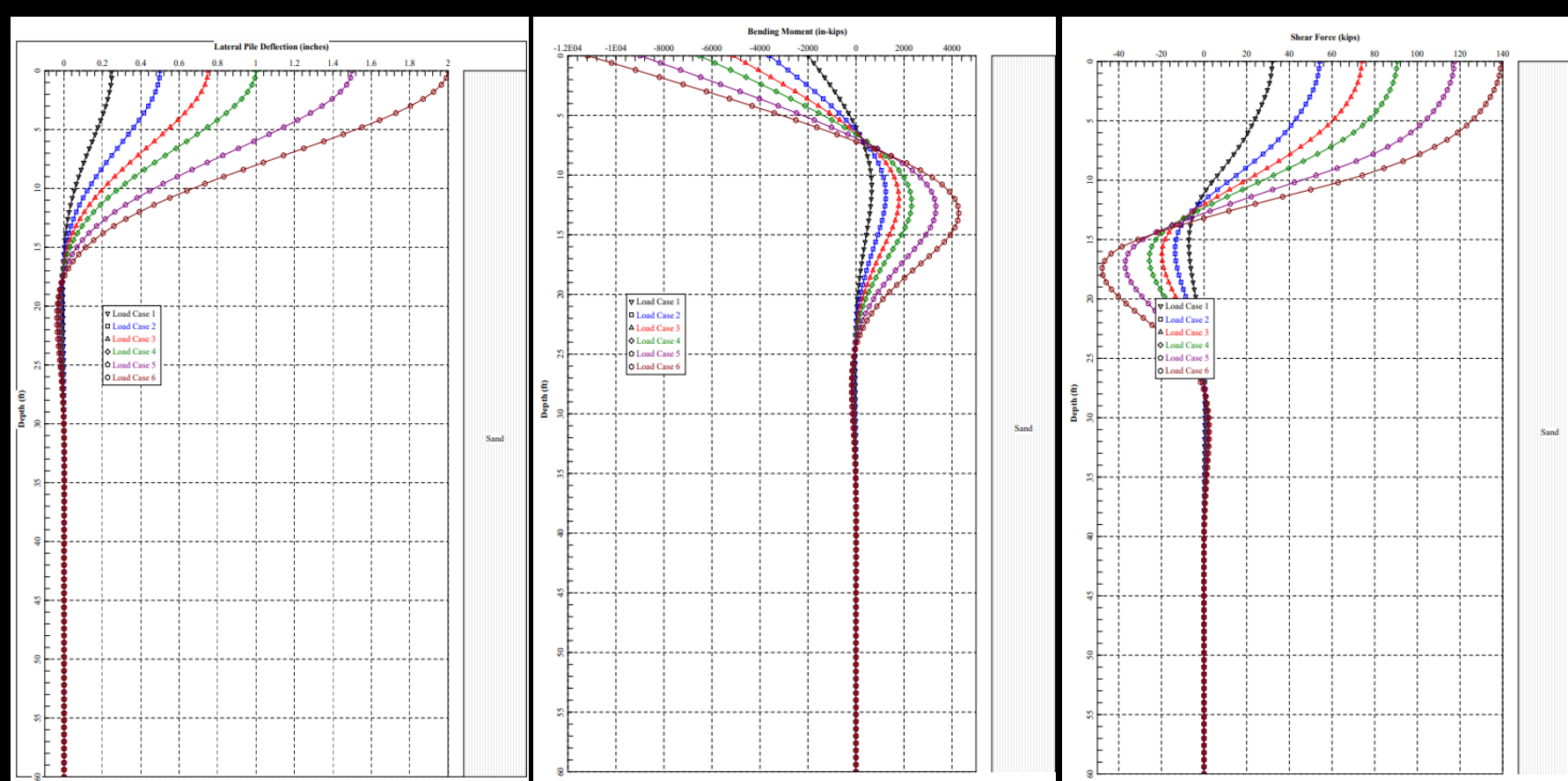


Foundation design was accomplished via an iterative approach between Nordlund's method for axial capacity, LPILE analysis, and optimizing for design cost.

- Foundation Type: Driven H-Piles, HP-14X117, Grade 50 steel
- Quantity: 8 Piles, 4 piles per abutment
- Spacing (center-to-center): 10 feet
- Length: 49 feet (uniform)
- Axial Capacity: 94.56 kips

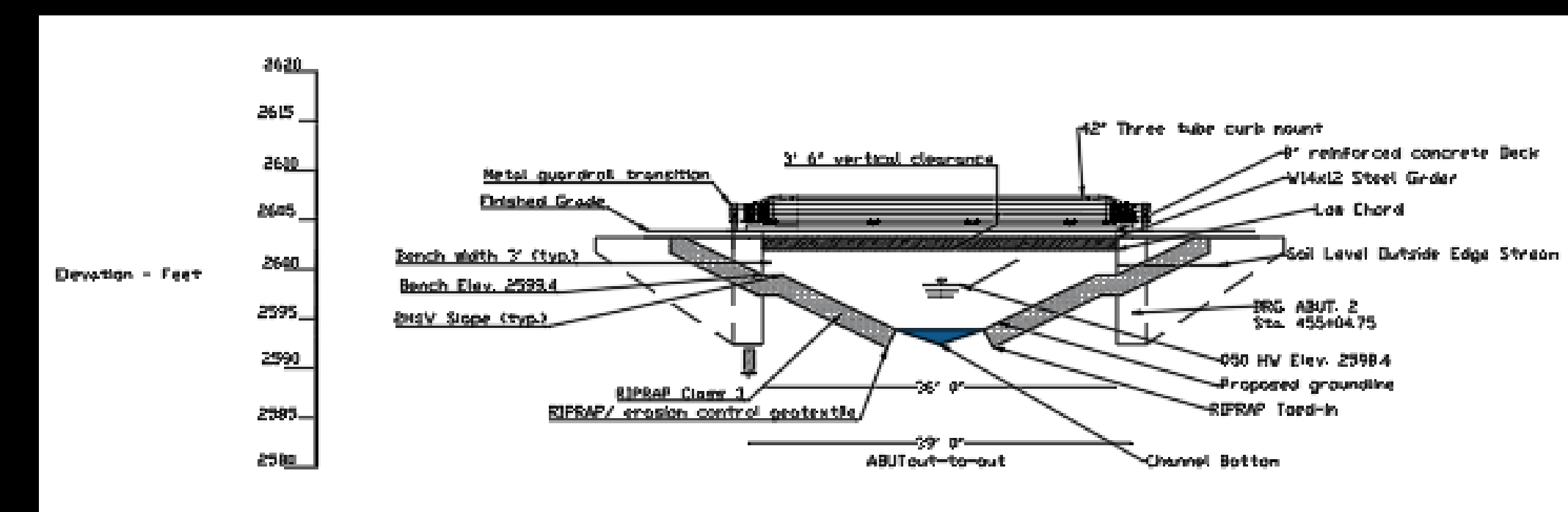


The US-95 over Four Mile Creek Bridge is in Viola, Idaho which is located 7 miles north of Moscow, Idaho. As shown in the figure, it guides the north-south traffic on US-95 over a portion of Four Mile Creek that runs east-west. The bridge was originally built in 1949 and has undergone scour on the abutments as well as deterioration on the guardrails. The 70-year-old structure does not meet current standards, and its live load capacity made it the limiting bridge for overweight permit vehicles on US-95 from Lewiston, Idaho to the Canadian border. Idaho's only seaport is in Lewiston, making US-95 vital for the transportation of goods and heavy vehicles.

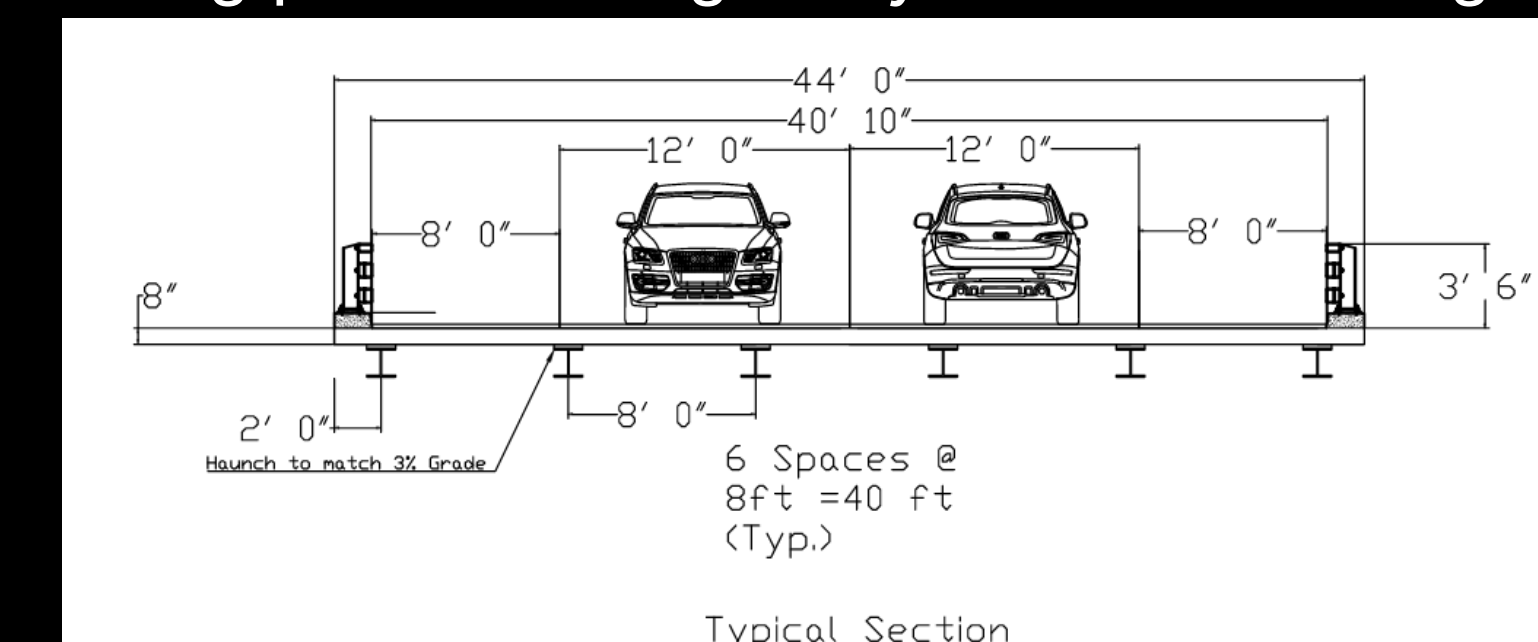


Category	Total cost
Construction Total	\$ 879,022.39
Mobilization (10%)	\$ 87,902.24
Contingency (5%)	\$ 43,951.12
Total	\$ 1,010,875.75

- To minimize depth, a single span, steel I-girder bridge was designed
- Loading was determined using LFRD load combinations with a HL-93 design vehicle
- Steel W14x120 girders were chosen and designed with cross-bracing, shear studs, and bearing stiffeners

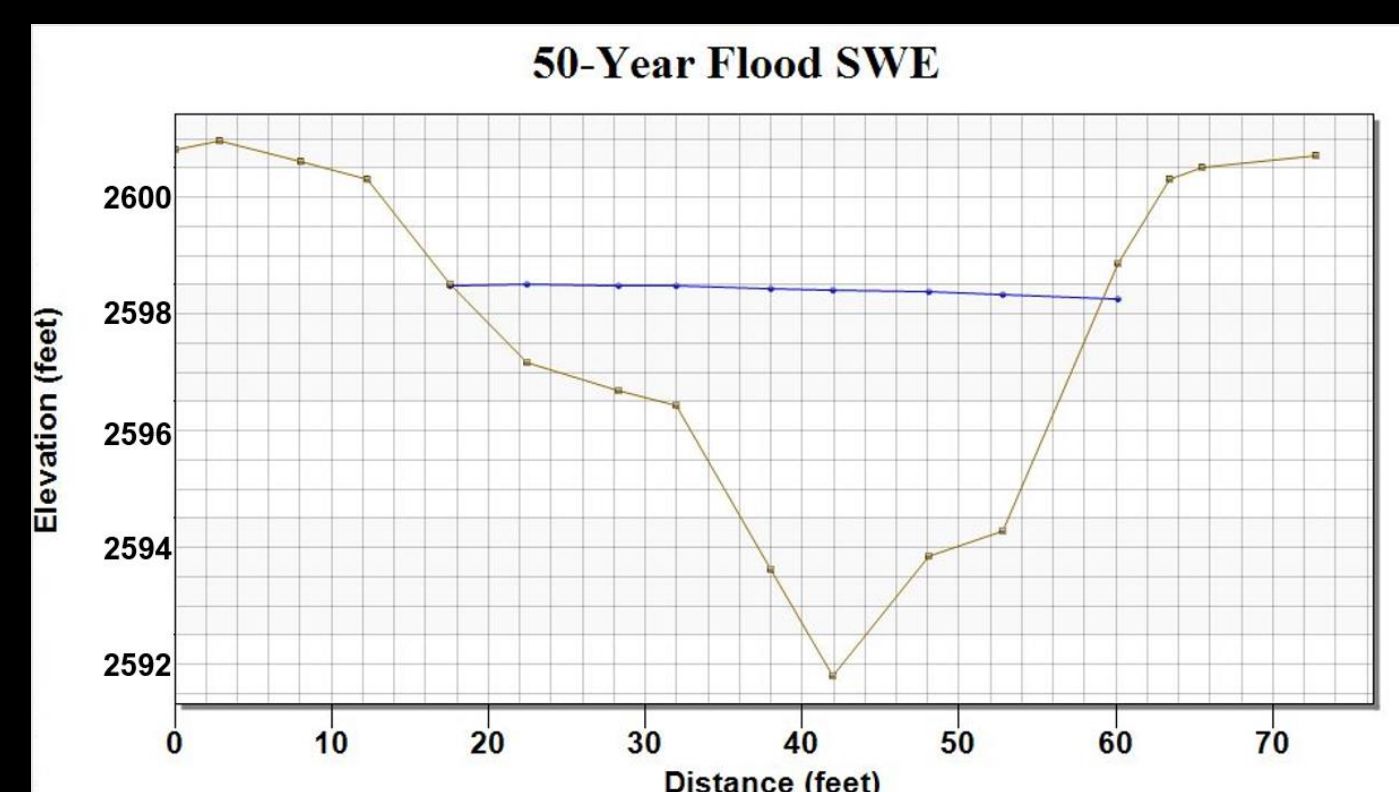
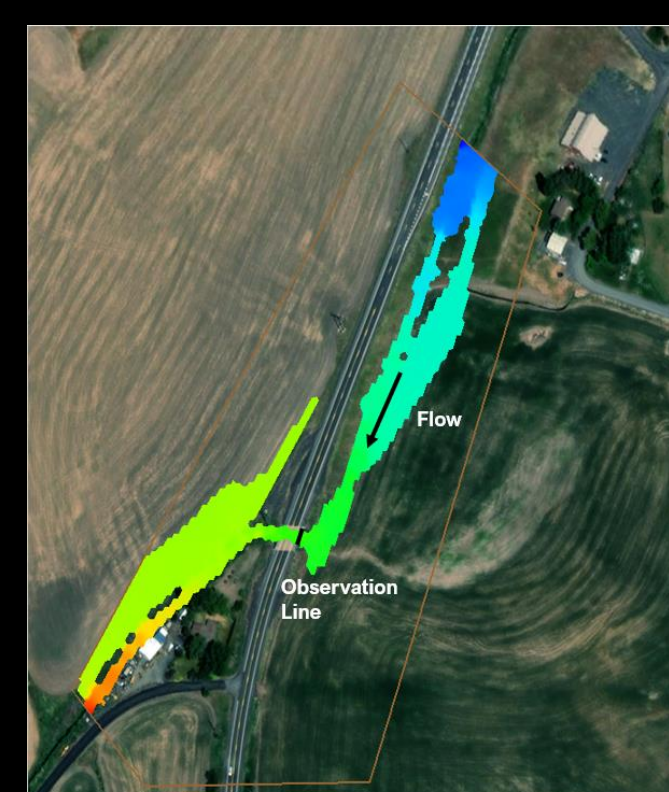


- Our design features an integral abutment with approach slabs
- Cast-in-place concrete deck with haunch
- Sequencing plan including analysis of the existing bridge

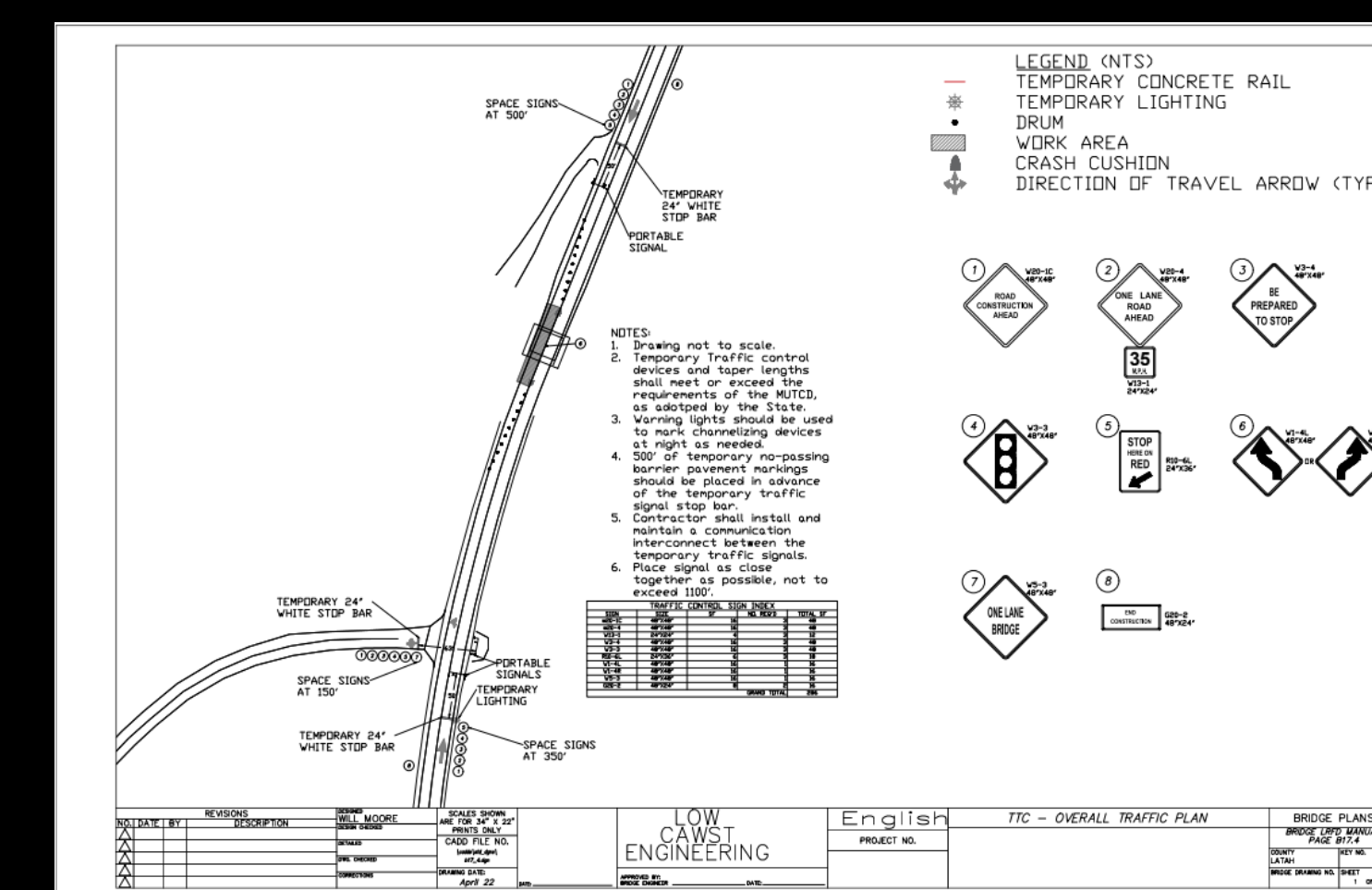


The analysis of Four Mile Creek was done using the 2-D software the Surface-water Modeling System (SMS).

- Q2 surface water elevation – 2596.3 ft
- Q50 surface water elevation – 2598.4 ft
- Q100 surface water elevation – 2598.8 ft
- Proposed bridge elevation – 2602 ft
- Scour analysis – 0 ft
- Riprap design – Class III, 18" thick, 118 yd³



- Bridge shoulder width: 8 ft
- Level of service: A
- Percent Time Spent Following: 26%
- Vertical alignment: grades of road kept same
- Temporary Traffic Control Plan created to optimize traffic flow



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