2. The grade on either traffic way, approaching the crossing, must be practicable for the traffic thereon.

The maximum height of loaded vehicles and any objects thereon on city streets or country highways has been accepted as 14 ft. This height is also sufficient to clear regular street railway traffic. While higher objects are moved along roads occasionally, it is properly not considered necessary to endanger the practicability of crossings under railways to accommodate them. With the railway on moderate embankment, undercrossings of roads, subways as they are called, become readily practicable. In many cases it is possible to sufficiently change the grade both of railway and road to meet requirements for a subway. Sometimes a deviation of the road, or change of location for a short distance, is practicable, and greatly simplifies the desired grade separation.

The vertical clearance, top of rail to bridge, required over railway tracks is in most cases much higher than over roads, and this constitutes, in the great majority of cases, the insurmountable obstacle to grade separation. The highest fixed projection on an ordinary railway train is the locomotive smoke stack, and passenger cars project higher than the great bulk of freight cars; but some, comparatively extremely few, special freight cars are higher than either passenger cars or locomotive stacks. The extreme clearance requirement is for height, top of rail to running board, of highest car, height of brakeman added thereto, and a further allowance for contingencies, among which may be height of load of light material on an open car exceeding maximum box car height.

There are, at the present time, on the railways of standard gauge in the United States, Canada, and Mexico,* about 2,377,282 freight cars of all kinds. They classify as to height, rail to running board, as follows:

Under 12 ft. including flat, gondola, and tank cars	63.1	per cent.
12 ft. to 13 ft.	23.4	" "
13 ft. to 13 ft. 6 in. inclusive	11.9	" "
13 ft. 6 in. to 14 ft "	0.65	" "
Over 14 ft.	0.95	" "

Of the total number of freight cars 98.4 per cent. are 13½ ft. high or under, and only 1.6 per cent. are higher than 13½ ft.; and less than one per cent. higher than 14 ft.

*Official Railway Equipment Register.