

## 1. Purpose

An accurate scale reduction of prototype dimensions, as is usual with the construction of railroad models, normally is not possible if rolling stock is to be used on the tracks of a model layout. In particular, the radius of model curves must be reduced significantly in order to construct an operating model railroad in the typical space available.

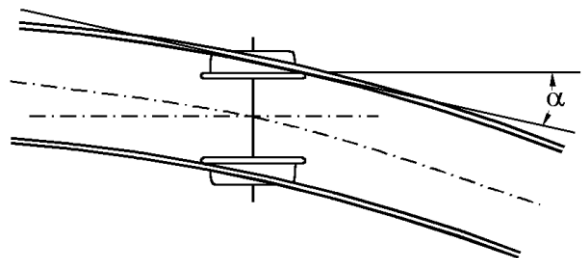
A limit to the over-reduction of curve radii is necessary, as much for visual realism as for the mechanical exigencies of smooth operation of the rolling stock. On the other hand, the important kinetic influence of speed, so important in prototype operations in curves, is insignificant in modelling, especially when incorporating easements in accordance with NEM 113.

The solutions described below only provide a solution for the mechanical aspects of reliably negotiating curves, and do not address the largely subjective judgements of presenting a realistic appearance.

## 2. Relationship between Rolling Stock and Curve Radius

### 2.1 Rolling Stock with Fixed-Axles

For rolling stock where the end axles cannot turn radially, the angle of approach  $\alpha$  of the wheel against the rail is decisive (see illustration). This angle may not exceed  $12^\circ$ . To minimize friction resistance and to diminish the likelihood of derailments, it is recommended not to exceed the minimum values recommended in the table.



### 2.2 Rolling stock with trucks

For rolling stock with trucks, it is generally the method of attachment and the lateral displacement of the couplers that limits the angle of rotation of the trucks. Maintaining the recommended minimum radius in accordance with the table ensures that rolling stock with trucks will also enjoy satisfactory performance.

## 3. Minimum Radius

Using the preceding information, the following radii result as a function of track use and vehicle group (from NEM 103), multiplied by G (= track gauge from NEM 310):

	Standard - Vehicle Group			Narrow Gauge
	A	B	C	
Minimum allowable radius	22 G	25 G	30 G	15 G
Recommended minimum radius				
- for branch lines in stations	25 G	30 G	35 G	20 G
- for the main track on branch lines	30 G	35 G	40 G	25 G
- for the main track on main lines	35 G	40 G	45 G	30 G