

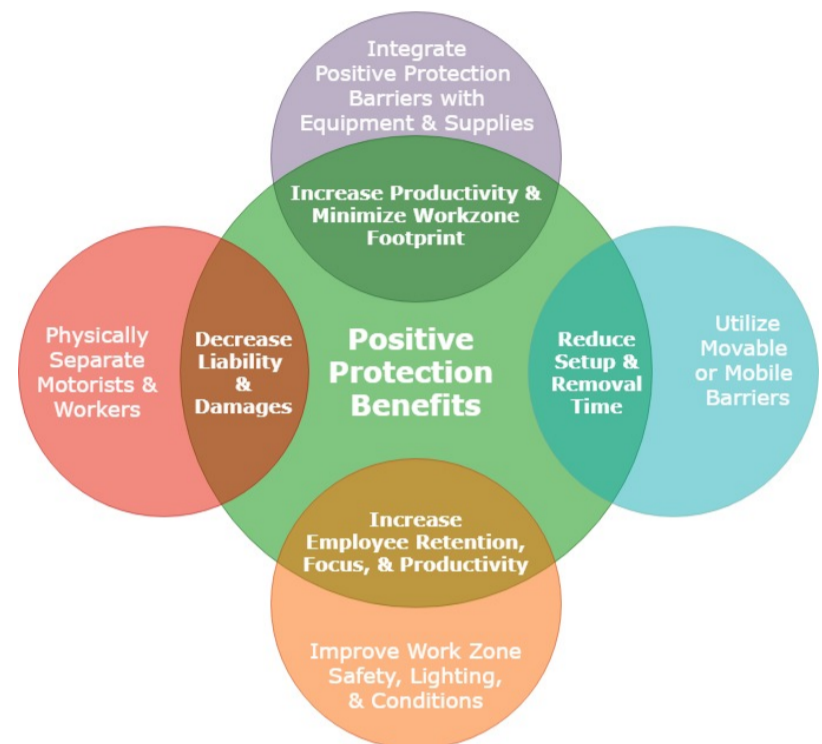
## Highway Barriers for Work Zone Safety

The [serious hazards](#) faced by highway workers, who are among the most "[Vulnerable Road Users](#)", highlight the need for [positive protection](#) measures such as highway barriers. In a 2022 survey, 64% of highway contractors reported crashes into their work zones. <sup>38</sup> In an earlier survey, 89% of highway contractors think [positive protection](#) barriers would help improve safety and prevent these horrific crashes. <sup>4</sup>

In 2021, ANSI Standard A10.47-2021 (§4.4) provides that [positive protection](#) "shall be used" in, at minimum, [5 circumstances](#). In 2021, the Infrastructure Investment and Jobs Act (IIJA) amended the [Highway Safety Improvement Program \(HSIP\)](#) to add protection for "[Vulnerable Road Users](#)", which includes road construction & highway workers on foot in work zones.

**Innovative highway barriers such as Mobile Barriers, Movable, & Temporary Barriers are enabling managers to accelerate highway projects,** increase roadway capacity to match daily traffic patterns, physically separate moving traffic and workers, minimize workzone footprints, and increase work zone safety. Benefits vary by product and application. For example, California research found a cost benefit for [highly mobile barrier](#) of \$1.9 million per year, per barrier in 2008 (\$2.72 million in 2023 dollars). <sup>14</sup> Commonly cited benefits of using Positive Protection include:

- Safeguarding Workers by Physically Separating Moving Traffic & Workers
- Reducing Project Duration & Cost
- Increase Roadway Capacity to Match Daily Traffic Patterns
- Increasing Productivity with Onboard Tools and Supplies
- Increasing Efficiency/Saving Time
- Increasing Employee Retention
- Decreasing Liability, and Damages
- Reducing Risk and Exposure to Dangers of Live Work Zone





## Mobile Barriers

[Mobile Barriers MBT-1®](#) is a highly mobile traffic barrier system for incident response & work zone safety. The mobility of the MBT-1® allows rapid work zone setup/removal and enables managers to reduce project duration & cost, schedule around peak traffic hours, and minimize roadway congestion.

The versatile MBT-1® integrates equipment & supplies for comprehensive on-site logistics with 85,000 lbs (38500 kg) GVWR carry capacity, integrated crane & heavy lifting capabilities, generator, high lumen work lights, TMA, electronic signage, and more. Tested and accepted under NCHRP 350 & MASH for TL-2 and TL-3 usage.

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## Moveable Barrier - Concrete

[Lindsay Transportation Solutions QMB Zipper](#): The Road Zipper System is designed to increase capacity and reduce congestion by making more efficient use of new or existing roadways & highways. This technology is used for managed lanes and construction applications to create safe, dynamic highways that offer [real-time roadway reconfiguration](#) while maintaining positive barrier protection between lanes. The Road Zipper System can be used to move barrier from one side of a lane to the other to create work space and reopen lanes again to restore capacity.

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## Moveable Barrier - Steel

[Valtir's Vulcan® moveable steel barrier](#) is comprised of lightweight, galvanized steel segments that offers [real-time roadway reconfiguration](#). It is tested to NCHRP Report 350 Test Level 3 and Test Level 4, and EN1317 H2 and N2 specifications. The Vulcan® Moveable Barrier is designed for easier movement with the Vulcan® Transfer Attachment (VTA) when connected to a skid steer or front end loader. The VTA is also designed to help the operator work from either side of the barrier.

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## Temporary Steel Barrier

[Hill & Smith Zoneguard®](#) temporary steel barrier, offers the road construction industry a revolutionary temporary barrier solution that provides superior protection. A cost-effective alternative to traditional concrete barrier, Zoneguard's lightweight configuration allows 750 feet to be hauled on one truck and up to 1500 feet to be installed in one hour. Zoneguard's low weight does not affect its performance, as it meets both NCHRP 350 (TL-3 & TL-4) and MASH (TL-3) crash test standards.



## Traditional Concrete Barrier (TCB)

Traditional concrete K-rail or Jersey Barrier is generally considered a device for use on Long-Term Projects. With a weight of 4,000 lbs or more, concrete Jersey Barrier requires heavy equipment to install, rearrange, and remove at the end of a project. As a result, traditional concrete barrier is often left-in-place for the duration of a project, limiting roadway capacity & flexibility to respond to rush hour traffic congestion. Commonly cited challenges of using concrete Jersey Barrier or K-Rail include installation/removal time & cost, safety risks of installation/removal in live traffic, and impracticality for Short-Term and Short-Duration work zones and/or where it is desirable to reopen lanes and relieve congestion for rush hour highway traffic.

# Footnotes

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<sup>1</sup> [Temporary Traffic Control Devices, 23 U.S.C. § 112\(g\).](#)

<sup>2</sup> [Definitions, Subpart K - Temporary Traffic Control Devices, 23 C.F.R. § 630.1104.](#)

<sup>3</sup> [Positive Protection Measures Defined, 23 U.S.C. 112\(g\)\(4\).](#)

<sup>4</sup> [2019 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

<sup>5</sup> [2018 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

<sup>6</sup> [2017 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

<sup>7</sup> [2016 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

<sup>8</sup> Estimated Total Crashes & Injuries Data: 2013-2015 data from NHTSA National Automotive Sampling General Estimates System (NASS/GES). NHTSA retired NASS/GES at the end of 2015. 2016-2017 data from NHTSA's replacement Crash Report Sampling System (CRSS).

<sup>9</sup> Fatalities Data: NHTSA Fatality Analysis Reporting System (FARS) Encyclopedia. 2018 is the last year with available data.

<sup>10</sup> [Positive Protection Devices, Subpart K - Temporary Traffic Control Devices, 23 C.F.R. § 630.1108\(a\)\(1-5\).](#)

<sup>11</sup> [Payment for Traffic Control, Subpart K - Temporary Traffic Control Devices, 23 C.F.R. § 630.1108\(f\)\(2\).](#)

<sup>12</sup> ["Portable Positive Protection: A Guide for Short Duration and Short Term Work Zones", Updated by Mobile Barriers LLC, Based on Material Developed by ATSSA for the FHWA Work Zone Safety Grant Program \(June 2016\).](#)

<sup>13</sup> [U.S. Department of Transportation, "Guidance on Treatment of the Economic Value of a Statistical Life in U.S. Department of Transportation Analyses - 2016 Adjustment," \(August 8, 2016\).](#)

<sup>14</sup> UC Davis/AHMCT, "A Risk Assessment and Cost Benefit Analysis for [Highly Mobile Barriers]," Technical Report Number UCD-ARR-08-09-30-01, (2008). Ibid, Attachment 3.

<sup>15</sup> Mobile Barriers LLC internal crash analysis for Washington D.C. located highly mobile barrier.

<sup>16</sup> Former Deputy Executive Director of the Texas Department of Transportation (TxDOT).

<sup>17</sup> [2013 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

<sup>18</sup> [2014 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

<sup>19</sup> [2015 Associated General Contractors of America \(AGC\) Highway Workzone Safety Study.](#)

## Work Zone Barriers

[Defining Positive Protection](#)

[Examples & Types of Positive Protection](#)

[Benefits of Positive Protection](#)

## Work Zone Crash Data

[Contractor Reported Crashes & Outcomes](#)

[Workzone Total Crashes & Injuries](#)

[Work Zone Crash Fatalities](#)

[Work Zone Pedestrian Fatalities](#)

[Firetruck and Emergency Response Collision Crash Data](#)

## Implementation

[When are Positive Protection Barriers Appropriate?](#)

[What Federal Funding is Available for Positive Protection Barriers?](#)

[How Can Contractors Obtain & Use Positive Protection Barriers?](#)

[FHWA Repeals Proprietary Product Rule](#)

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