

Rounding for Specification Compliance

When is 24.88 equal to 25?

The project specification required a specified overall value (SOV) for floor flatness of 25. F-numbers were measured within 72 hours in accordance with ASTM E 1155-14 “Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.” Unlike most ASTM standard test methods, this one does not state the significant digits to which the measured value is to be reported. The manufacturer’s floor flatness measuring device typically reports the values to the nearest hundred.

On this project, the F-number test device recorded the floor flatness output as 24.88. The test lab used this output and reported that value in its inspection report to the Government Owner. The owner determined the concrete contractor was not in compliance with the floor flatness and demanded the concrete contractor pay for all floor preparation costs when the floor installer arrived on site six months later.

Obviously, the change in floor flatness with time contributed to the floor installer’s surface preparation cost. The design team had not engineered the floor to remain flat with time. The floor installer submitted a change order to the Government Owner for the surface preparation costs. The Owner then backcharged the concrete contractor the entire surface preparation cost because they were not in compliance with the floor flatness specification. The floor flatness was 24.88 and not 25 and was therefore not in compliance by “0.12”.

There are two issues with the Government’s argument. First, if the concrete contractor does not meet the specification, they are only liable for the incremental cost of remediating to specification. If 24.88 does not meet the specification, the concrete contractor would only be liable for the cost to increase the floor flatness 0.12, not the entire cost.

Second, the floor flatness specifications are provided as a whole number with no decimal or following zeros. Thus, the measured value should be rounded to determine compliance with the specification. ASTM addresses rounding for specification compliance in ASTM E29-13 “Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.” This document outlines methods clarifying the intended meaning of specification limits with which observed values or calculated test results are compared in determining conformance with specifications.

Add this issue to your pre-construction checklist. Rounding for specification compliance should be done in accordance with ASTM standards. Otherwise, you might be fighting over a measured F-number that misses the specified value by 0.12 in.