



# Hwy 243 Osceola Bridge Project

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## Logical Termini Report

June 2021

MnDOT SP 1311-06 and WisDOT Project ID 8417-00-76



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# Introduction

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The purpose of this memorandum is to define the logical limits of improvement and analysis areas for the Trunk Highway (Hwy) 243 Osceola Bridge Project (MnDOT SP 1311-06 and WisDOT Project ID 8417-00-76). This memorandum will be distributed to Cooperating and Participating Agencies and the public with the draft purpose and need report and evaluation criteria for review and comment. The Minnesota Department of Transportation (MnDOT) and Wisconsin Department of Transportation (WisDOT) recognize that information collected and analyzed as part of developing the project purpose and need statement will influence the logical termini and vice versa. Comments from Cooperating and Participating Agencies and the public may result in changes to the logical termini, and it is possible that the logical termini also could change as alternatives are developed. Should any of these happen, then an updated logical termini memorandum will be prepared.

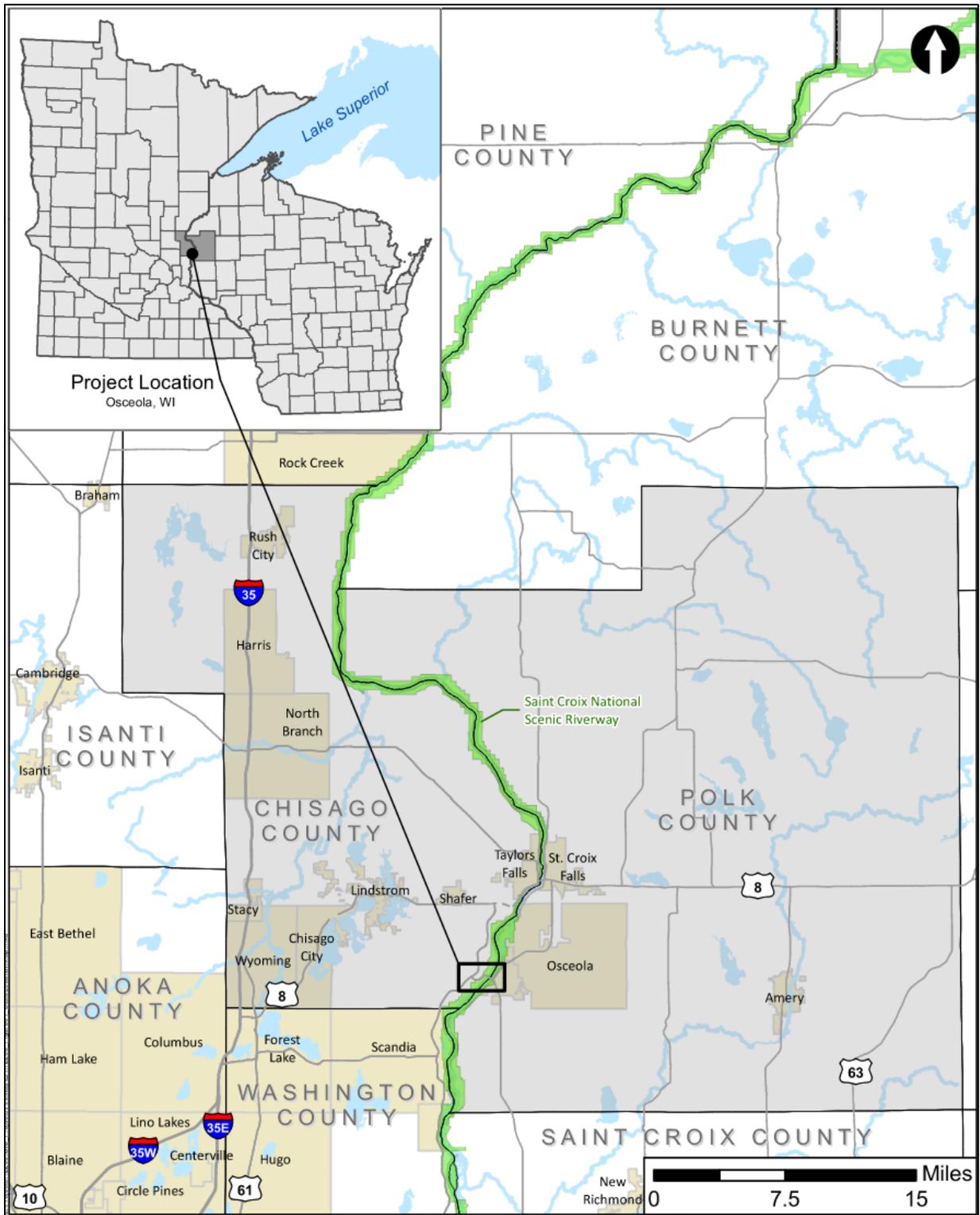
## Project Location

The Hwy 243 Osceola Bridge Project is in Franconia Township in Chisago County, Minnesota and the Village of Osceola in Polk County, Wisconsin and includes the Hwy 243 Bridge over the St. Croix River (MnDOT Bridge No. 6347 and WisDOT Bridge No. B-48-224). The Hwy 243 Bridge is approximately seven river miles downstream of the US Highway (US Hwy) 8 crossing between Taylors Falls, Minnesota and St. Croix Falls, Wisconsin, and approximately 23 river miles upstream of the MN Hwy 36/WI Hwy 64 crossing between Oak Park Heights, Minnesota and Town of St. Joseph, Wisconsin.

Figure 1 on the following page illustrates the project location.

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Figure 1. Project Location Map



# Federal Regulations and Principles

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The Federal Highway Administration (FHWA) outlines the three general principles of 23 Code of Federal Regulations (CFR) 771.111(f) required to frame a proposed project to ensure meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are fully evaluated.<sup>1</sup> These three principles include:

- Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
- Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and
- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

## Logical Termini

The purpose of establishing logical termini is to ensure that transportation problems are addressed and to reduce the risk of unexpected effects. Additionally, logical termini are intended to prevent segmentation. Segmentation may occur when transportation problems extend throughout an entire highway corridor, but the transportation problems and environmental issues are inappropriately discussed for only a smaller segment of the corridor. Logical termini for project development are defined as (1) rational end points for a transportation improvement, and (2) rational end points for a review of the environmental impacts.<sup>1</sup>

Oftentimes, the environmental impact evaluation will extend beyond and cover a broader geographic area than what will eventually become a part of the project area.

Logical termini can be locations where there are major traffic generators or changes in traffic volumes, locations where there are major crossroads or system intersections, and/or locations where there are changes in population centers (going from an urbanized area to a suburban or rural area – not legal city/county/township boundaries).

Establishing logical termini does not mean that the project area covers a single project; multiple projects may be covered within the termini and may be constructed in phases over time as funding permits.

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<sup>1</sup> FHWA Environmental Review Toolkit, NEPA Implementation, The Development of Logical Project Termini. November 5, 1993 accessed 4 February 2021 and available at [https://www.environment.fhwa.dot.gov/legislation/nepa/guidance\\_project\\_termini.aspx](https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_project_termini.aspx).

## Independent Utility

An independent utility analysis focuses on whether a project is a “stand alone” action. That is, if no other project is contemplated, the project serves a distinct purpose and need. The Council on Environmental Quality (CEQ) regulations use the term “unconnected single actions” to describe this concept. According to 40 CFR 1501.9(e)<sup>2</sup>, if an action: i) does not automatically trigger other actions that may require environmental impact statements, ii) does not require previous or simultaneous actions to be taken to proceed, and iii) is not an interdependent part of larger actions and does not depend on the larger actions for its justification, then the action should be said to demonstrate “independent utility”. The scope of the environmental document will cover the proposed action and the reasonably foreseeable impacts having a causal relationship to the proposed action.

The intent of independent utility is that a project must be able to provide a transportation benefit even if no other project is built in the area.

Independent utility does not preclude developing a program of projects tied under a broader environmental evaluation. Each of the projects developed as part of that program must be identified and developed with independent utility in mind. For example, if an improvement along Hwy 243 is also dependent on reconfiguration of an intersecting local roadway or vice-versa, the two actions would be required to be tied together as a project. When time for implementation of phases of the program occurs, each project that moves forward under the original environmental review will be required to complete an updated environmental evaluation and show independent utility before being constructed.

## Consideration of Alternatives for Other Reasonably Foreseeable Actions

The intent of this principle is to ensure that whatever project or program of projects that move forward do not dictate or restrict improvements or changes that may be made in adjacent areas. For example, if a roadway is extended up to a wilderness area and the purpose and need does not include providing access to the wilderness area, then it forces the roadway to continue through the wilderness area in the future. In the Hwy 243 corridor, this would be analogous to adding travel lanes to Hwy 243 on both sides of the St. Croix River, essentially forcing the widening of the bridge.

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<sup>2</sup> CEQ regulations at 40 CFR 1500-1508, updated July 2020 and effective September 14, 2020. Because the Hwy 243 Osceola Bridge Project started prior to September 14, 2020, it is not subject to the July 2020 CEQ final rule. CEQ regulations regarding unconnected single actions prior to September 14, 2020 can be found at 40 CFR 1508.25(a).

# Brief Summary of Purpose and Need

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A purpose and need statement has been developed for the Hwy 243 Osceola Bridge Project. The purpose and need for the Hwy 243 Osceola Bridge Project is documented in a separate report from this logical termini report. The purpose and need for the Hwy 243 Osceola Bridge Project is summarized below.

## Purpose and Need

### Project Need

MnDOT, in cooperation with WisDOT, has identified several factors justifying the need for the Hwy 243 Osceola Bridge Project. The needs have been categorized as primary or secondary as defined below.

*Primary needs* include the primary transportation problems that led to the initiation of the project. One primary need has been identified: bridge condition.

*Secondary needs* are other transportation problems that may be able to be addressed at the same time as primary needs. One secondary need has been identified: walkability/bikeability.

### Additional Considerations

*Additional considerations* are elements that are not central to the purpose and need of the project but are important criteria for evaluating build alternatives. The additional considerations identified for this project include:

- Maintenance of traffic during construction
- Osceola Landing
- Stormwater management
- Regulatory requirements
- Ecological connectivity

### Purpose Statement

The purpose of this project is to maintain a highway connection over the St. Croix River in the Hwy 243 corridor between Washington/Chisago counties in Minnesota and the Village of Osceola in Wisconsin and address pedestrian and bicycle comfort and mobility while minimizing impacts to the area's sensitive resources.

# Logical Termini Recommendations and Rationale

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Based on the identified transportation needs of the proposed project and transportation network, the proposed termini for the Hwy 243 Osceola Bridge Project include a western terminus at MN Hwy 95 in Franconia Township and an eastern terminus at WI Hwy 35 in Osceola, excluding the Hwy 243/MN Hwy 95 and Hwy 243/WI Hwy 35 intersections. These termini establish the general limits for the build alternatives that will be considered as part of the environmental review process for the project.

From a project development and environmental analysis standpoint, the project termini represent rational end points for a transportation improvement given the identified project purpose and needs and the ability to evaluate potential environmental impacts. Studies included in the environmental document (traffic, social, economic, and environmental impacts) will extend beyond the physical construction limits of the project to these logical termini to ensure that all resources and needs are properly addressed.

## Hwy 243 Osceola Bridge Project Logical Termini

### Western Terminus, Hwy 243 and MN Hwy 95

The western terminus for the Hwy 243 Osceola Bridge Project is the Hwy 243 and MN Hwy 95 intersection in Franconia Township. This location was identified as the western terminus because this location is at a system-to-system intersection, where traffic volumes change and where travel patterns can change based on origins and destinations served (i.e., northbound and southbound MN Hwy 95 to westbound and eastbound Hwy 243).

### Eastern Terminus, Hwy 243 and WI Hwy 35

The eastern terminus for the Hwy 243 Osceola Bridge Project is the Hwy 243 and WI Hwy 35 intersection in Osceola. This location was identified as the eastern terminus because this location is at a system-to-system intersection, where traffic volumes change and where travel patterns can change based on origins and destinations served (i.e., northbound and southbound WI Hwy 35 to westbound and eastbound Hwy 243).

### Intersection Crash Analysis

A crash analysis was prepared for the Hwy 243 and MN Hwy 95 intersection and the Hwy 243 and WI Hwy 35 intersection for the five-year period from 2015 through 2019. The results of this crash analysis are documented in the Hwy 243 Osceola Bridge Project existing traffic conditions technical memorandum (March 3, 2021).

The critical crash rate for the Hwy 243/MN Hwy 95 intersection is 0.83 million entering vehicles (MEV). This exceeds the critical crash rate of 0.63 MEV for similar rural, two-way stop control intersections. The critical crash rate for the Hwy 243/WI Hwy 35 intersection is 0.23 MEV, below the critical crash rate of 0.70 MEV for similar all-way stop control intersections.

MnDOT is planning for a future project to address vehicle safety at the Hwy 243/MN Hwy 95 intersection. The vehicle safety needs at the Hwy 243/MN Hwy 95 intersection are independent of the primary bridge condition need and secondary walkability/bikeability need for the Hwy 243 Osceola Bridge Project. This work is independent and does not affect alternatives for the current Hwy 243 Osceola Bridge Project or future project supporting this logical terminus.

### Intersection Operations and Hwy 243 Travel Demand Forecasts

An existing conditions traffic operations analysis was prepared as part of the Hwy 243 Osceola Bridge Project. This analysis included modeling traffic operations at the Hwy 243/MN Hwy 95 and the Hwy 243/WI Hwy 35 intersections under existing conditions for the A.M. and P.M. peak hours. The results of the operations analysis are documented in the Hwy 243 Osceola Bridge Project existing traffic conditions technical memorandum (March 3, 2021).

Table 1 tabulates the level of service (LOS) for the Hwy 243/MN Hwy 95 and the Hwy 243/WI Hwy 35 intersections under existing conditions during the A.M. and P.M. peak hours. Both intersections operate at an acceptable level of service with overall delays of 20 seconds or less.

**Table 1. Existing Traffic Operations Analysis Results**

Hwy 243 Intersection	Intersection Control	A.M. Peak Hour LOS	A.M. Peak Hour Delay	P.M. Peak Hour LOS	P.M Peak Hour Delay
MN Hwy 95	Side Street Stop	B	13 seconds	C	20 seconds
WI Hwy 35	All Way Stop	B	10 seconds	C	19 seconds

Future (year 2040) travel demand forecasts were prepared for the Hwy 243 Osceola Bridge Project using the Metropolitan Council’s Activity Based Model (ABM) for the Twin Cities Metropolitan Area. Travel demand forecast methodology is described in the Hwy 243 Osceola Bridge Project modeling and forecasting methodology technical memorandum (March 8, 2021).

Table 2 tabulates existing and forecast (year 2040) daily traffic volumes on Hwy 243, MN Hwy 95, and WI Hwy 35. Motorists using the Hwy 243 corridor include area residents, commuters working on either side of the St. Croix River, recreational users, regional trips to and from the Twin Cities Metropolitan Area, and commercial users. Nearby truck generators using Hwy 243 include businesses in Village of Osceola industrial parks and quarries in Minnesota and Wisconsin. Daily traffic volumes on Hwy 243 are projected to increase by 1,800 vehicles per day by year 2040. Daily traffic volumes on MN Hwy 95 and WI Hwy 35 are projected to increase by approximately 300 vehicles per day to 3,500 vehicles per day by year 2040.

**Table 2. Existing and Forecast (2040) Average Daily Traffic Volumes**

<b>Hwy Segment</b>	<b>Average Daily Traffic Volume Vehicles Per Day Existing Conditions <sup>(1)</sup></b>	<b>Average Daily Traffic Volume Vehicles Per Day Forecast (2040) Conditions</b>	<b>Daily Volume Increase Vehicles Per Day Existing to Forecast (2040) Conditions</b>
Hwy 243 (MN Hwy 95 to WI Hwy 35)	5,600	7,400	1,800
MN Hwy 95 (south of Hwy 243)	6,900	9,100	2,200
MN Hwy 95 (north of Hwy 243)	3,700	4,100	400
WI Hwy 35 (south of Hwy 243)	8,200	8,500	300
Wis Hwy 35 (north of Hwy 243)	9,500	13,000	3,500

(1) Existing traffic volume count for Hwy 243 and MN Hwy 95 south of Hwy 243 is from 2019. Existing traffic count for MN Hwy 95 north of Hwy 243 is from 2017. Existing traffic counts for WI Hwy 35 north and south of Hwy 243 is from 2018.

Source: MnDOT on-line interactive traffic mapping application and WisDOT on-line interactive traffic count map (TCMap) accessed 7 March 2021.

The Hwy 243 and MN Hwy 95 intersection currently operates at an acceptable LOS during peak hours. Forecast volumes are not anticipated to result in poor operations at this intersection. As noted above, MnDOT is planning a stand-alone vehicle safety improvement project for the Hwy 243 and MN Hwy 95 intersection.

The Hwy 243 and WI Hwy 35 intersection also currently operates at an acceptable LOS during peak hours. Previous work completed by WisDOT indicates that this intersection is projected to experience poor operations during the peak hours under future (2040) conditions, regardless of the Hwy 243 Osceola Bridge Project. This is because of continued background traffic growth in Osceola. The intersection operation needs at the Hwy 243 and WI Hwy 35 intersection are independent of the primary bridge condition need and secondary walkability/bikeability need for the Hwy 243 Osceola Bridge Project. WisDOT does not have a project planned for the Hwy 243 and WI Hwy 35 intersection. Any future work at the Hwy 243 and WI Hwy 35 intersection is independent and does not affect alternatives for the current Hwy 243 Osceola Bridge Project or future project supporting this logical terminus.

## Conclusion

Figure 2 on the following page illustrates the western and eastern termini identified for the Hwy 243 Osceola Bridge Project. The project termini represent rational end points for transportation improvements, and the study area accommodates a fair and unbiased evaluation of environmental impacts for highway and non-motorized improvements. Improvements made as part of the Hwy 243 Osceola Bridge Project have independent utility as stand-alone improvements.

The needs highlighted in this memorandum are specific to the Hwy 243 Osceola Bridge Project and are anticipated to be a reasonable expenditure even if no additional transportation improvements are made in the area. The improvements to other facilities do not restrict consideration of alternatives for improvements to Hwy 243 Osceola Bridge Project and their connections in the project area.

The termini for this project are logical and have been selected in accordance with FHWA Technical Guidelines for termini development. The proposed termini allow for the evaluation of project alternatives that: 1) would function independently of and not force the need for other transportation improvements; 2) would not restrict the consideration of project alternatives that avoid significant environmental resources; and 3) would allow for consideration of environmental issues on a broad scope so the project would not force improvements in areas where environmental issues and considerations would be greater. As such, the Hwy 243 Osceola Bridge Project has logical termini and independent utility in accordance with 23 CFR 771.111(f).

As the primary need related to bridge condition and secondary need related to walkability/bikeability are further evaluated and documented, it is possible that the project termini will be adjusted. If warranted, the Hwy 243 Osceola Bridge Project logical termini report will be updated to reflect modifications based upon needs identified through technical analyses or stakeholder input.

Figure 2. Hwy 243 Osceola Bridge Project Logical Termini

