Compass Traverse Local Attraction Correction

Local attraction corrections at the stations of a compass traverse from fore and back bearings, starting from a station free of attraction.

Method: Station-by-station elimination of local attraction

Input parameters

Unit system: SI

Parameter	Value	Unit
Fore bearing AB	45.500	°
Back bearing AB (observed at B)	226.50	°
Fore bearing BC (observed at B)	96.000	°
Back bearing BC (observed at C)	275.25	°
Fore bearing CD (observed at C)	167.75	°
Back bearing CD (observed at D)	348.25	°

Calculated results

Parameter	Value	Unit
Correction at B	-1.0000	°
Corrected fore bearing BC	95.000	°
Correction at C	-0.25000	°
Corrected fore bearing CD	167.50	°
Correction at D	-0.75000	°

Notes for this case

• Station A is taken as free of local attraction, so the true back bearing of AB is FB_AB ± 180°. The correction at B is the true minus the observed back bearing, and applies to every bearing observed at B, giving the corrected fore bearing of BC; its back bearing at C then gives the correction at C, and so on. Pick as the starting station one whose line has FB and BB differing by exactly 180° (a line free from attraction).

Formula and method

$$e_B = (FB_{AB} \pm 180^\circ) - BB_{AB}, \quad FB_{BC}{}' = FB_{BC} + e_B, \quad e_C = (FB_{BC}{}' \pm 180^\circ) - BB_{BC}$$

Variables

FB_{AB}	Fore bearing AB	rad
BB_{AB}	Back bearing AB (observed at B)	rad
FB_{BC}	Fore bearing BC (observed at B)	rad
BB_{BC}	Back bearing BC (observed at C)	rad
FB_{CD}	Fore bearing CD (observed at C)	rad
BB_{CD}	Back bearing CD (observed at D)	rad
e_B	Correction at B	rad
$FB_{BC}{}'$	Corrected fore bearing BC	rad
e_C	Correction at C	rad
$FB_{CD}{}'$	Corrected fore bearing CD	rad
e_D	Correction at D	rad

Method and standards

Local attraction.

Assumptions and limits

- Whole-circle bearings; first station free of attraction.

References

Station-by-station elimination of local attraction

Report details

Report reference	FCC-J4SP-CG7V (the same inputs always give the same reference)
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/civil/surveying/compass-local-attraction

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Reopens the calculator with the inputs of this report.