



## Impaired Clearances at Falsework Traffic Openings

To ensure the movement of goods across the State Highway System (SHS) it is necessary to provide traffic openings through construction projects. During bridge construction, openings through the falsework allow the passage of traffic to meet this requirement. When these traffic openings through the falsework restrict the height of vehicles using the SHS, it is necessary to notify the Division of Traffic Operations, Office of Truck Services. The *Highway Design Manual* mandates that traffic openings should have a vertical clearance of at least 15 feet and clearances less than 15 feet require a design exemption. The timely notification of temporary impaired clearances due to falsework is essential to the safe routing of oversized vehicles and ensuring the safety of the traveling public, the contractor's personnel and Caltrans staff.

The Structure Representative shall submit written notice to the Resident Engineer when falsework will temporarily impair clearance on the State highway or roadway. This notification is accomplished by completing form TR-0029 or TR-0019, *Notice of Change in Clearance or Bridge Weight Rating*. Time requirements for notification of impaired clearance are found in the Standard Specifications, Section 7-1.04<sup>1</sup>, *Public Safety*, and are usually no less than 20 and not more than 90 days prior to the impairment<sup>2</sup>. The *Construction Manual* still requires that the notification to the Transportation Permits Branch be within 15 days, the 5-day difference is for the Structure Representative to complete the calculations and give them to the Resident Engineer.

The detailed procedures for notification of temporary impaired clearances are contained in the:

- *Bridge Construction Records and Procedures Manual*, Bridge Construction Memo 2-20.0, *Notice of Change in Structure Clearance or Permit Ratings*.
- *Construction Manual*, Section 3-703A, *Temporary Clearance and Bridge Permit Rating Changes*.

The notification to the Resident Engineer should give anticipated dimensions of the impaired opening. The anticipated clearance should be calculated from the contractor's falsework submittal and verified using actual field dimensions. Structure Representatives, when performing the clearance calculations, should include an allowance for: falsework stringer deflection, adjustment of falsework grades, changes in pavement elevations, settlement, etc. The attached form SC-12.6.1, *Report of Falsework Clearance*, provides a methodology for determining the clearance under falsework at traffic openings. It should be filed in Category 12.6, *Falsework Plan*, of the project files.

<sup>1</sup> 2006 Standard Specifications, Section 7-1.09, *Public Safety*.

<sup>2</sup> Review the Contract Special Provisions for amendments or changes to these requirements.

The Structure Representative, immediately after the clearance is impaired, shall verify the dimensions of the impaired opening and notify the Resident Engineer of any necessary revisions to the clearance ensuring that allowances for settlement, stringer deflection, etc. continue to be taken into account. If the clearance is less, the Structure Representative should consider halting operations and removing the stringers already set, until clearance issues are resolved. The instructions within this section apply to any falsework being set over a traveled way, even if the resulting clearance satisfies legal height or load limitations. When the temporary impaired clearance is removed, the Structure Representative shall give the Resident Engineer written notice of the restored or revised clearance.

When falsework will not be removed by the tentative end date, an update within 15 days of the tentative end date previously submitted, needs to be made to the Transportation Permits Branch.

### **Structure Representative Responsibilities**

- Determines the theoretical clearance of the falsework traffic opening.
- Verifies that the opening clearance is greater than or equal to the dimensions for traffic openings given in the Contract Special Provisions.
- Completes the form TR-0019 or TR-0029, *Notice of Change in Clearance or Bridge Weight Rating*.
- Reports the impaired clearance to the Resident Engineer or Transportation Permits Branch or both, depending on District protocols, 15 days prior to erecting falsework.
- Verifies Transportation Permits Branch received the *Notice of Change in Clearance or Bridge Weight Rating*, (return fax).
- Measures the clearance when the impairment is placed.
- Verifies that the measured clearance is greater or equal to the clearance previously reported.
- Takes appropriate action if the measured clearance is less than that previously reported.
- Submits a revised clearance if it is different or if the ultimate clearance will be less than previously reported.
- Submits a revised clearance prior to falsework being lowered if the clearance will be less than that previously reported.
- Attach a copy of the Contract Special Provision page showing the traffic opening requirements for the structure under consideration to the file copy.
- If applicable attach copies of Contract Change Orders that modify the dimensions of the traffic opening listed on the *Notice of Change in Clearance or Bridge Weight Rating* to the file copy.
- Have the Bridge Construction Engineer review and initial the *Notice of Change in Clearance or Bridge Weight Rating*.

### **Bridge Construction Engineer Responsibilities**

- Ensures that the determination of the theoretical clearance is correct.
- Ensures the Contract Special Provision requirements have been met.

- Reviews the *Notice of Change in Clearance or Bridge Weight Rating* and if it is correct, *initials* the *Notice of Change in Clearance or Bridge Weight Rating*.

### **Structure Construction Oversight Engineer Responsibilities**

- With Local Agency Structure Representative:
  - Ensures that the determination of the theoretical clearance is correct.
  - Ensures the Contract Special Provision requirements have been met.
  - Reviews the *Notice of Change in Clearance or Bridge Weight Rating*, and if it is correct, *initials* the *Notice of Change in Clearance or Bridge Weight Rating*.

Job Stamp:
------------

Date:
-------

Bridge name:
--------------

Br. No. :
-----------

Co/Rte/PM:
------------

Direction of travel:
----------------------

Determination of falsework clearance:

- a) Calculated or Measured Minimum vertical clearance: \_\_\_\_\_  
Allowances:
- b) Pavement elevation changes (- or 0) \_\_\_\_\_
- c) Adjustment of Falsework grades (- or 0) \_\_\_\_\_
- d) Falsework settlement (-) \_\_\_\_\_
- e) Falsework stringer deflection (-) \_\_\_\_\_
- f) Release of sand jacks (wedging) (-) \_\_\_\_\_
- g) Calculated ultimate actual clearance<sup>1</sup> \_\_\_\_\_
- h) Clearance to report<sup>2</sup>

--

<sup>1</sup> This value must be greater than that given in the Special Provisions.

<sup>2</sup> Calculated ultimate actual clearance rounded down to the nearest 3"

The clear horizontal opening is 

<i>(insert dimension between k-rail)</i>
--

 feet wide.

Remarks:

## Instructions for Determination of Falsework Clearance

Use this form as an aid in determining the clearance at falsework openings. Reference BCM 120-2.0.

- a) Prior to falsework erection this value is calculated by subtracting the falsework depth (soffit plywood, joist, nailers, and stringer) below the bridge soffit from the difference in elevation between the bridge soffit and roadway.

After falsework erection this value is the measured distance between the roadway and the lowest edge of the falsework (generally the bottom flange of the stringer).

- b) If there are plans to pave the roadway under the structure prior to removal of the falsework, the net thickness of the overlay will need to be subtracted from the clearance. The net thickness is used to account for any grinding that may take place prior to the placement of the final surfacing.
- c) If the falsework is adjusted upwards a value of zero can be used to provide a slight buffer to the clearance.
- d) The probable or anticipated settlement of the falsework.
- e) Although the stringer deflection is generally compensated by the use of camber strips, the stringer itself will still deflect.
- f) If traffic will be allowed under the structure between the time sand jacks (wedging) is blown (removed) and stringers are removed, this allowance needs to be included.
- g) This is equal to the value of: value *a*) minus the summation of values *b*) through *f*).
- h) This is the value of *g*) rounded down to the nearest 3", i.e. 16'-5.75" would become 16'-3" and 16'- 1" would become 16' - 0".

This is the value that should be used in form TR-0029, *Notice of Change in Clearance or Bridge Weight Rating*, when reporting to the Resident Engineer.