

**Delaware Department of Transportation
Division of Transportation Solutions
Design Guidance Memorandum**

Memorandum Number 1-21

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|-----------------------|----------------------------|----------------------------------|
| 1. Road Design Manual | 2. Bridge Design Manual | 3. Utilities Design Manual |
| 4. Real Estate Manual | 5. Standard Specifications | 6. Standard Construction Details |

Title: Use of Temporary Traffic Barrier in Work Zones Effective date: 12/4/2008

Sections to Implement:

<input checked="" type="checkbox"/> Project Development	<input checked="" type="checkbox"/> Planning	<input checked="" type="checkbox"/> DTC
<input checked="" type="checkbox"/> Bridge	<input checked="" type="checkbox"/> Quality	<input checked="" type="checkbox"/> Construction
<input checked="" type="checkbox"/> Team Support	<input checked="" type="checkbox"/> Maintenance &	<input checked="" type="checkbox"/> Traffic
<input checked="" type="checkbox"/> Utilities	Operations	<input type="checkbox"/> Other _____

I. Purpose

To provide guidance on the use of positive protection devices to decrease the likelihood of fatalities and injuries to road users and workers in accordance with FHWA's ruling on Temporary Traffic Control Devices (23 CFR 630 Subpart K).

II. Design Guidance

Applicability: Applies to all projects on streets and highways under the Department's jurisdiction.

These guidelines should be applied to all new projects and all existing projects that have a semi-final plan due date after December 4, 2008. For existing projects with a semi-final plan due date before December 4, 2008, these guidelines may be applied on a case-by-case basis. These guidelines apply to all projects not requiring plans (e.g., maintenance projects, utility projects, etc.) as of December 4, 2008. These guidelines do not apply to work related to emergency repairs.

Temporary Traffic Barrier Evaluation: As part of the development of a Traffic Control Plan (TCP), the need for and usefulness of temporary traffic barrier protection should be evaluated throughout the project development process. In general, temporary traffic control barriers should only be installed if it is determined that the barrier offers the least hazard potential. During concept development and design, exposure control measures should be considered to avoid or minimize worker exposure to motorized traffic and road user exposure to work zone activities, while also providing adequate consideration to the potential impacts on mobility. Example exposure control measures include:

- Full road closures
- Ramp closures
- Median crossovers (i.e., half road closure)
- Full or partial detours
- Protection of work zone setup and removal operations using rolling road blocks

- Performing work at night or during off-peak periods when traffic volumes are lower
- Accelerated construction techniques
- Other strategies that will reduce traffic through the work zone or divert traffic away from the work space

Per the DelDOT Manual on Uniform Traffic Control Devices (DelDOT MUTCD) (Part 6 - Section 6F.81):

“Temporary traffic barriers are devices designed to help prevent penetration by vehicles while minimizing injuries to vehicle occupants, and are designed to protect workers, bicyclists, and pedestrians.

The four primary functions of temporary traffic barriers are:

- To keep vehicular traffic from entering work areas, such as excavations or material storage sites;*
- To separate workers, bicyclists, and pedestrians from motor vehicle traffic;*
- To separate opposing directions of vehicular traffic; and*
- To separate vehicular traffic, bicyclists, and pedestrians from the work area such as false work for bridges and other exposed objects.”*

Temporary traffic barrier shall be considered when there is no available escape route for workers (i.e., a location where a worker has no available area to avoid a vehicle intrusion into the work area other than the travel lanes).

Temporary traffic barrier shall be considered when the work area remains unchanged (i.e., excludes moving operations) and the duration of work is expected to be 2 weeks or more and either of the following two criteria are satisfied:

- **Work is to be performed on a facility with an existing posted speed limit of 45 mph or greater**
- **The operation occurs within a travel lane or shoulder or is within 10 feet of the edge of a travel lane**

In addition to the above conditions, the DelDOT MUTCD shall be reviewed to determine the need for temporary traffic barrier. Specific requirements of the DelDOT MUTCD include:

- **Vertical Differences: See Section 6G.21 and Table 6G-1**
- **Storage of Equipment: See Section 6G.22 and Table 6G-2**

The following should be performed during design of the TCP:

Preliminary Design: Frequently during preliminary design, the TCP has not been developed to the point where an adequate assessment of the use of temporary traffic barrier can be made; however, available data should be used to make an initial determination regarding whether temporary traffic barrier is warranted and whether exposure control measures should be considered.

Semi-Final/Final Design: During detailed design, as the TCP is developed further, an evaluation shall be performed to determine whether temporary traffic barrier is required and the most appropriate application of barrier (e.g., standard concrete traffic barrier, moveable

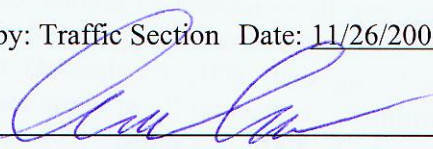
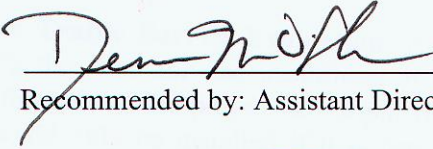

concrete barrier, etc.). Factors to be considered in the evaluation may include, but are not limited to, the following:

- Project scope and duration
- Anticipated travel speeds through work zone
- Traffic volumes
- Time of day (e.g., night work)
- Vehicle mix
- Pedestrian/bicycle exposure
- Type of work (as related to worker exposure and crash risks)
- Impacts on project cost and duration
- Distance between traffic and workers and the extent of worker exposure
- Escape paths available for workers to avoid a vehicle intrusion into the work space
- Work area restrictions (including impact on worker exposure)
- Consequences from/to road users resulting from roadway departure (e.g., severity of hazard, obstacle, drop-off/slope)
- Potential hazard to workers and road users presented by device itself and during device placement and removal (e.g., clear zone, barrier end protection, barrier deflection distance)
- Geometrics that may increase crash risks (e.g., poor sight distance, sharp curves)
- Access to/from work space

III. Justification

To decrease the likelihood of highway work zone fatalities and injuries to workers and road users and comply with federal policy.

Prepared by: Traffic Section Date: 11/26/2008

 _____ Recommended by: Assistant Director - Traffic	<u>11/26/08</u> _____ Date
 _____ Recommended by: Assistant Director - Design	<u>12/1/08</u> _____ Date
 _____ Approved: Chief Engineer	<u>12/1/08</u> _____ Date

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