THRESHOLD RAMP PERFORMANCE SOLUTION

BALLET REHEARSAL ROOM
SYDNEY OPERA HOUSE

iAccess Consultants

A division of Seidman & Associates Pty Ltd

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Revision [-]

Project: Ballet Rehearsal room

Sydney Opera House

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1.0 INTRODUCTION

1.1 General

This Performance Solution has been prepared at the request of Tonkin Zulaikha Greer Architects as project architects on behalf of the Sydney Opera House Trust and relates to the use of an AS1428.1:2001 threshold ramp in lieu of an AS1428.1:2009 threshold ramp associated with Door GR-03 to address the change in level between the passage and the Ballet Rehearsal room floor level.

The following extracts from the respective Australian Standards indicate the permissible lengths of threshold ramps. As part of the 2009 revision of AS1428.1 the length of the threshold ramp was reduced from 450mm to 280mm. The 450mm length of the threshold ramp was in place since the superseded 1428.1:1998 edition of the Australian Standard. The gradient of the threshold remained unchanged by the revision.

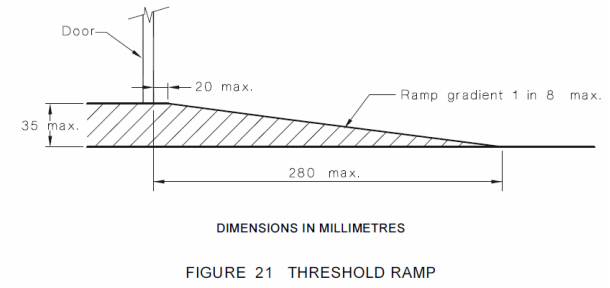


Figure 1 Extract from AS1428.1:2009

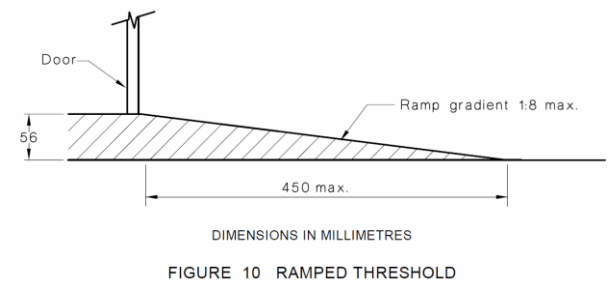


Figure 2 Extract from AS1428.1:2001

Door GR-03 located at the eastern end of the passage connecting the Ballet Rehearsal Room with the Western Foyer.

The Ballet Rehearsal Room is located at Ground Floor level on the western side of the Central Passage. The Ballet Rehearsal Room is accessed from a passage connecting to the Western Foyers or from the lift lobby (GL13 & 18) located to the southern side of the Central Passage. This route forms the accessible path of travel to and from the Ballet Rehearsal Room.

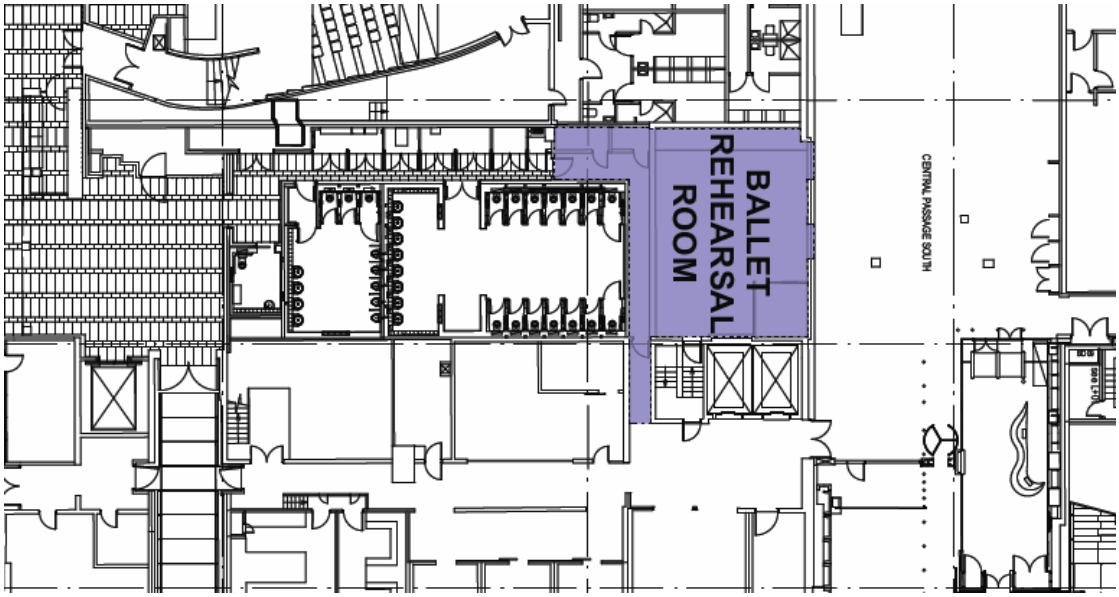


Figure 3 Location of the Ballet Rehearsal Room

This performance solution will demonstrate that the use of the AS1428.1:2001 (450mm long) threshold ramp does not preclude the operation of door GR-03 to the Ballet Rehearsal Room by adopting the reach range approach of Clause 22 of AS1428.2:1992.

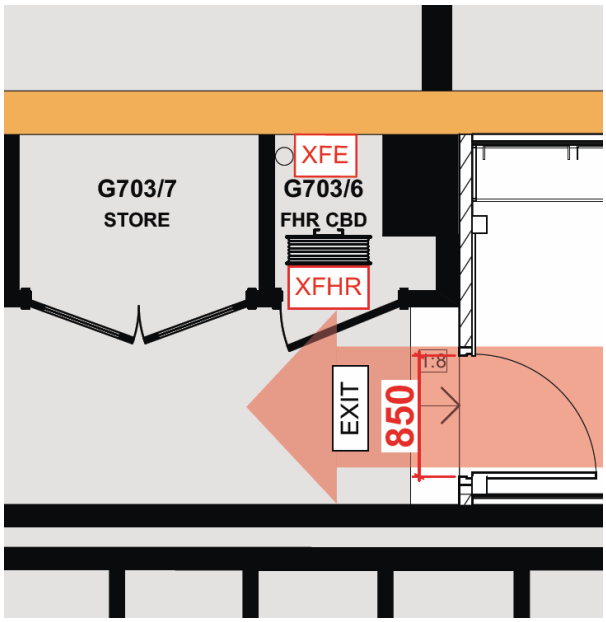


Figure 4 Location of the threshold ramp associated with door GR-03

The dimensional arrangements identified as part of AS1428.1:2009 are based on the A80 and A90 wheelchair dimensions where AS1428.1:2001 relies on the spatial arrangements of the A80 wheelchair alone.

This report is based upon, and limited to, the information depicted in the documentation provided for assessment, and does not make any assumptions regarding 'design intention' or the like.

1.2 Basis of Report

The assessment contained within this report reflects –

I. State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (Codes SEPP)
II. The NCC Building Code of Australia (BCA), Volume 1, Edition 2016, inclusive of NSW variations,
III. Architectural plans
IV. AS1428.1:2009
V. AS1428.1:2001

1.3 Scope of Project

The National Construction Code (NCC), within Part A0.5, states that compliance with the applicable Performance Requirements in a building design can only be achieved by complying with either the Deemed-to-Satisfy (DTS) provisions or as a Performance Statement.

It is intended that the proposed design of the subject development in this instance is to incorporate a combination of prescriptive and performance based compliance.

To this extent, this report has been prepared to identify and analyse the proposed Performance Statement and demonstrate the suitability of this design to ensure it satisfies the performance requirements of the NCC.

The following table provides a summary of the proposed Performance Statement relating to the affected parts of the building: -

NCC DTS PROVISION	NCC PERFORMANCE REQUIREMENT	ASSESSMENT METHODOLOGY	NCC DTS CRITERIA AND PROPOSED PERFORMANCE STATEMENT
D3.1 General Building Access Requirements	DP1(a)(iii)	NCC CL A0.9(d)	NCC Clause DP1(a)(iii) states: *Access must be provided, to the degree necessary, to enable people to access work and public spaces, accommodation and facilities for personal hygiene.*

1.4 Limitations of Report

The content of this report relates only to the non-compliance and subject building identified.

The study will be undertaken on the information made available by the design team. No liability is accepted on the accuracy of the information provided.

Any change in the above information to suit future re-organisation or planning will require further assessment to confirm compliance with the intent of the design objectives.

1.5 Report Exclusions

It is conveyed that this report should not construed to infer that an assessment for compliance with the following has been undertaken –

I. National Construction Code (NCC), with exception of the direct assessment made relating to the provision passage clearances required by NCC Clause D1.6 and Clause 6.3 of AS1428.1:2009
II. Occupational Health & Safety Act and Regulations;
III. WorkCover Authority requirements

2.0 DEVELOPMENT DESCRIPTION

2.1 General

The Development Application relates to the works associated with the new Ballet Rehearsal Room within at the Sydney Opera House. This project is defined as Accessibility Projects in response to the recent Accessibility Master Plan (AMP) as prepared by Scott Carver.

The Accessibility Master Plan (AMP) was prepared in response to the commitment by the Sydney Opera House within the Sydney Opera House Access Strategic Plan 2013-2015 which establishes the guiding principles of equity and social inclusion.

The purpose of the AMP was to maximise access for all, balancing the need for maintaining excellence for the venues within the Sydney Opera House; meeting its obligation as a World Heritage listed asset; its compliance to regulatory requirements; and maintaining its place as a world class performing arts venue.

The AMP identified the current gaps in compliance and explored the constraints of the existing premises. As a result, a series of opportunities were identified to provide equitable access to the core public and performer areas within the Sydney Opera House.

This report confirms that the provisions for compliance with the accessible requirements nominated in the Disability (Access to Premises – Building) Standard 2010 have been incorporated into the design proposed. The detail of the requirements of the Standard will need to be demonstrated in the detailed design associated with the Documentation process.

2.2 Building Characteristics and Occupant Characteristics

Sydney Opera House (1957 - 1973) is a masterpiece of late modern architecture. It is admired internationally and proudly treasured by the people of Australia. It was created by a young architect who understood and recognised the potential provided by the site against the stunning backdrop of Sydney Harbour. Denmark's Jørn Utzon gave Australia a challenging, graceful piece of urban sculpture in patterned tiles, glistening in the sunlight and invitingly aglow at night.

The Sydney Opera House has earned a reputation as a world-class performing arts centre and become a symbol of both Sydney and the Australian nation.

The distinctive roof comprises sets of interlocking vaulted 'shells' set upon a vast terraced platform and surrounded by terrace areas that function as pedestrian concourses.

The two main halls are arranged side by side, with their long axes, slightly inclined from each other, generally running north-south. The auditoria face south, away from the harbour with the stages located between the audience and the city. The Forecourt is a vast open space from which people ascend the stairs to the podium. The Monumental Steps, which lead up from the Forecourt to the two main performance venues, are a great ceremonial stairway nearly 100 metres wide.

The characteristics of the future patrons and performers are unknown however the proposed design of the proposed works have been determined to meet the changing needs of the diverse range of patrons and performers accessing the Sydney Opera House and its facilities.

3.0 OBJECTIVES AND PERFORMANCE REQUIREMENTS

3.1 Objectives and Performance Requirements

The Building Code of Australia (BCA) states that compliance with the Performance Requirements can only be achieved by –

A. Complying with the Deemed-to-Satisfy provisions; or
B. Formulating a Performance Statement which -
    (i) complies with the Performance Requirements; or
    (ii) is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or
C. A combination of both (a) and (b).

3.2 Relevant Performance Requirements

As contained within items 1.3 and 3.1 of this report, new works to the building are proposed which incorporate NCC Performance Statement justifying deemed- to-satisfy non-compliance/s.

NCC DTS PROVISION	NATURE OF NON – COMPLIANCE	NCC DTS CRITERIA AND PROPOSED PERFORMANCE STATEMENT
D3.1 General Building Access Requirements	The threshold ramp proposed to be employed at door GR-03 will have a rise greater than that approved by Clause 10.5 of A1428.1:2009	NCC Clause DP1(a)(iii) states: *Access must be provided, to the degree necessary, to enable people to access work and public spaces, accommodation and facilities for personal hygiene.*

Applicable part/s of Performance Requirements DP1(a)(iii) state as follows –

Access must be provided, to the degree necessary, to enable people to access work and public spaces, accommodation and facilities for personal hygiene.

4.0 ADOPTED ASSESSMENT METHOD

4.1 General

The acceptance criteria stipulated within clause 4.3 of this report represents the benchmark for measuring compliance for the proposed Performance Statement.

4.2 Method of Analysis

This report relies upon an expert judgement of the Deemed-to-Satisfy non-compliance/s for the purpose of demonstrating compliance with the applicable performance requirement/s of the NCC, in this instance being DP1(a)(iii)

4.3 Acceptance Criteria

For the Performance Statement, with recognition of the nature of the prescriptive non-compliance/s, the following acceptance criteria is established –

The Performance Statement is considered acceptable if it is shown to be at least equivalent or better than the NCC DtS provisions.

5.0 PERFORMANCE STATEMENT

5.1 Preamble

In accordance with A0.10 of the NCC, any Performance Statement must consider all relevant Performance Requirements. Performance Requirement DP1(a)(iii) has been directly identified as the only relevant Performance Requirements in relation to the subject issue/s.

DP1(a)(iii) in this instance concerns itself with the provision of accessible access to areas of the building appropriate to the disability or other needs of the occupant

5.2 Performance Statement –NCC Clause DP1(a)(iii)

5.2.1 NCC DtS Compliant Benchmark Design

DP1(a)(iii) nominates that Access must be provided, to the degree necessary, to enable people to access work and public spaces, accommodation and facilities for personal hygiene. NCC Clause D3.1 indicates the General Access requirements to be achieved.

In satisfying the provisions of Clause D3.1 the provisions of Clause 10.5 of AS1428.1:2009 Threshold Ramp need to be satisfied.

5.2.2 Assessment

DP1(a)(iii) states the performance requirement of providing Access. The performance requirement is qualified by the words *"to the degree necessary".*

The clearances noted at Clause 10.5 of AS1428.1:2009 have been determined to allow the 90th percentile wheelchair user to travel along the path of travel.

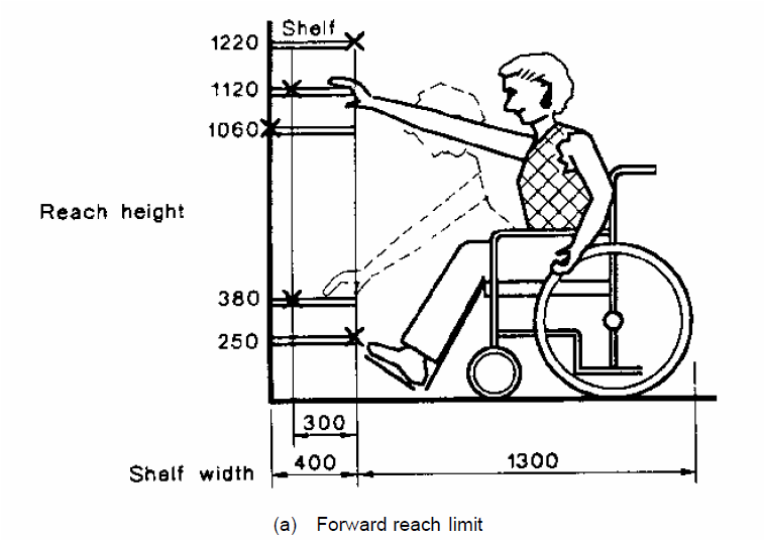
The editions of AS1428.1:2001 and AS1428.1:1998 nominated at Clause 7.1(d) the dimensional information relating to threshold ramps as being 450mm in length with a gradient of 1:8.

The premise of the permissible length of the gradient related to the ability of a wheelchair user to approach the door and operate the hardware to gain access to a room or dwelling. As part of the function of the approach to the doorway the ability to operate a key in a lock is of primary importance.

In the case of the Ballet Rehearsal Room it is likely that the access control system will release the striker and provide easy access through the doorways.

Clause 22 of AS1428.1:1992 address the issues of Reach Range. The position of the door handle is located within the limits of the reach range permitted by the Standard.

In this design latchside clearance compliant to the provisions of Clause 13.3 of AS1428.1:2009 is provided.



(a) Forward reach limit

6.0 CONCLUSION

This Alternative Design Solution seeks to employ an AS1428.1:2001 compliant threshold ramp to Door GR-03 in lieu of an AS1428.1:2009 compliant threshold ramp leading to the Ballet Rehearsal Room.

The adoption of this approach is justified by the reach range provisions of Clause 22 of AS1428.2:1992 together with the fact that compliant latchside clearances are provided and that the operation of the door strike is likely to be operated by the access control system.

This approach is further support by the fact that the 450mm threshold length was in effect as part of the 1998 and 2001 editions of AS1428.1. The threshold length was only reduced as part of the 2009 edition of AS1428.1 when the reference wheelchair design was increased from the 80th to the 90th percentile wheelchair scale.

DP1 employs the words *"to the degree necessary"* in defining the Performance Requirements to be satisfied.

It can be determined from the preceding discussion that the technology and sizing of wheelchairs has progressed since the 1983 J Bails research which forms the basis of the current AS1428.1:2009 Standard.

This assessment relies upon the fact that it is possible to operate the door employing the reach range provisions of Clause 22 of AS1428.2:1992 as well as the fact that the proposal is within the limits of the previously approved method of providing threshold ramp access where there is a change in level at doorways.

It can be seen from this discussion that the approach suggested by this alternative design solution satisfies the intent of DP1(a)(iii).