UNIVERSITY OF SHARJAH
where civilizations meet

Department of Civil and Enviromental Engineering

Surveying Lab

Basic Principles of Linear Surveying and offsetting

Lab Number

(**3**)

Student Name :…….

Student Number :…….

Student Section :…….

Submission Date

……/……../……..

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LAB 2: TAPE MEASUREMENTS

Objective:

- The students should learn how to produce map of a small area, using tape measurements.
- to get familiar with the simplest way of transfer of small project to the ground using tapes and accessories
- Set out perpendicular distance Between two points using shortest distance and Double right angle prism

Instruments:

- Steel or polymer tape
- Ranging poles
- Plumb bob
- Double right angle prism

Procedures:

A. Offsetting using Shortest Distance

a. Use AB as reference line. **Figure 1**

b. Establish lines, perpendicular to the reference line, from each point to be mapped (edges of the street and plant basins).

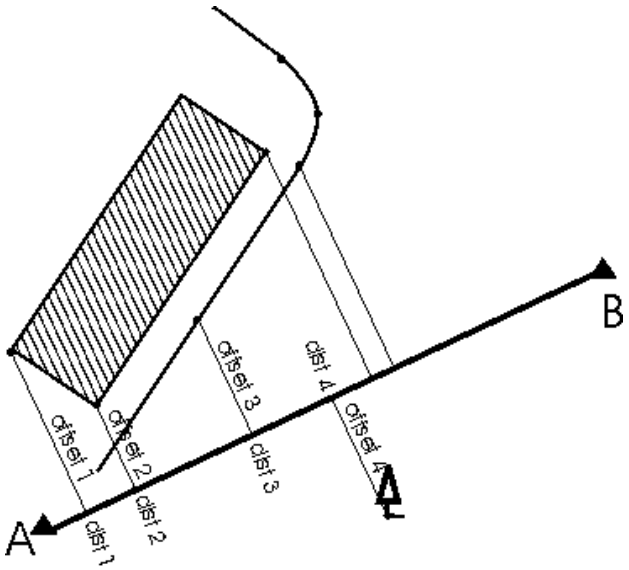

Figure 1

c. Establish lines, perpendicular to the reference line, from each point to be mapped (edges of the street and plant basins).

d. Measure the distances from the reference point (A) along the reference line AB to the perpendicular and the length of the perpendicular also called offset.

e. During field measurements draw sketch of the details (use appropriate symbols) and record all measured distances on it as it's shown on the Figure 1:

f. Use the field sketch (containing all measured distances) to draw a map of the area in scale 1:500

B. Offsetting using Double right angle prism

a. Establish the baseline AB (see figure 1).
b. Use the distances and offsets available from the project (figure 1) to set out on the ground each of the points 1 to 6.
c. Measure the first distance (Measured part A) m along the line BA starting from point B toward point A.
d. Mark the point. It represents the end of the perpendicular from point 6 to the baseline.
e. Set the prism over the marked point (you should see the ranging poles at the ends of the base line on the top of each other)
f. Guide your colleague (who is holding the third pole) in left or right direction until you see the images of the three poles matched together in the prism.
g. The third pole, seen this way, is marking the direction of the perpendicular to the required point .
h. Measure the offset along the established perpendicular starting from the baseline.
i. Mark the point and its number and check how it matched with the required points
j. Repeat the steps above until all points are set out.

Computations

Each student should submit complete report about the tasks performed including the following:

a. Introductions and objectives.
b. Instruments used.
c. Procedures.
d. Sketch of the area
e. Map of the area in scale 1:500.
f. Error calculation in each point and average Error
g. Conclusions and recommendations