



# FOUR HORNS DAM MODIFICATIONS PROJECT

INDUSTRY DAY | FEBRUARY 19, 2020

**February 19, 2020**

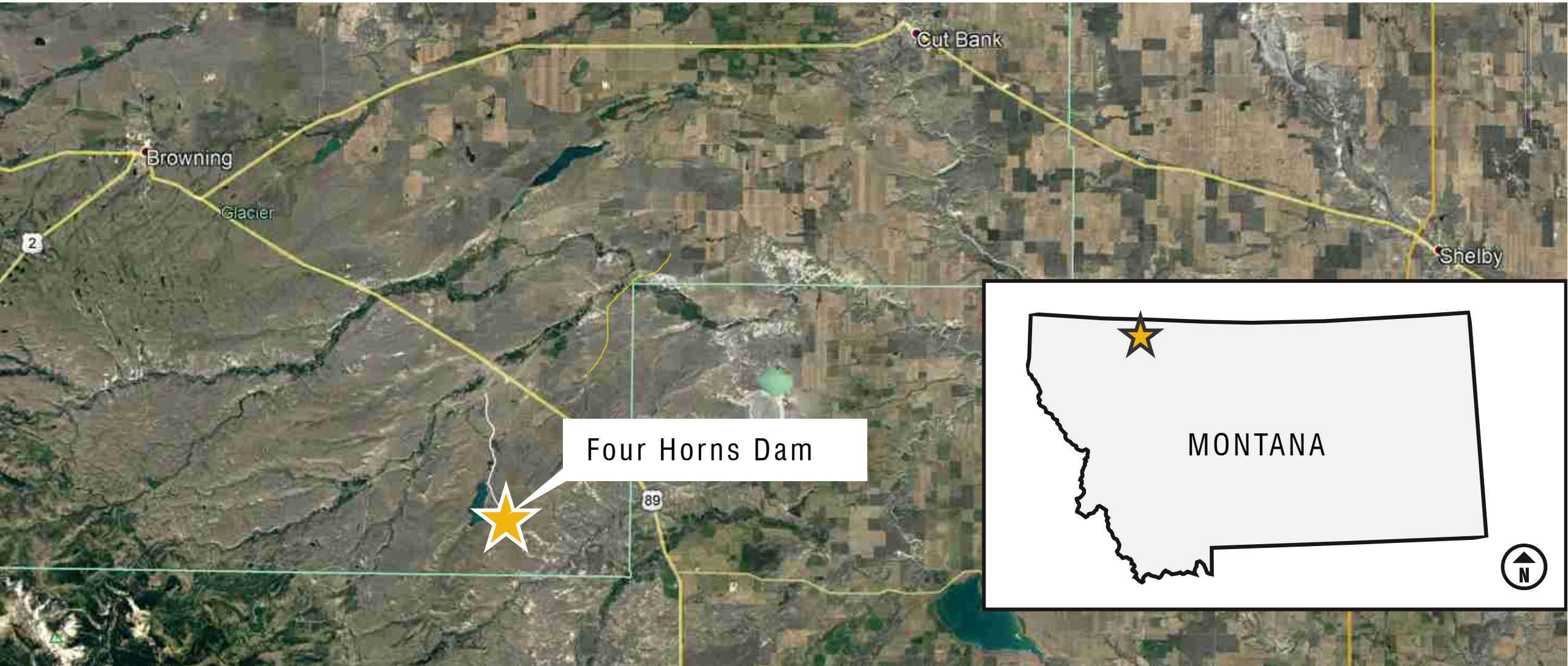


# AGENDA

- Introductions
- Project Overview
- Bidding
- TERO Requirements

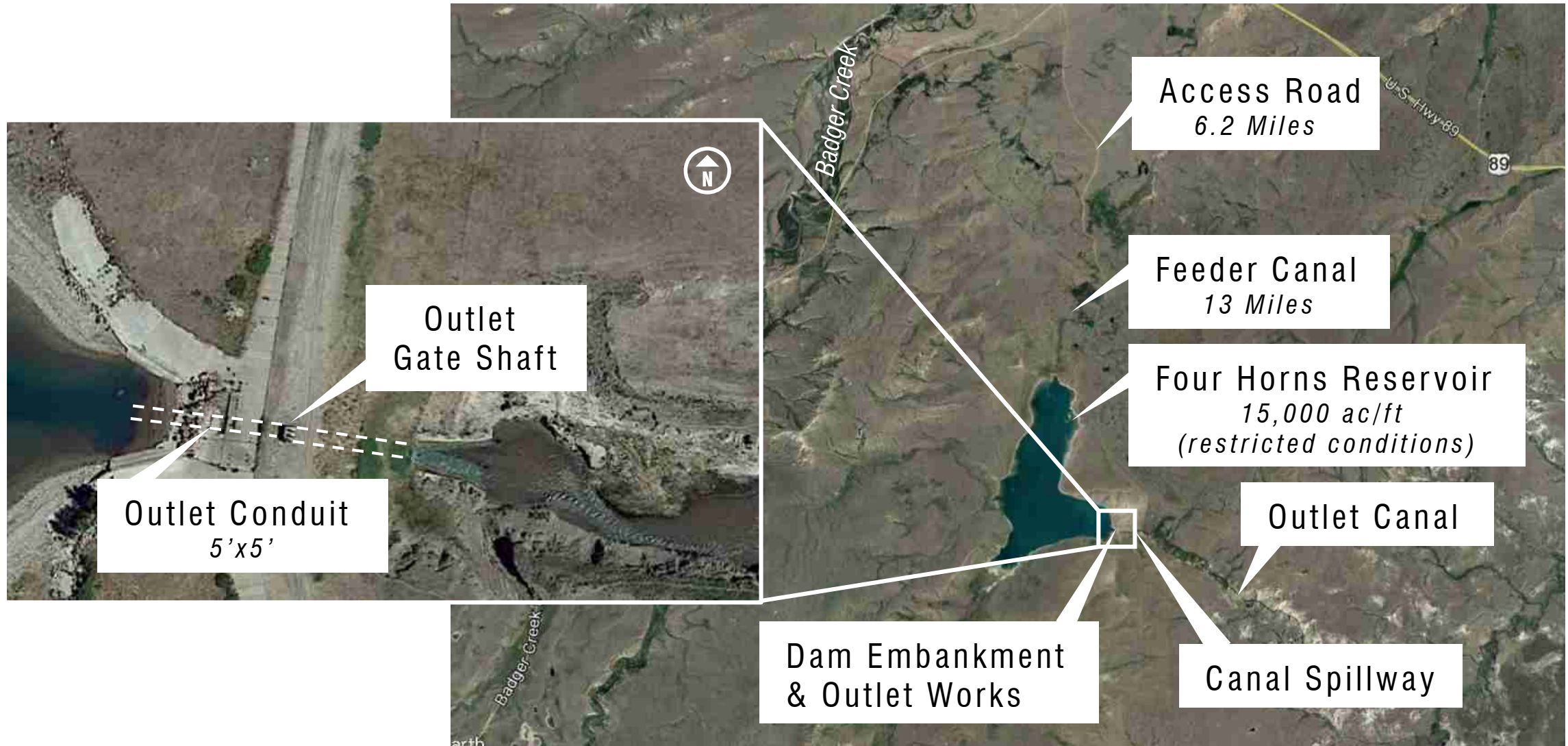


# FOUR HORNS DAM LOCATION





# FOUR HORNS DAM OVERVIEW



# PROJECT PURPOSE

- Correct potential dam safety issues
- Correct operational deficiencies
- Reconstruct canal spillway





# PROJECT OVERVIEW

- \$5 to \$10 million estimated construction cost range
- Summer 2020 to Fall 2021 construction timeframe
- Dam, outlet works, and canal spillway reconstruction

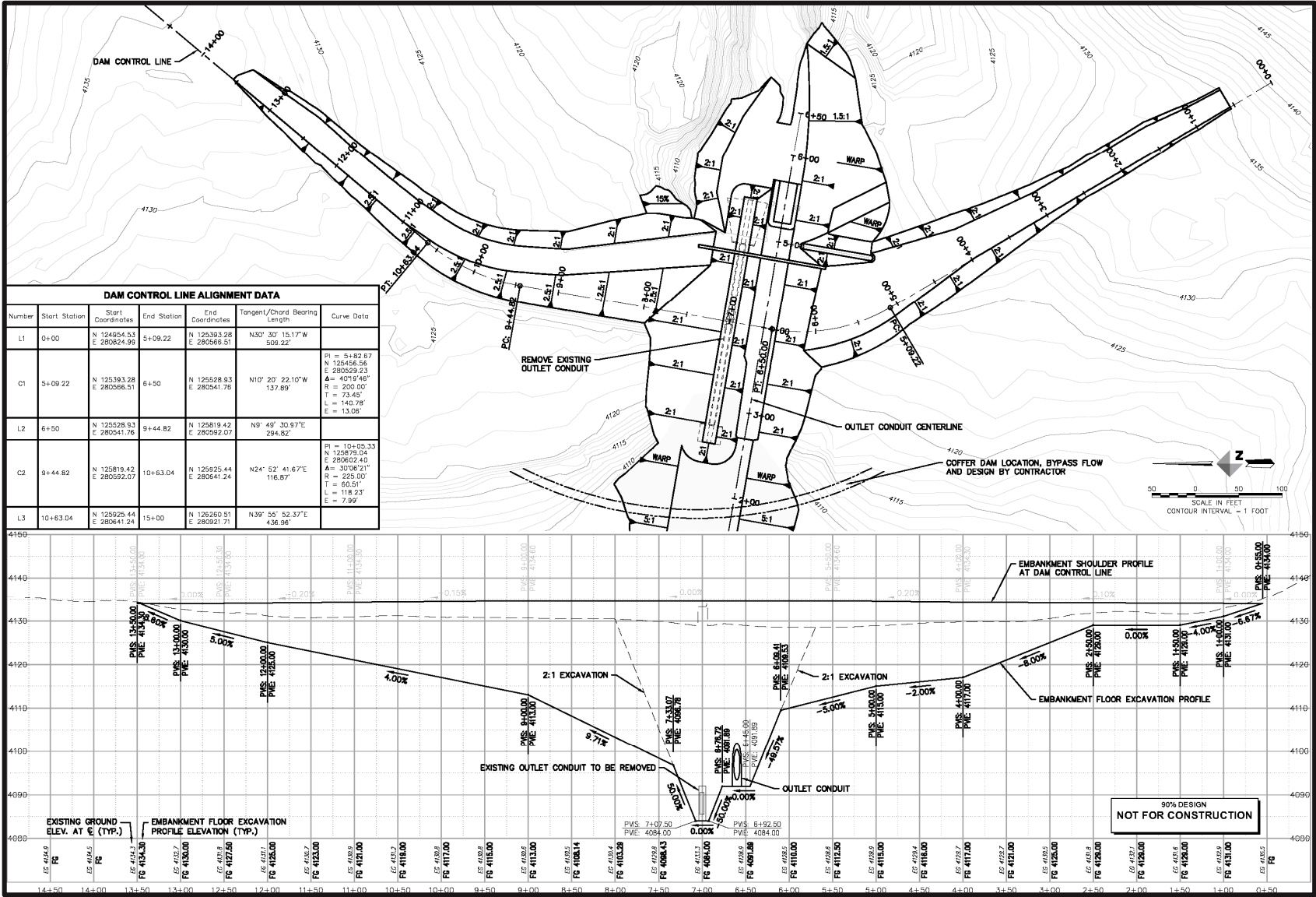




# FOUR HORNS DAM WORK OVERVIEW

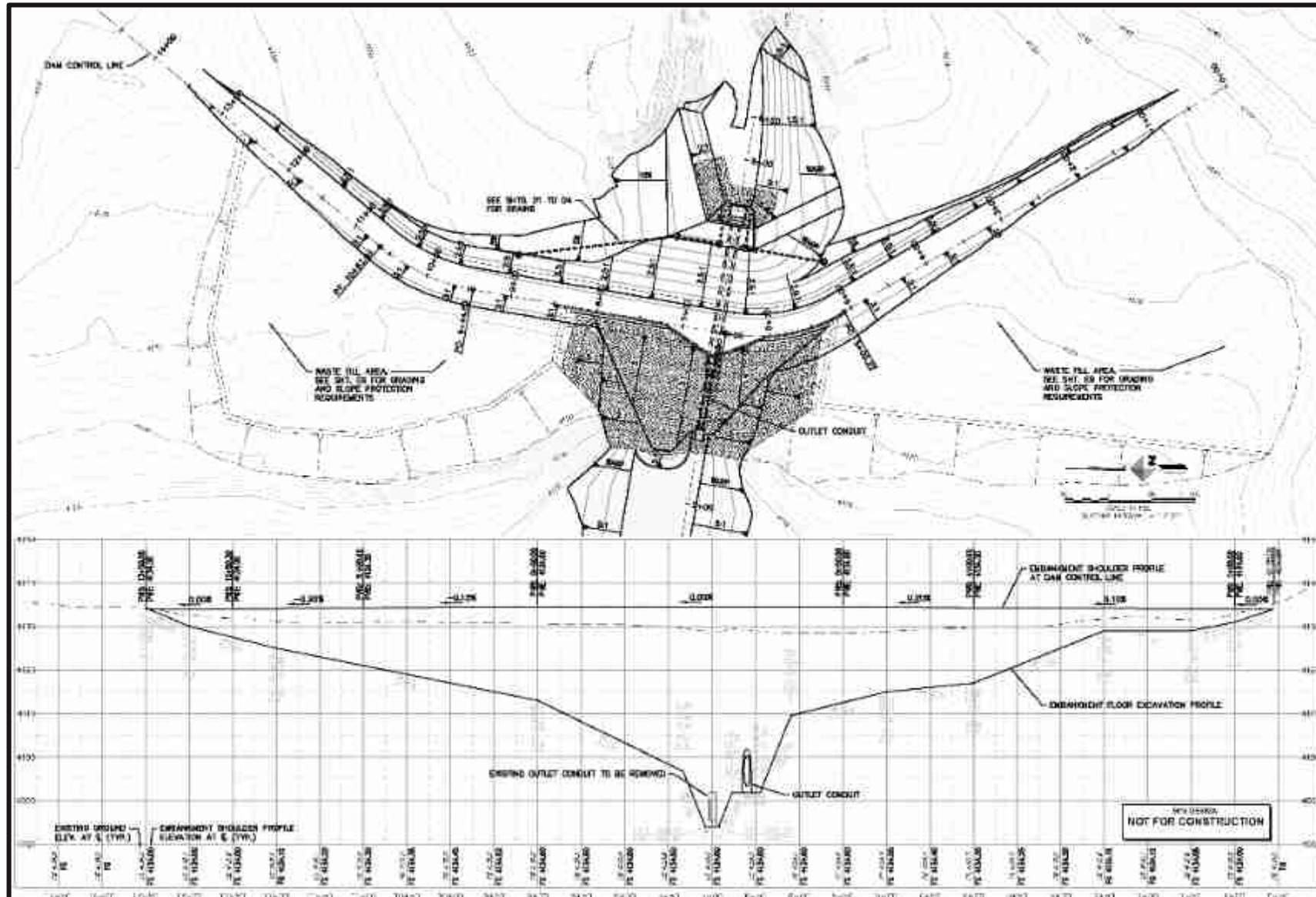
- Construct cofferdam and water control system
  - Excavate majority of existing embankment
  - Demo existing concrete outlet works
  - Reconstruct new zoned embankment
  - Raise Outlet Conduit Approximately 10 feet
  - Demo and Reconstruct Canal Spillway
  - Deliver irrigation water during construction
- Raise Reservoir Normal Full Pool
    1. New Full Pool 12 Feet Above Current Restriction
    2. New Full Pool 5 Feet Above Existing Unrestricted
    3. Restores 20,000 ac/ft Active Storage
    4. Raise Dam Crest 5 Feet

# EXCAVATION

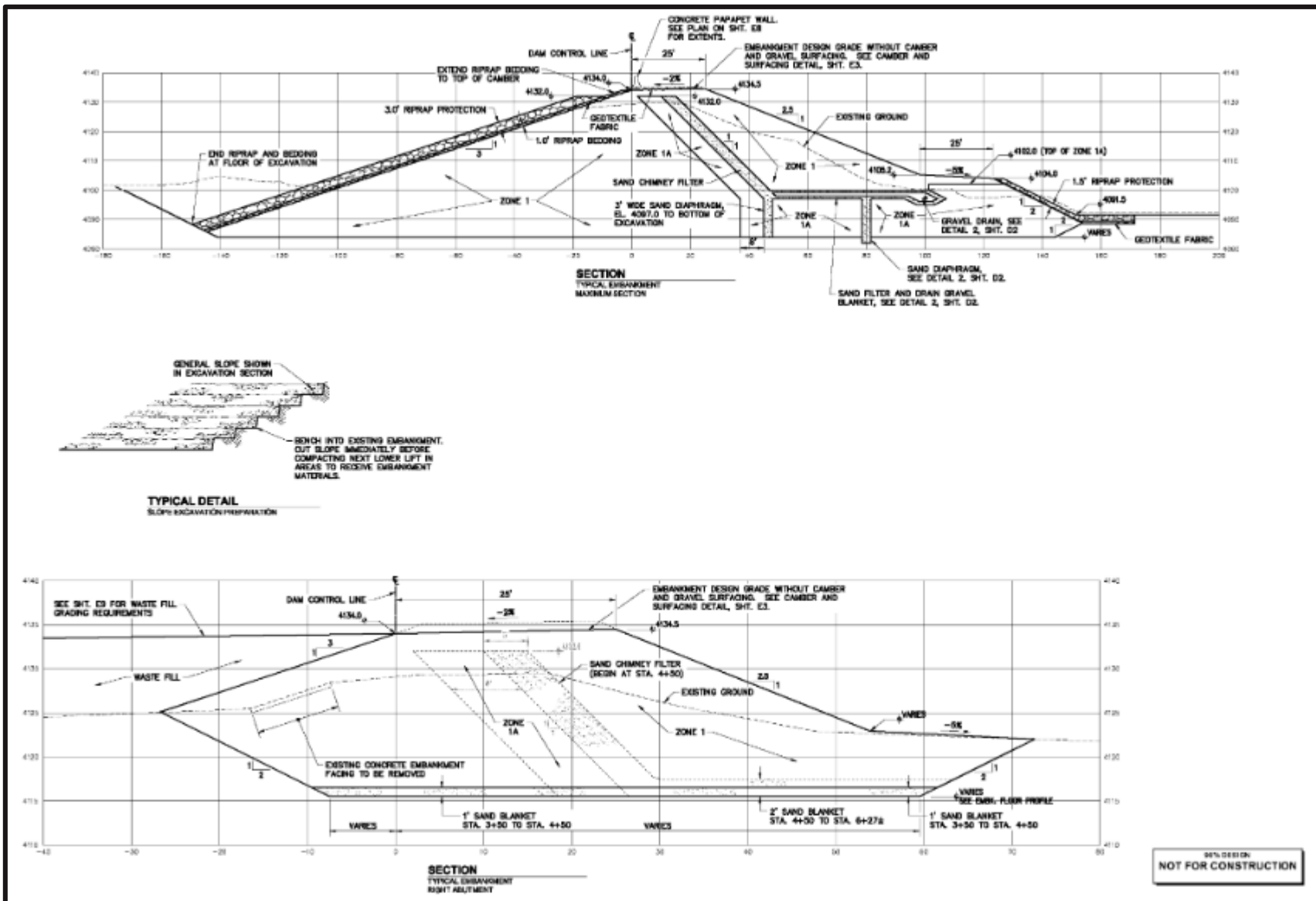




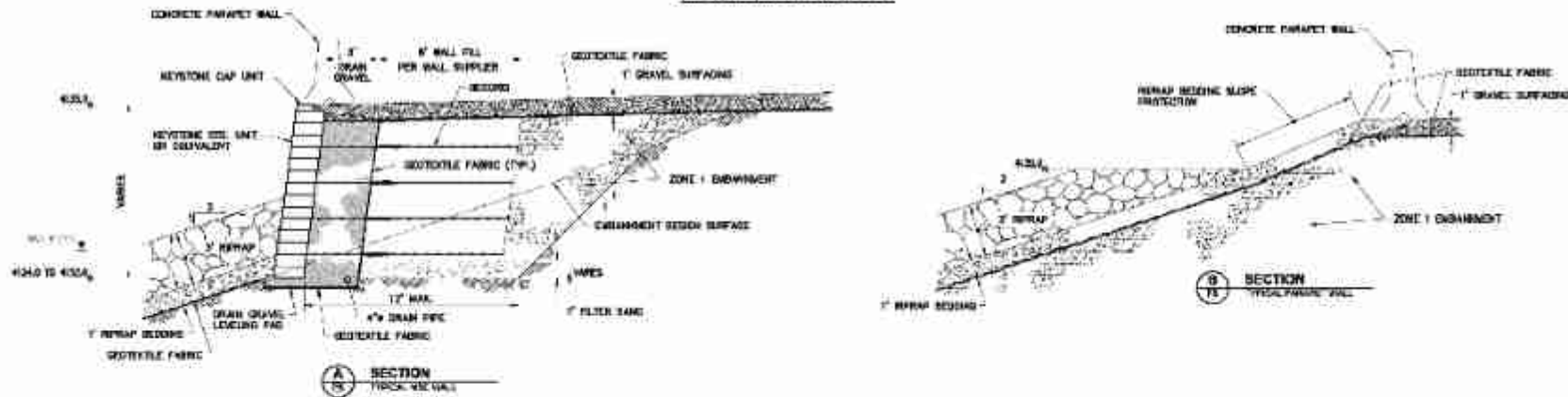
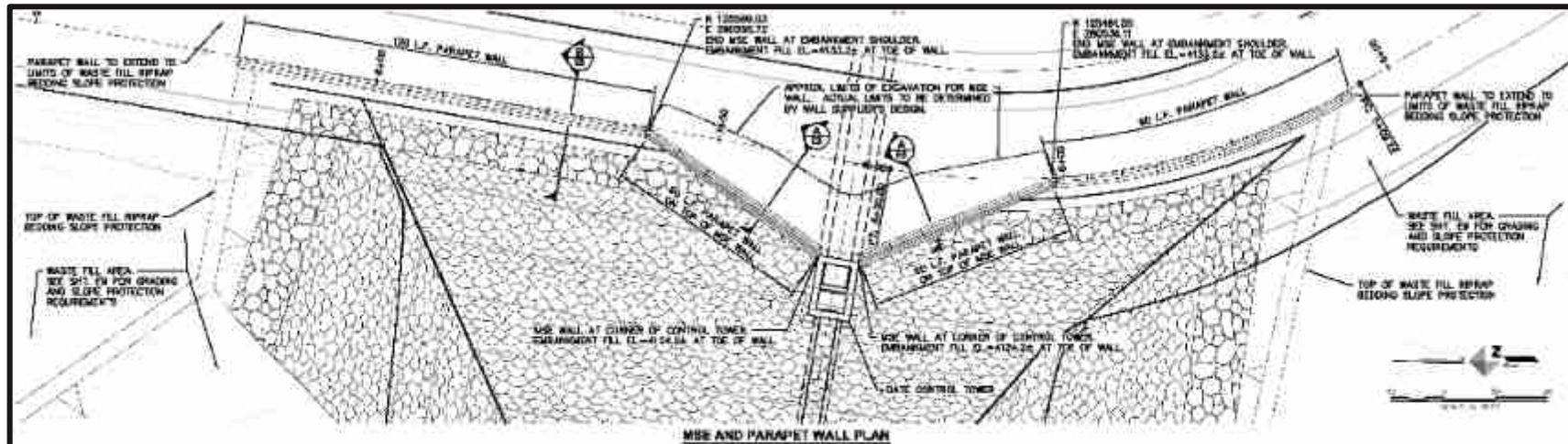
# EMBANKMENT



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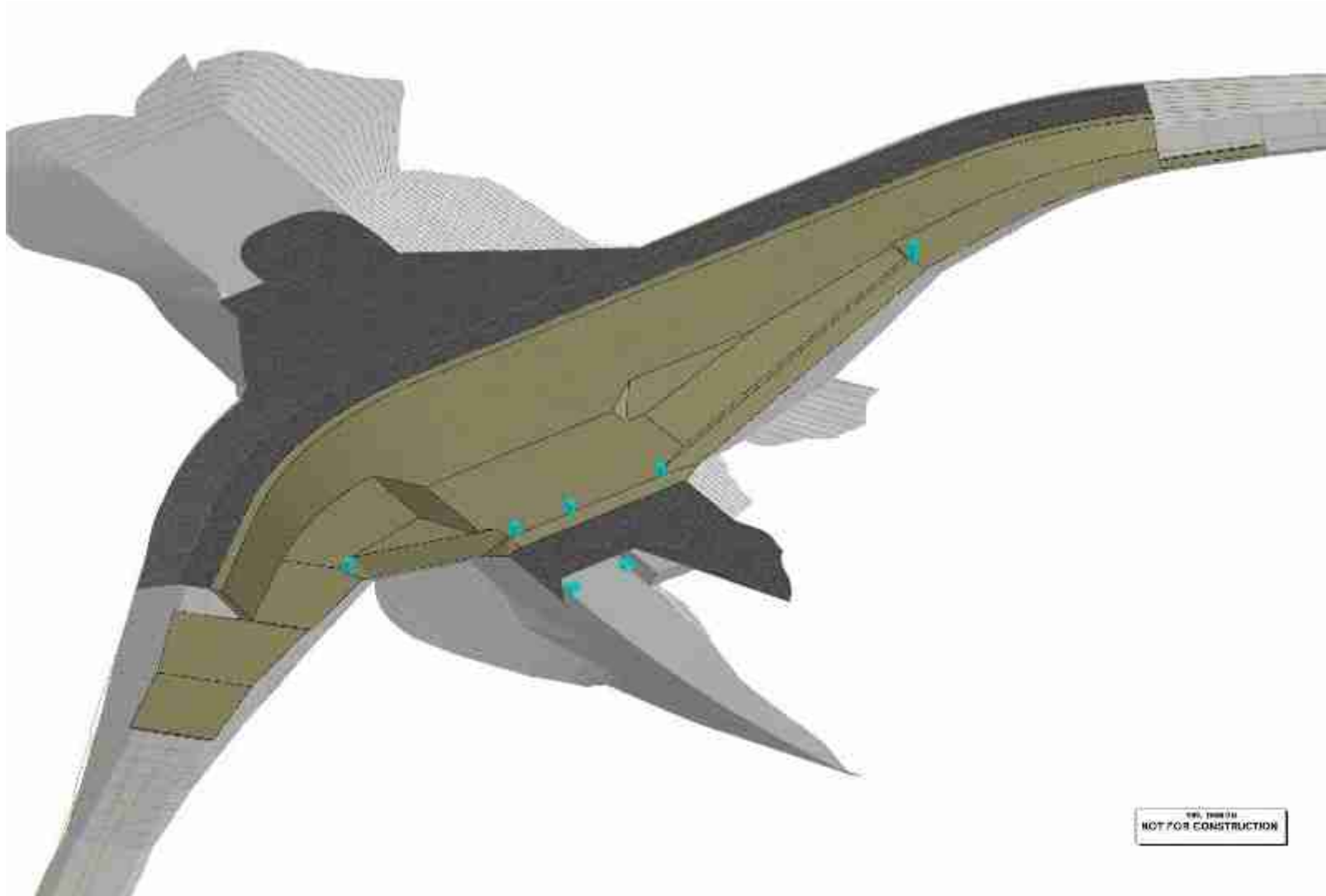
# EMBANKMENT



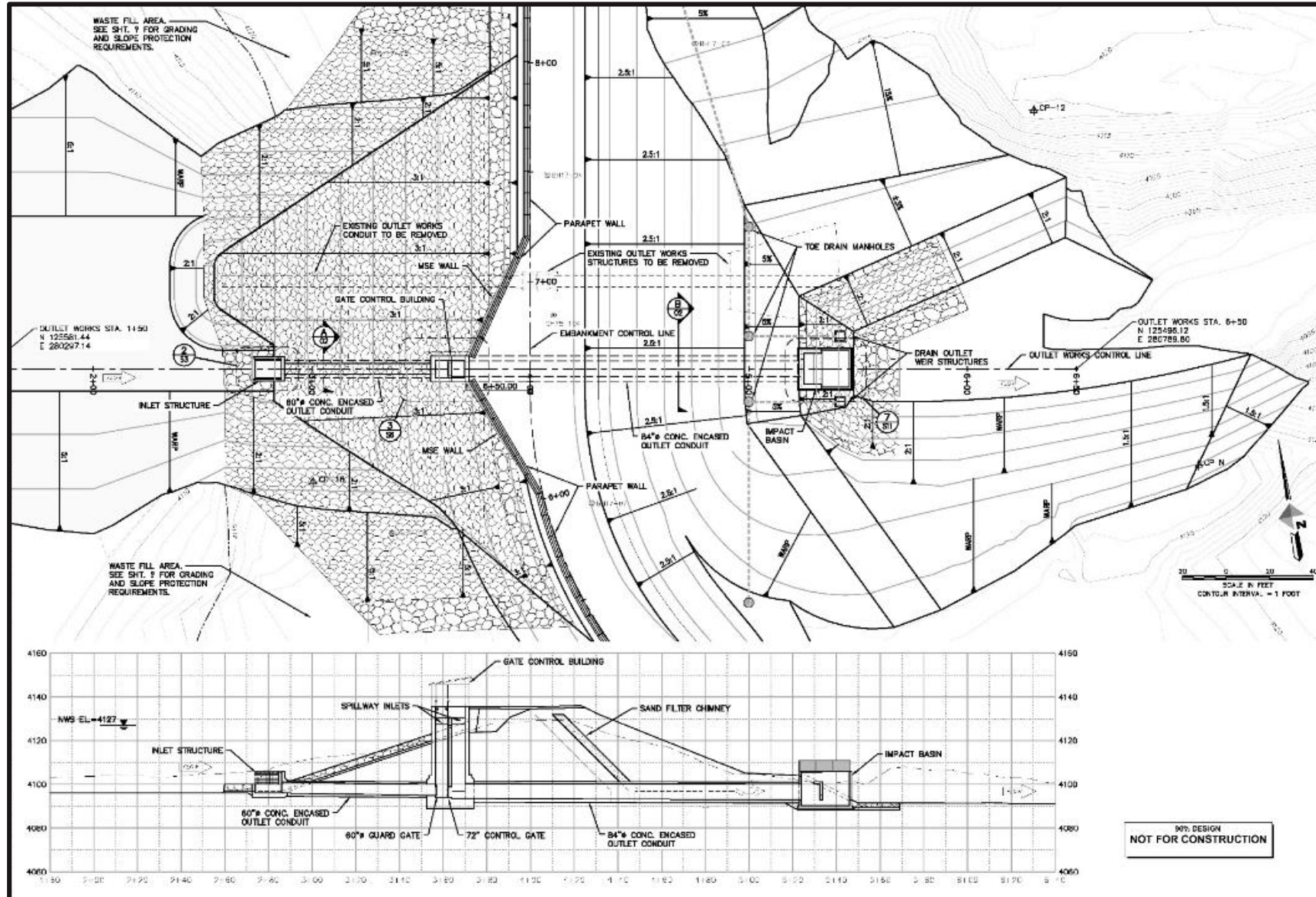
NOT FOR CONSTRUCTION



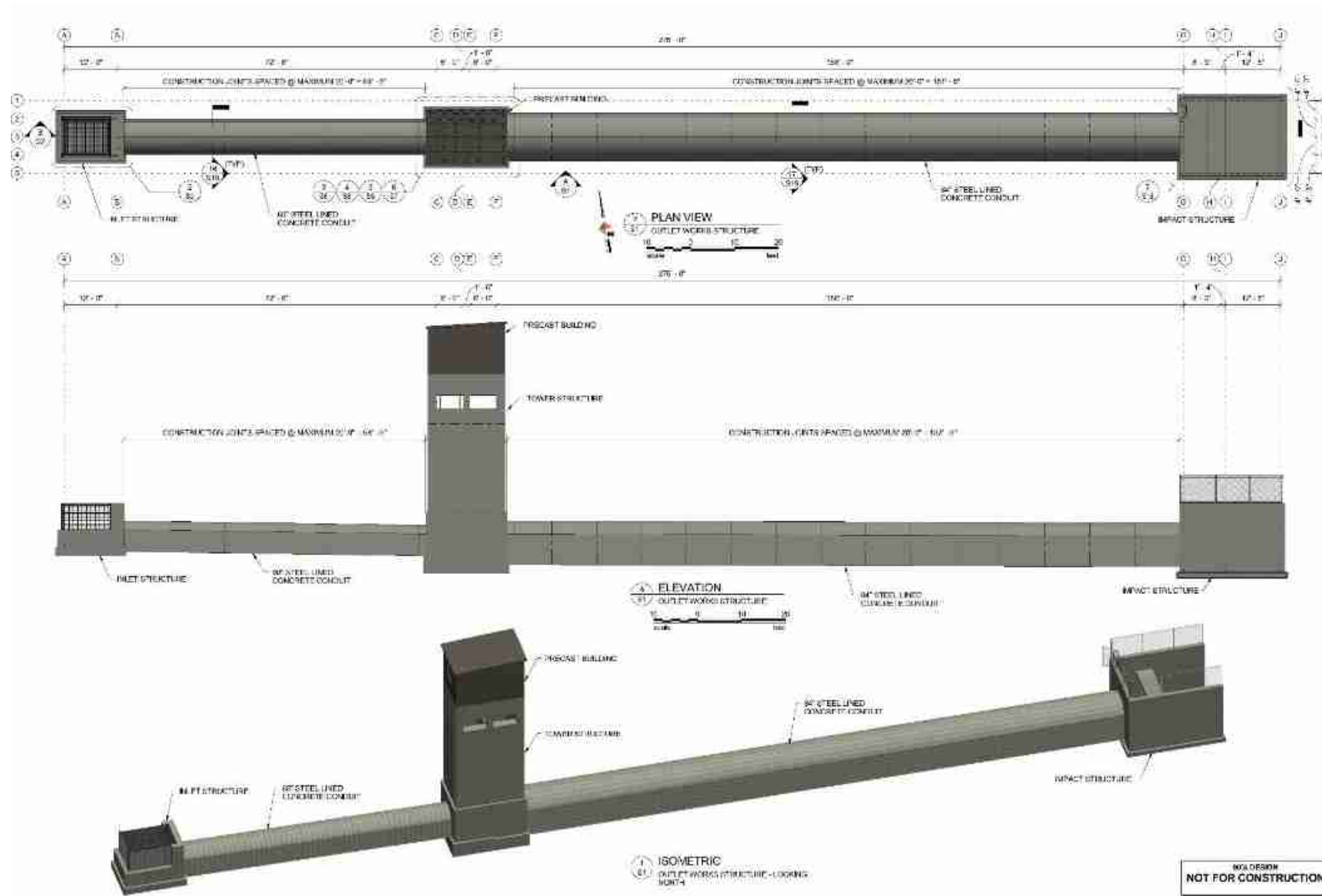
# FILTERS & DAMS



# OUTLET WORKS

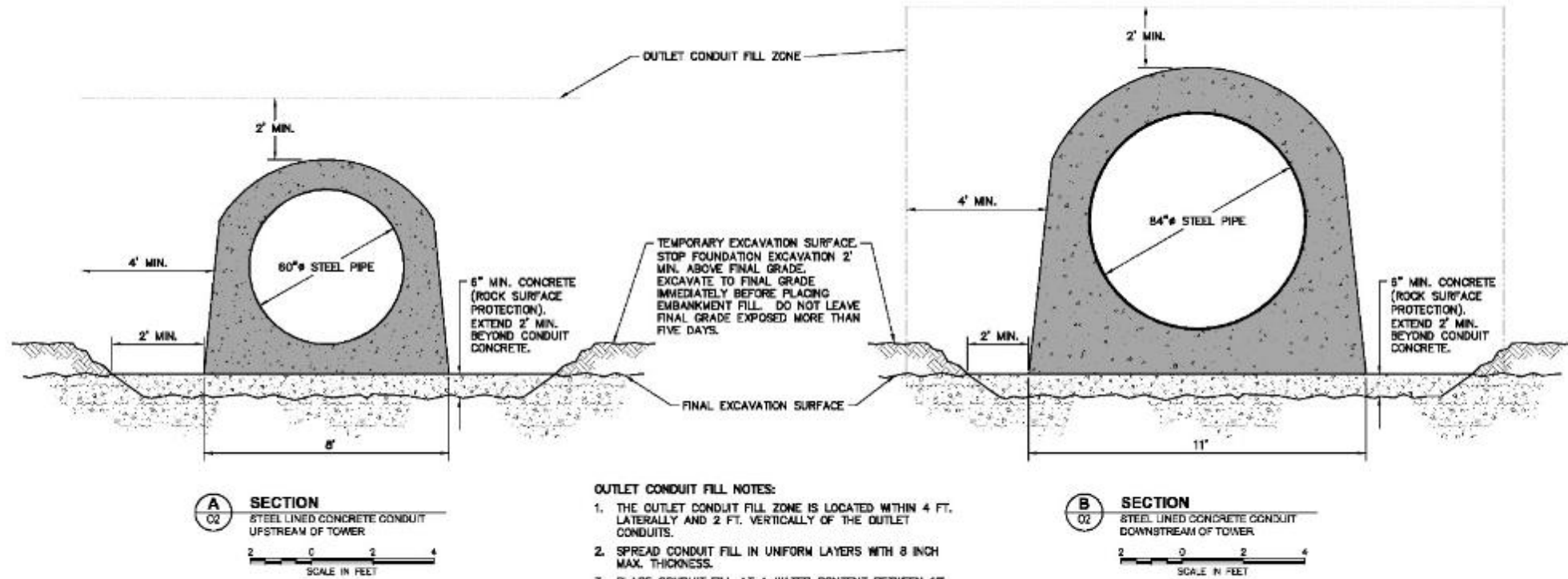


# OUTLET WORKS

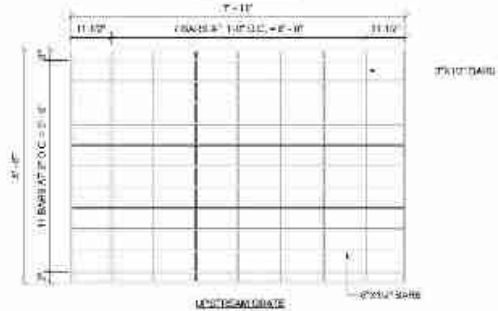
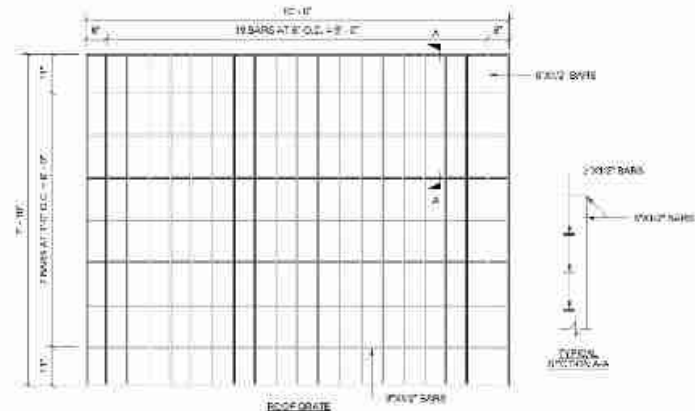




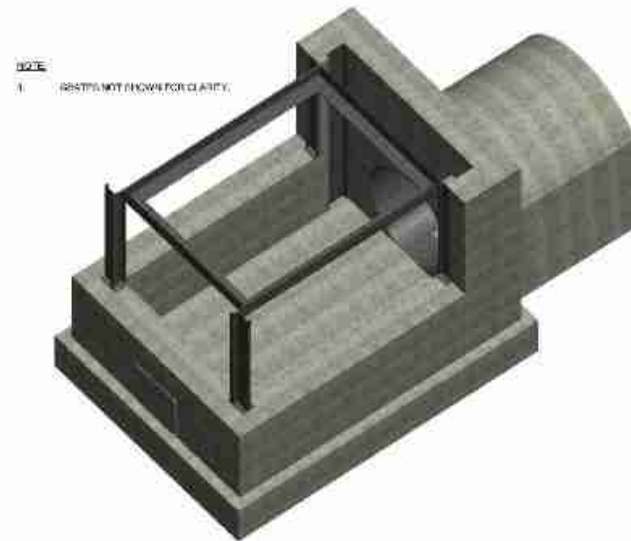
# OUTLET WORKS



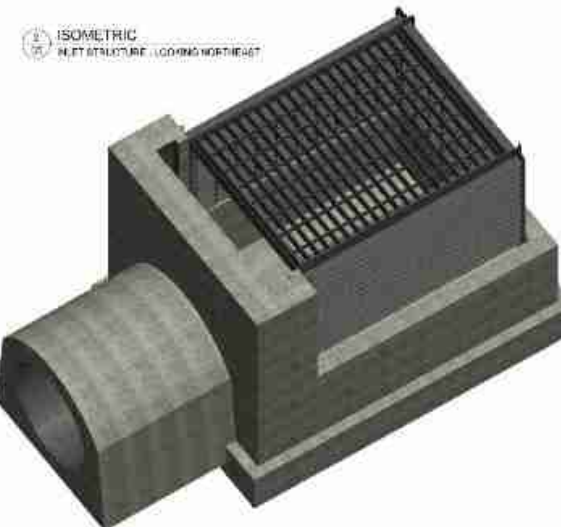
# OUTLET WORKS



1. ALL STEEL TRASH RACKS SHALL BE GALVANIZED AFTER FABRICATION.



NOTE: 1. GSDT'S NOT KNOWN FOR CLARITY.

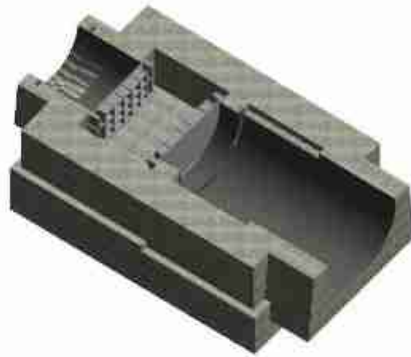


ISOMETRIC  
NET STRUCTURE (LOOKING NORTHEAST)

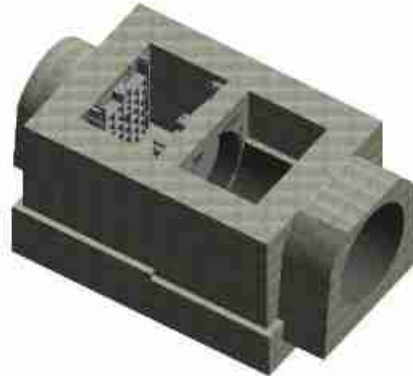
2 ISOMETRIC  
30 INLET STRUCTURE (GOING SOUTHWEST)

30% DESIGN  
NOT FOR CONSTRUCTION

# OUTLET WORKS



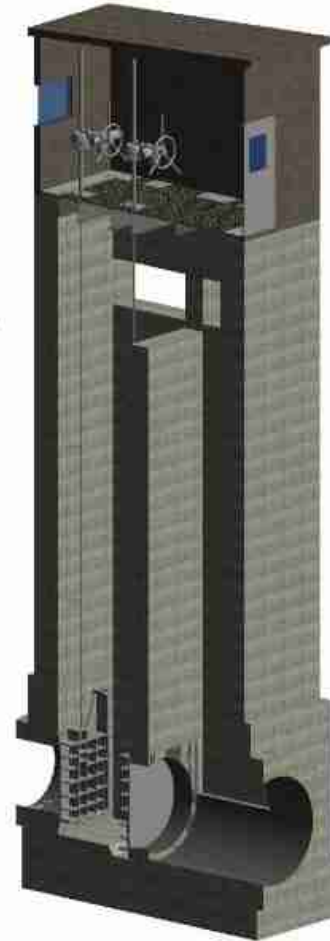
4 ISOMETRIC  
TOWER STRUCTURE - LOOKING  
NORTHWEST @ EL. 400.00



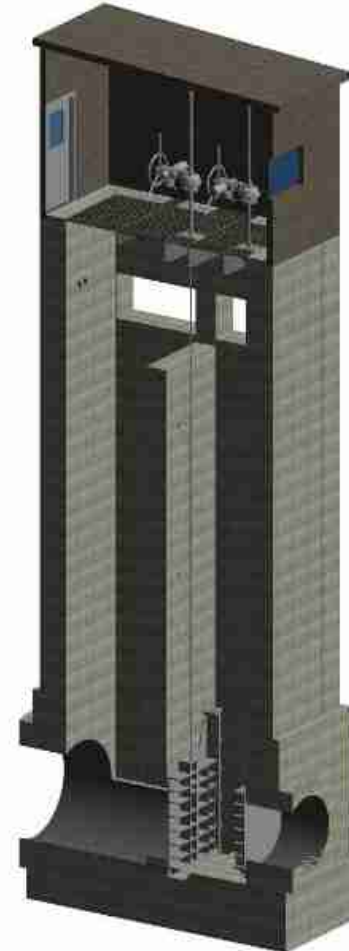
5 ISOMETRIC  
TOWER STRUCTURE - LOOKING  
NORTHWEST @ EL. 400.00



6 ISOMETRIC  
TOWER STRUCTURE - LOOKING  
NORTHWEST @ EL. 400.00



7 ISOMETRIC  
TOWER STRUCTURE - LOOKING NORTH  
WEST N45°P

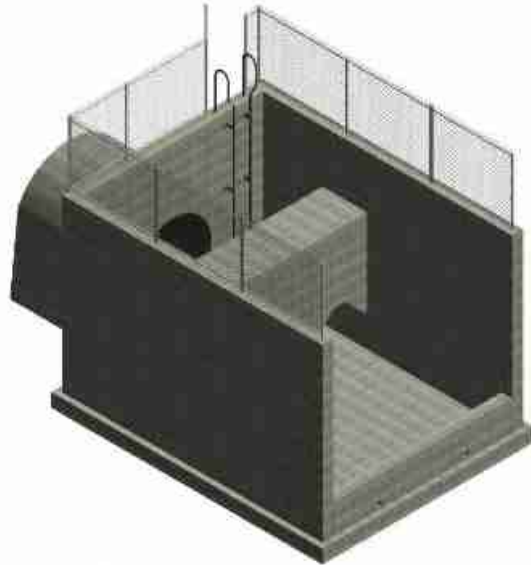


8 ISOMETRIC  
TOWER STRUCTURE - LOOKING SOUTHEAST  
N45°P

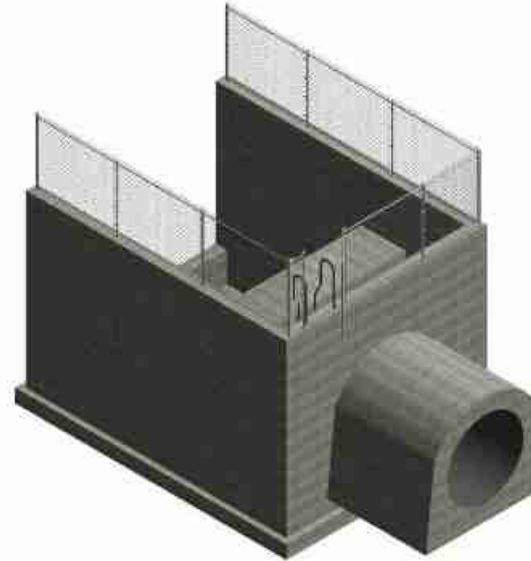
90% DESIGN  
NOT FOR CONSTRUCTION



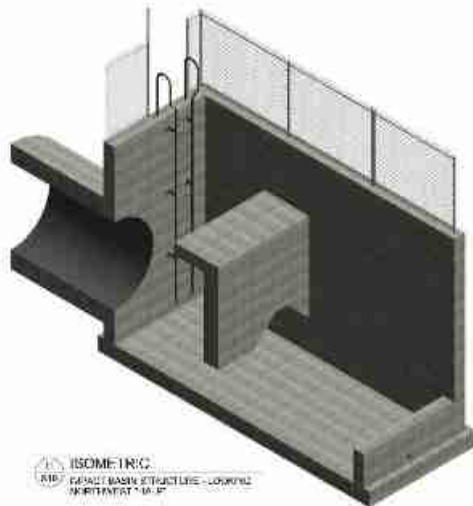
# OUTLET WORKS



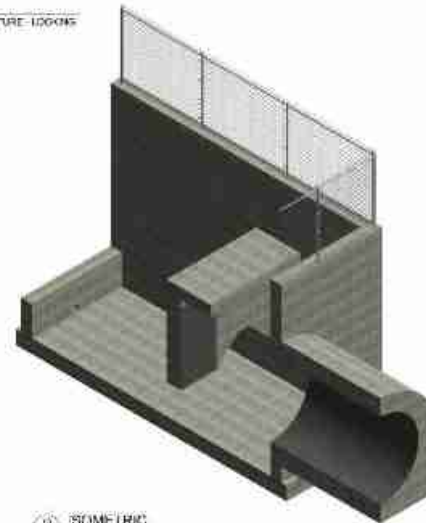
ISOMETRIC  
IMPACT BASIN STRUCTURE - LOOKING  
NORTH-EAST



ISOMETRIC  
IMPACT BASIN STRUCTURE - LOOKING  
SOUTH-EAST

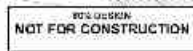


ISOMETRIC  
IMPACT BASIN STRUCTURE - LOOKING  
NORTH-WEST

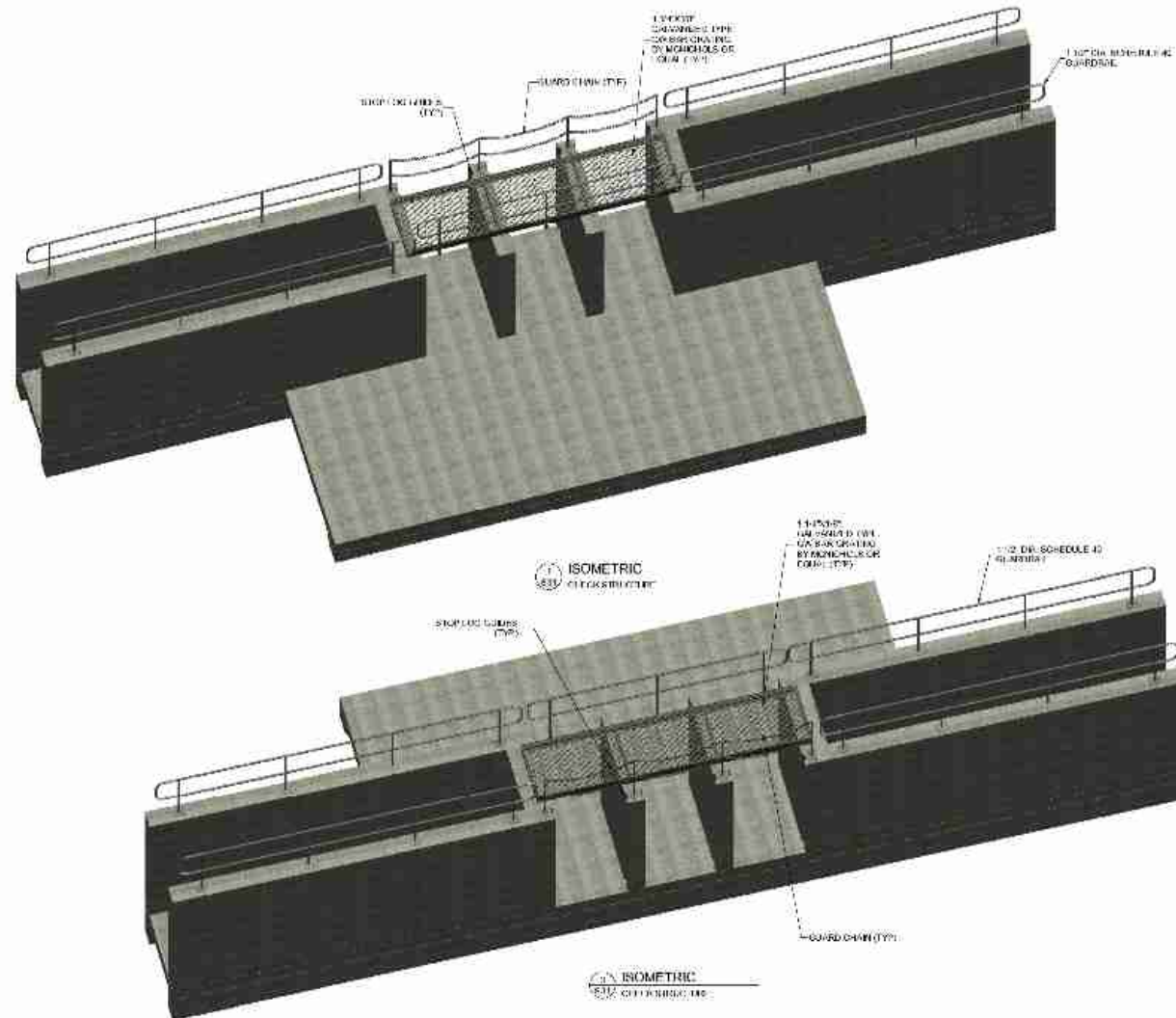


ISOMETRIC  
IMPACT BASIN STRUCTURE - LOOKING  
SOUTH-WEST

80% DESIGN  
NOT FOR CONSTRUCTION



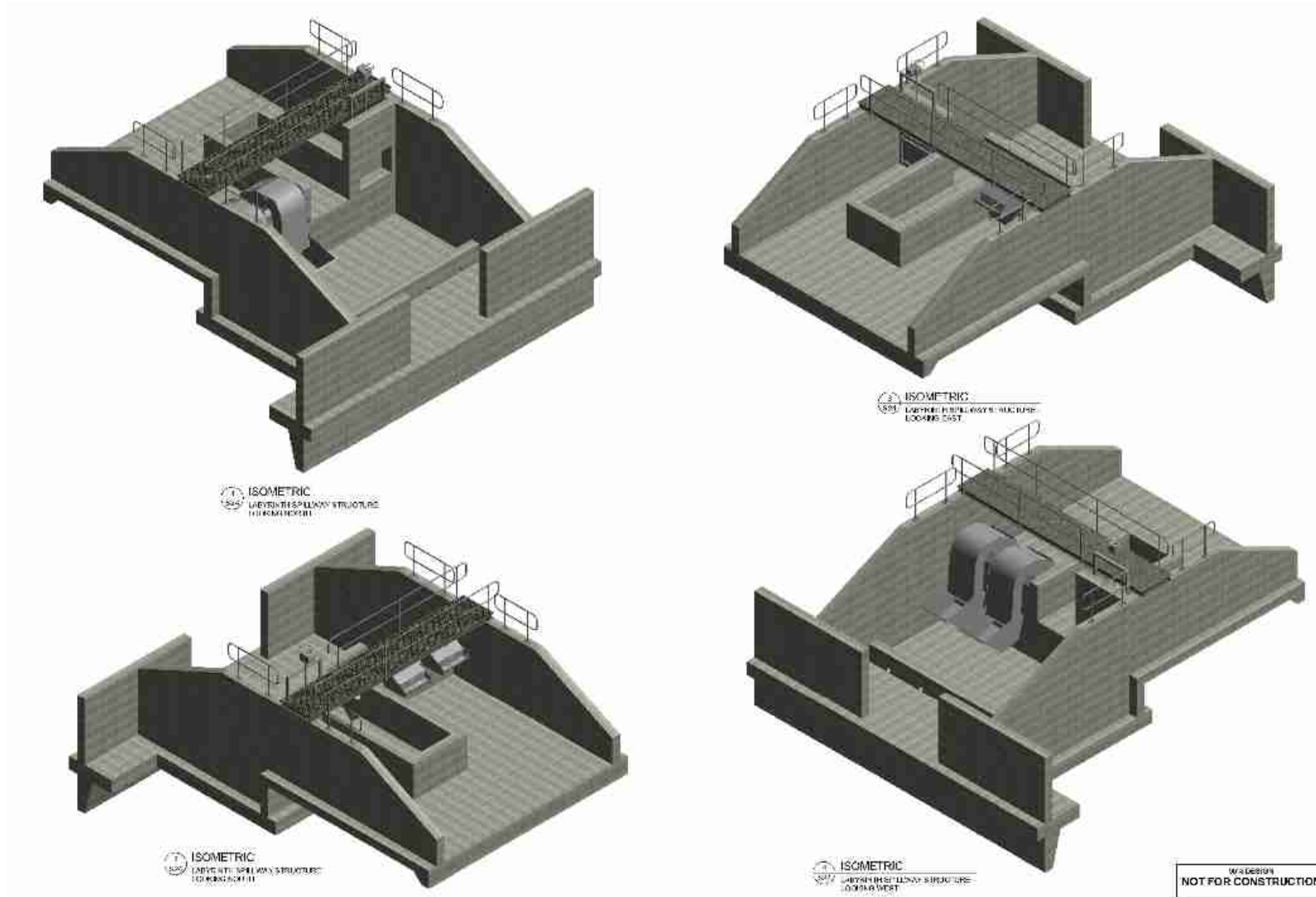
# CANAL SPILLWAY - CHECK



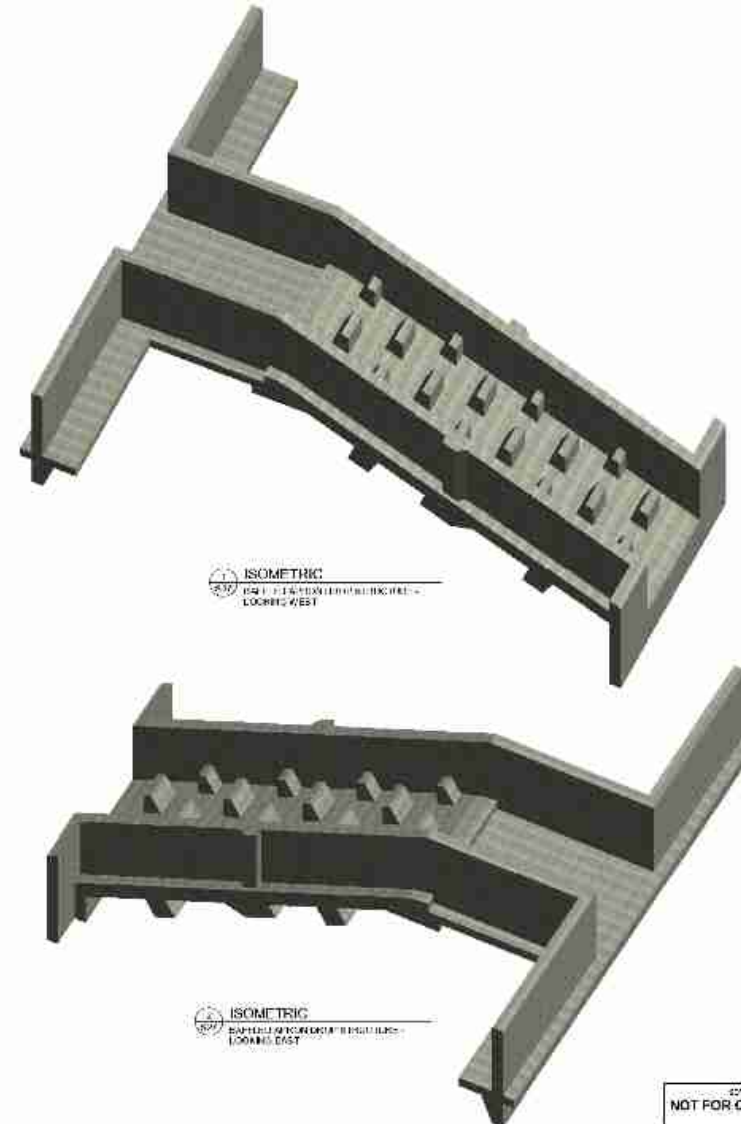
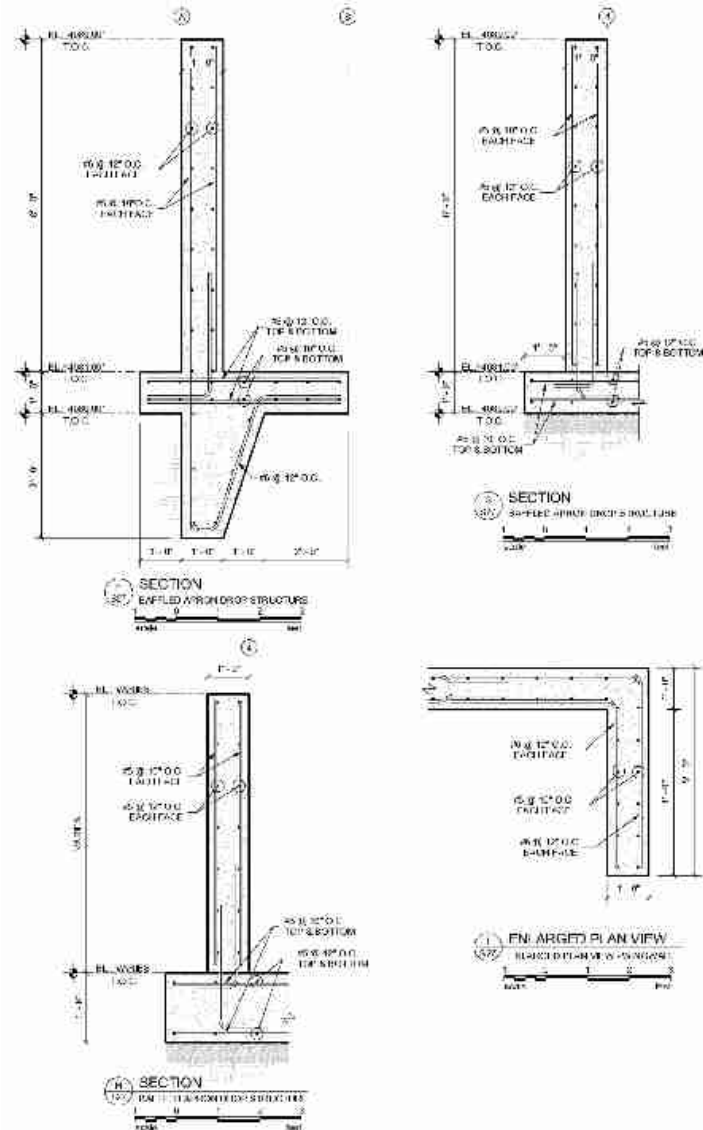
90% DESIGN  
NOT FOR CONSTRUCTION



# CANAL SPILLWAY - LABYRINTH



# CANAL SPILLWAY – BAFFLED DROP



07% DESIGN  
NOT FOR CONSTRUCTION



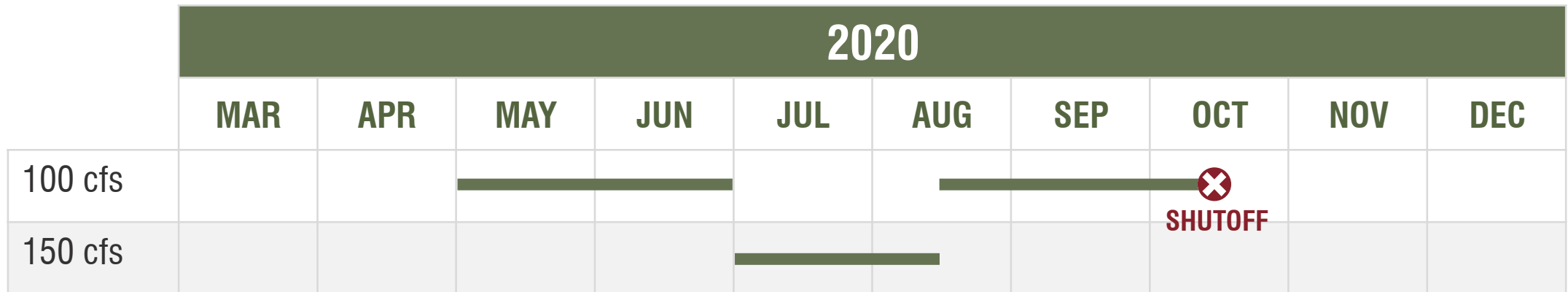
# ESTIMATED CONSTRUCTION QUANTITIES

- Excavation: 70,000 cy
- Embankment: 66,000 cy
- Filter/Drain Materials: 5,700 cy
- Riprap: 4,100 cy
- Riprap Bedding: 3,800 cy
- Reinforced Cast-in-Place Concrete:
  1. Outlet Works = 680 cy
  2. Canal Spillway = 300 cy
- Two Cast Iron Slide Gates and Manual Operators
- Stainless Steel Slide Gate & Automatic Siphons



# IRRIGATION OPERATION REQUIREMENTS

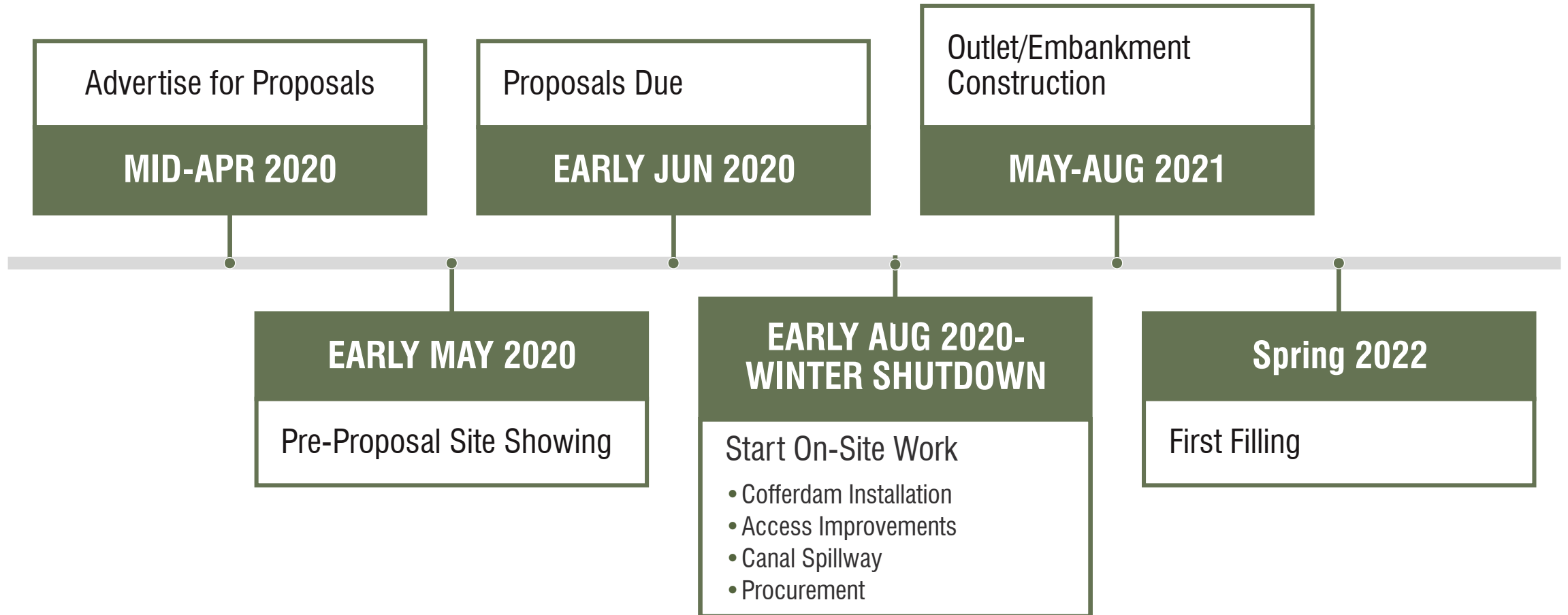
## Delivery Requirements During Construction



Four Horns Feeder Canal runs <200 cfs from MAR 1 - DEC 1



# PROJECT SCHEDULE



# RIGHT-OF-WAY & ACCESS

- New 30-foot right-of-way acquired along/near existing 2-track road
- ROW status
- Contractor improvements



Contractor Spot  
Repairs  
(As Needed)

Planned, Required  
Access Road Repairs

# PERMITS & CLEARANCES



404 Exemption – **OBTAINED**



NEPA Environmental Assessment – **COMPLETED**



Blackfeet Environmental Office Ordinance 117 Aquatic Resources Protection Permit – **IN PROCESS**



Blackfeet Tribal Historic Preservation Office Monitor – **CONTRACTOR REQUIREMENT**

# PROJECT BIDDING GENERAL REQUIREMENTS



Bidding Document Purchase



Bids from Single Prime Contractor



Pre-Bid Meeting



10% Bid Security



# LOW PRICE TECHNICALLY ACCEPTABLE SELECTION PROCESS

## Qualification Statement Review

Factors may include:

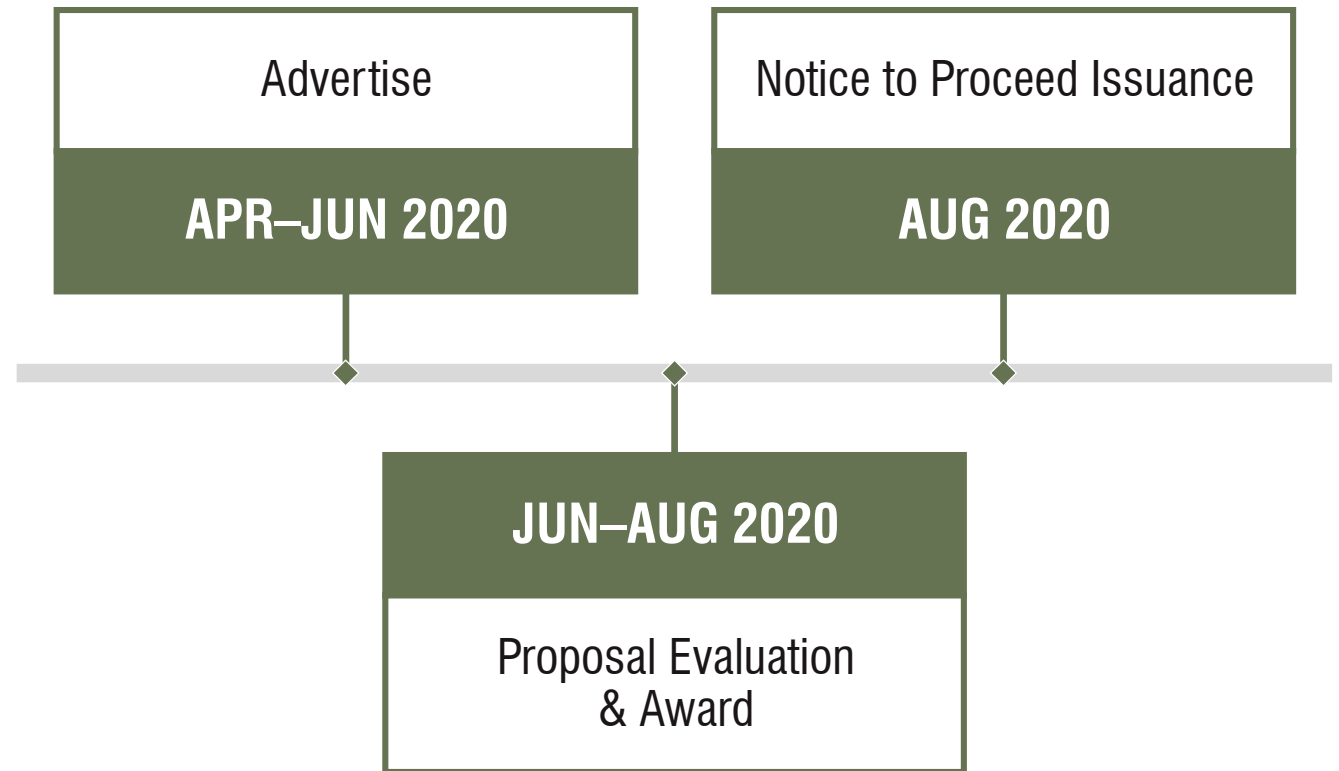
- Technical approach/capabilities
- TERO compliance
- Past performance

Determination of **acceptability**



**Low Price  
Determination  
& Award**

# BIDDING & AWARD SCHEDULE



# BLACKFEET BONDING REQUIREMENTS & DISPUTE RESOLUTION PROCEDURES

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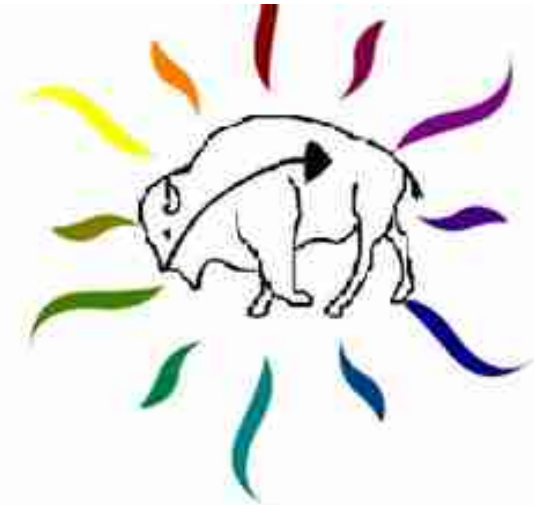
- Dawn Gray
- Jeanne Whiteing



# BLACKFEET TERO REQUIREMENTS

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65 Blackweasel Road  
Browning, MT 59417  
406-338-7887  
Blkft\_tero@blackfeetnation.com  
<https://btero.com/>



**Blackfeet T.E.R.O**



# QUESTIONS? FEEDBACK?

## Blackfeet Nation

Gerald Lunak | Blackfeet Tribe  
640 All Chiefs Road  
Browning, MT 59417  
Jlunak@blackfeetnation.com  
406-338-2071

## Consulting Engineer

Amy Darlinton, P.E. | NECI  
200 N. 34<sup>th</sup> Street  
Billings, MT 59101  
Amy.Darlinton@neciusa.com  
406-206-5248

