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Stations
Guideways

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STANDARDS

In 2003, the Board of Direction approved the revision to the ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by the Society. All such standards are developed by a consensus standards process managed by the Society's Codes and Standards Committee (CSC). The consensus process includes balloting by a balanced standards committee made up of Society members and nonmembers, balloting by the membership of the Society as a whole, and balloting by the public. All standards are updated or reaffirmed by the same process at intervals not exceeding five years.

The following standards have been issued:

ANSI/ASCE 1-82 N-725 Guideline for Design and Analysis of Nuclear Safety Related Earth Structures

ASCE/EWRI 2-06 Measurement of Oxygen Transfer in Clean Water

ANSI/ASCE 3-91 Standard for the Structural Design of Composite Slabs and ANSI/ASCE 9-91 Standard Practice for the Construction and Inspection of Composite Slabs

ASCE 4-98 Seismic Analysis of Safety-Related Nuclear Structures

Building Code Requirements for Masonry Structures (ACI 530-02/ASCE 5-02/TMS 402-02) and Specifications for Masonry Structures (ACI 530.1-02/ASCE 6-02/TMS 602-02)

ASCE/SEI 7-05 Minimum Design Loads for Buildings and Other Structures

SEI/ASCE 8-02 Standard Specification for the Design of Cold-Formed Stainless Steel Structural Members

ANSI/ASCE 9-91 listed with ASCE 3-91

ASCE 10-97 Design of Latticed Steel Transmission Structures

SEI/ASCE 11-99 Guideline for Structural Condition Assessment of Existing Buildings

ASCE/EWRI 12-05 Guideline for the Design of Urban Subsurface Drainage

ASCE/EWRI 13-05 Standard Guidelines for Installation of Urban Subsurface Drainage

ASCE/EWRI 14-05 Standard Guidelines for Operation and Maintenance of Urban Subsurface Drainage

ASCE 15-98 Standard Practice for Direct Design of Buried Precast Concrete Pipe Using Standard Installations (SIDD)

ASCE 16-95 Standard for Load Resistance Factor Design (LRFD) of Engineered Wood Construction

ASCE 17-96 Air-Supported Structures

ASCE 18-96 Standard Guidelines for In-Process Oxygen Transfer Testing

ASCE 19-96 Structural Applications of Steel Cables for Buildings

ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations

ANSI/ASCE/T&DI 21-05 Automated People Mover Standards—Part 1

ASCE/T&DI 21.2-08 Automated People Mover Standards—Part 2

ANSI/ASCE/T&DI 21.3-08 Automated People Mover Standards—Part 3

ANSI/ASCE/T&DI 21.4-08 Automated People Mover Standards—Part 4

SEI/ASCE 23-97 Specification for Structural Steel Beams with Web Openings

ASCE/SEI 24-05 Flood Resistant Design and Construction

ASCE/SEI 25-06 Earthquake-Actuated Automatic Gas Shutoff Devices

ASCE 26-97 Standard Practice for Design of Buried Precast Concrete Box Sections

ASCE 27-00 Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction

ASCE 28-00 Standard Practice for Direct Design of Precast Concrete Box Sections for Jacking in Trenchless Construction

ASCE/SEI/SFPE 29-05 Standard Calculation Methods for Structural Fire Protection

SEI/ASCE 30-00 Guideline for Condition Assessment of the Building Envelope

SEI/ASCE 31-03 Seismic Evaluation of Existing Buildings

SEI/ASCE 32-01 Design and Construction of Frost-Protected Shallow Foundations

EWRI/ASCE 33-01 Comprehensive Transboundary International Water Quality Management Agreement

EWRI/ASCE 34-01 Standard Guidelines for Artificial Recharge of Ground Water

EWRI/ASCE 35-01 Guidelines for Quality Assurance of Installed Fine-Pore Aeration Equipment

CI/ASCE 36-01 Standard Construction Guidelines for Microtunneling

SEI/ASCE 37-02 Design Loads on Structures During Construction

CI/ASCE 38-02 Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data

EWRI/ASCE 39-03 Standard Practice for the Design and Operation of Hail Suppression Projects

ASCE/EWRI 40-03 Regulated Riparian Model Water Code

ASCE/SEI 41-06 Seismic Rehabilitation of Existing Buildings

ASCE/EWRI 42-04 Standard Practice for the Design and Operation of Precipitation Enhancement Projects

ASCE/SEI 43-05 Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities

ASCE/EWRI 44-05 Standard Practice for the Design and Operation of Supercooled Fog Dispersal Projects

ASCE/EWRI 45-05 Standard Guidelines for the Design of Urban Stormwater Systems

ASCE/EWRI 46-05 Standard Guidelines for the Installation of Urban Stormwater Systems

ASCE/EWRI 47-05 Standard Guidelines for the Operation and Maintenance of Urban Stormwater Systems

ASCE/SEI 48-05 Design of Steel Transmission Pole Structures

FOREWORD

The Board of Direction approved revisions to the ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by ASCE. All such standards are developed by a consensus standards process managed by the ASCE Codes and Standards Committee (CSC). The consensus process includes balloting by a balanced standards committee, and reviewing during a public comment period. All standards are updated or reaffirmed by the same process at intervals of between five and ten years.

This standard is Part 3 of the four-part Automated People Mover Standards, which establish the minimum set of requirements necessary to achieve an acceptable level of safety and performance for an Automated People Mover (APM) system. An APM is defined as a guided transit mode with fully automated operation, featuring vehicles that operate on guideways with exclusive right-of-way.

Parts 1, 2, and 3 cover requirements for design of an APM system while Part 4 covers requirements for an APM in passenger operation. Part 3 contains sections covering electrical, stations, and guideways.

The ASCE Automated People Movers Standards Committee has been developing these standards since 1991. The committee comprises individuals from many backgrounds, including consulting engineering, research, transit agencies, airports, transit system design and manufacturing, education, government, and private practice.

This standard establishes the minimum set of requirements necessary to achieve an acceptable level of safety and performance for an APM system. As such, it may be used in the safety certification process. The overall goal of this standard is to assist the industry and the public by establishing standards for APM systems.

This standard has no legal authority in its own right but may acquire legal standing in one or more of the following ways:

1. Adoption by an authority having jurisdiction.
2. Reference to compliance with the standard as a contract requirement.
3. Claim by a manufacturer or manufacturer's agent of compliance with the standard.

This standard will be beneficial to transportation engineers, civil engineers, safety engineers, and contractors of APM systems. Anyone who owns, operates, builds or maintains, designs, tests, insures, oversees, or certifies APMs or other innovative technology transit systems such as magnetic levitation, air cushion, and monorail systems will also benefit from the standard.

This standard has been prepared in accordance with recognized engineering principles and should not be used without the user's competent knowledge for a given application. The publication of this standard by ASCE is not intended to warrant that the information contained therein is suitable for any general or specific use, and ASCE takes no position respecting the validity of patent rights. The user is advised that the determination of patent rights or risk of infringement is entirely their own responsibility.

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This standard was prepared through the consensus standards process by balloting in compliance with procedures of ASCE's Codes and Standards Activity Council. Those individuals who serve on the Automated People Mover Standards Committee are:

Thomas McGean, P.E., *Chair*
Lawrence Smith, P.E., *Secretary*
Tedd Snyder, P.E., *Vice-Chair*
Joseph Abbas
Douglas Baird
Frank Bares
Cheryl Boehm
Murthy Bondada, P.E.
Jon Brackpool
Pierre Brunet
David Campbell, P.E.
John Champ
Yves Clarissou
Redjean Clerc
Frank Culver
Peter DeLeonardis
Paul Didrikson, P.E.
Didier Dupre
Charles Elms, P.E.
Robert Falvey
Jimmy Fletcher, P.E.
Matthias Frenz
Henri Frey, P.E.
Darin Friedmann
Antonio Garcia
Franklin Gates
Robert Griebenow, P.E.
Greg Hale
Albert Hartkorn
William Hathaway
James Hoelscher
Gary Houts, P.E.
Victor Howe
Alex Inserto
James Johnson
Dieter Jussel
Ronald Kangas
John Kapala
Alexander Klimmer, P.E.
Kyle Kraudy
Jun-Ho Lee
J. Sam Lott, P.E.
Martin Lowson
Stanford Lynch, P.E.
Charles Martin
David Mason
Frank Mauderer
J. David Mori, P.E.
Diane Morse
Jorg Nahke
Josef Nejez
Hiroshi Ogawa, P.E.
Richard Prell
Felix Rhyner
Michael Riseborough
William Rourke
Obe Schrader
William Showalter
Michael Shumack
David Taliaferro
David Thurston
James Tuten, P.E.
Gert Vestergaard
Rudiger Vom Hovel
Thomas Waldron
Ray Warner, P.E.
Ken Williams

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CONTENTS

1. GENERAL 1

1.1 SCOPE 1

1.2 EXISTING APPLICATIONS 1

1.3 NEW APPLICATIONS 1

1.4 REFERENCE STANDARDS 1

1.5 DEFINITIONS 2

9. ELECTRICAL EQUIPMENT 3

9.1 GENERAL 3
9.1.1 Safety 3
9.1.2 Corrosion Control 4
9.1.3 Electrical System Protection 4
9.1.4 Grounding 4
9.1.5 Redundancy 5
9.1.6 Design Life 5
9.1.7 Voltage Regulation 5
9.1.8 Capacity 5

9.2 TRACTION POWER SUBSTATION EQUIPMENT 5
9.2.1 Interfaces with the Local Utility Company 5
9.2.2 Power Factor 5
9.2.3 Harmonics 5
9.2.4 System Monitoring and Alarms 5
9.2.5 Power Regeneration Equipment 6
9.2.6 Remote Monitoring and Control 6
9.2.7 Local Control 6
9.2.8 Restoring Power 6
9.2.9 Substation Facilities 6

9.3 WAYSIDE POWER COLLECTION 6
9.3.1 Guideway Mounted Power Distribution 6
9.3.2 Power Zones 6
9.3.3 Splice Joint Requirements 7
9.3.4 Expansion Joints/Sections 7
9.3.5 Power Rail Transitions 7
9.3.6 Insulators 7
9.3.7 Mounting 7
9.3.8 Power Rail to Earth Resistance 7
9.3.9 Power and Ground Rail Heating 7

9.4 PASSENGER STATION ELECTRICAL EQUIPMENT 7

9.5 UNINTERRUPTIBLE POWER SUPPLY 7

10. STATIONS 7

10.1 DISABLED PERSONS ACCESS REQUIREMENTS 8
10.1.1 Vehicle–Platform Gap 8
10.1.2 Detectable Warning Strip 8

10.2 PLATFORM EDGE PROTECTION 8
10.2.1 Intrusion Prevention System 8
10.2.2 Intrusion Control System 9
10.2.3 Intrusion Detection System 10

10.3 EVACUATION OF MISALIGNED TRAINS 10
10.4 EMERGENCY LIGHTING AND VENTILATION 10
10.5 FIRE PROTECTION 10
10.5.1 Fire Detection 10
10.5.2 Fire Containment 10
10.5.3 Fire Suppression 10
11. GUIDEWAYS 10
11.1 BLUE LIGHT STATIONS 11
11.2 INTRUSION PROTECTION AND DETECTION 11
11.3 EMERGENCY EVACUATION AND ACCESS 11
11.3.1 Tunnel Guideway 11
11.3.2 Surface Guideway 11
11.3.3 Elevated Guideway 11
11.4 FIRE PROTECTION 12
11.5 SIGNAGE 12
11.6 EMERGENCY LIGHTING AND VENTILATION 12
11.7 EMERGENCY POWER SUPPLY 12
11.8 GUIDEWAY ALIGNMENT 12
11.8.1 Clearances 13
11.8.2 Operating Equipment Interfaces 13
11.8.3 Drainage 13
11.9 STRUCTURAL CRITERIA 13
11.9.1 Loads and Forces 13
11.9.2 Load Combinations 15
11.9.3 Design and Analysis 15
INDEX 17

Automated People Mover Standards—Part 3

1. GENERAL

1.1 SCOPE

This standard has been divided into four parts to expedite the approval and release process as well as to facilitate ease of use. This document constitutes Part 3 of the standard.

Parts 1, 2, and 3 cover a minimum set of requirements for design of an Automated People Mover (APM) with an acceptable level of safety and performance.

Part 1 consists of:

1. General
2. Operating Environment
3. Safety Requirements
4. System Dependability
5. Automatic Train Control (ATC)
6. Audio and Visual Communications

Part 2 consists of:

1. General
7. Vehicles
8. Propulsion and Braking

Part 3 consists of:

1. General
9. Electrical
10. Stations
11. Guideways

Part 4 is a minimum set of requirements for maintaining an acceptable level of safety and performance for an APM in passenger operation. Part 4 consists of:

1. General
12. Security
13. Emergency Preparedness
14. System Verification and Demonstration
15. Operations, Maintenance, and Training
16. Operational Monitoring

The APM Standards all use SI units with equivalent English units provided in parentheses.

1.2 EXISTING APPLICATIONS

Existing installations and projects in progress before the effective date of this standard need not comply with the new or revised requirements of this edition, except where specifically required by the authority having jurisdiction. Existing APMs, when removed and reinstalled, shall be classified as new installations.

1.3 NEW APPLICATIONS

New installations begun after the effective date of this standard shall comply with the new or revised requirements of this edition.

1.4 REFERENCE STANDARDS

The following documents or portions thereof are incorporated by reference in this standard:

AASHTO: American Association of State Highway and Transportation Officials, Suite 249, 444 North Capitol Street NW, Washington, DC 20001; phone (202) 624-5806.

AASHTO LRFD Bridge Design Specifications, 4th edition, 2007 (cited in 11.9.1, 11.9.2, and 11.9.3)

AASHTO Standard Specifications for Highway Bridges, 17th edition, 2002 (cited in 11.9.1, 11.9.2, and 11.9.3).

ASCE: American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191; phone (703) 295-6163.

ANSI/ASCE/T&DI 21-05, *Automated People Mover Standards—Part 1* (cited in 9.1.3, 9.1.4, 9.1.4.2, 9.1.5, 9.2.3, 9.2.4, 9.2.5, 9.2.6, 9.2.8, 9.2.9, 9.5, 10.2, 10.2.1, 10.2.2, 10.2.3, 10.3, 10.5.1, 10.5.2, 11.1, 11.2, 11.3, 11.3.3, 11.8.1, 11.8.3, and 11.9.1)

ASCE/T&DI 21.2-08, *Automated People Mover Standards—Part 2* (cited in 9.1.4, 9.1.8, 10.1.1, 10.2.1, 10.2.2, 10.2.3, 11.8 11.8.1, and 11.9.3)

ANSI: American National Standards Institute, Customer Service, 25 West 43rd Street, 4th floor, New York, NY 10036; phone (212) 642-4980.

ANSI B77.1-2006, *Passenger Ropeways, Aerial Tramways, Aerial Lifts, Surface Lifts, Tows and Conveyors—Safety Requirements* (cited in 11.0)

ANSI Z97.1-2004, *Safety Glazing Materials Used in Buildings—Safety Performance Specifications and Methods of Test* (cited in 10.2.1 and 10.2.2)

ANSI 117.1-2003, *Guidelines for Accessible and Useable Buildings and Facilities* (cited in 11.5)

ASTM: American Society of Testing Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; phone (610) 832-9585.