

20 units covering all facets of earthmoving

- **A wealth of information built up from over 50 years of ‘in the field’ experience**
 - **Written in an easy to follow ‘hands on’ practical language**
 - **Fully illustrated with hundreds of photographs, diagrams and charts**
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1. Introduction

Emphasises the types and extent of soil erosion and the role of earthworks in combating this land degradation problem. Briefly summaries the contents of the other Units that make up the course.

2. Safety

Promotes awareness of safety and the uses for safe work practices in earthmoving operations. Safety is everybody’s concern and should not be ignored on legal, moral or financial grounds.

3. Tractor Mechanics and Maintenance

Provides a detailed breakdown of the major components of a typical bulldozer including the operation and maintenance procedures required to maintain top performance.

4. Erosion Control and Design Principles

Describes the principles involved in designing soil conservation earthworks including guidelines for estimating runoff and calculation of flow velocities. Legal implications associated with earthworks are also discussed.

5. Soils

Deals with soil formation, soil properties, erodability, classification, testing, ameliorants and compaction. Explains the behaviour of soil when used for construction of earthworks.

6. Levels and Levelling

Describes the types of levels used in the earthmoving industry from the basic dumpy level to the modern laser level detailing procedures to be followed in setting up, signalling and field book recording.

7. Earthmoving Principles

Describes the common types of earthmoving activities and the range of equipment suited to the variety of functions involved. Deals with the factors that determine earthmoving efficiency.

8. Dozing and Ripping Principles

Discusses the crawler tractor and its attachments, the blade and ripper. Details the different types of blades and rippers describing their application and advantages.

9. Farm Dams

Provides comprehensive information on the types of dams and their particular purposes. Site and shape selection are described, as well as methods for determining specifications for excavation, embankment and spillway.

10. Construction of Farm Dams

Describes basic dam construction principles and the need for adjustment to procedures to suit site conditions. Emphasises the importance of placement of materials in the embankment and the need for early identification of suitable and unsuitable soils.

11. Contour and Graded Banks

Discusses the role and function of contour and graded banks for soil conservation, as well as the nature and purpose of the various banks. Bank design is dealt with including shape, size, grade, length and spacing.

12. Construction of Banks

Sets out the principles and techniques of bank construction for the benefit of the general earthmoving operator. Construction techniques are dealt with in a step by step fashion for a range of banks and their component parts.

13. Waterways

Describes the different types of waterways and their characteristics explaining their planning, design, layout and pegging. Emphasises their importance as being critical to the success of soil conservation programs.

14. Construction of Waterways

Deals with the construction techniques best suited to both internally and externally constructed waterways. Also discusses aftercare and longer term maintenance.

15. Gully Filling and Shaping

Discusses the nature of gully erosion and its causes and effects. The techniques for gully filling and shaping are described in detail with an indication of situations where one method may be suited to another.

16. Land Clearing

Identifies the types of land clearing and describes the equipment used. The methods of clearing and hazards involved are explained highlighting safety requirements.

17. Access Tracks

Covers the principles and methods involved in the planning, construction and maintenance of access tracks in order to minimise soil erosion and control runoff.

18. Pipes in Earthworks

Discusses the general use of pipes in earthworks. The types available, their location and the failure

risks associated with each situation together with the necessary preventative measures.

19. Flumes and Chutes

Describes the various types of flumes and the factors that influence their location, design and construction. Procedures are detailed for the construction of concrete flumes including preferred equipment and excavation methods.

20. Special Earthworks

Describes the construction techniques for special earthworks associated with three non-farm areas – stabilising mine sites, including overburden replacement; waterponding in semi arid areas to encourage plant growth; and reshaping of sand dunes to prevent beach front erosion.

The training manuals are available from:

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