

**UNIT WEIGHTS, VOID RATIO, POROSITY, AND DEGREE OF SATURATION
(DISPLACEMENT METHOD)**

DATE _____

PROJECT _____

BORING NO. _____

Water Content

SAMPLE OR SPECIMEN NO.							
TARE NO.							
Weight in grams	TARE PLUS WET SOIL						
	TARE PLUS DRY SOIL						
	WATER	$\frac{W}{w}$					
	TARE						
	DRY SOIL	$\frac{W}{s}$					
Water content	w						

WEIGHT-VOLUME RELATIONS

SAMPLE OR SPECIMEN NO.							
TEST TEMPERATURE OF WATER, T.C							
WEIGHT IN GRAMS	SOIL AND WAX IN AIR						
	WET SOIL	w					
	WAX						
	WET SOIL AND WAX IN WATER						
	DRY SOIL ↑	$\frac{W}{s}$					
SPECIFIC GRAVITY OF SOIL	G_s						
VOLUME IN CC	WET SOIL AND WAX ↑↓						
	WAX						
	WET SOIL	v					
	DRY SOIL = $\frac{W_s}{G_s}$	$\frac{V}{s}$					
LB PER CU FT	WET UNIT WT = $(W/V) 62.4$	γ_m					
	DRY UNIT WT = $(\frac{W}{V}) 62.4$	γ_d					
VOID RATIO = $(V - V_s) / V_s$	e						
POROSITY, % = $[(V - V_s) / V] \times 100$	n						
DEGREE OF SATURATION, % = $[\frac{V_w}{(V - V_s)}] \times 100$	s						

VOLUME OF WAX = $\frac{\text{WEIGHT OF WAX}}{\text{SPECIFIC GRAVITY OF WAX}}$ = _____

↑ IF NOT MEASURED DIRECTLY, MAY BE COMPUTED AS FOLLOWS: $W_s = \frac{W}{1 + 0.01 w}$

↑↓ VOLUME OF WET SOIL AND WAX = $\frac{(\text{WEIGHT OF WET SOIL AND WAX IN AIR}) - (\text{WEIGHT OF WET SOIL AND WAX IN WATER})}{\text{DENSITY OF WATER AT TEST TEMPERATURE}}$

Remarks _____

Technician _____ Computed by _____ Checked by _____