



December 6, 2014

Malcolm H. Ray, P.E., Ph.D.  
Roadsafe LLC  
P.O. Box 312  
12 Main Street  
Canton, ME 04221

Mr. Gregory Nadeau  
Acting Administrator  
Federal Highway Administration  
U.S. Department of Transportation  
1200 New Jersey Avenue, S.E.  
Washington, D.C. 20590

Via Email

RE: October 22, 2014 Letter of Dr. D. L. Sicking

Dear Mr. Nadeau:

I have become aware of a letter sent to you on October 22, 2014 from Dr. Dean Sicking regarding testing of the ET-PLUS guardrail terminal. Dr. Sicking's letter is self-serving, biased and contains numerous errors and omissions such that I feel compelled to respond.

As I mentioned in my previous letter, I have worked exclusively in the area of roadside safety for over 30 years; have performed many contract research projects for the Federal Highway Administration, National Highway Traffic Safety Administration, the National Cooperative Highway Research Program, many of the States and many manufacturers of roadside products, Trinity Highway Products included. I do not receive royalties for any guardrail or guardrail terminal products, and while I have developed a number of bridge railings and guardrails, all but one are in the public domain. I mention this only to be clear that while I have worked for nearly every sponsoring organization in the area of roadside safety, I have no financial interest in the success or failure of any of them.

Clearly one must view Dr. Sicking's opinions and statements with some skepticism since he is a competitor of Trinity Highway Products (THP) and a rival and competitor of Texas A&M Transportation Institute (TTI). In the roadside safety community, Dr. Sicking's bias is well known. Obviously, any harm he can do to the reputation of THP and TTI products will enhance the market share of his own products. As Dr. Sicking mentions in his letter, he has participated in the development of seven guardrail terminals. But, what he does not disclose is that THP guardrail terminals represent, in my estimation, 70 percent of the terminal market place and all his devices together represent something less than 20 percent. Clearly, Dr. Sicking has much to gain financially if he can remove the top-selling terminal from the market place. One must weigh Dr. Sicking's own financial motivations when examining any of his claims or suggestions.

In my previous letter to the FHWA, I addressed the need for in-service performance evaluation (ISPE) of all guardrail terminals, not just the ET-Plus. I am personally aware of the following seven ISPEs of the energy absorbing guardrail terminals that use the typical NCHRP Report 490 procedure.

1. D. Focke, "ET-2000 Guardrail End Treatment in Ohio," Ohio Department of Transportation, Columbus, OH, July 24, 1996.
2. E. W. Brooks, "ET-2000 Extruder Guardrail End-Terminal," Oregon Department of Transportation, Salem, OR, December 1997.
3. K. R. Agent, "Evaluation of the ET2000 Guardrail End Treatment," Kentucky Transportation Center, College of Engineering, University of Kentucky, Lexington, KY, 2004.
4. P.O. Igharo, E. Munger and R.W. Glad, "In-Service Performance of Guardrail Terminals in Washington State," Research Report WA-RD-580.1, Washington State Department of Transportation, Olympia, WS, June 2004.
5. R. W. Esligar, "An Evaluation of Energy-Absorbing Guide Rail Terminals in New Brunswick," MS Thesis, University of New Brunswick, May 2011.
6. D. Bischoff and I. Battaglia, "ET-2000 – End Treatment for Guardrail," Research Report FEP-03-07, Wisconsin Department of Transportation, Madison, WI, December 2007.
7. D. A. Noyce, J. A. Waheed, A. R. Bill and K. Santiago, "The Operational and Safety Impacts of Run-off-Road Crashes in Wisconsin: Object Hits and Ramp Terminals – Turn Down Guardrail End Hits in Run-Off-Road Crashes in Wisconsin," Wisconsin Department of Transportation, Madison, WI, March 2008.

All seven of these studies address the ET-family of terminals; most only address the ET-family of terminals since they comprise the largest market share of guardrail terminals. The ET-family of terminals has been studied more than any other type of guardrail terminal. None of the studies listed above note any serious performance problems with the ET-2000 or the ET-PLUS, and they all found the ET-2000 and ET-PLUS acceptable for use their respective States and Providences.

Dr. Sicking is the inventor and collects royalties for the SKT guardrail terminal – the most common, direct competitor of the ET-PLUS. Of all the guardrail terminal ISPEs listed above, only the 2008 Wisconsin study found enough SKT guardrail terminals to include in the study. Even the recent pseudo-ISPE that Dr. Sicking and Schrum released to the media claims there were not enough SKTs available to study. Interestingly, the fatal and severe injury rate for the ET-PLUS that I reported to you in my last letter based on my analysis of Ohio DOT data was 2.8 percent. The 2008 Wisconsin study found that the SKT fatal and severe injury rate was 2.1 percent – identical from a statistical point of view. The ET-PLUS and the SKT have essentially the same performance in the field. If it is one's position that a severe and fatal injury rate of less than three percent is unacceptable for the ET-PLUS, then should it not also be unacceptable for Dr. Sicking's SKT.

While Dr. Sicking told you in his letter that he was involved in the recent Federal False Claims Act trial on behalf of Mr. Harman, what he did not tell you was that he failed to disclose his work for Mr. Harman in that litigation. Dr. Sicking told me directly more than a year ago that he

was not involved in the case, yet he was retained by Mr. Harman as a consultant, testified at trial for him, and the plaintiff's primary technical expert, Dr. Brian Coon, was his former PhD student. As pointed out earlier, given Dr. Sicking's financial motives for damaging the reputation of THP and TTI, his involvement in Mr. Harman's case is not surprising; what is surprising is his denial of the fact of his involvement as a consultant for Mr. Harman up until the moment he was called.

Dr. Sicking also failed to disclose to the NCHRP his work for Mr. Harman as a consultant. The NCHRP solicited proposals for NCHRP 22-30 in 2013 and, as I mentioned in my last letter, selected my company, Roadsafe LLC, to be the contractor. In the proposal, I clearly disclosed all my prior work for THP. Panel members are also required to disclose to NCHRP any potential conflicts they might have, but I believe Dr. Sicking never disclosed that he was a consultant for Mr. Harman working in active litigation against THP or his involvement in the trial and sought to have himself appointed to the panel after the contractor selection had been made. Once appointed, Dr. Sicking appears to have worked hard to de-rail the project. Why did Dr. Sicking work so hard to stop the NCHRP project if his main concern is purportedly safety? Could it be that he knew that the NCHRP 22-30 project would likely show that his terminal products performed no differently than THP products, such as the ET-Plus, and that fact would undercut his claims and not enhance his financial situation?

Dr. Sicking describes to you the "atrociousness of Trinity's misrepresentations" in a "deception perpetrated by Trinity and TTI" in "hiding the failed crash tests low angle, head-on, and off-set impacts of the very ET-PLUS that was installed across the nation." These statements are false and very misleading. He is referring to research and development tests performed by TTI of a flared terminal that, while using the ET-PLUS extruder head, used completely different components in different arrangements for a flared terminal. The flared terminal tests by TTI were never put into production, so when Dr. Sicking states that the flared terminal tested by TTI is "the very ET-PLUS that was installed across the nation" he is completely misrepresenting the facts. At the time of this experimental testing, Mr. Powers, with your agency, exchanged several emails with the TTI staff regarding the planned testing of an experimental flared terminal so the FHWA was fully aware of what TTI was researching.

As Dr. Sicking points out, he owns the intellectual property on seven guardrail terminal designs; one of these is the Sequential Kinking Terminal (SKT), which is a tangent terminal like the ET-PLUS. After developing the SKT, Dr. Sicking developed a similar terminal for flared applications, the Flared Energy Attenuating Terminal (FLEAT). They are similar, but not identical. No doubt, the first step in developing the FLEAT was to test an SKT installed on a flare. Apparently, the SKT must not have functioned properly when installed on a flare or Dr. Sicking would have sought FHWA acceptance for it in that application. One must ask whether Dr. Sicking disclosed any unsuccessful flared tests on the SKT to the FHWA. If, according to Dr. Sicking, TTI should provide all its failed research and development tests, then so should Dr. Sicking and any other roadside hardware developer.

Earlier in the dispute between Mr. Harman and Trinity Highway Products, the FHWA stated that "the controversy is a business dispute between competitors." As I have tried to point out above, the FHWA "got it right" in this earlier statement. Dr. Sicking's letter is simply a competitor's

attempt to gain market share and advance his own financial interests for his guardrail terminal products by slandering THP and TTI products. He is attempting to do with letters and emails what he has been unable to do in the marketplace.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Ray", written over a horizontal line.

Malcolm H. Ray, P.E., Ph.D.

Cc: Mr. Jeffery Paniati, FHWA  
Mr. Tony Furst, FHWA  
Mr. Micheal Griffith, FHWA  
Mr. Nicholas Artimovich, FHWA