

**Table 1: Solutions to Prevent Injuries at Road Construction Sites**

Solution	Specific solutions
Increased visibility	<ul style="list-style-type: none"> <li>Require workers to wear high-visibility safety apparel, including fluorescent, brightly colored, and reflective apparel, vests with strobes, and illumination rings for hard hats<sup>1a,1b,3</sup></li> <li>Employ work zone lighting, glare-free if possible<sup>1c,2</sup></li> <li>Increase taper length<sup>3</sup></li> <li>Install low-level transition lighting at the beginning and end of road work area to allow motorists to adjust to changing lighting conditions<sup>3</sup></li> <li>Increase visibility of barriers with bright colored paint, reflectors, and lights<sup>3</sup></li> <li>Ensure work signage is lighted and visible<sup>3</sup></li> </ul>
Positive barriers between workers and traffic	<ul style="list-style-type: none"> <li>Use temporary longitudinal barriers, including concrete or movable<sup>1d,1e,3</sup></li> <li>Use other temporary traffic control devices such as traffic cones and barrels<sup>1f,3</sup></li> <li>Use truck-mounted attenuators<sup>1g</sup></li> </ul>
Warning systems for drivers	<ul style="list-style-type: none"> <li>Set up intrusion alarm systems<sup>3</sup></li> <li>Lay temporary rumble strips<sup>1h</sup></li> <li>Use warning lights<sup>2</sup></li> <li>Portable changeable message signs, used in conjunction with traffic queue detection equipment, to provide drivers with real-time information<sup>2,3</sup></li> <li>Use dynamic speed display sign<sup>2</sup></li> </ul>
Warning systems for workers	<ul style="list-style-type: none"> <li>Use sensors, handheld radios, and intrusion alarm systems<sup>3</sup></li> <li>Have an object detection and camera system for heavy equipment<sup>1i</sup></li> <li>Use self-adjusting and directional backup alarms<sup>1j</sup></li> </ul>
Speed reduction systems	<ul style="list-style-type: none"> <li>Enforce speed reduction with police presence and radar guns<sup>3</sup></li> <li>Ticket and fine violators<sup>3</sup></li> <li>Apply speed reductions incrementally to maintain uniform traffic flow<sup>3</sup></li> </ul>
Impact attenuators	<ul style="list-style-type: none"> <li>Use crash cushions<sup>1k</sup></li> <li>Use truck-mounted attenuators<sup>1g</sup></li> </ul>
Engineering controls	<ul style="list-style-type: none"> <li>Use automated flagging assistant devices<sup>1l</sup></li> <li>Close the road, close the side of the road with work, or reroute traffic whenever possible<sup>3</sup></li> </ul>
Separate workers on foot from equipment	<ul style="list-style-type: none"> <li>Use flexible colored poles or temporary pavement markings to delineate pedestrian-free areas within the work zone<sup>3</sup></li> <li>Train workers and equipment operators to communicate with hand signals<sup>3</sup></li> </ul>
Raise awareness	<ul style="list-style-type: none"> <li>Participation in National Work Zone Awareness Week and Turning Point<sup>2</sup></li> <li>Distribute site-specific safety materials to all visitors and employees in the activity area<sup>3</sup></li> <li>Ensure truck drivers and equipment operators are aware of internal traffic control plans<sup>3</sup></li> <li>Train all workers on the internal traffic control plan<sup>3</sup></li> <li>Hold daily toolbox meetings to discuss and report hazards, close-calls, and safety considerations for the day's tasks<sup>3</sup></li> </ul>
Equipment safety and rollover prevention	<ul style="list-style-type: none"> <li>Use equipment with rollover protective structures and seat belts<sup>3</sup></li> <li>Only allow trained and authorized workers to handle equipment<sup>3</sup></li> <li>Require the use of parking brakes and chocks when equipment is unattended<sup>3</sup></li> <li>Install light strips on trucks for visibility, and use low-level lighting so that operators can see workers<sup>3</sup></li> <li>Regularly inspect and maintain equipment<sup>3</sup></li> <li>Use edge guards on trailers<sup>3</sup></li> </ul>