Toward a Nationwide Steel Bridge Fabrication Specification

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AASHTO/NSBA Steel Bridge Collaboration and “the Fab Spec”
Collaboration Objectives

• Standardize requirements and practices - try to do things one way instead of 50 ways

• Share resources and expertise - exchange information about best practices and technology and help agencies who have lost expertise and resources
Collaboration Background

• Discussions began March 1997
• Idea endorsed by SCEF (Region 3); Texas Steel Quality Council; various professionals
• Effort adopted by NSBA and AASHTO
  SCOBS, June 1997
  – T-14 chair: Ed Wasserman, Tennessee DOT
  – SCOBS chair: Jim Siebels, Colorado DOT
• First meeting held in Cincinnati, September 8-9, 1997
Collaboration Participants

- DOTs - designers, fabrication personnel, erection personnel
- Industry - fabricators, detailers, erectors, material producers
- FHWA - national, regional and division bridge and technology transfer engineers
- Academia
- Consultants - designer, inspection services
Collaboration Task Groups

- TG1: Detailing
- TG2: Fabrication & Repair
- TG4: QC/QA
- TG8: Coatings
- TG9: Bearings
- TG10: Erection
- TG11: Steel Bridge Handbook

- TG13: Analysis
- TG14: Field Repairs
- TG15: Data Modeling for Interoperability
- TG16: Orthotropic Deck Panels
Typical Process

• TG develops document
  – In-person meetings
  – Online ballot or email review of draft
• Online ballot to whole Collaboration
• Comment resolution with reballot as needed
• Present to AASHTO T-14 for review
• Comment resolution with reballot as needed
• Second T-14 review & approval for SCOBS ballot
Collaboration Standards

• “S” documents: Guide Specifications
  – More recently just “Specifications”
  – Written in spec-type language
  – Intended to be adopted by reference in their entirety (with or without exceptions—like D1.5)
  – Or “borrow” portions, use as source of good ideas

• “G” documents: Guides
  – Recommendations
  – Best practices
S2.1

Steel Bridge Fabrication
S2.1 Notable Bits

Section 2.2: Communication
Section 2.2: Communication

2.2.3: During the project, maintain effective communications with the Owner’s representatives. Address problems and concerns as early as possible in the work.
Section 2.2: Communication

2.2.4: On complex projects, start communication about special aspects of the job, including tolerances or other requirements, very early in the project.
S2.1 Notable Bits

Section 2.4: Prefabrication Meeting

Section 2.9: Progress Meetings
S2.1 Notable Bits

Section 2.5: Procedures

Includes list of processes requiring written procedures
S2.1 Notable Bits

Section 6.3: Specialty Structures
6.3.2: At a prefabrication meeting with the Contractor, Owner, and Erector, establish critical dimensions and tolerances required to ensure proper installation and performance of the structure.
Fabricators may propose alternate methods of geometry control for continuous girder bridges based on demonstrated accuracy that precludes the necessity for assembly.
S2.1 Notable Bits

Commentary

• Welding tubular members
• Extra end distance for bolted field splices
• Rotational capacity & preinstallation verification tests
• Shop assembly methods
AASHTO LRFD Bridge Construction Specifications

Section 11: Steel Structures
AASHTO Construction Specs

• Until recently, not kept up to date
• As of 2017 edition, much better maintained
  – Because of industry participation!
• Very few states adopt by direct reference
• Many use as source for state specs
AASHTO/AWS D1.5

- Base metal requirements
  - Scope
- Thermal cutting requirements
- Dimensional tolerances
  - Welding distortion
- Bending/straightening
- Fracture-critical:
  - Definitions
  - Engineer responsibilities
  - Material requirements
Now what?
HOW STANDARDS PROLIFERATE:
(See: A/C chargers, character encodings, instant messaging, etc.)

SITUATION:
There are 14 competing standards.

14?! RIDICULOUS!
We need to develop
one universal standard
that covers everyone’s
use cases.

YEAH!

SITUATION:
There are 15 competing standards.

Source: https://m.xkcd.com/927/
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- Content:
  - AASHTO Construction Spec Section 11
  - Collaboration S2.1
  - D1.5
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• Implementation:
  – Remove Section 11 from Construction Specs and refer to new spec
  – Discontinue S2.1
  – Remove fabrication provisions from D1.5 and refer to new spec
  – Will states incorporate by reference??
NEW AASHTO Steel Fab Spec!

• Implications of Implementation for States:
  – Reference to AASHTO LRFD construction specs will invoke the new spec
    • Could change to direct reference
  – Reference to D1.5 will invoke certain provisions
  – Reference to S2.1 will need to be replaced with new reference
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• Authorship possibilities:
  – T-17 alone
  – Existing SBC TG2 provides drafts to T-17 (instead of T-14)
    • Is there trust?
  – New formal subcommittee with controlled membership (like D1.5)
    • Will states support participation?