

17.1 TEMPORARY BRIDGES

17.1.1 GENERAL

This policy addresses the design criteria for temporary bridges that carry vehicular or pedestrian traffic.

Temporary bridges shall satisfy *AASHTO-CA BDS* and as amended by this STP with the following exemptions:

- Temporary bridges are exempt from tsunami and sea level rise requirements.
- Long-term degradation for scour does not need to be considered when designing foundations.

17.1.2 DEFINITIONS

Temporary Bridge – A bridge anticipated to be in service for 5 years or less, including structures in the following conditions:

- partial demolition associated with widening or retrofitting of existing bridges
- staged construction associated with new permanent bridges

17.1.3 LOADS AND LOAD FACTORS

Design loads and load combinations shall be in conformance with Section 3 of *AASHTO-CA BDS* with the following exceptions:

- The Strength I, Strength III, and Extreme Event limit state combinations and load factors in *AASHTO-CA BDS* Table 3.4.1-1 shall be as shown in Table 17.1.3-1.
- The Fatigue Limit States I & II need not apply for temporary bridges.

Table 17.1.3-1 – Amended Load Combinations and Load Factors for Temporary Bridges

Load Combination Limit State	DC DD DW EH EV ES EL PS CR SH	LL IM CE BR PL LS	WA	WS	FR	TU	TG	SE	CT
STRENGTH I	γ_p	1.35	1.00	0	1.00	0.50/1.20	γ_{TG}	γ_{SE}	0
STRENGTH III	γ_p	0	1.00	0.70	1.00	0.50/1.20	γ_{TG}	γ_{SE}	0
EXTREME EVENT II	1.00	0.50	1.00	0	1.00	0	0	0	1.00

17.1.3.1 Strength II Live Load for Temporary Bridges

The design permit vehicle or any construction equipment exceeding the load limits in Standard Specification 5-1.37B shall be evaluated with the Strength II load combination.

The minimum design permit vehicle shall consist of a class of permit trucks that matches the existing permit rating or a PXXXXX permit rating, whichever is greater.

Existing in-service bridges undergoing modifications during construction that are considered as a temporary condition or used as a temporary bridge need only to match the existing permit rating.

Permit vehicles shall be evaluated using the following design criteria partially adopted from the Structure Maintenance and Investigations *Bridge Load Rating Manual*:

- Axle weights and configurations for the permit trucks shall be as shown in Figure 17.1.3.1-1 and replace the truck in Figure 3.6.1.8.1-1 of *AASHTO-CA BDS*.
- Permit rating color code positions and the corresponding permit truck configurations shall be as specified in Table 17.1.3.1-1.
- Axle reduction factors established by the permit rating shall be applied to the axle weights of the corresponding permit truck configurations. The reduction factors for each permit color code shall be as specified in Table 17.1.3.1-2.
- The design permit vehicle shall be applied in two adjacent design lanes.
- The multiple presence factor, dynamic load allowance, and centrifugal force for the permit vehicles shall be in accordance with *AASHTO-CA BDS*.

Exceptions to this policy shall be approved by Structure Maintenance & Investigations, the Division of Traffic Operations, and the District or Local Agencies.

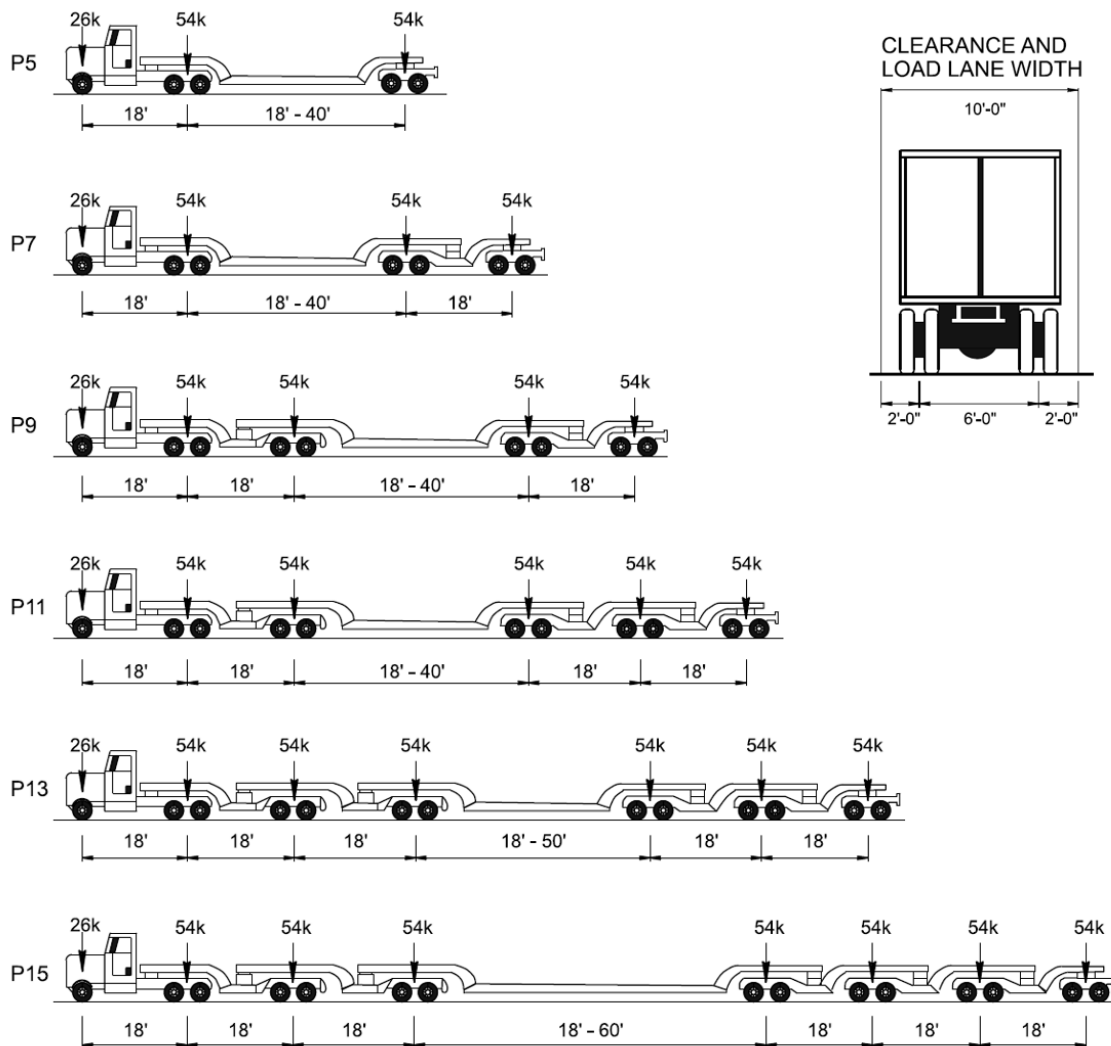


Figure 17.1.3.1-1 California Permit Trucks and Axle Configurations

Table 17.1.3.1-1 Permit Rating

Color Code Position	1 st	2 nd	3 rd	4 th	5 th	6 th
Permit Truck Configuration	P5	P7	P9	P11	P13	P15
# of Axles	5	7	9	11	13	15

Table 17.1.3.1-2 Permit Color Codes

Permit Color Coding	Axle Reduction Factor
P	1.00
G	0.87
O	0.67
X	0.00

Construction equipment shall be evaluated as a special design vehicle with the following design criteria:

- Refined methods shall be used to determine live load distribution for wheel line spacings less than six feet. The live load distribution may be based on the approximate methods in Article 4.6.2.2 of *AASHTO-CA BDS* for wheel line spacings of six feet or greater.
- The multiple presence factor shall be taken as $m = 1.0$.
- Construction equipment axle weights and configurations shall be based on manufacturer specifications and maximum anticipated axle weights.
- Axles that do not contribute to the extreme force effect under consideration shall be neglected.
- For centrifugal forces, the design speed shall be taken as 25 mph.
- The dynamic load allowance shall be 75% at the deck joints and 25% for other bridge members not entirely below ground level.
- The construction equipment shall be a single vehicle placed anywhere on the bridge.
- The deck shall be evaluated for the wheel loads using the methods described in *AASHTO-CA BDS*.

17.1.3.2 Seismic Design

The design seismic hazards shall be based on a design event with a 5% probability of exceedance in 5 years (or a 100-year recurrence interval). The seismic performance criteria, analysis, detailing requirements, and design method shall be as defined in the *SDC* and *SDSSB*, except precast girder superstructures need not be designed to be continuous.

17.1.4 REFERENCES

1. AASHTO. (2017). *AASHTO LRFD Bridge Design Specifications*, 8th Edition, American Association of State Highway and Transportation Officials, Washington, DC.

2. Caltrans. (2025). *Caltrans Seismic Design Criteria, Version 2.1*, California Department of Transportation, Sacramento, CA.
3. Caltrans. (2024). *Standard Specifications*, California Department of Transportation, Sacramento, CA.
4. Caltrans. (2022). *Structure Maintenance and Investigations Bridge Load Rating Manual*, 2nd Edition, California Department of Transportation, Sacramento, CA.
5. Caltrans. (2019). *California Amendments to AASHTO LRFD Bridge Design Specifications, 8th Edition*, California Department of Transportation, Sacramento, CA.
6. Caltrans. (2016). *Caltrans Seismic Design Specifications for Steel Bridges*, 2nd Edition, California Department of Transportation, Sacramento, CA.