WHEREAS, Changes in technology are providing opportunities for the transfer of electronic engineering data from design to construction; and

WHEREAS, There is a need for strategic direction at the national level; and

WHEREAS, There is a need for national guidance and standards for the transfer of electronic engineering data used to develop and deliver capital projects; and

WHEREAS, There is a need for a national forum for contractors, equipment manufacturers, and software vendors; and

WHEREAS, There is a need for design and construction to work closely to understand and identify business needs for state transportation agencies; therefore be it

RESOLVED, That the AASHTO Standing Committee on Highways establishes a Joint Technical Committee on Electronic Engineering Data; and be it further

RESOLVED, That this technical committee be a joint effort of the Subcommittee on Design, the Subcommittee on Construction, and the Subcommittee on Bridges and Structures.
Background Information

JOINT TECHNICAL COMMITTEE ON ELECTRONIC ENGINEERING DATA
Subcommittees on Design, Construction, and Bridges and Structures

NEEDS ASSESSMENT

There is an identified need across the State DOTs, as well as within the transportation portion of the civil engineering industry in general, to standardize effective approaches, efficient methodologies, and universal formats used for the transfer of intelligent engineering information between the providers of the data and customers making use of the data (e.g., Design and Construction). Currently there is no established national forum through which DOTs can collectively address the challenges of documenting electronic engineering design data so that it will legally and professionally meet contractual requirements as well as provide easily transferable engineering data between the various software applications. There is a need for a national forum to allow DOTs to discuss, develop and publish general policies, data standards and future guidance on the use and effective transfer of electronic engineering data.

Emerging technologies continue to replace the repetitive manual operations and the outdated (1970s) methodologies still in use today. Typically, paper contract plans are produced and the proposed highways are staked out by centerline station, offset, and grade change. New technologies currently available offer DOTs the opportunity to reevaluate the current business practices of highway and bridge design and construction operations from a two-dimensional paper-focused format, to a three-dimensional electronic conveyance that simulates the proposed intent in real-world conditions. As this metamorphosis of the civil engineering industry continues, technology is expanding its role by automating multiple manual computations of complex and optimally constrained designs. Additionally, the complexity required to ensure the inter-operability of engineering data between numerous proprietary software formats is also becoming more challenging. Inter-operability becomes very important when owners of the data attempt to transfer it between different proprietary applications such as those used to collect/develop the data, or manage/deploy the data to the users that require the information to construct the project.

In summary, DOTs have begun to realize the value of leveraging their project data by providing it in a format that facilitates multiple reuse during the project life cycle. Transportation agencies need to reevaluate who the customers are of electronic engineering data and take a more global perspective (across all stakeholders) towards the expectations and total value of the data. The more universally usable the data and the methods to utilize it become, the more effectively DOTs will be able to construct, operate, and maintain their capital projects. This increase in business efficiency benefits both the agency’s ability to deliver competitive products, as well as providing cost savings to its taxpayers.

DRAFT CHARGE STATEMENT

The Joint Technical Committee on Electronic Engineering Data will provide a national civil transportation forum for the following purposes:

- **Standards** – Develop, publish and maintain national civil engineering data standards to provide uninhibited exchange of data between various software applications and data customers. This may include some general discussion of CADD related standards.
- **Guidance** – Development and publication of guidance on the: 1) types of uses for electronic engineering data, 2) understanding the expectations of the data accuracy, 3) professional licensing considerations, 4) legal contractual requirements, 5) securing the integrity of the data, 6) insuring long-term record retention, and 7) benefit/cost considerations.
- **Best Practices** – Collect, recommend, publish and update information on the best practices for the use of electronic data and its related state-of-the-art technologies across the transportation industry.
- **Industry Focus Group** – Provide a forum to collect input and exchange ideas with other industry stakeholders such as contractors, software vendors, and hardware or equipment manufacturers.

POTENTIAL PUBLICATIONS

- **AASHTO Standards on Electronic Engineering Data for the Transportation Industry**
- **AASHTO Guide on Uses of Electronic Engineering Data, and Its Best Practices**
DRAFT TECHNICAL COMMITTEE OBJECTIVES

The functional objectives of this technical committee will be to:

1. Communicate with its DOT members to determine constituents’ business needs;
2. Engage external engineering data users such as the construction contracting community and material suppliers to hear their concerns.
3. Investigate and recommend guidelines for the use of electronic engineering data and how it relates to legal contract requirements, professional liability, and long-term data retention.
4. Work with major technology vendors to improve the exchange and use of intelligent engineering data to reduce costs, save time, and improve quality of the resulting product. This includes the transfer of engineering data through the development, contracting and building phases of a capital project.
5. Steer industry development based on the business needs for improving the conveyance of engineering data in a “vendor-neutral” format across the entire life cycle of a capital project.
6. Develop and maintain national standardized methods, content, and formats for effective transfer of engineering data from initial data collection (mapping) through record plans and/or asset management.

OPERATIONAL GUIDELINES

- The accelerating rate of change in the technology fields suggests that the need for this technical group’s work would continue to evolve at a similar rate, and therefore, the need for this group will be continuous and should not sunset.
- The technical committee will conduct a business meeting once or twice a year at rotating locations. Additional coordination and collaboration will continue through other communication methods such as conference calls or by email.
- The technical committee will submit annual reports of their activities to both the Subcommittees on Design, Construction, and Bridges and Structures.
- All issuances by this technical group will first be provided to the Subcommittees on Design, Construction, and Bridges and Structures for review.
- The technical group will limit their discussions to include only engineering data created or used as a part of Capital Projects. This may include from project inception, through Design, Construction, and the asset management of evolved engineering information.