**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.
GEOMETRY

Number of spans: 1
Out-to-out length: 24'-0"
Center-of-bearing length: 23'-0"
Skew: 0 degrees
Number of lanes: 2
Out-to-out width: 26'-0"
Curb-to-curb width: 24'-0"
Superstructure square footage: 624

Design load: AASHTO HS-20
Dead load: 65 lbs/sq ft
Design by: Merv Eriksson, USDA Forest Service
Abutment type: Treated timber retaining wall,
with timber anchors and steel tie rods
Abutment height (bottom of footing to top of deck): 11'-4"

Total project cost: $54,000
Total superstructure cost: $28,500
Total superstructure cost /sq ft: $45.67

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 Dyswag 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.

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

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