PROTECTING BRIDGE WORKERS: A ROLE FOR BRIDGE DESIGNERS?

OTEC 2016 – October 2016

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TWO PERSPECTIVES

Thom Kramer, P.E., CSP
  > Engineering & Safety

Dan Springer, P.E., PMP
  > Bridge Engineer/PM
What is a safe bridge?

Bridge design + Prevention through Design
  > Role of bridge designer

Bridge-specific fall protection

Primary considerations
WHAT IS A SAFE BRIDGE?

It depends on who you ask
WHAT IS A SAFE BRIDGE?
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PREVENTION THROUGH DESIGN
Basic benefits of PtD

- Safety
- Cost
PTD standard

> ANSI Z590.3-2011 (R2016)

Implement safety during design phases – before issuing drawings for construction

> Considers safety for:

  • Construction
  • Operations
  • Maintenance
ROLE OF BRIDGE DESIGNER

Safety checklist

- Foundation
- Strength
- Longevity
- Maintenance
- Inspection
BRIDGE FALL PROTECTION
WHEN IS IT NEEDED?

- Construction (contractor)
- Maintenance (ODOT)
- Inspection (both)
WHAT ARE THE HAZARDS?

- Fall related
  - Fall through opening
  - Fall off unprotected edge
  - Fall from ladder

- Confine space related
  - Atmosphere
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- Overall
  - Not using protection
  - Misuse of equipment
  - Rescue
LEADING EDGE CONCERNS
EDGE RATED SRLS

1. TRIP HAZARD
2. FORCE
3. FALL CLEARANCE
4. SHARP EDGES

Sharp Edge Rated!
PRIMARY CONSIDERATIONS
KEY FALL PROTECTION CONCEPTS

- System specification
- Anchorages
- Free fall
- Swing fall
- Fall clearance
KEY ANCHORAGE CONSIDERATIONS

- Anchorage strength
- Anchorage location
- Complete system and compatibility
Why is this so important?

- Free Fall
- Swing Fall
- Fall Clearance
FREE FALL & EQUIPMENT

Warning: Maximum User Weight 130-310 lbs.

6ft.  900lbs.
Maximum Free Fall  Maximum Arresting Force
Read Instructions Before Use

Warning: Maximum User Weight 130-310 lbs.

12ft.  1350lbs.
Maximum Free Fall  Maximum Arresting Force
Read Instructions Before Use
FREE FALL
When anchorage connector is not directly overhead
  > Within 15°

Force can cause serious injury
FALL CLEARANCE

1. 6 ft clearance from surface.
2. 6 ft clearance from working height.
3. 3.5 + 1 ft clearance from any object.
4. 15.5 ft clearance from any surface.
5. 17 ft clearance from any surface.
6. 5 ft clearance from any object.
7. 1.5 ft clearance from any surface.
ACTION ITEMS

- Consider how you will protect workers throughout the lifecycle of the structure
- Think of fall protection as a system, not as a piece of equipment
- Remember, tied off ≠ protection
- If in doubt, ask!
FREE FALL PROTECTION TRAINING

Protect Your Workers at Height

- Thursday, November 17
- 11:30 a.m. – 4 p.m.
- No cost
- Classroom training + outdoor demo
- Offers 3 PDHs
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