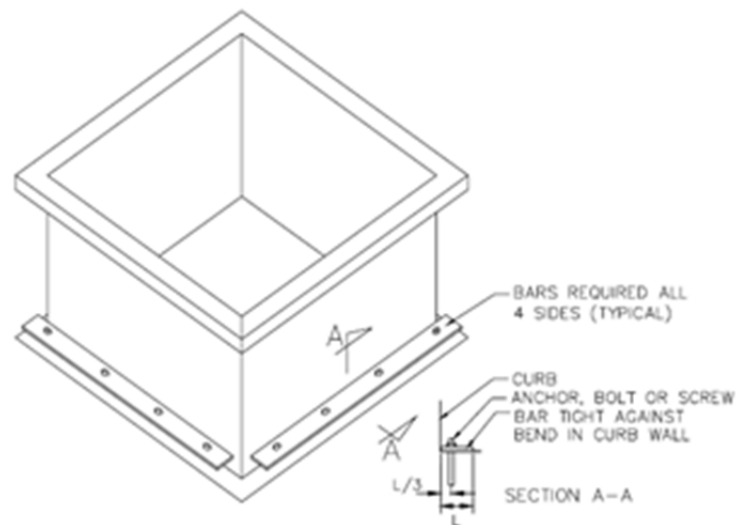


## ATTACHMENT OF SHEET METAL CURBS TO ROOF DECKS

The attachment of seismically rated sheet metal curbs to structures generates frequently overlooked design challenges. This is because most designers assume that the attachment will carry only the combination of a weight load and a horizontal shear load generated by seismic or wind forces.

Unfortunately, when exposed to high seismic or wind conditions, the weight and geometry on many pieces of equipment is such that uplifting loads can occur, particularly at the corners. This condition is exacerbated when working with equipment that is spring isolated from the curb itself. VISCMA has addressed these issues in previously published documents which are available from the [VISCMA.com/ Resources/Documents](http://VISCMA.com/Resources/Documents) page. In order to ensure that the sheet metal curbs are able to safely withstand the forces anticipated, a licensed Professional Engineer (PE) in responsible charge shall certify that the proposed curb complies with the load requirements.

When exposed to uplifting forces, the sheet metal curb wall will be loaded in tension and unless preventative steps are taken, the load path to the structural attachment hardware at its base, which of necessity is offset from the wall, could cause the lip to deform and potentially fail. When the PE in responsible charge has determined that the sheet metal curb lip should be reinforced, some form of backer bar that can resist these bending forces can be fitted snugly up against the sheet metal curb wall before attaching the curb to the roof deck. While the bars need not run the full length of the curbs, all attachment hardware for the curb should be through bars that are long enough to ensure that any uplifting forces are carried to the attachment hardware without damaging the curb lip. The length and thickness of reinforcement bars is to be determined by the PE in responsible charge.



Consideration should also be given to the effect on the anchor, bolt or screw loads of prying action applied to the attachment anchor points. If the geometry recommended in the sketch to the right is used, the force in the attachment bolt will be 1.5 times the uplifting force assumed for the curb wall. Even with this reinforcement, the PE in responsible charge would need to certify that the curb structure can handle the induced tension and shear loads.

For curbs with the lower flange oriented inward, the same design would apply with the exception that the geometry would be mirrored toward the inside.

***© 2014 Vibration Isolation and Seismic Control Manufacturers Association. All rights reserved.***

VISCMA is a non-profit association representing the manufacturers of seismic restraint, vibration isolation and noise control equipment. The primary objectives of the organization are to educate the construction industry on the proper use and application of vibration isolation and seismic restraint and to develop standards to continually improve the industry.

In partnership with FEMA and ASCE, VISCMA also publishes three Seismic Installation and Inspection Manuals designed to assist field personnel.

The association office is located at 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087-1866 and can be reached at 610-971-4850 or [info@viscma.com](mailto:info@viscma.com).

NOTICE OF DISCLAIMER: This article and its contents are intended to serve only as an informational resource for the reader or user. VISCMA, its officers, directors, employees, authorized representatives, agents and assigns make no representations or warranties of any kind or nature, either express or implied, with regard to the contents of the article and to the fullest extent permitted by applicable state law, disclaim any and all liability for damages or losses of any kind or nature to person(s) or property whether arising under contract, tort, negligence, strict liability or any other theory of law, including direct, indirect, incidental, consequential or punitive damages, attorneys' fees or costs, arising out of or relating to the use of, inability to use, or reliance upon the contents of the article. This disclaimer shall not in any manner impact or affect the terms and conditions of any manufacturers' warranties, if any.