



USE OF COMPOSITE STEEL FLOOR DECK IN PARKING GARAGES

This document has been prepared by the Steel Deck Institute (SDI) as a position paper regarding the use of composite steel floor deck in parking structures. This information was formerly contained in the SDI Code of Standard Practice.

Composite floor deck has been used successfully in many parking structures around the country; however, the following precautions should be observed:

1. Slabs should be designed as continuous spans with negative bending reinforcing over the supports;
2. Additional reinforcing should be included to deter cracking caused by large temperature differences and to provide load distribution; and,
3. In areas where salt water; either brought into the structure by cars in winter or carried by the wind in coastal areas, may deteriorate the deck, protective measures must be taken. The top surface of the slab must be effectively sealed so that the salt water cannot migrate through the slab to the steel deck. A minimum G90 (Z275) galvanizing is recommended, and, the exposed bottom surface of the deck should be protected with a durable paint. The protective measures must be maintained for the life of the building. Consideration should be given to using the steel deck as a stay in place form only, with the concrete slab then being designed to carry all loads as a reinforced concrete slab using reinforcing bars.

Additional information regarding steel floor deck in parking structures, including recommendations for concrete mix design and protection, may be found in AISC (2003) and Flynn and Astaneh-Asl (2001).

Adopted by SDI - August 2010

References

1. AISC (2003) Design Guide Number 18, "Steel-Framed Open-Deck Parking Structures."
2. Flynn, Lanny J., and Astaneh-Asl, Abolhassan, (2001) "Notes on Design of Steel Parking Structures Including Seismic Effects." Steel Technical Information and Product Services Reports (Steel TIPS).