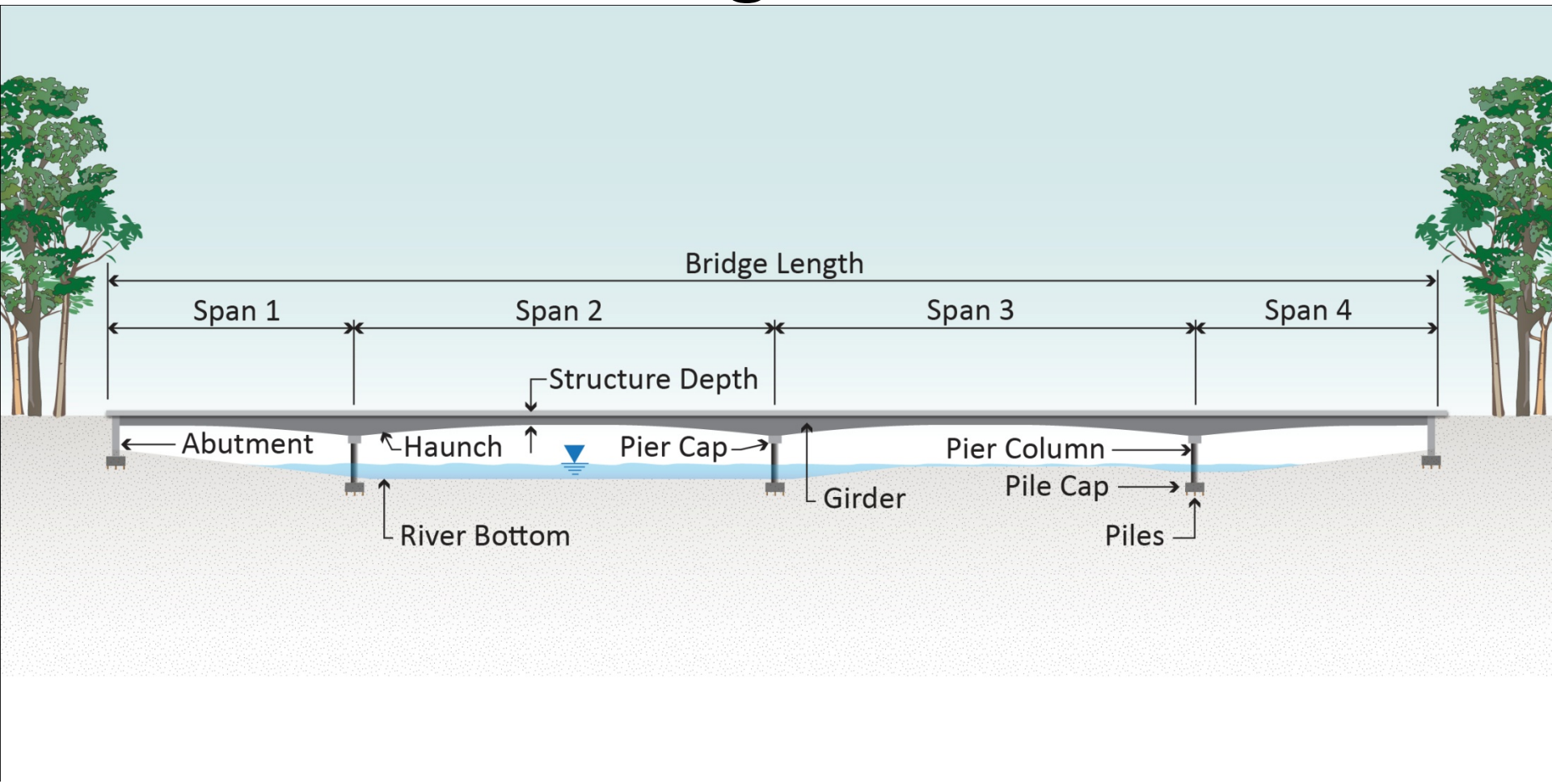
BRIDGE 101

John Hinman, CH2M HILL

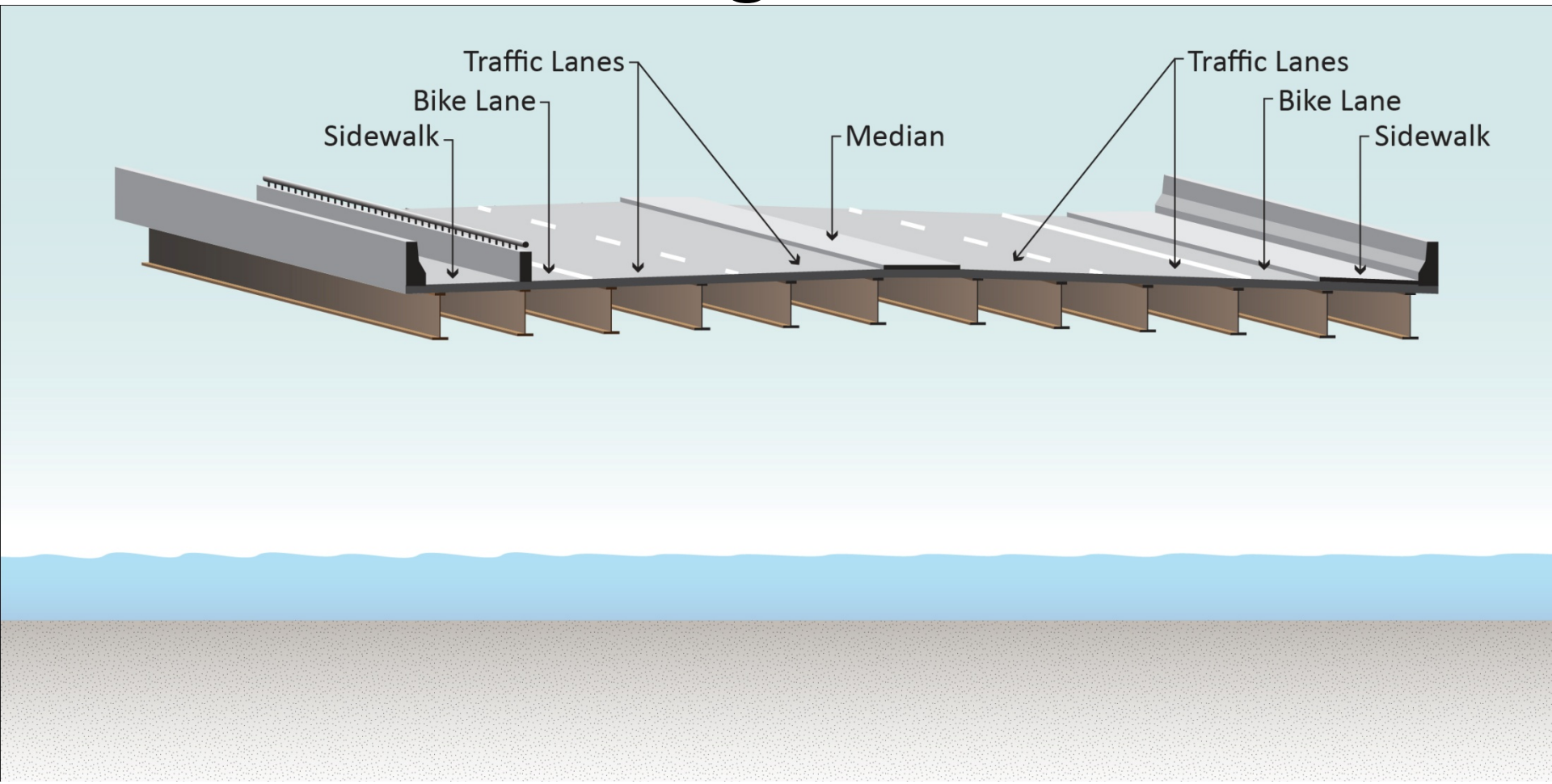
Broadway Avenue
Bridge Replacement

Bridge 101



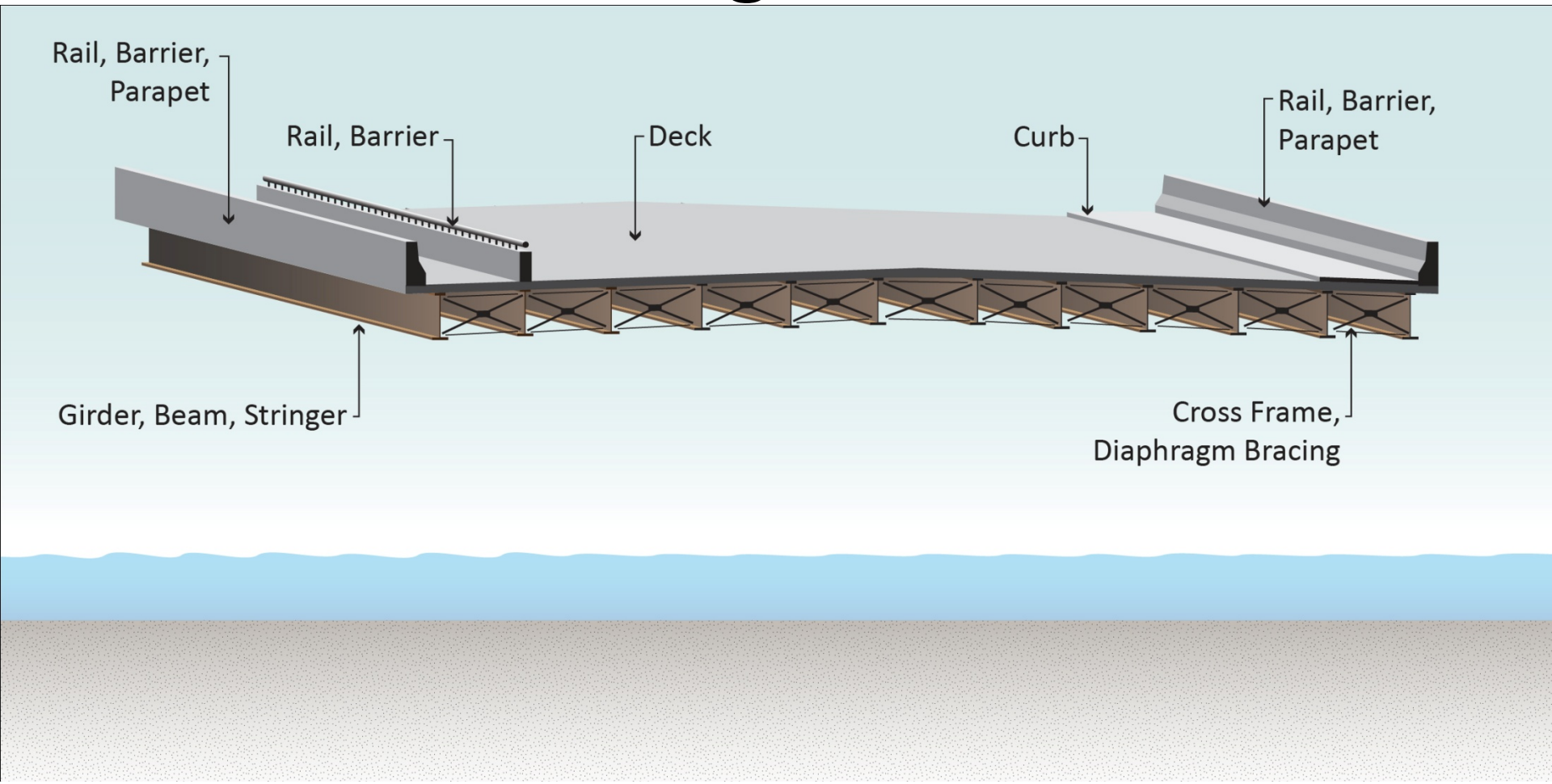
Broadway Avenue Bridge Replacement

Bridge 101



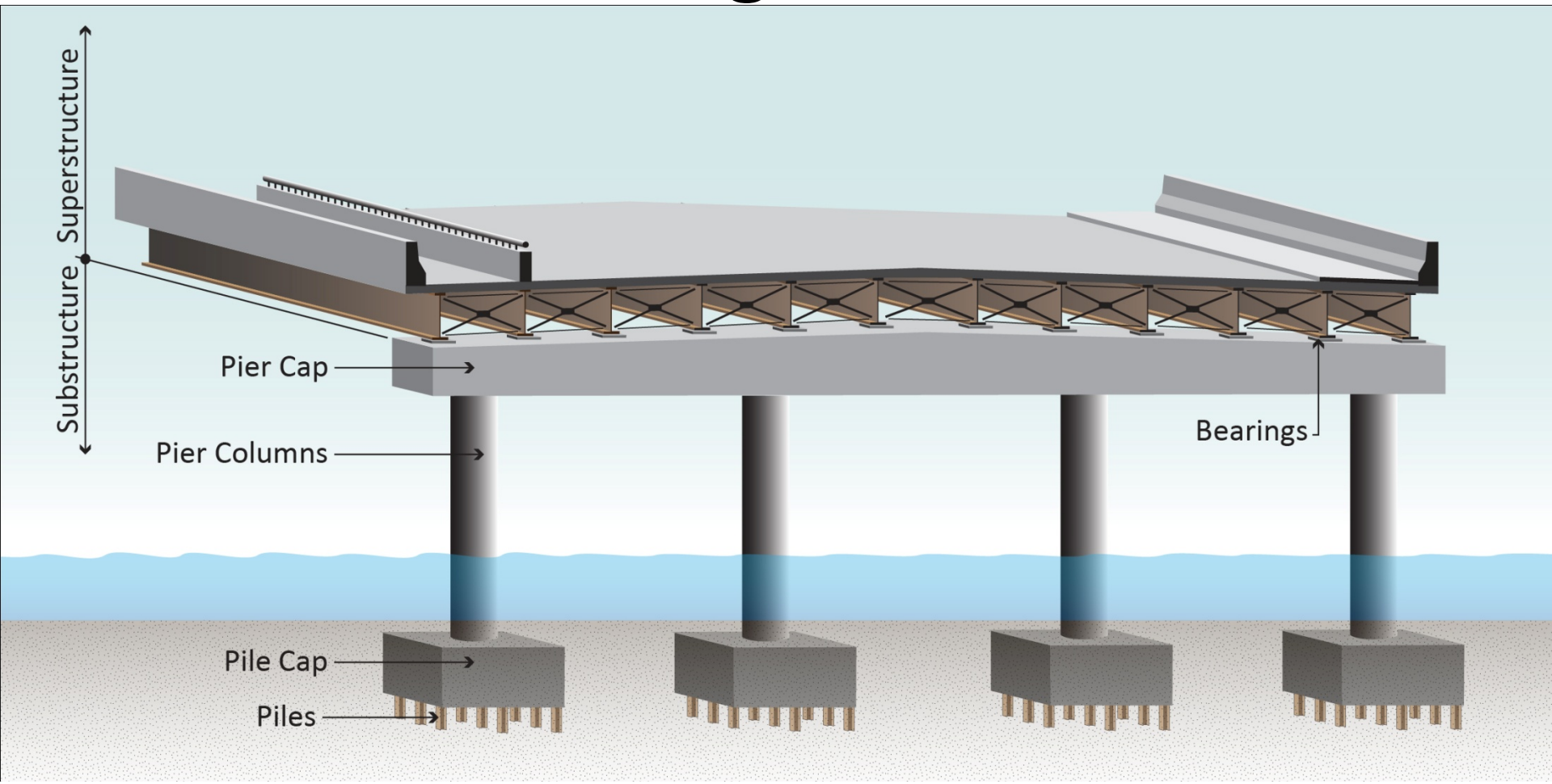
Broadway Avenue Bridge Replacement

Bridge 101



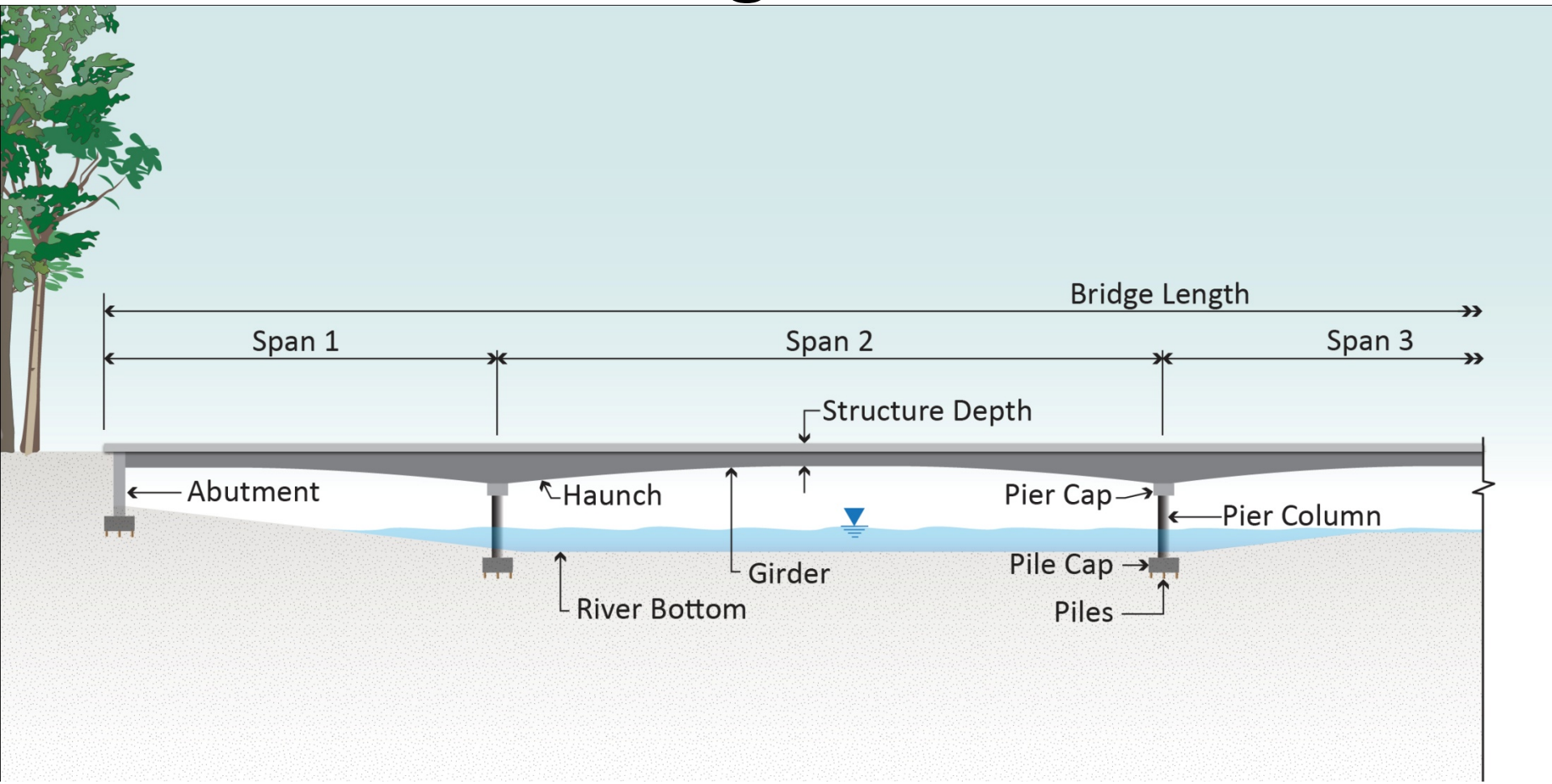
Broadway Avenue Bridge Replacement

Bridge 101



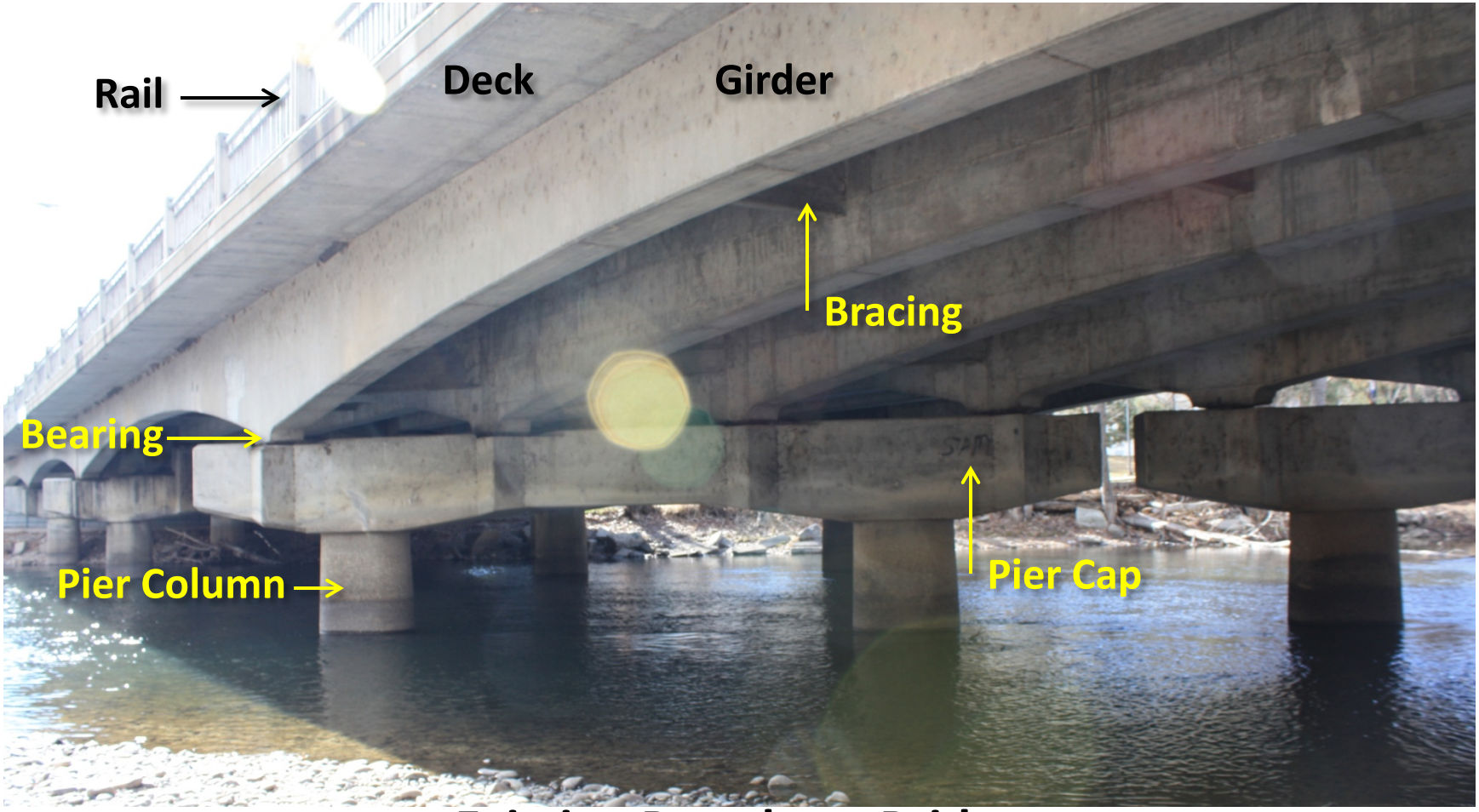
Broadway Avenue Bridge Replacement

Bridge 101



Broadway Avenue Bridge Replacement

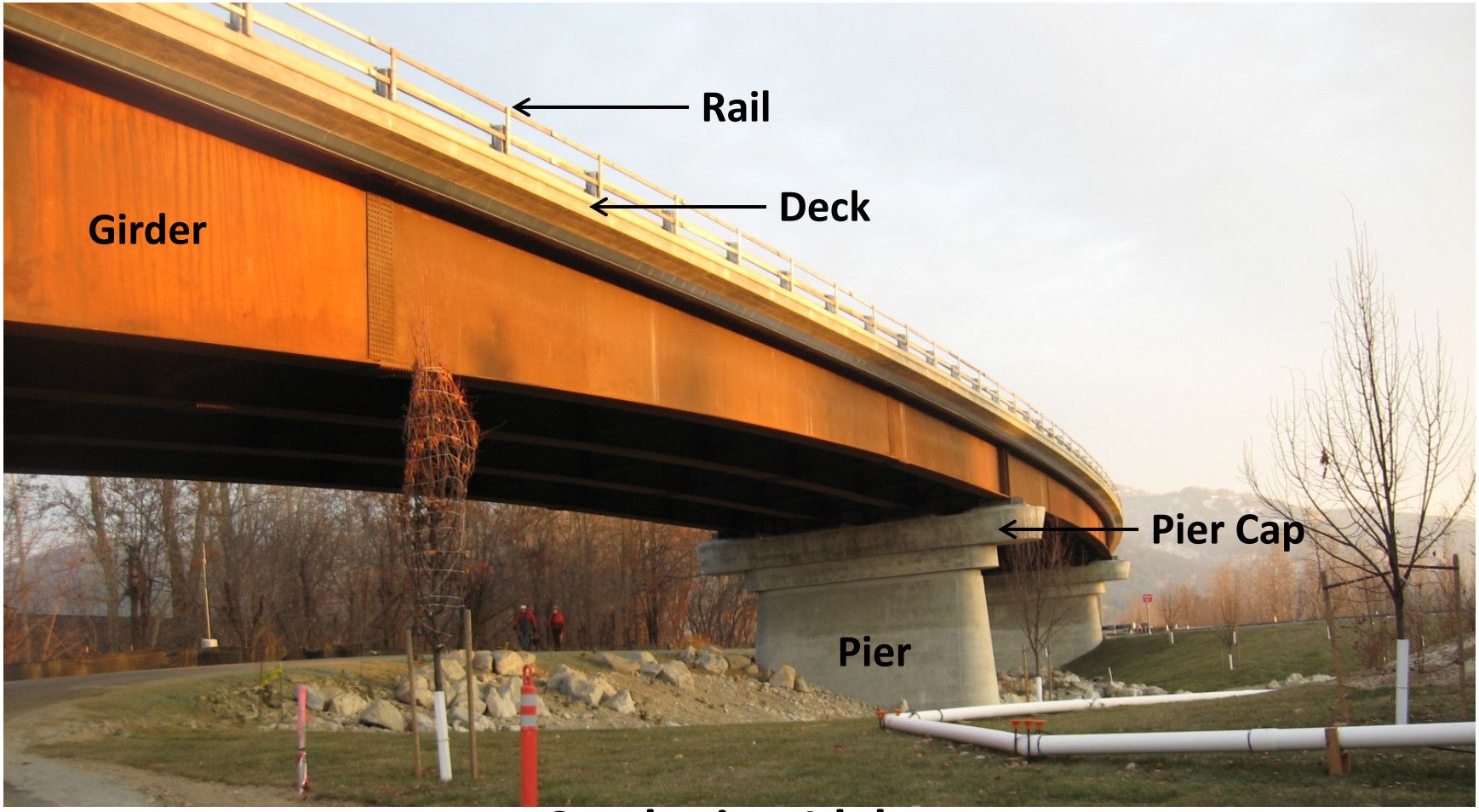
Bridge 101



Existing Broadway Bridge

Broadway Avenue Bridge Replacement

Bridge 101



Sandpoint, Idaho

Broadway Avenue Bridge Replacement

STRUCTURE

John Hinman, CH2M HILL

Broadway Avenue
Bridge Replacement

Things to Think About

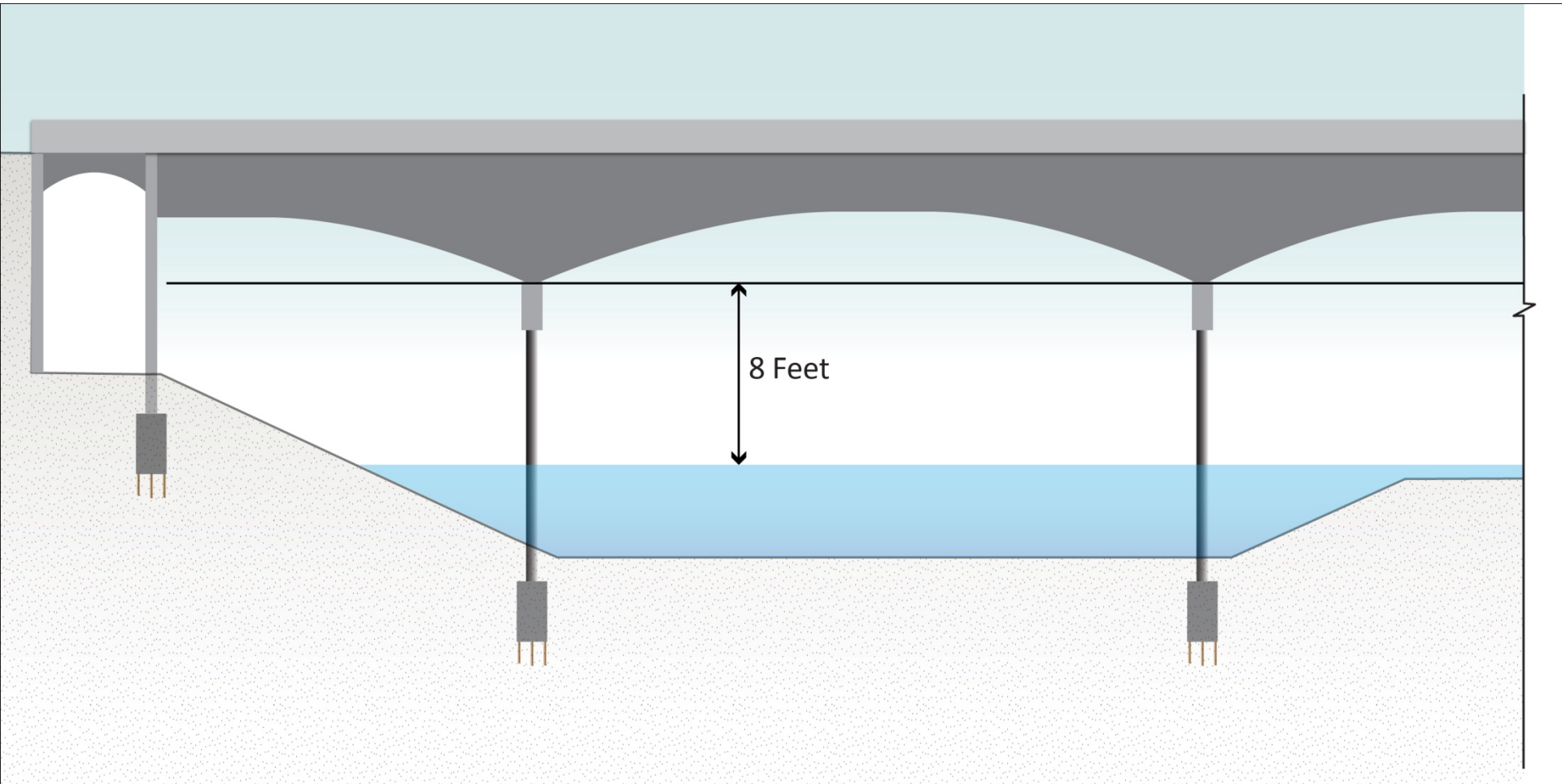
- Number of Spans
- Straight or Haunched Girders
- Pedestrian Accommodation
- Piers

Key Influences

- Height of Roadway
- Height of River
- Clearance for Pedestrians
- Comfort for Pedestrians
- Visual Quality

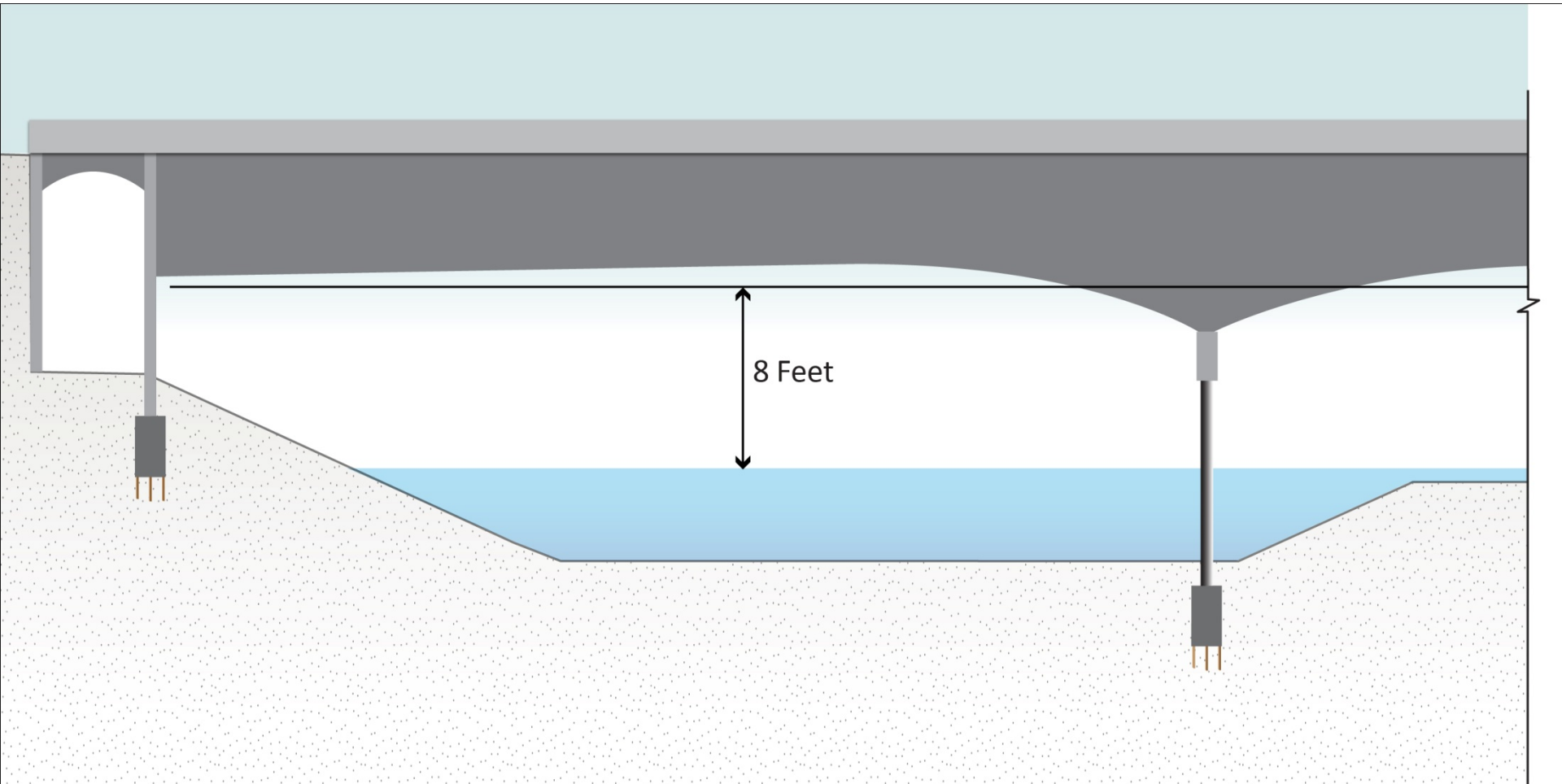
Height of River

- Ordinary Flow Allows Emergency Access



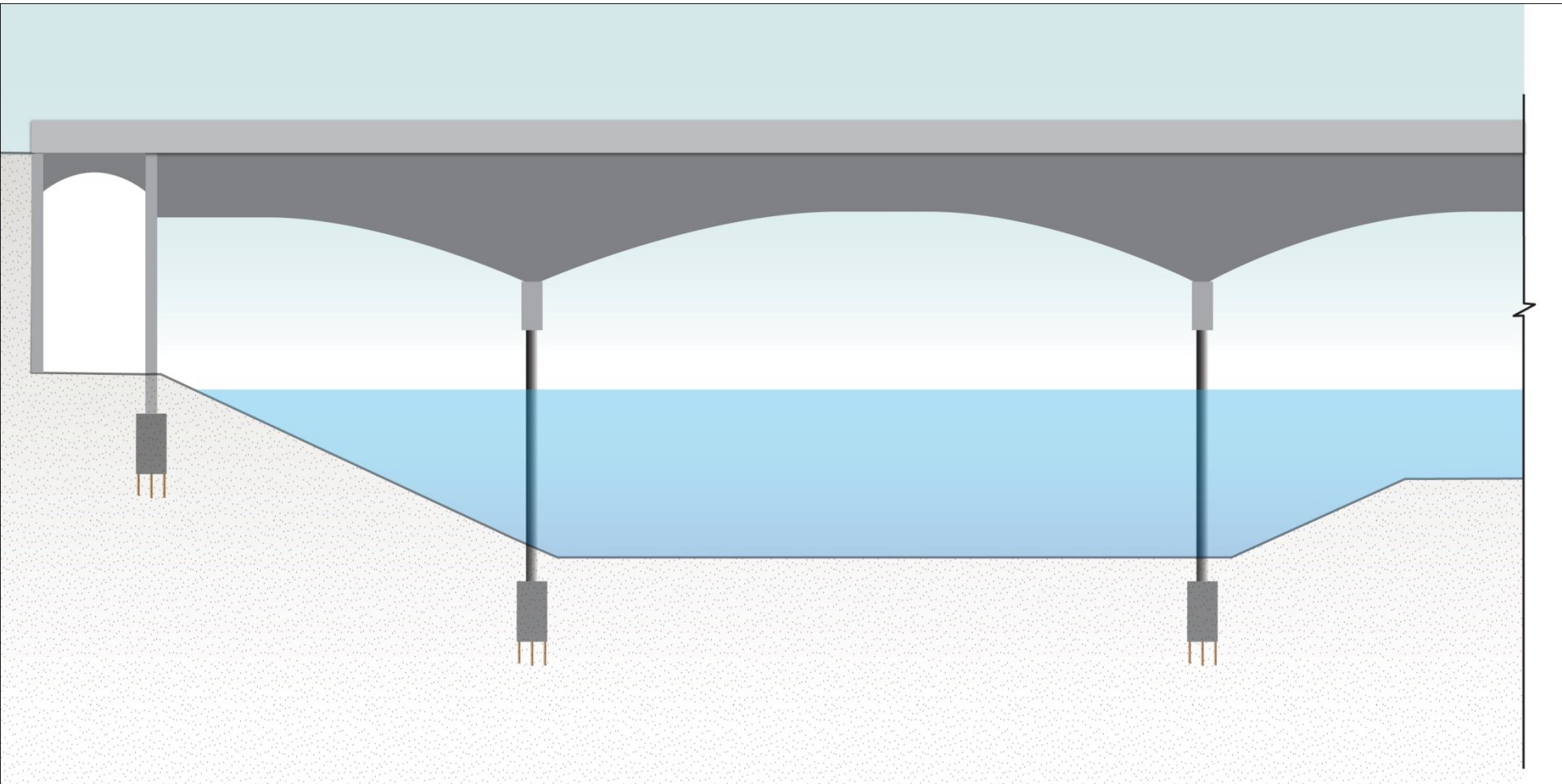
Height of River

- Ordinary Flow Allows Emergency Access



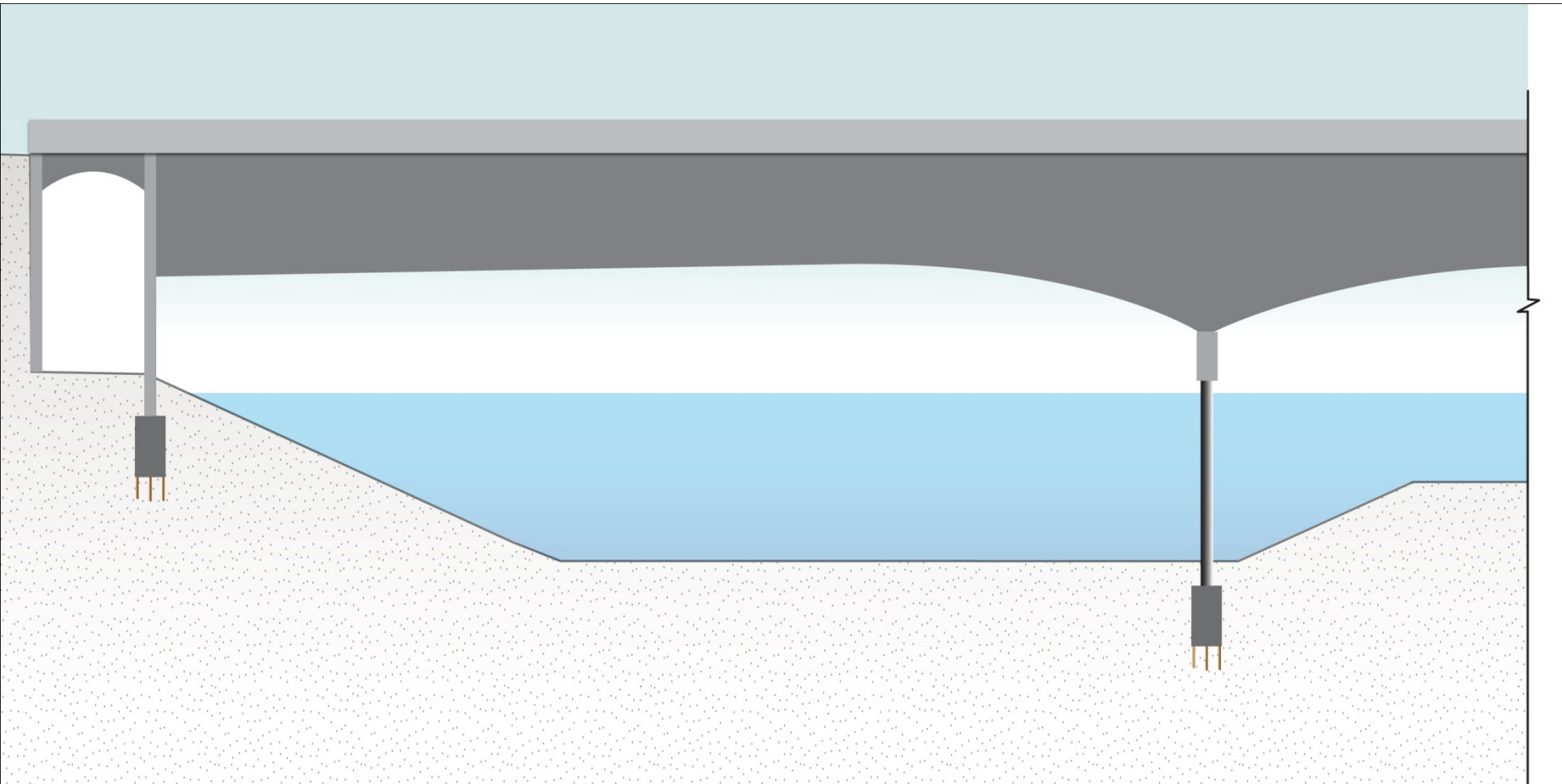
Height of River

- Path Open During Ordinary High Water



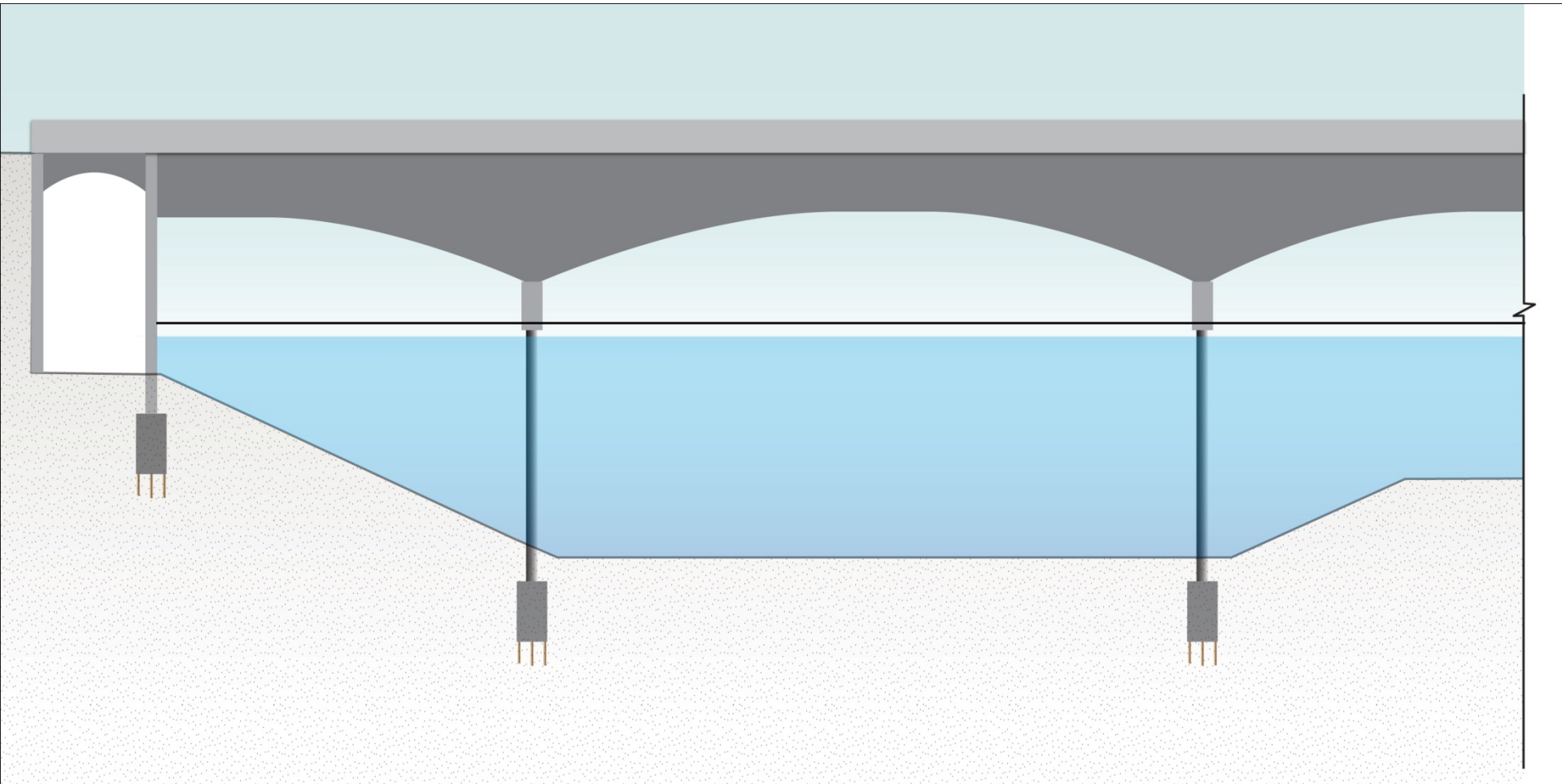
Height of River

- Path Open During Ordinary High Water



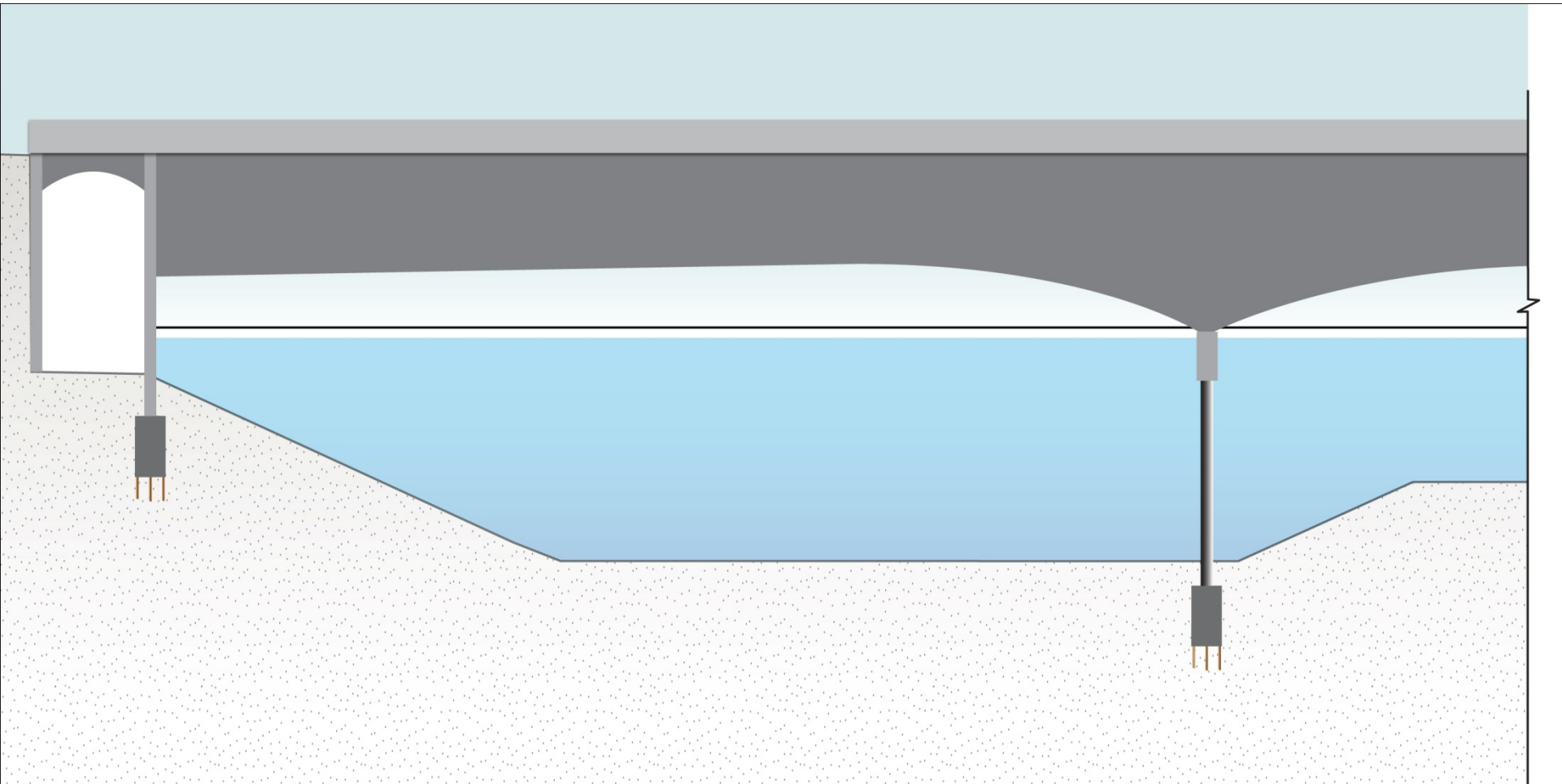
Height of River

- Pass Flood Flow (Very High Water)



Height of River

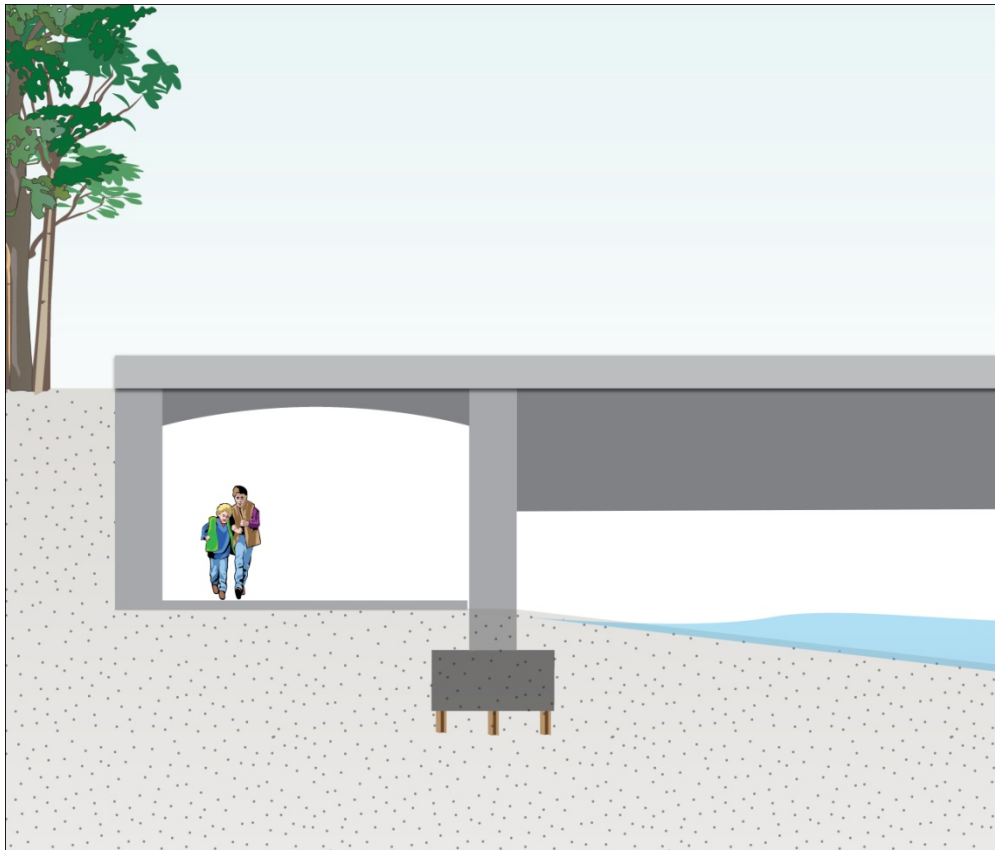
- Pass Flood Flow (Very High Water)



Pedestrians

- 14 Feet Wide Path
- 10 Feet of Clearance

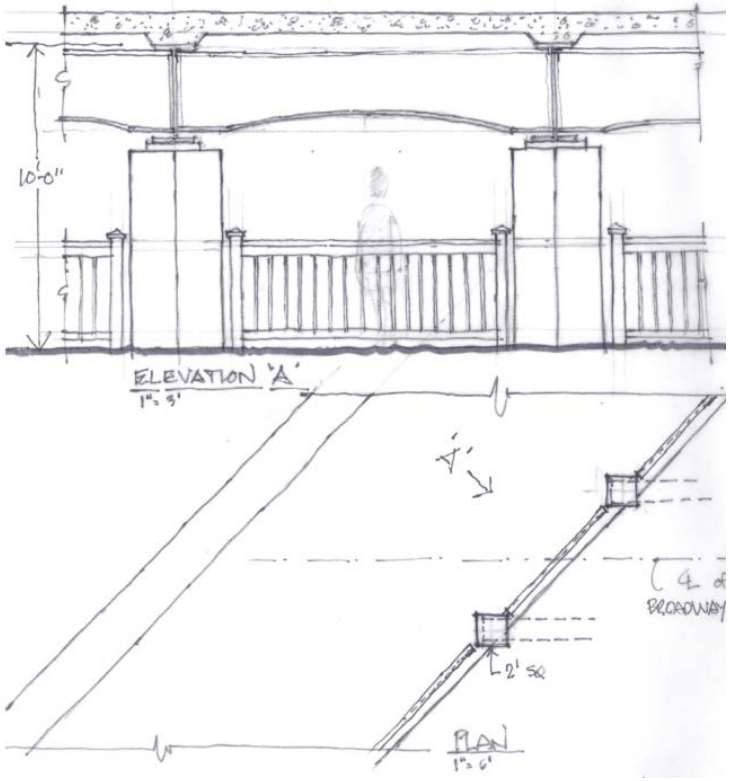
- 140 Feet Long

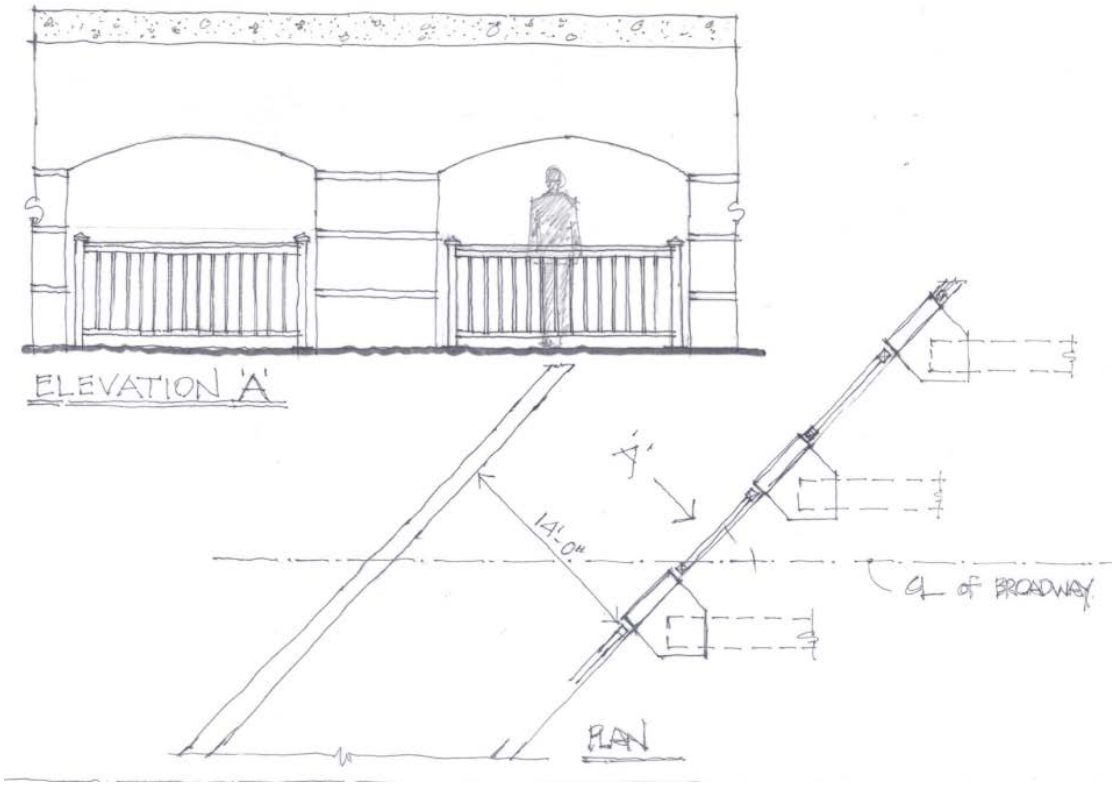


Broadway Avenue Bridge Replacement

Bridge Features & Aesthetics

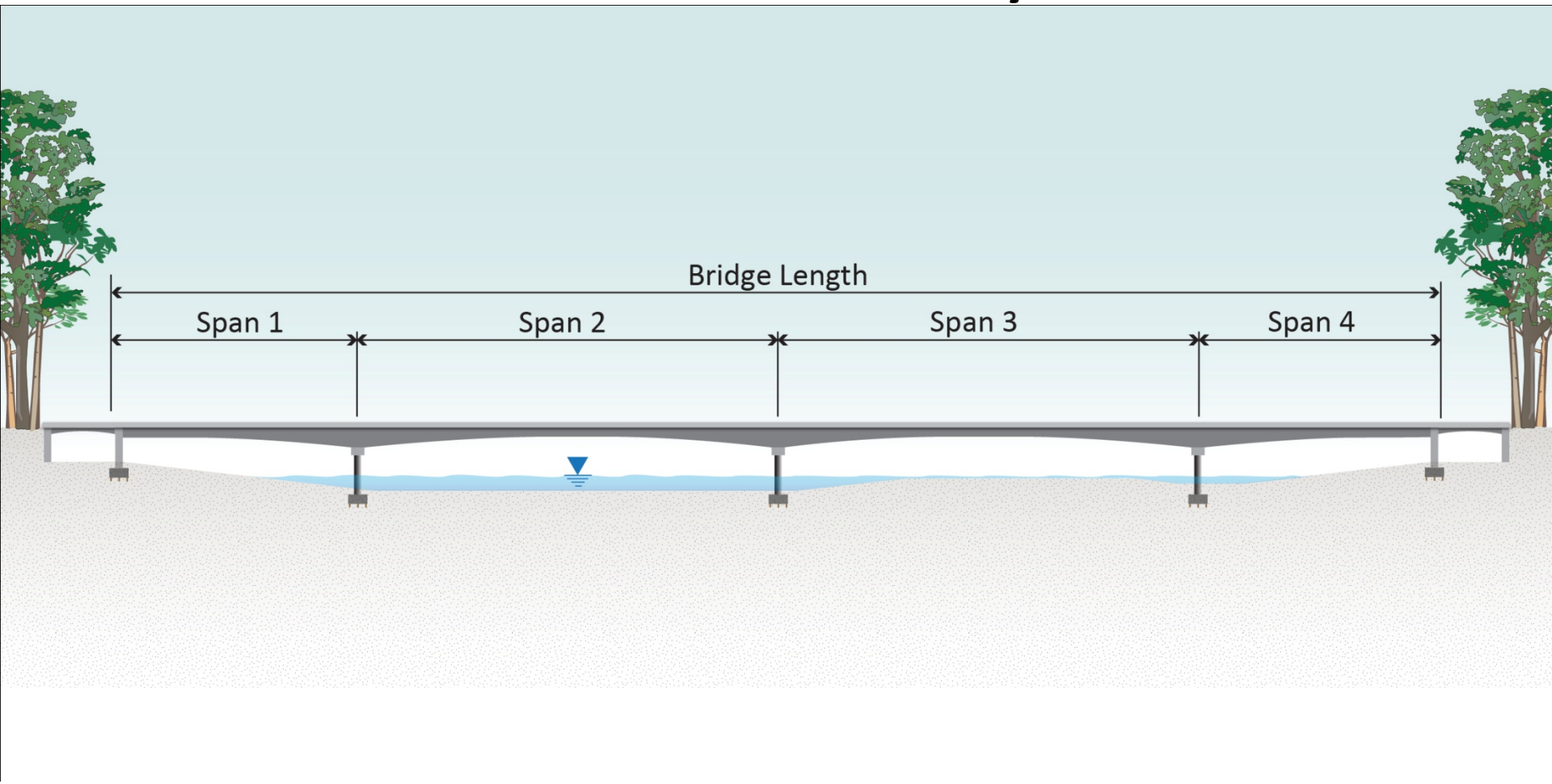
- Greenbelt Pedestrian Underpass Concepts





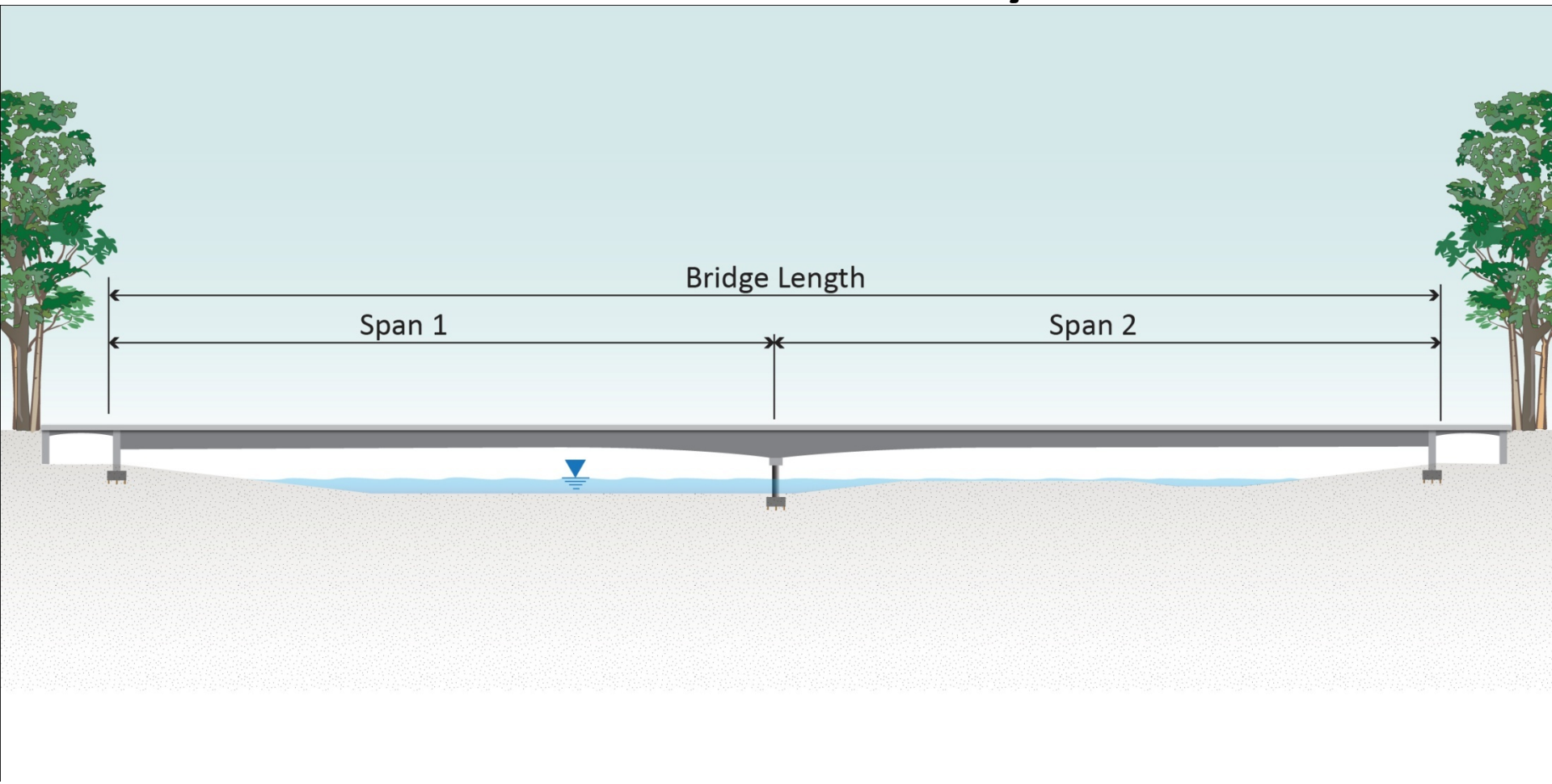
Broadway Avenue Bridge Replacement

Visual Quality



Broadway Avenue
Bridge Replacement

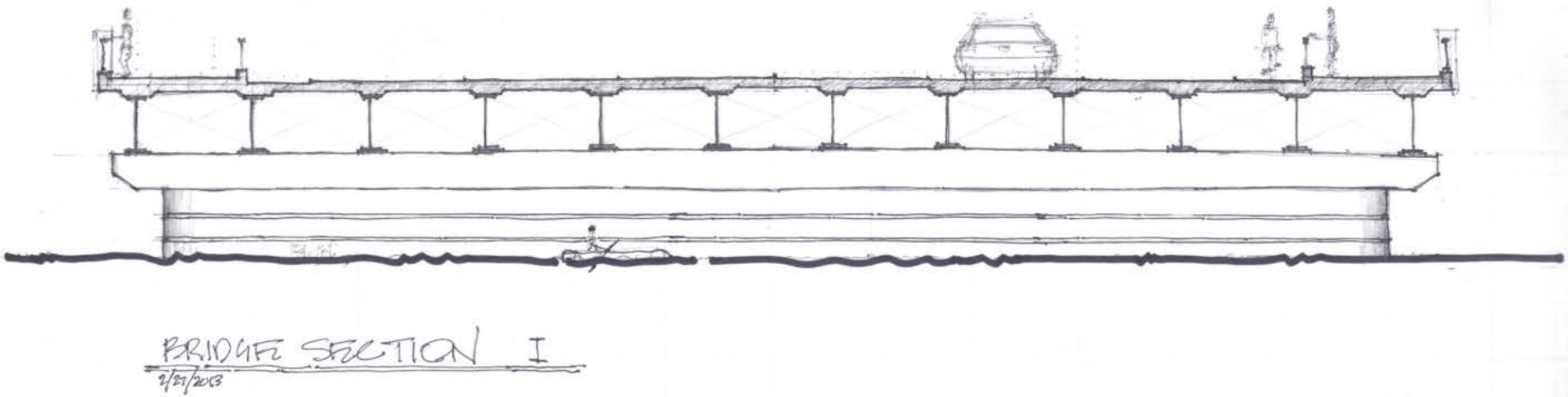
Visual Quality



Broadway Avenue
Bridge Replacement

Bridge Features & Aesthetics

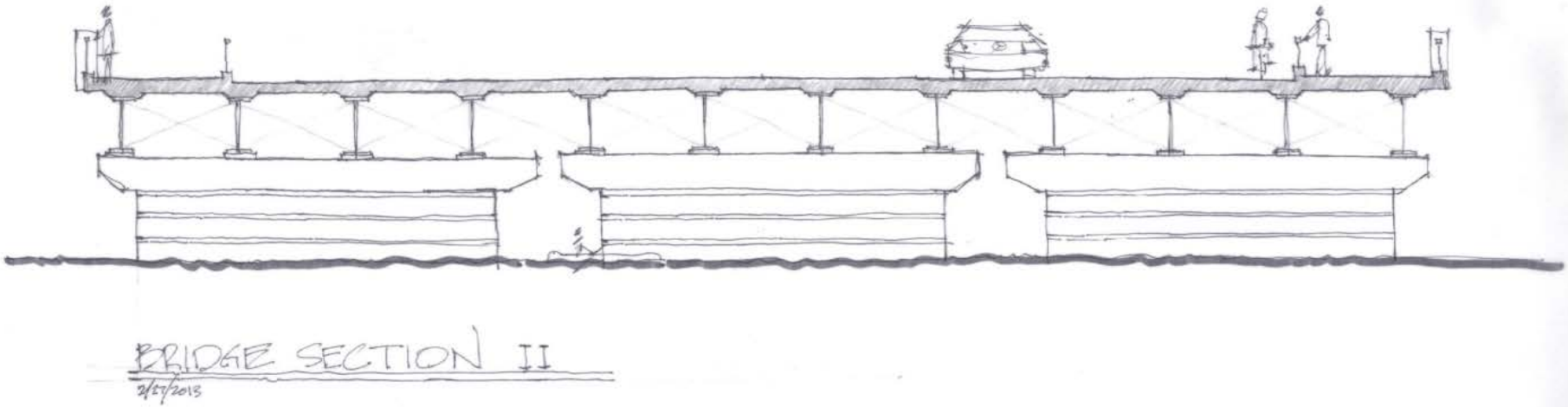
- Bridge Piers – Form and Spacing



Broadway Avenue Bridge Replacement

Bridge Features & Aesthetics

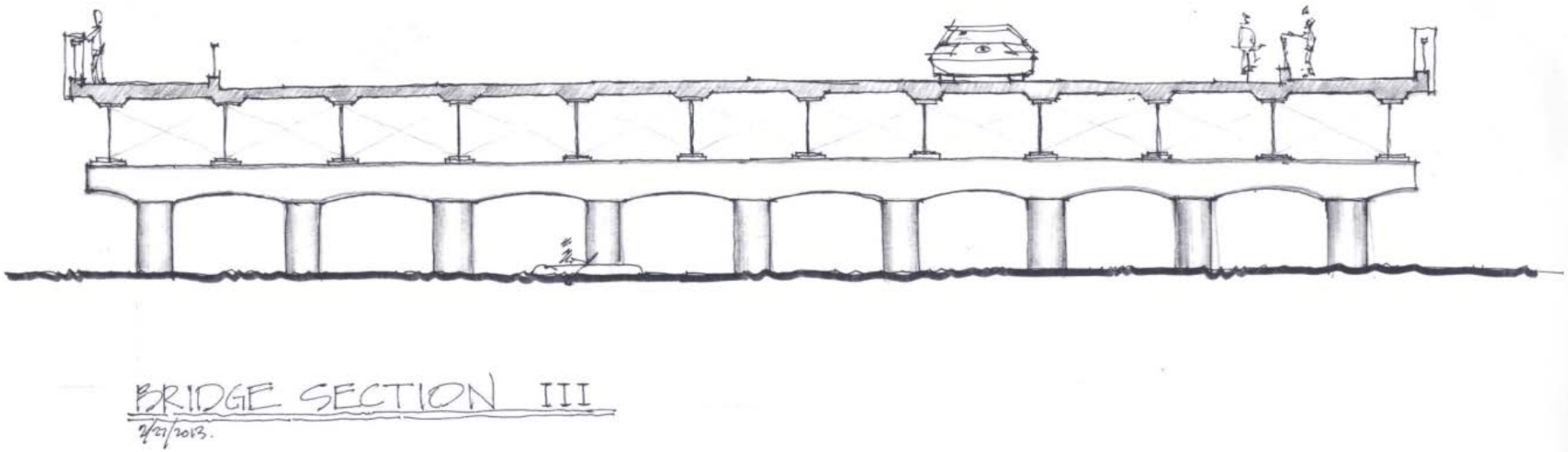
- Bridge Piers – Form and Spacing



Broadway Avenue Bridge Replacement

Bridge Features & Aesthetics

- Bridge Piers – Form and Spacing



Broadway Avenue Bridge Replacement

GREENBELT

Blaise Exon, CH2M HILL

Broadway Avenue
Bridge Replacement

Greenbelt

Broadway Avenue
Bridge Replacement

Greenbelt
General Considerations

- Users
  - Pedestrians
  - Cyclists
  - Maintenance Personnel
- Design & Layout Considerations
  - City Design Standards
    - Avoid Flooding
  - Various speeds (Pedestrians vs. Cyclists)
    - Think about sharp corners, ability to see around objects
    - Downhill Slopes
  - Americans with Disabilities Act Requirements

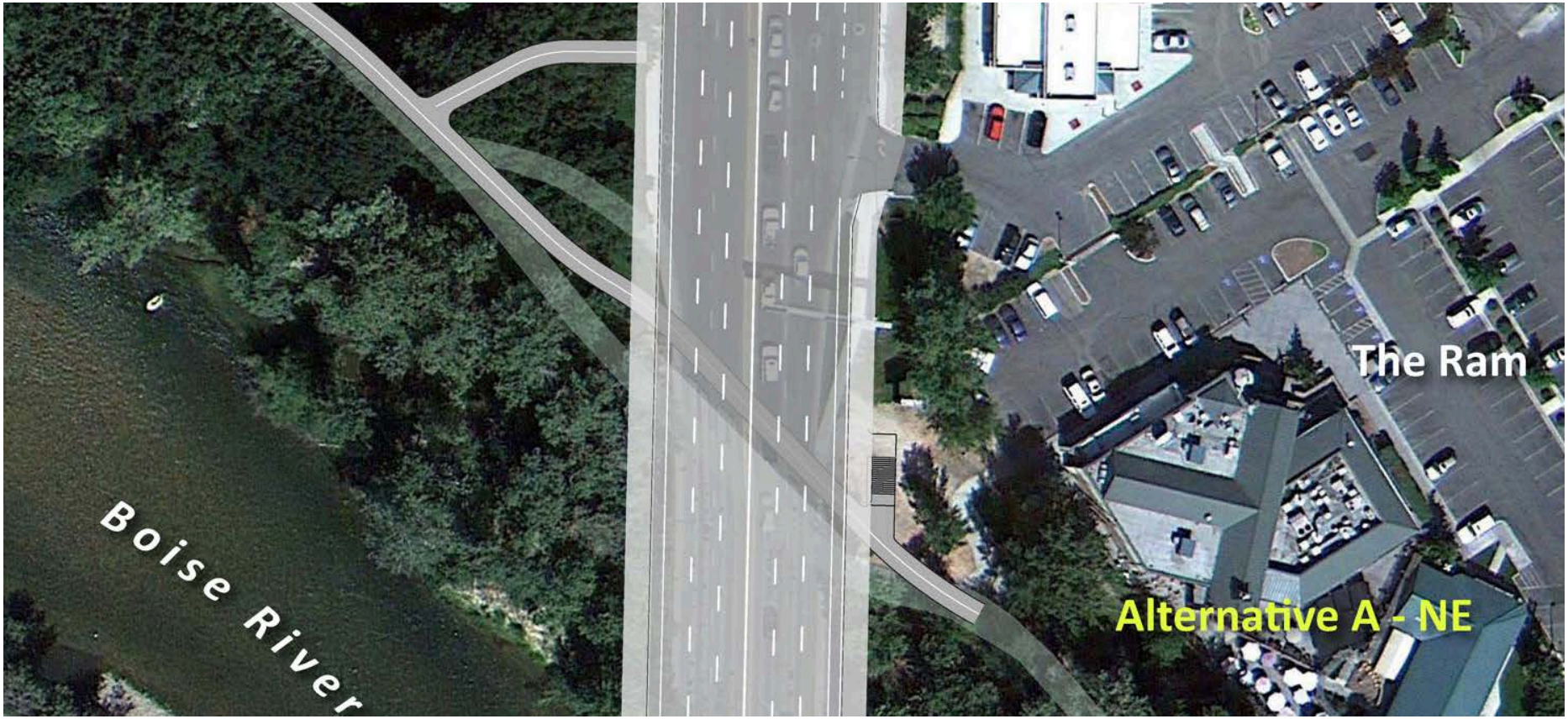
Greenbelt
Specific Considerations

- Intersections
  - Skew
  - Type
- Connectivity to Broadway
  - Slope, Landings, Length, and Location
- Gathering Areas
- Stairs

Greenbelt Underpass Considerations

- Dual Path vs. Single Path

Greenbelt
Single Path Underpass



Broadway Avenue
Bridge Replacement

Greenbelt
Single Path Underpass

- Users would be directed into the underpass with no other options.
- The underpass may or may not have openings.
- The underpass would be high enough in elevation to avoid most floods.

Greenbelt
Dual Path System

Broadway Avenue
Bridge Replacement

Greenbelt
Dual Path System

- Dual Path System
  - Dual paths allow users to avoid the underpass when flooding is not present.
  - Users can use the underpass during flooding.
  - Additional maintenance.
  - Merge/Diverge points.

Greenbelt
Connectivity to Broadway

- Northwest Quadrant (Julia Davis Park)
- Northeast Quadrant (The Ram)
- Southwest Quadrant (BSU)
- Southeast Quadrant (Dirt Lot)

Greenbelt

Northwest Connection to Broadway
Alternative A

Broadway Avenue
Bridge Replacement

Greenbelt

Northwest Connection to Broadway
Alternative B

Broadway Avenue Bridge Replacement

Greenbelt

Northwest Connection to Broadway
Alternative C

Broadway Avenue Bridge Replacement

Greenbelt

Northeast Connection to Broadway
Alternative A

Broadway Avenue Bridge Replacement

Greenbelt

Northeast Connection to Broadway
Alternative B

Broadway Avenue Bridge Replacement

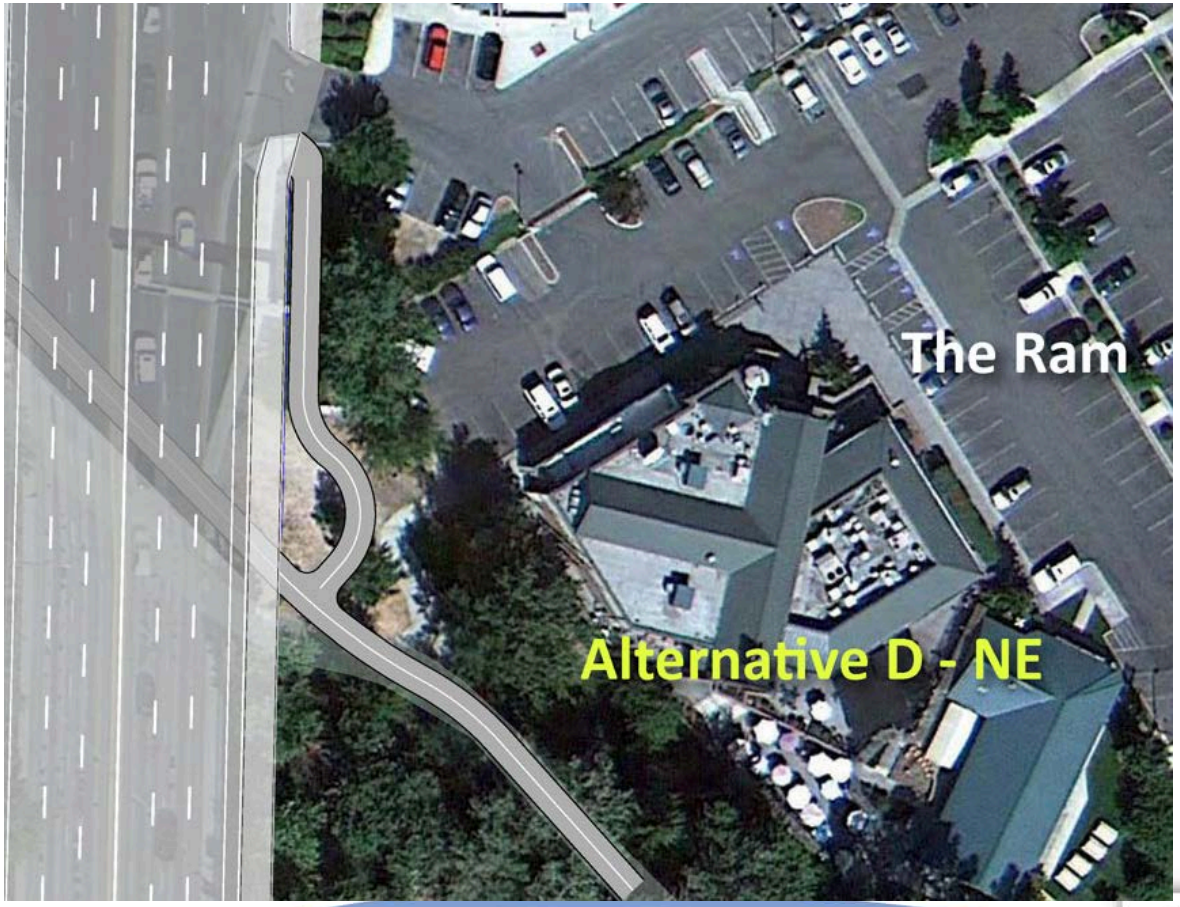
Greenbelt

Northeast Connection to Broadway
Alternative C

Broadway Avenue Bridge Replacement

Greenbelt

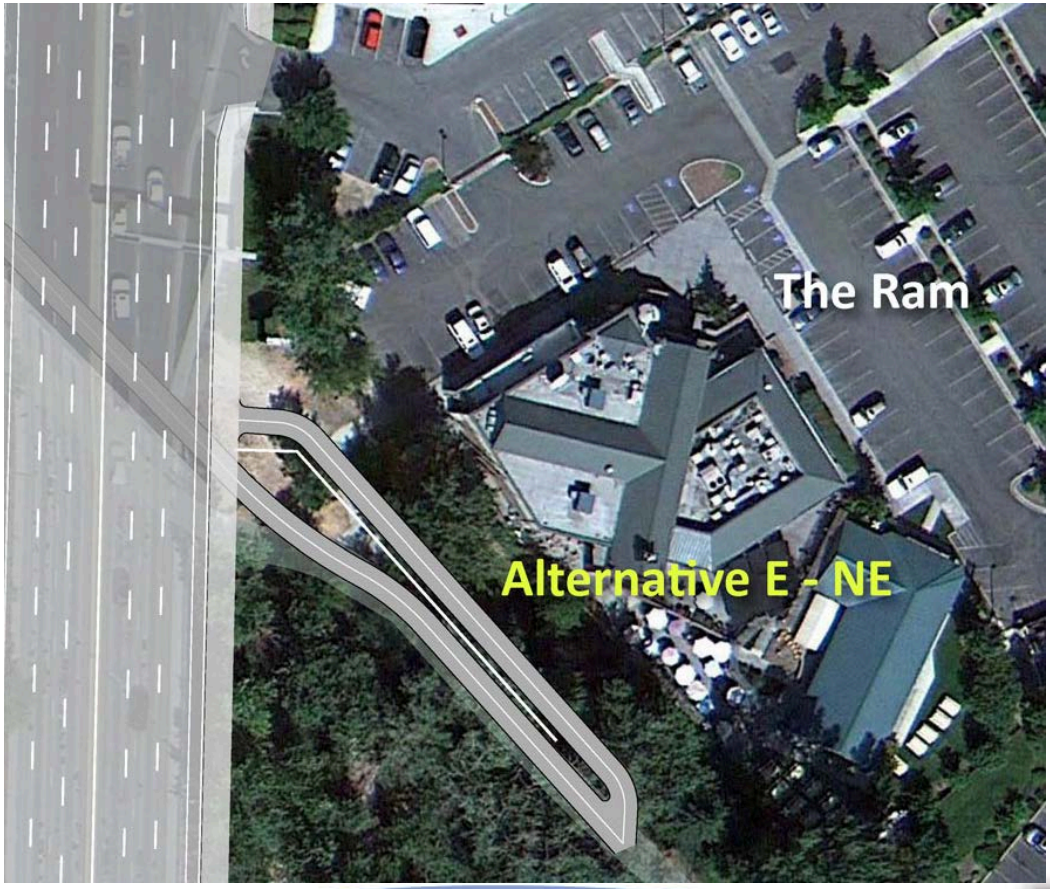
Northeast Connection to Broadway
Alternative D



Broadway Avenue Bridge Replacement

Greenbelt

Northeast Connection to Broadway
Alternative E



Broadway Avenue Bridge Replacement

Greenbelt

Southwest Connection to Broadway
Alternative A

Broadway Avenue Bridge Replacement

Greenbelt

Southwest Connection to Broadway
Alternative B

Broadway Avenue Bridge Replacement

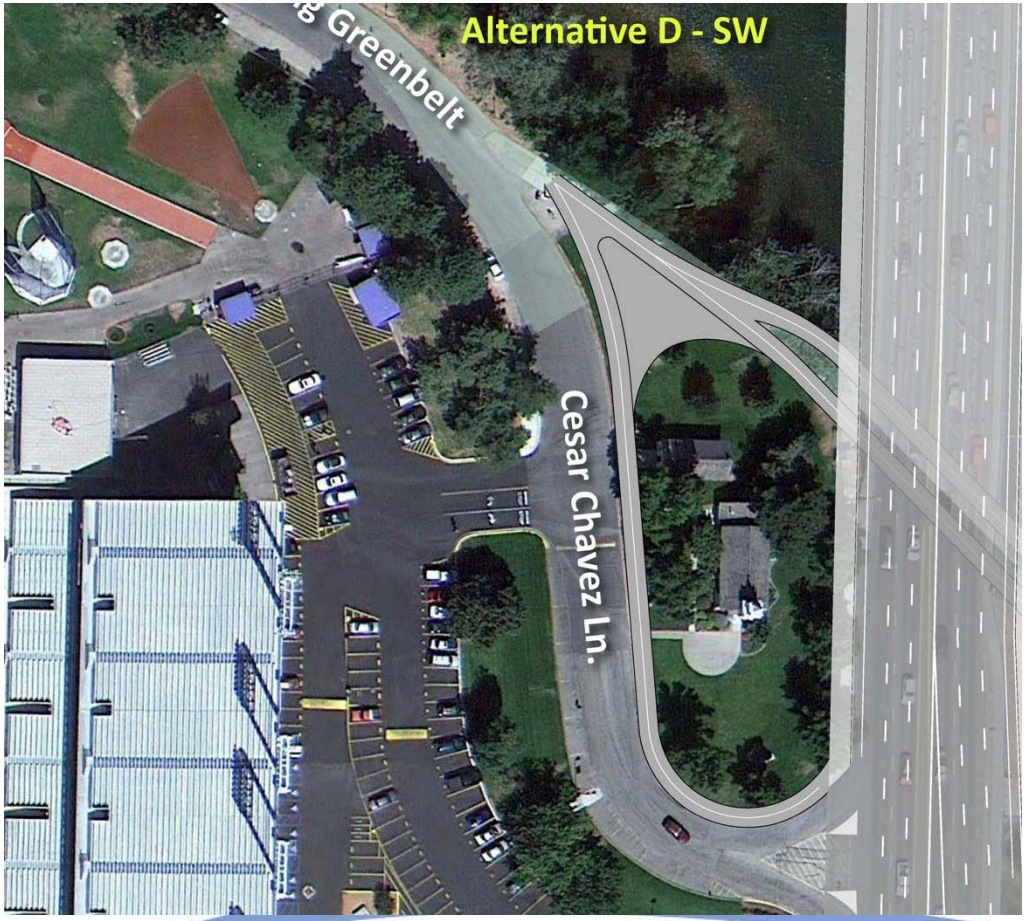
Greenbelt

Southwest Connection to Broadway
Alternative C

Broadway Avenue Bridge Replacement

Greenbelt

Southwest Connection to Broadway
Alternative D



Broadway Avenue Bridge Replacement

Greenbelt

Southeast Connection to Broadway
Alternative A

Broadway Avenue
Bridge Replacement

Greenbelt

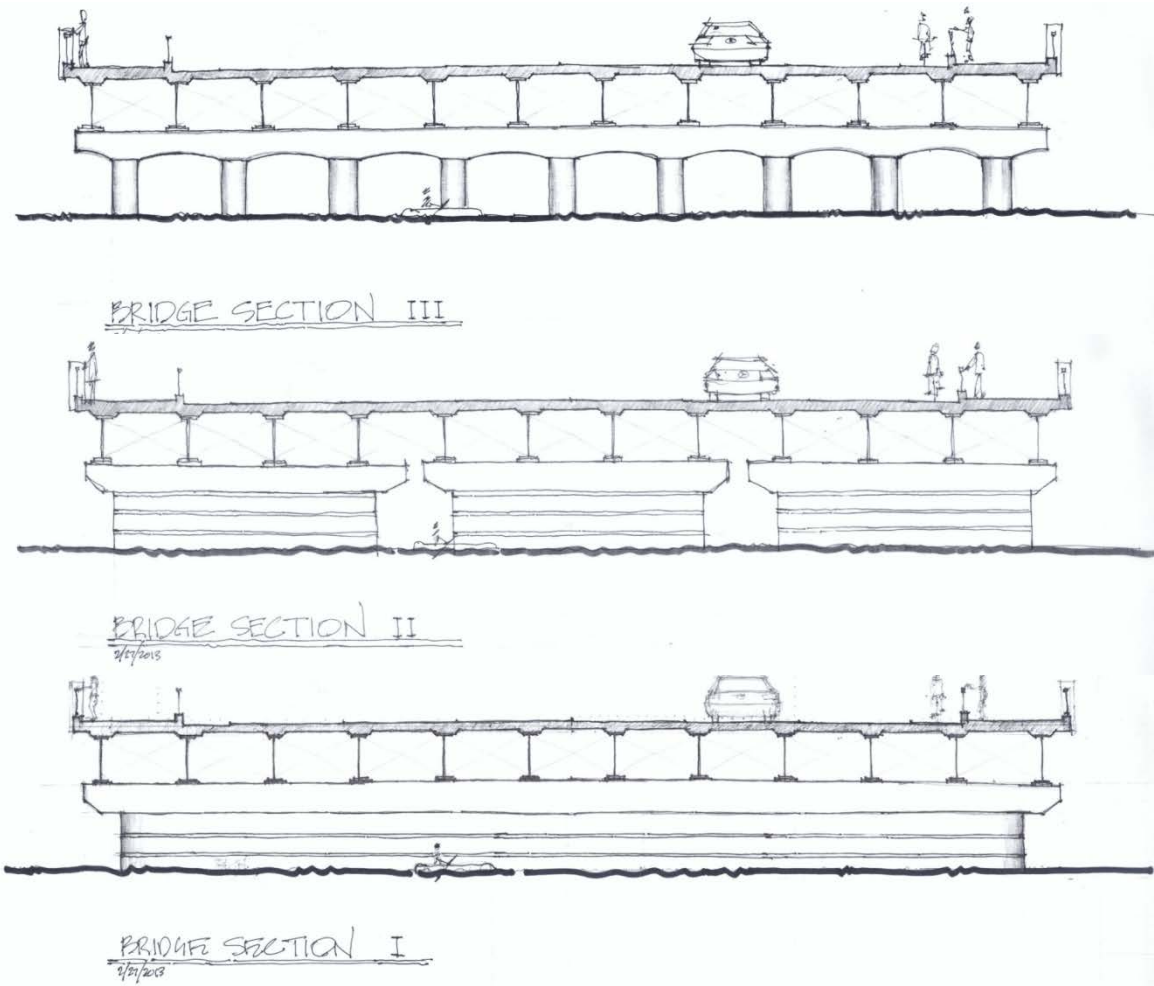
Southeast Connection to Broadway
Alternative B

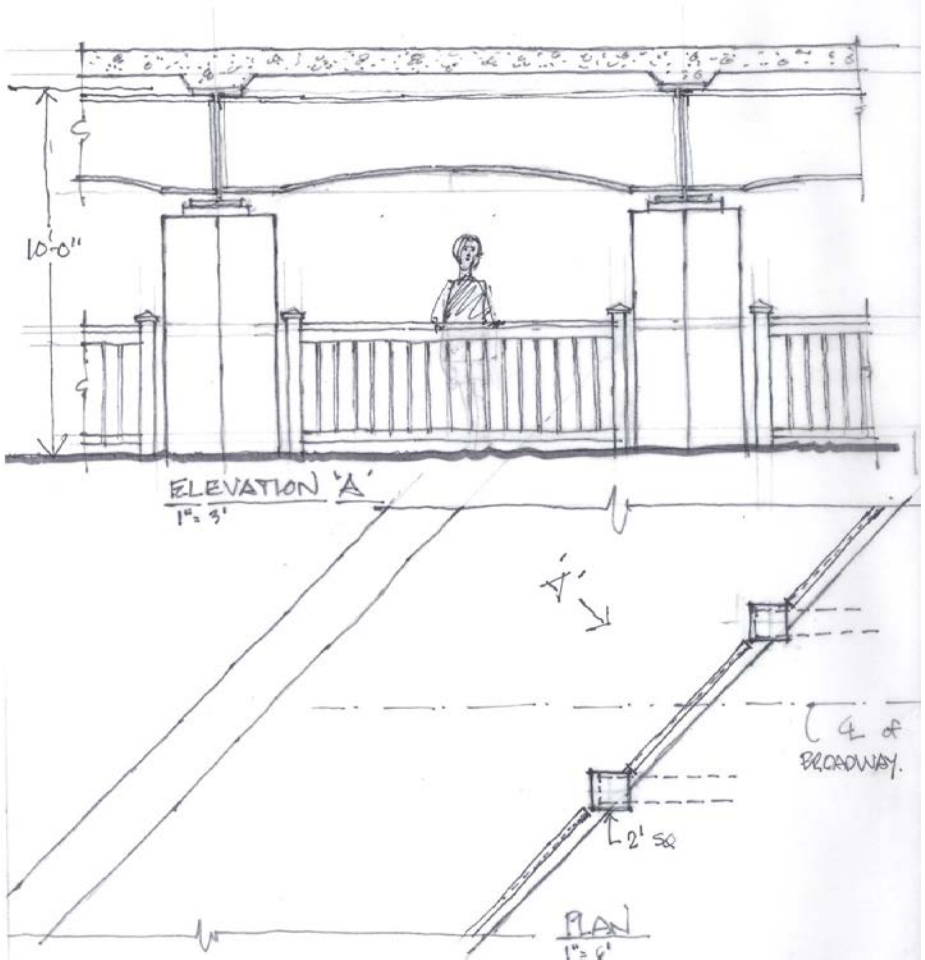
Broadway Avenue
Bridge Replacement

Broadway Avenue
Bridge Replacement

Piers

- Piers Affect Visual Quality
  - Greenbelt Users
  - River Floaters



Open Structure

- Provide View of the River