WORK ZONE SIGNS

GENERAL

Standard signs shall be used as required by the BC Standard sheets, the plans, or as directed by the Engineer to regulate, warn, and guide traffic. All sign usage and erection shall be in strict accordance with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD). The Contractor shall maintain each sign as directed by the Engineer.

The Contractor may use either the sign designs shown on the BC Standard Sheets, or those sign designs shown in the "Standard Highway Sign Designs for Texas" (SHSD). All work zone signs provided for in the TMUTCD but not detailed in the plans may be used when directed by the Engineer.

SIZE OF SIGNS

On secondary roads or city streets where speeds are low, smaller size construction warning signs may be used with the written approval of the Engineer and if the sign size is in accordance with the "Typical Construction Warning Sign Size and Spacing Chart" shown on page 6B-2.2 of the TMUTCD.

MATERIALS

Contruction signs shall be made from wood, metal, plastic or other approved materials. The designation of metal, fiberglass, plastic and wood as primary materials for signs shall not be interpreted to exclude other suitable rigid materials.

SIGN BLANK THICKNESS

Wood for signs shall be minimum 1/2 inch, medium density, outdoor grade plywood. Aluminum sign blanks shall have a minimum thickness of 0.080", for sign areas up to 16 square feet. Sign areas greater than 16 square feet should use a minimum thickness of 0.100".

SPLICES

All wood signs fabricated from 2 or more pieces shall have one or more plywood cleats, 1/2 inch thick by 6 inch wide, fastened to the back of the sign and extending fully across the sign.

REFLECTIVE SHEETING

Reflectorized signs shall be constructed of retroreflective sheeting meeting the color and reflectivity requirements of Material Specification, D-9-8300. Day only is defined as a device that is used only during daylight hours.

Type A, B or C sheeting may be used for all, day only, applications. Type A sheeting should be used for all, white background, regulatory signs. Type C sheeting shall be used for all other applications.

The above applications of sheeting grades to different type signs will apply unless otherwise specified in the plans.

TYPE A = Engineer Grade
TYPE B = Super Engineer Grade
TYPE C = High Specific Intensity

SIGN LETTERS

All sign lettering shall be clear, open rounded type capital letters as approved by and as published by the Federal Highway Administration. Signs and lettering shall be of first class workmanship equivalent to that of the Department standard signs.

SUPPORTS AND MOUNTING HEIGHT

Regardless of the type of support used, regulatory signs should not be erected at heights less than 5 feet in rural areas or 7 feet in urban areas above the pavement surface. Sign heights may be lowered if approved by the Engineer in writing.

Wood sign post supports shall be painted white.

Reflective sheeting is not required on back of barricades used as sign supports at locations other than project limits.

Signs may be erected on portable, temporary, or fixed supports, for use on construction projects to warn or guide traffic through and/or around the actual construction area.

PORTABLE - Signs erected on portable supports for use on construction projects normally mean signs which are used during the daytime to warn or guide traffic through and/or around the actual construction area, but at the end of the workday such signs are removed.

Portable supports shall be as shown on this sheet or as approved by the Engineer. The bottom of the sign shall be a minimum of one (1) foot above the pavement surface. Signs required for nighttime usage should not normally be mounted on portable supports, except when approved by the Engineer.

TEMPORARY - Where a sign may be required for a few days duration and then is no longer needed, where a sign is moved from location to location every few days, or where it is not practical or desirable to provide a fixed mounting, such signs may be erected on a temporary type of support. Temporary supports shall be as shown on this sheet or as approved by the Engineer. Signs erected on temporary supports should be mounted at a minimum height of three (3) feet measured to the pavement surface.

FIXED - Signs erected on fixed supports for use on construction projects normally mean signs that are to remain in place for both daytime and nighttime usage to regulate, warn and guide traffic in advance of and within the limits of the project including the crossroad approaches. Signs erected on fixed supports should be at a minimum height of five (5) feet in rural areas and seven (7) feet in urban areas and other rural locations where sight distance obstructions are present.

SIGN SUPPORT WEIGHTS

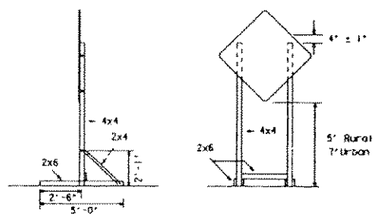
Where portable or temporary supports require the use of weights to keep a sign or barricade from turning over, the use of some type of sandbag is recommended. The use of pieces of concrete, rock, iron, steel or other solid objects will not be permitted.

REMOVING OR COVERING

When sign messages may be confusing or no longer apply, the signs shall be removed or completely covered. When signs are covered the material used shall be opaque, such as heavy mil black plastic. Burlap shall not be used to cover signs. Signs shall be removed upon completion of the work.

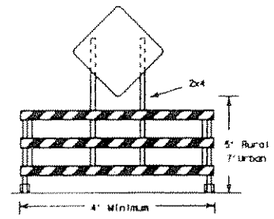
TYPICAL SIGN SUPPORTS

FIXED SUPPORTS



SKID MOUNT SIGN SUPPORT

For sign up to 21 square feet, barricade rails optional

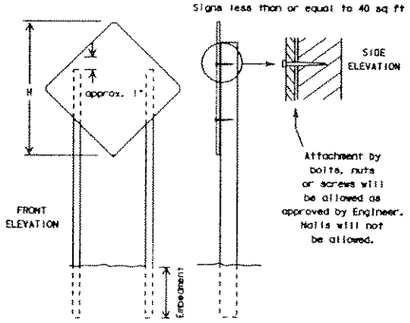


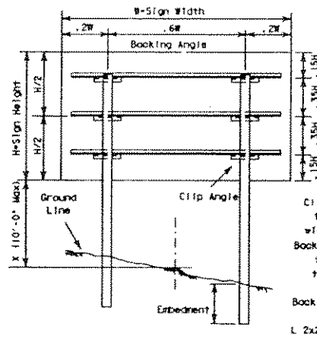
TYPE III BARRICADE

For one or two signs up to a total of 40 square feet.

See BC(3) for barricade construction details for stand or post type barricade sign support and typical fasteners that may be used to attach sign support.

ATTACHMENT DETAILS

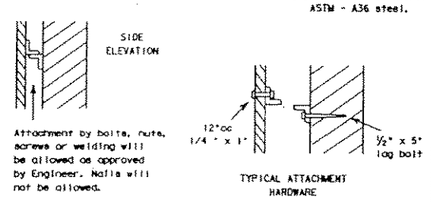




TIMBER POST BREAKAWAY ROADSIDE SIGNS

Sign area greater than 40 square feet or signs that require more than one piece to construct.

Clip Angle attached to support is 8" wider than support. Backing Angle attached to sign extends to 1 foot of the edge of sign. Backing and clip angle, typical is L 2x2x1/8 - 1.65 lbs/ft ASTM - A36 steel.



Attachment by bolts, nuts, screws or welding will be allowed as approved by Engineer. Nails will not be allowed.

TYPICAL ATTACHMENT HARDWARE

POST SELECTION AND EMBEDMENT

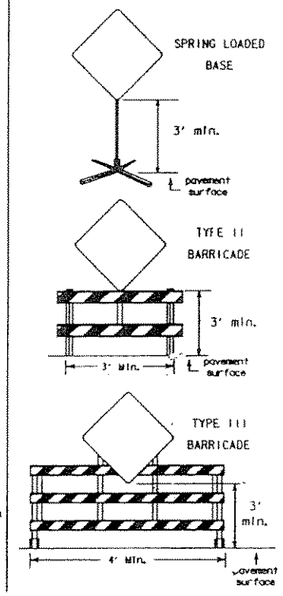
Sign Area (Square feet)	Post size (inches)
Up to 10	1 - 4x4
10 to 21	1 - 4x6 or 2 - 4x4
Greater than 21	3 - 4x4 or 2 - 4x6

Embedment depth should be 3 feet minimum unless specified elsewhere in the plans.

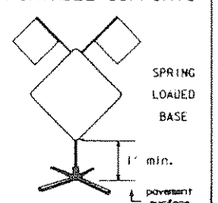
WOOD POST CROSS SECTION

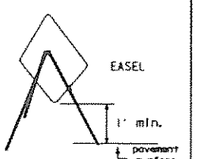
Direction of Traffic →

TEMPORARY SUPPORTS

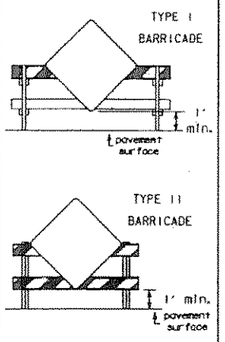


PORTABLE SUPPORTS



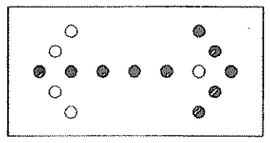


Sand bags may be used only if bag is resting on the ground. Other weights are not to be used. Other forms of attachment of weights to easel or sign shall not be used unless approved by the Engineer in writing.



TYPICAL FLASHING ARROW PANEL

For traffic to move right.



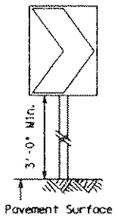
REQUIREMENTS

TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30" x 60"	13	3/4 mile
C	48" x 96"	15	1 mile

ATTENTION: All arrow panels shall be equipped with automatic dimming devices.

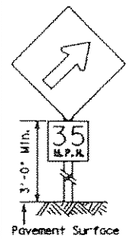
1. The Advance Warning Flashing Arrow Panel should be used for all lane closures (multilane roadway), or slow moving maintenance or construction activities on the traveled way. Arrow panels should not be used on two-lane roadways, detours, diversions or work on shoulders unless the CAUTION mode is used.
2. Necessary signs, barricades or other traffic control devices should be used in conjunction with the Advance Warning Arrow Panel.
3. The Arrow panel should have the capability of the following mode selections: LEFT ARROW, RIGHT ARROW, LEFT and RIGHT ARROW and CAUTION. The CAUTION mode consists of four corner lamps flashing simultaneously.
4. The Arrow panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 times per minute nor more than 40 flashes per minute. The Advance Warning Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
5. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and 25 percent for the sequential chevron.
6. The TxDOT standard is the flashing arrow, however the sequential chevron may be used. The sequential arrow should NOT be used.

USAGE OF CWI-6, ECWI-6a AND CWI-8 SIGNS



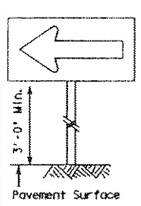
CWI-8

The CHEVRON sign (CWI-8) may be used to replace roadside delineation on curves or used in transitions or tapers.



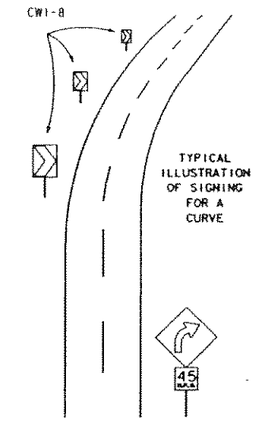
ECWI-6a

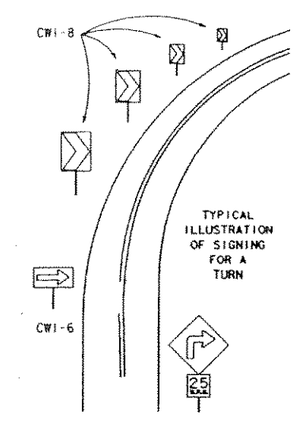
An UPWARD SLOPING ARROW sign (ECWI-6a) is intended to be used to indicate the beginning of a curve or transition. It should be preceded with an appropriate curve sign when needed, and should not be used throughout the curve or transition. Advisory speed plaque is optional.



CWI-6

A LARGE ARROW sign (CWI-6) is intended to be used to give notice of a sharp change in alignment (turn) in the direction of travel. It should be preceded with an appropriate advance construction warning turn sign.



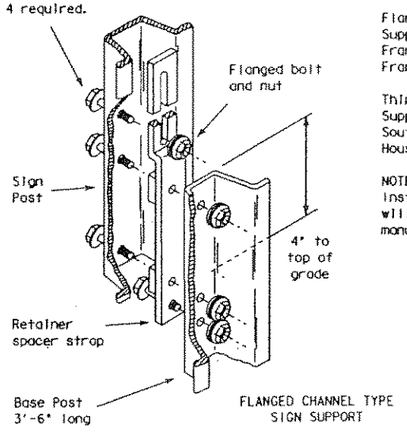


NOTES:

1. CWI-6, ECWI-6a & CWI-8 Signs may be mounted on temporary supports.
2. CHEVRON alignment signs, when used, are erected on the outside of a curve, sharp turn or on the far side of an intersection, in line with and at right angles to approaching traffic. Spacing of the signs should be such that three are visible throughout the change in horizontal alignment. See DELINEATOR SPACING on BC(3).
3. For two-way traffic, use same arrangement of signs on outside of curve for each direction of travel.
4. Appropriate advance warning CURVE or TURN sign with Advisory Speed plaque should be used when needed.

FIXED SIGN SUPPORTS

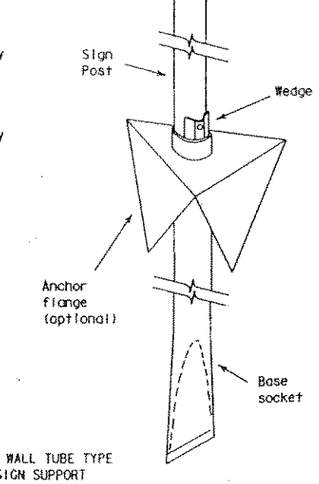
Hex head integral flange bolt, nut, and lockwasher, 4 required.



FLANGED CHANNEL TYPE SIGN SUPPORT

Flanged Channel Type Sign Support as manufactured by Franklin Steel Company, Franklin, Pa.
OR
Thin Wall Tube Type Sign Support as manufactured by Southwestern Pipe, Inc., Houston, Tx.

NOTES:
Installation requirements will be as recommended by manufactorer.



THIN WALL TUBE TYPE SIGN SUPPORT

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION

BARRICADE AND CONSTRUCTION STANDARDS

SIGN FABRICATION DETAILS
TYPICAL SIGN SUPPORTS
FLASHING ARROW PANELS

BC(4)-94

ORIGINAL DRAWING DATE: 4-88	REVISIONS	STATE DISTRICT	FEDERAL ROAD DIV.	FEDERAL AID PROJECT	SHEET
DN:- LR	6-88 2-94		10		105
DC:-	7-89	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
DN:- DN	4-92					
CK:-						

Traffic Operations Division