



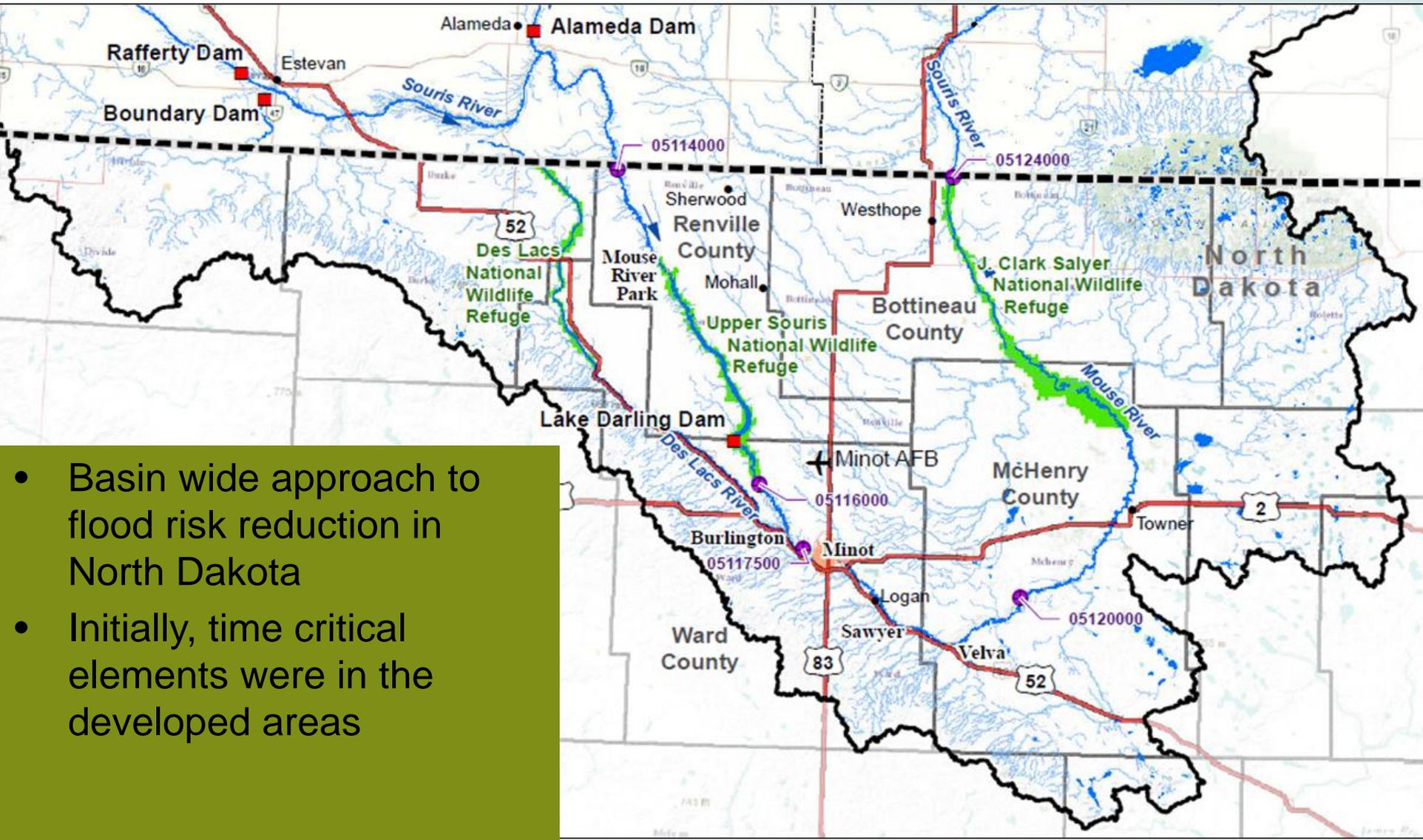
Houston Engineering Inc.

November 9, 2015

MOUSE RIVER ENHANCED FLOOD PROTECTION PROJECT  
4<sup>th</sup> AVENUE FLOOD PROTECTION  
NEIGHBORHOOD MEETING

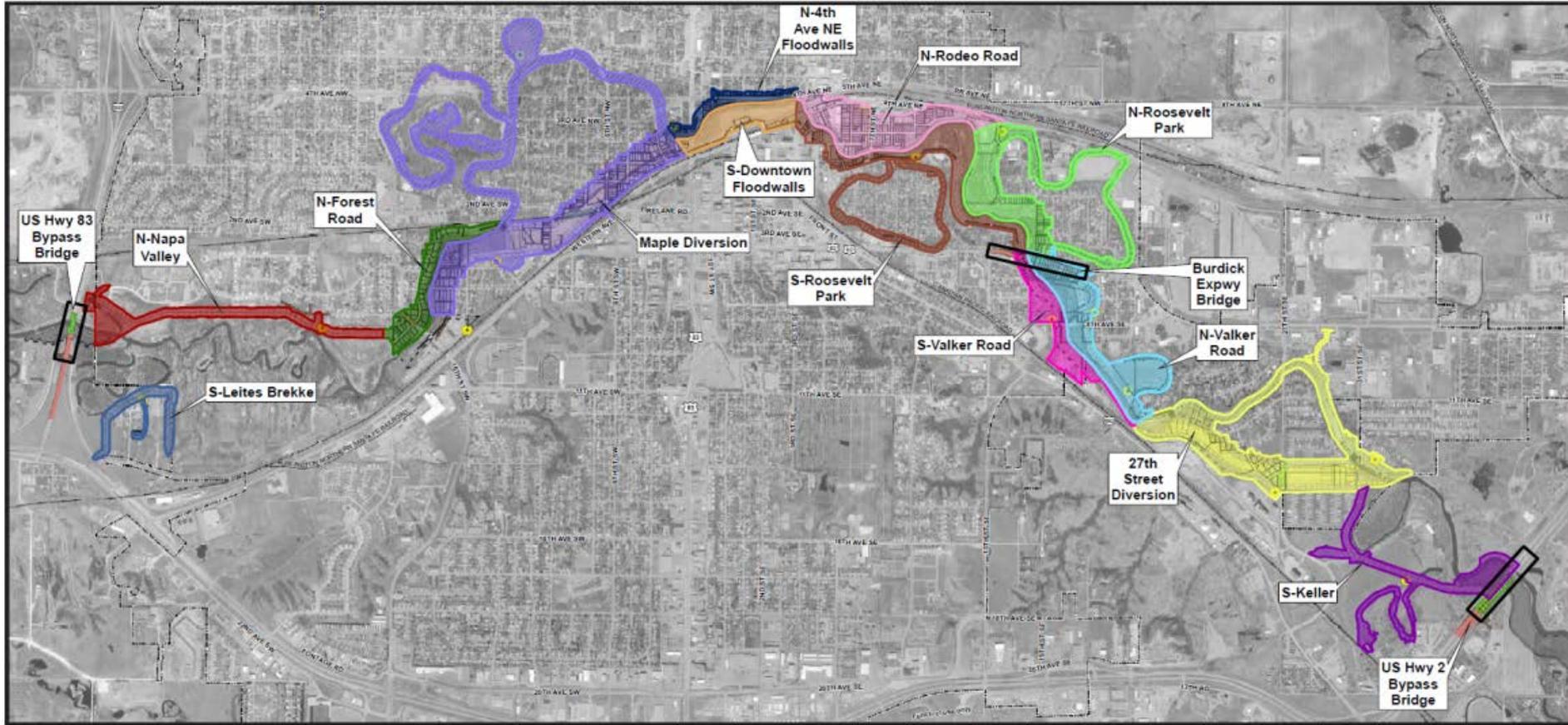
City of Minot and Souris River Joint Board

# Overall Mouse River Enhanced Flood Protection Project Scope



- Basin wide approach to flood risk reduction in North Dakota
- Initially, time critical elements were in the developed areas

# MREFPP – Minot Segments





# Overview of Phase 1



Project Phase  
Phase 1

Figure 1-2

PHASE 1  
Project Location & Phasing  
Basis of Design Report  
Mouse River Enhanced Flood  
Protection Project - Phase 1  
Minot, North Dakota

# Presentation Overview

1. Project Overview
2. Aesthetic Options for Public Consideration
3. Anticipated Schedule
4. Construction Estimate/Project Funding Summary
5. Questions/Input



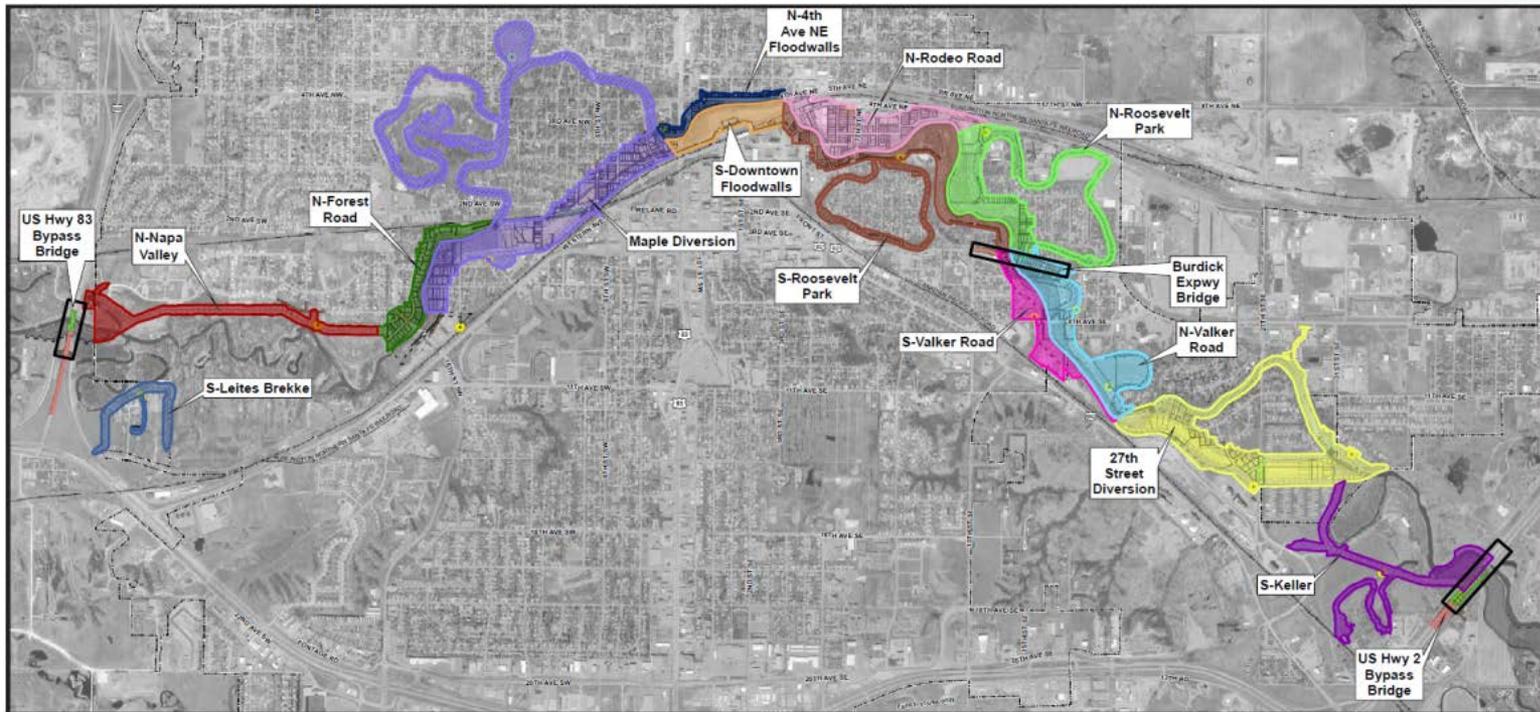
*Current Aerial*



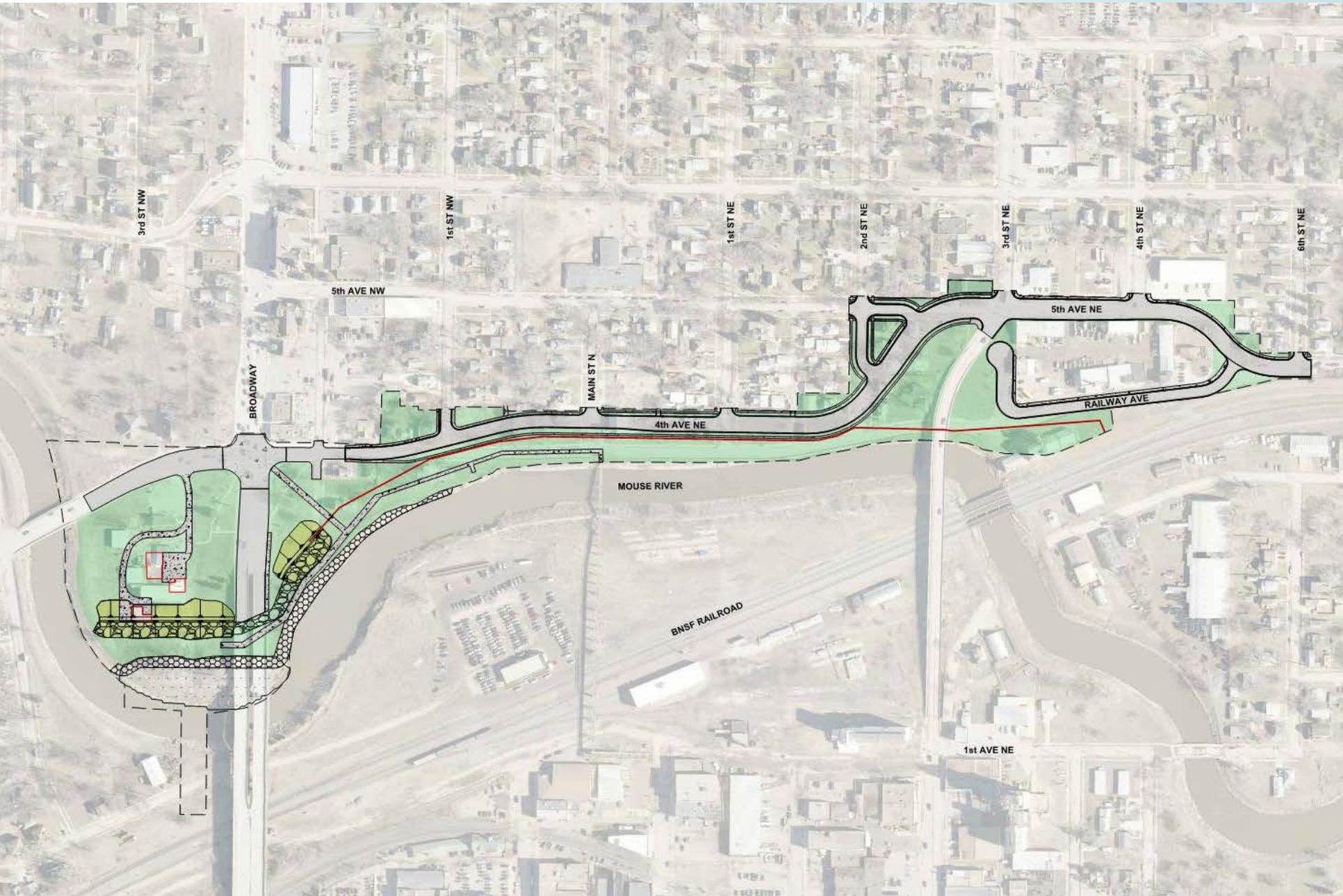
*6/27/2011 Flood Aerial*

# Project Overview

- Project Objective
  - Phase 1 of MREFPP
  - Reduce reliance on emergency measures
  - Compatibility with future MREFPP Phases to allow future Floodplain Accreditation
- Level of Protection
  - 2011 Flood Levels + 3-ft



# Project Overview



# Project Overview – 2,250 ft of Concrete Floodwalls



12-15'± in Height

# Project Overview – NDDOT Bridge Reconstruction



Conceptual bridge visualization provided by NDDOT (Subject to change)

# Project Overview – Earthen Levees Segments



14'± in Height

# Project Overview – 4<sup>th</sup> Avenue Re-alignment



# Project Overview – 1 Removable Closure



# Project Overview – Storm Water Pump Station



250,000± gpm capacity

# Project Overview – Various Utility System Modifications

- Storm Sewer
- Sanitary Sewer
- Water Distribution
- Sundre Line
- Franchise Utilities
- New Sanitary Lift Station



# Aesthetic Options for Public Input

- Broadway Gateway Options



- General Floodwall Coverage Options

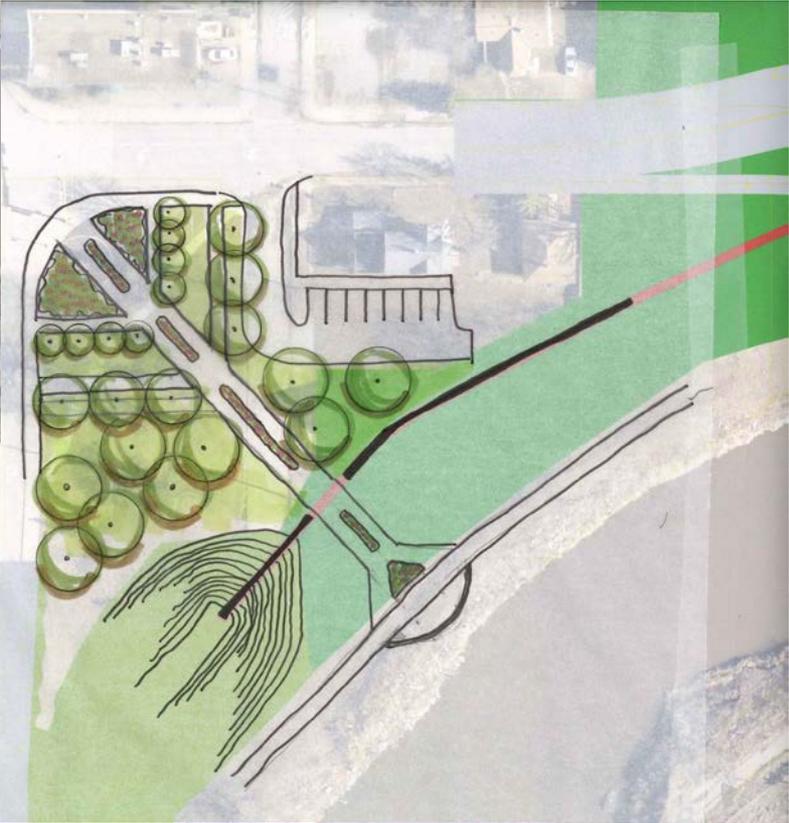


# Broadway Gateway Options



GENERAL CONCEPT A

GENERAL CONCEPT B



# General Floodwall Coverage - Concept A

## FLOODWALL

### CONCEPT A

*Formliner Precedent*

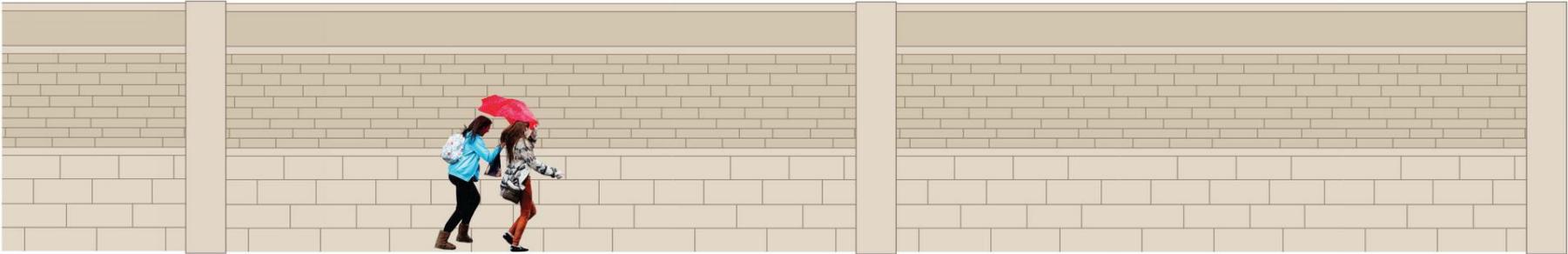
*Local Architecture*



*Formliner Patterns*



*Representative Formliner Wall*



# General Floodwall Coverage - Concept B

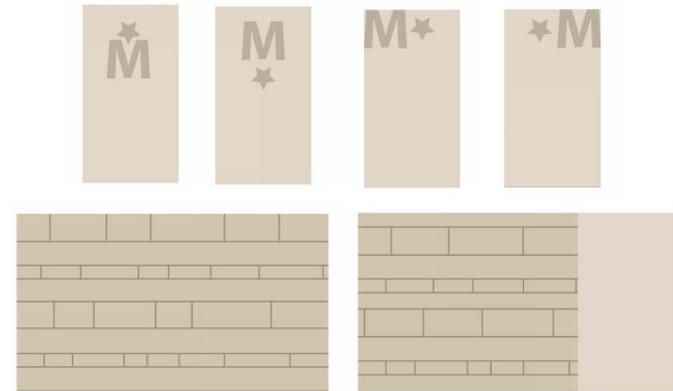
## FLOODWALL CONCEPT B

*Formliner Precedent*

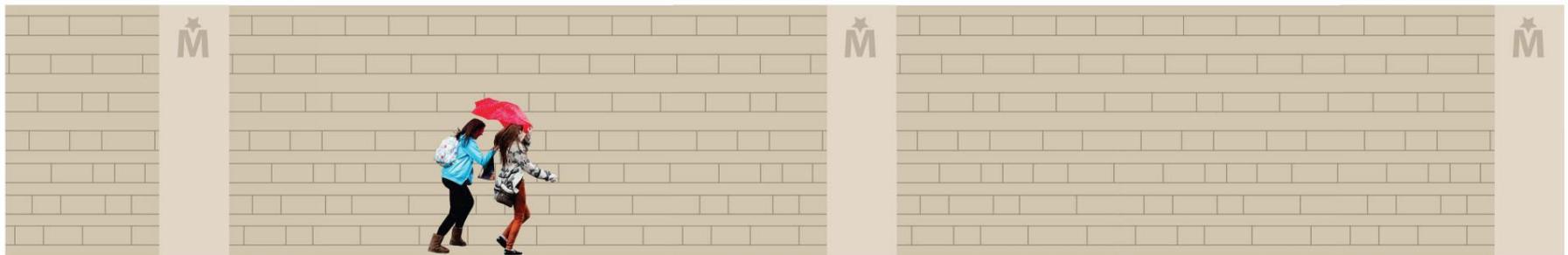
*City of Minot Logo*



*Formliner Patterns*



*Representative Formliner Wall*



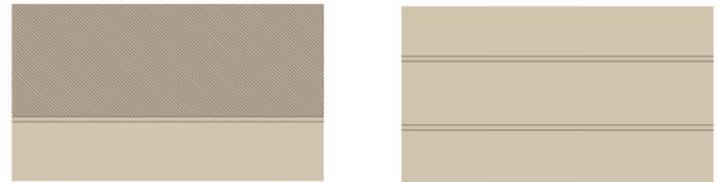
# General Floodwall Coverage - Concept C

## FLOODWALL CONCEPT C

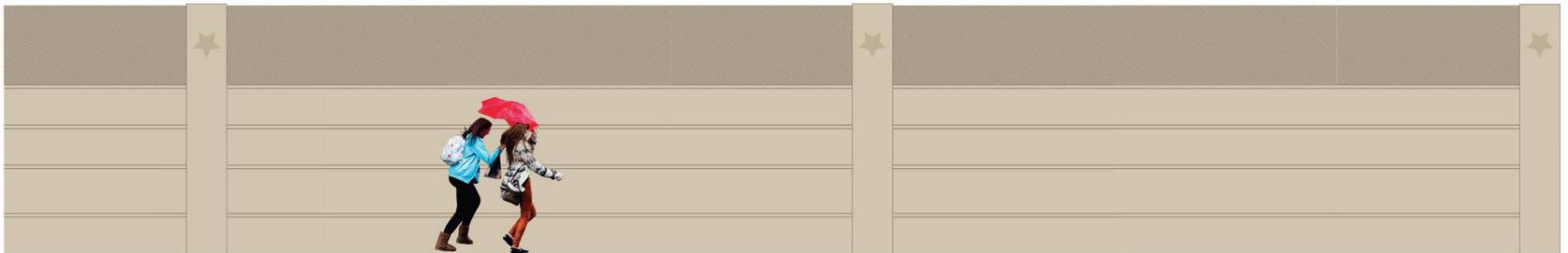
*Formliner Precedent  
Confluence Bridge Design*



*Formliner Patterns*



*Representative Formliner Wall*



# General Floodwall Coverage - Concept D

## FLOODWALL CONCEPT D

*Formliner Precedent  
Confluence Bridge Design*



*Formliner Patterns*



*Representative Formliner Wall*



# Anticipated Schedule

- 30% Design Completed
- Public Meeting (General Input and Review of Aesthetic Options...) - (Tonight)
- Finalized Design (Fall 2016)
- Right-of-Way Acquisition (On-going)
- Permitting/Environmental Review (Ongoing - Winter 2016)
- Construction (2017-2019)
- Vegetation Planting and Final Restoration/Closeout (2019)



# Current Construction Estimate / Project Funding

Cost Breakdown/Element	OPC Phase 1 Total
Mobilization/Demobilization	\$3.01M
Infrastructure Modifications	\$12.44M
Ecological Mitigation	\$0.00M
Roads, Road Raises, Railroads, and Bridges	\$3.33M
Channel Improvements and Hydraulic Structures	\$1.15M
Levees, Floodwalls, and Closures	\$18.76M
Interior Flood Damage Reduction Systems (Pumping Station)	\$24.00M
Recreation Features	\$0.25M
Cultural Resource Investigations and Mitigation	\$0.00M
Hazardous Waste Mitigation	\$0.25M
<b>Estimated Construction Cost</b>	<b>\$63.20M</b>

- NDSWC
- City of Minot Sales Tax

# Questions/Input