

# Chapter 8

## WORK ZONE TRAFFIC CONTROLS

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## CHAPTER 8 - WORK ZONE TRAFFIC CONTROLS

### 8-1.00 INTRODUCTION

#### 8-1.01 Purpose

This chapter is intended to show applications of basic principles of work zone traffic control and assist in developing traffic control plans.

#### 8-1.02 Scope

This chapter has been written to supplement, not to replace, the MN MUTCD. This chapter includes guidelines varying from planning traffic control to fit the needs of a particular activity to the reasons for keeping accurate records. These guidelines should be useful to any qualified individual involved with planning, designing, installing, maintaining, and inspecting traffic control in work zones. Individuals are qualified by means of adequate training in traffic control practices, having a basic understanding of the principles of traffic control in work zones, or having experience in applying traffic control in work zones.

Other road authorities are encouraged to evaluate the MN MUTCD and establish guidelines to meet their needs.

#### 8-1.03 Relation to other Mn/DOT Standards and Guidelines

As stated, this chapter is to supplement, not to replace, Part 6 Temporary Traffic Controls of the latest edition of the MN MUTCD. The MN MUTCD includes the Field Manual for Temporary Traffic Control Zone layouts and the Standard Signs Manual.

The guidelines contained in this chapter and in traffic control plans should conform to, or be of higher standards than, the MN MUTCD and other Mn/DOT technical standards and guidelines. Adequate protection of the workers, traveling public, and pedestrians is the primary goal of any traffic control. These measures must be consistent with the MN MUTCD and other Mn/DOT technical standards and guidelines.

#### 8-1.04 Chapter Organization

This chapter is divided into nine major sections:

1. 8-1.00 Introduction
2. 8-2.00 Glossary
3. 8-3.00 Responsibility
4. 8-4.00 Application of Traffic Controls
5. 8-5.00 Temporary Traffic Control Devices
6. 8-6.00 Temporary Traffic Control Plans
7. 8-7.00 Detours
8. 8-8.00 Installation, Maintenance, and Inspection of Temporary Traffic Control Devices
9. 8-9.00 Reference
10. 8-10.00 Appendix, Figures, and Forms

Each section contains information important to providing proper work zone traffic controls for Mn/DOT operations.

The footnote on appropriate pages contains hyperlinks to the primary documents referred to within this chapter. These links are generally mentioned in the text along with the document's description. Additional hyperlinks are included within the chapter for other documents as needed.

## 8-2.00 GLOSSARY

Refer to the MN MUTCD for definitions of common Work Zone Traffic Control terminology. Definition of terms found within this manual that are not included within the MN MUTCD are listed below.

**Barricade Mounted Signs** - traffic control signs that are mounted on TYPE III barricades.

**Ground Mounted Signs** - traffic control signs that are mounted on permanent supports.

**Portable Support Mounted Signs** - traffic control signs that are mounted on portable sign supports.

**Sign Overlay** - typically a route marker or other symbol placed directly on a sign face. If not otherwise specified, it will be of the same color as the legend on the sign face.

**Supplemental Sign Plaque** - a sign mounted above or below a primary sign and providing additional information concerning this primary sign.

**Supplemental Sign Plate** - legend made demountable by mounting it to a plate which is then bolted to the sign face.

**Traffic Management Plan (TMP)** - a plan of action which, when put into effect, details the procedures that Mn/DOT utilizes to assure that adequate provisions are made for the safety of motorists, pedestrians, and workers.

## 8-3.00 RESPONSIBILITY

### 8-3.01 General Responsibility

It is essential that various sections of the district be involved in providing proper work zone traffic controls. Exact details on the involvement of these sections is contained in Section 8-4.00 Application of Traffic Controls.

### 8-3.02 Legal Responsibility

Minnesota Statutes 169.06 and 169.07 provide that: (1) traffic signs shall be placed only by the authority of a public body or official having jurisdiction, for the purpose of regulating, warning, or guiding traffic; and that (2) no traffic sign or its support shall bear any message that is not essential to traffic control. Any unauthorized sign placed on the highway right-of-way by a private organization or individual without authority constitutes a public nuisance, and all such unofficial and nonessential signs should be removed.

Minnesota Statutes 169.06 (Subdivisions 1-4) and 169.07 establishes the legal authority for Mn/DOT and local units of government to: (1) place and maintain markings, (2) require obedience to official markings, (3) prohibit the display of unauthorized markings, and (4) prohibit interference with official markings. Markings shall be placed only by the authority of the public body having jurisdiction over the highway, road, or street for the purpose of regulating, warning, or guiding traffic. Pavement and curb markings, object markers, and delineators are all normally within highway, road, or street rights-of-way and, therefore, should never be installed except under public authority.

Construction contractors and public utility companies are permitted to erect temporary construction and maintenance signs and place temporary pavement markings at work sites to protect the public, equipment and workers, provided that such signs and markings conform to the standards of the MN MUTCD and the proper authority has been given by Mn/DOT.

Minnesota Statutes 169.14 (Subdivision 5d) allows the establishment of a work zone speed limit. Refer to the "Work Zone Speed Limits Guidelines". The document can be found online at:

<http://www.dot.state.mn.us/speed/pdf/WZSpeedLimitGuideline.pdf>

## 8-4.00 PLANNING FOR TEMPORARY TRAFFIC CONTROLS

### 8-4.01 Temporary Traffic Control Goals

During planning for work zones, one should strive for the greatest payoff in terms of safety and convenience at a cost commensurate with the hazards and problems involved. A properly installed temporary traffic control zone will allow traffic to pass through or around a work zone safely. It requires time and effort for planning, installation, and maintenance.

All work zone traffic control planning centers around an analysis of the work activity and relating it to the provision of adequate safety and capacity. What is the likelihood of motorists failing to negotiate the work zone safely? What are the consequences of such action on pedestrians, workers, or other motorists?

Planning for traffic control through a work zone may be more involved than for maintenance or utility zones because of the differences in traffic disruption and duration of the work. The exposure of traffic to potential hazards is a function of the traffic volume and the length of time that the closure will be in effect. The goals common to all traffic control zones are:

1. to minimize crashes and crash severity; and
2. to minimize inconvenience and conflicts as a result of the work.

It should be recognized that these goals may at times be in conflict with one another.

### 8-4.02 Traffic Management and Temporary Traffic Control Plan

The Traffic Management Plan (TMP) is a plan of action which, when put into effect, details the procedures that Mn/DOT utilizes to assure that adequate provisions are made for the safety of motorists, pedestrians and workers.

#### **Purpose of the TMP**

The purpose of the TMP is to emphasize the need for thorough planning, to provide a detailed set of guidelines and a checklist for the district to consider when developing a traffic control plan for each construction/maintenance project performed in their district. For all construction projects attention must be given to traffic control from the early stages of development of the project, through the completion of the actual construction, including the preliminary layout studies, detailed design, and the drafting of the special provisions. It is considered essential that various sections of the district be involved in order to provide their specialty input so that a traffic control plan can be developed. Careful consideration of the TMP should result in minimizing confusion and delays to motorists and pedestrians as well as reduce crashes, provide greater safety to the various parties involved in the project, and improve the image of Mn/DOT and the construction industry.

#### **Scope of the TMP**

These procedures should be implemented on all federal and non-federal aid construction and contract maintenance projects. They should also be implemented on maintenance and utility operations to the extent practical and feasible. Generally, for maintenance and utility operations, the provisions of the MN MUTCD, *Field Manual* will be sufficient; however, there may be times when the principles and philosophy described below will be appropriate to include during the development of these projects. The standard specifications, sample special provisions and checklist should be used as tools in developing a traffic control plan and assessing its effectiveness during construction.

The checklist will help you think through the traffic requirements. Depending on the complexity of the individual project, certain items on the list may not be applicable. It is recommended that the work sheets be a permanent part of the project file. It will be very helpful to be able to produce the checklist together with documentation explaining why certain traffic controls were needed and used, while others were considered, but not used.

### **Temporary Traffic Control Plan**

The Temporary Traffic Control (TTC) Plan is a plan for handling traffic through a specific highway or street, work zone or project. A TTC Plan may range in scope from a very detailed TTC Plan designed solely for a specific project, to a reference to standard specifications, a section of the MN MUTCD, or a standard highway agency manual. The degree of detail in the TTC Plan will depend on the project complexity and traffic interference with construction activity.

On most projects, the procedures for developing time and traffic provisions will produce a satisfactory TTC Plan. See Section 8-6.00 for more information on TTC Plans.

### **Responsibility**

Mn/DOT needs a total commitment by all persons involved to insure that adequate consideration is given to proper traffic control for all operations. In order to assure that this commitment is met, it will require early involvement by all parties involved, such as pre design, design, traffic, maintenance, and construction. Typical guidelines have been developed for the various stages.

### **Preliminary Design**

During the preliminary plan development, the Project Manager should review the scope of the project with the District Traffic Engineer, Assistant District Engineer Construction, and the District Detail Design Engineer to determine traffic control concepts for the proposed construction. Construction staging should be determined by the traffic carrying capacities of the roadway under construction, bypasses or detours. Consideration should be given for other construction work in the proposed highway corridor or general vicinity by other than Mn/DOT forces such as cities and counties. Refer to checklist for items to consider. The FHWA also requires that traffic control considerations and effects be mentioned in the Environmental Impact Statement (EIS).

### **Detail Design**

The District Detail Design Engineer should involve the District Traffic Engineer, the Assistant District Engineer Construction, the assigned Resident/Project Engineer, and appropriate FHWA personnel as the final detail plans are being developed so the necessary details for traffic control are worked into the construction plan and proposal. This may range in scope from a very detailed plan (or proposal) designed solely for a specific project, to a reference to a standard specification, a section of the MN MUTCD, or a standard agency manual. This TTC Plan shall be incorporated into the plans, specifications, and estimate (P.S. & E). If the complexity of a project warrants, a traffic control layout may be prepared by the District Traffic Engineer and be included in the P.S. & E.

On some projects it may be appropriate to provide broad TTC Plan parameters in the P.S. & E., and then permit the successful bidder to develop a detailed TTC Plan and use it if Mn/DOT and FHWA find it acceptable.

The District Detail Design Engineer should involve the District Traffic Engineer, the Resident/Construction Engineer and the District Work Zone Safety Coordinator personnel to develop detailed time and traffic provisions.

The pay items to be included in the plans must be determined by the districts during design. Individual projects may have varying pay items depending on size, complexity and location. Districts are encouraged to use appropriate pay items to the fullest practical extent.

### **Construction**

During the construction stage, the resident/project engineer will generally be the Mn/DOT person responsible for traffic control. The resident/project engineer may delegate this authority. This should be done at or before the pre-construction conference.

The responsible person should have the following duties:

1. Develop a familiarity with the MN MUTCD, the contract plans and special provisions, the current Minnesota Standard Specifications for Highway Construction and its supplements.
2. Coordinate Mn/DOT personnel assigned to the project relative to proper techniques of traffic safety and traffic operations prior to beginning construction and specifically how they relate to the TTC Plan. The District Traffic Engineer and others shall be available to assist in this task.
3. Ensure that all affected agencies such as State Patrol, local Police, fire departments, sheriff's office, hospital, ambulance services, local government, post office, school districts, etc., are informed of the scope of the project and how it may affect their individual needs and services. This public relations work is extremely critical in the case of a total detouring of traffic. The District Public Affairs Coordinator and/or the Office of Communications may be of help in this responsibility.
4. Notify the major local news media (TV, radio stations, newspapers, etc.), local tourism associations, AAA, local legislators, etc. of the scope of the project prior to beginning operations. Cooperation with the Contractor and any involved local government agencies is advised. All items of interest should be included.

These include:

- a. Type of work to be performed.
- b. Hours the highway will be fully opened to traffic.
- c. Hours of restricted usage.
- d. Type and place delays can be expected.
- e. Suggested alternate routes.
- f. Duration of the project.
- g. Location of the detour, if applicable.
- h. Anticipated completion date of project.
- i. A name and phone number the public can contact for information or to make comments about the project.

At appropriate times during the life of the project the responsible person should update the information mentioned above so that the public is kept current on the status of the project. The Public Affairs Coordinator may be of help in this responsibility.

1. Ensure that the Road Information Unit is notified at the start of construction, listing details on how traffic details on how traffic is affected. This is needed for the Weekly Road Condition Bulletin.
2. Monitor the Contractor's operations with regard to traffic and safety operations and enforce the requirements of the contract. On some projects, it may be necessary to change the TTC Plan during construction, depending on the contractor's schedule, progress of utility work, etc.
3. Review traffic operations through the project limits, including the condition of all traffic control devices on a regular basis.

During the construction stage the District Work Zone Safety Coordinator should make periodic reviews of projects to determine the adequacy of the TTC Plan and compliance with the TTC Plan by the Contractor. The frequency of these reviews should vary with the complexity of the projects.

1. Ensure that current documentation is maintained as to when deficiencies were noted in the implementation of the traffic control plan and how and when they were corrected.
2. Document any traffic crashes within the construction work zones and submit this information to the District Work Zone Safety Coordinator. This is in addition to the regular crash reporting done by citizens and law enforcement personnel.



The District Work Zone Safety Coordinator should compile a record of all known crashes within a work zone. This record should include all available information, such as: time of day, probable cause, location, pictures, sketches, weather conditions, interferences to traffic, etc. The District Work Zone Safety Coordinator should study this data to determine what, if any, changes should be made in the TTC Plan.

## **8-5.00 Temporary Traffic Control Devices**

### **8-5.01 General Requirements**

All traffic control devices used on Mn/DOT street and highway construction or maintenance work shall conform to the specifications of the latest edition of the MN MUTCD, the Mn/DOT Standard Specifications for Construction; and all other appropriate Mn/DOT technical manuals.

All devices shall be placed where they will convey their messages most effectively so the driver will have adequate time to react. All traffic control devices must be kept clean to insure proper effectiveness and retroreflectivity. All devices shall conform to the quality standards of the MN MUTCD *Field Manual*.

### **8-5.02 Signing**

#### *8-5.02.01 Guide Signs*

The placement and revision of guide signs is important to providing traffic control through work zones. However, placement of these signs should not interfere with necessary regulatory and warning signs. One commonly used guide sign is the advance notice guide sign. It is used to provide notice of when and where construction or maintenance will occur. There are two types of advance notice guide signs:

1. those signs that inform motorists of a date when construction and/or closures will begin, and
2. those signs that inform motorists of exact location(s) of construction that is underway.

Beside addition of special guide signs to highway work zones it is important that in-place guide signs be covered or modified to reflect actual conditions. For example if a ramp is closed, all advance guide signs should be properly modified to inform the motorist of the closure. For short term closures this signing is impractical and warning signs may be used to provide this information.

#### *8-5.02.02 Regulatory and Warning Signs*

Refer to the MN MUTCD Parts 2 and 6 for standards on regulatory and warning signs in work zones.

#### *8-5.02.03 Business Signing in Work Zones*

Mn/DOT construction projects have frequently caused disruption of traffic patterns in business areas and have sometimes caused difficulty and confusion for motorists attempting to reach specific businesses or groups of businesses. This has resulted in the development of business signs for use in construction areas.

These signs are used to improve driver guidance, create safer operations, and minimize the impact on businesses created by construction activities and detours.



The following guidelines apply to business signing in construction areas.

**General Business Signing Guidelines:**

1. The district should contact the affected traffic oriented businesses during the project development process for a construction project to explain the project, the detours (if required), the project schedule, and to obtain for lessening the project's impact on a business.
2. Businesses should be encouraged to use special advertisements via the media and directional information to inform customers.
3. Businesses that receive signing must be "vehicular traffic sensitive" and significantly affected by the construction project.
4. All business signs should conform to the MN MUTCD to the extent practical and possible.
5. Business signs which would interfere with permanent or construction signing shall not be allowed.
6. All business sign panels shall be 72" x 18" in size with black legend on orange reflectorized background. See Standard Sign G20-X4.
7. Up to four business sign panels may be installed on a structure.
8. All business sign panels shall be installed on a separate structure within the highway right-of-way by Mn/DOT or contract forces.
9. Business signs shall be removed when the impact to traffic ends, or at such time that permanent changes in the affected area are completed.
10. All business signing that is proposed by Mn/DOT to guide traffic shall be funded by Mn/DOT. Any additional business signing proposed by the businesses and allowed by Mn/DOT shall be funded by the businesses.

**Specific Business Signing Guidelines:**

When there is a detour required, whether the roadway is open to local traffic only or completely closed, the following guidelines apply:

1. When the construction zone is open to a local street, a sign may be installed indicating that the road is open to that street.
2. In areas where there are four or fewer traffic oriented businesses, sign panels for each specific business may be installed.
3. In areas where there are more than four traffic oriented businesses along the closed section, one of the following options may be used:
  - a. When the businesses are scattered, a sign with the message "LOCAL BUSINESSES" may be installed.
  - b. When the businesses are grouped in an area, a sign with the message "BUSINESS DISTRICT" may be installed.
4. Major attractions such as shopping centers, cities, and geographic areas may be approved for signing.
5. Trailblazing signs may be required.

When there is no detour required or the roadway is being reconstructed under traffic and motorists are having difficulty locating the access to the businesses, "BUSINESS ACCESS" signs may be used. In areas where there are four or fewer traffic oriented businesses, sign panels for each specific business may be installed.

#### 8-5.02.04 Supplemental Sign Plates

Separate demountable plates were introduced to allow greater flexibility in some cases of work zone signing. However, demountable legend plates should meet all of the following standards:

1. Legend plates shall have proper legend.
2. The legends shall be of proper letter size and series.
3. They shall be properly fastened to the sign face and shall have plastic spacers behind them to provide a minimum clearance of 1/4 inch from the existing legend.
4. The plates shall be made from the same type of retroreflective material as the sign face.
5. The sign sheeting shall be oriented the same as the sign face material.

The following signs are allowed to utilize demountable legend plates as detailed in the Standard Signs Manual.

1. Lane Reduction Transition (Right or Left) Sign (W4-2)
2. MERGE w/Arrow Sign (W20-X3)
3. RIGHT/LEFT TWO LANES CLOSED Sign (W20-X13)
4. Vehicle Mounted Signs for Mobile Operations Sign (W21-X4)
4. RIGHT/LEFT LANE CLOSED Sign (W21-X5)

Signing for moving operations also allows the use of demountable legend plates.

All work zone signs not listed above shall have the legend directly applied to the sign face as detailed in Mn/DOT specifications 3352.2A5c and 3352.2A5d. The methods detailed in these specifications are:

1. Painting the legend on the sign face using a direct or reverse screening process as detailed in Mn/DOT specification 3352.2A5c and as recommended by the sign sheeting manufacturer.
2. Properly applying a legend cut from pigmented plastic film as detailed in Mn/DOT specification 3352.2A5d. This non-retroreflective cast vinyl material shall have a life expectancy equal to the life of the sign sheeting.

The sign face shall maintain a uniform color and brilliance when viewed during both daytime and nighttime hours. To achieve this, the sheeting shall be applied as described in Mn/DOT specification 3352.2B4.

#### 8-5.02.05 Sign Mounting

Whenever possible, all temporary signs should be ground mounted using the currently accepted crashworthy supports as detailed in Chapter 6 of the Traffic Engineering Manual and Layout 20 of the TTC Plan Sheet templates. <http://www.dot.state.mn.us/trafficeng/workzone/wz-templates/pdf/layout%2020.pdf>

Temporary signs that will remain in place for 30 days or less may be mounted on portable crashworthy support structures as defined in the MN MUTCD, Part 1. Refer to the Approved Products web page listed below for examples of NCHRP Report 350 tested and approved temporary sign support structures.

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#### Links to Primary Documents:

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>

Unless designed and crash tested with other ballasting systems, the ballast system for use on portable support mounted signs is sandbags. See section 8-5.05 Ballast for more information.

#### 8-5.02.06 Temporary Sign Covering

When it is necessary to cover an in place sign, care must be taken to preserve the in place sign since some coverings may cause permanent damage to the sign face sheeting. Avoid the use of ropes, wire fasteners or strapping that may abrade the sign sheeting surface. Do not apply tape to the sign sheeting surface because sunlight will cause it to bond permanently. Pre-mask or application tape must be removed prior to exposure to sunlight. Do not use paper or plastic covers as heat and moisture entrapment can cause permanent damage to the reflective sheeting on the sign face.

On smaller signs such as Type C or D, porous cloth covers (such as burlap) that are folded over the sign edges and secured to the back of the sign have been used successfully for limited periods. The cloth shall be opaque and nighttime viewing is recommended to assess if the cover adequately blocks light from headlights. See Figure 8.2C in the appendix for more details on these sign covers.

Sign panel overlays for covering larger signs and/or overhead signs should be rigid panel (such as sheet aluminum or plywood). The installation shall allow adequate air flow between the overlay panel and the sign, by providing a minimum spacing of 1/8" inch (1" maximum). The spacers shall be a material that will not harm the sign sheeting face (such as plastic or rubber). Refer to Figure 8.2A & 8.2B in the appendix for more details on the recommended sign panel overlay method for overhead or ground mounted extruded signs.

#### 8-5.02.07 Sign Panel Overlays

When it is necessary to cover an in place sign, care must be taken to preserve the in place sign. Coverings for overhead sign should be sheet aluminum and installed according to the sheeting manufacturer's instructions.

#### 8-5.02.08 Sign Sheeting Specifications

There are many varieties of retroreflective sign sheeting available. Different types of sheeting are best suited for various applications, signs versus devices. See the Sign Sheeting Chart.

### Sign Sheeting Chart

Mn/DOT Name	Application
Sign Sheeting for Rigid Signs ASTM Type VII or ASTM Type VII FL	Existing Rigid Orange Temporary Signs
High Performance Sign Sheeting for Rigid Signs Type HP FLO	Upgraded Rigid Orange Temporary Signs
Sign Sheeting for Rigid Signs Type IX FLO	Upgraded Rigid Orange Temporary Signs
Sign Sheeting for Rigid Permanent Signs, Delineators and Markers Type HP	Upgraded Rigid Non-orange Temporary Signs
Sign Sheeting for Rigid Permanent Signs, Delineators and Markers Type IX	Upgraded and Existing Rigid Non-orange Temporary Signs
Sign Sheeting for Drums and Weighted Channelizers Type VII MD	Drums and Weighted Channelizers
Sign Sheeting for Tube Delineators	Tubular Markers and Surface Mount Delineators
Sign Sheeting for Traffic Cones	Cones

<sup>1</sup> Qualified Products shown on <http://www.dot.state.mn.us/products/signing/sheeting.html>

<sup>2</sup> Refer to Technical Memorandum No. 06-04-T-02 for implementation and compliance requirements.

See the Approved Products web page listed below for the Signing Approved Products List of the various retroreflective sign sheeting and their applications. Additional information found on that page includes the Specifications for Sign Sheeting, and the Sheeting Size and Specifications for various types of devices.

### **8-5.03 Pavement Markings in Temporary Traffic Control Zones**

These guidelines apply to all Mn/DOT construction and maintenance activities. They will apply to any temporary traffic control zone of at least 350 feet in length on tangent sections and of 50 feet in length or longer on curves of 6 degrees or greater.

#### *8-5.03.01 Pavement Marking Definitions*

**Final Pavement Marking** - the pavement marking that will be installed until the next time the pavement marking is scheduled to be renewed (typically one or more years). Final markings would include full length centerline markings, edgelines and messages.

**Temporary Pavement Marking** - the pavement marking that will be installed in staged long-term temporary traffic control zones. The temporary markings will either be removed or covered with another pavement surface prior to the application of the final markings. The temporary markings would include full length centerline markings, edgelines and messages. All temporary pavement markings shall be in conformance Part 6 Sections 6F-71 to 6F-73 and Part 3 of the MN MUTCD.

**Interim Pavement Marking** - any pavement markings that are not the final marking or is temporarily placed for staging purposes.

**Temporary Raised Pavement Marker (TRPM)** - retroreflective pavement markers applied to the roadway surface which maintain retroreflective properties during wet weather conditions. TRPMs are used alone to substitute for pavement marking segments or to provide wet weather capabilities to other pavement markings.

#### *8-5.03.02 Interim Pavement Marking Guidelines*

For all projects greater than 2 km (1.25 miles) in length, interim broken line stripe pavement markings shall use the same cycle length as final pavement markings, 50 feet, and shall be a minimum of 2 feet in length. See Figures 6F-8a and 8b of Part 6 of the MN MUTCD.

On projects greater than 350 feet in length, but less than 1-1/4 miles in length, the interim marking shall match the cycle length at either end of the project. On roadways marked with a 50 foot cycle, the interim stripe shall be 2 feet in length. See Figures 6F-8a and 8b of Part 6 of the MN MUTCD.

Material specifications and tolerances for interim pavement markings will be the same as for final pavement markings.

Temporary raised pavement markers, when used as interim pavement markings, shall be installed in accordance with Section 8-5.03.05.

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### **Links to Primary Documents:**

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>

In areas where paint or tape will not adhere to the surface (i.e. chip or sand seal operations), temporary raised pavement markers may be used to simulate a centerline as details in Section 8-5.03.05.

The minimum required interim pavement markings **shall be installed prior to opening the roadway to traffic** and should not be left in place for more than 14 calendar days unless they meet the requirements of temporary or final markings. Minimum required interim pavement markings include:

1. On Multi-lane Undivided Roadways, all double yellow centerlines, interim lane lines and interim broken line stripe pavement markings.
2. On Multi-lane Divided Roadways, all interim lane lines.
3. On Three and Five Lane Roadways with Two Way Left Turn Lanes, all solid yellow lines with yellow interim broken line stripe pavement markings and interim lane lines (for five lane sections).
4. On Two Lane Undivided Roadways, all broken line stripes.

In the event that it is not possible or practical to install interim marking before opening the road to traffic, plastic drums may be used to delineate the centerline if there is a minimum roadway width of 30 feet. Reflectorized cones, tubular markers, or weighted channelizers may be used on narrower roadways, but constant surveillance (24 hours per day) of the cones shall be maintained. Spacing of the channelizing devices shall be 100 feet in areas with a speed limit of 45 mph or higher and 50 feet in areas where the speed limit is 40 mph or lower.

In areas where passing is prohibited, no passing zone markings shall be installed prior to opening the road to traffic. A 2 foot broken line segment may be used in conjunction with the solid line for interim markings. See Figures 6F-8a and 8b of Part 6 of the MN MUTCD. The use of signs alone or signs with broken line pavement markings shall not be used to mark no passing zones on Mn/DOT projects.

#### *8-5.03.03 Temporary Pavement Marking Guidelines*

Through many work zones, traffic is moved from one lane to another. Traffic must be given clear direction as to which pathway to follow. Pavement markings such as center lines and edge lines provide direction for the motorist. Typically the markings placed for staging purposes on long term projects are temporary, meaning they will eventually be covered by surfacing materials or removed completely. The type of temporary pavement marking should be selected upon whether the marking is placed on the final surface (such as a lane shift crossing the final surface) or not.

For temporary pavement markings placed upon pavement surfaces that are to be overlaid or reconstructed, temporary tape or marking paint, or epoxy, on edge lines and/or centerline can be used.

1. For approved Temporary Tape products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.
2. For approved Pavement Marking products, see the Pavement Markings Approved Product List on the Approved Products web page listed below.

For temporary pavement markings placed upon a final pavement surface that is only being used on a temporary basis and will remain in place after the project is completed, removable lane tape (Mn/DOT's specification 3355) should be used.

1. For approved Removable Tape products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

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#### **Links to Primary Documents:**

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>

Temporary or final markings and all other pavement markings including edgelines, channelizing lines, lane reduction transitions, gore markings and other longitudinal markings and the various non-longitudinal markings (stop lines, railroad crossings, crosswalks, words, symbols, etc) should be installed within 14 calendar days.

The time limitations for installing temporary or final markings begin when construction operations first remove the in place marking from the roadway. These time limitations restart any time temporary or final markings are restored.

Lane lines and edge lines through transition and alignment change areas that remain in place for more than 14 days, shall be marked with temporary pavement markings with Wet Retroreflective Properties. Transition and alignment change areas include: lane closure tapers, sharp curves, exits, shifts onto temporary roadways or detours, etc.

### **Wet Retroreflective Properties**

A temporary pavement marking that has wet retroreflective properties (commonly called Wet Retroreflective Pavement Markings) retains retroreflectivity, presence, and color when wet or submerged in water. The following wet retroreflective pavement markings consist of a combination of one or more products to achieve the required properties:

1. Solid temporary pavement marking tape lines supplemented with TRPMs (temporary raised pavement markings) or
2. Solid temporary wet retroreflective pavement marking tape lines or
3. Solid pavement marking paint or epoxy lines supplemented with TRPMs (temporary raised pavement markings) or
4. Solid wet retroreflective pavement marking paint or epoxy lines.

For approved Removable Tape, TRPM, and Wet Retroreflective Removable Tape products, see the Temporary Traffic Control Approved Product List on the Qualified Products web page listed below.

For approved Wet Retroreflective Marking Paint or Epoxy products, see the Pavement Markings Approved Product List on the Approved Products web page listed below.

There is a high risk of damage or removal of wet retroreflective products by snow plowing operations. Therefore pavements markings which are applied for winter carry-over in transition and alignment change areas should be applied as double width markings and additional wet retroreflective properties may be omitted.

#### *8 5.03.04 Final Pavement Markings*

Standard final striping plan sheets shall be included in each Project Construction Plan. Refer to Chapter 7 on Pavement Markings, for more information on final pavement markings.

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### **Links to Primary Documents:**

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>



#### 8 5.03.05 Temporary Raised Pavement Markers (TRPMs)

TRPMs may be used to simulate solid lines without the use of any other pavement marking material, or they may be used to supplement other types of pavement markings. See the Standards for TRPMs as posted on the Approved Products web page for guidelines on how to use TRPMs to simulate and supplement pavement markings.

For approved TRPM products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

#### 8-5.04 Channelizing Devices

Channelizing devices are classified into 3 types. Type A channelizing devices include cones, surface mounted delineators, tubular delineators, weighted channelizers, and opposing traffic lane dividers. Type B channelizers include drums, Type I & II barricades and direction indicator barricades. Type C channelizers include Type III barricades. See Figure 8.1 for the 3 types. Refer to the MN MUTCD Part 6 for proper spacing, applications, sizes, color, and retroreflective sheeting requirements. See the Approved Products web page listed below for examples of NCHRP Report 350 tested and approved Type III barricades.

#### 8-5.05 Ballast

Sandbags are the most common ballast for temporary traffic control devices. When sandbags are used, they should be constructed so they will not readily rot or allow the sand to leach when exposed to the highway environment. Also, the sandbag should be constructed of a material which will allow the bag to break and disperse its contents when struck by an errant vehicle. Sandbags should not be filled to the extent that they become too heavy to be readily moved when a traffic control device is relocated. The number and size of sandbags used as traffic control device ballast should be kept to the minimum needed to provide stability for the device. Sandbags shall not be suspended from the traffic control device.

Other ballasting systems, such as the manufacturer provided weighted bases, may be used on some temporary traffic control devices provided they are crashworthy.

#### 8-5.06 Portable Precast Concrete Barrier (PPCB) Delineators

See the MN MUTCD Part 6 for application information and spacing requirements.

For approved PPCB Delineator products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

#### 8-5.07 Surface Mounted (Centerline) Delineators

See the MN MUTCD Part 6 for application information and spacing requirements.

For approved Surface Mounted Delineator products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

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#### Links to Primary Documents:

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>



## 8-5.08 Portable Changeable Message Signs (PCMS)

### 8-5.08.01 Definitions

**Change Interval** - The time interval which occurs between display of each panel (during this time no message is displayed).

**Character** - It is composed of 35 pixels. The pixels are arranged in a seven high by five wide matrix.

**Font** - The pixel description of the alphanumeric character. The format used for highways for all alpha-numeric characters (with the exception of the letter "I" and the number "1" is seven units high by five units wide.

**Message sign panel** - It presents or delivers the message to the motoring public. The message is displayed by forming various alpha-numeric characters.

**Panel** - A message (of up to three lines) displayed on a message sign panel.

**Pixel** - A pixel is one element of a total of 35 elements per character. A pixel changes its color electronically, which in turn will show the desired alpha-numeric character.

**PCMS (Portable Changeable Message Sign)** - A traffic control device with the flexibility to display a variety of messages to fit the needs of highway and street authorities. The components of a PCMS include: message sign panel, control system, power source and mounting and transporting equipment.

### 8-5.08.02 Message Sign Panel

The message sign panel shall meet the following requirements under both day and night conditions:

Field Setup -- The sign shall be placed to be visible from a minimum of 800 feet. When locked in place, the front panel shall be tilted forward 3 to 5 degrees to reduce daylight and headlight glare on the sign face.

Minimum Performance Standard -- The message shall become legible a minimum of 800 feet for traffic on all lanes of the roadway. The message shall remain legible for at least 750 feet from the nearest travel lane from the message sign panel.

For approved PCMS products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

The 750 feet distance is based on the ability of a driver to read two complete messages of two 2-second panels, which includes the change interval (0.5 seconds maximum) between panels, for a total of 8.0 seconds.

## 8 5.09 Flashing Arrow Panels

Any flashing arrow board used for purposes of traffic control shall meet criteria as defined in Part 6 of the MN MUTCD.

For approved Flashing Arrow Board products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

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### Links to Primary Documents:

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>

### 8 5.10 Crash Cushions and Attenuators

This specification details the general requirements for crash cushions used to protect the end(s) of PPCB in highway work zones. The crash cushions shall be one of two types.

#### 1. Non-Redirective (Gating)

The non-redirective impact attenuator shall consist of barrel-type modules complete with cores and discs for proper retention of predetermined sand content and have tight fitting covers. Depending upon manufacturer, the modules are approximately 1m (36 inches) in diameter and height. The number of barrels, layout pattern, and installation shall be as recommended by the manufacturer. Sand for filling the modules shall be reasonably dry and mixed with a minimum of 5% by mass of sodium chloride.

#### 2. Redirective (Non-Gating)

The redirective impact attenuator shall be a six bay unit provided with a deflector vane anchored to the concrete median barrier. Installation shall be as recommended by the manufacturer.

For approved Crash Cushion and Attenuator products, see the Temporary Traffic Control Approved Product List on the Approved Products web page listed below.

### 8-5.11 Flagging

Flagging procedures, when used, can provide positive guidance to the motorist traversing the work area. Part 6 of the MN MUTCD contains methods, procedures, and specifications for flagging. Refer to the 2007 Flagging Handbook at: [http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/fm\\_2007\\_flagginghandbook.pdf](http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/fm_2007_flagginghandbook.pdf)

### 8-5.12 Longitudinal and Edge Drop-offs

For uneven lanes, milled edges, and edge drop offs that occur in highway work zones, the best way to increase traffic safety is to make every attempt to minimize exposure to uneven lanes, milled edges, and edge drop offs; however it is realized that this is often not possible or feasible.

The Longitudinal Drop-off Guidelines for utilizing traffic control devices to mitigate the hazards of drop-offs are included in Figures 6K-4, 5, and 6 of the *Field Manual* which can be viewed at the web page listed below.

#### 8-5.12.01 Drop-off Definitions

For the purpose of the longitudinal drop-off guideline, the following definitions have been established:

**Edge Drop-Off** - The change in elevation when a shoulder is lower than the adjacent traveled lane at the edge of the lane, on the shoulder, or at the edge of the shoulder.

**Excavation** - A vertical change in elevation in the roadway, in the shoulder, or in the adjacent roadside that exceeds 300 mm (**12 inches**) in depth.

**Milled Edge** - The raised longitudinal edge of a lane or shoulder caused by a milling operation.

**Safety Treatment** - The treatments contained herein for increasing traffic safety using traffic control devices, safety related appurtenances, and construction techniques for uneven lanes, milled edges, and edge drop-offs that occur in street and highway work zones.

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#### Links to Primary Documents:

Approved Products Lists & Product Specifications: <http://www.dot.state.mn.us/products/>

MN MUTCD: <http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>

TTC Layouts Field Manual: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2007/index.html>

**Traffic Carrying Lanes** - The travelled lanes including turn lanes and their tapers, acceleration and deceleration lanes, and the travelled area to and from freeway ramps and loops.

**Uneven Lanes** - A drop-off condition between adjacent traffic carrying lanes when one lane is higher than the other.

#### 8-5.12.02 *Special Provisions for Drop-offs*

The project's special provisions shall specifically state that every attempt should be made to minimize uneven lanes, milled edges, and edge drop offs before the safety treatments are applied.

Consideration should be given to including conditions for the contractor to have the necessary traffic control and safety devices available on the project site within a reasonable time when directed by the Project Engineer.

### 8-6.00 Temporary Traffic Control Plans

The provisions of this chapter of the Traffic Engineering Manual should be useful to any qualified individual involved with planning, designing, installing, maintaining, and inspecting work zone traffic control.

When preparing specific traffic control plans:

1. the spacing of all traffic control devices should be shown,
2. the traffic control device tabulation should be completed, and
3. the proper pay items for all traffic control devices should be used.

#### 8-6.01 Placement of Temporary Traffic Control Devices

A set of standard temporary traffic control plan sheet templates for use on traffic control plans have been developed. These templates are listed on the Work Zone website:

<http://www.dot.state.mn.us/trafficeng/workzone/ttc-templates.html>.

The template sheets show typical plan sheets for title sheets, tabulation sheets, and various temporary traffic control operations (such as various types of lane closures, flagging operations, Intelligent Work Zone applications, etc.). These templates do not cover all situations encountered. Because all situations differ (geometrics, traffic volume, speed, etc.) engineering judgment is required to insure proper traffic control application.

#### 8-6.02 Traffic Control Devices Tabulation

For many traffic control plan layouts it is often advantageous to tabulate all traffic control devices used for the project. The templates contain a suggested plan sheet showing how to provide this tabulation. This tabulation is useful during preparation of the plan, for estimated traffic control costs, for bidding the project, and for determining what devices to have available on the project.

It is not always possible to provide a listing of estimated quantities of all traffic devices due to the dynamic and unpredictable nature of the construction staging. However, it is still recommended to provide this tabulation as a quick reference and field guide for necessary devices.

#### 8-6.03 Typical Traffic Control Pay Items

The list of "Typical Pay Items" is the recommended method to use on all contracts and special provisions. Use of a standard set of pay items on all contracts will aid in providing the proper work zone traffic controls at the lowest possible cost. This list of "Typical Pay Items" can be found at:

<http://www.dot.state.mn.us/bidlet/misfiles/pdf/AVGPR052010.pdf>

A set of standard special provisions can be obtained from MN/DOT's Special Provisions Unit on their website: <http://www.dot.state.mn.us/pre-letting/prov/index.html>.

## **8-7.00 ESTABLISHING AND MAINTAINING DETOURS**

Specification pertaining to traffic provisions, public convenience and safety provide for continued use of the highway under construction by traffic or the diversion of all except local traffic. Under certain conditions it may be necessary to provide a detour.

### **8-7.01 Conditions Requiring or Permitting a Detour**

When a construction contract requires by special provisions and specifications that through traffic be diverted, a detour must be provided. When a construction contract requires by special provisions and specifications that traffic is to be permitted to use the route under construction, no detour need be established around the work, unless, during the course of construction, unusual conditions beyond the control of the contractor make the carrying of through traffic impossible or inadvisable. In such case, a detour may be established for the length of time it is required, but only after it has been requested by the contractor and approved by the Commissioner of Transportation.

### **8-7.02 Selection of a Route**

When a route is to be selected for a detour, the appropriate personnel should be consulted as soon as possible for review of the proposed route. The District should designate a person to coordinate this review. The review team may include the District Traffic Engineer, District State Aid Engineer, District Design Engineer, Project Engineer, Area Maintenance Engineer, as well as the supervisory authorities in charge of the road(s) which will be affected. The information obtained in this review should include a detailed surface condition report, recommendations for reinforcement or modification of the proposed route, and recommendations for traffic control and signing on the proposed route. The form for Establishment of Detour, Form 8.A, must be filled out and submitted, along with a map of the proposed route, to the Central Office, Office of Land Management. The Commissioner's Order establishing the proposed route as a detour (temporary trunk highway) will be prepared by this office. Once the order is signed, copies will be distributed to the appropriate parties.

When a detour is found to be necessary after actual construction has begun and is requested by the contractor, the above procedure is followed except that generally the Project Engineer coordinates the route review. In addition, a Supplemental Agreement will have to be written documenting the change from the original contract.

Once the detour route has been established the Traffic Engineer and the Area Maintenance Engineer should work together to develop the signing layout and have the necessary signs prepared. The Project Engineer should consult with the Traffic and Area Maintenance Engineers to determine the advance notice they would need before the detour is to go into effect. This advance notice should allow enough time to have all signing and other traffic control devices properly installed and reviewed before traffic is diverted onto the detour.

### **8-7.03 Maintenance of a Detour**

Unless other arrangements are made in the contract, it will be assumed that the detour is to be maintained by state forces. However, if conditions make it advisable to have local authorities maintain their own roads, such arrangements can be made by agreement.

### **8-7.04 Maintenance Agreement**

When local authorities prefer to maintain their roads which are used for detours, and agreement will have to be reached. See the Maintenance Manual for specific instructions on maintenance agreements.

### **8-7.05 Emergency Detour**

Whenever it is necessary to establish an emergency detour around a section of road, the Road Information Office, Area Maintenance Offices, and Office of Land Management should be notified immediately by telephone or facsimile giving details as to location. This message should then be immediately confirmed by submitting the Establishment of Detour form.

This action will then be followed by the same procedure, both in the Office of Right of Way and the District, as is required in establishment of any detour.

### **8-7.06 Special Maintenance Work on Detours**

Refer to the Maintenance Manual.

### **8-7.07 Discontinuance of a Detour**

Prior to discontinuing the detour and rerouting traffic onto the construction project, the Project Engineer, accompanied by the Traffic and Maintenance Engineers, should inspect the project to determine that the required signs and traffic control devices are in place. The project must be generally in a safe condition.

A final review of the detour must be made as well. This should include the same individuals who made the initial review. The detour roadway must be acceptable to the governmental subdivision before it can be released as a temporary trunk highway. Reference should also be made to the Maintenance Manual. See Release of Detour form, Form 8.B.

## **8-8.00 INSTALLATION AND INSPECTION OF TTC DEVICES**

### **8-8.01 Installation**

Motorists do not expect to encounter workers in the roadway setting up a traffic control zone. Since the goal is to make the entire operation safe, high-level warning devices, flaggers, or flashing vehicle lights should be used to warn the drivers of the presence of workers. Flashing arrow boards are valuable to assist the workers during placement or removal of channelizing devices for lane closures.

### **8-8.02 Responsibility**

For each project, an individual shall be assigned the responsibility for traffic control. On construction projects, the Contractor should designate a specific person by name and telephone number. In addition, on large projects the traffic control responsibility should be assigned to an employee in the agency's organization.

Routine inspections of the traffic control installations should be carried out by these individuals.

### **8-8.03 Inspection Program**

#### *8-8.03.01 Frequency of TTC Inspections*

Prior to the daily work beginning, the supervisor and/or inspector should complete a comprehensive TTC inspection including all signs, pavement marking material, and channelizing devices that are being used.

During the work shift, TTC devices should be routinely monitored and misaligned devices should be readjusted on an hourly basis.

When the devices in a short term stationary TTC zone will not be able to be monitored and repaired on an hourly basis, then the requirements for an intermediate term stationary/night time TTC layout shall be utilized.

Less frequent but periodic inspections should be performed by senior staff of the Contractor (typically the superintendent) and the agency (the resident engineer and/or the traffic engineer).

### 8-8.03.02 TTC Inspection Programs

A comprehensive TTC inspection program should follow a formalized inspection plan including:

1. Defined inspection procedures
  - a. A review to insure that the travel path is clearly marked through the entire work zone, both day and night
2. Established repair/correction procedures
  - a. Assurance of an adequate inventory of devices for emergency replacements or repairs
  - b. Follow-up procedures to assure that specified repairs/corrections are made
3. Documentation of the TTC
  - a. Prepare a form on which the findings of the field inspection are recorded. See Section 8-8.03.03 Record Keeping for more information,
  - b. Several methods of recording traffic controls are available. These include photolog, photographs, plans, and video tape.
  - c. Identify possible causes of crashes or skid marks.
  - d. When the inspection process reveals a condition that requires repair/correction, the documentation should include:
    - 1) Description of the repair/correction needed, when it was noted, and by whom;
    - 2) Repairs/corrections or replacements made or deferred and why;
    - 3) Any other needed actions
  - e. Change orders or work orders also serve as a documentation, and should be keyed to the diary when used.

The inspector will be faced with the need to make decisions during the inspection and must exercise judgment in establishing appropriate practices.

### 8-8.03.03 Record Keeping

Good record keeping procedures suggest that the time and location of the installation and removal of traffic control devices be noted. Although this can be time consuming for a moving maintenance operation, it is important to record significant traffic control actions taken by the field crew. It is desirable that this include:

1. Starting and ending time of work;
2. Location of work;
3. Type, condition and position of traffic control devices;
4. Names of personnel;
5. Type of equipment used; and
6. Any change in temporary or permanent regulatory devices.

Major projects will require more detailed record keeping since they may involve greater amounts of funds, outside (Federal or State Aid) funding sources, and longer distances and times of physical exposure to the workers, motorists, or pedestrians.

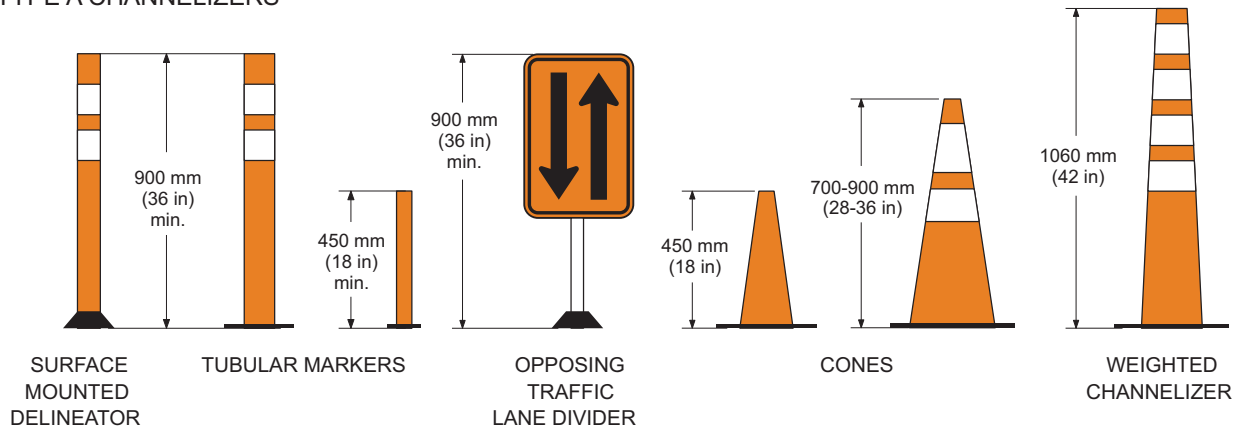
## 8-9.00 REFERENCES

1. Minnesota Department of Transportation, Minnesota Manual of Uniform Traffic Control Devices, current edition, including Part VI.
2. Minnesota Department of Transportation, Standard Specifications for Construction, current edition.

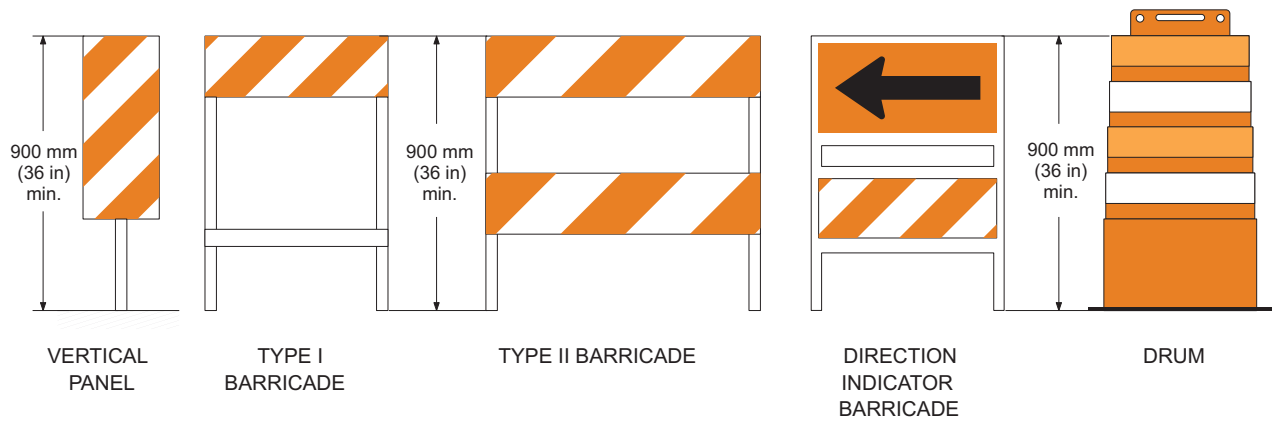




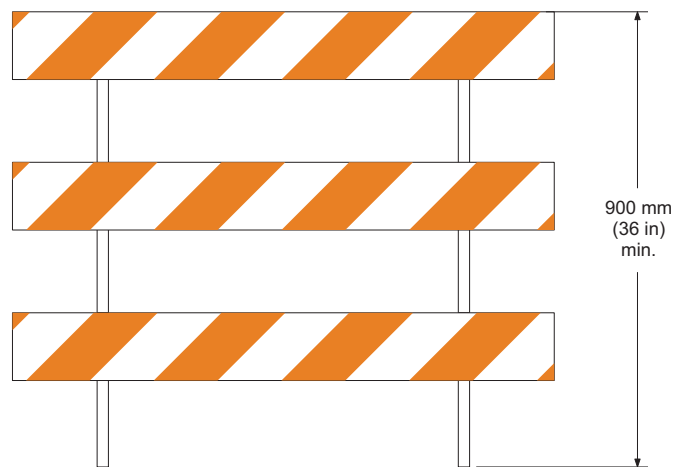
TYPE A CHANNELIZERS



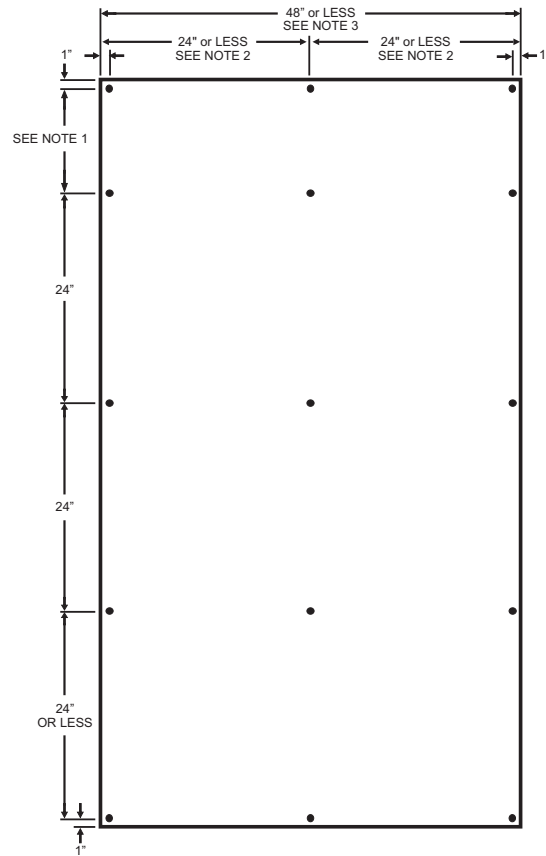
TYPE B CHANNELIZERS



TYPE C CHANNELIZER



Text Ref.: 8-5.04



**OVERLAY ASSEMBLY STEPS:**

- 1) DRILL 1/4" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH THE HOLE SPACING ON THE DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 24" APART.
- 2) ATTACH PLASTIC SPACER(S) (1/8" MIN. THICKNESS, 3/8" I.D., AND 7/8" O.D.) WITH DOUBLE-FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
- 3) POSITION THE FIRST OVERLAY PANEL'S BOTTOM EDGE FLUSH WITH THE BOTTOM OF THE INPLACE EXTRUDED SIGN PANEL AND THE OVERLAY PANEL'S LOWER LEFT EDGE FLUSH WITH THE LOWER LEFT EDGE OF THE BOTTOM INPLACE EXTRUDED PANEL SECTION.
- 4) DRILL ALL OF THE OUTSIDE HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH THE OVERLAY PANEL WITH 1/2" POP RIVETS (SPACERS THICKER THAN 1/8" WILL REQUIRE LONGER POP RIVETS) MEETING THE REQUIREMENTS ON Mn/DOT 3352.A7a.
- 5) DRILL THE INNER HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH WITH RIVETS AS SPECIFIED IN STEP 4 ABOVE.
- 6) ABUT THE NEXT OVERLAY PANEL TO THE FIRST ATTACHED OVERLAY PANEL AND PERFORM THE SAME WORK AS SPECIFIED IN STEPS 4 AND 5 ABOVE.
- 7) INSTALL EACH ADDITIONAL OVERLAY PANEL AS SPECIFIED IN STEP 6 ABOVE.

**NOTES:**

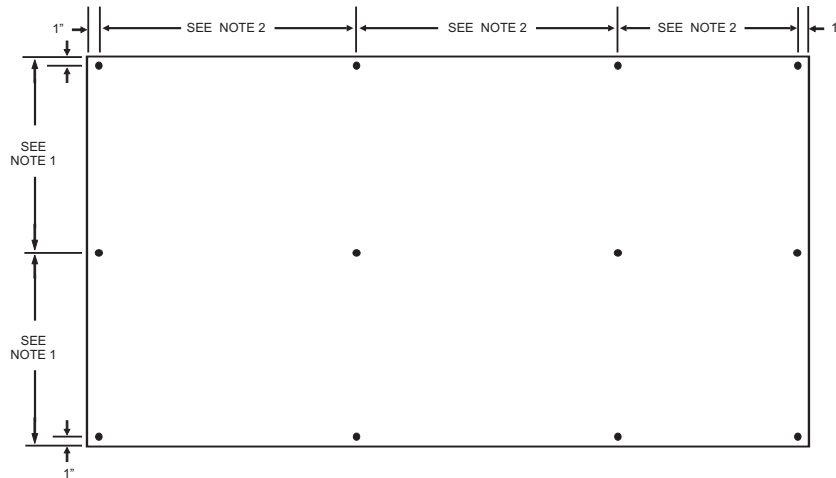
- 1) IF THE TOP EXTRUDED PANEL IS 6" HIGH, THIS VERTICAL SPACE IS 6". IF THE TOP EXTRUDED PANEL IS 12" HIGH, THIS VERTICAL SPACE IS 12".
- 2) THE CENTER RIVETS SHALL BE SPACED AT 1/2 OF THE PANEL'S WIDTH.
- 3) IF THE SHEET ALUMINUM PANEL IS GREATER THAN 48" WIDE, THE RIVET SPACING SHALL BE NO GREATER THAN 24". IF THE SHEET ALUMINUM PANEL IS LESS THAN 24" WIDE THERE SHALL BE NO INNER HOLES..

Text Ref.: 8-5.02.06

March 1,2007

**TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING A COMPLETE EXTRUDED SIGN PANEL**

**FIGURE 8.2A**



**OVERLAY ASSEMBLY STEPS:**

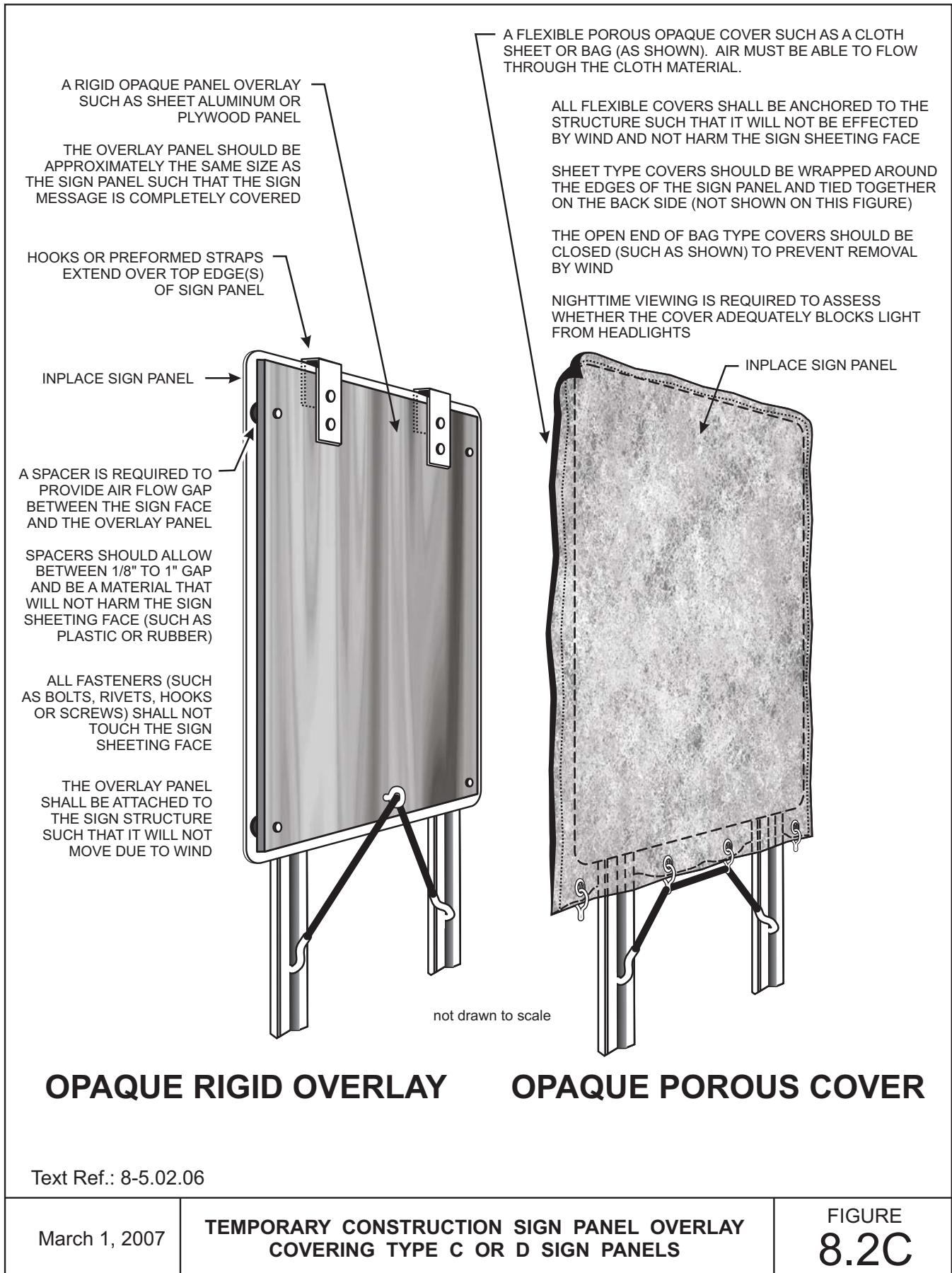
- 1) DRILL 1/4" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH THE HOLE SPACING ON THE DIAGRAM. THE HOLES SHALL NOT BE SPACED MORE THAN 24" APART.
- 2) ATTACH PLASTIC SPACER(S) (1/8" MIN. THICKNESS, 3/8" I.D., AND 7/8" O.D.) WITH DOUBLE-FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
- 3) POSITION THE OVERLAY PANEL ON THE INPLACE EXTRUDED SIGN PANEL MAKING SURE THAT THE MOUNTING HOLES IN THE OVERLAY PANEL DO NOT LINE UP WITH ANY HORIZONTAL EXTRUDED ALUMINUM PANEL JOINTS.
- 4) DRILL ALL OF THE OUTSIDE HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH THE OVERLAY PANEL WITH 1/2" POP RIVETS (SPACERS THICKER THAN 1/8" WILL REQUIRE LONGER POP RIVETS) MEETING THE REQUIREMENTS ON Mn/DOT 3352.A7a.
- 5) DRILL THE INNER HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH WITH RIVETS AS SPECIFIED IN STEP 4 ABOVE.

**NOTES:**

- 1) VERTICAL SPACING FOR THE MOUNTING HOLES IS 50% OF THE PANEL HEIGHT. IF THE PANEL IS LESS THAN 24" HIGH, THERE SHALL BE NO INNER HOLES.
- 2) HORIZONTAL SPACING FOR THE MOUNTING HOLES SHALL NOT BE LESS THAN 15" NOR MORE THAN 24".

Text Ref.: 8-5.02.06

<p>March 1, 2007</p>	<p><b>TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING A PORTION OF AN EXTRUDED SIGN PANEL</b></p>	<p>FIGURE <b>8.2B</b></p>
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# **Chapter 8**

## **WORK ZONE TRAFFIC CONTROLS**

### **APPENDIX 8-10.01**

#### **TRAFFIC MANAGEMENT PLAN CHECKLIST**



# CHECKLIST FOR TRAFFIC CONTROL

DATE \_\_\_\_\_

S.P. \_\_\_\_\_

LOCATION \_\_\_\_\_

LETTING DATE \_\_\_\_\_

## DETOUR ( Preliminary Design Stage )

	Yes	No	N/A	Spec Prov	Plan Det.
1. Will traffic be detoured? If no, go to #7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are various detours adequate in terms of:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Weight - Spring restrictions, height, width?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Wide loads and oversized?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Capacity and adequate traffic control devices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Railroad crossings and controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Geometrics (turning radii, etc.) ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Bridge restrictions and other structures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Conflict with other detour in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Other local motorist routes available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Can the detour be carried over winter (snow removal) ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. If the detour is to be established on other than trunk highways, has the preliminary contact been made with:					
A. County, City, or Townships?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Who will stripe the detour?					
C. Does the signing require upgrading?					
D. Who will be responsible for routine maintenance (i.e. patching)?					
4. Will all fronting businesses have acceptable ingress and egress and will other municipalities be served?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Are TOD'S necessary for businesses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ACTION TAKEN: \_\_\_\_\_



	Yes	No	N/A	Spec Prov	Plan Det.
5. Should the following be contacted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. School Bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Public Transit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Police	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Ambulance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Postal Route	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Is a public information meeting required? \_\_\_\_\_

**TRAFFIC CARRIED THROUGH THE PROJECT**

7. Will capacity be restricted during the peak hours (Lane Closure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Will alternate routes handle the diverted traffic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Have local governments been contacted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Number of lanes or reversible lanes needed?	_____				

8. Consider staging (i.e. lengths of permitted construction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Include in plans or let the contractor plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Can contractor stage work differently than planned?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Bypasses or temporary widening needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. What standards are used?	_____				
B. What locations?	_____				
C. Design speed?	_____				

10. Minimum width? \_\_\_\_\_

11. Will oversized load permits be affected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, will it be signed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Will the project be in place over the winter months? If yes,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Are traffic control devices adequate for winter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Are there provisions for the TCD's to be maintained over winter suspension?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

    If yes, who will maintain them? \_\_\_\_\_

**GENERAL CHECKLIST (Detailed Design Stage)**

	Yes	No	N/A	Spec Prov	Plan Det.
13. Signing (State or Contractor)					
A. Who maintains or inspects?					
B. How often					
C. TCP provided by State or Contractor?					
D. Are any special signs needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, where?					
E. Is cross road signing needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, by whom (State or Contractor)					
14. Are temporary signals needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. If yes, what type?					
Manual					
Fixed time					
Actuated					
15. Can inplace signals be shutdown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, during what hours?					
Does a local municipality need to be contacted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Is temporary street lighting needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes,					
A. Who will install?					
(State or Contractor)					
If State, is request letter needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Are breakaway or non-breakaway poles needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. How will power be furnished?					
D. Is an agreement needed with the power company?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Does inplace lighting need to be kept operational?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Is temporary barrier needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes,					
A. Who will furnish, install, and maintain?					
B. Barrier justification					
High ADT					
Excessive drop-off					
C. Will it be incorporated into existing permanent barrier?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. How will the barrier be delineated?					
Warning lights (type)					
Delineators (type)					
E. How will the barrier ends be protected?					
Taper buried out to the clear zone					
GREAT attenuator					
Barrel attenuator					
F. Is a spare attenuator needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	N/A	Spec Prov	Plan Det.
18. Are equipment traffic controls going to be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, has the proper permission been obtained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Is the Contractor's equipment permitted to use crossovers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, what type?					
A. Which ones?	_____				
	_____				
	_____				
B. Do the Contractor's vehicles need to be marked?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Can the Contractor store equipment, material, and waste material on the construction site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, must they follow AASHTO guidelines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If no, where?	_____				
21. Can the Contractor's workers park their vehicles on the construction site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, where?	_____				
If no, where?	_____				
22. Are temporary pavement markings required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Who will furnish, install, and maintain?	_____				
B. What type?					
Paint _____					
Tape _____					
TRPM _____					
23. Do inplace stripes need to be replaced?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. If yes, where?					
Centerline _____					
Edgeline _____					
B. How will they be removed?	_____				
C. Who will accomplish this?	_____				
24. Is temporary post-mounted delineation needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, who will furnish, install, and maintain?	_____				
25. Will drop-offs and excavations exist?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes,					
A. Will the drop-off exceed 50 mm (2 inches)?	<input type="checkbox"/>	<input type="checkbox"/>			
B. Will the drop-off exceed 100 mm (4 inches)?	<input type="checkbox"/>	<input type="checkbox"/>			
C. Will the drop-off exceed 150 mm (6 inches)?	<input type="checkbox"/>	<input type="checkbox"/>			

**ACTION TAKEN**

	Yes	No	N/A	Spec Prov	Plan Det.
26. Do in-place signs have to be removed or relocated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, by whom?	_____				
27. Are flagging operations required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes,					
A. What type of operation is being considered?					
Radio communication _____					
Pilot car _____					
Flag carrying _____					
B. Will the flagging operation be continued during daylight hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, is supplemental lighting needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Is a construction or work zone speed limit needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, will they use advisories or regulatory signs?	_____				
29. Will the project require any special devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changeable Message Signs, how many?	_____				
30. Will extra protection be required for other road users?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pedestrians _____					
bicyclists _____					
snowmobiles _____					
trail users _____					
schools _____					
parks _____					
31. Do utility operations affect traffic control?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Will the project require dust control?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Are there any restrictions for traffic control which can not be in-place concurrently? (i.e. fire, police, and traffic routing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, by where?	_____				

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**ACTION TAKEN**

	Yes	No	N/A	Spec Prov	Plan Det.
34. Will the source of material on or off the project interfere with traffic or a certain type of traffic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Does the Contractor have to give advance notice of traffic control changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Is the starting or completion date controlled by a school, special events, or holidays? If yes, (event and date)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>					
37. Is a working day other than as specified, such as an 18 hour day? What is the work week?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>					
38. Is there as conflict between working hours and local ordinances due to noise, air, or water restrictions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Is there an incentive clause needed in the contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Will working days be charged between November 15 and April 15 or suspended by a work order? (See 1806)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>					
41. Should there be <u>other than ordinary</u> liquidated damages such as additional penalties? (See 1807)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Is there a possibility that another contract will delay the work of this project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**ACTION TAKEN**

# Chapter 8

## WORK ZONE TRAFFIC CONTROLS

### APPENDIX 8-10.02

#### Detours

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#### List of Forms

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### **8-10.02.01 ESTABLISHING AND MAINTAINING DETOURS**

Specification pertaining to traffic provisions, public convenience and safety provide for continued use of the highway under construction by traffic or the diversion of all except local traffic. Under certain conditions it may be necessary to provide a detour.

#### **Conditions Requiring or Permitting a Detour**

When a construction contract requires by special provisions and specifications that through traffic be diverted, a detour must be provided. When a construction contract requires by special provisions and specifications that traffic is to be permitted to use the route under construction, no detour need be established around the work, unless, during the course of construction, unusual conditions beyond the control of the contractor make the carrying of through traffic impossible or inadvisable. In such case, a detour may be established for the length of time it is required, but only after it has been requested by the contractor and approved by the Commissioner of Transportation.

#### **Selection of a Route**

When a route is to be selected for a detour, the appropriate personnel should be consulted as soon as possible for review of the proposed route. The District should designate a person to coordinate this review. The review team may include the District Traffic Engineer, District State Aid Engineer, District Design Engineer, Project Engineer, Area Maintenance Engineer, as well as the supervisory authorities in charge of the road(s) which will be affected. The information obtained in this review should include a detailed surface condition report, recommendations for reinforcement or modification of the proposed route, and recommendations for traffic control and signing on the proposed route. The form for Establishment of Detour, Form 8.A, must be filled out and submitted, along with a map of the proposed route, to the Central Office, Office of Land Management. The Commissioner's Order establishing the proposed route as a detour (temporary trunk highway) will be prepared by this office. Once the order is signed, copies will be distributed to the appropriate parties.

When a detour is found to be necessary after actual construction has begun and is requested by the contractor, the above procedure is followed except that generally the Project Engineer coordinates the route review. In addition, a Supplemental Agreement will have to be written documenting the change from the original contract.

Once the detour route has been established the Traffic Engineer and the Area Maintenance Engineer should work together to develop the signing layout and have the necessary signs prepared. The Project Engineer should consult with the Traffic and Area Maintenance Engineers to determine the advance notice they would need before the detour is to go into effect. This advance notice should allow enough time to have all signing and other traffic control devices properly installed and reviewed before traffic is diverted onto the detour.

#### **Maintenance of a Detour**

Unless other arrangements are made in the contract, it will be assumed that the detour is to be maintained by state forces. However, if conditions make it advisable to have local authorities maintain their own roads, such arrangements can be made by agreement.

#### **Maintenance Agreement**

When local authorities prefer to maintain their roads which are used for detours, an agreement will have to be reached. See section 5-791.664 in the Maintenance Manual for specific instructions on maintenance agreements.



**Emergency Detour**

Whenever it is necessary to establish an emergency detour around a section of road, the Road Information Office, Area Maintenance Offices, and Office of Land Management should be notified immediately by telephone or facsimile giving details as to location. This message should then be immediately confirmed by submitting the Establishment of Detour form.

This action will then be followed by the same procedure, both in the Office of Right of Way and the District, as is required in establishment of any detour.

**Special Maintenance Work on Detours**

Refer to section 5-791.666 of the Maintenance Manual.

**Discontinuance of a Detour**

Prior to discontinuing the detour and rerouting traffic onto the construction project, the Project Engineer, accompanied by the Traffic and Maintenance Engineers, should inspect the project to determine that the required signs and traffic control devices are in place. The project must be generally in a safe condition.

A final review of the detour must be made as well. This should include the same individuals who made the initial review. The detour roadway must be acceptable to the governmental subdivision before it can be released as a temporary trunk highway. Reference should also be made to section 5- 791.667 of the Maintenance Manual. See Release of Detour form, Form 8.B.

**Maintenance of Construction Projects**

When the contractor is required to take care of through traffic on a construction project, it is expected that satisfactory travelways will be provided by the contractor over or around those portions of the trunk highway that are disturbed by construction operations. The contractor's responsibility in this respect is continuous throughout day, night, Sundays and holidays. However, if satisfactory traffic service is not being provided by the contractor, and once the Project Engineer becomes knowledgeable of the situation, it is his/her duty to advise the contractor accordingly and to insist that such satisfactory service be provided at once.

During the course and development of the construction project, the contractors will be required to extend and expand their traffic service operations until their project is completed and they are released from their obligation as previously specified and indicated.

In the case the contractor refuses to, or neglects to provide a passable and safe travelway for traffic after being instructed to do so by the Project Engineer, appropriate action will be taken in accordance with Spec. 1514.

Prior to the suspension of any construction project which is carrying traffic, the Project Engineer will review the project with regards to traffic safety. This review may include the Area Maintenance Engineer and the District Traffic Engineer.

Mn/DOT 25395 (5-79)

Dist. No. \_\_\_\_\_

RE: ESTABLISHMENT OF DETOUR FOR T.H. \_\_\_\_\_

1. S.P. No. \_\_\_\_\_ City \_\_\_\_\_  
County of \_\_\_\_\_
2. Reason for Detour \_\_\_\_\_
3. Total length of Detour (including portions of other T.H. if used) \_\_\_\_\_
4. Mileage of T.H. No. \_\_\_\_\_ closed \_\_\_\_\_
5. Designation and mileage of each road, and mileage of each surface type of road used as Detour \_\_\_\_\_  
\_\_\_\_\_
6. General and minimum width of surface \_\_\_\_\_
7. Will adverse weather affect detour? \_\_\_\_\_  
If so, additional sheet for alternate road should be prepared.
8. List all structures on detour indicating those limited to less than 20 tons, also list limited clearances. \_\_\_\_\_  
\_\_\_\_\_
9. Will additional Detour be needed for this Project? \_\_\_\_\_
10. Who will maintain Detour? \_\_\_\_\_
11. Approximate date Detour will become effective \_\_\_\_\_
12. If Detour is in City or Village, give names of streets used, type and mileage:  
\_\_\_\_\_
13. Proposed Detour, including questionable structures should be inspected by District Maintenance Engineer with County Engineer or Township Official.  
Comments \_\_\_\_\_  
\_\_\_\_\_
14. Give detailed description of detour and submit sketches as required. (Use Village or City plats if in municipality.) Include township and range.

\_\_\_\_\_  
Project Engineer

Date \_\_\_\_\_

\_\_\_\_\_  
District Maintenance Engineer

NOTE: Complete this form and return to Office of Land Management, Central Office.

TP 25395 (01)

Text Ref.: 8-8.05.01

July 1,1998	<b>ESTABLISHMENT OF DETOUR FORM</b>	FORM <b>8.A</b>
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**RELEASE OF DETOUR**

ORDER NO. \_\_\_\_\_

It is hereby ordered that the route designated as a detour for Trunk

Highway No. \_\_\_\_\_ in the \_\_\_\_\_

County of \_\_\_\_\_ by Order

No. \_\_\_\_\_, was released \_\_\_\_\_

and therefore, said route will revert to its original status.

Dated: \_\_\_\_\_

\_\_\_\_\_  
AREA MAINTENANCE ENGINEER

\_\_\_\_\_  
PROJECT ENGINEER

\_\_\_\_\_  
APPROVED BY  
DISTRICT ENGINEER

Note: Complete this form and return it to the Office of Land Management,  
Central Office.

Text Ref.: 8-8.05.01

July 1,1998	<b>RELEASE OF DETOUR FORM</b>	FORM <b>8.B</b>
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