

SURVEYING LAB FOR ARCHITECTURE AND PLANNING ENGINEERING

ENCE317

Exp No.8

Traverse measurment using Total station

Group C

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|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HR** | **HI** | **HD** | **VD** | **SD** | **Zenith** | **HA** | **HAR** | **Point** | **Stat.** |
| 1.56 | 1.39 | 65.634 | -3.786 | 65.693 | 9225'44'' | - | 0 | B | **A** |
| 2.50 | 1.39 | 82.648 | 7.177 | 83.052 | 8421'01'' | 13022'23'' | R1 | E |  |
| 2.72 | 1.33 | 83.308 | 7.857 | 83.778 | 8355'51'' | - | 0 | C | **B** |
| 2.50 | 1.33 | 65.451 | 2.960 | 65.571 | 8632'16'' | 5930'11'' | R1 | A |  |
| 2.00 | 1.34 | 44.666 | 0.137 | 44.690 | 8832'33'' | - | 0 | D | **C** |
| 2.50 | 1.34 | 83.302 | -7.547 | 83.559 | 9429'38'' | 17307'50'' | R1 | B |  |
| 2.50 | 1.32 | 66.835 | 1.797 | 66.926 | 8736'16'' | - | 0 | E | **D** |
| 2.00 | 1.32 | 44.360 | -1.104 | 44.374 | 9008'04'' | 8532'15'' | R1 | C |  |
| 2.00 | 1.33 | 82.681 | -7.646 | 82.948 | 9435'47'' | - | 0 | A | **E** |
| 1.95 | 1.33 | 66.830 | -2.307 | 66.811 | 9107'15'' | 9113'19'' | R1 | D |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **POINT** | **E** | **N** | **Z** |
| **C1** | 167487.672 | 152085.840 | 775.939 |
| **BM** | 167422.831 | 152077.999 | 767.33 |

Calculations:

Internal angle correction

The total sum of interior angles = (5 -2)\* 180= 540

The actual sum of interior angles = 53945'58''

Angular misclosure =53945'58'' -54000'00''= -0014'02''

Allowable error = 90' √5= 321'15''

Angular misclosure ‹ Allowable error √

Correction = - -0014'02''\5 =0002'48''

A = 13022'23''+0002'48''= 13025'11''

B= 5930'11''+0002'48''=5932'59''

C= 17307'50''+0002'48''=17310'38''

D=8532'15''+0002'48''= 8516'07''

E= 9113'19''+0002'48''= 9116'07''

Azimuth Calculations

α C1-BM= 83o6'17''

α C1-BM=83o6'17''+180=263o6'17''

∂ = 5809'38''

α AB=αAM + ∂ = 32115'55''

α BC= α AB + 180 - α ABC = 44142'56'' – 360= 8142'56''

α CD= α BC + 180 - α BCD = 8832'18''

α DE= α CD + 180 - α CDE = 18316'11''

α EA= α DE + 180 - α DEA = 27200'04''

α AB= α EA + 180 - α EAB= 32134'53''

Horizontal Distances

L AB=65.634+65.451 \ 2=65.543

LAB – LBA = 0.183

not accepted difference

Dlta L= .0759

L BC = 83.308+83.302\ 2 = 83.305

LBC- LCB= 0.006

Accepted

Dlta L =0.0883

LCD = 44.666 + 44.360\2 = 44.513

LCD –LDC = 0.306m \*\*\*السبب ميلان الريفليكتر بسبب وجود عمود امام الجهاز.

Accepted

Dlta L=0.0613

LDE = 66.835+66.830\2 = 66.833

LDE – LED = 0.005m

Accepted

Dlta L =0.0768

LEA= 82.681+ 82.648\2 = 82.665

LEA- LAE = 0.033m

Accepted

Dlta L =0.0879

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Station\leg** | **Length (m)** | **Corrected Azimuth** | **Depature △E=Lsinα** | **Latitude △N=Lcosα** | **Depature correction** | **Latitude Correction** | **Corrected △E** | **Corrected△N** | **E** | **N** |
| A |  |  |  |  |  |  |  |  | 167487.672 | 152085.840 |
| AB | 65.543 | 32134'53'' | -40.729 | 51.352 | 0.0422 | -0.125 | -40.6868 | 51.227 |  |  |
| B |  |  |  |  |  |  |  |  | 167446.9852 | 152137.067 |
| BC | 83.305 | 8142'56'' | 82.436 | 12.003 | 0.0537 | -0.159 | 82.4897 | 11.844 |  |  |
| C |  |  |  |  |  |  |  |  | 167529.4749 | 152148.911 |
| CD | 44.513 | 8832'18'' | 44.499 | 1.136 | 0.0287 | -0.0852 | 44.5277 | 1.0508 |  |  |
| D |  |  |  |  |  |  |  |  | 167574.0026 | 152149.9618 |
| DE | 66.830 | 18316'11'' | -3.812 | -66.721 | 0.0430 | -0.128 | -3.769 | -66.849 |  |  |
| E |  |  |  |  |  |  |  |  | 167570.2336 | 152083.1128 |
| EA | 82.665 | 27200'04'' | -82.615 | 2.886 | 0.0532 | -0.158 | -82.5618 | 2.728 |  |  |
| A |  |  |  |  |  |  |  |  | 167487.672 | 152085.840 |
| Sum. | 342.856 |  | -0.221 | 0.656 | 0.2208 | 0.6652 |  |  |  |  |

Depature and Latitude Correction:

E=sum.△E=-0.221

N=sum.△N=0.656

Total closing error = √(E)2 +(N)2 = 0.69

allow.= 0.0009 (342.856) +0.2 = 0.509

error > allow. X

**Elevations of Traverse points :**

H point= H sta.+HI +VD – HR (elevation)

HBM = 767.33

H A= 775.939

HB = hA+ HI+VD-HR = 771.983

hC= hB+ HI+VD-HR = 778.450

hD= hC+ HI+VD-HR = 777.927

hE= hD+ HI+VD-HR = 778.544

hA= hE+ HI+VD-HR = 770.228

Done.