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Vista Railing Systems Inc.
23282 River Rd
Maple Ridge, BC
V2W 1B6

Re: **Lag Screw Alternative Fasteners**

According to the Vista (formerly ProBuilt) Canadian Residential Deck Railing Design Guide, 8th Edition, October 2016, there are several installation instances of 1 ½", 2" or 2 ½" posts that require the use of 5/16" diameter regular lag screws with up to 4 ½" of minimum thread embedment into solid No. 1 or No. 2 wood backing (SPF or Fir). In all these instances, the desired fasteners should actually be min. 5/16" x 4" self-drilling, exterior rated, ACQ rated (if required), washer head, heat treated, structural screws such as GRK RSS, SPAX, or equivalent. These revised screws are much more likely to be installed correctly as they do not require any pre-drilling in typical North American softwoods, so are much more likely to develop full design withdrawal resistance, which is typically far higher than that of regular lag screws.

Regular lag screws require two specific diameter holes to be pre-drilled: One for the root diameter of the thread and one for the shank diameter. The shank hole has to be just deep enough to accommodate the length of the full diameter shank. Chances of this actually being done correctly in the field are remote. As such, the chance of regular lag screws actually developing their design withdrawal resistance is likewise remote. This is evident in fastener withdrawal load tests.

Therefore, the use of the aforementioned 5/16" x 4" GRK RSS, Spax, or equivalent screws is an acceptable alternative and they will meet the requirements for the Ontario Building Code 2012 for relevant Vista residential guard Installations. Note that care must still be taken to not over-tighten these fasteners, as that will have a negative effect on withdrawal resistance, just as it does for regular lag screws. Should screws need to penetrate additional layers of non-structural material, fastener length must be increased accordingly.

Sincerely,



July 11, 2017



July 21, 2017

Reviewed By

Doug Birch, P.Eng.