

ATTACHMENT NO. 4

TTC NO. 1

APPROVED BY NCUTCD COUNCIL ON JANUARY 19, 2007
Sent to Sponsors and FHWA

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Section 6A.01 General

Support:

The primary function of TTC is to provide for the ~~reasonably safe~~ and efficient ~~facilitate~~ ~~effective~~ movement of road users through or around TTC zones while ~~reasonably~~ protecting workers, responders to traffic incidents, and equipment.

{“efficient” changed to “effective.”}

Temporary facilities, including ~~reasonably safe~~ pedestrian routes around work sites, are also covered by the accessibility requirements of the Americans with Disabilities Act of 1990 (ADA) (Public Law 101-336, 104 Stat. 327, July 26, 1990. 42 USC 12101-12213 (as amended)).

Section 6B.01 Fundamental Principles of Temporary Traffic Control

Guidance:

General plans or guidelines should be developed to provide safety for motorists, bicyclists, pedestrians, workers, enforcement/emergency officials, and equipment, with the following factors being considered:

~~C. Provisions should be made for the reasonably safe continuous operation of work, particularly on high-speed, high-volume roadways. {“continuous” inserted.}~~

E. Bicyclists and pedestrians, including those with disabilities, should be provided with access and ~~reasonably safe~~ passage through the TTC zone.

To provide acceptable levels of operations, routine day and night inspections of TTC elements should be performed as follows:

A. Individuals who are knowledgeable (for example, trained and/or certified) in the principles of proper TTC should be assigned responsibility for safety in TTC zones. The most important duty of these individuals ~~should be~~ ~~is~~ to check that ~~all~~ TTC devices ~~of on~~ the project are ~~reasonably~~ consistent with the TTC plan and are ~~effectively fulfilling their intended purpose.~~ ~~in providing~~ ~~reasonably safe~~ conditions for motorists, bicyclists, pedestrians, and workers. {More words deleted.}

B. As the work progresses, temporary traffic controls and/or working conditions should be modified, ~~in order as needed,~~ to ~~provide~~ ~~reasonably safe~~ and ~~efficient~~ ~~effective~~ ~~facilitate~~ road user movement and ~~to provide~~ worker safety.

The individual responsible for TTC should have the authority to halt work until applicable or remedial safety measures are taken.

Section 6C.01 Temporary Traffic Control Plans

Support:

A TTC plan describes TTC measures to be used for facilitating road users through a work zone or an incident area. TTC plans play a vital role in ~~providing continuity of reasonably safe and effective facilitating~~ road user flow when a work zone, incident, or other event temporarily disrupts normal road user flow. Important auxiliary provisions that cannot conveniently be specified on project plans can easily be incorporated into Special Provisions within the TTC plan. ~~should~~ be provided about alternative routes that are usable by pedestrians with disabilities, particularly those who have visual disabilities. Access to temporary bus stops, ~~reasonably safe~~ travel across intersections with accessible pedestrian signals (see Section 4E.06), and other routing issues should be considered where temporary pedestrian routes are channelized. Barriers and channelizing devices that are detectable by people with visual disabilities should be provided.

Reduced speed limits should be used only in the specific portion of the TTC zone where conditions or restrictive features are present. However, frequent changes in the speed limit should be avoided. A TTC plan should be designed so that vehicles can ~~reasonably safely~~ travel through the TTC zone with a speed limit reduction of no more than 16 km/h (10 mph).

Section 6C.12 Flag Transfer Method of One-Lane, Two-Way Traffic Control

Support:

The driver of the last vehicle proceeding into the one-lane section is given a red flag (or other token) and instructed to deliver it to the flagger at the other end. The opposite flagger, upon receipt of the flag, then knows that ~~it is reasonably safe to allow~~ traffic ~~may be allowed~~ to move in the other direction. A variation of this method is to replace the use of a flag with an official pilot car that ~~always~~ follows the last road user vehicle proceeding through the section.

Section 6D.01 Pedestrian Considerations

Guidance:

The following three items should be considered when planning for pedestrians in TTC zones:

C. Pedestrians should be provided with a ~~reasonably safe~~ convenient and accessible path that replicates as nearly as practical the most desirable

characteristics of the existing sidewalk(s) or footpath(s). Where pedestrians who have visual disabilities encounter work sites that require them to cross the roadway to find an accessible route, instructions should be provided using an audible information device. Accessible pedestrian signals (see Section 4E.06) with accessible pedestrian detectors (see Section 4E.09) might be needed to enable pedestrians with visual disabilities to cross wide or heavily traveled roadways.

Consideration should be made to separate pedestrian movements from both work site activity and vehicular traffic. Unless a ~~reasonably safe~~ **an acceptable** route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

Section 6D.02 Accessibility Considerations

Guidance:

To accommodate the needs of pedestrians, including those with disabilities, the following considerations should be addressed when temporary pedestrian pathways in TTC zones are designed or modified:

A. Provisions for continuity of accessible paths for pedestrians should be incorporated into the TTC process. **Pedestrians should be provided with a reasonably safe, convenient and accessible path that replicates as much as practical the desirable characteristics of the existing pedestrian facilities.**

Section 6E.01 Qualifications for Flaggers

Guidance:

Because flaggers are responsible for public safety and make the greatest number of contacts with the public of all highway workers, they should be trained in **safe proper** traffic control practices and public contact techniques. Flaggers should be able to satisfactorily demonstrate the following abilities:

D. Ability to understand and apply **safe proper** traffic control practices, sometimes in stressful or emergency situations; and

Section 6E.05 Flagger Stations

Guidance:

The flagger should stand either on the shoulder adjacent to the road user being controlled or in the closed lane prior to stopping road users. A flagger should only stand in the lane being used by moving road users after road users have stopped. The flagger should be clearly visible to the first approaching road user at all times. The flagger also

should be visible to other road users. The flagger should be stationed sufficiently in advance of the workers to warn them (for example, with audible warning devices such as horns or whistles) of approaching danger by out-of-control vehicles. The flagger should stand alone, ~~never permitting a group of workers to congregate around the flagger station away from other workers.~~

Option:

At spot lane closures where adequate sight distance is available for the ~~reasonably safe~~ handling of traffic, the use of one flagger may be sufficient.

Section 6F.48 Advisory Speed Plaque (W13-1)

Option:

In combination with a warning sign, an Advisory Speed (W13-1) plaque (see Figure 6F-4, Sheet 2 of 4) may be used to indicate a recommended ~~safe~~ speed through the TTC zone.

Section 6F.74 Delineators

Guidance:

Spacing along roadway curves should be as set forth in Section 3D.04 and should be such that several delineators are ~~always~~ **constantly visible to an approaching driver.**

Section 6F.83 Vehicle-Arresting Systems

Support:

Vehicle-arresting systems are designed to prevent penetration into activity areas while providing for smooth and ~~reasonably safe~~ **acceptable** deceleration of errant vehicles. They can consist of portable netting, cables, and energy-absorbing anchors.

Guidance:

When used, a vehicle-arresting system should be used in accordance with the manufacturer's specifications, and should be located so that vehicles are not likely to penetrate the location that the system is designed to protect.

Sections 6F.85 Screens

Guidance:

Screens should not be mounted where they could adversely restrict road user visibility and sight distance, and adversely affect the ~~reasonably safe~~ operation of vehicles.

Section 6G.02 Work Duration

Support:

Maintaining ~~reasonably safe~~ work and road user conditions is a ~~paramount~~ goal in carrying out mobile operations.

Section 6G.14 Work Within the Traveled Way of Freeways and Expressways

Support:

Problems of TTC might occur under the special conditions encountered where vehicular traffic must be moved through or around TTC zones on high-speed, high-volume roadways. Although the general principles outlined in the previous Sections of this Manual are applicable to all types of highways, high-speed, access-controlled highways need special attention in order to **reasonably safely** and efficiently accommodate vehicular traffic while also protecting work forces. The road user volumes, road vehicle mix (buses, trucks, cars, and bicycles, if permitted), and speed of vehicles on these facilities require that careful TTC procedures be implemented, for example, to induce critical merging maneuvers well in advance of work spaces and in a manner that creates minimum turbulence and delay in the vehicular traffic stream. These situations often require more conspicuous devices than specified for normal rural highway or urban street use. However, the same important basic considerations of uniformity and standardization of general principles apply for all roadways.

Section 6G.20 Temporary Traffic Control During Nighttime Hours

Guidance:

Because typical street and highway lighting is rarely adequate to provide sufficient levels of illumination for work tasks, temporary lighting should be provided where workers are active to supply sufficient illumination to **reasonably safely** perform the work tasks.

Notes for Figure 6H-40—Typical Application 40 Median Crossover for Entrance Ramp

Guidance:

3. When used, the YIELD or STOP sign should be located far enough forward to provide adequate sight distance of oncoming mainline vehicular traffic to select a **reasonably safe** **an acceptable adequate** gap. If needed, YIELD or STOP lines should be installed across the ramp to indicate the point at which road users should YIELD or STOP. Also, a longer acceleration lane should be provided beyond the sign to reduce the gap size needed.

Notes for Figure 6H-44—Typical Application 44 Work in Vicinity of Entrance Ramp

Guidance:

3. When used, the YIELD or STOP sign should be located so that ramp vehicular traffic has adequate sight distance of oncoming mainline vehicular traffic to select a **reasonably safe** **an acceptable adequate** gap in the mainline vehicular traffic flow. Also, a longer acceleration lane should be provided beyond the sign to reduce the gap size needed. If insufficient gaps are available, consideration should be given to closing the ramp.

Section 6I.01 General

Support:

The primary functions of TTC at a traffic incident management area are to move road users **reasonably safely** and expeditiously past or around the traffic incident, to reduce the

likelihood of secondary traffic crashes, and to preclude unnecessary use of the surrounding local road system. Examples include a stalled vehicle blocking a lane, a traffic crash blocking the traveled way, a hazardous material spill along a highway, and natural disasters such as floods and severe storm damage.

Guidance:

On-scene responders should be trained in **safe** TTC practices for accomplishing their tasks in and near traffic. Responders should **always** **constantly be aware** **maintain** their visibility to oncoming traffic and take measures to move the traffic incident as far off the traveled roadway as possible or to provide for appropriate warning.

Support:

While some traffic incidents might be anticipated and planned for, emergencies and disasters might pose more severe and unpredictable problems. The ability to quickly install proper temporary traffic controls might greatly reduce the effects of an incident, such as secondary crashes or excessive traffic delays. An essential part of fire, rescue, spill clean-up, highway agency, and enforcement activities is the proper control of road users through the traffic incident management area in order to protect responders, victims, and other personnel at the site **while providing** **reasonably safe** traffic flow. These operations might need corroborating legislative authority for the implementation and enforcement of appropriate road user regulations, parking controls, and speed zoning. It is desirable for these statutes to provide sufficient flexibility in the authority for, and implementation of, TTC to respond to the needs of changing conditions found in traffic incident management areas.

Section 6I.02 Major Traffic Incidents

Guidance:

When flares are used to initiate TTC at traffic incidents, more permanent traffic control devices should replace them as soon as practical. Both the flare and its supporting device should then be removed from the roadway.

~~On-scene responders should be trained in **safe** practices for accomplishing their tasks in and near traffic. Responders should **always** be aware of their visibility to oncoming traffic and take measures to move the traffic incident as far off the traveled roadway as possible or to provide for appropriate warning.~~

Section 6I.03 Intermediate Traffic Incidents

Guidance:

~~On-scene responders should be trained in **safe** practices for accomplishing their tasks in and near traffic. Responders should **always** be aware of their visibility to oncoming traffic and take measures to move the traffic incident as far off the traveled roadway as possible or to provide for appropriate warning.~~