

COMPOSITE STEEL CONCRETE CONSTRUCTION

Composite construction of concrete slabs on formed steel decks that are connected to steel beams or girders shall be designed in compliance with applicable portions of Chapter I of the *AISC 360-16, Specifications for Structural Steel Buildings* published by AISC, and of Section 2206 of the Los Angeles Building Code.

The following requirements also apply:

1. The studs and welding equipment of each manufacturer shall be approved by the Department. Interchanging of the studs and equipment of different manufacturers is not permitted except where specifically approved for each job.
2. The installation, inspection, and qualification of a weld base shall comply with the applicable sections of the AWS Code for Welding in Building Construction, except as otherwise specified herein.
3. The welding of studs shall be done in the shop of a fabricator approved by the Department or it shall be done under continuous inspection by a Registered Deputy Building Inspector certified for structural steel.
4. The first two studs, at the start of each production period (the interval between start-up and any shutdown of equipment) and at the start of each new welding procedure, shall be tested by striking the stud with a hammer and bending it to an angle of 45 degrees. If failure occurs in the welding, the procedure shall be corrected and the next two studs shall be welded and tested prior to the welding of any additional studs. The bent studs need not be removed but an additional vertical stud shall be substituted for each 45-degree bent stud. The City Inspector shall be immediately informed of any changes in the welding procedure at the time during construction and he/she shall have the authority to select additional studs to be tested.
5. In addition to the tests required in Paragraph 4 above, at least one stud on each member, after being allowed to cool, shall be tested by striking the stud with a hammer and bending it to an angle of 15 degrees. If failure occurs, the procedure in Paragraph 4 above shall be followed.
6. Studs maybe welded directly through formed metal deck either uncoated, painted, or galvanized provided that:
 - a. The studs and equipment are approved by the Department for the welding through decks;

- b. Test data from the testing agency approved by the Department or from the mill shall be submitted for each job specifying the thickness of galvanizing, if any, on the deck. The galvanizing shall not exceed that approved for the specific type of stud installation; and
 - c. In place of the tests required in Paragraph 5, each welded stud shall be tested by striking the stud once with a six-pound hammer. The force of the hammer shall be sufficient to indicate whether or not quality welding has been obtained.
7. Bent studs that do not show any sign of failure shall be accepted as shear connectors provided that the connector will have at least one inch of lateral concrete cover except for that portion of the connector located within the ribs of the steel deck, and provided further the bend is no greater than 15 degrees. In addition, bent shear connectors used with metal decking shall extend a minimum of one and one-half inches when measured at the centerline of the stud and above the top of the ribs in order for it to be acceptable as a connector in the bent position.
 8. A welded wire mesh of 6 x 6 - W1.4 x W1.4 or equivalent shall be provided as a minimum transverse reinforcement over composite beams. The reinforcement shall be placed within one inch of the top of the concrete slab. If any unusually large slab force is anticipated, attention should be given to the transverse reinforcement so that the longitudinal shear in the slab is not critical. (The temperature reinforcement requirement may govern.)