

CONTENTS

- Preface
- Manual On Uniform Traffic Control Devices
- Abbreviations
- Symbols
- Definitions
- Temporary Traffic Control Devices
- Pedestrians And Bicyclist
- Railroads
- Overhead Work
- Overweight/Oversize Vehicles
- Lane Widths
- Sight Distance To Delineation Devices
- Above Ground Hazard
- Clear Zone Widths
- Superelevation
- Regulatory Speeds In Work Zones
- Flagger Control
- Survey Work Zones
- Sign Placement
- Adjoining And/Or Overlapping Work Zone Signing
- Sign Covering And Intermittent Work Stoppage Signing
- Sign Materials
- Work Zone Sign Supports
- Signing for Detours, Lane Shifts & Diversions
- Extended Distance Advance Warning Signs
- Speeding Fines Doubled When Workers Present Sign
- Length of Road Work Sign
- Intersecting Road Signing
- End Road Work Signs
- Variable Message Signs (VMS)
- Channelizing And Lighting Devices
- Channelizing And Lighting Devices Consistency
- Removing Pavement Markings
- Signals
- Warning Lights
- Roadside Barriers
- Truck Mounted Attenuators
- Manholes/Crosswalks
- Dropoffs In Work Zones
- Temporary Curb
- Identifications-Channelizing And Lighting Devices
And Advance Warning Arrow Panel Modes
- Commonly Used Warning and Regulatory Signs
In Work Zones
- Pavement Markings

PREFACE

All projects and works on highways, roads and streets shall have a traffic control plan. All work shall be executed under the established plan and Department approved procedures. This index contains information specific to the Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets.

Index 600 provides Department policy and standards. Changes are only to be made thru Department approved procedures. Indexes 601 thru 665 provide typical application for various situations. Modification can be made to these indexes as long as the changes comply with the M.U.T.C.D. and Department Design Standards.

The sign spacings shown on the indexes are typical (recommended) distances. These distances may be increased or decreased based on field conditions, in order to avoid conflicts or to improve site specific traffic controls.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

The Florida Department of Transportation has adopted the "Manual On Uniform Traffic Control Devices For Streets And Highways" (MUTCD) and subsequent revisions and addendums, as published by the U.S. Department of Transportation, Federal Highway Administration, for mandatory use on the State Maintained Highway System whenever there exists the need for construction, maintenance operations or utility work.

ABBREVIATIONS






























Abbreviations assigned to the 600 series Roadway Design Standards and applicable to traffic control plans, unless otherwise identified in the plans, are as follows:


COMM	Traffic Control Standards Committee
DTOE	District Traffic Operations Engineer
FDOT	Florida Department Of Transportation
HAR	Highway Advisory Radio
L	Taper Length, Buffer Length Or Taper Length Plus Buffer Space
LEO	Law Enforcement Officer
MOT	Maintenance Of Traffic
MUTCD	Manual On Uniform Traffic Control Devices For Streets And Highways
PRS	Portable Regulatory Sign
R	Radius
RPM	Raised Retroreflective Pavement Marker
RSDU	Radar Speed Display Unit
S	Posted Speed Of Off-Peak 85 Percentile Speed (M.P.H.)
TCP	Traffic Control Plan(s)
TCZ	Traffic Control Through Work Zones
TMA	Truck Mounted Attenuator
VMS	Variable Message Sign
VECP	Value Engineering Change Proposal
W	Width Of Taper Transition In Feet i.e., Lateral Offset

SYMBOLS

The symbols shown are found in the Traffic Control Zone Cell Library (TCZ.cel) on the CADD system.

Symbols assigned to the 600 series Roadway Design Standards and applicable to traffic control plans, unless otherwise identified in the plans, are as follows:

-  Work Area, Hazard Or Work Phase (Any pattern within a boundary)
-  Sign With 18" x 18" (Min.) Orange Flag And Type B Light
-  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 I, Type II Or Type III Barricade Or Vertical Panel Or Drum
-  Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Flashing Light)
-  Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Steady Burning Light)
-  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
-  Work Vehicle With Flashing Beacon
-  Shadow (S) Or Advance Warning (AW) Vehicle With Advance Warning Arrow Panel And Warning Sign
-  Truck Mounted Attenuator (TMA)
-  Orange Flag For TCZ Signs
-  Type B Light For TCZ Signs
-  Law Enforcement Officer
-  Portable Regulatory Sign
-  Radar Speed Display Unit
-  Variable Message Sign

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES				
	Names	Dates	Approved By 	
Designed By			Roadway Design Engineer	
Drawn By			Revision	Sheet No.
Checked By			02	1 of 10
				Index No. 600

DEFINITIONS

Regulatory Speed (In Work Zones)

The maximum permitted travel speed posted for the work zone as indicated by the regulatory speed limit signs. The work zone speed must be shown or noted in the plans. This speed should be used as the minimum design speed to determine runout lengths, departure rates, flare rates, lengths of need, clear widths, taper lengths, crash cushion requirements, marker spacings, superelevation and other similar features.

Advisory Speed

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

Travel Way

The intended path for vehicular traffic through or around obstructions in construction, maintenance, utility and other work zones on highways, roads and streets. For traffic control through work zones, travel way includes auxiliary lanes, shoulders and any other permanent or temporary surface intended for the path of vehicular traffic.

Detour, Lane Shift, and Diversion

A detour is the redirection of traffic onto another roadway to bypass the temporary 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

An 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 the Department's safety criteria, i.e., anything that is greater than 4" in height and is firm and unyielding or doesn't meet breakaway 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 traffic control devices that are no longer appropriate shall be removed or covered.

PEDESTRIANS AND BICYCLIST

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

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

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

RAILROADS

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

OVERHEAD WORK

No work shall be allowed over a traffic lane using a bucket truck, unless a lane closure has been set up in accordance with the appropriate Index.

OVERWEIGHT/OVERSIZE VEHICLES

Restrictions to Lane Widths, Heights or Load Capacity can greatly impact the movement of over dimensioned loads. The Contractor shall notify the Engineer who in turn shall notify the State Permits Office, phone no. (850) 488-4961, at least seven calendar days 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 Permits 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: 11' for Interstate with at least one 12' lane provided in each direction, unless formally excepted by the Federal Highway Administration; 11' for freeways; and 10' for all other facilities.

SIGHT DISTANCE TO DELINEATION DEVICES

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 tapers should not be hidden behind curves.

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 crash 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


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 roadside 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 Volume I Ch 4, Sec 4.2 and Exhibit 4-A and 4-B of the Plans Preparation Manual.

CLEAR ZONE WIDTHS FOR WORK ZONES	
WORK ZONE SPEED (MPH)	WIDTHS (feet)
60-70	30
55	24
45-50	18
30-40	14
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB

SUPERELEVATION

Horizontal curves constructed in conjunction with work zone traffic control should have the required superelevation 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.

MINIMUM RADII FOR NORMAL CROSS SLOPES	
DESIGN SPEED	MINIMUM RADIUS R
MPH	feet
65	3130
60	2400
55	1840
50	1390
45	1080
40	820
35	610
30	430
Superelevate When Smaller Radii Used	

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR				
TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By		
Designed By	12/87	 Roadway Design Engineer		
Drawn By	12/87	Revision	Sheet No.	Index No.
Checked By	12/87	02	2 of 10	600

REGULATORY SPEEDS IN WORK ZONES

Traffic Control Plans (TCPs) for all projects must include specific regulatory speeds for each phase of work. This can either be the posted speed or a reduced speed. The speed shall be noted in the TCPs; this 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 should be established to route vehicles safely through the work zone as close to normal highway speed 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 per 500' 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 signing is provided for in the plans.

On projects with interspaced work activities, speed reductions should be located in proximity to those activities which merit a reduced speed, and not "blanketed" for the entire project. At the departure 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 should be given to supplementing the existing signs when the construction work zone is between existing regulatory speed signs. For projects where the reduced speed conditions exist for greater than 1 mile in rural areas (non-interstate) and on rural or urban interstate, additional regulatory speed signs are to be placed at no more than 1 mile intervals. Engineering judgement should be used in placement of the additional signs. Locating these signs beyond ramp entrances and beyond major intersections are examples of proper placement. For urban situations (non-interstate), additional speed signs are to be placed at a maximum of 1000' apart.

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 (DTOE) to investigate the need. It will not be necessary for the DTOE to issue regulations for regulatory speeds in work zones due to the revised provisions of F.S. 316.0745(2)(b). Advisory Speed plates will be used at the option of the field engineer for temporary use while processing a request to change the regulatory speed specified in the plans when deemed necessary. Advisory speed plates cannot be used alone but must be placed below the construction warning sign for which the advisory speed is required.

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

FLAGGER CONTROL

Where flaggers are used, a FLAGGER symbol or legend sign must replace the WORKERS symbol or legend sign.

The flagger must be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed or to stop as required before entering the work site. Flaggers shall be positioned to maintain maximum color contrast between the Flagger's reflective garments and equipment and the work area background.

HIGH-VISIBILITY CLOTHING

For daytime work, the flagger's vest, shirt, or jacket shall be either orange, yellow, yellow-green, or a fluorescent version of these colors. For nighttime work, similar outside garments shall be retroreflective. The retroreflective material shall be either orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and be visible at a minimum distance of 1,000 ft. The retroreflective clothing shall be designed to clearly identify the wearer as a person.

HAND-SIGNALING DEVICES

STOP/SLOW paddles are the primary hand-signaling device. The STOP/SLOW paddle shall have an octagonal shape on a rigid handle. STOP/SLOW paddles shall be at least 26 inches wide with letters at least 6 inches high and should be fabricated from light semi-rigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When used at nighttime, the STOP/SLOW paddle shall be retroreflectorized.

Flag use is limited to immediate emergencies, intersections, and when working on centerline or shared left turn lanes where two (2) flaggers are required and there is opposing traffic in the adjacent lanes. Flags, when used, shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff that is approximately 36 inches in length. When used at nighttime, flags shall be retroreflectorized 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 space so that approaching road users will have sufficient distance to stop before entering the work space. When used at nighttime, the flagger station should be illuminated.

SURVEY WORK ZONES


The SURVEY CREW AHEAD symbol or legend 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, at the discretion of the Party Chief. Type B Light or dual orange flags shall be used at all times to enhance the SURVEY CREW AHEAD sign, even with mesh signs.

When Traffic Control Through Work Zones is being used for Survey purposes only, the END ROAD WORK sign as called for on certain 600 Series Indexes should be omitted.

Survey Between Active Traffic Lanes or Shared Left Turn Lanes

The following provisions apply to Main Roadway Traffic Control Work Zones. These provisions must be adjusted by the Party Chief to fit roadway and traffic conditions when the Survey Work Zone includes Intersections.

- (A) A STAY IN YOUR LANE (MOT-1) sign shall be added to the Advance Warning Sign sequence as the second most immediate sign from the work area.
- (B) Elevation Surveys-Cones may be used at the discretion of the Party Chief to protect prism holder and flagger(s). Cones, if used, may be placed at up to 50' intervals along the break line throughout the work zone.
- (C) Horizontal Control-With traffic flow in the same direction, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' towards the flow of traffic.
- (D) Horizontal Control-With traffic flow in opposite directions, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' in both directions towards the flow of traffic.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR				
TRAFFIC CONTROL THROUGH WORK ZONES				
	Names	Dates	Approved By	
Designed By		12/87	 Roadway Design Engineer	
Drawn By		12/87		
Checked By		12/87	Revision	Sheet No.
			02	3 of 10
				Index No. 600

SIGN PLACEMENT

Post-mounted signs installed at the side of the road shall be mounted at a height at least 7 feet measured from the bottom of the sign to a horizontal line extended from the near edge of the pavement. Signs mounted on barricades, or other portable supports shall be no less than 1 foot above the travel 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 way by the traffic control procedure applied:

- 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.
- Unanticipated conflicts arising between adjoining in progress highway construction projects will be resolved by the Resident Engineer for projects under his residency, and, by the District Construction Engineer for in progress projects under adjoining residencies.
- The District Maintenance Engineer will resolve anticipated and occurring conflicts within scheduled maintenance operations.
- The Unit Maintenance Engineer will resolve conflicts that occur within routine maintenance works; between routine maintenance work, unscheduled work and/or permitted work; and, between unit controlled maintenance works and highway construction projects.

SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING

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 woven fabrics including burlap will not be permitted.

Covering of only the legend or symbol will not be permitted.

Reflective coverings will not be permitted.

Hinged signs designed to cover when folded and sign blanks will be permitted.

Covers, blanks, hinged panels and intermittent work stoppage shields and plaques 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 B Lights and Orange Flags are not required.

Vinyl signs may be used for Day or Night Operations not to exceed 12 hours except as noted in the standards. Type B Lights and Orange Flags are not required.

All signs shall be post mounted if operation exceeds 12 hours except as noted in the standards.

WORK ZONE SIGN SUPPORTS

Signs mounted on temporary supports or barricades, and barricade/sign combination shall be crashworthy in accordance with NCHRP 350 requirements and included on the Qualified 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					
SIGN SIZE	SIGN BRACKET	ROUND ALUMINUM	DEPTH IN GROUND	STEEL CHANNEL	DEPTH IN GROUND
24" x 36"	2-I	NPS 2.0" x $\frac{1}{8}$ "	2'-0"	2.5 lb F/M*	3'-0"
48" x 48" DIAMOND	2-I & 1-II	NPS 3.5" x $\frac{3}{16}$ "	3'-4"	**	3'-0"
60" x 48"	3-I	NPS 3.5" x $\frac{3}{16}$ "	3'-4"	**	3'-0"
24" x 30"	2-I	NPS 2.0" x $\frac{1}{8}$ "	2'-0"	2.5 lb F/M*	3'-0"
48" x 48"	2-II	NPS 3.0" x $\frac{1}{8}$ "	2'-6"	**	3'-0"
60" x 24"	3-I	NPS 3.0" x $\frac{1}{8}$ "	2'-6"	3.0 lb F/M*	3'-0"
60" x 36"	3-I	NPS 3.5" x $\frac{3}{16}$ "	3'-4"	4.0 lb F/M*	3'-0"

* F/M Indicates Type F or Type M

** Requires two 3 lb/ft steel channel (F/M) at 2'-6" 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 shall use two Type I brackets per post.

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

Refer to Design Standard 11860, Sheet 3, for round aluminum sign bracket details, and 11865 Sheet 2 for steel channel breakaway 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 W1-4R, MOT-2, and MOT-3 warning signs should be used for the advanced warning for a lane shift. A diversion should be signed as a lane shift.

EXTENDED DISTANCE ADVANCE WARNING SIGNS

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 Advanced 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 M.P.H. or more).

SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN

The SPEEDING FINES DOUBLED WHEN WORKERS PRESENT sign should be installed on all projects. The placement should be 500 ft beyond the ROAD WORK AHEAD sign or midway to the next sign whichever is less.

LENGTH OF ROAD WORK SIGN

The length of road work sign (G20-1) bearing the legend ROAD WORK NEXT _____ MILES is required for all projects of more than 2 miles in length. The number of miles entered should be rounded up to the nearest mile. The sign shall be located at begin construction points.

INTERSECTING ROAD SIGNING

Signing 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 signing be less than a ROAD WORK AHEAD sign, including light and flag, for approaching vehicles.

END ROAD WORK SIGNS

The END ROAD WORK sign (G20-2A) should be erected approximately 500 feet beyond the end of a construction or maintenance project unless other distance called for in the plans. When other Construction or Maintenance Operations occur within 1 mile this sign should be omitted and signing coordinated in accordance with Index No. 600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION					
TRAFFIC CONTROL THROUGH WORK ZONES					
GENERAL INFORMATION FOR					
TRAFFIC CONTROL THROUGH WORK ZONES					
Designed By		Dates	12/87	Approved By	<i>James D. Mill</i>
Drawn By		Revision	02	Sheet No.	4 of 10
Checked By		Index No.			600

VARIABLE MESSAGE SIGNS (VMS)

The VMS can be used to:

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

The message should be visible and legible at a minimum distance of 900 feet. All messages should be cycled so that two message cycles are displayed to a driver while approaching the sign from 900 feet at 55 mph.

VMS should be placed approx. 500 to 800 feet in advance of the work zone conflicts or 1.5 to 2 miles in advance of complex traffic control schemes which require new and/or unusual traffic maneuvers.

If VMS are to be used at night, the intensity of the flashers 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.

CHANNELIZING AND LIGHTING DEVICES

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

Primary work zone traffic control devices are shown on Sheet 8 for the purpose of ready identification. Approved devices are listed on the Departments Qualified Product List.

CHANNELIZING AND LIGHTING DEVICE CONSISTENCY

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

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 asphalt concrete SP 9.5 or FC-6 is 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 TCP and be approved by the District Traffic Operations Engineer.

Maintain all existing actuated 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 should identify the intersections where Temporary Traffic Detection is required.

WARNING LIGHTS

Warning lights shall be in accordance with Section 6E-5 of the MUTCD except for the application limitations stipulated below:

Flashing

Type A Low Intensity Flashing Warning Lights are to be mounted on barricades, drums, vertical panels or advance warning signs (except as noted below) and are intended to continually warn drivers that they are approaching or proceeding in a hazardous area. Flashing lights shall not be used to delineate the intended path of travel, and not placed with spacings that will form a continuous line to the drivers eye. The Type A light will be used to mark obstructions 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 nor the second such sign when used.

Type B High Intensity Flashing Warning Lights shall be mounted on the first advanced warning sign and on the first and second advanced warning sign where two or more signs are used; this applies to all approaches to any work zone.

Steady-Burn

Type C Steady-Burn Lights are to be mounted on barricades, drums, concrete barrier walls or vertical panels and used in combination with those devices to delineate the travel way on lane closures, lane changes, diversion curves 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.

ROADSIDE BARRIERS

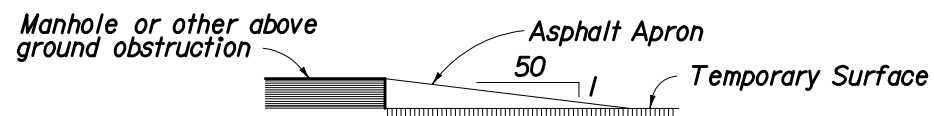
When connecting temporary concrete barrier wall to guardrail the connection shall be made in accordance with Index No. 410. All guardrail end anchorages to be included in the cost of Temporary Guardrail.

TRUCK MOUNTED ATTENUATORS

Truck-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Index No. 627. For short term, stationary operations, see Part VI of the MUTCD.

MANHOLES/CROSSWALKS

Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than $\frac{1}{2}$ " shall have a temporary asphalt apron constructed as shown in the diagram below.

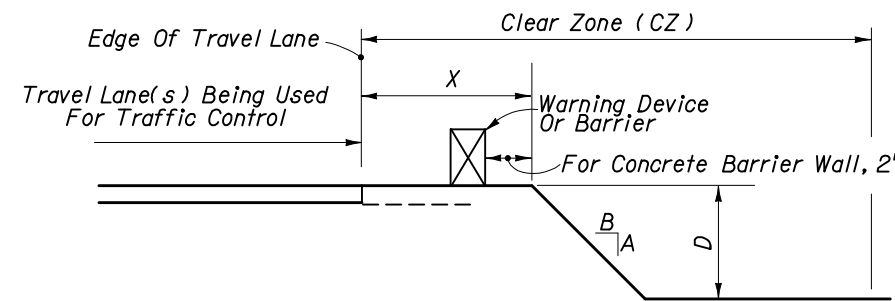


The apron is to be removed prior to constructing the next lift of asphalt. The cost of the temporary asphalt shall be included in the Contract Unit Price for Maintenance of Traffic, L.S.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR				
TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By		
Designed By	12/87	James D. Hill Roadway Design Engineer		
Drawn By	12/87	Revision	Sheet No.	Index No.
Checked By	12/87	02	5 of 10	600

DROPOFF CONDITION

1. A dropoff is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slopes (A:B) steeper than 1:4. When dropoffs occur within the clear zone due to construction or maintenance activities, protection 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 $\geq 6"$, no warning device will be required. For curb heights $< 6"$, see chart.



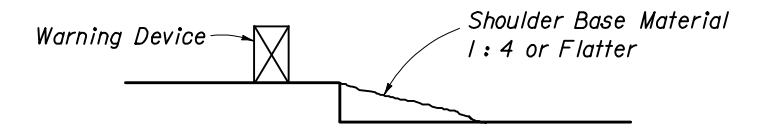
DROPOFF PROTECTION REQUIREMENTS ALL SPEEDS NO CURB AND GUTTER		
X (ft)	D (in)	Device Required
0-CZ	≤ 3	Sign W8-9AS
0-I2	> 3	Barrier
I2-CZ	> 3 to ≤ 5	Warning Device
0-CZ	> 5	Barrier

For Clear Zone widths, see Index No. 600 sheet 4.

DROPOFF NOTES

1. These conditions and treatments can be applied only in work areas that fall within a properly signed work zone.
2. The following are defined as acceptable warning devices:
 - a. Vertical Panel
 - b. Type I Or Type II Barricades
 - c. Drum
 - d. Cone (where allowed)
 - e. Tubular Marker (where allowed)
3. Where a barrier is specified any of the types below may be used as shown in the plans:
 - a. Concrete temporary barrier wall;
 - b. Temporary guardrail and end anchorages;
 - c. Temporary Curb;
 - d. Temporary water filled barriers.
4. Warning device spacing shall be as follows:
 - A. On Taper
Maximum spacing between cones and tubular markers shall be 25'. Maximum spacing between Type I or Type II barricades or vertical panels or drums shall be based on the speed limit as follows: 15' up to 25 MPH; 30' for 30 - 40 MPH; 50' for 45 MPH and greater.
 - B. On Alignments
Maximum spacing between cones or tubular markers shall be 25'. and for Type I or Type II barricades, vertical panels or drums is 50' on center for the first 250'; thereafter, cones or tubular markers at 50' on center and Type I or Type II barricades drums or vertical panels at 100' on center.

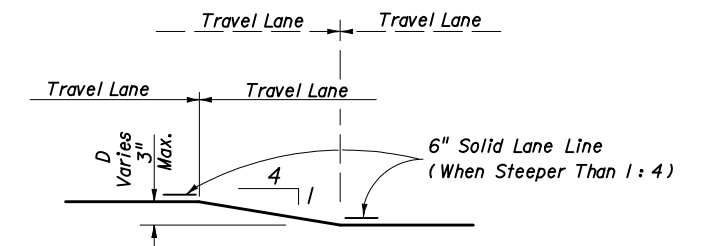
SHOULDER TREATMENT



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 VECP consideration.

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING

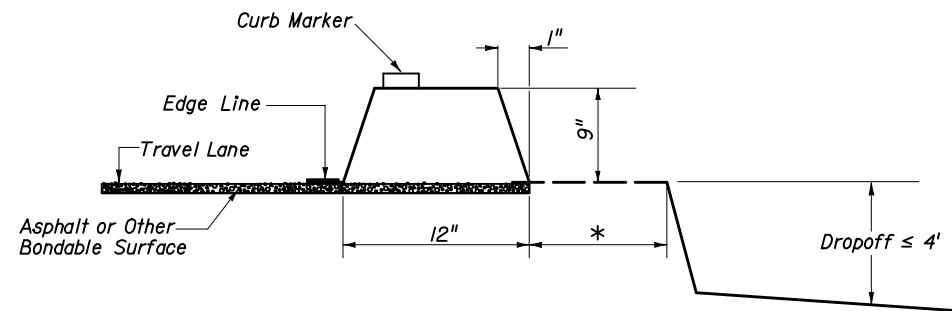


NOTES

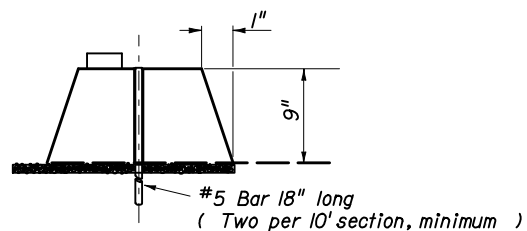
1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.
2. Whenever there is a difference in elevation between adjacent travel lanes, the W8-9A sign with "UNEVEN PAVEMENT" plaque is required at intervals of $\frac{1}{2}$ mile maximum.
3. If D is $1\frac{1}{2}"$ or 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 R4-1 and MOT-1 signs shall be used as a supplement to the W8-9A; this condition should never exceed 3 miles in length.

DROPOFFS IN WORK ZONES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By		
Designed By	12/87	James D. Mill Roadway Design Engineer		
Drawn By	12/87	Revision	Sheet No.	Index No.
Checked By	12/87	02	6 of 10	600

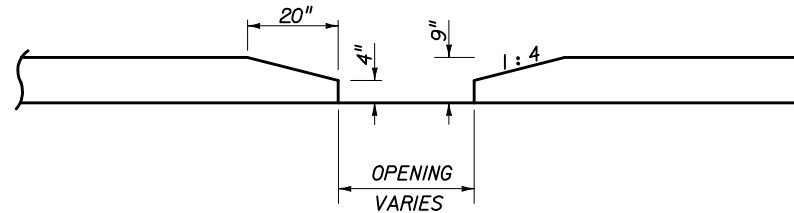


TEMPORARY CURB DETAIL

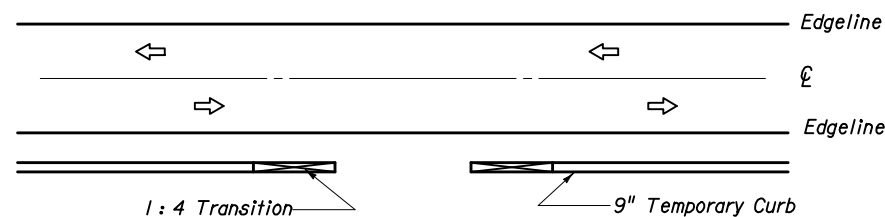


PINNING DETAIL

* 12" (or more) is desirable in order to enhance/improve stability. However, it is recognized that there may be cases where 12" (or more) is not feasible or obtainable. In these instances, engineering judgement must be used to balance this offset distance with the depth of dropoff, soil type, etc.



ELEVATION



**PLAN
TEMPORARY CURB OPENINGS**

TEMPORARY CURB

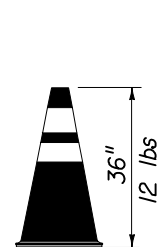
1. Application: Temporary curb shall not be used on facilities with posted speeds greater than 45 mph or dropoffs greater than 4' deep. It shall not be used on Interstate or limited access facilities.
2. Edgelines shall be provided in accordance with the traffic striping specifications, including reflective beads. The face of the curb shall also be painted (white or yellow as appropriate). A Curb Marker shall be placed on the temporary curb every 10' (Colorless when curb is on the right side of the lane, and amber when the curb is on the left side of the lane).
3. The temporary asphalt curb is to be bonded to the surface by use of a tack coat. It is important that the curb adhere to the surface in order to provide the strength necessary to redirect errant vehicles. Concrete curb and curb of other approved materials shall be pinned to a paved surface as shown in detail.
4. When temporary curb is call for in the plans the contractor has the option to construct temporary curb of asphalt, Class I concrete, or other Department approved material. Temporary Traffic Separator as shown in Index 614 shall not be allowed as a substitute for Temporary Curb.
5. When concrete is used to construct temporary curb, 1/2" open joints shall be constructed every 10' in order to control cracking.
6. Drainage needs must be addressed when using temporary curb. If driveways or other accesses are not frequent enough to allow for water runoff, the designer may need to specify the need for "drainage slots" at an appropriate spacing based on grades, number of lanes, etc. Typically, a drainage slot should be 12" wide (a break in the curb) at 50' spacings.
7. At openings such as driveways and business accesses, the temporary curb should be transitioned in height from 4" up to 9" at a 1 : 4 slope in order to eliminate a potential hazard at the end points.
8. Temporary curb shall be paid for under the contract unit price for Temporary Curb, LF, and will include all materials (including Curb Markers) and work necessary to construct, maintain and remove the temporary curb. Any damage to existing pavement caused by the removal of temporary curb shall be satisfactorily repaired and the cost of such repairs are to be included in the cost of the temporary curb.

NOTICE

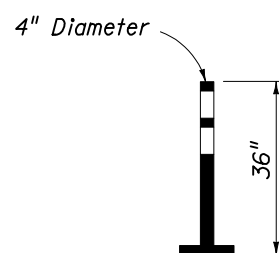
THE TEMPORARY CURB SHOWN ON THIS INDEX CAN BE USED ON STATE HIGHWAY PROJECTS LET TO CONTRACT THROUGH SEPTEMBER 30, 2002. TEMPORARY CURB AND BARRIERS OTHER THAN THE PRECAST TEMPORARY CONCRETE BARRIER WALL DETAILED ON INDEX 415 THAT ARE USED FOR SHIELDING DROPOFFS ON STATE HIGHWAY PROJECTS LET TO CONTRACT AFTER OCTOBER 1, 2002 MUST MEET NCHRP 350 CRITERIA AND MUST BE INCLUDED ON THE QUALIFIED PRODUCTS LIST. IF AND WHEN A GENERIC TEMPORARY CURB OR LOW PROFILE TYPE BARRIER IS APPROVED FOR USE ON STATE HIGHWAY PROJECTS, THE DESIGN WILL BE POSTED ON THE ROADWAY DESIGN WEB SITE.

TEMPORARY CURB

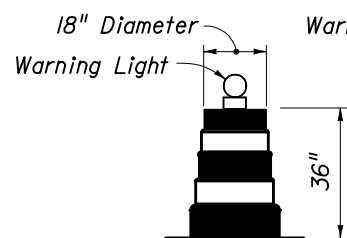
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By <i>Lance D. Hill</i>		
Designed By		Roadway Design Engineer		
Drawn By		Revision	Sheet No.	Index No.
Checked By		02	7 of 10	600



CONES

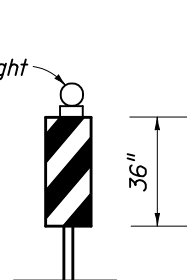


TUBULAR NON-FIXED MARKER TO BE USED DURING DAYLIGHT ONLY.



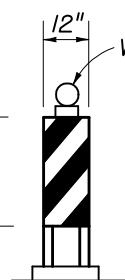
STEEL DRUMS NOT PERMITTED

PLASTIC DRUMS

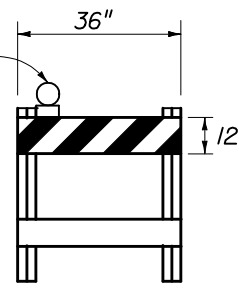


POST MOUNT

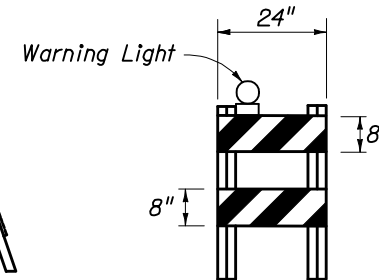
VERTICAL PANEL



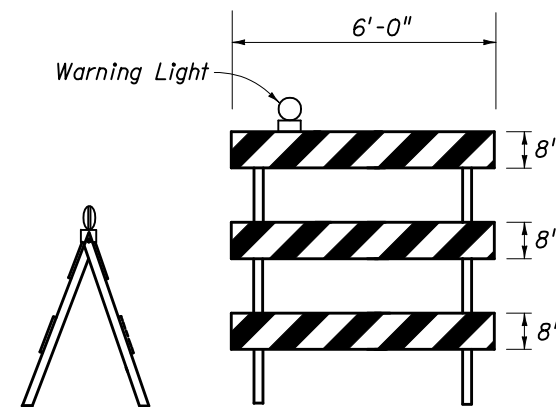
A-FRAME



TYPE I BARRICADE

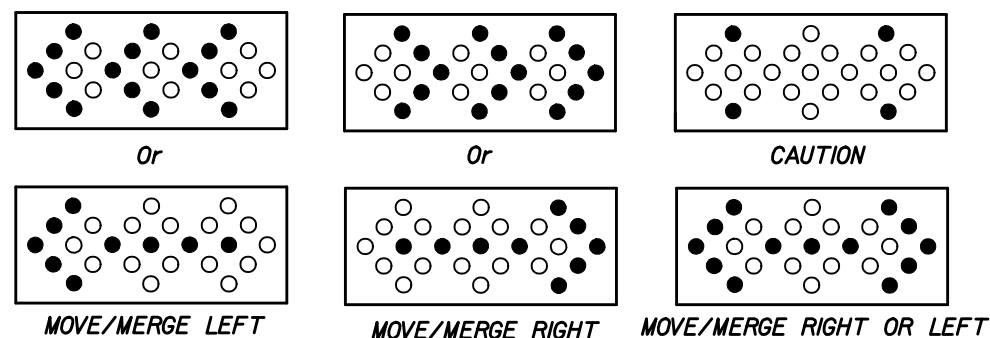


TYPE II BARRICADE



TYPE III BARRICADE

CHANNELIZING AND LIGHTING DEVICE AND ADVANCE WARNING ARROW PANEL NOTES



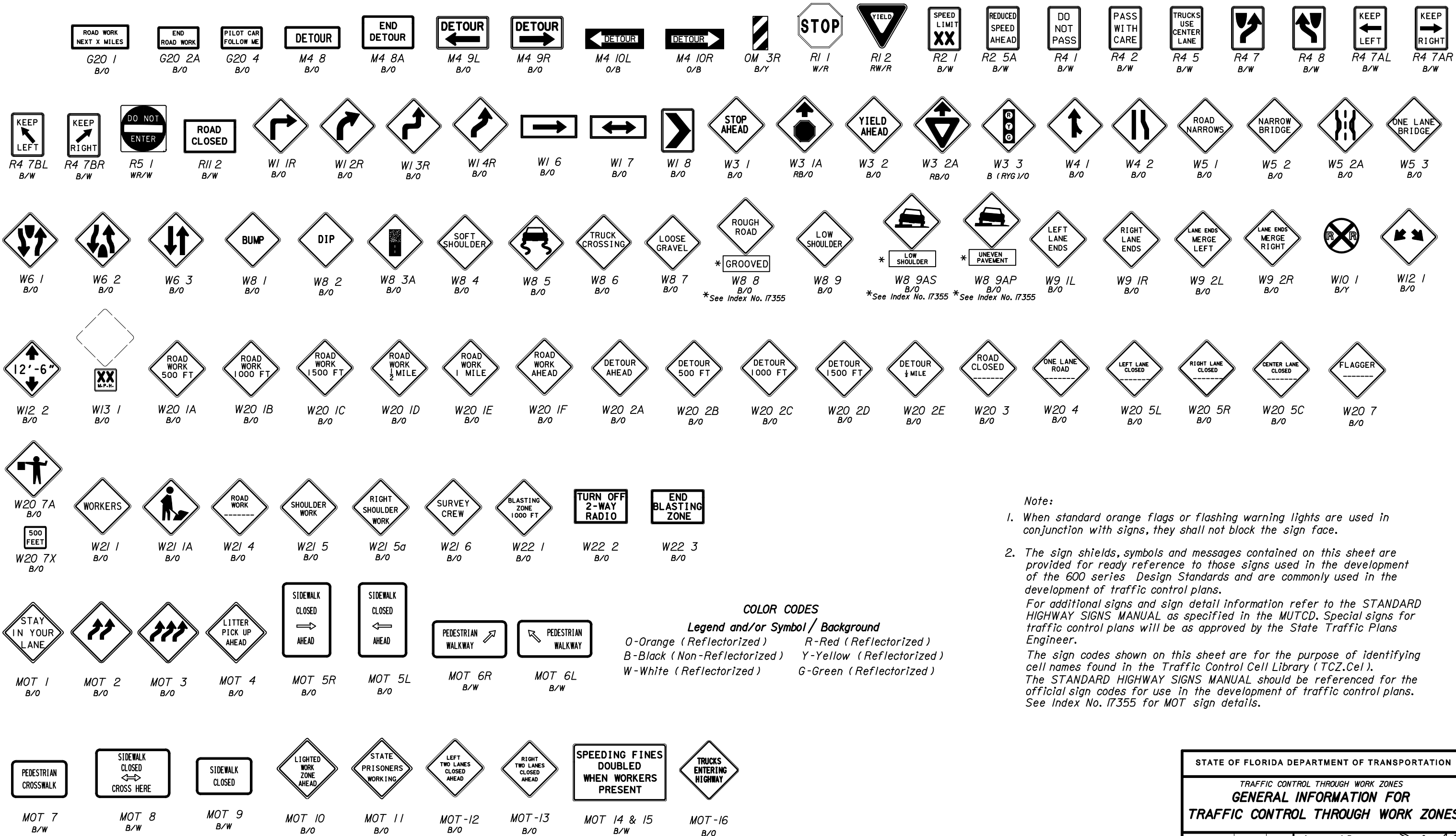
● Minimum Required Lamps
○ Additional Lamps Allowed

**MODES
ADVANCE WARNING ARROW PANELS**

- Only approved traffic control devices included on the Qualified Products List (QPL) may be used.
- The FDOT approval number shall be engraved on the device at a convenient and readily visible location. Where engraving is not practical a water-resistant type label may be used.
- The details shown on this sheet are for the following purposes: (a) For ease of identification and (b) To provide information that supplements or supercedes that provided by the MUTCD.
- 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 rails or 33 percent of the total area of the three rails.
- During hours of darkness, warning lights shall be used on drums, vertical panels, Type I, Type II and Type III barricades in accordance with 'Warning Lights' Sheet 5.
- Ballast shall not be placed on top rails or any striped rails or higher than 13" above the driving surface.
- For rails less than 3'-0" long, 4" stripes shall be used.
- When Advance Warning Arrow Panels are used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.
- A single arrow panel shall not be used to shift 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.
- Cones Shall:
 - Be used only in work zones where workers are present.
 - Not exceed 1 mile in length of use at any one time nor exceed a 12 hour work period.
 - Have as a minimum, one designated person for the purpose of continuous monitoring and maintenance of cones during lane closures.
 - Be reflectorized as per the MUTCD with Department approved reflective collars when used at night.
- The splicing of sheeting is not permitted on either channelizing devices or MOT signs.

IDENTIFICATIONS - CHANNELIZING AND LIGHTING DEVICES AND ADVANCE WARNING ARROW PANEL MODES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR				
TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By		
Designed By	12/87	James D. Mill Roadway Design Engineer		
Drawn By	12/87	Revision	Sheet No.	Index No.
Checked By	12/87	02	8 of 10	600



*See Index No. 17355

*See Index No. 17355 *See Index No. 17355

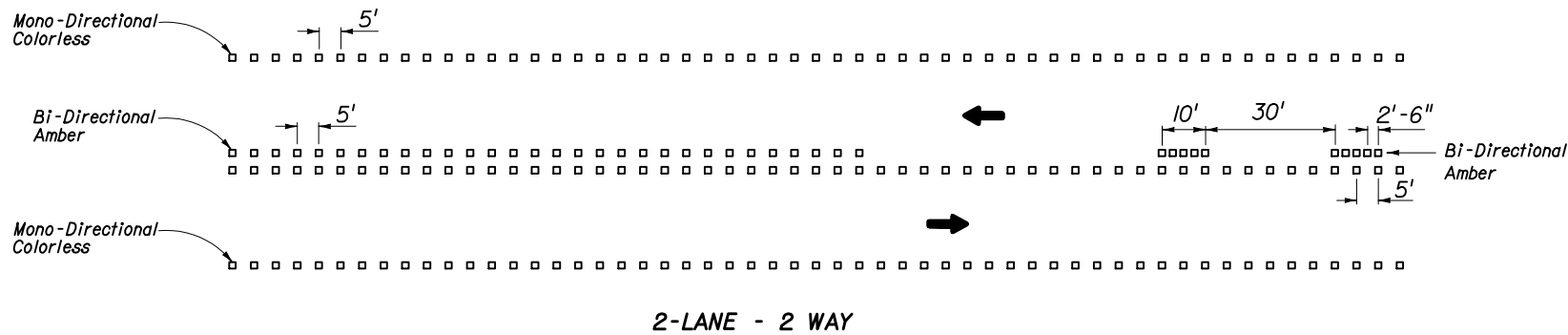
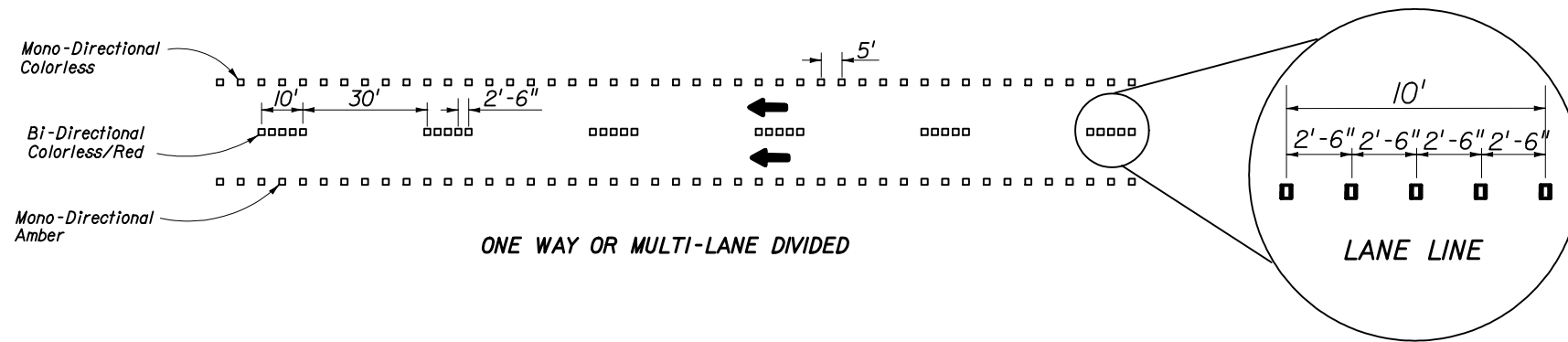
COLOR CODES

Legend and/or Symbol / Background
 O-Orange (Reflectorized) R-Red (Reflectorized)
 B-Black (Non-Reflectorized) Y-Yellow (Reflectorized)
 W-White (Reflectorized) G-Green (Reflectorized)

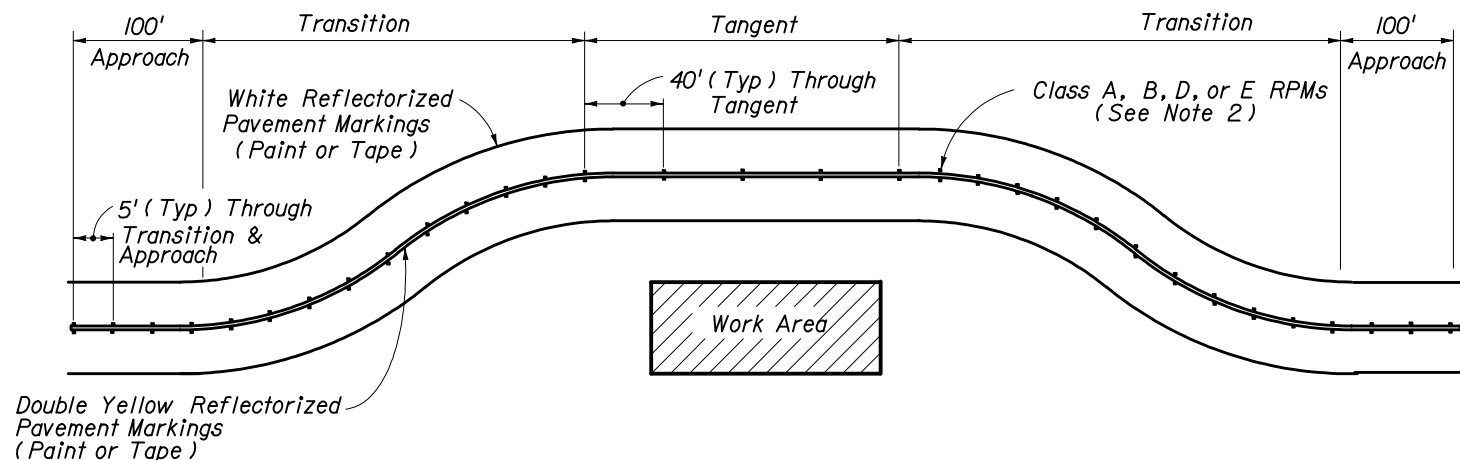
Note:
 1. When standard orange flags or flashing warning lights are used in conjunction with signs, they shall not block the sign face.
 2. The sign shields, symbols and messages contained on this sheet are provided for ready reference to those signs used in the development of the 600 series Design Standards 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 (TCZ.Cel). 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 MOT sign details.

COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR				
TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By		
Designed By	12/87	[Signature]		
Drawn By	12/87	Revision	Sheet No.	Index No.
Checked By	12/87	02	9 of 10	600



**TYPICAL PLACEMENT OF REFLECTIVE PAVEMENT MARKERS
IN LIEU OF TEMPORARY TAPE OR PAINT IN WORK ZONES**



USE OF RPMs TO SUPPLEMENT PAINT OR TAPE

PAVEMENT MARKINGS

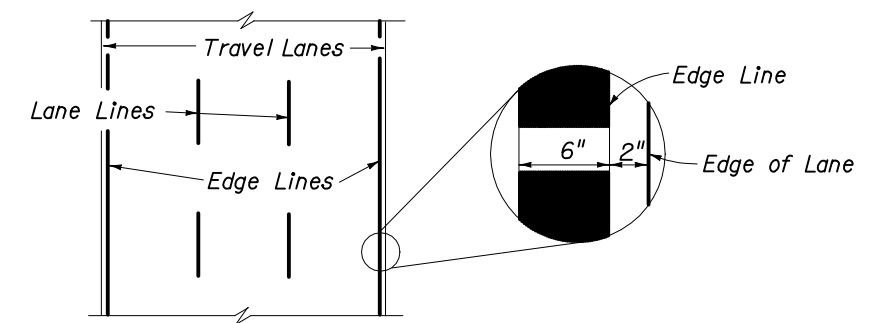
RPM CLASS

APPLICATION FOR REFLECTIVE PAVEMENT MARKERS

- A Permanent Applications In Non-Traffic Areas Or Can Be Used In Work Zone Applications For Traffic And Non-Traffic Areas.
- B Permanent Application In Traffic And Non-Traffic Areas Or Can Be Used In Work Zone Applications For Traffic And Non-Traffic Areas.
- D Work Zone Application Only, For Traffic And Non-Traffic Areas.
- E Temporary Work Zone Application Only, Not Exceeding Five (5) Continuous Days, For Traffic And Non-Traffic Areas.

NOTES FOR REFLECTIVE PAVEMENT MARKERS

1. RPMs shall be installed as a supplement to all lane lines and the edge lines of of gore areas during construction. Placement of RPMs should be as shown in Index I7352 with the exception that Class D markers be placed at a maximum spacing of 5' center to center.
2. 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 tape or paint; however, tape or paint must be used in all transition areas in addition to RPMs. In short term work zones, where the RPMs will be used for five (5) days or less, CLASS "E" RPMs may be used to form lane or edge lines.
3. Basic color rule: colorless reflectors supplement white lines and amber reflectors supplement yellow lines.
4. To provide contrast on concrete pavement, or light asphalt, the five (5) colorless RPMs shall be followed by five black RPMs. The spacing between RPMs shall be 2'-6". Black RPMs will not be required for contrast with amber RPMs.
5. It shall be the contractors responsibility to replace damaged or missing RPMs.
6. RPMs used to supplement lane lines are to be paid for as Reflective Pavement Marker (Temporary), EA. RPM's used in lieu of temporary tape or paint are to be paid for as Removable Pavement Marking L.F.



PLACEMENT OF PAINT OR TAPE PAVEMENT MARKINGS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL THROUGH WORK ZONES				
GENERAL INFORMATION FOR				
TRAFFIC CONTROL THROUGH WORK ZONES				
Names	Dates	Approved By <i>Samuel D. Mill</i>		
Designed By		Roadway Design Engineer		
Drawn By		Revision	Sheet No.	Index No.
Checked By		02	10 of 10	600