

Consensus Studies Completed Reports 2019

Special Report 330: [Performance of Bridges that Received Funding Under the Innovative Bridge Research and Construction Program](#)

The FAST Act called on TRB to convene a study committee to examine the results of the Innovative Bridge Research and Construction (IBRC) program, which was created by Congress to promote innovation in highway bridge construction. Between 1999 and 2005, the program provided state departments of transportation with nearly \$130 million in grants to encourage the use of innovative materials and technology to construct or repair approximately 400 bridges. Projects funded by the IBRC program included the use of such materials as fiber-reinforced polymer composites, high-performance concrete, high-performance steel, and corrosion-resistant reinforcing bar, and techniques like accelerated bridge construction.

Special Report 330 analyzes the performance of bridges that received IBRC project funding and assesses the extent to which the projects met the goals of the program. The report also provides an analysis of the utility of the innovative materials and technologies used in IBRC projects, compared with conventional materials and technologies, in meeting the needs of a sustainable transportation system with low life-cycle costs. The report contains a series of recommendations on how the installed and life-cycle costs of bridges may be reduced using innovative materials and technologies and recommends that Congress create a new federal program to provide incentives for innovation in bridge construction.

Special Report 331: [The Vital Federal Role in Meeting the Highway Innovation Imperative](#)

Issued by TRB's Research and Technology Coordination Committee, Special Report 331 reviews the federal highway research and innovation enterprise, including the research, development, and technology (RD&T) programs of the Federal Highway Administration (FHWA) and the U.S. DOT Intelligent Transportation Systems Joint Program Office (ITS JPO). The report explains how FHWA and ITS JPO programs are conducting nationally significant research, fulfilling congressional mandates, and addressing many significant gaps in highway research coverage.

The report also points to developments that are changing highway transportation in fundamental ways and could warrant even greater levels of RD&T investment by the two federal programs. Several candidate topics for future RD&T are identified, including research on automated vehicle technology, energy and sustainability, growing and changing populations, resilience, goods movement, safety, and equity. The report concludes by observing that with sustained and adequate funding and modest additions and changes to its RD&T portfolios, FHWA and the ITS JPO should continue to serve and advance the national interest.

Special Report 332: [Review and Update of U.S. Coast Guard Vessel Stability Regulations and Guidance](#)

The U.S. Coast Guard (USCG) has safety regulatory jurisdiction over vessels registered in the United States. One of its oldest regulatory functions is to ensure that ships, boats, and other floating vessels remain upright as they encounter both expected and unexpected loading, operating, and weather conditions, including wind and wave conditions and unexpected failure of watertight integrity. USCG has made major changes to its stability regulations over the past 30 years, most notably by consolidating most of them into a single subchapter. Despite these

consolidations, however, USCG is interested in making further improvements to the regulations, particularly with regard to their usability by vessel designers, classification societies, operators, and inspectors.

USCG asked TRB to convene a study committee to identify ways to make the stability regulations more usable and complete in meeting the requirements of different types of vessels and to account for vessels that have undergone weight changes that can affect their stability characteristics. In Special Report 332, the study committee explains how stability standards have been improved over time but still need to be kept updated based on the latest technical knowledge, well-aligned with international standards, and organized and presented in a manner that facilitates compliance and enforcement. The report identifies a number of options to further these goals.

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Special Report 333: [Toward New Naval Platforms: A Strategic View of Naval Engineering](#)

Naval engineering concerns the design, construction, operation, and maintenance of naval sea platforms. The Office of Naval Research asked TRB to form a committee to review the status of its efforts under the National Naval Responsibilities: Naval Engineering (NNR-NE) program to ensure a healthy science and technology (S&T) and educational enterprise that can fulfill the future technology needs of the U.S. Navy in developing highly capable and affordable sea systems.

Special Report 333 contains findings on the state of naval engineering research, workforce development, and research infrastructure critical to naval interests. The report recommends that ONR employ a strategic framework for making choices about how best to pursue these three pillars of the program in the fast-changing S&T landscape and in response to new Navy operational paradigms. In particular, the proposed framework emphasizes the importance of NNR-NE making deliberate choices about when it should take the lead in sponsoring basic research to further naval interests and when it should leverage and monitor critical S&T for this purpose.

The Committee for the Review of FHWA's Infrastructure R&D Program (LTIP), in its January 30, 2019, [Letter Report](#), notes important accomplishments of the LTIP during 2018, including the development of a strategic plan for the LTIP, re-initiation of LTPP data collection, and development of an enhanced portal to FHWA's bridge data. The committee's report stresses the importance of LTPP and LTBP data for developing improved deterioration models that state Departments of Transportation need to meet federal asset management requirements. The letter report recommends actions to strengthen awareness of, and support for, the LTIP.