Temporary Traffic Control
Layout Selection by Maintenance Activity
(Supplemental Guidebooks)

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April 2016

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16. Abstract (Limit: 200 words)

The intent of this document is to help local agencies identify the appropriate work zone layout based on the maintenance activity that will be performed. This document focuses on low volume roads only and includes both a rural and urban guide that are intended to be used as supplemental guidance to the Temporary Traffic Control Work Zone Layouts Field Manual (dated January 2014). The information presented here does not replace or override anything within the field manual. Agencies must follow the standards and guidance contained in the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD), including the Field Manual. This document also includes a copy of a letter that was written and submitted to the MUTCD Committee in April 2016, requesting changes for low volume roadways. A summary of training opportunities is included as well.

Printing Instructions for Supplemental Guides:
The supplemental guides are formatted to be printed as a booklet. The printed document is the same size as the field manual so that it can be stored within the book. In order for it to print properly, use these printing settings:

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Temporary Traffic Control – Layout Selection by Maintenance Activity

FINAL Report

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The following members comprise the project's Technical Advisory Panel (TAP) that contributed to this project:

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Table of Contents

Introduction:

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Rural Temporary Traffic Control – Layout Selection by Maintenance Activity

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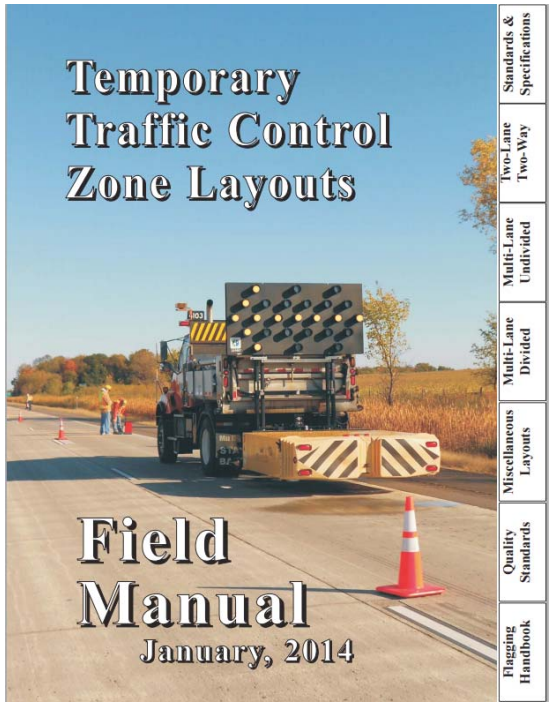
Temporary Traffic Control Layout Selection by Maintenance Activity

RURAL

LOW VOLUME RURAL STREET OR HIGHWAY - JANUARY 2016

The intent of this document is to **help local agencies identify the appropriate work zone layout based on the maintenance activity that will be performed.** This document is intended to be used as supplemental guidance to the *Temporary Traffic Control Zone Layouts Field Manual* (dated January 2014). The information presented here does not replace or override anything within the field manual. Agencies must follow the standards and guidance contained in the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD), including the Field Manual.



Temporary Traffic Control Zone Layouts Field Manual (dated January 2014).

Criteria to use this document:

- Rural Highway
- Low Volume (<400 ADT)
- Mobile, Short Duration or Short Term work only
- Attended work zones

How to use this document:

1. Identify your maintenance activity and work duration
2. Use the matrix on page 3 to select a layout to consider
3. Find the box that corresponds with the suggested layout on the following pages.
4. Read the "Notes from field manual" section and the questions under the section "Is this the appropriate layout?"
5. If the layout is not appropriate, use the guidance provided to identify a better layout.
6. Once the appropriate layout is identified, use the Field Manual for guidance on how to setup the work zone in the field, and the "Minimum Required Devices" section as guidance on the minimum devices needed when using the layout.

NOTES

LAYOUT 80
ROAD CLOSURE

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
	ALL ROADWAYS

Maintenance Activities:
- Road closure

General Information:
Layout 80 is for a total closure that lasts less than 3 days

Notes from Field Manual:
1. The Road Authority will determine if a detour is required and specify the detour route.
2. Road Closure Notice sign should be installed seven days in advance of the closure.
3. Install at the last driveway or intersection beyond which there is no public access.

Is this the appropriate layout?
Will the closure be less than 3 days?
Can you meet all requirements of Layout 80?
If the answer is NO, a special temporary traffic control plan must be considered.

Minimum Required Devices for 55 MPH:

Description	Qty	Device
ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY signs	1	ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED X MILES AHEAD LOCAL TRAFFIC ONLY
ROAD CLOSED AHEAD XXX FEET sign	1	ROAD CLOSED AHEAD 500 FEET
ROAD CLOSED AHEAD sign	1	ROAD CLOSED AHEAD
Type III Barricade	3*	

*with enough to completely close the road at point of closure.

Layout Selection Matrix by Maintenance Activity:

RURAL

		WORK DURATION		
		MOBILE	SHORT DURATION	SHORT TERM
	MAINTENANCE ACTIVITY	15 Minutes or less	One Hour or less	12 Hours or less
On road	Asphalt pavement patching	5	8	9
	Concrete pavement patching	-	-	9
	Temporary pothole patching	5	8	-
	Crack Filling	-	8	13
	Crack sealing - route and seal	-	-	13
	Surface treatment	-	-	13
	Grading a gravel road	72	-	-
	Road closure	81	80	80
	Culvert maintenance (partial road closure)	-	-	9, 10
	Shouldering	5, 71	-	-
	Shoulder disking/blading	5, 71	-	-
Roadside	Mowing	71	-	-
	Tree/Brush removal	5, 71	8	9, 10
	Debris removal - routine (e.g. litter pickup)	5	2	-
	Debris removal - Large item (e.g. couch, roadkill)	5	-	-
	Utility repair	2	2	2
	Sign repair	5	2	-
	Snow cleanup	5	-	-
	Driveway culvert maintenance	2	2	2
	Ditch maintenance (partial road closure)	-	-	2

Duration of Work Definitions

Since low volume roads with less than 400 ADT are two-lane two-way highways, the first and most important decision for temporary traffic control is to ensure you select a layout with the proper duration of work. The Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD) defines Duration as follows:

Duration - the length of time any work operation occupies a specific location or causes a traffic obstruction without changing the location. This time is measured from the first disruption to traffic until the total clearing of the area. The following durations are defined in overlapping intervals since Temporary Traffic Control (TTC) layouts for longer durations may always be used for shorter durations, especially when roadway attributes such as traffic volume and speed, and the work space location may warrant higher levels of traffic control.

- **Mobile** - when an operation is continuously moving or stopped in one location for periods of 15 minutes or less. The traffic control devices are typically vehicle-mounted. The work area should change by at least the decision sight distance for it to be considered a change in location.
- **Short Duration** - when an operation stays in one location during daylight conditions from 15 minutes to one hour, such that minimal TTC devices are deployed.
- **Short Term** - when an operation stays in one location during daylight conditions from 15 minutes to twelve hours, such that advance signing and channelizing devices are required.
- **Intermediate Term/Night** - when an operation stays in one location during daylight conditions from 15 minutes to no more than 3 days, or stays in one location during hours of darkness. Advance signing and larger channelizing devices (Type B) are required.
- **Long Term** - when an operation stays in one location for more than 3 days. A project specific Traffic Control Plan is typically required.

Required Devices

Although cones are the typical channelizer for short term operations, they cannot be used in unattended work zones (Section 6F-64 of MN MUTCD). If leaving a lane closure or marking work when the workers are not present a higher level channelizer, such as a drum or barricade must be used.

LAYOUT 13
LANE CLOSURE, TWO FLAGGER – TWO-LANE TWO-WAY ROAD

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
	ALL TWO-LANE TWO-WAY ROADWAYS

Maintenance Activities:

- Crack filling
- Crack sealing - route and seal
- Surface treatment

General Information:
Layout 13 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term). This layout contains some guidance on the application of Decision Sight Distance for flagger location and requires the use of two flaggers.

Notes from Field Manual:

1. The approach sight distance to the flagger shall be at least the Decision Sight Distance (D).
2. The ONE LANE ROAD AHEAD sign may be omitted when the posted speed limit is 40 mph or less.
3. The two-way taper should be 50 feet and using five equally spaced channelizing devices.

Is this the appropriate layout?
Can you meet all requirements of Layout 13?

If the answer to any of these is no, a special temporary traffic control plan must be considered.

Minimum Required Devices for 55 MPH:

Description	Qty	Device
ROAD WORK AHEAD sign	2	
ONE LANE ROAD AHEAD sign	2	
FLAGGER AHEAD sign	2	
Flagger and STOP SLOW paddle	2	
28" cones or other channelizing device	15*	

*with an additional channelizer for every 100 feet of work space.

LAYOUT 10
LANE CLOSURE, ONE FLAGGER – TWO-LANE TWO-WAY ROAD

SHORT OR INTERMEDIATE TERM	**DAYLIGHT OR NIGHTTIME HOURS**
500 FEET MAXIMUM WORK SPACE	**USE FOR ROADS LESS THAN 400 ADT ONLY**

Maintenance Activities:

- Culvert maintenance (partial road closure)
- Tree/brush removal

General Information:
Layout 10 has a maximum work space is 500 feet and it is restricted to use on roadways with <400 ADT. Layout 10 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term). This layout contains some guidance on the application of Decision Sight Distance for flagger location and whether a second flagger is required.

Notes from Field Manual:

1. The approach sight distance to the flagger shall be at least the Decision Sight Distance.
2. If the flagger's ability to see oncoming motorists beyond the work space is less than the Decision Sight Distance (D), two flaggers shall be used - See Layout 13.
3. STOP signs shall be installed if the work space must be left unattended at night - see Layout 20.
4. The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.

Is this the appropriate layout?
Is the work space less than 500 feet long?

Will traffic be able to be controlled by a single flagger?

Can you meet all requirements of Layout 10?

If the answer to any of these is no, layout 13 must be considered.

Minimum Required Devices for 55 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
FLAGGER AHEAD signs	1	
Flagger and STOP SLOW paddle	1	
28" cones or other channelizing device	15*	

*With an additional channelizer for every 100 feet of work space.

Pedestrian Access

If an existing pedestrian route is impacted by a short-term or short-duration work zone that is attended with project personnel, establishing an alternate pedestrian route may not be necessary if the work can be stopped and pedestrians can navigate the work zone safely. Pedestrians may be delayed for a short period of time for project personnel to move equipment and material to facilitate passage. Work zone personnel may also provide assistance to the pedestrian as necessary.

If alternative pedestrian layouts are needed, Layouts 84 a&b and 85 a&b of the Field Manual should be considered.

Mobile Layouts

Since most of the speed limits on rural low volume roadways are 55 mph and the corresponding decision sight distance is 1200 feet, to meet this definition the work space has to move at least 4800 feet per hour, or approximately one mile per hour.

Will your work move more than 1200 feet every 15 minutes, or approximately one mile per hour?

If not, do not use a mobile layout and consider a stationary (short duration or short term) layout.

LAYOUT 9
LANE CLOSURE, NO FLAGGER – TWO-LANE TWO-WAY ROAD

SHORT TERM	DAYLIGHT HOURS
500 FEET MAXIMUM WORK SPACE	USE FOR ROADS LESS THAN 400 ADT ONLY

Maintenance Activities:

- Asphalt pavement patching
- Concrete pavement patching
- Culvert maintenance (partial road closure)
- Tree/brush removal

General Information:
Layout 9 has a maximum work space length of 500 feet and is for short term (daylight hours and 12 hours or less) application. There is not specific guidance on determining when traffic is unable to self-regulate included in this layout.

Notes from Field Manual:

1. When traffic cannot regulate itself through the length of the work space, use Layout 10.
2. STOP signs shall be installed if the work space must be left unattended at night - see Layout 20.
3. The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.

Is this the appropriate layout?
Is the work space less than 500 feet long?

Will traffic be able to self-regulate without the use of a flagger?

Is the work during daylight hours?

Can you meet all requirements of Layout 9?

If the answer to any of these is no, Layout 10 must be considered.

Minimum Required Devices for 55 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
28" cones or other channelizing device	15*	

*Minimum number of cones for a 500 foot work space is 19.

LAYOUT 2
SHOULDER CLOSURE WORK ON OR NEAR SHOULDER

SHORT OR INTERMEDIATE TERM	DAYLIGHT HOURS
OFF TRAVELED ROADWAY	ALL ROADWAYS

Maintenance Activities:

- Debris removal - routine (e.g. litter pickup)
- Utility repair
- Sign repair
- Driveway culvert maintenance
- Ditch maintenance

General Information:
Layout 2 is for work on the shoulder or off of the traveled roadway for all types, speeds and volumes of streets and highways. Even so, the requirements and options presented in this layout make it appropriate for many shoulder and off roadway operations on low volume roadways.

Notes from Field Manual:

1. All signs, barricades and channelizing devices may be omitted when the work occupies an isolated shoulder location for less than one hour and it has little or no interference with traffic.
2. An operation which moves between work spaces that are less than the decision sight distance along the shoulder should use a stationary or mobile shoulder closure.
3. The ROAD WORK AHEAD sign may be omitted for short term daylight operations if:
   a. the distance from curb face to the work space is at least 2 feet, or
   b. the distance from the edge of the roadway to the work space is at least 15 feet and a vehicle displaying a 360-degree flashing beacon is operating.
4. This ROAD WORK AHEAD sign shall be installed on 2-lane, 2-way roads if traffic control devices are installed for a work space in the opposite shoulder.

Is this the appropriate layout?
Will the work zone be entirely off the traveled lanes?

Can you meet all requirements of Layout 2?

If the answer to any of these is NO, the appropriate short term stationary layout must be considered.

Minimum Required Devices for 55 MPH:

No Devices are required if less than one hour with little or no interference with traffic.

For all other conditions:

Description	Qty	Device
ROAD WORK AHEAD signs	1 or 2	
28" cones or other channelizing device	6*	

*with an additional channelizer for every 100 feet of shoulder closure

LAYOUT 5
LANE CLOSURE – TWO LANE TWO WAY ROAD

MOBILE	DAYLIGHT HOURS
WORK IN TRAVELED LANES	USE FOR ROADS LESS THAN 1500 ADT ONLY

Maintenance Activities:

- Asphalt pavement patching
- Temporary pothole patching
- Shouldering
- Shoulder disking/blading
- Tree/brush removal
- Debris removal - routine (e.g. litter pickup)
- Debris removal - large item (e.g. couch, roadkill)
- Sign repair
- Snow cleanup

General Information:
Layout 5 covers most of the mobile applications for low volume roads where work is conducted on the traveled lanes.

Notes from Field Manual:

1. If the approach sight distance is restricted, a spotter should be used to protect the work area and to warn the driver.
2. If the visibility is poor or the operation does not move at least the Decision Sight Distance (D)every 15 minutes, the appropriate stationary layout should be used.
3. This layout may be used for nighttime operations only in locations where the posted speed limit is 40 mph or less.
4. The slow moving or stopped work vehicle should keep the traffic lane as wide as possible by using the shoulder space whenever possible.

Is this the appropriate layout?
Can you meet all requirements for Layout 5 of the Field Manual?

If the answer is NO, the appropriate stationary layout must be considered

Minimum Required Devices for 55 MPH:

There are no minimum required devices.

The STANDARD that applies is:

Mobile operations shall have appropriate devices on the equipment (that is, high-intensity rotating, flashing, oscillating, or strobe lights, signs, or special lighting), or shall use a separate vehicle with appropriate warning devices.

Description	Qty	Device
Flashing Vehicle Light	1	

LAYOUT 71

WORK OFF ROADWAY MOBILE OPERATIONS HAVING LITTLE OR NO INTERFERENCE WITH TRAFFIC

MOBILE	DAYLIGHT HOURS
LITTLE OR NO INTERFERENCE WITH TRAFFIC	ALL ROADWAYS

Maintenance Activities:

- Shouldering
- Shoulder disking/blading
- Mowing
- Tree/brush removal

General Information:

Layout 71 is for work that is off the roadway where there is little or no interference with traffic. This layout can be used for all highways regardless of traffic volume.

Notes from Field Manual:

1. The operations should be scheduled and completed during daylight work shifts and have little or no interference with traffic. The work should be suspended during periods of poor weather or visibility.
2. All vehicles shall be equipped with a flashing vehicle light visible 360-degrees around the vehicle when viewed from a distance of 60 feet.
3. The ROAD WORK AHEAD sign may be omitted when there is an adequate approach decision sight distance to the equipment along the majority of the route.
4. When advance warning signs are used, the signs should be no more than 3 miles from the work vehicle. The location of the signs should be determined by the sources of traffic, such as major cross roads.
5. On roadways where decision sight distance is restricted and the equipment must encroach into the traffic lane routinely, a shadow vehicle may be used as shown.

Is this the appropriate layout?

Is your work area off the roadway with little or no interference with traffic?

Can you meet all requirements of Layout 71?

If the answer to any of these is NO, the appropriate stationary layout must be considered.

Minimum Required Devices for 55 MPH:

All vehicles shall be equipped with a flashing vehicle light visible 360-degrees around the vehicle when viewed from a distance of 60 feet.

A SLOW MOVING vehicle sign is required for all slow moving vehicles operating on public roadways.

Description	Qty	Device
Flashing Vehicle Light	1	
SLOW MOVING sign	1	

Short Term Layouts

Short Term - when an operation stays in one location during daylight conditions from 15 minutes to twelve hours, such that advance signing and channelizing devices are required.

Will your operation stay in one location for less than 12 hours?

If the answer is NO, consider the use of the appropriate Intermediate Term layout.

Many of the short term layouts in the field manual are also intermediate term layouts which can remain in place for up to three days and during night time conditions. For these situations remember cones cannot be used in unattended work zones.

LAYOUT 8
EQUIPMENT IN TRAFFIC LANE – TWO-LANE TWO-WAY ROAD

SHORT DURATION	DAYLIGHT HOURS
50 FEET MAXIMUM WORK SPACE	USE FOR ROADS LESS THAN 1500 ADT ONLY

Maintenance Activities:

- Asphalt pavement patching
- Temporary Pothole Patching
- Crack Filling
- Tree/brush removal

General Information:
Layout 8 has a maximum work area length of 50 feet which, along with the one hour time restriction, limits the use of this layout to very specific work types. There is not specific guidance on determining when traffic is unable to self-regulate included in this layout.

Notes from Field Manual:

1. The work vehicle shall not be parked on the shoulder opposite of the coned area.
2. The flagger and the Flagger Ahead symbol sign may be omitted when traffic volumes do not restrict traffic's ability to regulate itself through the length of the work space.
3. The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.

Is this the appropriate layout?
Will the work zone be in place for one hour or less?

Can you meet all requirements of Layout 8?

If the answer to any of these is NO, the appropriate short term stationary layout must be considered.

Minimum Required Devices for 55 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
FLAGGER AHEAD signs	1	
Flagger and STOP SLOW paddle	1	
28" cones or other channelizing device	10	

LAYOUT 72
GRAVEL ROAD MAINTENANCE GRADING OPERATIONS – TWO-LANE TWO-WAY ROAD

MOBILE	DAYLIGHT HOURS
ROAD GRADING OPERATIONS	GRAVEL ROADS

Maintenance Activities:

- Grading a gravel road

General Information:
Layout 72 is specific to grading gravel roads.

Notes from Field Manual:

1. Grading operations should be scheduled and completed during daylight work shifts. Work should be suspended during poor weather or visibility conditions.
2. Motor Graders shall be equipped with a flashing vehicle light visible 360 degrees around the vehicle when viewed from a distance of 60 feet.
3. Motor grader blade end(s) may be marked with red or orange flags to provide additional warning and make the equipment more visible to passing vehicles.
4. The ROAD WORK AHEAD signs may be omitted when there is an adequate approach decision sight distance to the motor grader along the majority of the route.
5. When advance warning signs are used, the signs should be no more than 3 miles from the work vehicle. The location of the signs should be determined by the sources of traffic, such as major cross roads.

Is this the appropriate layout?
Can you meet all requirements of Layout 72?

If the answer to any of these is NO, the appropriate stationary layout must be considered.

Minimum Required Devices for 55 MPH:

Motor Graders shall be equipped with a flashing vehicle light visible 360-degrees around the vehicle when viewed from a distance of 60 feet.

A SLOW MOVING vehicle sign is required for all slow moving vehicles operating on public roadways.

Description	Qty	Device
Flashing Vehicle Light	1	
SLOW MOVING sign	1	

LAYOUT 81
TEMPORARY ROAD CLOSURE – TWO LANE TWO WAY ROAD

MOBILE	DAYLIGHT OR NIGHTTIME HOURS
TOTAL CLOSURE 15 MINUTES OR LESS	ALL ROADWAYS

Maintenance Activities:
- Road closure

General Information:
Layout 81 is for a total closure that lasts less than 15 minutes

Notes from Field Manual:
1. The traffic from both lanes should not be stopped for more than 15 minutes.
2. Conditions represented are for work during daytime hours only.
3. For night closures, the following should be used:
   a. Law enforcement officers with squad car for flaggers.
   b. A changeable message sign in each direction.
4. The BE PREPARED TO STOP sign may be omitted when the posted speed limit is 40 mph or less.

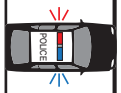
Is this the appropriate layout?
Will the closure be less than 15 minutes?
Can you meet all requirements of Layout 81?
If the answer is NO, the appropriate stationary layout must be considered.

Minimum Required Devices for 55 MPH:

DAYLIGHT HOURS

Description	Qty	Device
ROAD WORK AHEAD signs	2	
BE PREPARED TO STOP signs	2	
FLAGGER AHEAD signs	2	
Flagger and STOP/ SLOW paddle	2	

NIGHTTIME HOURS

Description	Qty	Device
ROAD WORK AHEAD signs	2	
BE PREPARED TO STOP signs	2	
FLAGGER AHEAD signs	2	
Law Enforcement with Squad Car	2	
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	2	

Short Duration Layouts

Short Duration - when an operation stays in one location during daylight conditions from 15 minutes to one hour, such that minimal temporary traffic control devices are deployed.

Will your operation stay in one location for less than one hour?

Is your operation during daylight conditions?

If the answer is NO, consider the use of the appropriate Short Term or Intermediate Term layout.

Urban Temporary Traffic Control – Layout Selection by Maintenance Activity

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Temporary Traffic Control Layout Selection by Maintenance Activity

URBAN

LOW VOLUME URBAN RESIDENTIAL STREET - JANUARY 2016

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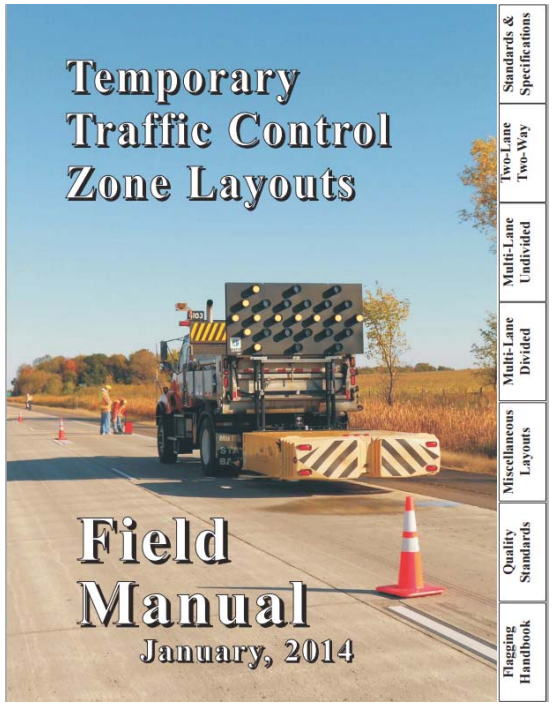

Temporary Traffic Control Zone Layouts Field Manual (dated January 2014).

Criteria to use this document:

- Urban Residential Street
- Low Volume (<400 ADT)
- Mobile, Short Duration or Short Term work only
- Attended work zones
- 30 mph or less

This guidance was developed to aid in selecting appropriate temporary traffic controls for maintenance work on streets commonly referred to as residential streets. While the The Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD) and Minnesota Statutes do not specifically define these streets these guidelines were developed for streets with a speed limit of 30 mph or less, that have a traffic volume less than 400 ADT, and have few if any businesses or commercial development. Many of these residential streets have limited pavement width and consideration should be given to working with local law enforcement to restrict parking on the streets where work is being planned. This will facilitate being able to provide safe passage of vehicles while providing work space exclusively for workers, equipment and materials. The MN MUTCD contains requirements to provide a minimum of 10 foot wide lanes for the passage of vehicles.

How to use this document:

1. Identify your maintenance activity and work duration
2. Use the matrix on page 3 to select a layout to consider
3. Find the box that corresponds with the suggested layout on the following pages.
4. Read the "Notes from field manual" section and the questions under the section "Is this the appropriate layout?"
5. If the layout is not appropriate, use the guidance provided to identify a better layout.
6. Once the appropriate layout is identified, use the Field Manual for guidance on how to setup the work zone in the field, and the "Minimum Required Devices" section as guidance on the minimum devices needed when using the layout.

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Layout Selection Matrix by Maintenance Activity:

URBAN

		WORK DURATION		
		MOBILE	SHORT DURATION	SHORT TERM
	MAINTENANCE ACTIVITY	15 Minutes or less	One Hour or less	12 Hours or less
On road	Asphalt pavement patching	5	8	9
	Concrete pavement patching	-	-	9
	Pothole patching	5	8	-
	Crack Filling	-	8	9, 10, 13
	Crack sealing - Route and seal	-	-	9, 10, 13
	Surface treatment	-	-	9, 10, 13
	Sweeping - Residential	5	-	-
	Road closure (e.g. water main break)	81	80	80
	Utility maintenance (partial road closure)	-	-	9, 10
Roadside	Mowing	71	-	-
	Tree/Brush removal	5, 71	8	9, 10
	Debris removal - routine (e.g. litter pickup)	2	2, 3	-
	Debris removal - Large item (e.g. couch, roadkill)	5	-	-
	Utility repair - roadway	2, 3, 21	2, 3, 21	2, 3, 21
	Sign repair	2, 3, 5	2, 3	-
	Snow cleanup	2, 3, 5	3	-
	Utility repair - intersection	-	-	28

Duration of Work Definitions

Since most low volume roads with less than 400 ADT are two-lane two-way streets, the first and most important decision for temporary traffic control is to ensure you select a layout with the proper duration of work. The MN MUTCD defines Duration as follows:

Duration - the length of time any work operation occupies a specific location or causes a traffic obstruction without changing the location. This time is measured from the first disruption to traffic until the total clearing of the area. The following durations are defined in overlapping intervals since Temporary Traffic Control (TTC) layouts for longer durations may always be used for shorter durations, especially when roadway attributes such as traffic volume and speed, and the work space location may warrant higher levels of traffic control.

- **Mobile** - when an operation is continuously moving or stopped in one location for periods of 15 minutes or less. The traffic control devices are typically vehicle-mounted. The work area should change by at least the decision sight distance for it to be considered a change in location.
- **Short Duration** - when an operation stays in one location during daylight conditions from 15 minutes to one hour, such that minimal TTC devices are deployed.
- **Short Term** - when an operation stays in one location during daylight conditions from 15 minutes to twelve hours, such that advance signing and channelizing devices are required.
- **Intermediate Term/Night** - when an operation stays in one location during daylight conditions from 15 minutes to no more than 3 days, or stays in one location during hours of darkness. Advance signing and larger channelizing devices (Type B) are required.
- **Long Term** - when an operation stays in one location for more than 3 days. A project specific Traffic Control Plan is typically required.

Required Devices

Although cones are the typical channelizer for short term operations, they cannot be used in unattended work zones (Section 6F-64 of MN MUTCD). If leaving a lane closure or marking work when the workers are not present a higher level channelizer, such as a drum or barricade must be used.

NOTES

LAYOUT 80
ROAD CLOSURE

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
	STREETS

Maintenance Activities:
- Road closure

General Information:
Layout 80 is for a total closure that lasts less than 3 days

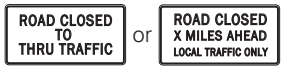
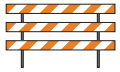
Notes from Field Manual:
1. The Road Authority will determine if a detour is required and specify the detour route.
2. Road Closure Notice sign should be installed seven days in advance of the closure.
3. Install at the last driveway or intersection beyond which there is no public access.

Is this the appropriate layout?
Will the closure be less than 3 days?

Can you meet all requirements of Layout 80?

If the answer is NO, a special temporary traffic control plan must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY signs	1	
ROAD CLOSED AHEAD XXX FEET sign	1	
ROAD CLOSED AHEAD sign	1	
Type III Barricade	3*	

*with enough to completely close the road at point of closure.

Pedestrian Access

If an existing pedestrian route is impacted by a short-term or short-duration work zone that is attended with project personnel, establishing an alternate pedestrian route may not be necessary if the work can be stopped and pedestrians can navigate the work zone safely. Pedestrians may be delayed for a short period of time for project personnel to move equipment and material to facilitate passage. Work zone personnel may also provide assistance to the pedestrian as necessary.

If alternative pedestrian layouts are needed, Layouts 84 a&b and 85 a&b of the Field Manual should be considered.

Mobile Layouts

Since most of the speed limits on urban residential streets are 30 mph and the corresponding decision sight distance is 550 feet to meet this definition, the work space has to move at least 2200 feet per hour, or approximately 1/2 mile per hour.

Will your work move more than 550 feet every 15 minutes, or approximately 1/2 mile per hour?

If not, do not use a mobile layout and consider a stationary (short duration or short term) layout.

LAYOUT 28
CLOSURE IN CENTER OF INTERSECTION

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
ONLY FOR SPEED LIMITS 40MPH OR LESS	USE FOR ROADS LESS THAN 400 ADT ONLY

Maintenance Activities:

- Utility repair - intersection

General Information:

Layout 28 is intended for use where work is in the center of the intersection and there is adequate space for traffic to drive around the closed area.

Layout 28 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term).

Notes from Field Manual:

1. The minimum paved lane width from channelizing devices to the edge of the pavement or to the outside edge of the shoulder shall be 10 feet.

Is this the appropriate layout?

Can traffic drive around the closed area?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 28?

If the answer to any of these is no, layout 29 must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD WORK AHEAD sign	4	
18" cones for daytime low speed 28" cones or other channelizing device	VARIES	

LAYOUT 13
LANE CLOSURE, TWO FLAGGER – TWO-LANE TWO-WAY ROAD

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
	ALL STREETS

Maintenance Activities:

- Crack filling
- Crack sealing - route and seal
- Surface treatment

General Information:
Layout 13 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term). This layout contains some guidance on the application of Decision Sight Distance for flagger location and requires the use of two flaggers.

Notes from Field Manual:

1. The approach sight distance to the flagger shall be at least the Decision Sight Distance (D).
2. The ONE LANE ROAD AHEAD sign may be omitted when the posted speed limit is 40 mph or less.
3. The two-way taper should be 50 feet and using five equally spaced channelizing devices.

Is this the appropriate layout?
Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 13?

If the answer to any of these is no, another layout must be considered

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD WORK AHEAD sign	2	
FLAGGER AHEAD sign	2	
Flagger and STOP SLOW paddle	2	
18″ cones for daytime low speed 28″ cones or other channelizing device	15*	

*with an additional device for every 50 feet of work space.

LAYOUT 5
LANE CLOSURE – TWO LANE TWO WAY ROAD

MOBILE	Daytime all speeds Nighttime 40 mph or less
WORK IN TRAVELED LANE RESIDENTIAL STREET	USE FOR ROADS LESS THAN 1500 ADT ONLY

Maintenance Activities:

- Asphalt pavement patching
- Pothole Patching
- Sweeping - Residential
- Tree/brush removal
- Debris removal - Large item (e.g. couch, roadkill)
- Sign repair
- Snow cleanup

General Information:
Layout 5 covers most of the mobile applications for residential street where work is conducted on the traveled lanes. This layout may be used for night time operations for roadways with posted speed 40 mph or less.

Notes from Field Manual:

1. If the approach sight distance is restricted, a spotter should be used to protect the work area and to warn the driver.
2. If the visibility is poor or the operation does not move at least the Decision Sight Distance (D)every 15 minutes, the appropriate stationary layout should be used.
3. This layout may be used for nighttime operations only in locations where the posted speed limit is 40 mph or less.
4. The slow moving or stopped work vehicle should keep the traffic lane as wide as possible by using the shoulder space whenever possible.

Is this the appropriate layout?
Can you meet all requirements for Layout 5 of the Field Manual?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

If the answer is NO, the appropriate stationary layout must be considered.

Minimum Required Devices for 30 MPH:

There are no minimum required devices.

The STANDARD that applies is:

Mobile operations shall have appropriate devices on the equipment (that is, high-intensity rotating, flashing, oscillating, or strobe lights, signs, or special lighting), or shall use a separate vehicle with appropriate warning devices.

Description	Qty	Device
Flashing Vehicle Light	1	

LAYOUT 71

WORK OFF ROADWAY MOBILE OPERATIONS HAVING LITTLE OR NO INTERFERENCE WITH TRAFFIC

MOBILE	DAYLIGHT HOURS
LITTLE OR NO INTERFERENCE WITH TRAFFIC	ALL RESIDENTIAL STREETS

Maintenance Activities:

- Mowing
- Tree/brush removal

General Information:
Layout 71 is for work that is off the roadway where there is little or no interference with traffic. This layout can be used for all streets regardless of traffic volume.

Notes from Field Manual:

1. The operations should be scheduled and completed during daylight work shifts and have little or no interference with traffic. The work should be suspended during periods of poor weather or visibility.
2. All vehicles shall be equipped with a flashing vehicle light visible 360-degrees around the vehicle when viewed from a distance of 60 feet.
3. The ROAD WORK AHEAD sign may be omitted when there is an adequate approach decision sight distance to the equipment along the majority of the route.
4. When advance warning signs are used, the signs should be no more than 3 miles from the work vehicle. The location of the signs should be determined by the sources of traffic, such as major cross roads.
5. On roadways where decision sight distance is restricted and the equipment must encroach into the traffic lane routinely, a shadow vehicle may be used as shown.

Is this the appropriate layout?
Is your work area off the roadway with little or no interference with traffic?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 71?

If the answer to any of these is NO, the appropriate stationary layout must be considered.

Minimum Required Devices for 30 MPH:
All vehicles shall be equipped with a flashing vehicle light visible 360-degrees around the vehicle when viewed from a distance of 60 feet.

A SLOW MOVING vehicle sign is required for all slow moving vehicles operating on public roadways.

Description	Qty	Device
Flashing Vehicle Light	1	
SLOW MOVING sign	1	

LAYOUT 10

LANE CLOSURE, ONE FLAGGER – TWO-LANE TWO-WAY ROAD

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
500 FEET MAXIMUM WORK SPACE	USE FOR ROADS LESS THAN 400 ADT ONLY

Maintenance Activities:

- Crack filling
- Crack sealing - route and seal
- Tree/brush removal
- Surface treatment
- Utility maintenance

General Information:
Layout 10 has a maximum work space is 500 feet and it is restricted to use on roadways with <400 ADT. Layout 10 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term). This layout contains some guidance on the application of Decision Sight Distance for flagger location and whether a second flagger is required.

Notes from Field Manual:

1. The approach sight distance to the flagger shall be at least the Decision Sight Distance (D).
2. If the flagger's ability to see oncoming motorists beyond the work space is less than the Decision Sight Distance, two flaggers shall be used - See Layout 13.
3. STOP signs shall be installed if the work space must be left unattended at night - see Layout 20.
4. The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.

Is this the appropriate layout?
Is the work space less than 500 feet long?

Will traffic be able to be controlled by a single flagger?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 10?

If the answer to any of these is no, layout 13 must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
FLAGGER AHEAD signs	1	
Flagger and STOP SLOW paddle	1	
18" cones for daytime low speed 28" cones or other channelizing device	15	

*Minimum number of cones for a 500 foot work space is 24.

LAYOUT 9
LANE CLOSURE, NO FLAGGER – TWO-LANE TWO-WAY ROAD

SHORT TERM	DAYLIGHT HOURS
500 FEET MAXIMUM WORK SPACE	USE FOR ROADS LESS THAN 400 ADT ONLY

Maintenance Activities:

- Asphalt pavement patching
- Concrete pavement patching
- Crack filling
- Crack sealing-route and seal
- Tree/brush removal
- Surface treatment
- Utility Maintenance

General Information:
Layout 9 has a maximum work space length of 500 feet and is for short term (daylight hours and 12 hours or less) application. There is not specific guidance on determining when traffic is unable to self-regulate included in this layout.

Notes from Field Manual:

1. When traffic cannot regulate itself through the length of the work space, use Layout 10.
2. STOP signs shall be installed if the work space must be left unattended at night - see Layout 20.
3. The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.

Is this the appropriate layout?
Is the work space less than 500 feet long?

Will traffic be able to self-regulate without the use of a flagger?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Is the work during daylight hours?

Can you meet all requirements of Layout 9?

If the answer to any of these is no, Layout 10 must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
18" cones for daytime low speed	15*	

*Minimum number of cones for a 500 foot work space is 24

LAYOUT 81
TEMPORARY ROAD CLOSURE – TWO LANE TWO WAY ROAD

MOBILE	DAYLIGHT OR NIGHTTIME HOURS
TOTAL CLOSURE 15 MINUTES OR LESS	ALL ROADWAYS

Maintenance Activities:

- Road closure

General Information:
Layout 81 is for a total closure that last less than 15 minutes

Notes from Field Manual:

1. The traffic from both lanes should not be stopped for more than 15 minutes.
2. Conditions represented are for work during daytime hours only.
3. For night closures, the following should be used:
   a. Law enforcement officers with squad car for flaggers.
   b. A changeable message sign in each direction.
4. The BE PREPARED TO STOP sign may be omitted when the posted speed limit is 40 mph or less.

Is this the appropriate layout?
Will the closure be less than 15 minutes?

Can you meet all requirements of Layout 81?

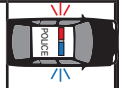
If the answer is NO, the appropriate stationary layout must be considered.

Minimum Required Devices for 30 MPH:

DAYLIGHT HOURS

Description	Qty	Device
ROAD WORK AHEAD signs	2	
FLAGGER AHEAD signs	2	
Flagger and STOP/ SLOW paddle	2	

NIGHTTIME HOURS

Description	Qty	Device
ROAD WORK AHEAD signs	2	
BE PREPARED TO STOP signs	2	
FLAGGER AHEAD signs	2	
Law Enforcement with Squad Car	2	
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	2	

Short Duration Layouts

Short Duration - when an operation stays in one location during daylight conditions from 15 minutes to one hour, such that minimal TTC [temporary traffic control] devices are deployed.

Will your operation stay in one location for less than one hour?

Is your operation during daylight conditions?

If the answer is NO, consider the use of the appropriate Short Term or Intermediate Term layout.

LAYOUT 3
PARKING LANE CLOSURE

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTTIME HOURS
PARKING LANE	ALL STREETS (NO LIMIT ON ADT)

Maintenance Activities:

- Utility repair - roadway
- Sign repair
- Snow cleanup
- Debris removal-routine

General Information:

Layout 3 is for work on the parking lane for all types, speeds and volumes of streets and highways. Even so, the requirements and options presented in this layout make it appropriate for off roadway operations on residential streets. Layout 3 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term).

Notes from Field Manual:

1. This layout is intended for use where a parking lane is closed. If this parking lane is normally open to vehicle travel during the time of day this closure will be in effect, the lane shall be considered a traveled lane and not a parking lane. The appropriate layout shall then be used to provide traffic control for the lane closure.

Is this the appropriate layout?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 3?

If the answer to any of these is NO, the appropriate short term stationary layout must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
18" cones for daytime low speed 28" cones or other channelizing device	4*	

*With an additional channelizer for every 50 feet of parking lane closure.

LAYOUT 2
SHOULDER CLOSURE WORK ON OR NEAR SHOULDER

SHORT OR INTERMEDIATE TERM	DAYLIGHT OR NIGHTIME HOURS
OFF TRAVELED ROADWAY	ALL ROADWAYS

Maintenance Activities:

- Debris removal - routine (e.g. litter pickup)
- Utility repair - roadway
- Sign repair
- Snow cleanup

General Information:

Layout 2 is for work on the shoulder or off of the traveled roadway for all types, speeds and volumes of streets and highways. Even so, the requirements and options presented in this layout make it appropriate for many shoulder and off roadway operations on low volume roadways. This layout is for use on rural designs where there is no curb and gutter, typically has ditches, and there is a shoulder present. If your work area is in an urban design with curb and gutter and parking lanes, you must consider use of Layout 3 (Intermediate Term Section). Layout 2 is not restricted to short term (daylight hours and 12 hours or less) but can be used for 3 days or less (Intermediate term).

Notes from Field Manual:

1. All signs, barricades and channelizing devices may be omitted when the work occupies an isolated shoulder location for less than one hour and it has little or no interference with traffic.
2. An operation which moves between work spaces that are less than the decision sight distance along the shoulder should use a stationary or mobile shoulder closure.
3. The ROAD WORK AHEAD sign may be omitted for short term daylight operations if:
   a. the distance from curb face to the work space is at least 2 feet, or
   b. the distance from the edge of the roadway to the work space is at least 15 feet and a vehicle displaying a 360-degree flashing beacon is operating.
4. This ROAD WORK AHEAD sign shall be installed on 2-lane, 2-way roads if traffic control devices are installed for a work space in the opposite shoulder.

Is this the appropriate layout?

Will the work zone be entirely off the traveled lanes?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 2?

If the answer to any of these is NO, the appropriate short term stationary layout must be considered.

If your work area is in an urban design with curb and gutter and parking lanes, you must consider use of Layout 3 (Intermediate Term Section).

Minimum Required Devices for 30 MPH:

No Devices are required if less than one hour with little or no interference with traffic.

For all other conditions:

Description	Qty	Device
ROAD WORK AHEAD signs	1 or 2	
18" cones for daytime low speed 28" cones or other channelizing device	6*	

*with an additional channelizer for every 100 feet of shoulder closure

LAYOUT 8
EQUIPMENT IN TRAFFIC LANE – TWO-LANE TWO-WAY ROAD

SHORT DURATION	DAYLIGHT HOURS
RESIDENTIAL STREET 50 foot MAXIMUM WORK SPACE	USE FOR ROADS LESS THAN 1500 ADT ONLY

Maintenance Activities:

- Asphalt pavement patching
- Pothole patching
- Crack filling
- Tree/brush removal

General Information:

Layout 8 has a maximum work area length of 50 feet which, along with the one hour time restriction, limits the use of this layout to very specific work types. There is not specific guidance on determining when traffic is unable to self-regulate included in this layout.

Notes from Field Manual:

1. The work vehicle shall not be parked on the shoulder opposite of the coned area.
2. The flagger and the Flagger Ahead symbol sign may be omitted when traffic volumes do not restrict traffic's ability to regulate itself through the length of the work space.
3. The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.

Is this the appropriate layout?

Will the work zone be in place for one hour or less?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 8?

If the answer to any of these is NO, the appropriate short term stationary layout must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
FLAGGER AHEAD signs	1	
Flagger and STOP SLOW paddle	1	
18" cones for daytime low speed 28" cones or other channelizing device	10	

LAYOUT 21
EQUIPMENT ON CENTERLINE – TWO-LANE TWO-WAY ROAD

SHORT DURATION	DAYLIGHT HOURS
RESIDENTIAL STREET 50 foot MAXIMUM WORK SPACE	USE FOR ROADS LESS THAN 1500 ADT ONLY

Maintenance Activities:

- Utility repair - roadway

General Information:

Layout 21 has a maximum work area length of 50 feet which, along with the one hour time restriction, limits the use of this layout to very specific work types.

Notes from Field Manual:

1. The work vehicle shall be parked off of the roadway. Do not obstruct the shoulder in the coned areas.
2. The flagger and Flagger Ahead sign may be omitted if there is at least 10 feet of roadway and shoulder available to safely pass the work equipment on the centerline of the roadway.

Is this the appropriate layout?

Will the work zone be in place for one hour or less?

Has parking been restricted to allow for a minimum 10 foot lane for safe passage of vehicles?

Can you meet all requirements of Layout 21?

If the answer to any of these is NO, the appropriate short term stationary layout must be considered.

Minimum Required Devices for 30 MPH:

Description	Qty	Device
ROAD WORK AHEAD signs	2	
FLAGGER AHEAD signs	2	
Flagger and STOP SLOW paddle	2	
18″ cones for daytime low speed 28″ cones or other channelizing device	20	

Short Term Layouts

Short Term - when an operation stays in one location during daylight conditions from 15 minutes to twelve hours, such that advance signing and channelizing devices are required.

Will your operation stay in one location for less than 12 hours?

If the answer is NO, consider the use of the appropriate Intermediate Term layout.

Many of the short term layouts in the field manual are also intermediate term layouts which can remain in place for up to three days and during night time conditions. For these situations remember cones cannot be used in unattended work zones.

Letter to the MUTCD Committee

April 12th, 2016

Janelle Anderson
MnDOT Tort Claims & Standards Engineer
1500 W. Co. Rd. B2
Roseville MN 55113

SUBJECT: Recommendations for Consideration by the Minnesota Committee on Uniform Traffic Control Devices to Revise the Minnesota Manual on Uniform Traffic Control Devices for Temporary Traffic Controls on Low Volume Streets and Highways

Dear Ms. Anderson,

The Minnesota Local Road Research Board (LRRB) recently established a Technical Advisory Panel to address the concerns of local agencies regarding temporary traffic control guidelines outlined in the Minnesota Manual on Uniform Traffic Control Devices Field Manual. A goal of the TAP was to make recommendations to the Minnesota Committee on Uniform Traffic Control Devices to revise the Field Manual, specifically *Part K Temporary Traffic Control Zone Layouts*. The recommendations are aimed to assist local agencies in providing improved and safer temporary traffic controls for their maintenance operations.

The TAP has determined that many layouts within the manual contain unnecessary and sometimes excessive requirements for applications — specifically for lower volume local road systems with unique design and traffic characteristics. In addition, the temporary traffic control layouts contained in the manual are biased toward the experience and needs of MnDOT, focusing on high volume, high speed Trunk Highways. While it is necessary to address the various temporary traffic control needs for a statewide transportation system, it results in a difficult and time consuming effort for local road authority field operations personnel to determine the appropriate layouts and standards that are needed for their project.

The TAP would appreciate the MCUTCD to consider revisions to the MN MUTCD and Temporary Traffic Control Zone Layouts, Field Manual. These include:

- Application of channelizing devices on low volume roads.
- Refining requirements and device spacing on low volume low speed residential streets.
- Providing a new section in the Field Manual for low volume rural highways.

Application of Channelizing Devices

The guidance and standards for the application of channelizing devices in the MN MUTCD are applicable to all roadways and all temporary traffic control zones regardless of traffic speed, traffic volume, and roadway design. The LRRB Task Force recommends that the MCUTCD consider developing guidance for inclusion in PART 5. TRAFFIC CONTROL DEVICES FOR LOW VOLUME ROADS, Chapter 5G. Temporary Traffic Control Zones that allow for the completion of short-term work (up to 12 hours) on low volume (<400 ADT) roadways without channelizing devices where the work space is short, vehicle paths are clearly visible, work space is frequently moving, and risk to workers and the traveling public is not compromised.

To accomplish this the following language is recommended for inclusion in **Chapter 5G.3 Channelization Devices**:

> Option: (existing language)
>
> To alert, guide and direct road users through temporary traffic control zones on low volume roads, tapers may be used to move a road user out of the traffic lane and around the work space using the spacing of devices that is described in Section 6F.58.
>
> Option: (new language)
>
> Short-term daylight hour maintenance operations that typically have short work spaces, clearly visible vehicle paths and offer limited risk to workers and road users may omit the routine use of channelization devices. Channelization devices may also be omitted if flaggers give specific instructions to drivers on how to proceed through the work zone.
>
> Guidance: (new language)
>
> Channelization devices should be used if road users should be guided in a clear and positive manner while approaching and within construction, maintenance, and utility work areas.

Low Volume Low Speed Residential Streets

- The MN MUTCD defines Roadway as, "that portion of a highway improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm, or shoulder is used by persons riding bicycles or other human-powered vehicles. In the event a highway includes two or more separate roadways, the term roadway as used in this Manual shall refer to any such roadway separately, but not to all such roadways collectively." This definition results in parking lanes being a portion of the roadway where shoulders are not. It is recommended that the MCUTCD consider revising Layout 3 of the Field Manual to include Note 1 from Layout 2 that,"All signs, barricades and channelizing devices may be omitted when the work occupies

an isolated parking lane location for less than one hour and it has little or no interference with traffic."

- The values used in the Temporary Traffic Control Distance Charts for low speed roadways are far greater than those contained in the federal MN MUTCD. For example, advance sign spacing in the Minnesota charts for a 30 mph speed limit is 250 feet while the federal MUTCD uses 100 feet. The MN MUTCD allows 100 foot spacing but requires the use of engineering judgement to apply this value. The Minnesota chart value is difficult to apply in an urban situation where block lengths are 200-400 feet. Also, there are not many situations included that provide guidance on how to adjust sign spacing and location or taper length or placement based on the vicinity of intersections, entrances or pedestrian or bike facilities often present in urban environments. In addition, Part 5G of the MN MUTCD includes the use of 100 feet minimum spacing for 30 mph roadways, but excludes built up urban areas and residential streets from using this value.

  The following is recommended for inclusion in the Temporary Traffic Control Distance Charts contained in the Field Manual of the MN MUTCD:

<table>
<tr><td colspan="2">Posted Speed Limit Prior to Work Starting
(mph)</td><td colspan="2">Advance Warning Sign Spacing
(A)
feet</td></tr>
<tr><td rowspan="2">0-30</td><td rowspan="3">G = 25 ft</td><td>< 400 ADT</td><td>100</td></tr>
<tr><td>All Other Roads</td><td>250</td></tr>
<tr><td>35-40</td><td colspan="2">325</td></tr>
</table>

- Layout 71 contains the note, "the signs should be no more than 3 miles from the work vehicle." This is essentially a rural, high-speed highway requirement; however, it applies to all roadways. This is based on the signs not being more than 3 minutes away; however, in a residential environment, this time may be inappropriate and too long due to visual clutter and other distractions in the urban environment. It is recommended that the MCUTCD consider revising note 4 to read:

  > 4. When advance warning signs are used, the signs should be no more than 3 miles from the work vehicle on high-speed roadways and no more than 1 mile on low-speed roadways. The location of the signs should be determined by the sources of traffic, such as major cross roads.

- Layout 81 appears to apply to higher volume, higher speed roadways and the number of devices and personnel needed for a short 15 minute closure on a low volume low speed residential street is excessive. Consideration by the MCUTCD of allowing a reduction of devices, personnel and requirements for these residential streets is recommended. It is recommended to include the following note on Layout 81:

  > 5. For streets with speeds 30 mph or less, less than 400 ADT, and few businesses or commercial development, the flagger ahead sign may be omitted and for night closures, the changeable message sign in each direction and law enforcement officers may be omitted.

- The LRRB Task Force recommends that the MCUTCD consider providing reduced spacing requirements for urban environments in the distance charts and to also consider inclusion of more layouts to provide guidance for adjusting temporary traffic controls to meet the needs for local agencies while deploying adequate temporary traffic controls. This guidance should include adjustments for work zones in the vicinity of intersections and entrances, presence of pedestrian and bicycle facilities and traffic, and street classification and use, i.e. collector, residential, etc.

Low Volume Rural Highways

The applications and layouts for low volume rural highways are scattered throughout the Field Manual. To facilitate use by local authorities, the Task Force recommends including a separate section in the Field Manual for low volume rural highways. This section would contain the existing Layouts 8, 9, 10, 11, 20, 21, 23, and 72. Since most of these rural highways have statutory speed limits of 55 mph and many are not posted, the Task Force also recommends showing distances directly on the layouts rather than referring to the device spacing charts. It is further suggested that all optional devices be removed from the layouts. Figure 1 shows these recommendations applied to the existing layouts 9 and 10.

Questions regarding these requests and recommendations may be directed to Mark Vizecky, MnDOT State Aid Safety Engineer, 651-366-3839, or mark.vizecky@state.mn.us .

Sincerely,

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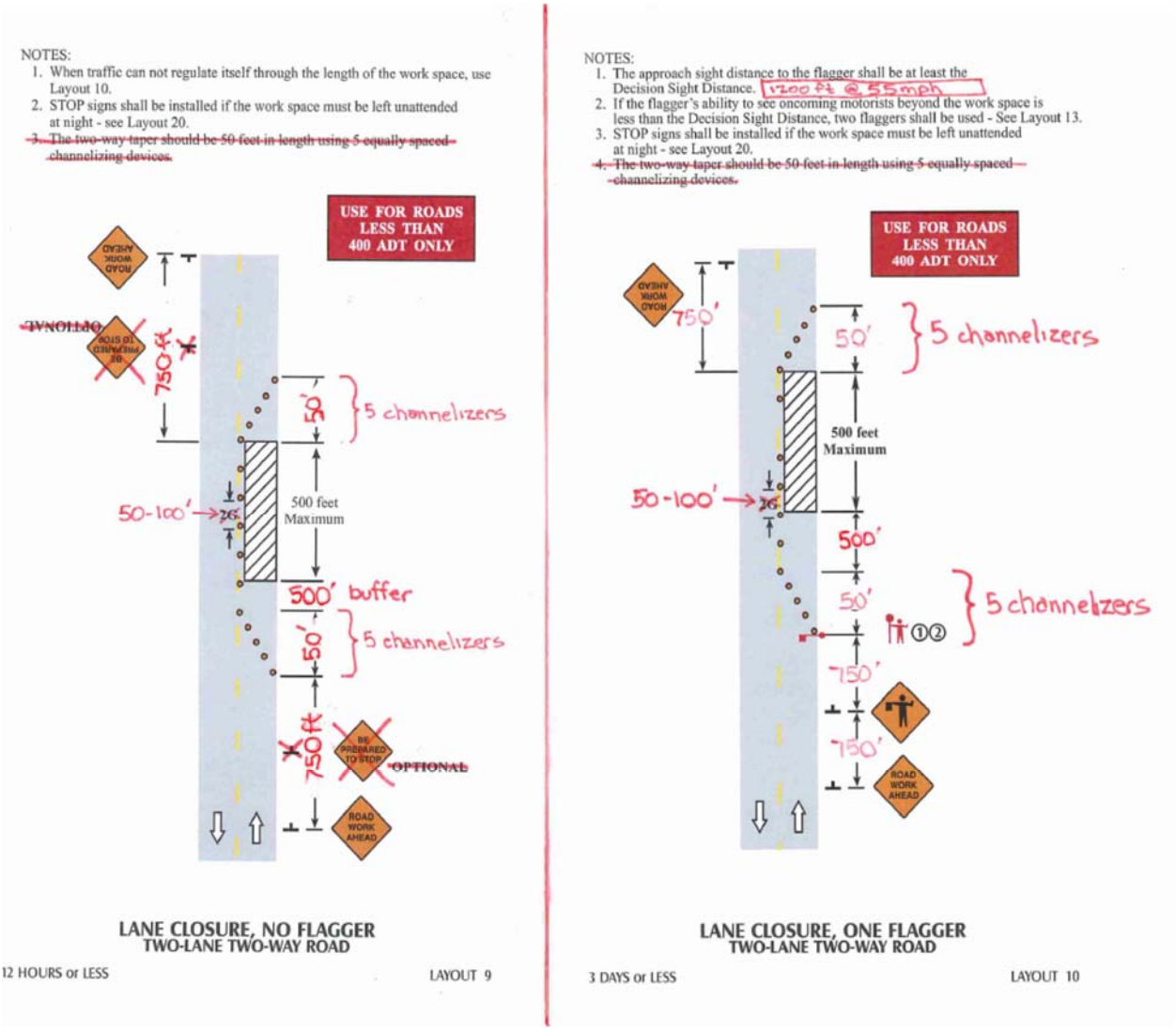

Figure 1 – Recommendation Examples

Work Zone Safety - Training and Resources

Work Zone Safety - Training and Resources

A variety of work zone safety training options and resources are available to local agencies. Below is a summary of a few current resources that were available at the time of publication, however it this is not a comprehensive list.

MnDOT
MnDOT's work zone website includes manuals, guidelines, checklists, specifications and technical memorandums related to work zones.

http://www.dot.state.mn.us/trafficeng/workzone/

- Work zone safety campaign - construction zone and safety information and safe driving tips
- Work Zone Safety Awareness Program - A free program involving work zone safety issues presented throughout the state by MnDOT personnel or Drivers Education and 55 Alive instructors.
- Work zone safety tools - Manuals, handbooks, and other guidelines related to standards and safety within work zones on Minnesota roadways.
- Work zone training courses - Training Courses conducted by MnDOT
- Work zone safety committees

Minnesota Local Transportation Assistance Program (LTAP)
The Minnesota LTAP hosts two work zone related training courses that are detailed below.

Work-Zone Safety, Temporary Traffic Control, and Flagging Training (In Person Training)
http://www.mnltap.umn.edu/training/topic/traffic/workzone-safety/
In this four-hour comprehensive workshop, attendees will learn key elements required for temporary traffic control, safety, and flagging.

Work-Zone Safety Tutorial (Online training)
http://www.mnltap.umn.edu/training/online/workzone/index.html
This tutorial offers a convenient opportunity for new, seasonal, or temporary staff to learn about the fundamentals of work-zone safety and the basic concepts of the work-zone area before arriving at the job site. This tutorial addresses many of the hazards inherent in road and street work and how these dangers can be minimized to keep motorists, pedestrians, and employees safe.

American Traffic Safety Services Association (ATSSA)

Work Zone Safety Training Grant
ATSSA partnered with the Federal Highway Administration (FHWA) to offer a number of work zone safety training courses to state and local governments and transportation agencies at a low cost of $25 per course, per participant. Details about the courses and registration information can be found at the following link. http://www.atssa.com/WorkZoneSafetyGrant

The courses “TCT – Traffic Control Technician” and “TCS – Traffic Control Supervisor” have been modified to MNMUTCD standards.

Work Zone Safety App
www.workzonesafety.org
ATSSA has recently released a Work Zone Safety App for use on smart phones. Users should note that this application is based on federal standards and does not include Minnesota standards.