Risk-Factor Selection for Ancillary Traffic Structures

TRB Asset Management Conference • Michael J. Garlich, S.E., P.E.

COLLINS ENGINEERS INC.

Ancillary Traffic Structures

- Current large inventory
- Required for safe traffic movement
- Assess for:
  - Structure condition
  - Functionality

Impediments

- Lack of accurate inventory data
- Lack of condition information
- No national inspection requirements

COLLINS ENGINEERS INC

Risk Factors

- Existing condition
  - Structural
  - Functional
- Age → design for fatigue
  - Lanes
  - Traffic volume

Current Condition Basis

Risk Criteria Applied to Existing Inventory

Risk assessed based on current observed conditions

versus

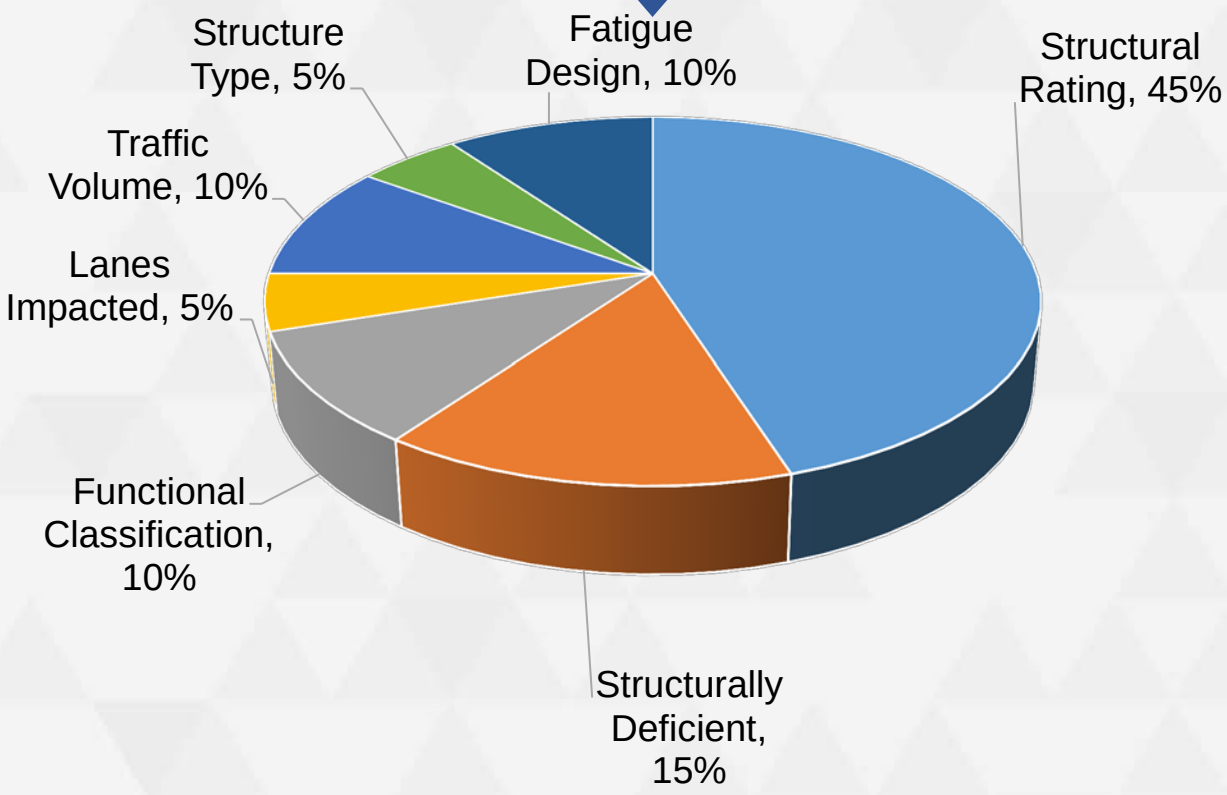
Design of New Structures

Risk Criteria Integrated into Design Criteria

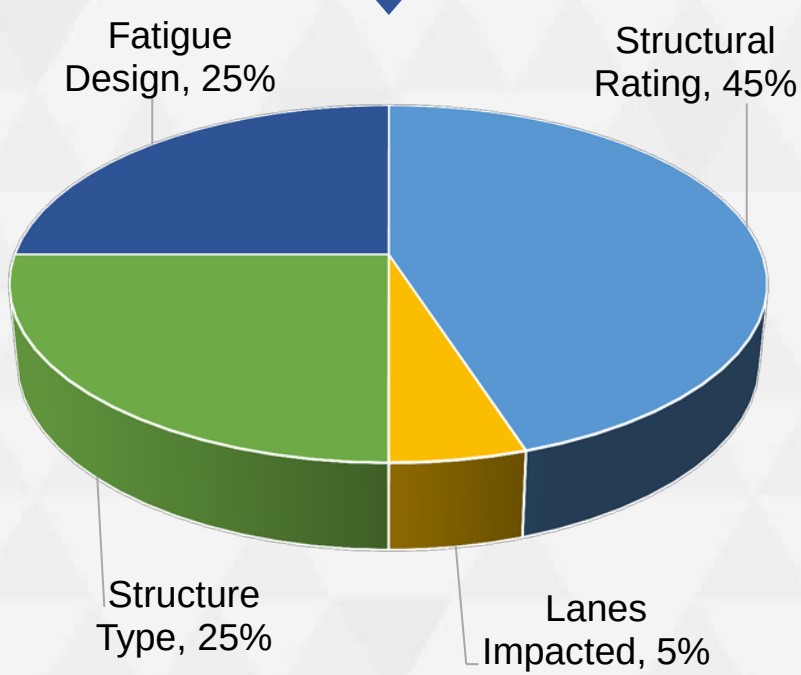
LRFD Specifications, 2015

Current Condition Risk Basis

Delaware DOT



District of Columbia DOT



Effects of Current Condition & Design Criteria

Agreement: Structural Rating: Minimum Rating of Foundation, Pole or Chord			
Critical or More Than One Poor	Poor	Fair	Good
45	35	20	0

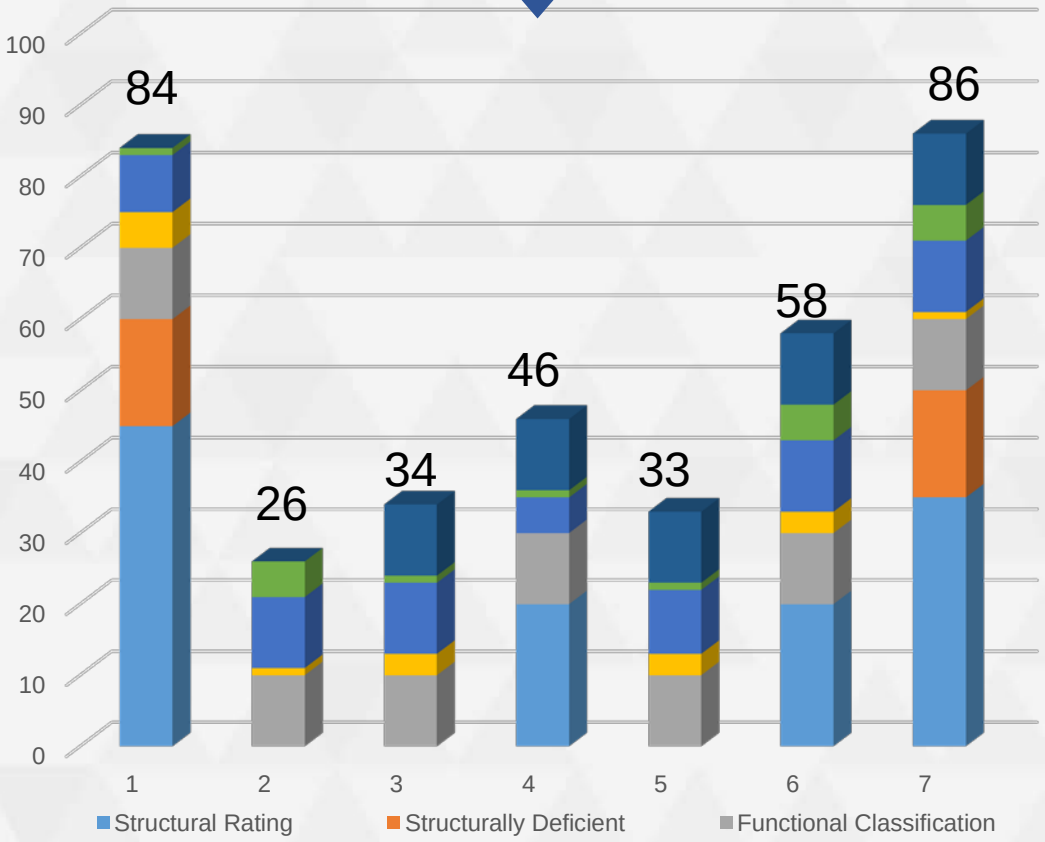
Agreement: AASHTO 2001 Fatigue Provisions Included in Design		
	Designed for Fatigue	Not Designed For Fatigue
Delaware	0	10
DC	0	25

Differing Approach to Structure Type Risk

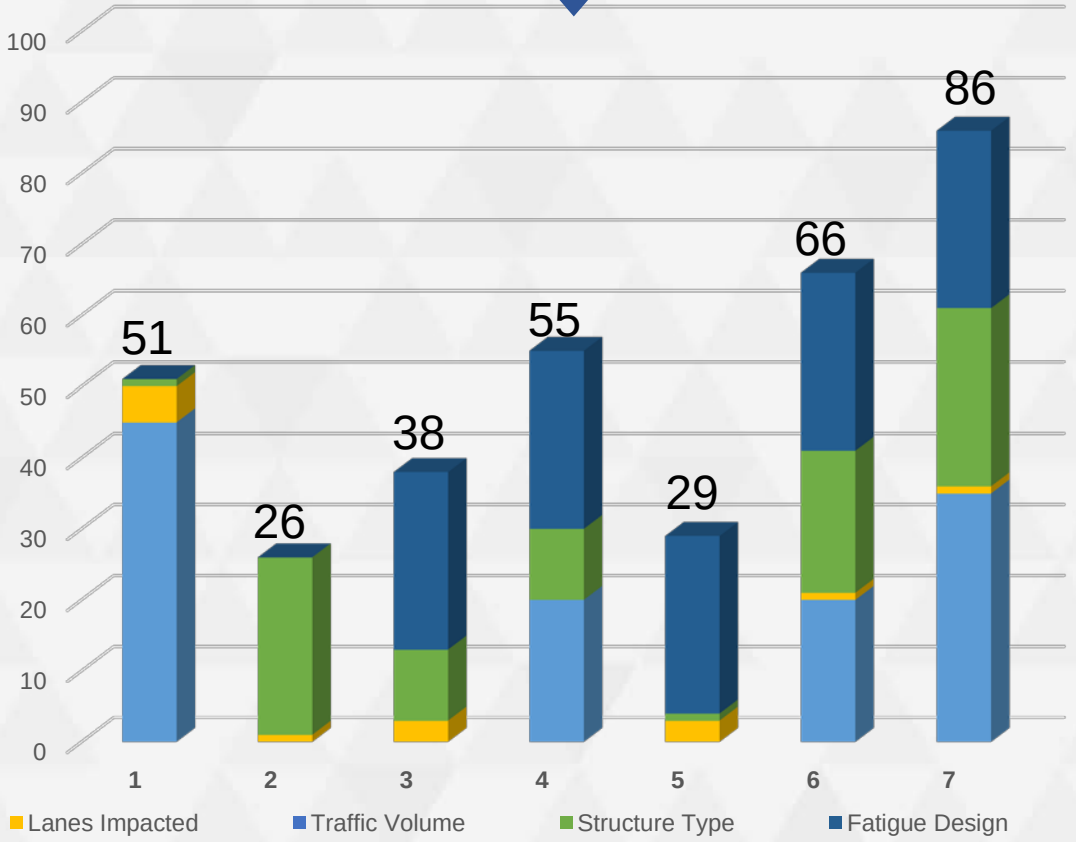
	DC vs. DE Approach: Structure Type – 5 or 25% of Risk					
	Four or more Poles	Bridge Mounted	Clamped Chord-Pole Connection 2 Poles & Trichord	Clamped Chord-Pole Connection 2 Poles & 2 Chord Span	Cantilever 6 or more Bolts	Cantilever 4 Bolts
Delaware	1	1	2	5	3	4
DC	1	10	5	20	20	25

Calculated Risk Varies for the Same Conditions

Delaware DOT Risk Criteria



District of Columbia DOT Risk Criteria



COLLINS ENGINEERS INC