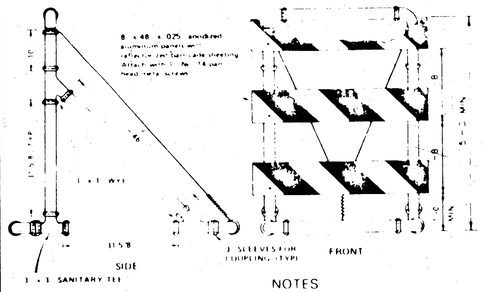
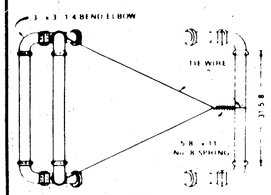




OPTIONAL
TYPE III PVC BARRICADES
TYPICAL DESIGN DETAILS

May be used at the option of the Contractor

NOTES

1. All pipe shall be polyvinyl Chloride (PVC) pressure rated pipe SDR 21 or SDR 26 ASTM D2241
2. Joint fittings may be PVC ASTM D2665 or Acrylonitrile Butadiene Styrene (ABS) ASTM D2661 (Drainage Waste and Vent)
3. All pipe and fittings shall be white
4. All joints shall be free to separate upon vehicle impact
5. Shaded conduit to be tied together with rope threaded into pipe interior. Use 3/16 No. 6 solid braided nylon or equivalent
6. A fixed frangible pavement connection is preferred. Sand Bags may be substituted

STRIPING FOR BARRICADE

Where a barricade extends entirely across a roadway, it is desirable that the stripes slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided for, the chevron striping may slope downward on both directions from the center of the barricade.

Striping should cover the full width of the rail. Striping of rails, panels and plates for the right side of the roadway is shown above. For the left side of the roadway, striping should slope downward to the right.

For all types of barricades with rails less than 3' 0" long, stripes 4" wide shall be used.

The 8" rail width is a nominal dimension for rails made of lumber.

Identification markings may be shown only on back side of barricade rails.

BARRICADE NOTES

Channelizing devices other than barricades should normally be used for channelization purposes.

Barricades should normally be placed perpendicular to the traffic flow. Other channelizing devices, such as drums, vertical panels or portable barriers, should be used where needed to separate traffic from the work area. In all cases, the barricades should be so located as to most advantageously warn and direct traffic.

Barricades may be designed and constructed from wood, PVC pipe or any other suitable material in a manner approved by the Engineer. The construction details shown hereon are typical and are suggested details for wood and PVC pipe support systems for barricades. The details of rail width and striping, number and spacing of rails, minimum length and height (above pavement) of rails must be adhered to when alternate designs are used.

When signs are placed on barricades, a maximum number of 2 signs should be visable to the motorist.

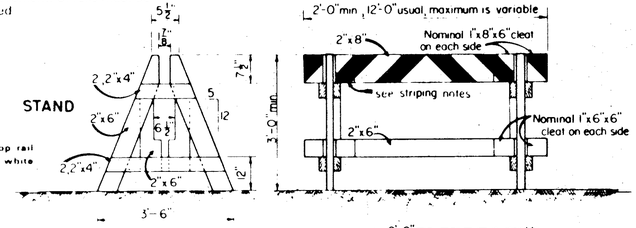
Barricades are to be constructed in a first class workmanship manner of clean sound material. All surfaces above ground, which are not striped, shall be white except the unpainted galvanized metal or aluminum components may be used. Components made of lumber shall be painted with a minimum of two coats of an approved brand of white paint to secure thorough coverage and a uniform white color.

The Contractor shall maintain each barricade in a clean and good condition.

Barricades shall be removed upon completion of the work and/or the elimination of the hazard on any section.

TYPE I BARRICADE

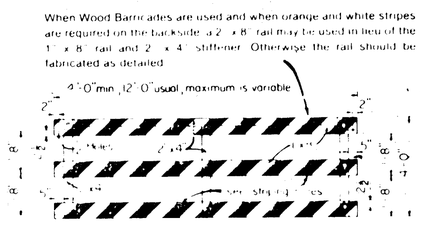
For Type I Barricades, both sides of the top rail shall have reflective orange and reflective white striping.



BARRICADE DETAILS

All lumber sizes are nominal dimensions.
Fabrication Details ± 1/2"

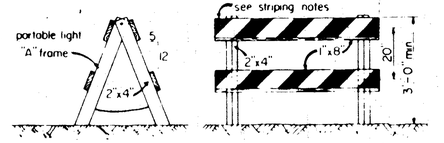
When Wood Barricades are used and when orange and white stripes are required on the backside a 2" x 8" rail may be used in lieu of the 1" x 8" rail and 2" x 4" stiffener. Otherwise the rail should be fabricated as detailed.

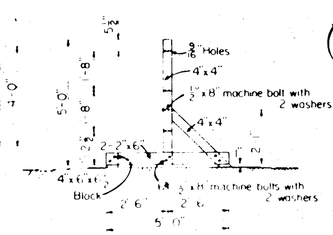


PANEL FOR
TYPE III BARRICADE

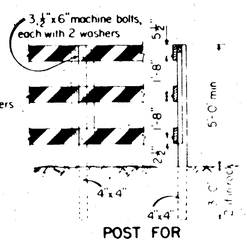
TYPE II BARRICADE

For Type II Barricades, all four (4) rail faces shall have reflective orange and reflective white striping.

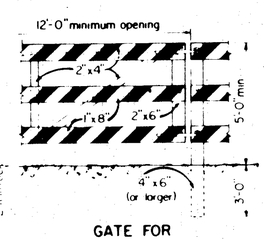




STAND FOR TYPE III BARRICADE



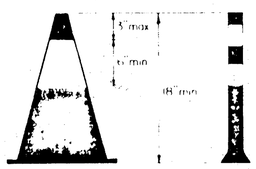
POST FOR
TYPE III BARRICADE



GATE FOR
TYPE III BARRICADE

TYPE III BARRICADE

For Type III Barricades, the three (3) rails shall be reflective orange and reflective white stripes on one side facing traffic in one direction only, and on both sides if serves traffic in two directions. See Barricade Layouts on Sheet BC(2).

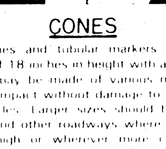


CONES

Traffic cones and tubular markers shall be a minimum of 18 inches in height with a broadened base and may be made of various materials to withstand impact without damage to themselves or to vehicles. Larger sizes should be used on freeways and other roadways where speeds are relatively high or wherever more conspicuous guidance is needed. Orange shall be the predominant color on cones and tubular markers. They should be kept clean and bright for maximum target value. For nighttime use they shall be reflectorized or equipped with lighting devices for maximum visibility. Reflectorized material shall have a smooth sealed outer surface which will display the same approximate color day and night.

Reflectorization of tubular markers shall be a minimum of two three inch bands, placed a maximum of 2" from the top with a maximum of 6" between the bands. Reflectorization of cones shall be provided by a minimum 6" band placed a maximum of 4" from the top.

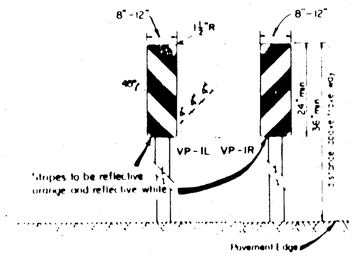
Cones or tubular markers are generally only suitable for temporary usage (up to 8 hours) with other channelization devices, such as vertical panels or barricades, preferred for longer term usage. Care should be taken to insure that they remain in their proper location and in an upright position.



DRUMS

Drums, set on end, and used for traffic warning or channelization shall be approximately 36" in height and minimum of 18" in diameter. The contractor, at his option, may use drums made from steel barrels or black polyethylene plastic drums liners weighing approximately eight pounds each. The markings on drums shall be horizontal circumferential reflectorized orange and reflectorized white stripes, 4 to 8 inches wide. The first reflectorized stripe should start within two (2) inches of the top of the drum. There shall be at least two orange and two white stripes on each drum. If there are non reflectorized spaces between the horizontal orange and white stripes, they shall be no more than 2 inches wide. Metal drums shall be painted black or orange before reflectorized stripes are added. All drums on a project will be the same color. When drums are placed in the roadway, appropriate warning signs should be used. During hours of darkness, a flashing warning light should be placed on drums used singly as a warning device. Steady burn electric lights or delineators should be placed on drums used in series for traffic channelization. Drums should not be weighted with sand, water or other material to the extent that it would make the drums dangerous to motorists.

CW1 8 CHEVRON signs, CW1 6A ARROW signs or VP-1 Vertical Panels mounted above drums may be used as supplements to drum delineation.

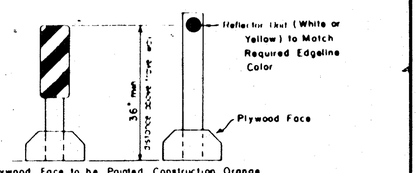


VERTICAL PANELS (VP)

Vertical Panels are normally used as channelizing devices to indicate tangent or nearly tangent roadway alignment where good target value of a device is needed in daytime as well as the nighttime. In addition, vertical panels should be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive day and night delineation may be required. Vertical panels should be mounted back to back if used at the edge of cuts adjacent to two-way, two lane roadways. Stripes should always slope downward toward the traveled way.

CHANNELIZING DEVICES

The Type or Types of Channelizing Devices used are to be as specified by the Engineer.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

Other similar supports may be used when approved or directed by the Engineer

GENERAL NOTES

REFLECTORIZATION

The reflectorized white and reflectorized orange stripes for barricades, drums and vertical panels shall be constructed of retroreflective sheeting in conformance with project specifications and shall be maintained to meet the appearance, color, and reflectivity requirements of those specifications.

WARNING LIGHTS

Warning lights are portable lens directed, enclosed lights. The color of the light emitted shall be yellow. The lights should be mounted at a minimum height of 36 inches to the bottom of the lens.

Type A Low Intensity Flashing Warning Lights are commonly mounted on barricades, other channelization devices or advance warning signs and are intended to warn the driver that he is approaching a hazardous area. Their use shall be as specified elsewhere in the plans, on Sheets BC(1) and BC(2), or as directed by the Engineer.

Type B High Intensity Flashing Warning Lights are normally used at or approaching extremely hazardous site conditions within the construction area. They may be mounted on barricades, signs or other supports. As these lights are effective in daylight as well as dark, they are designed to operate 24 hours per day. Their use should be specified elsewhere in the plans or as directed by the Engineer. Flashing warning lights shall not be used in a series.

Type C Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices used to delineate the edge of the traveled way on detour curves, lane changes, lane closures, shoulder drop-offs and other similar conditions or hazards. The series of Steady Burn Lights should have a Type B High Intensity Flashing Warning Light at the beginning and end of the series to mark the hazard. Where Steady Burn Lights are to be used for delineation, the contractor may at his option, utilize delineators.

Contractors shall furnish a copy of a certification from the manufacturer of the lights that the warning lights meet the requirements of the ITE Standard For Flashing and Steady Burn Warning Lights as contained in the latest edition of the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways."

DELINEATORS

Delineators are normally used to indicate roadway alignment where improved nighttime visibility is needed but other roadway features are sufficient for daytime alignment. They should generally be used on high fills and horizontal and vertical curves where only nighttime delineation is needed. Delineators, when required for temporary use to control traffic through construction areas, will be considered subsidiary to the item BARRICADES, SIGNS AND TRAFFIC HANDLING. Delineators shall meet the material requirements of the project specifications. When used, delineators on the right side of the roadway facing traffic shall be white. The color of delineators used along the left edge of divided streets and highways and one-way roadways shall be yellow.

SPACING OF DELINEATORS

Spacing of Delineators on curves should be according to the Table below. Spacing of delineators on tangent sections should normally be between 100 and 200 feet with the closer spacing for lower speeds and greater spacing for higher speeds.

RADIUS OF CURVE (FEET)	50	150	200	250	300	400	500	600	700	800	900	1000
APPROX. SPACING FOR CURVE (FEET)	20	30	35	40	50	55	65	70	75	80	85	90

STATE OF TEXAS
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

BARRICADE AND CONSTRUCTION STANDARDS

BARRICADE DETAILS
DELINEATORS & VERTICAL PANELS
DRUMS & CONES
REFLECTORIZATION
WARNING LIGHTS

BC(3)-82

ORIGINAL DRAWING DATE 5-80	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
REVISIONS		6			
2-82	COUNTY		CONTROL	SECTION	JOB	HIGHWAY