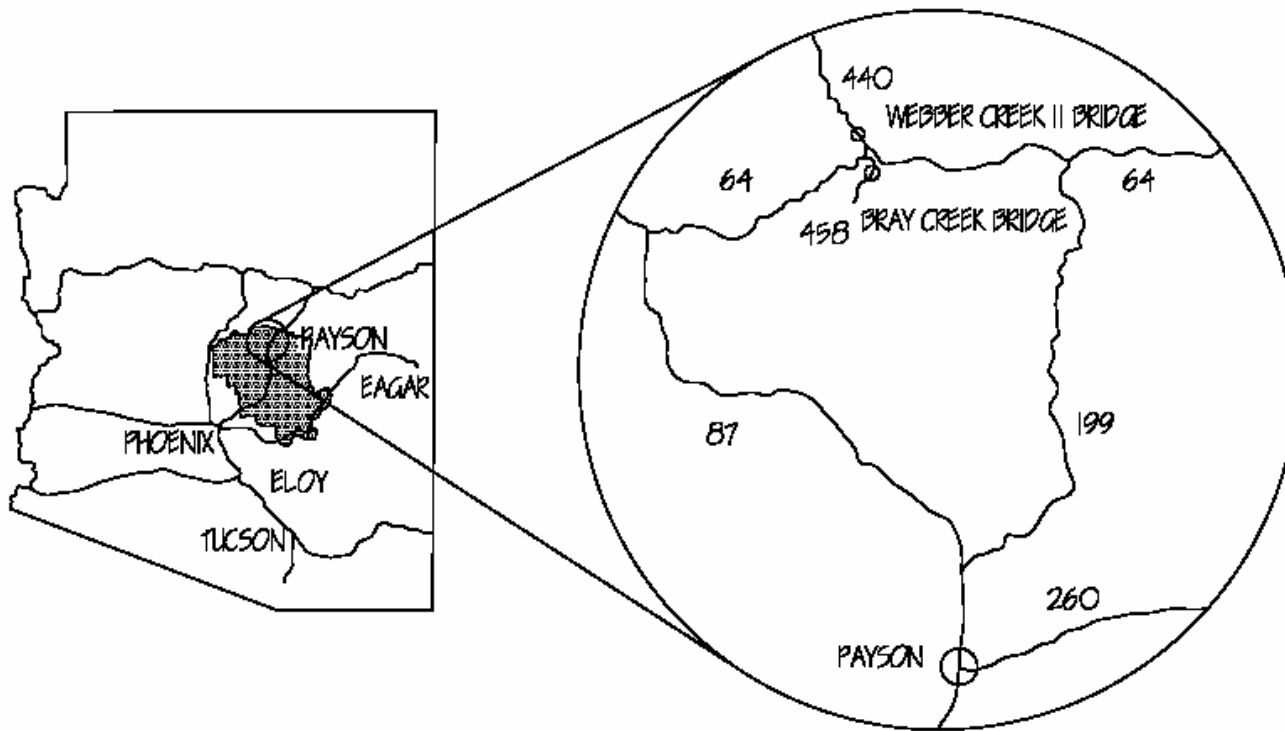


# PONDEROSA PINE GLULAM BRIDGES IN ARIZONA

# INTRODUCTION TO THE PROJECT

- Began in 1998
- Partial funding, Timber Bridge Initiative
- Tonto National Forest
- Replacement of superstructure
- Bray Creek
- Webber Creek II

# Arizona



# Existing Structures

- Bray Creek Bridge
  - Flat Car
  - Timber plank deck
  - 30' x 16' (o-o)
- Webber Creek II
  - Steel girders
  - Nail-laminated deck
  - 18' x 15' (o-o)

# Bray Creek



# Bray Creek



# Webber Creek II

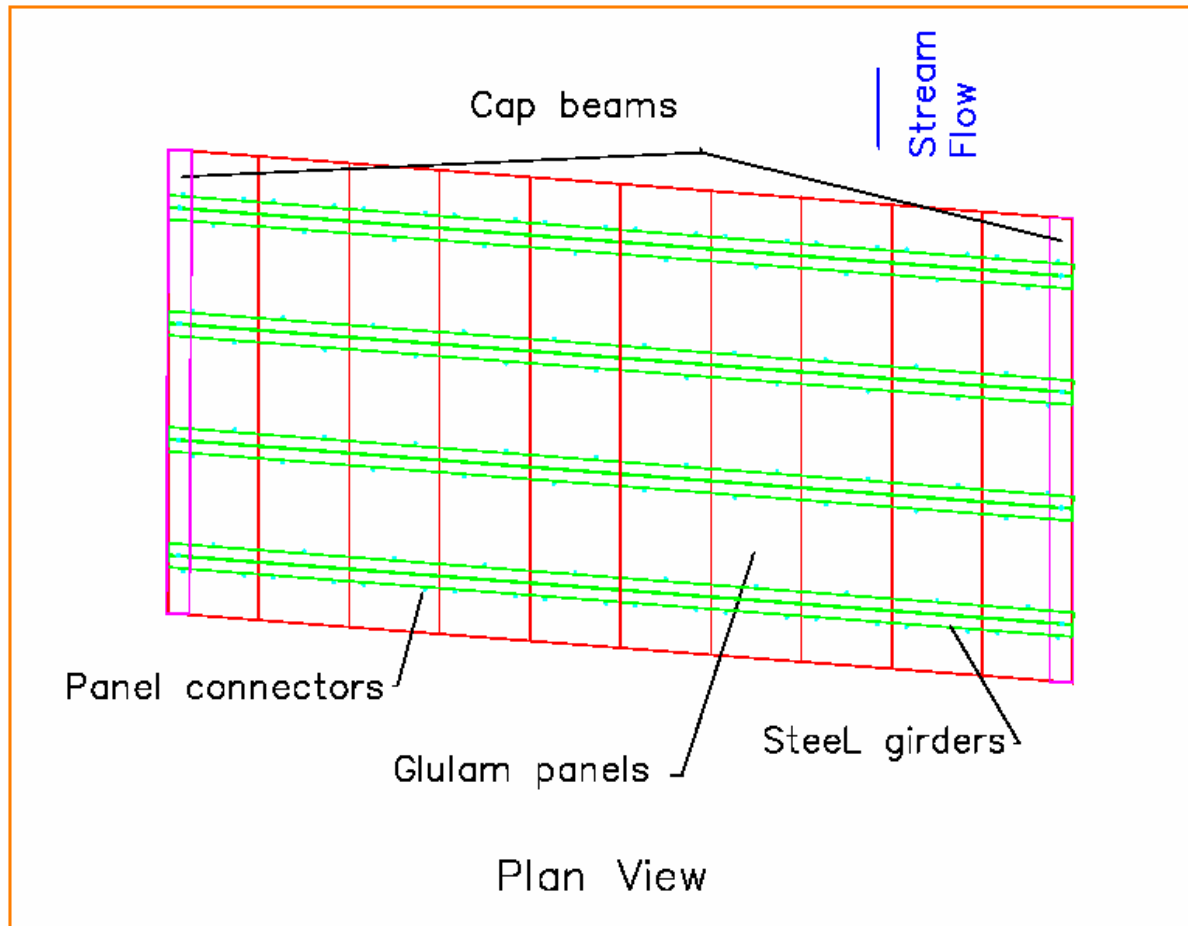


# Design

- Bray Creek
  - Existing substructure
  - Steel girders
  - Transverse glulam panels
  - 10 – 5 1/8" x 37 1/2" x 16'
  - No. 2 Ponderosa Pine
  - Creosote treated



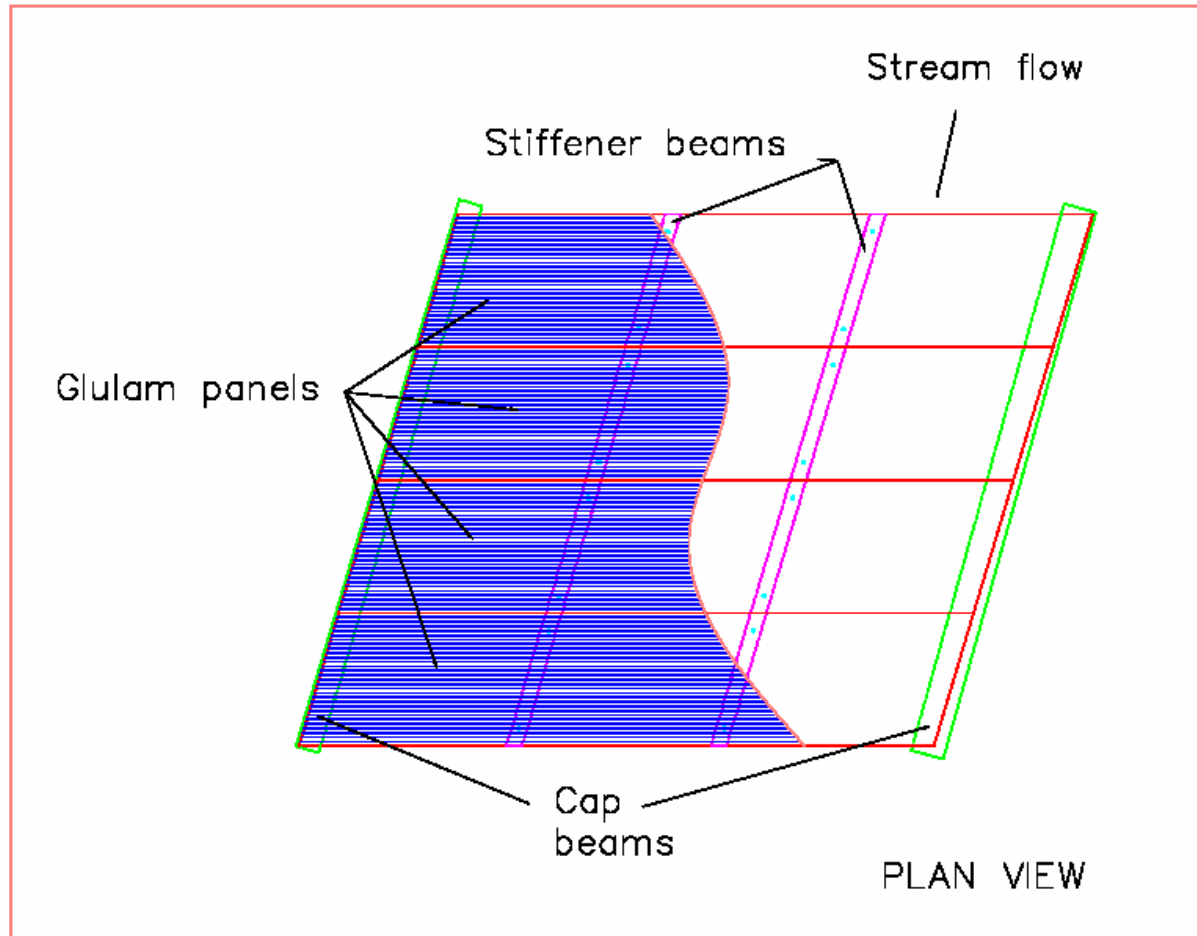
# BRAY CREEK



# Design

- Webber Creek II
  - Existing substructure
  - Longitudinal glulam panels
  - 4 – 10  $\frac{3}{4}$ " x 45" x 18'
  - No. 1 Ponderosa Pine
  - Creosote treated

# Webber Creek II



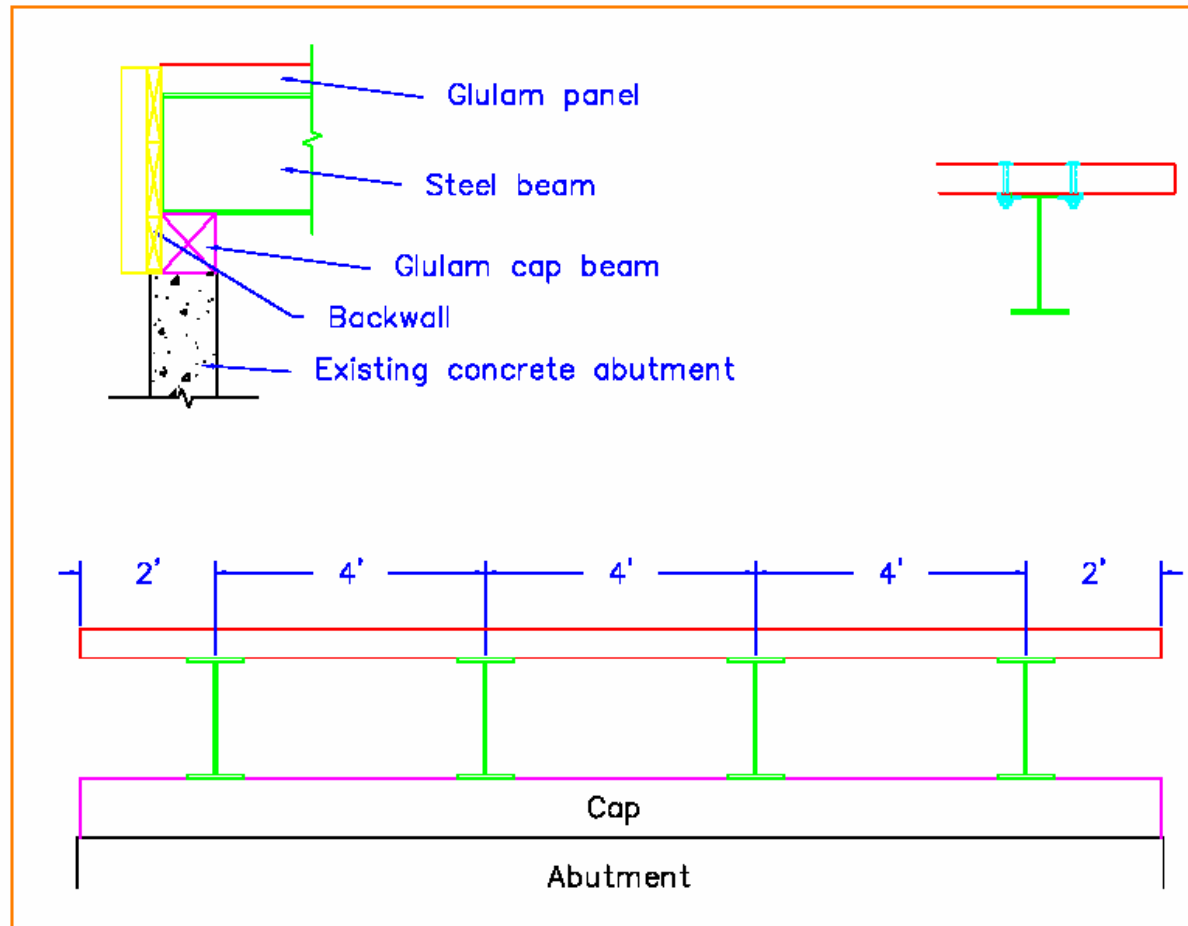
# Construction Crew



# Bray Creek



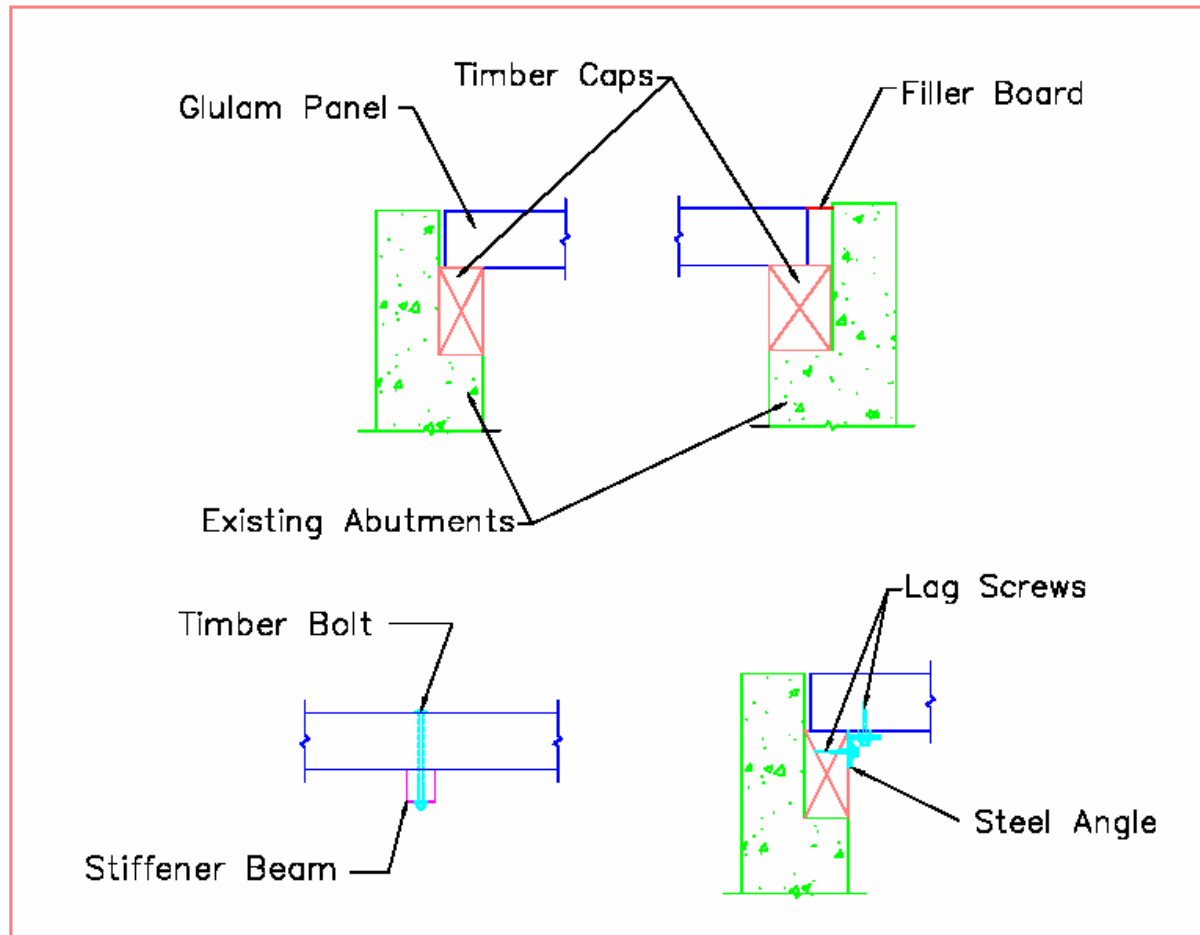
# Construction Details



# Webber Creek II



# Construction Details





# Completed



# Guardrails, Running Plates

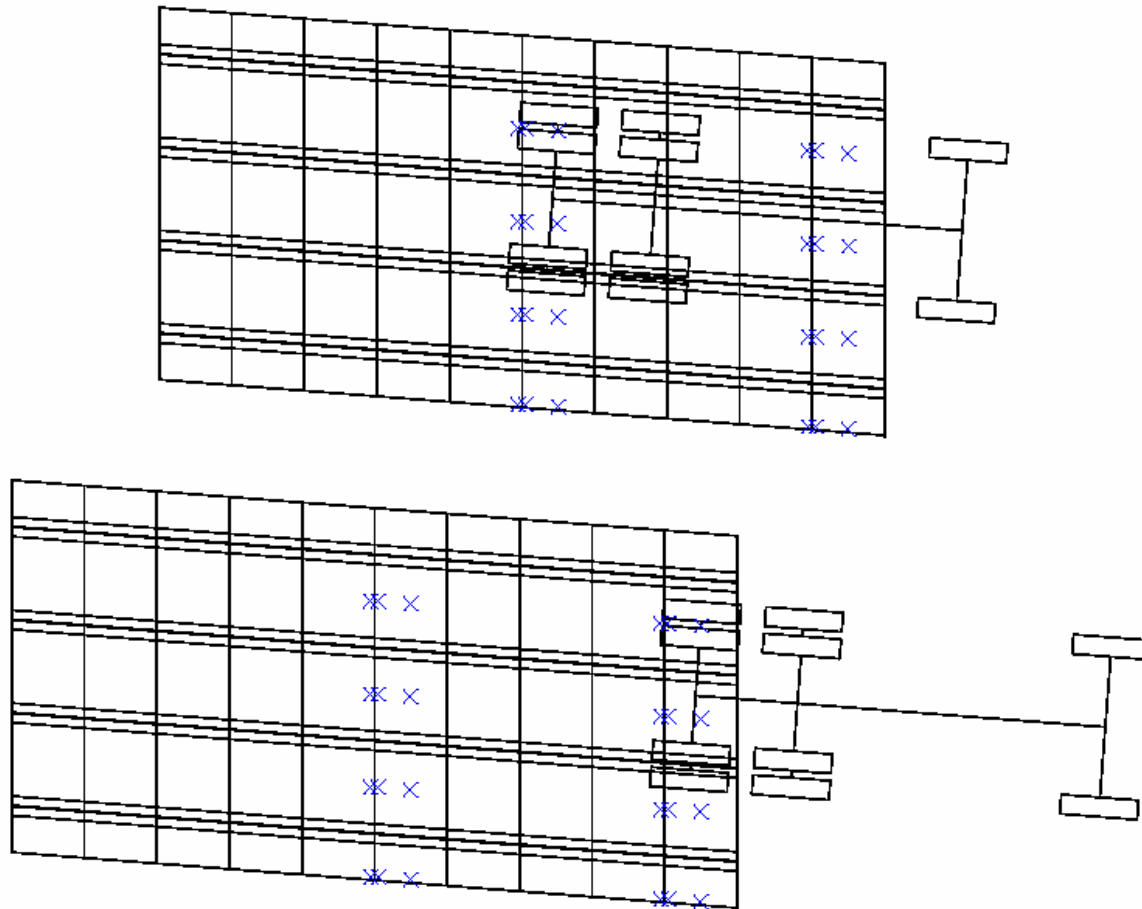


# Load Tests

- Performance
- Deflection under static load
- Dump trucks, 3 axle
- $11,900 \text{ lb} + 34,500 \text{ lb} = 46,400 \text{ lb}$
- $10,620 \text{ lb} + 27,260 \text{ lb} = 37,880 \text{ lb}$
- Suspended rules & surveyors level
- Readings in millimeters



# Placement on Bray Creek



# Bray Creek



# Bray Creek

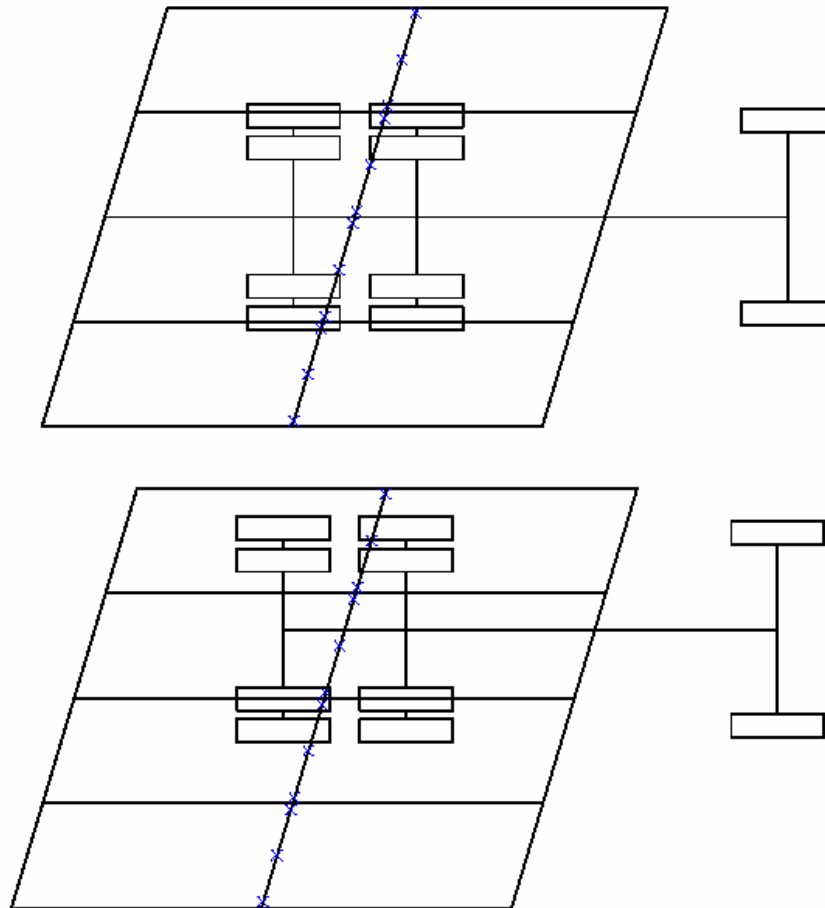


# Bray Creek





# Placement on Webber Creek II



# Webber Creek II



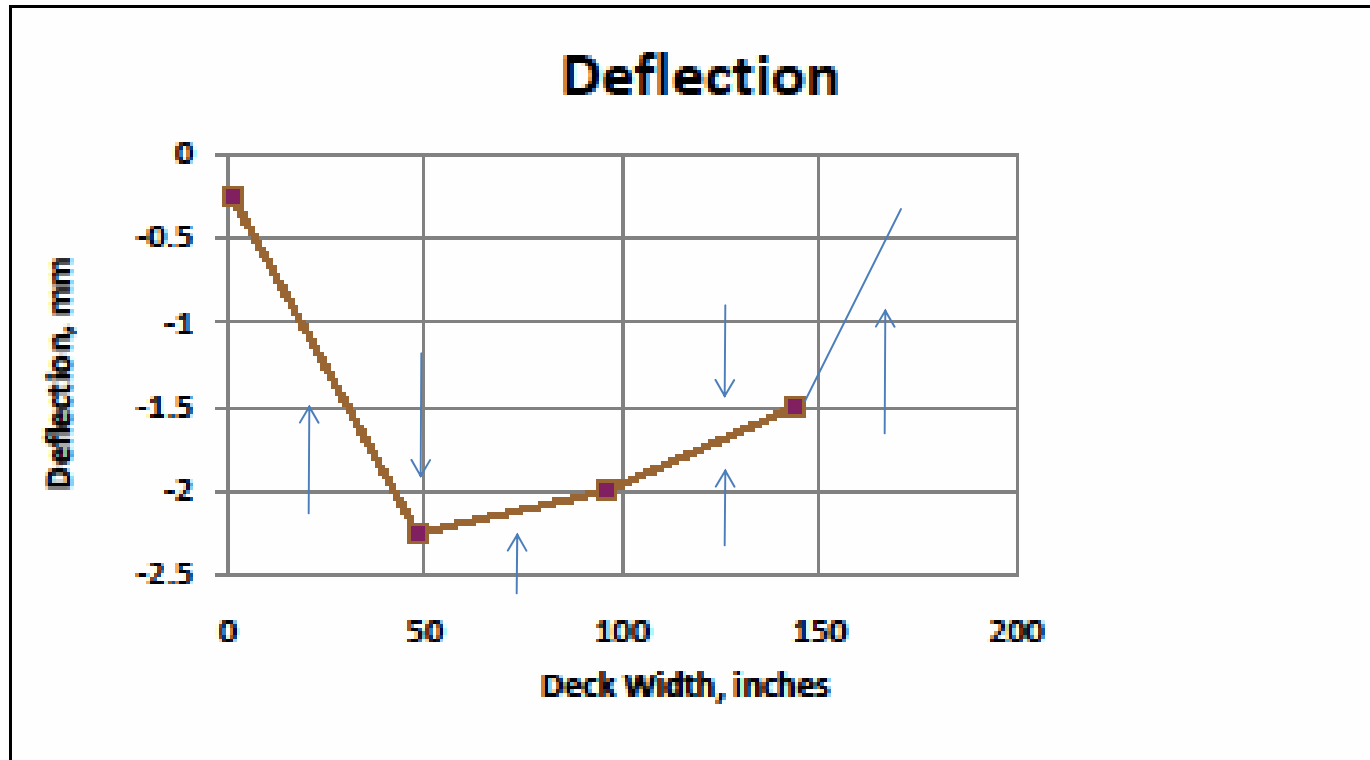
# Webber Creek II



# Maximum Deflection

- Bray Creek Bridge
  - End panel
  - Rear axle – 17,200 lb
  - Duals between girders – 8,600 lb
  - Total deflection of 2.5 mm (0.10 in)
  - Deflection between girders of 1 mm

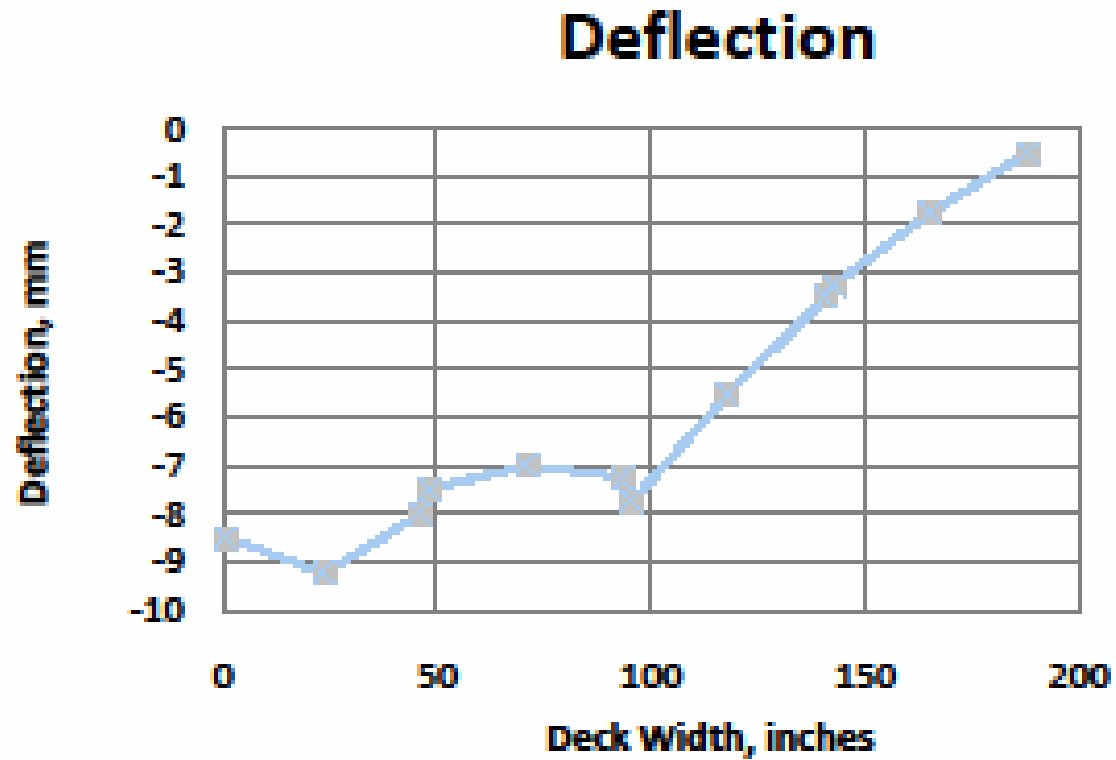
# Bray Creek Deflection



# Maximum Deflection

- Webber Creek II
  - Centerline near edge
  - Both rear axles – 34,500 lb
  - Deflection of 9.3 mm (0.36 in)

# Webber Creek II Deflection



# Bray Creek, 2009





# Bray Creek, 2009



# Webber Creek II, 2009



# Webber Creek II

