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LEVELS DISPLAYED  
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
 DATE: 7/18/98  
 CK: 3354/5565/7890/41/42/43/44/45/46/47/48  
 DW: 4950/51/52/53/54/55/56/57/58/59/60/61/62/63  
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**GENERAL NOTES**

Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer  
 Traffic Operations Division - TE  
 Texas Department of Transportation  
 125 East 11th Street  
 Austin, Texas 78701-2483  
 Phone (512) 416-3335  
 Fax (512) 416-3161  
 E-mail TRF-STANDARD@mailgw.dot.state.tx.us

Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects which would adversely affect their appearance or serviceability.

After drums and other traffic control devices are placed, the work zone should be driven through both during the day and after dark to be certain that these devices are functioning as intended.

**PLASTIC DRUM** - Prequalified plastic drums shall meet the following requirements.

**GENERAL DESIGN REQUIREMENTS**

Plastic drums shall be of a two-piece design; the "body" of the drum shall be the top portion of the drum and the "base" shall be the bottom of the drum.

The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 35 km/h or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles. Plastic drums that have been in use for more than two years generally do not have enough locking strength to prevent accidental separation. Plastic drums identified for replacement by the project engineer, inspector or their designee shall be replaced within 24 hours with an approved device.

Plastic drums shall be constructed of lightweight flexible, and deformable materials. Use of metal drums or single piece plastic drums as channelization devices or sign supports shall not be allowed.

Drums shall present a profile that is a minimum of 18 inches in width at the 36 inches height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.

Drums shall be tapered to allow nesting of a minimum of 5 drum bodies for ease in transport.

The top of drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 14mm diameter holes to allow attachment of a warning light, delineator reflector unit or sign.

The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches in width nor greater than 8 inches. Any non-reflectORIZED space between any two adjacent stripes shall not exceed 2 inches in width.

Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.

Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.

Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.

Drum and base shall be marked with manufacture's name, model number, and year and month of construction.

**RETROREFLECTIVE SHEETING**

The retroreflective stripes used on drums shall be constructed of retroreflective sheeting meeting the color and reflectivity requirements of Departmental Materials Specification D-9-8300: Flat Surface Reflective Sheeting, Type C unless otherwise specified in the plans.

Drums used only during daylight hours may use any type of sheeting meeting the color and retroreflective color requirements of Departmental Materials Specification D-9-8300.

The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, checking, cracking, or loss of reflectivity other than that loss due to abrasion of the sheeting surface.

**BALLAST**

Unballasted bases shall be large enough to hold up to 50 lbs. of sand. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs.

The ballasted base should weigh between 35 (minimum) and 75 lbs. (maximum). The ballast may be sand in one to three sand bags separate from the base, sand in a sand-filled plastic base, a integral crumb rubber base and ballast or other ballasting devices as approved by the Engineer. Stacking of sand bags will be allowed, however height of sand bags above pavement surface may not exceed 12 inches.

The ballasts shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle. Ballast shall not be placed on top of drums.

Adhesives may be used to secure base of drums to pavement.

**SIGNS, CHEVRONS, AND VERTICAL PANELS**

Signs used on plastic drums shall be manufactured using substrates listed on the Compliant Products List.

Chevrons and other work zone signs with an orange background shall be manufactured with Type C (high intensity grade) retroreflective sheeting meeting the color and reflectivity requirements of "Departmental Materials Specification D-9-8300: Flat Surface Reflective Sheeting, Type C" unless otherwise specified in the plans.

Signs with white backgrounds, such as the KEEP RIGHT sign (R4-8 series), shall be manufactured with Type A (engineer grade) sheeting.

Approved sign messages for signs mounted on plastic drums are the Chevron (CW1-8), the KEEP RIGHT/LEFT sign (R4-7 or R4-8 series), the Vertical Panel, and the Opposing Lane Divider. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height. Refer to acceptable materials list for approved substrate materials. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled way.

Signs shall be installed using one 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2" beyond nuts. The hardware used for the mounting of signs onto plastic drums shall be of adequate quality for this use.

**WARNING LIGHTS, WARNING REFLECTORS, AND DELINEATORS**

Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area. Type A flashing warning lights are not intended for delineation and shall not be used in a series.

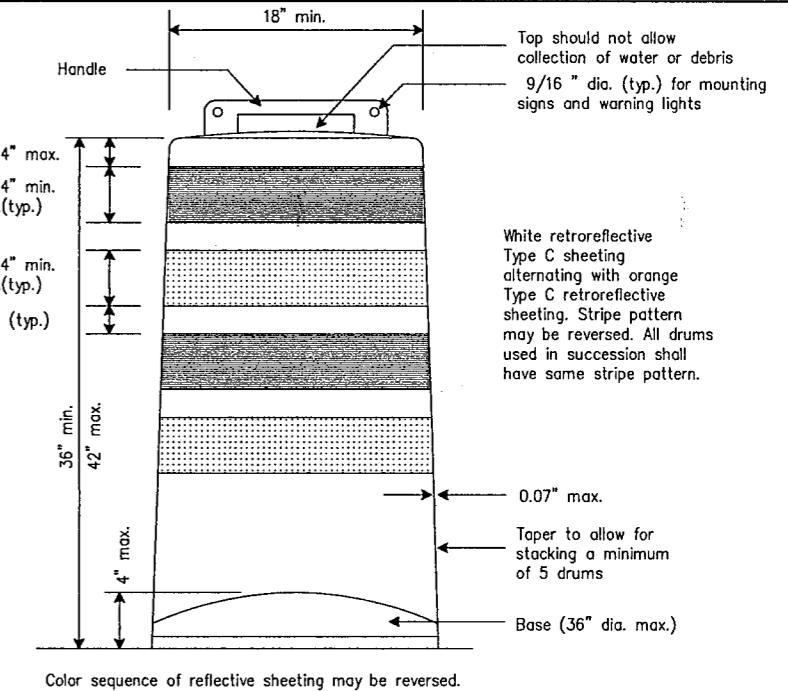
Type B warning lights shall not be attached to a drum. Type C steady-burn warning lights are intended to be used in a series to delineate the edge of the traveled way on detours, on lane changes, on lane closures, and on other similar conditions. Type A and Type C warning lights shall be installed at locations as detailed on other sheets in the plans.

A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, Steady Burn Warning Light at the discretion of the contractor unless otherwise noted in the plans. The warning reflector shall be manufactured from a sign substrate from the approved list for use on plastic drums. The warning reflector shall have a retroreflective surface area (one-side) no less than 30 square inches.

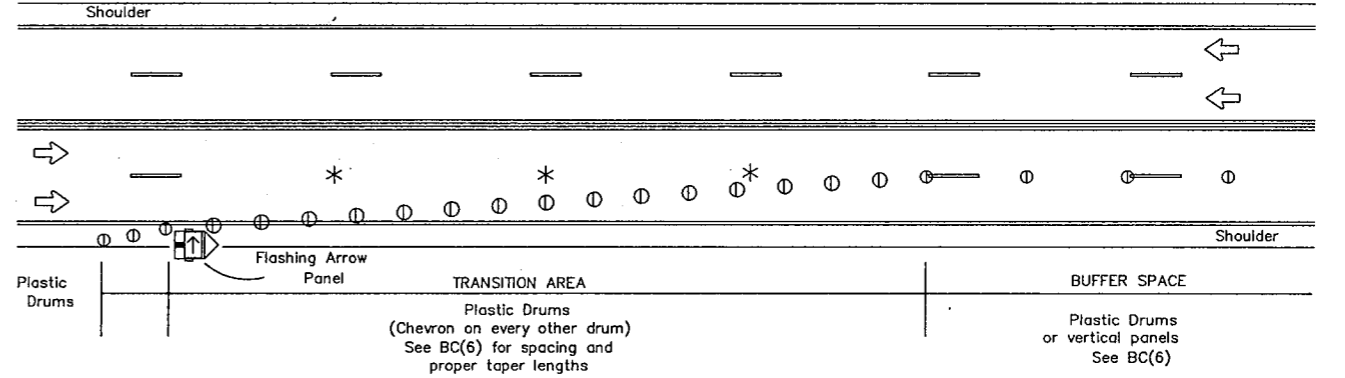
The side of the warning reflector facing approaching traffic shall be fully reflectORIZED using retroreflective sheeting meeting the color and reflectivity requirements for ASTM Type 4 retroreflective sheeting as described in ASTM Design Standard 4956-93B. When used near two-way traffic, both sides of the warning reflector shall be fully reflectORIZED. The warning reflector should be mounted on the side of the handle that faces approaching traffic so that the maximum amount of reflective sheeting is visible to traffic approaching in the adjacent lane. Delineators may be used as directed by the Engineer. Delineators may not be used to substitute for warning lights. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.

Type(A) Class(1), Type(A) Class(2), or Type(B) Reflector Units (D & OM Standard) may be attached to drums to delineate the intended vehicular path. The color of the reflector unit shall correspond to the marking it is supplementing or for which it is substituting. The reflective unit shall be attached to the handle of the drum using the mounting hole nearest the traveled way and shall be aligned perpendicular to approaching traffic.

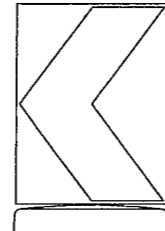
Contractor shall provide, on request from project engineer, a letter from the drum manufacturer certifying the plastic drum model number, the year and month of construction and that it meets the specifications on this standard sheet.



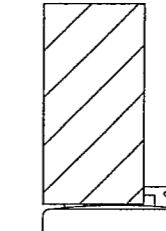
**TYPICAL LANE CLOSURE**



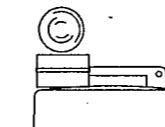
\* NOTE: For Long Term Stationary Duration - Lane lines shall be removed.



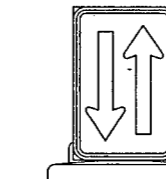
18" x 24" Sign  
 (Maximum Sign Dimension)  
 Chevron CW1-8,  
 Driveway sign D70a,  
 Keep Right R4 series  
 or other sign as approved  
 by Engineer



12" x 24" Vertical Panel  
 mount with diagonals  
 sloping down towards  
 travel way



Warning Light or approved substitute  
 mount towards travel way



12" x 18" Sign  
 Opposing Lane Divider

**STANDARD PLANS**  
**TEXAS DEPARTMENT OF TRANSPORTATION**  
*Traffic Operations Division*

**BARRICADE AND CONSTRUCTION STANDARDS**

**PLASTIC DRUMS BC(5)-98**

© TxDOT February 1998		DR-LR	DR-DTN	DR-DN	DR-DM	REV. NO.
STATE DESIGN	FEDERAL PLAN	FEDERAL AND PROJECT			SHEET	
DALLAS	6	CM 97 (449)			66	
COUNTY	CONTROL	SECTION	JOB	HIGHWAY		
DALLAS	8050	18	034	BELT LINE		

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