Moving-load analysis FAQ

This page is devoted to frequently asked questions (FAQ) related to moving-load analysis.

On this page:

General

General frequently asked questions are listed as follows:

How are transverse moving loads applied?

Answer: Transverse (horizontal) moving loads are available since CSIBridge V17.2.0. Braking, acceleration and centrifugal horizontal loads can be defined.

How is the speed of a moving truck changed?

Answer: For step-by-step moving-load analysis, once a load pattern of Bridge Live type is defined, select Modify Bridge Load to access the Multi-Step Bridge Live Load Pattern Generation form in which the speed of a moving truck may be specified.

When a vehicle is defined, how are two directions specified for its path of motion?

Answer: Depending upon analysis type, direction may be defined as follows:

- For influence-based moving-load analysis, in which Moving Load is specified for load-case type, the vehicle automatically moves in two directions.
- For step-by-step moving-load analysis, in which Multi-step Static is specified for load-case type, Forward or Backward vehicle direction may be specified on the Multi-Step Bridge Live Load Pattern Generation form.
- To obtain Multi-step Static response for a vehicle which may travel in either direction, results from Forward and Backward patterns may be enveloped.

Why are my bridge objects returning zero force during moving-load analysis?

Answer: The request for saving section forces should be made such that bridge objects return the proper response during moving-load analysis.

Influence-based

Influence-based frequently asked questions are listed as follows:

How is the load from each truck axle distributed over shell objects?

Answer: During influence-based moving-load analysis, an interpolated influence surface determines the effect of loading from each truck axle. For additional details, please see the Influence-based moving-load analysis implementation article.

How are unit loads distributed from lane-load points to model joints?

Answer: For response, please see the Influence-based moving-load analysis implementation and Lane-load point connection articles.

Why does deformed configuration from moving-load analysis not look correct?

See Deformed shape for moving load analysis.

Why are zero results generated for a bridge object which is updated as a solid model?

Answer: Analysis > Bridge Response > Moving Load Case Results Saved > Section Cuts must be selected for solid models, while it is not necessary for frame and shell models.

Step-by-step
Step-by-step frequently asked questions are listed as follows:

Why does step-by-step moving-load analysis not run when the vehicle is defined using a uniform load?

Answer: Vehicles defined using a uniform load may only be used during influence-based moving-load analysis. To use such a vehicle in step-by-step moving-load analysis, the uniform load would need to be approximated and modeled using a series of equivalent point loads.

Influence-line

Influence-line frequently asked questions are listed as follows:

Why is the influence line not displayed as a smooth line?

Answer: Influence lines will appear piecewise linear when discretization is more coarse. A similar effect occurs when output-station spacing is fairly large for moment-diagram plots. The effect of refining lane discretization (Figure 1) is apparent in the influence lines which follow (Figure 2):
Figure 2 - Influence line