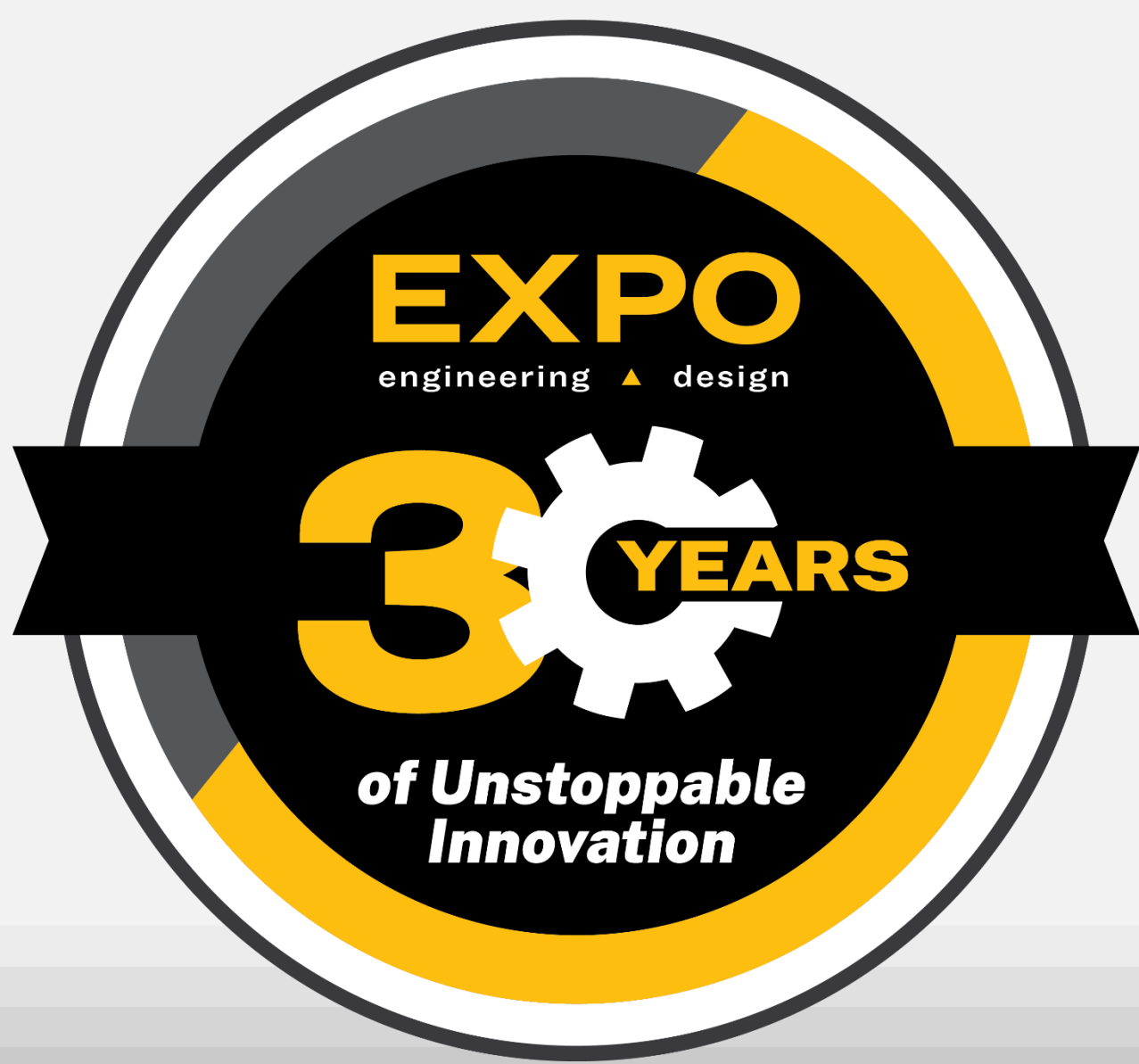
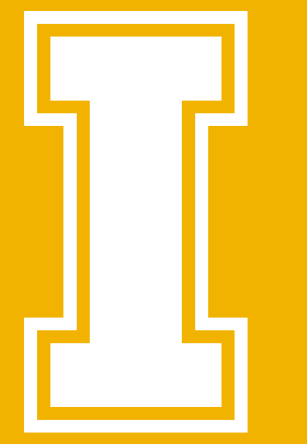




SH-3 POTLATCH RIVER BRIDGE REPLACEMENT

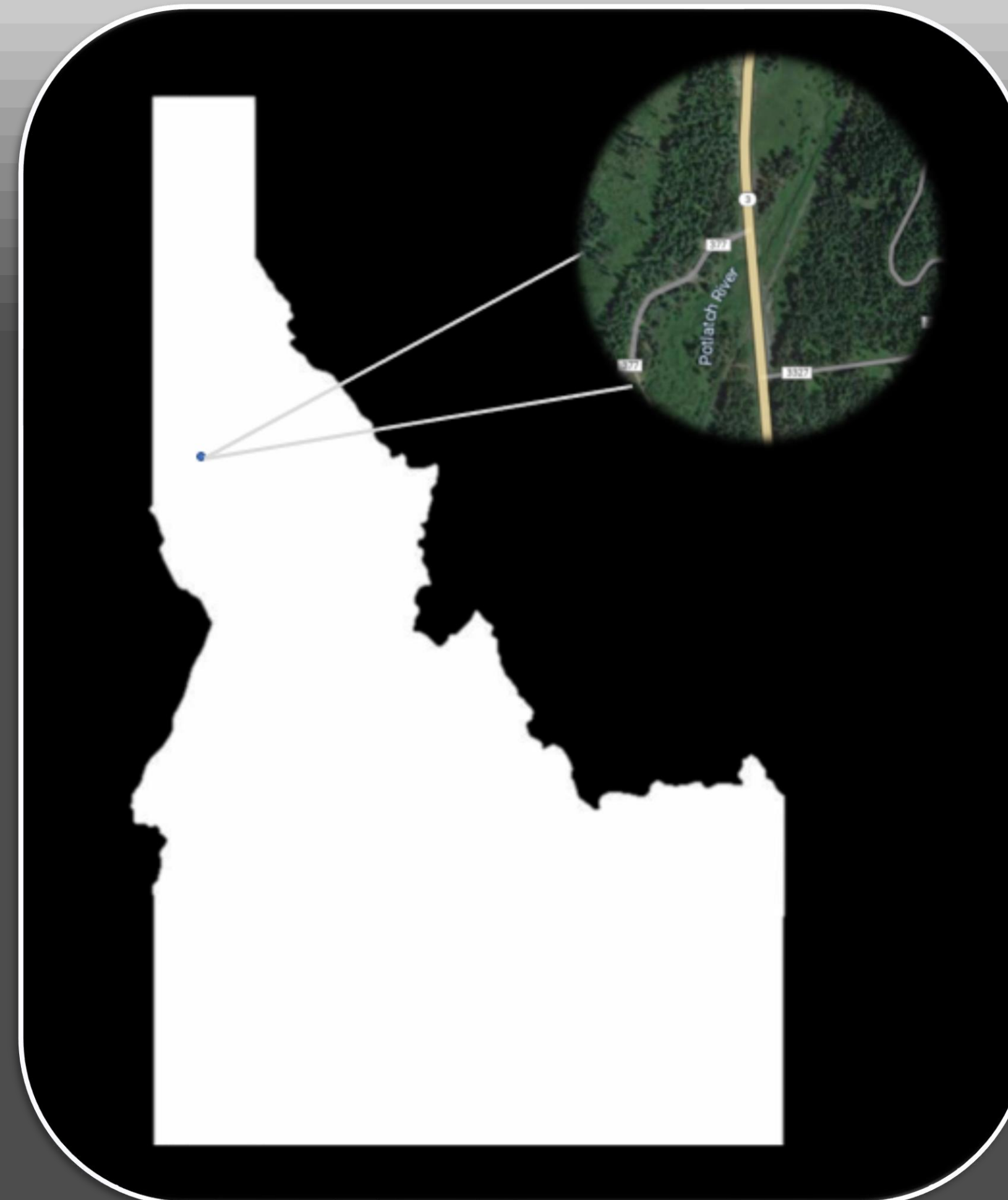


CROSSING THAT BRIDGE INC.

ANTHONY DAVIS, PETER OSTERBERG, MATT THOMPSON, ZIXIANG YU

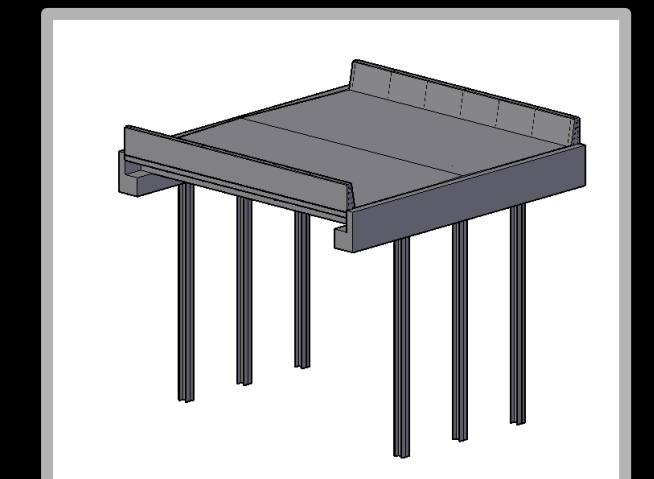
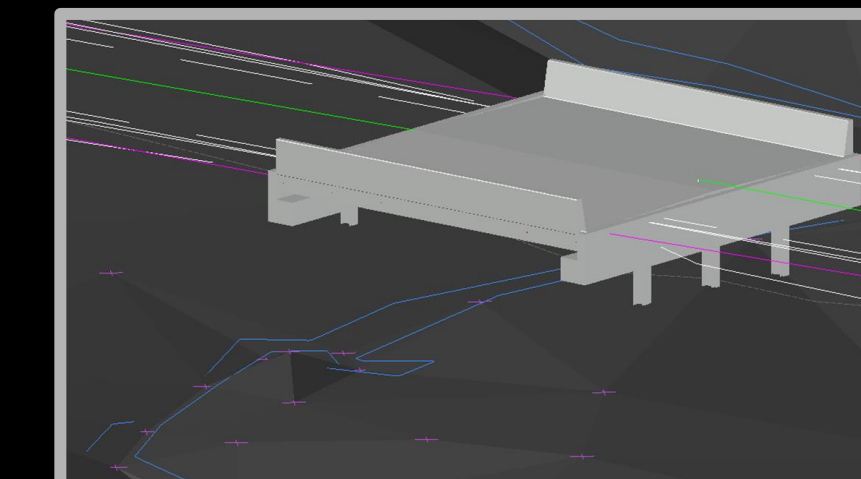
Introduction

- Built in 1955 north of Bovill
- Rebuild necessary to handle modern truck loads
- Existing bridge was cast in place concrete tee-beam
- Supported by untreated timber piles of unknown condition
- Rural location is heavily used by logging industry



Cost Estimation

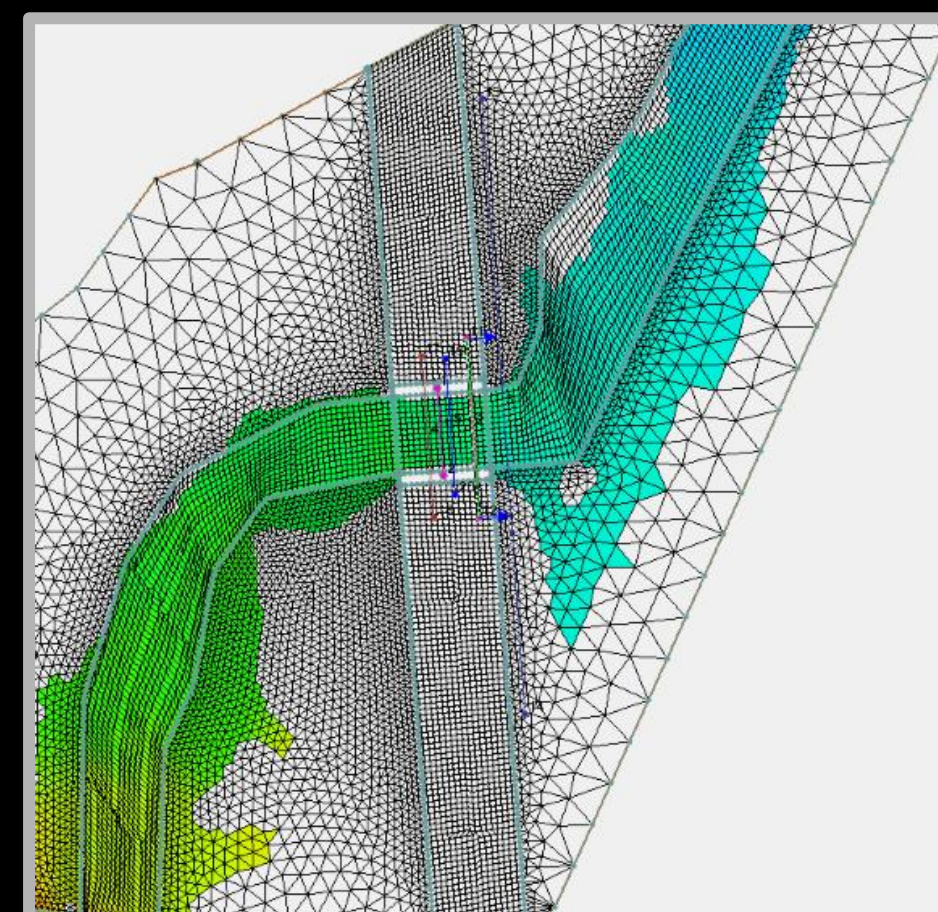
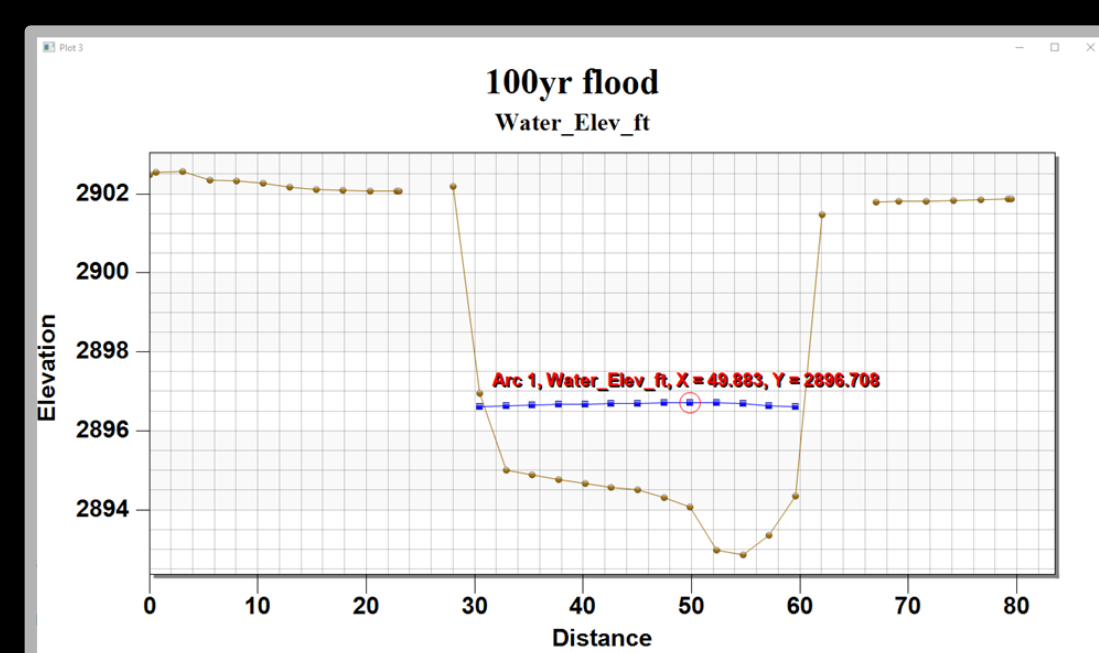
Cost for Bridge and Road Removal	\$	304,318.69
Cost for Roadway	\$	220,622.39
Cost for Bridge Structure	\$	187,917.30
Cost for Traffic Control	\$	56,560.30
Miscellaneous	\$	99,114.03
Project Total		\$ 868,532.71



Hydrology & Hydraulics

The analysis for the Potlatch River Bridge was conducted using the Surface-water Model System (SMS).

- Q1.5 Surface Water Elevation - 2895ft (71 cfs)
- Q50 Surface Water Elevation - 2896 ft (275 cfs)
- Q100 Surface Water Elevation - 2897 ft (325 cfs)
- Design Low Cord Elevation – 2899.45 ft
- Riprap Design – Class IV, D50 = 15", 30" Thick, 40 yd^3



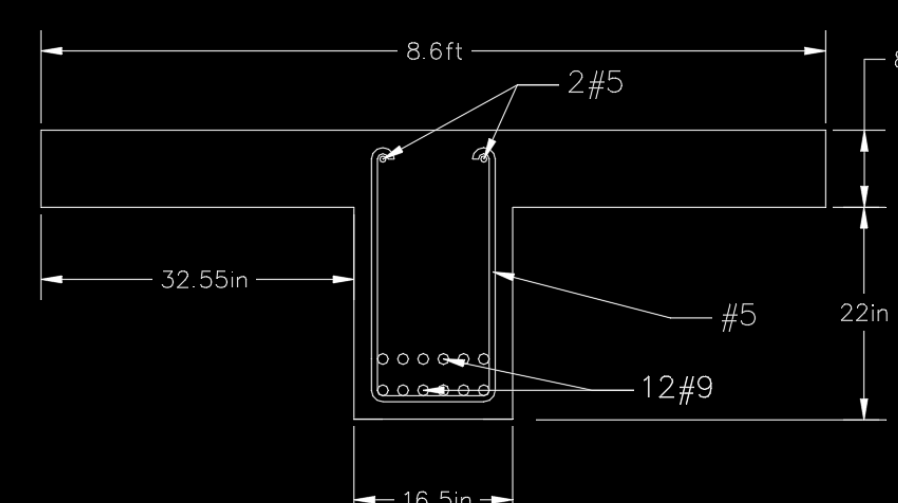
Structural Design

Overview

- Reinforced Concrete
- Width: 40 feet 10 inches
- Span: 37 feet
- Deck thickness: 8 inches

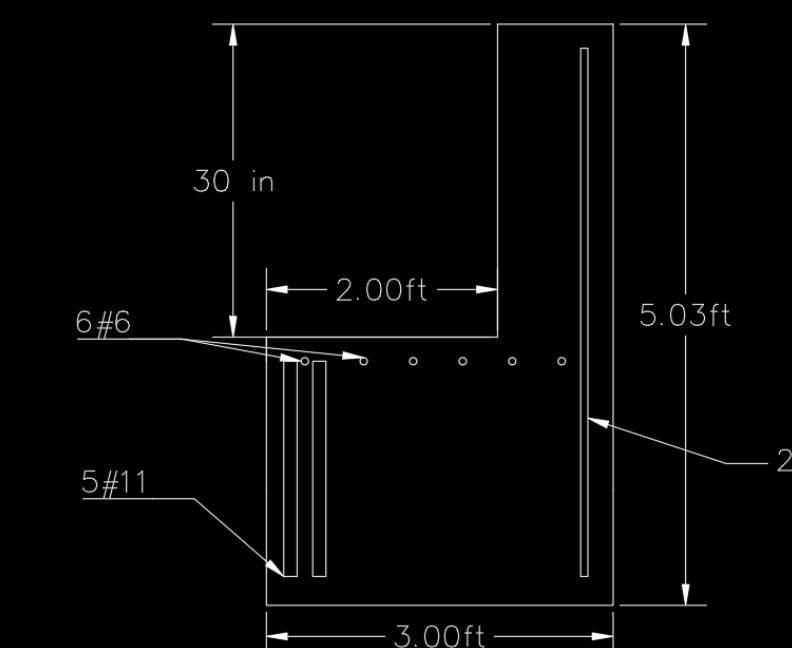
Girder:

T beam with 30" height and 16.5" width



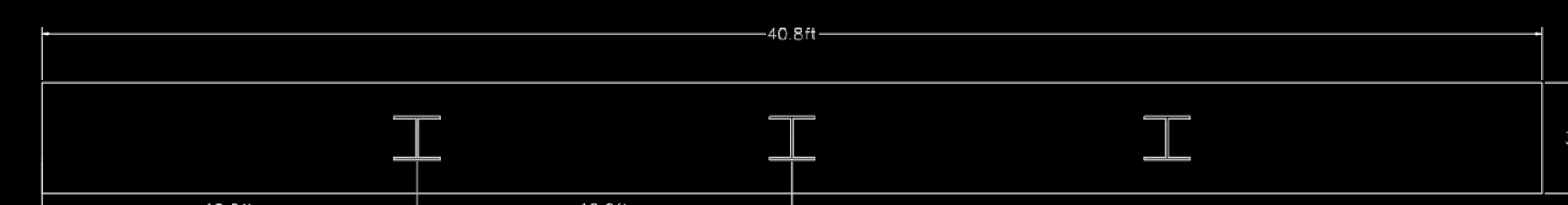
Abutments

- 5.03' tall and 3' wide



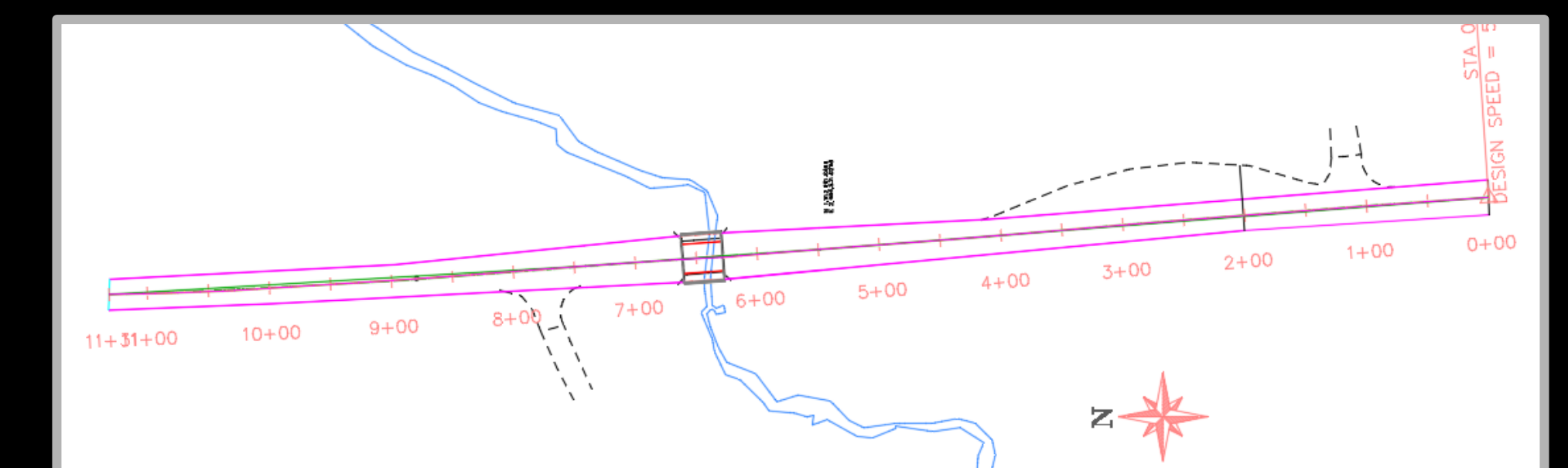
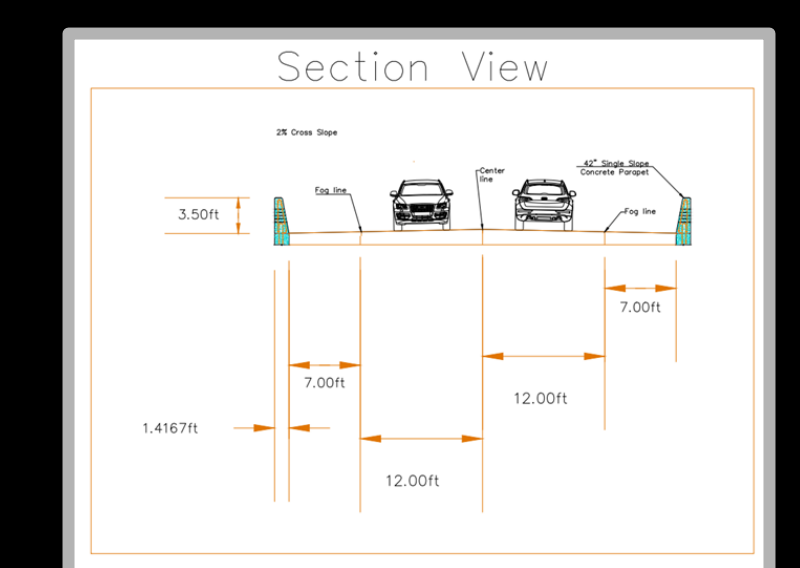
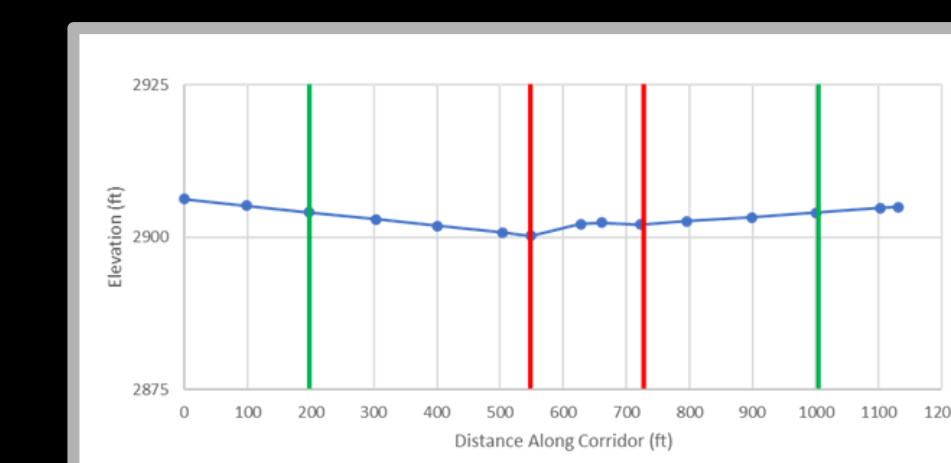
Foundations

- Six 14 x 117 steel H-Piles
- Three piles per abutment
- Spaced 10.2 ft apart



Transportation

- Bridge elevation raised by 1 ft
- Replaced 800 feet of road in order to taper from bridge width to road width (between green lines)
- Vertical realignment within 80 ft of either side (between red lines)
- Fixed timing TTC signal



2023 Capstone Project