

Primer on Work Zone Safety in Canada

Work Zone Safety Challenges

Work zones are challenging to drivers. The road may change its familiar path, lanes may be closed, the surface may be sub-standard, pavement edge drop-offs may be present, all of which increase the difficulty of vehicle control. Additionally, the driver is faced with increased information load from the traffic signs that accompany these changes.

The safety challenge in work zones is to successfully inform drivers well in advance about what to expect in the work zone itself and in the surrounding areas where traffic is likely to increase. Further, temporary roadways must be clearly and simply designed, providing drivers with adequate visibility distance and time to make the required lane and speed changes.

The presence of workers, often in close proximity to live traffic, presents a unique road safety challenge in work zones. Workers are especially vulnerable because they are typically situated within the traffic clear zone and are not always able to devote full attention to passing vehicles. Consequently, minor driving errors in work zones can often cause serious worker injuries and fatalities.

Fundamental Principles for Work Zone Planning, Design and Operation

Fundamental principles upon which work zones should be planned, designed, and operated are as follows:

- *Road user safety.* The safety of motorists, bicyclists, pedestrians, and enforcement/emergency officials should be an integral element of every work zone, from planning through completion.
- *Worker safety.* Explicit consideration should be given to the safety of construction workers and their equipment.
- *Mobility and accessibility.* Minimizing speed changes and differentials, maintaining traffic progression, and accommodating access points within the work zone can help avoid many road safety risks that occur when work zones are congested and road users experience navigation difficulties.
- *Communication and positive guidance.* Road users should receive pertinent information at the times and locations needed to make appropriate decisions such as lane and speed changes. Clear, consistent, timely, and relevant information can help them prepare for unusual circumstances while approaching and navigating through a work zone.



- *Consistency and uniformity.* All messages should be consistent, unambiguous, easily and quickly understood, and should provide only necessary information.
- *Constructability.* Projects should be planned, designed, and built as effectively and efficiently as possible to return the roadway to normal conditions and a lower collision risk state.

Transportation Management Plans

Addressing safety and mobility issues requires considerations that start early in project development and continue through project completion. Careful work zone planning and coordination can mitigate safety risks before construction commences. A Transportation Management Plan (TMP) comprises a coordinated set of strategies designed to mitigate the impacts of work zone activities. They help achieve road safety goals by clearly defining and communicating a comprehensive plan for the work project management to the local road authority, contractors, and the public.

The transportation management planning process for work zones includes compiling project material, identifying and assessing project risks, developing TTC plans, evaluating plans, and monitoring the performance of the work zone. Figure 1 illustrates the steps involved in the process of assessing and managing risk.

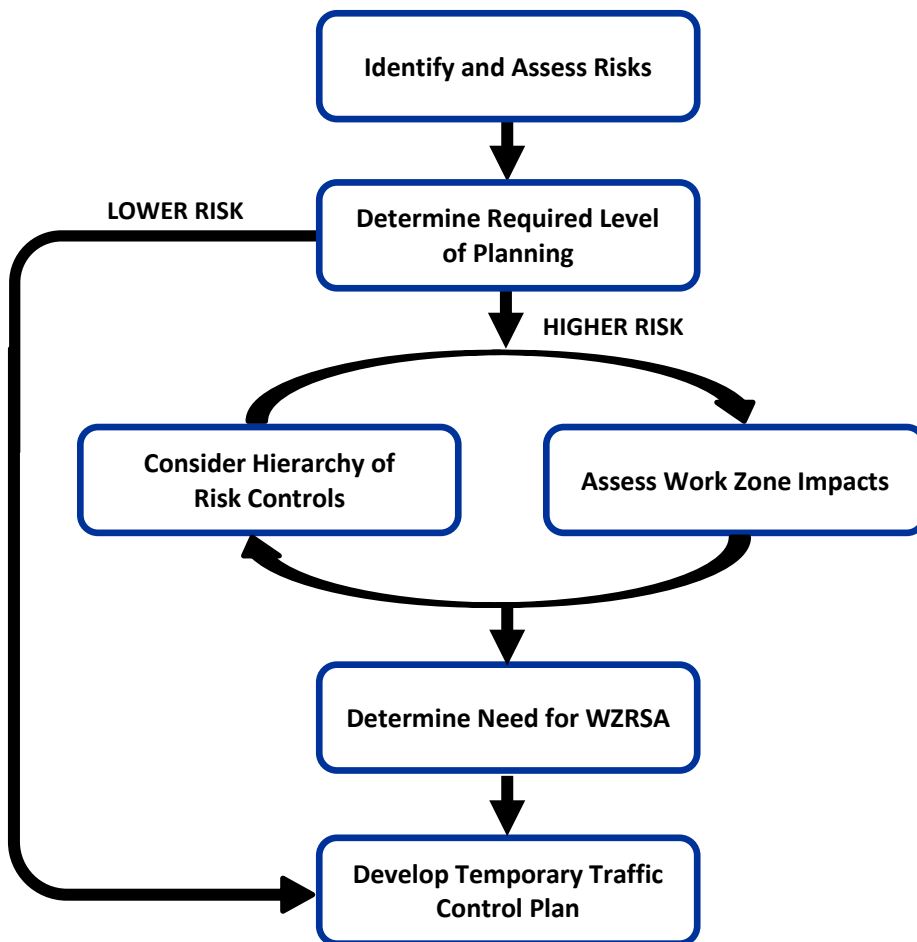


Figure 1 – Assess and Manage Work Zone Risks



Work Zone Road Safety Audits

A work zone road safety audit (WZRSA) is a special type of road safety audit (RSA) that evaluates the temporary elements of a work zone (e.g., traffic control devices and barriers) and the traffic impacts to other areas due to any changes in traffic patterns when pedestrian, motor-vehicle, motorcycle, or bicycle traffic is deviated or transferred from the pre-work zone corridor. WZRSAs are a proactive and systematic process to assess the safety of geometric and operational elements of the work zone. The objective is to reduce the future risk of collisions occurring and the severity of collisions that do occur.

Strategies for Mitigating Collision Risk in Work Zones

Practices can be implemented to help reduce collisions at common locations such as highways and arterials, pedestrian and cyclist facilities, roundabouts, and at-grade railway crossings. These strategies help eliminate the risk, control the risk exposure, use positive protection devices to physically separate the work area from traffic, and use administrative and behavioural controls for road users and workers. Multiple road safety considerations specific to work zones should be taken into account such as nighttime work, business access and driveways, inactive work spaces, pavement drop-offs, and work occurring near intersections.



More information

This primer is based on the Transportation Association of Canada publication *National Guidelines for Work Zone Safety in Canada*. The guide is intended to help promote and facilitate consistent work zone safety practices across Canada. The guide was developed based on an extensive environmental scan which included a comprehensive review of Canadian and international current practices and literature. These sources are referenced and described in the Synthesis report developed as the knowledge base for the guide. Findings from the synthesis were interpreted and subjected to human factors and road safety engineering principles to create the guide. This publication is available for purchase from TAC's online bookstore at www.tac-atc.ca.

Disclaimer

Every effort has been made to ensure that this primer is accurate and up-to-date. The Transportation Association of Canada assumes no responsibility for errors or omissions. The primer does not reflect a technical or policy position of TAC.

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