

## LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT CALIBRATION PROCEDURE

### UNIT WEIGHT MEASURES

#### I. EQUIPMENT

- A. Scale, accurate to 0.01 pound with a capacity 100 pounds.
- B. Plate Glass, preferable at least 1/4 inch thick and at least 1 inch larger than the diameter of the Measure to be calibrated.
- C. Thermometer, having a range of at least 10-32°C (50-90°F) with an accuracy of  $\pm 0.5^{\circ}\text{C}$  ( $0.9^{\circ}\text{F}$ ).
- D. A small amount of petroleum jelly can be placed on the rim of the container to prevent leakage.

#### II. PROCEDURE

- A. Weigh the empty Measure and glass plate together to the nearest 0.1 pound.
- B. Fill the measure with water at room temperature, record the temperature of the water and cover the measure with a piece of plate glass in such a way as to eliminate bubbles and excess water.
- C. Determine the unit weight of the water using the attached table, interpolating if necessary.
- D. Clean all excess water from the outside of the measure. Weigh it carefully to 0.1 pound.
- E. Calculate the weight of water by subtracting the weight of empty measure and glass from the weight of measure, glass and water.
- F. Calculate the capacity of the measure by dividing the weight of water required to fill the measure by its unit weight.
- G. Calculate the calibration factor for the measure by dividing the unit weight of water by the weight required to fill the measure.
- H. Personnel doing the calibration of the measure must put their name on the worksheet and update the calibration factor on the unit weight measure.

STATE OF LOUISIANA  
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

CALIBRATION OF  
UNIT WEIGHT MEASURES

Verification procedures used: DOTD A14/AASHTO T19

Calibration Frequency: 12 months Previous Calibration Date: \_\_\_\_\_

Date of Calibration: \_\_\_\_\_ Next Calibration Due: \_\_\_\_\_

Identification No.: \_\_\_\_\_ Mfg./distributor: N/A

Calibrated by: \_\_\_\_\_

Calibration equipment used: Glass plate #1, Thermometer ( )

Reference to certified thermometer:

Temperature		kg/m <sup>3</sup>	lb/ft <sup>3</sup>
°C	°F		
15.6	60	999.01	62.366
18.3	65	998.54	62.336
21.1	70	997.97	62.301
(23.0)	(73.4)	(997.54)	(62.274)
23.9	75	997.32	62.261
26.7	80	996.59	62.216
29.4	85	995.83	62.166

Temperature of water	(0.5°C)	
Unit weight of water (C)	(lb/ft <sup>3</sup> )	
Weight of measure, glass, & water (A)	(0.1lb)	
Weight of measure & glass (B)	(0.1lb)	
Weight of water (A-B)	(0.1lb)	
Capacity of measure (V), V= (A-B) ÷ C	(ft <sup>3</sup> )	
Calibration factor= C ÷ (A-B)		

Recommended action: Repair \_\_\_\_\_ Replace \_\_\_\_\_ None \_\_\_\_\_

Checked By: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Comments: \_\_\_\_\_