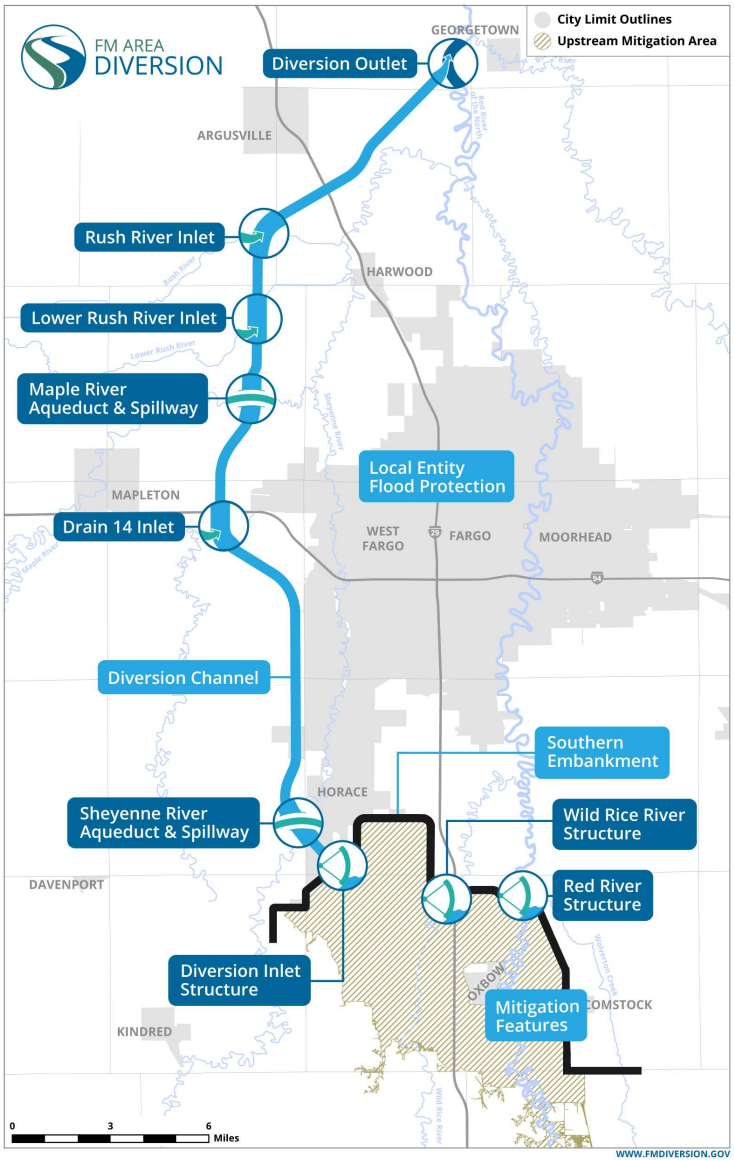
METRO FLOOD DIVERSION AUTHORITY

FM Area Diversion Project Update

Tom Fuchs, *MFDA Senior Construction Manager*


Project Overview



Project Goals

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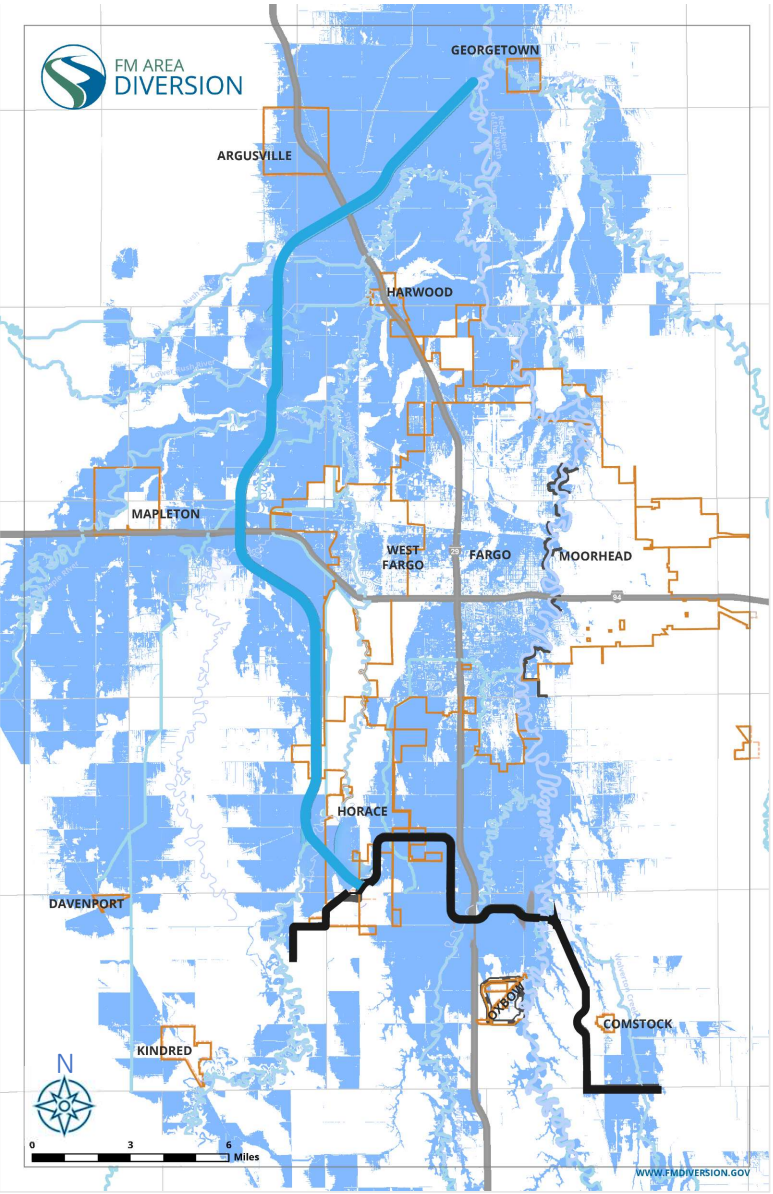
100-year flood protection minimum

37-foot river stage through town

500-year fightable protection

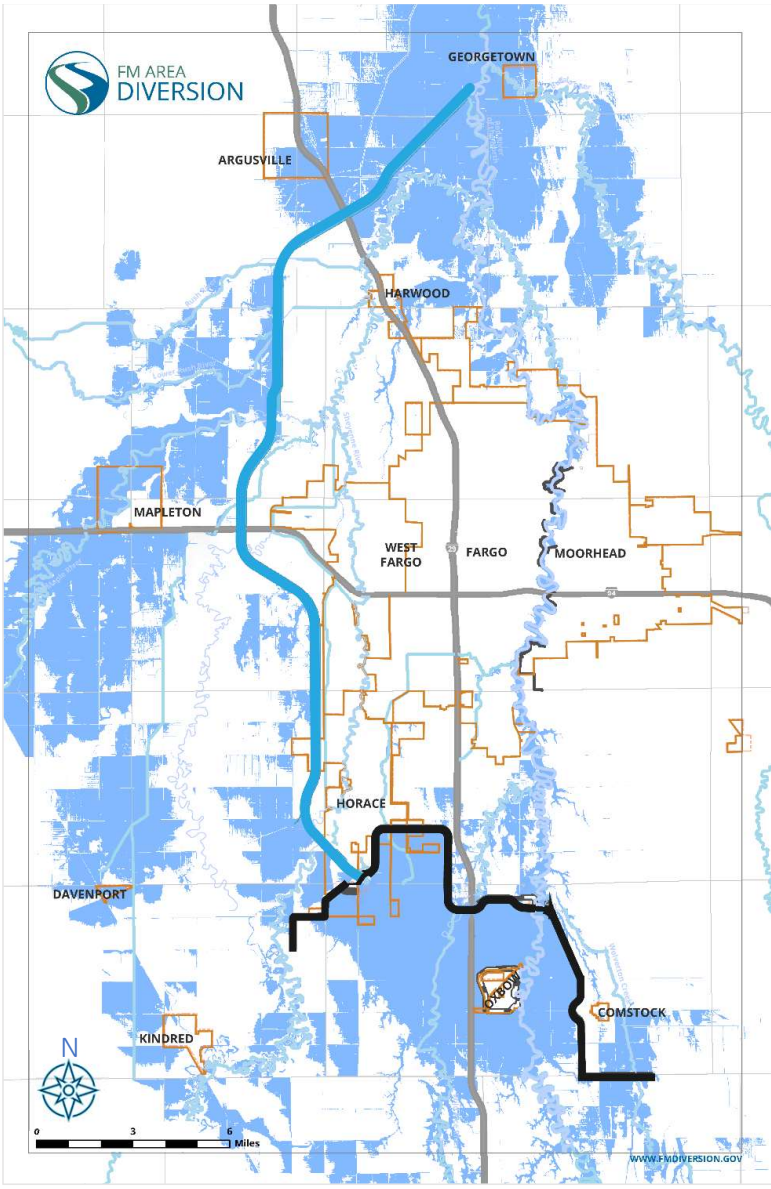
40-foot river stage through town

100-Year Floodplain



Existing Conditions

With Project



Project Timeline

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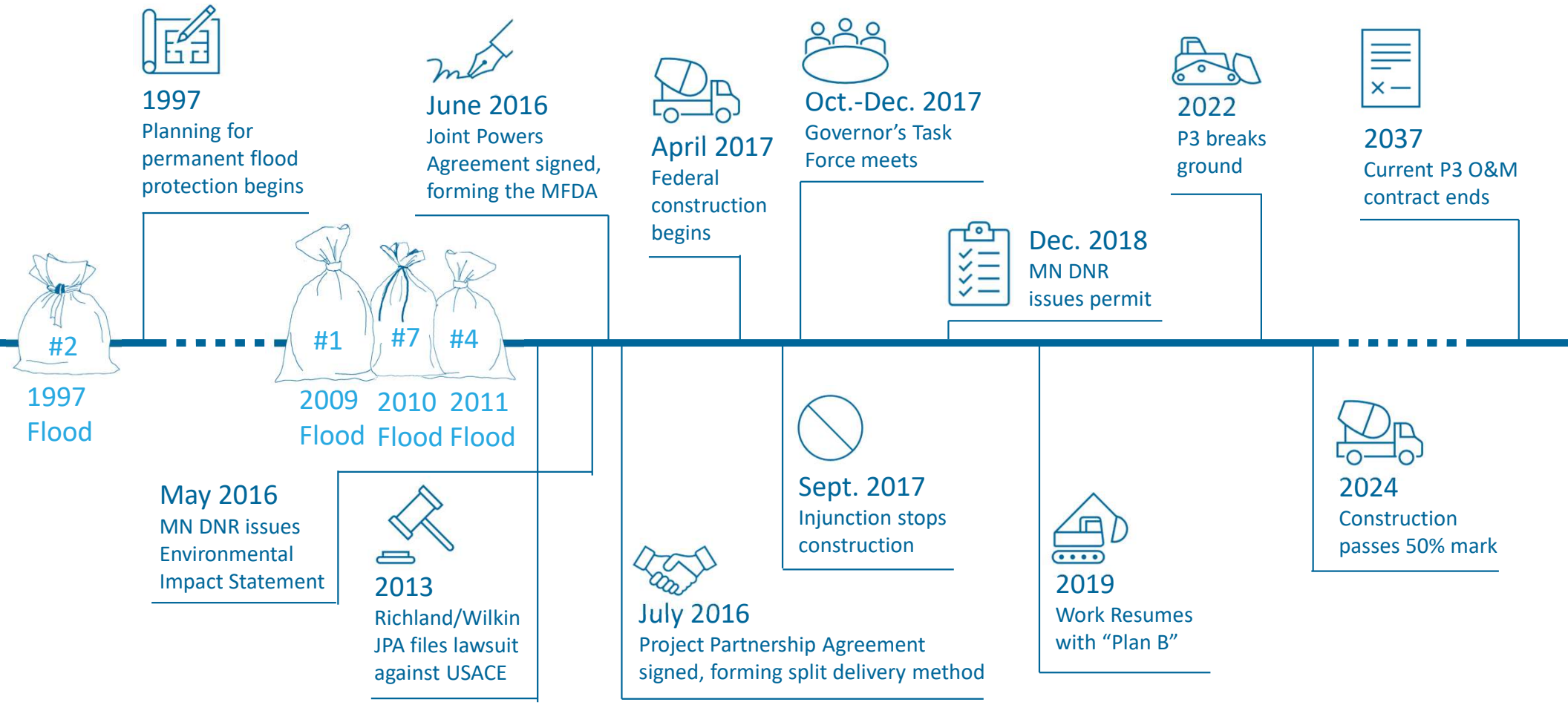

North Dakota Impact

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Reducing catastrophic flood risk protects:

55+ schools including >20% of the state's school-age children, from K-12

>25% hospital capacity for the state

Only Level 1 trauma center between Minneapolis, Seattle, Denver and Omaha

>$25 billion property value

Largest university in the state

How It Will Work

METRO FLOOD DIVERSION AUTHORITY

How It Will Work

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01

Levees & Floodwalls

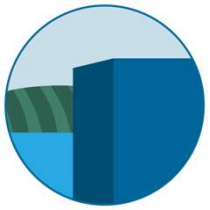
As water comes from the upper parts of the drainage basin, it passes through the natural riverbed, which is bordered by in-town levees and floodwalls. If there is the possibility the flood level will be more than 37 feet, the MFDA will prepare to operate the FM Area Diversion.

02

Control Structures

Radial-arm flood gates on the Red River Structure and Wild Rice River Structure are lowered to limit the amount of floodwater that enters the metro area, allowing no more than 37 feet of water to move through town in the Red River.

03



Southern Embankment

A portion of floodwater moves behind the 22-mile southern embankment into the upstream mitigation area.

04

Diversion Inlet

Gates open on the Diversion Inlet Structure south of Horace, North Dakota, allowing floodwater to enter the stormwater diversion channel and safely pass around the metro area.

05

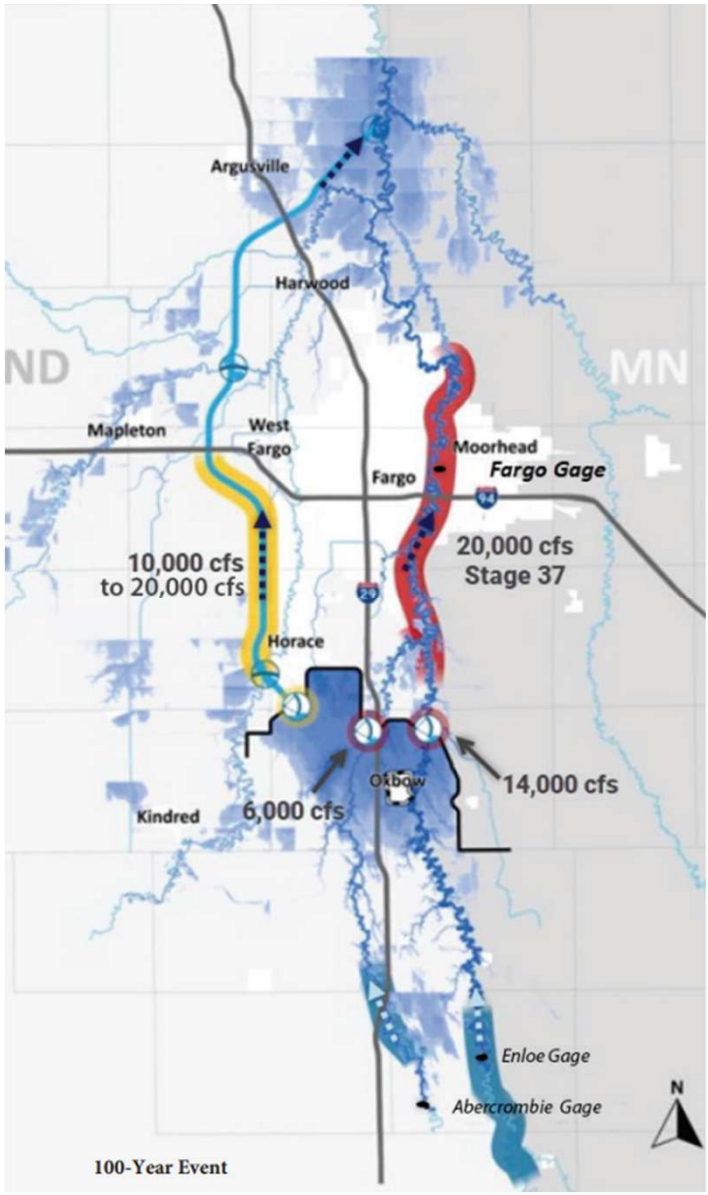
Post-Flood Cleanup

Once project operations end, cleanup begins. The MFDA will remove flood-related debris from the upstream mitigation area, which will experience overland flooding during project operations. Details on planned cleanup activities are in the mitigation plan.

Project Operation Map & CFS

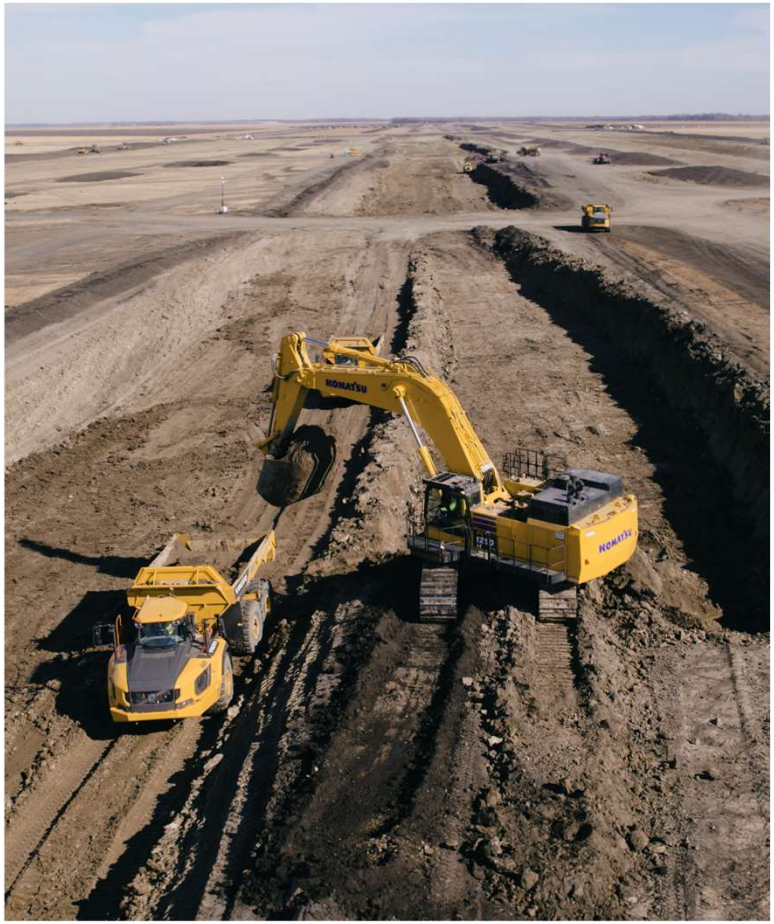
100-year flood event operational example

- Red River Structure gates open about 5 feet to pass 14,000 cfs
- Wild Rice Structure gates open about 4 feet to pass 6,000 cfs
- Floodwaters are stored upstream behind the southern embankment
- Diversion Inlet Structure gates open about 2 feet to pass 10,000-20,000 cfs into the stormwater diversion channel




GREG THOMPSON, PE, CFM
HOUSTON ENGINEERING

Project Firsts



- First-ever public-private partnership (P3) done in conjunction with the U.S. Army Corps of Engineers
- First-ever water management P3 implemented in North America
- First green finance initiative in the U.S. specifically designed for climate change adaptation
- Pilot project for using renewable biofuels to power heavy machinery

Project Awards

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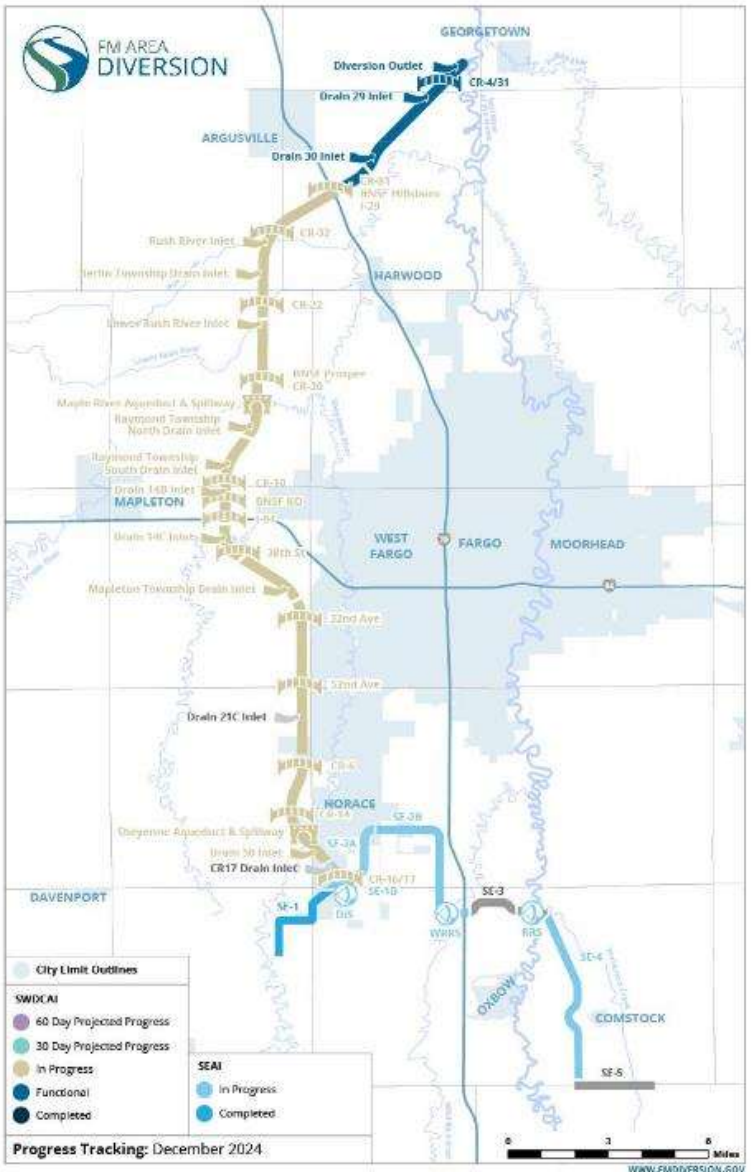
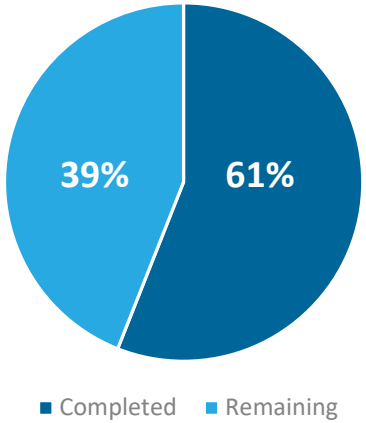
- Americas **P3 Deal of the Year** from Project Finance International
- **North America Water Deal of the Year** Award from Proximo
- Dan W. Renfro **Partnering Award** (Ames Construction, USACE contractor)
- IJ Global's **Water Deal of the Year** and **Public Sector Project of the Year** in North America
- Environmental Finance **Green Social and Sustainability Loan of the Year**
- Americas Award for **Public Finance** from International Finance Law Review
- **Project Delivery Team of the Year** (USACE)
- P3 Awards **Public Sector Promoter/Procurer of the Year** (MFDA), **Best Financial Structure** (Agentis Capital) and **Legal Advisor of the Year** (Ashurst)
- Bond Buyer's **P3 Deal of the Year** and **P3 Public Financing Award**
- IJGlobal's **ESG Climate Adaptation Award**
- National Academy of Construction's **Recognition of Special Achievement Award**
- Associated General Contractors of North Dakota's **2023 Safety Award** (ASN Constructors)
- **ND Ready Mix Gold Star Award** (City of Fargo) for Drain 27

Construction Progress





FM Area Diversion

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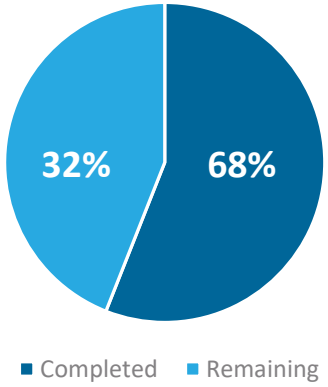
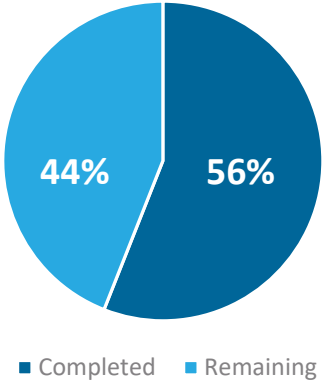
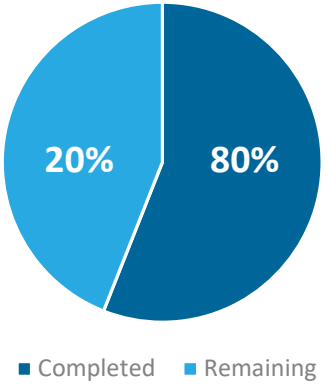
Construction Completion



Federal Work

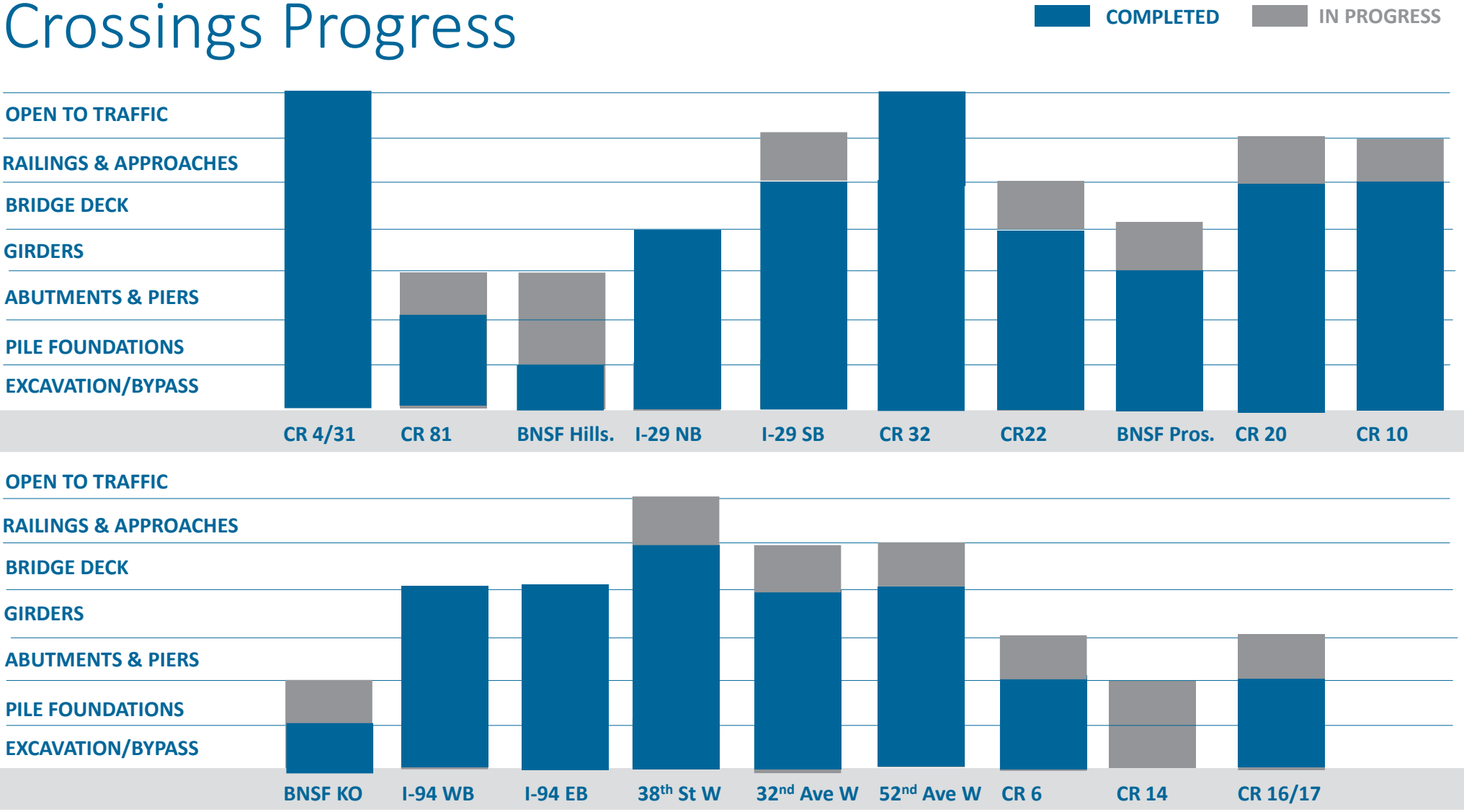


P3 Work



In-Town Work

Crossings Progress



2024 Year in Review

68 Components Under Construction

FM AREA DIVERSION

ASN Constructors

316K
Hours Put on P3 Machinery

US Army Corps of Engineers®

800
Boulders Placed at Drayton Dam

>80
Tb of Data Collected from Drone Surveying

28M
CY of Material Excavated

850K
CY of Material Excavated for the Southern Embankment & OHB Levee

24
Miles of Piling Driven

23K
CY of Concrete Placed

42K
CY of Concrete Placed at the Red River Structure

16
Miles of Piling Driven at RRS

3,508
Trees Planted

1,077
Acres of Native Grasses Planted

THE CITY OF Fargo FAR MORE

MOORHEAD MINNESOTA

6
Stormwater Lift Stations Worked On

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Project Flyover

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https://youtu.be/bnrJ4Yq_q7Q?feature=shared

Stormwater Diversion Channel

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Construction Overview

Builder: ASN Constructors (P3)

Start Date: August 2022

Scheduled Completion: Early 2027

Component Details

Length: 30 miles

Excavation Totals: 45 million cubic yards

Utility Relocations: coordinating with 18 companies

Maple River Aqueduct

METRO FLOOD DIVERSION AUTHORITY

Construction Overview

Builder: ASN Constructors (P3)

Start Date: June 2023

Scheduled Completion: Q4 2025

Component Details

Length: 250 feet

Width: 50 feet

Concrete: 10,000 cubic yards

Piling: 48,194 linear feet of H pile

September 2024

RED RIVER VALLEY ALLIANCE

Sheyenne River Aqueduct

METRO FLOOD DIVERSION AUTHORITY

Construction Overview

Builder: ASN Constructors (P3)

Start Date: 2024

Scheduled Completion: early 2027

Component Details

Length: 250 feet

Width: 35 feet

Concrete Used: 8,000 cubic yards

Piling: 9,642 linear feet of sheet pile

Diversion Outlet

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Construction Overview

Builder: ASN Constructors (P3)

Start Date: 2023

Completed: 2024

Component Details

Length: 1,500 feet

Width: 300 feet

Riprap: 24,000 cubic yards

Boulders: 450+ placed as rock weir to promote fish passage

19 Channel Crossings

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32nd Ave. W.

38th Street

County Roads 16/17

County Roads 4/31*

County Roads 20/22

County Road 32*

RED RIVER VALLEY ALLIANCE

* Completed in 2024

Interstate & Railroad Crossings

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I-94

I-29

BNSF Hillsboro

BNSF Shoofly

BNSF Prosper

BNSF KO

RED RIVER VALLEY ALLIANCE

Drains & Inlets

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Drain 14B

Drain 14C

Drain 29

Drain 30

Lower Rush Inlet

Rush River Inlet

RED RIVER VALLEY ALLIANCE

Diversion Inlet Structure

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Construction Overview

Builder: Ames Construction (USACE contractor)

Start Date: 2017

Scheduled Completion: 2025

Component Details

Excavation: 264,000 cubic yards

Steel Piling: 55,400 linear feet

Concrete: 11,700 cubic yards

Riprap: 20,000 cubic yards

Gates: 50 feet wide by 26 feet tall

Wild Rice River Structure

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Construction Overview

Builder: Ames Construction (USACE contractor)

Start Date: 2020

Scheduled Completion: 2025

Component Details

Excavation: 420,000 cubic yards

Steel Piling: 70,200 linear feet

Concrete: 13,000 cubic yards

Riprap: 14,500 cubic yards

Gates: 40-by-40 feet

Red River Structure

METRO FLOOD DIVERSION AUTHORITY

Construction Overview

Builder: Ames Construction (USACE contractor)

Start Date: 2022

Scheduled Completion: March 2026

Component Details

Excavation: 1.8 million cubic yards

Steel Piling: 87,000 linear feet

Concrete: 72,000 cubic yards

Riprap: 26,200 cubic yards

Gates: 50 feet wide by 52.5 feet tall

Southern Embankment

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Reach 1A – 100% Completed

Reach 1B – 29% Completed

Reach 2A – 76% Completed

Reach 2B – 37% Completed

Reach 4 – 5% Completed

Up Next

Reach 3 – Contract awarded in January 2025 to HSG Park Joint Venture 2 in 2025

Reach 5 – Starting in 2025

In-Town Flood Protection

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THE CITY OF Fargo FAR MORE

CASS COUNTY GOVERNMENT

Construction Overview

Projects began in 2009 to allow for up to 37 feet of floodwater to flow safely through town

Project Details

18 stormwater lift stations

259 property acquisitions

4.4 miles county road improvements/ grade raises

26.2 miles of levees/floodwalls

In-Town Flood Protection

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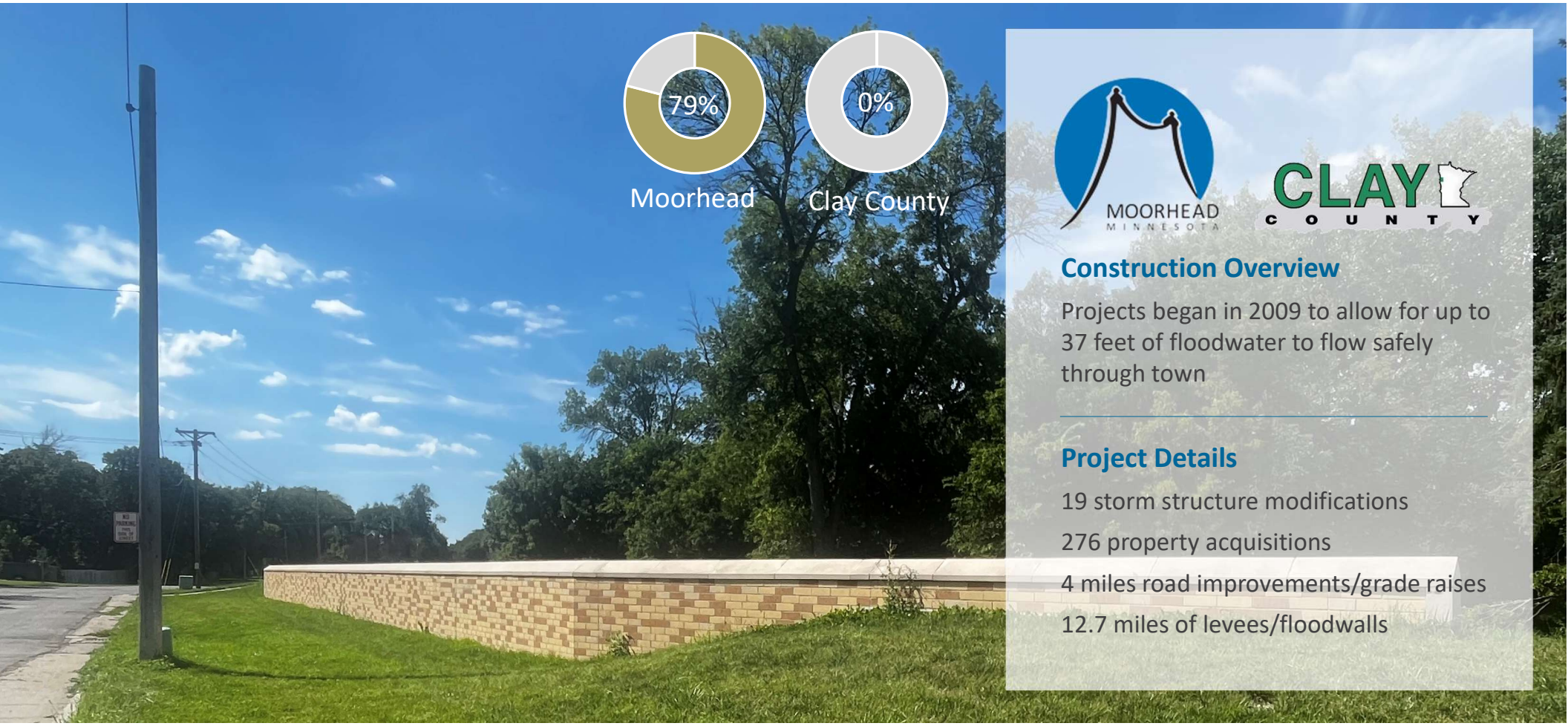

MOORHEAD MINNESOTA

CLAY COUNTY

Construction Overview

Projects began in 2009 to allow for up to 37 feet of floodwater to flow safely through town

Project Details

19 storm structure modifications

276 property acquisitions

4 miles road improvements/grade raises

12.7 miles of levees/floodwalls

Oxbow Wetland Mitigation

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Project Overview

Contractor: Industrial Builders Inc.

Start Date: Fall 2020

Completed: Spring 2023

Component Details

Size: 10.6 wetland acres with 8.2 acres of 50-foot upland buffers

Growth: 63.1 acres of seedlings planted

Drayton Dam Mitigation

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Project Overview

Contractor: HSG Park Joint Venture (USACE Contractor)

Start Date: May 2022

Completed: Fall 2023

Location: 120 miles north of Fargo-Moorhead

Component Details

- Constructing a rock rapids fishway structure
- Offsets project impacts to biotic connectivity on the Red River

Drain 27 Mitigation

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Project Overview

Contractor: HSG Park Joint Venture (USACE contractor)

Start Date: Spring 2022

Completed: Fall 2022

Wetland Establishment Completion Date: December 2027

Component Details

Size: 320 acres of wetland

Excavation: 436,000 cubic yards

Native Plant Seeding: 485 acres

OHB Ring Levee

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Project Overview

Contractor: Hendrickson Transportation (USACE contractor)

Start Date: Spring 2024

Completion: September 2025

Component Details

Excavation: 11,500 cubic yards

Construction Challenges

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Pace of the project in conjunction with the volume of work

Unfamiliarity with split delivery/P3 process

Physical construction challenges

- Maintaining drainage
- Maintaining access
- Project/program coordination
- Winter work

Stay Connected

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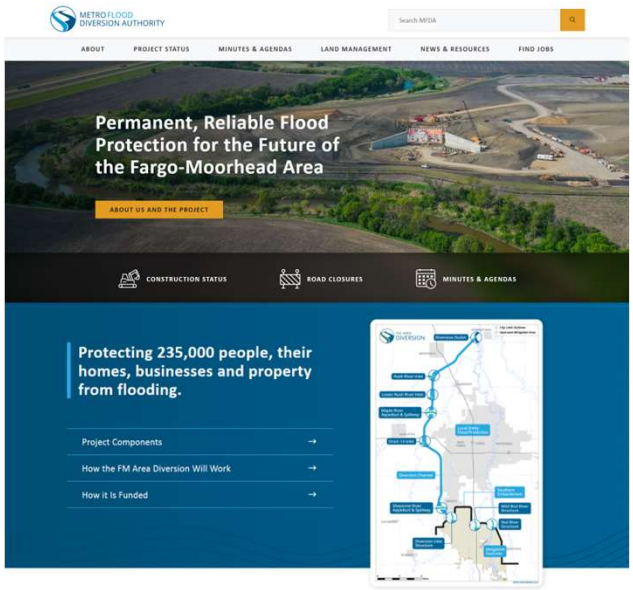

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