

**BEFORE THE
U.S. DEPARTMENT OF TRANSPORTATION
AND THE FEDERAL HIGHWAY ADMINISTRATION**

Work Zone Safety and Mobility and
Temporary Traffic Control Devices

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Docket No. FHWA-2022-0017

COMMENTS OF MOBILE BARRIERS LLC

(November 17, 2023)

As a small business dedicated to improving work zone safety, efficiency, and traffic flows, Mobile Barriers LLC appreciates the opportunity to submit these comments in response to the Federal Highway Administration’s (“FHWA”) and the Department of Transportation’s (“DOT”) notice of proposed rulemaking on Work Zone Safety and Mobility and Temporary Traffic Control Devices, 88 FR 64836 (the “NPRM”).

FHWA proposes to revise its rules on traffic safety and mobility in highway work zones in response to the directives of Section 1405 of the Moving Ahead for Progress in the 21st Century Act (“MAP-21”)¹ and Section 1427 of the Fixing America's Surface Transportation Act (“FAST Act”).² These regulations were last modified over 15 years ago (2004 for Subpart J and 2006 for Subpart K), and Mobile Barriers supports FHWA’s efforts to strengthen its rules and protect workers. However, FHWA’s proposed rules are insufficient to protect highway workers, and do not comply with Congress’ direction to FHWA to “do all within its power to protect workers in highway work zones.”³ Accordingly, Mobile Barriers strongly encourages FHWA to strengthen its proposed rules, consistent with MAP-21, to ensure the safety of workers in highway work zones.

Mobile Barriers also take this opportunity to encourage FHWA to include and reference the Subpart K criteria of Section 630.1108(a) in the Manual on Uniform Traffic Control Devices (“MUTCD”) in the equivalent section of the current Part 6, Temporary Traffic Control. With the changes proposed for Section 630.1108(a), it is ever more important to amend both the text and illustrations of the MUTCD to alert design engineers and others in positions of responsibility to be aware of and consider such criteria.

¹ Moving Ahead for Progress in the 21st Century Act, (Public Law 112–141), Section 1405, Highway Worker Safety, (July 6, 2012).

² Fixing America's Surface Transportation Act, (Pub. L. 114-94), Section 1427, Highway Work Zones, (Dec. 4, 2015).

³ *Id.*

I. With Work Zone Fatalities On The Rise, FHWA Must Strengthen Its Proposed Rules And Adopt Current ANSI Safety Standards Concerning Positive Protection

Mobile Barriers strongly encourages FHWA to do everything in its power to protect workers in highway work zones, including by strengthening its proposed rules regarding the use of positive protection. Despite efforts to reduce work zone fatalities and injuries, work zone fatalities have increased significantly over the past decade. Since 2011, work zone fatalities have grown from 590 fatalities to 857 fatalities in 2020 (the most recent year of available national work zone fatality data).⁴ Vehicle collisions with highway workers as a percentage of all highway worker fatalities have also increased at an alarming rate. In 2020, 53% of all highway worker fatalities at road construction sites were caused by a vehicle striking a worker, up from 35% in 2015.⁵ And in a 2023 survey conducted by the Associated General Contractors of America (“ACG”), the majority of highway contractors (55%) reported crashes into their work zones.⁶

In short, more road workers are being injured or killed in preventable work zone crashes. Intensifying this trend, as FHWA notes in its NPRM, work zone activities are expected to increase significantly with the passage of the Bipartisan Infrastructure Law (“BIL”).⁷ In addition, the risks posed to road workers will likely further increase as the size of vehicles in the U.S. continues to grow larger. According to a recent Insurance Institute for Highway Safety (“IIHS”) study, the average U.S. passenger vehicle has grown 4 inches wider, 10 inches longer, 8 inches taller, and 1,000 pounds heavier over the past 30 years.⁸ Significantly, the IIHS study found that vehicles with higher front ends (pickup trucks, SUVs and vans with a hood height greater than 40 inches) were 44% to 45% more likely to cause fatalities in crashes with pedestrians than smaller cars and trucks.⁹

These increased dangers further emphasize the particular vulnerability of highway workers as reflected by Congress’ designation of pedestrians (which includes workers working on foot on or

⁴ Fatality Analysis Reporting System (“FARS”) maintained by NHTSA and is available at the following URL: <http://www.fars.nhtsa.dot.gov/>. Vehicle collisions with highway workers as a percentage of all highway worker fatalities are also trending upward.

⁵ See Census of Fatal Occupational Injuries, Bureau of Labor Statistics, US. Department of Labor, Washington, DC. Accessible at <https://www.bls.gov/iif/overview/cfoi.htm>; Worker Fatalities and Injuries at Road Construction Sites. National Work Zone Safety Information Clearinghouse. Accessible at <https://workzonesafety.org/work-zone-data/worker-fatalities-and-injuries-at-road-construction-sites/>.

⁶ Associated General Contractors of America, 2023 Work Zone Safety Survey. Accessible at https://www.agc.org/sites/default/files/users/user21902/2023_Work_Zone_Survey_National.pdf.

⁷ Bipartisan Infrastructure Law (enacted as the Infrastructure Investment and Jobs Act), (Pub. L. 117–58) (November 15, 2021).

⁸ Hu, Monfort, and Cicchino, Insurance Institute for Highway Safety, The association between passenger-vehicle front-end profiles and pedestrian injury severity in motor vehicle crashes, (November 2023).

⁹ *Id.* at 15; see also, News Release, IIHS, Vehicles with higher, more vertical front ends pose greater risk to pedestrians, (November 14, 2023).

along roadways) as “Vulnerable Road Users” in the BIL,¹⁰ which amended the Highway Safety Improvement Program to add protection for Vulnerable Road Users.¹¹ Similarly, the DOT also recognizes that highway workers are among the most “Vulnerable Road Users” in its 2022 Vulnerable Road User Safety Assessment Guidance:

FHWA therefore encourages States and other funding recipients to prioritize vulnerable road user safety in all Federal highway investments and in all appropriate projects[.]” . . . Please note that a vulnerable road user . . . Includes a highway worker on foot in a work zone, given they are considered a pedestrian.¹²

Since passing the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (“SAFETEA-LU”) in 2005, (which enacted 23 U.S.C. 109(e) and 112(g)), Congress has increasingly emphasized the need to protect highway workers.¹³ The rising number of accidents, injuries, and fatalities, however, further highlight the imperative for stronger rules to protect highway workers, including those concerning positive protection.

Towards that goal, and in alignment with the purpose of Section 1405 of MAP–21 and Section 1427 of the FAST Act, Mobile Barriers strongly encourages FHWA to strengthen its rulemaking to meet current industry safety standards, such as those contained in ANSI Standard A10.47-2021 (emphasis added):

ANSI standard A10.47, Section 4.4

4.4 Positive Protection Measures

Positive protection shall be used (unless determined unnecessary) in a case in which the work zone provides workers no means of escape (e.g., tunnels, bridges, etc.) from external motorized traffic intruding into the work space, or any combination of:

1. Long duration work zones (e.g., two weeks or more) resulting in substantial worker exposure to motorized traffic.
2. Projects with high anticipated operating speeds (e.g., ≥ 45 miles per hour, 72 kilometers per hour) especially when combined with high traffic volumes ($> 20,000$ vehicles per day).

¹⁰ See BIL, Section 11111.

¹¹ 23 U.S.C. § 148 (a)(1)(15) (defining “Vulnerable Road Users” to include persons with an attribute code that is included in the number of non-motorized fatalities, as defined in 23 CFR 490.205, which includes persons designated with NHTSA FARS attribute code (5) “Pedestrians,” which in turn includes all pedestrians except for those in/on personal conveyances and in buildings.).

¹² USDOT, Memorandum: Vulnerable Road User Safety Assessment Guidance, (October 21, 2022).

¹³ See BIL/IIJA, Section 1111; MAP-21, Section 1405; FAST Act, Section 1427.

3. Work operations that place workers within one lane-width to travel lanes open to traffic.

Positive protection shall be considered in any other cases involving:

1. Roadside hazards, such as drop-offs or unfinished bridge decks, that will remain in place overnight or longer.
2. Other circumstances not listed that merit the use of positive protection.

4.4.1 Positive protection *may only be determined unnecessary if (a) there is a written analysis by the project sponsor supporting such a conclusion*, and (b) the project is outside an urban area and the average daily traffic load of the applicable road is less than 100 vehicles per hour.

4.4.2 Where positive protection has been determined unnecessary, alternative methods shall be used to protect from work area intrusions. The alternative methods shall be implemented before work begins and workers shall be instructed on the methods used.¹⁴

In particular, Mobile Barriers notes that the ANSI standards above call for the use of positive protection in more circumstances than FHWA’s proposed language. As currently written, it would give states broad discretion, based on each state’s own generalized agency-developed guidelines, rather than a project-specific analysis as required by MAP-21.¹⁵ Strengthening the proposed rules to meet the ANSI standard would be more consistent with the DOT’s 2022 National Roadway Safety Strategy (“NRSS”), which prioritizes zero deaths and makes a commitment to “taking substantial, comprehensive action to significantly reduce serious and fatal injuries on the Nation’s roadways.”¹⁶ Without stronger protections for workers in work zones, FHWA’s commitment rings hollow.

¹⁴ ANSI standard A10.47, Section 4.4 (emphasis added).

¹⁵ NPRM at 64845 (proposing 23 CFR 630.1106(b) read: “The strategies and devices to be used may be determined by a project-specific engineering study *or determined from agency guidelines* developed from an engineering study that indicate when positive protection devices or other strategies and approaches are to be used based on project and highway characteristics and factors.” (emphasis added)).

¹⁶ National Roadway Safety Strategy, (issued January 27, 2022); *See also*, DOT Memo, Vulnerable Road User Safety Assessment Guidance (October 21, 2022) (“FHWA recognizes that zero is the only acceptable number of deaths on our Nation’s roads and achieving zero is our safety goal. FHWA therefore encourages States and other funding recipients to prioritize vulnerable road user safety in all Federal highway investments and in all appropriate projects.”).

II. As Currently Proposed, The NPRM Is Insufficient To Protect Workers To The Fullest Extent Required By Law

The proposed changes to Subpart K, Temporary Traffic Control Devices, do not fully ensure the safety of workers to the extent required by MAP-21 and the FAST Act.¹⁷ Specifically, the proposed language (1) weakens the threshold for the use of positive protection in work zones that provide workers no means of escape from motorized traffic, and (2) omits the requirement to use temporary longitudinal traffic barriers in certain circumstances in long-duration stationary work zones.

As noted in the NPRM, language in MAP-21 “directed FHWA to modify Subpart K to re-incorporate the original language proposed in the 2006 NPRM related to criteria for requiring positive protection.”¹⁸ Specifically, Section 1405 of MAP-21 outlined the following (emphasis added):

SEC. 1405. HIGHWAY WORKER SAFETY. Not later than 60 days after the date of enactment of this Act, the Secretary shall modify section 630.1108(a) of title 23, Code of Federal Regulations (as in effect on the date of enactment of this Act), to ensure that—

(1) at a minimum, *positive protective measures are used to separate workers* on highway construction projects from motorized traffic in all work zones conducted under traffic in areas that offer workers no means of escape (such as tunnels and bridges), *unless* an engineering study determines otherwise;

(2) temporary longitudinal traffic barriers are used to protect workers on highway construction projects in long-duration stationary work zones when the project design speed is anticipated to be high and the nature of the work requires workers to be within 1 lane-width from the edge of a live travel lane, *unless*—

(A) an analysis by the project sponsor determines otherwise; or

(B) the project is outside of an urbanized area and the annual average daily traffic load of the applicable road is less than 100 vehicles per hour[.]¹⁹

Congress reemphasized this language and its commitment to worker safety in the FAST Act, signed into law in 2015.²⁰ Specifically, Section 1427 instructed FHWA to “move rapidly to finalize regulations, as directed in section 1405 of MAP–21 (126 Stat. 560), to protect the lives and safety of construction workers in highway work zones from vehicle intrusions.”²¹ As explained below,

¹⁷ MAP-21, Section 1405; FAST Act, Section 1427.

¹⁸ NPRM at 64840.

¹⁹ MAP-21, Section 1405; *see also*, 23 U.S.C. § 112(g), Temporary Traffic Control Devices.

²⁰ FAST Act, Section 1427; *see also*, NPRM at 6840.

²¹ FAST Act, Section 1427.

however, the NPRM does not properly implement this language. Notably, Congress' explicit reference and instruction in the FAST Act to implement the prior directive from an existing law is clear. FHWA cannot continue to ignore clear unambiguous statutory language.

a. Work Zones Offering No Means of Escape

As currently written, the NPRM does not fully implement the MAP-21 requirement concerning the use of positive protection in work zones that provide workers no means of escape from motorized traffic.

MAP-21 directs FHWA to modify 23 CFR 630.1108(a) to ensure that “at a minimum, positive protective measures are used to separate workers on highway construction projects from motorized traffic *in all work zones* conducted under traffic in areas *that offer workers no means of escape* (such as tunnels and bridges), unless an engineering study determines otherwise” (emphasis added).

However, the proposed rule adds an additional qualification (high operating speeds) to the requirement to use positive protection (unless an engineering study determines otherwise) (emphasis added):

§ 630.1108 Work zone safety management measures and strategies.

(a) Positive Protection Devices. At a minimum, agencies shall use positive protection devices in work zones *with high anticipated operating speeds* that provide workers no means of escape from motorized traffic intruding into the workspace unless an engineering study determines otherwise.²²

The circumstance requiring positive protection in MAP-21 is not qualified with or limited by “high anticipated operating speeds.” Instead, Congress legislated a clear and unambiguous threshold in MAP-21, providing that positive protection shall be used “*in all work zones* . . . that offer workers no means of escape (such as tunnels and bridges), unless an engineering study determines otherwise” (emphasis added).

Reducing the threshold to “work zones with high anticipated operating speeds” creates a loophole, rendering the rule largely meaningless and needlessly jeopardizing worker safety. For example, the term “high anticipated operating speeds” is left undefined, and could be interpreted by state agencies in a manner that would preclude the use of positive protection in many, most, or virtually all work zones that offer workers no means of escape.

Congress has made clear, as reflected in the language of MAP-21, that if a work zone has “no means of escape” from motorized traffic, then no operating speed is truly safe. An unprotected worker who cannot escape faces serious injury from motor vehicles at any speed, even walking

²² NPRM at 64845, 64846 (emphasis added).

speeds.²³ A study by the AAA Foundation for Traffic Safety shows that the average risk of severe injury for a pedestrian struck by a vehicle reaches 50% at only 31 mph; and the average risk of death for a pedestrian struck by a vehicle reaches 25% at only 32 mph and 50% at 42 mph.²⁴

Other studies show even worse outcomes, with one study cited by FHWA showing that the risk of a pedestrian crash fatality reaches 45% at 30 mph and 85% at 40 mph,²⁵ and another study estimating that pedestrians have less than a 50% chance of surviving a crash with a vehicle traveling 30 mph or above.²⁶

The qualification in the proposed rule that links “high anticipated operating speeds” to the use of positive protection in work zones offering no means of escape does not reflect the dangers workers face in such work zones, even at relatively low speeds.

Furthermore, the new speed qualification does not meet ANSI Standard A10.47-2021. ANSI Standard A10.47-2021 provides that positive protection measures “shall be used (unless determined unnecessary)” in “[w]ork zones that provide employees no means of escape (e.g. tunnels, bridges, etc.) from external motorized traffic intruding into the work space[,]” among other circumstances.²⁷ The ANSI standard does not qualify this with a high speed component.

Considering the vulnerability of highway workers,²⁸ FHWA’s commitment to zero deaths, and the worsening trend in highway accidents, Mobile Barriers urges FHWA to amend its proposed language to ensure workers are protected in work zones that offer no means of escape, consistent with the ANSI Standards and the judgement of Congress as reflected in MAP-21.

²³ USDOT, Memorandum: Vulnerable Road User Safety Assessment Guidance, (October 21, 2022) (“Please note that a vulnerable road user: . . . Includes a highway worker on foot in a work zone, given they are considered a pedestrian.”).

²⁴ Tefft, B.C., Impact Speed and a Pedestrian’s Risk of Severe Injury or Death, Technical Report, AAA Foundation for Traffic Safety, (2011).

²⁵ Limpert, Motor Vehicle Crash Reconstruction and Cause Analysis, Forth Edition, (1994); Synthesis of Methods for Estimating Pedestrian and Bicyclist Exposure to Risk at Areawide Levels and on Specific Transportation Facilities, Chapter 5, FHWA-SA-17-041, (January 2017).

²⁶ Peden, World Health Organization, World Report on Road Traffic Injury Prevention, (2004); *See also*, DOT/FHWA Report, Leaf and Preusser, Literature Review on Vehicle Travel Speeds and Pedestrian Injuries Among Selected Racial/Ethnic Groups, (October 1999) (estimating “fatality rates of 40, 80, and nearly 100 percent for striking speeds of 30, 40, and 50 miles per hour or more respectively.”).

²⁷ ANSI Standard A10.47-2021.

²⁸ USDOT, Memorandum: Vulnerable Road User Safety Assessment Guidance, (October 21, 2022) (“Please note that a vulnerable road user: . . . Includes a highway worker on foot in a work zone, given they are considered a pedestrian.”).

b. Temporary Longitudinal Traffic Barriers And Positive Protection In Long-Duration Stationary Work Zones

FHWA’s proposed rulemaking also omits language included in MAP-21 that would require the use of temporary longitudinal barriers to protect workers on highway construction projects in certain long-duration stationary work zones.

Specifically, the NPRM does not require positive protection or temporary longitudinal traffic barriers “to protect workers on highway construction projects in long-duration stationary work zones when the project design speed is anticipated to be high and the nature of the work requires workers to be within 1 lane-width from the edge of a live travel lane, unless (A) an analysis by the project sponsor determines otherwise; or (B) the project is outside of an urbanized area and the annual average daily traffic load of the applicable road is less than 100 vehicles per hour;”

As noted above, Section 1405 of MAP-21 directs FHWA to modify 23 CFR 630.1108(a) to ensure that:

(2) temporary longitudinal traffic barriers are used to protect workers on highway construction projects in long-duration stationary work zones when the project design speed is anticipated to be high and the nature of the work requires workers to be within 1 lane-width from the edge of a live travel lane, unless—

(A) an analysis by the project sponsor determines otherwise; or

(B) the project is outside of an urbanized area and the annual average daily traffic load of the applicable road is less than 100 vehicles per hour[.]²⁹

FHWA justifies its decision to omit this language by noting that, “language indicating that decisions regarding the use of longitudinal traffic barrier and other positive protection devices shall be based on an engineering study . . . was already stated in § 630.1106(b).”³⁰ The proposed language in Section 630.1106(b), however, fails to ensure “temporary longitudinal traffic barriers are used to protect workers” in work zones that “require[] workers to be within 1 lane-width from the edge of a live travel lane[.]”

Positive protection, including longitudinal traffic barriers, are important to preventing errant vehicles from veering into work zones where workers are within 1 lane from traffic. This is further reflected in ANSI Standard A10.47-2021, which provides that positive protection measures “shall be used (unless determined unnecessary)” in “[l]ong duration work zones (e.g. two weeks or more)

²⁹ MAP-21, Section 1405.

³⁰ NPRM at 64841 (“[t]he FHWA proposes to modify § 630.1108(a), Positive Protection Devices, to remove redundant language indicating that decisions regarding the use of longitudinal traffic barrier and other positive protection devices shall be based on an engineering study, as this was already stated in § 630.1106(b).”).

resulting in substantial employee exposure to motorized traffic” that “place workers within one lane-width to travel lanes open to traffic.”³¹

In addition, while both MAP-21 and the proposed Section 630.1106(b) language reference the use of an engineering study or project sponsor analysis, the proposed Section 630.1106(b) language also allows state agencies to rely on more generalized agency guidance (as opposed to a project-level analysis) to rebut the presumption of positive protection in long-duration stationary work zones (emphasis added):

The strategies and devices to be used may be determined by a *project-specific engineering study or determined from agency guidelines* developed from an engineering study that indicate when positive protection devices or other strategies and approaches are to be used based on project and highway characteristics and factors.³²

The reference to “agency guidelines developed from an engineering study” in the proposed Section 630.1106(b) can be used by agencies to justify not using positive protection in those circumstances required by Congress in MAP-21 (i.e., work zones offering workers no means of escape and long-duration stationary work zones with high project design speeds that place workers within 1 lane-width from a live travel lane) without conducting a project-specific analysis.³³

For example, a state agency could develop “agency guidelines” concluding that with regard to work zones that offer no means of escape, positive protection is only necessary if the work zone is also located in a high traffic area, with high operating speeds, and with a duration of two weeks or more. Regardless of the particulars, under the proposed rule language, a state agency would be able to develop “agency guidelines” establishing standards for the use of positive protection that deviate from the requirements imposed by Congress in MAP-21.

Congress’s judgment that positive protection shall be used in the provided circumstances cannot be supplanted and ignored in favor of general “agency guidelines,” based on a generic “engineering study”, without actually conducting a project-level engineering analysis. This interpretation would upset the presumption that positive protection is to be used in those circumstances unless an engineering study determines otherwise.

In the interest of worker safety, and given Congress’s direction to FHWA to “do all within its power to protect workers in highway work zones,”³⁴ FHWA must amend its rulemaking to make clear that positive protection shall be used in long-duration stationary work zones that require workers to be within 1 lane-width from the edge of a live travel lane unless a project-specific engineering study or project-specific analysis by the project sponsor determines otherwise.

³¹ ANSI Standard A10.47-2021.

³² NPRM at 64845.

³³ MAP-21, Section 1405.

³⁴ FAST Act, Section 1427.

III. The Cost-Benefit Studies Cited By FHWA Are Misguided And Faulty; Positive Protection is Cost-Effective In Many Circumstances

In its discussion introducing revisions to Subpart K, FHWA cites four cost-benefit studies as apparent justification for its failure to implement, for the past 11 years, the clear requirements of MAP-21, as reiterated in the FAST Act in 2015.³⁵ The cost-benefit studies cited by FHWA, however, fail to take into account all of the benefits of positive protection, while overstating their costs, in addition to other fundamental flaws.

For example, the most recent study cited by FHWA was released in 2014 and relies on obsolete data³⁶ and methods³⁷ and was prepared for, and specific to, the state of Idaho (the “Idaho Study”).³⁸ Furthermore, this study only considered one particular form of positive protection, portable concrete barrier, which is a particularly expensive form of positive protection, particularly in terms of deployment costs and prolonged interruptions of traffic. As reflected in federal statutes and the current and proposed regulations, positive protection includes more than portable concrete barrier.³⁹

The second study, which is unpublished and the only other study prepared in the last 10 years (the “Unpublished Study”), is also heavily flawed.⁴⁰ It also only evaluated one type of positive protection (temporary concrete barriers). In addition, the study incorporated multiple flawed costs assumptions. For example, the study estimated that work zones impacted by the MAP-21 directive would span four miles on average (based on data which is not representative of work zones that would be impacted by MAP-21)⁴¹ and assumed three miles of concrete barrier would be needed

³⁵ NPRM at 64840; Ullman, Finley, Bryden, Srinivasan, Traffic Safety Evaluation of Nighttime and Daytime Work Zones, NCHRP Report 627, (2008); Ullman, Iragavarapu, and Sun, Work Zone Positive Protection Guidelines. Report No. FHWA/TX-11/0-6163-1 (May 2011); Support for MAP-21 Section 1405: Cost-Benefit Analysis. Unpublished report prepared for FHWA, (March 12, 2013); Ullman and Iragavarapu, Work Zone Positive Protection Guidelines for Idaho, Report No. FHWA-ID-14-228, (November 2014).

³⁶ The Idaho Report relies on a 2011 edition of AASHTO’s Roadside Design Guide tool to estimate crash frequency. Since 2011, work zone fatalities and injuries have increased dramatically.

³⁷ The Idaho Report relies on an outdated 2013 statistical distribution for Quality-Adjusted Life Years (“QALYS”) costs.

³⁸ Ullman and Iragavarapu, Work Zone Positive Protection Guidelines for Idaho, Report No. FHWA-ID-14-228, (November 2014) (“This project developed Idaho-specific Work Zone Positive Protection Guidelines that the Idaho Transportation Department (ITD) staff can use.”).

³⁹ 23 U.S.C. § 112(g) (“In this subsection, the term ‘positive protective measures’ means temporary traffic barriers, crash cushions, and other strategies to avoid traffic accidents in work zones, including full road closures.”).

⁴⁰ See Support for MAP-21 Section 1405: Cost-Benefit Analysis, Unpublished report prepared for FHWA, (March 12, 2013). Available at https://ops.fhwa.dot.gov/wz/docs/wz_cba_rpt100217.pdf.

⁴¹ This estimate comes from a study of 2001 data which evaluated online work zone data in 13 states. Of the 789 work zones analyzed, only 18% had provided work zone length data, and more than half of those came from only three states: Kentucky, Arizona, and Oregon. Furthermore, the ratio of bridge to non-bridge work zones (which have very different work zone lengths, and thus very different cost considerations) in the sample was not designed to reflect the subset of work zones impacted by the congressional directive. As a result, this four mile long estimate is not

for each work zone (which is an unrealistic figure)⁴² without citing any published research, data, or methodology other than “professional judgment.”⁴³

The Unpublished Study also mischaracterizes MAP-21’s actual requirements. The study’s analysis rests on the baseless assumption that every applicable work zone, other than those already utilizing positive protection, would be required to use positive protection without regard to their particular circumstances. Essentially, it ignores the “unless an engineering study requires otherwise” element of MAP-21, greatly skewing estimated costs.⁴⁴

As a general matter, the studies FHWA relies on fail to take into account the full comprehensive costs of work zone crashes. For example, the California Department of Transportation agreed to pay \$37 million to settle a lawsuit by a worker left paralyzed when he was struck by a motor vehicle while working on a highway work zone, an accident that likely would have been avoided with the use of positive protection.⁴⁵ FHWA does not take these costs into account.

According to FHWA’s own 2018 Report on Crash Costs for Highway Safety Analysis, “it is critical to account for the comprehensive costs of crashes.”⁴⁶

Comprehensive crash costs (a.k.a., societal crash costs) are the combination of tangible impacts (i.e., economic costs) and the monetized pain and suffering (i.e., QALY). Comprehensive costs are meant to capture all the impacts that result from crashes.⁴⁷

Overall, the studies that FHWA cites in defense of its delay are deeply flawed, and as a result have little to no practical value. Indeed, positive protection can be very cost effective in a wide array of circumstances and work zones. The California Department of Transportation (“Caltrans”), in a cost-benefit analysis of a tractor towed, steel mobile barrier, found that such barriers provide a \$1.9M yearly average operational cost benefit.⁴⁸ Further, some types of barrier, such as mobile

representative of work zones in this cost-benefit analysis. See Wunderlich and Hardesty, A Snapshot of Summer 2001 Work Zone Activity – Final Report, Sponsored by the Federal Highway Administration, (February 2003).

⁴² A realistic estimate would begin by studying the actual length/amount and cost of barrier used in work zones that already incorporate positive protection and the types of work zones likely to be impacted by the MAP-21 directive. This did not occur here.

⁴³ Unpublished Study at 8 (“We assumed that each work zone would have approximately 3 miles of barrier wall.¹⁰ [FN10] Assumption based on the professional judgment of . . . Department of Transportation Federal Highways Administration.”).

⁴⁴ See MAP-21, Section 1405 (requiring the Secretary to modify 23 U.S.C. 630.1108(a) to ensure that “positive protective measures are used . . . unless an engineering study determines otherwise” and “temporary longitudinal traffic barriers are used . . . unless an analysis by the project sponsor determines otherwise[.]” (emphases added)).

⁴⁵ Sacramento Bee, California to pay \$37M to worker paralyzed in highway crash (July 8, 2019).

⁴⁶ Harmon, Bahar, and Gross, Report on Crash Costs for Highway Safety Analysis, FHWA-SA-17-071, (January 2018).

⁴⁷ *Id.*

⁴⁸ Arico & Ravani, A Risk Assessment and Cost Benefit Analysis for the Balsi Beam Mobile Work Zone Crash Protection System, An AHMCT Technical Report, at 64 (2008).

barriers, actually improve traffic flow. This has also been studied and demonstrated by the Caltrans in its cost-benefit analysis of steel mobile barriers.⁴⁹ As technology improves, more options for positive protection will offer greater benefits and more flexibility in a variety of work zones.

IV. Underpinning FHWA’s Proposed Rule, Which Fails To Fully Implement MAP-21, Is The Implicit Incorporation Of FHWA’s Flawed Cost-Benefit Studies, Which FHWA Is Not Permitted To Consider

As explained above, FHWA has failed to fully implement MAP-21 and the FAST Act by weakening the thresholds for positive protection and allowing state agencies to substitute project-specific engineering analysis with generalized agency guidance. That, in turn, would allow state agencies to issue guidance fully supplanting Congress’s directive to use positive protection in the described work zones “unless an engineering study determines otherwise.”⁵⁰ This appears to be an intentional decision and the direct result of FHWA incorporating these faulty cost-benefit studies⁵¹ into its decision making for this rulemaking.

Even if FHWA’s cost-benefit studies were not faulty, FHWA lacks the authority to ignore a clear and precise congressional directive. Congress made the judgment that positive protection must be used in certain specified work zone environments, unless an engineering study determines otherwise, and set an explicit timeframe of 60 days to issue a rulemaking. The issuance of a rule to implement this directive was delegated to FHWA, but the decision itself, that positive protection be presumptively required, was made by Congress.⁵²

This is firmly established in case law.⁵³ For example, in *Whitman v. American Trucking Associations*, 531 U.S. 457 (2001), the Supreme Court held that the Clean Air Act unambiguously barred the Environmental Protection Agency (“EPA”) from considering costs in setting the National Ambient Air Quality Standard (“NAAQS”). The Supreme Court “refused to find implicit in ambiguous sections of the [the Clean Air Act] an authorization to consider costs that has elsewhere, and so often, been expressly granted[.]”⁵⁴ It further stated that for the EPA to prevail, it “must show a textual commitment of authority to the EPA to consider costs in setting NAAQS under § 109(b)(1).”⁵⁵

⁴⁹ *Id.*

⁵⁰ MAP-21, Section 1405.

⁵¹ As explained in Section III, the cost-benefit studies cited by FHWA fail to take into account all of the benefits of positive protection and overstate their costs.

⁵² FAST Act, Section 1427.

⁵³ *Whitman v. Am. Trucking Associations*, 531 U.S. 457 (2001) (holding that the Clean Air Act barred the EPA from considering implementation costs in process of setting national ambient air quality standards since the Act contained no explicit permission for the Agency to consider such costs); see also *Massachusetts v. E.P.A.*, 549 U.S. 497, 501 (2007) (holding that an agency’s decision not to regulate cannot “rest[] on reasoning divorced from the statutory text”);

⁵⁴ *Id.* at 467.

⁵⁵ *Id.* at 468.

As with the Clean Air Act, MAP-21 and the FAST Act do not provide a textual commitment to consider cost. Congress in MAP-21 and the FAST Act specified a particular regulatory approach: implement a rule requiring positive protection in the specified work zone environments.

This is not a situation where broad rulemaking authority is delegated with little clarity over what requirements should be promulgated and in what manner. Here, the directive is explicit, statutorily required, and the decision and authority flow directly from Congress. If that was not made abundantly clear in 2012 when Congress passed MAP-21, it most certainly was when this directive was reemphasized and expanded in the FAST Act.⁵⁶ Not only did the FAST Act call on FHWA to implement the directive in Section 1405 of MAP-21, it also stated that FHWA shall “do all within its power to protect workers in highway work zones.”⁵⁷ FHWA should do so now.

V. The NPRM Needlessly Weakens The Definition Of Positive Protection

The proposed revision to the definition of “positive protection devices” may have unintended consequences, negatively impacting worker safety. FHWA proposes to revise the definition of the term “positive protection devices” to remove the reference to crashworthiness evaluation criteria:

Proposed definition: *Positive Protection Devices* means devices that contain or redirect vehicles.⁵⁸

Current definition: *Positive Protection Devices* means devices that contain and/or redirect vehicles and meet the crashworthiness evaluation criteria contained in National Cooperative Highway Research Program (NCHRP) Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features, 1993, Transportation Research Board, National Research Council.⁵⁹

State agencies could attempt to rely on this revised definition to justify using positive protection devices that do not meet crashworthiness criteria for the intended speed/situation (i.e., using a TL-2 device improperly in a TL-3 scenario or using untested devices).⁶⁰ The qualifier, “meet crashworthiness evaluation criteria”, is important because it explicitly emphasizes and clarifies that positive protection devices must (1) be crash tested & (2) must also be appropriate for the relevant speeds (i.e., TL-2 & TL-3) to meet crashworthiness criteria. The removal of the crashworthiness evaluation criteria may result in agencies attempting to use exposure control

⁵⁶ FAST Act, Section 1427.

⁵⁷ *Id.*

⁵⁸ NPRM at 64845.

⁵⁹ 23 CFR § 630.1104.

⁶⁰ MASH ratings include TL-1, TL-2, TL-3, TL-4, TL-5, and TL-6. Each rating shows the size and speed of vehicles used in the tests. For example, TL-1 is cars and trucks at 31 mph, TL-2 is cars and trucks at 41 mph, and TL-4 is cars, trucks, and single unit trucks at 62 mph and 56 mph respectively.

measures or other traffic control measures, which do not provide a physical separation of workers from motorized traffic or meet crashworthiness criteria, in place of positive protection.

The current definition emphasizes and makes clear to anyone unfamiliar with positive protection devices (including state agencies which may experience high turnover) that an essential characteristic of positive protection devices is that they are crash tested & meet crashworthiness criteria (i.e., TL-2, TL-3, TL-4 for anticipated traffic speed & vehicle mass).

Including the reference to crashworthiness criteria is also important because some states incorporate these regulations into their official guidelines for “positive protection devices” rather than referencing NCHRP 350 or MASH directly. For example, Idaho’s 2014 “Work Zone Positive Protection Guidelines for Idaho” relies on Subpart K (not NCHRP 350 or MASH):

The Code of Federal Regulation (CFR) Title 23 Part 630 Subpart K - Temporary Traffic Control (630.1102 –630.1110) rule states that positive protection devices (i.e. devices that contain and/or redirect vehicles and meet the federal crashworthiness evaluation criteria) shall be considered where work zone conditions place workers at increased risk from motorized traffic and where positive protection devices can significantly improve safety.⁶¹

FHWA justifies the removal of the crashworthiness evaluation criteria by noting that “NCHRP 350 has been superseded with the Manual of Assessing Safety Hardware (otherwise known as MASH),” and citing FHWA’s longstanding policy that all roadside safety hardware installed on the National Highway System (“NHS”) be crashworthy.⁶²

This revision will cause unnecessary confusion. If FHWA intends for positive protection devices to be subject to crashworthiness evaluation criteria, as it suggests,⁶³ it should do so expressly in its definition of the term. The definition can simply be updated to reflect the MASH criteria. Otherwise, the elimination of crashworthiness criteria from the definition invites an interpretation that positive protection devices do not need to meet crashworthiness requirements or may otherwise include devices and technology that do not provide separation of workers from motor traffic.

Additionally, the following discussion in the NPRM could further cause or worsen this potential confusion (emphasis added):

Language in the Moving Ahead for Progress in the 21st Century Act (MAP-21) signed into law on July 6, 2012, directed FHWA to modify Subpart K to re-incorporate the

⁶¹ Ullman & Iragavarapu, Work Zone Positive Protection Guidelines for Idaho, Prepared for Idaho Transportation Department Research Program, RP 228, (December 2014).

⁶² NPRM at 64840 (“As the MASH implementation process moves forward, there no longer is a need to call out the crashworthiness requirements that positive protection devices shall meet.”).

⁶³ NPRM at 64840 (“The FHWA's longstanding policy is that all roadside safety hardware installed on the National Highway System (NHS) be crashworthy.”).

original language proposed in the 2006 NPRM related to criteria for requiring positive protection. . . While the results of the various analyses have not supported the inclusion of the specific thresholds of the 2006 NPRM language into the Subpart K regulation, there is reason to revise the rule at this time. It has been over 15 years since the rule was first published. *New technologies, such as work zone intelligent transportation systems (also referred to as smart work zones) and automated flagger assistance devices (AFADs), have become dependable tools that are now readily available to help mitigate the safety and mobility impacts of work zones and should be listed as options to consider within the regulation.* Other advanced technologies to support connected and automated vehicle travel through and around work zones continue to be developed and deployed.⁶⁴

The discussion of new technologies (such as automated flagger assistance devices and smart work zones) above occurs in the context of the discussion of positive protection measures and devices. FHWA then states that these technologies “have become dependable tools . . . and should be listed as options to consider within the regulation.” It is not clear whether FHWA intends to encompass within the definition of positive protection devices these technologies that provide no physical separation of workers from motorized traffic.

If that is the intent, such an expansion of the meaning and definition of positive protection devices will completely negate the clear statutory requirement. Congress, in MAP-21, conveyed its understanding that positive protection provides physical separation of workers from motorized traffic.⁶⁵ In any case, FHWA should make its definition clear. Given the potential safety ramifications, this should not be left open to interpretation by the states.

VI. FHWA Should Not Remove Safety Considerations from The Definition Of Mobility

FHWA proposes to weaken the definition of “Mobility” in Subpart J by removing the consideration and criteria to protect highway workers and road users:

Current definition (in part): With specific reference to work zones, mobility pertains to moving road users efficiently through or around a work zone area with a minimum

⁶⁴ NPRM at 64840 (emphasis added).

⁶⁵ See MAP-21, Section 1405 (providing that the Secretary shall modify section 630.1108(a) to ensure that “at a minimum, positive protective measures are used *to separate workers* on highway construction projects from motorized traffic[.]” (emphasis added)). Further, examples provided in the statutory definition of “Positive Protective Measures” include only those devices that would be subject to crashworthiness requirements or strategies such as full road closures. See 23 U.S.C. § 112(g)(4) (“In this subsection, the term “positive protective measures” means temporary traffic barriers, crash cushions, and other strategies to avoid traffic accidents in work zones, including full road closures”).

delay compared to baseline travel when no work zone is present, *while not compromising the safety of highway workers or road users* (emphasis added).⁶⁶

Proposed definition (in part): With specific reference to work zones, mobility pertains to moving road users efficiently through or around a work zone area with minimum delay compared to baseline travel when no work zone is present.⁶⁷

FHWA should not delete “while not compromising the safety of highway workers or road users” from the definition of mobility. Safety of highway workers is essential and fundamental to the concept of mobility in work zones. FHWA’s justification for removing this important consideration is simply that “the importance of not compromising the safety of highway workers is already emphasized in the definition of ‘Safety.’”⁶⁸ This explanation is insufficient. Protection of highway workers and road users must always take precedence, even if mobility is temporarily compromised. Mobility without safety is not acceptable, and the proposed definition is not consistent with Congress’ direction to FHWA to “do all within its power to protect workers in highway work zones.”⁶⁹ Accordingly, FHWA should not continue with its proposed modification to the definition of mobility.

VII. Conclusion

The U.S. faces serious challenges on our nation’s highways, including rising work zone fatalities and injuries. Mobile Barriers appreciates and supports the FHWA’s efforts to protect highway workers and its current action to finally update its regulations on Work Zone Safety and Temporary Traffic Control Devices. For the reasons discussed above, however, FHWA must further strengthen its protections of highway workers consistent with the language provided in MAP-21 and the FAST Act, and consistent with current industry safety standards. Mobile Barriers appreciates the DOT’s and the FHWA’s consideration of its Comment.

Respectfully submitted,

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⁶⁶ 23 CFR § 630.1004.

⁶⁷ NPRM at 64843.

⁶⁸ NPRM at 64838.

⁶⁹ *Id.*