NSBA Update

Danielle Kleinhans, Ph.D., P.E.

Managing Director

Steel: The Bridge Material of Choice

National Steel Bridge Alliance
A Division of the American Institute of Steel Construction
Designer Resources

AASHTO/NSBA Collaboration Standards
NSBA Staff

- Kleinhans Shergalis
- Carlson
- Schrage
- Garrell
- McElaney
AASHTO/NSBA Collaboration

• 2016 Approved Items
  – G12.1 – “Guidelines to Design for Constructability”.
  – G 2.2 - “Guidelines for Resolution of Steel Bridge Fabrication Errors”.
  – S 2.1 - “Steel Bridge Fabrication Guide Specification”.
AASHTO/NSBA Collaboration

- 2017 Ballot Items
  - S 8.2 - “Guide Specification for Application of Thermal Spray Coating (Metallizing) for Steel Bridges”
AASHTO/NSBA Steel Bridge Collaboration

- Fall 2017 Meeting
  - Oct 31 – Nov 2
  - Savannah, GA

- Spring 2018 Meeting
  - Early May
  - TBD
8th Edition AASHTO LRFD Update

• NSBA Webinar Series – Review of changes in next AASHTO LRFD Specification.
  – First Webinar – New bolted splice design procedure (March 14, 2017).
  – Second Webinar – Overview of other changes in the next specification edition (December 2017).
• Modern Steel Construction article.
Expensive and Slow to Erect Field Splice

- Field Splice
  - 92 bolts in each web
  - 32 bolts each flange
  - Total 312 bolts
  - 936 holes

Bolts: $312 \times $20 = $6,240
Labor: 312 \times 10 \text{ min} = 52 \text{ field hours each splice}
Outline of New Design Method

• Design connection to develop yield strength of the flange
• Design the web connection to develop shear capacity of the web plus moment not resisted by flanges
• Check moment capacity of connection using flange yield strength
• If flanges are not sufficient to develop the moment - the needed additional moment is added to the design of the web connection
Results of New Design Method

• Good for Designers
  – Simpler direct design method

• Good for fabricators and erectors
  – Fewer bolts in the web
  – Slightly more in the flanges
    Generally fewer bolts overall
### NSBA Bolted Splice Designer - Plate Girder

#### Design Input

<table>
<thead>
<tr>
<th>Unfactored Loads - Splice Centerline</th>
<th>Moment (kip-ft)</th>
<th>Shear (kip)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noncomposite Dead Load (DC1)</td>
<td>248.00</td>
<td>-8.00</td>
</tr>
<tr>
<td>Superimposed Composite Dead Load (DC2)</td>
<td>50.00</td>
<td>-12.00</td>
</tr>
<tr>
<td>Future Wearing Surface (DW)</td>
<td>52.00</td>
<td>-11.00</td>
</tr>
<tr>
<td>Positive Live Load plus Impact (LL + I)</td>
<td>2469.00</td>
<td>19.00</td>
</tr>
<tr>
<td>Negative Live Load plus Impact (LL + I)</td>
<td>-1754.00</td>
<td>-112.00</td>
</tr>
<tr>
<td>Deck Casting</td>
<td>1300.00</td>
<td>-62.00</td>
</tr>
</tbody>
</table>

#### Bolt Properties

- **Bolt Type**: A325
- **Bolt Diameter (in)**: 7/8
- **Web Threads**: Included
- **Flange Threads**: Included
- **Surface**: Shot Blast
- **Hole Size**: 1/2
- **Top Flange**: Plain
- **Web Roll**: 1/4
- **Bottom Flange**: Plain

### Reference Figures

![Reference Figures](image)

- **Concrete**: Composite
- **Thickness**: 12 in
- **Haunch**: 6 in

- Output from SIMON as direct input
UPDATED: NSBA Splice

NSBA Splice takes the time consuming task of designing and checking a bolted splice connection and rewrites the process with a simple input page and output form. NSBA Splice can be incorporated as a design tool on plate girder bridges allowing the designer to quickly analyze various bolted splice connections to determine the most efficient bolt quantity and configuration. Based upon the updated AASHTO LRFD 8th Edition, Splice allows the user to explore the effects of bolt spacing, bolt size, strength and connection dimensions on the overall splice design.

Splice is presented in an easy to understand Microsoft Excel spreadsheet format allowing users with Microsoft Excel 2010 or later to access and utilize. Included in the download is the design spreadsheet as well as two completed examples. The examples are the inputs and solutions for Examples 1 and 2 presented in Bolted Field Splices for Steel Bridge Flexural Members.

The current version of NSBA Splice (v1.01) was released on March 31, 2017 and is an update to v1.00. released on March 13, 2017. Click here to view a complete listing of fixes.
Educational Activities

Conferences and Webinars
Re-run of Bridge Night School

• Registration open late August

• Two options
  – Combination of recorded (September) and live sessions (October)
  – Just the live sessions
2018 World Steel Bridge Symposium

• 2018 World Steel Bridge Symposium (WSBS)
  – April 11 – 14.
  – Baltimore Convention Center - Baltimore, Md.

• Call for Abstracts is closed

• Abstracts were due by June 2

• Look for registration in January 2018!
## 2018 Prize Bridge Competition

- **Prize Bridge Competition Categories**

<table>
<thead>
<tr>
<th>Major Span</th>
<th>Short Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Span</td>
<td>Movable Span</td>
</tr>
<tr>
<td>Medium Span</td>
<td>Reconstructed</td>
</tr>
<tr>
<td></td>
<td>Special Purpose</td>
</tr>
</tbody>
</table>

- Opened to traffic between May 2015 and September 2017.
- Accepting entries July through December 2017.
Thank You!
Thank you!

Kleinhans Shergalis

McElaney

Carlson

Schrage

Garrell