

AS 3868—1991

Australian Standard[®]

**Earth-moving machinery—Design
guide for access systems**

This Australian Standard was prepared by Committee ME/63, Earth-moving Equipment. It was approved on behalf of the Council of Standards Australia on 13 November 1990 and published on 11 February 1991.

The following interests are represented on Committee ME/63:

Australian Mining Industry Council
Austroads
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Construction and Mining Equipment Association of Australia
Department of Conservation and Environment, Vic.
Department of Defence
Department of Industry and Economic Planning, Vic.
Department of Minerals and Energy, N.S.W.
Department of Resource Industries, Qld
Earthmovers and Road Contractors Association of Australia
Forestry Commission of New South Wales
Local Government Engineers Association of New South Wales
Queensland Forest Service
Rural Water Commission, Vic.
Safety Institute of Australia
Telecom Australia
Tractor and Machinery Association of Australia
Water Board, Sydney
WorkCover Authority, N.S.W.

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 87224.

AS 3868—1991

Australian Standard[®]

**Earth-moving machinery—Design
guide for access systems**

First published as AS 3868—1991.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 6651 5

PREFACE

This Standard was prepared by the Standards Australia Committee on Earth-moving Equipment at the request of the Department of Mines, Queensland.

Although it is based on ISO 2867—1980, *Earth-moving machinery—Access systems*, it includes additional recommendations to suit Australian conditions.

The Standard forms part of the series AS 2958, *Earth-moving machinery—Safety*.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 REFERENCED DOCUMENTS	4
1.3 DEFINITIONS	4
SECTION 2 GENERAL DESIGN RECOMMENDATIONS	
2.1 STRUCTURAL DESIGN	5
2.2 FUNCTIONAL DESIGN	5
2.3 MATERIALS	5
2.4 FIXING OF COMPONENTS	5
2.5 STRESSES AND SIZES OF BOLTS	5
2.6 WELDING	6
2.7 VISIBILITY	6
SECTION 3 LADDERS	
3.1 DESIGN LOAD	7
3.2 DIMENSIONS OF STEP-LADDERS	7
3.3 RUNG LADDERS	7
3.4 STAIRWAYS	7
3.5 SAFETY	8
SECTION 4 GRAB RAILS (HANDRAILS) AND GRAB HANDLES	
4.1 STRENGTH	9
4.2 HEIGHT	9
4.3 SPACING	9
4.4 SHAPE	9
4.5 DIAMETER	9
4.6 LENGTH	9
4.7 CLEARANCE	9
4.8 LOCATION	9
4.9 CHANGE OF SHAPE	9
4.10 MAXIMUM HEIGHT OF GRAB HANDLES	10
4.11 PREFERRED SUPPORT	10
4.12 CONTROLS	10
SECTION 5 WALKWAYS, PLATFORMS, AND LANDINGS	
5.1 FLOORS	11
5.2 GUARDRAILS	11
SECTION 6 CAB ENTRANCE AND EXIT OPENING	
6.1 NORMAL ENTRANCE AND EXIT	12
6.2 ALTERNATIVE EXIT	12

STANDARDS AUSTRALIA

Australian Standard

Earth-moving machinery—Design guide for access systems

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard recommends criteria for design of component parts of access systems on earth-moving machines having engine power in excess of 15 kW.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1170	SAA Loading Code
1170.1	Part 1: Dead and live loads and load combinations
1170.2	Part 2: Wind loads
1250	SAA Steel Structures Code
1538	Cold-formed Steel Structures Code
1554	SAA Structural Steel Welding Code
1657	SAA Code for Fixed Platforms, Walkways, Stairways, and Ladders
1664	SAA Aluminium Structures Code
1665	SAA Aluminium Welding Code
1734	Aluminium and aluminium alloys—Flat sheet, coiled sheet and plate
1866	Aluminium and aluminium alloys—Extruded rod, bar, solid and hollow shapes
2953	Earth-moving machinery—Human dimensions
2953.1	Part 1: Minimum access
2953.2	Part 2: Physical dimensions of operators and minimum operator space envelope

1.3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.3.1 Entrance opening—opening providing entry to the operating compartment.

1.3.2 Grab rail (handrail) and grab handle—devices that may be grasped by the hand for body support.

1.3.2.1 Grab rail (handrail)—device designed specifically to permit movement of the hand to a different location without removing the hand from the device. (See Figure 4.1.)

1.3.2.2 Grab handle—device designed specifically for single placement of a hand. (See Figure 4.2.)

1.3.3 Guardrail—a rail above the outside edge of a walkway or platform to protect a person falling. (See Figure 5.1.)

1.3.4 Ladder—system consisting of a series of steps that are uniformly spaced and will accommodate either one foot or both feet.

1.3.5 Platform—surface on which personnel are required to perform a service function, or a machine function other than operating.

1.3.6 Step—device designed for foot placement.

1.3.7 Should—indicates a recommendation.

1.3.8 Walkway—surface designed for personnel to move about on the machine.