# I. TRAFFIC CONTROL DEVICES

THE FOLLOWING ARE FOUR TYPES OF TRAFFIC CONTROL DEVICES USED IN WORK ZONE TRAFFIC CONTROL:

- SIGNS
- CHANNELIZING DEVICES
- LIGHTING DEVICES
- PAVEMENT MARKINGS

## A. SIGNS

SIGNS USED IN WORK ZONE TRAFFIC CONTROL ARE CLASSIFIED AS REGULATORY, GUIDE OR WARNING. REGULATORY SIGNS IMPOSE LEGAL RESTRICTIONS AND MAY NOT BE USED WITHOUT PERMISSION. GUIDE SIGNS COMMONLY SHOW DESTINATIONS, DIRECTIONS, AND DISTANCES. WARNING SIGNS GIVE NOTICE OF CONDITIONS THAT ARE POTENTIALLY HAZARDOUS TO TRAFFIC.

**WARNING SIGNS** – CONSTRUCTION AND MAINTENANCE WARNING SIGNS ARE USED EXTENSIVELY IN STREET AND HIGHWAY WORK ZONES. THESE SIGNS ARE NORMALLY DIAMOND SHAPED, HAVING A BLACK SYMBOL OR MESSAGE ON AN ORANGE BACKGROUND. AS A GENERAL RULE THESE SIGNS ARE LOCATED ON THE RIGHT–HAND SIDE OF THE STREET OR HIGHWAY.

**SIZE** – THE STANDARD SIZE FOR ADVANCE WARNING SIGNS IN WORK ZONE IS GENERALLY 48"x48". WHERE SPEEDS AND VOLUMES ARE RELATIVELY LOW, A MINIMUM SIZE OF 36"x36" MAY BE USED. (SEE PART VI OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) FOR SPECIFIC SIGN SIZES).

**MOUNTING** – STANDARDS FOR HEIGHT AND LATERAL CLEARANCE OF ROADSIDE SIGNS ARE INCLUDED IN PART VI OF THE MUTCD. SIGNS MOUNTED ON BARRICADES, OR TEMPORARY SUPPORTS, MAY BE AT LOWER HEIGHTS BUT THE BOTTOM OF THE SIGN SHALL BE NOT LESS THAN 12" ABOVE THE PAVEMENT ELEVATION. HIGHER MOUNTING HEIGHTS ARE, HOWEVER, DESIRABLE.

**ILLUMINATION AND RETROREFLECTORIZATION** – ALL SIGNS USED DURING THE HOURS OF DARKNESS SHALL BE MADE OF RETROREFLECTIVE MATERIAL OR ILLUMINATED. (STREET OR HIGHWAY LIGHTING IS NOT REGARDED AS MEETING THE REQUIREMENTS FOR SIGN ILLUMINATION.)

**SIGN SPACING** – SEE TABLE 1

### TABLE 1

| SIGN SPACING (IN FEET) | AREA/ROAD TYPE | | |
|---|---|---|---|
| | TWO LANE URBAN | HIGHWAY | EXPWY./ FREEWAY |
| A | 200' | 500' | 1,000' |
| B | 200' | 500' | 1,600' |
| C | 200' | 500' | 2,600' |

## B. CHANNELIZING DEVICES

CHANNELIZING DEVICES ARE USED TO WARN AND ALERT DRIVERS OF HAZARDS IN WORK ZONES, PROTECT WORKERS, AND GUIDE AND DIRECT DRIVERS PAST THE HAZARDS. CHANNELIZING DEVICES INCLUDE CONES, TUBULAR MARKERS, VERTICAL PANELS, DRUMS, BARRICADES, AND BARRIERS. THE MOST COMMON CHANNELIZING DEVICE USED IN TEMPORARY WORK ZONES IS THE TRAFFIC CONE.

**SPACING** – CHANNELIZING DEVICES SHALL BE SPACED SO THAT THEY MAKE MAKE IT APPARENT THAT THE ROADWAY OR WORK AREA IS CLOSED TO TRAFFIC. THERE ARE SEVERAL RULES OF THUMB THAT CAN BE USED TO GUIDE YOU IN THE PROPER SPACING OF CHANNELIZING DEVICES.

1. THE MAXIMUM SPACING BETWEEN DEVICES IN A TAPER SHALL BE A DISTANCE, IN FEET, WHICH IS APPROXIMATELY EQUAL TO 100% OF THE SPEED LIMIT IN MPH. FOR EXAMPLE, IF THE TAPER IS ON A STREET WITH A 50 MPH SPEED LIMIT, THE DEVICE SHALL BE SPACED AT ABOUT 50'–0".

2. ALL TAPERS SHALL BE MADE UP OF AT LEAST 5 CHANNELIZING DEVICES.

3. THE SPACING BETWEEN DEVICES IN A BUFFER OR WORK AREA MAY BE UP TO A DISTANCE , IN FEET, OF 200% OF THE SPEED LIMIT IN MPH. FOR EXAMPLE, IF THE STREET HAS A SPEED LIMIT OF 30 MPH, THE DEVICES IN THE BUFFER AND WORK AREA MAY BE SPACED UP TO 60'–0".

4. IN URBAN AREAS, SHORTER SPACING BETWEEN DEVICES IN THE BUFFER AND WORK AREAS SHALL BE USED. FOR EXAMPLE, THE SPACING USED IN TAPERS SHALL ALSO BE USED IN BUFFERS AND WORK AREAS.

## C. LIGHTING DEVICES

LIGHTING DEVICES FOR SHORT TERM CONSTRUCTION AND MAINTENANCE WORK ZONES ARE DESIGNED TO SUPPLEMENT THE SIGNS AND CHANNELIZING DEVICES USED IN THESE ZONES. TYPICAL LIGHTING DEVICES INCLUDE WARNING LIGHTS, FLASHING VEHICLE LIGHTS, AND FLASHING ARROW PANELS.

**WARNING LIGHTS** – THE PRINCIPAL TYPES AND USE OF WARNING LIGHTS ARE:

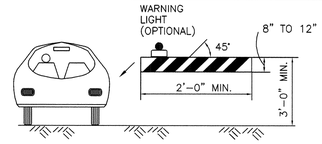
1. LOW INTENSITY FLASHING LIGHTS (TYPE A) – USED TO WARN OF AN ISOLATED HAZARD AT NIGHT.

2. HIGH INTENSITY FLASHING LIGHTS (TYPE B) – NORMALLY MOUNTED ON ADVANCED WARNING SIGNS TO DRAW ATTENTION TO A HAZARD BOTH DAY AND NIGHT.

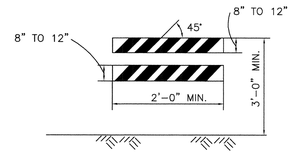
3. LOW INTENSITY STEADY–BURN LIGHTS (TYPE C) – USED IN A SERIES TO DELINEATE THE EDGE OF THE TRAVELWAY AND CHANNELIZE TRAFFIC AT NIGHT.

### TABLE 2

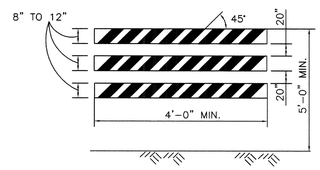
| FLASHING ARROW PANELS | | | |
|---|---|---|---|
| AREA/ROAD TYPE | MINIMUM SIZE | MIN. NUMBER OF LAMPS | MIN. LEGIBILITY DISTANCE |
| URBAN | 24" x 48" | 12 | 1/2 MILE |
| HIGHWAY | 30" x 60" | 13 | 3/4 MILE |
| EXPWY. / FREEWAY | 48" x 96" | 15 | 1 MILE |



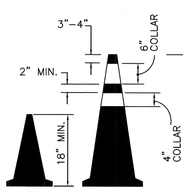

TYPE I BARRICADE



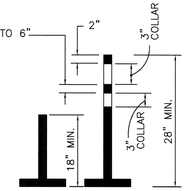

TYPE II BARRICADE



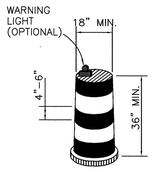

TYPE III BARRICADE



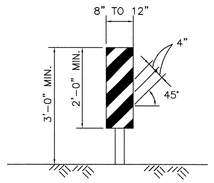

CONES



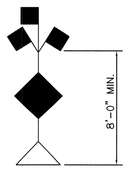

TUBULAR MARKERS




DRUM




VERTICAL PANEL




HIGH LEVEL WARNING DEVICE (FLAG TREE)

**NOTES:**

1. STRIPES ON BARRICADE RAILS SLOPE DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION TRAFFIC IS TO PASS.

2. FLASHING OR STEADY BURN WARNING LIGHTS SHALL BE USED ON BARRICADES, PANELS, AND DRUMS AS NEEDED.

## D. PAVEMENT MARKINGS

PAVEMENT MARKINGS INCLUDE STRIPINGS AND RAISED MARKERS. PAVEMENT MARKINGS SHALL BE REFLECTORIZED IN ORDER TO BE VISIBLE IN DARKNESS. THEY ARE TO BE USED ALONE OR TO SUPPLEMENT THE REGULATIONS OR THE WARNINGS OF OTHER DEVICES.

**TYPES OF PAVEMENT STRIPES** – SEE TABLE 3

# II. FIVE PARTS OF A TRAFFIC CONTROL ZONE

THE TRAFFIC CONTROL ZONE IS THE DISTANCE BETWEEN THE FIRST ADVANCE WARNING SIGN AND THE POINT BEYOND THE WORK AREA WHERE TRAFFIC IS NO LONGER AFFECTED. FIVE PARTS OF A TRAFFIC CONTROL ZONE INCLUDE:

1. ADVANCED WARNING AREA – TELLS TRAFFIC WHAT TO EXPECT AHEAD.
2. TRANSITION AREA – MOVES TRAFFIC OUT OF ITS NORMAL PATH.
3. BUFFER AREA – PROVIDES PROTECTION FOR TRAFFIC AND WORKERS.
4. WORK AREA.
5. TERMINATION AREA – LETS TRAFFIC RESUME NORMAL DRIVING.

### TABLE 4

**TAPER LENGTH CRITERIA FOR WORK ZONE**

| TYPE OF TAPER | TAPER LENGTH |
|---|---|
| MERGING TAPER | L MIN. |
| SHIFTING TAPER | 1/2 L MIN. |
| SHOULDER TAPER | 1/3 L MIN. |
| TWO–WAY TRAFFIC TAPER | 100' MAX. |
| DOWNSTREAM TAPERS (USE IS OPTIONAL) | 100' PER LANE |

FORMULAS FOR "L"

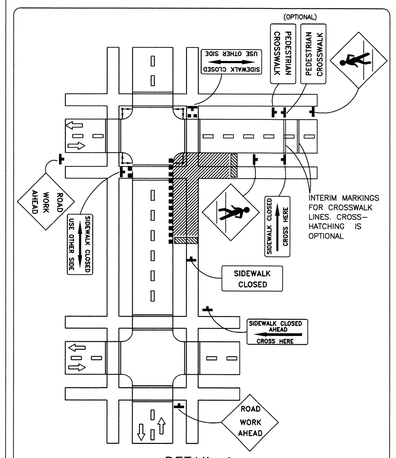
| SPEED LIMIT | FORMULA |
|---|---|
| 40 MPH OR LESS | $L = WS^2/60$ |
| 45 MPH OR GREATER | $L = WxS$ |

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED OR OFF–PEEK 85 PERCENTILE SPEED IN MPH.

# III. TYPICAL APPLICATION DIAGRAMS

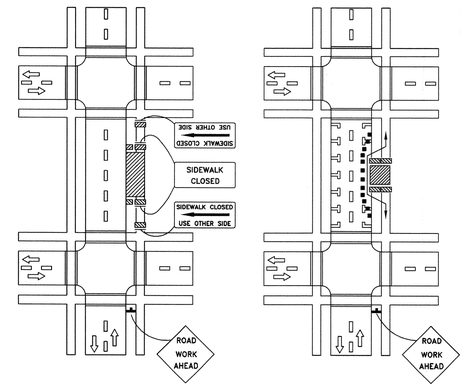
THE DIAGRAMS SHOWN ON THESE PLANS ARE EXAMPLES OF THE APPLICATION OF PRINCIPLES AND PROCEDURES FOR SAFE AND EFFICIENT TRAFFIC CONTROL IN WORK ZONES BUT ARE NOT INTENDED TO BE STANDARDS. IT IS NOT POSSIBLE TO INCLUDE ILLUSTRATIONS TO COVER EVERY SITUATION WHICH WILL REQUIRE WORK AREA PROTECTION. THESE TYPICAL LAYOUTS ARE NOT INTENDED AS A SUBSTITUTE FOR ENGINEERING JUDGEMENT AND SHALL BE ALTERED TO FIT THE CONDITIONS OF A PARTICULAR SITE.

IN ADDITION TO TYPICAL DIAGRAMS, TABLES ARE PRESENTED WHICH PROVIDE INFORMATION ON TAPER LENGTHS AND BUFFER SPACES. THE INFORMATION PRESENTED ARE MINIMUM FOR STANDARD HIGHWAY CONDITIONS. FOR URBAN CONDITIONS, SHORTER SPACINGS (WHICH ARE UNDERLINED) SHALL BE USED. EXPRESSWAY AND FREEWAY CONDITIONS WILL REQUIRE LONGER DISTANCES. FOR FURTHER INFORMATION, REFER TO PART VI OF THE "MANUAL ON THE UNIFORM TRAFFIC CONTROL DEVICES".




DETAIL 1

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS




PEDESTRIAN DETOUR

WALKWAY PROVIDED

DETAIL 2

SIDEWALK CLOSURE AND BYPASS WALKWAY

### TABLE 5

| BUFFER SPACE | |
|---|---|
| SPEED MPH | DISTANCE |
| 25 OR BELOW | 155' |
| 30 | 200' |
| 35 | 250' |
| 40 | 300' |
| 45 | 360' |
| 50 | 425' |
| 55 | 495' |
| 60 | 570' |
| 65 | 645' |
| 70 | 730' |

### TABLE 3

| DESCRIPTION | COLOR | WIDTH | APPLICATION |
|---|---|---|---|
| SINGLE BROKEN | WHTE | 4" | SEPARATION OF TRAVEL LANES IN THE SAME DIRECTION; INDICATE THAT IT IS PERMISSIBLE TO CROSS THE LINE TO CHANGE LANES; i. e., LANE LINES ON MULTILANE ROADWAYS. |
| | YELLOW | 4" | SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS; INDICATE THAT PASSING IS ALLOWED IN BOTH DIRECTIONS; i. e., CENTERLINE ON TWO LANE, TWO WAY ROADWAYS. |
| SINGLE SOLID | WHITE | 4" | SEPARATION OF TRAVEL LANES OR SEPARATION OF TRAVEL LANE AND SHOULDER; INDICATE THAT CROSSING THE LINE IS DISCOURAGED; i. e., LANE LINES AT INTERSECTION APPROACHES OR RIGHT EDGE LINES. |
| | | 6" | SEPARATION OF A MOTOR VEHICLE TRAVEL LANE FROM A BIKE TRAVEL LANE. |
| | | 8" | DELINEATION OF LOCATION WHICH INDICATES CROSSING IS STRONGLY DISCOURAGED; i. e., SEPARATION OF TURN LANES FROM THROUGH LANES OR GORE AREAS AT RAMP TERMINALS. |
| | YELLOW | 4" | DELINEATION OF LEFT EDGE LINES ON DIVIDED ROADWAYS, ONE–WAY ROADS AND RAMPS. |
| DOUBLE SOLID | WHITE | 4"–4"–4" | SEPARATION OF TRAVEL LANES IN THE SAME DIRECTION; INDICATE THAT IT IS PROHIBITED TO CROSS THE LINES; e. g., PROHIBIT LANE CHANGES ON THE APPROACH TO AN OBSTRUCTION IN THE ROADWAY BETWEEN TWO LANES IN THE SAME DIRECTION |
| | YELLOW | 4"–4"–4" | SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS, WHICH INDICATE THAT PASSING IS NOT ALLOWED IN EITHER DIRECTION. LEFT TURN MANEUVERS ACROSS THIS MARKING ARE PERMITTED. ALSO USED IN ADVANCE OF OBSTRUCTIONS WHICH MAY BE PASSED ONLY ON THE RIGHT SIDE. |
| SOLID PLUS BROKEN | YELLOW | 4"–4"–4" | SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS; INDICATE THAT PASSING IS ALLOWED FOR VEHICLES ADJACENT TO THE BROKEN LINE, BUT PROHIBITED FOR VEHICLES ADJACENT TO SOLID LINE. USED ON TWO–WAY ROADWAYS WITH TWO OR THREE LANES. ALSO USED TO DELINEATE EDGES OF A TWO–WAY LEFT TURN LANES (SOLID ON THE OUTSIDE, BROKEN LINES ON THE INSIDE). |
| DOUBLE BROKEN | YELLOW | 4"–4"–4" | DELINEATES THE EDGES OF REVERSIBLE LANES. |
| SINGLE DOTTED | BOTH | 4" | AN EXTENSION OF A LANE LINE OR CENTERLINE THROUGH AN INTERSECTION OR A CURVED DOTTED LINE THROUGH AN INTERSECTION TO HELP GUIDE TURNING VEHICLES AS THEY MOVE THROUGH THEIR TURN. MAY EXTEND AN EDGELINE, ESPECIALLY WHERE THE ROAD WIDENS FOR AN ADDED LANE FOR DECELERATION OR FOR TURNING. |
| | WHITE | 8" | SEPARATION OF THROUGH LANE AND AUXILIARY LANE OR DROPPED LANE. |
| TRANSVERSE | WHITE | 6" | CROSSWALK EDGE LINES AT MINOR INTERSECTIONS (MIN. 6'–0" APART) |
| | | 12" | STOP BARS AT MINOR INTERSECTIONS; ALSO CROSSWALK EDGE LINES AT MAJOR INTERSECTIONS (MIN. 6'–0" APART). |
| | | 24" | STOP BARS AT MAJOR INTERSECTIONS; ALSO HIGH–VISIBILITY, LONGITUDAL CROSSWALK STRIPING (MINIMUM 6'–0" IN LENGTH, SPACED 2' APART). |
| DIAGONAL | WHITE | 12" | CROSSHATCH MARKINGS, PLACED AT AN ANGLE OF 45° AT VARYING DISTANCES APART, ON SHOULDERS OR CHANNELIZATION ISLANDS TO ADD EMPHASIS TO THESE ROADWAY FEATURES. |

**GENERAL NOTES:**

(1) FOR LEGEND AND GENERAL NOTES, SEE DRAWING STD12.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL CONSTRUCTION ZONE FOR MINIMUM TRAFFIC CONTROL LAYOUT

| DRAWN BY: | REVIEWED BY: | RECOMMENDED BY: |
|---|---|---|
| R. FERGUSON | A.Y. N.S. | NGUYEN D. PHAN, CHIEF ENGINEER |
| DATE: 12–16–2009 | SCALE: AS NOTED | APPROVED: ROBERT C. MENDOZA, DIRECTOR 12-16-09 |

DRAWING No.

STD11