

$$\text{DENSITY} = \frac{\text{MASS}}{\text{VOLUME}} \quad \text{Expressed in pounds per CF}$$

$$\text{DENSITY} = \frac{\text{Full CONTAINER} - \text{Empty CONTAINER}}{\text{SIZE OF CONTAINER}}$$

$$\frac{92.1 - 19.6}{0.5\phi 4} = 143.85 \text{ pounds per CF}$$

SAMPLE CAME FROM A 7 CY LOAD

TOTAL batch weight 27,300 pounds

$$\begin{array}{r} 27,300 \div 7 = 3900 \text{ pounds per CY} \\ \div 27 \\ \hline 144.44 \text{ pounds per CF} \end{array}$$

$$143.85 < 144.44$$

Density of batched MATERIAL was less than mix design.
The batched MATERIAL took up more volume per pound.

How much concrete did the batch yield?

$$27,300 \div 143.85 = 189.78 \text{ CF}$$

$$\div 27$$

7.03 cy yield

How much was the yield relative to the target?

$$\frac{7.03}{7.00} = 1.004 \times 100 = 100.4\% \text{ relative yield}$$

In order to have 535 pounds of cement per cy the mix design called for 3745 pounds of cement.

How much cement is ACTUALLY in each cy AS batched

$$3745 \div 7.03 = 532.7 \text{ pounds}$$

If the mix had been calculated to weigh 151.4 pounds per CF with Absolutely NO Air voids (theoretical density) what percent of Air voids are in the concrete AS batched?

$$\frac{151.40 - 143.85}{151.40} * 100 = 5.00\%$$