



I-94 Midway Grant Marsh Bridge Engineering and Feasibility Study

Public Input Meeting #2
December 7, 2023



Key Project Contacts

- Theresa Maahs, P.E. – Project Manager (Stantec)
- Michael E. Johnson, P.E. – NDDOT Project Manager



Study Advisory Committee

- City of Mandan
- City of Bismarck
- FHWA
- Bismarck-Mandan MPO
- Morton County
- Burleigh County
- NDDOT



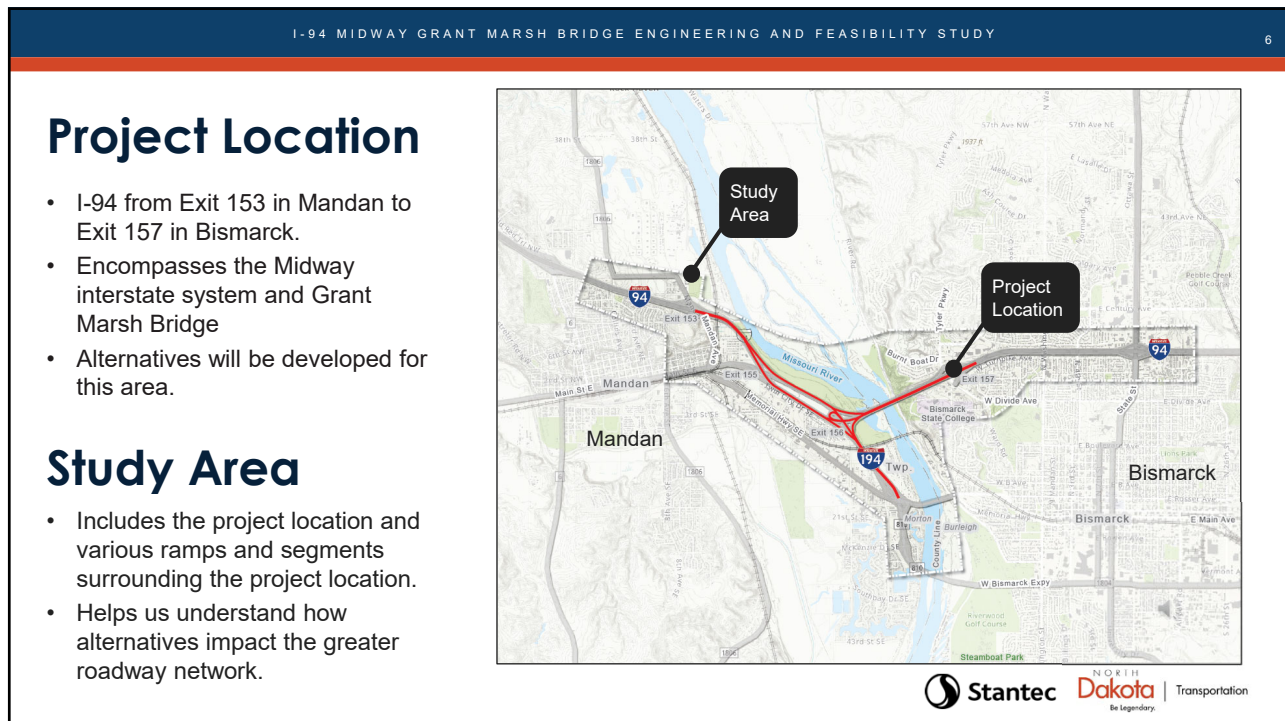
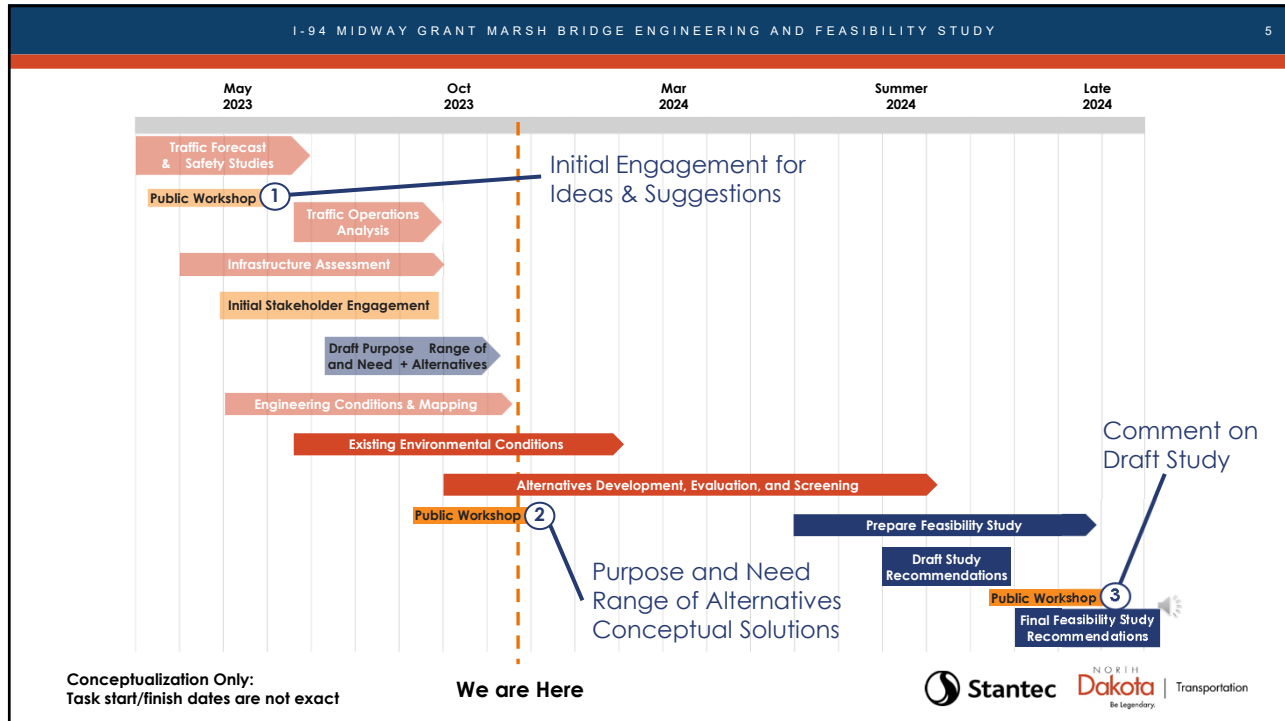


Agenda

- Study Update
- Draft Preliminary Purpose & Need
- Proposed Range of Alternatives
- Conceptual Solutions
- Next Steps



Study Update



Study Goals

- 1 Identify existing conditions, resources, and project challenges/constraints.
- 2 Establish a Preliminary Purpose and Need
- 3 Establish a Range of Alternatives
- 4 Recommend a small number of reasonable alternatives for review and refinement during the subsequent environmental review process.

The NDDOT intends to adopt or incorporate Planning Products from this Study into the federal environmental review process, pursuant to Title 23 U.S.C. § 168(d)(4).



Preliminary Purpose & Need



What is 'Purpose and Need', and why is it required?

- Provides the project Justification for expending public funds
- The Purpose and Need Statement is a key factor in determining the Range of Alternatives and subsequent alternative development and eliminations



Primary Purpose components:

- “Drive” the project by providing fundamental goals as to **WHY the project is justified**
- Any alternative that does not achieve **every** Primary Purpose will be eliminated as unreasonable

“Other Desirable Outcomes” Purpose components:

- Sometimes referred-to as “Secondary P&N” components
- Additional Goal(s) that are desirable, yet **do not act as the core purpose** of the project
- An “other desirable outcome” would not, by itself, provide a basis for eliminating alternatives in the screening stage, but could be considered as a factor when selecting alternatives to move forward



Statement of Purpose

Primary Purposes:

1. Provide a **long-term interstate highway across the Missouri River** which meets current design standards.
2. **Reduce potential for crashes** by providing conforming designs that better meet driver expectations.
3. **Maintain interstate mobility and reliability**, while extending the congestion free operating lifespan.



Statement of Purpose

Other Desired Outcomes:

1. **Improve bicycle and pedestrian mobility** within the study area by providing new facilities and improving the existing facilities.
2. Seek to minimize impact to the local and regional community by **minimizing construction duration and disruption**.



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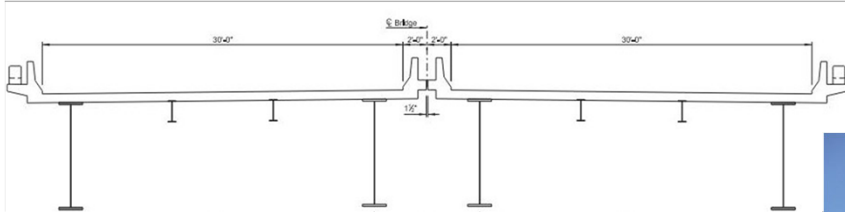


Project Needs


- Structural Deficiencies
- Future Traffic Capacity Issues
- Safety
- Geometric Deficiencies
- Bicycle and Pedestrian Accommodations

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Grant Marsh Bridge Structural Deficiencies

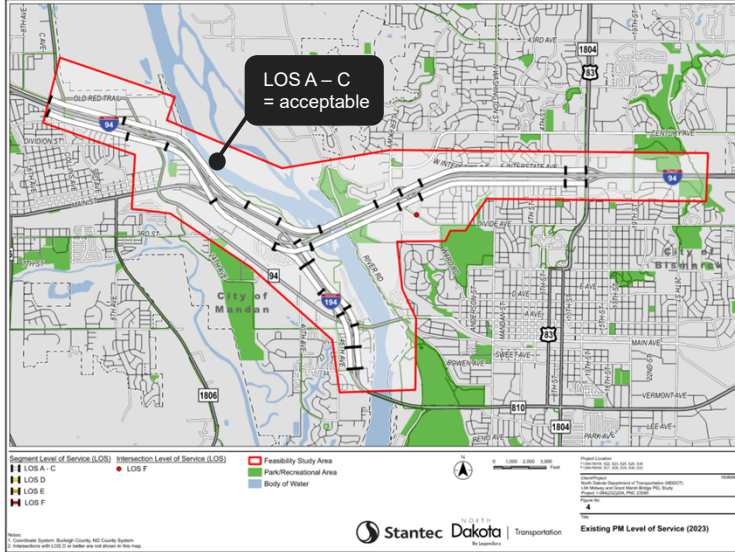


- Built in 1965
- Current condition rating is 5 (fair)
- Non-redundant structure
- Insufficient roadway width (narrow shoulders)
- Not feasible to widen
- Future replacement necessary

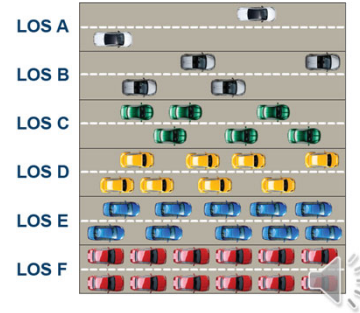


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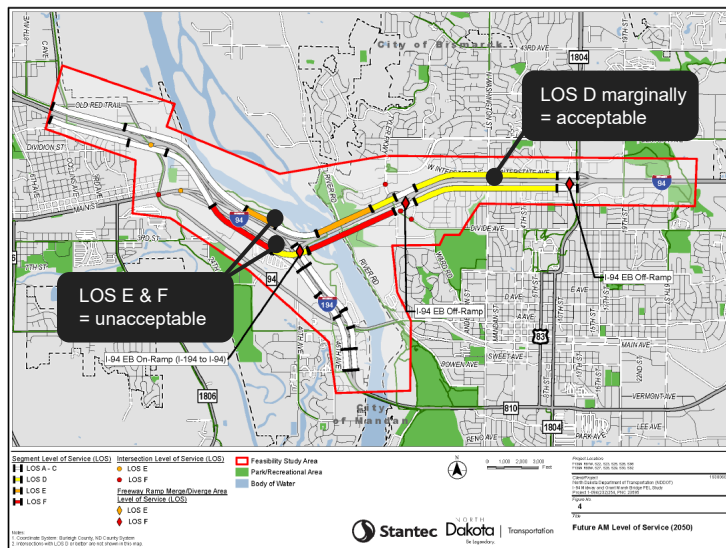
Existing Traffic Capacity (Level of Service)



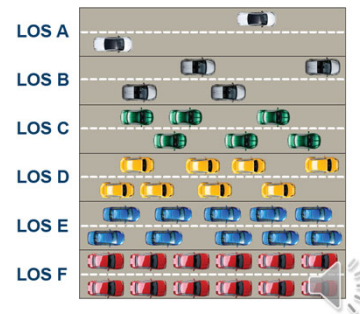
- Existing (2023) traffic volumes indicate I-94, I-194 and ramps operate at acceptable levels of service (LOS)



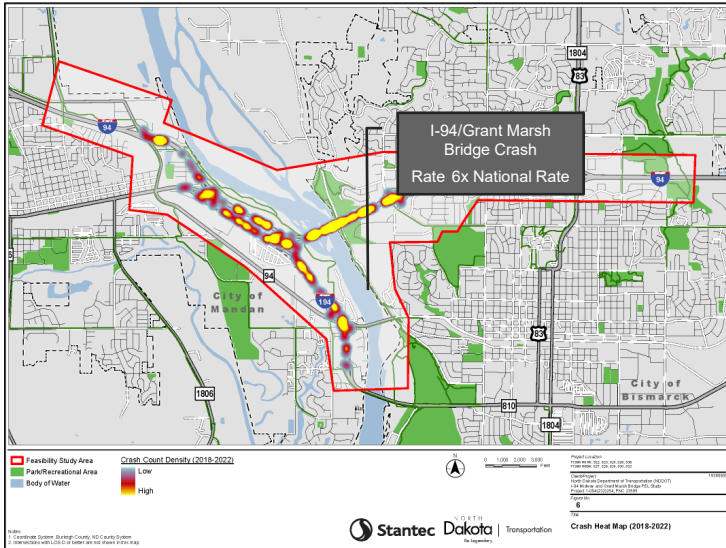
Future Traffic Capacity Issues (Level of Service)



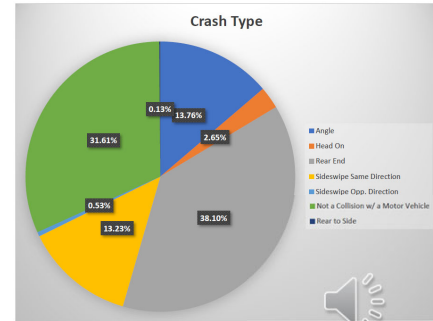
- Future 2050 traffic volumes indicate specific segments of I-94 and its ramps deteriorate to unacceptable levels of service.



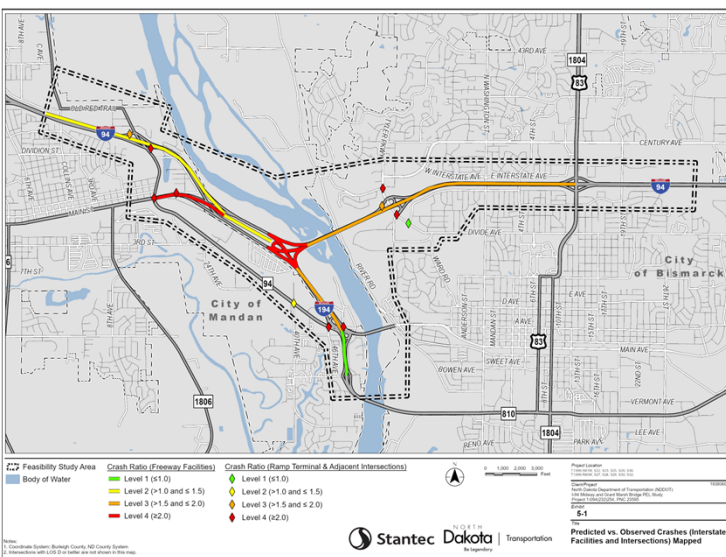
Safety Issues



- Most crashes (Rear End) occur on I-94 and its ramps between I-194 and Tyler Parkway/Divide Avenue interchanges

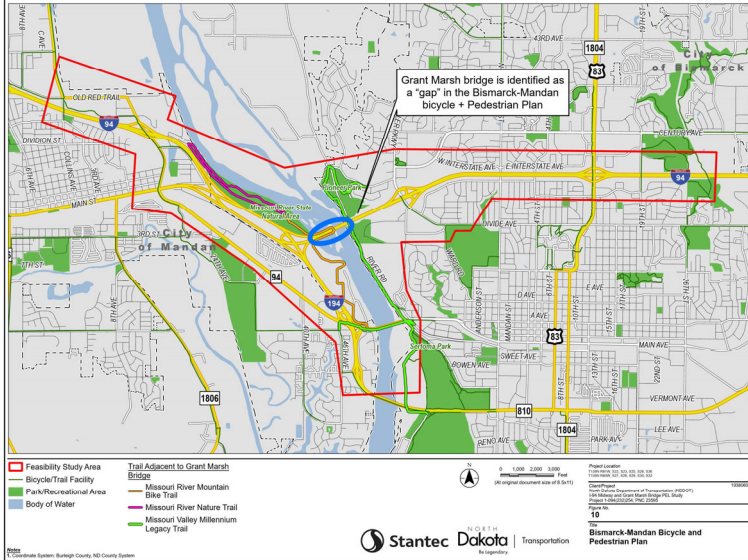


Safety Issues



- Majority of freeway segments on I-94 and I-194 have crash rates that exceed national crash rates for similar freeways

Bicycle and Pedestrian Accommodations



- Due to restricted width, bicycles are not currently allowed on the Grant Marsh Bridge.
- Bismarck-Mandan MPO Envision 2040 identified the Grant Marsh Bridge as a pedestrian/bicycle gap.



Additional Considerations

- Environmental and Social Impacts
- Navigation
- Aesthetics
- Cost
- Maintenance
- Construction methods - and other parameters...



What is a Range of Alternatives?

- An array of “high-level” alternatives which are viewed as potentially feasible
- Only required for larger, federal Environmental Impact Statements and Environmental Assessment documents

A broad range of alternatives typically starts a progressive alternative development and screening process.

Several options listed in an initial Range of Alternatives may not satisfy Purpose and Need.



Range of Alternatives



GM Bridge Project: High-Level Range of Alternatives

Pursuant to 23 USC §139 (f)(4)(B) and other federal provisions, seven high-level alternatives were identified.

01

NO BUILD

02

NO ACTION

03

TDM

04

TSM

05

MASS
TRANSIT

06

IMPROVE
EXISTING

07

AVOIDANCE
CONCEPTS

Proposed Range of Alternatives

01

NO BUILD

- Do Nothing

02

NO ACTION

- Requirement of the US Army Corps of Engineers
- Cannot cause reportable discharges of dredged or fill material into Waters of the United States
 - ONLY conduct project work that does NOT impact the Missouri River or any streams or wetlands



Proposed Range of Alternatives

03

TDM

Transportation Demand Management

- A broad scope of strategies typically endorsed by local governments and employers
 - Ridesharing, flexible work schedules, telecommuting
 - Enhanced transportation modes
 - Bicycle and pedestrian facilities; ebike commuting

04

TSM

Transportation System Management

- Live information boards with alternative routing
- Controlled signals
- Physical improvements such as managed lanes, extra turn and passing lanes

Proposed Range of Alternatives

05

MASS
TRANSIT

- High-capacity people carriers
- Bus, Streetcar, Rail

06

IMPROVE
EXISTING

- Reconfigurations to the I-94 Midway corridor, plus bridge replacement solutions
- Most of the project alternatives will fall into this category

Proposed Range of Alternatives

07

AVOIDANCE CONCEPTS

- Federal law* requires NDDOT to investigate alternatives that avoid parks, recreation areas, historic sites, and other protected resources
 - Reconfigurations to the north of the Midway corridor, plus north-side bridge replacement solutions
 - Interstate Tunnel below the Missouri River

* [Section 4(f) / 6(f)] 

Conceptual Solutions



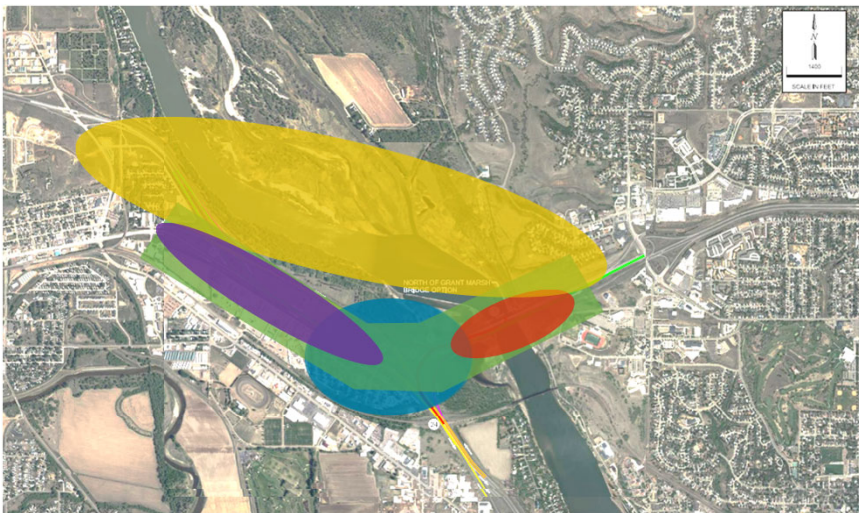
Conceptual Solutions

A Conceptual Solution represents a highway or bridge design feature that resolves a **specific need** at a **specific location**

Examples might include:

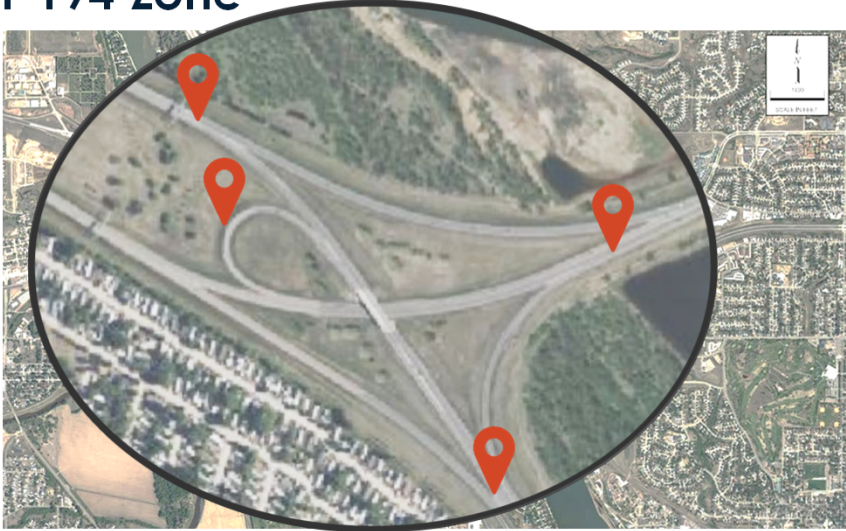
- Bridge replacement locations
- Adding additional lanes and/or widening shoulders
- Reconfigurations to I-94 and I-194
 - Eliminating left-side exits
 - Shifting entrance and exit ramp locations
 - Improving loop design and allowable speed
 - Improving connections to Main Street in Mandan

Conceptual Solutions Zones



- I-194 Interchange
- E Main Street Connections
- C-D Roadways
- Missouri River Crossing
- Park Avoidance Crossings

I-194 Zone



- I-94 WB left-hand exit
- Small Radius Loop Ramp
- I-194 WB left-hand entrance
- I-194 EB two-sided weave

Conceptual Solutions – I-194



E Main St Zone



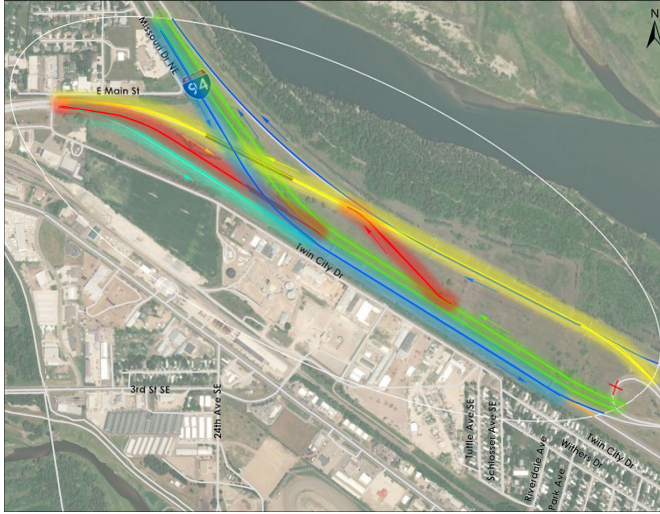
I-94 WB left hand exit

I-94 EB/WB 1 sided weaves

Conceptual Solutions – E Main St



Conceptual Solutions – E Main St



Collector-Distributor Roadway Zone



Conceptual Solutions – Collector-Distributor Roads

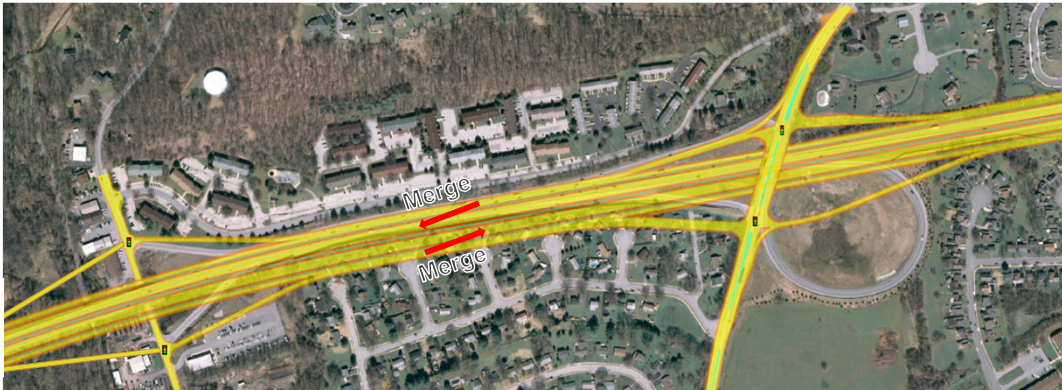


A simple, one-way Collector-Distributor Road on both sides of a freeway.



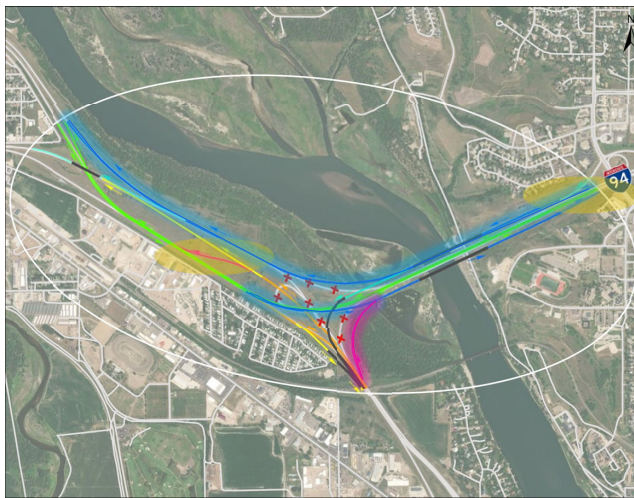
Collector-Distributor Roads help to:

- Remove local traffic from mainline
- Eliminate weave zones from mainline interstate
- Act as a relief bypass should incidents or traffic jams occur on the Interstate

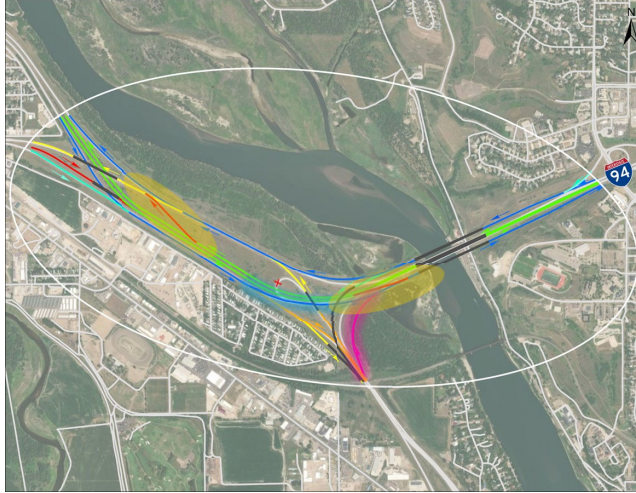


As Interstate segments are determined viable for merge zones, various mainline Interstate access points can be established from the Collector-Distributor Road.

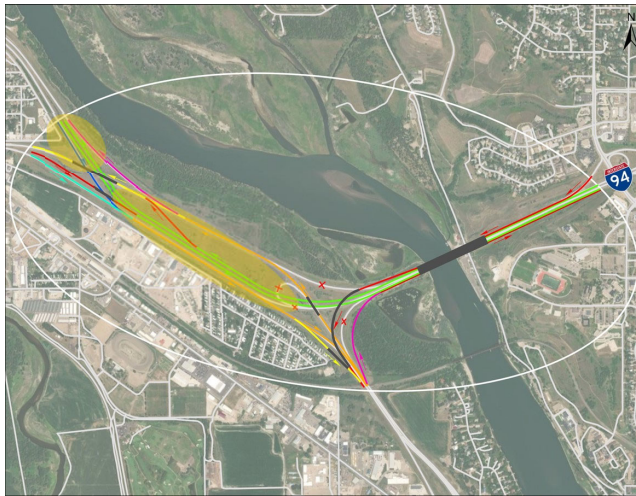
Conceptual Solutions – C-D Roads



Conceptual Solutions – C-D Roads



Conceptual Solutions – C-D Roads



Missouri River Crossings Zone



Crossing Location

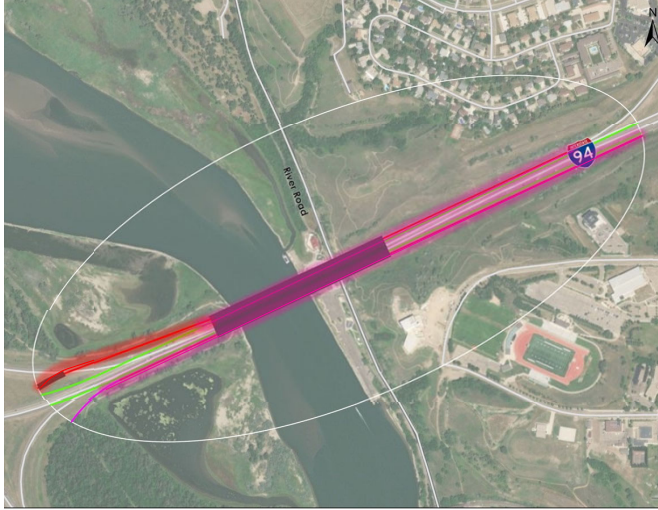
I-94 WB two-side weave

I-94 EB Merge

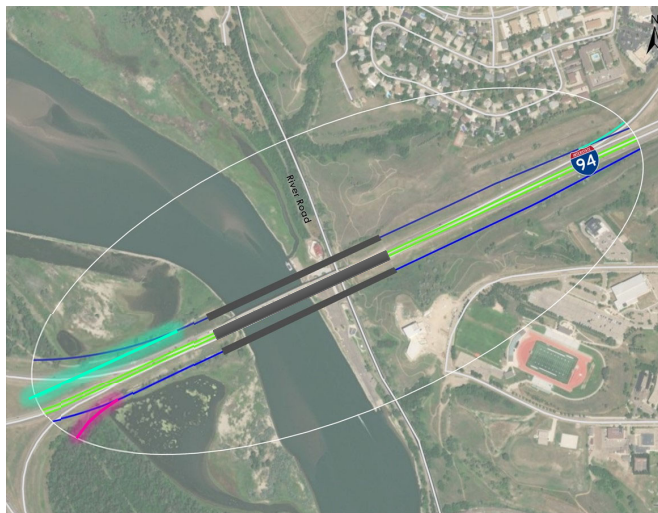
Conceptual Solutions – Missouri River Crossings



Conceptual Solutions – Missouri River Crossings



Conceptual Solutions – Missouri River Crossings



Conceptual Solutions – Park Avoidance Crossings

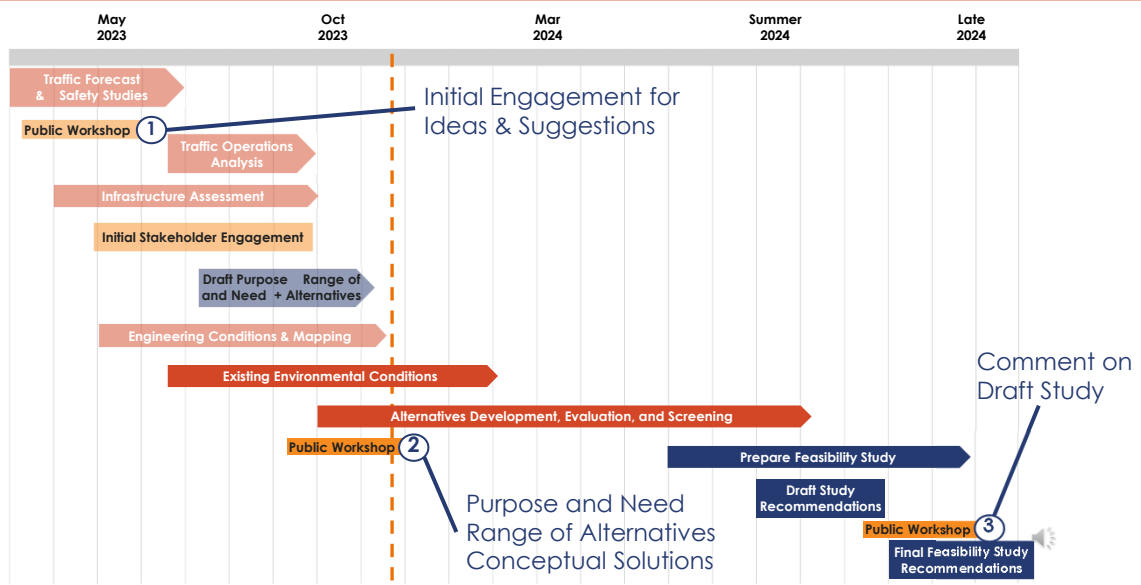


Schedule & Next Steps



Alternative Development Steps

- Step 1** → Establish Draft Preliminary **Purpose & Need** (the project justification)
- Step 2** → Establish a high-level, reasonable **Range of Alternatives** to consider
- Step 3** → Consider project studies and input, then develop **Conceptual Solutions** for each of the various problems or needs identified
- Step 4** → Combine the Conceptual Solutions from various locations & reconfigurations. Each combination forms a **Project Alternative**
- Step 5** → **Eliminate** less-desirable alternatives
- Step 6** → **Refine** and improve the better alternatives
- Step 7** → Final alternative eliminations, resulting in limited **alternative recommendations** for the next study.



Stay Involved

Visit the Project Website

www.dot.nd.gov/midway-grantmarsh



Contact Us

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Please consider filling out the Title VI Public Participation Survey (on the Project Website) which helps the North Dakota Department of Transportation ensure inclusion of all segments of the population affected by transportation programs and activities.

