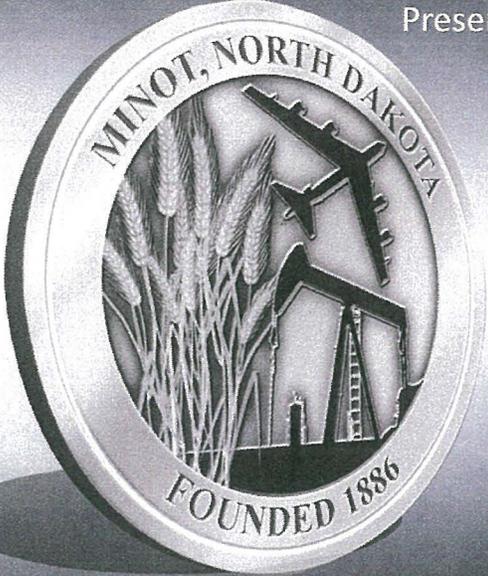


**Mouse River Enhanced Flood Protection Project**  
Presented to: Water Topics Overview Committee



**PROVIDE**  
*FOR THE WORLD*

**POWER**  
*THE WORLD*

**PROTECT**  
*THE WORLD*

Dan Jonasson, Director of Public Works

## Background on Mouse River Enhanced Flood Protection Plan (MREFPP)

**Sept 26, 2011**

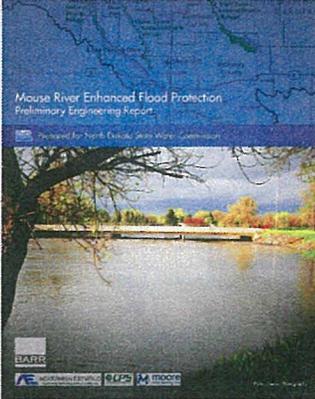
- NDSWC signs contract with Barr Engineers and Ackerman Estvold Engineers to complete MREFPP – Preliminary Engineering Report

**April 12, 2012**

- Minot City Council Adopts Footprint of Preliminary Engineering Report
- Similar Actions Taken by Other Local Governments (Ward County, City of Burlington, etc.)

**December 2013**

- Souris River Joint Water Board Adopts MREFPP



**City of Minot**

## Mouse River Enhanced Flood Protection

- Developed on behalf of the Souris River Joint Board (SRJB)
- NDSWC Tasked with Plan Preparation
- Plan Released – February 2012
- Objective – Protection against flood similar to 2011
  - 21.6 miles of levees
  - 2.8 miles of floodwalls
  - 30 closure structures
  - Basin Wide Approach – Urban and Rural Solutions
- Cost – Approximately \$1.028B (2014-2039)
  - \$820 Million – Urban Areas
  - \$180 Million Rural Reaches
- Timeline – 25 years - 2014-2039

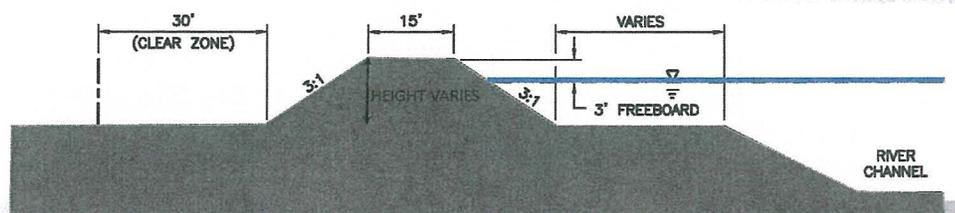


**City of Minot**

3

## Preliminary Alignment contains 21.6 Miles of Levees in Mouse River Basin

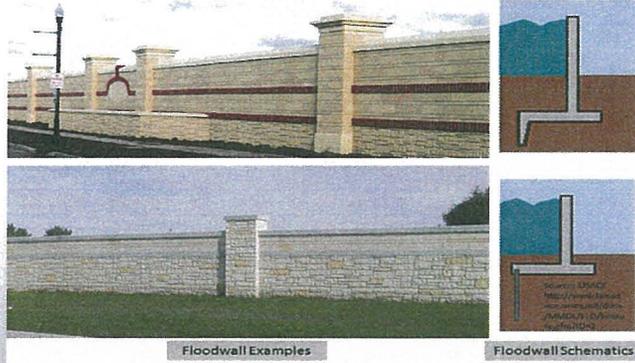
Item	Units	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Length of Levee	feet	38,200	46,300	29,500	114,000



**City of Minot**

## Preliminary Alignment Contains 2.8 Miles of Floodwalls in Basin

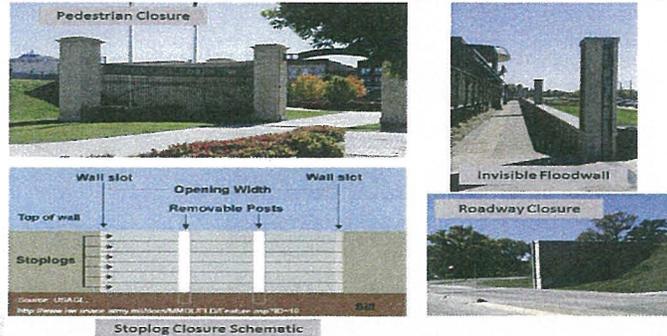
Item	Units	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Length of Levee	feet	1,100	11,800	2,000	14,900



**City of Minot**

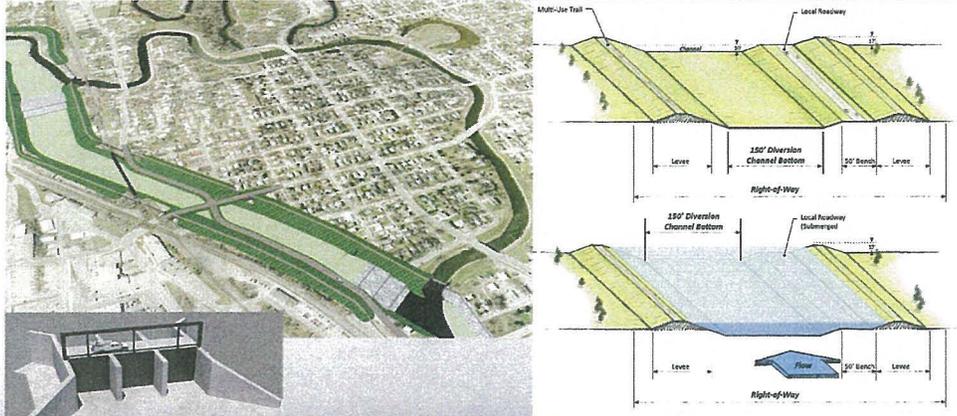
## Preliminary Alignment Contains 30 Transportation Closures in Basin

Item	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Transportation Closures	2 (1 road & 1 RR)	20 (16 road & 4 RR)	8 (2 road & 6 RR)	30 (19 road & 11 RR)



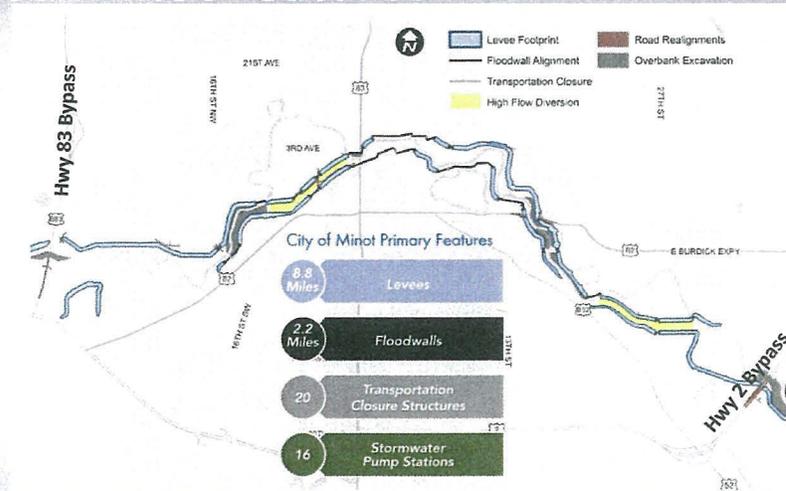
**City of Minot**

## Preliminary Alignment Contains 2 High Flow Diversions in Minot



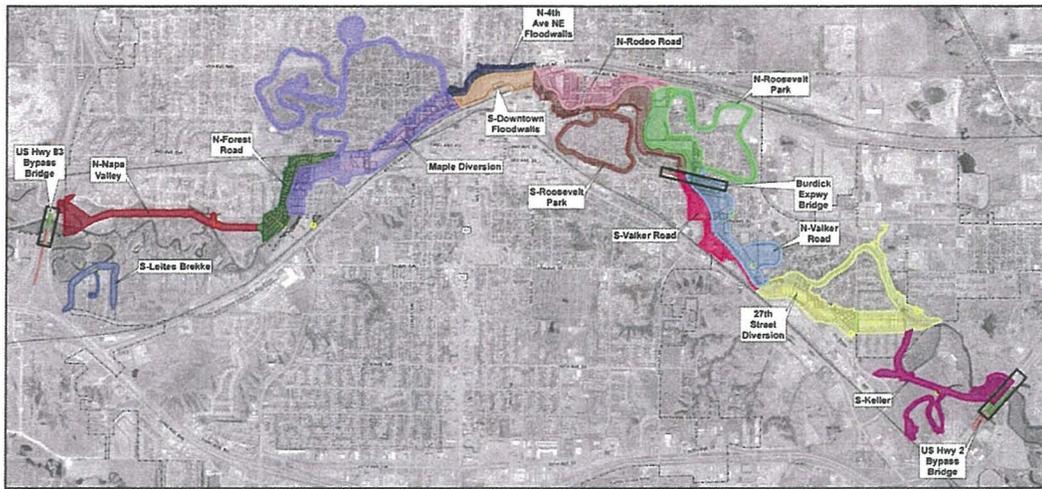
City of Minot

## Proposed Minot Features



City of Minot

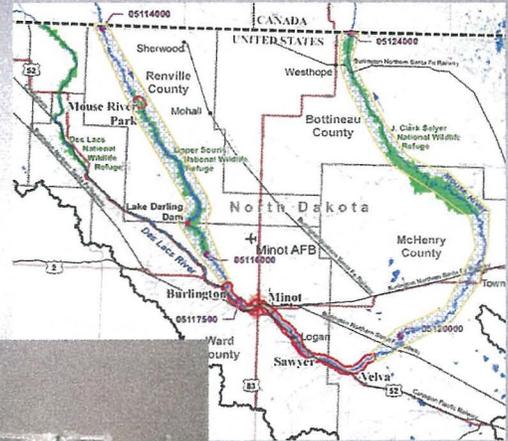
## Phasing Sequence in Minot Reaches



**City of Minot**

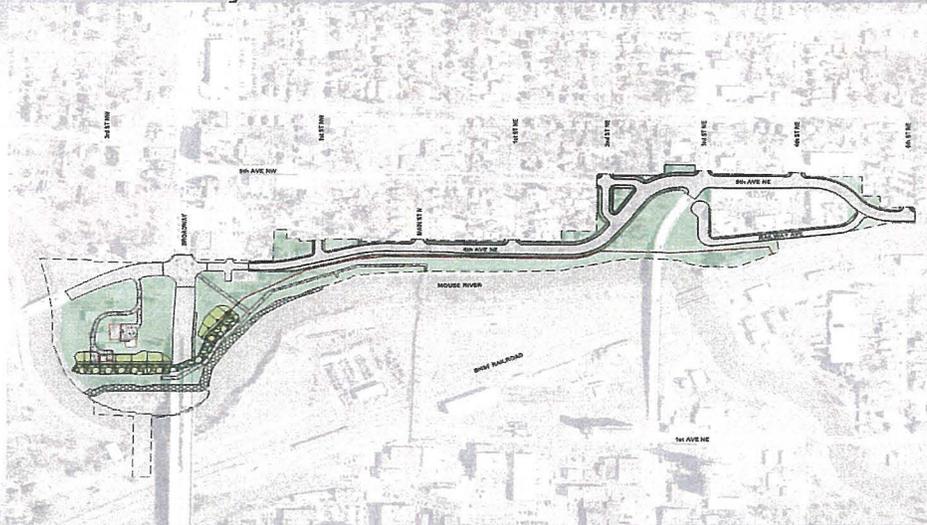
## MREFPP – Rural Reaches

- STaRR Program
  - Structure Acquisition Relocation and Ring Dike Program
  - Provides relocation or protection to rural structures, homes, out buildings
- Modification of 1989 agreement and operations plan of the Dams



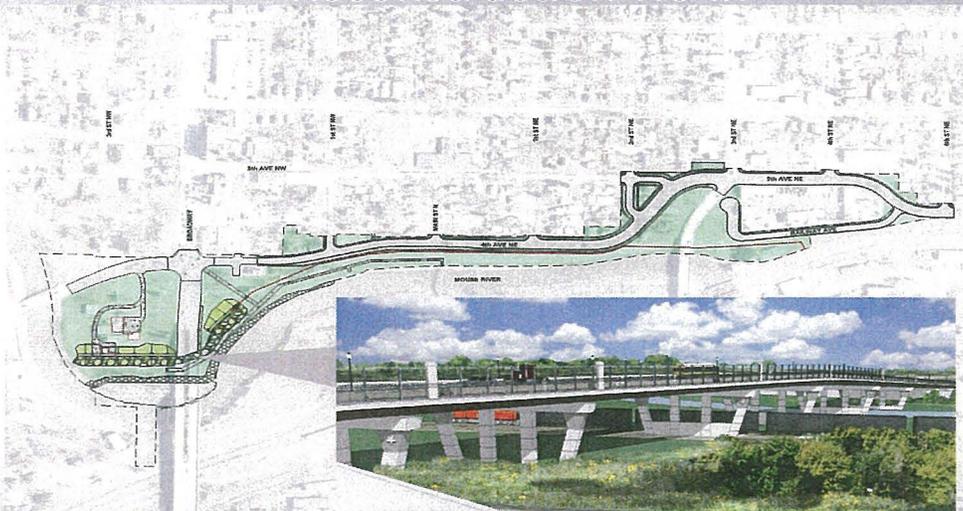
**City of Minot**

## Project Overview Phase 1 - Minot



**City of Minot**

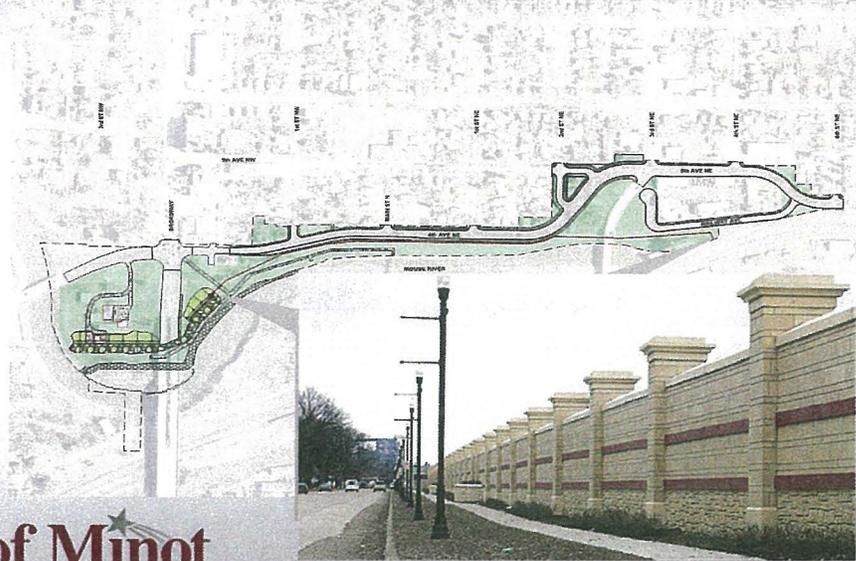
## Project Overview – NDDOT Bridge Reconstruction Tie-in



**City of Minot**

Conceptual bridge visualization provided by NDDOT (Subject to change)

# Project Overview – 2,250 ft of Concrete Floodwalls



**City of Minot**

## Phase 1 – Minot design of MREFPP

**FLOODWALL**  
REFINED CONCEPT

*Formalities: Katigro & Ceballos Detail*

**What changed?**

- wall height
- column layout
- additional architectural details

**Key Issues to address:**

- Increase wall height to provide more protection with MREFPP
- Increase the height of the 10th and 11th Avenue sections

**Representative Wall Elevation**

Architectural drawings showing a cross-section of the floodwall with a brick pattern and decorative columns. Below it is a perspective view of the wall with people walking on top, and a side elevation showing the wall's profile against a background of trees and a sky.

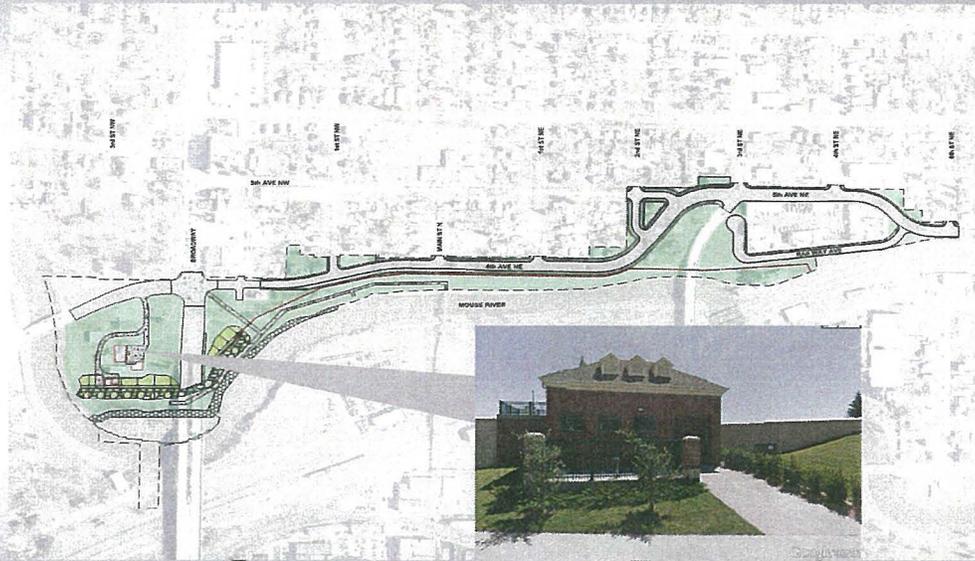
Gateway features are being incorporated into the floodwall design to tie in with pedestrian access

**RIVER GATEWAY**  
REFINED CONCEPT WITH PARKING OPTION B

A detailed site plan of the River Gateway area, showing the layout of the floodwall, walkways, and parking areas. The plan includes labels for various features such as "PARKING", "WALKWAY", "LANDSCAPE", and "RIVER". It also shows the location of the floodwall relative to the river and surrounding streets.

**City of Minot**

### Project Overview – Storm Water Pump Station(180,000GPM)



**City of Minot**

### Phase 1 conceptual flyover



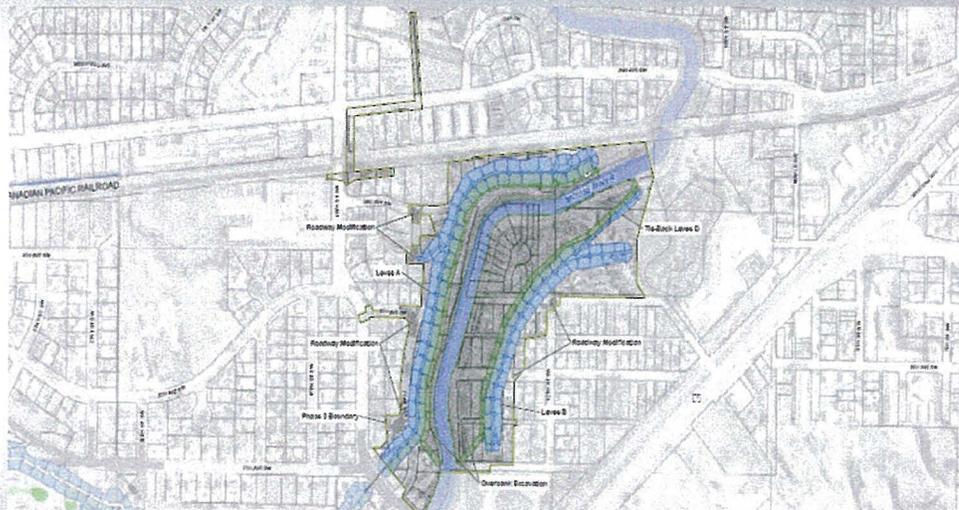
**City of Minot**

## Napa Valley Segment (phase 2)



**City of Minot**

## Forest Road Segment (phase 3)



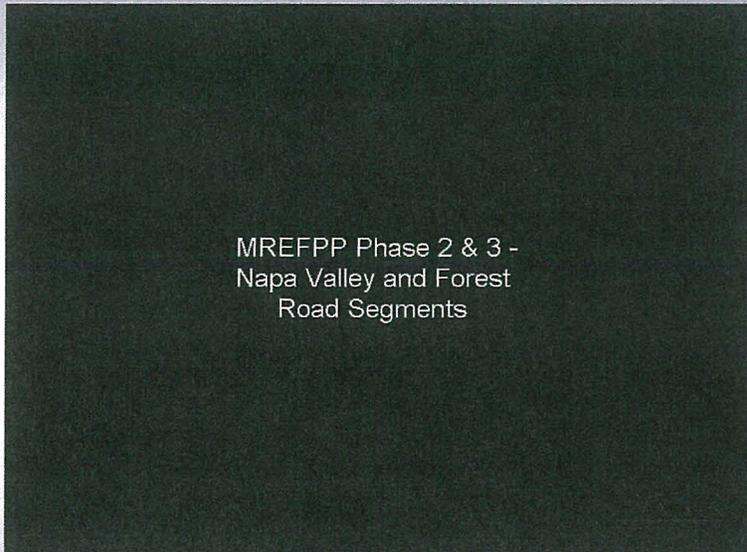
**City of Minot**

# 16<sup>th</sup> Street Road Closure



**City of Minot**

# Phases 2 & 3 Conceptual Flyover



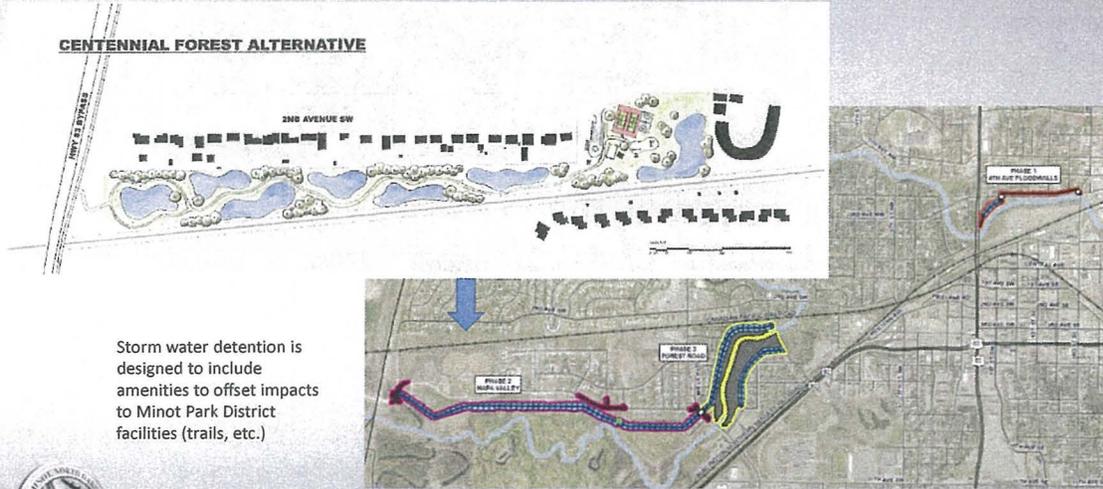
MREFPP Phase 2 & 3 -  
Napa Valley and Forest  
Road Segments



**City of Minot**

### Design of 3 Segments in Minot

#### CENTENNIAL FOREST ALTERNATIVE



Storm water detention is designed to include amenities to offset impacts to Minot Park District facilities (trails, etc.)



# City of Minot

### Phase 2A Conceptual Flyover

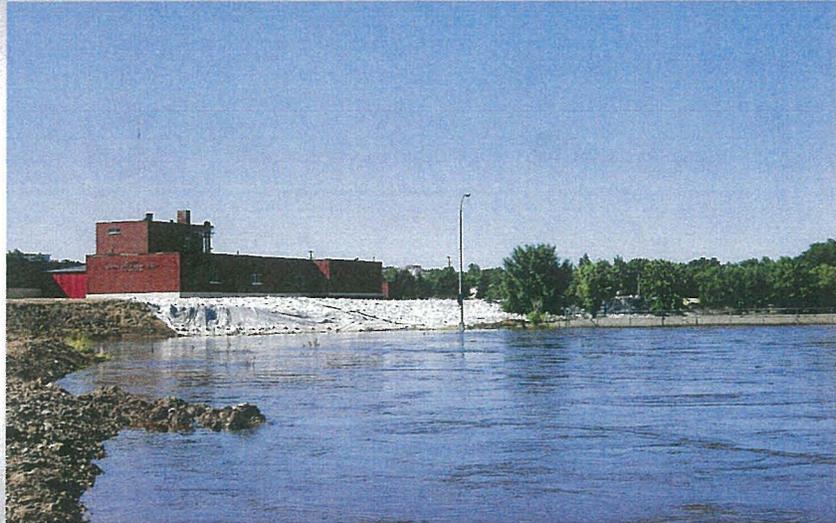


# City of Minot

# Water Plant HMGP (hazard mitigation)

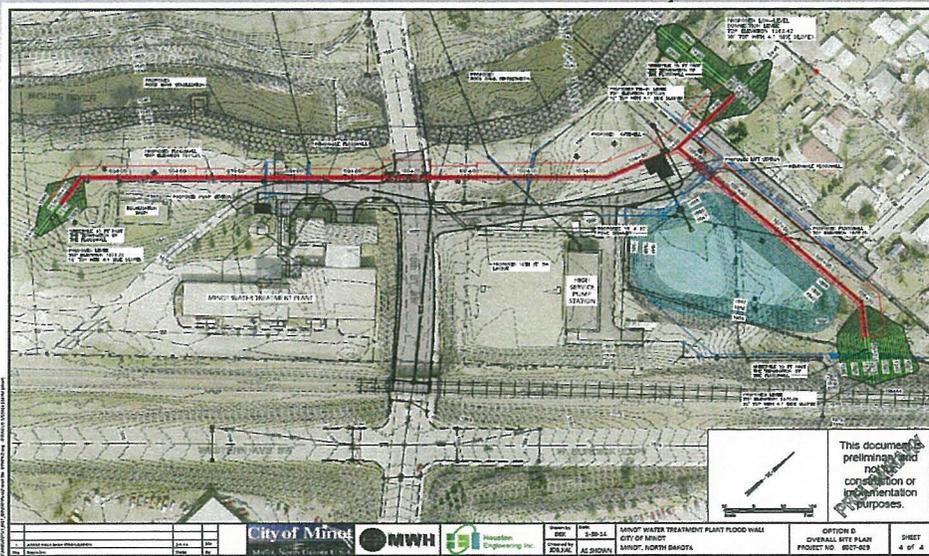
Project cost \$28 million

Funding – FEMA-DES-  
Minot



## City of Minot

# Water Plant HMGP Project



## City of Minot

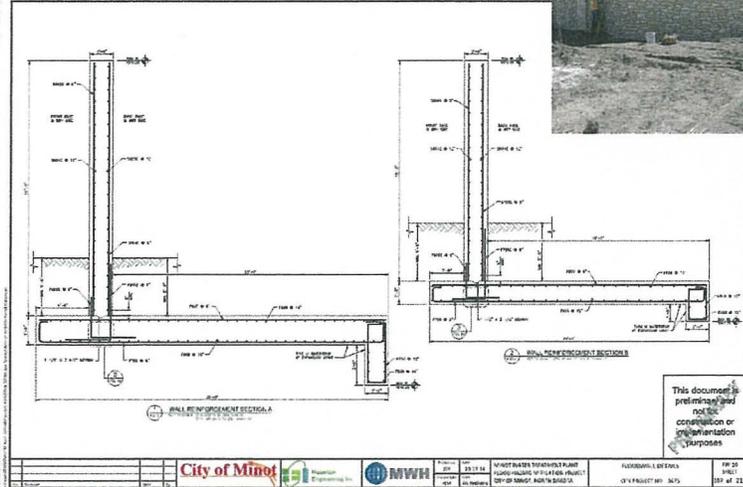
MINOT WATER TREATMENT PLANT FLOOD WALL  
CITY OF MINOT  
MINOT, NORTH DAKOTA

OPTION D  
OVERALL SITE PLAN  
PROJECT NO. 192-149

SHEET  
4 OF 4

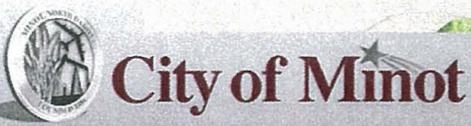
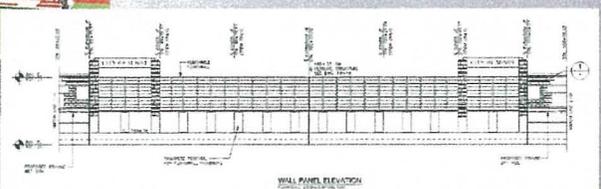
# Floodwalls and Removable Closures

- Floodwalls
  - 1,570 Concrete – Inverted T-walls
  - 5 – 15 of Exposed Heights
  - Form-lined and Stained



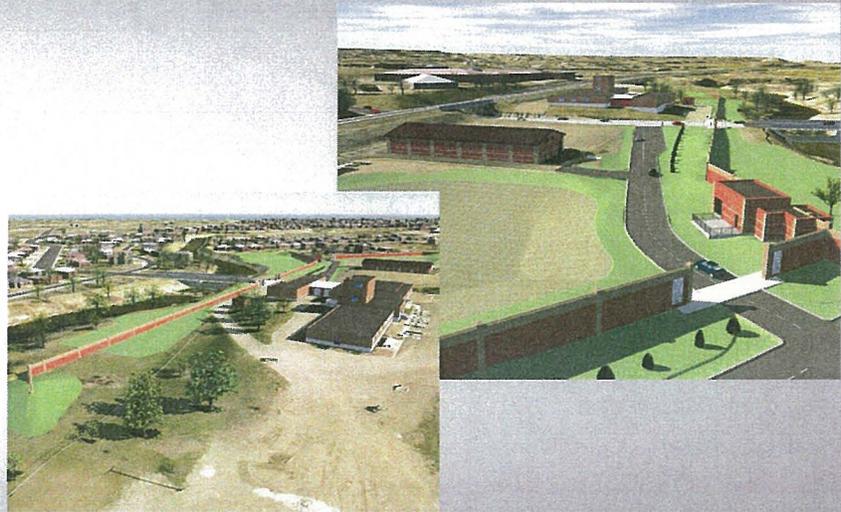
# Removable Closures

- Removable Closures
  - 2 Closures
  - 16<sup>th</sup> (129' + 15.5' each side)
  - 12<sup>th</sup> (55')



## Misc. Project Features

- Intake relocation
- UV Treatment
- Tie-back Levees
- Riverbank Stabilization
- Utility Relocations



**City of Minot**

## Water Plant HMGP Project

- Currently under construction
- Major work completed 2016
- Final work completed July 2017



**City of Minot**

## Water Plant HMGP Flyover Rendering



**City of Minot**

29

## Current Flood Protection Status

- Phase 1 -70% Design complete – bid January 2017
- Phase 2-3 90% design complete – Bid December 2016
- EIS – being completed by Barr/Ackerman and Houston Eng. – 10-2016
- StARR Program to start summer of 2016
- Feasibility Study ceremony held May 6, 2016
- Feasibility study will gain federal interest



**City of Minot**

30



Provide for the World



Power the World



Protect the World

# Questions



**City of Minot**