Birzeit University

Faculty of Engineering and Technology

Civil Engineering Department

SURVEYING Lab ENCE316

Experiment no. 1: Tapping and Mapping using ties & offsets

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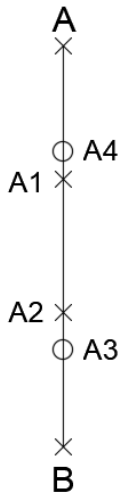
❖ Part 1 : Tapping

Data Arrangement:

Forward

Segment	Distance (m)
A A1	√
A1 A2	√
A2 B	√
Σ	Sum 1



Backward

Segment	Distance (m)
B A3	√
A3 A4	√
A4 A	√
Σ	Sum 2

Calculations:

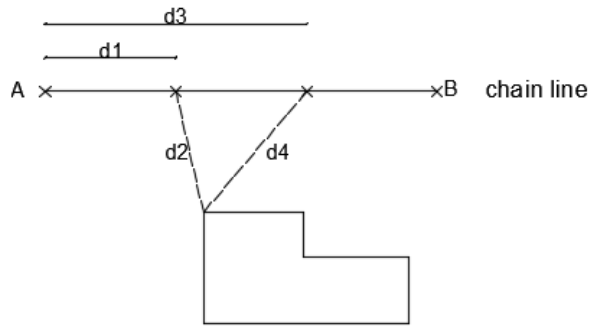
AB avg = $\frac{Sum1+sum2}{2}$

Error (e) = $|measured\ distance - known\ distance\ |$

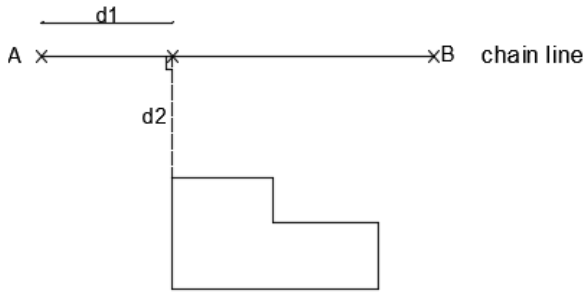
RP= $\frac{1}{measured\ distance/|e\ |} \approx \frac{1}{3000}$

Part 2: Mapping using ties & offsets

Data Arrangement:



Ties method



Offset method

Point	Ties Method				Offset Method		Notes
P1	d_1^*	d_2	d_3^*	d_4	d_1^*	d_2	
P2							
P3							
. . .							

Note: d_1^* and d_3^* measured on chain line.

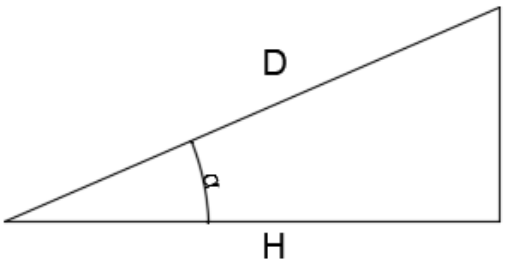
Calculations:

You have to check if it necessary to correct the distances measured on chain line.

$H = D \cos \alpha$,

Where α is angle of inclination of chain line measured using Abney level.

D is the largest distance measured on chain line.



If $H = D \pm 0.05$ m then no need for any correction and α can be neglected (means α has small value)

If not, then you have to correct d_1^* and d_3^* before drawing.

You have to submit the following:

1- Data & Calculations for tapping part.
2- Tabulated data collected for mapping exercise.
3- Sketch for mapping area.
4- Map on A3 paper for ties & offsets exercise as attached.