

International Association for  
Bridge and Structural Engineering  
Symposium 2007

Woodrow Wilson Bridge  
Bascule Span

Presented By:  
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Hardesty & Hanover, LLP  
September 21, 2007

Plan of Project

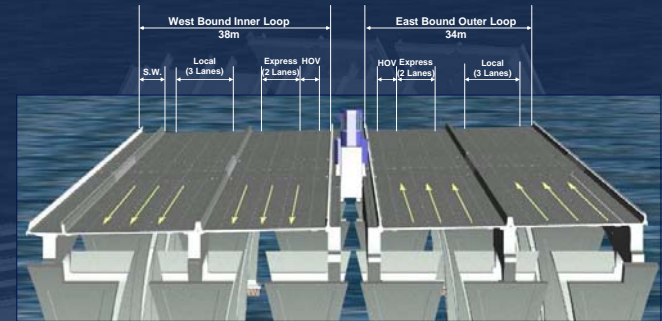


- Replacement of the 1800 meter long Woodrow Wilson Bridge
- 300,000 vehicles daily
- Sponsoring Agencies: MDSHA, VDOT, FHWA, DDOT
- Project scheduled for completion in mid-2008
- Prime Design Consultant: Parsons Transportation Group
- Bascule Span Design Consultant: Hardesty & Hanover

New Woodrow Wilson Bridge

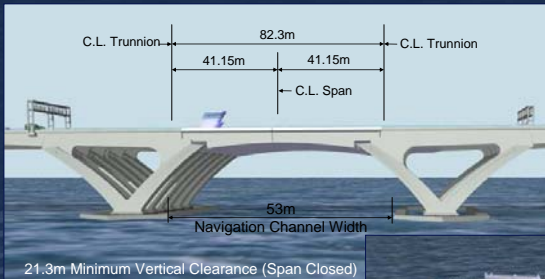


General Bridge Configuration



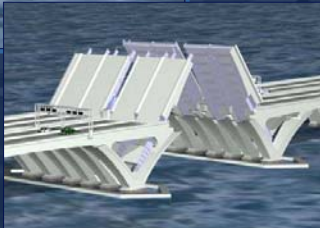
- Separate Inner Loop and Outer Loop structures
- Six lanes of traffic in each direction

### New Bascule Span



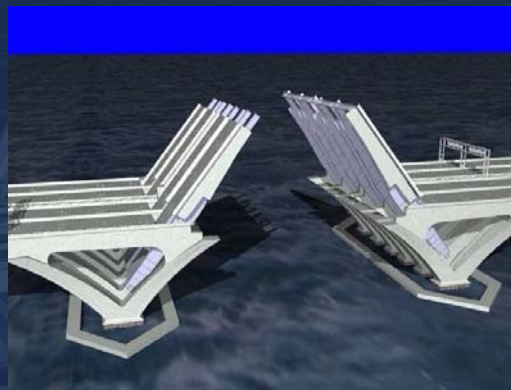
#### New Bascule Span

- 4 double leaf bascule spans (8 leaves total)
- 76m width
- 65 Bridge Openings Per Year



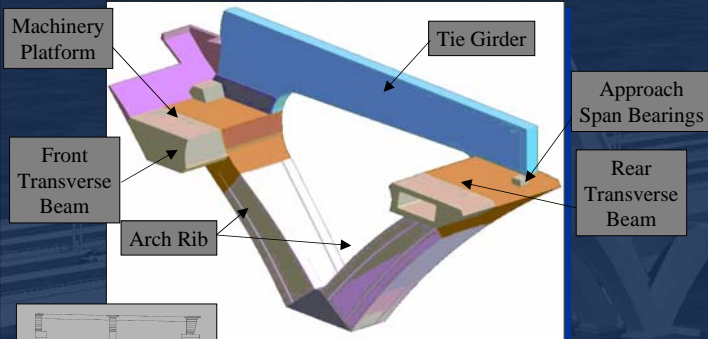
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### Bascule Span Leaf Operation

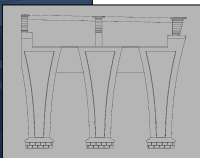


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### Bascule Pier



- Cast-In-Place, Post-Tensioned Concrete V-Piers (45Mpa Concrete)



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### Bascule Pier



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## Bascule Piers

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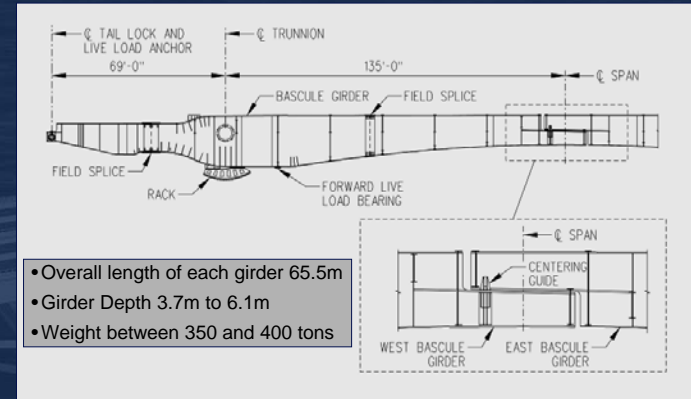


- Dead Loads are Predominant Loads (Each Weighs 16,000 Tons)
- Dead Load Nearly Balanced, Still Require Heavy Post Tensioning
- Load Sharing Between 3 V-Piers

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## Bascule Girder

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- Overall length of each girder 65.5m
- Girder Depth 3.7m to 6.1m
- Weight between 350 and 400 tons

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## Bascule Girder Erection

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## Bascule Girder Erection

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## Bascule Span Superstructure

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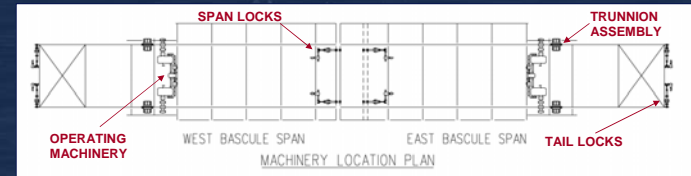
- Each Leaf Weighs 2000 to 2500 tons
- 17,000 Tons of Moving Structure – Largest Movable Bridge in the World



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## Mechanical Systems

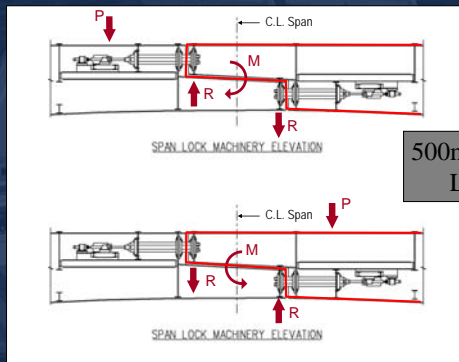
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## Span Locks

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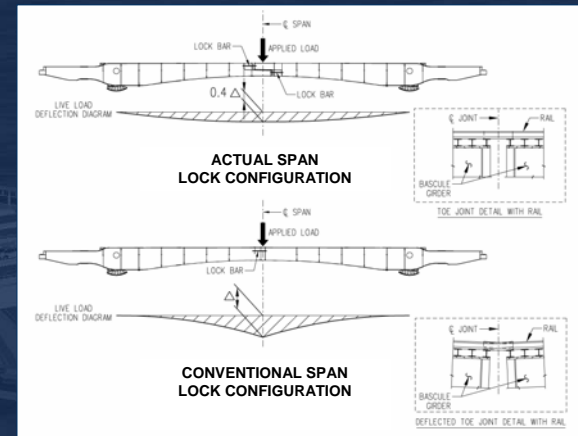


500mm x 400mm  
Lock Bars

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## Span Locks – Deflection Improvement

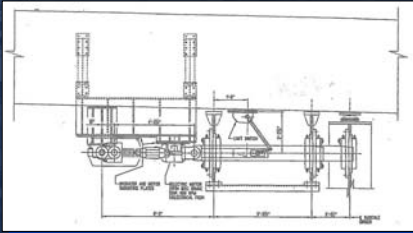
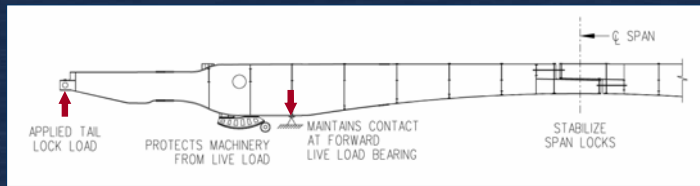
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## Tail Lock Function

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## Project Status

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- Outer Loop Bridge opened to traffic on time and on budget in summer 2006
- Completion of Inner Loop bascule spans ahead of schedule for 2008 completion



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