channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer. 4. Drums and all related Items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices"

(TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD). 5. Drums, bases, and related materials shall exhibit good workmanship and

shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.

6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replace-

## GENERAL DESIGN REQUIREMENTS

ment device must be an approved device.

Prequalified plastic drums shall meet the following requirements:

- 1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- 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 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
  3. Plastic drums shall be constructed of lightweight flexible, and

deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.

- 4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch 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.
- 5. The top of the 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 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compilant sign.
- 6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective aircumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in
- 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,
- 8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.

9. 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 vory more than 0.5 lb. from that of the prequalified sample. 10. Drum and base shall be marked with manufacturer's name and model number.

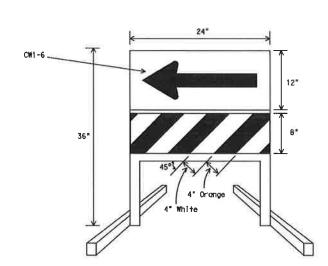
## RETROREFLECTIVE SHEETING

The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Flot Surface Reflective Sheeting." High Specific Intensity (Type C) retroreflective sheeting shall be supplied unless otherwise specified in the pians.

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, crocking, or lose of retroreflectivity other than that loss due to abrasion of the sheeting

## BALLAST

- 1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 Inches.
- 2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-In ballast can be constructed of an Integral crumb rubber base or a solid rubber base.
- 3. The ballast shall not be heavy objects, water, or any material that would become hozordous 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.
- 5. Ballast shall not be placed on top of drums.
- 6. Adhesives may be used to secure base of drums to pavement.



## DIRECTION INDICATOR BARRICADE

- i. The Direction Indicator Barricade may be used in tapers, transitions, and
- other areas where specific directional guidance to drivers is necessary.

  2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
- 3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type E Fluoprescent Prismatic Orange above a rall with Type C High Specific Intensity retroreflective sheeting in alternation 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass.
- 4. Double arrows on the Direction Indicator Barriagde will not be allowed. Approved manufacturers are shown on the CMZTCO List. Ballast shall be as approved by the manufacturers instructions.



18" x 24" Slan (Maximum Sign Dimension) Chevron CW1-8. Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



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

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS. CHEVRONS. AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- 1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- 2. Chevrons and other work zone signs with an orange background shall be manufactured with Type E (Fluorescent Prismatic) sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type C (High Specific Intensity). Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 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.
  5. Signs shall be installed using a 1/2 inch bolt (nominal)
- and nut, two washers, and one locking washer for each connection.
- 6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2
- 7. Chevrons may be placed on drums on the outside of curves, on merging topers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
- 8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

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Associates, Inc.

THESE CONSTRUCTION PLANS WERE PREPAR UNDER THE RESPONSIBLE SUPERVISION OF WICHAEL D. CLARK, LICENSED PROFESSIONA ENGINER NO. 63290

APPEARING ON THIS WAS AUTHORIZED BY CLARK, P.E. # 63290 THE SEAL DOCUMENT

RAFFIC CONTROL DEVICES
DETAILS BC(8)-07
ADDISON PARKING GARAGE
ADDISON, TEXAS  $\mathbb{R}$ THE

File SHEET

C-5

STANDARD PLANS Texas Department of Transportation Traffic Operations Division

BARRICADE AND CONSTRUCTION CHANNELIZING **DEVICES STANDARD** 

8 of 12

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