

# MSC Guidelines for Review of Curved or Winding Stairs in the Escape Path

Procedure Number: SOLAS-01

Revision Date: 4/6/2016

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## References

- ❑ SOLAS Regulation II-2/13.3.2.4.5
  - ❑ MSC.1/Circ. 1238
  - ❑ International Code for Fire Safety Systems (FSS), Chapter 13.2.2
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## Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center by e-mail or phone. Please refer to Procedure Number: **SOLAS-01**.

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## Reference Text

“The widths, number and continuity of escapes shall be in accordance with the requirements of the Fire Safety Systems Code.”

FSS Ch-13.2.2.2 “All stairways sized for more than 90 persons shall be aligned fore and aft”

FSS Ch 13.2.2.3 “Stairways shall not exceed 3.5 m in vertical rise without the provision of a landing and shall not have an inclination greater than 45°”

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## Guidance

This guidance applies to stairways that are a part of the emergency evacuation plan, serve more than 90 persons and have a minimum width calculated per Chapter 13, Section 2 of the FSS Code. These stairways must be aligned fore and aft. Any stair that does not meet these requirements, and specifically winding staircases, must undergo an engineering analysis in accordance with the requirements of SOLAS II-2/17 to determine the appropriate correction to the factors used in the evacuation analysis contained in MSC.1/Circ.1238, Appendix 1, sections 1.3 and 1.4. Additionally the effective width, for evacuation calculations, must only include areas along the tread width where the angle of inclination does not exceed 45 degrees.

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## Background

The evacuation analysis contained in MSC.1/Circ. 1238 relies on factors derived from land-based buildings where there are specific requirements on uniformity of tread depth on stairs. Winding or curved stairs, where the tread is roughly triangular shape, as well as triangular landings create a situation where depending on the design, the speed of travel down the stair can be significantly impaired. The slope of the stair where the tread is narrow can also greatly exceed the limit of 45 degrees contained in FSS Ch 13.2.2.3. The result is a stair that is difficult for people to use with an effective useable width that is significantly less than the measured clear width. The speed of travel along this type of stair in an emergency evacuation scenario depends heavily on the actual design and requires careful analysis beyond that required for traditional stairs.

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## Disclaimer

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current thinking on this topic and may assist industry, mariners, the general public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements. You can use an alternative approach for complying with these requirements if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative, you may contact The Marine Safety Center, who is responsible for implementing this guidance.