



AMERICAN ASSOCIATION OF
STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHTO
THE VOICE OF TRANSPORTATION

AASHTOWare Overview

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AASHTO and AASHTOWare

One of the key objectives of the American Association of State Highway and Transportation Officials (AASHTO) is to provide a construction contract management solution to its members through the AASHTOWare® cooperative software development program. Through this program, AASHTO member agencies have been able to maximize their pooled resources to continuously improve a system that can serve the needs of its members. Today, the Project software suite represents the most comprehensive solution for the AASHTO member agencies. No other solutions on the market have the breadth of capabilities or years of experience of AASHTO in serving the transportation community.

Here are a few examples of how these products can meet Alaska DOT's business needs:

- A signature feature of the web-based Project software is to maintain a “chain of custody” of data that can be audited. For example, chain of custody is essential for materials lab management, as well as construction inspection documentation.
- The web-based AASHTOWare Project software enhances the functional capabilities of each of the modules by bringing them together into one unified product. For example, the estimation module consolidates best practices for both program and detailed level estimates. Another example is the Civil Rights & Labor module that allows external access by contractors to enter payroll and prompt payment information.
- The unified database eliminates data silos and maximizes data availability by providing highly-configurable tools within the application to allow agencies to customize the application/database to meet additional needs.
- Info Tech has developed numerous customizations for agencies and provides knowledgeable resources on-site or on an itinerant basis. Info Tech has employees with detailed knowledge of the construction contract management process. Many of these have worked directly for a state transportation agency at some point in their career.
- Finally, because AASHTO is the owner of the AASHTOWare Project suite of software products, AASHTO member agencies can be assured the applications will be fully supported in the future and adapted to changes in technology and business practices. By pooling the resources of its members, AASHTO can ensure the Project applications will continue to be enhanced as needed.

In many cases a number of gaps with its existing construction contract management platform of a DOT can be found. AASHTO and Info Tech believe the Project solution will provide the best option to close these gaps and provide a platform for the future as more consolidation of systems and functions occur within all agencies. Specifically, the Project software can address the gaps as follows:

- The Project software can provide an enterprise system that will allow the complete management of highway construction contract program at the statewide level and at the same time allow the regions to effectively manage their operations. The central technical environment that is web-based can accommodate all business locations and provide real time data to all users. Regions can continue to manage their own programs and Bid Openings, if desirable. The statewide office will have the ability to manage the entire program, including the regions, with centralized data.
- The Bid Express service, offered by Info Tech will integrate all regional bidding, providing contractors a central platform for accessing all infrastructure projects throughout the state. Regions can manage their own Bid Openings as they do now.
- The web-based Project software is built to allow and control external access as: 1) more agencies rely on consultants for developing projects; 2) contractors perform data submission, such as payrolls and prompt payment.
- Another area is the program and detailed estimation portions of the construction contract management lifecycle. AASHTO currently provides both programmatic and detailed estimation tools. A description of Project Estimation has been included later in this document.
- Through all the AASHTOWare Project modules – Preconstruction, Bids, Estimation, BAMS/DSS, Civil Rights & Labor, and Construction & Materials – AASHTO demonstrates its commitment and ability to meet the expanding needs of its members. Finally, the AASHTOWare Project suite represents the lowest risk to most DOTs to maintain a vital program for the future. DOTs can leverage the experience of its peers, as well as contribute its best practices to the community of 48 AASHTO member agencies already in production with one or more modules of the Project software.

The American Association of State Highway and Transportation Officials (AASHTO):

The AASHTOWare Cooperative Software Development Program was established because the member departments of AASHTO recognized the benefits of joining together in cooperative efforts to develop, maintain, and enhance computer software products jointly. Through this program, AASHTO member agencies have been able to pool resources to develop, maintain, support, and enhance multiple software development products, including the Project suite of software.

Task forces comprised of AASHTO member agency representatives, specifically the AASHTOWare Project Task Force (PTF) as it relates to the software proposed in this response, manage the AASHTOWare program. The PTF is responsible for managing a yearly work plan as well as development project work plans to develop, maintain, support and enhance the Project suite of products.

Currently, 46 state transportation agencies in the United States and two Canadian provinces license one or more modules of AASHTOWare Project. Figure 2.1 depicts AASHTO member agencies using one or more Project software products.

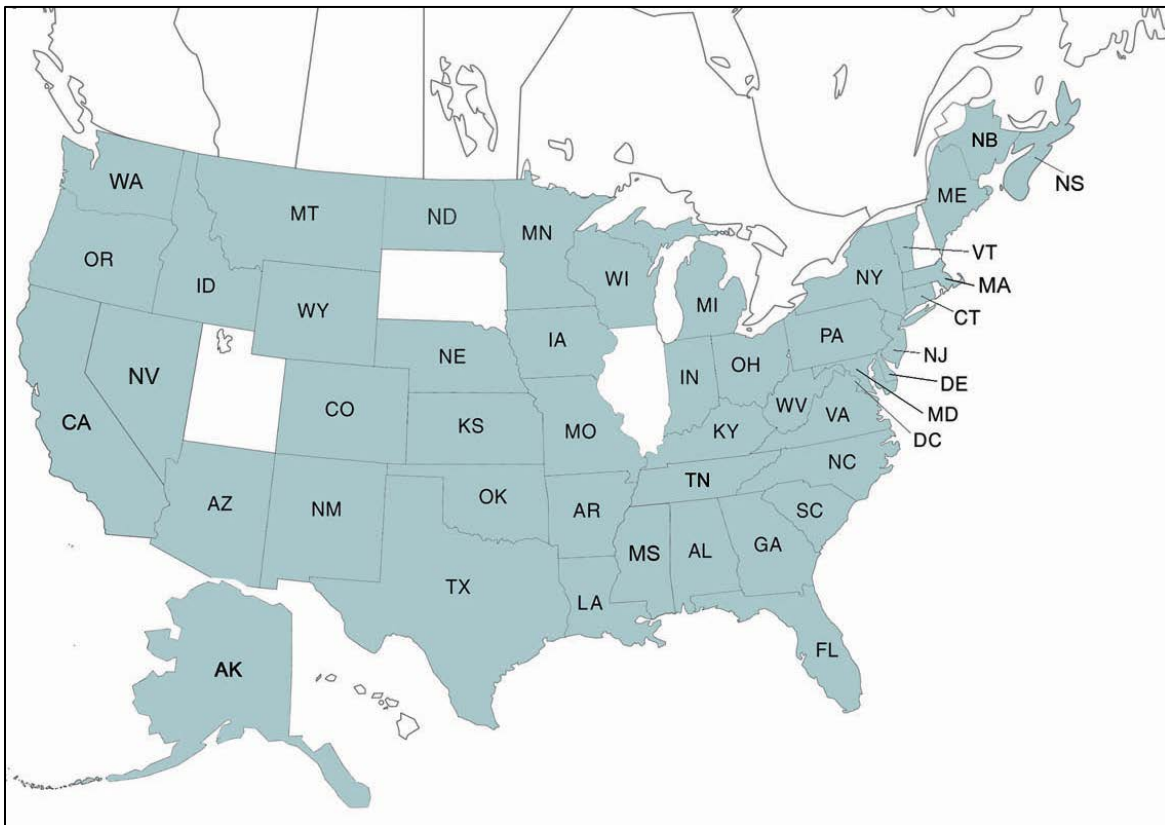


Figure 2.1 – AASHTO member agencies licensing one or more of the Project modules.

A. Overview

The web-based AASHTOWare Project software provides the best value solution based on the following key factors:

- A. **Proven, Evolving System** – The existing AASHTOWare Project suite of software is a proven, reliable system that has been developed over the course of 25 years. It has been built by users who have intimate knowledge of all transportation agency business processes and system functions. These users have also directed the evolution of the modules in terms of architecture and functional requirements.
- B. **Install Base** – More than 48 state transportation agencies, two Canadian provincial transportation agencies, several hundred cities and counties, several hundred engineering consulting firms, and several thousand highway contracting firms now use at least one Project module. The applications perform a range of functions, from project estimation, to contract proposal preparation, to electronic bidding, to pre-award analysis, and construction contract management.
- C. **Cost** – As AASHTO is a non-profit established for the benefit of its member agencies, the great majority of Project license fees are reinvested directly into the software through maintenance, enhancement, and support contracts. All of these benefits result in a lower Total Cost of Ownership for the agency.
- D. **Commitment** – AASHTO is an organization whose charter reflects that it exists to serve its member agencies. An increasingly important part of this service is oversight of effective, valuable, enterprise-level software solutions. Given that Project software is the most widely used suite of AASHTOWare software, with thousands of end-users, the system will continue to be enhanced and supported over the long term for the benefit of the member agencies.
- E. **Best Practices** – The Project software is built on best practices, which is one of the biggest benefits to AASHTO members. Through the AASHTOWare Cooperative Software Development program, AASHTO member agencies have invested a large amount of human and financial capital to ensure that the system serves the user community at-large. As a result, the applications that have been funded and managed through AASHTO have greatly improved construction estimates, provided better market awareness, improved communications between agencies and their contracting community, improved oversight, and reduced fraud.
- F. **Flexibility** – The modules of the web-based AASHTOWare Project software have been specifically designed to allow agencies more ability than ever before to configure the application according to how each agency conducts its business. These configurations are not disturbed by new releases and do not require specialized support from Info Tech. In terms of technology to support the applications, there are a variety of configurations - including hosted services - to support the organizational structure. From the standpoint of implementation, there is flexibility in the mix of agency and Info Tech resources that will fit with the agency's objectives and schedule. Info Tech employs a variety of methodologies to meet agency needs.

- G. **Risk Avoidance** – By adopting software that has been proven in multiple transportation agencies and is supported through shared investment, DOTs avoid the risk that is often associated with custom software development and/or implementation. Additionally, since on-going maintenance costs for a custom solution typically run 17-20% of the initial system cost, this financial burden will be significantly reduced by sharing these expenses with the other software licensees. In addition, all base software upgrades and standard customer support are included in the AASHTOWare licensing fees.
- H. **Maintenance and Support** – Product maintenance and customer support are included with the annual software license. Info Tech is committed to providing the highest quality customer support possible. Info Tech undertakes all reasonable and necessary efforts to resolve an incoming issue quickly and professionally. Info Tech has highly specialized technicians available on business days from 8:30 A.M. - 5:30 P.M. Eastern Time by phone, fax and email or directly online. Info Tech has a call tracking system that is used to record all support requests made by our customers, with a goal of having all issues resolved within a 24-hour period. Additionally, all licensees have access to the Cloverleaf™ (www.cloverleaf.net) website which is a web portal with a wealth of product, support and user information.
- I. **Upgrades** – Product upgrades are included with the software license. Usually, software releases occur on a fiscal year basis with one or more cumulative product upgrades annually.
- J. **User Involvement** – The success of the Project software is built on the involvement of the licensing agencies and other member agencies of AASHTO, resulting in the sharing of solutions and costs. The Project Task Force provides for the strategic direction for the the suite of AASHTOWare Project software products, which includes the long term vision for the software, product objectives and annual goals. The PTF is composed of representatives from nine AASHTO member agencies. Technical Review Teams are teams appointed by the PTF to assist in development of new products or enhancements to existing products. A national user group meets once a year and communicates regularly. This user group provides unified input to the PTF on product effectiveness and opportunities for product enhancements by reviewing and prioritizing maintenance, enhancements, and support needs. The user group is made up of Technical Advisory Groups, which are volunteers assisting in the review of proposed software modifications and an annual review of long/short range goals.

The Project suite of software products has evolved over several years. For the last 25 years, AASHTO members have been working together to develop a modular approach to software that supports the construction contract management lifecycle (see Figure 4.1) that is prevalent in transportation agencies throughout the US and into Canada.



Figure 4.1 – Project Construction Contract Management Components

Together, the Project suite and the Bid Express service cover all the core business functions of a transportation agency, including:

- Cost estimation
- Project development
- Plans, Specifications, and Estimates (PS&E) estimate
- PS&E Package preparation and advertisement
- Bid opening, bid review, and evaluation
- Contract award
- Contractor management
- Civil Rights and Labor Tracking
- Construction management
- Materials and Lab management
- Decision support

Project has been designed and enhanced with the objective of remaining generic, while still allowing maximum possible customization to meet agency-specific needs and business rules via configuration options, custom processes and report facilities, and customizations to the Graphical User Interface (GUI).

The Project modules are broken into four categories: Estimation, Projects & PS&E Packages, Bid Openings, and Construction. These four categories encompass the lifecycle described in Figure 4.1. In general, the Estimation, Projects & PS&E Packages, and the Bid Openings categories are known as the Preconstruction functions and are distinguished from post-award or Construction.

B. AASHTOWare Project BAMS/DSS™

AASHTOWare BAMS/DSS™ (BAMS/DSS) software is historical database and bid analysis software. The BAMS/DSS software is widely regarded as the premier software product for the analysis of highway construction bid and project data. The system is built around a relational, open architecture historical database specifically designed to provide decision support in the following areas:

- Bid monitoring and evaluation
- Vendor (contractor) analysis
- Contract analysis
- Item price estimation
- Collusion detection
- Planning and budgeting process

This historical repository contains information from all phases of the contract lifecycle, along with analysis models to support the wide variety of management information requirements. The BAMS/DSS software provides both standard models and ad hoc analysis capabilities, permitting each agency to use the available data to meet its own needs. The BAMS/DSS software also provides the historical data and reporting capabilities to detect and expose bid rigging and collusive activity, producing such key reports as:

- Contract Profiles – provides a concise summary of information about selected contracts.
- Contract Award and Bid Evaluation – reports on bidding pattern comparisons between bidders, engineer’s estimates and historical prices.
- Vendor Profiles – produces a summary of bid related information during a specified time period.
- Vendor Competition and Market Shares Analysis – examines bidding activity among selected vendors and determines the level of competition.
- Vendor Work Location and Activity Maps – pinpoints a vendor’s win, loss, bid and subcontract activity along with facility locations.
- Line Item Profiles – produces graphic and tabular displays that can be used to identify the bid items most responsible for a vendor’s bidding deviation on a specified contract.

- Item Price Estimation and History – provides a systematic evaluation of historical bid prices and estimates.
- Item Price/Quantity Variance – analyzes the variance between the awarded and the final costs and quantities on a specified contract.

C. AASHTOWare Project Estimation™

The AASHTOWare Project Estimation™ (Estimation) software is a newer module of the existing web-based AASHTOWare Project software using its infrastructure and unified database. With ever evolving technology, AASHTO member agencies recognize the need to provide agencies with updated software applications, not just due to changing agency needs, but also to stay compatible with changes in technical architecture, third party software, database systems, software tools, etc. The functions of the agency in relation to estimating methods and practices are critical to each transportation department.

The Estimation module supports the estimating process from project conception to final detailed estimate/engineer's estimate. This includes estimating in and through all phases of a project development lifecycle. An area of particular emphasis is for planners to develop programmatic or parametric estimates. The application has the ability to address all functional/business requirements for an integrated cost estimation web-based application that is designed to meet the needs of a user base of planners, estimators, business managers, and external/legislative stakeholders.

The Estimation module supports the day-to-day operations of a project in the estimation phases of the transportation project lifecycle. The Estimation module is expected to be used by multiple personnel within an agency. Those personnel expected to benefit from the functionality of the Estimation module include, but are not limited to, planners, estimators, project managers, clerks, auditors, management, consultants, and Federal Highway Administration (FHWA). The module will allow for the complete administration of the estimation process.

D. AASHTOWare Project Preconstruction™

The AASHTOWare Project Preconstruction™ (Preconstruction) module is part of the web-based AASHTOWare Project application that addresses the needs of a state agency's numerous departments that are involved from the project estimation phase, through the award phase. The user can enter project data, prepare the PS&E estimate for highway construction projects, combine them into PS&E Packages and select a group of PS&E Packages for a bid opening package, all within a single system. It is designed to aid highway agency personnel in managing vendor information, advertising PS&E Packages, tracking plan holders, processing bid information, tracking disadvantaged business enterprise commitments and making award decisions. Following receipt of bids, the Preconstruction software imports data directly from the Project Bids module, including such items as cost-plus-time bids and DBE commitment information, eliminating the need for manual data entry.

Standard reports include the engineer's estimate, the PS&E Package estimate and the electronic PS&E Package. This module has been designed for flexibility in project definition and PS&E Package creation using multiple funding units, bid-based pricing at both the project and proposal level, differing CENG percentages, cost-plus-time designations and alternate specifications, at both the category and line item levels. It provides the notice to contractors, plan holder management, on-line and batch data entry facilities for vendor bids, the bid tabulation report and analyses of the received bids, and bid opening summary reports. Additionally, it maintains the plan holders list and produces mailing lists and plan holder invoices.

E. AASHTOWare Project BIDS™

AASHTOWare Project BIDS™ (BIDS) is the *de facto* national standard electronic bidding system that effectively streamlines the entire bidding process, providing agencies with complete control over Bid Opening procedures, while facilitating paper, CD, and Internet bid submittals from the contracting community. It allows bidders to receive PS&E Package information, including item schedules, DBE requirements, and addenda in an electronic format; enter all information required for a valid PS&E Package; and submit item bids in a secure, machine-readable form. The Project Bids software supports PS&E Packages with alternate sections and alternate items, lump sum and fixed-price items, cost-plus-time bidding, marking PS&E Packages as information only or with serial numbers, and distribution of amendments in electronic form. With its template facility, any textual material can be easily included in the electronic proposal.

The Project Bids software is designed to exchange data with the Project system to produce item schedule data to assist with PS&E Package creation.

With the Project Bids software, the component bidders use to complete their electronic bids, contractors can submit bids in a variety of formats, including over the Internet, on CD, on USB Flash Drives, or even on paper. The Project Bids software supports encrypted, secure digital signature creation and management, allowing secure bid submission and bid withdrawal via the Bid Express service over the Internet. Bidders simply open the Bid file provided by DOT and enter line item prices for each part of the job. The Project Bids software calculates bid values as bidders work through the list and alerts them if an item is accidentally omitted, or if alternates or options are bid incorrectly. The Project Bids software also supports export/import functions to standard formats allowing the contractors to easily interface with their existing estimating systems. The intuitive interface allows bidders to revise or amend bids quickly and efficiently without losing previous work that is unaffected by the changes.

In order to simplify the highway agency's implementation and management of Project Bids software licensing, the Project Bids program and its associated documentation may be copied by the highway agency for unlimited distribution to and use by all of its prospective bidders.

F. AASHTOWare Project Civil Rights & Labor™

The AASHTOWare Project Civil Rights & Labor™ module receives and processes the data required to meet federal and state requirements for civil rights and labor compliance activities. Civil Rights & Labor is a module of the web-based AASHTOWare software that allows the effective administration of an agency's external civil rights and labor compliance activities such as contractor payrolls and labor compliance, wage decisions, Disadvantaged Business Enterprise (DBE) certification, vendor data management, DBE commitments, On-the-Job Trainees (OJT) tracking and monitoring, subcontractor data and prompt/actual payment tracking, Bidder/Quoter submittals, trucking types and tracking, contract compliance reviews and issues tracking.

Functionality and security is also available to allow non-agency users (e.g. contractors and subcontractors) to access the Civil Rights & Labor software to submit electronic payrolls and subcontractor payments information. Non-agency users can also manage DBE commitments and Bidder/Quoter submittals.

Two tools are also available to assist contractors and payroll software companies in creating Extensible Markup Language (XML) formatted payroll files for import into the Civil Rights & Labor software: the AASHTO Project Payroll Spreadsheet Conversion Utility and the AASHTO Project Payroll XML Developer's Resource Kit.

The Civil Rights & Labor software also comes with standard reports and a report creation tool. These reports include the Uniform DBE Awards, Commitments and Payments, and the Federal 1392.

The Civil Rights & Labor module shares data and functionality with the Preconstruction module as well as the Construction & Materials module, which takes advantages of the benefits of the infrastructure and unified database of web-based AASHTOWare Project.

G. AASHTOWare Project Construction & Materials™

The AASHTOWare Project Construction & Materials software is the comprehensive construction management tool of the Project suite. It provides for data entry, tracking, reporting, and analysis of contract data from contract award through finalization. The Construction & Materials software will also provide recording, tracking, and reporting of material samples and test results from job sites, plants, and test labs. The Construction & Materials software is built on multi-tier web architecture, and is completely integrated with the rest of the Project suite, allowing for easy integration and data transfer. It is used by all levels of construction and materials personnel, such as field inspectors, technicians, project managers, clerks, auditors, lab personnel, management, producer/suppliers, contractors, and FHWA. One primary design goal is to have the data entered once, at the source, and reused throughout the entire system.

The Construction & Materials software will have the following main functions:

- **Contract Administration**
- **Contract Records**

- **Daily Work Reports**
- **Contractor Payments**
- **Materials Functionality**
- **Reporting Capabilities**
- **Document Management Capabilities**
- **Records Workflow and Management Capabilities**

H. Post-implementation support

As part of the ongoing service to Project licensees, AASHTO, through its contractor, Info Tech, is committed to providing the highest quality customer support possible. Info Tech undertakes all reasonable and necessary efforts to resolve an incoming issue quickly and professionally.

A DOT ultimately controls the cost of implementing the Project software due to the many variables involved in the process. Info Tech provides a full range of software implementation services for the Project software suite. Agencies license software directly from AASHTO and then can utilize AASHTOWare Project service units or contract with Info Tech directly for customized software implementation services to meet the specific needs of the agency.