

Work Zone Safety and Mobility

For the Traffic Regulator

Traffic Regulator

■ Resource Materials

- Michigan Manual on Uniform Traffic Control Devices, Part 6, Chapters 6C and 6E (MMUTCD).
- Standard Specifications for Construction, Section 922.07, page 876-877.

Training Requirement

- Any traffic regulator working in the state of Michigan must read the MDOT Traffic Regulator's Manual.
- A Copy of this manual may be viewed online at:
 - http://www.michigan.gov/documents/mdot/MDOT-TrafficRegulatorsManual_327600_7.pdf
- To order copies of this manual contact:

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Traffic Regulator Instruction



Agenda

- Project Responsibilities for the Traffic Regulator
 - Rules of Conduct
 - Equipment and Clothing
 - Traffic Control Layout
 - Station and Position
 - Primary Traffic Regulators
 - Control Traffic

Project Responsibilities

For the Traffic Regulator

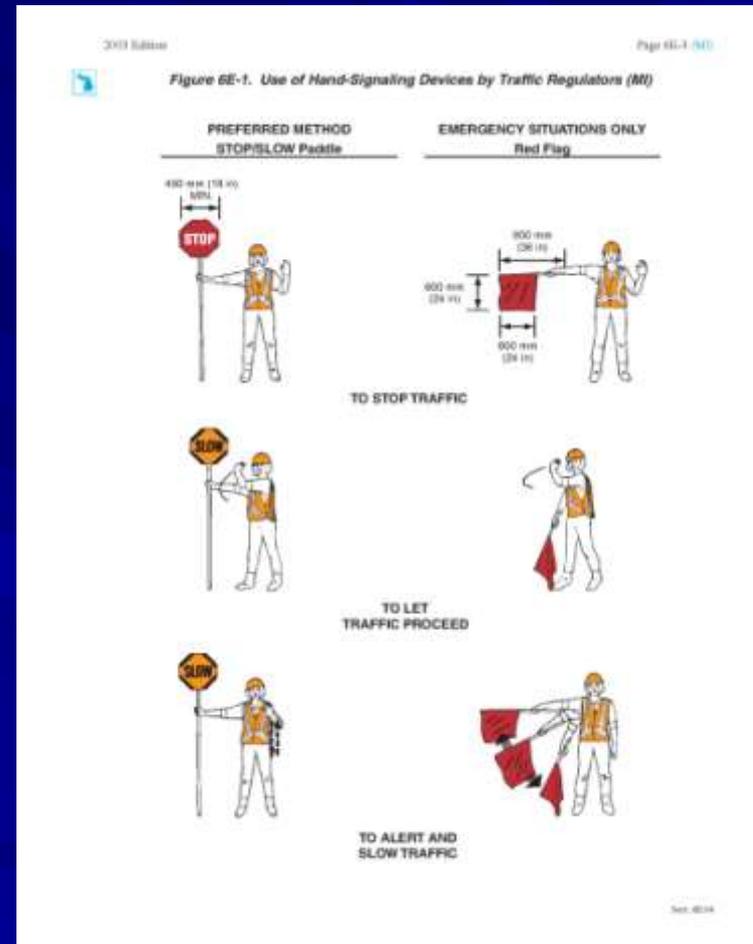
Rules of Conduct

Rules of Conduct

- All traffic Regulators shall be properly trained, equipped, attired, and be able to satisfactorily demonstrate the following abilities:
 - Receive and communicate specific instructions clearly, firmly, and courteously.
 - Move quickly to avoid danger from errant vehicles.

Rules of Conduct

- Control signaling devices (such as paddles and flags) in order to provide clear and positive guidance to drivers approaching the work zone in frequently changing situations.



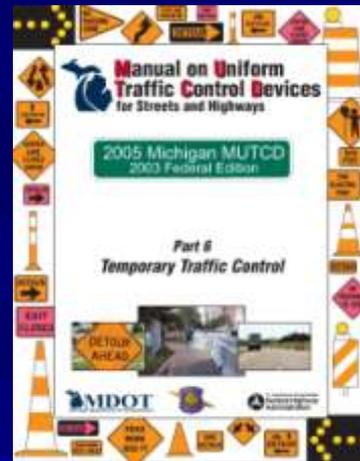
Rules of Conduct

- Understand and apply safe traffic control practices, sometimes in stressful and emergency situations.
- Recognize dangerous traffic situations and warn workers and other regulators in sufficient time to avoid injury.

Rules of Conduct

- Do not mingle with the work crew, traveling public, or other people.
- Determine an escape path that is free of obstructions.

Rules of Conduct



- All Traffic Regulators must meet the training requirements described in the current edition of the Manual on Uniform Traffic Control Devices, Michigan Edition, Part 6, Chapter 6E.
- Prior to performing work, the Part 6 should also be reviewed.

Rules of Conduct

- Be constantly alert of your surroundings, particularly for vehicles approaching from each direction.
- Never turn your back to approaching traffic.



Rules of Conduct

- Always coordinate breaks with the lead traffic regulator or supervisor.
- Do not abandon your traffic regulator station until a replacement arrives and is ready to regulate traffic.
- Ensure periodic breaks or rest periods are scheduled and coordinated throughout a work shift.

Rules of Conduct

- Sitting on an approved stool is **prohibited** if traffic is visibly approaching or moving by the traffic regulator station.
- When traffic is not in the line of sight of the traffic regulator they may sit on an approved stool.



Rules of Conduct

- Shall not use cell phones, headphones, TV's, portable DVD players, MP3 players, or other devices that distract attention or hinder the ability to maintain clear communication with others.



Rules of Conduct

- Always maintain communication with other traffic regulators thru two-way radios, or visual signals if spaced close enough to each other.
- Be constantly aware of your surroundings so as to properly handle traffic emergencies, along with changes in the work zone.

Rules of Conduct

- Prepare and apply appropriate preventive measures for regulating for long durations and/or in adverse weather conditions, such as extreme heat and cold.
- Stay with the arrow board and sign sequence until you are instructed to move.

Rules of Conduct

■ Dealing with angry motorists

– If the motorist disregards your directions:

- Stay calm, be polite.
- Alert the crew.
- Record the vehicle description and license plate.
- Do not leave your station.
- Report this to your supervisor without leaving your station.

Rules of Conduct

■ Be Confident

- Assume responsibility with confidence.
- Have a professional attitude and appearance.
 - Indicates to the motorist that you are in charge.
 - Helps maintain a safe and orderly flow of traffic.

Rules of Conduct

■ Remain Calm

- Excitement is contagious.
- It is essential to perform your duties calmly.
- Never signal traffic in a frantic or hasty manner.

Rules of Conduct

■ Pay Attention to Your Job

- Your job is to control traffic.
- Do not allow yourself to be distracted.
- Do not assist the work crew.
- Do not watch construction operations beyond what is necessary to direct traffic.

Rules of Conduct

■ **Limit Discussion with Motorists**

- Be courteous but brief.
- You may advise the first motorist in line.
- Do not leave your post to advise other drivers in line.
- Provide simple information, such as “We are paving up ahead”.

Rules of Conduct

■ Limit Discussion with Motorists

- Be Polite.
- Do not lean on the vehicle while talking.
- If you are on the drivers side, be aware of traffic from the other direction.

Equipment and Clothing

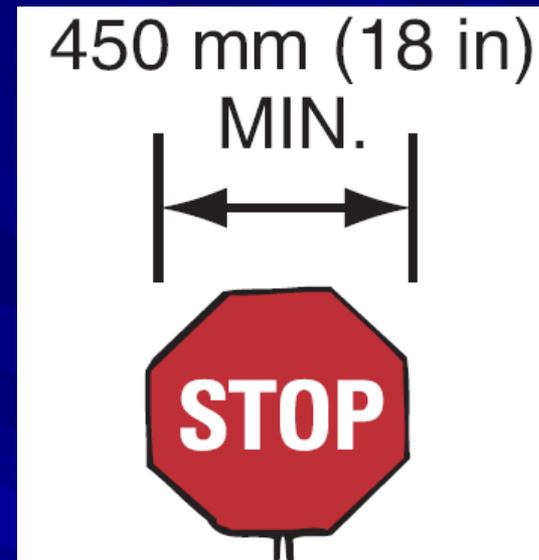


Equipment

- Paddle Requirements: (Stop/Slow and Stop/Stop)
 - 18 inch x 18 inch minimum; octagonal shape.
 - Light semi-rigid material mounted to rigid staff so legend and sign face are not obscured.
 - Letters must be at least 6 inches high.
 - Staff must be a minimum of 6 feet in length to the bottom of the sign.

Equipment

- Stop/Slow and Stop/Stop Paddle
 - **STOP** face shall be red with white letters and border, with retro-reflective sheeting.
 - Flashing lights may be used on the face according to the MMUTCD.



Equipment

- Stop/Slow and Stop/Stop Paddle
 - **SLOW** face must be orange with black letters and border with retro-reflective sheeting.



Equipment

- Two-way Radio System Requirements
 - Sufficient power to send and receive clear signals over the length of the intended traffic regulating operations.
 - Able to send and receive messages that can be heard by all traffic regulators, primary and intermediate, at the same time.
 - Have a backup communication system readily available.

Equipment

■ STOP/SLOW Paddle Stand

- NCHRP 350 or Mash-08 crashworthy approved
- Must be approved for use by the Engineer prior to use on MDOT projects.
- Must be able to quickly remove paddle from the stand.
- Stand may not have other devices attached to it.
- Use of a cone or barrel to stand the paddle is prohibited.

Clothing

■ Personal Protective Equipment - Vest

- The retro-reflective safety apparel shall be designed to clearly identify the wearer as a person.
- Intended to provide 360 degree conspicuity through the full range of body motion during both daytime and nighttime work.

Clothing

- Personal Protective Equipment - Vest
 - Traffic Regulators shall wear clean safety apparel meeting the requirements of ISEA “American National Standard for High Visibility Safety Apparel” meeting the ANSI 107-2004 standard performance for Class 2 risk exposure.



Clothing

- The apparel background (outer) material color shall be either fluorescent orange-red or fluorescent yellow-green as defined in the standard.
- The retro-reflective material shall be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet.

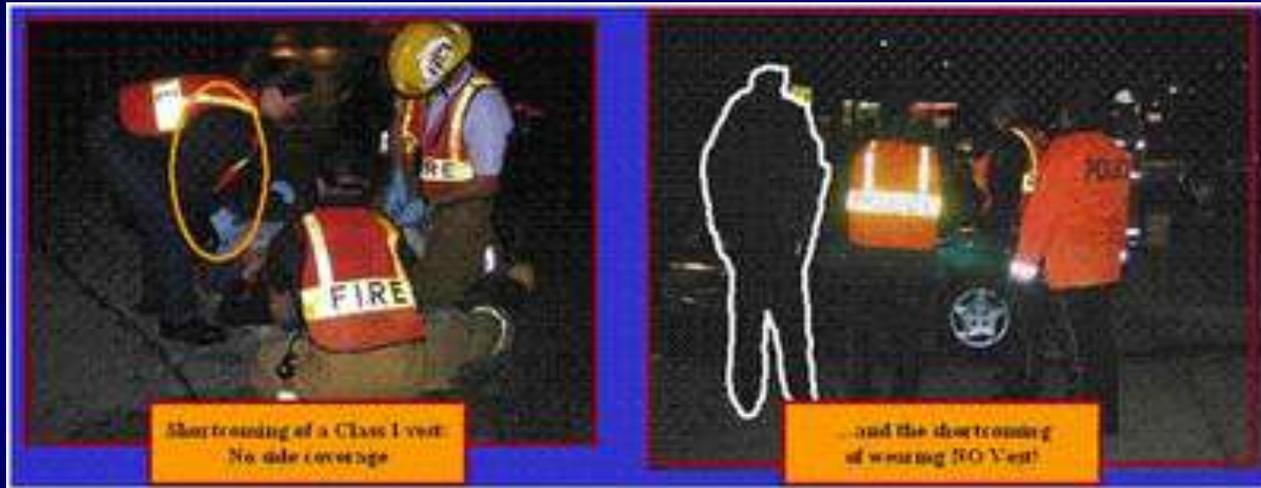
Clothing



- Personal Protective Equipment – Vest
 - Class 2

- Personal Protective Equipment – Vest
 - For nighttime activity, Class 3 risk exposure should be considered.

Clothing



- Left side - Non-ANSI 107 vest, no side coverage
- Right side - no vest highlighted (see outline of worker)

Clothing

- Shirt
- Full length pants
- Abbreviated or suggestive clothing such as tank tops, shorts, skirts, halter tops, etc., are not appropriate.

Equipment and Clothing

■ Personal Protective Equipment

- “Wear head, eye, and foot protection as prescribed in Construction Safety Standards Part 6, Personal Protective Equipment, R 408.40601 and Part 22, R 408.42223, Rule 2223, Part 10 of the Michigan Administrative Code.”

Equipment

■ Flashlight

- In addition to usual regulating equipment, a flashlight with a required red glow cone can be used only during hours of darkness to help get the attention of motorists from a distance.



Equipment

■ Step

- To help reduce fatigue when standing, a short step may be used to elevate one foot (i.e.: 3 inch to 6 inch high block of wood).



Equipment

■ Stool

- May not be used in any portion of an open or closed traffic lane. (In other words, may be placed on the shoulder.)
- 30 inch minimum height.
- No arm or back supports.
- Communication equipment may be attached.
- Do not attach **STOP/SLOW** or **STOP/STOP** paddle.

Equipment

- Miscellaneous Warning Devices – You may be issued the following:
 - Shrill Whistle
 - Marine Air Horn
 - Used to alert workers of danger.



Equipment

- Lighting during hours of darkness
 - Traffic Regulator stations are required to be illuminated for night work with a minimum of 10 foot candles. The light source shall not glare into traffic from either direction.
 - Required levels of lighting are a minimum of ten (10) foot candles (MIOSHA Construction Safety Standard, Part 1, General Rules, Rule 133 (1)).



Equipment

- **Red Flags are allowed for emergency purposes only!**
 - Minimum 24 inches square.
 - Securely fastened to a staff that is 3 feet in length.
 - Free edge is weighted so the flag hangs vertically even in heavy winds.
 - Required to be retro-reflective.



Equipment and Clothing

- Orange flags are prohibited from use during any traffic regulating operation.
- To improve visibility of hand movements, wear bright orange or high visibility gloves. For night use, the gloves should have retro-reflective material.



Traffic Control Layout

Traffic Control Layout

- Maximum recommended distance(s) between channelizing devices in the tangent section should be equal in feet to twice the lowest posted construction speed limit in miles per hour.
- Temporary signing is to be in accordance with contract requirements or current edition of MMUTCD.

Traffic Control Layout

- Place temporary signs and longitudinal buffer spaces according to the requirements found in the current edition of the MMUTCD; Part 6, or as required in the contract documents.

Traffic Control Layout

- Adjustments to temporary sign spacing and longitudinal buffer space may be permitted or required by the Engineer to improve visibility and stopping sight distances that may be reduced by existing conditions.

Traffic Control Layout

- The maximum distance between traffic regulators shall be no more than 2 miles or as directed by the Engineer or contract documents.
- Distances more than 2 miles or as described in the contract require written approval from the Engineer prior to proceeding.

Station and Position

Station and Position

- The station shall be located a minimum of 100 to 200 feet in advance of the workers.
- The station should include audible an warning device such as a horn or whistle, to warn workers of approaching danger by errant vehicles.
- It is located so an errant vehicle has additional space to stop without entering the work area.

Station and Position

- Stand on the shoulder adjacent to the travel lane that is being controlled out of the path of approaching traffic.
- Stand a minimum of 10 feet in advance of the lighted arrow panel for best visibility to approaching traffic.
- A stool may not be used in any portion of an open or closed traffic lane (it may be placed on the shoulder).

Station and Position

- After stopping the first vehicle, traffic regulator may need to leave the shoulder to stand in the controlled lane in front of the stopped vehicle in order to keep the **STOP** sign visible to approaching traffic.
- **Do not cross into the open lane of traffic.**

Station and Position

Position – Good Example



Primary Traffic Regulators

Primary Traffic Regulators

- Primary Traffic Regulators are stationed at each end of the closure with the responsibility of controlling the movement of traffic into and out of the work zone or incident area.

Primary Traffic Regulators

- One of the primary traffic regulators should be designated as the lead traffic regulator.
- The lead traffic regulator may be responsible for leading the coordination of traffic regulator assignments, breaks, replacements, and setup.

Primary Traffic Regulators

- The lead traffic regulator is typically the traffic regulator who is in control of the lane that has the location of the construction work.

Control Traffic

Control Traffic

■ To Stop Traffic

- Stand stationary on the shoulder adjacent to the travel lane that is being controlled.
- Face traffic.
- Aim the STOP paddle face toward approaching traffic in the arm closest to traffic with the arm extended horizontally away from the body.

Control Traffic

To Stop Traffic (cont'd.)

- The free arm shall be held with the palm of the hand open above shoulder level facing approaching traffic.



Control Traffic

To Stop Traffic (cont'd.)

- Try to make direct eye contact with the driver of the first stopped vehicle in order to maintain their attention.
- Communicate to other traffic regulators once the first vehicle is stopped in a controlled position.

Control Traffic

To Stop Traffic (cont'd)

- If approaching vehicle does not appear to be stopping, point at the motorist to get their attention, then provide the hand signal to stop along with the **STOP** face of the paddle.
- If the **STOP/SLOW** paddle is equipped with flashing lights:
 - Use the flash sparingly to attract the motorists while they are still a distance away from your station.



Control Traffic

- Make clear and precise signals that can be easily understood.
- **Do not wave the paddle.**

Control Traffic

To Release Stopped Traffic

- Visually determine that all traffic and work operations are clear in the travel lane.
- Confirm with the other Traffic Regulator(s) that their traffic has stopped.

Control Traffic

■ To Release Stopped Traffic

- Stand stationary on the shoulder adjacent to the travel lane that is being controlled.
- Face the traffic to be released.
- Aim the SLOW paddle face at the released traffic in the right arm extended horizontally away from the body.
- Motion left to right with the free arm for traffic to proceed.



Control Traffic

■ To Alert or Slow Traffic

- Stand stationary on the shoulder adjacent to the travel lane.
- Face approaching traffic and aim the **SLOW** paddle face toward approaching traffic in the arm adjacent to traffic extended horizontally away from the body.
- Motion with the free arm up and down with the palm down.



Night Work

Operations during Hours of Darkness

- Traffic Regulator stations and work area are required to be illuminated with appropriate lighting. Lighting should not create glare for the Traffic Regulators or motorists.
- Required levels of lighting are a minimum of ten (10) foot candles per MIOSHA Construction Safety Standard, Part 1, General Rules, Rule 133 (1).

Operations during Hours of Darkness

- **STOP/SLOW** paddle required to have retro-reflective sheeting, which shall meet the sign sheeting requirements in the agency or contract documents.
- A flashlight with a red glow cone may be used to get the attention of motorists. The proper method is to slowly wave the light back and forth slowly across the front of the legs with the free hand.

Pilot Vehicles



Pilot Vehicles

- Used in conjunction with Traffic Regulators to help control traffic passing through the work zone.
- The goal with using pilot vehicles is to provide information to the motorists on where and what speed to drive through the work zone.

Pilot Vehicles

■ Procedures for Pilot Vehicles

- The Traffic Regulator holds traffic in a stopped position.
- The driver of the pilot vehicle positions the vehicle on the shoulder opposite the Traffic Regulator or if the shoulder is limited, at the beginning of the stopped queue of vehicles.
- The Traffic Regulator checks with other Traffic Regulators to make sure traffic has been cleared.

Pilot Vehicles

- Once the traffic regulator confirms from other regulators that traffic has been cleared, traffic regulator releases the pilot vehicle, turns the **STOP/SLOW** paddle to **SLOW** and directs remaining traffic in the queue to follow.
- Clearly communicate with other regulators when the last vehicle has been released.

Emergency Vehicle Procedures

Emergency Vehicle Procedures

- Always be alert for emergency vehicles and crews.
- Immediately contact other Traffic Regulators and work crews and coordinate stoppage of all traffic entering and traveling through the work zone.

Emergency Vehicle Procedures

- Allow emergency vehicle to proceed through the work zone.
- Continue to keep traffic out of the work zone until the emergency vehicle(s) have cleared the work zone.

Emergency Vehicle Procedures

- All other traffic regulators shall immediately stop all traffic movements to allow the emergency vehicle to pass through the work zone.

Special Traffic Regulating Situations

Signalized Intersections

■ Signalized Intersections

- Altering signal operations are separately arranged or included in the contract documents.

Signalized Intersections

- **For operations that impact an intersection for greater than 20 minutes:**
- **Prior to starting work:**
 - Place traffic control devices per appropriate maintaining traffic typical.
 - Provide Traffic Regulators at all intersection legs.
 - Turn the signal off and bag the entire signal.

Signalized Intersections

- **For operations that impact an intersection for greater than 20 minutes:**
- **Prior to completing work:**
 - Remove bags from signal.
 - Turn signal back on.
 - Once the signal is on and working point to the signal to let the driver know that they are to now follow the signal.

Signalized Intersections

- **For operations that impact an intersection for 20 minutes or less (short duration)**
 - Prior to starting work, the agency designated representative shall:
 - Place traffic control devices per appropriate maintaining traffic typical.
 - Place traffic regulators at all directions of traffic being controlled.

Signalized Intersections

20 minutes or less (cont'd)

- Under Michigan Vehicle Code 257.611a
 - An owner or employee of an entity performing construction, maintenance, surveying, or utility work within a work zone may direct traffic within that work zone if both of the following apply:
 - (a) The department of transportation, the local authority, or the county road commission, within its respective jurisdiction, authorizes that owner or employee to direct traffic due to safety or work requirements. The authorization shall be issued in the manner considered appropriate by the department of transportation, the local authority, or the county road commission, and may be general or specific. The authorization may establish the conditions under which the owner or employee may direct traffic, and may allow the owner or employee to direct traffic in disregard of an existing traffic control device.
 - (b) The owner or employee is properly trained, equipped, and attired in conformance with the manual of uniform traffic control devices authorized under section 608.
 - (2) The operator of a motor vehicle who fails to comply with the directions of an owner or employee directing traffic under this section, including a direction made in disregard of an existing traffic control device, is responsible for a civil infraction.

Signalized Intersections

20 minutes or less (cont'd)

- **For operations that impact an intersection for 20 minutes or less (short duration)**
 - Conduct Traffic Regulator operations while the signal is in stop and go operation. **Do not attempt to stop traffic under a green indication until the intersection is under control.**

Signalized Intersections

20 minutes or less (cont'd)

- For operations that impact an intersection for 20 minutes or less (short duration)
- Prior to giving control back to the signal:
 - Make sure the first vehicle is stopped at a red light.
 - Point to the signal to let the driver know that they are to now follow the signal again.

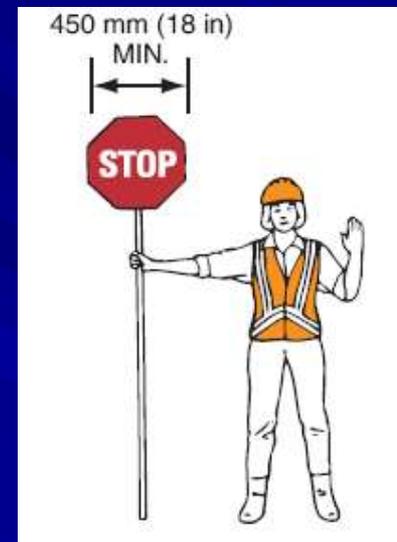
Non-Signalized Intersections

- A traffic regulator is required for each side road approach of traffic being controlled.
- **Stop** and **Yield** signs are not required to be covered.

Summary

Summary

- Be Visible.
- Wear all required safety equipment.
- Stay with the signs.
- Stand alone.
- Remain alert.
- Have an escape route.



Summary

- Record vehicle description and license plate of any driver who disobeys your instructions and threatens safety of the work.
- Be brief and courteous.
- Remain in your position until relieved.
- Be professional.

