Pre-Fabricated Modular Beam Bridge

Belmont Bridge, Black Road, Whitman County, WA

Fabricator: True North Steel – Missoula, MT
Contractor: Whitman County Crew
Design Engineer: Mark Storey, County Engineer

Existing Structure – 19 ft Span, 22 ft Wide
Built/Rebuilt 1921/2002
Wood Deck/Stringers with Wood Piles & Wood Backwalls
Wood Deterioration & Susceptibility to Flooding

Replacement Structure Requirements
- Increase Hydraulic opening – 30 ft Channel
- 32 ft long by 28 ft wide
- Raise Clearance for 100 yr Flood, longer span
- Gravel Roadway
- Piles to rock through alluvial soils
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Fabricator: True North Steel
Missoula, MT

Superstructure Design: True North Steel

Substructure Design: Whitman County
Pre-Fabricated Modular Beam Bridge

Bridge Demolition,
Surveying, Erosion Control,
Permit Requirements
Pre-Fabricated Modular Beam Bridge:

Foundation and Abutment:
County Owned Pile Driver
(44 ton/pile capacity)
HP12x53 Piles
HP12x53 Pile Cap
Pre-Fabricated Modular Beam Bridge
Abutment top plate, backwall, and backfill
Pre-Fabricated Modular Beam Bridge

Completed Abutment & Rip Rap
Pre-Fabricated Modular Beam Bridge

Modular Components Delivered And set on abutments.
Pre-Fabricated Modular Beam Bridge

Modular Bridge units Assembled
Pre-Fabricated Modular Beam Bridge

Nearly finished Bridge
Pre-Fabricated Modular Beam Bridge

Timing

Temp Bridge, Bridge Demolition, Excavation, Stream Restoration, Road Building & Bridge Installation ~ 4 Weeks

Costs

Steel Superstructure $ 50,000
Labor & Equipment   $ 75,000
Pile Foundations   $ 20,000
Road Building      $ 15,000
Permitting         $  8,000
Total              $168,000

~$ 187/ ft²

Concrete Superstructure Alternative $ 85,000
Pre-Fabricated Modular Beam Bridge

Take-Aways – Steel Bridges

- Economical
- Lighter Superstructure
- Lighter Equipment
- Lighter Abutments
- Ease of Erection
- Modular
- Accelerated Bridge Construction
- Match-Fit Fabrication
- Sustainability
- Recyclable
- Reusable / Movable
Thank You Questions?

By: W. Mark Storey, PE