

June 6, 2017

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**Re: 16821 - Engineering Review and Certification of Alsipercha Fall Arrest System mounted on the Alsipercha Tripod base, to comply with ANSI Z359.6 and CSA Z259.16**

I am an expert in the field of Fall Protection Engineering, and am currently a member of the ANSI Z359 and CSA Z259 technical committees on Fall Protection in Canada and the US. I chaired development of the CSA Z259.16 standard for “*Design of Active Fall Protection Systems*” which was the basis of ANSI Z359.6 “*Specifications and Design Requirements for Active Fall Protection Systems*”, which serve as engineering standards for active Fall Protection systems in the US and Canada.

The Alsipercha is an Anchorage Connector device that may eventually be certified as meeting an Anchorage Connector standard. The Alsipercha is currently tested and certified as meeting the requirements of the EN795 standard in Europe. Unfortunately, there are no applicable North American anchorage connector standards (ANSI Z359.18 has not yet been published, and CSA Z259.15 does not currently include protocols applicable to this type of device). The testing requirements of OSHA 1926 Subpart M, Appendix C, and OSHA 1910 Subpart I, Appendix D are similar to the EN 795 requirements.

The only available North American certification is by a professional engineer, certifying the complete fall protection system to meet ANSI Z359.6 and CSA Z259.16 requirements.

I have been retained to verify compliance of the Alsipercha tripod system to the above. I have developed a computer model to predict its behavior, and have conducted testing to verify the model.

My engineering analysis concludes that the Alsipercha system meets and exceeds OSHA 1926 Subpart M Appendix C, OSHA 1910 Subpart I Appendix D, ANSI Z359.6 and CSA Z259.16 requirements.

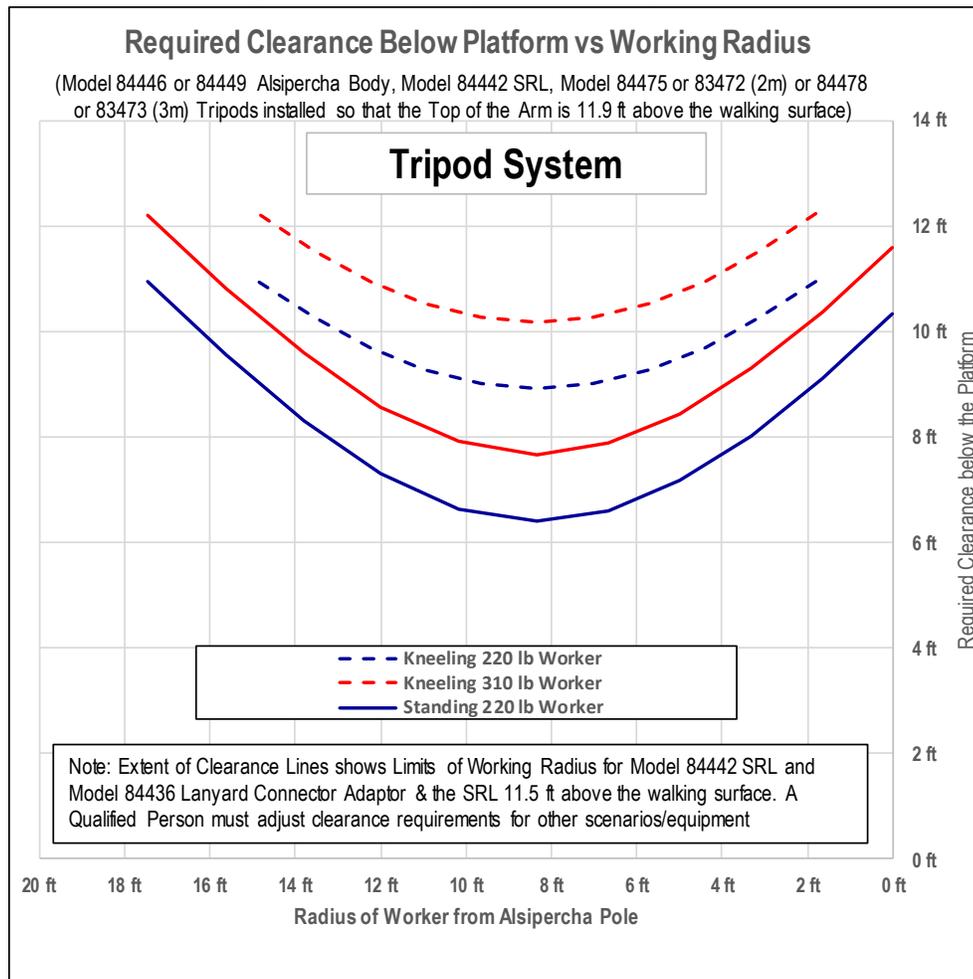
My mandate has been analysis and testing of the Alsipercha post installed on the Tripod Bases. As a structural engineer, I understand both steel and reinforced concrete design and analysis, and have verified through calculation and testing, that the Alsipercha Tripod system can safely arrest the fall of one worker weighing up to 310 lbs.

This letter certifies that I am a qualified fall protection engineer, meeting the requirements for a Qualified Person defined by OSHA 1926 and 1910. I hereby certify that the Alsipercha Tripod system meets or exceeds requirements of ANSI Z359.6, CSA Z259.16, OSHA 1926 Subpart M Appendix C and OSHA 1910, Subpart I, Appendix D.

1. The Alsipercha Tripod system consists of the following parts supplied by Alsina:
  - Alsipercha Davit, Part 84446 or galvanized Part 84449; and
  - 10' (3,05m) Self Retracting Device (Personal Fall Limiter) Part 84442; and
  - Optional 18" (460mm) Lanyard Connector Adaptor, Part 84436; and
  - Alsipercha Tripod, 2m high: Part 84475 or galvanized 83472; or
  - Alsipercha Tripod, 3m high: Part 84478 or galvanized 83473

2. The Tripod Base shall be installed in reinforced concrete having minimum dimensions of 10 ft x 10 ft x 10 inches thick (3m x 3m x 250mm thick) and a minimum reinforcement of #3 bars at 8 inches c/c both ways, mid-depth the slab (10M bars at 200 c/c mid-depth the slab). The concrete strength must be at least 1500 psi (10 MPa). For anchoring into slabs with smaller dimensions, lower strengths or other materials, a professional engineer must certify that the slab or other substrate is capable of anchoring an unfactored overturning moment of 11,000 ft-lb (15 kN-m).
3. The Tripod shall be anchored into concrete using Hilti HY200A epoxy with 16mm (5/8") dia Hilti Hit TZ bolts embedded a minimum of 5 3/4 inches (145mm). The anchors must be installed in accordance with the instructions from Hilti. Substitution of other anchoring products must be certified by a professional engineer.
4. The Alsipercha tripod system provides fall arrest protection for one worker, weighing up to 310 lbs.
5. The maximum arrest force seen by the worker during a fall will be less than 1350 lb (6 kN).
6. The maximum overturning torque applied to the socket at the base of the Alsipercha will be less than 11,000 ft-lb (15 kN-m).

The minimum required clearance varies according to the weight of the worker, the height of the Self Retracting Device above the working surface and the radius that the worker is from the Alsipercha vertical post. When the SRD anchorage to the top of the Alsipercha is greater than 11.5 ft (3.5m) above the working platform, the following chart details required clearances below the platform for various working radii from the Alsipercha vertical post:



Note that use of stretch web harness, such as Miller Duraflex, will require 1.5 ft (0.46m) more clearance than specified in the above table.

If the elevation of the anchorage of the Self Retracting Device is not at least 11.5 ft (3.5m) above the working platform, a Qualified Fall Protection Engineer must be consulted to determine the required clearances.

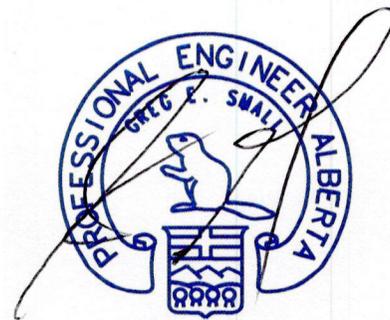
8. The Alsipercha system and tripod must be inspected by the user in accordance with the manufacturer's pre-use inspection instructions, and at least once a year by a Competent person.
9. Safe access to the location where a worker connects to the Alsipercha must be provided by the employer. This may be accomplished using taglines to connect to the user at a lower safe level prior to climbing to the working level, or access using acceptable stairways, catwalks, elevating work platforms, etc.
10. Before commencing work involving use of the Alsipercha, a rescue plan to promptly retrieve fallen workers who may be hanging from the Alsipercha system after a fall must be in-place and ready for immediate implementation.
11. No modifications may be made to the Alsipercha system, including replacement of the self-retracting device supplied with the system, without consultation and advice from a qualified fall protection engineer.
12. This system is portable and relocatable, in accordance with the specifications and drawings supplied by Alsina.
13. The Alsipercha shall be used in strict accordance with the procedures provided by its manufacturer by workers who have received appropriate training in its use.

If you have any questions, please do not hesitate to contact me.



**State of Arizona BTR Firm Registration 20385-0**

Greg Small, M.Eng., P.Eng.  
Founder – Elevated Insight and Engineering Ltd.



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**APEGA Permit to Practice P13711**