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Seminar

# Decked Bulb-T Girder Bridges

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BERGER/ABAM ENGINEERS Inc.

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ENGINEERS INC.



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# Standard Prestressed Concrete Girder Bridge

## Typical Construction

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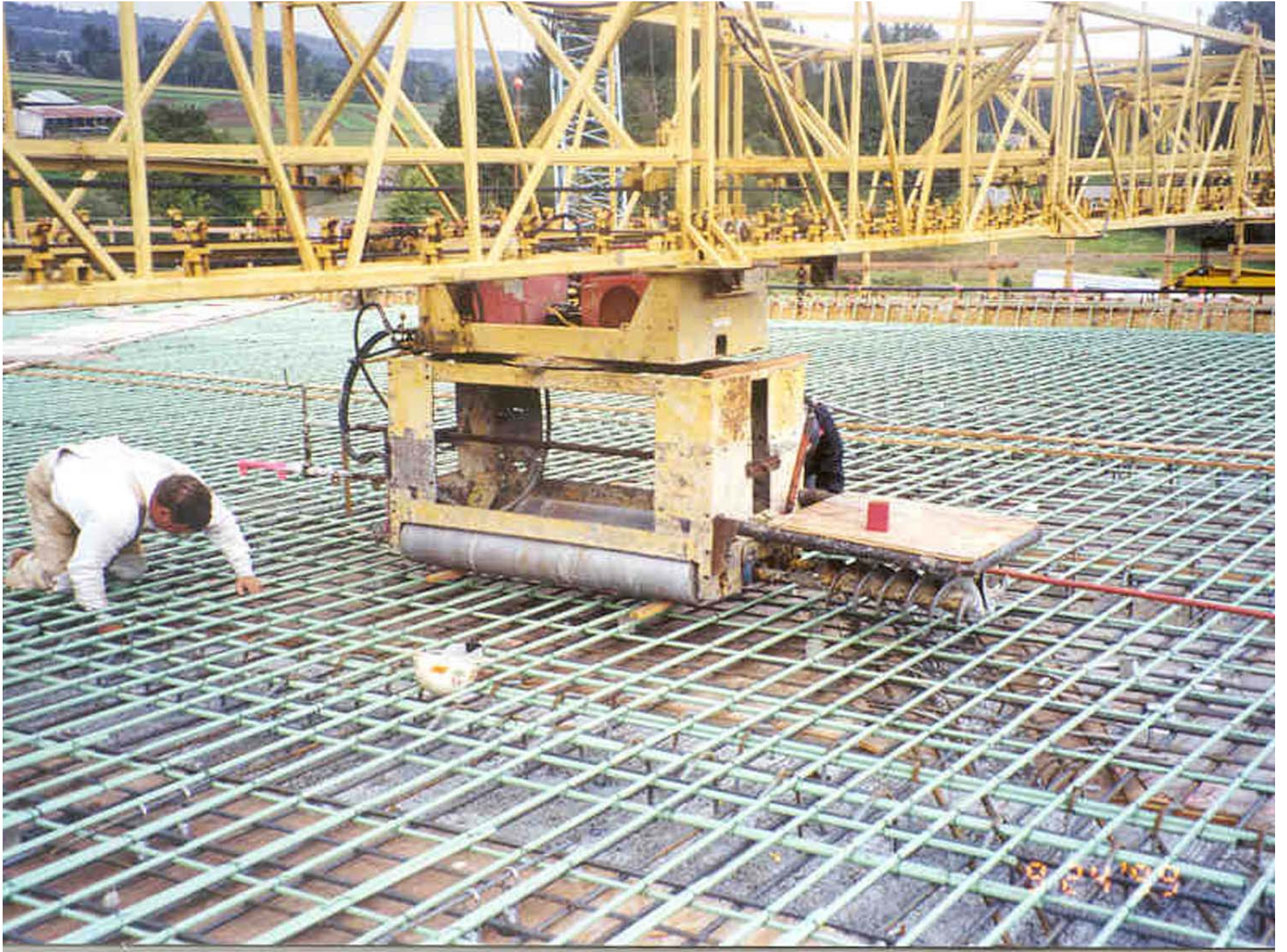


















# Standard Girder Bridges - Pros

- Flexible & Adaptable to Geometric Requirements
- Useable with Large Skewed Piers
- Useable on High ADT Routes
- Useable on Curved Alignments
- Durable Deck Slab, No Joint Issues

# Standard Girder Bridges - Cons

- Longer Construction Time due to CIP Deck
- Requires More Strands in Girder for Similar Span/Depth Ratios
- Generally Costs More



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# Lewis County Silverbrook Bridge No. 111 Replacement

## Decked Bulb-T (DBT) Girder Bridge Case Study

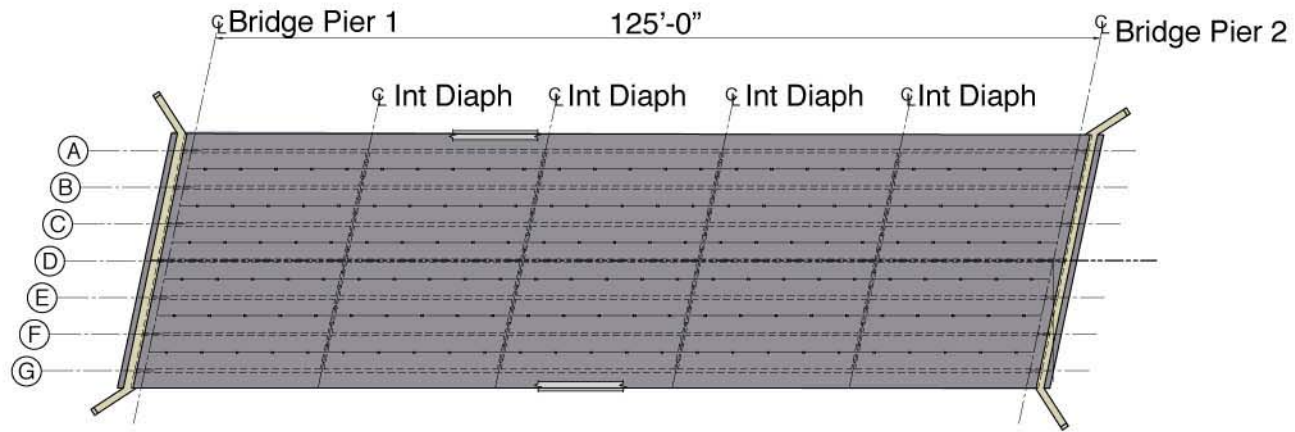
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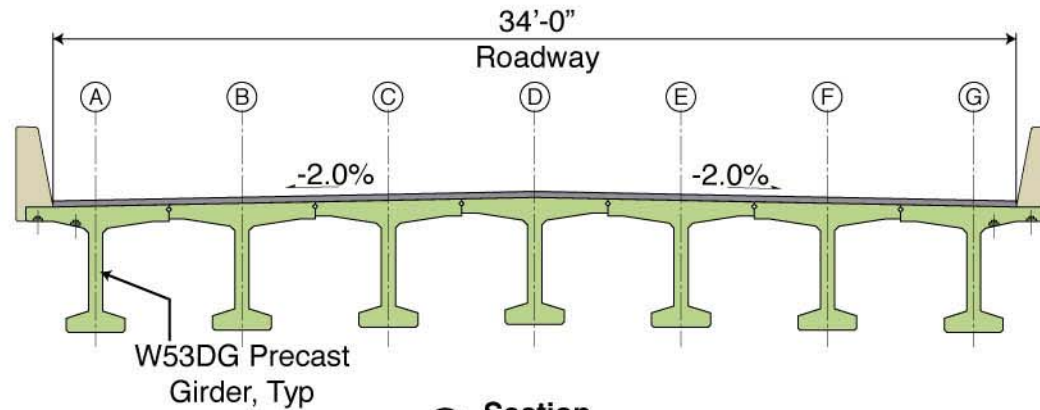
WEIGHT  
LIMIT  
9 T  
11 T  
14 T  
COURTESY OF  
THE DISTRICT  
OF COLUMBIA  
METROPLAN, LLC



# Plan and Section View



1 Plan  
Scale:



2 Section  
Scale:







































# Decked Bulb-T Girder Bridges - Pros

- Cost Effective for Similar Span/Depth Ratios
- Uses Fewer Prestressing Strands
- No Deck Slab Formwork
- No Deck Slab Pour
- Reduces Construction Time
- Improved Safety Conditions for Workers

# Decked Bulb-T Girder Bridges - Cons

- Potential Deck Flange Joint Durability Issue
- Limited to Lower ADT Routes
- Limited Bridge Geometry (Large Skew, \*\*Vertical Profile, Curved Alignment)
- Potential Differential Camber Issue Between Girders



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# Port of Tacoma Marshall Avenue Auto Facility Bridge

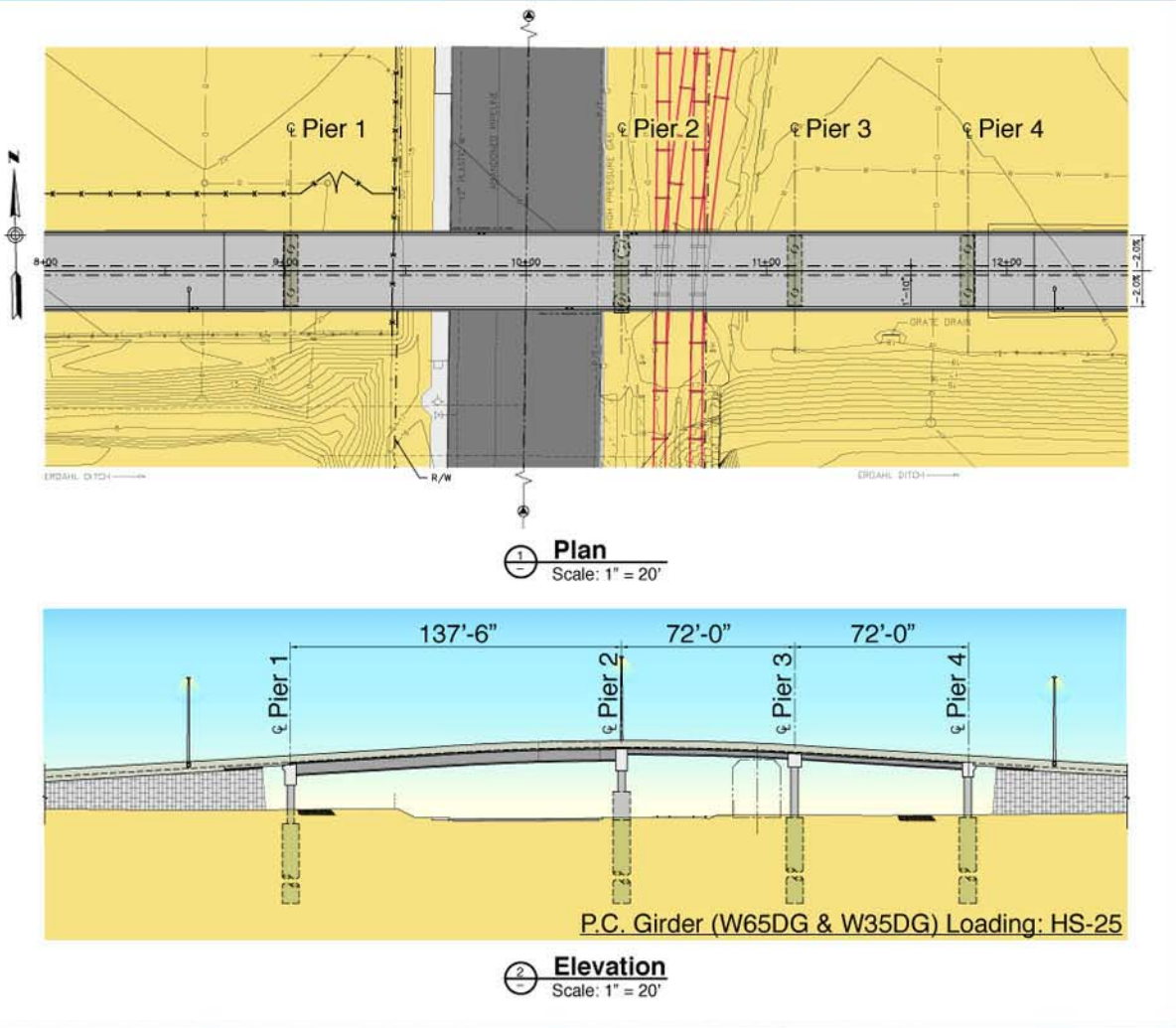
Decked Bulb-T Girder Bridge  
Case Study

**BERGER/ABAM**  
ENGINEERS INC.

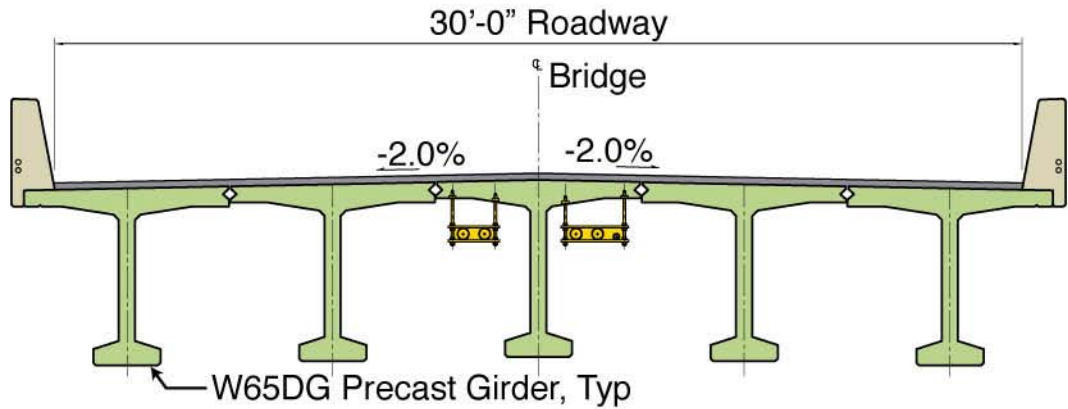




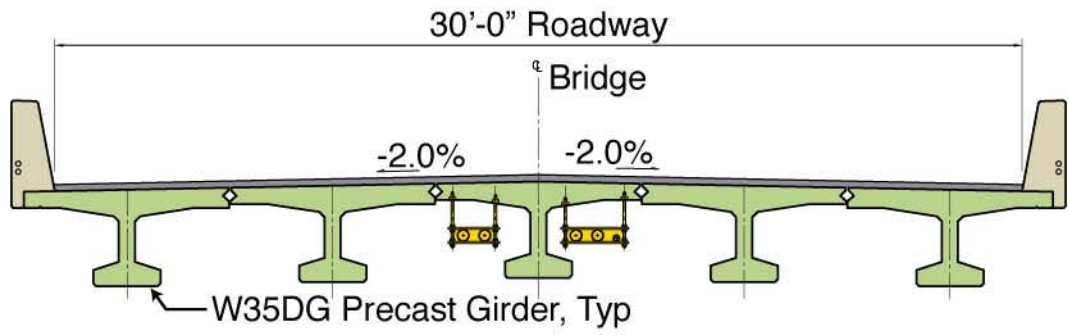
# Plan and Elevation



# Cross-Sections



2 Section - Spans 2  
Scale:



3 Section - Spans 3 & 4  
Scale:





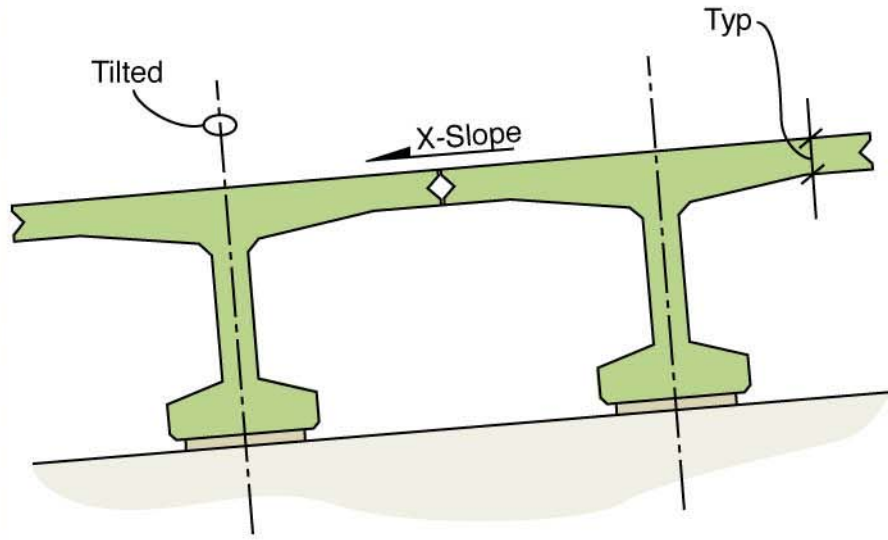




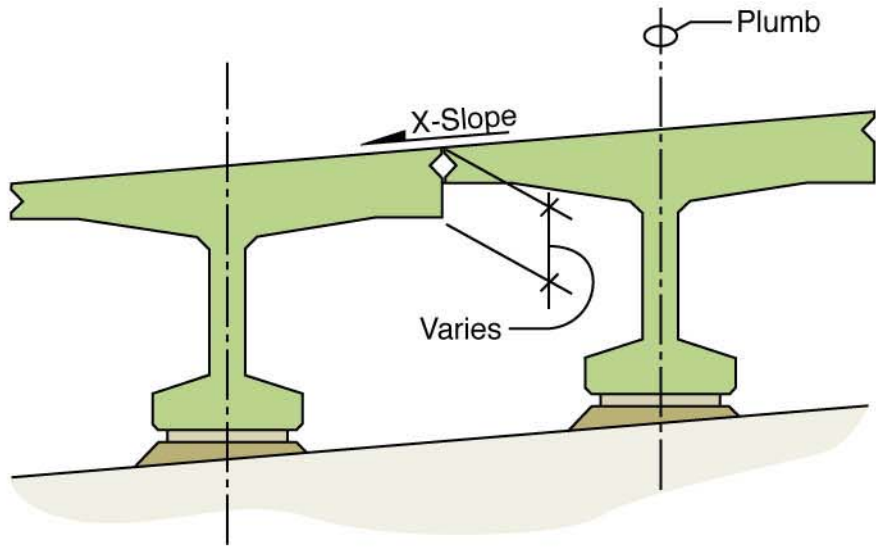




# Girder Cross-Sections



**Tilt Girders**  
Constant Depth Flanges



**Plumb Girders**  
Varying Deck Thickness





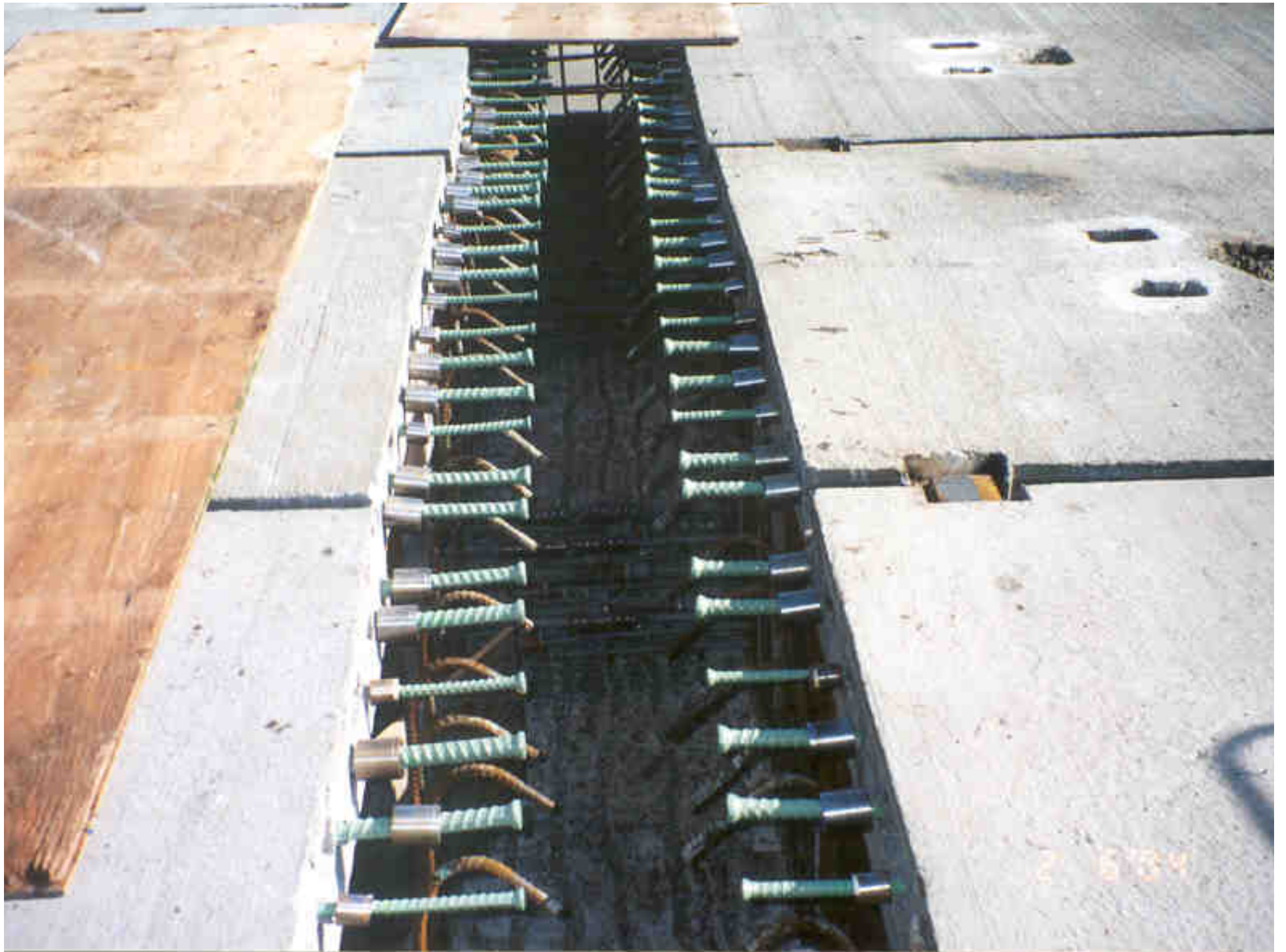




















# Intermediate Diaphragms

- Controls Transverse Girder Roll
- Controls Differential Vertical Deflection
- Reduces Demand on Longitudinal Deck Joints
- Suggest Using Three or More Diaphragms
- Optional - Add Transverse P/T





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**Thank You**

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