



## 4.1 LIVE LOAD DISTRIBUTION BY REFINED METHODS OF ANALYSIS

### 4.1.1 GENERAL

This policy addresses the use of refined methods of analysis for distribution of live load in all types of girders.

### 4.1.2 POLICY

Refined methods of analysis shall be used for any of the following conditions:

- The transverse location of live load is relatively fixed, e.g. construction loads.
- The number of girders or cells, skew, or other parameters are outside the range of applicability given in AASHTO-CA BDS Article 4.6.2.

Refined methods may be based on the guidelines for grillage and finite element analysis found in NCHRP Final Report 12-26. A fictitious model of a single simply-supported span with similar parameters may be used to determine live load distribution factors. The design may then proceed using these factors in conjunction with a spine beam model following a design process emulative to the approximate methods described in AASHTO-CA BDS.

When a refined method of analysis is used, the live load distribution factors, including shear corrections, shall be included in the General Notes of the contract plans.

### 4.1.3 REFERENCES

1. AASHTO. (2017). *AASHTO LRFD Bridge Design Specifications*, 8th Edition, American Association of State Highway and Transportation Officials, Washington DC.
2. Caltrans. (2019). *California Amendments to AASHTO LRFD Bridge Design Specifications*, 8th Edition, California Department of Transportation, Sacramento, CA.
3. NCHRP. (1992). National Cooperative Highway Research Program, Research Results Digest 187, *Distribution of Wheel Loads on Highway Bridges*.
4. NCHRP. (1991). National Cooperative Highway Research Program, Final Report 12-26, *Distribution of Wheel Loads on Highway Bridges*.