REINFORCED CONCRETE SLAB BRIDGES

**Best Locations for Use**
- Short Spans (less than 50’)
- Where shallow structure depths are required
- When roadway overtopping is required
- Horizontal Curves
- Unique Geometric Considerations
REINFORCED CONCRETE SLAB BRIDGES

- Design Considerations
  - Span Configurations
  - Slab Thickness
  - Concrete Strength
  - Haunched Slabs
  - Skew
  - Edge Beams
  - Post Tensioning
  - Constructability
Design Considerations

- Span Configurations
  - Ratio interior to end span 1.25 – 1.33
  - Can be designer driven by unique site requirements
Design Considerations

+ Slab Thickness
  - Simple Spans – \(1.2(S+10)/30\)
  - Continuous Spans – \((S+10)/30\)
Design Considerations

+ Concrete Strength
  ✗ Typically Class C
Design Considerations

Haunched Slabs

- Straight haunches preferred in lieu of parabolic
- Depth at pier should be 2 – 2.5 the thickness in the span
- Length should be limited to 0.25L for straight haunches, 0.3L for parabolic haunches, & 0.2L for drop panel haunches.
- Parabolic may be considered if aesthetic requirements warrant their use.
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- Design Considerations
  - Skew
    - Reinforcing Steel
      - Less than 45 degrees – placed parallel to skew
      - Greater than 45 degrees – placed perpendicular to longitudinal reinforcement.
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- Design Considerations
  + Edge Beams
    - Discontinuous slab edges must be strengthened
    - Required by the IDM
    - Structurally-continuous barriers may only be considered effective for the service limit state, and not the strength or extreme-event limit state.
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- Design Considerations
  + Post Tensioning
    - Can be used to extend span ranges for RC Slabs
    - Can be used to eliminate the need for haunched sections
    - Can be used to reduce the required reinforcing steel
**Design Considerations**

**Constructability**

- The maximum reinforcing-bar size should be #11.
- The minimum spacing of reinforcing bars should preferably be 6 in.
- Longitudinal steel should be detailed in a 2-bar alternating pattern, with one of the bars continuous through the slab. The maximum size difference should be two standard bar sizes.
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- Design Manual Revisions Proposed
  - Provide Department specific guidance for AASHTO code
  - Provide Department preferred details