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ATTN: Docket No. FHWA-2021-0011

Re: Improving Road Safety for All Users on Federal-Aid Projects

The American Society of Civil Engineers (ASCE) appreciates the opportunity to submit comments to the Federal Highway Administration (FHWA) on improving road safety for all users on Federal-aid projects and the design standards for the National Highway System (NHS). Safety is a fundamental principle of civil engineers' work. ASCE supports sustained efforts to reduce traffic crashes and related deaths through improvements in system performance, improved standards for planning and design, and continued implementation of safety programs. The input presented in this document is in response to a request for information (RFI) published by FHWA in the Federal Register on February 3rd.

Founded in 1852, ASCE is the nation's oldest engineering society. ASCE represents more than 150,000 members of the civil engineering profession in 177 countries. As the professionals who design, construct, and maintain critical aspects of the transportation system, including roadways, ASCE welcomes the opportunity to offer perspective on this subject. ASCE was a strong supporter of the Infrastructure Investment and Jobs Act (IIJA), which provided a once-in-a-generation investment in our nation's infrastructure and provisions to improve safety and modernize the transportation system. FHWA has the important responsibility of working with state, local, and Tribal partners to ensure IIJA funding and programs are carried out efficiently. ASCE is grateful for the opportunity to offer perspective on design standards, safety performance assessments, and multimodal considerations.

As FHWA's RFI notes, safety on roadways remains a pressing issue. Estimates from the National Highway Traffic Safety Administration (NHTSA) indicate 42,915 people died in traffic crashes in 2021¹. This estimate, which marks a 10.5% increase from the 38,824 traffic deaths recorded in 2020, is the highest number of such fatalities since 2005. In September, NHTSA released early estimates indicating 20,175 people died in crashes in the first half of 2022². This figure marks a .5% increase compared to the fatalities NHTSA projected for the first half of 2021. Safer roadway systems reduce loss of life and help

¹ <https://www.nhtsa.gov/press-releases/early-estimate-2021-traffic-fatalities>

² <https://www.nhtsa.gov/press-releases/early-estimates-traffic-fatalities-first-half-2022>

keep the nation's economic network intact. ASCE believes safety initiatives must account for all modes of transportation and views the IJJA as a chance to bolster transportation safety programs.

ASCE would like to thank FHWA for the opportunity to submit comments on roadway safety on Federal-aid projects and design standards. We stand ready to answer any questions or lend additional feedback as the agency conducts this information collection process. For these comments, ASCE and its members would like to focus on **specific responses to the questions FHWA presented in the RFI, considerations for various types of vehicles, and the promotion of industry-driven technical material and standards.**

ASCE's 2021 Report Card for America's Infrastructure

Every four years, ASCE publishes its *Report Card for America's Infrastructure*, which grades the nation's major infrastructure categories using an "A" to "F" school report card format. The most recent report card³, released in March 2021, evaluated 17 categories of infrastructure and reflected an overall "C-" grade.

Roads received a "D" on the Report Card, which found the country faces a \$786 billion backlog of road and bridge capital needs. The Report Card notes the need to improve safety on our roadways for both motorists and pedestrians, and identifies widened lanes and shoulders, center lane rumble strips, lane markings, and sidewalks as infrastructure improvements that could reduce fatalities. To raise the grade for roads, ASCE recommends increased funding from all levels of government and the private sector to address the condition and operations of the roadway system to maintain a state of good repair and ensure safety for all users.

ASCE's response to several of FHWA's questions

FHWA presented 27 questions in its RFI. ASCE is prepared to answer several of those questions, particularly about design standards for the NHS and safety performance assessment implementation considerations. As the system of all Interstate highways, principal arterials, other highways, and city streets, the NHS is vital to the nation's economy, defense, and mobility. ASCE's responses to specific questions presented by FHWA are below:

- *Question 7: What changes to other FHWA regulations codified at Title 23 of the Code of Federal Regulations (CFR) are needed to equitably improve safety for people of all ages and abilities who use urban and suburban streets?*
 - a) In Section 625.4e, concerning standards for context sensitive design, greater emphasis needs to be placed on peer-reviewed research supporting the development of design guidelines and practices to ensure the safety of all users, particularly in documents which are intended to be used nationally. Any contents of a design guide must not conflict with other practices and standards already developed in this manner.

- *Question 9: What, if any, elements of design are not adequately covered by the existing design standards in Part 625?*
 - a) Design elements used in context sensitive design or in Complete Streets applications should meet current guidelines and standards of practice developed consistent with

³ <https://infrastructurereportcard.org/>

comments noted in Question 7 above in addressing the safety needs of all roadway users.

- *Question 10: What specific provisions of Part 625 present an obstacle to equitably improving safety for people outside of vehicles, and why?*
 - a) Care needs to be taken when including requirements that facilities or accommodations be provided in all individual roadway projects. In older urban areas, right of way may be constrained and not reasonably available to support all modes. This can result in providing minimums required for construction of multimodal roadway elements where all accommodations need to be “squeezed” into limited right of way rather than promoting their safe and effective use. This would not only limit the ability to effectively support all travel types, but could also compromise the safety of all users whether they are walking, biking, using transit, or operating a motor vehicle. Service may be more effectively and conveniently provided when considering a specific travel corridor adjacent to the project, including such elements as bike boulevards and multi-use paths, which could be included in project development and implementation.

- *Question 11: Are there additional documents that FHWA should incorporate by reference in Part 625 to better facilitate the context sensitive design of streets that safely serve all users? Please identify the documents and describe why they should be referenced in the regulation.*
 - a) Since roadway lighting can enhance context sensitive design and other project types and promote safety for all travel modes, lighting must be sufficient to adequately illuminate roadways, sidewalk areas, and pathways. Roadway lighting standards are defined in the design standards set forth in the latest version of the handbook published by the Illuminating Engineering Society⁴. This can provide the benchmark used to define the adequacy of lighting in the traveled way.
 - b) Another document that should be considered is the multimodal concepts and analysis procedures for the assessment of Quality of Service in the Highway Capacity Manual⁵. This document provides for the evaluation of design alternatives and their impacts on pedestrian, bicycle, transit, and motor vehicle operation and their potential ultimate impacts on safety. If the Highway Capacity Manual procedures are applied using software products, they should faithfully implement the concepts included in the Manual. In addition to large urban areas, concepts are available to evaluate active travel in rural areas and small communities.
 - c) References should be included to the Public Rights-of-Way Accessibility Guidelines (PROWAG). Elements included must be incorporated into design guidelines developed and standards of practice applied.

- *Question 23: What challenges or concerns does your agency see with possible federal requirements for safety performance assessments on certain Federal-aid projects?*

⁴ <https://store.ies.org/product/rp-8-21-lighting-roadway-and-parking-facilities/>

⁵ <https://nap.nationalacademies.org/catalog/26432/highway-capacity-manual-7th-edition-a-guide-for-multimodal-mobility>

- a) Identification of high-frequency crash locations or hazardous conditions for vulnerable road users based on crash experience is often difficult due to generally low frequency of crashes experienced. Screening for applicability of safety initiatives can be labor intensive, and may only identify crash presences within travel corridors or large areas, which may make safety performance assessments difficult. For individual locations with low frequencies of crashes, the ability to reach performance targets could be difficult and limit participation in some safety improvement programs because of low probability of accident reduction despite needed safety improvements.
 - b) Similar to comments in item “a” above, there is a significant difference between high-risk and crash-driven project selection and implementation. Hazardous conditions on roadways can often be identified despite few or no recent crashes experienced, and necessary improvements may not be eligible for safety initiatives due to limited opportunities for crash reduction. Examples of high-risk safety treatments may include curve delineation and warnings, sign and pavement marking retroreflectivity to meet federal visibility standards, paved shoulders, and beam guardrail installation.
 - c) Concern exists over additional engineering requirements for safety performance assessments included as part of project application, screening, project development, and design. While the safety performance assessment may help achieve better selection and design of high-priority treatments to support the advancement of the Department of Transportation’s (DOT) National Roadway Safety Strategy (NRSS), this will translate to higher engineering costs, and could ultimately result in implementation delays related to state and federal project oversight and approvals.
 - d) Project development costs associated with expanded analytical requirements may result in engineering costs exceeding the cost for actual construction/installation in some cases. This may limit opportunities for many jurisdictions to take advantage of and participate in some Federal-aid safety programs. Positive measures to reduce costs and prevent delays should become a part of the overall project development process for Federal-aid projects. Expanded categorical exclusions from portions of the National Environmental Policy Act (NEPA) process or extensive safety analysis for many types of low-cost safety improvements could make a considerable improvement in the availability of local participation in safety-related Federal-aid programs.
 - e) In areas where limited right of way is available, such as in older urban areas, while attempting to address Complete Streets requirements, there should be a distinction made between “mandated” versus “appropriate” treatments. The inclusion of facilities for multimodal roadway use may result in the implementation of facilities only meeting facility minimums rather than meeting more desirable performance needs of all travel modes. The development of inadequate facilities could result in unintended or undesirable performance degradation for all travel modes. As an option, alternatives such as bicycle boulevards or multi-use paths within an immediately adjacent travel corridor or street should be appropriate in project development and design rather than providing accommodations in an individual Federal-aid roadway project.
- *Question 24: What challenges or concerns does your agency see with possible federal requirements for implementing cost-effective safety improvements resulting from safety performance assessments?*

- a) While the increase in federal funding and expanded programs is positive, local matching fund availability may be a determining factor for local jurisdiction participation in federal safety improvement programs. The Highway Safety Improvement Program (HSIP) provides 90% federal project funding, with a 10% local match. However, other federal programs and initiatives are subject to higher local shares. Opportunities to make significant safety improvements are being made available through various Federal-aid programs. However, participation in these initiatives by local agencies may be limited by their ability to borrow through bonding or increase local tax levies. This is particularly noteworthy for small communities and rural jurisdictions.
 - b) Other concerns include delays in the implementation of projects, additional engineering requirements, additional project oversight for project approvals, and increased project development and contracting costs as discussed in the response to Question 23 above.
- *Question 27: What additional resources (i.e. staff, guidance, tools, budget, etc.) would be necessary to adequately assess the expected safety performance of Federal-aid projects?*
 - a) Following the development of the American Association of State Highway and Transportation Officials' (AASHTO) Strategic Highway Safety Plan in 1998, the National Cooperative Highway Research Program (NCHRP) developed a series of guides to assist state and local agencies in reducing injuries and fatalities in targeted areas. These guides represent more than 20 individual documents included as parts of NCHRP Report 500⁶, which targets key emphasis areas in the AASHTO plan. The documents developed correspond to the emphasis areas outlined in the AASHTO Strategic Highway Safety Plan. These documents provide a valuable tool to develop programs to assist in mitigation of traffic crashes and to reach the AASHTO program targets for the reduction of traffic fatalities. However, these documents were developed nearly 20 years ago in most cases, and some of the material has become dated. It is recommended that these documents be updated in support of the advancement of the NRSS.
 - b) The assessment of expected safety performance needed for planning individual crash reduction projects and strategies under various federally funded initiatives, and the development and design of other federally funded transportation projects under the NRSS, is highly dependent on the availability, accuracy, and access to current and historical crash data. The availability of adequate data needed under program requirements for the screening and analysis included in many of these initiatives is not necessarily available in many jurisdictions nationally, particularly in some small and mid-sized communities in urban areas, as well as in small communities and rural areas. To make the needed data available in these areas and to effectively participate in these federal initiatives, it is recommended that support and outreach be provided by federal and state agencies focusing on providing access to current and historical crash data for all areas and communities to identify and mitigate safety issues.
 - c) It is recommended that both federal and state agencies develop and maintain outreach to rural counties, townships, and small communities to aid in identifying hazards and unusual crash experiences, and to provide needed educational opportunities to mitigate these problems and take advantage of the expanded federal safety initiatives.

⁶ <https://www.trb.org/Main/Blurbs/152868.aspx>

Additionally, to ensure successful outcomes of NRSS goals and objectives, strong partnerships by federal and state agencies with metropolitan planning organizations (MPOs), counties, and local jurisdictions need to be maintained to assist in project identification, development, and the identification of funding opportunities. Partnerships for multi-jurisdiction safety initiatives and projects should also be encouraged and promoted.

- d) Emphasis should be given to providing outreach for the needed training of staff for MPOs and local municipalities in the assessment and identification of crash data, basic crash mitigation strategies, use of the Highway Safety Manual⁷, and other technical matter needed to successfully apply for and implement safety improvements under Federal-aid initiatives. For large urban areas, advanced topics in transportation and operational safety would be beneficial where engineering is done by agency staff. Training and outreach are critical for personnel responsible for safety in small communities and for communities in rural areas to be able to effectively implement crash/hazard identification and reduction programs. Consideration should be given to partnership with and support of national and local branches of professional organizations and engineering societies (such as ASCE or the Institute of Transportation Engineers), as well as universities to provide grants for low- or no-cost training opportunities in transportation operation and safety.
- e) Provide the financial resources necessary for expanded focus and support of non-construction projects under the various Federal-aid programs. These should include programs such as child safety initiatives, traffic enforcement, identifying areas where expanded enforcement efforts are needed, addressing reckless driving, and providing driver training and educational programs.

Design considerations for various vehicle types

FHWA projects should take into consideration the types of vehicles that are traveling on various structures. For example, pavement and structural supports should account for the substantially heavier weight of electric vehicles (EVs) in addition to the weight of more traditional motor vehicles.

ASCE appreciates FHWA's commitment to launching a Complete Streets initiative to implement policies that prioritize the safety of all transportation system users. ASCE supports Complete Streets policies that integrate the safety, needs, and convenience of all users in the planning, design, construction, operations, and maintenance of transportation networks. As vehicle electrification grows more prevalent, planning approaches should consider the parking and charging needs of e-bikes, e-scooters, and e-delivery vehicles.

Promotion of industry-driven standards

ASCE engages in setting standards on a large scale and can serve as a useful source of technical information for government partners. ASCE Standards provide technical guidelines for promoting safety, reliability, productivity, and efficiency in the civil engineering profession. 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

⁷ <https://www.highwaysafetymanual.org/Pages/default.aspx>

committee, followed by a public review period. These standards are adopted by state and local jurisdictions and used in the designing of projects around the world.

One particular standard that can offer sound guidance for transportation engineering and roadway safety is ASCE 58, Structural Design of Interlocking Concrete Pavement for Municipal Streets and Roadways (ASCE/T&DI/ICPI 58-16)⁸, which establishes guidelines for developing appropriate pavement structures for various traffic and subgrade conditions. This standard provides preparatory information for design, key design elements, design tables for pavement equivalent structural design, construction considerations, applicable standards, definitions, and best practices.

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 DOT. In particular, the Transportation & Development Institute and the Infrastructure Resilience Division represent professionals who could be appropriate points of contact for the agency.

Another area in which ASCE may lend expertise and perspective is the Manual on Uniform Traffic Control Devices (MUTCD). The IIJA, which ASCE strongly supported, requires the DOT to update the MUTCD every four years. 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 DOT on this manual. ASCE believes 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.

Conclusion

ASCE thanks FHWA for the opportunity to submit comments about road safety and design standards. ASCE appreciates FHWA's willingness to hear from transportation industry representatives and technical experts. Furthermore, ASCE recognizes DOT's commitment to safety, such as through the NRSS. ASCE signed on to DOT's Call to Action in support of the NRSS and remains a willing partner in the effort to improve safety for all transportation system users. We are prepared to answer questions as the agency collects information.

⁸ <https://ascelibrary.org/doi/book/10.1061/9780784414507>