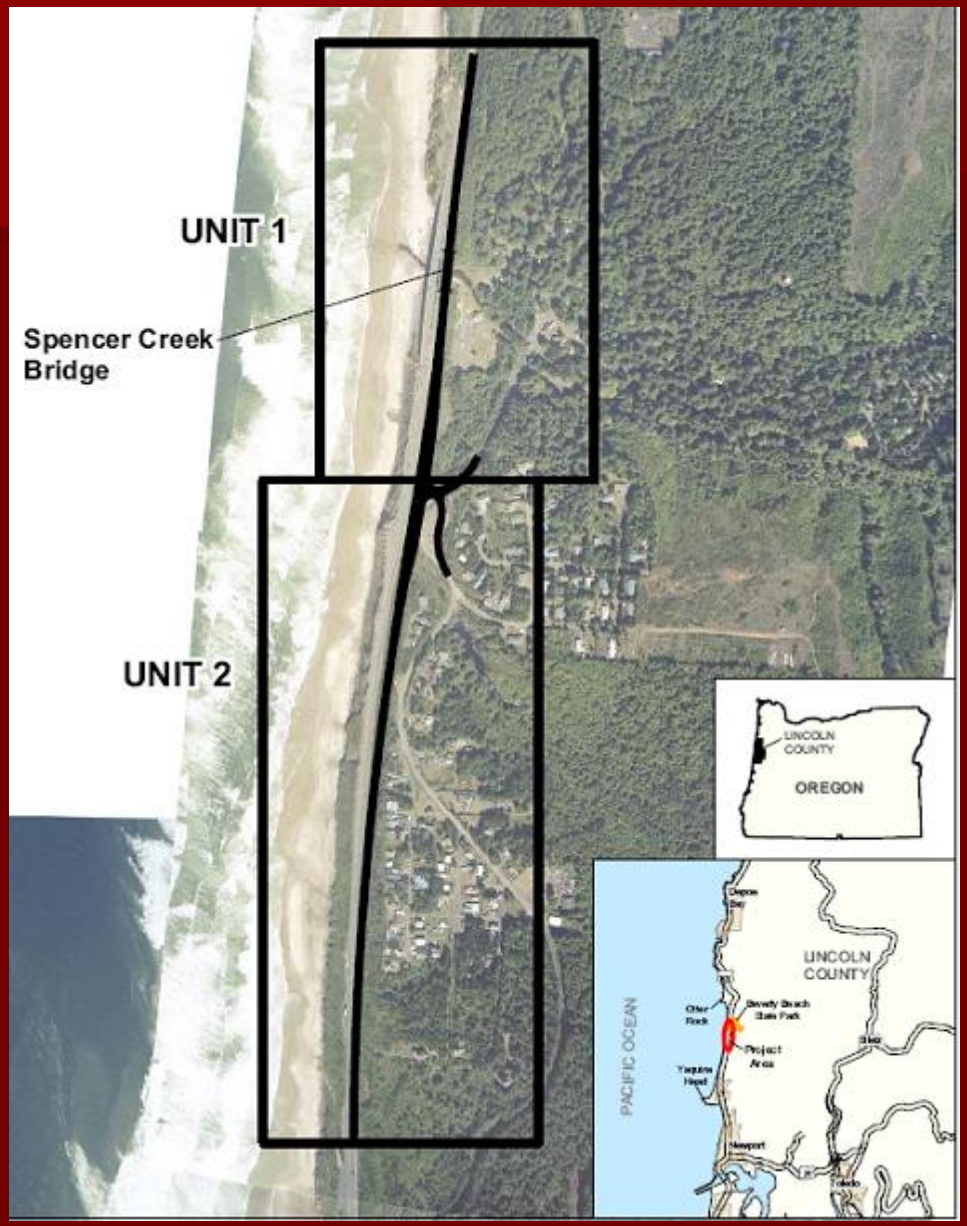
SPENCER CREEK BRIDGE
REPLACEMENT PROJECT

LOCHNER

Design Team

- **ODOT**
  - Roadway
  - Hydraulics
  - Environmental
- **Lochner**
  - Structural
- **Shannon & Wilson**
  - Geotechnical

Project Description



Ref.: ODOT Environmental Impact Statement, 2006

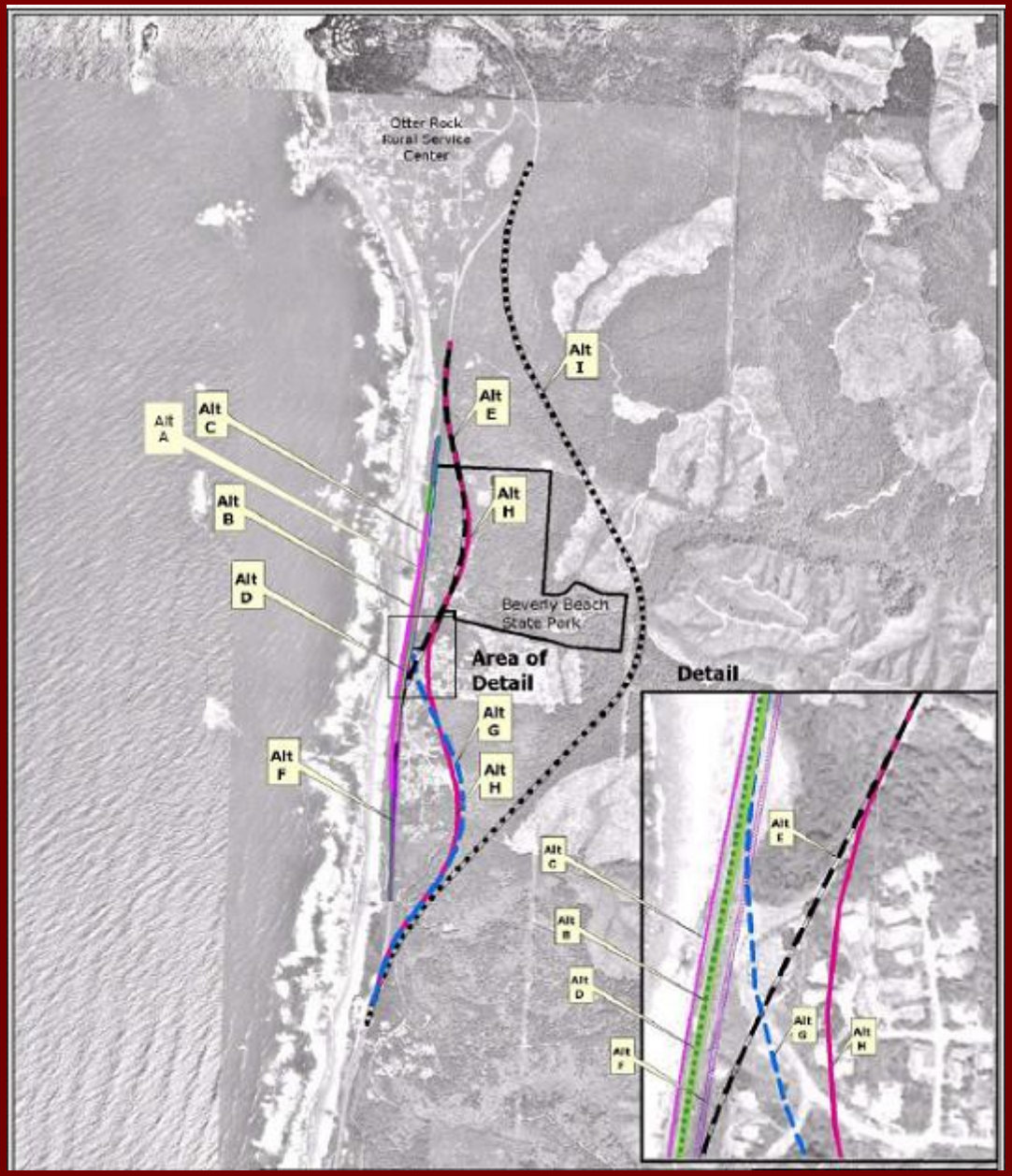
Old Spencer Creek Bridge

Existing Detour Bridge

Project Alternatives

- 1947 Bridge not in use
- 1999 Temp Bridge reaching useful life
- Highway threatened by sea erosion
- Beverly Beach Park users

- Alternative F
  Shift Roadway about 50 feet east



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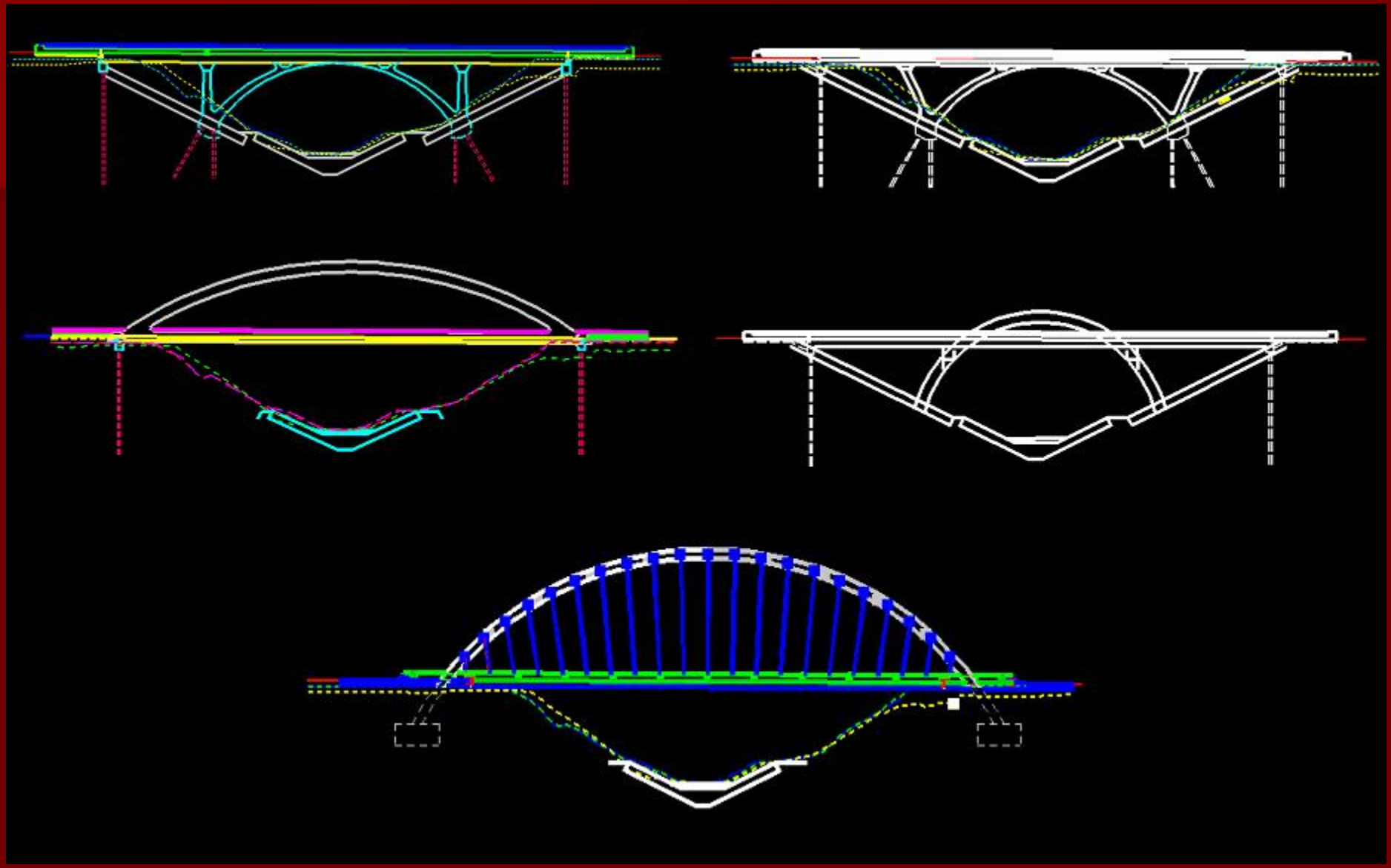
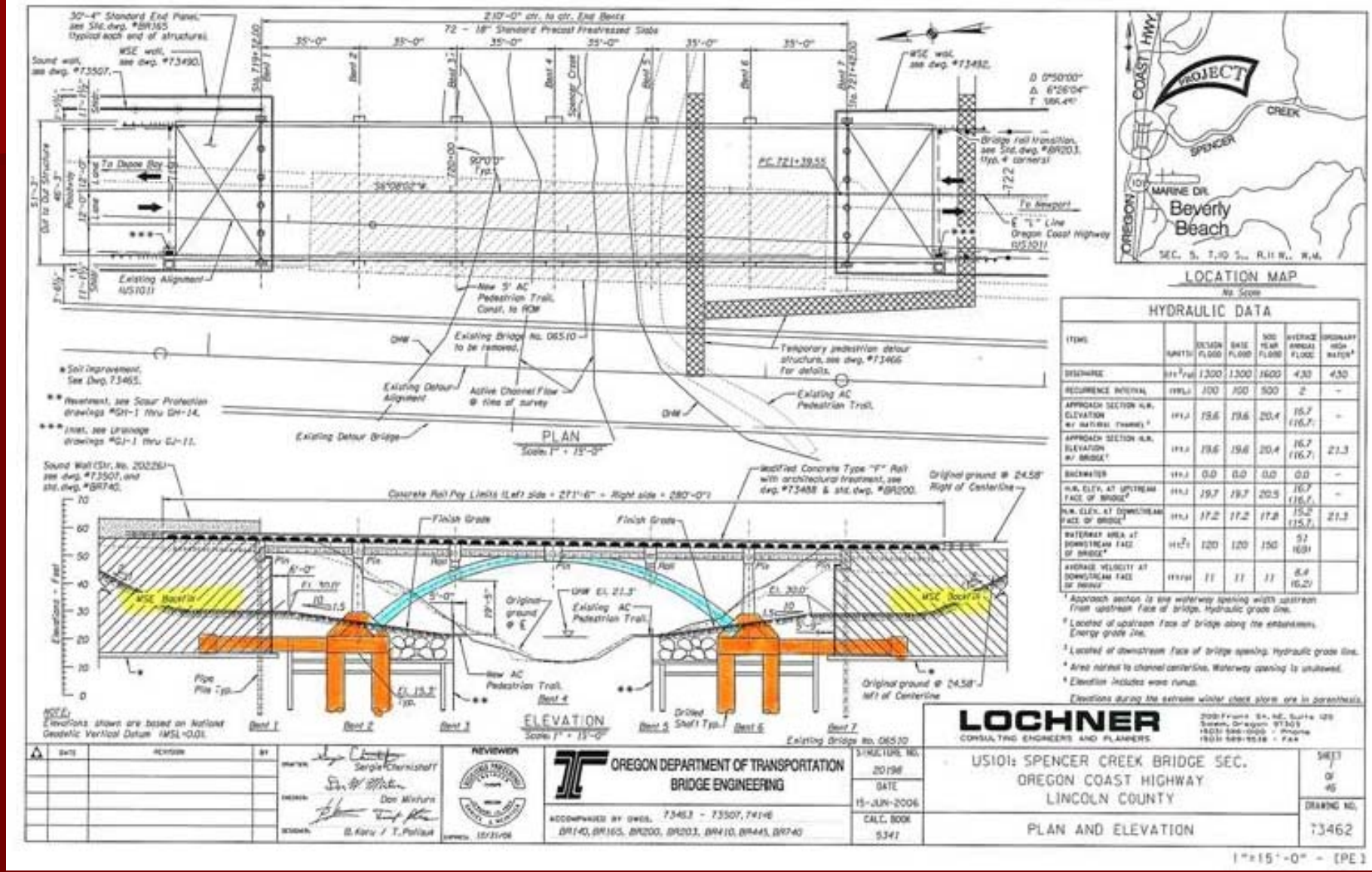
Bridge Design Alternatives



Final Bridge Design



Design Concept

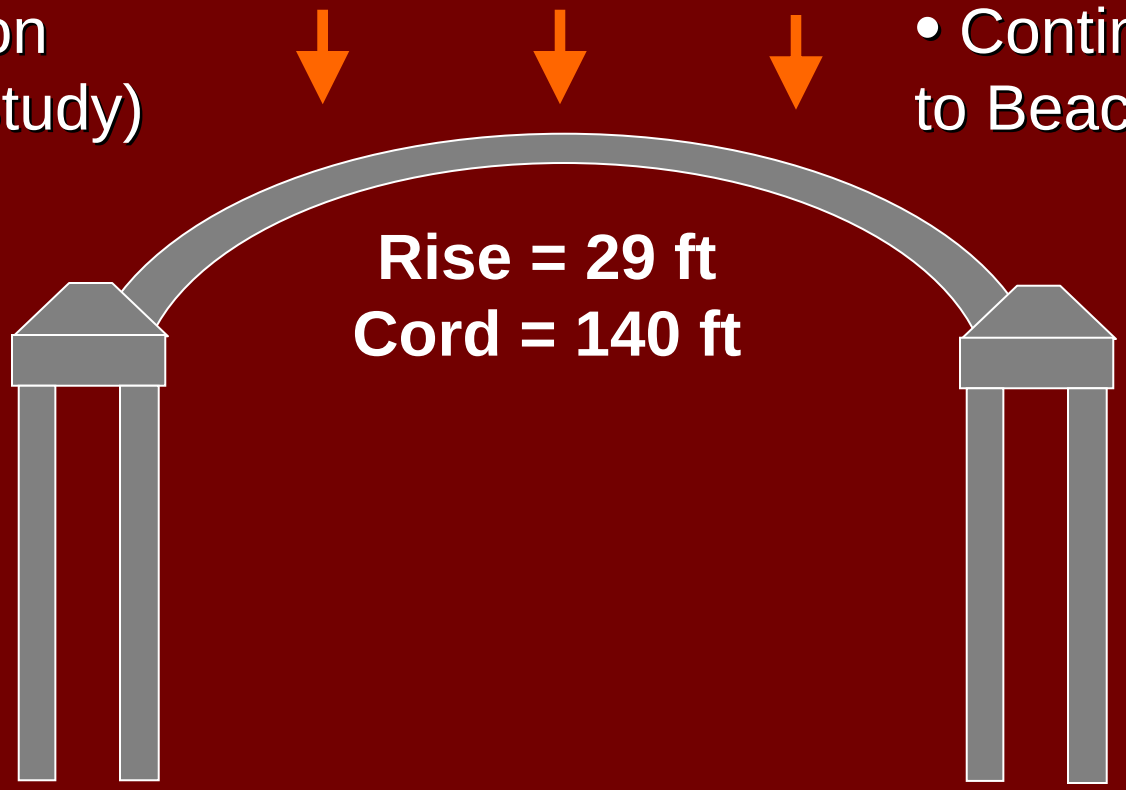
- 120 year life
- Coastal Exposure

Salt Spray
Tidal Erosion
Tsunami (Study)

- High Seismic

0.30g 500 yr
0.45g 1000 yr

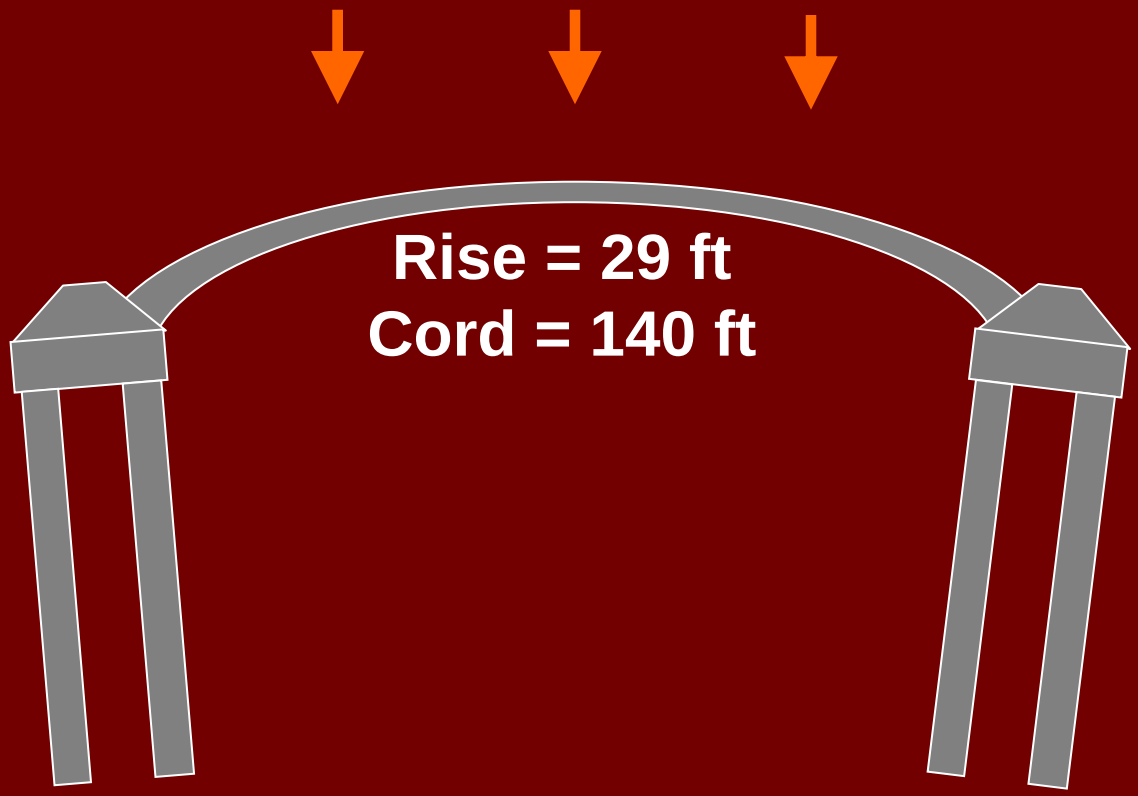
- Continuous Park to Beach Access



Silty Sand-Clay

Scour

Design Concept



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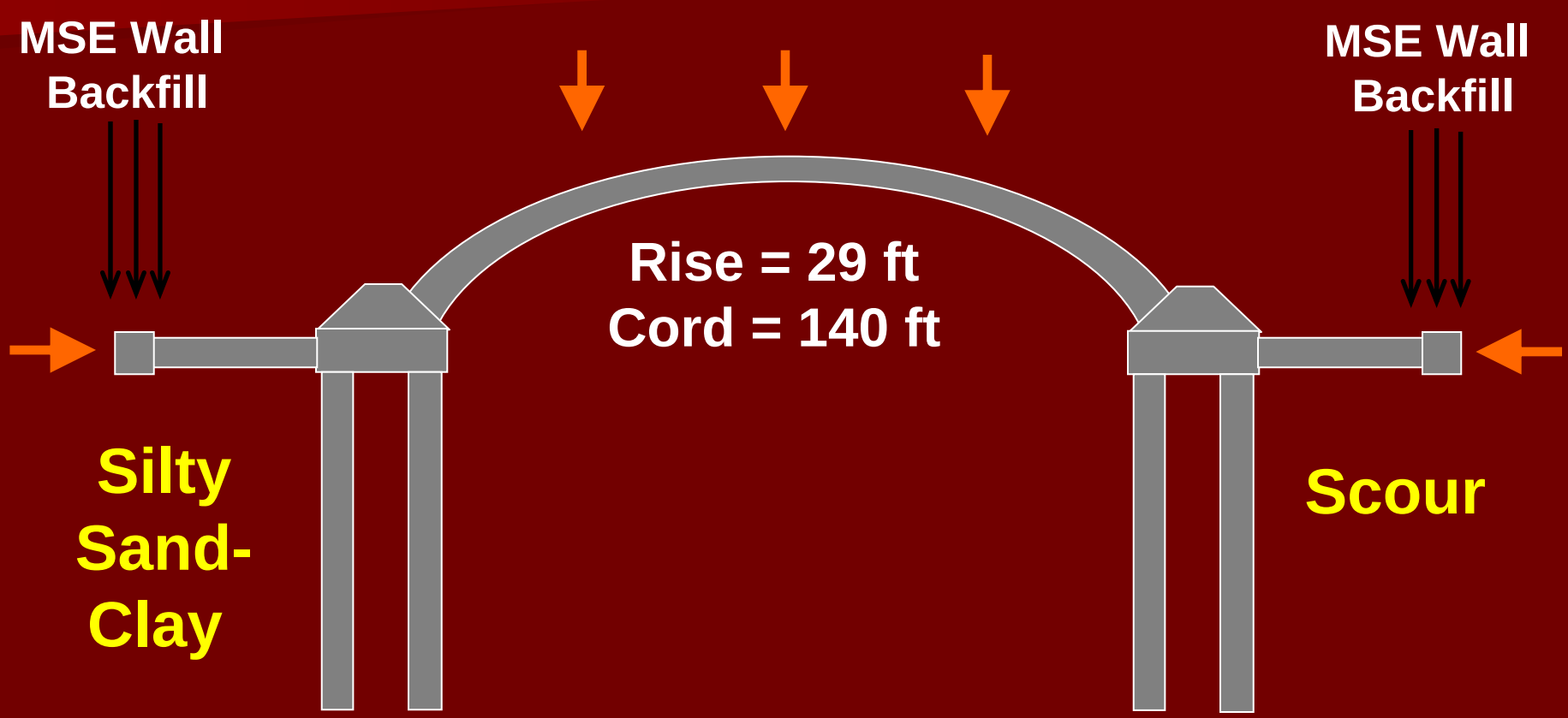
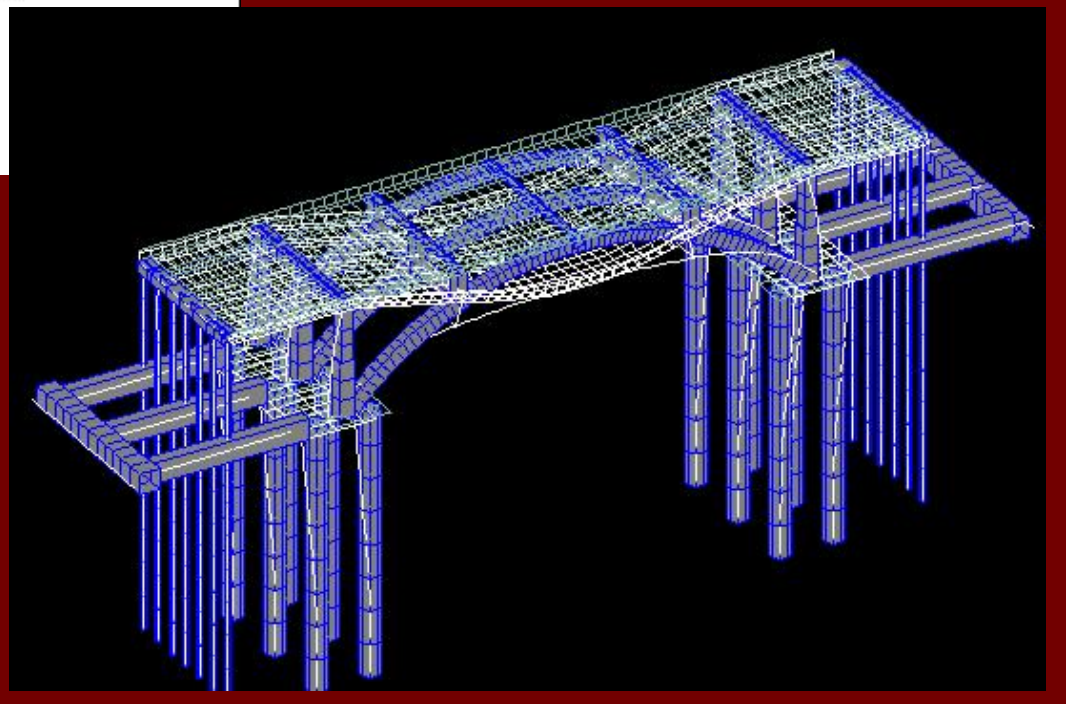


Design Concept

3-D
FE Modeling



Construction Sequence

LOCHNER

Demolition

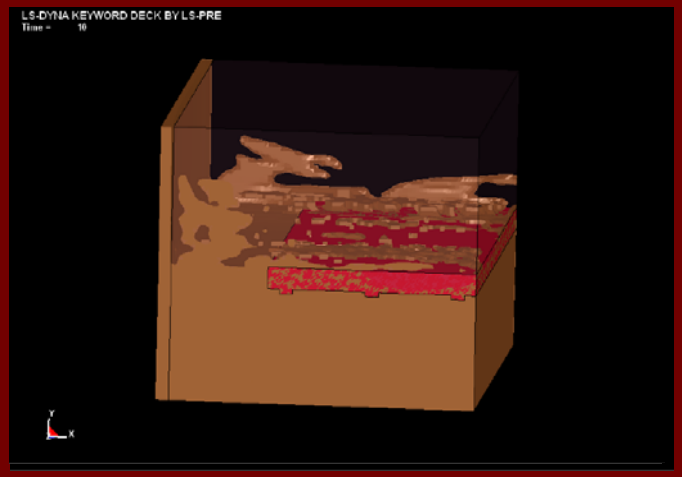
Construction

Bridge Instrumentation

- Install 6 Earth Pressure Cells, 6 Load Cells, 4 Deformation Sensors, 4 Tiltmeters
- Measure shaft cap deformation/rotation and reaction behind deadman block during arch rib, cross beam, and PS slab erections
- All sensors will be integrated to ODOT Health Monitoring Program after project completion

Impact of Project

- Work in a team with ODOT
- Critical north-south route at Oregon Coast, US 101, a National Scenic Byway & All-American Road
- Provide Arch Bridge to be consistent with OCH
- Have been used to develop tsunami design criteria for coastal Infrastructure at Oregon State University



Ref.: Tsunami Design Criteria for Coastal Infrastructure: A Case Study for Spencer Creek Bridge, Oregon, Report No. OR-RD-07-03