

GUIDE SPECIFICATIONS FOR SOUND CONTROL HOLLOW METAL DOOR AND FRAME ASSEMBLIES

FOURTH EDITION

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether they have 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 an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretation should be addressed to the 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CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time.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 American National Standards Institute.

This standard was developed by representative members of and approved by the Hollow Metal Manufacturers Association Division (HMMA) of the National Association of Architectural Metal Manufacturers (NAAMM) to provide their opinion and guidance on the specification and use of swinging sound control hollow metal doors and frames. This standard contains advisory information only and is published as a public service by NAAMM and its HMMA Division.

NAAMM AND ITS HMMA DIVISION DISCLAIM ALL LIABILITY OF ANY KIND FOR THE USE, APPLICATION OR ADAPTATION OF MATERIAL PUBLISHED IN THIS STANDARD.

Current information on all NAAMM Standards is available by calling, writing, or visiting the website of the National Association of Architectural Metal Manufacturers, www.naamm.org.

National Association of Architectural Metal Manufacturers

800 Roosevelt Road, Building C, Suite 312

Glen Ellyn, IL 60137

Tel: 1-630-942-6591 • Fax: 1-630-790-3095

www.naamm.org

Copyright © 1992, 1995, 2003, 2013
All Rights Reserved

TABLE OF CONTENTS

Foreword	ii
----------------	----

Part 1 - GENERAL

1.01	Summary	1
1.02	Products Provided Under This Section	1
1.03	Related Sections	1
1.04	References	2
1.05	Testing and Performance	3
1.06	Quality Assurance	4
1.07	Submittals	4

Part 2 - PRODUCTS

2.01	Sound Control Hollow Metal Doors	5
2.02	Sound Control Panels	7
2.03	Sound Control Hollow Metal Door Frame Product	7
2.04	Manufacturing Tolerances	11
2.05	Hardware	11
2.06	Finish	12

Part 3 - EXECUTION

3.01	Site Storage and Protection of Materials	12
3.02	Installation	13
3.03	Field Verification	14
3.04	Maintenance	15

Figures	16
----------------------	----

Appendix (Not part of the Standard)

Steel Tables, HMMA 803	A1
Grouting of Hollow Metal Frames, HMMA 820 TN01	A2
Standards Writing or Accreditation Organizations	A3
Over-View of ASTM Sound Control Tests	A4

FOREWORD

These specifications have been prepared in accordance with the CSI recommended Master Format 2012 with Part 1 - General, Part 2 - Product and Part 3 - Execution. Guide specifications are intended to be used as the basis for developing project specifications and must be edited to fit specific project requirements. Inapplicable provisions should be deleted, appropriate selections should be made where there are choices, and provisions applicable to the project should be added where necessary. Options are shown in brackets. Notes, recommendations and instructions to Specifiers are given in italics at the start of or directly following the sections to which they apply. Notes that contain permissive language are not considered part of the standard. Dates given with ASTM and other standards were current at the time this specification was published. When a more recent standard is available, the Specifier should verify its applicability to this Guide prior to its inclusion. *While the CSI Section Format locates Delivery, Storage and Handling in Part 1, NAAMM standards include them under Part 3 – Execution.*

This specification is comprehensive in regard to steel swinging sound control doors, door frames, sidelight, transom, borrowed light and fixed and operable window assemblies. It does not cover sliding sound control doors or other related components. Due to the complexity of the field of acoustics, it is advisable to retain an acoustical consultant or acoustician.

Materials and fabrication methods are specified in detail in Part 2. Specific internal door constructions are not covered since they are proprietary to each manufacturer. Pillowing of the door can occur on some acoustical doors due to the acoustical material used on the interior of the door. Pillowing should not exceed 1/2 inch (12.7 mm), this will not affect the acoustical quality of the door. Doors and frames manufactured in accordance with these specifications have successfully met the testing and performance requirements of Section 1.05. However, the materials and fabrication methods called for in these specifications, while providing an excellent guide, are not intended to restrict the use of other materials and methods where it can be demonstrated through the specific testing procedures in Section 1.05 that the construction can equal or exceed the performance levels specified. In order to ensure that a manufacturer's product meets the desired performance levels, the construction specifications must always include the Testing and Performance requirements of Section 1.05 and the Quality Assurance requirements of Section 1.06. Note: the effectiveness of a door and frame unit is dependent on the sum of all parts of the unit functioning effectively in order to meet the STC rating, OITC rating and/or STL specified. This means that all portions of the unit, including the door, frame, hinging and latching hardware, perimeter gaskets and glazing, are tested as a unit. All components must be supplied as tested; glazing may be factory or field installed.

The values stated in inch-pound units are to be regarded as the standard. Corresponding metric values are included in parenthesis for reference purposes only.

Hardware Considerations

The selection of the hardware is a very important part of a successful sound control assembly. Sound doors are generally heavier than conventional hollow metal doors, particularly in applications with higher ratings. Their weight can vary, from 4.5 to 22 lbs. per square foot (22 to 98 kg/m²), depending on the STC rating, OITC and/or STL and thickness of the door; therefore, it is important to specify proper heavy-duty hardware capable of handling the door weight over the life of the installation. A minimum of three traditional butt hinges or two cam-lift hinges is required for all units. The door frame may be manufactured from thicker materials than those of conventional hollow metal frames for doors weighing only 4.5 to 6 lbs. per square foot (22 to 30 kg/m²).

Sound control doors are built with specially designed proprietary cores. Any interference with this sound septum may cause a reduction in performance. Concealed vertical rod exit devices or concealed closers are examples of hardware that may interfere with the performance of the assembly.

Another important part of the assembly is the gasketing around the door. Hardware that may interfere with this seal should be avoided.

Other Key Considerations

Although many acoustic door frame assemblies closely resemble traditional hollow metal products, a number of additional factors must be taken into account.

- o Installation instructions provided by the manufacturer must be followed in order to obtain the desired acoustical rating.
- o The quality of the installation of the door, frame, gasketing and hardware is essential.
- o The flatness of the floor beneath the door is critical.
- o The manufacturer of sound control assemblies can provide advice on installation and hardware selection.

As is the case with any product that is certified based on performance done under controlled laboratory (STC) conditions, sound control door assemblies installed under less well-controlled job site (FSTC) conditions can be expected to have a 4 to 5 point reduction in STC performance.

Depending upon door and frame constructions, along with hardware and gasketing systems, sound control hollow metal door and window assemblies are available from NAAMM-HMMA members to suit a wide range of performance criteria. Specifiers are encouraged to consult member manufacturers for assistance with technical product information for your application.

For hollow metal doors and frames not requiring sound control hollow metal door assemblies give consideration to NAAMM HMMA 860, "Guide Specifications for Hollow Metal Doors and Frames" or ANSI/NAAMM HMMA 867, "Guide Specifications for Commercial Laminated Core Hollow Metal Doors and Frames". For commercial steel doors and frames expected to be subjected to a more rigorous level of use, ANSI/NAAMM HMMA 861, "Guide Specifications for Commercial Hollow Metal Doors and Frames", may be used. For situations where corrosion resistance beyond that of typical commercial steel door and frame applications, or where specialized aesthetic appearance are significant design criteria, consideration should be given to ANSI/NAAMM HMMA 866, "Guide Specifications for Stainless Steel Hollow Metal Doors and Frames". If security is a factor, there are two hollow metal standards available - ANSI/NAAMM HMMA 862, "Guide Specifications for Commercial Security Hollow Doors and Frames" and ANSI/NAAMM HMMA 863, "Guide Specifications for Detention Security Hollow Metal Doors and Frames".

CSI SECTION 08 34 73

SOUND CONTROL HOLLOW METAL DOOR AND FRAME ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

This Section includes swinging sound control doors, frames, transoms, sidelights, borrowed lights and window assemblies as shown in the contract documents.

1.02 PRODUCTS PROVIDED UNDER THIS SECTION

- A. Provide complete assemblies with door, frame and other material required of the manufacturer to obtain the specified Sound Transmission Classification (STC) rating, Outdoor-Indoor Transmission Classification (OITC) rating and/or Sound Transmission Loss (STL).
 - 1. Hollow Metal Sound Control Doors, swinging type, including [glass moldings and stops] [gasketing] [other], as shown in the approved submittal drawings.
 - 2. Hollow metal sound control panels, fixed or removable, similar in construction to hollow metal sound control doors, as shown in the approved submittal drawings.
 - 3. Hollow metal sound control frames, transom frames, sidelight, borrowed light and window assemblies, including [moldings and stops for fixed glazed openings] [cam lift hinges] [gasketing] [other], as shown in the approved submittal drawings.
 - 4. Hollow metal sound control sidelight, borrowed light and window assemblies with operable glazed lights, as shown in the approved submittal drawings.

In this guide specification the term "frame product" is used to define, as, a group; frames, transom frames, fixed or operable sidelight, borrowed light and window assemblies.

1.03 RELATED SECTIONS

- A. Section 01 66 00 - Product Storage and Handling Requirements
- B. Section 03 30 00 - Cast-In-Place Concrete
- C. Section 04 20 00 - Unit Masonry
- D. Section 05 10 00 - Structural Metal Framing (for Lintels, Posts, Columns or Other Load Bearing Elements)
- E. Section 06 11 00 - Wood Framing
- F. Section 08 11 13 - Hollow Metal Doors and Frames
- G. Section 08 11 19 - Stainless Steel Doors and Frames
- H. Section 08 34 53 - Security Doors and Frames
- I. Section 08 71 00 - Door Hardware
- J. Section 08 80 00 - Glazing
- K. Section 09 20 00 - Plaster and Gypsum Board (for the Installation of Commercial Hollow Metal or Stainless Steel Doors and Frames in Steel Stud Partitions)
- L. Section 09 90 00 - Painting and Coating
- M. Section 11 19 00 - Detention Equipment
- N. Section ____ - Assembly of Knocked-Down or Slip-On Commercial Hollow Metal or Stainless Steel Frames
- O. Section ____ - Field Measurements

This specification covers only those products listed in Section 1.02. Not included in Section 08 34 73 are builders or rough hardware of any kind, weather-stripping, gaskets, items furnished by others, field painting and protection at the building site of products furnished under this section.

1.04 REFERENCES

The Standards listed in this Guide are referenced by basic designation only. The edition of a Standard is deemed as that in affect on the publication date this Guide, unless specifically noted otherwise. If a more recent standard is available, the Specifier should verify its applicability to this Guide prior to its inclusion.

- A. ANSI A250.10, Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
- B. ANSI/NAAMM HMMA 801, Glossary of Terms for Hollow Metal Doors and Frames
- C. ANSI/NFPA 80, Standard for Fire Doors and Other Opening Protectives
- D. ANSI/NFPA 105, Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives
- E. ANSI/NFPA 252, Standard Methods of Fire Tests of Door Assemblies
- F. ANSI/NFPA 257, Standard Fire Test for Windows and Glass Block Assemblies
- G. ANSI/UL 9, Fire Tests of Window Assemblies
- H. ANSI/UL 10B, Fire Tests of Door Assemblies
- I. ANSI/UL 10C, Positive Pressure Fire Tests of Door Assemblies
- J. ANSI/UL 1784, Air Leakage Tests of Door Assemblies
- K. ASTM A 653/A 653M, Specification for Steel Sheet, Zinc-Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- L. ASTM A 1008/A 1008M, Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability. Solution Hardened and Bake Hardenable
- M. ASTM A 1011/A 1011M, Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability and Ultra-High Strength
- N. ASTM C 143/C 143M, Test Method for Slump of Hydraulic Cement Concrete
- O. ASTM E 90, Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- P. ASTM E 336, Test Method for Measurement of Airborne Sound Insulation in Buildings
- Q. ASTM E 413, Classification for Rating of Sound Insulation
- R. ASTM E 966, Standard Guide for Field Measurements of Airborne Sound Insulation of Building Facades and Facade Elements
- S. ASTM E 1332, OITC, Outdoor Indoor Transmission Class
- T. CAN/ULC-S104, Standard Method for Fire Tests of Door Assemblies
- U. CAN4-S106, Standard Method for Fire Tests of Window and Glass Block Assemblies
- V. NAAMM HMMA 802, Manufacturing of Hollow Metal Doors and Frames
- W. NAAMM HMMA 803, Steel Tables
- X. NAAMM HMMA 810, Hollow Metal Doors
- Y. NAAMM HMMA 810, TN01 Defining Undercuts of Doors
- Z. NAAMM HMMA 820, Hollow Metal Frames
- AA. NAAMM HMMA 820 TN01, Grouting Hollow Metal Frames
- AB. NAAMM HMMA 820 TN02, Continuously Welded Frames
- AC. NAAMM HMMA 830, Hardware Selection for Hollow Metal Doors and Frames
- AD. NAAMM HMMA 831, Recommended Hardware Locations for Hollow Metal Doors and Frames
- AE. NAAMM HMMA 840, Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames

AF. NAAMM HMMA 850, Fire-Rated Hollow Metal Doors and Frames

The following standards are used only for 'neutral pressure' fire test methods and should be deleted from project specifications when 'positive pressure' is required by the governing building code: ANSI/UL10B (H), CAN/ULC-S104 (T) and CAN4-S106 (U).

Conversely, ANSI/UL 10C (I) is used only for 'positive pressure' fire tests and should be deleted from project specifications requiring 'neutral pressure' fire tests.

ANSI/NFPA 252 (E), ANSI/NFPA 257 (F) and ANSI/UL 9 (G) reference both 'neutral pressure' and 'positive pressure' fire test methods and as such should be included in all project specifications, except those requiring compliance with Canadian Building Codes.

Only project specifications requiring compliance with Canadian Building Codes should include CAN/ULC-S104(T) and CAN4-S106 (U).

Refer to Appendix 3 for a list of the Standards Writing or Accreditation Organizations referenced in Section 1.04.

1.05 TESTING AND PERFORMANCE

- A. Conduct sound control performance testing on a fully operable assembly in accordance with ASTM E 90, ASTM E 413 and ASTM E 1332, by an independent testing laboratory. Qualify the laboratory referenced in the test report and/or certification under the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute for Science and Technology (NIST) or the International Accreditation Service (IAS) under the International Laboratory Accreditation Cooperation (ILAC) agreement.

See Appendix 4 for an over-view of ASTM E 90, E 413, and ASTM E 1332.

- B. Labeled Fire-Rated and/or Smoke Control Door and Frame Product

1. Where determined and scheduled by the Architect;

- a. Provide Listed or Classified doors, panels, frames, transom frames, sidelight, borrowed light and window assemblies bearing the label of a testing agency having a factory inspection service for openings requiring fire protection and/or smoke control ratings.
- b. Test doors, panels, frames, transom frames and sidelight assemblies in accordance with [ANSI/NFPA 252 or ANSI/UL 10B or CAN/ULC-S104] [ANSI/NFPA 252 or ANSI/UL 10C] [and/or] [ANSI/UL 1784].
- c. Test borrowed light and window assemblies in accordance with [ANSI/UL9 or ANSI/NFPA 257] [CAN4-S106].
- d. Construct products as Listed or Classified for labeling.

ANSI/UL10C provides for positive pressure testing to accommodate the requirements of some jurisdictions and should be included only for such.

ANSI/UL10B, CAN/ULC-S104 and CAN4-S106 provide for 'neutral pressure' testing to accommodate the requirements of the remaining jurisdictions and should be included only for such.

ANSI/NFPA 252, ANSI/NFPA 257 and ANSI/UL 9 cover both neutral and positive pressure testing and therefore should be included in all project specifications, except when compliance with Canadian Building Codes is required.

ANSI/UL 1784 provides for smoke control assembly testing required by ANSI/NPFA 105 to accommodate these specific requirements and should be included only when required.

Include CAN/ULC-S104 and CAN4-S106 only for projects requiring conformance with Canadian Building Codes.

2. For any door or frame product specified by the Architect to be fire-rated, which cannot qualify for labeling due to design, hardware or other reason, advise the Architect, in the submittal