

Preface

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List of Abbreviations and Symbols

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1 Introduction

The engineer and construction / The construction industry / Types of construction contracts / Construction economy and the engineer / Construction economy and the contractor / Value engineering / Making a value engineering study / Objections to value engineering studies / Examples of value engineering studies / The time value of money

2 Job Planning and Management

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Construction activities / The critical path method / Definitions of terms and symbols / Steps in critical path scheduling / Developing a critical path schedule / Determining total float / Determining free float / Applying the critical path method to overlapping activities / Updating an arrow diagram / The time-grid diagram method / Advantages of the time-grid diagram / Conducting a crash program / Determining the minimum total cost of a project / Manual versus computer analyses of critical path methods / Preparing a construction schedule for a highway project / Clearing the right of way / Drainage structures / Earthwork / Concrete pavement / Scheduling resources / Delivering materials / Scheduling laborers / Financing the project / Job layout / Project control during construction / Keeping equipment records / Project supervision / Construction-cost control / Cost-control records

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Rolling resistance / The effect of grade on the required tractive effort / The effect of grade in locating a borrow pit / The effect of altitude on the performance of internal-combustion engines / The combined effect of pressure and temperature on the performance of internal-combustion engines / Drawbar pull / Rimpull / Acceleration

5 Soil Stabilization and Compaction

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Glossary of terms / Properties of soils / Swell and shrinkage / Types of soils / Soil tests / Laboratory tests / Field tests / Nuclear determination of moisture density of soils / Soil stabilization / Stabilizing soils with hydrated lime / Asphalt-soil stabilization / Cement-soil stabilization / Specifications for compacting soils / Tamping rollers / Smooth-wheel rollers / Pneumatic-tired rollers / Pressure bulb theory of load distribution / Pneumatic-tired rollers with variable inflation pressures / Vibrating compactors / Densification of soils by explosive vibrations / Installation of the explosives / Deep densification of soils using a terra-probe vibrator / Production rates using the terra-probe vibrator / Limitations on the classifications of soils that may be compacted by the terra-probe vibrator / Cost considerations / Conclusions regarding the method of deep-sand vibratory compaction

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