

The supplier may furnish CM sections with no connector section (Alternate connection) or with whatever length of connector section is convenient. The supplier and contractor will be responsible for determining what combination of culvert pipe length will be required for various lengths of connector sections if any, they wish to furnish. Regardless of the length connector furnished as an attachment to the end section, that portion of the culvert designated "C" will be measured and paid for as end section.

It is especially important that inspectors and other field personnel are aware of these instructions in order that an end section will not be rejected simply because the length of the connector is not the same as that shown on the Standard. This variance is entirely acceptable provided the contractor has adjusted the length of the pipe.

PIPE ENDWALLS WITH LOAD CARRYING GRATE

Pipe endwalls with load carrying grates (St'ds. EW-11 and EW-11A) were designed as a safety feature to prevent an errant vehicle from encountering the hazards of a collision with conventional endwalls. They are intended for use on low height embankments which would be traversable by an out of control vehicle and where guardrail would otherwise not be required. The Standard EW-11A is designed for use at crossover locations where there is no other alternative to placing a pipe culvert under the crossover.

The designer is to carefully study each situation before specifying Standard EW-11 or EW-11A on the plans. Guidelines for the use of these designs are given below:

1. Pipe endwalls with load carrying grates are to be used with traversable slopes (3:1 or flatter) on all classes of highways.
2. Pipe endwalls with load carrying grates are not to be installed where guardrail is required.
3. Pipe endwalls with load carrying grates will not be required on culverts with ends located outside of the required clear zone width. For guidelines, see Section A-2.
4. Crossover locations should be carefully studied to eliminate the need for a pipe culvert under the crossover. In the event there is no other alternative, the Standard EW-11A is to be specified. The approach slopes of the crossover are to be graded 10:1, regardless of the need for a pipe. Cross slopes (i.e., median crossovers, intersecting roads, or driveways) on freeways and other high speed facilities with design or operating speeds of 50 mph (80 km/h) and higher should be desirably sloped at 10:1 or flatter with a 6:1 maximum slope. On low volume or low speed roads, where accident history does not indicate a high number of runoff the road occurrences, slopes steeper than 6:1 may be considered as a cost effective approach.
5. When pipe endwalls with load carrying grates are specified, the designer must be sure that all other hazards in the area are treated in an equally safe manner.

Each project presents the designer with unique circumstances which may require special treatment. If there is any question in the designer's mind, he is to discuss the situation with the appropriate Engineer.