

# RiskTopics

## Traffic control safety for construction

### Zurich Resilience Solutions - Risk Engineering

Every construction project, whether a road, highway or building site, should provide traffic control for the project workers and third parties who may interface with the construction project. This requires careful planning for internal (on the worksite) and external (traveling public) traffic control while minimizing disruption. Effective traffic control provides concise and safe direction for vehicles and pedestrians in and around the construction project.

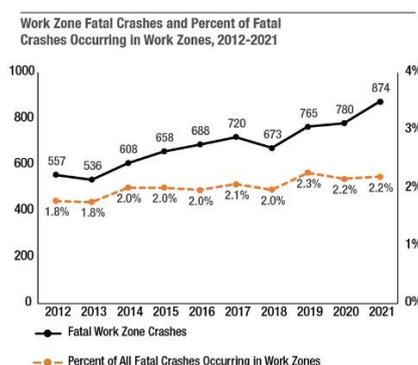
#### Introduction

Effective safety practices are essential when dealing with traffic flow through a highway, city, project specific, or other traffic work zones. Activities discussed include construction, maintenance, utility workers, landscaping, emergency workers, and all other occupations who may conduct activities on or along the road that are exposed to road hazards. These hazards include collision with traffic or work vehicles - especially at high speeds, weather conditions, maintenance of traffic - including setting up and taking down temporary traffic control devices used to protect workers and to move traffic safely through the work zone, truck safety during placement of materials, overhead hazards such as bridge work and electrical lines. One key general liability exposure that is sometimes forgotten is protection of pedestrians and third-party individuals.

#### Discussion

Nationally in 2021, there were 874 fatal crashes, resulting in 956 fatalities. The prior 3-year average was 739 fatal crashes per year with 821 fatalities per year. This number has been increasing each year since 2011 when there were 533 fatal crashes resulting in 590 fatalities.<sup>1</sup>

Additional statistics show a consistent increase in losses in work zone traffic control environments.<sup>2</sup>



When crashes occur in a work zone, they may be attributed to lack of planning during the design of the traffic control plans, items such as:

- Not anticipating existing local traffic conditions thus failing to eliminate confusion and/or conflicts experienced by the motorist.
- Absence of foresight to anticipate hazards or changing conditions when developing the traffic control plans.
- Inadequate communication to the driver including lack of proper or sufficient signage and/or lane markings in advance of and within the work zone. Errors or omissions in the traffic control plan; not utilizing the appropriate, current, or applicable standard(s) for the hazard or work zone layout. Conflicting guidance: when there is a conflict in guidance, some motorists or pedestrians will follow the unintended path.
- Deficient documented inspections and maintenance of the temporary traffic control devices; consistent review of the work zone and the installed temporary traffic control is essential to ensure the traffic control plan is functioning as designed and expected. Documented inspections are essential in the event of a claim. If the inspection isn't documented, then it didn't happen.

## Guidance

Prior to starting construction activities that would change the normal traffic flow, a formal traffic control plan should be implemented to safely direct and guide the traveling public, including pedestrians and bicyclists, through the work zone, as well as to protect the construction workers. Implementation includes setting the temporary traffic control elements on the roadway as shown on the traffic control plan (barrels, cones, concrete barriers, line painting, etc.), monitoring the movement of traffic through the work zone, maintaining the traffic control devices through daily inspections, and if required, adjusting the traffic control plan, with proper reviews and approvals, to eliminate conflicts and improper vehicle movements.

Every traffic control plan is going to be different from the last, but traffic control plans may be divided into the following three major categories:

- **Project** – construction project sites continue to decrease in size as owners try to do more in smaller spaces and save on rising real estate costs. Some key practices that lend themselves to project sites include:
  - Develop an internal traffic control plan (ITCP) that is site specific and addresses the different phases of construction as site conditions change.
  - RFID (Radio-frequency identification) which places tags on building components and works to assist with on-time delivery and installation of building components. This not only protects critical path items from damage but provides space on the project for work to progress including utilities and parking areas.
  - When possible, develop a traffic control plan that includes one way in and one way out. This eliminates the need for trucks and equipment to back up which may minimize struck by's.
  - Have separate entrances for vehicles and WOFs (workers on foot). Separate entrances separate workers on foot and vehicles and minimize struck by injuries. Truck entrances may have environmental controls like larger crushed stone to minimize dirt and mud on the roadway. This large stone makes for a poor walking surface and can cause slips, trips, and falls.
  - Project fencing and regulatory signage such as “No Trespassing” and PPE requirements, office check in, etc. are another way to remove general liability of unauthorized personnel as well as theft.
  - Usage of back-up alarms or camera use on trucks and construction equipment.
- **Urban and city** – while very similar to project sites and with overlapping key practices, urban and city projects include additional hazards such as sidewalks, on street parking areas, high traffic times (such as rush hour) and high-rise buildings. Key practices in addition to those that are applicable above include:
  - Planning and inspection of sidewalk closures and covers to protect high volumes of pedestrian traffic. This includes allowances for ADA (American Disabilities Act) ramps and signs as needed. In many instances a detour of pedestrian traffic does not function well since pedestrians will try and continue to walk the shortest route (but in the street). If an adjacent lane or parking area can be closed, placing barrier rail and creating a pedestrian walkway adjacent to the closed sidewalks can

be a good solution.

- When placing covers for sidewalks that can't be closed, but where high rise buildings are being built adjacent to the sidewalk, ensure that covers are structurally adequate, well lit, and smooth for the disabled and to minimize the possibility of slips, trips, and falls from the walking public.
- Use crane stops on cranes to prevent swing over sidewalks and live traffic
- Plan with city and municipal officials to determine times when lane closures may be utilized for unloading of trucks and for best ways to notify urban residents of changes to traffic patterns or closures.
- **Highway** – for purposes of this risk topic, a highway includes any high-speed two or more-lane roadway where shoulder and/or lane closures will be needed and where traffic control flagging operations will require qualified flaggers to direct traffic.
  - Develop an internal traffic control plan for highway work zones contained within barrier rails to assist with separation of vehicles, equipment and WOFs. These work areas are tightly confined between concrete barrier rail and roadway shoulders creating opportunities heavy equipment and material trucking to strike workers on foot. Statistics show that more workers working in highway work zones are struck by their own vehicles than by third parties traveling the roadway. <https://ops.fhwa.dot.gov/wx/workersafety/index.htm>
  - Mark access / egress points into closure areas for emergency and project personnel and keep all current to changes to these access points.
  - If available, use an enhanced 911 automated positioning system to help locate accidents. Additional key practices are motorist call boxes, closed circuit TV cameras, dynamic message signs, and traveler information websites to provide critical and daily updates.
  - Where barrier rail is not in use to control access to work zones, at the end of the day place all materials and equipment as far as safely possible off the edge of travel way to avoid third parties accidentally striking equipment or materials.
  - Whenever possible enlist the support of local police and highway patrol to assist in enforcing established speed limits and with critical operations. Hiring off duty police or highway patrol with vehicles, especially during nighttime operations, is an effective means to slow down traffic and help with emergency operations.

The following key practices should be considered for **all** traffic control exposures:

- Reduced vehicle speeds.
- Positive guidance: guiding motorists in a clear and positive manner as they approach and drive within the work zone.
- Worker protection, such as the use of truck mounted impact attenuators and concrete barriers.
- Daily (or each shift) documented inspections of all traffic control. Key practices are videos, pictures, written and joint inspections with the DOT.
- Check weather conditions daily and using real time weather apps for hazardous conditions that might require stoppage of work or immediate pick up of traffic control devices.
- Ensure that all personnel who designs, selects, places, and maintains temporary traffic control devices are qualified and certified (as required per state).
- Ensure that FAA form 7460 has been submitted and approved for all cranes over 200 feet in height.
- Strictly adhere to the project traffic control plans and the MUTCD (manual of uniform traffic control devices) when setting up daily or long-term traffic control devices and plans. When changes are required, get written approvals from the federal, state, or municipal authorities authorizing necessary changes.
- Consider using a traffic control company for major lane and road closures. These companies have the most qualified personnel to perform large closures. Any outsourced services for traffic control must include the proper indemnification clause in the contract agreement.
- Provide alternative routes when feasible.

- Avoid sudden and unexpected traffic movements.
- Provide clear, frequent, and positive guidance to drivers, pedestrians, and bicyclists as they approach and travel through the work zone.
- Use additional traffic control as required on side road approaches or ramps; a proactive approach is essential.

Ensure that the safety of the traveling public within the temporary traffic control area is an integral and high-priority element of every project from planning and design through construction until the last traffic control device is removed.

## Conclusion

The American Society of Civil Engineers Infrastructure Report Card says “Our nation is at a crossroads. Deteriorating infrastructure is impeding our ability to compete in the thriving global economy, and improvements are necessary to ensure our country is built for the future.”<sup>3</sup> The American Society of civil engineers provided a comprehensive assessment of the nation’s 16 major infrastructure categories in ASCE’s Infrastructure Report Card. Below are some statistics on bridges and roads quoted from the ACSE Infrastructure report card:

- The U.S. has more than 617,000 bridges, 42% are 50 years or older. 46,154 or 7.5% of the nation’s bridges are considered structurally deficient. On average there were 178 million trips across a structurally deficient bridge each day.<sup>3</sup>
- America’s roads are often crowded, frequently in poor condition, chronically underfunded, and are becoming more dangerous. It is estimated that the repair cost for the backlog of bridge repair needs is \$125 billion and at the current rate of repair, the additional deterioration over the next 50 years will become overwhelming.<sup>3</sup>

These statistics from ASCE, along with OSHA’s guidance on traffic control safety, and the federal government’s continued funding of all infrastructure needs, re-enforce the need for effective safety practices, training, and planning of traffic control.

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## References

<sup>1</sup>“Work Zone Traffic Crash Trends and Statistics”,[www.https://workzonesafety.org/work-zone-data/work-zone-fatal-crashes-and-fatalities/](https://workzonesafety.org/work-zone-data/work-zone-fatal-crashes-and-fatalities/) (accessed August 25, 2023).

<sup>2</sup>“Work Zone Traffic Crash Trends and Statistics”,[www.https://workzonesafety.org/work-zone-data/work-zone-traffic-crash-trends-and-statistics/](https://workzonesafety.org/work-zone-data/work-zone-traffic-crash-trends-and-statistics/) (accessed August 25, 2023).

<sup>3</sup>“Overview of Bridges.” ASCE’s 2021 Infrastructure Report Card |, 7 July 2023, [infrastructurereportcard.org/cat-item/bridges-infrastructure/](https://infrastructurereportcard.org/cat-item/bridges-infrastructure/).

## Other resources

- Internal traffic control plan (ICTP) - this is a tool that can be used by contractors to maintain safe traffic flow within their work area. Follow the link to an ICTP document from the Federal Highway Administration.

[The Roadway Safety Alliance - Internal Traffic Control Plans](#)

- [Manual on Uniform Traffic Control Devices for Streets and Highways](#)
- [High Visibility Clothing for Heavy & Highway Construction](#)
- [Federal Highway Administration \(FHA\) Traffic Incident Management \(TIM\)](#)
- [Federal Highway Administration \(FHA\) Work Zone Best Practices Guidebook](#)
- [National Workzone Safety Roadway Safety and Training Program](#)

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