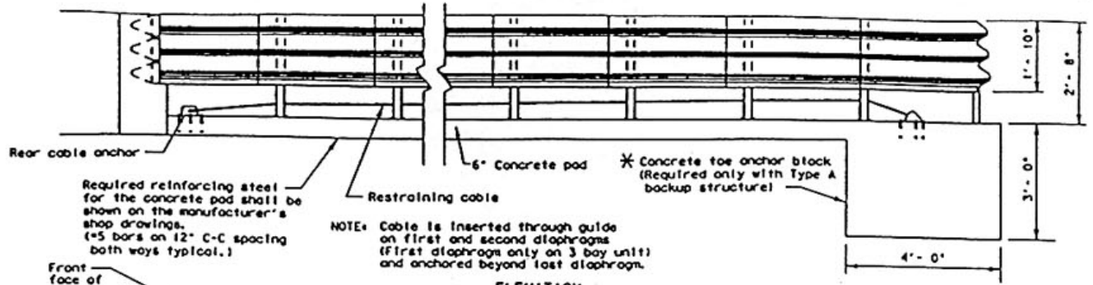
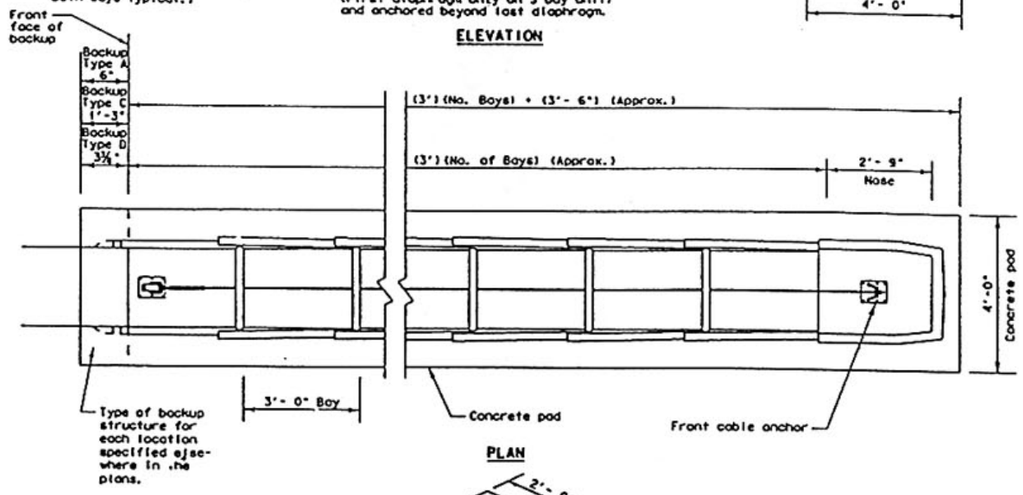
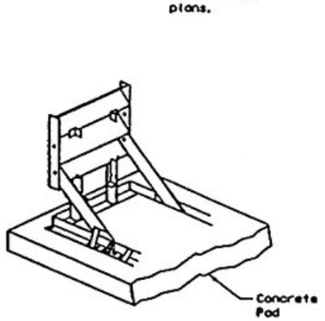


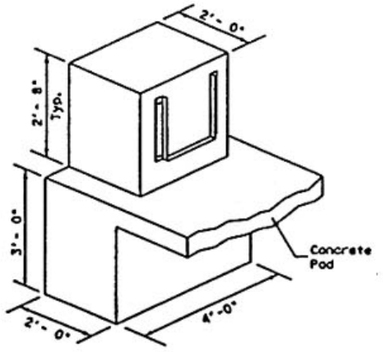
ELEVATION



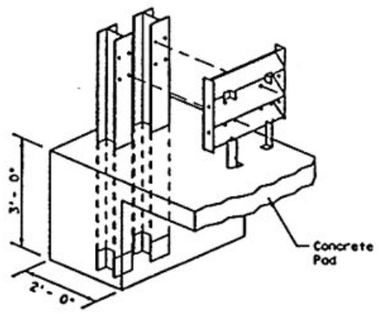
PLAN



TYPE A
TENSION STRUT



TYPE B
CONCRETE WALL BACKUP



TYPE C
WIDE FLANGE BACKUP

DESIGN SPEED (MPH)	NO. OF BAYS
40 OR LESS	3
45	4
50	5
55	6
60	7
65	9
70	10

The specified number of bays is based upon 6G's maximum deceleration force for impact at a specific design speed. Additional bays may be added if special considerations warrant and site conditions will accommodate additional length.

Permanent G.R.E.A.T. units are available in 2'-0", 2'-6", or 3'-0" widths to 12 bays. Unit width, number of bays, and backup type shall be specified elsewhere in the plans.

The Type CZ unit is available in 2'-0" or 2'-6" widths with 3 or 6 bays only.

BACKUP TYPES

* TYPE A TENSION STRUT: Consists of diagonal struts, connections, and accessories, as detailed by the Manufacturer, located at the rear of the G.R.E.A.T. unit. Typical application is for G.R.E.A.T. units attached to double-face guardrail. When used, a 4'-0"x 4'-0"x 3'-0" concrete toe anchor block shall be provided beneath the front portion of the concrete pad, except where the G.R.E.A.T. unit is to be placed on continuously reinforced concrete pavement or bridge deck (7" minimum, 4,000 p.s.i.) or non-reinforced concrete pavement (8" minimum, 4,000 p.s.i.)

TYPE B CAST-IN-PLACE CONCRETE WALL BACKUP: If cast-in-place structures such as bridge parapets, columns, or special walls are used as backup structures, then intermediate walls shall be provided between the structures and the G.R.E.A.T. unit. Intermediate walls shall be equal in height and width to the G.R.E.A.T. unit and reinforced with a steel cage. A cast-in-place transition section from standard C.T.B. or S.S.C.B. may be used in lieu of the Type D Backup (Type B Option). Special caution should be exercised in the design and detail of the transition to achieve an unobtrusive taper. Reinforcing steel should transition from the standard barrier section to the standard backup section. Details for the intermediate walls, cast-in-place transition sections from C.T.B. or S.S.C.B. to concrete wall backup, or other modifications will be shown elsewhere in the plans. Concrete wall backups may be used on continuously reinforced concrete pavement or bridge deck (7" minimum, 4,000 p.s.i.) or non-reinforced concrete pavement (8" minimum, 4,000 p.s.i.) In those cases, all vertical steel will be doweled (5 inch minimum) into existing decks or located and placed prior to pouring proposed decks as approved by the Engineer.

TYPE C WIDE FLANGE BACKUP: Consists of two 24 inch WF steel posts erected vertically at rear of G.R.E.A.T. unit. Details for the connections and accessories for the wide flange backup will be provided by the Manufacturer.

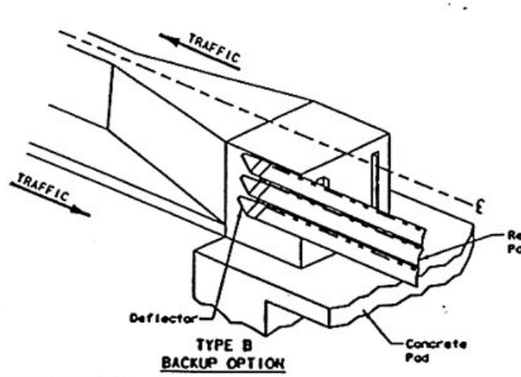
TYPE D MEDIAN BARRIER BACKUP: Typical application is for G.R.E.A.T. units 2'-0" width attached to standard permanent C.T.B. The designer must specify bi-directional applications to provide for placement of transition panels. These pieces are installed with a unit offset to eliminate snagging potential at barrier end of G.R.E.A.T. Special connection details will be provided by the Manufacturer. The Designer should specify either C.T.B. or S.S.C.B. median barrier application to allow the Manufacturer to supply the appropriate transition panel.

TYPE CZ CONSTRUCTION ZONE BACKUP: Consists of a steel base and tension strut backup as integral parts of the G.R.E.A.T. unit. Anchorage requirements are as follows:

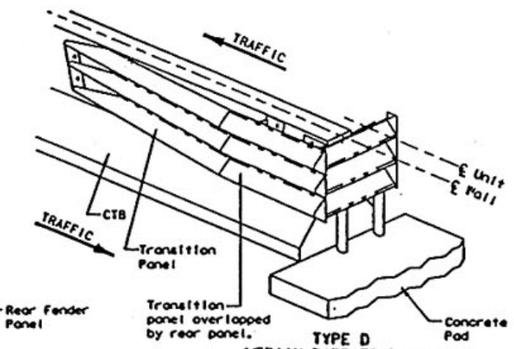
WITH FOUNDATION TYPE:	ANCHOR WITH:
Minimum six inch concrete	6.5 inch studs or 18 inch threaded rod and Mfr. epoxy
Minimum three inch asphalt over minimum three inch concrete	18 inch threaded rod and Mfr. epoxy
Minimum six inch asphalt over base	18 inch threaded rod and Mfr. epoxy
Minimum three inch asphalt over base	Anchor pins
Minimum eight inch asphalt on non-base type surface	18 inch threaded rod and Mfr. epoxy

Details for a precast portable concrete pad are available from the Manufacturer. The pad, with proper anchor bolts, may be used as a substitute foundation as approved by the Engineer.

If the unit is anchored to asphalt, it should be relocated to fresh, undisturbed asphalt and re-anchored after each impact to ensure adequate future performance. A zero clearance between the backup and barrier wall is recommended. In no case should this distance exceed 11 inches.



TYPE B
BACKUP OPTION



TYPE D
MEDIAN BARRIER BACKUP

Bi-directional with typical offset shown. Offset plus transition panel will be omitted for uni-directional application. Base width of barrier should be tapered to prevent potential snagging for uni-directional application as directed by the Engineer.

GENERAL NOTES

1. Details of components for the G.R.E.A.T. and backups and reinforcing details will be shown on shop drawings furnished to the Engineer.
2. Concrete shall be class "S" with a minimum compressive strength of 4,000 p.s.i.
3. If the cross-slope varies more than 2% over the length of the system, the concrete pad will require levelling. Max. permissible cross-slope is 8%.
4. The installation area should be free from all curbs, elevated objects, depressions, or any other features which may affect unit performance.
5. The G.R.E.A.T. system shall be parallel with the barrier or ℄ of merging barriers.
6. Unit width selected should be adequate to protect an errant vehicle travelling at 15 degrees to the roadway from the face or corner of the potential hazard.
7. For all permanent steel backups, (Types A, C, and D) the distance between the face of backup and the barrier wall should not exceed 14 inches in any case.

Texas Department of Transportation
Design Division (Roadway)

GUARD RAIL ENERGY ABSORBING TERMINAL

GREAT-94

FILE: MAY 1994	DN: TCH	CK: TCH	DW: BCD	CK:	SCC NO.: A62
	DIST. 6		FEDERAL AID PROJECT		SHEET

ACC: /usc/d481303
FILE: GREAT94.DGN
LEVELS DISPLAYED