

**City Surveys**

**Plane Table**

**and**

**Minor Triangulation**

**[Bombay]**



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# **CITY SURVEY MANUAL:**

with Chapters on

**Plane Table Surveys**

and

**Minor Triangulation,**

by

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Published under Revenue Department Order No. 708, dated 19th January 1917.

POONA:

PRINTED AT THE YERAVDA PRISON PRESS

1918

## PREFACE

CITY Surveys have been made in this Presidency for at least a century past. Of the very old surveys practically nothing remains. Then we had another batch of surveys between 1860 and 1880. Some were carried out by the Survey of India largely with the Plane Table. The Bombay Survey Department seem never to have used this instrument. There was then a further series of surveys by Col Laughton, which became the stereotyped pattern for City Survey up to 1915. Those surveys were excellently made in so far as they presented an exact map of the existing state of things; but they were most defective in the want of foresight which led to their being so made that maintenance for a long period was practically impossible. Indian cities change rapidly, and it is not worth spending a large sum of money on a survey if it is quite out of date within a generation. Consequently by 1914 it became evident that most of the old surveys would have to be done again.

2. A Manual of rules for this old type of survey was compiled in Gujarati and printed in Marathi type, under the directions of Mr. C. N. Seddon, I. C. S., while Amatya or Chief Revenue Officer of Baroda about 1910. While discussing problems connected with such surveys in 1914, Mr. G. Wiles, I. C. S., was entrusted by Mr. Seddon, then Director of Land Records, with the preparation of a Manual. The intention was to embody the existing practice, largely as it had been handed down from Col. Laughton: In fact, one or two surveys were commenced with exactly the same radical defects which had rendered the old surveys useless and the new ones necessary. Mr. Wiles completed his Manual during 1915-16, but at this time very much thought was being given to city survey problems, stimulated by the resurvey of Bombay City which was being excellently done by Mr. Newland of the Survey of India and also by my own experiments with the Plane Table as an instrument for measuring the details of village sites in Surat District (1913-14). Consequently, though Mr. Wiles did much spade work, our methods were changing rather rapidly and new ideas were being adopted, so that it became necessary to rewrite and greatly add to his work. I took this task up myself, but it was not completed until 1917, partly because of other work in hand, but rather more because it was desirable to corroborate by full experience the new conclusions to which I had come. The Manual now appears very late owing to delays in the Press and in many little details connected with the Figures and so on. But the delay has not been unfruitful since it has enabled us to see the system in actual operation.

3. The process of City Surveys as herein set out differs materially from that of the old surveys, and it is more economical in labor and therefore in money: it is fully as accurate and moreover it has throughout one main object which is that it shall be maintainable practically in perpetuity so long as the ground once surveyed continues to be occupied by a city. With the continuous and frequently phenomenally rapid growth of land values, and with the growing intensity of municipal activity and town planning and all the other operations for which accurate detailed maps and continuous and unimpeachable records of titles are required, the importance of such a system needs no vindication. While the present work is practically wholly my own, still I am much indebted to Mr. Wiles for what he did and to Messrs. A. F. L. Brayne, I. C. S., V. B. Mardhekar, and A. R. Dalal, I. C. S., for helpful criticisms and suggestions as Superintendents of Land Records.

4. While dealing chiefly with City Survey, it seemed to me also expedient to add two chapters upon matters which had hitherto received no attention in this Presidency, and as to which there were no adequate works easily available and adapted to departmental conditions. These chapters are upon the Plane Table and its uses (*see R. 9863-14*), and the method of Minor Triangulation Survey. In this method, the principle of a demarcated rigorous frame-work is introduced into Revenue Cadastral Survey work of agricultural and waste

lands. It is my earnest hope that this method will in time lighten the heavy incubus of the innumerable boundary marks which have hitherto been unnecessarily employed in our Revenue Survey work. We have a very complete Manual of Cross-Staff Survey by Mr. R. G. Gordon, I. C. S. (1912).

5. It must be distinctly understood that there is much in this work, particularly in the chapter upon Enquiry, which must not be understood to rank as orders of Government. Where I am reproducing the views and instructions of Government, I think it will be clear enough from the context. Government have never themselves issued any directions as to how City Survey should be conducted, or on any technical points of survey. But these instructions are departmental. Least of all should any of my opinions on points of law be considered to have any greater weight, because they have been included in a book which Government have generally approved and permitted to be published. I trust, there will be something at least in this work which will be of use to all who are connected with Land Records work in India. I shall always be thankful for any corrections or suggestions for the amendment and improvement of the treatise.

*Poona, April 10, 1918.*

F. G. H. ANDERSON.

## ADDENDA AND CORRIGENDA.

Make the following additions and corrections neatly in manuscript, before bringing the Manual into use:—

Page.	Para.	Line.	Corrections.
1	b	Last	<i>After 'under discussion' write 'They will now pay under R. 15407-17.'</i>
16	40	1	<i>For 'line' write 'land.'</i>
38	89 (3)	3	<i>'against a Municipality'</i>
40	96 Note, cl. 2.	1	<i>'The thirty years' limitation'</i>
			} Note: "in respect of a public street or space only."
44	107	18	<i>After 'have acquired' insert 'or which has vested in them.'</i>
	108	27	<i>After 'vesting is at an end' note: "I. L. R. 44 Cal. 689; confirmed in R. 2597-18 (Jalgaon Market Sites)."</i>
		31	<i>After 'sanction of the Commission' insert 'which can be refused unless Land Revenue is assessed and fully protected (R. 2597-18).'</i>
45			<i>The first two lines at the top of this page are misplaced and should be the last two lines of the page.</i>
53	Note.	3	<i>Correct 'ehiter' to 'either.'</i>
73	174	Last	<i>Instead of 'area,' write 'areas' and delete the comma.</i>
89	6	Last	<i>After 'Chapter II' correct comma to semicolon (;).</i>
99	F		<i>Under 'Left: Correction' instead of a blank insert -30'.</i>

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Government Resolutions and Orders are cited by one letter (R., G., J, &c.) indicating the department (Revenue, General, Judicial) and by their number, and the last two figures of the year. Thus R. 3251-17 means Government Resolution (or Order) in the Revenue Dept., No. 3251 of 1917.

- C. T. S. = City Survey.
- D. I. L. R. = District Inspector of Land Records.
- D. L. R. = Director of Land Records.
- D. S. O. = District Survey Office.
- E. O. = Enquiry Officer.
- G. T. S. = Great Trigonometrical Survey.
- I. L. R. = Indian Law Reports.
- L. R. C. = Land Revenue Code of 1913.
- N. A. = Non-agricultural.
- P. T. = Plane Table.
- R. L. A. = Remembrancer of Legal Affairs.