

# I-94 Midway Grant Marsh Bridge Engineering and Feasibility Study

Public Input Meeting #2  
December 7, 2023



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## 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



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# Consultant Team



**Theresa Maahs**  
Project Manager



**Keith Strickland**  
Traffic Interstate Operations



**Aaron Cook**  
Roadway Design



**Wade Frank**  
Bridge Design Development



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# Agenda

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

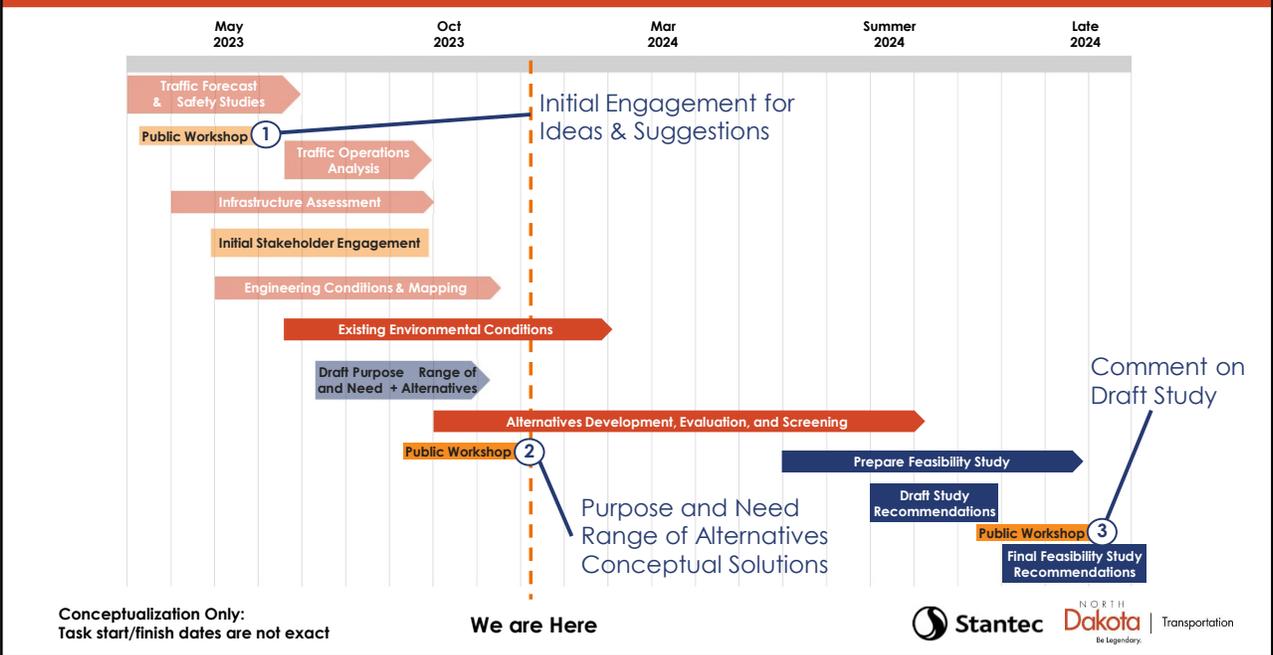


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# Study Update

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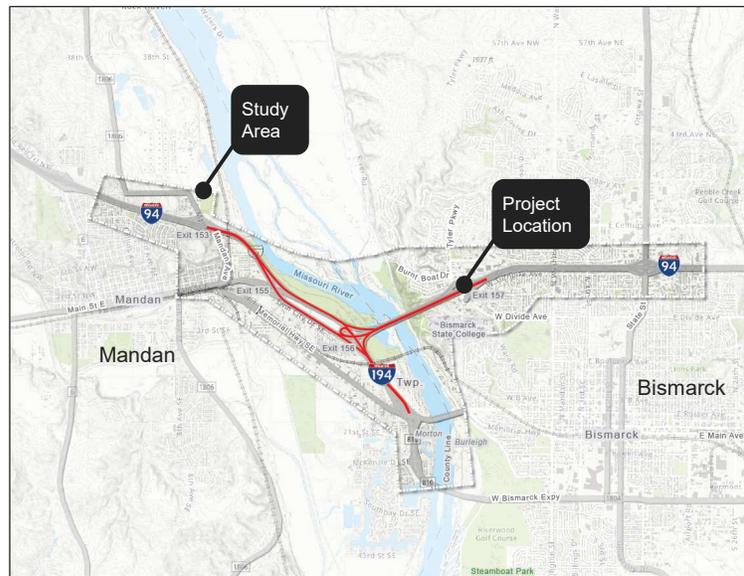
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## Project Location

- I-94 from Exit 153 in Mandan to Exit 157 in Bismarck.
- Encompasses the Midway interstate system and Grant Marsh Bridge
- Alternatives will be developed for this area.

## Study Area

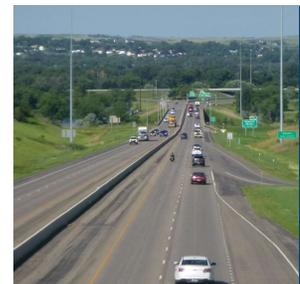
- Includes the project location and various ramps and segments surrounding the project location.
- Helps us understand how alternatives impact the greater roadway network.



## 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

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## 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

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## 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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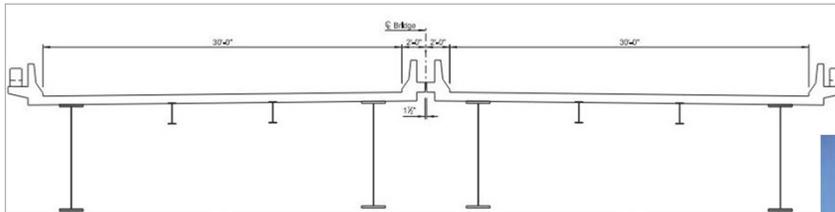


### Project Needs

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

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# Grant Marsh Bridge Structural Deficiencies

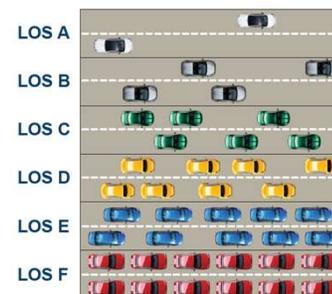


- Built in 1965
- Current condition rating is 5 (fair)
- Non-redundant structure
- Insufficient roadway width (narrow shoulders)
- Not feasible to widen
- Future replacement necessary

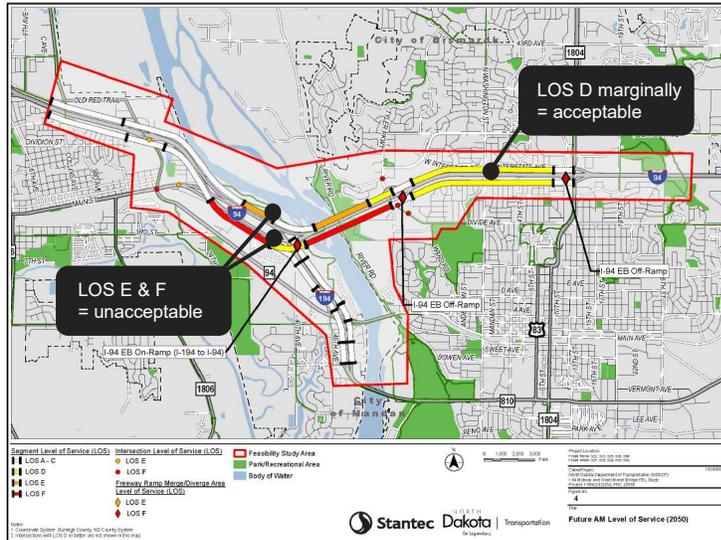
# Existing Traffic Capacity (Level of Service)



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



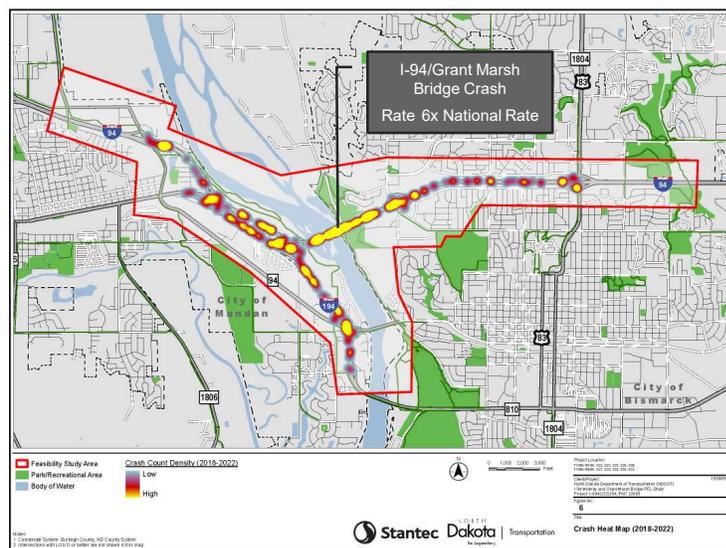
## Future Traffic Capacity Issues (Level of Service)



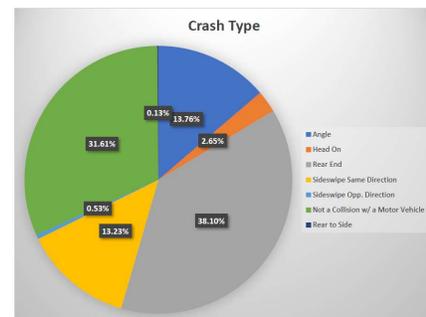
- Future 2050 traffic volumes indicate specific segments of I-94 and its ramps deteriorate to unacceptable levels of service.



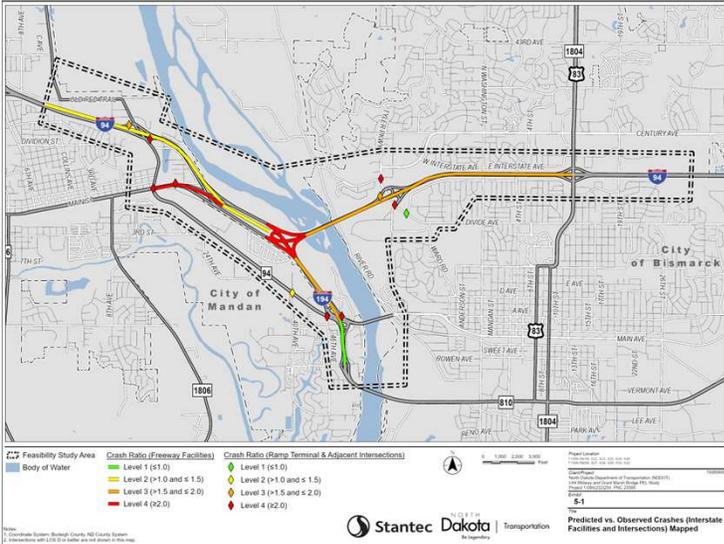
## Safety Issues



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



# Safety Issues



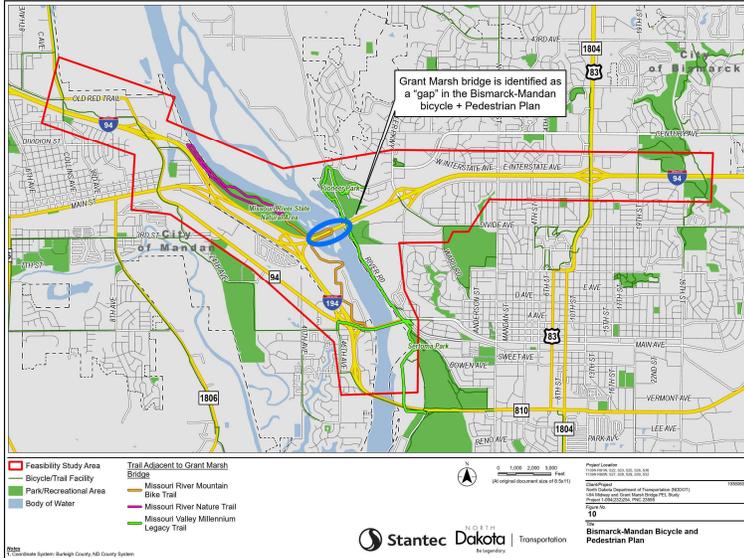
- Majority of freeway segments on I-94 and I-194 have crash rates that exceed national crash rates for similar freeways

# Additional Considerations

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



# 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.



## Range of Alternatives

## 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.**

## 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

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### MASS TRANSIT

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

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### IMPROVE EXISTING

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

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## Proposed Range of Alternatives

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### 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)]

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## Conceptual Solutions

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## Conceptual Solutions

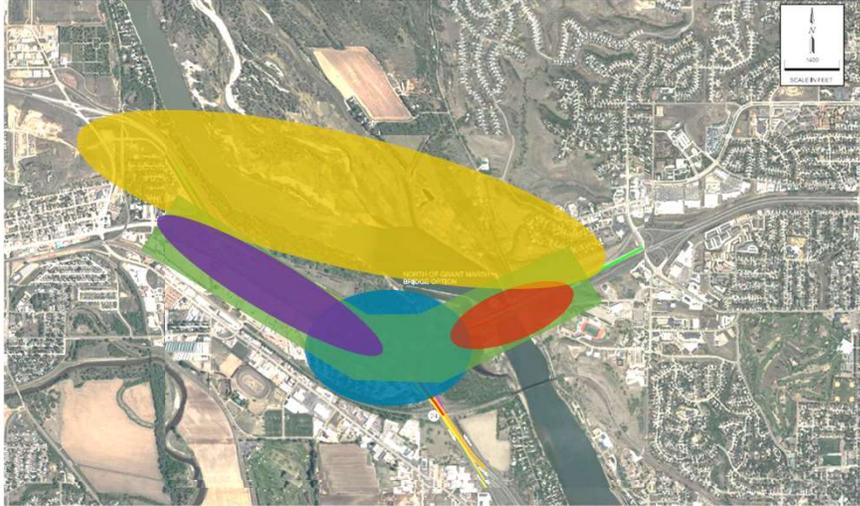
A Conceptual Solution represents a highway or bridge design feature that resolves a **specific need** at a **specific location**

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

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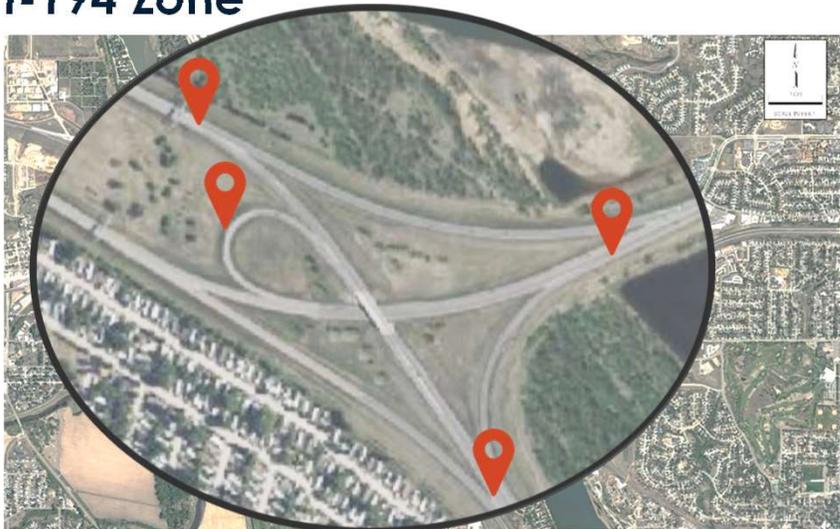
# Conceptual Solutions Zones



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

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# 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**

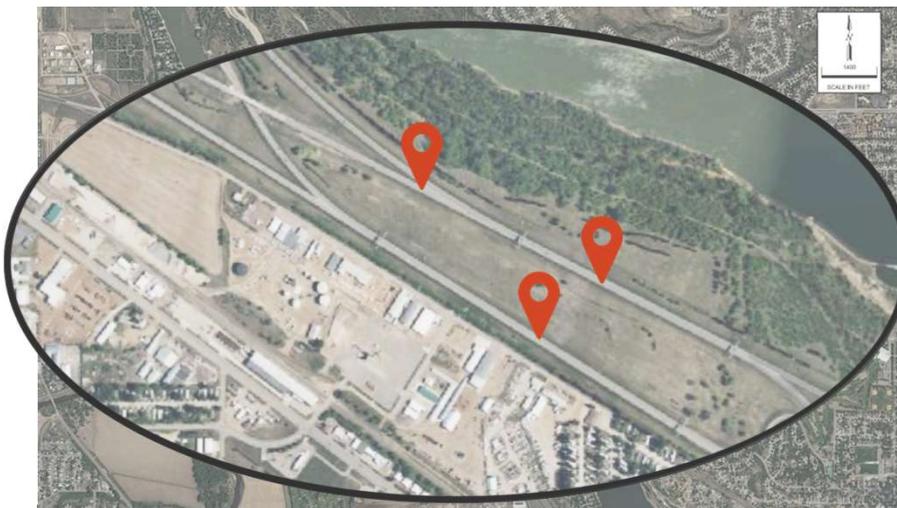
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# Conceptual Solutions – I-194



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# E Main St Zone



I-94 WB left hand exit  
I-94 EB/WB 1 sided weaves

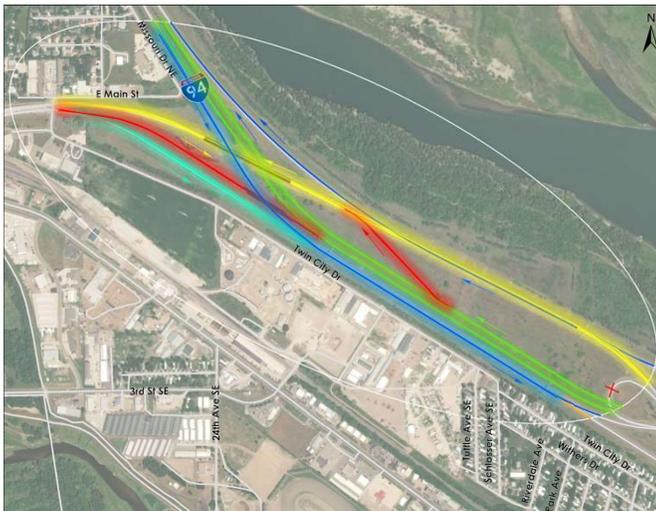
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# Conceptual Solutions – E Main St



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# Conceptual Solutions – E Main St



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## Collector-Distributor Roadway Zone



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## Conceptual Solutions – Collector-Distributor Roads



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

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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

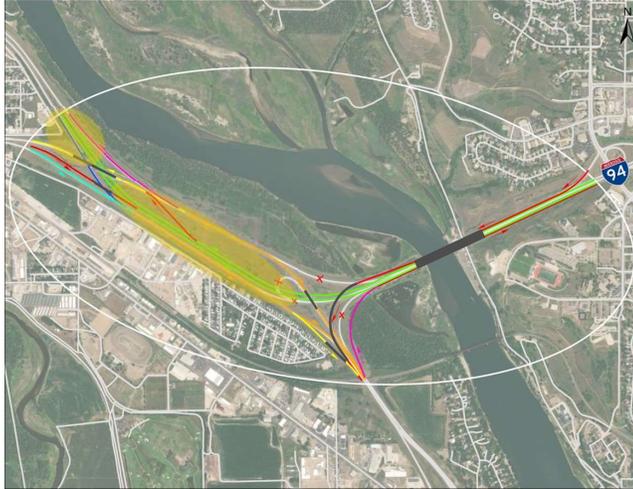
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As Interstate segments are determined viable for merge zones, various mainline Interstate access points can be established from the Collector-Distributor Road.

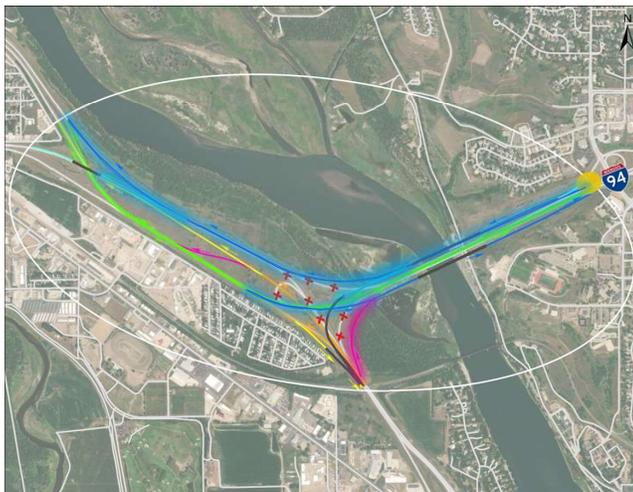
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## Conceptual Solutions – C-D Roads



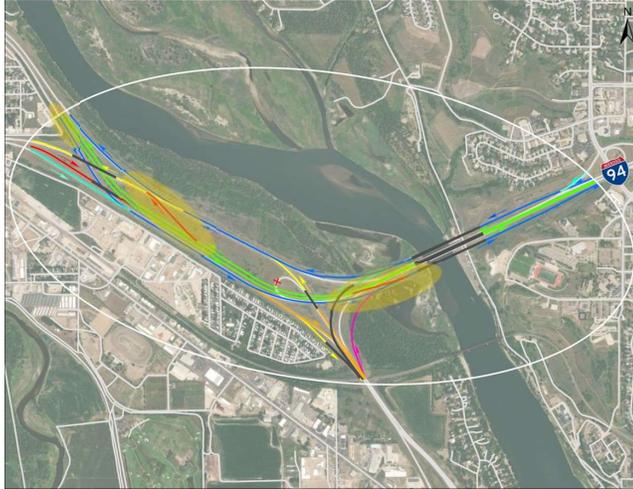
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## Conceptual Solutions – C-D Roads



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## Conceptual Solutions – C-D Roads



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## Missouri River Crossings Zone



- Crossing Location
- I-94 WB two-side weave
  - I-94 EB Merge

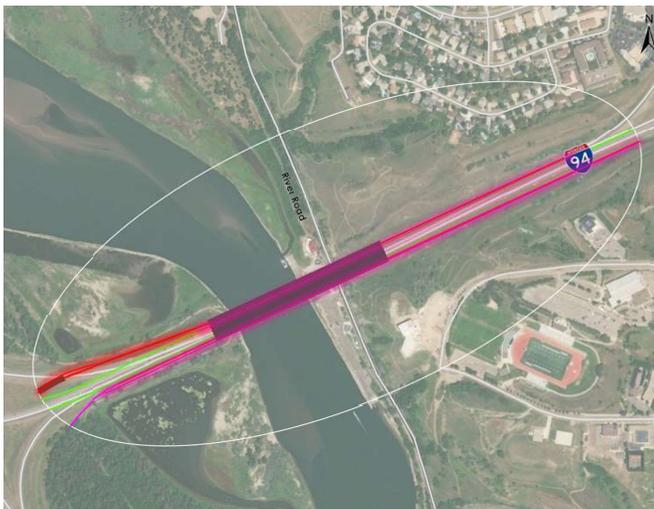
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## Conceptual Solutions – Missouri River Crossings



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## Conceptual Solutions – Missouri River Crossings



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## Conceptual Solutions – Missouri River Crossings



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## Conceptual Solutions – Park Avoidance Crossings



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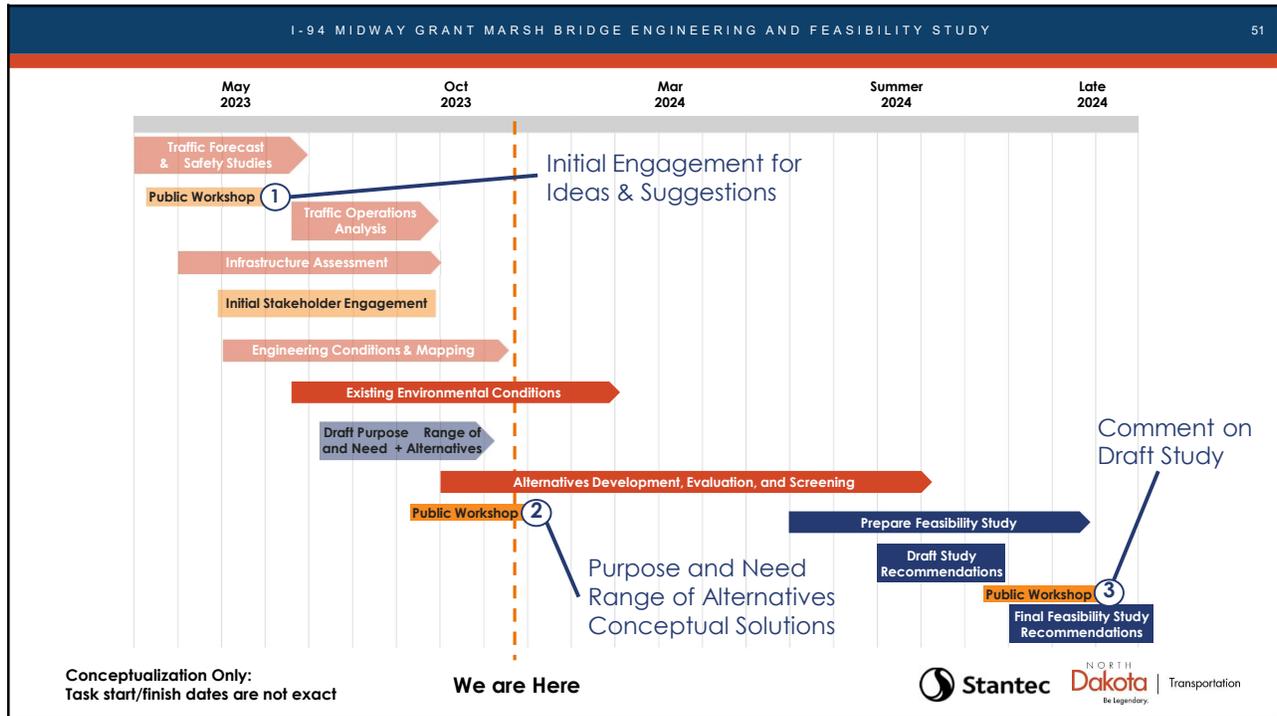
## Schedule & Next Steps

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## 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.

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## Stay Involved

### Visit the Project Website

[www.dot.nd.gov/midway-grantmarsh](http://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.



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