MATT MENU SELECTION - 07

Louisiana Department of Transportation and Development

DENSITY & MOISTURE CONTENT WORK SHEET

DOTD 03-22-0750
Metric/ English
Rev. 12/98

Metric/English (M or E) ⌊_⌋ *(Entry Field Located on Menu)*

Project No. ⌊_⌊_⌊_⌊_⌊-⌊_⌊_⌊-⌊_⌊_⌊_⌊_⌊_⌋ **Date Tested** ⌊_⌊_⌊-⌊_⌊_⌊-⌊_⌊_⌋ **Material Code** ⌊_⌊_⌊_⌋

Submitted By ⌊_⌊_⌊_⌊_⌋ **Purpose Code** ⌊_⌋ **Spec. Code** ⌊_⌋

Test Method ⌊_⌋ *N = Nuclear S = Sand Cone* **Item Number** ⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋

Station Tested ⌊_⌊_⌊_⌊_⌋ + ⌊_⌊_⌊_⌋ **Section & Test No.** ⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋

Location:____________ Lift No: ________ Depth of Test: ____________

OM:	Optimum % Moisture Content of Total Material **(TR 415 or TR 418)**	OM	⌊_⌊_⌊.⌊_⌋
%FM:	Field % Moisture Content at Compaction **(TR 403)** *(See back for calculations)*	%FM	⌊_⌊_⌊.⌊_⌋
P_1:	% Pulverization **19mm (3/4" SIEVE) (TR 431)** *(See back for calculations)*	P_1	⌊_⌊_⌊_⌋
P_2:	% Pulverization **4.75mm (NO.4 SIEVE) (TR 431)** *(See back for calculations)*	P_2	⌊_⌊_⌊_⌋

(TR 415) Cross Reference Test No.	Sta. No.:	**Max. Dry Density Method** ⌊_⌋ *(1 = TR 415 A 2 = TR 415 B 3 = TR 418)*	
a: Total Wet Mass (Wt.) of Sample			
b: Mass (Wt.) of +4.75 (+4) Material			
c: % By Mass (Wt.) of 4.75 (+4)Retained **(100 b/a)**			
d: Mass (Wt.) of Mold & Soil			
e: Mass (Wt.) of Mold			
f: Mass (Wt.) of Compacted Soil **(d - e)**			
g: Wet Density **(f / 0.944)** or **(f / 2.832)** or **(f / 2.124)** **(f x 30)** or **(f x 10)** or **(f / 0.075)**			
h: Mass (Wt.) of Wet Soil			
i: Mass (Wt.) of Dry Soil			
j: Mass (Wt.) of Water **(h - I)**			
k: % Moisture Content **(100 j/I) (TR 403)**			
l: Dry Density **100g / (100 + k)**			

om *(from Family of Curves)*: ________ pr *(from Family of Curves)*: ________ **FAMILY OF CURVES ZONE NUMBER** ⌊_⌊_⌋

SAND METHOD
(TR 401)

SA: Mass (Wt.) of Sand in Mold	
SB: Vol. of Mold	
SC: Unit Mass (Wt.) of Sand **(SA/SB)**	
SD: Orig. Mass (Wt.) of Sand	
SE: Final Mass (Wt.) of Sand	
SF: Mass (Wt.) of Sand in Cone (SD-SE)	
SG: Orig. Mass (Wt.) of Sand	
SH: Final Mass (Wt.) of Sand	
SI: Mass (Wt) of Sand in Cone & Hole **(SG-SH)**	
SJ: Mass (Wt.) of Sand in Hole **(SI-SF)**	
SV: Vol. of Hole **(SJ/SC)**	
SW: Dry Mass (Wt.) of Material	
SDD: Dry Density **(SW / SV)**	⌊_⌊_⌊_⌊_⌊_⌊_⌋
PR: Maximum Dry Dens. **(TR 415 / TR 418)**	⌊_⌊_⌊_⌊_⌊_⌊_⌋
%PR: % Density (Sand) **(SDD / PR) x 100**	⌊_⌊_⌊_⌊_⌊_⌊_⌋

NUCLEAR METHOD (TR 401)

Nuclear Device Number ⌊_⌊_⌊_⌋ **Insp. (Nuclear Badge No.)** ⌊_⌊_⌊_⌊_⌋	Test 1	Test 2	Test 3
DS: Density Standard Count			
DC: Density Test Count			
DR: Density Count Ratio **(DC / DS)**			
WD: Wet Density			
MS: Moisture Standard Count			
MC: Moisture Test Count			
MR: Moisture Count Ratio **(MC / MS)**			
M: Moisture by Mass (Wt.)			
MP: Moisture by Percent - *TR 401* ☐ / *TR 403* ☐			
NDD: Dry Density **(WD - M)** or $\frac{100 \times WD}{100 + MP}$			
%NPR: % Density **(NDD / PR) x 100**			
ADD: Average Dry Density **(NDD)** or **(NDD/3)**	⌊_⌊_⌊_⌊_⌊_⌊_⌋		
PR: Maximum Dry Density **(TR 415/TR 418)**	⌊_⌊_⌊_⌊_⌊_⌊_⌋		
%PR: % Dens.(Nuclear) **(% NPR)** or **(% NPR/3)**	⌊_⌊_⌊_⌊_⌊_⌊_⌋		

Remarks ⌊_⌋

____________________ *(Signature)*

Pulverization, P_1 and P_2 (TR 431)

* Test No. * *Utilize as many columns as necessary per test section.*		1	2	3	4
Adjusted Wet Mass (Wt) Sample (A)					
Mass (Wt) of + 19 mm (3/4 in) Material (B_1)					
Mass (Wt) of + 4.75 mm (No. 4) Material (B_2)					
% Pulverization 19 mm (3/4 in) (P_1)	$100 \times \frac{(A - B_1)}{A}$				
% Pulverization 4.75 mm (No. 4) (P_2)	$100 \times \frac{A - (B_1 + B_2)}{A}$				

Field Moisture Content at Compaction, % FM (TR 403)

* Test No. * *Utilize as many columns as necessary per test section.*		1	2	3	4
Total Wet Mass (Wt) of Matl. at Compaction (A)					
Total Dry Mass (Wt) of Matl. at Compaction (B)					
Mass (Wt) of Water (C)	(A - B)				
% Field Moisture Content (% FM)	$100 \times \frac{C}{B}$				

Optimum Moisture and Maximum Dry Density Adjustments for Material Containing 20% - 60 % Siliceous Aggregate (TR 415)

		1	2	3
Optimum % Moist. of Tot. Material, (OM)	$OM = [(\frac{100 - c}{100}) \times om] + \frac{c}{100}$			
Maximum Dry Density, lb/ft³ (PR) *(English)*	$PR = \frac{160 \times pr \times z}{\frac{c}{100} \times pr \times z + [160 \times (1 - \frac{c}{100})]}$			
Maximum Dry Density, kg/m³ (PR) *(Metric)*	$PR = \frac{2564 \times pr \times z}{\frac{c}{100} \times pr \times z + [2564 \times (1 - \frac{c}{100})]}$			