



# **Indian Railway Signal Engineering**

**Volume -1**

By:  
**Pramod P. Goel**

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**Dedicated to my parents**

## PREFACE

I joined railway in September 1964 and retired having put in 40 years of service. While working in different capacities, experience has been snowballing around me. The idea of sharing my experiences with all those who are in the beginning of their career has always been haunting me. I made frequent attempts to put all that on record, which I gathered as knowledge with the passage of time. However now that it is available in your hands a feedback shall be of great help in improving the write-up.

Railway Signal Engineering is not taught formally in colleges except by The Institution of Railway Signal & Telecommunication Engineers. The institute placed at Secunderabad is the only temple of Railway Signal Engineering and I am proud to having started my career at this Institute.

Complete Signalling system may be put in six major groups viz. **operating devices**; such as levers, operating cum indication panel or key board with a VDU; **operated equipment** such as points, signals, facing point locks etc; **transmission media between operated equipment and the operating devices** such as rod run, wire run and cable; **interlocking**; **power supply system** viz. batteries/IPS and the **monitoring devices** viz. track circuits, electric point detectors, lock/fouling bars etc.

There were two choices, first, the entire work could be put in one bound book form and second, to put different topics in the form of booklets. I decided to go in for the second choice with the reason that every one might not be interested in all the topics and also that a book with every thing together may become unwieldy. The Book 'Indian Railway Signal Engineering' sre presented in the form of booklets named as the 'Indian Railway Signal Engineering, Volume-I, Volume-II, Volume-III & Volume-IV, out of which each contains a major topic with a few topics common to signal and interlocking without which it would have been difficult to explain the topic covered in the book in hand.

The Volume-I, in your hand is basically an introduction to Signal Engineering, history of railways, history of signalling, signalling system, operating system of railways and how the installation process of signalling system works, without going much into technical details, which is followed by ensuing volumes. I have liberally taken extracts from various rule books to be accurate in presentation of facts as well as to enable reader to get major portion of the rules and regulations at one place.

This book basically deals with broad gauge railways which covers the major portion of Indian Railways

I am hopeful that this book shall be useful to the signal engineers as ready reference as well as for preparation of departmental examinations.

Any suggestions for its improvement shall be my privilege

## **ACKNOWLEDGEMENTS**

This book is the result of persistent encouragement of Shri Madan Mohan Agarwal, Ex Chief Engineer Northern Railway and author of many books on Track Engineering. I am not hesitant to record that this book might not have seen the light of the day without his inspiration. I express my sincere thanks to him;

I am thankful to Shri P. K Mehta, a friend of mine who has been a very popular author of books on finance and has been a source of inspiration to me;

Debts of gratitude are also owed to Shri A.K. Rastogi FA&CAO/Con. NCR. Allahabad, Shri Anup Kumar CEE (P&D) CORE, Shri D.K. Singh DYCSTE/Con. NCR. Allahabad for helping me with the latest prevalent practices of Railways; and Shri P.L. Srivastava, who having gone through the text painstakingly has given very valuable suggestions;

I am immensely grateful to Shri Amit Kesarwani, CAD expert, who has prepared most of the drawings and helped with content management & indexing of this and other volumes;

Lastly, I wish to thank my family members, my wife Pratibha Goel and children Chhavi, Vaibhava, Vipul and son in law Amitabh, who have always been there for me and have been giving help and advice to enable me to reach this point.

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Date: 01.06.2008

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