Mouse River Enhanced Flood Protection Project

Presented to: Water Topics Overview Committee

PROVIDE
FOR THE WORLD

POWER
THE WORLD

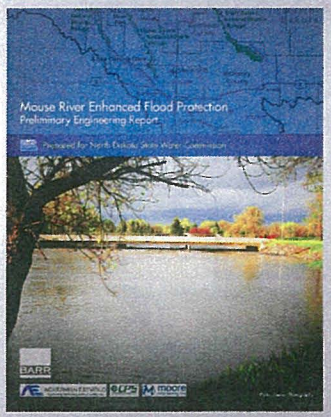
PROTECT
THE WORLD

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

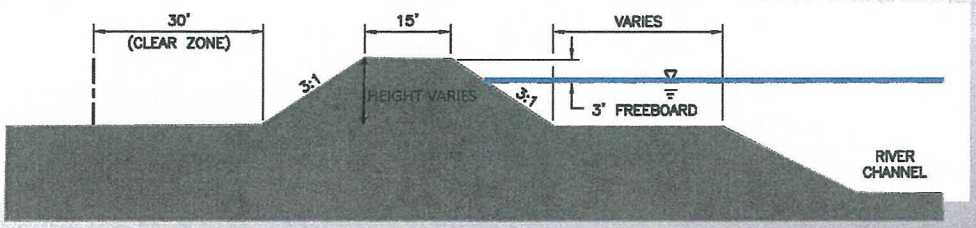
- Cost – Approximately $1.028B (2014-2039)
  - $820 Million – Urban Areas
  - $180 Million Rural Reaches

- Timeline – 25 years - 2014-2039

City of Minot

Preliminary Alignment contains 21.6 Miles of Levees in Mouse River Basin

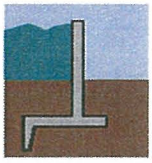
Item	Units	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Length of Levee	feet	38,200	**46,300**	29,500	114,000

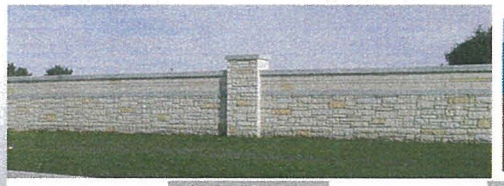


City of Minot

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





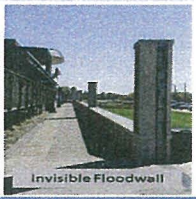
Floodwall Examples

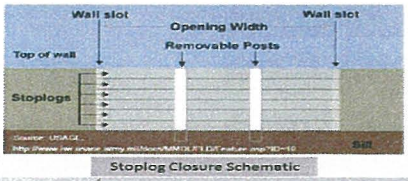
Floodwall Schematics

City of Minot

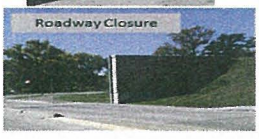
Preliminary Alignment Contains 30 Transportation Closures in Basin

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)



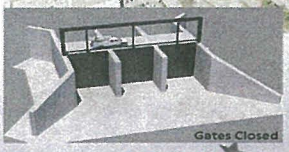


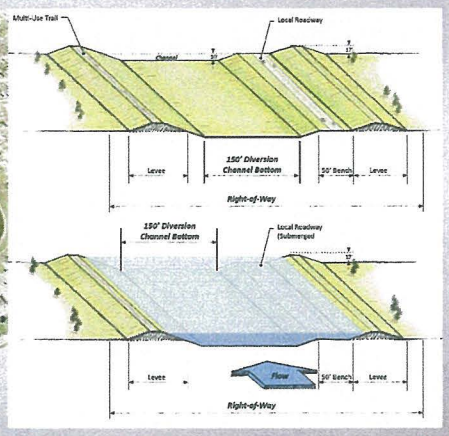
Stoplog Closure Schematic



City of Minot

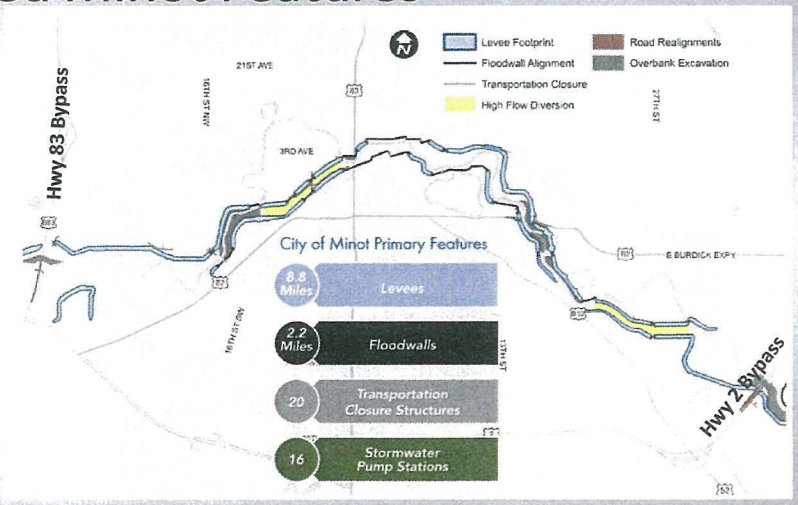
Preliminary Alignment Contains 2 High Flow Diversions in Minot





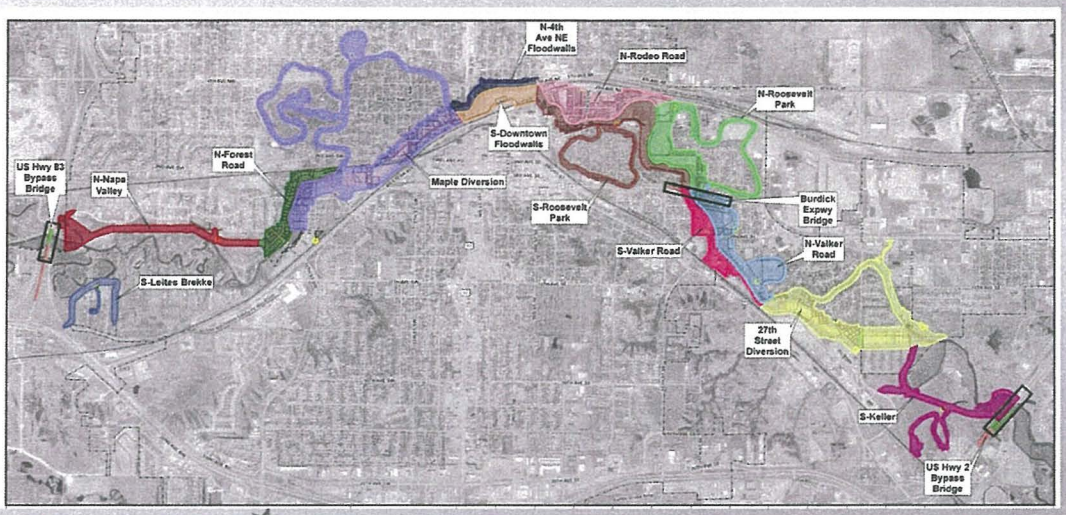
City of Minot

Proposed Minot Features



City of Minot

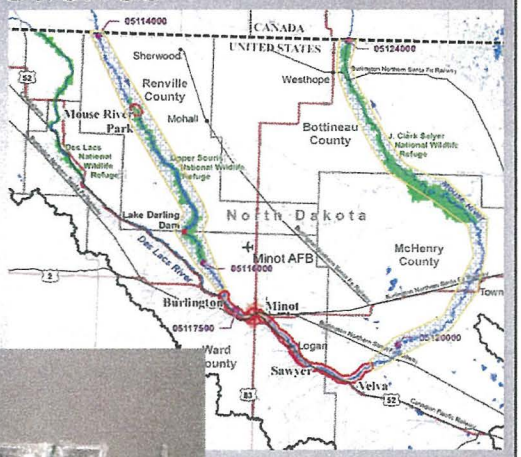
Phasing Sequence in Minot Reaches



City of Minot

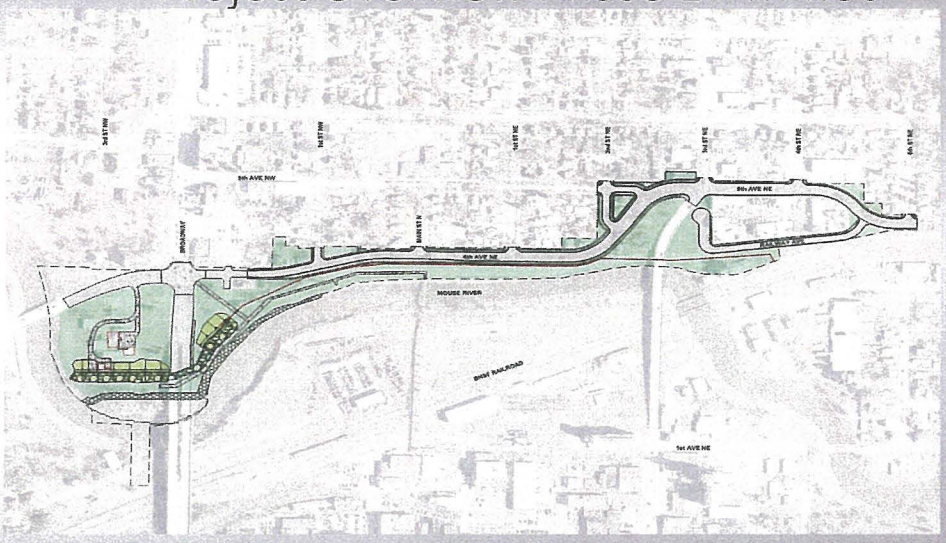
MREFPP – Rural Reaches

- 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



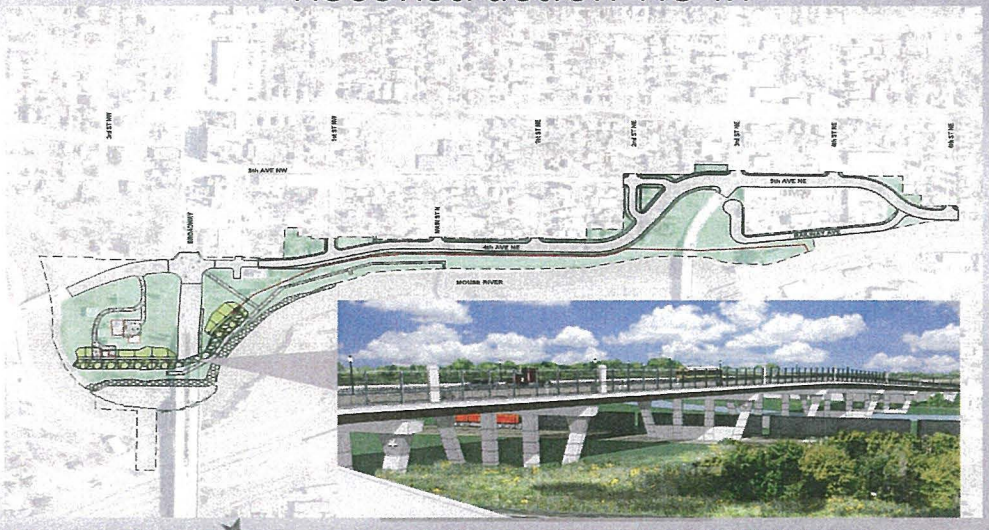
City of Minot

Project Overview Phase 1 - Minot



City of Minot

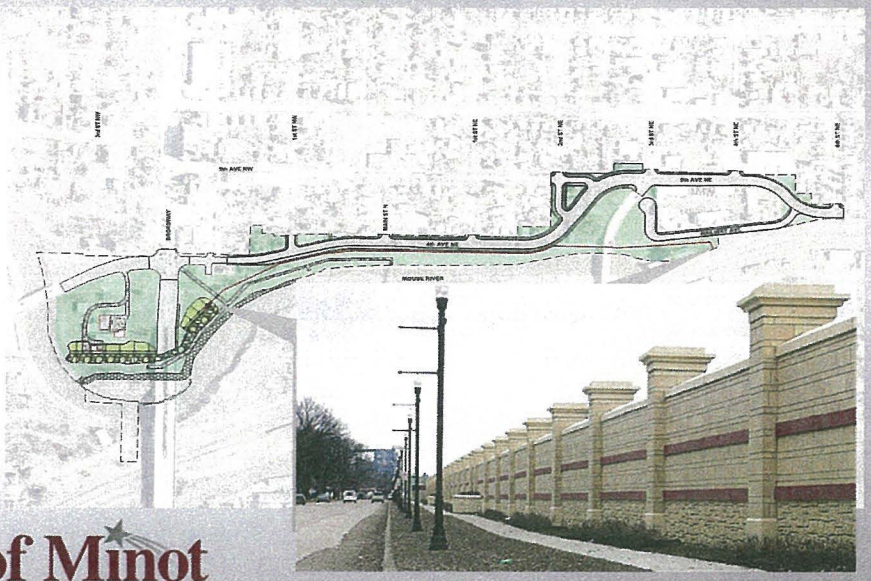
Project Overview – NDDOT Bridge Reconstruction Tie-in



City of Minot

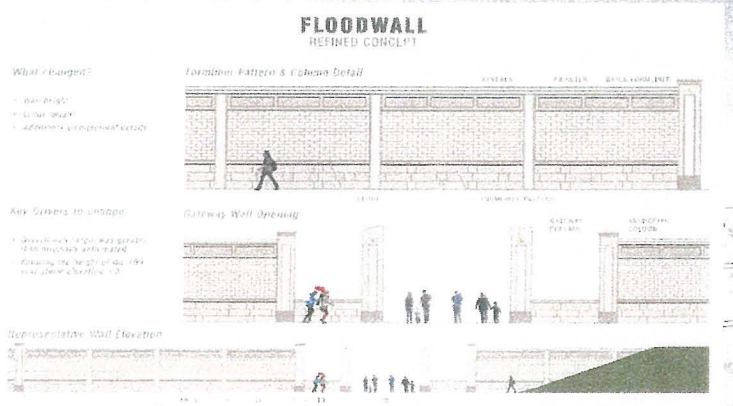
Conceptual bridge visualization provided by NDDOT (Subject to change)

Project Overview – 2,250 ft of Concrete Floodwalls



City of Minot

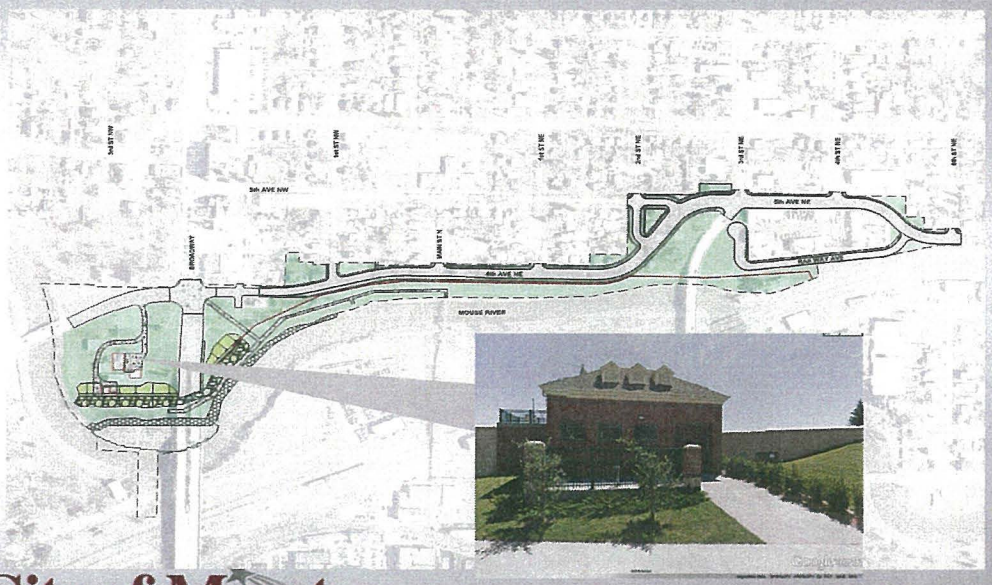
Phase 1 – Minot design of MREFPP



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

City of Minot

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

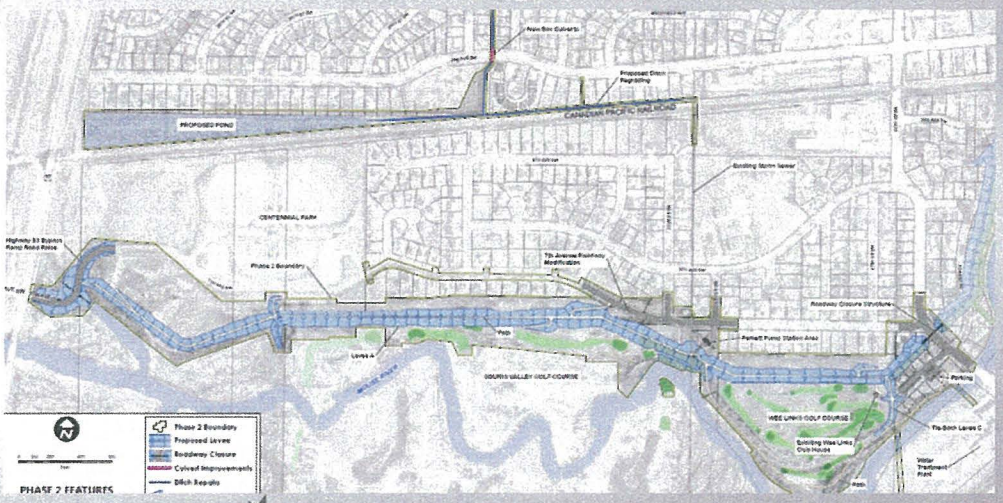


City of Minot

Phase 1 conceptual flyover

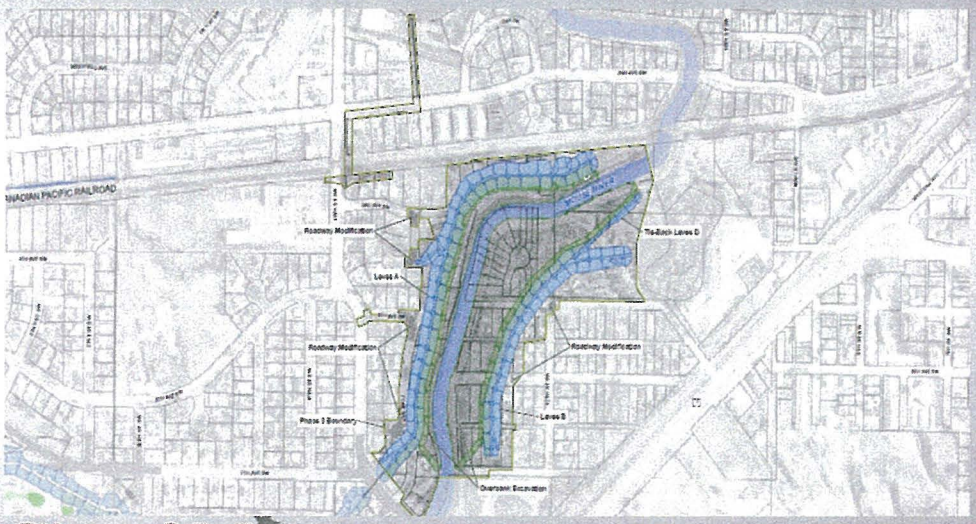
City of Minot

Napa Valley Segment (phase2)



City of Minot

Forest Road Segment (phase 3)



City of Minot

16th Street Road Closure

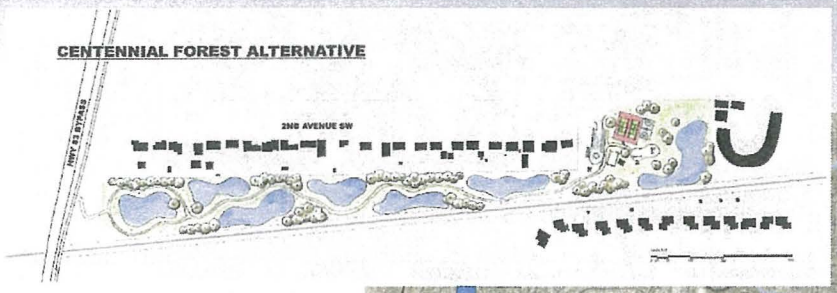
City of Minot

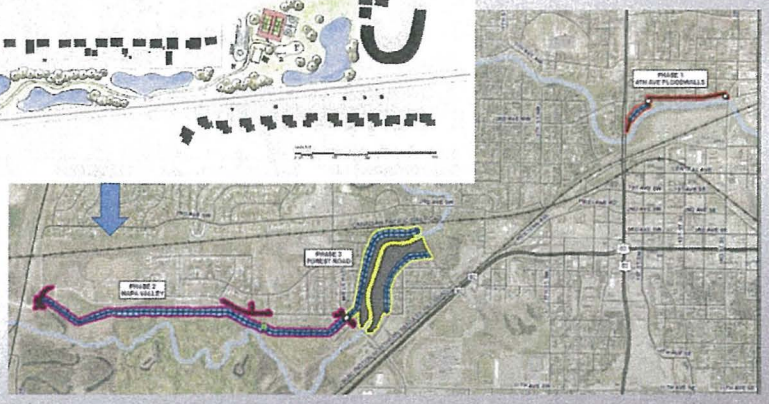
Phases 2 & 3 Conceptual Flyover

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

City of Minot

Design of 3 Segments in Minot





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

City of Minot

21

Phase 2A Conceptual Flyover

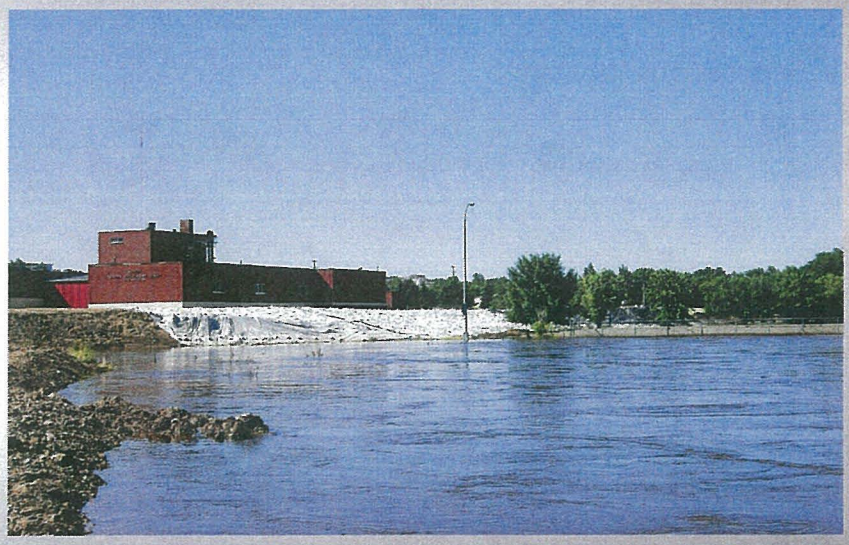
City of Minot

22

Water Plant HMGP (hazard mitigation)

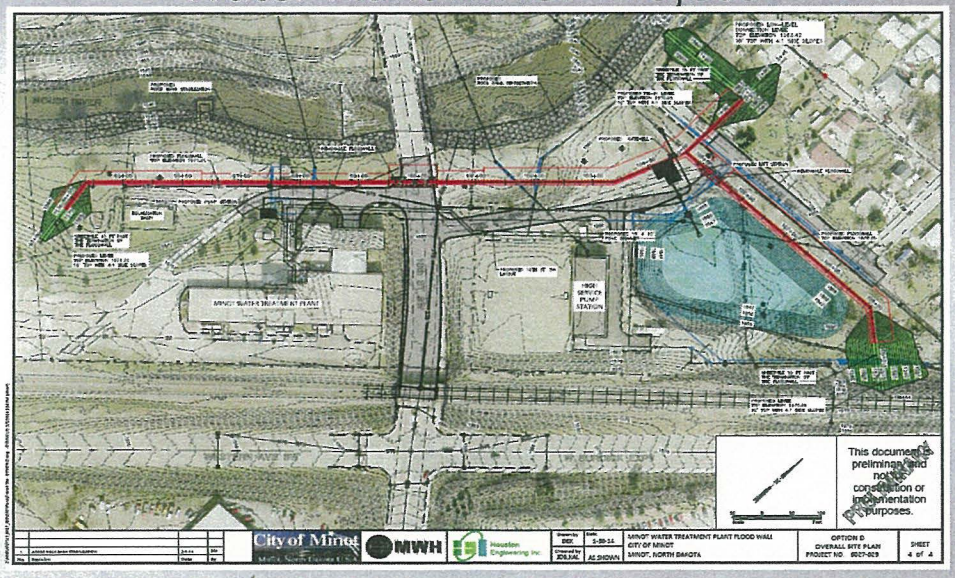
Project cost $28 million

Funding – FEMA-DES-Minot



City of Minot

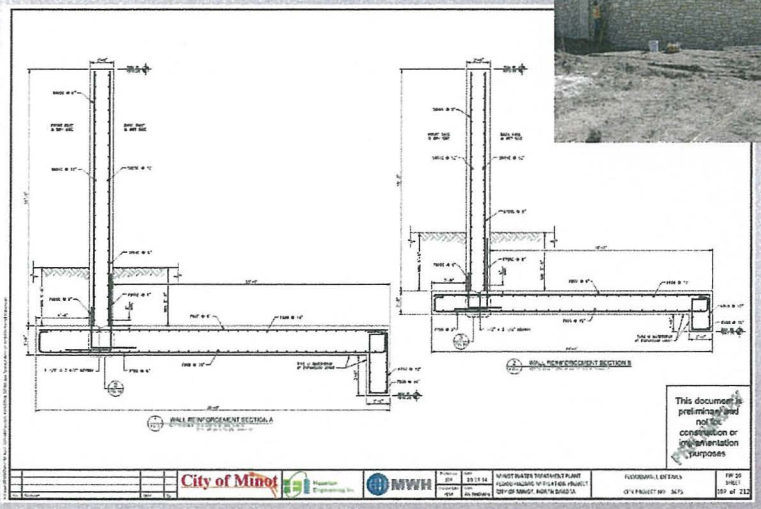
Water Plant HMGP Project



City of Minot

Floodwalls and Removable Closures

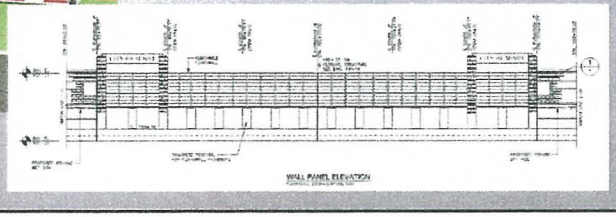
- Floodwalls
  - 1,570 Concrete – Inverted T-walls
  - 5 – 15 of Exposed Heights
  - Form-lined and Stained



City of Minot

Removable Closures

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



City of Minot

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