



LARS Bridge

Integrated Bridge Load-rating Analysis, Modeling, and Editing

LARS Bridge brings a streamlined process to bridge load-rating modeling and analysis – for both existing and planned bridges. The software handles most common single- or continuous-span bridge types. LARS Bridge provides an integrated toolset for efficient graphical modeling, editing, and load-rating analysis.

Integrated Documentation Workflows

The CONNECT Edition provides a common environment for comprehensive project delivery and connects users, projects, and your enterprise. With the CONNECT Edition, you now have a personal portal to access learning, communities, and project information. Your project teams can review project details and status, and gain visibility into project performance with the new project portal. Your project team may also wish to take advantage of the new ProjectWise® Connection Services including Project Performance Dashboards, Issues Resolution, and Scenario Services.

Industry Compatibility

LARS Bridge delivers broad industry compatibility and fits well with the overall bridge maintenance workflow. The software conforms to the latest AASHTO Bridge Specifications for:

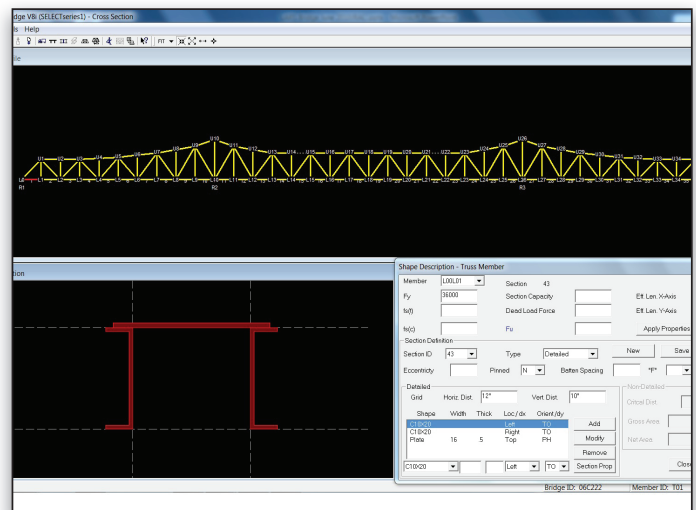
- LRFD – Load and Resistance Factor Design
- LFD – Load Factor Design
- ASD – Allowable Stress Design

Using these bridge design specifications and the AASHTO Manual for Bridge Evaluation, LARS Bridge performs up-to-date LRFR (Load and Resistance Factor Rating), LFR (Load Factor Rating), and ASR (Allowable Stress Rating) bridge ratings.

LARS Bridge utilizes complete bridge data from the AASHTO BRIDGEWare database, sourced by AASHTOWare Virtis and Opis software. LARS Bridge also works directly with retired-format AASHTO BARS (Bridge Analysis and Rating System) files, extending the usefulness of legacy bridge data.

Graphical Modeling and Analysis Tools

LARS Bridge is used to model and analyze the most common bridge types. An easy-to-use graphical interface enables bridge engineers to quickly and efficiently enter all bridge data needed for load rating analysis. Graphical tools display a variety of analysis results generated by the analytical engine: moment and shear envelopes, available capacity for live load, actual live load plus impact, dead load, and superimposed dead load. LARS Bridge displays influence lines for moment and shear at checkpoints along the structure. Engineers can choose from numerous report types to provide tabular, detail, and summary results at any location within the member.



Member definition for a continuous truss.

Additionally, LARS Bridge is an AASHTO-approved load rating engine that runs within Virtis, offering Virtis users an alternative, proven rating engine. The ability to use LARS Bridge inside or outside of Virtis brings an additional level of workflow flexibility in how LARS Bridge can be deployed by organizations.

Direct Integration with Routing and Permitting

Bridges analyzed with LARS Bridge can be used directly by the Bentley SUPERLOAD® live-load bridge analysis process for oversize/overweight routing and permitting.

LARS Bridge Includes

The LARS Bridge system includes the following features:

- Load rating for complex truss bridges;
- A connection to the AASHTO BRIDGEWare database to directly extract Virtis/Opis Bridge models into LARS Bridge format;
- Data management exclusive to LARS Bridge information;
- Quick permit weight analysis for any number of bridges and a permit vehicle. Another option provides the ability to perform inventory, operating, and/or

System Requirements

Software:

LARS Bridge is a stand-alone system

Processor:

Any Intel-compatible processor

Operating System:

Windows XP and Windows 7

Memory:

Minimum 500 MB

Disk Space:

Minimum 100 GB

Input Device:

Mouse and keyboard

Find out about Bentley at: www.bentley.com

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LARS Bridge At-A-Glance

LARS Bridge Features

- Provides easy-to-use Windows interface
- Defines models with graphical tools that provide instant feedback
- Locates bridge model components (including cross section components, loads, and stirrup placement) using a unique parametric referencing scheme
- Reduces model-preparation time
- Supports field-inspection activities
- Supports design of new bridges
- Supports management of text and graphics data (digital photographs)
- Models defects in existing bridges
- Allows stress customization for all material types

Member Information

- Member ID
- Member type
- Flexural
- Truss
- Member function
- Longitudinal deck
- Longitudinal – thru, top, or bottom
- Floor beam – interior, end, or cantilevered
- Truss (simple span and continuous/cantilever span)
- Live load distribution factors
- Maximum/minimum impact factors for:
 - » Inventory
 - » Operating
 - » Legal
 - » Permit
- Copy-member feature
- Member-symmetry feature

Materials

- Structural steel
- Hybrid steel
- Composite steel and concrete
- Composite hybrid steel and concrete
- Prestressed concrete

- Composite prestressed concrete
- Reinforced concrete
- Timber

Structure Configuration

- Up to 20 flexural spans
- Up to 9 truss spans
- Simple and continuous span
- Fixed or pinned ends (left, right, or both)
- Hinges at any location

Bridge Types

- Steel (composite and noncomposite)
- Prestressed (composite and noncomposite)
- Reinforced concrete
- Continuous trusses
- Cantilever trusses
- Simple span trusses
- Timber

Member Section Definition

- A unique parametric referencing scheme is used to model bridge components
- Steel sections are built up with plates or standard sections from library
- Multiple cover plates can be added to built up sections or standard sections
- Prestressed concrete sections include rectangular and I-sections or standard sections from library (debonded strands are supported)
- Reinforced concrete sections include rectangular, T-beam, or I-beam
- Rebar sizes are built in
- Timber sections are user-defined
- Steel members can include defects and deterioration
- Shear reinforcement can be defined using stirrups or bent up bars
- Lateral bracing and stiffeners can be defined (including longitudinal stiffeners)

Rating Analysis

- Supports the latest AASHTO LRFD, LFD, and ASD Specifications
- Supports the Manual for Bridge Evaluation (MBE)

Rating Positions

- Default checkpoints
- Exact checkpoints at multiple locations
- Separate rating checkpoints for moment, shear, or both

Superimposed Loads

- Concentrated loads at any location on a member
- Uniform loads at any location on a member
- Non-uniform load at any location on a member

Graphical Results Output

- Moment and shear envelopes for selected member by rating type (inventory, operating, or legal) showing:
 - » Dead load moment
 - » Superimposed dead load moment
 - » Live load and impact moment
 - » Available moment capacity for top positive, top negative, bottom positive, and bottom negative conditions
- Moment and shear influence lines at every 10th checkpoint

Report Generation

- Flexural tabular reports
- Flexural detail reports at default checkpoints
- Flexural detail report at all checkpoints (10th points and user specified locations)
- Flexural summary

For more information, visit:

www.bentley.com/LARS

LARS Reports

Member(s) To Report:

Design Method:
☐ Allowable Stress
☐ Load Factor
☒ LRFD
☒ Critical Summary for All Methods

Analysis Type:
☐ Moment (with Service)
☐ Shear
☒ Both

Report Type:
☐ Tabular (All)
☒ Detail - Default Checkpoints
☐ Detail - All Checkpoints
☐ Detail - Select Checkpoint

Buttons: OK, Cancel, Add, Remove

Selected Reports

Member(s)	Method	Analysis	Report	Checkpoint
All	LRF	B	Tabular (All)	
All	LRF	B	Detail - Default	

Flexible report generation

LARS Bridge Handles Multiple Bridge Types:

- Steel and composite steel/concrete
- Hybrid steel and composite hybrid steel
- Reinforced concrete
- Prestressed concrete and composite prestressed concrete
- Timber
- Simple span trusses
- Continuous and cantilever span trusses