**CONTENTS**

1. Preface
   - Abbreviations
   - Symbols
   - Definitions
   - Temporary Traffic Control Devices
   - Pedestrian And Bicycle
   - Railroads
   - Overhead Work
   - Overweight/Oversize Vehicles
   - Lane Lenghs
   - Length Of Lane Closures
   - Sight Distance
   - Above Ground Hazard
   - Clear Zones
   - Width For Work Zones
   - Super-elevation
   - High Visibility Safety Apparel
   - Flagger Control
   - Regulatory Speeds In Work Zones
   - Survey Work Zones
   - Sign Placement
   - Adjacent And/Or Overlapping Work Zone Signing
   - Sign Covering And Interim Work Stoppage Signing
   - Sign Materials
   - Work Zone Sign Supports
   - Sign For Detours, Lane Shifts & Diversions
   - Extended Distance Advance Warning Signs
   - Intersecting Road Signing
   - Utility Work Ahead Sign
   - Length Of Road Work Sign
   - Speeding Lines Doubled When Workers Present Sign
   - Grooved Pavement Ahead Sign
   - End Road Work Signs
   - Manholes/Crosswalks/Joins
   - Truck Mounted Attenuators
   - Removing Pavement Markings
   - Signals
   - Channelizing And Lighting Devices
   - Channelizing And Lighting Devices Consistency
   - Warning Lights
   - Standard Orange Flag
   - Portable Changeable (Variable) Message Signs (PCMS)
   - Advance Warning Arrow Panels
   - Dropoffs In Work Zones
   - Business Entrance
   - Temporary Traffic Control
   - Temporary Pavement Markings
2. Symbols
   - Work Area, Hazard Or Work Phase (Any pattern within a boundary)
   - Sign With 8" x 8" (Min.) Orange Flag And Type B Light
   - Channelizing Device
   - Type I Or Type II Barricade Or Vertical Panel Or Drum
   - Type I Or Type II Barricade Or Vertical Panel Or Drum (With Flashing Light At Night Only)
   - Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only)
   - Type I Or Type II Barricade Or Vertical Panel Or Cone Or Tubular Marker Or Drum
   - Cone Or Tubular Marker
   - Type III Barricade
   - Type III Barricade (With Flashing Light)
   - Type III Barricade (With Steady Burning Light)
   - Work Zone Sign
   - Flagger
   - Traffic Signal
   - Advance Warning Arrow Panel
   - Portable Signal
   - Crash Cushion
   - Stop Bar
   - Vehicle With Flashing Beacon
   - Shadow (S) Or Advance Warning (AW) Vehicle
   - Truck Mounted Attenuator Arrow Panel And Warning Sign
   - Portable Regulatory Sign
   - Radar Speed Display Unit
   - Posted Speed Of Off-Peak 55 Percentile Speed (MPH)
   - Speed And Law Enforcement Officer
   - Temporary Traffic Control
   - Traffic Control Plan(s)
   - Traffic Control Zones
   - Type 1
   - Value Engineering Change Proposal
   - Width Of Taper Transition In Feet (i.e., Lateral Offset)

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**GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES**

*2008 FDOT Design Standards*

<table>
<thead>
<tr>
<th>Sheet No.</th>
<th>Page 1</th>
<th>Sheet No.</th>
<th>1 of 10</th>
</tr>
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<tbody>
<tr>
<td>100</td>
<td></td>
<td>690</td>
<td></td>
</tr>
</tbody>
</table>
DEFINITIONS

Regulatory Speed (In Work Zones)
The maximum permitted travel speed posted for the work zone is indicated by the regulatory speed limit sign. The work zone speed must be shown or noted on the plans.

This speed should be used as the minimum design speed to determine runup length, departure rates, flare rates, lengths of need, clear zone lengths, taper lengths, crush cushion requirements, marker spacings, superelevation and other similar features.

Average Speed
The maximum recommended travel speed through a curve or a hazardous area.

Travel Way
The portion of the roadway for the movement of vehicles. For traffic control through work zones, the travel way may include the temporary use of shoulders and any other permanent or temporary surface intended for use as a lane for the movement of vehicular traffic.

Detour, Lane Shift, and Diversion
A detour is the redirection of traffic onto another roadway to bypass the permanent traffic control zone. A lane shift is the redirection of traffic onto a different section of the permanent pavement. A diversion is the redirection of traffic onto a temporary roadway, usually adjacent to the permanent roadway and within the limits of the right of way.

Above Ground Hazard
Any above ground hazard is any object, material or equipment other than traffic control devices that encroaches upon the travel way or that is located within the clear zone which does not meet Department's safety criteria, i.e., anything that is greater than 4' in height and is firm and unyielding or doesn't meet breakway requirements.

TEMPORARY TRAFFIC CONTROL DEVICES

All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary control devices that are no longer appropriate shall be removed or covered. Arrow Panels, Portable Changeable Message Sign, Radar Speed, Display Trailers, Pedestrian or Bicycle Signs, and any other NCHRP 350 Category 4 devices shall be delineated with retroreflective T1C devices when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crush cushion when not in use.

PEDESTRIAN AND BICYCLIST

When an existing pedestrian or bicycle way is located within a traffic control work zone, accommodation must be maintained and provision for the disabled must be provided.

Only approved temporary traffic control devices may be used to delineate a temporary traffic control zone pedestrian walkway.

Advanced notification of sidewalk closures and marked detours shall be provided by appropriate signs.

RAILROADS

Railroad crossings affected by a construction project should be evaluated for traffic control to reduce queuing on the tracks. The evaluation should include as a minimum traffic volumes, distance from the tracks, the intersections, lane closures, taper locations, signal timing, etc.

OVERHEAD WORK

Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)

Overhead work using a modified lane closure is allowed if all of the following conditions are met:

- Work operation is located in a signalized intersection and limited to signals, lighting and utilities.
- Work operations are 60 minutes or less.
- Speed limit is 45 mph or less.
- Aerial lift equipment in the work area has high intensity, rotating flashing, oscillating, or strobe lights operating.
- Aerial lift equipment is placed directly below the work area to classify.
- Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 100 foot taper.
- Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)

Overhead work using an open traffic lane is allowed if all of the following conditions are met:

- Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
- Work operations are 60 minutes or less.
- Speed limit is 45 mph or less.
- No encroachment by any part of the work activities and equipment within an area bounded by 2 feet outside the edge of travel way and 1 foot high.
- Aerial lift equipment in the work area has high intensity, rotating, flashing, oscillating, or strobe lights operating.
- Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
- Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling onto open lanes of traffic.
- Other Governmental Agencies, Rail Facilities, or Utilities may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK USING A STANDARD LANE CLOSURE)

The lane directly below the overhead work is closed in accordance with the appropriate standard index drawing or detailed in the plans.

OVERWEIGHT/OVERSIZED VEHICLES

Restrictions to Lane Widths, Heights or Load Capacity can greatly impact the movement of over dimensional loads. The Contractor shall notify the Engineer in turn shall notify the State Permit Office, phone (850) 405-5777, at least seven calendardays in advance of implementing a maintenance of traffic plan which will Impact the flow of overweight/oversized vehicles. Information provided shall include location, type of restriction (height, width or weight) and restriction time frames. When the roadway is restored to normal service the State Permit Office shall be notified immediately.

LANE WIDTHS

Lane widths of through roadways should be maintained through work zone travel ways wherever practical. The minimum widths for work zone travel lanes shall be as follows: 10 feet for interstate with at least one 12' lane provided in each direction, unless formally expected by the Federal Highway Administration for freeways and 12 for all other facilities.

LENGTH OF LANE CLOSURES

Lane closures shall not exceed 2 miles in total length in any given direction on the interstate or on state highways with a posted speed of 55 MPH or greater.

SIGHT DISTANCE

Tapers: Transition tapers should be obvious to drivers. If restricted sight distance is a problem (e.g., a sharp vertical or horizontal curve), the taper should begin well in advance of the view obstruction. The beginning of the tapers should not be hidden behind vegetation.

Intersections: Traffic control devices at intersections must provide sight distances for the user to perceive potential conflicts and to traverse the intersection safely.

ABOVE GROUND HAZARD

Above ground hazards (see definitions) are to be considered work areas during working hours and treated with appropriate work zone traffic control procedures. During non-working hours, all objects, materials and equipment that constitute an above ground hazard must be stored/placed outside the travel way and clear zone or be shielded by a barrier or crush cushion.

For above ground hazards within a work zone the clear zone required should be based on the regulatory speed posted during construction.

CLEAR ZONE WIDTHS FOR WORK ZONES

The term "clear zone" describes the unobstructed relatively flat area, impacted by construction, extending outward from the edge of the travel lane. The table below gives clear zone widths in work zones for medians and roadbed conditions other than for roadside canals where roadside canals are present, clear zone widths are to conform with the distances to canals as described in Volumes 1 Chapter 4, Sec 4.2 and Exhibit 4-A and 4-B of the Plans Preparation Manual.

<p>| CLEAR ZONE WIDTHS FOR WORK ZONES |</p>
<table>
<thead>
<tr>
<th>WORK ZONE WIDTHS</th>
<th>WORK ZONE SPEED (MPH)</th>
<th>WORK ZONE WIDTHS (FEET)</th>
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</thead>
<tbody>
<tr>
<td>60-70</td>
<td>55</td>
<td>24</td>
</tr>
<tr>
<td>45-50</td>
<td>35-40</td>
<td>14</td>
</tr>
<tr>
<td>ALL SPEEDES</td>
<td>4' BEHIND FACE CURB &amp; GUTTER OF CURB</td>
<td></td>
</tr>
</tbody>
</table>

SUPERELEVATION

Horizontal curves constructed in conjunction with work zone traffic control should have the required super-elevation applied to the design radii. Under conditions where normal cross slope controls curvature, the minimum radii that can be applied are listed in the table below.

<table>
<thead>
<tr>
<th>MINIMUM RADIUS FOR NORMAL CROSS SLOPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESIGN SPEED</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>65</td>
</tr>
<tr>
<td>55</td>
</tr>
<tr>
<td>50</td>
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<tr>
<td>30</td>
</tr>
<tr>
<td>25</td>
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<tr>
<td>20</td>
</tr>
</tbody>
</table>

SUPERELEVATION WHEN SMALLER RADII USED

2008 FDOT Design Standards

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES
HIGH-VISIBILITY SAFETY APPAREL

All high-visibility safety apparel shall meet the requirements of the International Safety Equipment Association (ISEA) and the American National Standards Institute (ANSI) for High-Visibility Safety Apparel as stated in ANSI/ISEA 107-1990 or ANSI/ISEA 107-2007. The apparel background material shall be one of the following colors: orange, orange-red, yellow, yellow-green, or any combination thereof. The reflective material shall be one of the following colors: orange, yellow, red, silver, yellow-green, or a combination of these colors, and shall be visible at a minimum distance of 1,000 feet. Class 3 apparel may be substituted for Class 2 apparel. Replace apparel that is not visible at 1,000 feet.

WORKERS: All workers within 5 feet of the edge of any work zone shall wear ANSI/ISEA Class 2 apparel. Workers operating machinery or equipment in which safety clothing could become entangled during operation shall wear fitted high-visibility safety apparel.

UTILITIES: When other industry apparel safety standards require utility workers to wear apparel that is consistent with IFOY requirements such as NFPA, OSHA, ANSI, etc., the other standards for apparel may prevail.

FLAGGERS: For daytime activities, flaggers shall wear ANSI/ISEA Class 2 apparel. For nighttime activities, flaggers shall wear ANSI/ISEA Class 3 apparel.

FLAGGER CONTROL

Where flaggers are used, a flagger symbol or legend sign must replace the WORKERS symbol or legend sign. The flagger shall be clearly visible, approaching traffic in a distance to permit response by the motorist to the flagging instructions, and to permit traffic to reduce speed or stop before entering the work zone. Flaggers shall maintain maximum visibility contrast between the flagger's high-visibility apparel and equipment and the work area background.

Hand-Signaling Devices

STOP/SLOW paddles are the primary hand-signaling device. The STOP/SLOW paddle shall have an octagonal shape on a white hand. The background of the paddle shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. If used at night, the STOP/SLOW paddle shall be retroreflective.

Flag use is limited to interstates, intersections, and when working on the centerline or adjacent lanes, or when approaching traffic in the adjacent lanes. Flags, when used, shall be at least 9 inches square, one of a good grade of red material, and securely fastened to a staff that is at least 36 inches in length. When used at nighttime, flags shall be retroreflective red.

Flashlight, lantern, or other lighted signal that will display a red warning light shall be used at night.

Flagger Stations

Flagger stations shall be located far enough in advance of the work zone so that approaching road users will have sufficient distance to stop before entering the work zone. When used at nighttime, the flagger station shall be illuminated.

REGULATORY SADDLES IN WORK ZONES

Traffic Control Plans (TCPs) for all projects must include specific regulatory speeds for each phase of work. These can either be the posted speed or a reduced speed. The speed shall be noted in the TCP and includes indicating the existing speed if no reduction is to be made. Regulatory speeds are to be uniformly established through each phase.

In general, the regulatory speed is to be established in route vehicles through the work zone as close as to normal highway speeds as possible. The regulatory speed should not be reduced more than 10 mph below the posted speed and never below the minimum statutory speed for the class of facility. When a speed reduction greater than 10 mph is imposed, the reduction is to be done in 10 mph increments.

Temporary regulatory speed signs shall be removed as soon as the conditions requiring the reduced speed no longer exist. Once the work zone regulatory speeds are removed, the regulatory speed existing prior to construction will automatically go back into effect unless new speed limit signs are provided for in the plans.

Projects with inter spaced work activities, speed reductions should be located in proximity to these activities which merit a reduced speed, and not "blended" for the entire project. At the integration of such activities, the normal highway speed should be posted to give the motorist notice that normal speed can be resumed.

If the existing regulatory speed is to be used, consideration is given to supplementing the existing signs when the construction work zone is between existing regulatory speed signs. For projects where the reduced conditions exist for greater than 90% of the time, additional regulatory speed signs are to be placed at no more than 1 mile intervals. Engineering judgment is required when considering these conditions and the ramp speeds. Where major intersections, and major traffic routes are involved in the work area.

When field conditions warrant speed reductions different from those shown in the TCP the contractor may submit to the project engineer for approval by the Department, a signed and sealed study to justify the need for further reducing the posted speed, or the engineer may request the District Traffic Operations Engineer (TDE) to conduct an analysis of the area. The TDE may also request the Traffic Engineer of the traffic control plan for the project to conduct a traffic study as well. When deemed necessary, Advisory speed signs may be used alone, or must be placed below the normal highway for which the advisory speed is required.

For additional information refer to the DOT Roadway Plans Designation Manual, Volume I, Chapter 10.

SURVEY WORK ZONES

The SURVEY CREW AHEAD symbol or sign shall be the principal Advance Warning Sign used for Traffic Control Through Survey Work Zones and may replace the ROAD WORK AHEAD sign when lane closures occur during the operation of the Survey Crew. Type B Light or dual orange flags shall be used at all times to enhance the SURVEY CREW AHEAD sign, even with mesh signals.

When Traffic Control Through Survey Zones is being used for survey purposes only, the END ROADWORK sign shall be used for an entire lane closure to advise motorists of the survey work. The following provisions apply to Main Roadway Traffic Control Survey Work Zones. These provisions must be adjusted by the Party Chief to fit roadway and traffic conditions when the Survey Zone includes Intersections.

(A) A STAY IN YOUR LANE sign shall be added to the Advance Warning Sign sequence as the second most important sign from the work area.

(B) Elevation Surveys - Cones may be used at the discretion of the Party Chief to protect periodic tester and flagger's cones. If used, they may be placed at 100 foot intervals along the break line throughout the work zone.

(C) Horizontal Control - Traffic flow in the same direction shall be protected by using the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 500 foot intervals for a total of 1000 feet.

(D) Horizontal Control - Traffic flow in opposite directions to be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 500 foot intervals for a total of 1000 feet. In both directions towards the flow of traffic.

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES
SIGN PLACEMENT

Post-mounted signs installed at the side of the road shall be mounted at a height of at least 3 feet measured from the bottom of the sign to the horizontal line extended from the near edge of the pavement. Signs mounted on barriers or other portable supports shall be no less than 1 foot above the traveled way.

ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING

Adjoining work zones may not have sufficient spacing for standard placement of signs and other traffic control devices in their advance warning areas or in some cases other areas within their traffic control zones. Where such restraints or conflicts occur or are likely to occur, one of the following methods will be employed to avoid conflicts and prevent conditions that could lead to misunderstanding on the part of the traveling public as to the intended travel path by the traffic control procedure applied:

(A) For scheduled projects the engineer in responsible charge of project design will resolve anticipated work zone conflicts during the development of the project traffic control plan. This may entail revision of plans on preceding projects and coordination of plans on concurrent projects.

(B) Unanticipated conflicts arising between adjoining projects will be resolved by the Resident Engineer for projects under his jurisdiction, and by the District Construction Engineer for projects under his jurisdiction.

(C) The District Maintenance Engineer will resolve anticipated conflicts arising between each maintenance area.

(D) The Unit Maintenance Engineer will resolve conflicts that occur within routine maintenance work; between routine maintenance work, unscheduled work and/or permitted work; and, between unit controlled maintenance works, and highway construction projects.

SIGN COVERING AND INTERRUPTWORK STOPPAGESIGNING

Existing signs that conflict with temporary work zone signing shall be removed or covered as approved by the Engineer. Traffic control signs that require covers when no work is being performed in a work area shall be fully covered with a durable opaque sheet material.

Plastic film and washable fabrics including burlap will not be permitted. Covering only the legend or symbol will not be permitted. Reflective coverings will not be permitted.

Hinged signs designed to cover when folded will be permitted. Covers, hinged panels, and intermittent work stoppage shields and planks are incidental to work operation signs and are not to be paid for separately.

SIGN MATERIALS

Mesh signs may be used only for Daylight Operations as noted in the standards. Type E lights and Orange Flags are not required except for survey work zones.

Vinyl signs may be used for Day or Night Operations not to exceed 1 day except as noted in the standards. Type E lights and Orange Flags are not required except for survey work zones.

WORK ZONE SIGN SUPPORTS

All signs shall be mounted when work operations exceed 1 day except as noted in the standards. Signs mounted on temporary supports or barricades, barricade/sign, or other barricades shall be crashworthy and in accordance with NCHRP 350 and in accordance with the Qualitative Products List (QPL).

All post mounted work zone signs shall be installed on either round aluminum or steel channel post as specified in the table below.

SUPPORTS FOR MAINTENANCE OF TRAFFIC SIGNS

<table>
<thead>
<tr>
<th>SIGN SIZE</th>
<th>SIGN BRACKET</th>
<th>ROUND ALUMINUM</th>
<th>DEPTH IN GROUND</th>
<th>STEEL CHANNEL</th>
<th>DEPTH IN GROUND</th>
</tr>
</thead>
<tbody>
<tr>
<td>24&quot; x 36&quot;</td>
<td>2-I</td>
<td>NPS 2.0&quot; x 2&quot;</td>
<td>2'-0&quot;</td>
<td>2.5 lb F/M**</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>48&quot; x 48&quot;</td>
<td>8-22</td>
<td>NPS 3.5&quot; x 2&quot;</td>
<td>3'-4&quot;</td>
<td>**</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>60&quot; x 48&quot;</td>
<td>3-3</td>
<td>NPS 3.5&quot; x 2&quot;</td>
<td>3'-4&quot;</td>
<td>**</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>24&quot; x 36&quot;</td>
<td>2-I</td>
<td>NPS 2.0&quot; x 2&quot;</td>
<td>2'-0&quot;</td>
<td>2.5 lb F/M**</td>
<td>3'-0&quot;</td>
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<td>NPS 3.5&quot; x 2&quot;</td>
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<td>**</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>60&quot; x 48&quot;</td>
<td>3-3</td>
<td>NPS 3.5&quot; x 2&quot;</td>
<td>3'-4&quot;</td>
<td>**</td>
<td>3'-0&quot;</td>
</tr>
</tbody>
</table>

** F/M Indicates Type F. Type M

* Requires two 3 lb/ft steel channel (F/M) at 2'-0" center to center. All sign brackets shall be Type I. The total number of brackets shall be per post as tabulated, except the "Diamond" sign, which should use two Type I brackets per post.

The 4 lb/ft steel channel shall be installed with approved barricade bases.

Refer to Index No. 1186, Sheet 3, for round aluminum sign bracket details, and Index No. 1186, Sheet 2, for steel channel barricade bases, and notes.

SIGNING FOR DETOURS, LANE SHIFTS AND DIVERSIONS

Detours should be signed clearly over their entire length so that motorists can easily determine how to return to the original roadway. The reverse curve (W-4) warning sign should be used for the advanced warning for a lane shift. A diversion should be signed as a lane shift.

EXTENDED DISTANCE ADVANCED WARNING SIGN

Advance Warning Signs shall be used at extended distance of one-half mile or more when limited sight distance or the nature of the obstruction may require a motorist to bring their vehicle to a stop. Extended distance Advance Warning Signs may be required on any type roadway, but particularly be considered on multi-lane divided highways where vehicle speed is generally in the higher range (45 MPH or more).

INTERSECTING ROAD SIGNING

Signs for the control of traffic entering and leaving work zones by way of intersecting highways, roads and streets shall be adequate to make drivers aware of work zone conditions. Under no condition will intersecting leg signage be less than a ROAD WORK AHEAD sign.

UTILITY WORK AHEAD SIGN

The Utility Work Ahead (W-27) sign may be utilized when approved as part of the ROAD WORK AHEAD or the ROAD WORK XX FT (W-28) sign for utility operations on or adjacent to a highway.

LENGTH OF ROAD WORK SIGN

The length of road work sign (G-20) bearing the legend ROAD WORK NEXT WILES is required for all projects more than 2 miles in length. The number of miles entered shall be rounded up to the nearest mile. The sign shall be located at the beginning of the project.

SPEEDING FINES DOUBLE WHEN WORKERS PRESENT SIGN

The SPEEDING FINES DOUBLE WHEN WORKERS PRESENT sign should be installed on all projects, but may be omitted if the work operation is less than 10 days. The placement should be 500 feet beyond the ROAD WORK AHEAD sign or midway to the next sign whichever is less.

GROOVED PAVEMENT AHEAD SIGN

The GROOVED PAVEMENT AHEAD sign is required 500 feet in advance of a grooved surface open to traffic.

END ROAD WORK SIGN

The END ROAD WORK sign (G-20A) should be installed on all projects, but may be omitted when the work operation is less than 10 days. The sign should be placed at the construction area or maintenance area beyond 500 feet of the end of the road work. When other construction or Maintenance Operations occur within 1 mile of the end of the road work, this sign should be omitted and the signer coordinating in accordance with Index No. 600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.
MANHOLES/CROSSWALKS/JOINTS

Manholes extending 1½ or more above the travel lane and crosswalks having an uneven surface greater than ½ shall have a temporary asphalt apron constructed as shown in the diagram below.

All transverse joints that have any difference in elevation shall have a temporary asphalt apron constructed as shown in the diagram below.

The apron is to be removed prior to constructing the next lift of asphalt. The cost of the temporary asphalt shall be included in the contract unit price for Maintenance of Traffic, IS.

TRUCK MOUNTED ATTENUATORS

Truck-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Index Nos. 607 and 609. For short-term, stationary operations, see Part D of the MUTCD.

REMOVING PAVEMENT MARKINGS

Existing pavement markings that conflict with temporary work zone delineation shall be removed by any method approved by the Engineer, where operations exceed one daylight period; however, painting over existing pavement markings will not be permitted. Full pavement width overlays of either a structural or friction course are a positive means to achieve obliteration.

 SIGNALS

Existing traffic signal operations that require modification in order to carry out work zone traffic control shall be included in the TIP and be approved by the District Traffic Operations Engineer. Maintain all existing activated or traffic responsive mode signal operations for main and side street movements for the duration of the Contract and require restoration of any loss of detection within 12 hours. The contractor shall select only detection technology listed on the Department’s Approved Products List (APL) and approved by the Engineer to restore detection capabilities. The plans shall identify the intersections where Temporary Traffic Detection is required.

CHANNELIZING AND LIGHTING DEVICES

Channelizing and lighting devices for work zone traffic control shall be as prescribed in Part XI of the MUTCD, subject to supplemental revisions provided in the contract documents.

Primary work zone traffic control devices are shown on Sheet B for the purpose of ready identification. Approved devices are listed in the Department’s Qualified Product List.

CHANNELIZING AND LIGHTING DEVICE CONSISTENCY

Barrels, vertical panels, cones, tubular markers and drums shall not be intermixed within either the lateral transition or within the tangent alignment.

WARNING LIGHTS

Warning lights shall be in accordance with Section 8F-78 of the MUTCD except for the application limitations stipulated below.

Flashers
Type A low intensity Flashing Warning Lights are to be mounted on barrels, drums, vertical panels or advance warning signs (except as noted below) and are intended to continuously warn drivers that they are approaching or proceeding in a hazardous area. Flashing lights shall be used to delineate the intended path of travel and shall be placed with spacings that will form a continuous line to the driver’s eye. The Type A light will be used to mark obstructs that are located adjacent to or in the intended travel way. Type A lights shall not be used in conjunction with the first advance warning sign or the second such sign when used.

For post-mounted signs, Type B High Intensity Flashing Warning Lights shall be mounted on the first advance warning sign and on the first and second advance warning signs where two or more signs are used. This applies to all approaches to any work zone. The light shall be mounted on the channel post or on the upper edge of the sign nearest the traffic.

Steady-Burn
Type C Steady-Burn Lights are to be mounted on barrels, drums, concrete barrier walls or vertical panels and used in combination with those devices to delineate the travel way or lane closures, lane changes, direction changes and other similar conditions. Steady-burn lights are intended to be placed in a line to delineate the traveled way through and around obstructions in the transition, buffer, work and termination areas of the traffic control zone. Their intended purpose is not for warning drivers that they are approaching or proceeding through a hazardous area.

STANDARD ORANGE FLAG

For post-mounted signs a standard orange flag 18” x 18” (min.) shall be mounted on the first advance warning sign and on the first and second advance warning signs where two or more signs are used. This applies to all approaches to any work zone. The flag shall be mounted on the channel post or on the upper edge of the sign furthest from traffic.

PORTABLE CHANGEABLE (VARIABLE) MESSAGE SIGNS (PCMS)

The PCMS can be used to:

1. Supplement standard signing in construction or maintenance work zones.
2. Reinforce static advance warning messages.
3. Provide motorists with updated guidance information.

PCMS should be placed approx. 500 to 800 feet in advance of the work zone. If possible, PCMS should be placed on the shoulder of the roadway, which require new or unusual traffic maneuvers. If PCMS are to be used at night, the intensity of the flashes shall be reduced during darkness when lower intensities are desirable.

For additional information refer to the FDOT Roadway Plans Preparation Manual, Volume I, Chapter 10.

ADVANCE WARNING ARROW PANELS

An arrow panel in the arrow or chevron mode shall be used only for stationary or moving lane closures on multi-lane roadways.

For shoulder work, blocking the shoulder, for roadside work near the shoulder, or for temporarily closing one lane on a two-lane, two-way roadway, an arrow panel shall be used only in the caution mode.

A single arrow panel shall not be used to merge traffic laterally more than one lane. When arrow panels are used to close multiple lanes, a single panel shall be used at the merging taper for each closed lane.

When Advance Warning Arrow Panels are used at night, the intensity of the flashes shall be reduced during darkness when lower intensities are desirable.

MODES

- Minimum Required Lamps
- Additional Lamps Allowed

2006 FDOT Design Standards

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES
DROP OFF CONDITION NOTES

1. A dropoff is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slopes (A/A) steeper than 1:4. When dropoffs occur within the clear zone due to construction or maintenance activities, protective devices are required. See chart.

2. Distance X is to be the maximum practical under project conditions.

3. Distance from the travel lane to the barrier or warning device should be maximum practical for project conditions.

4. Any dropoff condition that is created and restored within the same work period will not be subject to the use of barriers; however, warning devices will be required.

5. When permanent curb heights are 6", no warning device will be required. For curb heights < 6", see chart.

DROP OFF PROTECTION REQUIREMENTS

NO CURB AND BUTTER

<table>
<thead>
<tr>
<th>X (ft)</th>
<th>D (in)</th>
<th>Device Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 0.5</td>
<td>&lt; 3</td>
<td>Sign WB-BA</td>
</tr>
<tr>
<td>0.5 – 1.0</td>
<td>&gt; 3</td>
<td>Barrier</td>
</tr>
<tr>
<td>1.0 – 1.5</td>
<td>&gt; 5</td>
<td>Warning Device</td>
</tr>
</tbody>
</table>

Refer to Standard Index drawing of selected barrier for required deflection space.

SHOULDER TREATMENT

NOTES

1. Shoulder treatment may be used in lieu of barrier. Warning devices are required.

2. Daily inspections shall be conducted to assure that no erosion, excessive slopes, rutting, or other adverse conditions exist. Any deficiencies shall be repaired immediately.

3. Compensation for the placement and removal of the material required for the shoulder treatment shall be included in the cost for Maintenance Of Traffic, LS. Use of shoulder treatment in lieu of a barrier is not eligible for VESCP consideration.

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING

<table>
<thead>
<tr>
<th>Travel Lane</th>
<th>Travel Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; Solid Lane Line</td>
<td>(When Steeper Than 1:4)</td>
</tr>
</tbody>
</table>

NOTES

1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.

2. Whenever there is a difference in elevation between adjacent travel lanes, the WB-2 sign with "UNEVEN LANES" is required at intervals of ½ mile maximum.

3. If D is ≥ 6" or less, no treatment is required.

4. Treatment allowed only when D is 3" or less.

5. If the slope is steeper than 1:4 (not to be steeper than 1:1), the A4-1 and MDT-1-OA signs shall be used as a supplement to the WB-2; if this condition should not exceed 3 miles in length.

DROP OFFS IN WORK ZONES

Table I

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Max. Distance Between Devices (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25 25 50 25 50</td>
</tr>
<tr>
<td>30 to 45</td>
<td>25 25 50 30 50</td>
</tr>
<tr>
<td>50 to 70</td>
<td>25 25 50 50 100</td>
</tr>
</tbody>
</table>

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

2006 MUTT Design Standards

07/18/06

Sheet No. 600
1. Sign height shall be 7' minimum. Sign offset from edge of travel way should be between 6' and 10' and relatively consistent through the project phase.

2. Signs should show specific business names. Logos may be provided by business owners. BUSINESS ENTRANCE sign in accordance with index i7.355 may be used when approved by the Engineer.

3. Place one business sign for each driveway entrance affected. When several businesses share a common driveway entrance, place one sign per common driveway entrance.

4. Channelizing devices should be placed at a reduced spacing on each side of the driveway entrance as to not to interfere with providing sight distances for the driveway user.

PLACEMENT OF BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES AT BUSINESS ENTRANCE

1. The tubular marker is to be made of a flexible material or have a flexible joint at the base such that it will not cause damage to vehicles upon impact and will return to its original shape after being struck by a 5000 lb. vehicle at a velocity of 75 ft/sec.

2. The tubular marker shall be orange with two white retroreflective bands.

3. The tubular marker may be attached by bituminous adhesive or other methods approved by the Engineer.

4. Retroreflective material shall have a smooth seated outer surface which will display the same approximate color day and night.

5. 1/8" openings for drainage will be constructed in the separator island every 20' in areas with grades of 1% or less or every 50' in areas with grades over 1% as directed by the Engineer.

6. Two Way Traffic signs shall be repeated every 1/2 mile in each direction, throughout the limits where the temporary traffic separator is used.

7. The Contractor has the option of using temporary traffic separators and tubular type warning devices from the specified products list in lieu of the temporary asphalt separator and tubular warning devices detailed on this sheet.

8. Temporary traffic separator shall be paid for under the contract unit price for Maintenance of Traffic, LS, and will include all materials and work necessary to construct, maintain, and remove the temporary traffic separator. Any damage to existing pavement caused by the removal of temporary traffic separator shall be satisfactorily repaired and the cost of such repairs are to be included in the cost of Maintenance of Traffic, LS.

TEMPORARY ASPHALT SEPARATOR

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES
1. Only approved traffic control devices included on the Qualified Products List (QPL) may be used.

2. The FDOT approval number shall be engraved on the device of a convenient and readily visible location. Where engraving is not practical a water-resistant type label may be used.

3. The details shown on this sheet are for the following purposes: (a) To provide information that supplements or supersedes that provided by the MUTCD.

4. The Type III Barricade shall have a unit length of 6'-0" only. When barricades of greater lengths are required those lengths shall be in multiples of the 6'-0" unit. Signs used in conjunction with Type III Barricades may be mounted on or above the barricade. These signs should not cover more than 50 percent of the top two rolls or 33 percent of the total area of the three rolls.

5. During hours of darkness, warning lights shall be used on drums, vertical panels, Type I, Type II, Type III and direction indicator barricades in accordance with "Warning Lights" in Index No. 600.

6. Ballast shall not be placed on top rails or any striped rails or higher than 13' above the driving surface.

7. The direction indicator barricade may be used in taper and transitions where specific directional guidance to drivers is necessary. If used, direction indicator barricades shall be used in series to direct the driver through the transition and into the intended travel lane.

8. The clipping of sheeting is not permitted on either channelizing devices or MUTCD signs.

9. For rails less than 3'-0" long, 4" stripes shall be used.

10. Cones shall:
   a. Be used only in active work zones where workers are present.
   b. Not exceed 2 miles in length of use at any one time.
   c. Have as a minimum, one designated person for the purpose of continuous monitoring and maintenance of cones during lane closures.
   d. Be reflectorized as per the MUTCD with Department approved reflective collars when used at night.

IDENTIFICATIONS - CHANNELIZING AND LIGHTING DEVICES
COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

COLOR CODES
Legend and/or Symbol / Background
G-Orange (Reflected)  R-Red (Reflected)  Y-Yellow (Reflected)
B-Black (Non-Reflected)  T-White (Reflected)  S-Green (Reflected)

Notes:
1. The size of diamond shaped Temporary Traffic Control (TTC) warning signs shall be a minimum of 48" x 48".
2. Fluorescent orange shall be used for all orange colored work zone signs.
3. When standard orange flags or flashing warning lights are used in conjunction with signs, they shall not block the sign face.
4. The sign shields, symbols and messages contained on this sheet are provided for ready reference to these signs used in the development of the MUTCD and are commonly used in the development of traffic control plans.
For additional signs and sign detail information refer to the STANDARD HIGHWAY SIGNS MANUAL as specified in the MUTCD. Special signs for traffic control plans will be as approved by the State Traffic Plans Engineer.
The sign codes shown on this sheet are for the purpose of identifying cell names found in the Traffic Control Cell Library (TCC). The STANDARD HIGHWAY SIGNS MANUAL should be referenced for the official sign codes for use in the development of traffic control plans. See index No. 17355 for MUTCD sign details.

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

2004 MUTCD Design Standards
Code No. 106

3000 Series
USE OF RPMs IN LIEU OF PAINT OR REMOVABLE TAPE IN WORK ZONES

1. In all transition areas paint or removable tape shall be used in addition to RPMs.

2. The color of the RPM body and the reflective face shall conform to the color of the marking for which they substitute.

3. In work zones, CLASS A, B, or D RPMs may be used to form lane lines, edge lines and temporary gore areas. In lieu of paint or removable tape at the spacing shown above, where the RPMs will be used for five (5) days or less, CLASS E RPMs may be used to form lane or edge lines.

USE OF RPMs TO SUPPLEMENT PAINT OR REMOVABLE TAPE IN WORK ZONES

1. RPMs shall be installed as a supplement to all lane lines and the edge lines of gore areas during construction. Placement of RPMs should be as shown in Index No. ITSE with the following exceptions:
   - RPMs shall be placed at 5 feet center to center in approach and transition areas.
   - Class D markers be placed at a maximum spacing of 5 feet center to center.

PLACEMENT OF PAVEMENT MARKINGS

LW - Total width of travel lanes divided by the number of travel lanes unless other widths are shown in the plans.
**GENERAL NOTES**

1. If the work operation (excluding establishing and terminating the work area) requires that two or more work vehicles cross the offset zone in any one hour, traffic control will be in conformance with Index No. 602.

2. No special signing is required.

3. When a side road intersects the highway within the work area, additional TTC devices shall be placed in accordance with other applicable TCZ indexes.

4. When construction activities encroach on a sidewalk refer to Index No. 600.

5. For general TCZ requirements and additional information refer to Index No. 600.

**SYMBOLS**

- Work Area
- Lane Identification + Direction of Traffic

**CONDITIONS**

WHERE ANY VEHICLE, EQUIPMENT, WORKERS AND THEIR ACTIVITIES ARE BEHIND AN EXISTING BARRIER, MORE THAN 2' BEHIND THE CURB, OR IS OR MORE FROM THE EDGE OF TRAVEL WAY.
GENERAL NOTES
1. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway.
2. When four or more work vehicles enter the through traffic lanes in a one hour period or less (excluding establishing and terminating the work area), the advanced FLAGGER sign shall be substituted for the WORKERS sign. For isolation of flaggers and FLAGGER signs, see index No. 603.
3. WORKERS sign to be removed or fully covered when no work is being performed.
4. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign only on the side where the shoulder work is being performed.
5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TTC indexes.
6. For general TCZ requirements and additional information refer to index No. 602.

DURATION NOTES
1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS
WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENTRAP THE AREA CLOSER THAN 10' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.
GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the opposite lane open to traffic.

2. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway.

3. Additional one-way control may be effected by the following means:
   - (1) Flag-carrying vehicle
   - (2) Official vehicles
   - (3) Pilot vehicle
   - (4) Traffic signals

   When flaggers are the sole means of one-way control the flaggers shall be in sight of each other or in direct communication at all times.

4. The ONE-LANE ROAD signs are to be fully covered and the FLAGGR signs either removed or fully covered when no work is being performed and the roadway is open to two way traffic.

5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TTC indexes.

6. The two channelizing devices directly in front of the work area and the one channelizing device directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

7. For general TCC requirements and additional information, refer to Index No. 600.

DURATION NOTES

1. ROAD WORK AHEAD and the BE PREPARED TO STOP signs may be omitted if all of the following conditions are met:
   - Work operations are 60 minutes or less.
   - Speed limit is 45 mph or less.
   - No sight obstructions to vehicles approaching the work area.
   - Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   - Volume and condition of the roadway has been considered.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA BETWEEN THE CENTERLINE AND A LINE 2' OUTSIDE OF THE EDGE OF TRAVEL WAY.

Table I

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Max. Distance Between Devices (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>120</td>
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<td>30</td>
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<td>360</td>
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<tr>
<td>70</td>
<td>390</td>
</tr>
<tr>
<td>75</td>
<td>420</td>
</tr>
</tbody>
</table>

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.
### GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers) and their activities are forbidden in lane and intersection areas reserved for traffic.

2. The FLAGGER legend sign may be substituted for the symbol sign.

3. When vehicles in a parking zone block the line of sight to TCZ signs, the sign shall be pole mounted and located in accordance with index No. 00902.

4. If the work space extends across a crosswalk, the crosswalk should be closed using the information in index No. 660.

5. Flaggers shall be located where they can control more than one direction of traffic.

6. Maximum spacing between channelizing devices shall be not greater than 10 ft.

7. Temporary signal phasing modifications are to be approved by the District Traffic Operations Engineer prior to the beginning of work.

8. For general TCZ requirements and additional information refer to index No. 600.

### DURATION NOTES

1. ROAD WORK AHEAD AND END ROAD WORK sign may be omitted if all of the following conditions are met:
   - Work operations are 60 minutes or less.
   - Speed is 45 mph or less.
   - No sight obstructions to vehicles approaching the work area for a distance equal to A plus B.
   - Vehicles in the work area have high-intensity, flashing, flashing, or strobe lights operating.
   - Volume and complexity of the roadway has been considered.

### CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF A PORTION OF ONE OR MORE TRAFFIC LINES IN AN INTERSECTION.

### SYMBOLS

- Work Area
- Stop Sign
- Traffic Control Device (See Index No. 600)
- Flagger
- Lane Identification + Direction of Traffic
**CONDITIONS**

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF ONE TRAFFIC LANE, FOR WORK AREAS LESS THAN 500' DOWNSTREAM FROM AN INTERSECTION FOR A PERIOD OF MORE THAN 60 MINUTES.

**SYMBOLS**

- **Work Area**
- **Sign With 18" x 18" (Min.) Orange Flag And Type B Light**
- **Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only).** *(Sidewalk Access May Be Closed During Daylight Only. Close Sidewalk - See Index No. 460)*
- **Type I Or Type II Barricade Or Vertical Panel Or Drum (With Flashing Light At Night Only)*
- **Work Zone Sign**
- **Flagger**
- **Lane Identification + Direction of Traffic**

**GENERAL NOTES**

1. Work operations shall be confined to one travel lane, leaving the opposing travel lane open to traffic.
2. All vehicles, equipment, workers (except flaggers) and their activities are restricted to one side of the roadway.
3. When vehicles in a parking zone block the line of sight to TCZ signs or when TCZ signs approach on a pedestrian walkway, the signs shall be post mounted and located in accordance with Index No. 27300.
4. If work area is confined to an outside auxiliary lane the work area shall be barricaded and the FLAGGER sign replaced by ROAD WORK AHEAD signs. Flaggers are not required.
5. Flaggers shall be in sight of each other or in direct communication at all times.
6. The FLAGGER legend sign may be substituted for the symbol sign.
7. The maximum spacing between devices shall be no greater than 25'.
8. For general TCZ requirements and additional information refer to Index No. 600.
9. The two channelizing devices directly in front and directly at the end of the work area is acceptable only by a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights.

**TYPICAL APPLICATIONS**

- Utility Work
- Pavement Repair
- Structure Adjustments

**TWO-LANE TWO-WAY, WORK NEAR INTERSECTION**

<table>
<thead>
<tr>
<th>2006 PDOT Design Standards</th>
<th>Last Updated</th>
<th>Sheet No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>11/15/2015</td>
<td>1 of 1</td>
</tr>
</tbody>
</table>
**GENERAL NOTES**

1. Work operations shall be confined to one traffic lane, except for haul road crossings, leaving the opposite lane open to traffic.

2. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway, except for haul road crossings.

3. The installation and timing of signals shall be approved by the District Traffic Operations Engineer prior to signals being placed in operation.

   Where sight distance to the signal is limited, the signals may be mounted on span wire at the discretion of the Engineer.

   The maximum distance between portable traffic signals (receiver/controllers) shall be 0.25 miles. However, in no case shall the distance exceed the maximum distance at which the remote operator (transmitter) can positively and safely operate both portable signals.

4. Flaggers to supplement the signal operator/flagger shall be used when needed to assure safe movements between traffic and operating equipment, as determined by the Engineer.

5. When needed, an additional warning sign may be installed in advance of the ROAD WORK AHEAD sign. The distance between successive signs shall be 500'.

6. The SIGNAL AHEAD legend sign may be substituted for the signal sign.

7. SIGNAL AHEAD and EQUIPMENT CROSSING AHEAD signs are to be removed or fully covered when no work is being performed and the highway is open to two-way traffic. Type III Barricades shall be in place to block haul road access when the haul road is not in operation and a flagger/signal operator is not on duty, except when the haul road is an existing poorly marked road.

8. When a side road intersects the highway within the TCC zone, additional TCC devices shall be placed in accordance with other applicable TCC indexes.

9. For general TCC requirements and additional information, refer to Index No. 500.

10. Span wire signals are to be used only in work zones where workers present, where the contractor can monitor signal operation and maintain traffic with flaggers in the event of a power failure.

**CONDITIONS**

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES WILL ENCROACH ON ONE LANE OR MOMENTARILY ENCROACH ON BOTH LANES OF A TWO-LANE TWO-WAY ROADWAY AND TRAFFIC SIGNALS ARE NEEDED.
SINGLE LANE CLOSURE • ROADWAY AND BRIDGES ALL LENGTHS

2005 MDOT Design Standards

TWO-LANE TWO-WAY, WORK WITHIN THE TRAVEL WAY
SIGNAL CONTROL
SINGLE LANE CLOSURE • ROADWAY AND BRIDGES ALL LENGTHS

SINGLE LANE CLOSURE • SHORT BRIDGES

TWO-LANE TWO WAY, WORK WITHIN THE TRAVEL WAY SIGNAL CONTROL

2006 PDDT Design Standards

Sheet Number: 073/0195

Sheet No.: 3 of 4
GENERAL NOTES

1. Where work activities within 2' of the edge of travel way are incidental (i.e., mowing, litter removal) the Engineer may delete requirements for signs and the advance warning vehicle provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

2. If an arrow panel is used, the caution mode shall be used.

3. Shadow and Advance Warning Vehicle shall display rotating/strobe lights.

4. For general TCZ requirements and additional information, refer to Index No. 600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE AN INTERMITTENT OR CONTINUOUS MOVING OPERATION.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Work Zone Sign
- Lane Identification + Direction of Traffic
- Work Vehicle With Rotating/Strobe Lights
- Advance Warning Vehicle with Truck Mounted Attenuator (TMA)
GENERAL NOTES
1. If the work operation (excluding establishing and terminating the work area) requires that two or more work vehicles cross the offset zone in any one hour, traffic control will be in accordance with Index No. 612.

2. No special signing is required.

3. This Index also applies when work is being performed on a multilane undivided highway.

4. This Index also applies to work performed in the median behind an existing barrier or more than 5 feet from the edge of travel way, both roadways. Work performed in the median behind curb and gutter shall be in accordance with Index No. 602.

5. When a side road intersects the highway within the work area, additional traffic control devices shall be placed in accordance with other applicable TCC indexes.

6. When construction activities encroach on a sidewalk refer to Index No. 660.

7. For general TCC requirements and additional information refer to Index No. 660.

SYMBOLS

- Work Area
- Lane Identification + Direction of Traffic

CONDITIONS
WHERE ANY VEHICLE, EQUIPMENT, WORKERS AND THEIR ACTIVITIES ARE BEHIND AN EXISTING BARRIER, MORE THAN 2 FEET BEHIND THE CURB, OR 15' OR MORE FROM THE EDGE OF TRAVEL WAY

MULTILANE, WORK OUTSIDE SHOULDER
### GENERAL NOTES

1. All vehicles, equipment, workers, and their activities are restricted to one side of the roadway.
2. If the work operation encroaches on the through traffic lanes or when four or more work vehicles enter the through traffic lanes in a one-hour period (excluding establishing and terminating the work zone), a flagger shall be provided and a FLAIGHTER sign shall be substituted for the WORKERS sign. The flagger shall be positioned at the point of vehicle entry or departure from the work area.
3. This TIZC plan also applies to work performed in the median more than 2 feet but less than 25 feet from the edge of travelway.
4. When work is being performed on a multilane undivided roadway the signs normally mounted in the median (as shown) shall be omitted.
5. WORKERS signs to be removed or fully covered when no work is being performed.
6. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign.
7. When a side road intersects the highway within the TIZC zone, additional TIZC devices shall be placed in accordance with other applicable TIZC indexes.
8. For general TIZC requirements and additional information refer to Index No. 600.

### DURATION NOTES

1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Vehicular traffic in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.

### CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA CLOSER THAN IS BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVELWAY.

---

### Table 1: Device Spacing

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Max. Distance Between Devices (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type I or Type II</td>
</tr>
<tr>
<td></td>
<td>Taper-Corner or Vertical Panel or Drum</td>
</tr>
<tr>
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<td>Taper-Tangent</td>
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<td>Taper-Tangent</td>
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<tr>
<td>100</td>
<td>50</td>
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</table>

### Table 2: Taper Length - Shoulder

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<td>70</td>
<td>30</td>
<td>50</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

B = Minimum shoulder width.
L = Length of shoulder taper in feet
W = Width of total shoulder in feet
S = Posted speed limit (mph)

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### Symbols

- **D** Road Work Ahead
- **A** Work Area
- **B** Sign With 18" x 18" (Min.)
- **C** Orange Flag And Type B Light
- **D** Channelizing Device (See Index No. 600)
- **E** Work Zone Sign
- **F** Lane Identification - Direction of Traffic

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**2006 MUTCD Design Standards**

**MULTILANE, WORK ON SHOULDER**
GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the adjacent lanes open to traffic.

2. All vehicles, equipment, workers, and their activities are restricted to one side of the roadway.

3. On undivided highways the median signs as shown are to be omitted.

4. When work is performed in the median lane on divided highways the channelizing device plan is inverted and left lane closed and lane ends signs substituted for the right lane closed and lane end signs.

   The same applies to undivided highways with the following exceptions:
   (a) Work shall be confined within one median lane.
   (b) Additional barricades, cones, or drums shall be placed along the centerline of the work area and the trailing end of the work area.

   When work on undivided highways occurs across the centerline so as to encroach on both median lanes, the inverted plan is applied to the approach of both roadways.

5. Signs and traffic control devices are to be modified in accordance with INTERMITTENT WORK STOPPAGE details (sheet 2 of 2) when no work is being performed and the highway is open to traffic.

6. The two channelizing devices directly in front of the work area may be omitted provided vehicles in the work area have high-intensity redlight, flashing, or strobe lights operating.

7. When paved shoulders having a width of 8 ft., or more are closed, channelizing devices shall be used to close the shoulder in advance of the ramp taper to direct vehicular traffic to remain within the travel way. See Index No. 612 for shoulder taper formulas.

8. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TTC indexes.

9. This TTC plan does not apply when work is being performed in the middle lane(s) of a single or more lane highway. See Index No. 614.

10. For general TTC requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Temporary white directional may be omitted for work operations less than 3 days.

2. Signs, arrow panel and buffer space may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space and the taper length combined.
   d) Traffic lights in the work area are of high-intensity, flashing, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE LANE ADJACENT TO EITHER SHOULDER AND THE AREA 2' OUTSIDE THE EDGE OF TRAVEL WAY.
EVEN PAVEMENT

SUMMARY: SPEEDING FINES DOUBLED WHEN WORKERS PRESENT

SIGN:

- SPEEDING FINES DOUBLED WHEN WORKERS PRESENT

- Arrow Panel Operation Discontinued
- Arrow Panel Shall Be Removed Or Relocated Outside The Clear Zone Or Be Shielded By A Barrier Or Crash Cushion
- Temporary Pavement Markings Placed Through Work Area And Devices Relocated Laterally 2' To 4' Outside Edge Of Travel Way.

UNEVEN PAVEMENT

SUMMARY: INTERMITTENT WORK STOPPAGE - LANE REOPENED TO TRAFFIC

SIGN:

- SPEEDING FINES DOUBLED WHEN WORKERS PRESENT

- Arrow Panel Operation Discontinued
- Arrow Panel Shall Be Removed Or Relocated Outside The Clear Zone Or Be Shielded By A Barrier Or Crash Cushion
- Temporary Pavement Markings Placed Through Work Area And Devices Relocated Laterally 2' To 4' Outside Edge Of Travel Way.
CONDITION NOTES

1. The RIGHT LANE CLOSED and lane reduction signs are to be removed or fully covered when no work is being performed and the center lane is opened to traffic.

2. For work performed in the median or outside lane refer to Index No. 603.

3. When the lane closure exceeds a continuous 24-hour period all existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and replaceable pavement markings used for marking new edge lines and centerline.

GENERAL NOTES

1. All vehicles, equipment, workers, and their activities are restricted to one side of the highway.

2. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ indexes.

3. For general TCZ requirements and additional information refer to Index No. 603.

DURATION NOTES

1. Temporary pavement markings may be omitted for work operations less than 3 days.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS ON THEIR ACTIVITIES ENCROACH ON ANY PORTION OF A CENTER LANE OF A MULTILANE HIGHWAY, AND TWO DRIVING LANES ARE MAINTAINED ON THE TRAVEL WAY.
CONDITION NOTES

1. See General Notes, Sheet 1 of 2.

2. Length of time that traffic is using shoulder should be minimized. For example, remove lane closure and lane shift at night (unless performing night work) if practical.

3. The RIGHT LANE CLOSED, lane reduction and reverse curve signs are to be removed or fully covered when no work is being performed and the travel way is open to traffic.

4. When the lane closure exceeds a continuous 24 hour period all existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and reasonable pavement markings used for marking new edge lines and centerlines.

5. For general TCZ requirements and additional information refer to Index No. 600.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON ANY PORTION OF A CENTER LANE OF A MULTILANeway, AND TWO DRIVING LANES ARE MAINTAINED, AND, THE OUTSIDE SHOULDER PAVEMENT IS TEMPORARILY USED AS A TRAVEL LANE.
GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers) and their activities are forbidden in lane and intersection areas reserved for traffic.

2. The WORKER legend sign may be substituted for the symbol sign.

3. When vehicles in a parking zone block the line of sight to TC2 signs, the signs shall be posted and located in accordance with Index No. I/250.

4. If the work area extends across a crosswalk, the crosswalk should be closed using the information in Index No. 660.

5. Dual signs are required for divided roadways.

6. Maximum spacing between barriers, vertical panels, cones, tubular markers and drums shall not be greater than 25.

7. Temporary signal phasing modifications are to be approved by the District Traffic Operations Engineer prior to the beginning of work.

8. For general TC2 requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Signs and arrow panel may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed is 40 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to twice the taper length.
   d) Vehicles in the work area have high-intensity, flashing, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.
GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers) and their activities are restricted to one side of the roadway.

2. Work operations shall be confined to either one lane or lane combination as follows:
   (a) Outside travel lane
   (b) Outside auxiliary lane
   (c) Inside travel lane and adjacent auxiliary lane
   (d) Inside travel lane and inside auxiliary lane
   (e) If inside travel lane and adjacent auxiliary lane
   (f) See Sheet 3 of 3

If the work area is confined to an auxiliary lane the work area shall be barricaded and the RIGHT (LEFT) LANE CLOSED AHEAD signs replaced by ROAD WORK AHEAD signs, and the arrow and yield signs eliminated.

3. When vehicles in a parking zone block the lane of sight to TCZ signs the signs shall be post mounted and located in accordance with Index No. 17361.

4. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index No. 660.

5. Signs are required on the median side for divided highways.

6. The two channelizing devices directly in front and directly in the end of the work area may be omitted provided vehicles in the work area have high-intensity flashing, alternating, or strobe lights operating.

7. For general TCZ requirements and additional information refer to Index No. 600.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.)
- Orange Flag And Type B Light
- Work Zone Sign
- Advance Warning Arrow Panel
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Flashing Light At Night Only)
- Type III Barricade
- Channelizing Device (See Index No. 600)
- Lane Identification + Direction of Traffic

DURATION NOTES

1. Signs and arrow panel may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 40 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to twice the sight length.
   d) Vehicles in the work area have high-intensity, alternating, flashing, alternating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.
**Right Lane Closed on Far Side of Minor Sidestreet**

**Right Lane Closed on Far Side of Intersection with Significant Right Turning Movements**

1. The normal procedure is to close the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a right lane having significant right turning movements, then the right lane may be restricted to right turns only as shown in this detail.

2. For intersection approaches reduced to a single lane, left turning movements may be prohibited to maintain capacity for through vehicular traffic.

---

**Table I: Device Spacing**

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Max. Distance Between Devices (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>30 to 45</td>
<td>50</td>
</tr>
</tbody>
</table>

**Table II: Taper Length - Merge (1/2 Lateral Transition)**

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>L (ft)</th>
<th>Notes (Merge)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>125</td>
<td>L=W^2</td>
</tr>
<tr>
<td>30</td>
<td>60</td>
<td>L=W^2</td>
</tr>
<tr>
<td>35</td>
<td>245</td>
<td>L=W^2</td>
</tr>
<tr>
<td>40</td>
<td>320</td>
<td>L=W^2</td>
</tr>
<tr>
<td>45</td>
<td>540</td>
<td>L=W^2</td>
</tr>
</tbody>
</table>

For lateral transitions other than U, use formula for L shown in the notes column. Where:

- L = Length of taper in feet
- W = Width of lateral transition in feet
- S = Posted speed limit (mph)
GENERAL NOTES

1. All vehicles, equipment, workers, and their activities are prohibited from the lane areas reserved for traffic.

2. Work operations shall be confined to one center travel lane, leaving the adjacent travel lanes open to traffic.

3. The merging taper shall direct vehicular traffic into either the right or left lane, but not both.

4. When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with the TSP Manual.

5. If the work space extends across a crosswalk, the crosswalk shall be closed using the information in index No. 880.

6. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Signs and buffer space may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space and the taper length combined.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF THE CENTER LANE NEAR AN INTERSECTION
**GENERAL NOTES**

1. These illustrations are representative of general conditions.

2. The intensity of light and position of panels shall be as specified in Index No. 600.

3. Vehicle-mounted signs shall be mounted with the bottom of the sign at a minimum height of 48 inches above the pavement. Signs legends shall be covered or turned from view when work is not in progress.

4. If the work vehicle speed exceeds the minimum legal speed limit on limited access facilities and one half the posted speed limit on other facilities the engineer in charge may delete requirements for shadow vehicle and attenuators. The work vehicle will be required to have an advance warning arrow panel and sign message.

5. Where work activities within 40' of the edge of travel way are incident to (i.e., paving, Litter Removal) the Engineer may delete requirements for signs and the advance warning vehicle provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

6. Shadow and Advance Warning Vehicle shall display rotating/strobe lights.

7. For general TCZ requirements and additional information, refer to Index No. 600.

---

**SYMBOLS**

- Work Vehicle With Rotating/Strobe Lights
- Shadow (S) Or Advance Warning (AW) Vehicle with Advance Warning Arrow Panel and Sign Message
- Truck Mounted Attenuator (TMA)
- Lane Identification And Direction Of Traffic
GENERAL NOTES

1. All vehicles, equipment, workers and their activities are restricted to one side of the highway.

2. TWO-WAY TRAFFIC sign(s) shall be repeated every 4 mile in each direction, throughout the tangent distance (T).

3. L(min) - WS for speeds ≥ 45 mph
   - WS for speeds < 40 mph
   Where:
   W - Width of lateral transition in feet.
   S - Posted speed limit (mph).

4. Where the tangent distance (T) extends beyond 250’, spacing between Type I or II barricades or vertical panels or drums may be increased to 250’ within the limits of the tangent, or post mounted delineators at 50 centers may be substituted for barricades, vertical panels or drums.

5. All existing pavement markings within the realignment which conflict with the revised traffic pattern are to be removed and removable pavement markings used for making new edge lines.

6. When side roads, cross roads or interchanges intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ indexes.

7. For general TCZ requirements and additional information refer to index No. 600.

SYMBOLS

- Work Area
- Sign with 18” x 18” (Min.)
  Orange Flag And Type B Light
- Type I Or Type II Barricades Or Vertical Panel
  Or Drum (With Steady Burning Light At Night Only).
  (Traffic Barriers May Be Closed During Daylight Only.
  Cones May Be Used - See Section No. 600.)
- Work Zone Sign
- Advance Warning Arrow Panel
- Lane Identification + Direction of Traffic

SCHEME APPLICATIONS

Scheme 1 Restriction Construction Limits
Scheme 2 Unrestricted Construction Limits And Light To Moderate Traffic
Scheme 3 Unrestricted Construction Limits And Moderate To Heavy Traffic

Where: Construction Limits Are The Outward Beginning Or Ending Of Lane Reductions.

Where: Unless A Specific Scheme Is Called For In The Plans, Scheme Selection Shall Be At The Contractor’s Option And As Approved By The Engineer.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES REQUIRE THE CLOSURE OF ONE ROADWAY AND THE OPPOSITE ROADWAY IS CONVERTED TO TEMPORARY TWO-WAY TRAVEL BY WAY OF CROSSEOVERS.
GENERAL NOTES

1. All vehicles, equipment, workers and their activities are restricted to one side of the roadway.

2. TWO-WAY TRAFFIC signs shall be repeated every 1/4 mile in each direction, through the tangent distance (T).

3. When paved shoulders being a width of 8 ft or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way, See Index No. 612 for shoulder taper formulas.

4. Where the tangent distance (T) exceeds 250', spacing between cones or barrow markers may be increased to 50' or spacing between Type I or II bollardes or vertical panels or drums may be increased to 100 within the limits of the tangent.

5. This index does not apply when work is being performed in the middle lane(s) of a 2-lane or more lane highway. Special maintenance of traffic details will be required.

6. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TTC indexes.

7. For general TCZ requirements and additional information refer to Index No. 660.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.)
- Orange Flag & Type B Light
- Channelling Device (See Index No. 600)
- Type III Barriade (With Flashing Light)
- Work Zone Sign
- Advance Warning Arrow Panel
- Lane Identification & Direction of Traffic
GENERAL NOTES

1. Work operations shall be confined to two way left turn lane, leaving the adjacent lanes open to traffic.

2. Advance Warning Vehicle will have an Advanced Warning Arrow Panel In the Warning Mode.

3. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ indexes.

4. For general TCZ requirements and additional information, refer to Index No. 690.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ARE BEING CONDUCTED IN THE TWO WAY LEFT TURN LANE.
CONDITION A

WHEN THE PAVING TRAIN IS IN LANE 1 THE U-TURNING VEHICLE SHALL CAUTIOUSLY TURN INTO LANE 2 AND PROCEED IN LANE 3 TO THE FRONT OF THE TRAIN.

CONDITION B

WHEN THE PAVING TRAIN IS IN LANE 2 THE U-TURNING VEHICLE SHALL CAUTIOUSLY TURN INTO LANE 1, AND PROCEED IN LANE 3 TO THE FRONT OF THE PAVING TRAIN.

CONDITION A & B

THE ADVANCE WARNING ARROW PANELS ARE REQUIRED. UNDER NO CIRCUMSTANCES WILL THE TRAFFIC TRANSITION BE LOCATED WITHIN THE LIMITS OF THE CROSSOVER.

SYMBOLS

WORK AREA

- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only).
- Type I Or Type II Barricade Or Vertical Panel Or Cone Or Tubular Marker Or Drum
- Work Zone Sign
- 60° x 60° Sign With 18° x 18° (Min.) Orange Flag And Type B Light
- Advance Warning Arrow Panel - Type C (48° x 96°)
- Trailer Mounted And Actuated By Flagger Upon Approach Of The Work Vehicle

GENERAL NOTES

1. This index does not apply to limited access facilities.
2. When crossovers do not exist, the contractor will construct temporary crossovers in accordance with Index No. 63.
3. L = Length of taper in feet
   - WS for speeds 25 mph or less
   - 500 ft for speeds 40 mph or more
   Where:
   n = Width of lateral transition in feet
   S = Posted speed limit in mph.
4. Within the lateral transitions, the maximum spacing between cones and tubular marks shall be 25 ft. Maximum spacing between Type I or Type II barricades or vertical panels or drums shall be based on the speed limit as follows: 15 ft for 25 mph, 30 ft for 30-40 mph, 50 ft for 45 mph or greater.
   Spacing for devices parallel to the travel lanes shall be 25 ft centers for cones or tubular marks and 50 ft for Type I or Type II barricades or vertical panels or drums.
5. For Case I, Condition A, when the median width is too narrow for trucks to make turns into Lane No. 2, Sign No. 1, 2, 3, and the Flagger Actuated Advance Warning Arrow Panel shall be moved ahead to a crossover in advance of the paving lane taper. Project advance warning sign (not shown) shall be located in advance of the relocated Sign No. 3.
6. For Case I, Conditions A & B, when the median width is too narrow for trucks to make turns into Lane No. 2, Sign Nos. 1, 2, 3, and the Flagger Actuated Advance Warning Arrow Panel shall be moved ahead to a crossover in advance of the FRONT LANE CLOSED % MILE sign. Project advance warning sign (not shown) shall be located in advance of the relocated Sign No. 3.
CONDITION A

WHEN THE PAVING TRAIN IS IN LANE 1 THE U-TURNING VEHICLE SHALL CAUTIOUSLY TURN INTO LANE 2 AND PROCEED IN LANE 2 TO THE FRONT OF THE TRAIN

CONDITION B

WHEN THE PAVING TRAIN IS IN LANE 2 THE U-TURNING VEHICLE SHALL TURN INTO LANE 1 CAUTIOUSLY MERGE INTO LANE 1 AND PROCEED TO THE FRONT OF THE PAVING TRAIN

CONDITION A & B

THE ADVANCE WARNING ARROW PANEL IS REQUIRED. UNDER NO CIRCUMSTANCES WILL THE TRAFFIC TRANSITION BE LOCATED WITHIN THE LIMITS OF THE CROSSES

TRAFFIC TRANSITION AREA DOWNSTREAM FROM CROSSES

CASE II

Notes: See Sheet 1 of 2 for General Notes.
GENERAL NOTES

1. Temporary median crossovers shall be within the project limits and shall not be used for transporting materials to or from any other project. The acceleration-deceleration surfaces shall be paved. RAF material is acceptable for crossing surfacing.

2. Temporary median crossovers shall be located only in areas having adequate sight distance. On limited access facilities, temporary median crossovers shall not be located within 0.5 miles of interchanges or within 2,000 ft of acceleration-deceleration lanes of rest areas, other access openings, or other highway service areas.

3. For paving train operations at permanent crossovers, see index No. 630.

4. All traffic control devices are to be removed when crossover will not be in use for one hour or longer.

5. Trailer mounted advance warning panel may be used in lieu of advance warning vehicle.

6. When a crossover is no longer needed, all temporary construction shall be immediately removed and the area restored to its original condition.

7. Cost of construction, maintenance, removal and restoration work related to temporary crossovers shall be included in the contract unit price for Maintenance of Traffic, Inc.

SYMBOLS

D = Work Zone Sign

== Light Direction of Traffic

LENGTH OF ACCESS LANES (FT.)

<table>
<thead>
<tr>
<th>Grade</th>
<th>D1</th>
<th>D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% or less</td>
<td>950</td>
<td>950</td>
</tr>
<tr>
<td>3 to 4% Upgrade</td>
<td>530</td>
<td>530</td>
</tr>
<tr>
<td>3 to 4% Downgrade</td>
<td>710</td>
<td>710</td>
</tr>
</tbody>
</table>

TEMPORARY CROSSOVER FOR MEDIAN WIDTHS ≥ 75'
SYMBOLS

- Work Area, Hazard Or Work Phase (Any Pattern Within A Boundary)
- Work Zone Sign
- Cone Or Tubular Marker
- Advance Warning Vehicle

WEIRD: Lane Identification • Direction of Traffic

TEMPORARY CROSSOVER FOR MEDIAN WIDTHS FROM 50' TO < 75'

LENGTH OF ACCESS LANES (FT.)

<table>
<thead>
<tr>
<th>Grade</th>
<th>$D_1$</th>
<th>$D_2$</th>
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</thead>
<tbody>
<tr>
<td>2% or less</td>
<td>590</td>
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<tr>
<td>3 to 4% Upgrade</td>
<td>530</td>
<td>2310</td>
</tr>
<tr>
<td>3 to 4% Downgrade</td>
<td>710</td>
<td>985</td>
</tr>
</tbody>
</table>

NOTE

1. A lane closure analysis will be required to determine the times of day that this crossover can be in operation.

2006 PDOT Design Standards

TEMPORARY CROSSOVER
**General Notes**

1. Work operations shall be confined to one traffic lane, leaving the opposite lane open to traffic.
2. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway.
3. Additional one-way control may be effected by the following means:
   1. Flag-carrying vehicles
   2. Official vehicles
   3. Pilot vehicles
   4. Traffic signals.

   When flaggers are the sole means of one-way control, the flaggers shall be in sight of each other or in direct communication at all times.

4. The **One-Lane Road Work** signs are to be fully covered and the **Flagger** signs either removed or fully covered when no work is being performed and the roadway is open to two-way traffic.

5. When a side road intersects the highway within the TCC zone, additional TCC devices shall be placed in accordance with other applicable TCC indexes.

6. The two-channelizing devices directly in front of the work area and the one channelizing device directly to the side of the work area may be deleted provided vehicles in the work area have high-intensity flashing, flashing, or strobe lights operating.

7. Discontinuing of extended buffer space will not occur until the queue length plus 300' is reached.

8. If the queuing of vehicles across active rail tracks cannot be avoided, a uniformed traffic control officer or flagger shall be provided at the highway-rail grade crossing to prevent vehicles from stopping within the highway-rail grade crossing, even if automatic warning devices are in place.

9. For general TCC requirements and additional information, refer to Index No. 600.

**Conditions**

Where any vehicle, equipment, workers or their activities encroach the area between the centerline and a line 2' outside the edge of travel way that requires a lane closure in the vicinity of a railroad crossing.

---

**Duration Note**

1. **Road Work Ahead** and the **Be Prepared to Stop** signs may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Speed limit is 45 mph or less.
   c. No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space.
   d. Vehicles in the work area have high-intensity flashing, flashing, or strobe lights operating.
   e. Volume and complexity of the roadway has been considered.
   f. No queuing of vehicles across rail tracks.

---

**Symbols**

- **Work Area**
- **Sign With 18" X 18" (Min.), Orange Flag And Type B Light**
- **Type I, Type II Or Type III Barriole Or Vertical Panel Or Drum**
- **Channelizing Device (See Index No. 600)**
- **Work Zone Sign**
- **Flagger**
- **Lane Identification + Direction of Traffic**

---

**Table I**

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Max. Distance Between Devices (ft)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Type 1 or Type 2</td>
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<tr>
<td>25 to 45</td>
<td>20</td>
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<tr>
<td>50 to 70</td>
<td>30</td>
</tr>
</tbody>
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**2006 PDOT Design Standards**

**Work in Vicinity of Railroad Crossing**
PHASE I
1. Maintain two-lane two-way traffic over existing pavement. Construct new roadway within the proposed 4-lane limits, excluding the friction course. Sign as shown if roadway construction area falls within 200' of existing roadway edge. When the construction area falls more than 100' from the existing roadway edge, traffic shall be controlled in accordance with Index No. 600 or 602.
2. Construct shoulder pavement to provide two-lane two-way traffic over shoulder and existing pavement during Phase II roadway construction. For lane width requirements see Index No. 600. Signing as shown, with the near 1000' zone modified in accordance with Index No. 603, to be in place prior to shoulder pavement construction.

PHASE II
1. Remove existing pavement marking in areas of diversion and re-mark as shown. Install warning devices and re-sign as shown. Traffic to be controlled in accordance with Index No. 607. For lane width requirements see Index No. 600.
2. Route through traffic to temporary and existing pavement.
3. Construct transitions, excluding friction course.

SYMBOLS
- Sign With 60" x 18" (Min.) Orange Flag And Type B Light
- Type I Or Type II Barricade Or Vertical Panel Of Drum (With Steady Burning Light At Night Only)
- Work Zone Sign
- Lane identification + Direction of Traffic

LEGEND
- Phase I Construction
- Phase II Construction
- Phase III Construction

CONVERTING TWO LANE TO FOUR LANES
DIVIDED, RURAL
Required Only When Construction Zone Speed Reduced Below Existing Posted Speed Prior To Construction

Required Only When Construction Zone Speed Reduced Below Existing Posted Speed Prior To Construction

Required For Projects > 2 Miles

Double Yellow Reflectanced Pokémon Markings
White Reflectanced Pokémon Markings
Yellow Reflectanced Pokémon Markings (Double Yellow in No Passing Zones as Directed By Engineer)

PHASE III
1. Remove temporary marking from the existing pavement and temporary shoulder pavement. Work pavement, install warning devices and re-signal as shown. Traffic to be controlled in accordance with Index No. 650. For lane width requirements see Index No. 650.
2. Route through traffic to newly constructed roadway.
3. Resurface or reconstruct existing pavement including required shoulder pavement and friction course.

PHASE IV
1. Reroute through traffic as shown in Phase II. Signage to be as shown in Phase II.
2. Construct friction course over pavement constructed in Phases I and II.

SYMBOLS

1. Exit signs and pavement markings that conflict with construction signing and marking shall be eliminated or removed.
2. Lane widths for maintenance of two-way traffic should normally be equal to lane widths of the existing facility, but lanes shall be no less than 70 ft in width. When one lane or one way operations are necessary, a minimum width of 30 ft is recommended with a minimum width of 20 ft for the temporary restrictions in E.
3. Within the internal transitions, the minimum spacing between Type I or Type II berms or vertical panels on median shall be 12 ft for 45 mph or greater. The minimum spacing between warning devices used for delineation between the travel way and construction area is 50 ft for Type I or Type II berms or vertical panels or drums.
4. Warning devices shall be in conformance with "Draper" in Work Zones, see Index No. 600.
5. For speed sign application, see "Regulatory Speed in Work Zones" Index No. 600.
6. For reflected retro-reflective pavement marker application, see "Pavement Markings" Index No. 600 and Index No. 7100.
7. Additional berms, signing lighting or other traffic control shall be provided for limited work areas in accordance with other applicable TCS Indexes.
8. When a side road intersects the highway within the TCS zone, additional TCS devices shall be placed in accordance with other applicable TCS Indexes.
9. Provisions approved by the Engineer shall be made for the removal of storm water from the roadway prior to construction.
10. For general TCS requirements and additional information refer to Index No. 600.
PHASE III

1. Signs and work Phases I and II shall be performed in accordance with the Phase III diagram.

2. Perform through traffic in Phase II pavement.

3. Continue work in Phases I and II until the Phase III pavement is completed. Traffic must be maintained through the area.

GENERAL NOTES

1. All signage, pavement markings, and barriers necessary for maintenance of traffic shall conform to Index No. 600.

2. Lane widths for maintenance of two-way traffic should be not less than 10 ft in width. When one lane of a two-lane operation is required, the minimum width of 10 ft should be maintained and traffic control is required in accordance with Index No. 604, 605, or 650.

3. At signalized intersections, signals shall be directed or relaid as required by the state or local authority.

4. All rerouted traffic will be in accordance with Index Nos. 600 and 5730.

5. Additional barriers, signs, and other traffic control for limited work areas shall be provided in accordance with applicable traffic control devices.

6. Precautions approved by the Engineer shall be taken for the removal of storm water from the roadway during construction.

7. For general construction requirements and additional information, refer to Index No. 600.

SYMBOLS

- Orange Flag and Type B Light
- Type I or Type II Barriole or Vertical Panel
- Drum (With Steady Burning Light At Night Only)
- Tubular Markers May Be Used During Daylight Only
- Type III Barriole (With Flashing Light)
- Work Zone Sign
- Stop Bar
- Lane Identification + Direction of Traffic

LEGEND

- Phase I Construction
- Phase II Construction
- Phase III Construction
PHASE III

1. Re-route traffic to final alignment and maintain two-way traffic.
2. Remove all temporary construction items.

GENERAL NOTES

1. All signage, pavement marking, barricades and warning lights necessary for maintenance of traffic shall conform to Index No. 600.

2. For speed sign applications see Index No. 600.

3. For lane width requirements see Index No. 600. When one-way one-lane operations are necessary, a minimum width of 12' shall be maintained and traffic controlled in accordance with Index Nos. 623, 606 or 631. Minimum width for the diversion shoulders is 6'.

4. Method of attaching temporary guardrail to the diversion structure to be approved by the Engineer. Cost of temporary guardrail systems, including end anchorage assemblies, transitions and attachment to temporary structures, are to be included in the contract unit price for Guardrail (Temporary) LF.

5. Provisions approved by the Engineer shall be made for the removal of storm water from the roadway(s) during construction.

6. Only temporary crash cushions approved by the Department shall be used unless specified devices called for in the plans.

7. Where the temporary structure is not required the diversion may be constructed in accordance with Index No. 606, unless otherwise stipulated in the plans.

8. For reflective raised pavement marker application see Index Nos. 600 and 7258.

9. For general TC2 requirements and additional information refer to Index No. 600.
CORNER SIDEWALK CLOSURE WITH TEMPORARY CROSSWALKS

GENERAL NOTES

1. Only the signs controlling pedestrian flows are shown. Other work zone signs will be needed to control traffic on the streets.

2. For spacing of traffic control devices and general TCC requirements refer to Index No. 600. Maximum spacing between barricades, vestigial panels, drums or tubular markers shall not be greater than 25'.

3. Street lighting should be considered.

4. For nighttime closures use Type A flashing warning lights on barricades supporting signs and closing sidewalks. Use Type C steady-burn lights on channelizing devices separating the work area from vehicular traffic.

5. Pedestrian traffic signs and displays controlling closed crosswalks shall be covered or deactivated.

6. Post Mounted Signs located near or adjacent to a sidewalk shall have a 7' minimum clearance from the bottom of sign to the sidewalk.

7. When construction activities involve sidewalks on both sides of the street, efforts should be made to divide the construction so that both sidewalks are not out of service at the same time.

8. In the event that sidewalks on both sides of the street are closed, pedestrians shall be guided around the construction zone.

9. Temporary walkways shall be a minimum of 4' wide with a minimum 0.02 cross slope and a maximum 0.05 running slope between ramps. Temporary walkways less than 5' in width shall provide a 5' x 5' passing area at intervals not to exceed 200'. Temporary ramps shall meet the requirements for curb ramps specified in Index No. 304, General Notes 1 through 11. Temporary walkway surfaces and ramps shall be stable, firm, slip resistant, and kept free of any obstructions and hazards such as notes, debris, mud, construction equipment, stored materials, etc.

10. Temporary ramps and temporary crosswalk markings shall be removed with reopening of the sidewalk, unless otherwise noted in the plans. All work and materials associated with constructing temporary curb ramps and temporary crosswalk markings, removal and disposal of temporary curb ramps and temporary crosswalk markings, and restoration to original condition shall be paid for as maintenance of traffic, lump sum.
GENERAL NOTES

1. Access openings across limited access right of way and use of this index are prohibited unless specifically permitted in the Contract Plans or Special Provisions. When permitted in the Contract Plans or Special Provisions and prior to construction of any opening, the Contractor must submit, in writing, a request identifying specific locations for approval by the Engineer.

2. No more than two (2) access openings will be allowed on each project.

3. Access openings shall be located only in areas having adequate sight distance and shall not be located within 1.5 miles of interchanges or within 2000 ft. of acceleration-deceleration lanes of real areas, other access openings or other highway service areas.

4. Access openings shall not be constructed directly opposite temporary median crossovers nor within 2000 ft. of temporary median crossovers.

5. Access openings shall be within the project limits and shall not be used for transporting materials to or from any other project. The acceleration-deceleration surfaces shall be paved. HAP material is acceptable for driveway surfacing.

6. Any Material Aid Call Boxes affected by the temporary access openings shall be relocated outside the limits of access lanes and removed in use during construction. Upon removal of access lanes, call boxes shall be returned to their previous location. Temporary relocation and restoration of call boxes shall be at the contractors expense.

7. Access openings in the limited access fence wall here gates which are to be locked during non-work hours or periods when the access is not in active use.

8. The contractor shall take all precautions necessary to insure against entrance by livestock or unauthorized persons or vehicles.

9. The contractor shall not vary from the plan details without approval of the Engineer.

10. Gates shall be removed and access opening locations shall be restored to pre-construction condition immediately upon completion of activity utilizing the materials being transported through the openings whether or not the project is completed.

11. Failure to comply with any provision of the access opening plan shall be cause for terminating use of all openings. Upon notification by the Engineer, the contractor shall cease hauling and begin restoration of affected areas. Under this condition expense of removal, restoration and of additional hauling distances shall be borne by the contractor.

12. No guardrail or barrier wall will be removed for access openings.

13. Construction and removal of the access and restoring the area to pre-construction condition shall be included in the cost of Maintenance Of Traffic, LS.

SYMBOLS

D: Work Zone Sign

LENGTH OF ACCESS LANES (Ft)

<table>
<thead>
<tr>
<th>Grade</th>
<th>D1</th>
<th>D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% or less</td>
<td>590</td>
<td>1540</td>
</tr>
<tr>
<td>3 to 4% Upgrade</td>
<td>530</td>
<td>2300</td>
</tr>
<tr>
<td>3 to 4% Downgrade</td>
<td>710</td>
<td>925</td>
</tr>
</tbody>
</table>
GENERAL NOTES

1. At lane closures where workers are present, reduce the posted speed limit (speed limit that existed prior to construction) by 10 MPH using the Portable Regulatory Sign (PRS), but not less than 55 MPH or a speed warranted by geometric condition, whichever is lower. Taper lengths, buffer space and device spacing shall be selected using the posted speed, not the reduced speed.

2. All Arrow Panels, Portable Changeable Message Signs, Portable Regulatory Signs and Radar Speed Display Trailers, shall be turned off and moved outside the clear zone of oncoming traffic by a barrier or crash cushion when not in use.

3. Work operations shall be confined to one traffic lane, leaving the adjacent lane(s) open to traffic.

4. All vehicles, equipment, workers and their activities are restricted to one side of the roadway.

5. When work is performed in the median lane on divided highways, the Shoulder(s) (buffer) lane(s) shall be placed and lane reduction signs shall be placed for the right lane closed and lane reduction signs.

6. When work is being performed on a multi lane divided roadway, the signs and traffic control devices normally placed in the median (as shown) shall be omitted.

7. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to divert vehicular traffic to remain within the travel lane. See Index No. 602 for shoulder taper formulas.

8. For general TCZ requirements and additional information refer to Index No. 600.

CONDITIONS

The MAS is intended to be used on multiline facilities with posted speeds of 55 MPH or greater where the work operations require a lane closure and workers are present.