

FIGURE 1 - DETERMINING PEAK POINT OF COMPACTION CURVE

NOTES:

1. LABEL THE POINTS FROM THE THREE COMPACTION SPECIMENS POINTS A, B, AND C, IN ORDER, STARTING WITH THE SPECIMEN WITH THE LEAST AMOUNT OF "ADDED WATER" (i.e. SPECIMENS WITH THE LOWEST MOISTURE CONTENT). IF MORE THAN THREE SPECIMENS WERE COMPACTED, SELECT THE SPECIMEN WITH THE HIGHEST CONVERTED BULK DENSITY AND LABEL AS POINT B; SELECT THE SPECIMEN WHICH HAS 2% LESS "ADDED WATER" THAN POINT B AND LABEL AS POINT A; SELECT THE SPECIMEN WHICH HAS 2% MORE "ADDED WATER" THAN POINT B AND LABEL AS POINT C (SEE FIGURE 1).

2. ASSIGN THE FOLLOWING NOTATION TO VALUES FROM THE THREE COMPACTION POINTS:

- x_A = ADDED WATER AT POINT A (%)
- x_B = ADDED WATER AT POINT B (%)
- x_C = ADDED WATER AT POINT C (%)
- y_A = CONVERTED BULK DENSITY OF POINT A (Mg/m^3)
- y_B = CONVERTED BULK DENSITY OF POINT B (Mg/m^3)
- y_C = CONVERTED BULK DENSITY OF POINT C (Mg/m^3)

3. CALCULATE THE VALUE $x_1, x_2, y_1, y_2, x_m, z_m,$ AND y_m AS FOLLOWS:
 $x_1 = x_B - x_A; x_2 = x_C - x_A; y_1 = y_B - y_A; y_2 = y_C - y_A;$

$$x_m = \frac{1}{2} \left[x_1 + \frac{(x_2 - x_1) \left(\frac{y_1}{x_1} \right)}{\left(\frac{y_1}{x_1} \right) - \left(\frac{y_2}{x_2} \right)} \right] \text{ AND } y_m = \frac{- (x_m^2 y_1)}{x_1 (x_1 - 2x_m)}$$

4. CALCULATE THE MAXIMUM CONVERTED BULK DENSITY (MCBD) AS FOLLOWS:


$$MCBD = y_A + y_m$$

5. CALCULATE THE AMOUNT OF WATER ADDED OR REMOVED AS A PERCENTAGE OF THE MASS OF THE SPECIMEN AT THE IN-SITU MOISTURE CONTENT CORRESPONDING TO THE MAXIMUM CONVERTED BULK DENSITY AS FOLLOWS:

$$z_m = x_A + x_m$$

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**THE HILF METHOD OF
RAPID COMPACTION CONTROL
(SHEET 1 OF 2)**

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