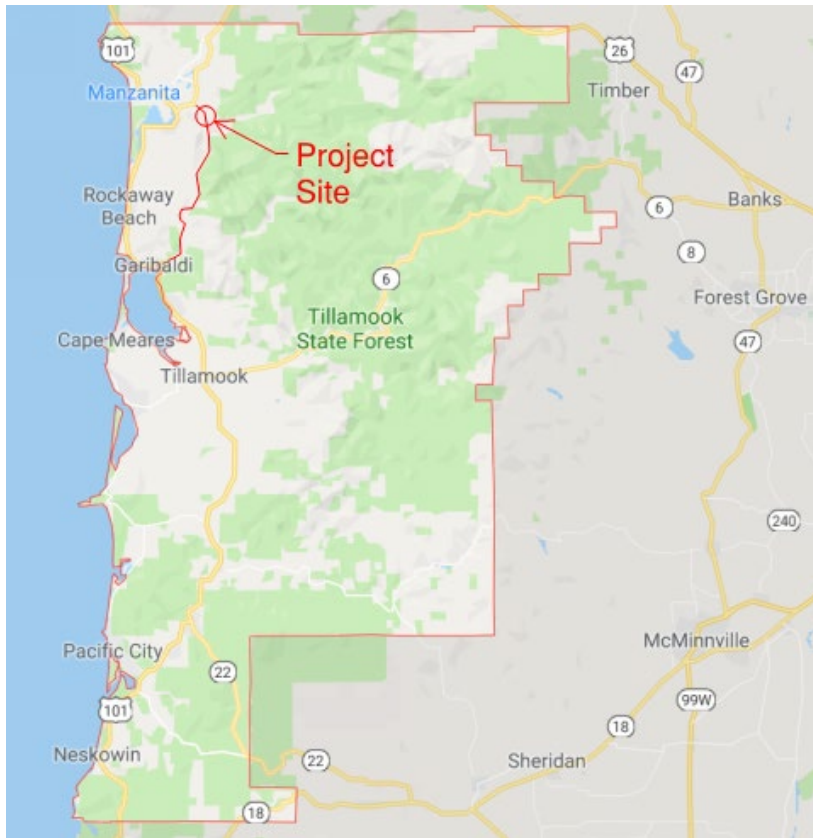


# Coastal Bridge Engineering in Oregon

Nehalem River (Lommen) Bridge

# Project Team

- Tillamook County Public Works (Owner)
- Otak Inc. (Lead Consultant and Designer)
  - David Evans Associates (Design Q/A)
  - Shannon and Wilson (Geotechnical)
  - AINW (Archeological)
  - Bayside Surveying
- Farline Bridge Construction (Contractor)
  - McGee Engineering (Value Engineering)



- Alternate redundant route to US101
- 30 mile detour



- Fracture Critical concrete girder, long spans
- Lengthy detour
- Tillamook Railroad x'ing proximity
- Restricted channel, flooding
- Tidal influence in estuary
- Debris Buildup
- Narrow Bridge (24 foot between curbs)
- High Seismic Acceleration, poor, liquefiable soils

Existing Conditions





- ***300 foot*** main span, no piers in the active channel

Long Span Girder



- Stage Construction
  - Single stage and re-alignment
  - Removal of existing approach fill

Lengthy Detour

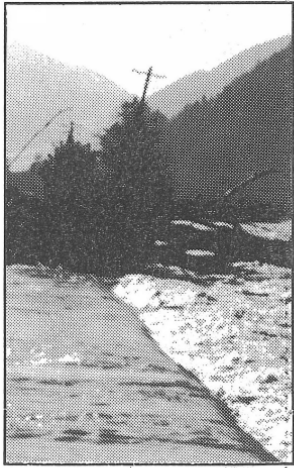


Photo courtesy Jack Hoffert

Above, Water flows over the Miami-Foley Road between Shiffman Road and South Fork Nehalem River Bridge. Left, North County Falcon Cable offices are isolated.

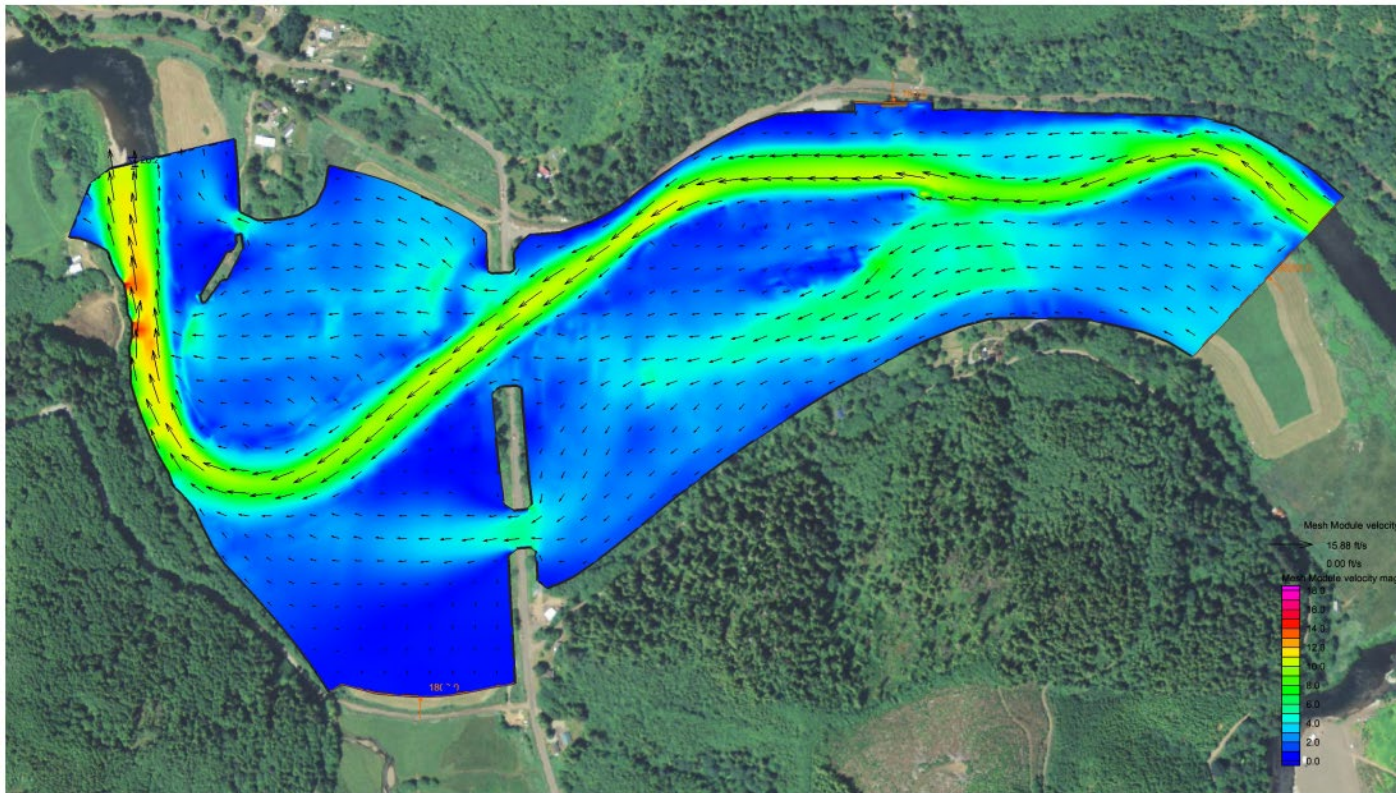
NEWSPAPER CLIPPING FROM THE TILLAMOOK HEADLIGHT HERALD, DATED FEB. 28, 1996



DEBRIS ON BRIDGE APPROACH FOLLOWING FLOOD OF 2015

# Restricted Channel and Flooding





GRAPHIC OF 2D HYDRAULIC FLOW MODEL OUTPUT FOR RELIEF BRIDGE OPTION

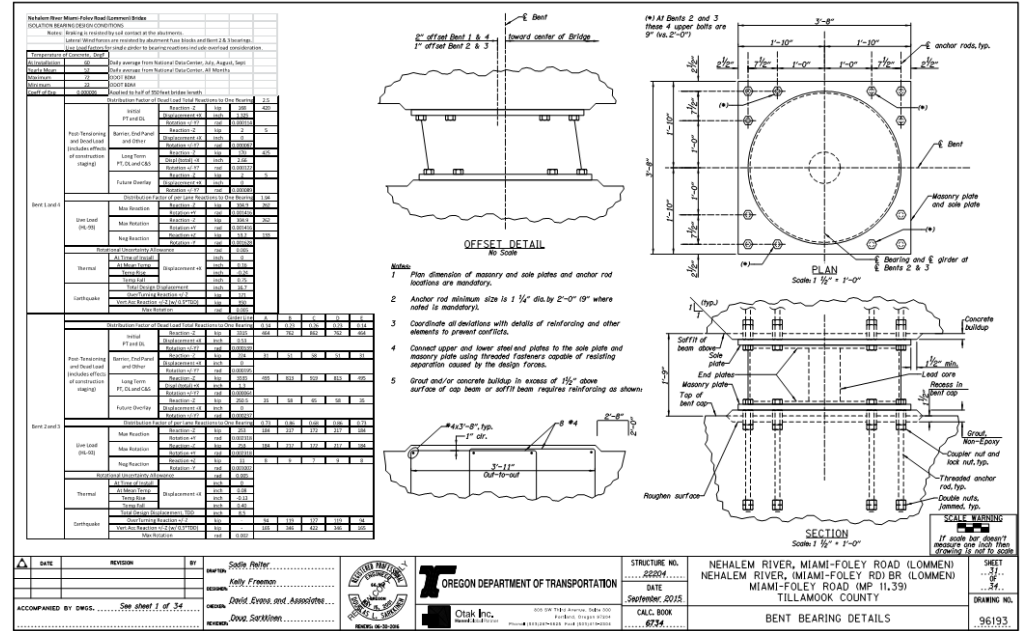
Restricted Channel and Flooding





- Piers out of the channel
- Round column sections, avoid drift snag









**Construction Phase**



# Construction Phase

- Project awarded to Farline Bridge from Stayton, OR
- NTP of October 2015 with a completion date of October 31, 2017





Existing Conditions





December, 2015 Flood Damage





December, 2015 Flood Damage





December, 2015 Flood Damage





# Drill Shaft Installation





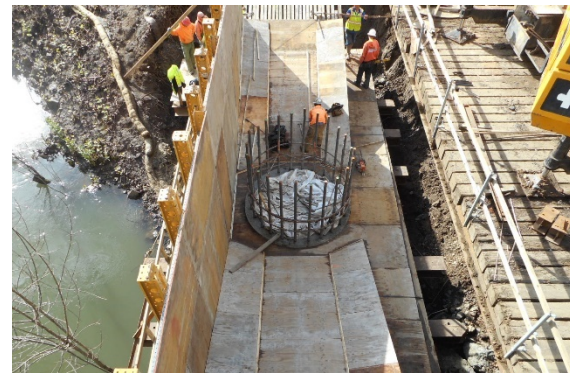
Drill Shaft Installation





Drill Shaft Installation





Bent Cap Installation





Bent Cap Installation





Bent Cap Installation





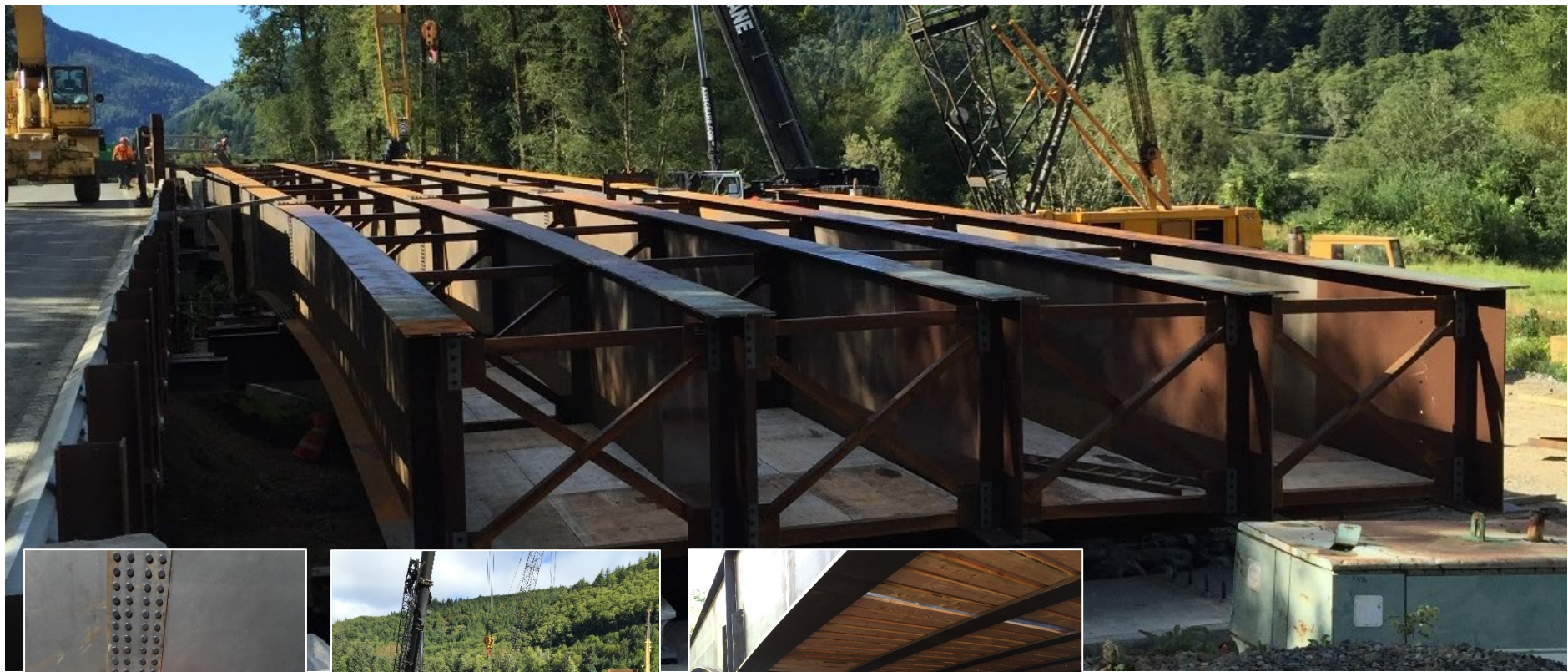
Bent Cap Installation





Beam Installation





Beam Installation





Beam Installation





February, 2017 Flood





Deck Installation





Deck Installation





Deck Installation





## UPDATE: Hwy 101 Culvert Replacement, MP 48, south of Wheeler – PHOTOS



Alternate Route due to Sinkhole on Hwy 101





Demolition of Existing Structure





Demolition of Existing Structure





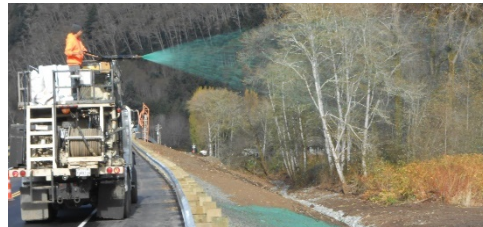
Demolition of Existing Structure



- All ODOT projects were mandated to keep route open
- Delayed paving for over a month
- Required an extension from ODOT for paving window into October



Eclipse in late August of 2017



Paving, Guardrail and Final Stabilization





Before and After





Before and After





Before and After





Before and After







- Contract completion date October 31, 2017
  - Actual Completion February of 2018
  - Original Contract \$8.4 Million
  - Final Cost \$8.3 million (Includes \$100k in CCO's)



Project Completion







Questions