Temporary Traffic Control General Guidelines

Individual Responsibilities

Before beginning work, you should familiarize yourself with this manual, the definitions, principles, and the following General Responsibilities. Qualified individuals who have adequate training in Temporary Traffic Control and have a basic understanding of the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD) should supervise the selection, placement, and maintenance of traffic control devices in Temporary Traffic Control (TTC) zones.

General Responsibilities

Except where otherwise specified, any public or private agency performing work within the right-of-way of streets or highways open to public travel shall be responsible for:

- Supplying, installing, and maintaining all necessary traffic control devices outlined in this manual and as stipulated by the road authority to protect the work space and safely direct traffic around the TTC zone.
- Supplying their own flagger(s) when required.
- Informing occupants of abutting properties, either orally or by written notice, of parking prohibitions or access limitations.
- Notifying the road authority when existing traffic signs need to be removed or relocated or when any regulatory sign must be installed for construction or maintenance work.
- Replacing or reimbursing the road authority for any damage to or loss of existing traffic signs or devices.
- Keeping all traffic control devices clean and in proper position to ensure optimum effectiveness.
- Removing traffic control equipment when it is no longer required or appropriate.
- Keeping proper records of traffic control that contain starting and ending times, location, names of personnel, traffic controls used, etc. The method of record keeping may vary from a log entry to a complete Temporary Traffic Control Plan (TTCP).
- Performing and documenting routine day and night inspections of the TTC zone.

Permission to Work Within the Right-of-Way

Prior to starting work, permission shall be obtained from the road authority. The road authority may limit the hours of work or have other requirements such as detours, parking restrictions, etc. Peak traffic periods vary by hour or day-of-week and all work should be scheduled during non-peak hours.

When working in or near an intersection with a traffic control signal system, the road authority with jurisdiction over the signal should be contacted to ensure proper operation of the signal while the work is in progress.

Any work requiring traffic control to extend across a railroad right-of-way requires coordination with the railroad authority.

Selecting an Appropriate Temporary Traffic Control Layout

This Field Manual, Part 6K of the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD), has been organized such that field personnel are able to determine the proper Temporary Traffic Control layout(s) for the work zone they need. The layouts are divided primarily by the type of roadway and type of work space. The roadway designations are:

1. Low Volume Rural/Residential,
2. Two-Lane, Two-Way Roads (low, intermediate, and high volumes),
3. Roads with Two-Way Continuous Left Turn Lanes,
4. Multi-Lane Undivided Roads, and
5. Multi-Lane Divided Roads.

After determining the type of roadway upon which the work space will be located, the type of work space needs to be determined. The work space is the area within the right-of-way that will be closed from normal usage. It includes all the area needed by support equipment, materials, workers, and vehicles. It may require the closing of a roadway lane(s), the shoulder(s) of the road, or turn lane(s) within an intersection. The work space may even be completely off the roadway shoulder such as on side-slopes or along sidewalks. The layouts are listed by the typical work space areas. Continuity for existing road users (vehicles, pedestrians, and/or bicyclists) needs to be provided by the temporary traffic control.

Within some layouts, there are TTC options that may be omitted based upon several factors. These may include: duration of the operation, volume of the road, speed limit on the road, and departmental (or company) policy. TTC supervisors should be fully aware of the variations in the layouts due to the various factors, and when and how the layouts may be modified. See Figure 6K-1, Checklist for Establishing a TTC Zone (page 6K-p).

All distances shown on the layouts and charts are approximate. In general, all chart distances vary based upon the posted speed limit. Adjustments to these distances should be made based on traffic entry points and decision sight distance.

Several layouts may need to be combined together for one project. For example, work in or near an intersection may require a layout for a lane closure, a layout for work in the intersection, and a layout for sidewalk detours or bypasses.

In some situations, a TTC layout usually required for a longer duration may be needed due to the nature of the work or the traffic. For example, patching a pothole on a high-volume, high-speed freeway may require less than 15 minutes of time (mobile operation) but a stationary lane closure may be needed because of the high volumes of traffic.

Additional layouts have been placed in this manual for unique operations and special signing conditions. These layouts may have special restrictions and guidelines contained within their notes.

Enhancement of Temporary Traffic Control Layouts

To improve safety, typical layouts contained in this manual may need to be modified to fit more complex roadway conditions or operations. When conditions are more complex, modifications may incorporate devices and practices from the following list:

1. Additional Personnel
   a. Spotters
   b. Law Enforcement
   c. Multiple Flaggers
2. Additional Devices:
   a. More signs or enhanced signs (using LEDs, flags, beacons, etc.)
   b. Flashing Arrow Board(s)
   c. More channelizing devices at close spacing
   d. Temporary raised pavement markers
   e. High-level warning devices
   f. Portable Changeable Message Sign(s) (PCMS)
   g. Portable traffic signals
   h. Protection Vehicles
   i. Temporary rumble strips
   j. More delineation
3. Upgrading of Devices
   a. A complete set of standard pavement markings in high hazard areas
   b. Brighter and/or wider pavement markings
   c. Larger and/or brighter signs
   d. More visible channelizing devices with greater conspicuity
4. Lateral Buffer Space or Closing an Additional Lane
5. Closing Shoulders with Shoulder Tapers and/or Protection Vehicles
6. Increased Distances
   a. Longer advance warning area
   b. Longer tapers
7. Lighting
   a. Temporary roadway lighting
   b. Steady burn lights used with channelizing devices
   c. Sequential lighting
   d. Flashing lights for isolated hazards
   e. Illuminated signs
   f. Work space lighting
8. Work zone speed limits
   a. See Workers Present Speed Limit (Layouts 83a & b)
   b. Contact the road authority.
   c. See "*Speed Limits in Work Zones Guidelines"* for details: http://www.dot.state.mn.us/speed/pdf/wzspeedlimitguideline.pdf

Installing the Temporary Traffic Control Zone

Traffic control devices shall be installed in the order that drivers will see them, starting with the sign or device that is furthest from the work space. If traffic in both directions will be affected, such as work in the center lane(s), the devices may be placed in both directions at the same time. When one direction of traffic will be directed into the opposing lanes of traffic, all traffic controls for the opposing traffic should be installed first.

A minimum lane width of 10 feet should be provided at all times. Anything less than 10 feet shall be approved by the road authority. After the Temporary Traffic Control (TTC) zone is in place, it should be inspected by driving through the zone. Motorists' actions and reactions should be noted and any problems encountered should be quickly corrected. Any modifications to the Temporary Traffic Control plan or standard layouts and the reasons for the modifications should be documented.

During the life of a TTC zone, maintenance of devices is frequently needed. On short term operations, vehicles may knock over cones which then need to be placed upright. Problems encountered should be corrected immediately and documented.

Inspecting the Temporary Traffic Control Zone

To provide acceptable levels of operations and to maintain safety, routine day and night inspections of the TTC zone should be performed and documented by knowledgeable personnel. See Figure 6K-2, SAMPLE PROJECT INSPECTION CHECKLIST (page 6K-q) for an example inspection sheet.

Removing the Temporary Traffic Control Zone

Traffic control devices should be removed as soon as the work is completed and they are no longer needed. Devices should be removed in the opposite order from which they were installed, especially devices in the termination, activity, and transition areas. Devices in the advance warning area may be removed in the order they were installed. Alternatively, a Mobile Lane Closure may be used to remove the TTC devices in the order that they were installed.

Crossing Live Lanes of Traffic

Personnel may cross live traffic lanes only if it is safe to do so utilizing a walking pace taking into consideration roadway geometry, traffic volume, and other appropriate factors.

Roadside Safety

Attention should be given to the maintenance of roadside safety during the life of the TTC zone by applying the following principles:

- To accommodate run-off-the-road incidents, disabled vehicles, or emergency situations, unencumbered roadside recovery areas or clear zones should be provided where practical. See Table 6K-1, Recommended Clear Zones (page 6K-c).

- Work equipment, workers' private vehicles, materials, and debris should be stored in such a manner to reduce the probability of being impacted by run-off-the-road vehicles.

In urban areas with curbs, wide clear zones are typically much more difficult to achieve; in these areas, a minimum **lateral offset to obstruction** of 1.5 feet should be provided behind the curb face.

When work is not active, hazards or fixed objects should not be left or placed within the clear zone distance from Table 6K-1 (page 6K-c) or the lateral offset to obstruction of 1.5 feet, depending on the road environment. If not practical to remove hazards or fixed objects, they should be protected with temporary barrier. If not practical to provide temporary barrier, hazards or fixed objects should be delineated with Type B channelizing devices.

Marking Hazards

Damaged infrastructure (such as washouts, damaged guardrail, impacted end treatments and light poles) should be repaired as soon as possible (based on agency priorities); however, until the repair occurs, these hazards should be marked with either a Type I/Type II barricade with a Type A low intensity flashing warning light or a retroreflectorized drum. Cones may be used for short term emergency situations.

Certain construction operations may leave structures (manhole covers, drainage structures, etc.) exposed above the grade or dropped below the grade in the traffic space of the activity area. These should be made apparent so that drivers, bicyclists, and pedestrians are able to avoid them or slow down to minimize the hazard.

Checklist for Establishing a Temporary Traffic Control Zone

- ❑ **Obtain permission from all affected road authority(ies).**
- ❑ **Determine the type of roadway.**
- ❑ **Determine the type of road users (vehicles, pedestrians, bicyclists).**
- ❑ **Determine the type of work space.**
- ❑ **Determine the duration of work.**
- ❑ **Select hours of work to avoid peak periods.**
- ❑ **Select the appropriate layout(s) using:**

  Type of roadway, type of work, duration, traffic volume, speed, and impact on pedestrian and bicycle travel (see the appropriate **Index Chart** at the start of each section). **Review all NOTES on Layout(s)**.
- ❑ **Determine any modifications to typical layout(s) (see Enhancement of TTC Layouts on page 6K-m).**
- ❑ **Check Decision Sight Distance(s) (D).**
- ❑ **If possible, maintain access to intersections, parking areas, driveways (public and private), and mass transit.**
- ❑ **Coordinate with mass transit if needed.**
- ❑ **Allow for buffer space free of obstructions.**
- ❑ **Contact the road authority if the work zone interferes with normal signal operation in the area.**
- ❑ **Check the condition and orientation of devices (see Quality Standards, pages 6K-93 through 6K-108).**
- ❑ **Install devices beginning with the first device the driver will see.**
- ❑ **Conduct a drive through to check for problems, modify as needed.**
- ❑ **Document Temporary Traffic Control zone problems and major modifications to the layouts.**
- ❑ **Observe traffic to see if the TTC is working correctly.**
- ❑ **Remove, turn, or cover the devices as soon as work is suspended or completed.**

Figure 6K-1

SAMPLE

PROJECT INSPECTION CHECKLIST

PROJECT - _____

ITEM		YES	NO	HOW MANY?
1.	**Are any devices missing?**	❑	❑	_____
	Do any devices need repair?	❑	❑	_____
	Were all replaced or repaired?	❑	❑	_____
2.	**Are any lights (flashers, etc.) not functioning?**	❑	❑	_____
	Were they all replaced or repaired?	❑	❑	_____
3.	**Are any devices improperly placed?**	❑	❑	_____
	Were all positions corrected?	❑	❑	_____
4.	**Do any devices need cleaning?**	❑	❑	_____
	Were all devices cleaned?	❑	❑	_____
ADDITIONAL COMMENTS ON THE BACK OF THIS FORM?		❑	❑	_____

The above check was completed by _____
(name/title)

on _____ at _____ ❑ a.m. ❑ p.m.
(date) (time)

Figure 6K-2