Calculation and Rounding Rules for Test Procedures

These calculating and rounding rules are the department's accepted standards of LADOTD. They shall be used to perform all testing procedures calculations, including DOTD, AASHTO, ASTM, Federal Test Methods, Corps of Engineers, etc. Exceptions, if any, will be determined by the DOTD Materials Engineer Administrator.

Examples of all calculations, along with any deviations, are given in each DOTD testing procedure.

When performing calculations there are two actions to consider - truncating and rounding. Truncating is the act of discarding any decimals beyond those needed. Rounding is the act of bringing the value to the nearest significant figure. Intermediate calculations are truncated; intermediate steps and final answers are rounded. An intermediate calculation is any math function within a formula. An intermediate step is the value that is carried forward into another calculation. An intermediate step is noted on a worksheet and may or may not be reported. A final answer is that result which is reported.

Intermediate calculations are truncated as follows:

1. If the result of the formula is not a percentage, then truncate **2** decimal places beyond the required accuracy of the final answer. (Ex. The final result is to the nearest $0.01 yd^2$ - truncate after the fourth decimal place or 0.0001.)
2. If the result is a percentage, then truncate **4** decimal places beyond the required accuracy of the final answer. (Ex. The final result is to the nearest 0.1 % - truncate after the fifth decimal place or 0.00001.)

The result of the formula is then rounded to the desired accuracy. This rounded value will then be used in any subsequent calculations, noted on a worksheet and/or reported.

The result to be reported shall be carried 2 decimal places beyond the required degree of accuracy before rounding. Rounding will be performed as follows:

1. If the digits following the point of desired accuracy is **<u>less than 50</u>**, do not change the digit to be used.

   Example:

   2.38 = 2
   2.049 = 2.0
   2.1339 = 2.13
2. If the digits following the point of desired accuracy is **<u>greater than or equal to 50</u>**, add 1 to the last digit used.

   Example:

   2.51 = 3
   2.062 = 2.1
   2.1359 = 2.14

Always follow the example calculations given in the DOTD testing procedure. However if there are no calculations shown, or if working a non-DOTD procedure, consult these results.

NOTE:
When methods shown in a test procedure or approved software deviate from the standard calculating and rounding rules, the standard rules are not to be used. The specific methods shown in the procedure or the approved software are to be used for calculating and rounding purposes.