

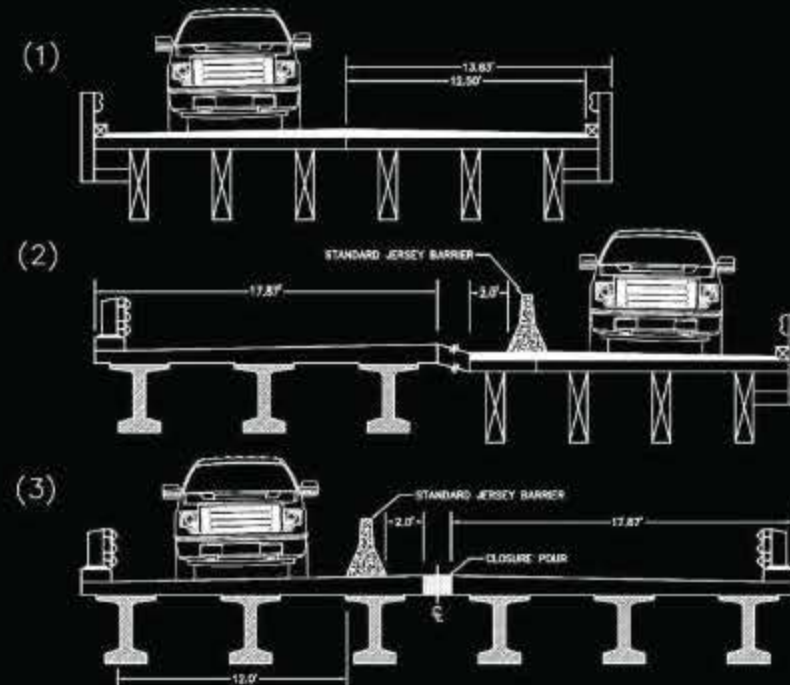
STAGING CONSTRUCTION

Stage 1

- One 12' lane of traffic open
 - One 2' barrier
 - 2' of clearance behind barrier
- Stage 1 total width existing bridge = 16'
Width of new bridge including railing = 18.6'

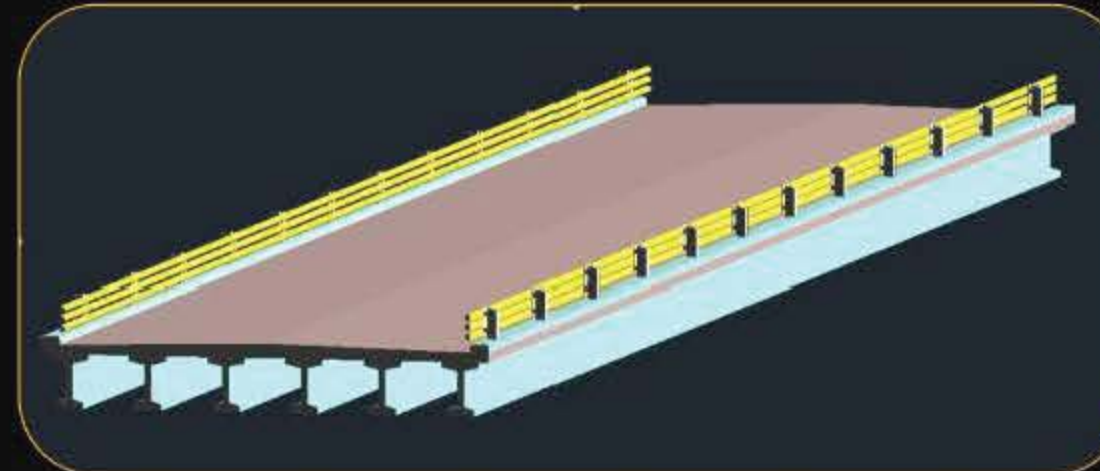
Stage 2

- Minimum one 12' lane for traffic on newly constructed bridge
 - One 2' barrier
 - 2' of clearance behind barrier
- Stage 2 total width for travel lane = 17'
Width of new bridge including railing = 18.6'



OVERVIEW

- Located on Rapid Lightning Road in Bonner County, ID
 - Existing bridge is a two-lane, simple span timber bridge constructed in 1974
 - Bridge is to be removed and replaced due to its poor substructure rating and excessive scour at the foundation
 - Rapid Lightning Road serves as the primary connector between rural areas in Bonner County into the urban Sandpoint, ID area
- The timber structure will be replaced with a prestressed concrete girder, pile-supported bridge. One lane of traffic must remain open during construction due to the remote location of the bridge. The new bridge will be constructed in stages, which will cause an adjustment of the existing roadway alignment.



BRIDGE DESIGN

Bridge Overview

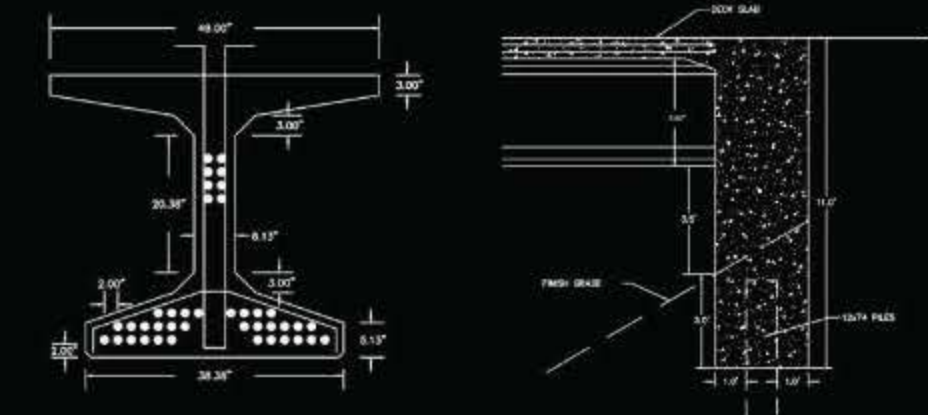
- Span: 105'
- Width: 37.5'
- Skew: 20°
- Railings: Two Tube Curb Mount Rails
- Deck Thickness: 8"

Girders

- 42" Wide Flange Prestressed Concrete Girders

Abutments

- 11' x 3' abutments



Foundations

- Bridge will be supported by ten 12x74 H-Piles per abutment
- There will be five piles for each abutment stage
- Piles are spaced at 50.06" (4.17') center-to-center



HYDROLOGIC DESIGN

Hydraulic Design

- Used the HEC-23 method to determine riprap size gradation and thickness
- 3724 ft³ of riprap placed to prevent future abutment and roadway scour
- Bridge clearance of 2455.09' to clear the 100-year flood water elevation at 2150 cfs

Stormwater Design

- Two seepage beds located at the NW and SE extents of the project
- Seepage bed size of 127 ft² to treat the runoff of a 24-hour 100-year design storm
- 6" vertical curbing, two curb inlet drains, and 64' of 6" HDPV pipe to direct stormwater to the seepage beds

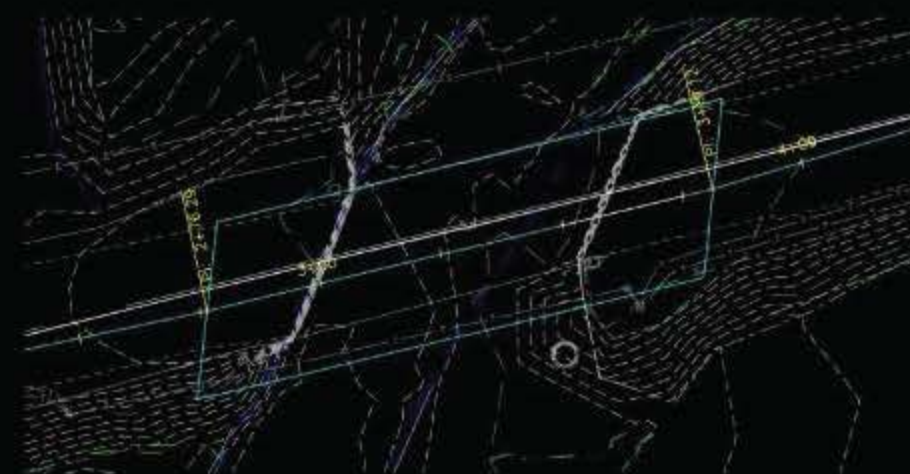
ROADWAY DESIGN

Horizontal Alignment

- Civil3D alignment tool used to shift proposed bridge centerline 4' 2" to the south from the original bridge centerline

Vertical Alignment

- Civil3D vertical profile used to verify proposed bridge superstructure depth satisfies ITD's bridge clearance standards



COST ESTIMATE

Item	Cost	Item	Cost
42" Wide Flange Girder	\$285,020.48	Super Intendent	\$234,160.71
Two Tube Curb Mount Rail	\$24,610.80	Soil Excavation	\$17,607.10
Removal of Bridge	\$58,425.53	Soldier Pile Wall East	\$63,340.41
Deck Concrete	\$74,329.70	Soldier Pile Wall West	\$96,414.91
Deck Reinforcement	\$24,790.76	HP 12x74 Piles	\$35,944.44
Abutment Concrete	\$35,612.90	Pile Points	\$1,769.11
Abutment Reinforcement	\$5,779.71	Wing Wall Concrete	\$18,930.43
Concrete Barriers	\$17,062.00	Wing Wall Reinforcement	\$971.36
Temporary Shoring	\$36,046.78	Temporary Traffic Control	\$12,750
Dewater Bridge - No Cofferdam	\$20,468.36	Rip Rap	\$12,218.46
General Laborer	\$181,017.86	Asphalt	\$19,144.68

Total: \$1,242,153.68

SPECIAL THANKS TO:

Nick McDowell, P.E.
Dr. Richard Nielsen, P.E., Ph.D.