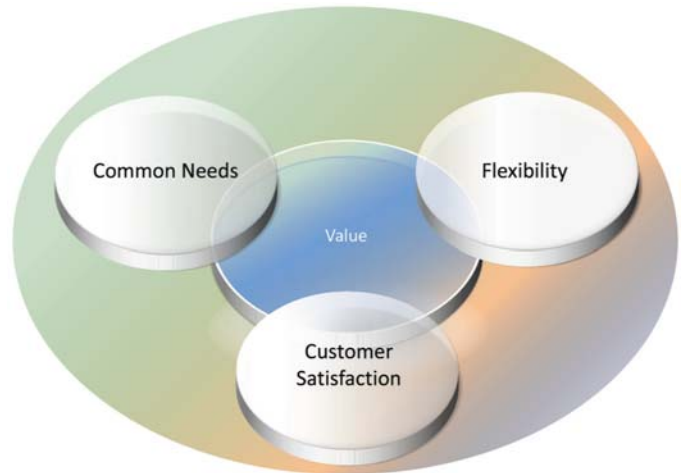# AASHTOWare

Bridge Rating™

Features

- ✓ Superstructure load rating in accordance with the AASHTO Manual for Condition Evaluation of Bridges, AASHTO Manual for Bridge Evaluation, AASHTO Standard Specifications, and AASHTO LRFD Specifications
- ✓ Supports two or three dimensional bridge descriptions
- ✓ 3-D description serves as the analysis of special vehicle configurations

AASHTOWare® Goals/Benefits

- ✓ Pooling resources to produce significant cost savings
- ✓ Software developed "*by DOTs for DOTs*"
- ✓ Best practices approach
- ✓ Focus on universal requirements – meet 90% of common needs
- ✓ Built in flexibility – allows software customization to meet unique needs (i.e. the remaining 10%)

Who uses AASHTOWare Bridge Rating software?
State DOTs, Local Agencies, plus District of Columbia, Puerto Rico, FHWA, Canadian Provinces, bridge rating consultants, and educational institutions within the jurisdiction of AASHTO Member and Associate Member Departments

About the Software

AASHTOWare Bridge Rating uses a common database with AASHTOWare Bridge Design to allow an organization to store a detailed description of each bridge, which is independent of the analytical engine, method of analysis, and rating method. Among the benefits are:

- ✓ Rating a bridge using multiple analysis programs and specifications from the same description and input
- ✓ Upgrading and/or replacing components of the system, including the structural analysis engine, specification checking software, and user interface while preserving the basic bridge data
- ✓ Easily linking to other related software systems, including bridge management systems such as AASHTOWare Bridge Management

With the completion of the first phase of the AASHTOWare Bridge Design and Rating Modernization project, AASHTOWare Bridge Rating 6.8.3 delivers the modernized AASHTO analytical engine along with the legacy engine. The modernized engine improves on the analysis runtime performance of all structure types.

Standalone tools delivered with AASHTOWare Bridge Rating 6.8.3:
- ✓ Load Rating Tool
- ✓ Prestressed Concrete Design Tool
- ✓ Regression Comparison Tool

Product Information

- ✓ AASHTOWare Bridge Design & Rating Technical Support - https://aashto.mbakercorp.com
- ✓ Rating & Design Bridge User Group (RADBUG) **-** http://aashtobr.org
- ✓ AASHTOWare - https://www.aashtoware.org
- ✓ AASHTOWare FY2019 Catalog - https://www.aashtoware.org/wp-content/uploads/2018/07/FY-2019-AASHTOWare-Catalog-FINAL.pdf

Current Features

Bridge Load Rating System
- ✓ AASHTO analytical engine for load and resistance factor rating (LRFR), load factor rating (LFR), and allowable stress rating (ASR)
- ✓ Integrated database where bridge models and rating results can readily be stored, reviewed, and re-used
- ✓ A 3-D description of a bridge superstructure can also be used by a variety of line-girder, 2-D or 3-D analysis packages, permit/routing systems, and other third-party produced applications.

Bridge Configurations and Capabilities
- ✓ Simple spans, continuous spans, hinges (steel and reinforced concrete)
- ✓ U. S. customary and S.I. units
- ✓ Girder-line and 3D-FEM analyses
- ✓ Parallel and flared girder configurations
- ✓ Reinforced concrete tee beams, slabs, I-beams, and multi-cell box beams
- ✓ Reinforced concrete box culverts
- ✓ Pre-stressed concrete box, I, tee, and U-beams (precast, pre-tensioned, and continuity for live load)
- ✓ Post-tensioned multi-cell box beams
- ✓ Harped strands and de-bonded strands
- ✓ Steel rolled beams (including cover plates)
- ✓ Steel built-up plate I-girders

- ✓ Steel welded plate I-girders (including hybrid)
- ✓ Parallel, tapered, parabolic, and circular webs
- ✓ Transverse and longitudinal stiffened
- ✓ Frame structure simplified definition
- ✓ Steel trusses and floor systems
- ✓ Timber beams and decks
- ✓ Corrugated metal decks
- ✓ 3-D analysis of steel and concrete multi-girder superstructures
- ✓ 3-D analysis of curved steel multi-girder superstructures

Load Rating Features
- ✓ Load rate various structure units within a bridge
- ✓ Load rate various members, diaphragms and lateral bracing within a structural unit
- ✓ Rate a user-defined group of bridges
- ✓ Input definition and rating of deteriorated sections
- ✓ Review of rating history for groups of bridges and routing applications
- ✓ AASHTO engine for LRFR/LFD/ASD rating
- ✓ Load rate timber and corrugated metal decks
- ✓ Load rate girder-floor beam-stringer configurations
- ✓ Load rate truss-floor beam-stringer and floor-truss configurations
- ✓ Load rate gusset-plate connections and splice connections
- ✓ Permit rating with routine traffic in adjacent lane
- ✓ A vehicle library capable of defining any number of wheels on any number of axles
- ✓ Rating of non-standard gage vehicles by loading a 3-D influence surface
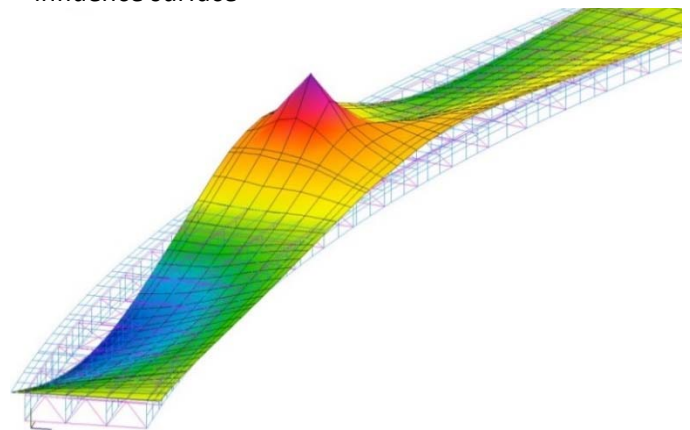
Bridge Load Rating and Permit Vehicle Analysis Database
- ✓ Bridges along a route can be placed into folders, where an entire route can be rated for a permit vehicle in a single step

✓ Permit analysis includes sophisticated 3-D analysis to consider load effects due to a specific vehicle traveling along a user-defined path on a structure

✓ Complies with corporate database management standards by supporting the widely used Oracle and Microsoft SQL Server databases, including their data sharing and security features

Graphical Features and Customizable Libraries

✓ Libraries of standard and user-defined vehicles, loads, steel and pre-stressed shapes, load and resistance factors, materials, parapets, and other bridge components allow bridge models to be built quickly in a drag-and-drop manner

✓ All or part of a bridge can quickly be copied to another bridge

✓ As a bridge model is constructed, a graphical schematic framing plan, elevation view, cross-section view, and other schematics provide feedback and reveal common types of errors

Import and Rating Features

As the successor to the Bridge Analysis and Rating Systems (BARS), AASHTOWare Bridge Rating can import existing BARS data files. Existing BRASS and BAR7 data files are also supported by the import feature.

✓ Supports flexure and shear ratings, computes dead loads and distribution factors if they are not manually input, and analyzes deteriorated sections

✓ Data can be provided in either cross-section or schedule-based forms

Architectural Support for Third-Party Customization and Add-ons

Since the structural model of a bridge in a database can be complex, AASHTOWare Bridge Rating provides a simplified object model that ties the modules of the system together and makes the software open to expansion by experienced users and third-party developers. Although AASHTOWare Bridge Rating is written in C++/C#, its support of the industry-standard COM interface makes it possible to access the system's data and functionality from many commercial software packages, including Visual Basic®, Excel®, AutoCAD®, and even Microsoft Word®. AASHTO encourages third-party developers to market add-on features, which enhance the core capabilities of the system.

Licensing

Description	Annual License Fee (Effective July 1, 2018)	Annual License Fee (Effective July 1, 2019)
Single Workstation	$ 10,000 (first copy)	$ 10,000 (first copy)
	$ 8,500 (copies 2+)	$ 8,500 (copies 2+)
Unlimited Users		
• AASHTO Member	$ 37,500	$ 37,500
• Non-Members	$ 50,000	$ 50,000
Special Consultant Option	$ 5,000 per copy	$ 5,000 per copy
Agency Sponsored Consultants	$ 33,000 (10)	$ 33,000 (10)
	$ 60,000 (20)	$ 60,000 (20)
	$ 90,000 (30+)	$ 90,000 (30+)
Developer	$ 500	$ 500
Educational (classroom instruction)	FREE	FREE

The complete list of licensing options with full explanation can be found at https://www.aashtoware.org/products/bridge/bridge-ordering

Service Units are optional fixed-fee units of contractor-provided service offered to licensees for consultation and support to assist in implementation or customization of the software. Examples of services provided:

✓ Preparing and importing data

✓ Specialized software training

✓ Agency-specific modifications and validations

✓ Agency-customized reports

Contacts

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

AASHTO

Judy Skeen Tarwater, P.E.
AASHTO Project Manager
444 North Capitol Street NW, Ste 249
Washington, D.C. 20001
Phone: 512-963-1465
jtarwater@aashto.org

Michael Baker
INTERNATIONAL

Herman Lee, P.E.
Baker Project Manager
Michael Baker International
Airside Business Park
100 Airside Drive
Moon Township, PA 15108
Phone: 412-269-7920
hlee@mbakerintl.com