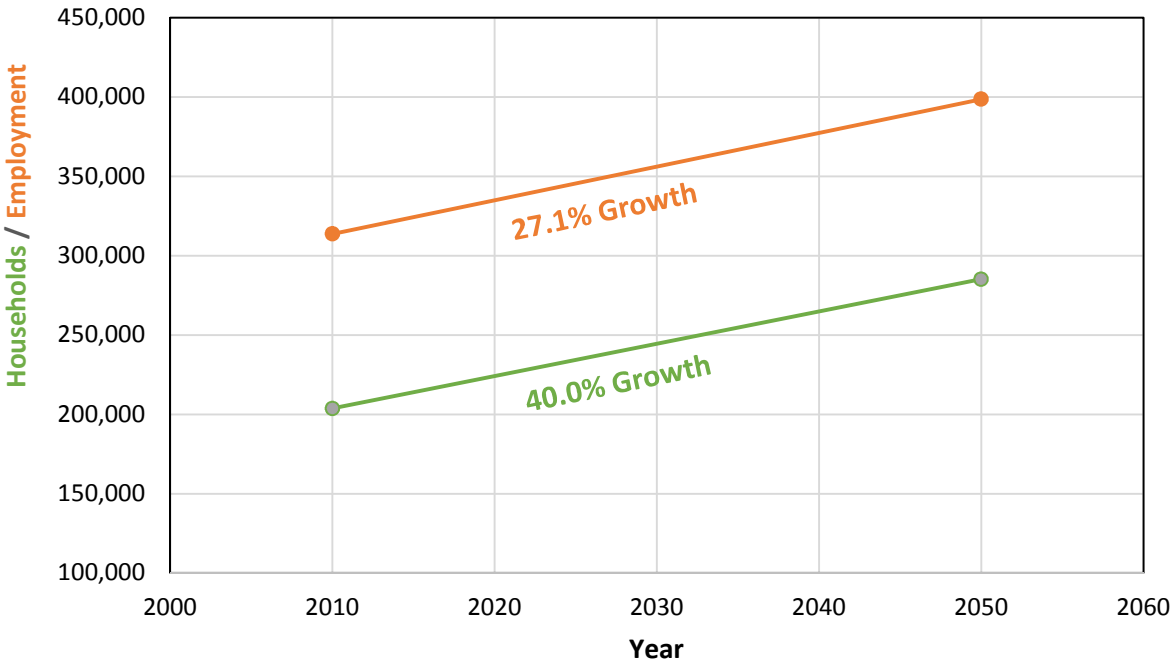


Table 4 summarizes the base year AADT volumes and the forecasted project design year 2040 volumes. Note that the project design year is different than the TDM horizon year of 2050.

Table 4 - Summary of Base Year and Design Year AADT Volumes

Segment	Base Year 2012 AADT (unless otherwise noted)	Design Year 2040 AADT
Mainline		
I-39/90 North of BIC	86,100 (2013)	116,000
I-39/90 South of BIC	56,300 (2013)	72,000
US 12/18 East of BIC	17,100 (2014)	24,400
US 12/18 West of BIC	78,200 (2010)	105,000
Ramps		
I-39/90 NB to US 12/18 EB Ramp	610	1,100
I-39/90 NB to US 12/18 WB Ramp	9,300	11,700
I-39/90 SB to US 12/18 WB Ramp	26,900	34,000
I-39/90 SB to US 12/18 EB Ramp	2,900	5,200
US 12/18 EB to I-39/90 SB Ramp	8,900	12,500
US 12/18 EB to I-39/90 NB Ramp	27,400	34,700
US 12/18 WB to I-39/90 NB Ramp	3,000	5,500
US 12/18 WB to I-39/90 SB Ramp	580	800

[4] November 2015 data provided by the Madison Area Transportation Planning Board.

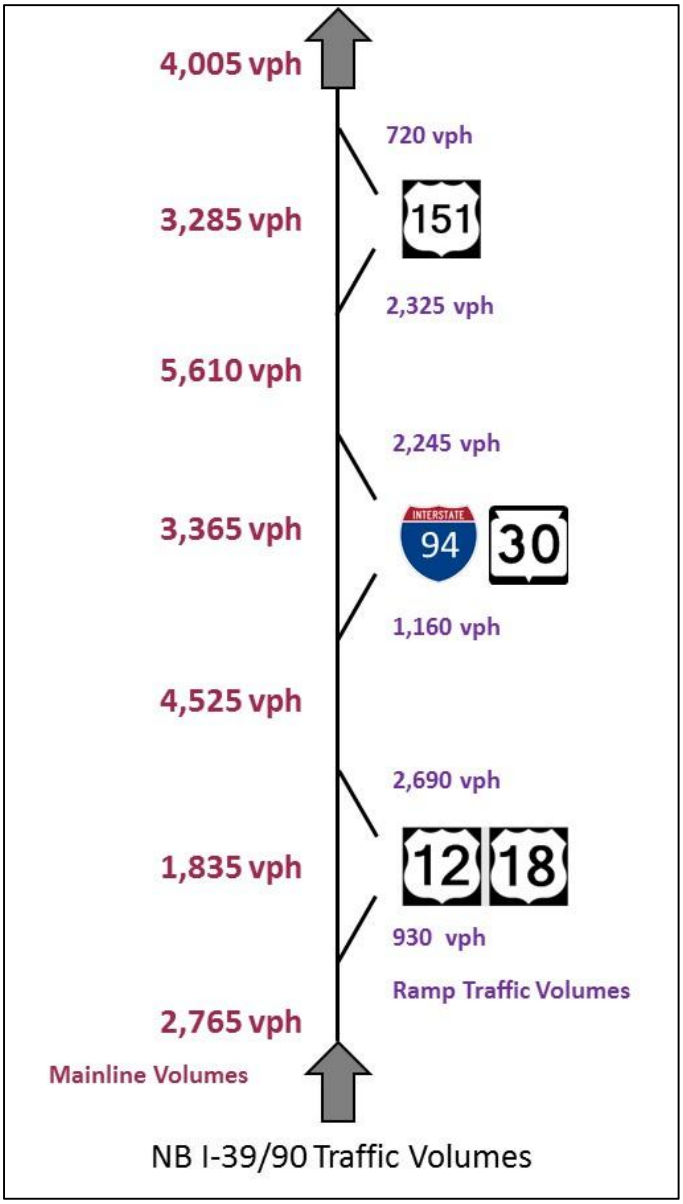
The process to develop design year (2040) peak period volumes included the following steps:

- Identify existing (2012) peak period volumes, which reflect high-volume travel periods in the Beltline Interchange.
- Calculate the ratio of the peak period volume to the existing daily traffic volume.
- Forecast future year daily traffic volumes.
- Apply the peak period ratio to the future year daily traffic volumes to calculate the expected design year peak period traffic volume.
- Balance peak period volumes for consistency.

Segments within the Beltline Interchange experience peak period volumes at different times and on different days. The volume development process described above results in a balanced set of peak period volumes based on actual 2012 data for each peak period. The process used was documented and approved by the WisDOT Traffic Forecasting Section (TFS). Note, the process used does not use the factors provided in the TFS forecast sheet, as using those factors would create a volume set where all ramps and segments experience their highest volumes within the same hour; a condition that does not actually exist. Additionally, the forecast sheet does not provide design factors for the interchange ramps and using the TFS approved process provides for a more precise calculation of the ramp volumes during the peak periods.

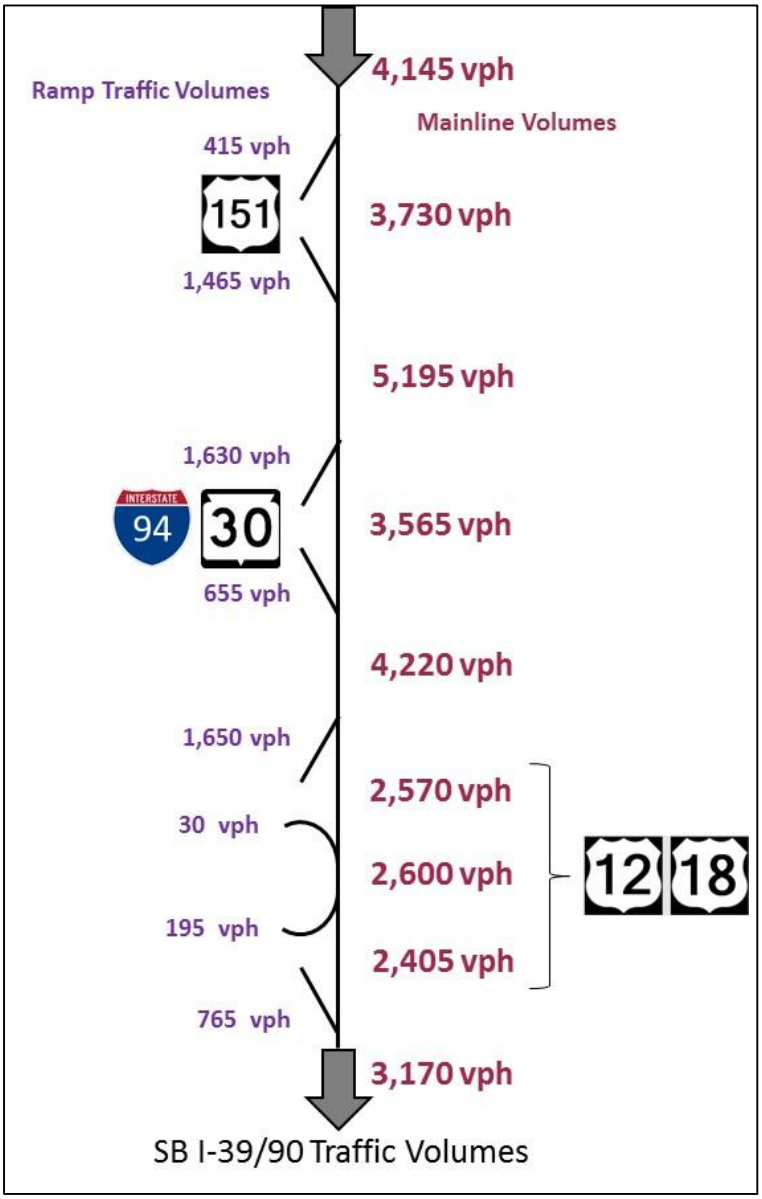
The design year 2040 traffic volumes for the northbound I-39/90 corridor from the Beltline Interchange through the US 151 interchange during the Friday PM peak period are shown in **Figure 4**.

Figure 4 – NB I-39/90 Year 2040 Friday PM Peak Period Corridor Volumes



The design year 2040 traffic volumes for the northbound I-39/90 corridor from the Beltline Interchange through the US 151 interchange during the Friday PM peak period are shown in **Figure 5**.

Figure 5 – SB I-39/90 Year 2040 Sunday Peak Period Corridor Volumes



Additional information concerning the development of design year volumes can be found in **Appendix G** in a memorandum titled *WisDOT ID 1007-10-02: I-39/90 & US 12/18 Interchange – Design Year 2040 Traffic Volume Development*, dated September 15, 2017.

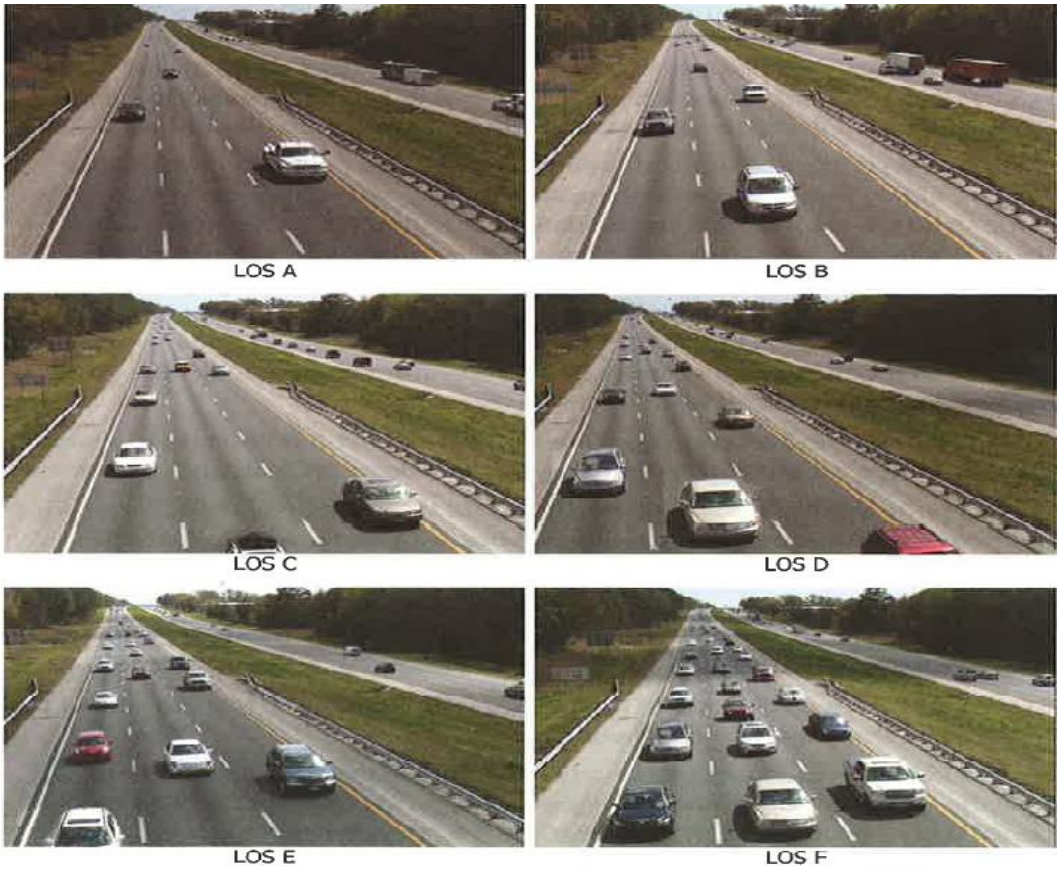
Future Traffic and Operations

Level of service (LOS) characterizes traffic conditions on a roadway and indicates how well the roadway system functions. The Highway Capacity Manual (HCM) 6th Edition states that highway segments "can be characterized by three performance measures: density in passenger cars per mile per lane, space mean speed in miles per hour, and the ratio of demand flow rate to capacity (V/C). Because speed is constant through a broad range of flows and the V/C ratio is not directly discernible to road users (except at capacity), the service measure for basic freeway and multilane highway segments is density."[5] Density can then be converted to a LOS rating. LOS ratings range from LOS 'A' representing low density and high-speed conditions to LOS 'F' representing high density, stop-and-go conditions.

[5] National Academy of Sciences. Transportation Research Board. (2016). *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis.* Washington, DC. Page 12-19

WisDOT and FHWA have approved revisions to the Facilities Development Manual (FDM) Procedure 11-5-3, which contains established policies and procedures for the analysis of existing and future capacity of all highways and streets being designed by WisDOT.[6] These revisions were published March 16, 2018. The revisions identify LOS 'D' as desirable on Corridors 2030 Backbone and Connector Routes in urbanized areas with a population greater than 50,000 people and LOS 'C' as desirable on these same corridors in rural areas. FHWA and WisDOT have agreed that LOS 'D' through the Beltline interchange is desirable for traffic operations. I-39/90 south of the Beltline interchange is more rural in nature, both in the surrounding land use and population, as well as the vehicle characteristics. Therefore, the desirable LOS for I-39/90 segments south of the US 12/18 (Beltline) interchange is LOS 'C' or better. **Figure 6** illustrates traffic conditions associated with each LOS for a multilane divided freeway:

Figure 6 - Level of Service Characteristics[7]



- **LOS 'A' through LOS 'C'** indicate the freeway is operating near free-flow speed and low-density conditions. At LOS 'C', the aftermath of a crash may cause a reduced speed condition and cause delays.
- **LOS 'D'** indicates traffic operates at slightly reduced speeds. Freedom to maneuver within the flow of traffic is limited due to traffic density. The freeway cannot accommodate increases in traffic flow without further reducing speed. Any incidents would cause delays.
- **LOS 'E' and LOS 'F'** indicate slow speed, high density conditions. At LOS 'E', traffic density provides minimal gaps and minimal room for lane changes without disrupting traffic flow conditions. During LOS 'E' conditions, even the smallest changes in conditions are likely to increase traffic density to LOS 'F', which represents stop and go conditions with delays and queues. LOS 'F' conditions occur when traffic volumes are greater than the freeway can accommodate.

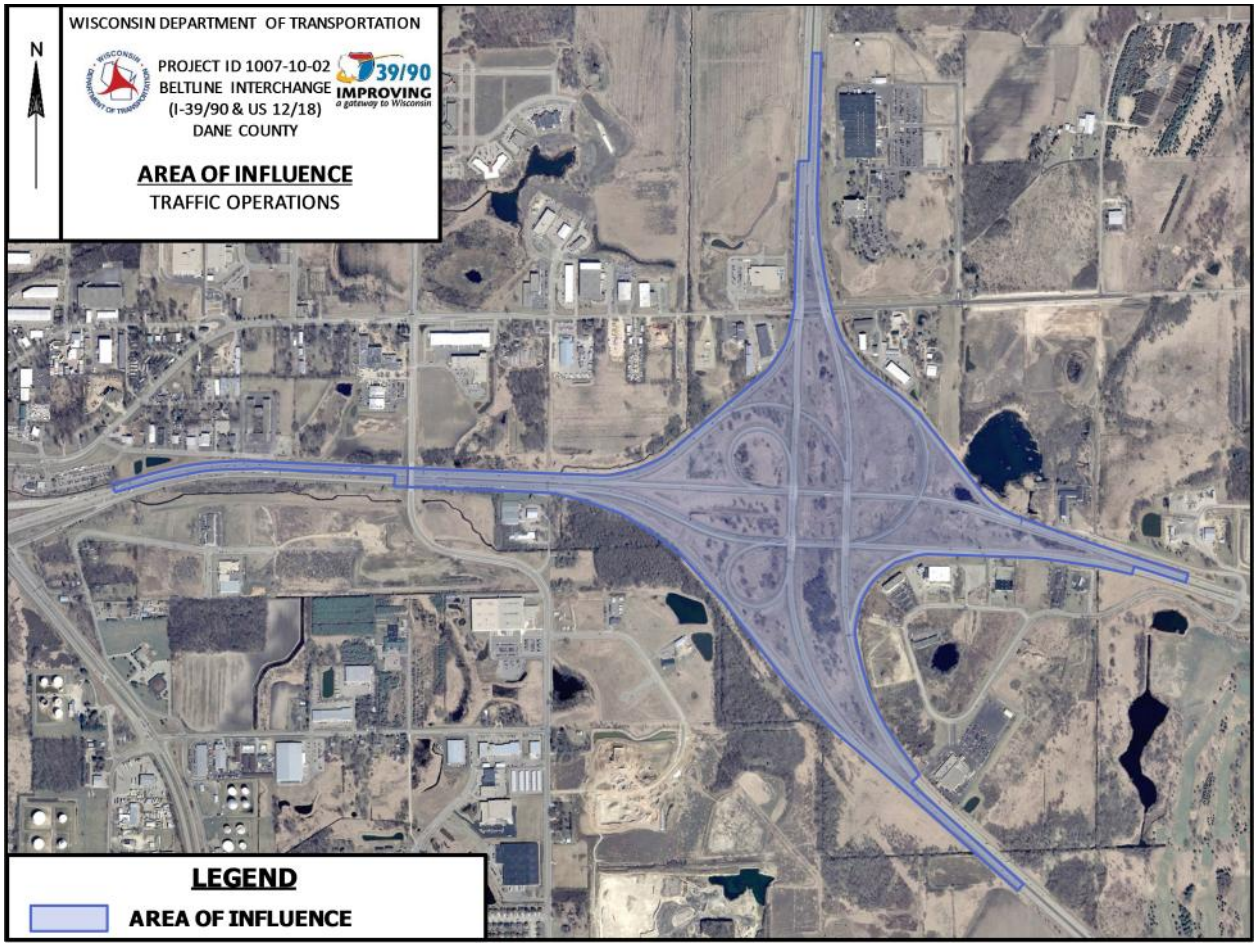
The operations analysis focuses on the mainline I-39/90 and US 12/18 segments within the Beltline interchange and extends to the influence area of the ramps within the Beltline interchange. The traffic operations influence area of ramps is defined by Chapter 14 of the Highway Capacity Manual (HCM) as a set distance from the gore point of merge and diverge segments. Determining the influence area on each leg of the interchange was based on this HCM Chapter 14 guidance, which states:

[6] http://wisconsindot.gov/rdwy/fdm/fd-11-05.pdf
[7] National Academy of Sciences. Transportation Research Board. (2016). *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis.* Washington, DC. Page 12-17

For right-hand on-ramps, the ramp influence area includes the acceleration lane(s) and Lanes 1 and 2 of the freeway mainline (rightmost and second rightmost) for a distance of 1,500 feet downstream of the merge point. For right-hand off-ramps, the ramp influence area includes the deceleration lane(s) and Lanes 1 and 2 of the freeway for a distance of 1,500 feet upstream of the diverging point.[8]

The influence area surrounding the US 12/18 (Beltline) interchange was identified as 1,500 feet beyond the gore of the merge and diverge movements on the periphery of the Beltline interchange, with two exceptions. On the north leg of the Beltline interchange, the US 12/18 on-ramp to northbound I-39/90 provides an acceleration lane that extends 2,700 feet to the north. Because this acceleration lane is part of the merge movement, the influence area was defined as 2,700 feet north of the gore for northbound I-39/90 traffic. The second exception occurs for the westbound US 12/18 movement on the west leg of the Beltline interchange. The auxiliary lane provided between the I-39/90 and the US 12/18 interchange with US 51 results in a weaving segment, thereby extending the influence area to the westbound US 12/18 off-ramp to US 51. The influence area is shown in **Figure 7**.

Figure 7 – Traffic Operations Area of Influence



Figures 8 and **Figure 9** summarize the existing and future No-Build LOS, respectively, for I-39/90 through the US 12/18 (Beltline) interchange and the interchange ramp movements affecting interstate travel. The Beltline Interchange analysis summarized in these figures uses existing and forecasted peak period volumes and the Highway Capacity Software (HCS) 7, which is based on the HCM 6th Edition methodology. This software uses a deterministic analysis model, which uses defined equations to identify the expected density and LOS of each individual segment within a given study area. HCS 7 does not have the ability to consider conditions outside of the given study segment and therefore cannot consider the impact of congestion from sources external to the Beltline Interchange. The future year 2040 LOS assumes the existing roadway configuration remains the same within the Beltline interchange with improvements only on the south leg of the interchange.

[8] National Academy of Sciences. Transportation Research Board. (2016). *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis.* Washington, DC. Page 14-4

Figure 8 - Existing Year 2012 Level of Service

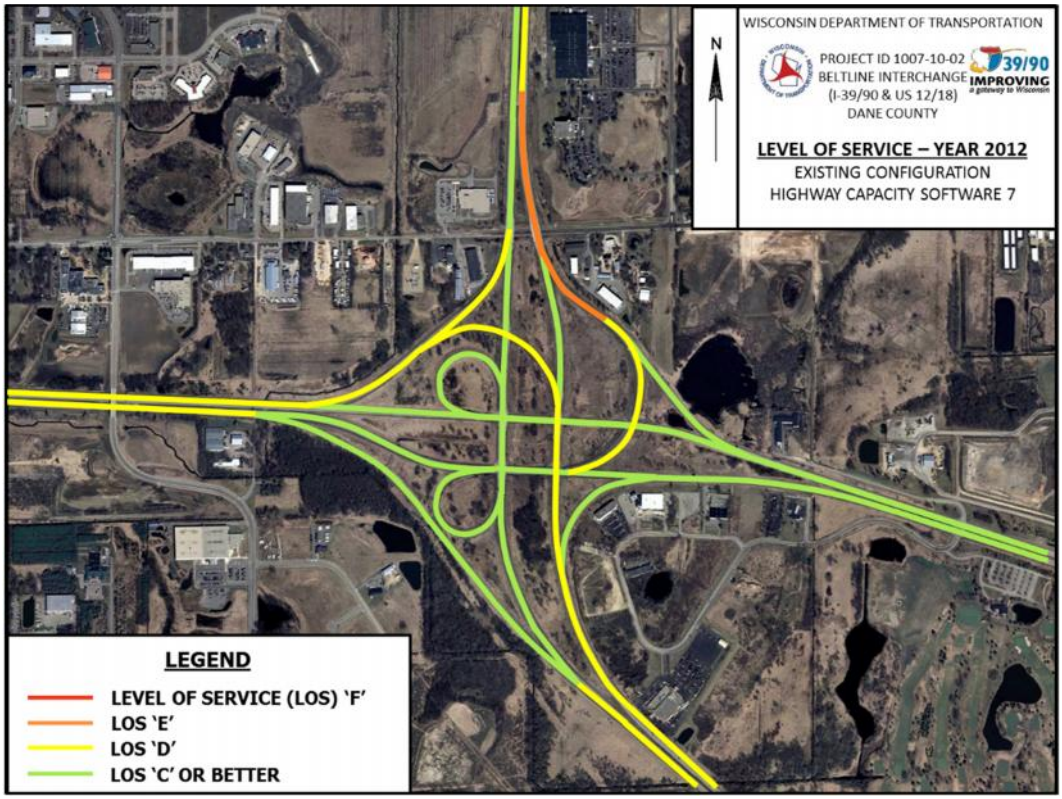
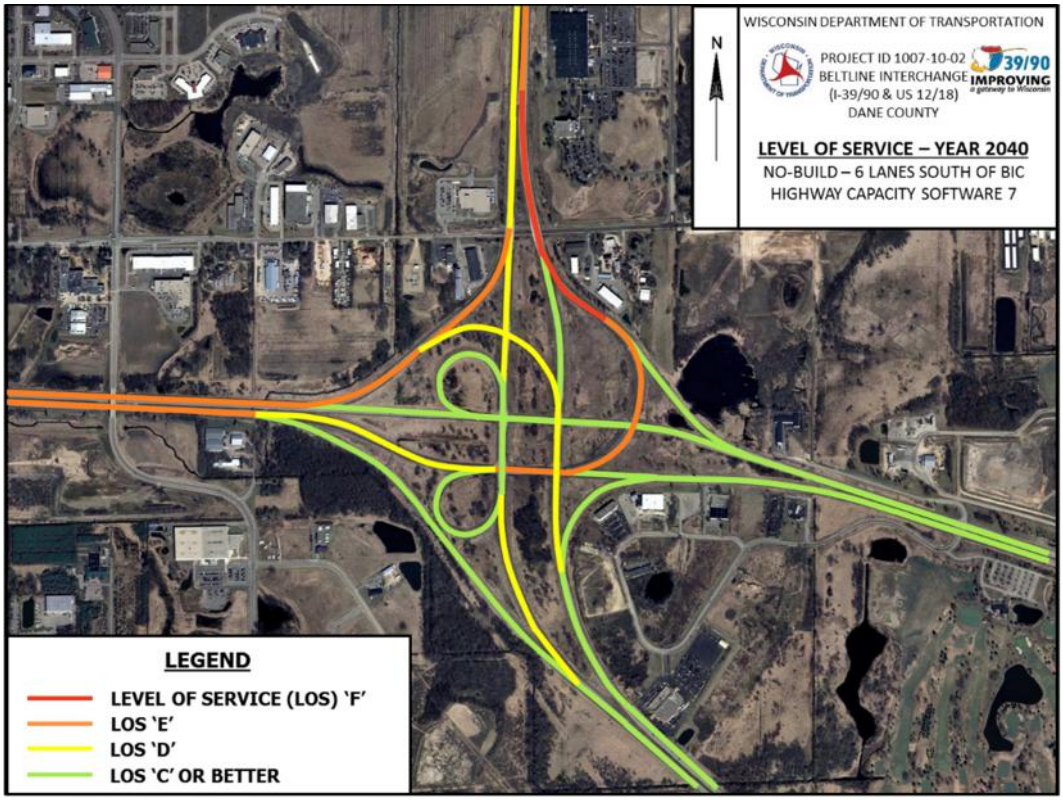


Figure 9 - Future No-Build Year 2040 Level of Service



* *2040 analysis for segments south of the US 12/18 (Beltline) interchange include the expansion to a 6-lane cross section as part of the I-39/90 Expansion Project (WisDOT ID 1001-10-02).*

WisDOT's policy is for interstate highways in urban areas to operate at an acceptable LOS during the 30th highest hourly volumes occurring in the design year (FDM 11-5-3.5.1). For I-39/90 within the Beltline Interchange, the 30th highest hourly volumes occur during the summer PM peak periods going northbound on Friday and southbound on

Sunday. The east-west US 12/18 corridor experiences its highest volumes westbound during the weekday AM peak period and eastbound during the weekday PM peak period. Given this dynamic in peak travel periods, the LOS analysis includes the two busiest commuter travel times, weekday AM peak period (7-8 AM) and weekday PM peak period (4-5 PM), and the two busiest recreational travel times, Friday PM peak period (3-4 PM) and Sunday peak period (2-3 PM).

The 2040 No-Build analysis summarized in **Figure 9** includes the addition of a northbound and southbound lane along I-39/90 south of the Beltline interchange, as part of the adjacent I-39/90 Expansion Project (WisDOT ID 1001-10-02).

The LOS was calculated for each of the basic freeway segments, merge, diverge, and weaving movements. By the design year of 2040, the US 12/18 merge with northbound I-39/90 is expected to operate over capacity and at LOS 'F'. The over-capacity condition can be expected to result in the queuing of vehicles, which will extend along the eastbound US 12/18 ramp to northbound I-39/90 and the westbound US 12/18 ramp to northbound I-39/90. Some slowing and congestion will be felt along northbound I-39/90 near the merge with US 12/18, as vehicles enter the congested merging area.

The northbound I-39/90 segment north of the Beltline interchange is expected to operate at LOS 'E', as are the eastbound and westbound segments of US 12/18 west of the Beltline interchange. In addition, the LOS was calculated for the major ramp segments connecting I-39/90 with the west leg of the interchange. Two of these movements, the eastbound US 12/18 ramp to northbound I-39/90 and the southbound I-39/90 ramp to westbound US 12/18, are expected to operate at LOS 'E' in the year 2040. The southbound I-39/90 ramp to westbound US 12/18 is expected to operate near capacity and will experience reduced speeds during the high-volume weekday AM peak period. This slowing of traffic will be felt on southbound I-39/90 as traffic destined for westbound US 12/18 attempts to access the exit lanes.

In addition to the LOS results described above, the Beltline interchange will be impacted by congestion along US 12/18 west of the project limits. Currently, congestion along westbound US 12/18 during the weekday AM peak period results in queues that occasionally reach I-39/90. As traffic demand grows in the future, these queues are expected to increase. By the design year of 2040, the queues are expected to reach mainline I-39/90 and extend north to the I-39/90/94 Badger interchange and south, along I-39/90 northbound mainline, south of the Beltline Interchange, for approximately 1.5 miles. These queue estimates are based on conclusions gathered from calibrated, validated, and approved Paramics models developed as part of earlier iterations of the Beltline Interchange project, as well as model observations from the Madison Beltline Planning and Environment Linkages (PEL) Study. Paramics microsimulation software is developed by Quadstone Paramics and is a microsimulation tool, which "refers to tools that analyze the movement of individual vehicles as they travel through a network."[9] The benefit of microsimulation software is its ability to evaluate complex traffic movements and recognize the impact of one segment upon another.

As shown in **Figure 10**, the segments with queue spillback from outside congestion will experience major delay and are shown as LOS 'F'. The identification of these segments experiencing outside queues as LOS 'F' uses engineering judgement, based on HCM 6th Edition language that states, "The HCM uses LOS 'F' to define operations that...have reached a point that most users would consider unsatisfactory."[10]

Consideration of capacity improvements along US 12/18 west of the Beltline Interchange are currently under discussion as part of other projects and may have the potential to reduce queueing along US 12/18. The potential impact that these other project improvements may have on congestion is unknown at this time. Fully efficient flow through the entire Beltline Interchange system cannot be achieved without improvements to I-39/90 north of the Beltline Interchange, including the Badger Interchange with I-94 and WIS 30, as well as improvements to the Beltline west of I-39/90. Further investments within the Beltline Interchange system interchange as part of this project, without investments to the surrounding systems, will not achieve fully efficient flow.

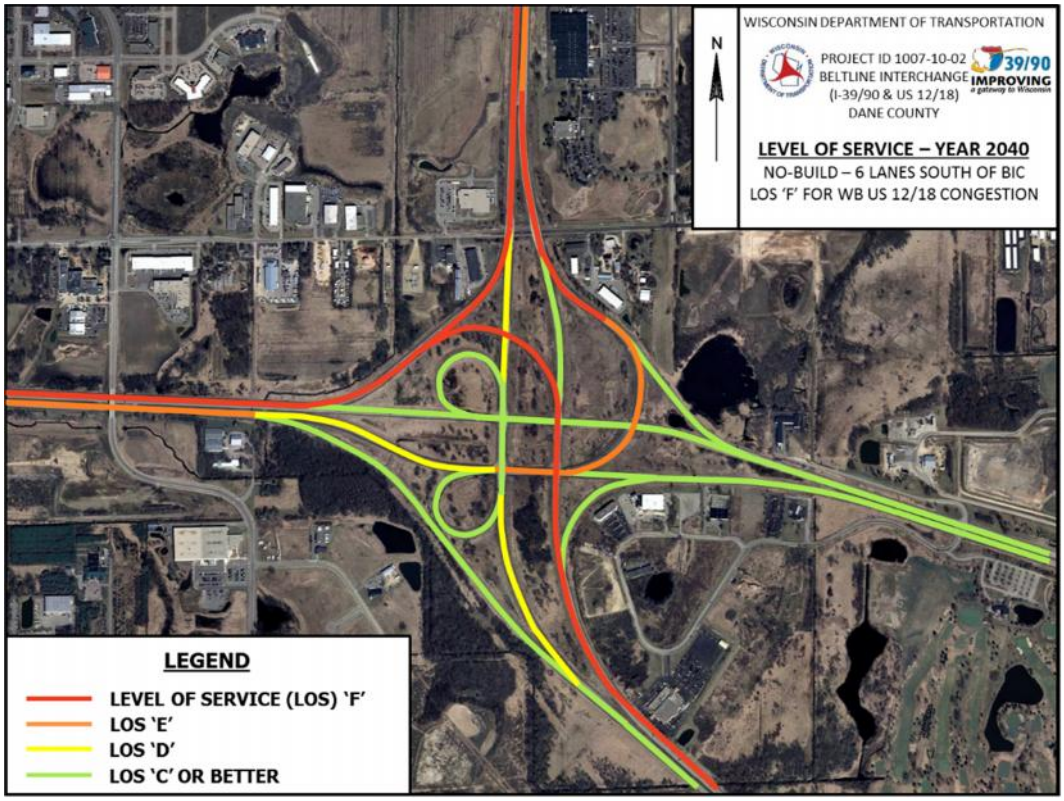
During purpose and need development, it is anticipated that the following segments that are expected to operate at LOS 'E' or worse in 2040, when evaluated without consideration of outside congestion, will have the potential for some improvement within the range of alternatives for this project (see **Figure 11**, Locations 1 and 2).

- NB I-39/90 at the merge with US 12/18 (Location 1)
- US 12/18 ramp segment to NB I-39/90 prior to the merge with NB I-39/90 (Location 2)

[9] Wisconsin Department of Transportation. (March 16, 2018). *Facilities Development Manual (FDM)*. Chapter 11-5-3.7.1.4. https://wisconsindot.gov/rdwy/fdm/fd-11-05.pdf#fd11-5

[10] National Academy of Sciences. Transportation Research Board. (2016). *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis.* Washington, DC. Page 5-5

Figure 10: 2040 No-Build LOS with Westbound Queue Impacts from US 12/18 Beltline



During purpose and need development, it is anticipated that the following segments that are expected to operate at LOS 'E' or worse in 2040, when evaluated without consideration of outside congestion, will not be addressed by the improvements within the range of alternatives for this project (see **Figure 11**, Locations 3 through 7).

- EB US 12/18 between US 51 and the Beltline interchange (Location 3)
- EB US 12/18 diverge and ramp segment to NB I-39 (Location 4)
- NB I-39/90 mainline segment north of the merge with US 12/18 (Location 5)
- SB I-39/90 ramp segment to WB US 12/18 after the diverge from SB I-39/90 (Location 6)
- WB US 12/18 between the Beltline interchange and US 51 (Location 7)

Additionally, the improvements being considered as part of this project are not expected to address the operational issues created by queuing along the US 12/18 Beltline west of the Beltline interchange, or by queuing from the I-39/90/94 interchange and other areas north of the Beltline interchange. If no improvements are made along westbound US 12/18 outside of the project limits, the following segments are expected to operate at LOS 'F' in the year 2040 because of the Weekday AM peak period queue spillback (see **Figure 11**, Locations 8 through 11):

- SB I-39/90 mainline north of the Beltline interchange (Location 8)
- NB I-39/90 mainline south of the Beltline interchange (Location 9)
- NB I-39/90 ramp to WB US 12/18 and associated diverge and merge areas (Location 10)
- SB I-39/90 ramp to WB US 12/18 and associated diverge and merge areas (Location 11)

Additional information concerning the operations analysis can be found in the project files in a memorandum titled *WisDOT ID 1007-10-02: I-39/90 & US 12/18 Interchange - Traffic Operations – Existing and Future No-Build Conditions*, dated February 6, 2018.

Interchange Geometrics

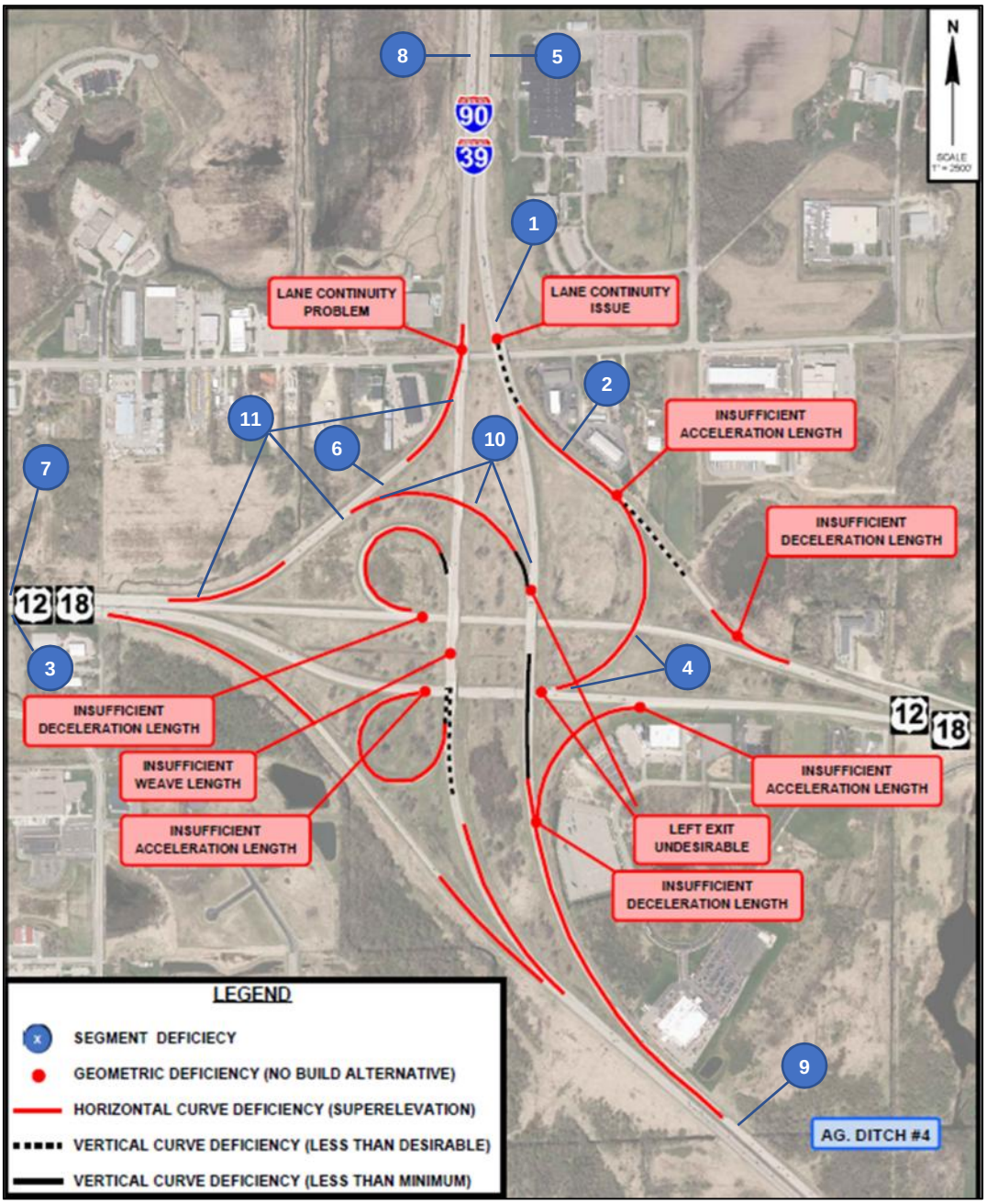
The WisDOT Facilities Development Manual (FDM) contains established standards and guidelines for application on all highways and streets being designed by WisDOT. The FDM desirable design criteria values fall in the middle to upper range of the American Association of State Highway and Transportation Officials (AASHTO) design criteria values. AASHTO guidance strongly recommends that middle to upper range values be used in most cases, and that the minimum design criteria values only be used under special circumstances. The reason that the desirable

(or middle to upper design criteria) values are to be used in most cases is because of the added safety and operational benefits that they provide.[11] Design values greater than the minimums are to be used where conditions permit and costs are not excessive. Safety is a prime consideration in the development of all designs. However, engineering judgment must be used to determine the cost and safety effectiveness and the social and environmental impacts of the various design elements. Exceptions to standards may be justified on the basis of safety, cost-effectiveness and social and environmental considerations. This project's alternatives development process will consider Performance-Based Practical Design and cost-effective geometric improvements to deficiencies that impact safety within the interchange's safety area of influence as well as those that impact operational efficiency along I-39/90 within the interchange's traffic operations area of influence.

The I-39/90 and US 12/18 (Beltline) Interchange is currently a semi-direct, partial cloverleaf configuration with several deficiencies as shown in **Figure 11**. The west leg of the interchange serves the Madison Beltline, a major traffic corridor leading into and around the city of Madison, with the heaviest traffic movements being to and from US 12/18.

Geometric deficiencies along I-39/90 outside of the area shown on **Figure 11** are described in **Table 5**.

Figure 11 – Existing Interchange Deficiencies



[11] WisDOT, Facilities Development Manual, Procedure 11-15-1, http://wisconsindot.gov/rdwy/fdm/fd-11-15.pdf

Table 5 – Existing I-39/90 Deficiencies Outside of Area of Influence

Location	Deficiency Type
I-39/90 - South of Beltline Interchange	
I-39/90 NB & SB - North of County AB Overpass	Horizontal Curve (Superelevation)
I-39/90 NB & SB - North of Siggelkow Road	Horizontal Curve (Superelevation)
I-39/90 North of Beltline Interchange	
I-39/90 NB & SB - South of Railroad	Horizontal Curve (Superelevation), Vertical Curve (Less than Desirable)
I-39/90 NB & SB - Between RR & County AB/Buckeye Road Overpass	Grade (Less than Desirable)
I-39/90 NB & SB - Between County AB/Buckeye Road & County BB/Cottage Grove Road Overpass	Vertical Curve (Less than Desirable)
I-39/90 NB & SB - South of IH 94 at Badger Interchange	Horizontal Curve (Superelevation)

One of the primary geometric deficiencies that affects interstate travel through the Beltline interchange is the left-hand exit ramp for the northbound to westbound driver. Since the original construction of this interchange in 1960, national design standards have been developed to recommend left-hand entrances and exits be avoided, especially on high-speed, free-flow ramps. Research has shown that the left-hand exits are contrary to driver expectations and less safe than the conventional right-hand exits.[12] Left-side entrances and exits also create conflicts between vehicles traveling at different speeds. Typically, the left-hand lane is used by traffic traveling at the highest speeds with slower traffic using the right-hand lane(s). When an entrance or exit is on the left, slower ramp vehicles are now required to use that left-hand lane. The difference in vehicle speeds causes safety and operational concerns and can increase the number of crashes. On average, the number of crashes is nearly 50 percent higher at left-side exits compared to right-side exits.[13]

In the case of the Beltline interchange, the northbound I-39/90 left-hand exit to westbound US 12/18 experienced a total of 32 crashes during the study period. Of these, nine were reported as either “changing lanes,” “merging,” or “slowing” within the crash summary data, which may be influenced by the presence of the left-hand exit. It is possible that other rear-end, sideswipe, or run-off-road crashes with vehicles labeled as “going straight” involved vehicles attempting to access the left-hand exit.

The eastbound US 12/18 diverge to northbound I-39/90 has been classified as a “split” and not a “left-hand exit” given the equal number of lanes provided for the ramp to northbound I-39/90 and for eastbound US 12/18 traffic. Additionally, the traffic volumes traveling from eastbound US 12/18 to northbound I-39/90 are higher than the traffic continuing east on US 12/18.

Similarly, because the southbound exit ramp to westbound US 12/18 combines an exit-only condition with a center option lane, drivers tend to make sudden lane changes in the area of the lane drop. This exit ramp area experienced 62 crashes during the study period. Of these crashes, 33 were reported as either “changing lanes” or “merging” within the crash summary data, which may be influenced by drivers making sudden lane changes in the area of the lane drop.

There is also insufficient merge distance and substandard sight distance where the westbound to northbound ramp converges with the eastbound to northbound ramp. Drivers entering a freeway accelerate until the desired highway speed is reached. Since the change in speed is usually substantial, as noted by USDOT, AASHTO recommends that provisions should be made for acceleration and deceleration to be accomplished on auxiliary lanes to minimize interference with through traffic and to reduce crash potential.[14] Stopping sight distance is the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object.[15]

[12] American Association of State Highway and Transportation Officials: A Policy on Geometric Design of Highways and Streets 2011, Chapter 10.9.6, Page 10-103

[13] Crash Modification Factors Clearinghouse, Operational and Safety Performance of Left-Side Off-Ramps at Freeway Diverge Areas, Zhou et al., 2010, CMF ID 2521, http://www.cmfclearinghouse.org/detail.cfm?facid=2521

[14] USDOT Federal Highway Administration, Freeway Management and Operations Handbook, Chapter 5 – Roadway Improvements, https://ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/chapter5.htm#ref5

[15] American Association of State Highway and Transportation Officials: A Policy on Geometric Design of Highways and Streets 2011, Chapter 3.2.2, Page 3-2

Along this ramp movement, 23 crashes were reported during the study period. Of these, four were reported as either "changing lanes" or "merging" within the crash summary data, which may be influenced by the acceleration length. It is possible that other crashes such as rear-end collisions may be influenced by the acceleration length. Additionally, acceleration and deceleration distances at the interchange ramp connections along I-39/90 are substandard. Inadequate acceleration and deceleration lanes often result in drivers speeding up or slowing down while still in the through lanes of traffic, thereby disrupting the free flow speed of the interstate. According to the FHWA Crash Modification Factors (CMF) Clearinghouse, a study has shown that extending an acceleration lane by approximately 98 feet can reduce all types of crashes by 11 percent.[16] Similarly, the same study found that extending a deceleration lane by approximately 100 feet can reduce all types of crashes by 7 percent.[17]

Connection to the I-39/90 Project from south of the Beltline Interchange to the Illinois State Line
WisDOT is currently undertaking a major reconstruction and capacity expansion project in south-central Wisconsin. The I-39/90 Expansion Project extends approximately 45 miles between the Illinois State Line and US 12/18 Madison Beltline (WisDOT ID 1001-10-02). Proposed improvements include reconstruction of the existing freeway lanes and the addition of a third lane in each direction to create a six-lane divided highway. Interchanges and grade-separated crossings will be reconstructed to address roadway and capacity deficiencies. The design effort for some segments of the project continues while construction activities that include interchange reconfigurations, temporary lane widenings, bridge replacements, interstate reconstruction, and alternate route improvements have begun or are already completed. Construction of the 45-mile corridor began in 2015 and is anticipated to be completed in 2021. Any alternatives considered in this EA need to be compatible with the I-39/90 reconstruction and capacity expansion project.

I-39/90 in southern Wisconsin is a gateway to the state and a vital link in the Primary Highway Freight System (PHFS), which includes routes that are identified as the most critical highway portions of the US freight system. This corridor links Wisconsin and Illinois, and heavy trucks account for about 29 percent of its traffic. In addition to serving thousands of businesses in the two counties directly impacted by the corridor (Dane and Rock County), I-39/90 is a key link in the corridor between Chicago and Minneapolis/St Paul and to national points beyond to the south, east, and west. This corridor also carries heavy tourism and recreational traffic, which peaks in the summer months and slows the flow of all traffic throughout this corridor.

Trucks are vital to the economy of Wisconsin and are an important user of the I-39/90 corridor. Congestion along highways with a large number of trucks and their acceleration/deceleration rates has a greater economic impact than congestion on other highways. It is estimated that this delay costs autos $19.23 per person-hour and $26.20 per person-hour for trucks. As congestion increases along the corridor, the user delay cost impact to the trucking industry will continue to increase.[18]

Table 6 shows average vehicles and trucks per day along various interstate corridor locations throughout Wisconsin. In Dane and Rock Counties, I-39/90 has higher truck percentages than other Wisconsin freeways, particularly those in the Milwaukee area. The volume of trucks on a roadway not only influences the design standards that need to be followed but also reduces the capacity of highways due to their size.

Table 6 – Traffic Volumes and Truck Percentages (2014) [19]

Interstate Highway	County	Average Vehicles per Day	Truck %	Average Trucks per Day
I-39/90/94: County V – WIS 60	Dane	53,242	26%	13,843
I-39/90: US 12/18 – I-94 / WIS 30	**Dane**	**86,557**	**21%**	**18,177**
I-39/90: County S – WIS 11 / Avalon Road	**Rock**	**45,927**	**29%**	**13,319**
I-39/US 51: Casimir Road – Business US 51	Portage	27,553	16%	4,408
I-94: County F – WIS 67	Waukesha	43,852	13%	5,701
I-94: 7 Mile Road – County G	Racine	87,357	19%	16,598
I-43: WIS 84 – County D	Ozaukee	25,153	14%	3,521

[16] Crash Modification Factors Clearinghouse, Handbook of Road Safety Measures, Elvik, R. and Vaa, T., 2004, CMF ID 474, http://www.cmfclearinghouse.org/detail.cfm?facid=474
[17] Crash Modification Factors Clearinghouse, Handbook of Road Safety Measures, Elvik, R. and Vaa, T., 2004, CMF ID 475, http://www.cmfclearinghouse.org/detail.cfm?facid=475
[18] WisDOT Bureau of State Highway Program's 2014 User Delay Costs
[19] WisDOT Bureau of State Highway Program's Traffic Data System (TRADAS)

Needs Outside the Scope of the Proposed Project
As noted previously, it is not WisDOT and FHWA's intention to address all project needs within the project termini. The needs that will be addressed, either fully or substantially, are those that impact the safety and operations of the I-39/90 mainline and fall within the Beltline Interchange traffic operations area of influence.

The following locations with a safety rating of "poor" or worse will not be addressed by the improvements within the range of alternatives for this project. These locations are not being addressed since they are not located along I-39/90 nor are they located along an exit ramp within the Beltline Interchange that could potentially cause backups onto the interstate.

- Eastbound US 12/18 ramp diverge to southbound I-39/90
- Westbound US 12/18 ramp diverge to southbound I-39/90
- Eastbound US 12/18 from the Beltline Interchange to 1,000 feet west of County AB
- Westbound US 12/18 WB from 1,000 feet west of County AB to the Beltline Interchange

Five segments with an expected design year 2040 LOS 'E' or worse will not be addressed by the improvements for this project. LOS 'E' indicates slow speeds and high-density conditions. Operations on the freeway at this level are highly volatile because there are virtually no usable gaps within the traffic stream. These locations are not being addressed since they are either not on the I-39/90 mainline, or they are not generated within the traffic operations area of influence of the Beltline Interchange. The five segments are:

- Eastbound US 12/18 between Stoughton Road and the Beltline Interchange
- Eastbound US 12/18 ramp diverge and ramp segment to northbound I-39/90
- Northbound I-39/90 mainline segment north of the merge with US 12/18
- Southbound I-39/90 ramp segment to westbound US 12/18 after the diverge from southbound I-39/90
- Westbound US 12/18 between the Beltline Interchange and Stoughton Road

The improvements being considered as part of this project are not expected to address the operational issues created by queuing from the US 12/18 Beltline west of the Beltline interchange. The operational issues along westbound US 12/18 identified earlier in this document are extensive enough that it is not expected that reasonable improvements can be included within the Beltline Interchange area of influence to keep queues off mainline I-39/90 within the project area in the design year 2040. Additionally, congestion located along I-39/90 north of the project limits may have the potential to impact the Beltline Interchange in the design year of 2040, but an approved model estimating the extent of this outside congestion is not available. Solutions for addressing the operational issues outside of the project limits are not included in the scope of the Beltline Interchange project.

2. Summary of Alternatives (see **Appendix C – Range of Alternatives and Screening Memo**)

The Range of Alternatives was developed to meet acceptable engineering standards that reflect a Performance-Based Practical Design approach, avoid or minimize harm to the human environment and natural and cultural resources, and to be compatible with adjacent development and land use to the extent practicable. Other Improvement Concepts have been considered throughout the life of the project, but will not be carried forward under the Range of Alternatives because of the revised project purpose.

No-Build Alternative (Dismissed)
Consistent with the requirements of National Environmental Policy Act (NEPA), full consideration is being given to a No-Build Alternative that serves to help decision makers understand the consequence of not moving forward with the project and as a baseline for comparison of the other alternatives.

The No-Build Alternative would not make any geometric or safety improvements, however it would include routine/preventative maintenance. In addition to the routine and preventative maintenance, the no build alternative would provide approximately 3,400 feet of six lanes of I-39/90 south of US 12/18 with a concrete median barrier as a compatible and safe connection with the I-39/90 Expansion Project from south of the Beltline Interchange to the Illinois State Line.

One project included in WisDOT's 2018-2023 Six Year Highway Improvement Program within the project limits of the Beltline Interchange is the proposed replacement of the County BB (Cottage Grove Road) structure over I-39/90 in 2020 (WisDOT ID 1010-01-77).

The No-Build Alternative does not meet the project's purpose and need since it does not make any safety improvements, or address any of the traffic operations or interchange deficiencies. As a result, it was not identified as the preferred alternative.

Alternative A (Dismissed)
Alternative A includes a two-lane northbound cross section and a two-lane southbound cross section along I-39/90 through the core of the Beltline Interchange. Northbound I-39/90 would be shifted approximately 400 feet west through the core of the interchange with the roadway reconstructed to more closely align with southbound I-39/90. Southbound I-39/90 would remain in place and maintain two existing lanes through the core of the interchange. While both northbound and southbound I-39/90 were evaluated individually, Alternative A, as a whole, was eliminated from consideration because southbound I-39/90 does not meet the purpose and need for safety and operations through the core of the interchange.

Alternative B (Dismissed)
Alternative B includes a three-lane northbound cross section and a three-lane southbound cross section along I-39/90 through the core of the Beltline Interchange. As with Alternative A, northbound I-39/90 would be shifted approximately 400 feet west through the core of the interchange with the roadway reconstructed to more closely align with southbound I-39/90. Southbound I-39/90 would remain in place and be widened to the inside to allow a third lane through the core of the interchange. While both northbound and southbound I-39/90 were evaluated individually, Alternative B, as a whole, was eliminated from consideration because northbound I-39/90 does not meet the purpose and need for safety through the core of the interchange.

Improvements Common to Alternatives A and B
In addition to the I-39/90 mainline improvements, both Alternatives A and B would include the following:

1. The northbound I-39/90 to westbound US 12/18 exit ramp would be reconstructed as a right-side exit and combined with the exit to eastbound US 12/18.
2. The addition of a dedicated exit-only lane to southbound I-39/90 near the exit ramp to westbound US 12/18.
3. Increased length of the acceleration lane at the southbound I-39/90 ramp merge with eastbound US 12/18.
4. The addition of an acceleration lane for the westbound US 12/18 ramp at the merge with the eastbound US 12/18 ramp to northbound I-39/90.

Both alternatives would also provide approximately 3,400 feet of six lanes of I-39/90 south of US 12/18 with a concrete median barrier as a compatible connection with the I-39/90 Expansion Project from south of the Beltline Interchange to the Illinois State Line.

The expected safety impact for reconstructing the northbound I-39/90 left-side exit to westbound US 12/18 as a right-side exit is a reduction of 13 crashes over a five-year period. This estimate takes into consideration the safety improvement for an additional ramp lane and the conversion from a left-side to a right-side exit, improvements that are common to both Alternatives A and B. Combining the exits for westbound US 12/18 and eastbound US 12/18 into a single exit point creates a ramp split along the northbound I-39/90 off-ramp to US 12/18. A similar design can be found in Wisconsin at the eastbound WIS 29 off-ramp to northbound US 51 and Stewart Avenue near Wausau. Over the most recent five-year period of 2013 through 2017, two crashes occurred on the off-ramp. The volume of daily traffic on the WIS 29 off-ramp is very similar to the forecasted ramp volume for the northbound I-39/90 exit to US 12/18, suggesting that this new ramp could experience two crashes over a five-year period as a result of the new ramp split configuration. This increase of two crashes should be included with the previously described expected reduction of 13 crashes, resulting in a net reduction of 11 crashes.

Both Alternative A and B address the project's purpose and need since they make improvements to safety issues, traffic operations, and interchange deficiencies that affect interstate travel through the Beltline Interchange; and ensure compatibility with the I-39/90 expansion project south to the south. As a result, both alternatives were carried forward for Range of Alternatives Analysis which evaluated the alternatives based on the project's four purpose and need elements, as well as environmental and right-of-way impacts.

The selection of the technical criteria used for the Range of Alternatives Analysis was based on locations where the level of potential improvement to safety and traffic operations, and the extent of impacts to environmental resources and right-of-way varied between the alternatives. Alternatives A and B were analyzed based on how well each alternative, or portion of each alternative, would improve safety along the interstate through the interchange.

During the analysis, the northbound and southbound roadways were evaluated independently which allowed for the opportunity to identify the greatest overall potential for safety improvement along the interstate through the Beltline Interchange and best satisfy the purpose of the project. This approach resulted in the recommendation of a Preferred Alternative that is a "hybrid" of Alternatives A and B and is identified as Alternative C in this Environmental Assessment.

Alternative C (Preferred Alternative, see Appendix D – Preferred Alternative and Impact Exhibits)
Alternative C includes a two-lane northbound cross section (Alternative A) and three-lane southbound cross section (Alternative B) along I-39/90 through the core of the Beltline Interchange. Northbound I-39/90 is shifted approximately 400 feet west through the core of the interchange with the roadway reconstructed to more closely align with southbound I-39/90. Southbound I-39/90 will remain in place and be widened to the inside to allow a third lane through the core of the interchange.

In addition to the I-39/90 mainline improvements, Alternative C includes the following:

1. The northbound I-39/90 to westbound US 12/18 exit ramp is be reconstructed as a right-side exit and combined with the exit to eastbound US 12/18.
2. The addition of a dedicated exit-only lane to southbound I-39/90 near the exit ramp to westbound US 12/18.
3. Increased length of the acceleration lane at the southbound I-39/90 ramp merge with eastbound US 12/18.
4. The addition of an acceleration lane for the westbound US 12/18 ramp at the merge with the eastbound US 12/18 ramp to northbound I-39/90.
5. The roadway subgrade along the inside median of northbound I-39/90 between westbound US 12/18 and Femrite Drive will be constructed to accommodate a future expansion the roadway.
6. The structures along northbound I-39/90 over the northbound I-39/90 exit ramp to westbound US 12/18 and Femrite Drive will be constructed full width to accommodate a third median lane in the future.

The project extends south of eastbound US 12/18 for approximately 3,400 feet south to Agriculture Ditch #4 (see **Figure 1** and **Appendix B**, Project Location Map). This proposed section of roadway provides six lanes along I-39/90 with a concrete median barrier and is compatible with the I-39/90 Expansion Project from south of the Beltline Interchange to the Illinois State Lline.

<u>Northbound I-39/90</u>
The US 12/18 entrance ramp to northbound I-39/90 experiences higher hourly traffic volumes than northbound I-39/90 within the core of the Beltline Interchange during approximately 74% of all hours of the year. This relationship is true during the design hours used for analysis. The selected design hours include the Weekday AM peak (7-8 AM), the Weekday PM peak (4-5 PM), the Friday afternoon peak (3-4 PM), and the Sunday afternoon peak (2-3 PM), representing the 30th highest hourly traffic volume of the year along I-39/90 and the 100th highest hourly traffic volume of the year along US 12/18. In the area of the US 12/18 entrance ramp to northbound I-39/90, the peak design hour occurs on Friday afternoons. Additionally, the hours of the year that experience the highest volumes along northbound I-39/90 north of the Beltline Interchange, also experience higher volumes on the entrance ramp from US 12/18 as compared to northbound I-39/90 in the core of the Beltline Interchange. The peak design hour occurs on Friday afternoons for this location as well.

The expected safety impact for northbound I-39/90 as a function of the three-lane versus two-lane comparison is an increase of three crashes for the three-lane option and a reduction of eight crashes for the two-lane option, suggesting that the two-lane option would be expected to experience fewer crashes than the three-lane option in the northbound direction, independent of other safety improvements included with the alternatives.

With respect to traffic operations along northbound I-39/90 through the core of the Beltline Interchange, the two-lane option is expected to operate at LOS 'C' in the design year of 2040 without consideration of outside congestion, while the three-lane option is expected to operate at LOS 'B'.

Providing two lanes northbound rather than three lanes, reduces the complexity of the merging movement for US 12/18 traffic entering northbound I-39/90 by providing a lane addition and reducing the number of required lane changes. Although the three-lane option results in slightly improved traffic operations, the two-lane proposed configuration is preferred due to the potential for crash reduction, lower environmental impact, and lower project cost (when compared to three lanes). The situation of ramp traffic volumes (the US 12/18 ramp to northbound I-39/90) being heavier than those along the mainline interstate during almost all hours of the day and year, is unique. Reducing from three lanes on northbound I-39/90 to two lanes through the core of the interchange still provides an acceptable level of service and is the most effective way to address this unique situation.

In the proposed three-lane cross section for northbound I-39/90 south of the Beltline Interchange, existing lane utilization data suggests that the right lane carries more traffic than the left lane. Additionally, it is expected that the majority of heavy vehicle traffic will travel in the center and right lanes. Based on guidance within NCHRP 175, the selection of a left-side lane drop is recommended given the lane preference of heavy vehicle traffic, existing lane utilization data, and the presence of ramps on the right side of the freeway. This lane drop occurs approximately ¾-mile north the exit ramp to US 12/18, just after the northbound I-39/90 bridge over westbound US 12/18.

Southbound I-39/90

The expected safety impact for southbound I-39/90 is a reduction of 23 crashes for the three-lane option and a reduction of zero crashes for the two-lane option, suggesting that the three-lane option would be expected to experience fewer crashes than the two-lane option, independent of other safety improvements included with the alternatives.

With respect to traffic operations along southbound I-39/90 through the core of the Beltline Interchange, the two-lane option is expected to operate at LOS 'D' in the design year of 2040 without consideration of outside congestion, while the three-lane option is expected to operate at LOS 'C'.

Providing three lanes southbound will result in higher environmental impact and cost, however, it is preferred due to the potential for crash reduction and improved level of service.

Alternative Refinements

Two locations have been identified within the Beltline Interchange that, as part of the refinements to Alternative C, could have the potential to further improve safety and/or operations. The evaluation is independent of the Range of Alternatives screening process and the alternative refinements do not preclude or favor one alternative over another.

Southbound I-39/90 Ramp Diverge to Westbound US 12/18: Sub-options under consideration for the southbound I-39/90 ramp diverge to westbound US 12/18 include maintaining the ramp diverge immediately adjacent to the southbound lanes of I-39/90 versus providing a 4-foot buffer between the ramp lanes and southbound mainline.

Southbound I-39/90 Lane Development Prior to the Exit Ramp to Westbound US 12/18: Sub-options under consideration for how lanes are developed along southbound I-39/90 prior to the exit ramp to westbound US 12/18 include the addition of two "exit only" lanes along the outside of southbound I-39/90 to westbound US 12/18; and the addition of one lane along the outside of southbound I-39/90 as an exit lane to westbound US 12/18 and one lane to the inside along the median southbound through the core of the interchange.

The following is a list of technical memos and reports completed for the Beltline Interchange during the alternatives development process. These reports are located in the project file and available for review upon request.

- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Design Year 2040 Traffic Volume Development:* This memo serves as a summary of the process used to identify base year traffic volumes and develop design year volumes (memo dated September 15, 2017; WisDOT Traffic Forecasting Section concurrence September 19, 2017).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Beltline Interchange Safety Analysis:* This memo identifies safety concerns within the influence area of the Beltline Interchange by analyzing the historic crash rates and patterns (memo dated October 20, 2017; FHWA concurrence March 13, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Crash Prediction for Major Design Concept Differentiators:* This memo summarizes the impact that the Beltline Interchange design concepts are expected to have on safety (memo dated April 5, 2018; FHWA concurrence April 20, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Improvement Concepts Pre-Screening Memo:* This memo is a summary of the pre-screening process, its findings and provides a recommendation of the improvement concepts that should be considered for dismissal and those that should be carried forward for further evaluation as the Range of Alternatives (memo dated May 1, 2018; FHWA concurrence May 11, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Cost Estimate Review:* This report is a summary of an unbiased risk-based review and the verification of the accuracy and reasonableness of the cost estimate and schedule to complete the project. The report includes a probability range for the cost estimate that represents the project's current level of design[20] (final report from FHWA dated July 26, 2018; see **Appendix A – Cost Estimate Review Summary**).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Northbound I-39/90 Lane Drop Evaluation:* This memo details the location of either a left or right-side lane drop along northbound I-39/90 and provides information on existing lane utilization, safety, and national guidance on the selection of the preferred option (memo to project file dated August 31, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange Safety Analysis Update – I-94 CNAT Study Data:* This memo summarizes the review of system interchanges gathered as part of the I-94 CNAT study (memo to project file dated October 9, 2018; FHWA concurrence October 18, 2018).

[20] USDOT Federal Highway Administration, Major Projects, Cost Estimating Process https://www.fhwa.dot.gov/majorprojects/cost_estimating/process.cfm

- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Traffic Operations - Existing and Future No-Build Conditions:* This memo summarizes the traffic volumes and methodology used to analyze the existing and design year No-Build condition traffic operations of the Beltline Interchange and the resulting density and level of service (LOS) for the study segments (memo dated February 6, 2018; FHWA agreement to move forward July 25, 2018. Memo revision dated October 11, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Traffic Operations - 2040 Range of Alternatives Supplement:* This memo serves as a supplement to the previous memorandum mentioned above and expands on the traffic operations analysis to include the results of the design year 2040 analysis for the two alternatives identified as the Beltline Interchange Range of Alternatives (memo dated April 18, 2018; FHWA agreement to move forward July 25, 2018. Memo revision dated October 11, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Preliminary Engineering & Operational Review (PEOR):* This report documents the proposed change(s) in access to the existing Beltline Interchange and ensures that each of the proposed alternatives to be carried forward for detailed analysis in the environmental document would be acceptable from an engineering and operational standpoint (draft report dated October 16, 2018).
- *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Range of Alternatives Screening Memo:* This memo details the development of the Range of Alternatives for the Beltline Interchange, as well as the screening process and evaluation criteria used to identify the Preferred Alternative. (see **Appendix C – Range of Alternatives and Screening Memo**)

3. Description of Proposed Action (see **Appendix D – Preferred Alternative and Impacts Exhibits**)

   The proposed project consists of improvements to I-39/90 at the US 12/18 (Beltline) Interchange. The project is located in south central Wisconsin, Dane County on the east side of the city of Madison. The project length totals approximately 2.37 miles within the project area (see **Figure 1 – Project Location Map**).

   The Proposed Action (Preferred Alternative – Alternative C) will provide two lanes northbound and three lanes southbound. The reconstruction of northbound I-39/90 through the core of the interchange is consistent with a future expansion of the roadway. Since the foundation supports of new bridges are designed for a minimally expected life of 75 years[21], the new northbound structures and roadway embankment through the core of the Beltline Interchange will be constructed to accommodate a future third lane of traffic. By remaining in place, southbound I-39/90 will utilize the remaining life of the existing pavement and structures.

   Drivers along I-39/90 will notice several improvements as they pass through the completed project area; most noticeably as they enter and exit the interstate coming from and going to US 12/18. With the northbound I-39/90 exit to westbound US 12/18 being reconfigured from the left to a right side exit, drivers should experience a more safe and comfortable exiting maneuver with less impact on the adjacent free-flow traffic. By providing an additional lane along southbound I-39/90 at the exit ramp to westbound US 12/18 and a third lane through the core of the interchange, the roadway at this location is expanded from its current 3-lane section to 5 lanes, removing the existing either-or lane at the exit ramp and providing a safer exiting maneuver and improved traffic flow.

   Insufficient acceleration (merge) and deceleration (diverge) lane lengths will be improved at the following locations:

   - Where the westbound to northbound ramp converges with the eastbound to northbound ramp,
   - the southbound I-39/90 ramp merge with eastbound US 12/18,
   - the northbound I-39/90 ramp merge with eastbound US 12/18 ramp, and
   - the westbound US 12/18 diverge to northbound I-39/90.

   Longer acceleration and deceleration lanes allow drivers to adjust their speeds on auxiliary lanes away from free-flow traffic which helps minimize interference with through traffic and reduces the potential for crashes.

   Other improvements or aspects of the Proposed Action include the following:

   1. The construction of wider shoulders which provide safer environments for emergency stops and more recovery area for driver errors.
   2. The construction of four new bridges along northbound I-39/90 through the core of the interchange.

[21] WisDOT Bridge Manual, Chapter 11 – Foundation Support, Section 11.3 – Deep Foundations https://wisconsindot.gov/dtsdManuals/strct/manuals/bridge/ch11.pdf

3. With the northbound I-39/90 to westbound US 12/18 exit ramp being reconstructed as a right-side exit, the existing I-39/90 roadway will be utilized as the exit ramp to westbound US 12/18.
4. Southbound I-39/90 would receive shoulder improvements, repairs to the existing concrete pavement as necessary, and the structure approach slabs would be replaced.
5. The box culvert under I-39/90 at Pennito Creek (C-13-044) will be extended approximately 35 feet to the east of I-39/90 and approximately 30 feet to the west to accommodate deceleration/acceleration lanes to/from US 12/18.
6. The northbound I-39/90 structure over Femrite Drive (B-13-463), will be widened to the outside to accommodate the extension of an acceleration lane from the westbound US 12/18 ramp merge with the eastbound US 12/18 ramp to northbound I-39/90.

The Proposed Action ties into the expansion of the I-39/90 at the south end of this project to complete the 45-mile expansion of I-39/90 between the Illinois State Line and the US 12/18 Madison Beltline, which is consistent with the planned improvements to the adjacent transportation facilities identified in the project Purpose and Need (see **Appendix D – Preferred Alternative and Impact Exhibits**).

The preferred alternative will be constructed to address the project's purpose and need consistent with Performance-Based Practical Design principles and current design standards, thus improving the overall safety and correcting the existing geometric deficiencies along I-39/90. I-39/90 and the connecting ramps will remain open to traffic throughout the duration of construction; however, there may be some temporary lane closures that will be in effect during the transition between various construction stages. No detour routes will be designated for construction of the project.

4. Construction and Operational Energy Requirements

Energy requirements for construction of the Preferred Alternative would be greater than those required for the No-Build Alternative. A significant amount of energy would be consumed up front during construction, and additional energy consumption would be required for continued maintenance of the facility over its lifetime. However, the No-Build Alternative would have similar energy requirements for maintenance and would perpetuate the use of an inefficient transportation system, resulting in more congestion, loss of time, higher consumption of energy, and increased crashes and safety problems. Over the design life of the facility, savings in operational energy would be greater than the energy required to construct the facility and thus in the long-term would result in net savings in energy usage. The Preferred Alternative would not require the full reconstruction of the interchange, and therefore would save on energy consumption for construction in comparison to a full reconstruct of the interchange, while still addressing the purpose and need of this project.

5. Land Use Adjoining the Project and Surrounding Area

Current land use maps for municipalities within the project area show that agricultural, commercial, residential, industrial, and recreational land uses are prevalent in the area adjoining the project (see **Figure 12**). County GIS data shows that a majority of the unincorporated area adjoining the project is agricultural. Within close proximity to the Beltline Interchange, these lands are primarily south of the Beltline Interchange along I-39/90.

Figure 12 – Existing Land Use

Residential uses are primarily located west of the north leg, with some scattered east of the Beltline Interchange. The Secret Places Subdivision just south of the Beltline Interchange includes concentrated single family residential development. This subdivision is relatively new, having been built in phases over the last two decades. Other major areas of residential development are largely concentrated in more urbanized areas farther away from the Beltline Interchange and include the cities of Madison and Monona, and the villages of McFarland and Cottage Grove.

A variety of commercial/industrial establishments can be found in various locations near the area, including along I-39/90, US 12/18, Millpond Road, and Femrite Drive.

There are numerous parks and recreation areas in the greater Madison area, including Yahara Hills Golf Course located east of I-39/90 along the south leg of the Beltline Interchange. The 36-hole regulation golf course is owned by the city of Madison and open to the public. The Capital City State Trail provides a link around and through Madison between the Military Ridge State Trail and, eventually, the Glacial Drumlin State Trail. This future connection is proposed within the project area adjacent to the Wisconsin and Southern Railroad crossing on the north leg of the Beltline Interchange.

Wetlands are also abundant in the area with the largest areas located adjacent to Door Creek south of the Beltline Interchange, and near Upper Mud Lake to the west. The WisDOT World Dairy Wetland Mitigation Bank is located along the west side of I-39/90 just north of the interchange within the project area. Areas of low quality wetlands exist within the core of the interchange, and in much of the undeveloped area in the northeast quadrant of the interchange; these areas serve the purpose of storing stormwater runoff from the existing interchange.

Land use surrounding the project area is similar to that of the area immediately adjoining. Land use includes agriculture, widely dispersed farmsteads and rural residential uses. Commercial and industrial land uses remain prevalent along US 12/18 and I-39/90 farther away from the interchange.

According to the Dane County Farmland Preservation Plan (March 2012), Dane County used 70% of the total land area for active farming in 2010. This included the cultivation of 15 different crops and extensive cattle herding. Large farm operations are located near the general project area.

More urbanized areas exist outside of the immediate project area. The city of Madison is located primarily to the west of the project area and is a regional commercial, government, industrial, and retail hub. The city of Monona is also located west of the Beltline Interchange, and the village of McFarland is located to the southwest, and the village of Cottage Grove to the east.

6. Planning and Zoning

A number of local and regional plans have been adopted which include the project area. Improvements to the Beltline Interchange are identified in several of these plans, including the MATPB Regional Transportation Plan 2050 and the City of Madison Yahara Hills Neighborhood Development Plan. The Preferred Alternative is consistent with, and does not conflict with plans and land use controls/regulations for the project area. Existing plans in the project area have been identified for the following organizations and units of government:

WisDOT

Connections 2030 is WisDOT's statewide long-range plan for the State of Wisconsin. This multi-modal plan, published in 2009, sets policy directions for the state trunk highway system, but also for public transit, intercity travel, freight movement, bicycle and pedestrian travel, and funding, project scheduling and prioritization decisions. The plan presents a system-level vision through 2030 and identifies 37 statewide, system level priority corridors. The plan identifies the variety of transportation facilities and services within each broad corridor and makes short-, medium- and long-term recommendations and activities for each.

The Six Year Highway Improvement Program: 2018-2023 lists specific projects that are funded in the next six-year period. As discussed above, any project in a metropolitan area that is funded with federal dollars must also be included in the Metropolitan Planning Organization's Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP). The Beltline Interchange project is included in WisDOT's six-year program and the RTP and TIP. All projects in the MPO TIP are incorporated into the STIP.

Connections 2030
http://wisconsindot.gov/Pages/projects/multimodal/conn2030.aspx

Statewide Transportation Improvement Plan
http://wisconsindot.gov/Pages/doing-bus/local-gov/astnce-pgms/highway/stip.aspx

Dane County

The Dane County Comprehensive Plan utilizes an overarching, "umbrella" structure that incorporates a number of long established county and regional plans built around key planning concepts - farmland preservation, parks and open space, urban service areas, and environmental corridors. The umbrella structure is suitable to address regional issues that affect multiple municipalities. The entire Beltline Interchange project area is identified in the plan as falling within the planning area of incorporated municipalities; the plans of these municipalities are discussed later in this section. The County also maintains a separate Farmland Preservation Plan, Land Use & Transportation Plan, and Parks and Open Space Plan.

Dane County Comprehensive Plan 2007
http://www.daneplan.org/plan

Vision 2020: Dane County Land Use & Transportation Plan
https://danedocs.countyofdane.com/webdocs/PDF/capd/landuse_and_transportation_plan.pdf

Dane County Farmland Preservation Plan
https://plandev.countyofdane.com//planning/farm_preservation.aspx

2018-2023 Dane County Parks and Open Space Plan
https://parks-lwrd.countyofdane.com/Information/Planning-Development

Capital Area Regional Planning Commission

The Capitol Area Regional Planning Commission (CARPC) is an independent entity charged with the duty of preparing and adopting a regional plan for the physical development of the region. The regional plan is not a single document. There are many existing plans developed by various agencies in the region. These can potentially be combined into a unified regional plan to better guide decision-making. County and local level plans are listed later in this section.

CARPC is also responsible for maintaining a continuing, area-wide water quality management planning process. CARPC works to protect, improve and enhance water quality by implementing and updating the Dane County Water Quality Plan. The plan was initially certified in 1979 and has been continually updated and expanded since then.

Dane County Water Quality Plan
https://danedocs.countyofdane.com/webdocs/PDF/capd/waterq/WQP_Summary_2004.pdf

Madison Area Transportation Planning Board (MATPB)

MATPB is the federally designated Metropolitan Planning Organization (MPO) for the Madison Urban Area. The MPO is the policy body responsible for cooperative, comprehensive regional transportation planning and decision making for the Madison Metropolitan Planning Area. The area lies within the MPO boundaries.

The Regional Transportation Plan 2050 (RTP) was adopted in 2017. This plan is an integrated, multi-modal system plan that provides the overall framework for transportation planning and investment decision making in the region. It also identifies specific transportation projects and strategies or actions to be implemented. MATPB also produces the five-year TIP, which lists the transportation projects that are planned for study or construction in the next five years. A transportation project that uses federal funds must be included in the RTP and the TIP. The current RTP and TIP include the Beltline Interchange project.

Regional Transportation Plan 2050
http://www.madisonareampo.org/planning/RegionalTransportationPlan2050.cfm

Transportation Improvement Program
http://www.madisonareampo.org/planning/improvementprogram.cfm

City of Madison

Most of the lands adjacent to the Beltline Interchange itself are in the city of Madison. The city of Madison Comprehensive Plan, developed in 2006, established broad, long-term goals, policies, and implementation recommendations that are intended to provide a framework for both ongoing community planning activities and other adopted city planning documents that give detailed recommendations on an array of topics. These plans include general and special transportation plans, several corridor plans focused on design as well as land use issues. The comprehensive plan also provides a framework and guidance for the city's five-year capital improvement program, and for preparing revised and updated land development regulations, such as the zoning code.

The city of Madison is currently in the process of updating the Comprehensive Plan. A complete draft of the plan was released in May 2018 for public review and comment.

The City's Yahara Hills Neighborhood Plan, adopted in 2017, includes more detailed planning for the Yahara Hills Neighborhood. The neighborhood includes area adjacent and within close proximity to the Beltline Interchange. The Plan was prepared to guide the future growth and development of the new neighborhood. Parts of the Neighborhood Development Plan (NDP) planning area were recognized as potential locations for future urban expansion in the 1990 city of Madison Peripheral Area Development Plan, now included in the City's Comprehensive plan. In addition, open space is recommended for substantial locations within the NDP planning area, especially those areas associated with the numerous wetlands, floodplains and drumlins.

Comprehensive Plan
http://www.cityofmadison.com/dpced/planning/comprehensive-plan/1607/

Comprehensive Plan – May 1, 2018 Draft
https://www.imaginemadisonwi.com/document/comprehensive-plan-may-1-2018-draft

Yahara Hills Neighborhood Development Plan
https://www.cityofmadison.com/dpced/planning/documents/YH_FINAL_ADOPTED_PLAN.pdf

2018-2023 City of Madison Parks and Open Space Plan
https://www.cityofmadison.com/parks/projects/2018-2023-park-open-space-plan

Village of McFarland
In the vicinity of US 51, Voges Road forms the boundary between the village of McFarland and the city of Madison. Further to the east towards I-39/90, Siggelkow Road forms this boundary. The area of McFarland that falls within the Beltline Interchange project area is the area at the intersection of Stoughton Road and Voges Road. The village of McFarland Comprehensive Plan was adopted by the village in March 2006. In 2017, the village adopted a full update to the plan.

Village of McFarland Comprehensive Plan
https://www.mcfarland.wi.us/index.asp?SEC=0E83C2A4-E3E3-452E-B443-D0155A06F2DE&DE=300AF5FC-C27A-4DBB-A7D1-48B424F3368B

Town of Blooming Grove
The town of Blooming Grove is adjacent to the cities of Madison and Monona. Large portions of the town have been annexed over the years. The town of Blooming Grove Land Use Plan was adopted in 2000.

The town of Blooming Grove has an intergovernmental agreement with the city of Madison that will terminate the town government on October 31, 2027. In the intervening years, Madison will be able to annex specific areas of the town, while other areas are protected from annexation. All town lands remaining by the end date of the agreement will be annexed into the city. Town lands west of I-39/90 and north of the C&NW rail line were subject to annexation as early as 2015. Lands in the immediate vicinity of the Beltline Interchange and north up to the C&CW rail line could be annexed in 2020 or later. Other areas in the town that are within the Beltline Interchange project area are protected from annexation until the dissolution of the town in 2027. Property owners may petition for annexation, and such annexation will be permitted, regardless of their status under this agreement.

Town of Blooming Grove Land Use Plan
https://plandev.countyofdane.com/planning/plan.aspx?town=4

Town of Pleasant Springs
The southern termini of the Beltline Interchange project area is the County N interchange on I-39/90, located in the town of Pleasant Springs. The southern construction limit for the project on I-39/90 is at County AB, which is on the western town line. The Town of Pleasant Springs Comprehensive Plan:2017 was adopted by the town in October 2017.

Town of Pleasant Springs Comprehensive Plan: 2017
http://www.pleasantsprings.org/compplanupdate.html

County land use data indicates that areas of residential and undeveloped space west of I-39/90 may become developed for residential use. An expert panel workshop was held on March 1, 2017, where representatives of local, state, and federal agencies and other local interest groups were invited to identify and discuss potential indirect effects of the project. A number of planned developments near the project area were identified prior to and during the workshop. These include:

- Yahara Hills Neighborhood Development Plan
- Ho-Chunk Nation development in the southwest quadrant of the Beltline Interchange, including a potential new connecting road from the new development to County AB as part of the Phase I Development Plan

- Dane County Rodefeld Landfill and campus expansion
- World Dairy Wetland Mitigation Bank
- Further expansion of the Secret Places residential subdivision
- Reiner/Sprecher Road area improvements
- Planned development near US 12/18 and County AB
- Marsh Road neighborhood development
- Office Park proposed near the existing industrial park in McFarland, accessed from existing Marsh Road
- Possible Lower Yahara River Trail over/under I-39/90 from McFarland to Ho-Chunk Nation development, south of the Beltline Interchange
- Possible Capital City/Glacial Drumlin State Trail connection under I-39/90, north of the Beltline Interchange

The city of Madison also has plans to further develop the Sprecher Neighborhood which is located beyond the northeast quadrant of the Beltline Interchange. Most of the properties within the planning area are currently used for agriculture, open space or are vacant. A few properties are used for other commercial, industrial, or institutional activities, although often at very low density, and the balance of the land consists of residential parcels. The Sprecher Neighborhood is planned primarily as a residential community, with about 45 percent of the planning area recommended for residential development.

About 23 percent of the planning area is recommended for park and open space uses, 6 percent for commercial uses, and institutional uses and other specialized uses account for about 4 percent of the land. Most of the remaining balance, about 18 percent, will be required for street rights-of-way. No proposed use is assigned to the small area (4 percent of the planning area) located east of the Door Creek corridor, at this time. The development plan for the Sprecher Neighborhood also includes a major north-south arterial highway serving the east side of the Madison metropolitan area with a full range of urban services. The Proposed Action is not expected to have any effects on this planned development.

Apart from development at the sites indicated above, land use within the project area would not change. The strip acquisition of agricultural land along the corridor is not expected to affect the overall agricultural character in the rural areas of the corridor. Likewise, the existing pattern of scattered residential and commercial developments in the communities located throughout the corridor is not expected to change as a result of the Proposed Action.

7. Indirect Effects and Cumulative Effects

If any of the following boxes are checked, the Pre-Screening Worksheet for EA and ER Projects For Determining the Need to Conduct a Detailed Indirect Effects Analysis (IEA) found in Appendix A of the WisDOT report titled *Guidance for Conducting an Indirect Effects Analysis* must be completed and attached to this environmental document.

An alternative being carried forward for detailed consideration includes:

- ☐ Economic development as a purpose and need element of the proposed project.
- ☒ Construction of one or more new or additional through lanes.
- ☐ Construction of a new interchange or elimination of an existing interchange.
- ☒ Construction of one or more additional ramps or relocation of a ramp lane to a new quadrant on an existing interchange.
- ☐ Changing an at-grade intersection to a grade-separation with no access or a grade-separation to an at-grade intersection.
- ☐ Construction of one or more additional intersections along the mainline created by a new side road access.
- ☐ One or more new access points along a side road within 500 feet of the mainline.

☐ None of the above boxes have been checked, it has therefore been concluded that the proposed action will not result in indirect effects or cumulative effects.

☒ The proposed action may result in indirect effects or cumulative effects. The Pre-Screening Worksheet for EA and ER Projects For Determining the Need to Conduct a Detailed Indirect Effects Analysis attached as **Appendix E – Indirect Effects Analysis (IEA) Pre-screening Worksheet**, indicates a detailed indirect effects and cumulative effects analysis is not required.

☐ The proposed action may result in indirect effects or cumulative effects. It has been determined that a detailed indirect effects and cumulative effects analysis is required.

8. Environmental Justice

How was information obtained about the presence of populations covered by EO 12898? *(check all that apply)*	
☒ US Census Data	☐ Survey Questionnaire
☐ Real Estate Company	☐ WisDOT Real Estate
☒ Public Involvement Meeting	☐ Local Government
☐ Official Plan	☒ Windshield Survey*
☐ Human Resources Agency Identify agency: Identify plan, approval authority and date of approval:	
☒ Other – Identify: Tenant Resource Center website http://www.tenantresourcecenter.org/; EPA EJSCREEN (Environmental Justice Screening and Mapping Tool) https://www.epa.gov/ejscreen. An expert panel workshop was held 3/1/2017 to discuss indirect and cumulative impacts that could result from the project. All topics related to potential impacts were open for discussion, including those to low income and minority populations (see **Appendix E – Indirect Effects Analysis (IEA) Pre-screening Worksheet**).	

*Conducting only a windshield survey is not sufficient to make a determination regarding whether or not populations are present.

Based on data obtained from the methods above, are populations covered by EO 12898 present in the project area?

a. ☐ No
b. ☒ Yes – Factor Sheet B-4 must be completed.

9. Title VI of the 1964 Civil Rights Act, the Americans with Disabilities Act or the Age Discrimination Act

Indicate whether or not issues have been identified or concerns have been expressed related to Title VI of the 1964 Civil Rights Act, the Americans with Disabilities Act or the Age Discrimination Act.

a. ☒ No – Issues related to the above laws were not identified and concerns were not expressed.
b. ☐ Yes – Issues related to the above laws were identified and/or concerns were expressed. Explain:

10. Public Involvement (see WisDOT project file for complete documentation of all Public Involvement)

A. Public Meetings

Date (m/d/yyyy)	**Meeting Sponsor** (WisDOT, RPC, MPO, etc.)	**Type of Meeting** (PIM, Public Hearings, etc.)	**Location**	**Approximate Number of Attendees**
4/17/2018	WisDOT	Public Involvement Meeting (PIM) to present information regarding the change in project scope, the purpose and need of the proposed project, and design improvement alternatives being considered.	McFarland High School	82

B. Other methods such as those identified in the Public Involvement Plan and Environmental Justice Plan (if applicable):

- Comment forms and associated sticker numbers to place on a map were handed out at the PIM. This allowed for easy and organized tracking of public comments.
- A WisDOT I-39/90 Expansion Project email distribution list has been created to help keep the public informed of the project including meeting notifications and displays, as well as a website specific to the Beltline Interchange. The website is located at: https://projects.511wi.gov/i-39-90/us1218-beltline/

C. Identify groups that participated in the public involvement process. Include any organizations and special interest groups including but not limited to:

- Ho-Chunk Nation/Ho-Chunk Gaming Madison (commercial business owner)
- Harley Davidson of Madison (local business owner)
- B&D Pottinger, LLC (local business owner)
- Reverend Jim's Roadhouse (local business owner)
- T-Bird Holdings (local business owner)
- BP Gas Station (local business owner)
- McAllen Properties (commercial property leasing/developer)

D. Indicate plans for additional public involvement, if applicable:

Aside from the Public Involvement Meeting (PIM) held on April 17, 2018 to present information regarding the change in project scope, the purpose and need of the proposed project, and design improvement alternatives being considered, no other public meetings are currently scheduled as part of the environmental documentation process. A public hearing will be held for the project in December 2018.

11. Briefly summarize the results of public involvement.

A. Describe the issues, if any, identified by individuals or groups during the public involvement process:

The following is a general summary of the comments received at the April 17, 2018 public meeting:

- Several residents and local business owners expressed concern about the high number of crashes that occur along I-39/90 and within the Beltline Interchange.
- Several residents and local business owners expressed concern that there are no longer any improvements proposed along US 12/18 at the at-grade intersections with Millpond Road and County AB.
- General questions from residents about property impacts.
- General concern was expressed by a few residents about the increasing traffic and noise along I-39/90.

B. Briefly describe how the issues identified above were addressed:

- WisDOT representatives were on hand to discuss the primary causes contributing to the high number of crashes within the Beltline Interchange and the proposed improvements at those locations. There was consensus that eliminating the left-side exit for the northbound I-39/90 ramp to westbound US 12/18 and improving the westbound US 12/18 ramp merge with eastbound US 12/18 ramp to northbound I-39/90 would improve safety within the interchange.
- WisDOT representatives were on hand to explain that the project scope has been revised to reduce impacts and enable savings in the estimated cost of the interchange. This approach provides an opportunity to improve safety as it affects travel along I-39/90 through the interchange, while utilizing the remaining life of the infrastructure. With this change in focus, it was determined that deficiencies along US 12/18 that do not impact travel along I-39/90 would no longer be addressed with the project. Those in attendance with concerns were encouraged to contact the WisDOT Southwest Region Office in Madison to express their concern.
- WisDOT representatives were on hand to discuss potential environmental, utility, and real estate impacts with local business and property owners.
- It was explained that while a noise analysis is being completed for the project; it is not anticipated that the analysis will indicate that noise barriers will be warranted.

12. Local/regional/tribal/federal government coordination (see **Appendix F – Agency & Local Officials Coordination**)

A. Identify units of government contacted and provide the date coordination was initiated.

Unit of Government (MPO, RPC, City, County, Village, Town, Tribal, Federal, etc.)	**Coordination Correspondence Attached** (Yes/No)	**Coordination Initiation Date** (m/d/yyyy)	**Coordination Completion Date** (m/d/yyyy)	**Comments**
All Units of Government				
ALL	Yes	12/21/2017	Ongoing	Each unit of government identified herein was sent the following letters and was invited to provide comments: • Project NEPA Update (revised project scope): sent 12/21/2017 • Public Involvement Meeting (invitation): sent 4/3/2018 • Project NEPA Update (purpose and need): sent 4/10/2018 – 4/13/2018 • Public Hearing (invitation): to be sent 2 weeks prior to hearing (11/29/2018) Additional correspondence is noted below and included in **Appendix F – Agency & Local Officials Coordination**.
Local Governments				
Dane County (Highway, Planning)	Yes	12/21/2017	Ongoing	
City of Madison (Mayor, Engineering, Parks, Planning, Traffic)	Yes	12/21/2017	Ongoing	A response was received from the city of Madison that noted general concerns with overall drainage in the area of the city-owned Yahara Hills Golf Course (YHGC) at the box culvert at Agriculture Ditch #4 and requested ongoing coordination throughout the design process (6/29/18). WisDOT will reconstruct an existing drainage ditch shifted east to accommodate the addition of an exit lane to US 12/18 and replace the box culvert at Agriculture Ditch #4 under the expansion project to the south (Construction ID's 1007-12-75, 1007-12-75), prior to construction of the Beltline Interchange. A Permanent Limited Easement (PLE) will be acquired with the expansion project to the south from the city of Madison for future maintenance of the box culvert and drainage ditch. Any additional work along this area needed for the completion of the Beltline Interchange project will be limited to the area within the PLE.
Madison Area Transportation Planning Board (MPO)	Yes	12/21/2017	Ongoing	A response was received from the MPO which identifies Alternative B as their preferred alternative (7/13/2018). It was noted in the letter that if Alternative C is selected, the MPO strongly recommends the northbound structures be constructed to accommodate a future third lane.
Capital Area Regional Planning Commission (CARPC)	Yes	12/21/2017	Ongoing	

Unit of Government (MPO, RPC, City, County, Village, Town, Tribal, Federal, etc.)	Coordination Correspondence Attached (Yes/No)	Coordination Initiation Date (m/d/yyyy)	Coordination Completion Date (m/d/yyyy)	Comments
City of Monona (Mayor)	Yes	12/21/2017	Ongoing	
Village of McFarland (President)	Yes	12/21/2017	Ongoing	
Town of Blooming Grove (Chair)	Yes	12/21/2017	Ongoing	
Town of Cottage Grove (Chair)	Yes	12/21/2017	Ongoing	
Native American Tribes: See Basic Sheet 5 – Agency and Tribal Coordination				

B. Describe the issues, if any, identified by units of government during the public involvement process:

A few local officials in attendance at the April 17, 2018 public involvement meeting expressed concern that the project does not address all of the interchange safety issues; in particular, those along US 12/18 at the at-grade intersections with Millpond Road and County AB.

C. Briefly describe how the issues identified above were addressed:

WisDOT representatives were on hand to explain that the project scope has been revised to reduce impacts and enable savings in the estimated cost of the interchange. This approach provides an opportunity to improve safety as it affects Interstate travel through the interchange, while utilizing the remaining life of the infrastructure. With this change in focus, it was determined that deficiencies needed along US 12/18 that do not impact interstate travel would no longer be addressed with the project. Local officials were encouraged to contact the WisDOT Southwest Region Office in Madison to express their concern.

D. Indicate any unresolved issues or ongoing discussions:

There are no unresolved issues; coordination with local officials will continue throughout the design process. A summary of the comments received at the public involvement meetings was sent to the local officials. Comments received for topics/areas outside of the scope of the current Beltline Interchange project purpose, need, and scope, were forwarded to staff at WisDOT and FHWA.

13. Public Hearing Requirement

☒ This document is an Environmental Assessment.

- ☐ A Notice of Opportunity to Request a Public Hearing **will be** published, or,
- ☒ A Public Hearing **will be** held.

☐ This document is a Type 2c Categorical Exclusion / Environmental Report.

- ☐ A substantial amount of right-of-way **will** be acquired.
- ☐ The proposed action **will** substantially change the layout or functions of connecting roadways or of the facility being improved.
- ☐ The proposed action **will** have a substantial adverse impact on abutting property.
- ☐ The proposed action **will** have other substantial social, economic, environmental effects.
- ☐ The department has made a determination that a public hearing is in the public interest.

☐ None of the above boxes have been checked, it has therefore been concluded that a Notice of Opportunity to Request a Public Hearing **will not** be published and a Public Hearing **is not** required, or,

- ☐ A Notice of Opportunity to Request a Public Hearing **will be** published, or,
- ☐ A Public Hearing **will be** held.

Note: For federally-funded projects, FHWA signature of this environmental document indicates concurrence with the department's Public Hearing requirement determination.

BASIC SHEET 4 – TRAFFIC SUMMARY MATRIX
(see Appendix G – Traffic Forecasts and Peak Period Volume Development)†

		I-39/90: South & North of US 12/18		I-39/90: SB Through Core (after Exit to EB US 12/18)	I-39/90: NB Through Core (after Exit to WB US 12/18)
		No Build, Alts A, B, and C		No Build, Alts A, B, and C	No Build, Alts A, B, and C
TRAFFIC VOLUMES		South	North		
Base Yr. AADT	Yr. 2013	56,300	86,100	19,250	18,240
Const. Yr. AADT*	Yr. 2021	60,950	94,960	20,510	19,710
Const. Plus 10 Yr. AADT*	Yr. 2031	66,765	106,035	22,085	21,545
Design Yr. AADT	Yr. 2040	72,000	116,000	23,500	23,200
DHV**	Yr. 2040	6,700	10,950	2,940	2,165
TRAFFIC FACTORS					
K [☒ $_{30}$ /☐ $_{100}$/☐ $_{250}$] (%)		10.1%	9.4%	10.1%	10.1%
D (%)		55%	58%		
Design Year T (% of AADT)		24.7%	12.4%	24.7%	24.7%
T (% of DHV)		15.8%	8.0%	15.8%	15.8%
Level of Service*** (No consideration of impacts from operational issues that originate outside the area of influence)		LOS 'C'	LOS 'E'	LOS 'D' (No Build, Alt A) LOS 'B' (Alts B and C)	LOS 'C' (No Build, Alts A and C) LOS 'B' (Alt B)
Level of Service*** (With consideration of impacts from operational issues along westbound US 12/18 outside the area of influence)		LOS 'F'	LOS 'F'	LOS 'D' (No Build, Alt A) LOS 'B' (Alts B and C)	LOS 'C' (No Build, Alts A and C) LOS 'B' (Alt B)
SPEEDS					
Existing Posted		70 mph	70 mph	70 mph	70 mph
Future Posted		70 mph	70 mph	70 mph	70 mph
Design Year Project Design Speed		70 mph	70 mph	70 mph	70 mph
OTHER (specify)					
P (% of AADT)		11.5%	9.9%	11.5%	11.5%
K_8 (% OF AADT)		N/A	N/A	N/A	N/A

AADT = Annual Average Daily Traffic

DHV = Design Hourly Volume

K [$_{30/100/200}$] : K_{30} = Interstate, K_{100} = Rural, K_{250} = Urban, % = AADT in DHV

D = % DHV in predominate direction of travel

T = Trucks

P = % AADT in peak hour

K_8 = % AADT occurring in the average of the 8 highest consecutive hours of traffic on an average day (required only if CO analysis is required).

† Forecasts developed in accordance with WisDOT forecasting policy and procedures and approved by the WisDOT Traffic Forecasting Section.

* AADT volume for construction year and construction year +10 estimated using linear interpolation between base and design year.

** DHV developed using representative K30 data from the base year (2012), forecasted forward to the design year.

*** Level of service of I-39/90 south of US 12/18 under No-Build Alternative includes the expansion of I-39/90 from four to six lanes as part of the I-39/90 Expansion Project (WisDOT ID 1001-10-02).

1. Identify the agency that generated the data included in the Traffic Summary Matrix.

   WisDOT Traffic Forecasting Section (Volumes and Factors), Dane Partners (Level of Service)

2. Identify the date (month/year) that the traffic forecast data included in the Traffic Summary Matrix was developed.

   The WisDOT ID 1010-10-00 traffic forecast dated April 2015 was used for all traffic volumes (I-39/90 North and South) and for the I-39/90 North traffic factors at Site 130004. The April 2015 forecast included both a No Build and Build condition forecast. The forecasted volumes for each condition were very similar and both forecasts included the expansion of I-39/90 south of Madison from a 4 to 6 lane cross section. It was determined that the No Build forecast would be used because the Build forecast assumed a full reconstruct of the Beltline Interchange, which is not within the revised scope for the project. The WisDOT ID 1007-10-01 traffic forecast dated October 2014 was used for the I-39/90 South traffic factors at Site 130006.

3. Identify the methodology and/or computer program(s) used to develop the data included in the Traffic Summary Matrix.

   WisDOT forecasting methods used a combination of the November 2014 version of the Dane County Travel Demand Model (TDM) and the Traffic Analysis Forecasting Information System (TAFIS). LOS developed using Highway Capacity Software 7 (HCS 7) and the Highway Capacity Manual 6th Edition (HCM 6). The extent of queuing from congestion along westbound US 12/18 outside of the Beltline Interchange traffic operations area of influence was identified based on conclusions gathered from calibrated, validated, and approved Paramics models developed as part of earlier iterations of the Beltline Interchange project, as well as model observations from the Madison Beltline Planning and Environment Linkages (PEL) Study. Engineering judgement used to identify LOS 'F' conditions for queue spillback from westbound US 12/18 during the Weekday AM peak period, based on HCM 6th Edition language that states, "The HCM uses LOS 'F' to define operations that...have reached a point that most users would consider unsatisfactory." (Page 5-5)

   The operational analysis methodology and results are summarized in the Draft *Preliminary Engineering & Operational Review (PEOR) Report I-39/90 at US 12/18 (Beltline) Interchange* dated October 16, 2018. Additional details on the input parameters for the analysis can be found in the following technical memorandums which are available upon request. Memorandums are also identified on pages 25 and 26.

   - *WisDOT ID 1007-10-02: I-39/90 & US 12/18 Interchange – Traffic Operations – Existing and Future No-Build Conditions*
   - *WisDOT ID 1007-10-02: I-39/90 at US 12/18 Interchange – Traffic Operations – 2040 Range of Alternatives Supplement*

4. If a metric other than Annual Average Daily Traffic (AADT) is used for describing traffic volumes such as Average Annual Weekday Traffic (AAWT), explain why a different metric was used and how it compares to AADT.

   N/A

BASIC SHEET 5 – AGENCY AND TRIBAL COORDINATION

Agency	Coordination Required?	Correspondence Attached?	Comments
WisDOT			
Region Real Estate Section	☐ No	N/A	
	☒ Yes	☐ Yes ☒ No	Coordination has been initiated and will be ongoing throughout the design process to address project effects. The project will not require any relocations.
Bureau of Aeronautics	☐ No	N/A	
	☒ Yes	☒ Yes ☐ No	BOA has indicated they do not have any concerns with the proposed project (12/19/2013). It was noted that filing with FAA for equipment used during construction at least 45 days prior to the start of construction may be required; determinations are valid for a year and a half so it was recommend filing when the project is closer to being started. Dane County Regional Airport and Blackhawk Airfield will be sent a courtesy notification of the identified preferred alternative during final design (otherwise coordination is not required).
Railroads and Harbors Section	☐ No	N/A	
	☒ Yes	☐ Yes ☒ No	No work is anticipated at the southbound (B-13-458) or northbound (B-13-459) structures over the Wisconsin & Southern Railroad. In accordance with Wisconsin State Statute 86.13, WisDOT will send a letter to the railroad at least 12 months before the start of construction notifying them of the project and proposed work in the area of the crossing (WisDOT Crossing Inventory Number 177337U).
All Agencies and Tribes			
Each agency and tribe identified herein as required coordination was sent the following letters and was invited to provide comments: • Project NEPA Update (revised project scope): sent 12/21/2017 • Public Involvement Meeting (invitation): sent 4/3/2018 • Project NEPA Update (purpose and need): sent 4/10/2018 – 4/13/2018 • Public Hearing (invitation): to be sent 2 weeks prior to hearing (11/29/2018) Additional correspondence is noted below and included in **Appendix F – Agency & Local Officials Coordination**.			
STATE AGENCY			
Department of Natural Resources (WDNR)	☒ Yes	☒ Yes ☐ No	WDNR confirmed no Land and Water Conservation Funds (LWCF), Dingell-Johnson (D/J), or Pittman-Robertson (P/R) funds were used on the Yahara Hills Golf Course (2/28/2014). WDNR provided initial comments (6/21/2018) along with some follow up comments (7/19/2018) pertaining to the project as follows: • Public Lands (*specific note to presence of Yahara Hills Golf Course and a future shared-use trail to be located between the Capital City and Glacial Drumlin State Trails*) • Wetlands (*noted delineation report concurrence provided 11/12/2013; verification summary memo concurrence 3/14/2018*) • Fisheries/Stream (*no in-stream restrictions needed during construction for Pennito Creek and its tributary)* • Aquatic Connectivity and Culvert Work • Endangered Resources (*specific note for known occurrence of the Rusty Patched Bumble Bee; no known Northern Long-eared Bat maternity roost trees or hibernacula within in project area)* • Migratory Birds (*avoid nesting season May 1 through July 31)* • Invasive Species and Viral Hemorrhagic Septicemia (VHS) (*specific note for Emerald Ash Borer and Oak Wilt for clearing and grubbing)*

Agency	Coordination Required?	Correspondence Attached?	Comments
			• Floodplains (*noted need for coordination with Dane Zoning Administrator to ensure compliance with local zoning, NR116).* • Public Waterway Navigation (*specific note that Pennito Creek and its tributary are not used by recreational watercraft so navigational aids during construction are not necessary)*
State Historic Preservation Office (SHPO)	☒ Yes	☒ Yes ☐ No	Archaeological and historical investigations were completed for the project. No potentially eligible archaeological sites were identified. Yahara Hills Golf Course (YHGC) and Clubhouse were previously identified to potentially meet the National Register of Historic Places criteria; a Determination of Eligibility was completed and the property was determined to meet the National Register of Historic Places criteria (WisDOT ID 3080-10-01). Following a comprehensive Section 106 review, SHPO and WisDOT determined the project will have No Effect on the identified historic YHGC property (7/31/2018). A letter and map were sent to SHPO describing the work at YHGC referenced in the Beltline Interchange Section 106 that will be completed under the I-39/90 Corridor Expansion Project to the south (1007-10-01). The letter included language informing SHPO that a Determination of No Adverse Effect (DNAE) may be used in considering whether a *de minimis* Section 4(f) finding is appropriate and SHPO concurrence with the DNAE serves as acknowledgement of this official notification. Concurrence was received from SHPO on 9/7/2018. See **Appendix H – Section 106 Documentation.**
Department of Agriculture (DATCP)	☒ Yes ☐ No	☒ Yes ☐ No	An AIS was published for the project on 8/21/2014. Since then, the scope of the project has been significantly reduced resulting in no anticipated impacts to agricultural lands. DATCP has stated that they have no comments on the revised purpose and need (4/11/2018) and has determined that no further action is required for this project (7/13/2018).
FEDERAL AGENCY			
US Army Corps of Engineers (USACE)	☒ Yes ☐ No	☐ Yes ☐ No	Coordination is ongoing to receive concurrence on the wetland verification report.
US Fish and Wildlife Service (USFWS)	☒ Yes ☐ No	☒ Yes ☐ No	On behalf of FHWA, WisDOT submitted to USFWS information and determination to fulfil Section 7(a)(2) responsibilities under the Endangered Species Act (ESA) for the Environmental Assessment for the Beltline Interchange (7/2/2018). Potential impacts to the following species were identified: Northern Long-eared Bat, Rusty Patched Bumble Bee, Whooping Crane, Eastern Prairie Fringed Orchid, Mead's Milkweed, and the Prairie Bush-clover. WisDOT intends to rely on the programmatic biological opinion for the Northern Long-eared Bat (NLEB), developed for the final 4(d) rule and this submittal to satisfy our Section 7(a)(2) responsibilities, as outlined in the streamlined consultation framework. In accordance with the final 4(d) rule issued for the northern long-eared bat, WisDOT has determined that the proposed activity along I-39/90 may affect but will not result in prohibited take of the NLEB. The activity involves tree removal, but will not occur within 0.25 miles of a known hibernacula, nor will the activity remove a known maternity roost tree or any other tree within 150 feet of a known maternity roost tree from June 1 – July 31. All remaining species received a no effect determination, except that a *may affect – not likely to adversely affect* finding has been made for the Rusty Patched Bumble Bee (RPBB). The Beltline Interchange project will include conservation measures to offset any potential impacts to suitable habitat for the RPBB.

Agency	Coordination Required?	Correspondence Attached?	Comments
			USFWS provided concurence with the *may affect – not likely to adversely affect* finding for the RPBB in the high-potential area in Madison and indicated their support for the proposed conservation measure to revegetate disturbed natural areas with shrubs/trees and a pollinator friendly seed mix that would benefit the species in the area. Per USFWS, consultation under Section 7 of the ESA is concluded and no additional coordination is required (7/26/2018).
Natural Resources Conservation Service (NRCS)	☐ Yes ☒ No	☐ Yes ☒ No	
US National Park Service (NPS)	☐ Yes ☒ No	☐ Yes ☒ No	
US Coast Guard (USCG)	☐ Yes ☒ No	☐ Yes ☒ No	
US Environmental Protection Agency (EPA)	☒ Yes ☐ No	☒ Yes ☐ No	EPA stated that they have no comments to provide on the revised purpose and need (4/30/2018).
Advisory Council on Historic Preservation (ACHP)	☐ Yes ☒ No	☐ Yes ☒ No	
Other (identify)	☐ Yes ☐ No	☐ Yes ☐ No	
SOVEREIGN NATIONS			
American Indian Tribes	☒ Yes	☒ Yes	In addition to receiving the Project NEPA Update letters and Public Involvement Meeting invitations noted above, the tribes were also sent the following: • Initial Project Scoping Letter (request for cultural resources information; opportunity to become an interested party under Section 106 of the National Historic Preservation Act): sent 12/2/2013 In response to the initial Project Scoping Letter, the Bad River Band of Lake Superior Chippewa Indians of Wisconsin indicated they would require payment of a processing fee for review of each federal undertaking received for projects beyond the exterior boundaries of their reservation. As described in FDM, Chapter 26, Section 20, WisDOT does not compensate any entity, including Tribes, for consultation required by law, regulation, or other authorities, where the consultation is part of administrative processes designed to protect the interests of the consulting entity. As a tribe located within the project area, the Ho-Chunk Nation was sent a copy of the results of the Section 106 National Historic Preservation Act studies (10/15/2018).

BASIC SHEET 6 – ALTERNATIVES COMPARISON MATRIX

All estimates including costs are based on conditions described in this document at the time of preparation in the year of expenditure (YOE). Additional agency or public involvement may change these estimates in the future.

PROJECT PARAMETERS	Unit of Measure	ALTERNATIVES			
		No Build[1]	Alternative A	Alternative B	Alternative C
Project Length	Miles	0.65	2.01	2.71	2.37
PRELIMINARY COST ESTIMATE [3]					
Construction (LET)	Million $	$10.2 M*	$55.4 M	$76.4 M	$65.9 M
Utilities, Construction Engineering	Million $	$0.6 M	$2.8 M	$3.9 M	$3.3 M
Design Engineering	Million $	$7.9 M	$10.5 M	$10.5 M	$10.5 M
Real Estate	Million $	$0.0 M	$1.7 M	$2.4 M	$2.0M
TOTAL	Million $	$18.7 M	$70.4 M	$93.2 M	$81.7 M
LAND CONVERSIONS					
Total Area Converted to ROW Note: Totals include 3.66 acres of WisDOT owned land that will be converted to highway right-of-way	Acres	0	4.92	9.95	7.66
REAL ESTATE					
Number of Farms Affected	Number	0	0	0	0
Total Area Required From Farm Operations	Acres	0	0	0	0
AIS Required (see Factor Sheet A-3)		☐ Yes ☒ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
Farmland Rating	Score	N/A	N/A	N/A	N/A
Total Buildings Required	Number	0	0	0	0
Housing Units Required	Number	0	0	0	0
Commercial Units Required	Number	0	0	0	0
Other Buildings or Structures Required	Number & Type	0	0	0	0
ENVIRONMENTAL FACTORS					
Indirect Effects		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Cumulative Effects		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Environmental Justice Populations		☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
National Register Eligible Historic Properties in the Area of Potential Effect	Number	1**	1**	1**	1**
National Register Eligible Archeological Sites in the Area of Potential Effect	Number	0	0	0	0
Burial Site Protection *(authorization required)*		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
106 MOA Required		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Section 4(f) Evaluation Required		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Section 6(f) Land Conversion Required		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Flood Plain		☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
Unique Upland Habitat Identified		☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Total Wetlands Filled	Acres	0.1	5	5	5
Stream Crossings	Number	0	1	1	1
Threatened/Endangered Species	May affect, NLAA[2]	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
Noise Analysis Required Receptors Impacted	 Number	☐ Yes ☐ No N/A	☒ Yes ☐ No 14	☒ Yes ☐ No 14	☒ Yes ☐ No 14
Contaminated Sites	Number	0	1	1	1

[1] The estimated cost of routine maintenance through the design year should be included in the "Construction" box for the No Build alternative.
[2] A *may affect – not likely to adversely affect* (NLAA) finding was made for one or more federally-listed species.
[3] Estimates are in current year dollars (Fiscal Year 2019) and does not include risk.
* The No Build construction (LET) cost includes the cost to provide approximately 3,400 feet of six lanes of I-39/90 south of US 12/18 with a concrete median barrier as a compatible and safe connection with the I-39/90 Expansion Project from south of the Beltline Interchange to the Illinois State Line.
** No Effect to identified historic property

BASIC SHEET 7 – EIS SIGNIFICANCE CRITERIA

In determining whether a proposed action is a "major action significantly affecting the quality of the human environment," the proposed action must be assessed in light of the following criteria (1) if significant impact(s) will result, the preparation of an environmental impact statement (EIS) should commence immediately. Indicate whether the issue listed below is a concern for the proposed action or alternative and (2) if the issue is a concern, explain how it is to be addressed or where it is addressed in the environmental document.

1. Will the proposed action stimulate substantial indirect environmental effects?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

2. Will the proposed action contribute to cumulative effects of repeated actions?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

3. Will the creation of a new environmental effect result from this proposed action?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

4. Will the proposed action impact geographically scarce resources?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

5. Will the proposed action have a precedent-setting nature?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

6. Is the degree of controversy associated with the proposed action high?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

7. Will the proposed action be in conflict with official agency plans or local, state, tribal, or national policies, including conflicts resulting from potential effects of transportation on land use and transportation demand?
   - ☒ No
   - ☐ Yes – Explain or indicate where addressed.

BASIC SHEET 8 – ENVIRONMENTAL COMMITMENTS

Attach a copy of this page to the design study report and the PS&E submittal package.

Factor Sheet	**Commitment** (If none, include "No special or supplemental commitments required.")
A-1 General Economics	No special or supplemental commitments required.
A-2 Business	No special or supplemental commitments required.
A-3 Agriculture	No special or supplemental commitments required.
B-1 Community or Residential	No special or supplemental commitments required.
B-2 Indirect Effects	No special or supplemental commitments required.
B-3 Cumulative Effects	No special or supplemental commitments required.
B-4 Environmental Justice	No special or supplemental commitments required.
B-5 Historic Resources	Yahara Hills Golf Course, a property eligible for the National Register of Historic Places, and Yahara Hills Open Space (West), both Section 4(f) resources, are located along the northernmost 4,400 feet of the I-39/90 Corridor Expansion Project to the south of the Beltline Interchange. WisDOT will replace the box culvert at Agriculture Ditch #4 under the expansion project to the south (WisDOT ID 1007-12-75), prior to construction of the Beltline Interchange. Orange construction fencing will be placed along the historic boundary to serve as a visual aid for construction equipment operators to limit work within the limits of the right-of-way and permanent/temporary easements. These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
B-6 Archaeological/Burial Sites	No special or supplemental commitments required.
B-7 Tribal Coordination/ Consultation	No special or supplemental commitments required.
B-8 Section 4(f) and 6(f) or Other Unique Areas	Yahara Hills Golf Course and Yahara Hills Open Space (West) are located along the northernmost 4,400 feet of the I-39/90 Expansion Project to the south of the Beltline Interchange, and qualify for protection under Section 4(f). A Finding of *de minimis* Impact on Parks, Recreation Areas and Wildlife and Waterfowl Refuges was prepared for the golf course property and approved by FHWA on 10/3/2018 under a previous design project (*I-39/90 North Segment, WisDOT ID 1007-10-01*) and included in a Letter to File under the EA Re-Evaluation and Supplementation (*I-39/90 Corridor Expansion, WisDOT ID 1001-10-02; FHWA concurrence 10/17/2018*). A Temporary Limited Easement (TLE) will be needed during construction of the corridor expansion project to the south for minor grading, tree removal, and the replacement of the box culvert at Agriculture Ditch #4. A Permanent Limited Easement (PLE) will be acquired with the expansion project to the south from the city of Madison for future maintenance of the box culvert and drainage ditch. Any additional work along this area needed for the completion of the Beltline Interchange project will be limited to the area within the PLE. Orange construction fencing will be placed along the PLE to serve as a visual aid for construction equipment operators to limit work within the limits of the right-of-way and permanent/temporary easements. These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.

Factor Sheet	**Commitment** (If none, include "No special or supplemental commitments required.")
B-9 Aesthetics	No special or supplemental commitments required.
C-1 Wetlands	Wetland impacts will be avoided and/or minimized to the greatest extent possible during final design. Roadway slopes will be as steep as possible without compromising driving safety; generally, the fill slopes will be 4:1 minimum inside the clear zone and steepened to 3:1 or 2.5:1 outside of the clear zone to reduce the roadway footprint and impacts to adjacent lands. Any unavoidable wetland losses will be compensated for in accordance with the WDNR/WisDOT Cooperative Agreement and the WisDOT Wetland Mitigation Banking Technical Guideline at the WisDOT World Dairy Wetland Mitigation Site in Dane County at the appropriate ratio. Coordination with the USACE and WDNR will continue throughout the design process and during construction as necessary. Only permitted wetlands will be impacted. All conditions of the Section 404 permit and Section 401 Water Quality Certification will be adhered to in the field by the contractor, and overseen by WisDOT's construction engineer. These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
C-2 Rivers, Streams and Floodplains	Pennito Creek is a warm-water fishery; per WDNR (7/19/2018), no in-stream restrictions are needed during construction for Pennito Creek and its tributary. The project requires the box culvert at Pennito Creek to be extended at both ends. Measures will need to be taken by the contractor to prevent nesting by either removing unoccupied nests during the non-nesting season or by installing barrier netting prior to May 1; if this is not possible, the contractor will only be allowed to complete work at the box culvert between August 30 and May 1 (non-nesting season). New culvert pipes will be set and sized in such a manner to avoid or minimize impacts to stream morphology, aquatic organism passage, and water quality. The invert elevation of the new culvert(s) will be set an adequate distance below the natural streambed elevation, to allow for a natural and continuous streambed condition to occur. The invert elevations of the existing and proposed structure(s), the water surface elevations, and the natural streambed elevations upstream and downstream will be specified in the plans. The project lies within a mapped/zoned floodplain. The requirements in NR 116 will be met with the project. Dane County, the local floodplain zoning authority, was included on initial project scoping and invited to all Local Official Meetings and Public Involvement Meetings. Additional coordination with Dane County will occur when changes to floodplains are known during final design. Coordination with the USFWS, USACE, WDNR, and Dane County will continue throughout the design process and during construction as necessary. These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
C-3 Lakes or other Open Water	No special or supplemental commitments required.
C-4 Groundwater, Wells and Springs	No special or supplemental commitments required.
C-5 Upland Wildlife and Habitat	Appropriate special provisions for WisDOT I-39 Corridor native seed mixes, native shrubs and trees, and plantings for snow drift control will be incorporated into the project. Subcontractor Pre-certification will be required for native prairie seeding (with follow-up surveillance and care), and tree/shrub installation (with follow-up surveillance and care).

Factor Sheet	**Commitment** (If none, include "No special or supplemental commitments required.")
	These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
C-6 Coastal Zones	No special or supplemental commitments required.
C-7 Threatened and Endangered Species	USFWS provided concurence with the *may affect – not likely to adversely affect* finding for the Rusty Patched Bumble Bee (RPBB) in the high-potential area in Madison and indicated their support for the proposed conservation measure to revegetate disturbed natural areas with shrubs/trees and a pollinator friendly seed mix that would benefit the species in the area. Per USFWS, consultation under Section 7 of the ESA is concluded and no additional coordination is required (7/26/2018). These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
D-1 Air Quality	No special or supplemental commitments required.
D-2 Construction Stage Sound Quality	WisDOT Standard Specification 107.8(6) and 108.7.1 will apply.
D-3 Traffic Noise	No special or supplemental commitments required.
D-4 Hazardous Substances or Contamination	Contaminated soil is expected to be encountered within the proposed construction limits at an approximate depth of less than two feet. Special provisions will be included in the contract for the removal and disposal of any contamination encountered during construction and the anticipated plume of contamination denoted in the plan. There are also several monitoring wells located within the proposed project's grading limits. Survey lath with flagging will be used to mark the monitoring wells and serve as a visual aid for the construction equipment operators. It is expected that the height of the existing monitoring wells can be adjusted in the field after construction, and will not need to be relocated. WisDOT will contract with an environmental firm that will make any necessary adjustments to the monitoring wells. Special provisions will be included in the contract detailing the on-site coordination that will needed for the monitoring wells. During the design process, WisDOT will develop a plan to address any contamination encountered during construction, and for the adjustment of any monitoring wells to the satisfaction of the WDNR, WisDOT Bureau of Technical Services – Environmental Services Section, and FHWA before advertising the project for letting. This commitment will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
D-5 Storm Water	A stormwater management plan will be developed to minimize runoff effects to surrounding waters as a result of construction in compliance with Trans 401. The project will meet the requirements defined in Trans 401 as well as the requirements defined in the Rock River basin Total Maximum Daily Load (TMDL) report. Storm water measures will adhere to the Wisconsin Pollutant Discharge Elimination System Transportation Construction General Permit (TCGP) for Storm Water Discharges. Coverage under TCGP is required prior to construction. WisDOT will need to apply for permit coverage just before the project goes to final PS&E. Permit coverage will be issued by the WDNR after design is complete and documentation shows that the project will meet construction and post-construction performance standards. At Yahara Hills Golf Course (YHGC), efforts will be made for median drains and cross culvert pipes to be placed such that they do not discharge directly onto these lands.

Factor Sheet	**Commitment** (If none, include "No special or supplemental commitments required.")
	Rather they will be placed at locations where the discharged water must travel through erosion control devices or natural vegetation such that sediment or contaminants are filtered out prior to entering the area. The city of Madison has noted general concerns with overall drainage in the area of YHGC and requested ongoing coordination throughout the design process. Coordination with WDNR and the city of Madison will continue throughout the design process and during construction. These commitments will be incorporated into the design plans and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
D-6 Erosion Control	An Erosion Control Plan (ECP) is required that describes best management practices that will be implemented before, during and after construction to minimize pollution from storm water discharges. As needed, the water quality in ditches approaching streams and sensitive or unique areas will be protected using erosion control measures such as trenched-in erosion bales (for moderate velocity runoff) and clean aggregate ditch checks (for moderate to high velocity runoff). Other devices such as riprap, matting, silt fence, detention basins, seeding, and sediment traps and barriers may also be used where applicable. The determination of need for, and which measure to use will be made during final design. Once the project contract has been awarded, the contractor will be required to outline their construction methods in the ECIP. An adequate ECIP for the project must be developed by the contractor and submitted to WisDOT and WDNR for review at least 14 days prior to the preconstruction conference. For projects regulated under the Wisconsin Pollutant Discharge Elimination System Transportation Construction General Permit (TCGP), submit the ECIP as an amendment to the ECP. The contractor will be required to include a plan for the re-vegetation of the project area, including borrow sites and waste areas, as a component of the ECIP. It will be required that re-vegetation and stabilization of cleared and graded areas occur as soon as practicable following grading operations. These commitments will be incorporated into the design and special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
E-1 Other: Emerald Ash Borer	This project has the potential for spreading the Emerald Ash Borer (EAB) beetle. It is illegal to move or transport ash material, the emerald ash borer, and hardwood debris (i.e. firewood) from EAB quarantined areas to a non-quarantined area without a compliance agreement issued by WI Department of Agriculture, Trade and Consumer Protection (DATCP). Regulated items include cut hardwood (non-coniferous) firewood, ash logs, ash mulch or bark fragments larger than one inch in diameter, or ash nursery stock (DATCP statute 21). These commitments will be incorporated into the special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.
E-2 Other: Oak-Wilt	The project may involve cutting or wounding of oak trees. WisDOT standard specification 201.3(4) states to prevent the spread of oak wilt by treating all cut surfaces and abrasions sustained between April 1 and September 30 by healthy oak trees and saplings with a thorough application of tree paint immediately upon discovering a wound. Between these dates, the contractor shall also paint the cut surfaces of stumps of all healthy oak trees and saplings immediately after cutting, whether remaining in place or grubbed. These commitments will be incorporated into the special provisions by the designer with oversight by the WisDOT Environmental Coordinator, and implemented in the field by the contractor with oversight by the WisDOT Construction Engineer.

BASIC SHEET 9 – ENVIRONMENTAL FACTORS MATRIX *(check all that apply)*

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
A. ECONOMIC FACTORS *Factor Sheet A-1, General Economics, must be included if Factor Sheet A-2 or A-3 is completed.*					
A-1 General Economics	☒	☒	☐	☒	The improved safety and operations of the project corridor will reduce congestion and travel delays, which will lead to more economic opportunities for increased development within the adjacent project area. It will require a major capital investment by WisDOT, cause temporary disruptions to traffic during construction, and require additional right of way.
A-2 Business	☒	☒	☐	☐	Improvements in safety and fewer travel delays for customers, suppliers, and the delivery of goods and services are generally positive. Temporary noise and traffic flow disruptions during construction are anticipated.
A-3 Agriculture	☐	☐	☒	☐	An AIS was published for the project on 8/21/2014. Since then, the scope of the project has been significantly reduced resulting in no anticipated impacts to agricultural lands. DATCP has stated that they have no comments on the revised purpose and need (4/11/2018) and has determined that no further action is required for this project (7/13/2018).
B. SOCIAL/CULTURAL FACTORS					
B-1 Community or Residential	☐	☒	☐	☒	The project improves safety at the I-39/90 and US 12/18 Beltline Interchange, which will likely decrease the number and travel times of emergency responses. No relocations are required.
B-2 Indirect Effects	☐	☐	☒	☐	An expert panel workshop was held 3/1/2017 where representatives of local, state, and federal agencies were invited to identify and discuss potential indirect effects of the project prior to the change in scope; a summary of the workshop was provided to the attendees on 4/18/2017. A copy of the summary is located in the project file and is available for review upon request. Alternatives were presented in three groups: no build, low-build, and full build alternatives. The Preferred Alternative most closely resembles the low-build alternatives discussed at the workshop which proposed to maintain the existing interchange configuration while incorporating improvements that would have had minimal environmental impacts and right-of-way needs. The low-build alternatives included a capacity expansion and safety improvement along I-39/90 that utilized the existing roadways and structures; and transportation management alternatives that aimed to reduce the number of trips and overall efficiency of the interchange. An alternative that combined these strategies was also proposed. Indirect effects of the low-build alternatives identified by panelists primarily related to effects of traffic congestion and safety. It is not anticipated that implementing the Preferred Alternative would contribute to increased congestion in the project area or a higher rate of crashes. A WisDOT Pre-Screening Worksheet was completed and it is concluded that the factors of the project, its location, and other conditions do not warrant further detailed analysis of the potential for indirect effects. See **Appendix E – Indirect Effects Analysis (IEA) Pre-screening Worksheet**.
B-3 Cumulative Effects	☐	☐	☒	☐	Cumulative effects were discussed at an expert panel workshop held on 3/1/2017 as part of the Indirect Effects Analysis process for the project prior to the change in scope. Resources identified that could potentially experience cumulative effects include water, agriculture, and business resources. The Proposed Action is not anticipated to significantly impact or contribute cumulative impacts on these resources.

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
B-4 Environmental Justice	☐	☒	☐	☒	The document is in compliance with USDOT and FHWA policies to determine whether a proposed project would have induced socioeconomic impacts or any adverse impacts on a minority or low income populations; and it meets the requirements of Executive Order on Environmental Justice 12898 – "Federal Actions to Address Environmental Justice on Minority and Low-Income Populations". Two facilities have been identified in the project area: • Ho-Chuck Gaming Facility (minority owned business – American Indian) • Residents of the America's Best Value Inn (low income) Neither minority nor low-income populations would receive disproportionately high or adverse impacts as a result of implementing the Proposed Action. Improved safety would benefit the residents and employees of the area.
For B-5 through B-8, if any of these resources are present on the project, involve the REC early because of possible project schedule implications.					
B-5 Historic Resources	☐	☐	☒	☒	Archaeological and historical investigations were completed for the project. No potentially eligible archaeological sites were identified. Yahara Hills Golf Course (YHGC) and Clubhouse were previously identified to potentially meet the National Register of Historic Places criteria; a Determination of Eligibility was completed and the property was determined to meet the National Register of Historic Places criteria (WisDOT Project 3080-10-01). Following a comprehensive Section 106 review, SHPO and WisDOT determined the project will have No Effect on the identified historic YHGC property (7/31/2018). A letter and map were sent to SHPO describing the work at YHGC referenced in the Beltline Interchange Section 106 that will be completed under the I-39/90 Corridor Expansion Project to the south (1007-10-01). The letter included language informing SHPO that a Determination of No Adverse Effect (DNAE) may be used in considering whether a *de minimis* Section 4(f) finding is appropriate and SHPO concurrence with the DNAE serves as acknowledgement of this official notification. Concurrence was received from SHPO on 9/7/2018. See **Appendix H – Section 106 Documentation**.
B-6 Archaeological/ Burial Sites	☐	☐	☒	☐	No archaeological sites are located within project area.
B-7 Tribal Coordination/ Consultation	☐	☐	☒	☐	Measures have been taken for full avoidance of Tribal Trust Land (Ho-Chunk Nation) within the project area.
B-8 Section 4(f) and 6(f) or Other Unique Areas	☒	☒	☐	☒	Yahara Hills Golf Course (YHGC) is a historic property and a publicly owned golf course which allows public access (fee applies), and is one of four public golf courses owned and operated by the city of Madison. According to the 2012-2017 City of Madison Park and Open Space Plan (POSP), it is considered a "Special Use Park" and encompasses one of three city of Madison owned green space areas in this location. The golf course is bordered by areas identified in the POSP as Yahara Hills Open Space (West) and Yahara Hills Park (South). The open space is used by walkers, joggers, and cross-country skiers, the City proposes the future development of Yahara Hills Park to provide community park facilities for the southeast side of Madison. YHGC and Yahara Hills Open Space (West) are located along the northernmost 4,400 feet of the I-39/90 Expansion Project to the south of the Beltline Interchange, and qualify for protection under Section 4(f). WisDOT will replace the box culvert at Agriculture Ditch #4 under the expansion project to the south (WisDOT ID 1007-12-75) prior to construction of the Beltline Interchange.

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
					A Finding of *de minimis* Impact on Parks, Recreation Areas and Wildlife and Waterfowl Refuges was prepared for the golf course property and approved by FHWA (10/3/2018) under a previous design project (*I-39/90 North Segment, WisDOT ID 1007-10-01*) and included in a Letter to File under the EA Re-Evaluation and Supplementation (*I-39/90 Corridor Expansion, WisDOT ID 1001-10-02, FHWA concurrence 10/17/2018*). A Temporary Limited Easement (TLE) will be needed during construction of the corridor expansion project to the south for minor grading, tree removal, and the replacement of the box culvert at Agriculture Ditch #4. A Permanent Limited Easement (PLE) will be acquired with the expansion project to the south from the city of Madison for future maintenance of the box culvert and drainage ditch. Any additional work along this area needed for the completion of the Beltline Interchange project will be limited to the area within the PLE. Orange construction fencing will be placed along the PLE to serve as a visual aid for construction equipment operators to limit work within the limits of the right-of-way and permanent/temporary easements. The expansion of the Glacial Drumlin Trail is currently planned along the northern limits of the project; however, Dane County does not own all the land to construct the trail at this time. The trail is also not formally designated as a trail at this time. These facts are consistent with Question 25 of the Section 4(f) policy paper that indicates Section 4(f) protections do not apply to this imminent facility.
B-9 Aesthetics	☐	☐	☒	☐	The Proposed Action will not cause a substantial alteration to the visual character of the landscape as a whole. The Proposed Action will occur within or immediately adjacent to the overall footprint of the existing Beltline Interchange.
C. NATURAL RESOURCE FACTORS					
C-1 Wetlands	☒	☐	☐	☒	A Wetland Delineation was completed for the project area; WDNR provided concurrence on 11/12/2013. A Wetland Verification Report was completed for the project area; WDNR concurrence was provided on 3/14/2018. Coordination with USACE to obtain concurrence is ongoing. The Proposed Action will impact approximately 5 acres of wetlands.
C-2 Rivers, Streams and Floodplains	☒	☐	☐	☒	The box culvert under I-39/90 at Pennito Creek (C-13-044) will be extended approximately 35 feet to the east of I-39/90 and approximately 30 feet to the west to accommodate deceleration/acceleration lanes to/from US 12/18.
C-3 Lakes or Other Open Water	☐	☐	☒	☐	There are no lakes or other open water in proposed project limits.
C-4 Groundwater, Wells, and Springs	☐	☐	☒	☐	The Proposed Action will not affect any drinking water wells or springs.
C-5 Upland Wildlife and Habitat	☒	☒	☐	☒	Appropriate special provisions for WisDOT I-39 Corridor native seed mixes, native shrubs and trees, and plantings for snow drift control will be incorporated into the project based on the soil types and slopes to promote a suitable ground cover for slope stabilization, for infiltration, to help minimize erosion, and for project restoration after construction. Native vegetation will be used minimize the need for future maintenance once established. In addition to native plantings and vegetation, during final design, consideration will be given to snow drifting control (sometimes addressed through living snow fence), invasive plant management, and storm water management which could have a vegetation planting component.
C-6 Coastal Zones	☐	☐	☒	☐	There are no Coastal Zones in proposed project limits.

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
C-7 Threatened and Endangered Species	☐	☐	☒	☐	On behalf of FHWA, WisDOT submitted to USFWS information and determination to fulfil Section 7(a)(2) responsibilities under the Endangered Species Act (ESA) for the Environmental Assessment for the Beltline Interchange (7/2/2018). Potential impacts to the following species were identified: Northern Long-eared Bat, Rusty Patched Bumble Bee, Whooping Crane, Eastern Prairie Fringed Orchid, Mead's Milkweed, and the Prairie Bush-clover. WisDOT intends to rely on the programmatic biological opinion for the Northern Long-eared Bat (NLEB), developed for the final 4(d) rule and this submittal to satisfy our Section 7(a)(2) responsibilities, as outlined in the streamlined consultation framework. In accordance with the final 4(d) rule issued for the northern long-eared bat, WisDOT has determined that the proposed activity along I-39/90 may affect but will not result in prohibited take of the NLEB. The activity involves tree removal, but will not occur within 0.25 miles of a known hibernacula, nor will the activity remove a known maternity roost tree or any other tree within 150 feet of a known maternity roost tree from June 1 – July 31. All remaining species received a no effect determination, except that a *may affect – not likely to adversely affect* finding has been made for the Rusty Patched Bumble Bee (RPBB). The Beltline Interchange project will include conservation measures to offset any potential impacts to suitable habitat for the RPBB. USFWS provided concurence with the *may affect – not likely to adversely affect* finding for the RPBB in the high-potential area in Madison and indicated their support for the proposed conservation measure to revegetate disturbed natural areas with shrubs/trees and a pollinator friendly seed mix that would benefit the species in the area. Per USFWS, consultation under Section 7 of the ESA is concluded and no additional coordination is required (7/26/2018).
D. PHYSICAL FACTORS					
D-1 Air Quality	☐	☐	☒	☐	For this project, the expected increase in peak traffic flow is only expected to increase by 888 vehicles per hour, over a 10-year period. No substantial impacts to air quality are anticipated.
D-2 Construction Stage Sound Quality	☒	☐	☐	☒	WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply requiring the following of the contractor: Check for and comply with local ordinances governing the hours for operation of construction equipment; the engineer's written approval is required for operations between 10:00 PM and 6:00 AM. Use equipment of the capacity and mechanical condition necessary to perform work conforming to the contract. Ensure that the equipment does not harm the roadway, pavement, structures, adjacent property, other highways, workers, or the public. Use equipment conforming to the specific contract requirements for individual bid items or classes of work. Equip motorized construction equipment with a muffler constructed to the manufacturer's specifications; with mufflers and exhaust systems maintained in good operating condition, free from leaks and holes.
D-3 Traffic Noise	☐	☐	☒	☒	A detailed noise analysis was required and completed for the project. No impacts are identified.
D-4 Hazardous Substances or Contamination	☒	☐	☐	☒	A Phase I Hazardous Materials Assessment (HMA) was completed for the project. Contaminated soil is expected to be encountered within the proposed construction limits at an approximate depth of less than two feet.

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
					There are several monitoring wells located within the proposed slope intercepts. The anticipated impact ranges between a 3-foot cut and 2-foot fill section. It is expected that the height of the existing monitoring well heights can be adjusted and will not need to be replaced. It is also possible that by the start of construction some of the monitoring wells could be closed. WisDOT will contract with an environmental firm that will coordinate any impacts to the system's monitoring wells located within the grading limits of the proposed project. WisDOT will work with all concerned parties to develop a plan for the removal and disposal of any contamination encountered during construction to the satisfaction of the WDNR, WisDOT Bureau of Technical Services – Environmental Services Section, and FHWA before advertising the project for letting.
D-5 Stormwater	☒	☐	☐	☒	The project will discharge runoff into Pennito Creek (stream), but not before being treated by being treated by WisDOT established Best Management Practices (BMP's). A stormwater management plan will be developed for use during construction to address the discharge of Total Suspended Solids (TSS), control peak flow, provide for infiltration, and maintain protective areas from the post-construction site. Established stormwater BMP's include wet ponds, infiltration structures, grass swales, vegetative filter strips, and biofilters to control runoff from the project area after construction is completed. Incorporating BMP's into the design of the project will help manage storm water runoff and maintain/ improve water quality on a permanent basis. Stormwater will primarily be conveyed along the project corridor in vegetated ditches; however, other treatement techniques will also be implemented. Filter strips and grass swales will be incorporated into the design as needed to meet the Total Suspended Solids (TSS) reduction requirements defined in Trans 401 as well as the Total Maximum Dail Load (TMDL) requirements set for the Rock River basin. If additional measures are needed to further reduce the TSS, consideration will be given for the use of biofiltration, wet detention ponds, and/or catchbasins. It should be noted that post construction efforts by either WisDOT or Dane County to maintain filter strips and swales, prevent woody growth, and remove debris and sediment buildup from box culverts and pipes would help to maintain stormwater quality between routine maintenance. The city of Madison has noted general concerns with overall drainage in the area of Yahara Hills Golf Course and requested ongoing coordination throughout the design process. Stormwater will be managed to minimize adverse and enhance beneficial effects, and will be compatible with fulfilling Trans 401 requirements.
D-6 Erosion Control and Sediment Control	☒	☒	☐	☒	An Erosion Control Plan (ECP) will be developed for the project to address the discharge of sediment and other pollutants that are carried in runoff from the construction site. The plan will detail how to control sediment and other pollutants throughout the duration of the construction project and stabilization of the site. Established erosion and sediment control BMP's include sediment ponds, tracking pads, and the use of silt fence and temporary seeding.

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
					Incorporating BMP's into the design of the project will help manage storm water runoff and maintain/improve water quality on a permanent basis. Sediment control devices such as temporary ditch checks (erosion bales), silt fence, stone or rock ditch checks, and/or sediment traps and basins will be included in the ECP as needed for use during construction. These devices will help remove sediment by filtering or slowing the velocity of the sediment laden water to such an extent that it can no longer keep the particles in suspension. Erosion control measures such as vegetation (temporary and permanent), mulch, erosion mat, and riprap will be in the ECP to hold the soil in place and act as protective covers shielding the soil from wind and water forces after grading is complete. Appropriate culvert end walls and grates will be included in the plan to help minimize the collection of debris between regular highway maintenance. There is a median storm sewer system that currently discharges to the ditch between the mitigation site and I-39/90. During heavy storm events, washout and debris backs up into the wetland mitigation area; a more substantial berm will be constructed in this area in addition to the application of BMP's and native vegetation to resolve this erosion issue. Standard WisDOT measures for erosion control and precautions during construction will be implemented according to the current Wisconsin Standard Specifications for Highway and Structure Construction. Construction site erosion and sediment control procedures will be followed as set forth in Trans 401 and the WisDOT/WDNR Cooperative Agreement.

FACTOR SHEETS DEFINED

This section of the Environmental Assessment (EA) is called the "Factor Sheets." Individual Factor Sheets correspond with specific environmental factors identified in the Environmental Factors Matrix of the Basic Sheets (page 43 of 54). The Factor Sheets are used to provide more detailed information on environmental factors and issues that may be substantial and require more of an in-depth discussion than is provided in the Basic Sheets. If there is no substantial impact to a specific environmental factor, a Factor Sheet was not completed.

GENERAL ECONOMICS EVALUATION

Wisconsin Department of Transportation

Factor Sheet A-1

Alternative	Total Length of Center Line of Existing Roadway 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative 2.37 miles

Preferred

☒ Yes ☐ No ☐ None identified

1. Briefly describe the existing economic characteristics of the area around the project:

The Proposed Action is located in south-central Wisconsin, Dane County, on the east side of the city of Madison.

Economic Activity	Description
a. Agriculture	Agriculture is an important industry for Dane County and the project area, although the number of overall farms is decreasing. From 2007 to 2012 the number of farms in Dane County has decreased from 3,331 to 2,749 (-17.5%). The number of acres of farmland has decreased in Dane County from 2007 to 2012, from 535,756 acres to 504,420 acres (-5.8%).
b. Retail business	Retail businesses surround the interchange. These businesses include hotels, a gas station, restaurant, and other businesses.
c. Wholesale Business	Dane County has a number of wholesale business operators. There are no known wholesale business operations in the project area.
d. Heavy Industry	There are no known heavy industry operations in the project area. Heavy industry is found in the US 51 (Stoughton Road) corridor which is located approximately 1.5 miles west of the project area.
e. Light Industry	Light industry is found along I-39/90 and includes GE Healthcare (formerly Datex Ohmeda) which makes medical equipment including anesthesia machines and ventilators.
f. Tourism	Dane County is home to popular tourist destinations. As the capital city of Wisconsin and home to the University of Wisconsin, the city of Madison sits on an isthmus between lakes Mendota and Monona and is a strong tourist draw. The nearby city of Monona is located on the eastern and southern shores of Lake Monona with over four miles of shoreline and over 330 acres of park space that play host to many community events. The village of McFarland is dedicated to the preservation and promotion of their heritage with a museum, Norwegian log cabin, and annex featuring early farming displays. The Ho-Chunk Nation anticipates significant development at their gaming facility in the southeast quadrant of the Beltline Interchange. The Nation currently has plans to develop 47.5 acres of tribally owned land adjacent to its current gaming facility on Evan Acres Road. The focus of the new development could potentially include a cultural heritage museum, regional entertainment venue, and sports complex, which could potentially include fields for rugby, soccer, lacrosse, and/or ultimate Frisbee.
g. Recreation	There are numerous parks and recreation areas in the greater Madison area, including Yahara Hills Golf Course located east of I-39/90 along the south leg of the Beltline Interchange. The 36-hole regulation golf course is owned by the city of Madison and open to the public. The Capital City State Trail provides a link around and through Madison between the Military Ridge State Trail and, eventually, the Glacial Drumlin State Trail. This future connection is proposed within the project area adjacent to the Wisconsin and Southern Railroad crossing on the north leg of the Beltline Interchange.
h. Forestry	Small woodlands exist in the project area. Forestry is not a major industry in the area.
i. Commercial	Several businesses are located in the project area and include Ho-Chunk Gaming Madison, Magnuson Grand Hotel, Harley Davidson of Madison, ABC Supply Co., Inc, America's Best Value Inn, Aribos Sealcoat Manufacturing and Supply, Restoration Cider, and JBC Coffee Roasters.
j. Other	The Dane County Sanitary Landfill (Rodefeld) is located just outside the project limits along US 12/18 across from Yahara Hills Golf Course.

Source: U.S. Dept. of Agriculture; U.S. Census Bureau; WI Dept. of Tourism (2010)

Table 1 shows the top three employers in Dane County by industry. The top three employers by industry for Dane County are health care and social assistance, retail, and accommodation and food services. The median household incomes is $64,773 in Dane County. Dane County has 72.9 percent of the population over the age of 16 in the labor force.

Table 1: Economic Characteristics of the Project Area

2015	Dane County	
Percent of Individuals in Labor Force (age 16 and over)	72.9%	
Top 3 Employers by Industry	1	Health Care and Social Assistance
	2	Retail
	3	Accommodation and Food Services
Median Household Income	$64,773	

Source: U.S. Census Bureau, 2015 County Business Patterns

2. Discuss the economic advantages and disadvantages of the proposed action and whether advantages would outweigh disadvantages. Indicate how the project would affect the characteristics described in item 1 above:

The Proposed Action's advantages include:

- Ensuring the economic viability of the area by promoting safe and efficient transportation on I-39/90
- Provides revenue for area construction companies through the purchase of construction materials and supplies required for the project
- Provides job creation and potentially increase retail sales from construction workers in the area (hotels, food)

The Proposed Action's disadvantages include:

- Major capital investment by WisDOT
- Temporary disruptions during construction
- Agricultural land will be taken along the outside edge of the current roadway due to right of way acquisition

The improved safety and operations of the route will benefit area commuters and tourists alike. There will be fewer delays and with improved mobility motorists will reach destinations more efficiently.

3. What effect will the proposed action have on the potential for economic development in the project area?

☒ **The proposed project will have no effect on economic development.**

☐ **The proposed project will have an effect on economic development.**

☐ Increase, describe:

☐ Decrease, describe:

AGRICULTURE EVALUATION

Wisconsin Department of Transportation

Factor Sheet A-3

Alternative	Total Length of Center Line of Existing Roadway 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None identified	

Note: *A Farmland Conversion Impact Rating for (NRCS-CPA-106) and Agricultural Impact Notice (AIN, DT1999) were completed for Project 1007-10-02 in June 2014; and DATCP published an Agricultural Impact Statement (AIS) in August 2014. At that time, the Beltline Interchange project scope proposed a full interchange reconstruction, as well as the reconstruction of US 12/18 with a new interchange along US 12/18 at County AB. In December 2017, WisDOT revised the project scope to reduce impacts and enable savings in the estimated cost of the interchange.* ***This change resulted in a change in acquisition totals required from 86.7 acres from 14 farmland owners to 0 acres of agricultural land impacts.*** *Follow up coordination was completed with DATCP to provide an update on the change in impacts (see* ***Appendix E – Agency & Local Officials Coordination****). As a result of this coordination, DATCP determined they would not prepare an addendum to the AIS or new AIS for the Beltline Interchange project. Additional coordination with NRCS was not required, the completed CPA 106 form for the full interchange reconstruction alternative resulted in a site assessment score less than 60 points.*

1. Total acquisition interest, by type of agricultural land use (revised project scope):

There is 3.66 acres of WisDOT owned land that will be converted to highway right-of-way. The land was a 40-foot upland buffer that was set aside along the eastern boundary of the WisDOT World Dairy wetland mitigation bank site [Mitigation Banking Instrument (11/2/15)]. This acreage has been included in the "Total Area Converted to ROW" on Basic Sheet 6, but is not included as "Total Area Required From Farm Operations".

Type of Land Acquired From Farm Operations	Type of Acquisition (acres)		Total Area Acquired (acres)
	Fee Simple	Easement	
Crop land and pasture	0	0	0
Woodland	0	0	0
Land of undetermined or other use (e.g., wetlands, yards, roads, etc.)	0	0	0
Totals	0	0	0

2. Indicate number of farm operations from which land will be acquired:

Acreage to be Acquired	Number of Farm Operations *
Less than 1 acre	0
1 acre to 5 acres	0
More than 5 acres	0

3. Is land to be converted to highway use covered by the Farmland Protection Policy Act?

☒ No (**per NRCS response to CPA-106, submitted June 2014**)
- ☐ The land was purchased prior to August 6, 1984 for the purpose of conversion
- ☐ The acquisition does not directly or indirectly convert farmland
- ☐ The land is clearly not farmland
- ☐ The land is already in, or committed to urban use or water storage

☐ Yes (This determination is made by the Natural Resources Conservation Service (NRCS) via the completion of the Farmland Impact Conversion Rating Form, NRCS Form AD-1006)
- ☐ The land is prime farmland which is not already committed to urban development or water storage
- ☐ The land is unique farmland
- ☐ The land is farmland which is of statewide or local importance as determined by the appropriate state or local government agency

4. Has the Farmland Impact Conversion Rating Form (AD-1006) been submitted to NRCS?

☐ No
☒ Yes (NRCS-CPA-106 completed for original project scope; submitted June 6, 2014) see **Appendix D – Preferred Alternative and Impact Exhibits**
- ☒ The Site Assessment Criteria Score (Part VI of the form) is less than 60 points for this project alternative.
  Date Form AD-1006 completed: June 6, 2014
- ☐ The Site Assessment Criteria Score is 60 points or greater
  Date Form AD-1006 completed:

5. Is an Agricultural Impact Statement (AIS) Required?

☐ No
- ☐ Eminent Domain will not be used for this acquisition
- ☐ The project is a "Town Highway" project
- ☐ The acquisition is less than 1 acre
- ☐ The acquisition is 1-5 acres and DATCP chooses not to do an AIS
- ☐ Other – Describe:

☒ Yes (completed for original project scope; published August 21, 2014) see **Appendix D – Preferred Alternative and Impact Exhibits**
- ☐ Eminent Domain may be used for this acquisition
- ☐ The project is not a "Town Highway" project
- ☐ The acquisition is 1-5 acres and DATCP chooses to do an AIS
- ☒ The acquisition is greater than 5 acres (**based on original project scope**)

6. Is an Agricultural Impact Notice (AIN) Required?

☐ No, the project is not a State Trunk Highway Project – AIN not required but complete questions 7-16
☒ Yes, the project is a State Trunk Highway Project – AIN may be required

Is the land acquired "non-significant"?

☐ Yes – (All must be checked) An AIN is <u>not</u> required but complete questions 7-16
- ☐ Less than 1 acre in size
- ☐ Results in no severances
- ☐ Does not significantly alter or restrict access
- ☐ Does not involve moving or demolishing any improvements necessary to the operation of the farm
- ☐ Does not involve a high value crop

☒ No
- ☒ Acquisition 1 to 5 acres – AIN required. Complete Pages 1 and 2, Form DT1999, (Pages 1 and 2, Figure 1, Procedure 21-25-30)
- ☐ Acquisition over 5 acres – AIN required Complete Pages 1, 3 and 4, Form DT1999 (Pages 1, 3 and 4, Figure 1, Procedure 21-25-30)

If an AIN is completed, do not complete the following questions 7-16.

7. Identify and describe effects to farm operations because of land lost due to the project:

☐ Does Not Apply
☐ Applies – Discuss:

8. Describe changes in access to farm operations caused by the proposed action:

☐ Does Not Apply
☐ Applies – Discuss:

9. Indicate whether a farm operation will be severed because of the project and describe the severance (include area of original farm and size of any remnant parcels):

☐ Does Not Apply
☐ Applies – Discuss:

10. Identify and describe effects generated by the acquisition or relocation of farm operation buildings, structures or improvements (e.g., barns, silos, stock watering ponds, irrigation wells, etc.). Address the location, type, condition and importance to the farm operation as appropriate:

☐ Does Not Apply
☐ Applies – Discuss:

11. Describe effects caused by the elimination or relocation of a cattle/equipment pass or crossing. Attach plans, sketches, or other graphics as needed to clearly illustrate existing and proposed location of any cattle/ equipment pass or crossing:

☐ Does Not Apply
☐ Replacement of an existing cattle/equipment pass or crossing is not planned. Explain:
☐ Cattle/equipment pass or crossing will be replaced
☐ Replacement will occur at same location
☐ Cattle/equipment pass or crossing will be relocated. Describe:

12. Describe the effects generated by the obliteration of the old roadway:

☐ Does Not Apply
☐ Applies – Discuss:

13. Identify and describe any proposed changes in land use or indirect development that will affect farm operations and are related to the development of this project:

☐ Does Not Apply
☐ Applies – Discuss:

14. Describe any other project-related effects identified by a farm operator or owner that may be adverse, beneficial or controversial:

☐ No effects indicated by farm operator or owner
☐ Applies – Discuss:

15. Indicate whether minority or low-income population farm owners, operators, or workers will be affected by the proposal: (Include migrant workers, if appropriate.)

☐ No
☐ Applies – Discuss:

16. Describe measures to minimize adverse effects or enhance benefits to agricultural operations:

COMMUNITY OR RESIDENTIAL EVALUATION

Wisconsin Department of Transportation

Factor Sheet B-1

Alternative	Total Length of Center Line of Existing Roadway 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None identified	

1. Give a brief description of the community or neighborhood affected by the proposed action:

Name of Community/Neighborhood: **Dane County**
Incorporated: ☒ Yes ☐ No
Total Population: 488,073
Demographic Characteristics:

Census Year 2010	% of Population
White	84.7
Non White/Minority	15.3
Age 65+	10.3
Below poverty level	12.7

Name of Community/Neighborhood: **City of Madison**
Incorporated: ☒ Yes ☐ No
Total Population: 233,209
Demographic Characteristics:

Census Year 2010	% of Population
White	78.9
Non White/Minority	21.1
Age 65+	9.6
Below poverty level	18.6

Name of Community/Neighborhood: **Village of McFarland**
Incorporated: ☒ Yes ☐ No
Total Population: 7,808
Demographic Characteristics:

Census Year 2010	% of Population
White	94.4
Non White/Minority	5.6
Age 65+	10.3
Below poverty level	1.9

Source: U.S. Census Bureau (2010)

2. Identify and discuss existing modes of transportation and their importance within the community or Neighborhood:

I-39/90 in southern Wisconsin is a gateway to the state and a vital link in the Primary Highway Freight System (PHFS), which includes routes that are identified as the most critical highway portions of the US freight system. This corridor links Wisconsin and Illinois, and heavy trucks account for about 29 percent of its traffic. I-39/90 had an Annual Average Daily Traffic (AADT) ranging from 56,300 to 86,100 vehicles per day in 2013 with forecasted volumes ranging from 72,000 to 116,000 vehicles per day in 2040.

Airports with controlled airspace near the study area include Dane County Regional Airport (city of Madison). Dane County Airport serves more than 95 flights daily and serves over 1.8 million passengers yearly.

Bicycle and pedestrian accommodations are not present along the project corridor.

3. **Identify and discuss the probable changes resulting from the proposed action to the existing modes of transportation and their function within the community or neighborhood:**

   It is anticipated that there will be no substantial changes to transportation modes and functions in the corridor communities. Overall, automobile and truck transportation will be improved by the Proposed Action.

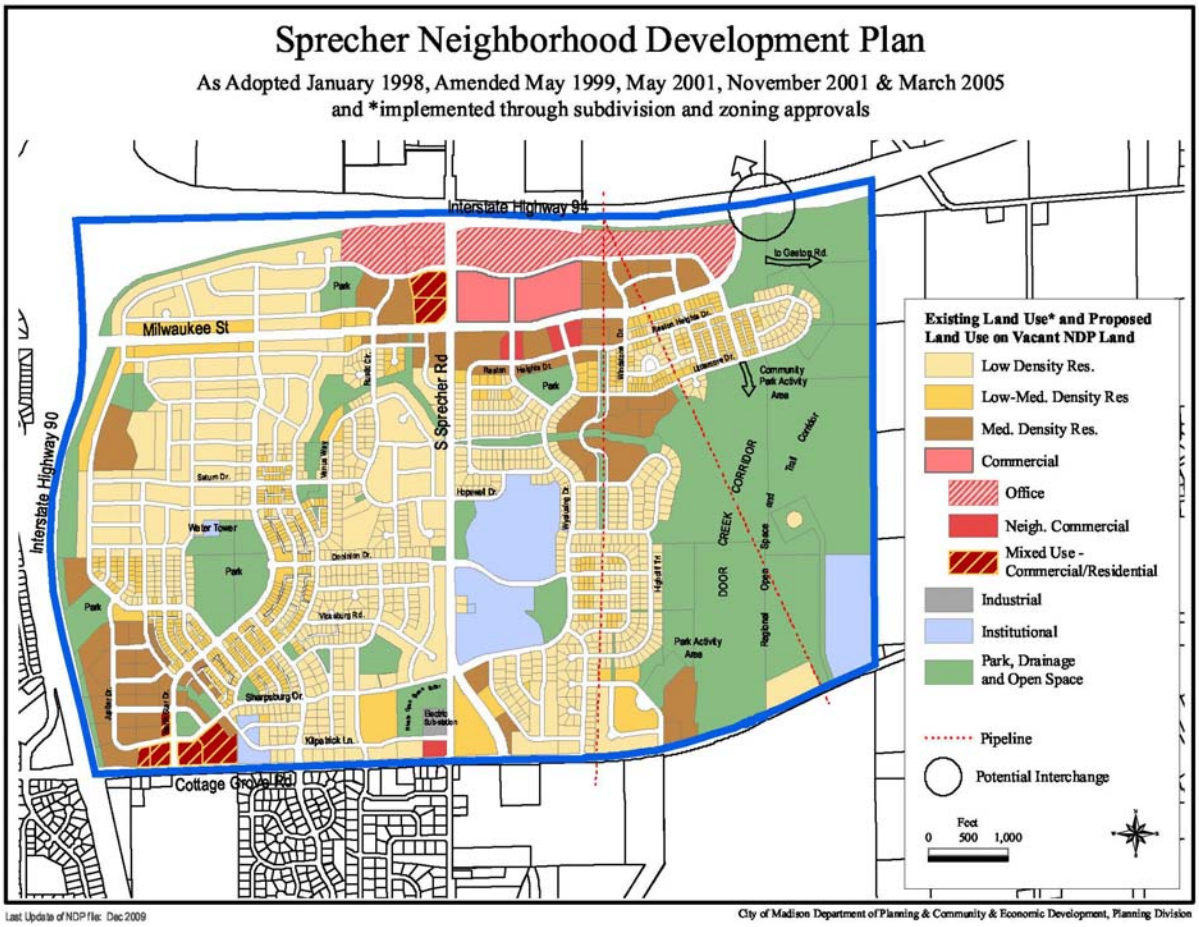
4. **Briefly discuss the proposed action's direct and indirect effect(s) on existing and planned land use in the community or neighborhood:**

   County land use data indicates that areas of residential and undeveloped space west of I-39/90 may become developed for residential use. An expert panel workshop was held on March 1, 2017, where representatives of local, state, and federal agencies and other local interest groups were invited to identify and discuss potential indirect effects of the project. Specific future developments identified prior to and during the workshop include:

   - Yahara Hills Neighborhood Development Plan (represented in the county future land use data as described above)
   - Ho-Chunk Nation development in the southwest quadrant of the Beltline Interchange, including a potential new connecting road from the new development to County AB as part of the Phase I Development Plan
   - Dane County Rodefeld Landfill and campus expansion
   - WisDOT World Dairy Wetland Mitigation Bank
   - Further expansion of the Secret Places residential subdivision
   - Reiner/Sprecher Road area improvements
   - Planned development near US 12/18 and County AB
   - Marsh Road neighborhood development
   - Office Park proposed near the existing industrial park in McFarland, accessed from existing Marsh Road
   - Possible Lower Yahara River Trail over/under I-39/90 from McFarland to Ho-Chunk Nation development, south of the Beltline Interchange
   - Possible Capital City/Glacial Drumlin Trail under I-39/90, north of the Beltline Interchange along the Wisconsin & Southern Railroad

   The City of Madison also has plans to further develop the Sprecher Neighborhood which is located beyond the northeast quadrant of the Beltline Interchange (see **Figure B-1**).

Figure B-1.1 – Sprecher Neighborhood Development Plan



Most of the properties within the planning area are currently used for agriculture, open space or are vacant. A few properties are used for other low-density commercial, industrial, or institutional activities, and the remainder of the land consists of residential parcels. The Neighborhood is planned primarily as a residential community, with about 45 percent of the planning area recommended for residential development. About 23 percent of the planning area is recommended for park and open space uses, 6 percent for commercial uses, and institutional uses and other specialized uses account for about 4 percent of the land. Most of the remaining area, about 18 percent, will be required for street rights-of-way. No proposed use is assigned to the small area (4 percent of the planning area) located east of the Door Creek corridor, at this time. The development plan for the neighborhood also includes a major north-south arterial highway serving the east side of the Madison metropolitan area with a full range of urban services.

Apart from development at the sites indicated above, land use within the project area would not change. The Proposed Action is not expected to have any effects on planned development in the area. The strip acquisition of agricultural land along the corridor is not expected to affect the overall agricultural character in the rural areas of the corridor. Likewise, the existing pattern of scattered residential and commercial developments in the communities located throughout the corridor is not expected to change as a result of the Proposed Action.

5. Address any changes to emergency or other public services during and after construction of the proposed project:

Increased emergency response time during construction is possible, but may be limited during nighttime hours when traffic on I39/90 may be down to only one lane in each direction at times. During daytime hours two lanes of traffic will be maintained and open on I-39/90 and at least one lane on ramps.

6. Describe any physical or access changes that will result. This could include effects on lot frontages, side slopes or driveways (steeper or flatter), sidewalks, reduced terraces, tree removals, vision corners, etc.:

Access points are not being added or removed along I-39/90, although the exit ramp from northbound I-39/90 to westbound US 12/18 will be changed to a right exit from the existing configuration as a left exit. The existing roadway will be obliterated between the northbound I-39/90 to westbound US 12/18 exit ramp and the south side of the structure over Femrite Drive. There will be minor strip acquisitions along I-39/90 for regrading of ditches and profile adjustments. With northbound I-39/90 being on a new alignment through the core of the Beltline Interchange, significant grading and higher fills are required and would result in physical changes within the Beltline Interchange core.

Two retaining walls will be included with the project, changing the appearance of the project area. One retaining wall will be located on the proposed northbound I-39/90 to westbound US 12/18 ramp in front of the Ho-Chunk Nation Tribal Trust parcel to avoid a right-of-way acquisition from the parcel. The other wall will be located within the median between the existing southbound I-39/90 and proposed northbound I-39/90 roadway due to profile differences between northbound and southbound I-39/90.

7. Indicate whether a community/neighborhood facility will be affected by the proposed action and indicate what effect(s) this will have on the community/neighborhood:

No community/neighborhood facilities will be affected by the Proposed Action.

8. Identify and discuss factors that residents have indicated to be important or controversial:

None

9. List any Community Sensitive Design considerations, such as design considerations and potential mitigation measures.

None

10. Indicate the number and type of any residential buildings that will be acquired because of the proposed action. If either item a) or b) is checked, items 11 through 18 do not need to be addressed or included in the environmental document. If item c) is checked, complete items 11 through 18 and attach the Conceptual Stage Relocation Plan to the environmental document:

a. ☒ None identified.
b. ☐ No occupied residential building will be acquired as a result of this project. Provide number and description of non-occupied buildings to be acquired.
c. ☐ Occupied residential building(s) will be acquired. Provide number and description of buildings, e.g., single family homes, apartment buildings, condominiums, duplexes, etc.

11. Anticipated number of households that will be relocated from the occupied residential buildings identified in item 10c, above:

Total Number of Households to be Relocated:
(Note that this number may be greater than the number shown in 10c) above because an occupied apartment building may have many households)

a. Number by Ownership
Number of Households Living in Owner Occupied Building Number of Households Living in Rented Quarters

b. Number of households to be relocated that have.
1 Bedroom: 2 Bedrooms: 3 Bedrooms: 4 or More Bedrooms:

c. Number of relocated households by type and price range of dwelling.
Number of Single Family Dwelling: Price Range:
Number of Multi-Family Dwellings: Price Range:
Number of Apartment: Price Range:

12. Describe the relocation potential in the community:

a. Number of Available Dwellings
1 Bedroom: 2 Bedrooms: 3 Bedrooms: 4 or More Bedrooms:

b. Number of Available and Comparable Dwellings by Location
within within

c. Number of Available and Comparable Dwellings by Type and Price (include dwellings in price ranges comparable to those being dislocated, if any).
Single Family Dwellings: Price Range:
Multi-Family Dwellings: Price Range:
Apartments: Price Range:

13. Identify all the sources of information used to obtain the data in item 12:

☐ WisDOT Real Estate Conceptual Stage Relocation Plan ☐ Multiple Listing Service (MLS)
☐ Newspaper Listing(s) ☐ Other – Identify

14. Indicate the number of households to be relocated that have the following special characteristics:

☐ None identified.
☐ Yes - _____ total households to be relocated. Complete table below

Special Characteristics	Number of Households with Individuals with Special Characteristics
Elderly	
Disabled	
Low income	
Minority	
Household of large family (5 or more)	
Not Known	
No special characteristics	

15. Describe how relocation assistance will be provided in compliance with the WisDOT Relocation Manual or FHWA regulation 49 CFR Part 24:

☐ Residential acquisitions and relocations will be completed in accordance with the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended." In addition to providing for payment of "Just Compensation" for property acquired, additional benefits are available to eligible displaced persons required to relocate from their residence. Some available benefits include relocation advisory services, reimbursement of moving expenses, replacement housing payments, and down payment assistance. In compliance with State law, no person would be displaced unless a comparable replacement dwelling would be provided. Federal law also requires that decent, safe, and sanitary replacement dwelling must be made available before any residential displacement can occur.

Compensation is available to all displaced persons without discrimination. Before initiating property acquisition activities, property owners would be contacted and given an explanation of the details of the acquisition process and Wisconsin's Eminent Domain Law under Section 32.05, Wisconsin Statutes. Any property to be acquired would be inspected by one or more professional appraisers. The property owner would be invited to accompany the appraiser during the inspection to ensure the appraiser is informed of every aspect of the property. Property owners will be given the opportunity to obtain an appraisal by a qualified appraiser that will be considered by WisDOT in establishing just compensation. Based on the appraisal(s) made, the value of the property would be determined, and that amount offered to the owner.

☐ Identify other relocation assistance requirements not identified above.

16. Identify any difficulties or unusual conditions for relocating households displaced by the proposed action:

17. Indicate whether Special Relocation Assistance Service will be needed. Describe any special services or housing programs needed to remedy identified difficulties or unusual conditions noted in item #14 above:

☐ None identified
☐ Yes - Describe services that will be required:

18. Describe any additional measures that will be used to minimize adverse effects or provide benefits to those relocated, those remaining, or to community facilities affected:

ENVIRONMENTAL JUSTICE EVALUATION

Wisconsin Department of Transportation

Factor Sheet B-4

Alternative	Total Length of Center Line of Existing Roadway: 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative: 2.37 miles

Preferred
☒ Yes ☐ No ☐ None identified

1. Identify and give a brief description of the populations covered under Executive Order 12898 (EO 12898). Include the relative size of populations and their pertinent demographic characteristics: (check all that apply)

Population Groups	Low Income	Elderly	Disabled
☒ Black (having origins in any of the black racial groups of Africa) Describe: 6.03% (255 people) of Block Group 3, Census Tract 114.01 and Block Group 3, Census Tract 31	Yes ☐ No ☒	Yes ☐ No ☐	Yes ☐ No ☐
☒ Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race) Describe: 5.25% (222 people) of Block Group 3, Census Tract 114.01 and Block Group 3, Census Tract 31	Yes ☐ No ☒	Yes ☐ No ☐	Yes ☐ No ☐
☒ Asian American (origins in any of the original peoples of the Far East, SE Asia, the Indian subcontinent, or the Pacific Islands) Describe: 2.29% (97 people) of Block Group 3, Census Tract 114.01 and Block Group 3, Census Tract 31	Yes ☐ No ☒	Yes ☐ No ☐	Yes ☐ No ☐
☒ American Indian and Alaska Native (having origins in any of the original people of North American and who maintains cultural identification through tribal affiliation or community recognition) Describe: 0.40% (17 people) of Block Group 3, Census Tract 114.01 and Block Group 3, Census Tract 31	Yes ☐ No ☒	Yes ☐ No ☐	Yes ☐ No ☐
☒ White and any combination of the above Describe: 2.65% (112 people) of Block Group 3, Census Tract 114.01 and Block Group 3, Census Tract 31	Yes ☐ No ☒	Yes ☐ No ☐	Yes ☐ No ☐
☐ Non-minority low-income population Describe:		Yes ☐ No ☐	Yes ☐ No ☐

	Community of Comparison		Community in Study Area	
Low Income	**Dane County**	**State of Wisconsin**	**Census Tract 114.01**	**Census Tract 31**
Population for whom the poverty status is determined	502,627	5,603,274	7,199	6,264
Population below the national poverty level (last 12 months)	63,834	711,616	447	371
% low income	12.7%	12.7%	6.2%	5.9%
125% of community comparison	15.9%	15.9%	-	-
Potential low income EJ impact?	-	-	No	No
Minority	**Dane County**	**State of Wisconsin**	**Census Tract 114.01 - Block Group 3**	**Census Tract 31 - Block Group 3**
Total population	516,818	5,754,798	2,046	2,649
Number one-race, white	423,858	5,483,394	2,014	2,083
Number non-white/minority	78,769	759,302	32	566
% non-white/minority	15.2%	13.2%	1.6%	21.4%
125% of community comparison	19.1%	16.5%	-	-
Potential low income EJ impact?	-	-	No	No

Source: 2016 Census and 2011-2015 American Community Survey (ACS).

Environmental justice populations exist within the study area and may be affected by the proposed action. These populations were identified via the EPA EJSCREEN tool, scoping, public involvement efforts, and identification from past projects in the area.

Potentially affected Environmental Justice populations include:

- Ho-Chunk Gaming Facility (Minority owned business - American Indian)
- Residents of the America's Best Value Inn (low income)

No buildings would be taken or directly affected by the Proposed Action at any of the properties.

2. How was information on the proposed action communicated to populations covered by Executive Order 12898. Check all that apply:

- ☐ Advertisements
- ☐ Brochures
- ☐ Newsletters
- ☒ Notices
- ☐ Utility Bill Inserts
- ☐ E-mails
- ☐ Public Service Announcements
- ☒ Direct Mailings
- ☐ Key Persons
- ☒ Other, identify: Public Involvement Meetings

3. How was input from populations covered by EO 12898 obtained? Check all that apply:

- ☐ Mailed Surveys
- ☐ Targeted Small Group Information Meetings
- ☐ Door-to-door interviews
- ☐ Targeted Workshop/conferences
- ☐ Focus Group Research
- ☒ Public Meetings
- ☐ Public Hearings
- ☐ Key Person Interviews
- ☒ Other, identify: Tenant Resource Center website http://www.tenantresourcecenter.org/; EPA EJSCREEN (Environmental Justice Screening and Mapping Tool) https://www.epa.gov/ejscreen. An expert panel workshop was held 3/1/2017 to discuss indirect and cumulative impacts that could result from the project. All topics related to potential impacts were open for discussion, including those to low income and minority populations (see **Appendix E – Indirect Effects Analysis (IEA) Pre-screening Worksheet**).

4. Indicate any special accommodations made to encourage participation from populations covered by EO 12898. Check all that apply:

- ☒ Interpreters
- ☐ Listening Aids
- ☒ Accessibility for Elderly & Disabled
- ☐ Transportation Provided
- ☐ Child Care Provided
- ☒ Sign Language
- ☒ Other: Hearing-impaired citizens and those who required an interpreter were provided the opportunity to request one by contacting WisDOT at least three working days prior to the meeting via the Wisconsin Telecommunications Relay System.

5. If there is a project advisory committee, identify and describe committee members from populations covered by EO 12898

- ☒ None identified
- ☐ Yes - Check all that apply and describe below:
  - ☐ Black
  - ☐ Hispanic
  - ☐ Asian-American
  - ☐ American Indian or Alaska Native
  - ☐ White and any combination of the above
  - ☐ Non-minority low-income

    Describe: _____

6. As a result of public involvement and inter-agency coordination, identify and describe issues of concern or controversy to populations covered by EO 12898:

A. Economic Development and Business

- ☒ No issues of concern or controversy identified.
- ☐ Yes - Issues of concern or controversy identified.
  1. List effects on businesses and populations covered by EO 12898:
     - ☐ None identified
     - ☐ Yes

       List and discuss:

Population Groups	Number of Businesses **Created** That Will:		Number of Businesses **Displaced** That:	
	Employ	Serve	Employ	Serve
Elderly	None Identified	None Identified	None Identified	None Identified
Disabled	None Identified	None Identified	None Identified	None Identified
Low income	None Identified	None Identified	None Identified	None Identified
Minority	None Identified	None Identified	None Identified	None Identified

2. List other effects.

☒ None identified
☐ Yes
List and discuss:

B. Agriculture

☒ No issues of concern or controversy identified.
☐ Yes - Issues of concern or controversy identified.

1. List effects on agricultural operations owned by members of populations covered by EO 12898.
   ☐ None identified
   ☐ Yes
   List and discuss:
2. List effects on agricultural operations which employ members of populations covered by EO 12898, including migrant workers
   ☐ None identified
   ☐ Yes
   List and discuss:
3. List other effects on members of populations covered by EO 12898:
   ☐ None identified
   ☐ Yes
   List and discuss:

C. Community/Residential

☒ No issues of concern or controversy identified.
☐ Yes - Issues of concern or controversy identified.
List and discuss:

1. List relocation effects on households covered by EO 12898:
   ☒ None identified
   ☐ Yes, list and discuss:

Population Groups	Number of Households Relocated
Elderly	
Disabled	
Low income	
Minority	

2. List other effects on members of populations covered by EO 12898.
   ☒ None identified
   ☐ Yes
   List and discuss:

D. Other

☒ No issues of concern or controversy identified.
☐ Yes - Issues of concern or controversy identified.
List and discuss:

7. Indicate whether effects on populations covered by EO 12898 are beneficial or adverse:

A. Beneficial effects

☒ Describe effects on populations and discuss whether they are direct, indirect or cumulative. Include a discussion of any measures to enhance beneficial effects. Describe methods used to determine beneficial effects resulting from the proposed project (if only beneficial effects, process is complete).

Safety improvements would have a positive direct effect for customers, suppliers, and the delivery of goods and services to businesses in the surrounding area. Converting the northbound I-39/90 to westbound US 12/18 exit ramp from a left hand exit to a right hand exit, adding a third lane to southbound I-39/90, and adding a third lane to the eastbound 12/18 to northbound I-39/90 entrance ramp enhances the overall safety concerns in the area.

B. Adverse effect

☒ 1. Adverse Effects are proportional or disproportionately low. Identified adverse effects are proportionate or disproportionately low to those experienced by the general population.

Describe effects on populations and discuss whether they are direct, indirect or cumulative. Describe methods used to determine adverse effects resulting from the proposed project. Include a discussion of any measures to avoid, minimize, or mitigate adverse effects. (**If only beneficial or proportional or disproportionately low effects, process is complete**).

Adverse effects would consist of minor travel delay during construction, these effects would be temporary and would be borne by the general population, and the benefits would outweigh adverse effects for all users.

☐ 2. Adverse Effects are disproportionately high. A disproportionately high and adverse effect means an adverse effect that:

a) Is predominately borne by populations covered by EO 12898; or

b) Will be suffered by populations covered by EO 12898 and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by population not covered by EO 12898.

Describe disproportionately high and adverse effects on populations covered by EO 12898 and discuss whether they are direct, indirect or cumulative. Describe methods used to determine adverse effects resulting from the proposed project. Include a discussion of any measures to avoid, minimize, or mitigate disproportionately high and adverse effects or enhance beneficial effects.

8. Will the alternative be carried through final design even with disproportionately high and adverse effects on populations covered by EO 12898?

A. ☐ No, the alternative will not be carried out because of disproportionately high and adverse effects on populations covered by EO 12898.

1. ☐ Another alternative with less severe effects on populations covered by EO 12898 can meet the purpose and need of the proposed alternative and is practicable.
2. ☐ Other
   Describe:

B. ☐ Yes, the alternative will be carried out with the mitigation of disproportionately high and adverse effects on populations covered by EO 12898.

1. ☐ All disproportionate effects will be mitigated by the following measures.
   List and discuss measures:
2. ☐ The alternative will be carried through final design without fully mitigating disproportionately high and adverse effects. A substantial need for the alternative exists based on the overall public interest. Alternatives that would have less adverse effects on populations covered by EO 12898 have either:
   a) ☐ Adverse social, economic, environmental, or human health impacts that are more severe.
   b) ☐ Would involve increased costs of an extraordinary magnitude.

HISTORIC RESOURCES EVALUATION

Wisconsin Department of Transportation

Factor Sheet B-5

Alternative I-39/90 & US 12/18 Beltline Interchange: ALT C	Total Length of Center Line of Existing Roadway 2.37 miles Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None identified	

Section 106 Form or other documentation, with all necessary approvals, must be attached to the Environmental Document for all projects (see **Appendix H – Section 106 Documentation**)

1. Parties contacted (see **Appendix F – Agency and Local Officials Coordination):**

Parties Contacted	Date Contacted	Comments Received		
		No	Yes	Check if Attached
Eric Knepp, City of Madison, Parks Division Superintendent	5/16/2018 6/11/2018	☐	☒	☒
Kimberly Cook, Wisconsin Historical Society Historic Preservation Specialist	12/21/2017 5/31/2018	☐	☒	☒

2. Property Name: Yahara Hills Golf Course and Clubhouse

3. Location: 6701 US Highway 12, Madison, WI, 53718

4. Use: City of Madison-owned recreational area (golf course)

5. Property type:

☐ Bridge
☐ Building
☐ Historic District
☒ Other: Municipal Golf Course (AHI # 229217) and Clubhouse (AHI # 227030)

6. Property Designations:

☐ National Historic Landmark (NHL)
☐ National Register of Historic Places (NRHP)
☐ State Register of Historic Places
☐ Local Registry
☐ Tribal Registry

7. A Determination of Eligibility (DOE) has been prepared:

☐ No – Property is already on NRHP or NHL
☒ Yes – DOE prepared (see **Appendix H – Section 106 Documentation**)
☐ Other:

8. Describe the significance of the structures and/or buildings:

Yahara Hills Golf Course (YHGC) is a 36-hole course located on approximately 440 acres on the southeast side of Madison between US 12/18 and I-39/90. It includes the clubhouse, four contributing sites (two 18-hole golf courses, a driving range, and a small putting green), and three non-contributing buildings. All of the contributing resources were constructed in 1967.

Yahara Hills Golf Course (AHI # 229217): Designed by park planner and golf course architect Arthur Johnson, the 36-hole course is comprised of two 18-hole courses: Yahara Hills East and Yahara Hills West, which are designed in a way where the courses mix and cross over each other in many places throughout the property. The gently rolling terrain is characterized by evergreen and deciduous trees which add aesthetic interest and delineate the broad fairways. A few large ponds present water hazards, and sand bunkers protect many of the greens. The landscape also includes a driving range, located west of the clubhouse near the northwest corner of the property. Finally, a small putting green is located immediately south and west of the clubhouse. The area is bordered by Millpond Road and a

water hazard to the north and Yahara Hills West and a water hazard to the south. The golf course at Yahara Hills is individually eligible under National Register Criterion C (embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction) as a good and intact local example of a post-World War II Freeway School golf course, created by prolific golf course and park designer Arthur Johnson.

Yahara Hills Golf Course Clubhouse (AHI# 227030): The YHGC clubhouse is a fine and intact example of Modernistic (Contemporary) design. When compared to municipal golf course clubhouses from the same era, the clubhouse exhibits key factors of Wrightian-influenced Modernistic (Contemporary) architecture. The period of significance coincides with the 1967 construction date. The YHGC clubhouse is eligible under National Register Criterion C (embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction).

9. In compliance with the requirements of Section 106, of the National Historic Preservation Act, the proposed project's effects on the historic property, (e.g., structure or building) have been evaluated in the following report, a copy of which is:

- ☐ In the project file, or
- ☒ Attached to this document (see **Appendix H – Section 106 Documentation**):
  - ☐ Documentation for determination of no historic properties affected (Reported on the Section 106 Review Form).
  - ☒ Documentation for determination of no adverse or conditional no adverse effect to historic properties.
  - ☐ Documentation for Consultation about adverse effect(s). A Memorandum of Agreement has been completed.
    - ☐ No, consultation about effects is continuing.
    - ☐ Yes, a copy of the MOA is attached to this document. Summarize MOA stipulations below:

10. Do FHWA requirements for Section 4(f) apply to the project's use of the historic property?

- ☒ No
  - ☐ Project is not federally funded.
  - ☒ No right-of-way or Permanent Limited Easements will be acquired from the property and the project will not substantially impair the characteristics that qualify the property for the NRHP.
  - ☐ Right-of-way will be acquired from the NRHP property but a *de minimis* finding has been proposed.
  - ☐ Other – Explain:
- ☐ Yes – Complete Factor Sheet B-8, Section 4(f) and 6(f) or other Unique Areas.

WETLANDS EVALUATION

(9/2013)

Wisconsin Department of Transportation

Factor Sheet C-1

Alternative	Total Length of Center Line of Existing Roadway 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None identified	

1. **Describe Wetlands:** All wetlands are located in Dane County
(see **Appendix D – Preferred Alternative and Impact Exhibits**)

	Wetland 1		**Wetland 2**		**Wetland 3**	
Name (if known) or wetland number[1]	W-3A		W-3B		W-3C	
Location (Section-Township-Range)	23-T7-R10		23-T7-R10		23-T7-R10	
Location (Latitude, Longitude)	43°3'24"N, 89°16'40"W		43°3'24"N, 89°16'36"W		43°3'37"N, 89°16'39"W	
Location Map	See Figure C-1.2		See Figure C-1.2		See Figure C-1.2	
Wetland Type(s)[2]	SS, M		SS, M, SM		RPE, RPF	
Wetland Loss	Acres: 0.16		Acres: 0.44		Acres: 0.06	
Wetland is: (Check all that apply)[3]	Yes	No	Yes	No	Yes	No
• Isolated from stream, lake or other surface water body	X		X			X
• Not contiguous (in contact with) a stream, lake, or other water body, but within 100-year floodplain	X		X			X
• If adjacent or contiguous, identify stream, lake or water body					Pennito Creek	
	Wetland 4		**Wetland 5**		**Wetland 6**	
Name (if known) or wetland number[1]	W-3D		W-3E		W-4	
Location (Section-Township-Range)	23-T7-R10		14-T7-R10		26-T7-R10	
Location (Latitude, Longitude)	43°3'37"N, 89°16'35"W		43°3'37"N, 89°16'39"W		43°2'52"N, 89°16'5"W	
Location Map	See Figure C-1.2		See Figure C-1.2		See Figure C-1.1	
Wetland Type(s)[2]	RPE, RPF		M		SS, M, SM, WS, DM	
Wetland Loss	Acres: 0.05		Acres: 0.30		Acres: 0.14	
Wetland is: (Check all that apply)[3]	Yes	No	Yes	No	Yes	No
• Isolated from stream, lake or other surface water body		X	X		X	
• Not contiguous (in contact with) a stream, lake, or other water body, but within 100-year floodplain		X	X		X	
• If adjacent or contiguous, identify stream, lake or water body	Pennito Creek					

[1] Use wetland numbering from the project wetland delineation report

[2] Use wetland types as specified in the "*WisDOT FDM 24-5 Attachment 10.2 Wetland Type Correspondence Table*"

[3] If wetland is contiguous to a stream, complete Factor Sheet C-2, Rivers, Streams and Floodplains Impact Evaluation. If wetland is contiguous to a lake or other water body, complete Factor Sheet C-3, Lake or Water Body Impact Evaluation.

	Wetland 7		Wetland 8		Wetland 9	
Name (if known) or wetland number[1]	W-LOOP 5		W-LOOP 6		W-LOOP 7	
Location (Section-Township-Range)	26-T7-R10		26-T7-R10		26-T7-R10	
Location (Latitude, Longitude)	43°2'43"N, 89°16'31"W		43°2'32"N, 89°16'35"W		43°2'36"N, 89°16'42"W	
Location Map	See Figure C-1.1		See Figure C-1.1		See Figure C-1.1	
Wetland Type(s)[2]	M, SM		SS, M, SM, WS		SS, M, SM	
Wetland Loss	Acres: 0.02		Acres: 2.84		Acres: 0.01	
Wetland is: (Check all that apply)[3]	Yes	No	Yes	No	Yes	No
• Isolated from stream, lake or other surface water body	X		X		X	
• Not contiguous (in contact with) a stream, lake, or other water body, but within 100-year floodplain	X		X		X	
• If adjacent or contiguous, identify stream, lake or water body						
	Wetland 10		**Wetland 11**		**Wetland 12**	
Name (if known) or wetland number[1]	W-LOOP 8		W-9		W-LOOP 13A	
Location (Section-Township-Range)	26-T7-R10		26-T7-R10		26-T7-R10	
Location (Latitude, Longitude)	43°2'41"N, 89°16'46"W		43°2'25"N, 89°16'26"W		43°2'51"N, 89°16'38"W	
Location Map	See Figure C-1.1		See Figure C-1.1		See Figure C-1.1	
Wetland Type(s)[2]	SS, M, SM, WS		SS, M, WS		SS, M	
Wetland Loss	Acres: 0.06		Acres: 0.30		Acres: 0.01	
Wetland is: (Check all that apply)[3]	Yes	No	Yes	No	Yes	No
• Isolated from stream, lake or other surface water body	X		X		X	
• Not contiguous (in contact with) a stream, lake, or other water body, but within 100-year floodplain	X		X		X	
• If adjacent or contiguous, identify stream, lake or water body						
	Wetland 13					
Name (if known) or wetland number[1]	W-LOOP 13B					
Location (Section-Township-Range)	26-T7-R10					
Location (Latitude, Longitude)	43°2'54"N, 89°16'36"W					
Location Map	See Figure C-1.1					
Wetland Type(s)[2]	SS, M, WS					
Wetland Loss	Acres: 0.29					
Wetland is: (Check all that apply)[3]	Yes	No				
• Isolated from stream, lake or other surface water body	X					
• Not contiguous (in contact with) a stream, lake, or other water body, but within 100-year floodplain	X		X			
• If adjacent or contiguous, identify stream, lake or water body						

Note; See footnote definitions on previous page

Figure C-1.1 – Wetland Location Maps

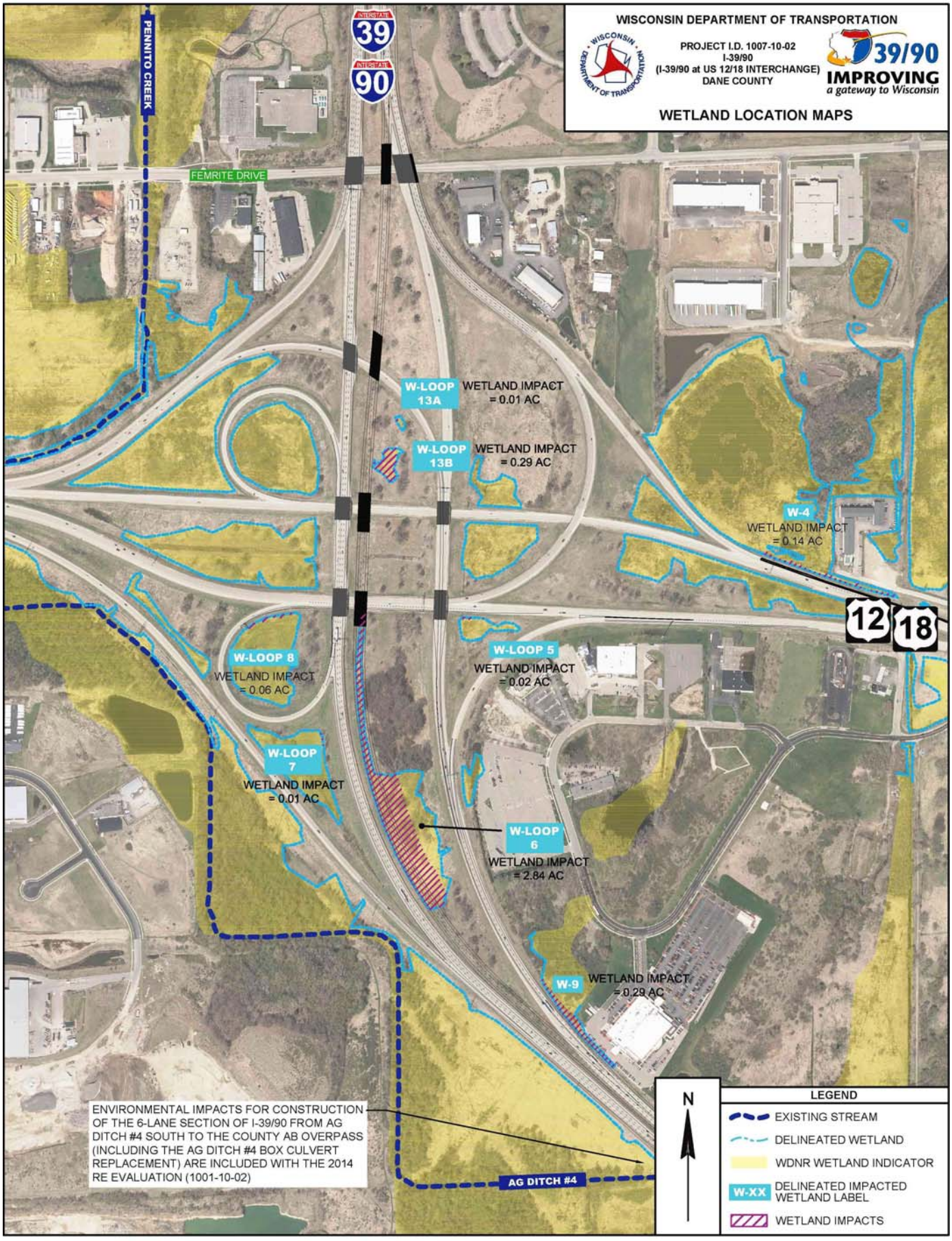
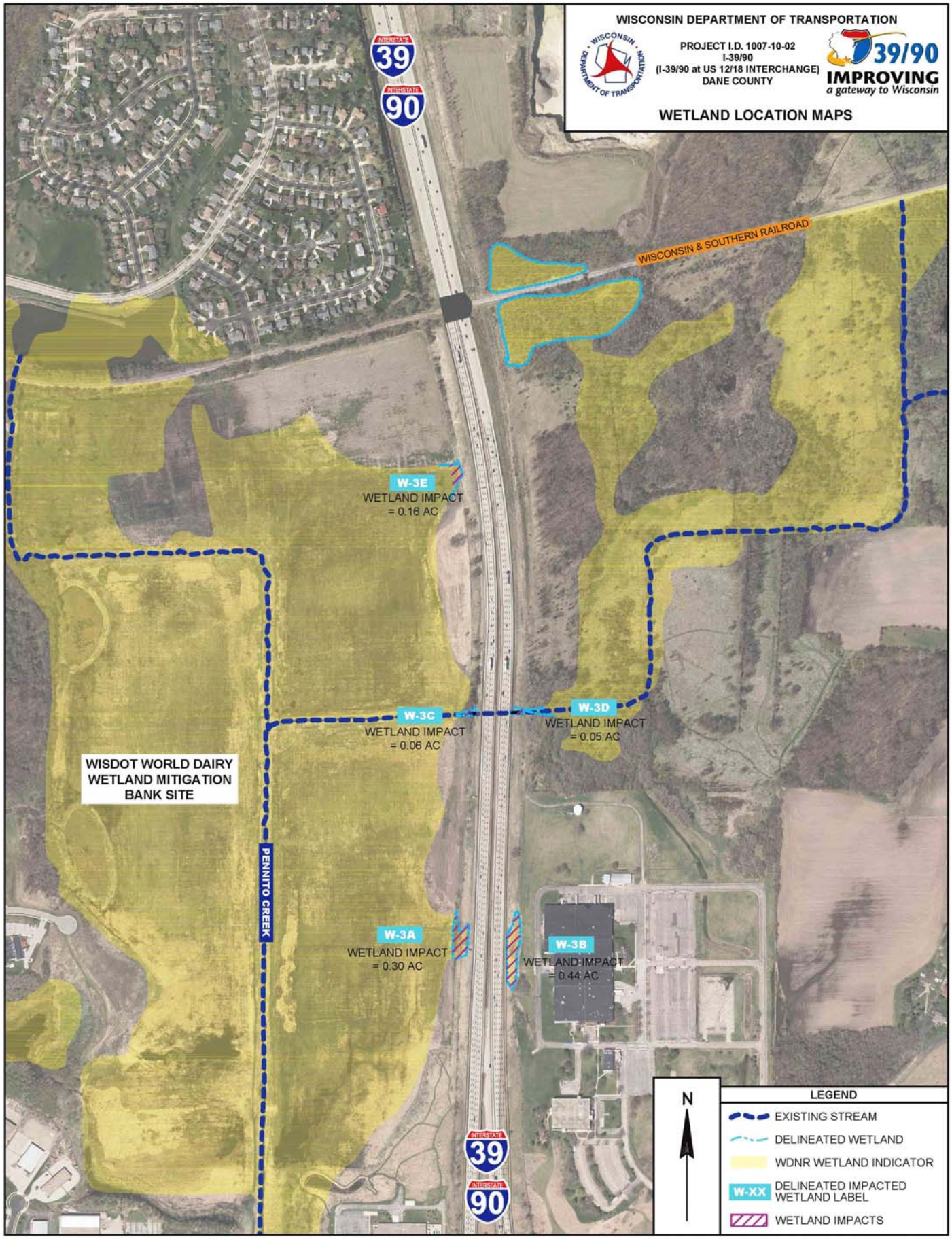


Figure C-1.2 – Wetland Location Maps



2. Are any impacted wetlands considered "wetlands of special status" per WisDOT Wetland Mitigation Banking Technical Guideline, page 10 (6 categories)?

☐ No
☒ Yes:
- ☐ Advanced Identification Program (ADID) Wetlands
- ☐ Public or private expenditure has been made to restore, protect, or ecologically manage the wetland on either public or private land
- ☒ Other – Describe: One of the properties impacted is the WisDOT World Dairy Center Wetland Mitigation Site. The 200-acre site is bound by I-39/90 to the east, a railroad corridor and residential development to the north, and industrial and commercial development to the west and south. The mitigation site will restore and enhance up to 153.6 acres of wetland and to restore up to 12.2 acres of upland prairie to serve as upland buffer. The upland areas along the northern and eastern periphery of the mitigation site were seeded with a native mesic prairie seed mix to allow for a transition from the wet meadow community to upland. The upland buffer is managed in conjunction with the adjacent wetlands. Municipal easements, utility easements, and grassed "buffers" along the waterways were excluded from the mitigation acreage. None of the 165.8 acres eligible for mitigation credit will be impacted by the project; the impacts will be limited to a 40-foot "buffer" area that was reserved during the development of the mitigation site in anticipation for future highway use.

3. Describe proposed work in the wetland(s), e.g., excavation, fill, marsh disposal, other:

The work will involve excavation, placement of fill, grading, and drainage work. Work will also include changes to base course, concrete/asphaltic pavements, and adjustments to utilities.

4. List any observed or expected waterfowl and wildlife inhabiting or dependent upon the wetland: (List should include permanent, migratory and seasonal residents).

Expected wildlife and waterfowl in the wetland areas near the Proposed Action may include: various reptiles and amphibians, white-tailed deer, rabbits, pheasant, muskrat, beaver, mink, weasel, raccoon, skunk, fox, coyote, duck, mallard and songbirds.

Under the U.S. Migratory Bird Treaty Act, destruction of swallows and other migratory birds or their nests is unlawful unless a permit has been obtained from the U.S. Fish & Wildlife Service (USFWS). The project will utilize measures to prevent nesting (e.g., remove unoccupied nests during the non-nesting season and install barrier netting prior to May 1). The non-nesting season occurs between August 30 and May 1. If netting is used, it will be properly maintained, then removed as soon as the nesting period is over. If netting is not practicable and work cannot be completed during the non-nesting season, then the USFWS will be contacted to apply for a depredation permit.

5. Federal Highway Administration (FHWA) Wetland Policy

☐ Not Applicable – Explain:
☐ Individual Wetland Finding Required - Summarize why there are no practicable alternatives to the use of the wetland
☒ Statewide Wetland Finding: **NOTE: All three boxes below must be checked for the Statewide Wetland Finding to apply**
- ☒ Project is either a bridge replacement or other reconstruction within 0.3 mile of the existing location.
- ☒ The project requires the use of 7.4 acres or less of wetlands.
- ☒ The project has been coordinated with the DNR and there have been no significant concerns expressed over the proposed use of the wetlands.

6. Erosion control or storm water management practices which will be used to protect the wetland are indicated on form: (Check all that apply)

☒ Factor Sheet D-6, Erosion Control Evaluation.
☒ Factor Sheet D-5, Stormwater Evaluation.
☐ Neither Factor Sheet - Briefly describe measures to be used:

7. US Army Corps of Engineers (USACE) Jurisdiction - Section 404 Permit (Clean Water Act)

☐ Not Applicable - No fill to be placed in wetlands or wetlands are not under USACE jurisdiction.
☒ Applicable - Fill will be placed in wetlands under the jurisdiction of the USACE.
Indicate area of wetlands filled: 5 Acres

Type of 404 permit anticipated:

☒ Individual Section 404 Permit required
☐ General Permit (GP) or Letter Of Permission (LOP) required to satisfy Section 404 Compliance.

Indicate which GP or LOP is required:

- ☐ **Non-Reporting GP** [GP-002-WI (*expires 5/31/16*) or GP-004-WI (*expires 12/31/17*)]
- ☐ **Reporting GP** [GP-002-WI, GP-003-WI (*expires12/31/17*), or GP-004-WI]
- ☐ **Letter of Permission** [LOP-06-WI (*in effect 4/17/06, no expiration date*)]
- ☐ **Programmatic GP** [Applies to projects not covered under the DOT/DNR Cooperative Agreement]

8. Wisconsin Department of Natural Resources Coordination - Section 401 Water Quality Certification

☒ DNR provided concurrence on the project wetland delineation on 11/12/2013. A Wetland Verification Summary Memo for the area was sent to WDNR on 02/21/2018. WDNR provided concurrence on 03/14/2018.
☐ Other- Explain:

9. Section 10 Waters (Rivers and Harbors Act). For navigable waters of the United States (Section 10) indicate which 404 permit is required:

☒ No Section 10 Waters
☐ Section 10 Waters

- ☐ **Reporting GP** [GP-003-WI (*expires12/31/17*)]
- ☐ **Reporting GP** [GP-004-WI (*expires 12/31/17*)]

Indicate whether Pre-Construction Notification (PCN) to the USACE is:

☐ Not applicable.
☒ Required – Submitted on: The PCN will be submitted during final design. (Date)

Status of PCN
USACE has made the following determination on: (Date)

USACE is in the process of review, anticipated date of determination is: (Date)

10. Wetland Avoidance and Impact Minimization: [Note: Required before compensation is acceptable]

A. Wetland Avoidance:

1. Describe methods used to avoid the use of wetlands, such as using a lower level of improvement or placing the roadway on new location, etc.:

   Due to the vast amount of wetlands in the Yahara River and Lake Monona Watershed, in which the Beltline Interchange is located, it is not possible or practicable to completely avoid wetland impacts with any of the alternatives, including the Preferred Alternative. Figures C-1.1 and C-1.2, and **Appendix D – Preferred Alternative and Impact Exhibits** demonstrate the extent of existing wetlands in and surrounding the project limits. The watershed is approximately 59,985 acres in size and has 5,159 acres of wetlands.[5]

2. Indicate the total area of wetlands avoided: 0 acres

B. Minimize the amount of wetlands affected:

1. Describe methods used to minimize the use of wetlands, such as increasing side slopes or use of retaining walls or beam guard, equalizer pipes, upland disposal of hydric soils, etc.:

   Side slopes will be examined during final design for steepening to minimize wetland impacts when possible without sacrificing safety features. Fill slopes will be 4:1 minimum inside the clear zone and will steepen to 3:1 or 2.5:1 outside of the clear zone in order to minimize impacts to wetlands. Ditches will be necessary to convey water outside of the roadway and to maintain water quality. Minimum ditch slopes and elevations will be utilized to the extent that is practical to minimize impacts. Ditch foreslopes will be 4:1 and backslopes will break from 6:1 to 4:1 or steeper to avoid wetland impacts while maintaining traversable ditches where required.

[5] https://dnr.wi.gov/water/watershedDetail.aspx?key=924664

2. Indicate the total area of wetlands saved through minimization:

   With minimization efforts, it is anticipated that approximately 0.5 acres of wetlands could be saved from the estimated 5 acres that are expected to be filled.

11. Compensation for Unavoidable Wetland Loss

According to Section 404(b)(1), of the Clean Water Act, wetland compensatory mitigation procedures and sequencing will conform to the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) joint rule on Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332; and 40 CFR Part 230 dated April 10, 2008). Compensatory mitigation will be consistent with amendments to the Cooperative Agreement between DNR and WisDOT on compensatory mitigation for unavoidable wetland losses (July 2012), and the WisDOT Interagency Coordination Agreement and Wetland Mitigation Banking Technical Guidelines with DNR, USACE, EPA, USFWS and FHWA (March 2002).

	Type	Acre(s) Loss	Ratio	Compensation Type and Acreage	
				On-site	World Dairy Wetland Mitigation Site
RPF(N)	Riparian wetland (wooded)	0.08	1.5:1		M
RPF(D)	Degraded riparian wetland (wooded)				
RPE(N)	Riparian wetland (emergent)	0.03	1.3:1		M
RPE(D)	Degraded riparian wetland (emergent)				
M(N)	Wet and sedge meadows, wet prairie, vernal pools, fens	2.91	1:1		M
M(D)	Degraded meadow				
SM	Shallow marsh	0.26	1:1		M
DM	Deep marsh	0.04	1:1		M
AB(N)	Aquatic bed				
AB(D)	Degraded aquatic bed				
SS	Shrub Swamp, shrub carr, alder thicket	0.53	1:1		M
WS(N)	Wooded swamp	0.80	1.2:1		M
WS(D)	Degraded wooded swamp				
Bog	Open and forested bogs				

D = Degraded, N = Non-degraded

The WisDOT World Dairy Wetland Mitigation Site serves as a wetland mitigation bank to compensate for wetland impacts from this proposed project. The 200-acre site is bound by I-39/90 to the east, a railroad corridor and residential development to the north, and industrial and commercial development to the west and south. The mitigation site is within the drainage area and floristic province.

12. If compensation is not possible within the drainage area and floristic province thru the use of the DOT mitigation bank, explain why and describe how a search for an on-site compensation site was conducted:

N/A – the WisDOT World Dairy Center Wetland Mitigation Site is within the drainage area and floristic province, immediately adjacent to the project.

13. Summarize the coordination with other agencies regarding the compensation for unavoidable wetland losses. Attach appropriate correspondence.

In a letter dated June 21, 2018, WDNR stated that unavoidable wetland losses must be compensated for in accordance with the DNR/WisDOT Cooperative Agreement and the WisDOT Wetland Mitigation Banking Technical Guidelines. Per the Agreement, mitigation banking is the preferred compensation option; however, other practicable and ecologically valuable project specific opportunities may be pursued on a case-by-case basis.

The mitigation bank site to be debited for this project is the World Dairy Wetland Mitigation Bank, located in the project area, Dane County, Wisconsin. Agency coordination will continue throughout the design process.

Factor Sheet C-2

Alternative	Total Length of Center Line of Existing Roadway 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None identified	

1. Stream Name: Pennito Creek

2. Stream Type: (Indicate Trout Stream Class, if known)

☐ Unknown Cool-Cold Headwater, Shallow Lowland, Macroinvertebrate, Cool-Warm Headwater noted.
☒ Warm water
☐ Cold water. If trout stream, identify trout stream classification:
☐ Wild and Scenic River

3. Size of Upstream Watershed Area: (Square miles or acres)

The Yahara River and Lake Monona Watershed, located in Dane County, is approximately 59,985 acres in size. Within the watershed are 102 miles of streams and rivers, 6,275 acres of lakes and 5,159 acres of wetlands. The watershed is dominated by agriculture (22%), urban lands (16%), suburban areas (16%) and grasslands (15%).[6]

4. Stream flow characteristics

☒ Permanent Flow (year-round)
☐ Temporary Flow (dry part of year)

5. Stream Characteristics

A. Substrate:

☒ Sand
☒ Silt
☐ Clay
☐ Cobbles
☐ Other – Describe:

B. Average Water Depth: Unknown

C. Vegetation in Stream

☐ Absent
☒ Present - If known describe: Curly leaf pondweed and elodea.

D. Identify Aquatic Species Present: The waterway supports fish and other aquatic life.

E. If water quality data is available, include this information:

This tributary to Upper Mud Lake, has poor habitat due to low flows, channel straightening and sedimentation from farm field and urban runoff. Despite the poor habitat, its Family Biotic Index (FBI) indicates “very good” water quality. This FBI score, coupled with growth of curly leaf pondweed and elodea, indicate groundwater discharge and cool water temperatures.[7]

F. Is this river or stream on the WDNR’s “Impaired Waters” list?

☐ No
☒ Yes - List: Wisconsin’s 2018 Impaired Waters List

[6] Wisconsin Department of Natural Resources, Watershed – Yahara River and Lake Monona (LR08), Details https://dnr.wi.gov/water/watershedDetail.aspx?key=924664

[7] Wisconsin Department of Natural Resources, Watershed – Yahara River and Lake Monona (LR08), Overview https://dnr.wi.gov/water/waterDetail.aspx?WBIC=804100

6. If bridge or box culvert replacement, are migratory bird nests present?

☐ Not Applicable:
☒ None identified
☐ Yes – Identify Bird Species present
Estimated number of nests:

7. Is a Fish & Wildlife Depredation Permit required to remove swallow nests?

☐ Not Applicable
☐ Yes
☒ No - Describe mitigation measures: The project requires the box culvert at Pennito Creek to be extended at both ends. Measures will need to be taken by the contractor to prevent nesting by either removing unoccupied nests during the non-nesting season or by installing barrier netting prior to May 1; if this is not possible, the contractor will only be allowed to complete work at the box culvert between August 30 and May 1 (non-nesting season).

8. Describe land adjacent to stream:

The dominant land use within the project area is agricultural. A WisDOT wetland mitigation bank site, other wetland areas, and commercial uses are located immediately adjacent to Pennito Creek.

9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:

None identified.

10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment: [Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8]

The box culvert located at Pennito Creek (C-13-044) will be extended 35 feet to the east of I-39/90 and 27 feet to the west. The existing single cell culvert is 12 feet wide x 10 feet high x 194 feet long. The culvert is located within the 100-year floodplain and is a crossing encroachment (see **Table C-2.1**).

Table C-2.1 – 100-Year Floodplain Impacts

Stream	Crossing Encroachment (acres)	Longitudinal Encroachment (acres)
Pennito Creek	0.74	0.15
Tributary to Pennito Creek (Ag Ditch #4)	-	0.55
Subtotal:	0.74	0.70
Total:	1.44	

11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:

Fill within the floodplain is not expected to increase backwater. Any future construction would comply with the National Flood Insurance Program, NR 116 and Executive Order 73. New construction would be planned and constructed in such a way as to comply with local floodplain development plans. Culverts would be sized to prevent creation of new backwater.

12. Describe and provide the results of coordination with any floodplain zoning authority:

The requirements in NR 116 will be met with the project. Dane County, the local floodplain zoning authority, was included on initial project scoping and invited to all Local Official Meetings and Public Involvement Meetings. Additional coordination with Dane County will occur when changes to floodplains are known during final design.

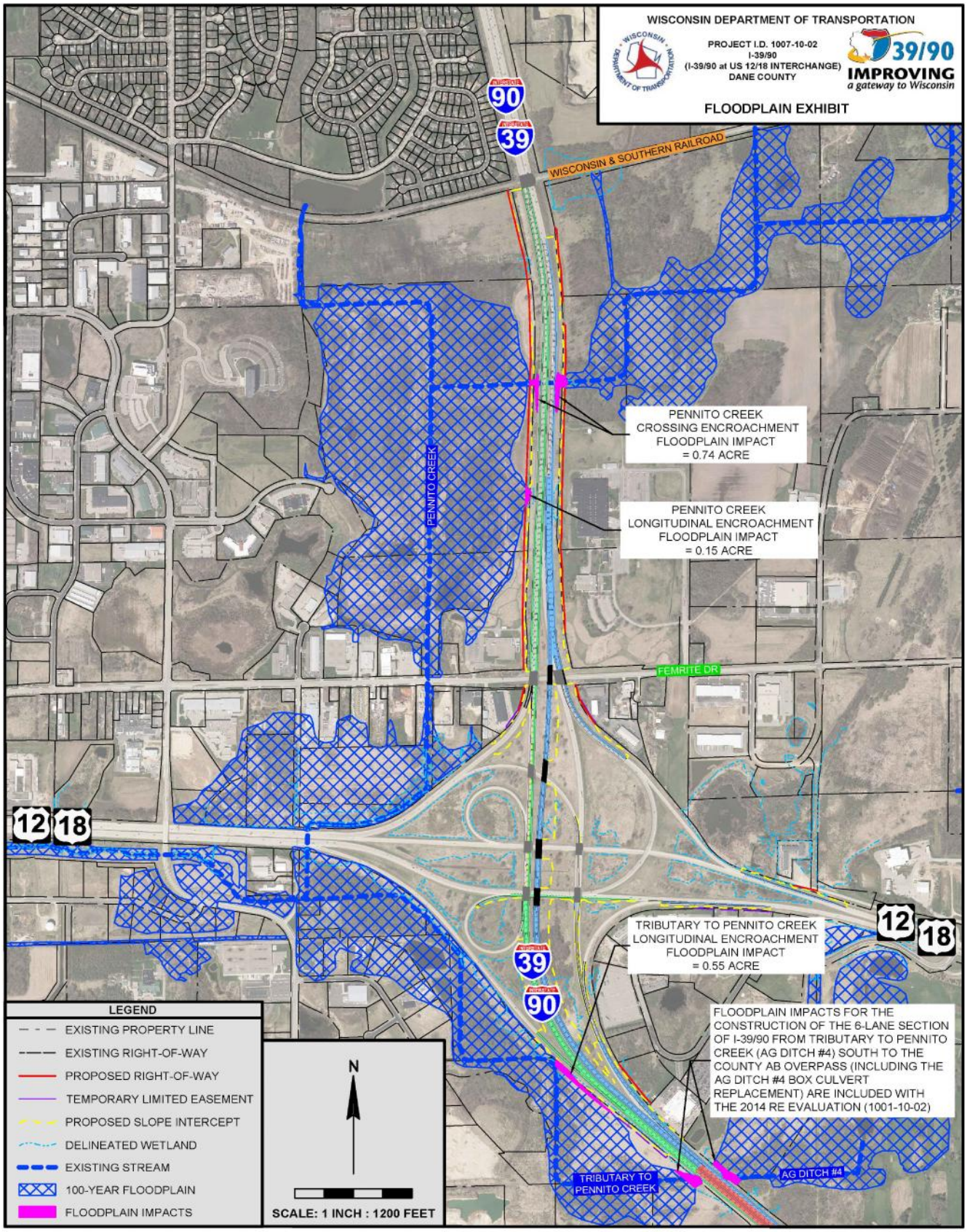
13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?

☒ No impacts would occur.
☐ Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
☐ Significant flooding with a potential for property loss and a hazard to life.
☐ Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, open space, aesthetics, etc.

14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:

The existing floodplain is predominately wetland, with some of the areas classified as agricultural use. Fill within the floodplain is not expected to increase backwater. Roadway improvements for the project are anticipated to impact approximately 1.44 acres of the 370 acres of 100-year floodplain located within the project area (see **Figure C-2.1**).

Figure C-2.1 – 100-Year Floodplain Exhibit



15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:

No adverse impacts to water quality are expected within floodplain during and after construction. Wis. Adm. Code Trans 401 *Construction Site Erosion Control and Storm Water Management Procedures for Department Actions* will apply to this project. Best management practices (BMP's) for TSS reduction by use of flatter roadside slopes and longitudinal ditches will be applied to have no increased adverse effect on plants, animals, or fish.

16. Are measures proposed to enhance beneficial effects?

☐ No
☒ Yes

WisDOT, through TRANS 401 and Cooperative Agreement, would comply with the substantive permit requirements of Chapter 147 Wis. Stats. Wisconsin Pollutant Discharge Elimination System. Additionally, erosion control measures implemented during construction would conform to the standard specifications listed in WisDOT's Standard Specifications for Road and Bridge Construction and the Wisconsin Storm Water Management Technical Standards.

Some of the BMP's could include silt fence, bale checks, temporary sediment basins, detention basins, and incorporating infiltration. Incorporating these BMP's into the design of the project may help to manage storm water runoff and maintain/improve water quality on a permanent basis.

UPLAND WILDLIFE AND HABITAT EVALUATION

Wisconsin Department of Transportation

Factor Sheet C-5

Alternative I-39/90 & US 12/18 Beltline Interchange: ALT C	Total Length of Center Line of Existing Roadway 2.37 miles Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Proposed Work in Upland Areas:

A. Describe the nature of proposed work in the upland habitat area (e.g., grading, clearing, grubbing, etc.):

The Proposed Action will require clearing and grubbing, removal of topsoil and grading in upland areas during construction and will require the permanent conversion of approximately 0.2 acres of uplands (see **Appendix D - Preferred Alternative and Impact Exhibits**).

2. Vegetation/Habitat:

A. Give a brief description of the upland habitat area. Include prominent plant community(ies) at the project site (list vegetation with a brief description of each community type if more than one present).

The project area is primarily rural in nature and consists of uplands, agricultural land, rural open space and wetlands. Uplands in the project area consist primarily of grasses, shrubs and trees.

There is an active wetland and upland habitat restoration at the WisDOT World Dairy Center Wetland Mitigation Bank Site adjacent to the southbound lanes from the Wisconsin & Southern Railroad line to the southbound to westbound ramp to US 12/18. The overall objective for the mitigation site is to restore historically drained wetlands, enhance existing wetlands, and restore native prairie in upland buffer areas to compensate for the filling of jurisdictional wetlands during future transportation construction projects. Specific functions of the restored wetlands include water quality protection, flood and storm attenuation, groundwater protection, and native plant and wildlife habitat. Upland buffer consists of tallgrass prairie restoration areas in the northeast corner and eastern mitigation site perimeter. Impacts from erosion and channel cutting over time and the transport of invasive species occur from ditched areas along the interstate that are poorly drained.

B. Will the project result in changes in the vegetative cover of the roadside?

The roadside areas that will be disturbed as a result of the Proposed Action will be restored after construction. The existing northbound lanes that will be removed will be restored.

The Site plan for the World Dairy Center mitigation site, includes a 40-foot buffer along the eastern property boundary that may be impacted by the proposed expansion of the I-39/90 corridor. The existing vegetated berm will be maintained and made contiguous along the mitigation site during the final ditch grading, and will be restored after construction. Areas outside of the shoulder will be managed by controlling invasive and weedy plant species and by increasing species diversity through installation of native seed mixes. Separation of highway stormwater ditching from the mitigation site will be incorporated into the final stormwater management plans.

3. Wildlife:

A. Identify and describe any observed or expected wildlife associations with the plant community(ies) listed in question #1:

Common types of wildlife species found in southern Wisconsin that will be expected to be in the project area include: various songbird species, crows, turkeys, raccoon, squirrels, waterfowl, herpitiles, raptors, and whitetail deer.

B. Identify and describe any known wildlife or bird use areas or movement corridors that will be severed or affected by the proposed action:

The Site plan for the World Dairy Center mitigation site, includes a 40-foot buffer along the eastern property boundary that may be impacted by the proposed expansion of the I-39/90 corridor. Several species have been identified at the World Dairy Center mitigation site which is adjacent to the southbound lanes on the north leg of the Beltline Interchange.

The most recent mitigation site monitoring report (2017) included the following wildlife observations:

- Birds observed incidentally while conducting Site management and monitoring included: American woodcock, Canada goose, wild turkey, sandhill crane, great blue heron, turkey vulture, red-tailed hawk, ring-billed gull, tree swallow, American robin, common yellowthroat, killdeer, sparrow sp., mallard, American goldfinch, red-winged blackbird, and various other waterfowl and songbirds.
- Reptiles and amphibians observed included common garter snake, chorus frog, and American toad.
- Observed mammals included white-tailed deer, Eastern mole, muskrat (signs of), groundhog, and Eastern cottontail.
- Insect observations included eastern tiger swallowtail, and various dragonflies and moths.

C. Discuss other direct impacts on wildlife and estimate significance:

There will be no known significant direct impacts to wildlife species. During construction, it is possible that some wildlife may be displaced. Suitable habitat exists in the project area to accommodate species that may be displaced during construction. It is not anticipated that there would be long-term effects to wildlife as a result of the Proposed Action.

D. Identify and discuss any probable indirect impacts on wildlife in the area expected due to the project:

The Proposed Action is not expected to cause unplanned indirect effects on wildlife in the project area. As previously noted, suitable wildlife habitat exists in the general project area and could likely accommodate any changes in wildlife habitat areas as a result of this project or other projects in the area.

E. Describe measures to avoid and/or minimize adverse effects or to enhance beneficial effects:

Measures to minimize adverse effects include the use of erosion control measures, re-vegetation of disturbed areas as soon as possible after construction, and implementation of standard maintenance practices throughout the project area and in upland area.

Appropriate special provisions for WisDOT I-39 Corridor native seed mixes, native shrubs and trees, and plantings for snow drift control will be incorporated into the project based on the soil types and slopes to promote a suitable ground cover for slope stabilization, for infiltration, to help minimize erosion, and for project restoration after construction. Native vegetation will be used minimize the need for future maintenance once established.

CONSTRUCTION STAGE SOUND QUALITY EVALUATION

Wisconsin Department of Transportation

Factor Sheet D-2

Alternative	Total Length of Center Line of Existing Roadway 2.37 miles
I-39/90 & US 12/18 Beltline Interchange: ALT C	Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Identify and describe residences, schools, libraries, or other noise sensitive areas near the proposed action and which will be in use during construction of the proposed action. Include the number of persons potentially affected:

The project area is primarily rural in nature and adjacent land use is a mix of vacant, commercial, and agricultural lands. Ho-Chunk Gaming Madison and Yahara Hills Golf Course are located southeast of the project area. There are no libraries or schools identified near the project area.

In addition to Ho-Chunk Gaming Madison and Yahara Hills Golf Course, there are approximately seven businesses located in the project area that could be affected by construction sound. Any potential effects are anticipated to be localized, temporary, and transient in nature.

2. Describe the types of construction equipment to be used on the project. Discuss the expected severity of noise levels including the frequency and duration of any anticipated high noise levels:

The noise generated by construction equipment will vary greatly, depending on equipment type/model/make, duration of operation and specific type of work effort. However, typical noise levels may occur in the 67 to 107 dBA range at a distance of 50 feet.

3. Describe the construction stage noise abatement measures to minimize identified adverse noise effects.

Check all that apply:

☒ WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply.
☐ WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply with the exception that the hours of operation requiring the engineer's written approval for operations will be changed to _____ P.M. until _____A.M.
☐ Special construction stage noise abatement measures will be required. Describe:

The types of construction equipment that are likely to be used on the project along with the corresponding maximum level allowed by the USEPA in decibels (dBA) at 50 ft. (15.2 m) from specific machines are listed below. Data was estimated from Figure 2-36 of the Report to the President and Congress on Noise, prepared by USEPA, February, 1972.

Earthmoving	Approx. Max. dBA Allowed
Compactors (Rollers)	71 – 75
Front Loaders	74 – 86
Backhoes	72 – 94
Tractors	77 – 97
Scrapers, Graders	80 – 84
Pavers	86 – 89
Trucks	82 – 94
Materials Handling	**Approx. Max. dBA Allowed**
Concrete Mixers	75 – 88
Concrete Pumps	82 – 85
Cranes (Moveable)	75 – 88
Cranes (Derrick)	86 – 88
Stationary	**Approx. Max. dBA Allowed**
Pumps	68 – 72
Generators	72 – 83
Compressors	76 – 87
Impact Equipment	**Approx. Max. dBA Allowed**
Pneumatic Wrenches	82 – 88
Jack Hammers and Rock Drills	81 – 98
Impact Pile Drivers (Peaks)	93 – 106
Other	**Approx. Max. dBA Allowed**
Vibrator	68 – 82
Saws	72 – 83

TRAFFIC NOISE EVALUATION

Wisconsin Department of Transportation

Factor Sheet D-3

Alternative Alternative B	Total Length of Center Line of Existing Roadway 4.75 mi Length of This Alternative 4.75 mi
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Need for Sound Level Analysis:

Is the proposed action considered a Type I project or WisDOT Retrofit Project per FDM 23-10-1?

☐ No – Complete only Factor Sheet D-2, Construction Stage Sound Quality Evaluation.

☒ Yes – Complete Factor Sheet D-2, Construction Stage Sound Quality Evaluation, and the rest of this sheet.

2. Traffic Data:

Indicate whether traffic volumes for sound prediction are different from the Design Hourly Volume (DHV) on Basic Sheet 6, Traffic Summary Matrix*:*

☒ No

☐ Yes – Indicate volumes and explain why they were used:

Automobiles	Veh/hr
Trucks	Veh/hr
Or Percentage (T)	%

3. Sound Level Analysis Technique

Identify and describe the noise analysis technique or program used to identify existing and future sound levels: (See attached receptor location map as Exhibit D-3.1). A receptor location map must be included with this document.

Federal Highway Administration (FHWA) Traffic Noise Model 2.5 (TNM) was used for this noise analysis. TNM is FHWA's computer program for predicting and analyzing highway traffic noise. TNM computes highway traffic noise at chosen receiver locations near to the noise source and aids in noise barrier analysis.

Existing and future noise levels along I-39/90 were modeled with TNM 2.5. Future noise levels are based on forecasted year 2040 traffic volumes.

4. Sensitive Receptors

Identify sensitive receptors, e.g., schools, libraries, hospitals, residences, etc. potentially affected by traffic sound: (See attached receptor location map – Exhibit D-3.1).

The project limits for the proposed I-39/90 expansion has 10 single-family residences, 1 apartment building, various commercial businesses, and a future trail crossing. Receiver numbers G1, G2, G3, G4, G5, and G6 represent Yahara Hills Golf Course which is a public golf course and Section 4(f) resource. Receivers that are representative of sensitive receptors within the project area are shown on Exhibit D-3.1.

5. Noise Impacts

If this proposal is implemented will future sound levels produce a noise impact?

☐ No

☒ Yes - The impact will occur because:

- ☒ The Noise Level Criteria (NLC) is approached (1 dBA less than the NLC) or exceeded.
- ☐ Existing sound levels will increase by 15 dBA or more.

6. Abatement

Will traffic noise abatement measures be implemented?

☐ Not applicable – Traffic noise impacts will not occur.

☒ No – Traffic noise abatement is not reasonable or feasible (explain why). In areas currently undeveloped, local units of government shall be notified of predicted sound levels for land use planning purposes. **A COPY OF THIS WRITTEN NOTIFICATION SHALL BE INCLUDED WITH THE FINAL ENVIRONMENTAL DOCUMENT.**

☐ Yes – Traffic noise abatement has been determined to be feasible and reasonable. Describe any traffic noise abatement measures which are proposed to be implemented. Explain how it will be determined whether or not those measures will be implemented:

Receivers representing locations of sensitive receptors having noise impacts under the proposed alternative are identified in Table D-3.1.

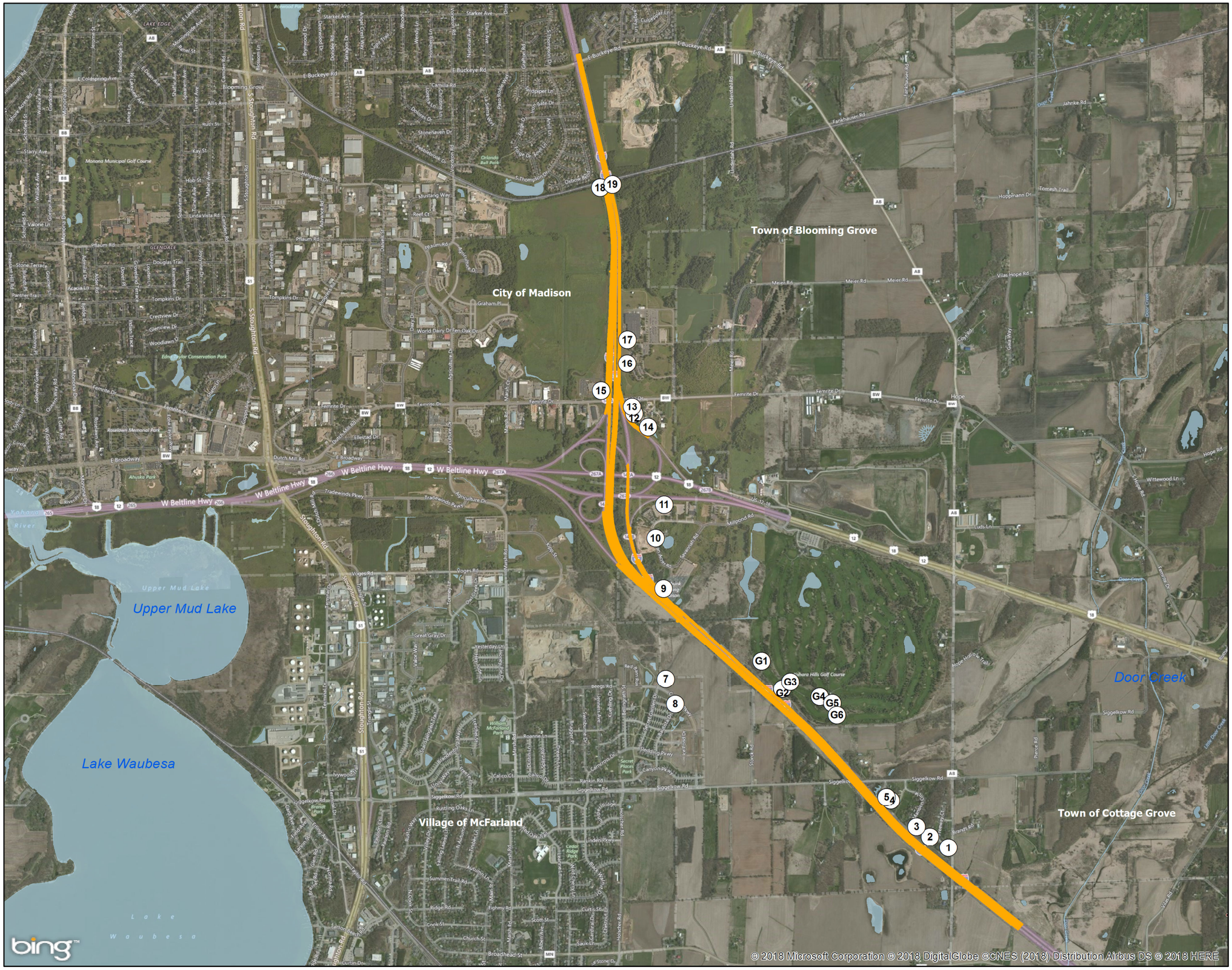
When traffic noise impacts occur, measures to reduce or eliminate impacts should be considered by the project sponsor where such impacts are determined to be “reasonable and feasible”. Noise abatement is considered reasonable if the cost of the abatement is less than $47,000 per benefited receptor. Barriers are considered feasible where terrain, access, safety or other physical constraints do not preclude them, and where they are able to achieve a substantial noise reduction.

A noise barrier analysis was conducted at seven distinct locations along the corridor using the TNM model for all impacted receptors along the project to determine if noise abatement was reasonable and feasible. The barrier was placed within the existing or proposed right-of-way so as to not interfere with vehicular sight distances. The barrier locations are indicated on Exhibit D-3.2A through D-3.2E. The height and length of each noise barrier was set with a noise reduction goal of 8 decibels per benefited receptor. At an average cost of $28 per square foot (WisDOT, 2018), an estimated barrier cost was determined for each barrier. Based on noise barrier modeling and the number of receptor units benefiting from each individual barrier, the proposed noise barriers were not determined to be reasonable or feasible for noise abatement at any of the locations since the cost would exceed $47,000 per benefited receptor, as shown in Exhibit D-3.3.

Table D-3.1

			Sound Level L_{eq}[1] (dBA)			Impact Evaluation		
Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families or People Typical of this Receptor Site	Noise Level Criteria[2] (NLC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Level Criteria (Col. e minus Col. d)	Impact[3] or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	379’	1	67	67	63	4	0	I
2	308’	1	67	72	69	3	5	I
3	284’	2	67	72	68	4	5	I
4	285’	1	67	73	71	2	4	I
5	264’	1	67	73	71	2	4	I
G1	434’	Recreation Area	67	68	64	4	1	I
G2	263’	Recreation Area	67	71	68	3	4	I
G3	521’	Recreation Area	67	67	63	4	0	I
G4	726’	Recreation Area	67	64	60	4	-3	N
G5	818’	Recreation Area	67	64	60	4	-3	N
G6	691’	Recreation Area	67	65	61	4	-2	N
7	1290’	1	67	57	55	2	-10	N
8	1592’	3	67	55	53	2	-12	N
9	131’	1 commercial	72	74	73	1	2	I
10	573’	16	67	63	63	0	-4	N
11	132’	2 commercial	72	67	66	1	-5	N
12	182’	1 commercial	72	69	68	1	-3	N
13	208’	1 commercial	72	70	69	1	-2	N
14	179’	1 commercial	72	66	64	2	-6	N
15	162’	1 commercial	72	73	71	2	1	I
16	222’	1 commercial	72	73	68	5	1	I
17	226’	1 commercial	72	73	69	4	1	I
18	110’	Future trail	67	72	72	0	5	I
19	93’	Future trail	67	70	70	0	3	I

[1] Use whole numbers only.
[2] Insert the actual Noise Level Criteria from FDM 23-30, Table 1.
[3] An impact occurs when future sound levels exceed existing sound levels by 15 dB or more, **or**, future sound levels approach or exceed the Noise Level Criteria (“approach” is defined as 1 dB less than the Noise Level Criteria, therefore an impact occurs when Column (h) is –1 dB or greater). I = Impact, N = No Impact.



39/90 IMPROVING
a gateway to Wisconsin

Exhibit D-3.1

I-39/90 and US 12/18
Interchange
(Beltline Interchange)

WisDOT ID:
1007-10-02
Dane County, WI

Legend

- (5) Noise Receivers/Receptors
- Project Location
- Municipal Boundary
- Water

Miles
0 0.25 0.5

N

39/90 IMPROVING
a gateway to Wisconsin

Exhibit D-3.2A

I-39/90 and US 12/18
Interchange
(Beltline Interchange)

WisDOT ID:
1007-10-02
Dane County, WI

Legend

Noise Receivers

- (5) Impacted Noise Receiver / Receptor Location
- (5) Non-Impacted Noise Receiver / Receptor Location
- Study Location
- Proposed Barrier Limits
- Municipal Boundary
- Water

0 0.05 0.1 Miles

N

39/90 IMPROVING
a gateway to Wisconsin

Exhibit D-3.2B

I-39/90 and US 12/18
Interchange
(Beltline Interchange)

WisDOT ID:
1007-10-02
Dane County, WI

Legend

Noise Receivers

- 5 Impacted Noise Reciever / Receptor Location
- 5 Non-Impacted Noise Reciever / Receptor Location
- Study Location
- Proposed Barrier Limits
- Municipal Boundary
- Water

Miles
0 0.05 0.1

39/90 IMPROVING
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Exhibit D-3.2C

I-39/90 and US 12/18
Interchange
(Beltline Interchange)

WisDOT ID:
1007-10-02
Dane County, WI

Legend

Noise Receivers

- 5 Impacted Noise Receiver / Receptor Location
- 5 Non-Impacted Noise Receiver / Receptor Location
- Study Location
- Proposed Barrier Limits
- Municipal Boundary
- Water

0 0.05 0.1 Miles

39/90 IMPROVING
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Exhibit D-3.2D

I-39/90 and US 12/18
Interchange
(Beltline Interchange)

WisDOT ID:
1007-10-02
Dane County, WI

Legend

Noise Receivers

- (5) Impacted Noise Receiver / Receptor Location
- (5) Non-Impacted Noise Receiver / Receptor Location
- Study Location
- Proposed Barrier Limits
- Municipal Boundary
- Water

0 0.05 0.1 Miles

39/90 IMPROVING
a gateway to Wisconsin

Exhibit D-3.2E

I-39/90 and US 12/18
Interchange
(Beltline Interchange)

WisDOT ID:
1007-10-02
Dane County, WI

Legend

Noise Receivers

- (5) Impacted Noise Receiver / Receptor Location
- (5) Non-Impacted Noise Receiver / Receptor Location
- Study Location
- Proposed Barrier Limits
- Municipal Boundary
- Water

0 0.05 0.1 Miles

N

Exhibit D-3.3
Barrier Analysis Documentation

Noise Barrier Number	Wall Length Modeled (ft)	Average Wall Height Modeled (ft)	Estimated Wall Cost @ $28/SF	Receiver Number Protected	# of Units Represented by Each Receiver	Noise Reduction at Each Unit (dBA)	Noise Reduction Goal for Reasonable-ness (dBA)	Does Barrier Meet Reasonable-ness Decibel Reduction Goal? (Y/N)	Average Barrier Cost per Unit	Is Barrier Cost Reasonable (<$47,000/Unit) (Y/N)
1	1960	26	$1,426,880	1 2 3 4 5	1 1 2 1 1	1.2 8.0 10.2 8.0 6.8	8 8 8 8 8	N Y Y Y N	$356,720	N
2	2247	20	$1,258,320	G1 G2 G3	1 unit 1 unit 1 unit	6.4 9.6 6.9	8 8 8	N Y N	$419,440	N
3	543	17	$258,468	9	1	8.0	8	N	$258,468	N
4	400	20	$224,000	15	1	6.1	8	N	$224,000	N
5	1240	15.4	$535,264	16 17	1 1	8.2 8.0	8 8	Y Y	$267,344	N
6	180	10	$50,400	18	1 unit	1.5	8	N	$50,400	N
7	260	10	$72,800	19	1 unit	4.0	8	N	$72,800	N

HAZARDOUS SUBSTANCES, CONTAMINATION and ASBESTOS EVALUATION

Wisconsin Department of Transportation

Factor Sheet D-4

Alternative I-39/90 & US 12/18 Beltline Interchange: ALT C	Total Length of Center Line of Existing Roadway 2.37 miles Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Briefly describe the results of the Phase 1 Hazardous Materials Assessment for this alternative. Do not use property identifiers including owner name, address or business name. Attach additional sheets if necessary.

Site Reference #	Land Use of Concern (Past or Present)	Contaminants of Concern	Phase 1 Recommendations (No further action, or is a phase 2, 2.5 or 3 recommended for this site, and why?)
B	Data Center Facility (spill associated with an aboveground storage tank)	Diesel Fuel	No further action.
C	Light Industry (release due to manufacturing process)	Volatile Organic Compounds (VOCs); Chlorinated Solvents; Petroleum Products	Special provisions are recommended for the removal and disposal of contaminated materials encountered during construction. No further action.
E	Highway Right-of-Way (overturned tanker truck)	Unleaded Gasoline	No further action.

Additional comments: Based on the findings of the report titled "*Addendum to the Phase 1 – Reconnaissance Investigation and Record Research and Report"* completed for the Beltline Interchange (dated 10/21/2013), no additional investigations are recommended for the project. The Site Reference #'s listed in the table above refer to the report appendices that the sites are documented in. The report is located in the project files and is available for review upon request.

2. Were any parcels not included in the Phase 1 assessment?

☒ No
☐ Yes – How many:
Why were the parcels not reviewed?

3. Are there any sites with continuing obligations or deed restrictions?

☐ No
☒ Yes – Complete the table for each site closed with continuing obligations or deed restrictions.

Site Reference #	Soil or Excavation Restrictions	Groundwater Restrictions	Cover Restrictions	Other Restrictions	DNR Notification Required?
C	None – Contaminated soil is expected to be encountered within the proposed construction limits at an approximate depth of less than two feet.	None	None	None	☐ No ☒ Yes ☐ Yes, DNR has been notified; response is attached.

4. Have Phase 2, 2.5 or 3 Assessments been completed? Discuss the results.

No Phase 2 or 2.5 Assessments were recommended to be completed.

5. **Describe the results of any additional investigations performed by WisDOT or others (Include the number of sites investigated, the level of investigation and results for each site that relates to this project).**

   N/A

6. **Describe any design elements that have been incorporated into the alternative to avoid any contaminated sites.**

   N/A

7. **Describe the remediation and waste management practices to be included in the design for areas where contamination cannot be avoided (e.g., materials handling plan, remediation of contamination, design changes to minimize disturbances).**

   Design efforts will be made to reduce the roadway footprint and impacts to known sites with contamination. Contaminated soil is expected to be encountered within the proposed construction limits at an approximate depth of less than two feet. Special provisions will be included in the contract for the removal and disposal of any contamination encountered during construction and the anticipated plume of contamination denoted in the plan.

   There are several monitoring wells located within the proposed slope intercepts (Site C). The anticipated impact ranges between a 3-foot cut and 2-foot fill section. It is expected that the height of the existing monitoring well heights can be adjusted and that the wells will not need to be replaced. It is possible that prior to the start of construction some of the monitoring wells could be closed. WisDOT will contract with an environmental firm that will make any necessary adjustments to the monitoring wells located within the grading limits of the proposed project. Special provisions will be included in the contract detailing the on-site coordination that will needed for the monitoring wells.

   During the design process, a plan will be developed to address any contamination encountered during construction, and for the adjustment of any monitoring wells to the satisfaction of the WDNR, WisDOT Bureau of Technical Services – Environmental Services Section, and FHWA before advertising the project for letting.

8. **List any parcels with known contamination which are proposed for acquisition.**

   Site C (fee and TLE)

9. **Asbestos (**see **Appendix D - Preferred Alternative and Impact Exhibits** for structure locations)

   Have the bridges been inspected for the presence of asbestos containing material (ACM)?

   ☐ No – Explain:
   ☒ Yes – Fill out the table. Insert additional rows as needed.

Bridge Number	Results of Asbestos Sampling	Proposed Work (brief description)	List the Appropriate Special Provision
SB I-39/90 over Wisconsin & Southern Railroad (B-13-458)	No ACM detected	Widen structure to the west	N/A
SB I-39/90 over Wisconsin & Southern Railroad (B-13-459)	No ACM detected	No work proposed	N/A
SB I-39/90 over NB I-39/90 to WB US 12/18 off-ramp (B-13-461)	No ACM detected	No work proposed	N/A
SB I-39/90 over Femrite Drive (B-13-462)	No ACM detected	Widen structure to the west	N/A
NB I-39/90 over Femrite Drive (B-13-463)	No ACM detected	Widen structure to the east	N/A
SB I-39/90 over WB US 12/18 (B-13-464)	No ACM detected	No work proposed	N/A
NB I-39/90 over WB US 12/18 (B-13-465)	No ACM detected	No work proposed	N/A
SB I-39/90 over EB US 12/18 (B-13-466)	No ACM detected	No work proposed	N/A
NB I-39/90 over EB US 12/18 (B-13-467)	No ACM detected	No work proposed	N/A

Note: All buildings to be acquired and demolished or relocated require asbestos inspections and will be inspected once acquisition has taken place.

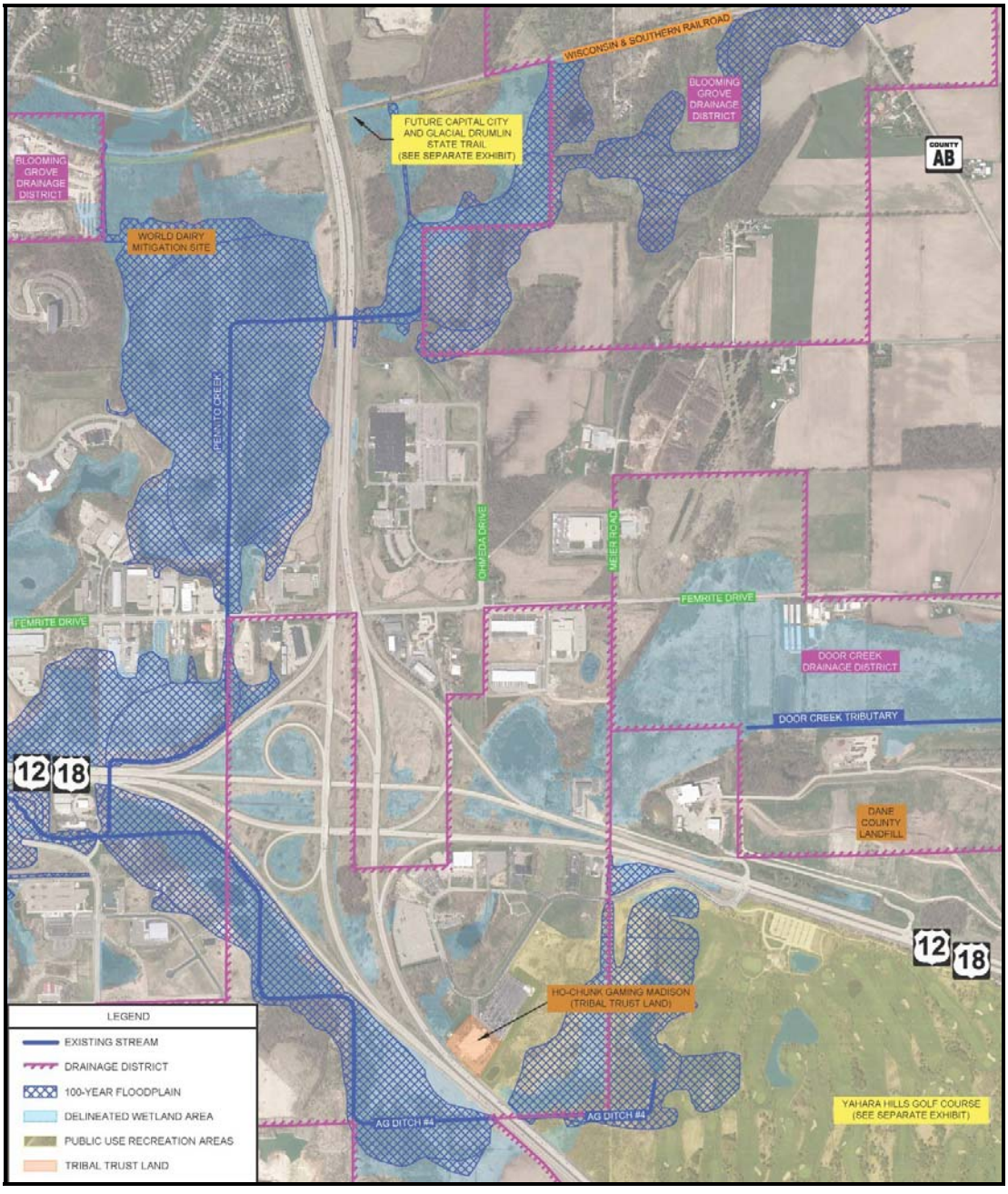
Factor Sheet D-5

Alternative I-39/90 & US 12/18 Beltline Interchange: ALT C	Total Length of Center Line of Existing Roadway 2.37 miles Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Indicate whether the proposed action may cause a discharge or will discharge to the waters of the state (Trans 401.03).

The project will discharge runoff to Pennito Creek (stream) within the project area, but not before being treated by being treated by WisDOT established erosion control best management practices (BMP's). Erosion control measures implemented during construction will conform to the standard specifications listed in WisDOT's Standard Specifications for Road and Bridge Construction and the Wisconsin Storm Water Management Technical Standards. An overview of the environmental resources in the project area are shown in **Figure D-5.1**.

Figure D-5.1 – Environmental Resources



2. Special consideration should be given to areas that are sensitive to water quality degradation. Indicate whether or not a sensitive area is present and provide specific recommendations on the level of protection needed.

☐ No water special natural resources are affected by the alternative
☒ Yes – Water special natural resources exist in the project area
- ☒ River/stream
- ☒ Wetland
- ☐ Lake
- ☐ Endangered species habitat
- ☐ Other – Describe:

Describe protection recommendations: The WisDOT World Dairy Wetland Mitigation Site is a 200-acre site bound by I-39/90 to the east, a railroad corridor and residential development to the north, and industrial and commercial development to the west and south. A total of 165.8 acres within the mitigation project boundary are eligible for wetland compensation credit pending attainment of performance standard criteria. Pennito Creek crosses I-39/90 in the same area and continues through the mitigation site. An existing berm along the east side of the mitigation site will be improved with the proposed project, along with improved ditching to allow for increased stormwater runoff treatment prior to reaching the site.

There is a median storm sewer system that currently discharges to the ditch between the mitigation site and I-39/90. During heavy storm events, washout and debris backs up into the wetland mitigation area; a more substantial berm will be constructed in this area in addition to the application of BMP's and native vegetation.

3. Indicate whether circumstances exist in the project vicinity that require additional or special consideration, such as an increase in peak flow, total suspended solids (TSS) or water volume.

☐ No additional or special circumstances are present
☒ Yes – Additional or special circumstances exist. Indicate all that are present:

☐ Areas of groundwater discharge	☒ Areas of groundwater recharge
☐ Stream relocations	☒ Overland flow/runoff
☒ Long or steep cut or fill slopes	☐ High velocity flows
☐ Cold water stream	☐ Impaired waterway
☐ Large quantity flows	☐ Exceptional/outstanding resource waters
☐ Increased backwater	☒ Total Maximum Daily Load (TMDL)

☐ Other – Describe any unique, innovative, or atypical stormwater management measures to be used to manage additional or special circumstances:

4. Describe the overall stormwater management strategy to minimize adverse and enhance beneficial effects.

Prior to the project being rescoped, 15 stormwater management meetings were held that provided an opportunity for interested parties to provide on the project. Participants included FHWA, USACE, WDNR, WisDOT Bureau of Technical Services, Dane County, and the city of Madison. With the identification of a Preferred Alternative, a stormwater management plan will be developed for use during construction to address the discharge of TSS, control peak flow, provide for infiltration, and maintain protective areas from the post-construction site. Coordination will continue throughout the design process and as needed during construction for compliance with the WisDOT/WDNR Cooperative Agreement.

Established stormwater BMP's include wet ponds, infiltration structures, grass swales, vegetative filter strips, and biofilters to control runoff from the project area after construction is completed. Incorporating BMP's into the design of the project will help manage storm water runoff and maintain/ improve water quality on a permanent basis.

Stormwater will primarily be conveyed along the project corridor in vegetated ditches; however, other treatement options will also be implemented, as needed, to meet the TSS reduction requirements defined in Trans 401 as well as the TMDL requirements set for the Rock River basin. The following options will be considered in the order shown:

1. Filter Strips
2. Grass Swales
3. Filter Strips to Grass Swales
4. Biofiltration (if necessary)
5. Wet Detention Ponds (if necessary)
6. Catchbasin Cleaning (if necessary)
7. Roadway Cleaning (if necessary)

In areas where concrete barrier is utilized (primarily in the median), storm sewer pipe and inlets may be implemented to maintain stormwater conveyance.

Storm sewer outfalls would be treated/filtered with riprap and typically drain into ditch sections. Storm sewer outfalls will not drain directly into the wetlands or Pennito Creek prior to any treatment. The WisDOT World Dairy wetland mitigation site will be separated from all roadway runoff by the construction of a berm.

5. Indicate how the stormwater management plan will be compatible with fulfilling Trans 401 requirements.

Stormwater will be primarily conveyed in vegetated ditches. In areas where concrete barrier is used, new storm sewer pipe and inlets may be used to maintain storm water conveyance. Filter strips, infiltration areas and grass swales may be used.

Construction site erosion and sediment control would be part of the project's design and construction as set forth in TRANS 401 Wis. Adm. Code and the WisDOT/WDNR Cooperative Agreement. The project does not fall within the EPA's Phase I or Phase II stormwater management areas or a municipal separate storm sewer system (Wis. Adm. Code NR 216).

6. Identify the stormwater management measures to be utilized.

- ☒ Swale treatment (parallel to flow) Trans 401.106(10)
- ☒ Vegetated filter strips (perpendicular to flow)
- ☐ Constructed storm water wetlands
- ☐ Buffer areas – Trans 401.106(6)
- ☒ In-line storm sewer treatment, such as catch basins, non-mechanical treatment systems.
- ☐ Detention/retention basins – Trans 401.106(6)(3)
- ☐ Distancing outfalls from waterway edge
- ☒ Infiltration – Trans 401.106(5)
- ☒ Other – Describe: If necessary, energy dissipation and stabilization measures will be used at receiving ditches with excessive slopes that are susceptible to erosion and washouts.

7. Indicate whether any Drainage District may be affected by the project.

- ☐ No – None Identified
- ☒ Yes

  Has initial coordination with a drainage board been completed?
  - ☐ No – Explain why:
  - ☒ Yes – Discuss results: An email was received from the attorney for the Dane County Drainage Board acknowledging receipt of the initial project letter. The Dane County Drainage Board represents all of the individual drainage districts in Dane County, with the Blooming Grove Drainage District being the only one within the project area; no formal comments have been received (see **Appendix E – Agency and Local Officials Coordination**).

8. Indicate whether the project is within WisDOT's Phase I or Phase II stormwater management areas.

Note: See Procedure 20-30-1, Figure 1, Attachment A4, the Cooperative Agreement between WisDOT and WDNR. Contact Regional Stormwater/Erosion Control Engineer if assistance in needed to complete the following:

- ☐ No – The project is outside of WisDOT's stormwater management area.
- ☒ Yes – The project affects one of the following and is regulated by a WPDES stormwater discharge permit, issued by the WDNR:
  - ☒ A WisDOT storm sewer system, located within a municipality with a population greater than 100,000.
  - ☐ A WisDOT storm sewer system located within the area of a notified owner of a municipal separate storm sewer system.
  - ☒ An urbanized area, as defined by the U.S. Census Bureau, NR216.02(3).
  - ☐ A municipal separate storm sewer system serving a population less than 10,000.

9. Has the effect on downstream properties been considered?

- ☐ No – Explain why:
- ☒ Yes – Coordination has been completed or is in process, describe:

  Trans 401.106(4) requires designers to maintain the existing 2-year design storm discharge peak rate for new highway facilities. To meet this requirement, the water surface elevation in the receiving water may increase by no more than 0.01 feet compared to the existing condition. This process has not been completed, but if an analysis is found to be necessary, consideration will be given to lengthening the time of concentration, modifying the soil to reduce the discharge rate, or providing detention storage in order to maintain or reduce the peak runoff discharge rates to the maximum extent practicable.

EROSION CONTROL EVALUATION

Wisconsin Department of Transportation

Factor Sheet D-6

Alternative I-39/90 & US 12/18 Beltline Interchange: ALT C	Total Length of Center Line of Existing Roadway 2.37 miles Length of This Alternative 2.37 miles
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Give a brief description of existing and proposed slopes in the project area, both perpendicular and longitudinal to the project. Include both existing and proposed slope length, percent slope and soil types.

The terrain along I-39/90 varies from flat to gently rolling. The existing profile grades on I-39/90 vary from 0.0 percent to 2.46 percent. The proposed profile grades on I-39/90 vary from 0.5 percent to 2.84 percent. The existing side slopes on I-39/90 are mostly 6:1 to the 34-foot clear zone, then 4:1 to ditch bottom or existing ground. 3:1 slopes are used when when the cut or fill is greater than 15 feet. The largest fill section on this project is approximately 35 feet above existing ground. The deepest cut section is approximately 4 feet below existing ground.

The soil in the study area consists of peat, soft and silty fill material, and loose clay. Mucky soils and cut/fill areas also exist within the study area. Further confirmation on soil characteristics and their associated impacts on the roadway design would be evaluated in the Soils Report to be delivered as this project progresses.

2. Indicate all sensitive resources to be affected by the proposal that are sensitive to erosion, sedimentation, or waters of the state quality degradation and provide specific recommendations on the level of protection needed.

☐ No – There are no sensitive resources affected by the proposal.
☒ Yes – Sensitive resources exist in or adjacent to the area affected by the project.

- ☒ River/stream
- ☐ Lake
- ☒ Wetland
- ☒ Endangered species habitat
- ☐ Other – Describe:

Describe protection recommendations: Proper erosion control measures will be used near sensitive areas which may include the use of silt fence, ditch checks, erosion mat, rip rap, temporary seeding, and permanent seeding.

3. Are there circumstances requiring additional or special consideration?

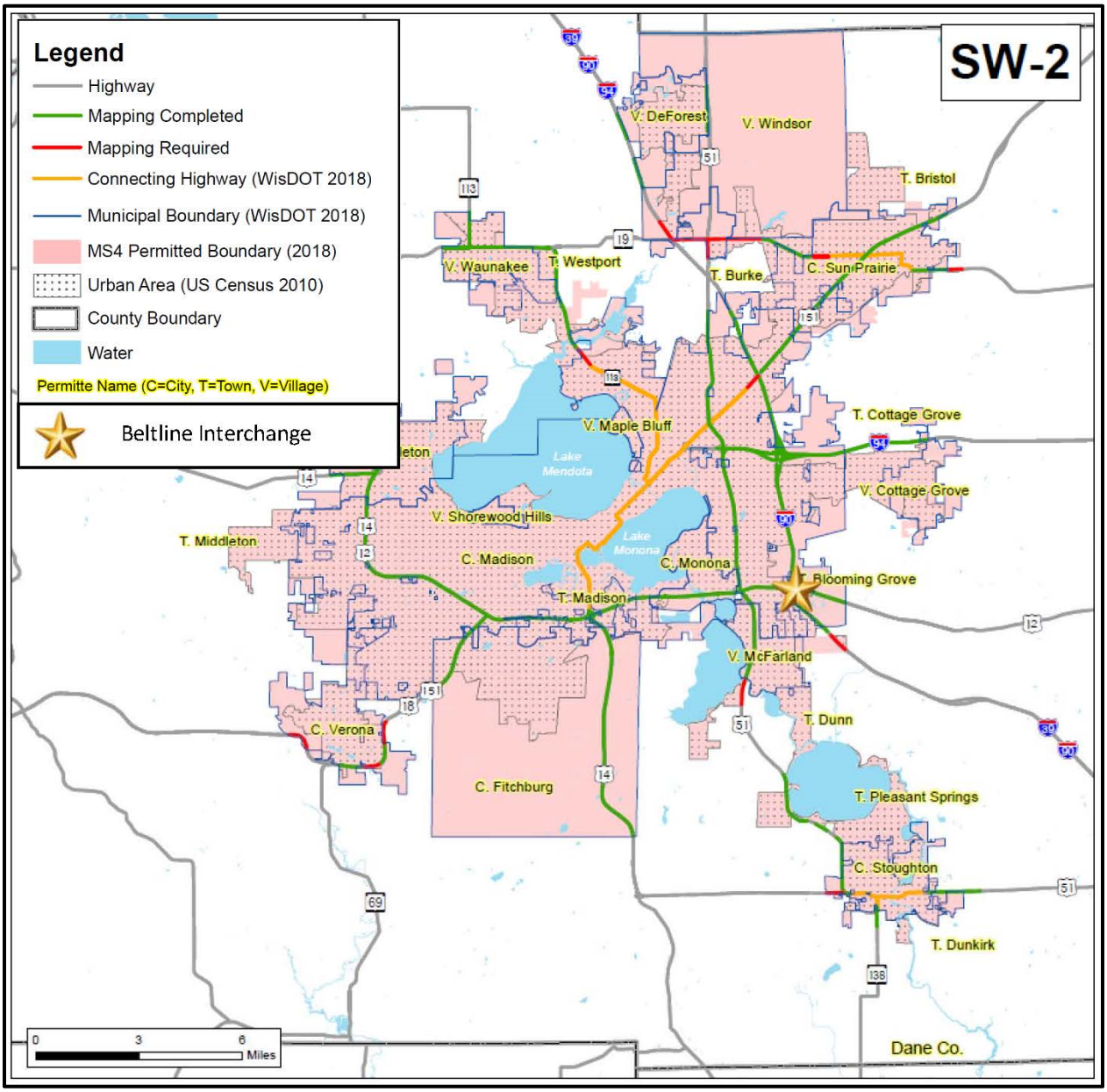
☐ No – Additional or special circumstances are not present.
☒ Yes – Additional or special circumstances exist. Indicate all that are present.

- ☐ Areas of groundwater discharge
- ☒ Overland flow/runoff
- ☒ Long or steep cut or fill slopes
- ☒ Areas of groundwater recharge (fractured bedrock, wetlands, streams)
- ☐ Other – Describe:

4. Describe overall erosion control strategy to minimize adverse effects and/or enhance beneficial effects.

During construction, Wis. Adm. Code Trans 401 and the WDNR/WisDOT Cooperative Agreement process will be followed. In addition, the project will adhere to the standards set forth as part of the General Permit to Discharge under the Wisconsin Pollutant Discharge Elimination System (WPDES General Permit No. WI-S066800-1). A Transortation Separate Storm Sewer System Permit (TS4) applies to this area as shown in **Figure D-6.1**.

Figure D-6.1 – TS4 Mapping for SW-2



This will ensure proper erosion control techniques are maintained, minimizing offsite sedimentation. Erosion control measures could include minimizing exposed soils and areas will be stabilizing disturbed areas as they are complete by including specifications requiring that no disturbed areas be left open for more than seven days. Maintaining proper erosion control techniques, as established by the WisDOT Facilities Development Manual and Best Management Practices (BMP's) to minimize offsite sedimentation, will be used. Vegetated ditch channels along the completed roadway corridor would utilize erosion mat, riprap, temporary seeding, permanent seeding, and ditch checks. Silt fence, culvert pipe checks and inlet protection will be used throughout the project. Erosion bales in combination with silt fence will be used at wetland areas. Additional measures to be used could include filter stips and grass swales (or a combination of both) will first be applied to meet the necessary requirements for the reduction of total suspended solids (TSS). Additional measures such as biofiltration, wet detention ponds, and catchbasin and roadway cleaning may be necessary to further reduce TSS.

Water and dust control surface treatment would be utilized as bid items on this project.

5. Discuss results of coordination with the appropriate authorities as indicated below.

☒ WDNR
☐ American Indian Tribe

The Erosion Control Implementation Plan (ECIP) that would be prepared with the contractor would be complementary to the Stormwater Management Plan. Both plans would reflect Trans 401 requirements, and the WPDES General Permit (TS4), and local guidelines to minimize adverse effects.

Note: All erosion control measures (i.e., the Erosion Control Plan) shall be coordinated through the WisDOT-WDNR liaison process and Trans 401 except when Tribal lands of American Indian Tribes are involved. WDNR's concurrence is not forthcoming without an Erosion Control Plan. In addition, Trans 401 requires the contractor to prepare an Erosion Control Implementation Plan (ECIP), which identifies timing and staging of the project's erosion control measures. The ECIP should be submitted to the WDNR liaison and to WisDOT 14 days prior to the preconstruction conference (Trans 401.08(1)) and must be approved by WisDOT before implementation. On Tribal lands, coordination for 402 (erosion) concerns are either to be coordinated with the tribe affected or with the U.S. Environmental Protection Agency (EPA). EPA or the tribes have the 401 water quality responsibility on Trust lands. Describe how the Erosion Control/Stormwater Management Plan can be compatible.

6. Will any special erosion control measures to be implemented to manage additional or special circumstances identified in Item 3 above?

☐ No
☒ Yes – Describe: Wetlands and box culvert extensions will utilize erosion mat, erosion bales, riprap, temporary seeding, permanent seeding, ditch checks, silt fence, and culvert pipe checks Long slopes will utilize erosion mat, soil stabilizer, temporary seeding, permanent seeding, rip rap, silt fence and swales as necessary.

There is a median storm sewer system that currently discharges to the ditch between the mitigation site and I-39/90. During heavy storm events, washout and debris backs up into the wetland mitigation area; a more substantial berm will be constructed in this area in addition to the application of BMP's and native vegetation.