

# **Stretching the Limits I**

## **Modern Timber Bridge Case Studies**

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## Stretching Bridge Spans

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- ❑ 1980s - WWS supplied 13 bridges with clear spans longer than 30m (Longest span = 51m)
  - ❑ 1990s - WWS supplied 19 bridges with clear spans longer than 30m (Longest span = 53m)
  - ❑ 2000s - WWS supplied 39 bridges with clear spans longer than 30m (Longest span = 61m)
  - ❑ 2010s - WWS has supplied 16 bridges with clear span longer than 30m (Longest span=85m)
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# Increasing Bridge Loading

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- Old Loading Criteria
    - HS20-44 Truck = 340kN (72,000 lbs.)
    - Pedestrian loading = 85 psf., reducible
  - New Loading Criteria
    - HL93 Truck with MPF = 384 kN (86,400 lbs.)
    - Lane Load = 9.33 kN/m applied to 3.048m wide lane (640 plf applied to 10'-0" wide lane)
    - Pedestrian Loading = 90 psf. nonreducible
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# Cosumnes River Bridge – Rancho Murieta, California

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## □ Bridge Statistics

- 3.66m (12'-0") wide three Span Bridge with two 32m (105'-0") side spans and a 60.96m (200'-0") main span.
  - 4.07kPa (85psf) pedestrian live load
  - 35.85kN (8000 lbs) maintenance vehicle load.
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# Cosumnes River Bridge – Rancho Murieta, California

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- Truss Configuration
    - AITC recommends span to depth ratio between 8 and 10 for parallel chord trusses
    - 3.48m (11'-5") at side span, 6.86m (22'-6") at main span
    - AASHTO aesthetics recommendations state, "Bridges should complement their surroundings, be graceful in form and present an appearance of adequate strength. Abrupt changes in the form of components structural type should be avoided."
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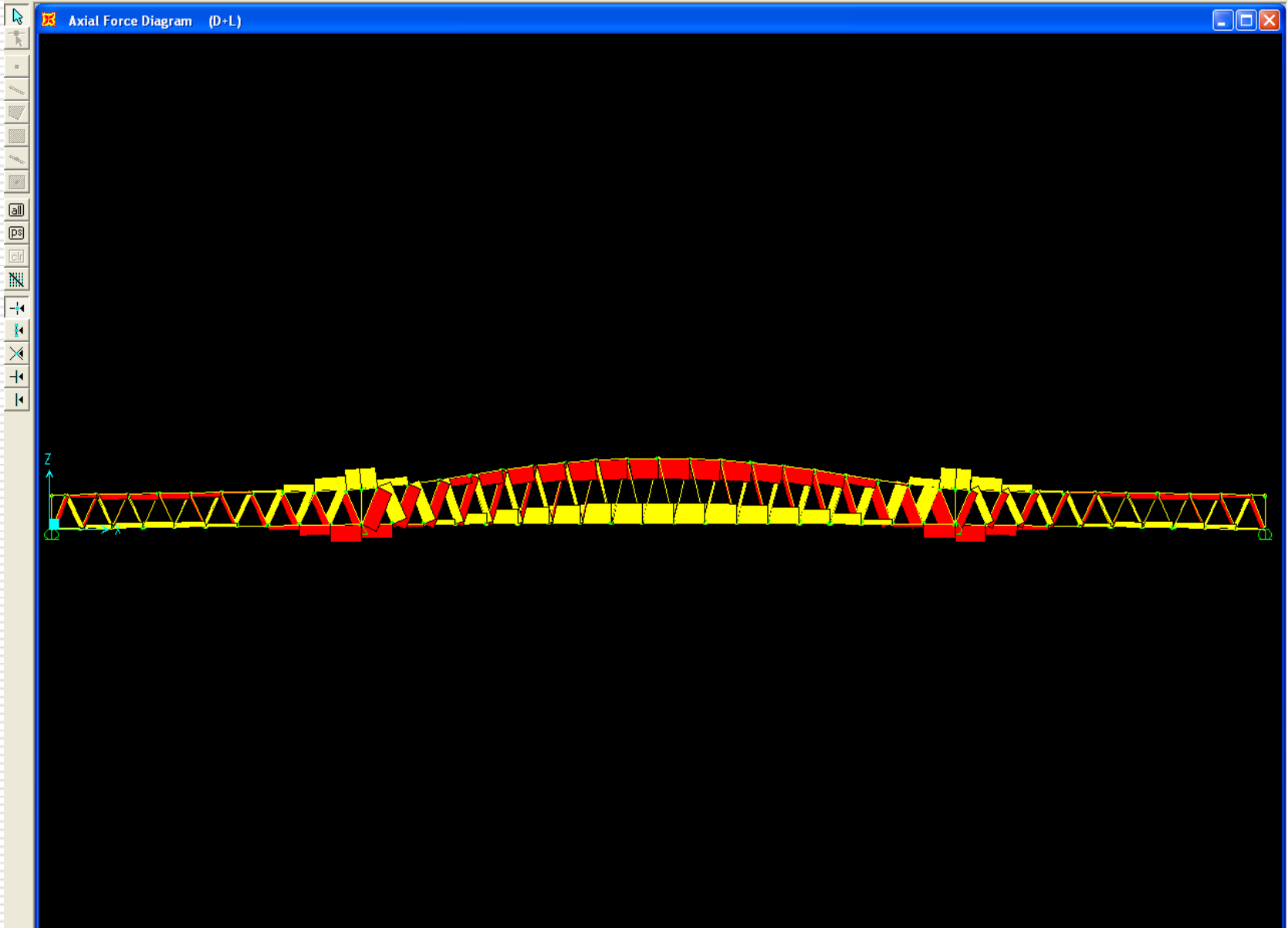




# Cosumnes River Bridge – Rancho Murieta, California

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- Challenges and Solutions
    - Main Span still too flexible
    - Continuity complicates connections at piers.
    - Installation of spans.
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# Cosumnes River Bridge – Rancho Murieta, California









# Overpeck Park Bridges – Teaneck, New Jersey



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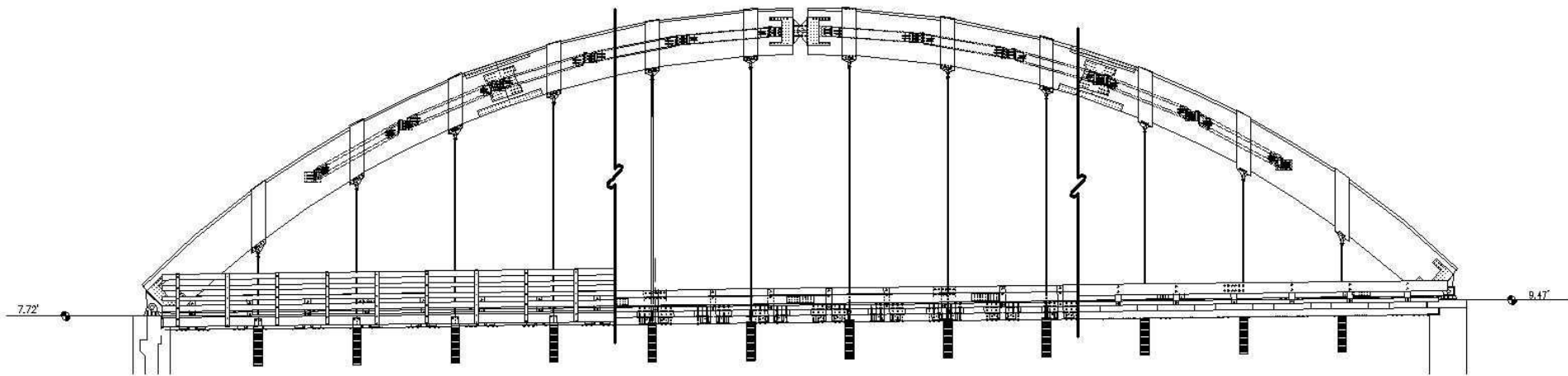
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## ❖ Specifications:

- ❖ Span: 42.67m (140'-0")
  - ❖ Width: 9.14m (30'-0")
  - ❖ 3.05m (10'-0") walkway on one side
  - ❖ Loading: HS20 + 25% (400.32kN or 90,000 lbs.)
  - ❖ TL4 crash tested rail system
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# Overpeck Park Bridges – Teaneck, New Jersey

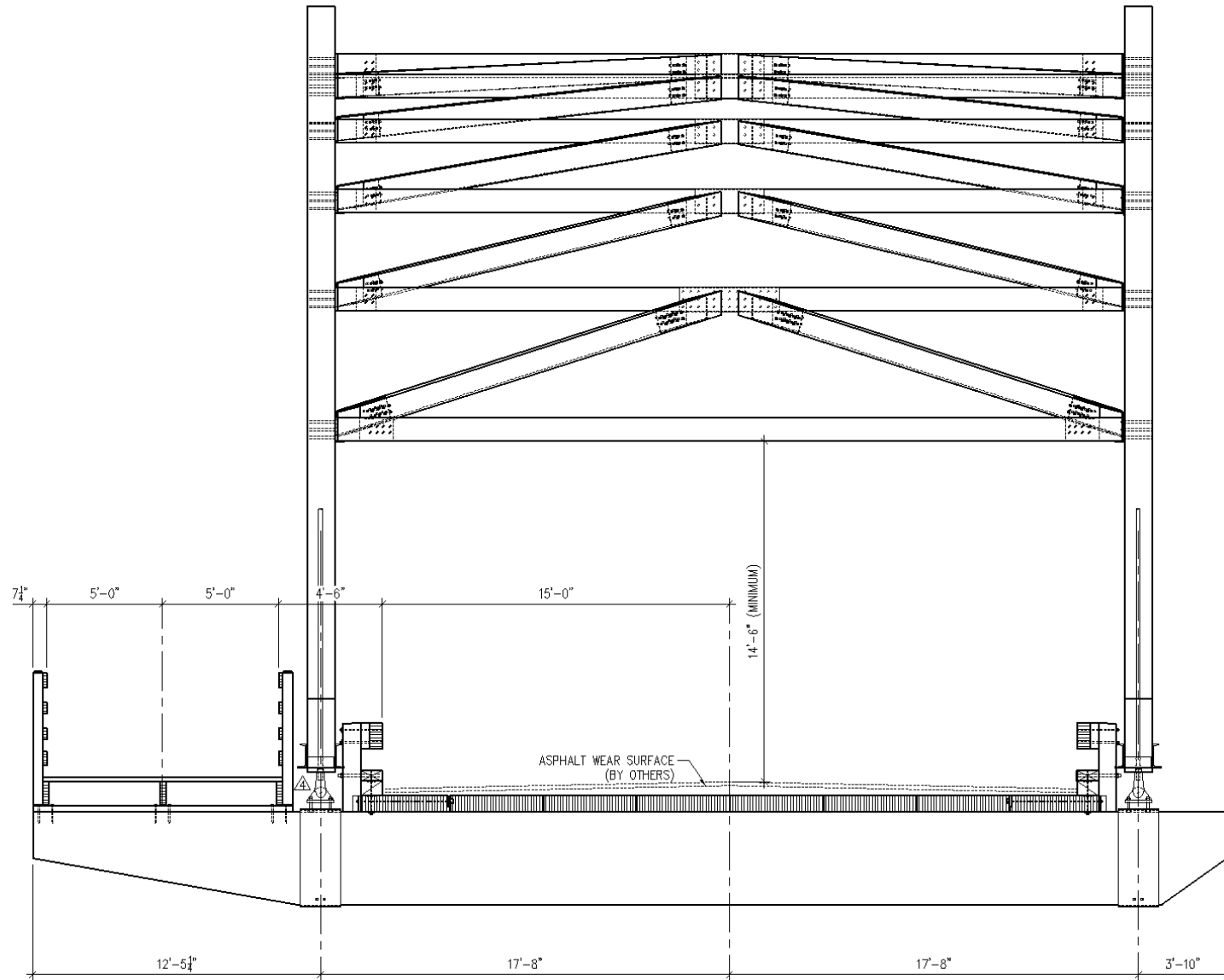
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*CUT-AWAY BRIDGE ELEVATION*

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# Overpeck Park Bridges – Teaneck, New Jersey



*BRIDGE SECTION © MID-SPAN*



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