

UNIVERSITY OF NEW SOUTH WALES

SCHOOL OF SURVEYING

29.002 SURVEYING 2

FIELD EXERCISE: DETAIL SURVEY (OFFSET)

1. AIM

To demonstrate the technique of detail surveys by offset method and of booking and plotting of such chain surveys.

2. EQUIPMENT

- 4 x Ranging Rods with steel shod
- 3 x Sighting Tripods as rod supports
- 1 x Double Pentagonal Prism with plumbing rod
- 1 x 30 m steel tape
- 1 x 100 m steel band
- 2 x Plumb-bobs
- 10x Chaining arrows
- 1 x Crayon
- 1 x "Suunto" Compass (Same No. as in exercise Hand Instruments)

3. EXERCISE

3.1 In an area of about 100 m x 100 m within the campus, the location of which will be indicated by your demonstrator, three points will be established. They should form a well conditioned triangle (angles between  $30^{\circ}$  and  $120^{\circ}$ ) as control framework of the survey. The three (detail) lines should be free of obstacles, so that distance measurements and offsets can be taken. Set up ranging rods on all three corners, support them with sighting tripods (if necessary) and plumb them.

3.2 Make a recovery sketch of all three corner points of your triangle and measure at least three distances (to cm).

3.3 Measure all three lines twice with your band.

3.4 Check your triangle by a control distance between two points of different detail lines.

3.5 Measure the magnetic bearing of all three detail lines both ways with the compass.

3.6 Survey about 50 points by the offset method. All well defined objects must be measured to the centimetre. Survey: Roads, paths, walkways, buildings, walls, gates, fences, hedges, trees, cuttings and embankments, telephone lines, electric transmission lines, bench marks and other survey marks, man holes, drainage, lawns, rocks, stand-pipes etc.

3.7 Well defined objects (buildings, fences etc.) must be checked by an offset onto another detail line or by measuring distances (to centimetres) between detail points.

3.8 All bookings in the fieldbook. Use one page for every detail line. Plot a sketch of the frame work (triangle) on another page, and book here the distance and compass measurements of the base triangle.

#### 4. REPORT/PLOT

Each student has to submit:

- 4.1 An original plot of the triangle and all detail points in pencil (4H, 6H) on cartridge paper. All field check measurements should be used to check this plot. Scale 1:250. The Grid North can be plotted after addition of the instrument constant, determined in another field session, to the compass readings. A drawing precision of  $< 0.5$  mm should be attempted.
- 4.2 A final plan (1:250), drawn and presented as per the standardized approach, summarised in the hand-out "Practical Classes" of Surveying IA. (On tracing paper, in indian ink).
- 4.3 A report on the field work, on misclosures of check distances or check offsets in the plot and on the calculation of the grid bearings of the three sides of the triangle.

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