

FIELD UNIT WEIGHTS OF AGGREGATES BY TRUCK MEASURE

DOTD Designation: TR 628-79

Scope

1. This method covers the procedure used to determine as hauled bulk unit weights, lb/yd³(kg/m³), of aggregates in the field by truck measurements.

Apparatus

2. The apparatus shall consist of the following:

(a) Certified platform scales (commercial or private).

(b) Truck with dump bed having straight, plane top edges.

(Note: Use a simple box bed, such as DOTD bobtail dump bed with no obstructions in the bed.)

(c) Miscellaneous:

(1) Measuring tape accurate to the nearest 1/2 in. (10 mm).

(2) Suitable strike off board or screed,

(3) Shovel(s) and scoop(s), and

(4) Five 1-gallon friction top cans with lids.

Procedure

3. Unit weight determinations by truck measure:

(a) Measure bed of truck (height, width, length) to nearest 1/2 in. (10 mm), and calculate total volume to the nearest 0.1 yd³(0.08 m³).

(b) Zero scales.

(c) Obtain weight, lb (kg), of empty truck.

(Note: Weigh truck twice for verification of scale repeatability. Weights should be within ± 0.5% of each other.)

(d) Fill truck with material from the stockpile to a normal full load.

(e) Instruct the truck driver to drive the truck approximately ten miles (16 kilometres round trip to induce road-haul vibration, simulating haul distance.

(f) When the truck returns strike off excess material with strike off board, level with the top of the measured truck bed (adding material if necessary). Rezero scales and obtain weight of loaded truck in lb (kg).

(g) Dump load and take one-gallon (3.79 litre) samples from five different areas of the pile

to assure uniform sampling. Determine moisture content of each sample in accordance with DOTD Designation: TR 106.

(Note: Any value that differs from the average of the measurements by more than 20% should be discarded and the new average computed on the basis of the remaining tests.)

Calculations

4. Calculate the wet unit weight as follows:

$$\text{Wet unit weight} = \frac{W - T}{V}$$

Where W = weight of loaded truck, lb (kg),

T = weight of empty truck, lb (kg),

and

V = volume of truck bed, yd³(m³).

Calculate the dry unit weight as follows:

$$\text{Dry unit weight} = \frac{(100 \times \text{wet unit wt.})}{100 + M}$$

Where M = average moisture content, %

Report

5. Wet and dry unit weights (by truck measure) shall be reported to the nearest 100 lb/yd³(59 kg/m³). Moisture content shall be reported to the nearest whole percent.

Normal testing time is two days.