

The Effect of Plumb Line Curvature on the Vertical Deflection Components

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Key words: Engineering survey, Positioning, Quantity surveying

SUMMARY

The effect of the deflection of plumb line is effectively used as a tools for finding Geodetic Network displacement and geoid undulation. In this paper, the different methods of the effect of plumb line curvature estimation is shown. In most of the methods, the need for sufficient gravity data, the knowledge of the density distribution, and other data make the estimation of the plumb line curvature effect a difficult task. Without knowing the density distribution inside the earth, the curvature effect can be determined from the use of Vening Meinesz's and Molodenskij' formula together. However, the procedure is laborious and time-consuming, and the integrations should be extended over the whole earth. This paper investigates the utilization of the combination of Stokes's and Molodenskij's approaches to determine the curvature effect of the plumb line. In other word, the determination of the curvature effect of the plumb line is based on combining Vening Meinesz's and Molodenskij's formula.

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