

How to Reduce the Chance of Errors Occuring

When levelling, the following procedures should be used if many of the sources of error are to be avoided.

1. Levelling should always start and finish at bench marks so that misclosure can be detected. When only one bench mark is available, levelling lines must be run in loops, starting and finishing at the same bench mark.
2. Where possible, all sight lengths should be below 50m to enable the staff to be read accurately.
3. The staff must be held vertically by suitable use of a circular bubble or by rocking the staff and noting the minimum reading.
4. BS and FS lengths should be kept equal for each instrument position to eliminate the effects of any collimation error. For engineering applications, it is important that the level has no more than a small collimation error.
5. For automatic and tilting levels, staff readings should be booked immediately after they are observed and important readings, particularly at change points, should be checked. Use a digital level where possible as it takes staff readings automatically.
6. The rise and fall method of reduction is preferable when height reference or control points where few, if any, IS readings are taken and the HPC method is preferable when setting out where a lot of IS readings are often taken.