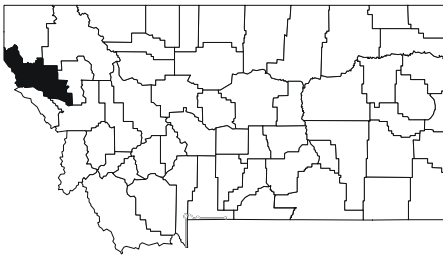
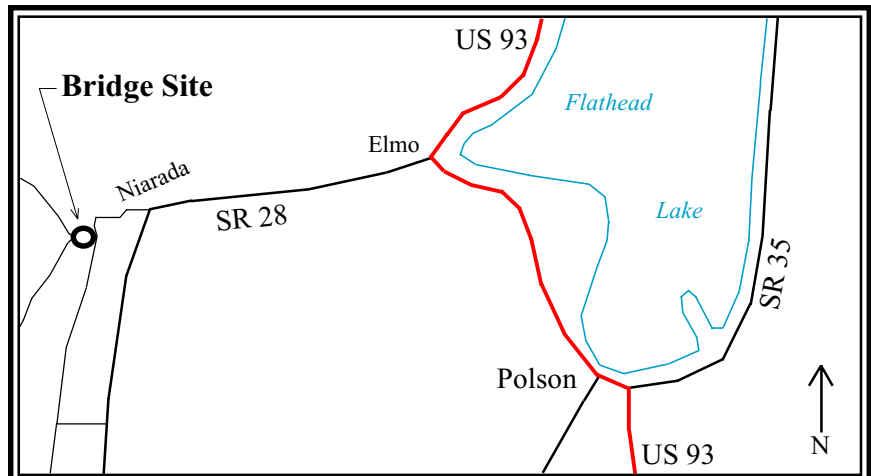


LITTLE BITTERROOT RIVER TIMBER BRIDGE, Sanders County, Montana



Type: Stress-laminated deck
County: Sanders County
Owner: Sanders County, Montana
Engineer: Merv Eriksson
Spans over: Little Bitterroot River
Bridge length: 24'-0"
Roadway width: 24'-0"

Directions: From Elmo and the intersection of US 93 and SR 28 travel southwest on SR 28. Turn right onto County Road L0023 at Niarada. Travel two miles southwest before turning right onto L45163. The bridge site is 1/4 mile.



USDA Forest Service

The National Wood In
Transportation Program



GEOMETRY

Number of Spans: 1	Design load: AASHTO HS-20	Total project cost: \$54,000
Out-to-out length: 24'-0"	Dead load: 65 lbs/sq ft	Total superstructure cost: \$28,500
Center-of-bearing length: 23'-0"	Design by: Merv Eriksson, USDA Forest Service	Total superstructure cost /sq ft: \$45.67
Skew: 0 degrees		
Number of lanes: 2	Abutment type: Treated timber retaining wall, with timber anchors and steel tie rods	
Out-to-out width: 26'-0"	Abutment height(bottom of footing to top of deck): 11'-4"	
Curb-to-curb width: 24'-0"		
Superstructure square footage: 624		

MATERIAL

DECK

Material: Wood
 Species: Coast Douglas-fir
 Allowable bending stress: 1505 psi
 Sizes used: 2" x 12" x 24'-0" (laminations)
 Quantity: 7,488 bf
 Preservative treatment: Copper naphthenate (2% copper)
 Prestressing: 1" diameter Dywidag bars
 Bearing plates: 11" x 16 1/2" x 1" A36 galvanized steel
 Anchorage plates: 4" x 6 1/2" x 1 1/4"

BEAMS/STRINGERS (none)

GUIDERAIL POSTS (none)

CURBS

Material: Wood
 Species: Coast Douglas-fir
 Sizes used: 8" x 12" x 24'-0" with 10" x 12" x 2'-4" scupper blocks

ABUTMENTS

Material: Wood
 Species: Coast Douglas-fir & Ponderosa pine (Posts, sills, caps, and braces are Coast Douglas-fir, no. 1 or better. All remaining lumber is Ponderosa pine, No. 2)
 Preservative treatment: Copper naphthenate (2% copper)
 Hardware & structural steel: A36, bolts & nuts: A307 (uncoated)

LOCAL IMPACT: This bridge carries Sanders County Road L45163 across the Little Bitterroot River on the Flathead Indian Reservation. The bridge is used by school buses, delivery vehicles, logging trucks, cattle trucks, and agricultural equipment.

BRIDGE PERFORMANCE: This two lane, stressed timber deck bridge replaced an undersized culvert. The treated timber abutments were constructed in place while the stress-laminated superstructure was fabricated on the adjacent roadway and lifted into place with a small crane.

FUNDING SOURCES: USDA Forest Service \$27,000; Balance of funding from Sanders County, Montana.

LOCAL CONTACT: Merv Eriksson
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Information provided by Merv Eriksson, Structural Engineer, USDA Forest Service.

WIT Program Proposal Number: R01-02-89 Federal Grant Identifier: R01-02-89