

March 8, 2022

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Federal Highway Administration
1200 New Jersey Avenue SE
Washington, D.C. 20590

ATTN: Docket No.: FHWA-2021-0021

Re: Federal Highway Administration Implementation of the Infrastructure Investment and Jobs Act

The American Society of Civil Engineers (ASCE) appreciates the opportunity to offer the following comments on the Federal Highway Administration's (FHWA) implementation of the Infrastructure Investment and Jobs Act (IIJA). A once-in-a-generation boost for the nation's roads and bridges, the legislation represents a substantial down payment on the infrastructure investment gap of \$2.5 trillion over 10 years that ASCE identified in the 2021 Report Card for America's Infrastructure¹. Thoughtful planning and implementation at the federal level will help ensure effective use of this investment.

Founded in 1852, ASCE is the country's oldest engineering society. Representing more than 150,000 civil engineers from the private sector, government, and academia, ASCE is dedicated to the advancement of the science and practice of engineering. ASCE members represent the professionals who plan, design, construct, and manage much of the nation's transportation infrastructure. As a result, civil engineers are affected by government decisions that either promote or impede the development of safe and resilient infrastructure in our communities.

As the federal agency that provides stewardship for the nation's road and bridge systems, FHWA's involvement will be integral to successful implementation of the IIJA, which contains a five-year, \$383.4 billion reauthorization of federal surface transportation and an additional \$110 billion in appropriations for road and bridge programs.

ASCE stands ready to assist its FHWA partners in implementing this historic piece of legislation and appreciates the opportunity to offer perspective. For these comments, ASCE and its members request

¹ <https://infrastructurereportcard.org/>

special consideration of **partnerships across all levels of government, the promotion of industry-driven standards, asset management and life-cycle cost analysis, and rural road safety.**

Government Partnerships and Education

Implementing the IJA will involve close collaboration between FHWA and state department of transportation (DOT) partners. Federal money, such as the \$52.5 billion in apportioned funding for Fiscal Year (FY) 2022 that FHWA announced in December, will contribute to many projects at the state and local levels. The IJA represents a significant injection of funding, and federal guidance and partnership will be critical to ensuring these projects progress in communities throughout the country.

ASCE recommends that FHWA urge state DOT partners to conduct workshops to assist local government agencies with implementing their projects. State DOTs sometimes possess more experience following federal project implementation guidelines than their local government counterparts. Project workshops geared toward the IJA would instruct local government agencies on federal and state project requirements, thereby assisting in streamlining project implementation and reducing risks for FHWA, state DOTs, and local governments.

Additionally, FHWA should encourage state DOTs to implement Locally Administered Federal-Aid Projects Stakeholder Partnering within their own states. FHWA's Federal-Aid Highway Program supports state roadways by offering financial assistance for the construction, maintenance, and operations of the nation's 3.9 million mile highway network. Partnerships with smaller government agencies are important, as local agencies own and operate about 75% of the nation's highway network². These partnership groups, made up of representatives of FHWA Divisions, state DOTs, and local agencies, can collaborate to develop and improve federal-aid project implementation practices and streamline implementation of federal-aid projects within their state.

Stakeholder partnering is one of the strategies promoted through FHWA's Every Day Counts initiative, which identifies and deploys innovations to facilitate project efficiency at the state and local levels. According to FHWA, each state has used 20 or more of the 52 innovations promoted through the Every Day Counts program³. The IJA represents a good opportunity to highlight these innovations as best practices for others to follow. ASCE supports innovation and infrastructure research to enhance economic vitality while assuring public health, safety, welfare, quality of life, sustainability, and resilience.

Promotion of Industry-driven Standards

Section 25005 of the IJA establishes the Strengthening Mobility and Revolutionizing Transportation (SMART) Grant Program, which provides grants to eligible entities to conduct demonstration projects focused on advanced smart city or community technologies meant to improve transportation efficiency and safety. Priority would be given to applications for projects that would encourage private sector

² <https://www.fhwa.dot.gov/federal-aidessentials/federalaid.cfm>

³ <https://www.fhwa.dot.gov/innovation/everydaycounts/about-edc.cfm>

innovation by promoting industry-driven technology standards and facilitate information sharing between public and private groups.

ASCE supports infrastructure research and innovation, and views efforts to share information about government, private sector, and academic activities as an appropriate method to enable research and innovation. Additionally, ASCE could serve as a useful source of technical information for government partners as the SMART program gets underway. ASCE engages in standards setting on a large scale. ASCE standards provide technical guidelines for promoting safety, reliability, productivity, and efficiency in civil engineering. Accredited by the American National Standards Institute (ANSI), ASCE has a rigorous and formal process overseen by the Codes and Standards Committee (CSC). Standards are created or updated by a balanced, volunteer standards committee, followed by a public review period.

ASCE's work related to codes and standards can directly help with resilience, which is a priority area for the Department of Transportation⁴. ASCE has several documents that offer a sound basis for designing structures that can reasonably withstand the ever-increasing impacts of climate change and can guide the FHWA when designing new structures. These include:

- ASCE 7, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16)⁵, currently an integral part of U.S. building codes, describes the means for determining soil, flood, tsunami, snow, rain, atmospheric ice, earthquake, and wind loads, and their combinations for resilient structural design;
- ASCE 24, Flood Resistant Design and Construction⁶, prescribes a standard for cost effectively increasing resiliency by reducing and eliminating risks to property from flood hazards and their effects;
- ASCE 41, Seismic Evaluation and Retrofit of Existing Buildings, standardizes methods for the retrofit of existing buildings to increase resiliency in communities after a seismic event; and
- ASCE Manual of Practice 140, Climate-Resilient Infrastructure: Adaptive Design and Risk Management, provides guidance for and contributes to infrastructure analysis/design in a world in which risk profiles are changing due to climate change per the Fourth National Climate Assessment.

ASCE has furthered its standard development efforts by creating the ASCE-7 Hazard Tool⁷. The tool provides quick, reliable way to look up hazard data for seven environmental hazards including wind, seismic, ice, rain, snow, flood, and tsunami, to determine multiple types of hazard loads for buildings and other structures.

New competitive grant programs supported by the IJJA should incentivize the use of the most updated codes and standards in order to increase resilience. Across all infrastructure sectors, advancements in resilience can be made by:

- Enabling communities to develop and institute their own resilience pathway for all their infrastructure portfolios by streamlining asset management, implementing life cycle cost

⁴ <https://www.transportation.gov/sustainability/climate/dot-climate-action-plan-resilience>

⁵ <https://www.asce.org/asce-7>

⁶ <https://ascelibrary.org/doi/book/10.1061/asce24>

⁷ <https://asce7hazardtool.online/>

analysis into routine planning processes, and integrating climate change projections into long-term goal-setting and capital improvement plans.

- Incentivizing and enforcing the use of codes and standards, which can mitigate risks of major climate or manmade events.
- Connect advancements in research with practice by implementing new technologies, materials, and processes to combat the ever-changing environment.
- Understanding that our infrastructure is a complex set of interconnected systems and encourage a dynamic, “big picture” perspective that weighs tradeoffs across infrastructure sectors while keeping resilience as the chief goal.
- Prioritizing projects that improve the safety and security of systems and communities, to ensure continued reliability and enhanced resilience.
- Improving land use planning across all levels of decision-making to strike a balance between the built and natural environments, while meeting community needs, now and into the future.
- Enhancing the resilience of various infrastructure sectors by including or enhancing natural or “green” infrastructure.

ASCE’s discipline-specific institutes and technical groups, which bring together volunteers from around the world to advance the profession’s expertise, may be useful sources of guidance for FHWA. In particular, the Transportation & Development Institute and the Infrastructure Resilience Division represent professionals who could be appropriate points of contact as the agency implements the IIJA.

Another area in which ASCE may lend expertise and perspective is the Manual on Uniform Traffic Control Devices (MUTCD). The IIJA requires the U.S. Department of Transportation to update the MUTCD. The required update is meant to provide for the protection of vulnerable road users, support the safe testing of automated vehicle technology and any preparation necessary for the safe integration of automated vehicles onto public streets, and guide appropriate use of variable message signs. It also incorporates recommendations issued by the National Committee on Uniform Traffic Control Devices (NCUTCD) that have not yet been incorporated. As a sponsoring organization of the NCUTCD, ASCE is in a position to provide comments and information to FHWA on this manual.

ASCE believes that a regular cycle of updates can be effective in keeping the manual current. Traffic control device standards and practices included in the MUTCD should be based on sound engineering practices and judgment supported through adequate peer-reviewed research and experimentation.

Asset Management and Life-Cycle Cost Analysis

ASCE recommends FHWA incentivize the use of asset management strategies and life-cycle cost analysis (LCCA) in grant and formula programs. Infrastructure owners, including FHWA, can benefit from both strategies as a way to prioritize investment choices and pinpoint repairs.

Asset management strategies can serve as useful tools to help government agencies prioritize investment decisions and determine needed repairs. This practice involves managing infrastructure capital assets to minimize the total cost of operating them while maintaining a desired level of service

for customers⁸. If asset owners have an up-to-date inventory of their infrastructure, they can start to better understand repair and replacement needs, as well as plan a long-term capital budget.

LCCA includes considerations associated with planning, funding, design, construction, operation, maintenance, and decommissioning of projects. A key element of smart investment, the analysis is meant to determine the cost of building, operating, and maintaining infrastructure for its entire lifespan. It also considers impacts associated with innovation, resiliency, and sustainability as well as regulatory and environmental factors.

Life-cycle costs are critical in evaluating project alternatives, but they are not always sufficiently considered. The systematic use of LCCA will raise awareness about the full cost of infrastructure and the need to plan for this total cost. LCCA will also promote innovative, resilient, sustainable, and cost-effective engineering solutions.

Rural Road Safety

Safety underpins the work of civil engineers, and ASCE supports the requirement that all infrastructure, regardless of its status as public or private, be maintained in a safe and functional condition. In particular, FHWA's implementation of the IIJA should include a focus on rural road safety, as rural areas experience a disproportional number of traffic fatalities. According to the National Highway Traffic Safety Administration (NHTSA), while 19% of the U.S. population lives in rural areas, some 45% of all roadway fatalities occur on rural roads⁹. The IIJA's creation of the Rural Surface Transportation Grant discretionary program, which includes \$2 billion over five years to boost transportation infrastructure in rural areas, is a positive step with the potential to improve safety on the nation's roads.

ASCE advocates for a sustained effort to reduce traffic crashes and related deaths through improvements in all aspects of highway system performance, such as standards for planning and design, the understanding of accident causation, and the implementation of safety improvement programs. Specifically, ASCE supports increased funding for DOT's Highway Safety Improvement Program and implementation of performance and outcome-based programs established for the Federal-Aid Highway Program.

Funding for rural road safety has historically been relegated to the Highway Safety Improvement Program. The rural road safety network would benefit from a mandate for this funding to be used systematically to address crashes related to lane and road departures by providing a minimum lane width and safety shoulder. More broadly, FHWA should set a goal with its IIJA implementation to achieve as much rural road safety as soon as possible in all 50 states and tribal lands.

In particular, IIJA investment should be made in roadway features that are intended to prevent crashes. To avoid crashes on rural roads, standards such as a minimum two-foot paved shoulder and a minimum 10.5-foot lane width should be mandatory on these roads. Also, increased investment should include countermeasures to improve safety, such as guardrails, pavement markings, enhanced warnings, and friction surfaces on hazardous curves. In addition to improving safety for system users, these

⁸ <https://infrastructurereportcard.org/the-impact/asset-management-report/>

⁹ <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812957>

investments could help raise the “D” grade Roads received on the 2021 Report Card for America’s Infrastructure¹⁰.

Technology can also play a role in improving roadway safety by filling in the gaps of human performance. Technological advancements can provide stability control, automatic braking, all-wheel drive, steering by wire, traction control, collision avoidance, blind spot warning systems, lane control, and automatic cruise control. Infotainment systems linked to cell phone technologies (e.g., Bluetooth and voice activated commands) in vehicles can reduce distracted driving (e.g., from texting, looking down at a phone for directions, searching for an address, etc.).

Conclusion

ASCE would like to thank FHWA for the opportunity to offer comments as the agency goes about implementing the IIJA. As professionals who play a large role in planning, designing, constructing, and managing much of the nation’s transportation infrastructure, civil engineers’ work will be affected by FHWA’s implementation decisions regarding this important law. We look forward to working with FHWA as implementation progresses.

¹⁰ <https://infrastructurereportcard.org/cat-item/roads/>