

Foundation Design for the Spencer Creek Bridge U.S. 101, Beverly Beach, Oregon

Shannon & Wilson, Inc., Lake Oswego, Oregon



CHALLENGES

High Design Demands

- Large lateral arch loads
- Tall retaining walls
- Long design life – 120 years

Difficult Geologic Site

- Extraordinary seismic risk - liquefaction, lateral spreading
- Oceanfront hazards - bluff erosion, storm surge, deep scour
- Deep, soft, compressible soil profile



Stone column and wick drain ground improvement for tall walls



Drilled shaft group with riprap and sheet pile revetment

Landmark Bridge TOUGH SITE

INNOVATIVE SOLUTIONS

Provided by an Array of Geotechnical Solutions

- Massive arch loads resisted by drilled shafts and thrust blocks
- Unique deadman thrust block embedded in MSE wall
- Robust revetment protects foundations from scour
- Seismic stability provided by stone columns
- Wick drains speed construction

PUBLIC BENEFITS

- A landmark bridge at a popular state park
- Key transportation lifeline strengthened
- Improved public safety



ACEC
American Council of Environmental Engineers

LOCHNER
Client / Bridge Design, Salem, Oregon

Oregon Department of Transportation
Tomb, Region 7, Salem, Oregon

Submitted by **SHANNON & WILSON, INC.**
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS