

Table 1: Survey Camp Traverse Readings

Traverse Measurements

Occupied	Station	Backsight (metre)	Foresight (metre)	HD: Mean (Avg)	HA (Angle)
1	12	96.734			0°00'00"
	2		54.786	54.771	113°13'28"
2	1	54.756			0°00'00"
	3		49.286	49.303	159°20'32"
3	2	49.320			0°00'00"
	4		102.699	102.672	113°01'19"
4	3	102.645			0°00'00"
	5		36.886	36.898	105°08'56"
5	4	36.910			0°00'00"
	6		63.252	63.252	164°43'02"
6	5	63.252			0°00'00"
	7		24.465	24.465	211°02'29"
7	6	24.465			0°00'00"
	8		69.333	69.325	141°51'39"
8	7	69.317			0°00'00"
	9		44.050	43.976	225°12'05"
9	8	43.902			0°00'00"
	10		43.958	43.969	72°21'49"
10	9	43.980			0°00'00"
	11		56.883	56.8835	84°17'18"
11	10	56.884			0°00'00"
	12		47.110	47.1105	191°26'22"
12	11	47.111			0°00'00"
	1		96.784	96.759	217°22'23"

Total = 1799°1'22"

Sum of interior angles = 1799°1'22"

$$\sum (n-2) \times 180^\circ = (12-2) \times 180^\circ = 1800^\circ$$

Therefore, angle of misclosure = $1800^\circ - 1799^\circ 1' 22''$
 = 58' 38"

Bearing Calculations

Internal angles		Line	Bearings	
12-1-2	$113^{\circ}13'28''$	(1-2)	$113^{\circ}13'28'' - 70^{\circ}$	$N 43^{\circ}13'28'' E$
1-2-3	$159^{\circ}20'32''$	(2-3)	$43^{\circ}13'28'' + 159^{\circ}20'32'' - 180^{\circ}$	$N 22^{\circ}34' E$
2-3-4	$113^{\circ}01'19''$	(3-4)	$180^{\circ} - (22^{\circ}34' + 113^{\circ}01'19'')$	$N 44^{\circ}24'41'' W$
3-4-5	$105^{\circ}08'56''$	(4-5)	$105^{\circ}08'56'' - 44^{\circ}24'41''$	$S 60^{\circ}44'15'' W$
4-5-6	$164^{\circ}43'02''$	(5-6)	$(60^{\circ}44'15'' + 164^{\circ}43'02'') - 180^{\circ}$	$S 45^{\circ}27'17'' W$
5-6-7	$211^{\circ}02'29''$	(6-7)	$45^{\circ}27'17'' + 211^{\circ}02'29'' - 180^{\circ}$	$S 76^{\circ}29'46'' W$
6-7-8	$141^{\circ}51'39''$	(7-8)	$(76^{\circ}29'46'') + 141^{\circ}51'39'' - 180^{\circ}$	$S 38^{\circ}21'25'' W$
7-8-9	$225^{\circ}12'05''$	(8-9)	$38^{\circ}21'25'' + 225^{\circ}12'05'' - 180^{\circ}$	$S 83^{\circ}33'20'' W$
8-9-10	$72^{\circ}21'49''$	(9-10)	$180^{\circ} - (83^{\circ}33'20'' + 72^{\circ}21'49'')$	$S 24^{\circ}4'4'' E$
9-10-11	$84^{\circ}17'18''$	(10-11)	$84^{\circ}17'18'' - 24^{\circ}4'41''$	$N 60^{\circ}12'37'' E$
10-11-12	$191^{\circ}26'22''$	(11-12)	$(191^{\circ}26'22'' + 60^{\circ}12'37'') - 180^{\circ}$	$N 71^{\circ}38'59'' E$
11-12-1	$217^{\circ}22'23''$	(12-1)	$360^{\circ} - 217^{\circ}22'23'' - 71^{\circ}38'59''$	$S 70^{\circ}58'38'' E$
		(1-12)	Azimuth given	$N 70^{\circ} W$

Error of Misclosure

	Bearings	Length (L)	Latitude $L \cos \theta$	Departure $L \sin \theta$
1-2	N 43° 13' 28" E	54.771	+39.910	+37.510
2-3	N 22° 34' E	49.303	+45.528	+18.92
3-4	N 44° 24' 41" W	102.672	+73.342	-71.850
4-5	S 60° 44' 15" W	36.898	-18.0836	-32.189
5-6	S 45° 27' 17" W	63.252	-44.369	-45.079
6-7	S 76° 29' 46" W	24.465	-5.713	-23.788
7-8	S 38° 21' 25" W	69.325	-54.362	-43.020
8-9	S 83° 33' 30" W	43.976	-4.934	-43.698
9-10	S 24° 4' 41" E	43.969	-40.163	+17.938
10-11	N 60° 12' 37" E	56.8835	+28.261	+49.366
11-12	N 71° 38' 59" E	47.1105	+14.831	+44.710
12-1	S 70° 58' 38" E	96.759	<u>-31.538</u>	<u>+91.475</u>
			<u>2.777</u>	<u>-0.295</u>

$$\text{Error of Closure} = \sqrt{(2.777)^2 + (-0.295)^2}$$

$$= 2.79 \text{ m}$$

$$\Sigma L = +2.777$$

$$\Sigma D = -0.295$$

