Basic Design Related Information for the Project

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Topographic Contours and Volume Calculations

Pond Volume =
\[(A_1 + 2A_2 + 2A_3 + A_4)\]
Contour Interval \times 0.5

\(A_1 = \text{area of contour 100}\)
\(A_2 = \text{area of contour 120}\)

Use Planimeter or AutoCAD to measure Areas – \(A_1\) to \(A_4\)
Instructions for Using Planimeter – Technical Instructions

1. Read the planimeter manual to make yourself familiar
2. Basic operations are:
   1. Turn it ON
   2. Press m ↔ ft to toggle between SI or customary system
   3. Press UNIT (press more than once to get the correct unit for your use)
   4. Find out the scale of your drawing in dimensionless units: For example if 1 in on the paper corresponds to say 10 ft then the scale is 1 in to 120 in – which is 1 to 120. You will need to input this scale by pressing 120 followed by SCALE
   5. You can start measuring the area of your interest by: (1) staring at a point on the perimeter of your area, (2) pressing “START”; (3) following the perimeter of the area clockwise until you reach the point where you started; (4) press END – the number on the screen is the area. Typically you need to repeat the procedure at least 3 times and use an average.

Cut/Fill Volume Calculations

[Diagram showing a series of numbers and lines representing a cut/fill area]
Design Constraints for Base, Final Grades, and Grades for Berms

1. Base grades shall not be steeper than 1 V to 3 H
2. Final grades shall not be steeper than 1 V to 4 H
3. Surface grades for a berm or an embankment shall be not be steeper than 1 V to 3 H
4. If any cut or fill slope is longer than 60 ft, use a minimum 10 ft wide bench
5. The corners for any graded contours shall be wider than 90 degrees
6. Illustrate the above constraints on the chalk board.
Instructions for Using Planimeter - Location

1. Planimeters and Digital Length Measures are stored in the Survey Lab (near the Soils Lab located on the first floor of EB)
2. DO NOT take the instruments outside the lab
3. Planimeter is a fairly sensitive and delicate instrument. Hence, handle it with care. Do not drop, and store it in its box when you are done.
4. You will need to contact Joseph (3-6088 or 3570/78 EB) to open the survey lab and lock the door when you leave
5. GOOD LUCK with the new gadgets!