

## Outline

- BOBS Organization Structure
- Bridge Type and Composition/Terminology
- Asset Management
- Bridge Maintenance
- **Bridge Design Process**
- Bridge Plans
- Road and Bridge Coordination
- Request for Action (RFA) Projects
- Design in Construction
- Accelerated Bridge Construction (ABC)
- Wrap up

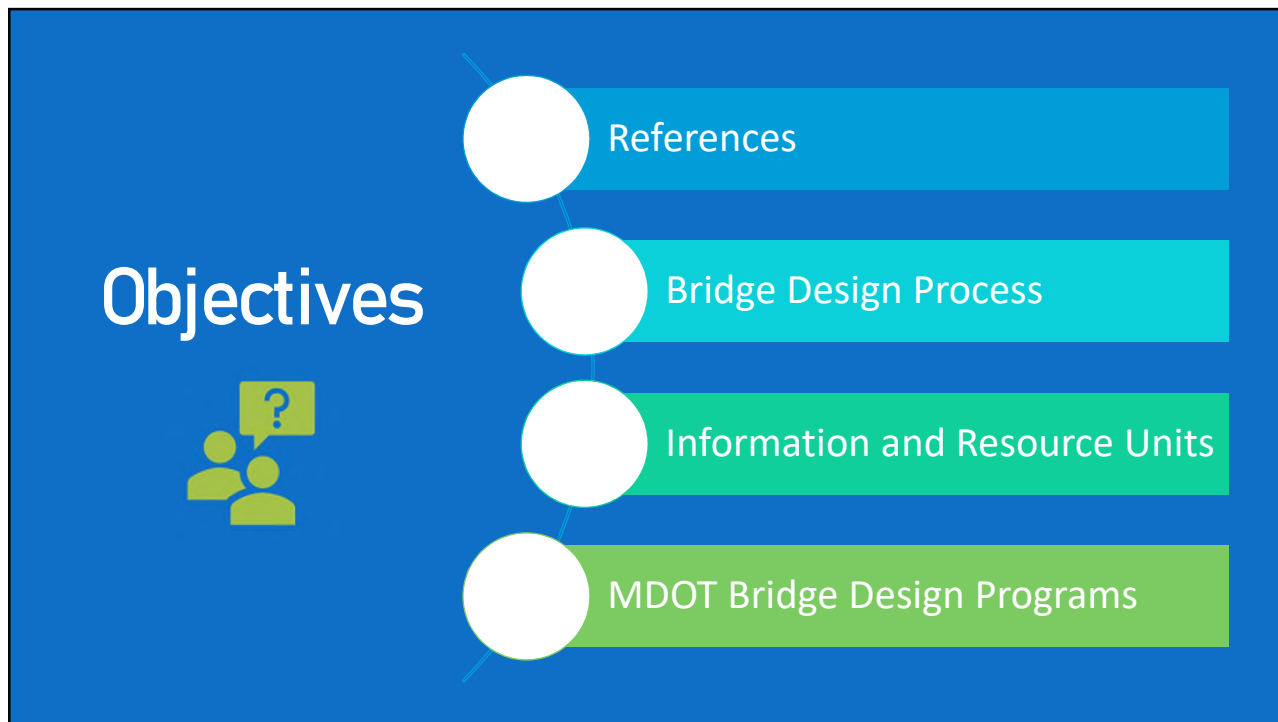


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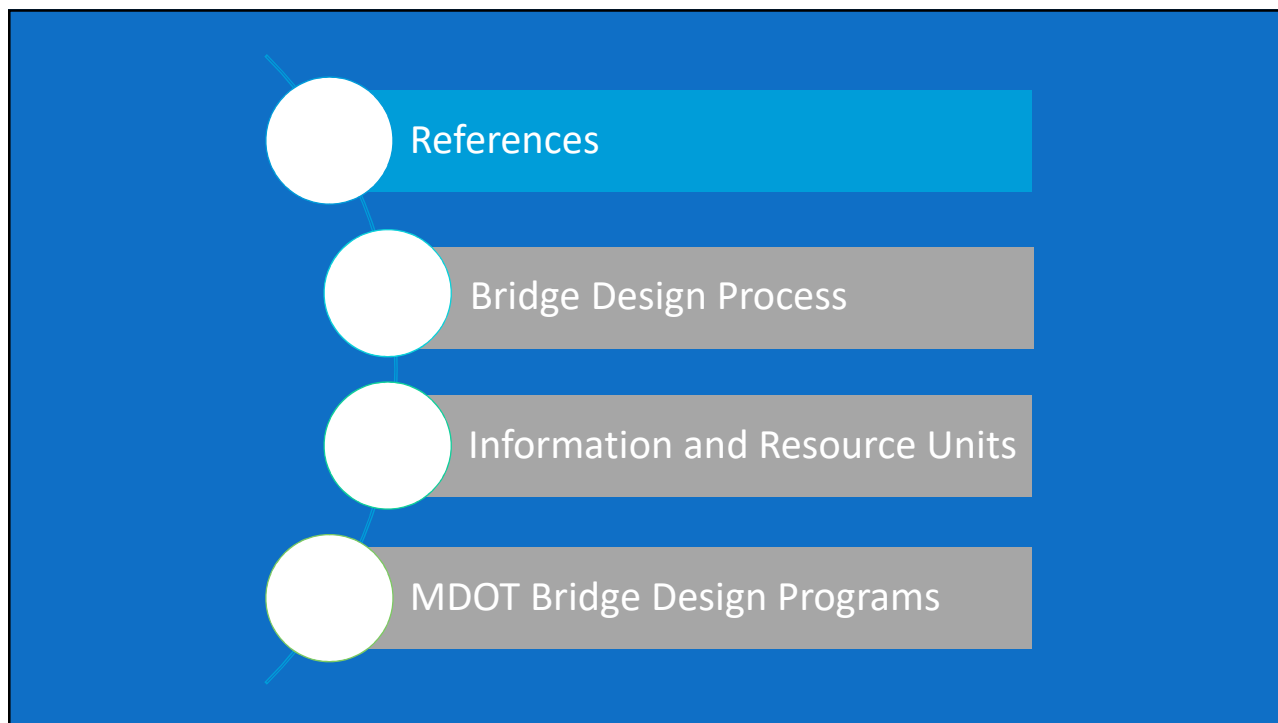
# Bridge Design Process

## Bridge Replacements and New Bridges

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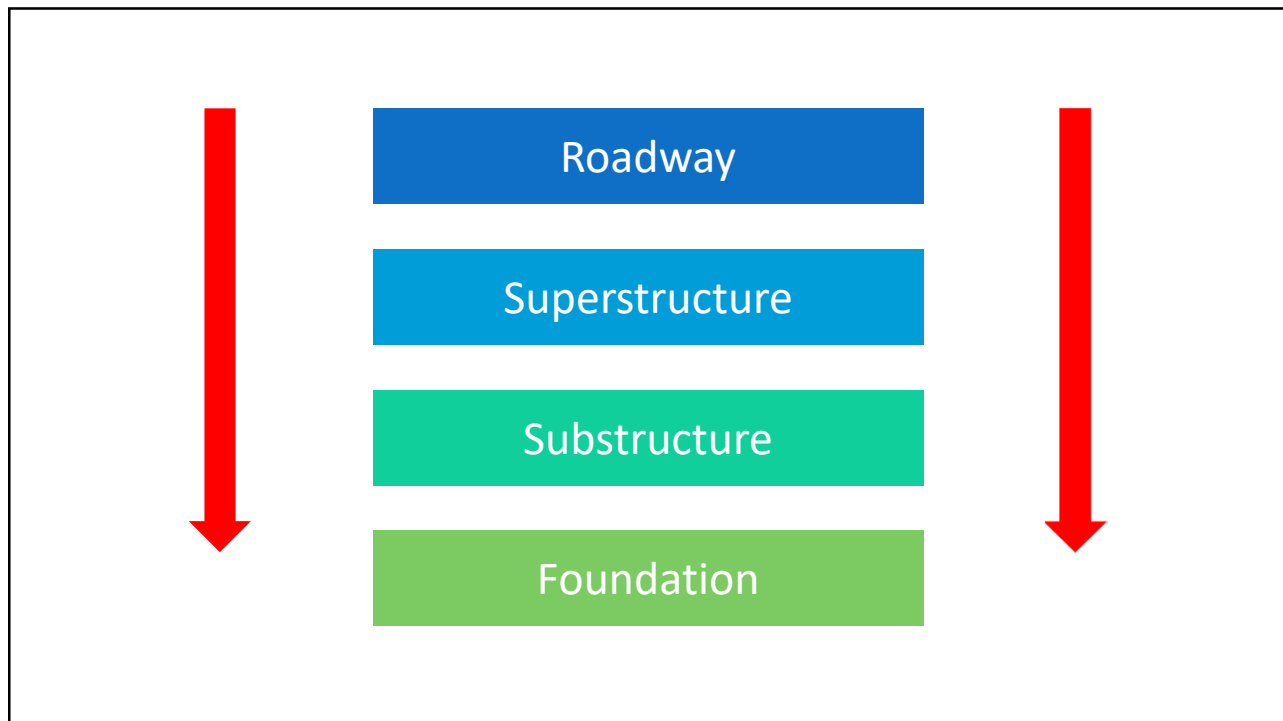
# References

Federal

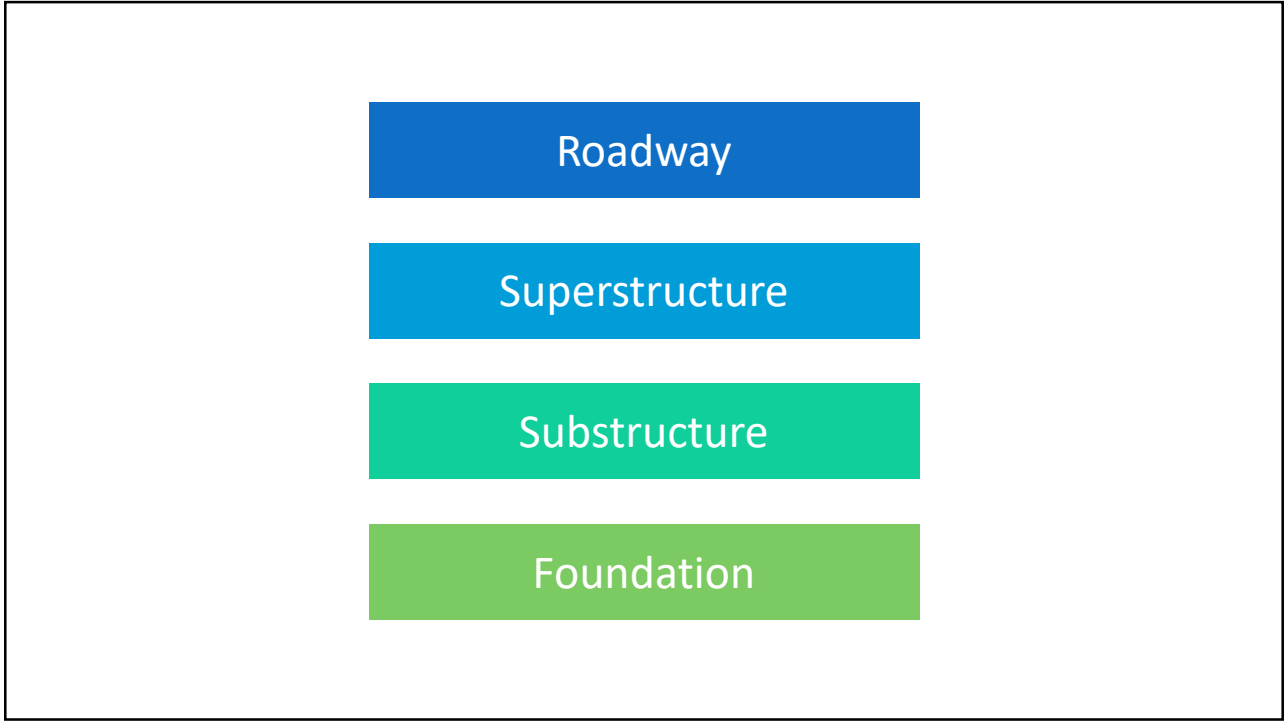
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- AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (Seventh Edition, 2014)
- Bridge Inspector's Reference Manual (2014)
- THE MANUAL FOR BRIDGE EVALUATION SECOND EDITION (2011)
- MDOT Bridge Design Guides
- MDOT Bridge Design Manual
- MDOT Road & Bridge Standard Plans

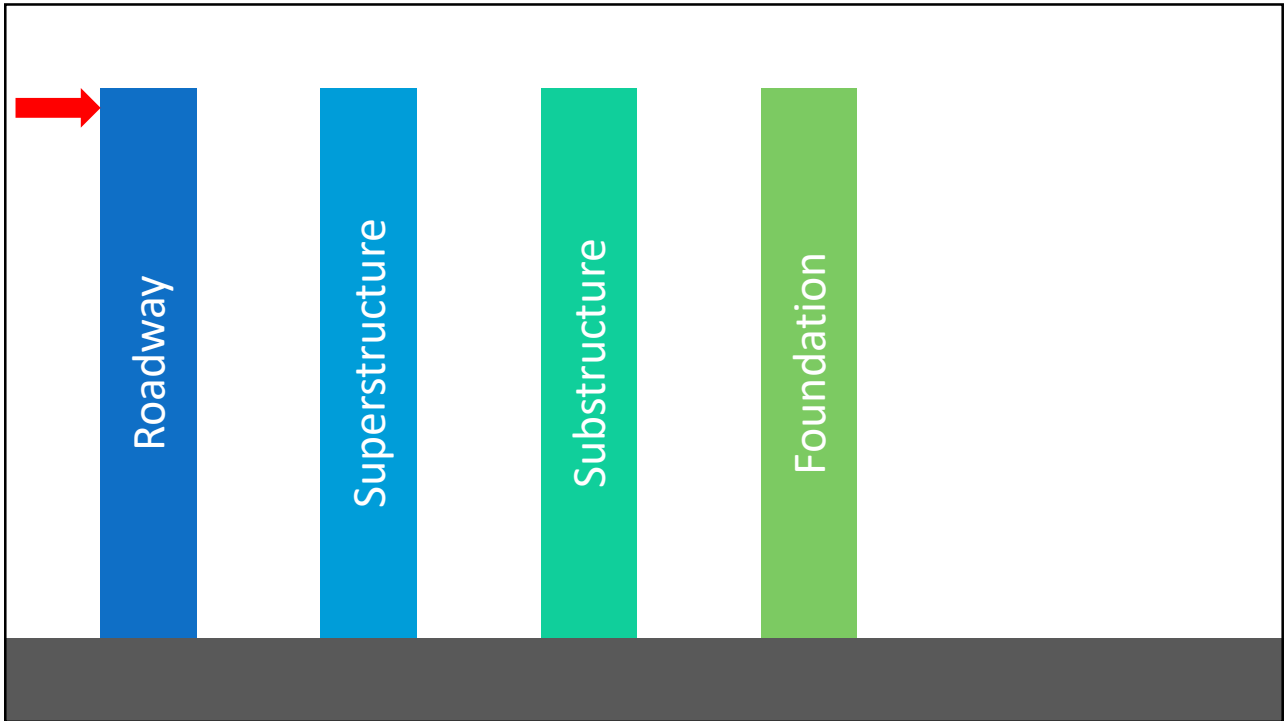
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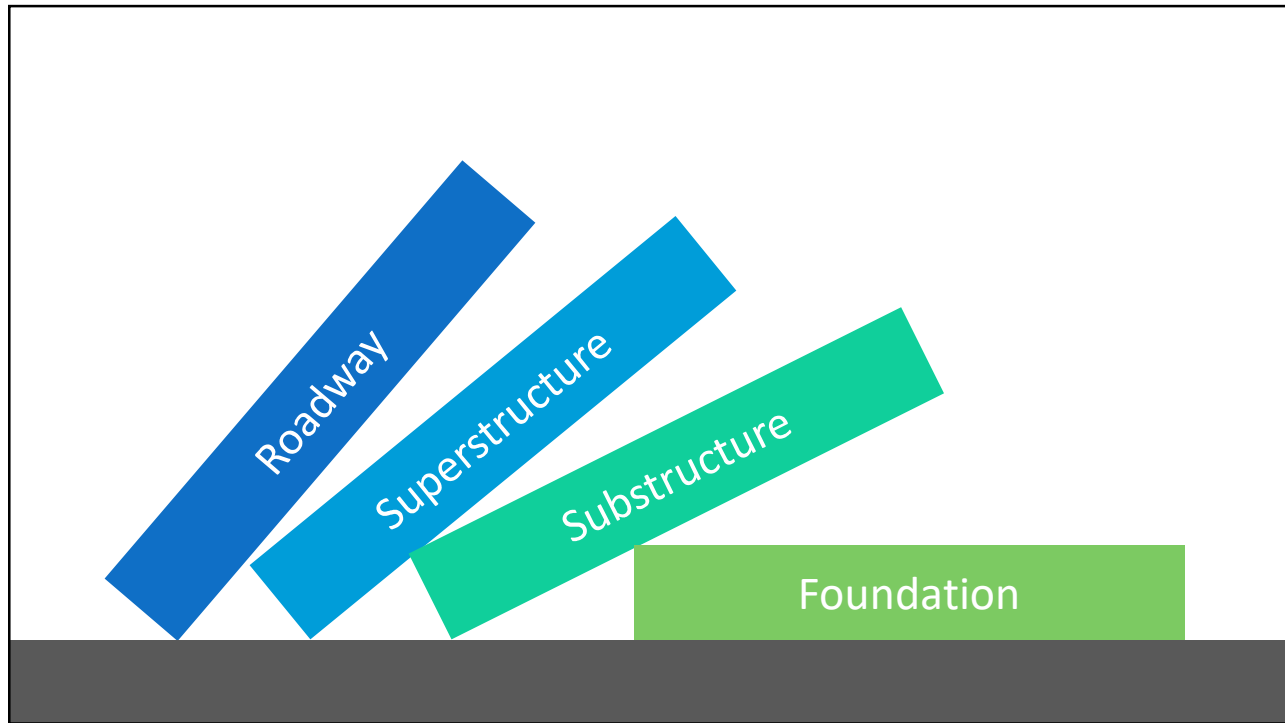
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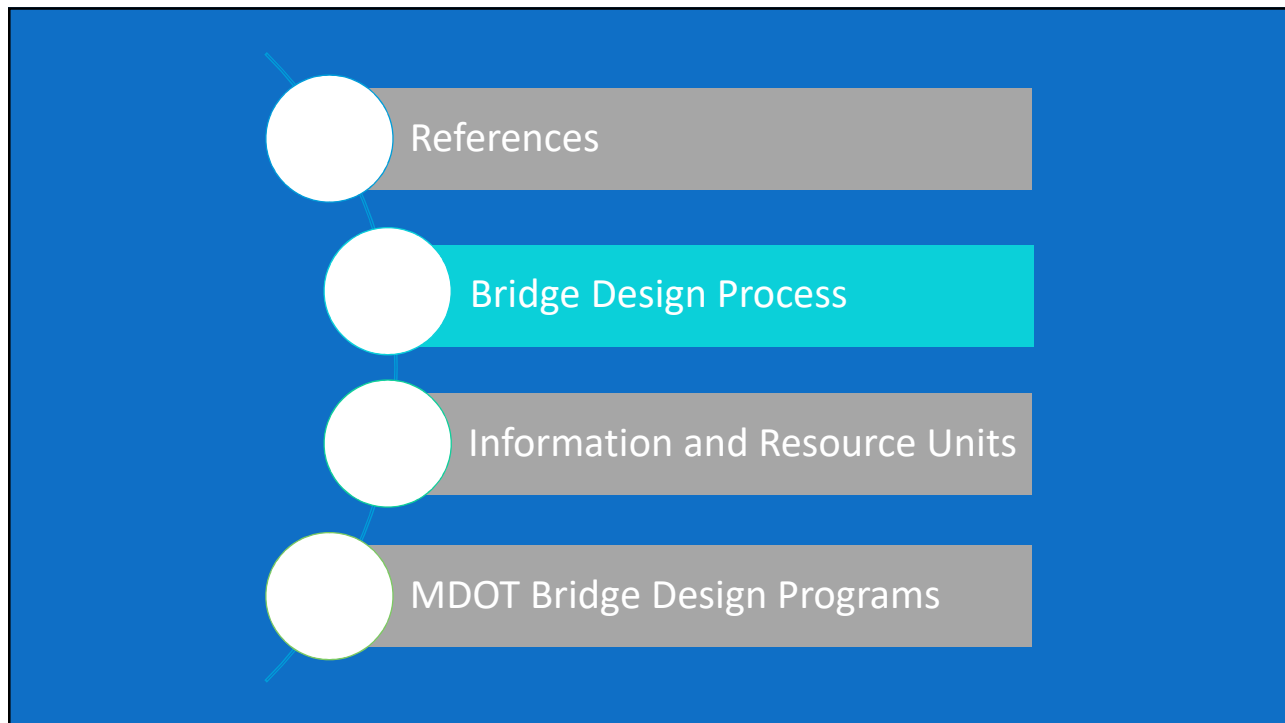
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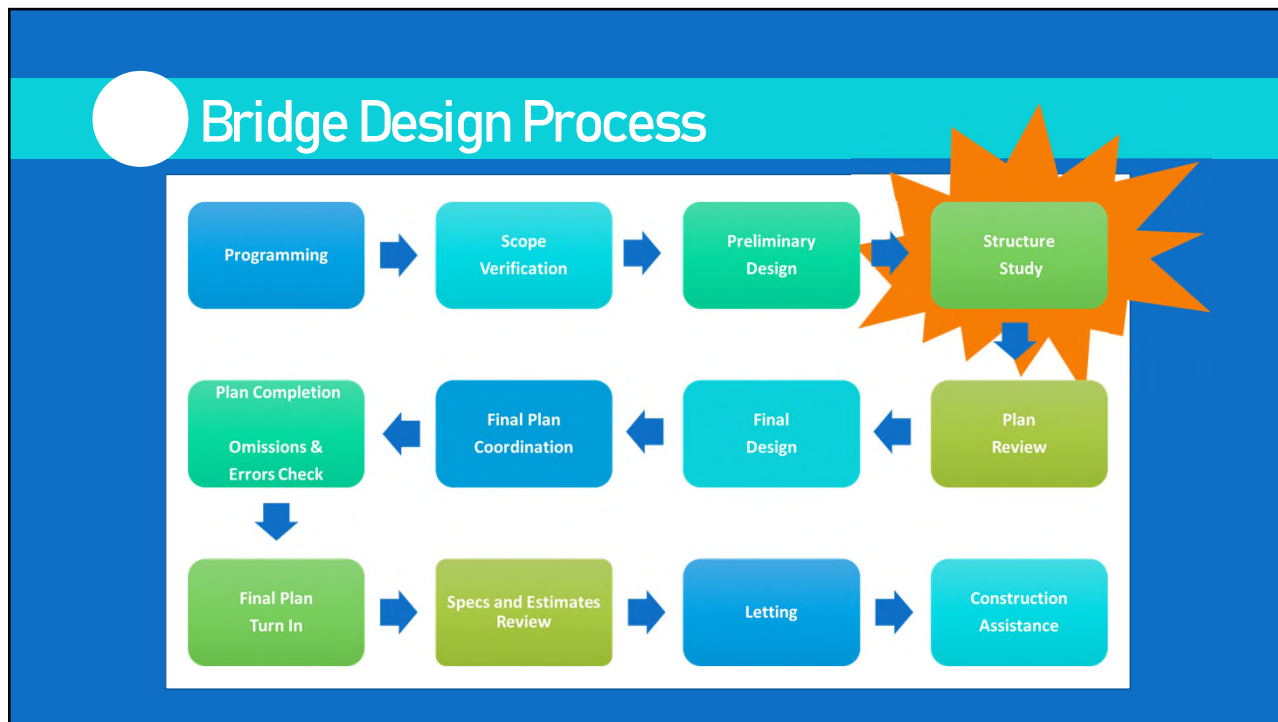
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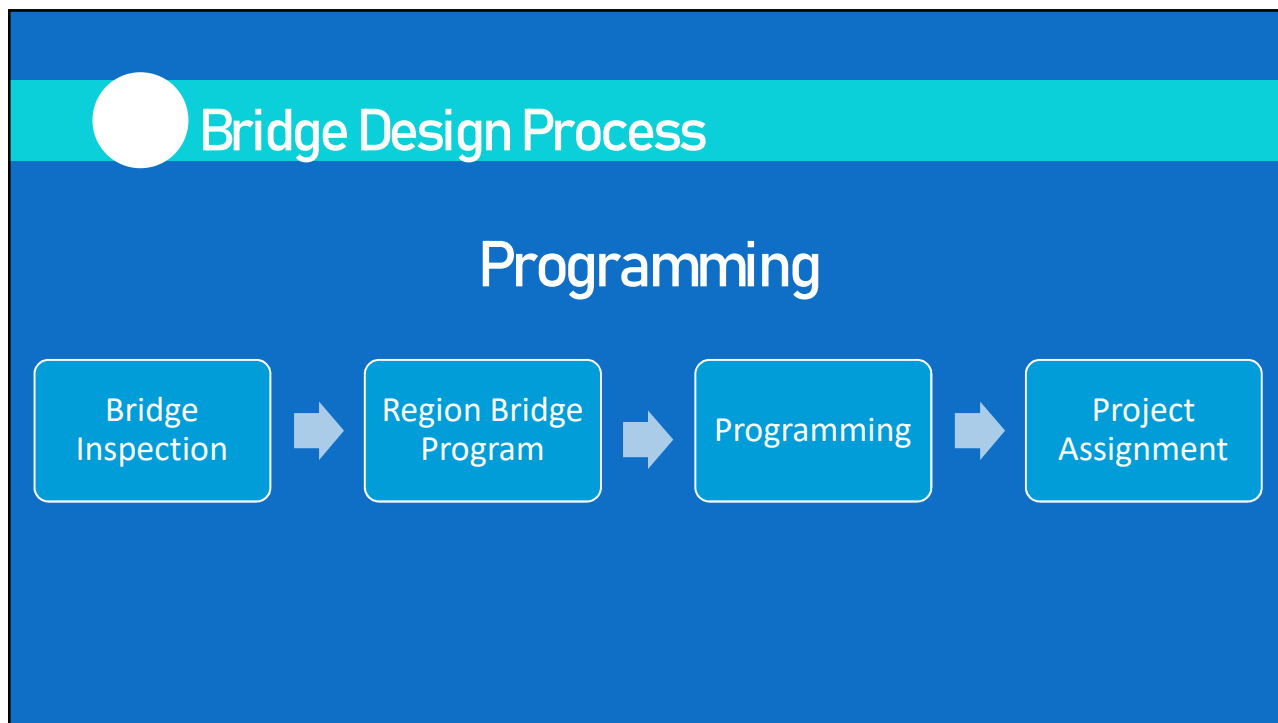
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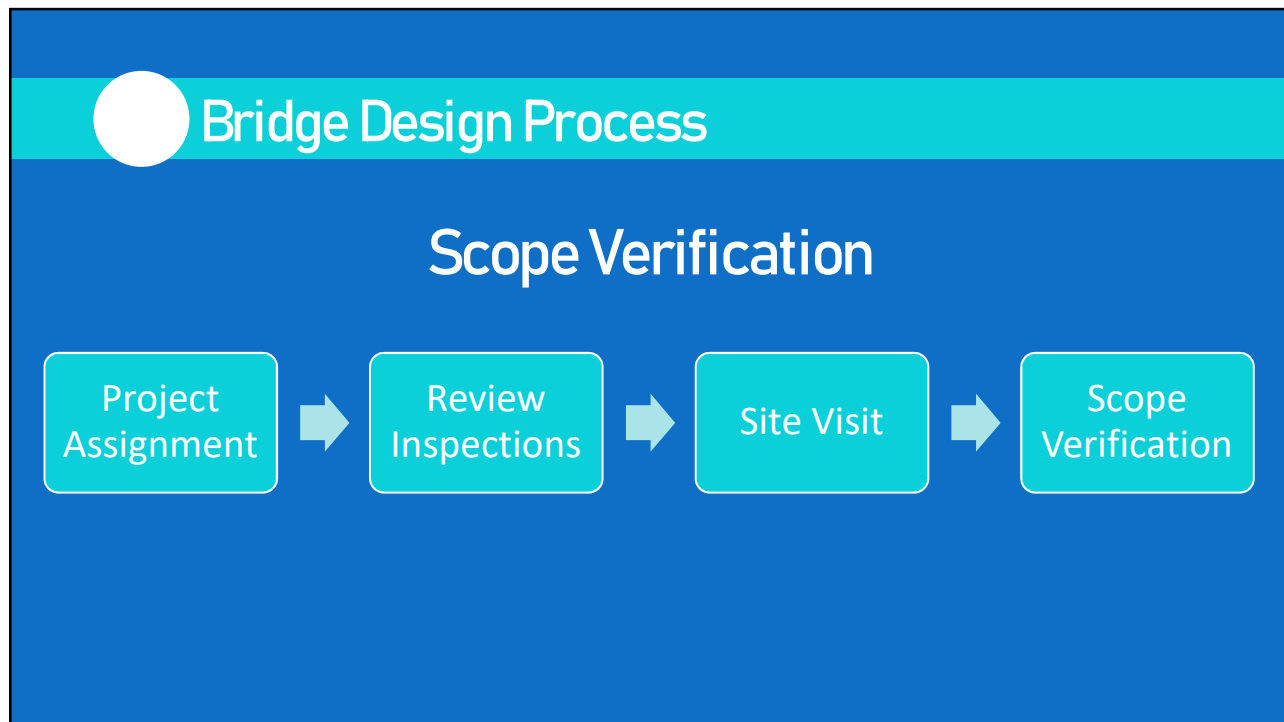
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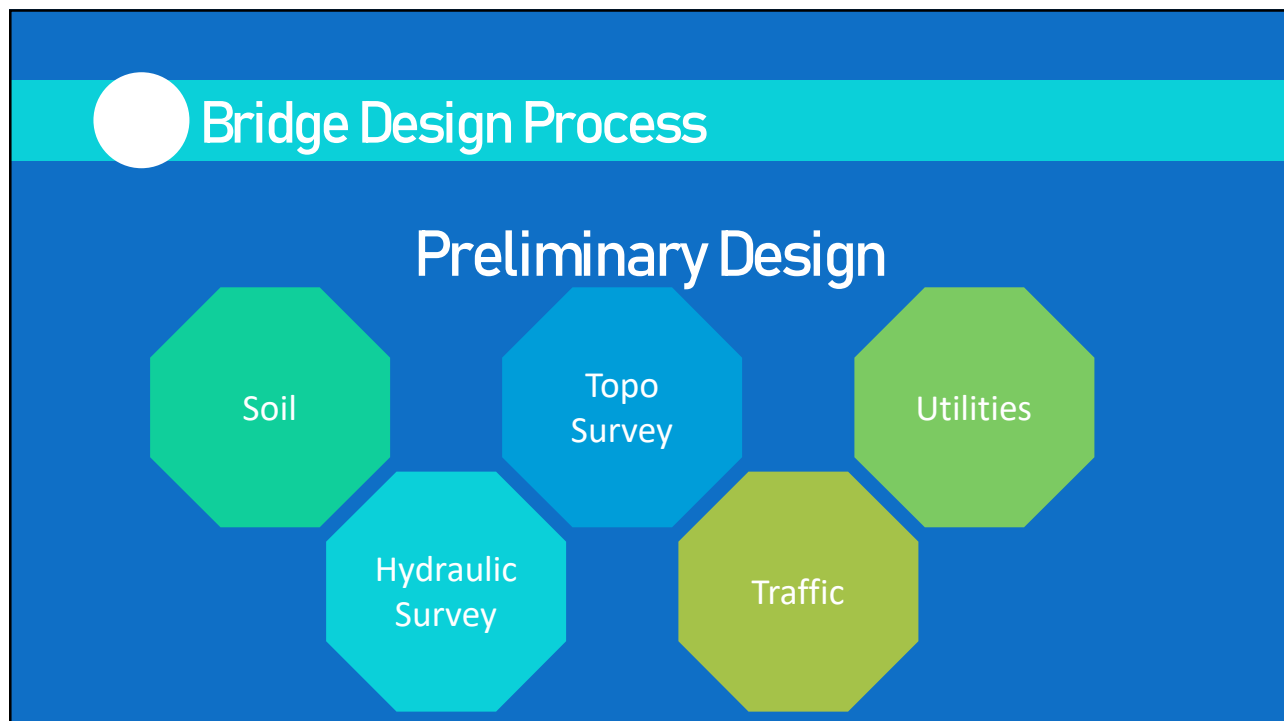
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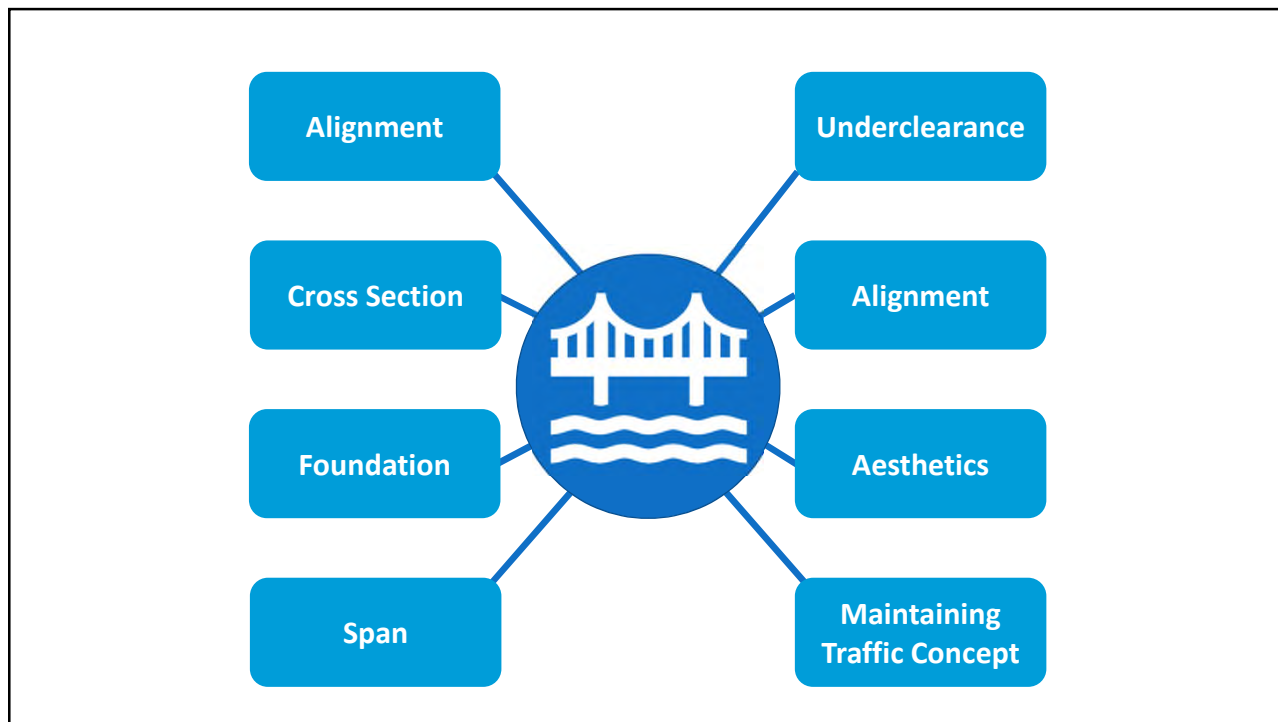
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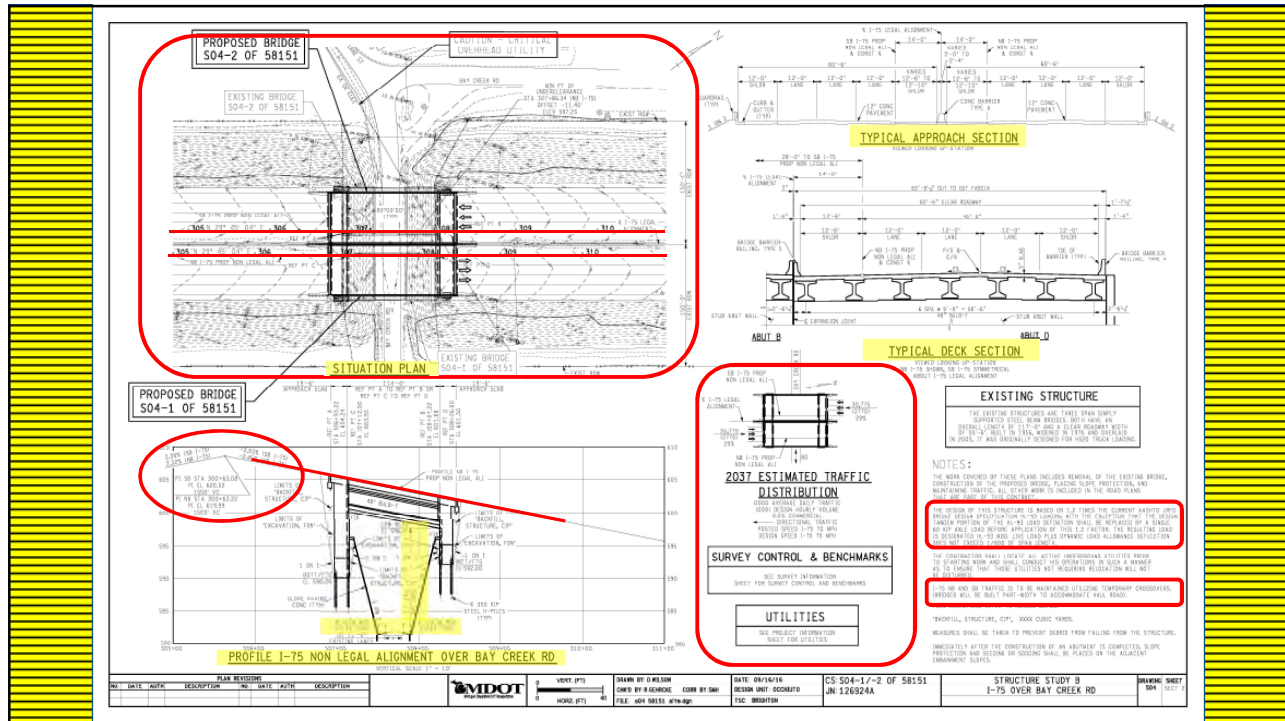
# Bridge Design Process

Structure Study

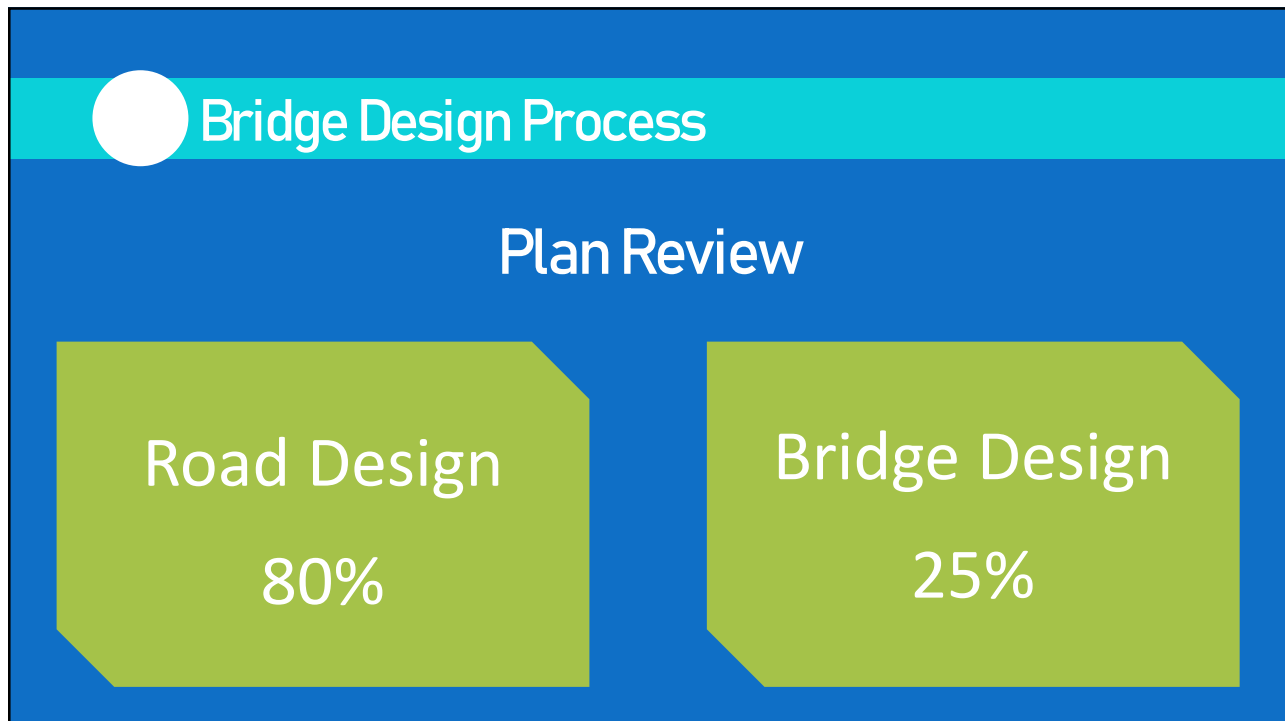
The slide features a dark blue background with a light blue horizontal bar at the top containing the title 'Bridge Design Process'. Below the title, a green rounded rectangle contains the text 'Structure Study'. To the right of this rectangle is a white icon depicting three stylized human figures with a lightbulb above them, representing a team or a conceptual idea.

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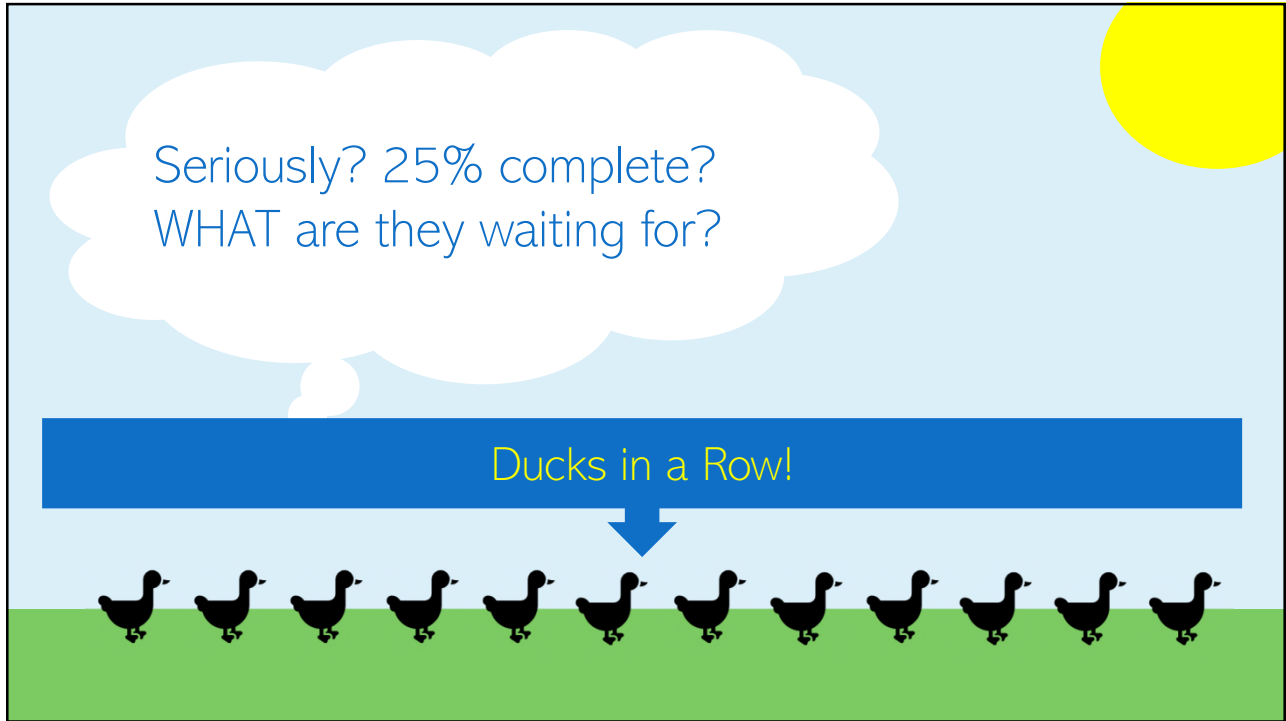




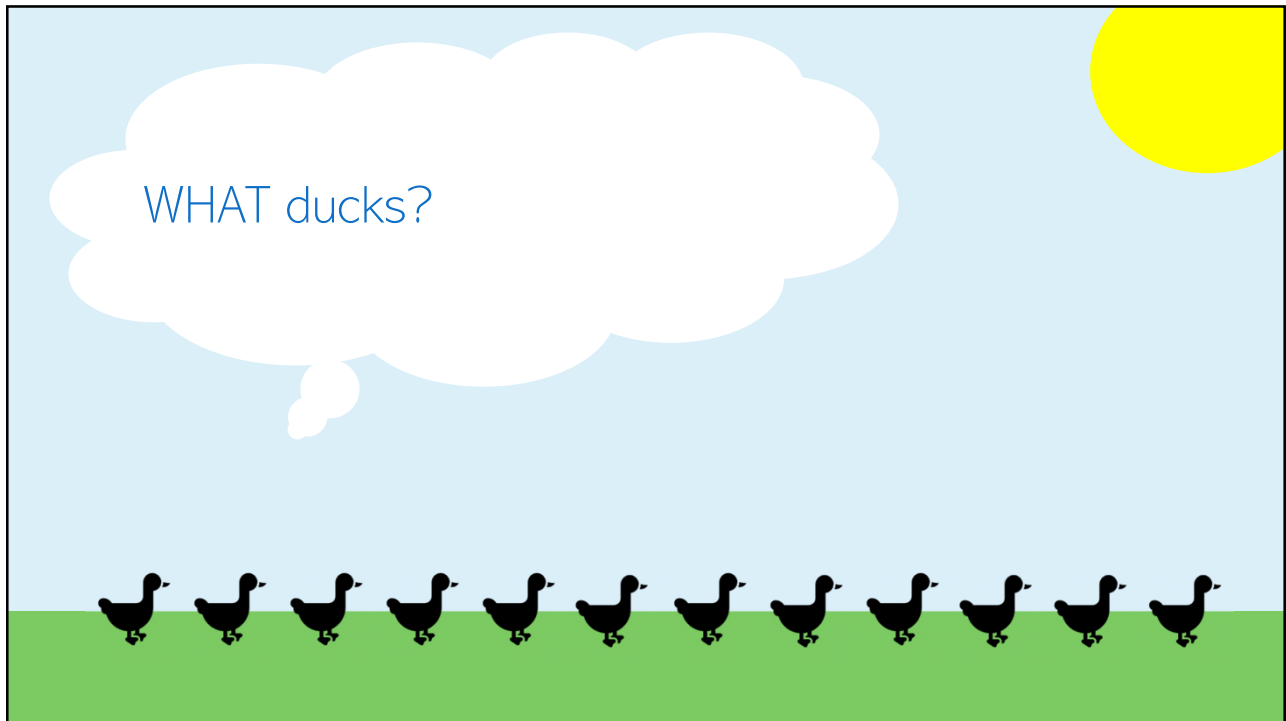
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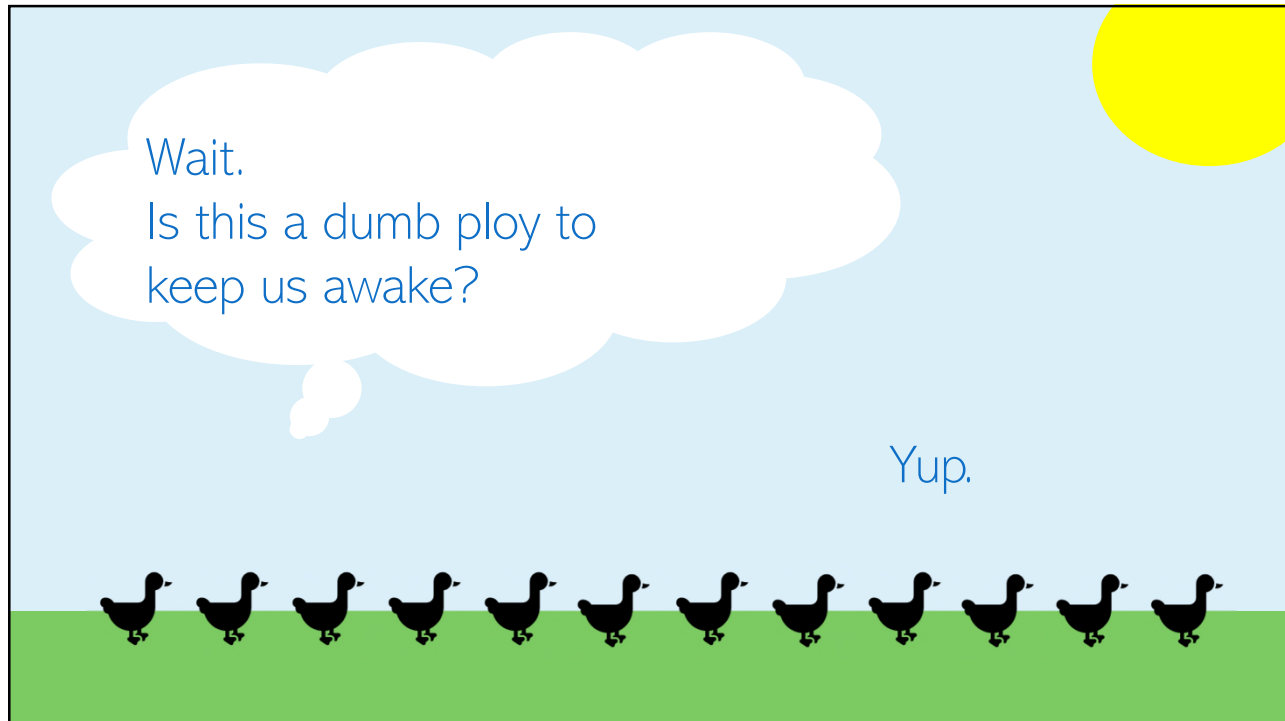
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## Bridge Design Process

### Final Design

- ✓ Permits
- ✓ Details
  - Substructure
  - Foundation
  - Beams
  - Superstructure
- ✓ Quantities
- ✓ Notes
- ✓ Slab and Screeds
- ✓ Mitigation Required
- ✓ Load Rating
- ✓ Design exceptions or variances



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## Bridge Design Process

### Final Plan Coordination



90-95% Complete

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90-95% complete now?  
That's better...

They probably had the  
ducks do it...

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# Bridge Design Process

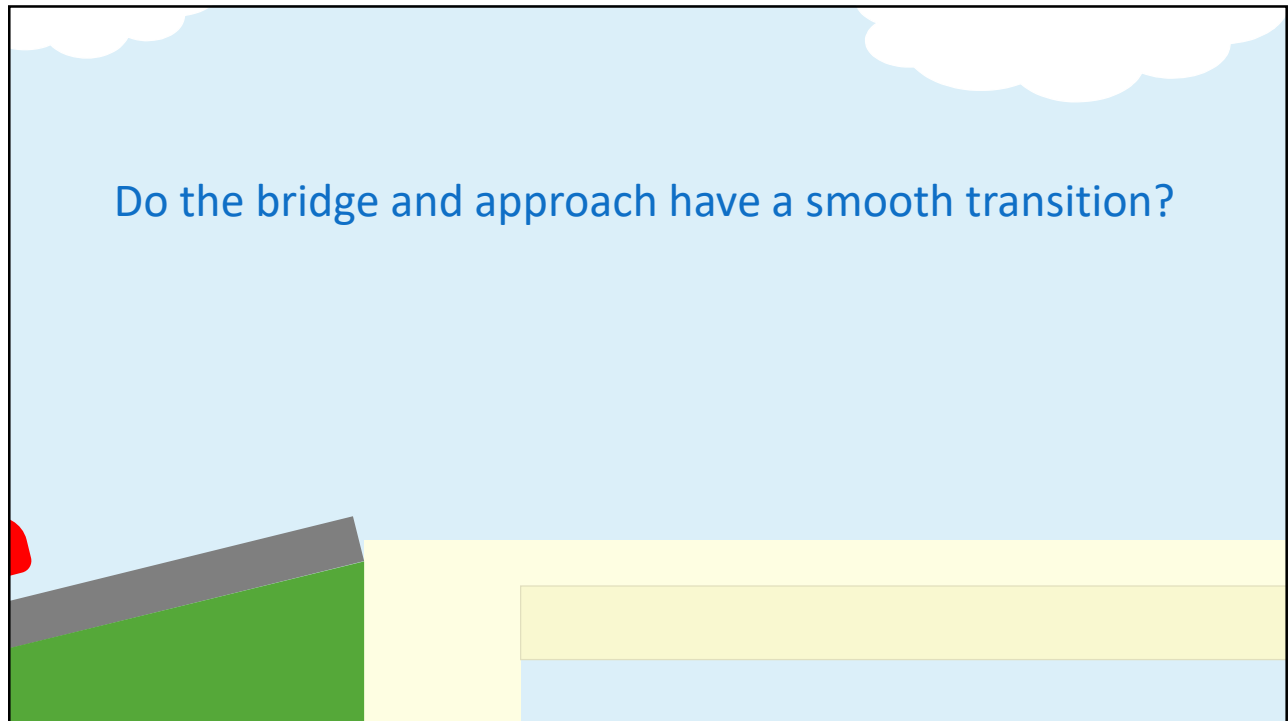
## Final Plan Coordination



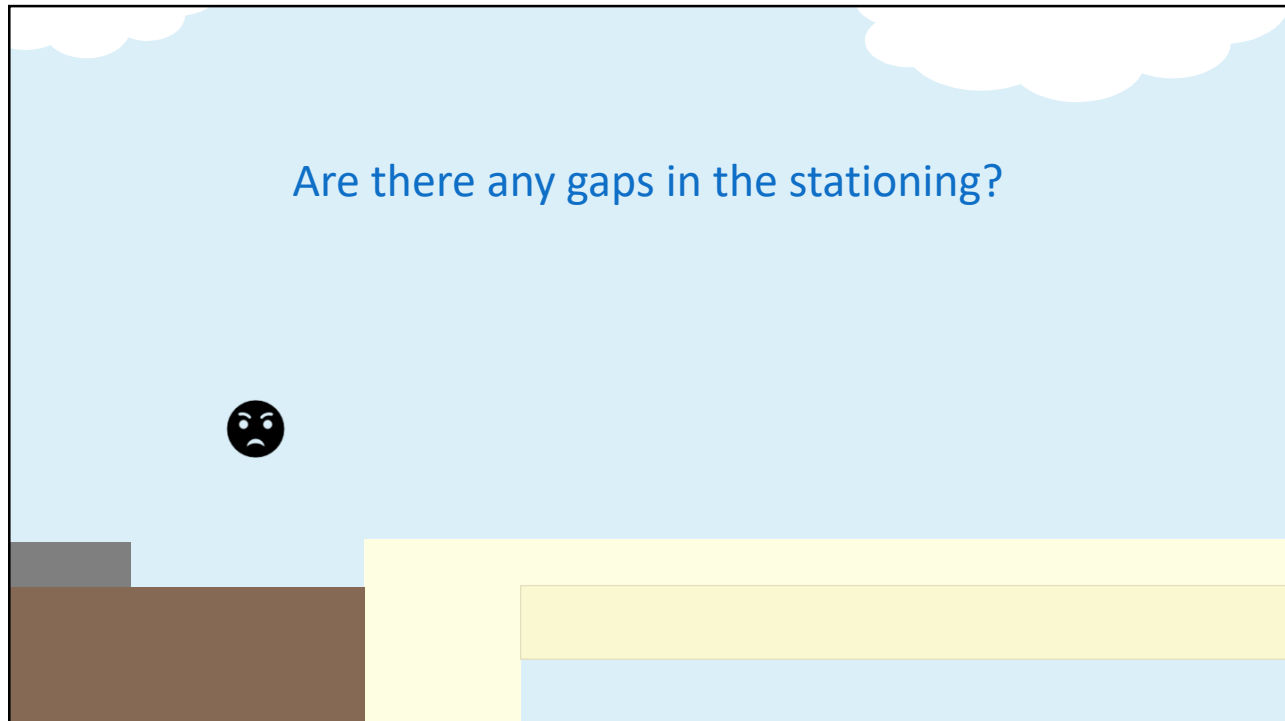
90-95% Complete

- Stop
- Collaborate
- Listen
- Coordinate
- Collaborate
- Finalize

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## Bridge Design Process

### Final Plan Coordination



- ✓ Utility conflicts
- ✓ Environmental mitigation
- ✓ Maintaining traffic

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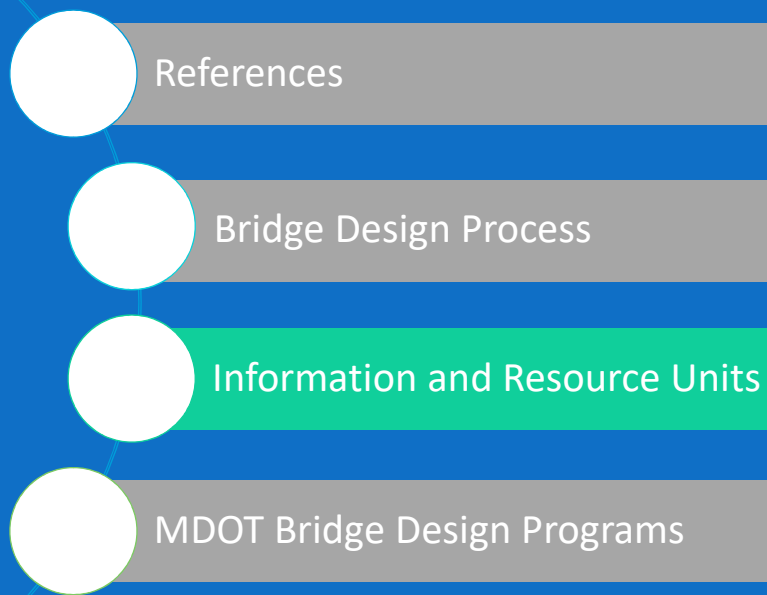
## Bridge Design Process

### Construction Assistance

- ✓ Requests for Information
- ✓ Shop Drawing Review
- ✓ Field Issues
- ✓ Slab and Screed Checks
- ✓ Pay Weights
- ✓ Plan Revisions



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## Information and Resource Units

### Bridge Design Parameters



- Bridge Location
- Existing Bridge Design
- Horizontal Alignment
- Vertical Alignment
- Roadway Type
- Geometric requirements
- Vertical Underclearance
- Span Length
- Speed
- Traffic Volumes
- Maintaining Traffic and Staging
- Hydraulic Span and Rise
- Scour Conditions
- Foundation Recommendations
- Tremie Requirements



The "Ducks"

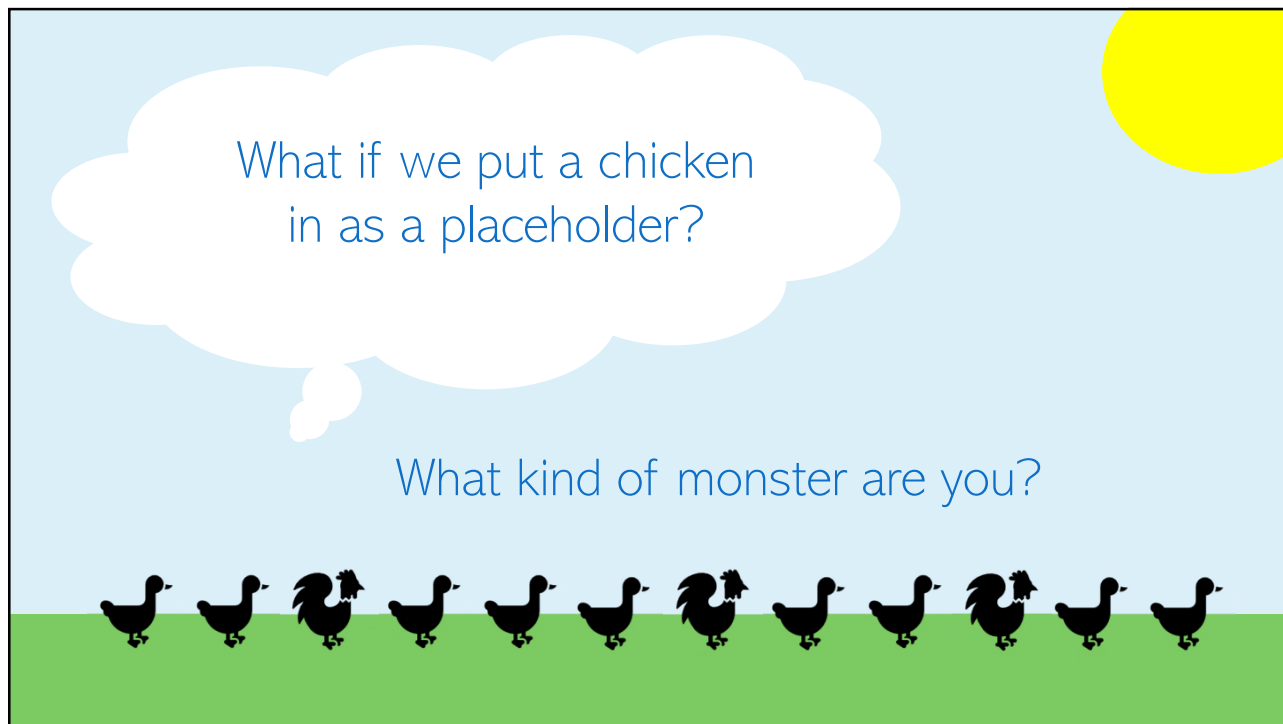
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Great...  
The ducks are back.

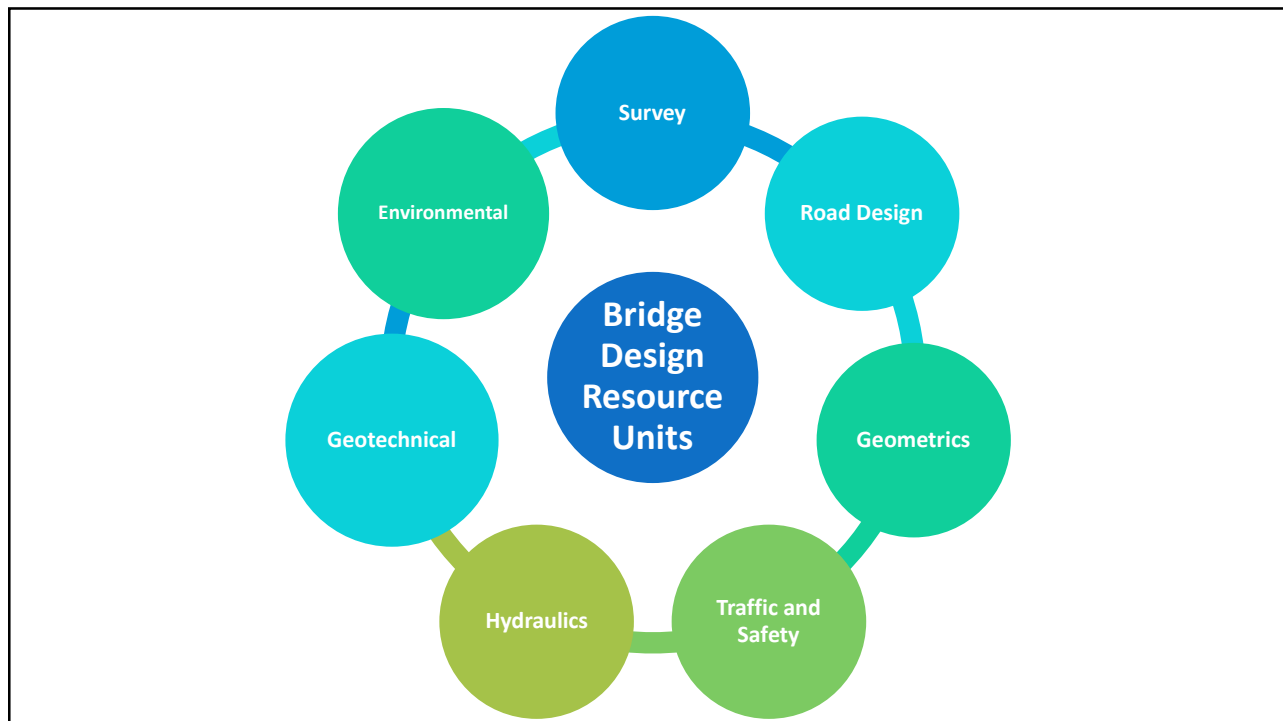
That's the spirit!

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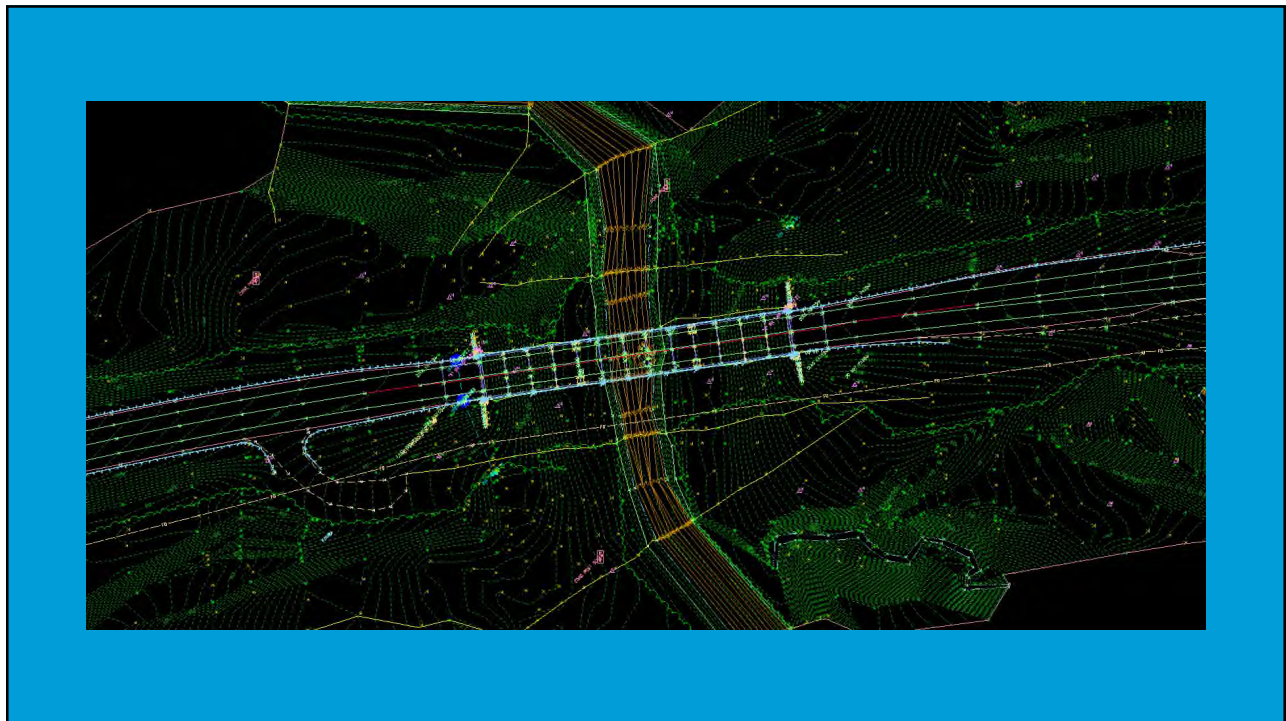
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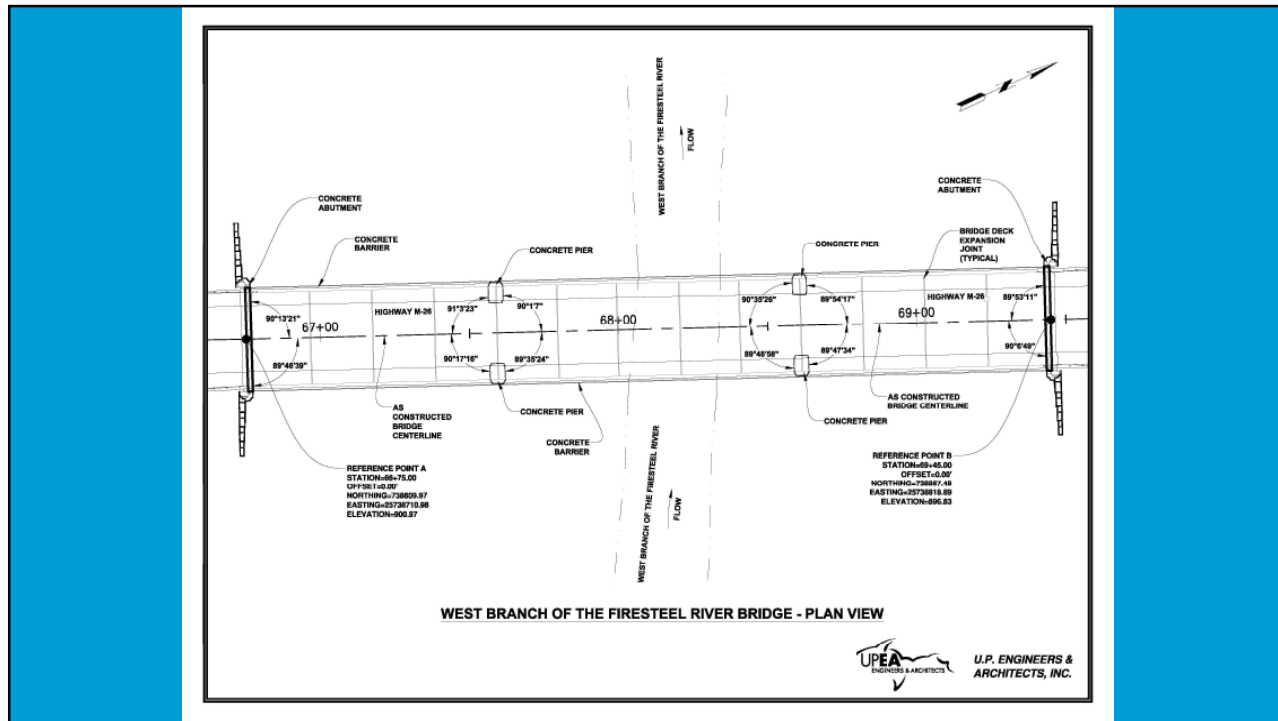
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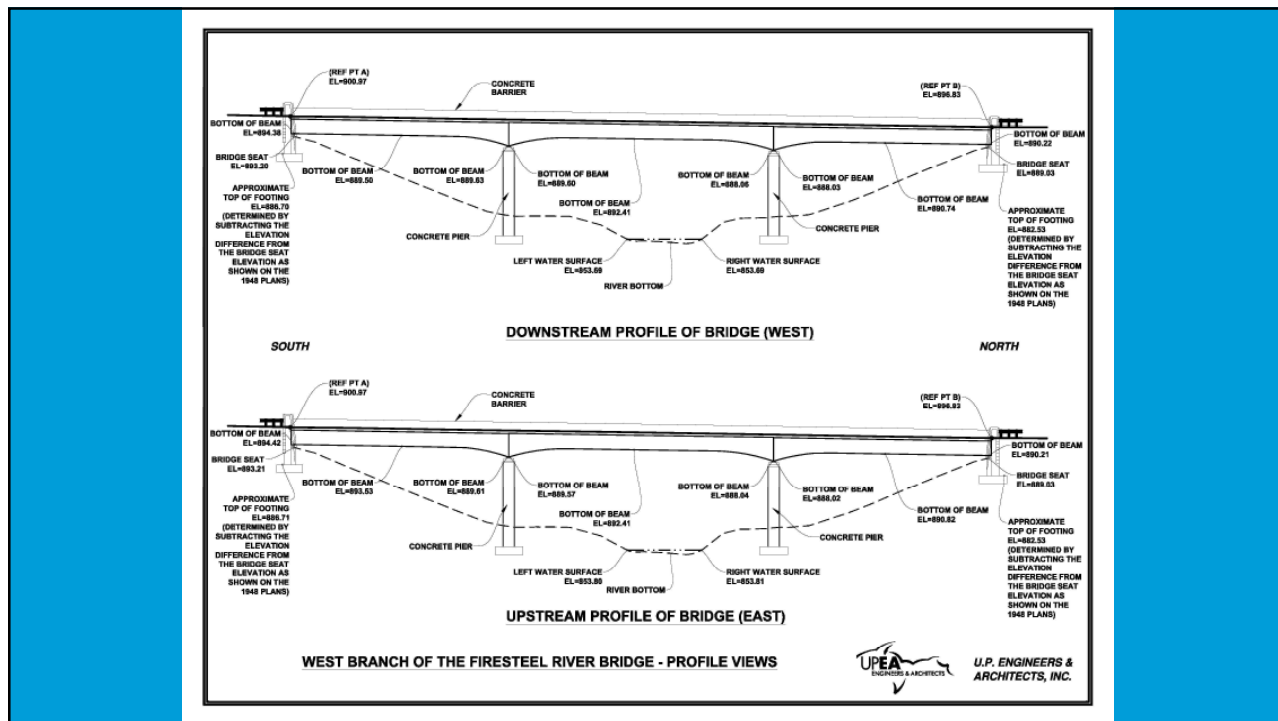
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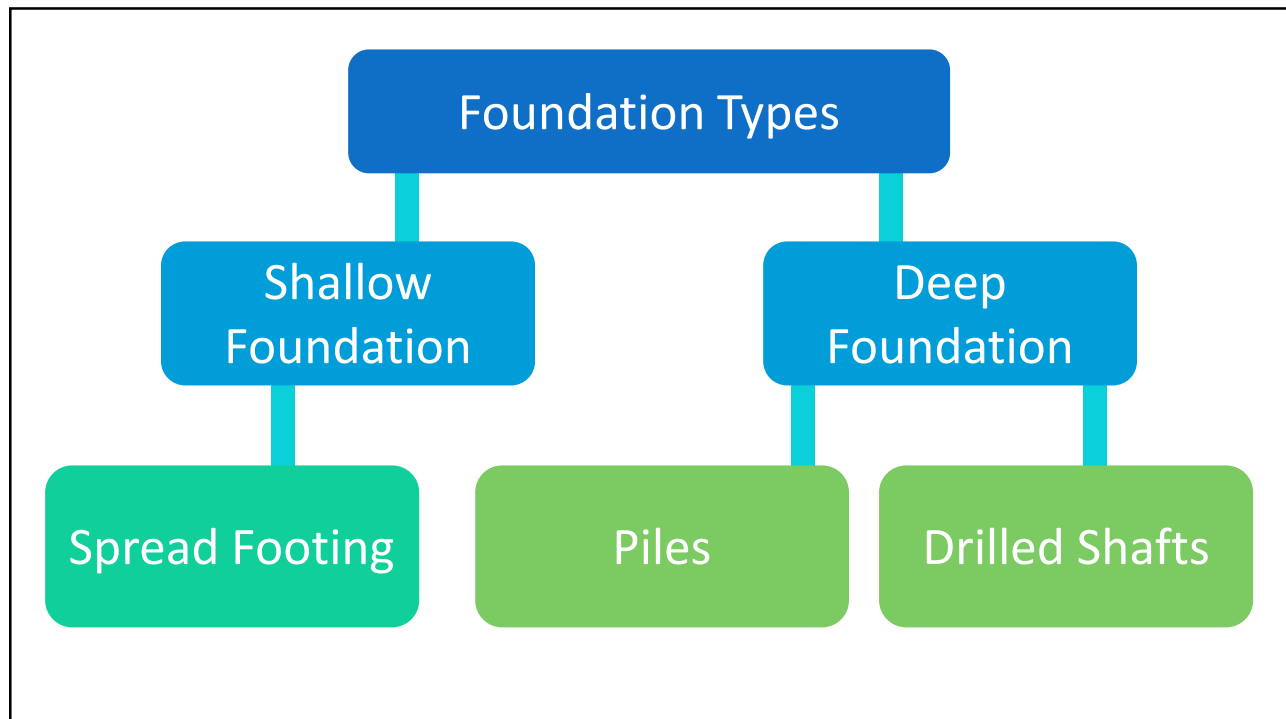
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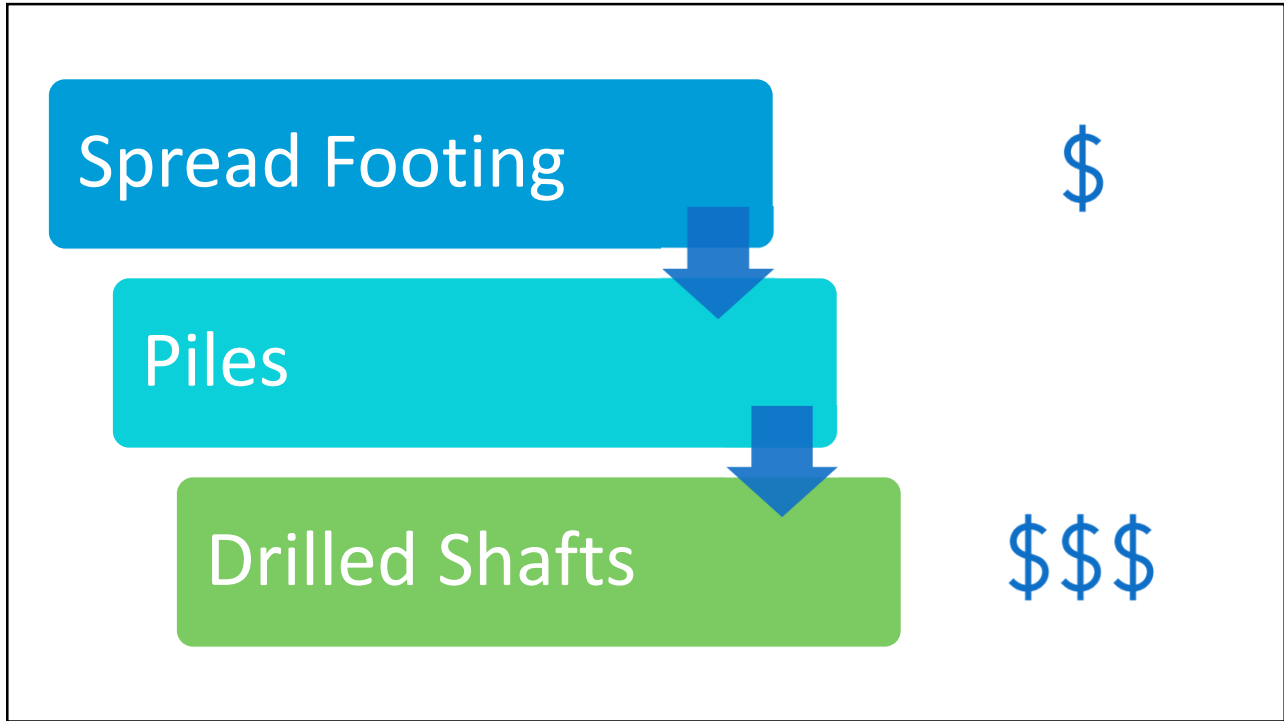
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Temporary Mechanically Stabilized Earth(MSE) Walls

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Permanent Mechanically Stabilized Earth(MSE) Walls

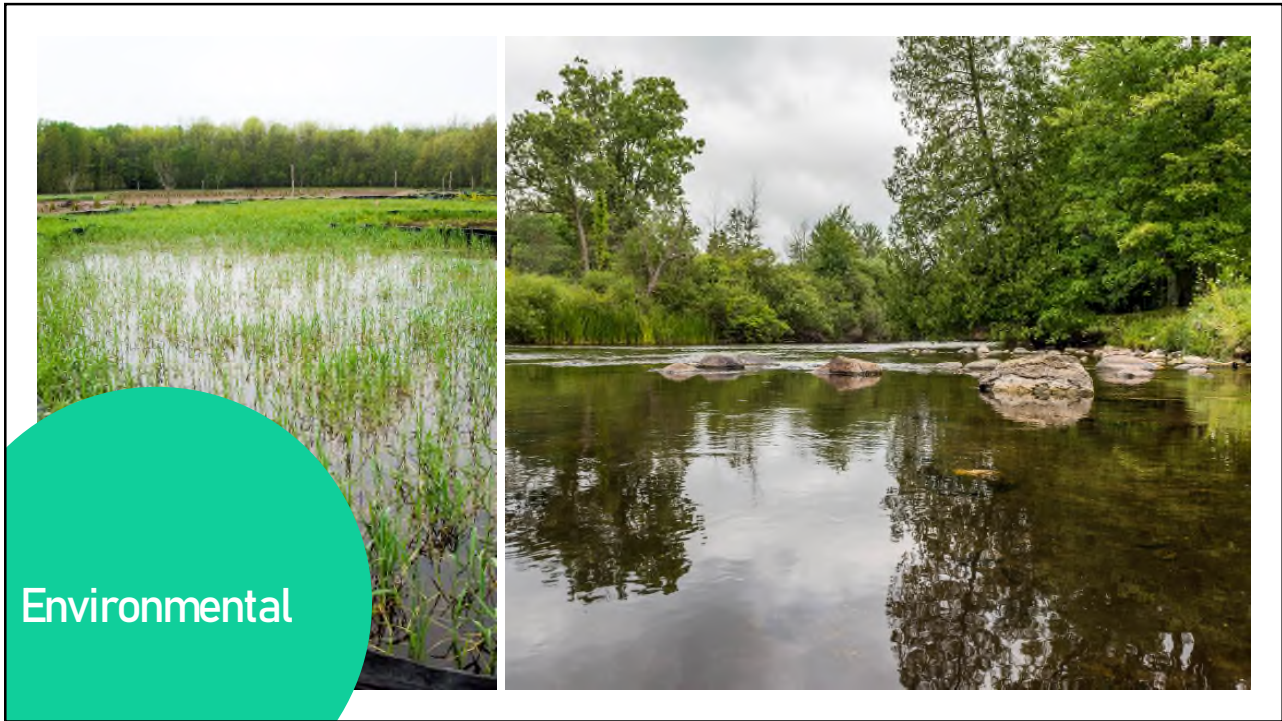
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### Common Protected Species

|  |   |   |
|--|---|---|
| <br><b>Fish</b>   | <br><b>Migratory<br/>Birds</b> | <br><b>Bats</b>          |
| <br><b>Snakes</b> | <br><b>Mussels</b>             | <br><b>Velociraptors</b> |

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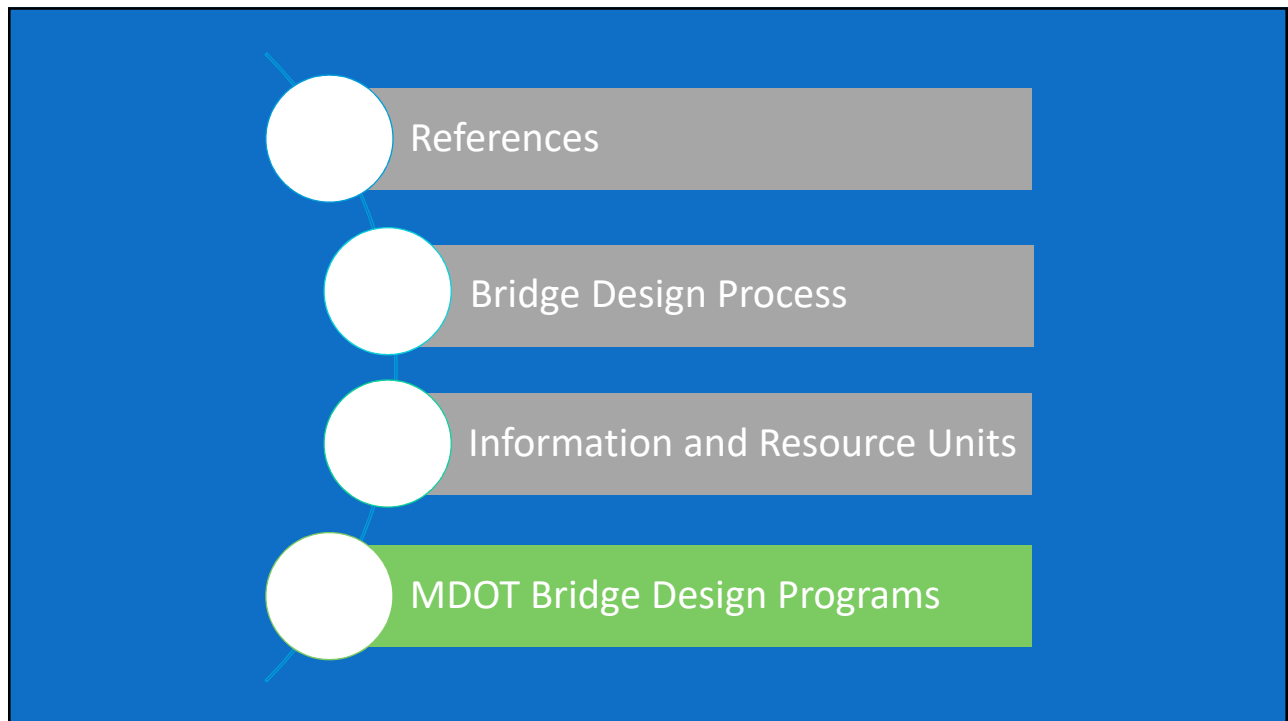
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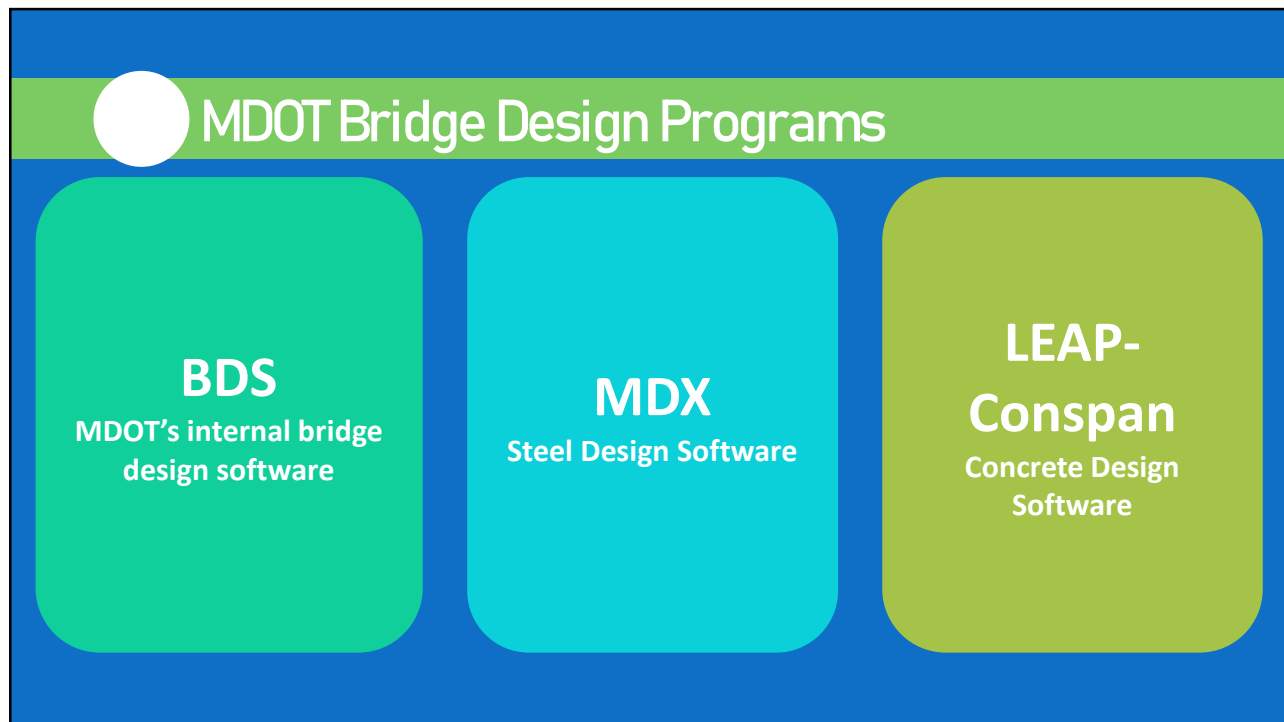


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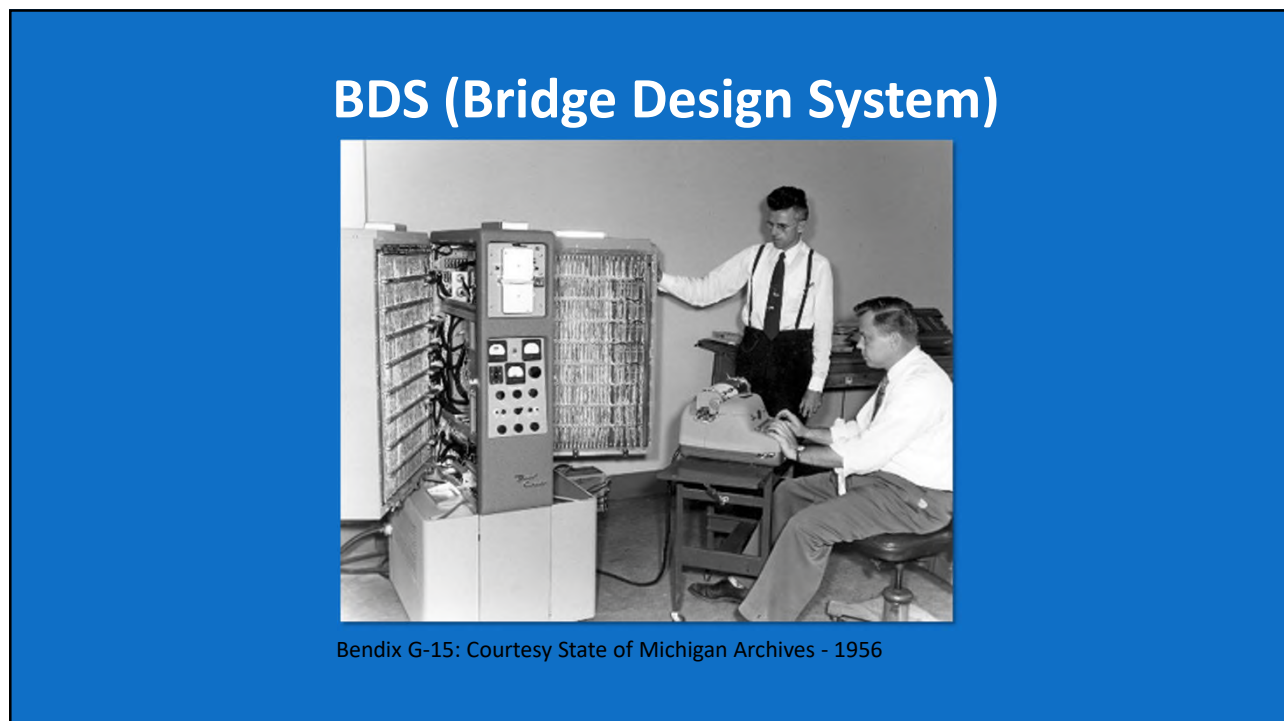


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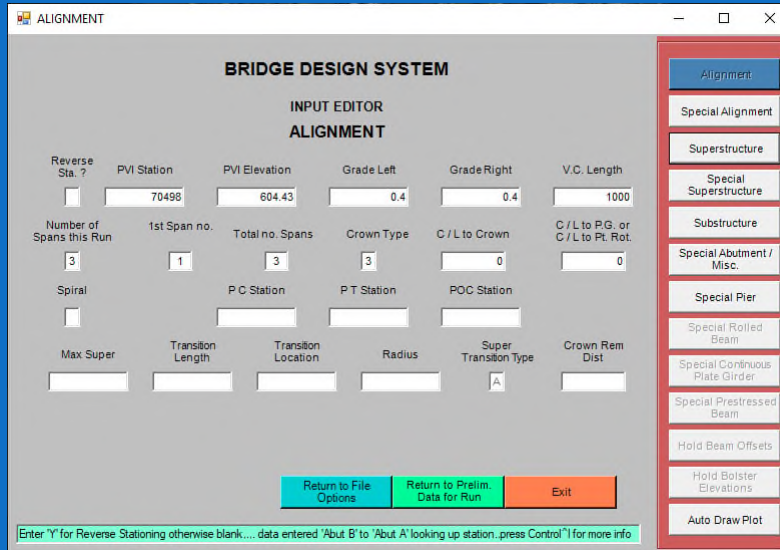


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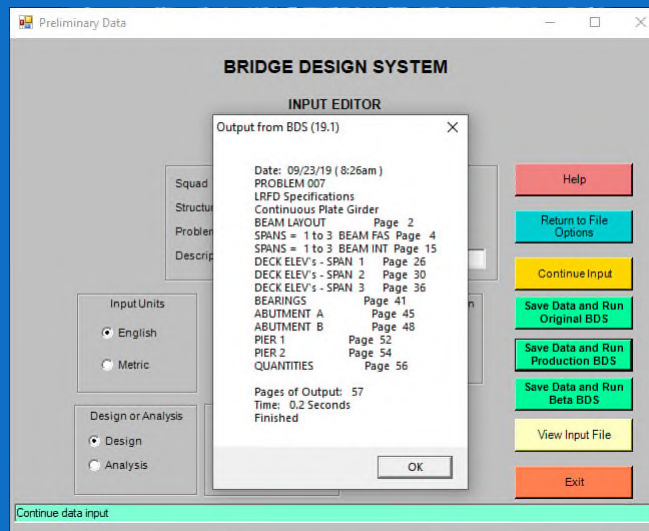
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# BDS (Bridge Design System)



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# BDS (Bridge Design System)



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## Key Points

- Roadway design elements should be completed before bridge design starts detailing final plans.
- A small change for road, equals many changes for bridge.
- Communication and coordination between all areas in a timely manner is crucial.