## Protection of Structures Adjacent to Railroad Tracks

**Necessity: all structures within 15 m**

To limit damage by the redirection and deflection of railroad equipment, all structures (except overhead bridges) adjacent to the railway with a clear distance of less than 15 metres from the centreline of the nearest existing or proposed track shall be protected by a reinforced concrete crash wall.

To limit damage by the redirection and deflection of railroad equipment, all overhead bridges adjacent to the railway shall be protected as outlined below under the heading Overhead Bridges.

**Overhead Bridges only**

Lateral clearances for all new bridge structures shall be in accordance with standard " Respecting Railway Clearances for Canada" as filed by the Railway Association of Canada and approved by The Minister of Transport on May 14, 1992. (Minimum 5.486 m from centreline of nearest track to face of an abutment or pier where no maintenance road is required or 7.925 m where a maintenance road is required.) Crash wall design shall be incorporated into all abutments, piers and walls of all new overhead bridge structures excepting that:

a) Crash walls may be omitted for piers and abutments of heavy construction (i.e. with a cross-sectional area equal to or greater than that required for the crash wall and the larger of its dimensions is parallel to the track).

b) Crash walls may be omitted where lateral clearance is equal to or greater than 8 metres from the centreline of track. In making this determination, mitigating factors such as horizontal and vertical alignment of the track, embankment height, and a risk assessment of the consequences of serious damage in the case of a collision shall be taken into consideration.

**Minimum crash wall height**

Crash walls with a clear distance of less than 4 metres from the centreline of the nearest existing or proposed railroad track shall have a minimum height of 4 metres above the top of rail. Crash walls with a clear distance equal to or greater than 4 metres from the centreline of the nearest existing or proposed railroad track shall have a minimum height of 2.5 metres above the top of rail.

**Design Loading and wall thickness**

The crash walls shall be designed for a minimum force of 2000 kN applied at a location 1.8 metres above the adjacent ground elevation (this load is considered as an extreme limit state for Load Factor Resistance or Limit States Design procedures).

Crash walls 8 m or less from the centreline of the nearest existing or proposed track shall be at least 750 mm thick, at least 4 metres long and extend a minimum of 300 mm beyond the outermost surface of the structure parallel to the track.

Crash walls greater than 8 m from the centreline of the nearest existing or proposed track shall be designed for the specified force and shall be at least 450 mm thick and extend a minimum of 300 mm beyond the outermost surface of the structure parallel to the track.

The crash wall shall be anchored to the footings and vertical surfaces of the structure, if applicable, with adequate reinforcing steel and shall extend to at least 1.5 metres below the lowest surrounding grade.

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