

# American National Standard

*for Evacuation Devices –*  
**Volume 1:**  
**Emergency Stair Travel Devices Used by**  
**Individuals with Disabilities**

---



# RESNA

Rehabilitation Engineering and Assistive Technology Society of North America



**ANSI/RESNA  
ED-1:2019**

2019-06-07

American National Standard  
for Evacuation Devices –

# **Volume 1: Emergency Stair Travel Devices Used by Individuals with Disabilities**

Secretary

**Rehabilitation Engineering and Assistive  
Technology Society of North America**

Approved 23 May 2019

**Rehabilitation Engineering and Assistive  
Technology Society of North America**

Approved 03 June 2019

**American National Standards Institute, Inc.**

## **COPYRIGHT PROTECTED DOCUMENT**

© 2019 RESNA

These materials are not for resale.

These materials are subject to copyright claims of RESNA. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of RESNA. All requests pertaining to the American National Standard for Evacuation Devices—Volume 1: Emergency Stair Travel Devices Used by Individuals with Disabilities should be submitted to RESNA.

### **RESNA**

**1560 Wilson Blvd., Suite 850, Arlington VA 22209**

Tel **703/524-6686**

Fax **703/524-6630**

TTY **703/524-6639**

E-mail **publications@resna.org**

Web **www.resna.org**

### **RESNA Assistive Technology Standards Board**

E-mail **technicalstandards@resna.org**

Published in the United States of America

## RESNA American National Standard

RESNA is accredited as a standards organization by the American National Standards Institute (ANSI). Approval of a RESNA American National Standard requires review by the RESNA Assistive Technology Standards Board and by ANSI to determine that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus means substantial agreement has been reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he or she has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue any interpretation of an American National Standard in the name of the American National Standards Institute or RESNA. Requests for interpretations should be addressed to the secretary or sponsor whose name appears on the title page of this standard.

**CAUTION NOTICE:** This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the ANSI office.

## Foreword

This standard covers emergency stair travel devices used by individuals with disabilities (ESTDs). These devices are used to enable evacuation by individuals with disabilities from high-rises, but may be used in any structure having stairs. Individuals with disabilities (occupants) work with other individuals during use, such as first responders, other life safety personnel, co-workers, family members, or others (operators).

This standard is designed to document the minimum requirements for ESTDs, and test methods to produce objective information about the equipment. All are intended to promote occupant and operator safety. In all cases, information disclosed with respect to the testing should be considered specific to the testing of a specific ESTD make and model.

RESNA ED Volume 1 consists of the following sections under the general title Evacuation Devices:

### **Volume 1: Emergency Stair Travel Devices Used by Individuals with Disabilities**

Section 1: **Terminology, Description, and Performance**

Section 2: **Inspection, Installation, and Maintenance**

The RESNA Standards Committee on Emergency Stair Travel Devices Used by Individuals with Disabilities (ESTD) was approved to begin work on this ED-1 standard by the RESNA Assistive Technology Standards Board (ATSB) on June 24, 2009. This occurred after recognizing that no single standards organization had responsibility to oversee these life safety devices, and as a result consumers were left to navigate an overabundance of technical specifications in order to try to piece the pertinent criteria together.

The use of emergency stair travel devices by individuals with disabilities has been noted in such large-scale incidents such as the attacks on the World Trade Center in 1993 and 2001. Most information about these devices is anecdotal, however. The RESNA Standards Committee on ESTD was formed to establish common terminology, identify essential features, and introduce performance standards, so that consumers, life safety professionals, and building owners and managers are able to select effective, high quality devices for use by building occupants. Even with a standard, it should be noted that regular attention to maintenance and adequate on-going training on the proper use of a device is an important aspect of its successful use.

### Committee Goals

The RESNA Standards Committee on ESTDs strives to establish strategic alliances with groups such as the National Fire Protection Association and others, to ensure that this established RESNA ED-1 Standard is incorporated into other review bodies with enforcement authority. It should also be recognized that this standard is established in such a way that advances in the industry or yet unrealized equipment can be included in subsequent revisions to the standard.

## Committee Structure

The RESNA Standards Committee on ESTDs officers include a Chair and Vice Chair. All RESNA ESTD members, including the officers, are identified as belonging to one the following interest categories:

- Building owners and managers
- Code development/code enforcement professionals
- Consultants
- Consumers
- Insurance industry professionals
- Manufacturers and suppliers
- Researchers
- Testing organization and facility professionals
- General or other

Per RESNA Procedures, RESNA ESTD membership must be balanced, i.e., the number of members in any one interest group cannot exceed more than one third of the total number of members. This helps promote diverse discussion and consensus across different perspectives as votes are taken.

For further information regarding RESNA procedures, please visit the RESNA website <<https://www.resna.org/at-standards>>

RESNA is accredited as a standards organization and the RESNA Assistive Technology Standards Board oversees the work of the RESNA standards committees. RESNA is an interdisciplinary organization that promotes assistive technology for people with disabilities.

Suggestions for the improvement of this standard are welcome. They should be sent to the following address:

**RESNA Assistive Technology Standards Board**  
**1560 Wilson Blvd., Suite 850**  
**Arlington, VA 22209**

This standard was approved by the RESNA Standards Committee on Emergency Stair Travel Devices Used by Individuals with Disabilities and the RESNA Assistive Technology Standards Board for submittal to ANSI. Committee approval of the standard does not necessarily imply that all the committee members voted for its approval or the approval of every test method or requirement in the standard. At the time the standard was developed, the RESNA Standards Committee on Emergency Stair Travel Devices Used by Individuals with Disabilities consisted of the following members:

**Organization**

**Name of Representative**

University of Illinois at Chicago - Assistive Technology Unit.....	Chair, Glenn Hedman
Taskforce Fire & Life Safety for People with Disabilities.....	Vice-Chair, Edwina Juillet
Children's Specialized Hospital.....	David Savage
EAD & Associates .....	Elizabeth Davis
EVAC+CHAIR North America, LLC .....	Jeff Wolvovsky
Evacuscape Inc. ....	Stephen Szames
Garaventa (Canada) Ltd .....	Trevor de Jaray
City of Chicago - Mayor's Office for People with Disabilities .....	Laurie Dittman
National Fire Protection Association, Inc. (NFPA) .....	Kevin Carr
Ocean County College (OCC) .....	Jamie Arasz Prioli
Stryker Medical .....	Nathan Matheny
Texas Woman's University .....	Alicia Lohmann
RESNA AT Standards Board .....	Secretary, Yvonne Meding

**Acknowledgement**

The RESNA Standards Committee on ESTDs would like to acknowledge the contributions of University of Illinois at Chicago – Assistive Technology Unit Equipment Specialist James Graham, regarding his continued work on the ED-1 testing stations.

**Dedication**

As this revised edition of the RESNA ED-1 Standard on Emergency Stair Travel Devices is completed, the Committee remembers the work of charter member Bill Scott, which contributed greatly to the independence and life safety of individuals with disabilities. Additionally, the work of Seanna Kringen and Harmony Hildebrand was instrumental in making the original edition a reality.



**Contents**

---

Scope of Volume 1 .....viii

Section 1      Terminology, Description, and Performance ..... 1.1

Section 2      Inspection, Installation, and Maintenance .....2.1

## Scope of Volume 1

**Volume 1:** Emergency Stair Travel Devices Used by Individuals with Disabilities.

This RESNA standard covers the purpose, description, terminology, design, performance, inspection, installation, and maintenance of devices whose purpose is the travel of individuals with disabilities over stair and horizontal surfaces during building evacuations. This standard does not cover devices whose purpose is the travel of individuals with disabilities during routine travel on stairs.

This standard specifies requirements and test methods for determining emergency stair travel device performance. It also specifies requirements for the disclosure of the test results.

The test methods may be used to verify a manufacturer's claim that a product exceeds the minimum requirements of this standard.

**WARNING:** This RESNA Standard calls for the use of procedures that may be injurious to the testing technician if adequate precautions are not taken.

## **Section 1**

### **Terminology, Description, and Performance**

## Contents

---

<b>Section 1 Introduction .....</b>	<b>3</b>
<b>1    Scope .....</b>	<b>4</b>
<b>2    Normative references .....</b>	<b>4</b>
<b>3    Terms and definitions.....</b>	<b>4</b>
<b>4    Characterization of Emergency Stair Travel Devices (ESTDs) .....</b>	<b>5</b>
<b>5    Performance .....</b>	<b>7</b>
<b>6    Testing and Measurement.....</b>	<b>8</b>
<b>7    Markings .....</b>	<b>19</b>
<b>8    Product information.....</b>	<b>21</b>
 <b>Annex A   (normative) RESNA ED-1:Sec01:2019 Test Results Form.....</b>	 <b>22</b>
 <b>Bibliography .....</b>	 <b>26</b>

## Section 1 Introduction

This edition of ANSI/RESNA ED-1, Section 1 updates the Standard to include performance criteria for emergency stair travel devices of any design type. Also, the ANSI/RESNA ED-1: Section 1 is now focused on aspects of performance solely under the control of the device manufacturer. Inspection, installation, and maintenance issues moved to a separate section, RESNA ED-1: Section 2.

This edition of the Standard addresses devices installed and made available for use on or after January 1, 2020. Exceptions to this Standard, including devices, materials, and installation are subject to the Authority Having Jurisdiction (AHJ).

It is recommended that access to the public way (travel away from the building), once an occupant is at the level of exit discharge, be address via an emergency evacuation plan (see NFPA 101, Section 4.8.2.1 for further details).

## **Section 1: Terminology, Description, and Performance**

### **1 Scope**

This section of RESNA ED-1 covers the terminology, description, and performance of emergency stair travel devices of any design type installed and made available for use on or after January 1, 2020.

### **2 Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI ICC A117.1-2017, Accessible and usable buildings and facilities (approved October 20, 2010)

ANSI/RESNA WC-1:2009, Section 1: Determination of static stability

ANSI/RESNA WC-3:2018, Section 3: Determination of static, impact, and repetitive load strengths for postural support devices

NFPA 101: 2018, Life Safety Code.

### **3 Terms and definitions**

The definitions contained in this section shall apply to the terms used in this Standard. Where terms are not defined in this section or within another section, they shall be defined using their ordinarily accepted meanings within the context in which they are used. Merriam-Webster's Collegiate Dictionary (2016 Edition) shall be the source for the ordinarily accepted meaning.

For the purposes RESNA ED-1: Section 1, the following apply:

#### **3.1 arm support**

the part of the device that provides a place for the occupant to place and/or secure an arm during use

#### **3.2 attachment**

the physical connection by which one component is attached to another

#### **3.3 capacity**

the maximum occupant weight that the device is rated for, as provided by the manufacturer