



Program Highlights

May 2018

A suite of transportation software products developed, supported, maintained, and enhanced through the joint efforts of subject matter experts from AASHTO member agencies, at substantially lower cost than custom/individual development.

PROJECT

AASHTOWare Project™ is web-based software that provides a comprehensive series of software modules designed to address phases in the construction lifecycle beginning with project definition, followed by cost estimation, the bidding/letting process, and construction and materials management. The software is built on a unified database that allows for easy access to data for use in decision-making, reporting, and tracking of various information (i.e. historical bid prices, civil rights and labor management, etc.).



AASHTOWare Project 4.1 is scheduled for release in August 2018, prior to the Project Users Group (PUG) conference. Attendees at the conference will be able to get hands on experience with the new enhancements, maintenance fixes, and warranty fixes in the web-based AASHTOWare Project software.

An effort is underway to deliver initial **AASHTOWare Project Data Analytics™** core functionality for line item profiles and bid evaluation analysis in a Software-as-a-Service (SaaS) production release scheduled for August 2018. The software is being built to allow users across all departments to analyze the vast array of data within the **AASHTOWare Project™** unified database to find patterns, draw conclusions, and most importantly, make better decisions.

AASHTO will be soliciting new funding in the spring of 2018 to support the full work plan for the continued development of **AASHTOWare Project™ BAMS/DSS** features, along with new functionality not found in the legacy system, in the web-based and SaaS platforms. Participating agencies will have input into the requirements definition and testing the new software in hosted SaaS environments using their data prior to production release.

The Task Force continues to explore mobile app development. A materials sampling and testing mobile application pilot project is underway with the help of field users from three state agencies. The pilot project is scheduled to be completed in August 2018.

"Twenty plus years of development, maintenance, support and enhancement; AASHTOWare Project has delivered high value in the project lifecycle from project inception, award, oversight and analysis to contract completion and everything in between while keeping pace with technology and the functional needs of our agencies."

– Todd Bergland, Manager Technology Support Group, Minnesota DOT

The **AASHTOWare Bridge Design & Bridge Rating™** software provides significant capabilities and features, including support for 3D analysis for multi-girder curved super-structures; LRFR for non-standard gage analysis; adjacent vehicle rating, reinforced concrete slab system structure definition; specification checking and rating of steel diaphragms and lateral bracing; load factor rating of reinforced concrete and post-tensioned multi-cell box beams; and nonstandard gage vehicle analysis of floor system superstructures composed of girders, floor beams, and stringers.

The current release includes features and capabilities from the LRFD Specification updates (8th Edition), the AASHTO *Manual for Bridge Evaluation Specification* updates (3rd Edition), and the incorporation of emergency vehicles into the standard library. Three standalone tools—load rating, prestressed concrete design, and regression comparison—are also delivered with the software.



The AASHTOWare Bridge Task Force is focused on providing improved LRFD and LRFR tools. At the core of the improvements is the comprehensive design of a new software architecture that can support the desired outcome of the modernization and include the following enhancements:

- Significantly upgraded core technology to a modern software architecture that better utilizes current and future hardware, and the latest software development technologies
- Improved analysis performance by taking advantage of the latest hardware and software advances using the multi-threading capabilities of the new processors and the latest parallel task libraries (i.e. running multiple tasks simultaneously)
- Improved and simplified the user interface - easier to use for beginners without losing modeling flexibility and robustness for advanced users
- Improved reporting capabilities
- Reduced maintenance costs and implementation time

The **AASHTOWare Bridge Management™** software provides a systematic procedure for the allocation of resources to the preservation and improvement of the bridges in a network by considering both the costs and benefits of maintenance policies versus investments in improvements or replacements.

AASHTOWare Bridge Management™ 5.3, released in September 2017, incorporated improvements and new features to our premier bridge management software including:

- Cassini re-write
- Element condition grid (significant performance improvements)
- Parameters page update
- Sufficiency rating clean-up (improved user interface)
- Enhanced rule builder for network policies
- Cross section module
- Load rating module
- Default data script
- Error check prescript

AASHTOWare Safety Analyst™ incorporates the *Highway Safety Manual* (HSM) safety management approaches into a computerized analytical tool for guiding the decision-making process for programming site-specific highway safety improvements. The software has the capability to identify accident patterns at specific locations and determine whether those accident types are overrepresented and determine the frequency and percentage of particular accident types along specified portions of the highway system. These capabilities can be used to investigate the possible need for enforcement and public education efforts in an area, in addition to identifying potential engineering improvements at a site.

Collection, analysis and improvement of safety data is identified as an eligible project under the Federal Highway Safety Improvement Performance Program. To that end, **Safety Analyst™** is a tool to help implement safety improvements and agencies can use their HSIP funds to license it. Here are some features:

- Helps with maximizing HSIP safety benefits and cost-effectiveness
- Assists with identifying, prioritizing, and evaluating site-specific and systemic countermeasure improvement projects
- Provides significant time savings by using software algorithms to automate network screening and complex calculations
- Computerized analytical tools that incorporate safety management techniques from the AASHTO HSM
- Standard safety database structure
- Does not require statistical expertise

Recent enhancements to **AASHTOWare Safety Analyst** include:

- **Modified level of service of safety (LOSS)**—The basic screening algorithms (Peak Searching and Sliding Screen) include a Modified LOSS metric. The Modified LOSS metric is similar to the LOSS concept presented in Chapter 4 of the AASHTO HSM. In **AASHTOWare Safety Analyst™**, the Modified LOSS represents the amount by which the expected crash frequency falls above or below the mean predicted crash frequency, expressed in the number of standard deviations of the predicted crash frequency.
- **Display of GIS Identifier in the site details dialog**—The site details dialog now displays the first latitude/longitude coordinate from the GISID string when the agency specifies the GISID in the prescribed latitude/longitude coordinates format.

The next release, available this summer, will feature:

- An improved crash diagram tool
- A data quality review tool

Future initiatives include:

- Functional specification to update and improve **Safety Analyst™** output reports
- Functional specification predictive component of network screening for corridors to introduce predicted crash frequencies



AASHTOWare Pavement ME Design™ incorporates the mechanistic-empirical pavement design guide and is a production-ready software tool to support the day-to-day operations of public and private pavement engineers. It provides tools to generate optimized pavement design based on given requirements and provides extensive reports to evaluate and fine-tune the design. The software supports Citrix® and remote desktop services.

The next release of **Pavement ME Design** will be available in July 2018 and will include the following enhancements:

- Customization of reports
- Gray out parameters not used as design criteria
- Lock down specific input variables—to provide selected users with the option to set or lock down specific input variables
- Capability to reset performance parameters - this tool will allow users to link together multiple ME Design project files in a chain creating a pavement “maintenance strategy” analysis. At the completion of the initial analysis, distress values will be transferred (or reset depending on the distress) to the next analysis in the maintenance strategy. Maintenance strategies can be defined by the user and the system may also provide default suggestions
- Adding k-value as an input variable
- Use modern-era retrospective analysis for research and applications (MERRA) data for the Integrated-Climate Model (ICM).
- Implement tensile strength: Input level 1—this will allow the user to predict the change in tensile strength over different temperatures
- Include the *MEPDG Manual of Practice* as part of the help file.

A major future initiative in FY 2019 is the recalibration of flexible and semi-rigid transfer functions. The objective of this effort will be to verify and update the global calibration coefficients of the flexible and semi-rigid pavement transfer function coefficients. The global calibration will be completed in accordance with the *AASHTO Guide for the Local Calibration of the Mechanistic-Empirical Pavement Design Guide*, dated November 2010.



AASHTO



American Association of State
Highway and Transportation Officials
444 N. Capitol Street N.W., Suite 249
Washington, DC 20001
Phone: 202-624-5808

www.aashtoware.org