



A Professional Corporation

Technical Bulletin

FROM SPEIGHT, MARSHALL & FRANCIS, P.C.

Structural Engineering - Special Inspections

May 2003

Bulletin No. XVIII

On a regular basis, we plan to distribute these informational leaflets about crucial - but often ambiguous - structural engineering topics. With the knowledge of our featured subjects, our goal is to help our clients improve their profitability while reducing their liability. We suggest distributing a copy of our technical bulletins throughout your office and keeping them on hand for quick reference.

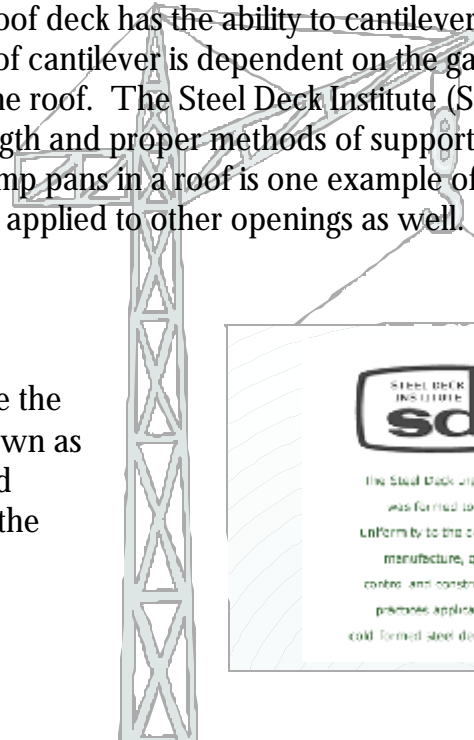
Support Techniques for Roof Deck Openings

Introduction:

When penetrations are made in metal roof deck, special attention must be given to supporting the deck edge around openings. Roof deck has the ability to cantilever past its bearing point; however, the allowable length of cantilever is dependent on the gage and depth of the deck and the expected loads on the roof. The Steel Deck Institute (SDI) offers recommendations for allowable cantilever length and proper methods of supporting deck edges around openings. The installation of sump pans in a roof is one example of such an opening, but the following information can be applied to other openings as well.

Definition:

A sump is a depression in the roof deck where the roof drain is located. The sump pan, also known as the sump receiver, is a device that receives and uniformly supports the roof drain, distributing the weight of the drain over a larger area of roof.



Supporting Roof Deck Around Penetrations for Sump Pans:

Sump pans must support the same loads as the deck they replace. Therefore, it is important that the pan is properly connected to the deck and the deck is supported around the opening.

Some sump pans brace the deck they replace through the use of clamps. The pan will be subjected to the same loads as the roof around it, so following the manufacturer's installation guidelines is key for properly supporting the roof deck.

SDI Recommendations:

The Steel Deck Institute has released a guide for the repair of deck that has been damaged or penetrated. With regard to a typical opening for a sump pan, the SDI manual states:

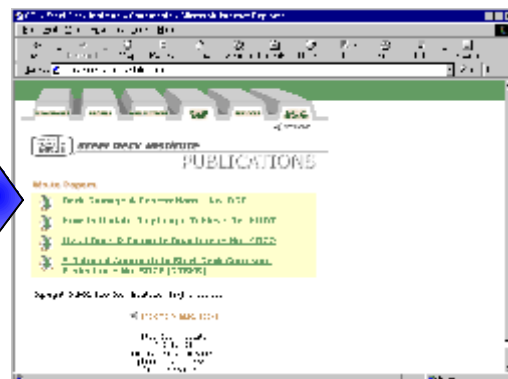
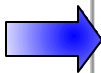
For holes or dents greater than a rib (8" to 13") it would be advisable to use a 0.057" minimum plate.

Depending on the size of the sump pan used, it may act as the plate that SDI suggests. For deck openings in different ranges, consult the SDI manual. The SDI provides recommendations for the maximum allowable span for cantilevered roof deck as well as reinforcing guidelines for longer spans. The SDI manual states:

Put 1 1/2" (38 mm) deep reinforcing channels or zees in each rib at each side of openings (flush with top of deck). Channels (zees) span between joists. Attach flanges of sump pan to channels or Z reinforcing.

Conclusion:

For additional information about repairing and supporting damaged or cut roof deck, see the "Deck Damage and Penetrations" white paper (No. DDP). It is available to download from the SDI at www.sdi.org.



SPEIGHT, MARSHALL & FRANCIS, P.C.

2125 McComas Way, Suite 103
Virginia Beach, Virginia 23456



(757) 427-1020

(757) 427-5919

e mail: a-team@smandf.com