



LEAP® Bridge Steel

Integrated Design, Analysis, and Load Rating of Steel Bridges

LEAP Bridge Steel is a comprehensive 3D steel bridge design and rating application. It offers advanced physical 3D bridge modeling, design, analysis, and load rating of steel bridges, following AASHTO LRFD specifications.

Advanced 3D Bridge Modeling, Design, Analysis, and Load Rating

This intuitive and powerful software complements Bentley's LEAP® Bridge Concrete capabilities for concrete design, providing a system that supports the real-world steel bridge design process. LEAP Bridge Steel enables you to take full advantage of this innovative approach for using engineering data throughout the lifecycle of the bridge, from design and engineering to project management, maintenance, operations, and inspection.

Design Superstructure and Substructure Quickly and Accurately

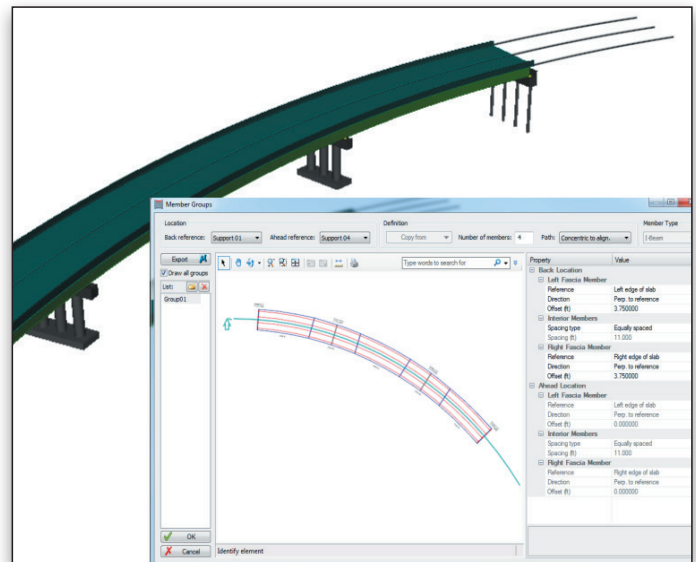
LEAP Bridge Steel is a powerful structural modeling and analysis solution for I-Girder and Tub-Girder-sized steel bridges. With an intuitive tree and ribbon control interface, it enables you to design, model, and evaluate steel bridges faster.

LEAP Bridge Steel offers a synthesis of geometric modeling, substructure and superstructure analysis and design, and load rating in a single, information-rich environment providing a smarter way to design. Intelligent data management and computational modeling will dramatically improve your bridge delivery process, making it easier to deliver your project on time and under budget.

LEAP Bridge Steel enables you to:

- Save time with a streamlined and robust analysis and design process in a full 3D work environment.
- Gain direct access to OpenRoads data (geometry, horizontal/vertical alignments, and digital terrain models).
- Analyze bridges using finite element analysis (FEA), in addition to line-girder and grillage analysis.
- Model, analyze and design steel I-girder and tub-girder bridges.
- Export information-rich 3D bridge models to MicroStation®.
- Eliminate manual processes by performing load transfers from steel superstructure to substructure analysis/design.

LEAP Bridge Steel models provide a rich data set for as-built documentation, maintenance, operations, and inspection.



Layout your curved bridge members in real time.

Meeting the Demands of Compliance and Data Integrity

Bentley understands the importance of compliance – the AASHTO codes are built into the design of LEAP Bridge Steel, simplifying the complexity of meeting government regulatory requirements. Bentley bridge applications make it easy to share the right information with the right people at the right time. Because the data is interoperable with OpenRoads, you can avoid the costs of translating files and integrating data unnecessarily.

Analysis and Design of Reinforced Concrete Abutments, Piers, and Foundations

Design multi-column and hammerhead piers; straight, tapered, or variable caps; and circular, rectangular (tapered and non-tapered) or drilled-shaft columns. Footing types include isolated or combined, supported on either soil or piles. There is no limit to the number of loads, bearings, and piles that may be included in the design. Analysis results are presented in a variety of easy-to-view formats. By combining superstructure design with substructure design, you can benefit from a comprehensive bridge model.

System Requirements

Processor

Intel® Pentium®-based or AMD Athlon®-based processor 2.0 GHz or greater

Operating System

Windows 10 (64-bit), Windows 8 (64-bit)

Memory

8 GB minimum, 32 GB recommended

Disk Space

10 GB minimum free disk space

Video

1GB of video RAM or higher recommended

Find out about Bentley at: www.bentley.com

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Planning, Engineering, Design, and Construction for the Lifecycle of Your Bridge

With the integrated process of LEAP Bridge Steel, you can synergistically develop a precise bridge data model that improves overall project accuracy and consistency.

Information Mobility – Access Intelligent Data When and Where You Need It

Data re-use and mobility are essential for a well-designed, constructed, and maintained asset. Bentley i-models are containers for the open exchange of infrastructure information that enable project team members to share and interact with project data and information regardless of authoring application or technology platform.

LEAP Bridge Steel's data-rich models allow stakeholders from all disciplines to be involved throughout the asset's lifecycle in developing a fully intelligent and living model.

Bentley LEAP Bridge Steel At-A-Glance

Supported Configurations

- Simple and continuous spans
- Straight and curved alignments
- Unlimited spans and girders
- Standard rolled shapes, I-Girders and Tub-Girders and built-up sections

Modeling and Visualization

- Streamlined and rapid modeling workflow of all bridge components
- Direct access to OpenRoads for importing horizontal alignment, vertical profile, and terrain
- Instantaneous 3D visualization of the bridge superstructure and substructure as designed
- Automatic creation of intelligent 3D MicroStation models

Computational Physical Bridge Modeling Encompassing All Bridge Components

- Horizontal alignment and vertical profile
- Roadway/deck surface
- Piers and abutments, normal, skewed and/or offset
- Deck slab definition including flared slabs and deck placement sequence
- Member group and framing plan definitions
- Straight, flared, and curved girder layout
- Extensive library of standard rolled steel shapes
- Schedule-based member definition for built-up members
- Cross frame and diaphragm definition and layout capabilities
- Transverse, bearing, and longitudinal stiffeners
- Bracing connection plates
- Shear connector layout
- Appurtenance library for parapets, medians, sidewalks, railings, and other components
- Import alignment and beam line geometry from MicroStation
- Cross frame member design check
- Shear connector design
- DGN drawing creation for framing plan, bridge cross section, and plan views
- Span hinge definition
- Deck elevation report
- Camber diagrams

Effective and efficient sharing and distribution of information can reduce errors, resolve conflicts, compress project schedules, and reduce project costs.

Integrated Modeling and Documentation Workflows Improve Project Delivery

When combined with other Bentley applications for user collaboration and project data management, LEAP Bridge Steel becomes an ideal solution for professional bridge organizations, construction teams, maintenance and inspection crews, and bridge owner-operators. LEAP Bridge Steel works seamlessly with ProjectWise®, Bentley's platform for connecting people and information across project teams. By using LEAP Bridge Steel with ProjectWise and Bentley Navigator, you can continuously share, reuse, and repurpose data, gaining the benefits of real-time collaboration – working across multiple locations and time zones, among numerous contributors, companies, and stakeholders.

- Material quantities report
- Enhanced cross frame member definition
- Enhanced reporting
- Enhanced 3D solid model
- Grillage model warping stiffness adjustment per NCHRP Report 725
- Finite element modeling and analysis

Analysis and Design

- Deck placement sequence analysis
- Automatic dead load calculation for self-weight of girders, cross frames, concrete deck, and appurtenances
- User-defined dead load: uniform, trapezoidal, and point loads
- Automatic generation load cases and load combinations for each of the analysis stages
- Live load library for LRFD HL-93 loading, fatigue truck, standard rating and permitting vehicles
- Custom vehicle definition including variable gage axles
- Field splice design
- Structural analysis powered by Bentley STAAD.Pro® engine
- Automated physical to analytical model creation for line-girder, 3D grillage

Reporting

- Extensive options for viewing and printing analysis and design results
- Microsoft Word, Microsoft Excel, Adobe PDF, and HTML
- Options for creating custom reports of selected results

Standards

- AASHTO LRFD 7th Edition including 2016 interims
- AASHTO MBE 2nd Edition including 2016 interims

Product Interoperability

- OpenBridge Modeler
- InspectTech
- OpenRoads
- MicroStation

For more information, visit www.bentley.com/LEAP