


<b>TO:</b>  <b>Director,</b> <b>Preliminary Plan Review Bureau</b>	<h1>ENGINEERING INSTRUCTION</h1> <p>NEW YORK STATE DEPARTMENT OF TRANSPORTATION</p>
<b>Distribution:</b> <input checked="" type="checkbox"/> Main Office <input checked="" type="checkbox"/> Regions <input type="checkbox"/> Special	<b>SUBJECT:</b> ROADSIDE SAFETY-GUIDE RAIL INSTALLATIONS  <b>Subject Code:</b> 7.30  <b>Code:</b> <u>EI 75-94</u> <b>Date:</b> <u>12/17/75</u>
<b>APPROVED:</b>  <u>R. R. Kelly, Construction Subdivision</u>	<b>Supersedes:</b>

A joint State and Federal inspection team has found deficiencies in the safety features that are being built on going construction contracts.

The types of deficiencies noted were:

1. Placing curb in front of guide rail which tends to vault a vehicle over the guide rail when hit.
2. Not providing sufficient strength for a guide rail transition between the guide rail and a rigid structure.
3. Not providing sufficient room for deflection between the face of guide rail and any fixed object.
4. Lack of coordination during the development of guide rail plans, electrical plans, drainage plans, etc., which necessitated the construction personnel to make field changes that were not consistent with good safety design practices.
5. Installing guide rail at locations where not warranted.
6. A lack of awareness by construction personnel concerning good highway safety design practices.

To respond to the need to provide construction people with the latest guidelines on highway safety design practices, please instruct your project staffs in the following abstracts from the Design Manual:

TABLE 10-4

GUIDE RAIL TYPES BASED ON DEFLECTION DISTANCE

Unobstructed Distance Available From Back Face of Guide Rail	Type	Post Spacing
4.0 to 4.9	Box Beam	3'
5.0 to 5.9	Box Beam	6'
5.0 to 5.9	Corrugated Beam	4' -2"
6.0 to 6.9	Corrugated Beam	6' -3"
7.0 to 7.9	Cable	4'
8.0 to 9.4	Cable	8'
8.0 to 9.4	Corrugated Beam	12' -6"
9.5 to 10.9	Cable	12'
11.0 and over	Cable	16'

When continuous runs of guide rail are encumbered by occasional fixed objects, whose unobstructed distance requires a change in the deflection of the rail system, this change should be accomplished by either a revision in the post spacing of the rail system or by means of a back up railing.

Guide railing with a deflection in excess of 8 feet should not be used when the rate of slope beyond the guide rail is steeper than 1 on 2 because of the possibility of a vehicle becoming entrapped and not returning to the highway. All guide railing, except cable guide rail with post spacings greater than 8 feet, may be used.

It is important that where guide rail is warranted, care is taken to insure that vehicles which may enter behind the guide rail do not become subjected to additional hazards such as stream crossings, retaining walls or steep cut slopes adjacent to crossroads. For hazards having a large lateral dimension, the actual guide rail length in advance should be approximately 350' including the terminal section assuming the terrain behind the guide rail is conducive for an out of control vehicle to run toward the hazard. The actual terminal will have to be determined in the field.

For a fixed object of limited dimensions, an angle of 15° from the line of guide rail to the back of the object is an accepted way to determine the start of a run of guide rail (see Standard Sheet - Guide Rail Protection for Overhead Sign Structures). The terminal section of the rail is in addition upstream from this point. This procedure is to be followed for both ends of rail for two-way roadways.

The minimum length of box beam guide rail to develop beam action strength is 125 feet including the terminal lengths. Cable and W section guide rail do not have minimum length requirements. However, short runs of rail should be avoided.

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Do not leave short gaps between rail installations (200' or less)-- extend the railing through the gap to provide a continuous system. Keep in mind that end anchors can be a hazard.

Where guide rail terminates near a normal longitudinal drainage ditch in cut, extend the rail into the cut slope and anchor if required for the type of rail. A sloped terminal section would not be required for this condition.

Each Project Engineer is to review the guide rail requirements for his contract. Any guide rail installation or location that is considered to be deficient is to be brought to the attention of the Construction Supervisor. Corrective action as needed is to be taken under existing or new contract items.

RRK:LG