



TEMPORARY TRAFFIC CONTROL ZONE HAZARDS

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As a member of the Temporary Traffic Control Technical Committee of the National Committee on Uniform Traffic Control Devices (NCUTCD), Mr. Bragdon helps to set the standards for temporary traffic control devices and advises the Federal Highway Administration. He is certified by the American Traffic Safety Services Association (ATSSA) as a Worksite Traffic Control Supervisor and has taught worksite traffic supervisor training courses for ATSSA for the last seventeen years. He is also an instructor in work zone traffic control training courses for the National Highway Institute.

Mr. Bragdon previously served as the City Traffic Engineer both for Jackson, MS and Grand Junction, CO and as the District III Traffic Engineer for the Colorado Department of Highways. Mr. Bragdon received his M.S.C.E. in Civil Engineering, specializing in traffic and transportation, from the Georgia Institute of Technology in Atlanta, GA. He has studied accident investigation, accident reconstruction and vehicle dynamics at Northwestern University's Traffic Institute.



It seems that the orange traffic drum has become our national symbol. Highway construction, maintenance and utility work zones can be found everywhere. These temporary traffic control zones, even when done properly, can confront motorists with unexpected and confusing situations. When done improperly, the results can be dire.

By their nature, temporary traffic control zones create obstacles with which motorists can collide, divert motorists' attention from the driving task, and expose workers to hazardous situations. There are many opportunities for things to go wrong in work zones. Three of the most common situations are:

- Pavement edge drop-offs,
- Rear-end collisions resulting from unprotected end-of-queue backups, and
- Parking equipment and storing materials within the clear zone.

Pavement Edge Drop-offs

In temporary traffic control zones, pavement edge drop-offs are often associated with resurfacing projects. There is no national standard that defines the point at which a drop-off becomes a hazard and not all pavement edge drop-offs create hazardous conditions for motorists.

Some of the criteria that need to be taken into consideration when evaluating a drop-off are:

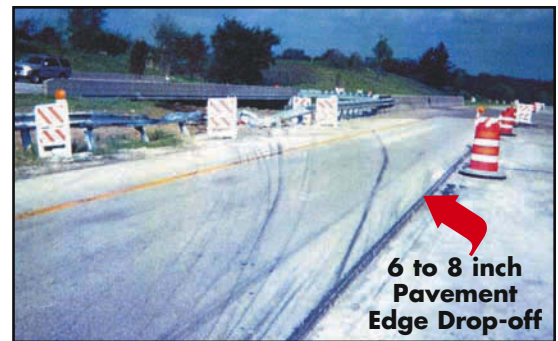
- Vertical height of the drop-off,
- Shape of the drop-off,
- Longitudinal length of the drop-off,
- Time duration that the drop-off will exist,
- Proximity of the traffic to the drop-off,
- Traffic volume,
- Speed of the traffic, and
- Size and type of vehicular traffic.

When hazardous conditions have been identified, motorists must be warned about them, protected from them and guided through the work zone in a reasonably safe manner.

In a recent case, a contractor excavated the right lane of an interstate highway, making it approximately eight inches lower than the open left lane. Although channelizing devices were in place, they were located in the excavated right lane. This provided no separation between the vehicle and the drop-off. Because of the poor delineation of the drop-off area, drivers of several heavy trucks and passenger vehicles entered the drop-off area and lost control of their vehicles, resulting in serious injuries and litigation.

Some of the temporary traffic control measures that should be considered that will provide reasonable safety for motorists include:

- Advance warning signs,
- Pavement markings,
- Temporary 45 degree asphalt fillet/wedge,
- Properly placed channelizing devices such as cones and drums, and
- Temporary traffic barriers.



The severe pavement drop-off in this temporary traffic control zone was inadequately marked; it did not meet MUTCD, state standards and other recognized standards and practices. The lack of warning and positive guidance resulted in a rash of serious crashes in this area. The parties involved in this project failed in their duty to protect the motoring public.

Rear End Collisions

When the volume of traffic entering a work zone exceeds the capacity of the roadway, the vehicles will back up and a queue will develop. The hazard occurs at the end of the queue when vehicles are stopped in an otherwise open travel lane.



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If the queue is short, within the advance warning area and the sight distance is good, approaching motorists may have adequate time to stop without incident.

However, if the end of the queue extends past the advance warning signs, drivers will have no advance notice of the upcoming hazard of the stopped vehicles. Contributing to this problem is the practice by some contractors of “set ‘em and forget ‘em”, in which they put up temporary traffic control measures but make no effort to monitor traffic to ensure that the signage is effective.

In one case involving a rear end collision, the contractor’s employees testified under oath that advance warning signs had been set out whereas multiple drivers of vehicles contradicted that evidence with testimony that no warning signs were visible. Photographic evidence indicated that they were both right. The contractor’s personnel placed the advance warning signs, but the spacing was shorter than required. The end of the queue backed up past the first sign so that the approaching traffic received no information that vehicles were stopped ahead.

Temporary traffic control measures that can be used to effectively warn motorists of end-of-queue backups include:

- Traffic surveillance to detect traffic back-ups,
- Additional warning signs and an extended advance warning area,
- Law enforcement officers at the end of the queue, and
- Portable changeable message signs.

Equipment and Materials in Clear Zone

The “clear zone” is an unobstructed area adjacent to a roadway that is available for a driver to gain control of a vehicle or to stop. Because of the proj-

ect design, work zones often have obstacles within the clear zone and motorists must be warned about them and protected from them.

Often the hazard occurs when construction equipment and materials are parked or stored within the clear zone for no other reason than convenience or laziness. The obvious solution is to park equipment or store materials outside the clear zone. However, sometimes it is not possible to move the equipment or materials. In that instance, the hazards must be properly marked or shielded.

The consequences of improper signage and warnings can be tragic and expensive. In one incident, two young men were killed in an override / underride accident involving a parked construction trailer. The jury awarded multi-million dollar punitive damages to their families because they felt the construction company’s actions were highly irresponsible.

Conclusion

Multiple parties are often involved in the planning, design and implementation of temporary traffic control zones. Large highway maintenance projects generate dozens, if not hundreds, of engineering drawings and voluminous amounts of paperwork.

A complete analysis of an accident in a temporary traffic control zone requires a traffic engineer with a specialized background who understands not only the scope and progression of the project, but also the responsibilities and duties of each party involved.

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