



LEAP[®] CONSPAN[®]

FOR ANALYSIS, DESIGN, AND LOAD RATING OF SIMPLE- AND MULTIPLE-SPAN PRECAST AND PRESTRESSED BRIDGE BEAMS

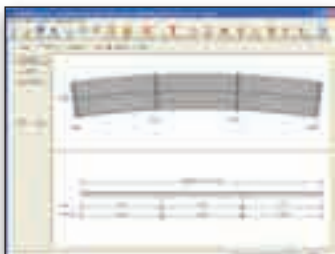
Powerful, efficient, and accurate, LEAP CONSPAN is the proven design, analysis, and load rating application for DOTs and leading consulting firms. LEAP CONSPAN incorporates both AASHTO Standard Load Factor Design (LFD) and Load and Resistance Factor Design (LRFD) Specifications for design of simple- and multiple-span precast, prestressed bridge beams. For streamlining LRFD transition and computing load rating for new or existing bridges, the LEAP CONSPAN user-friendly interface enables users to better work in accordance with AASHTO Standard Specifications for LFR rating or AASHTO LRFD Specifications for LRFR rating.



Automatically generate or define custom strand patterns and/or shear reinforcement.



Use advanced grillage analysis to compute refined distribution factors.



Model complex flared girder geometry, including roadway alignment, support, and cross section layouts.

Simplifies design

LEAP CONSPAN is a flexible solution that offers comprehensive control over many functions and parameters. A powerful drawing editor enables users to create realistic 3D designs and compute beam cross section properties quickly and accurately. Users can enter unlimited spans and beams and employ multiple beam cross sections along spans. Defaults are easily modified to suit specific state requirements. A Copy To tool facilitates transfer of dead loads, distribution factors, strands, stirrups, and more.

Supports AASHTO LFD and LRFR

LEAP CONSPAN performs load rating of prestressed concrete bridge beams according to the AASHTO Manual for Condition Evaluation of Bridges (LFD) and the AASHTO LRFR Manual. The Vehicle Library provides a list of predefined trucks, and users can define their own rating vehicles. Comprehensive results are available for nominal flexural and shear strengths, as well as stress checks.

Performs comprehensive beam and girder design

LEAP CONSPAN's built-in library contains standard AASHTO girders, bulb tees, box beams, double and single tees, rectangular beams and more. Users can add customized cross sections to the Beam Library. Distribution factors, dynamic load allowance, and allowable stresses are among the parameters that are established during the design of individual beams.

Offers built-in state specifications

LEAP CONSPAN supports California and Florida specifications. Other commonly used default values can also be customized.

Integrates with AASHTO BridgeWare databases

LEAP CONSPAN can read and write information related to bridge geometry, materials, prestressing strand pattern, and shear reinforcement to and from user-specified bridges in AASHTOWare's Virtis/Opis systems.

Automatically generates strand patterns

Users can specify the strand patterns and debonding/shielding schemes, or LEAP CONSPAN can automatically generate them. Debonded strand limits are user-specified. Strand types include stress-relieved and low-relaxation. Strand patterns can be straight, draped, or a combination. Strands can be specified using the graphical user interface. There are auto-generation capabilities for shear reinforcement. LEAP CONSPAN also offers options to use transformed strand and rebar section properties.

Handles an array of analysis capabilities

Users can model and analyze a bridge as a simple span or a series of simple spans or simple for self weight and continuous for all superimposed dead loads and moving live-loads. Users can also define composite and non-composite dead loads. LEAP CONSPAN maintains predefined LFD and LRFD live loads, but also allows users to define custom live-load specifications and customize limit state, load factors, and modifiers.

Handles advanced Geometric Layouts

LEAP CONSPAN features a Flared Girder Geometry option where users can define and analyze advanced/true geometry of bridges with non-parallel beams, varying start and

SYSTEM REQUIREMENTS

Software

Microsoft .NET Framework 2.0 or higher

Processor

1 GHz 32-bit (x86) or higher

Operating System

Microsoft - Windows Vista, Windows XP, Windows 2000, Windows Server 2003

Memory

512 MB minimum, more recommended

Disk Space

100 MB

Input Device

Mouse

ABOUT BENTLEY

Bentley Systems, Incorporated is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

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end skews for spans, and beams with varying lengths in the same span along straight or curved alignments.

Computes refined distribution factors

LEAP CONSPAN uses code-specified default distribution factors, but also features a powerful grillage-based option for computing refined distribution factors for many geometry configurations. In addition, users can input customized distribution factors.

Offers complete engineering functionality

Users can check service-load stresses against allowable limits. Factored positive moments and shears are checked against the ultimate strength capacity. LEAP CONSPAN can design the mild reinforcement in the deck slab and also compute negative and positive moment reinforcing over the piers. Code criteria – including cracking moment,

horizontal shear, and anchorage-zone reinforcement – are also calculated automatically.

Simplifies reports

LEAP CONSPAN presents analysis results in a variety of easy-to-understand formats, from a one-page summary to comprehensive project reports. Analysis results and graphical sketches can be exported to spreadsheets and DXF formats.

Integrates concrete bridge design

When LEAP CONSPAN is invoked from within the LEAP® Bridge Console, users have access to fully integrated bridge geometry, substructure, and superstructure analysis, design, and load rating capabilities. LEAP® Bridge enables users to design an entire bridge project within a single application. Single-instance input of design data ensures accuracy, eliminating duplicate entries and simplifying workflows.

LEAP CONSPAN AT-A-GLANCE

Graphical User Interface

- User-friendly interface
- U.S. and metric (SI) units
- Toggle between LRFD and LFD
- Context-sensitive help
- Extensive 2D and 3D graphics
- Text and graphical report formats
- Export of graphics to DXF and DGN
- Export results to Microsoft Excel

Structural Analysis

- Simple or continuous analysis models
- Multi-span bridge analyzed as a series of simple spans
- Automatic computation of live-load distribution factors
- Refined methods for live-load distribution factors
- Optional transformed strand and rebar properties
- Automatic computation of beam, deck, and haunch weights

- Unlimited number of line, area, point, or trapezoidal loads
- Automated moving-load analysis

Structural Analysis Options

- Prestress loss calculation by code equations
- LRFD refined prestress losses (approximate and detailed)
- Load rating as per LRFR or LFR
- User-defined rating vehicles

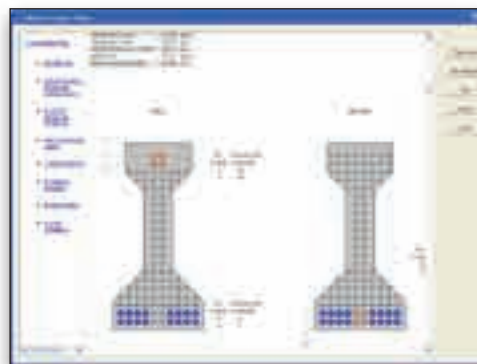
Design/Code Check

- AASHTO Standard (LFD) and LRFD specifications check
- Detailed reports and/or design summary
- Release and final stress check
- Vertical and Horizontal shear check
- Cast-in-place deck slab reinforcement design
- Negative moment reinforcing check
- Restraining moment computation

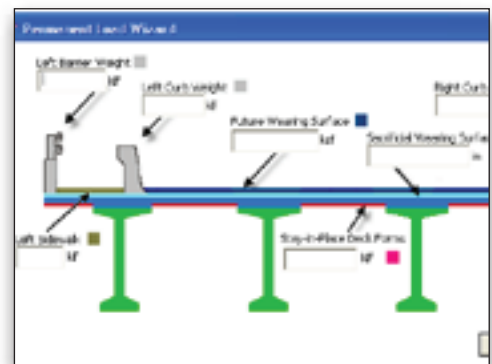
- Automatic strand pattern and auto-debonding/shielding
- Automatic shear stirrup layout design
- Detensioning report
- State specifications (California and Florida)

Libraries

- User-customizable Beam Cross Section Library
- User-customizable Prestressing Tendon and Rebar Library
- User-customizable Vehicle Live Load Library
- User-customizable Shear Stirrup Library
- Interaction with other Bentley products
- Bentley® Rebar and MicroStation® (DGN and DXF file formats)
- Export superstructure reactions to LEAP® RC-PIER
- Integration with LEAP® Bridge



Easy-to-read reports include graphics and text.



Quickly define bridge dead loads. Live loads and combinations are automatically preselected based on specification, bridge type, and more.