UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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SECTION TABLE OF CONTENTS

DIVISION 08 - OPENINGS

SECTION 08 36 13

SECTIONAL OVERHEAD DOORS

08/20

PART 1 GENERAL

1.1 REFERENCES
1.2 SUBMITTALS
1.2.1 Shop Drawing Information
1.2.2 Electric Operators Product Data
1.3 DELIVERY, STORAGE, AND HANDLING

PART 2 PRODUCTS

2.1 MATERIALS
2.1.1 Hard-Drawn Springwire
2.1.2 Oil-Tempered Springwire
2.1.3 Steel Sheet
2.1.4 Steel Shapes
2.1.5 Aluminum Extrusions
2.1.6 Aluminum Sheets and Strips
2.1.7 Glass
2.2 DOORS
2.3 DESIGN REQUIREMENTS
2.4 FABRICATION
2.4.1 Steel Overhead Doors
2.4.1.1 Insulated Sections
2.4.1.2 Aluminum Sections
2.4.2 Aluminum Panel Overhead Doors
2.4.3 Tracks
2.4.4 Hardware
2.4.5 Counterbalancing
2.5 MANUAL OPERATORS
2.5.1 Pushup Operators
2.5.2 Chain Hoist Operators
2.6 ELECTRIC OPERATORS
2.6.1 Operator Features
2.6.2 Motors
2.6.3 Controls
2.6.4 Entrapment Protection Devices

2.6.5 Control Transformers
2.6.6 Electrical Components
2.6.7 Hazardous Locations
2.7 WEATHER SEALS [AND SENSING EDGES]
2.8 FINISHES
2.8.1 Galvanized and Shop Primed
2.8.2 Aluminum

PART 3 EXECUTION

3.1 INSTALLATION
3.2 ELECTRICAL WORK
3.3 TESTING

-- End of Section Table of Contents --

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USACE / NAVFAC / AFCEC / NASA	**UFGS-08 36 13 (August 2020)**

Preparing Activity: NAVFAC	**Superseding**
	UFGS-08 36 13 (August 2011)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

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SECTION 08 36 13

SECTIONAL OVERHEAD DOORS
08/20

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NOTE: This guide specification covers sectional overhead doors. Vertical lift metal doors of the overhead stacking type are now covered in Section 08 36 19 VERTICAL LIFT DOORS.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

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NOTE: On the drawings, show:

1. Location and size of door openings

2. Type and details of door frames

3. Wire and conduit from power source to operators and controls for electrically-operated doors

4. Type of lift required (consult manufacturer's catalogs for required headroom and backroom)

5. Design wind loads required for building

6. Profile of door panel if important. Do not use proprietary profile.

7. Size and location of glazed panels

8. Location of motors and control stations.

****

PART 1 GENERAL

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA DAF45	(2003; Reaffirmed 2009) Designation System for Aluminum Finishes

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A227/A227M	(2017) Standard Specification for Steel Wire, Cold-Drawn for Mechanical Springs
ASTM A229/A229M	(2018) Standard Specification for Steel Wire, Quenched and Tempered for Mechanical Springs
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B209M	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
ASTM B221	(2014) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM E330/E330M	(2014) Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

DOOR AND ACCESS SYSTEM MANUFACTURERS ASSOCIATION (DASMA)

ANSI/DASMA 102	(2011) Specifications for Sectional Overhead-Type Doors
ANSI/DASMA 108	(2017) Standard Method for Testing Sectional Garage Doors, Rolling Doors and Flexible Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM AMP 500	(2006) Metal Finishes Manual

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 1	(2000; R 2015) Standard for Industrial Control and Systems: General Requirements
NEMA ICS 2	(2000; R 2005; Errata 2008) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated 600 V
NEMA ICS 6	(1993; R 2016) Industrial Control and Systems: Enclosures
NEMA MG 1	(2018) Motors and Generators
NEMA ST 20	(2014) Dry-Type Transformers for General Applications

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 325 (2017; Reprint Feb 2020) UL Standard for Safety Door, Drapery, Gate, Louver, and Window Operators and Systems

1.2 SUBMITTALS

****
NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.
****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Doors; G[, [_____]]

SD-03 Product Data

Doors; G[, [_____]]

[Electric Operators; G[, [_____]]

] SD-08 Manufacturer's Instructions

Doors

SD-10 Operation and Maintenance Data

Doors, Data Package 2; G[, [_____]]

1.2.1 Shop Drawing Information

Show types, sizes, locations, metal gages including minimum metal decimal thickness, hardware provisions, installation details, and other details of construction.[For electrically-operated doors, include supporting brackets for motors, location, type, and ratings of motors, switches, and safety devices.]

[1.2.2 Electric Operators Product Data

For electrically motor-operated doors, submit manufacturer's wiring diagrams for motor and controls.

]1.3 DELIVERY, STORAGE, AND HANDLING

Protect doors and accessories from damage during delivery, storage, and handling. Clearly mark manufacturer's brand name. Store doors in dry locations with adequate ventilation, free from dust and water. Remove damaged items and provide new. Provide easy access for inspection and handling of overhead doors prior to installation.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Hard-Drawn Springwire

ASTM A227/A227M.

2.1.2 Oil-Tempered Springwire

ASTM A229/A229M.

2.1.3 Steel Sheet

ASTM A653/A653M.

2.1.4 Steel Shapes

ASTM A36/A36M.

2.1.5 Aluminum Extrusions

ASTM B221M ASTM B221, Alloy 6063-T5.

2.1.6 Aluminum Sheets and Strips

ASTM B209M ASTM B209, alloy and temper best suited for the purpose.

2.1.7 Glass

****
NOTE: In accordance with DASMA TDS-158, safety glazing may not be required in all applications. Refer to conditions listed within DASMA TDS-158.
****

[Fully tempered, clear float glass][Double strength, clear glass] [3] [_____] mm [1/8] [_____] inch thick.

2.2 DOORS

Doors must comply with ANSI/DASMA 102. Metal doors to have horizontal sections hinged together which operate in a system of tracks to completely close the door opening in the closed position and make the full width and height of the door opening available for use in the open position. Provide a permanent label on the door indicating the name and address of the manufacturer. Provide doors with [standard lift type designed to slide up and back into a horizontal overhead position and requiring a maximum of 400 mm 16 inch of headroom for 50 mm 2 inch tracks and 535 mm 21 inch of headroom for 75 mm 3 inch tracks] [low headroom type designed to slide up and back into a horizontal overhead position and requiring a maximum of 250 mm 10 inch of headroom for 50 mm 2 inch tracks and 300 mm 12 inch of headroom for 75 mm 3 inch tracks] [high lift type designed to slide up and back into a combination vertical and horizontal position] [vertical lift type designed to slide upward into a vertical position]. Doors operate [by lifting handles] [by hand chain with gear or sprocket reduction] [by hand crank with gear or sprocket reduction] [by electric power with auxiliary hand chain operation].

2.3 DESIGN REQUIREMENTS

****
NOTE: Determine design wind loads in accordance with ASCE 7-16. Insert design wind load for the building if not shown on the drawings Note that plus or minus 0.64 kilopascals plus or minus 13.3 PSF encompasses 185 KMH 115 MPH Exposure B per ASCE 7-16, which includes over 80 percent of the U.S. geographic area.
****

Design wind load must [conform to the design wind load for the building] [withstand a wind pressure of [plus or minus 0.64] [_____] kilopascals [a minimum of plus or minus 13.3] [_____] pounds per square foot] of door area without damage. Doors must be tested in accordance with either ASTM E330/E330M or ANSI/DASMA 108 and must meet the acceptance criteria of ANSI/DASMA 108.

2.4 FABRICATION

****
NOTE: Choose this paragraph and subparagraphs or the paragraph below ALUMINUM PANEL OVERHEAD DOORS.
****

2.4.1 Steel Overhead Doors

Form door sections of hot-dipped galvanized steel not lighter than [0.9 mm thick 20 gage with longitudinal integral reinforcing ribs][or][0.6 mm thick 24 gage with longitudinal integral reinforcing ribs and flat bottom V-grooves]. Install sections not less than 50 mm 2 inch in thickness. Meeting rails to have interlocking joints to ensure a weathertight closure and alignment for full width of the door. Provide sections of the height indicated or the manufacturer's standard. Do not exceed 600 mm thick 24 inch height for intermediate sections. Bottom sections may be varied to suit door height. Do not exceed 750 mm 30 inch height for bottom section.[Provide glass panels and install panels using manufacturer's standard for rubber gaskets.]

****

NOTE: Door assembly may be required to be rated for U-factor. Doors obtain U-factor in accordance with either ANSI/DASMA 105 or NFRC 100. Note that the U value of 0.27 is met in common insulation offerings such as 25.4 mm 1 inch polyurethane or 35 mm 1-3/8 inch EPS.

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2.4.1.1 Insulated Sections

Insulate door sections with plastic foam or other material providing a "U" factor of 0.27 or less. Cover interior of door sections with steel sheets of not lighter than 0.4 mm thick 27 gage to completely enclose the insulating material.

[2.4.1.2 Aluminum Sections

At the Contractor's option, door sections may be constructed of aluminum in lieu of steel. Provide the same structural and thermal properties for aluminum sections as specified for steel sections.

][2.4.2 Aluminum Panel Overhead Doors

Provide door panel construction with extruded aluminum stiles and rails with aluminum[and glass] panels. Stiles and rails has a minimum wall thickness of 1.5 mm 0.060 inch. Meeting rails shall have interlocking joints to ensure a weathertight closure and alignment for full width of door. Provide sections to the height indicated or the manufacturer's standard, but the height of an intermediate section not to exceed 600 mm 24 inch. Bottom sections may be varied to suit door height, but to not exceed750 mm 30 inch in height. Provide aluminum panels not less than 1.0 mm 0.040 inch in thickness. Install panel using a continuous vinyl gasket and snap-in type of aluminum or vinyl glazing bead.[Install glass panels as specified for aluminum panels.]

]2.4.3 Tracks

Provide galvanized steel tracks not lighter than 1.8 mm 14 gage thick for 50 mm 2 inch tracks and not lighter than 2.5 mm 12 gage thick for 75 mm 3 inch tracks. Provide galvanized steel vertical tracks with continuous galvanized steel angle not lighter than 2.1 mm thick 13 gage for installation to walls. Incline vertical track through use of adjustable brackets to obtain a weathertight closure at jambs. Reinforce horizontal track with galvanized steel angle; support from track ceiling construction

with galvanized steel angle and cross bracing to provide a rigid installation.

2.4.4 Hardware

Provide hinges, brackets, rollers, locking devices, and other hardware required for complete installation. Install roller brackets and hinges with 14 gage galvanized steel. Provide rollers with ball bearings and case-hardened races. Provide reinforcing on doors where roller hinges are connected. Provide a positive locking device and cylinder lock with two keys on manually operated doors.

2.4.5 Counterbalancing

Counterbalance doors with an oil-tempered, helical-wound torsional spring mounted on a steel shaft. Provide adjustable spring tension, connect spring to doors with cable through cable drums. Provide cable safety factor of at least 5 to 1.

2.5 MANUAL OPERATORS

2.5.1 Pushup Operators

Provide lifting handles on both sides of door. Do not exceed the lesser of 10 percent of the door weight or 11.25 kilograms 25 pounds for the maximum lifting force of required to operate the door. Provide pulldown straps or ropes at bottom of doors over 2130 mm 7 feet high.

2.5.2 Chain Hoist Operators

Provide a galvanized, endless chain operating over a sprocket. Extend chain to within 1200 mm 4 feet of the floor and mount on inside of building. Obtain reduction by use of roller chain and sprocket drive or gearing. Provide chain cleat and pin for securing operator chain. Allow for future installation of power operators to chain hoist operator. Do not exceed the maximum lifting force of 15.75 kilograms 35 pounds required to operate the door.

2.6 ELECTRIC OPERATORS

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NOTE: Indicate location of motors and control switches when electric operators are required. Specify three-phase motors whenever three-phase electric service is specified. Locate control stations at least 1500 mm 5 feet above floor line, so operator will have complete visibility of door at all times. Place one control station about 600 mm 2 feet from door jamb, guide, or track.

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2.6.1 Operator Features

Operators must be labeled and listed to the requirements of UL 325. Provide operators of the drawbar type or side mount (jack shaft) type as recommended by the manufacturer. Include operators with electric motor, machine-cut reduction gears, steel chain and sprockets, magnetic brake, brackets, pushbutton controls, limit switches, magnetic reversing contactor, a manual chain hoist operator for emergency use, and other

accessories necessary for operation. Design electric operator so motor may be removed without disturbing the limit switch timing and without affecting the manual operator. Provide the operator with slipping clutch coupling to prevent stalling the motor. Provide a clutch controlled emergency manual operator so that it may be engaged and disengaged from the floor; do not affect limit switch timing by operation. The manual operator is not required if door can be manual-pushup operated with a force not to exceed 11.25 kilograms 25 pounds. Provide an electrical or mechanical device that disconnects the motor from the operating mechanism when the manual operator is engaged.

2.6.2 Motors

NEMA MG 1, high-starting torque, reversible type with sufficient horsepower and torque output to move the door in either direction from any position. Provide a motor to produce a door travel speed of not less than 200 mm 8 inch or more than 300 mm one foot per second without exceeding the rated capacity. Motors must be operate on current of the characteristics indicated at not more than 377 rad/s 3600 rpm.[Single-phase motors must not have commutation or more than one starting contact.][Provide motor enclosures with drip-proof type or NEMA TENV type.]

2.6.3 Controls

Provide a motor for each door with an enclosed, across-the-line type, magnetic reversing contactor, thermal overload and undervoltage protection, solenoid-operated brake, limit switches, and control switches. Locate control switches at least 1500 mm 5 feet above the floor so the operator will have complete visibility of the door at all times. Provide control equipment to conform to NEMA ICS 1 and NEMA ICS 2. Provide control enclosures with NEMA ICS 6, Type 12 or Type 4, except that contactor enclosures may be Type 1. Provide a three-button type control switch stations with buttons marked "OPEN," "CLOSE," and "STOP." The "OPEN" and "STOP" buttons must require only momentary pressure to operate. The "CLOSE" button must require constant pressure to maintain the closing motion of the door. If the door is in motion and the "STOP" button is pressed or the "CLOSE" button released, the door must stop instantly and remain in the stop position; from the stop position, the door may be operated in either direction by the "OPEN" or "CLOSE" button. Provide full-guarded type pushbuttons to prevent accidental operation. Provide limit switches to automatically stop doors at the fully open and closed positions. Limit switch positions must be readily adjustable.

2.6.4 Entrapment Protection Devices

Provide entrapment protection devices for electrically-operated doors in accordance with UL 325. These devices must immediately stop and reverse the door in its closing travel upon sensing an obstruction in the door opening or upon failure of the device or any component of the control system. Any momentary door-closing circuit must be automatically locked out and the door must be operable manually or with constant pressure controls until the failure or damage has been corrected. No entrapment protection device must be used as a limit switch, unless its function is specifically intended to do so.

2.6.5 Control Transformers

NEMA ST 20. Provide transformers in power circuits as necessary to reduce

the voltage on the control circuits to 120 volts or less.

2.6.6 Electrical Components

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NOTE: Ensure that labor and materials for connecting motors and controls are specified in the electrical section, such as SECTIONAL OVERHEAD DOORS: Mount controls, including Type SO cable and takeup reels furnished by the door manufacturer, and provide necessary conduit, conductors, and devices in accordance with the door manufacturer's wiring diagrams.
****

NFPA 70. Provide manual or automatic control and safety devices, including extra flexible Type SO cable and spring-loaded automatic takeup reel or equivalent device, for operation of the doors. Conduit wiring and mounting of controls are specified in the corresponding electrical specification section.

[2.6.7 Hazardous Locations

****
NOTE: Delete this paragraph if not applicable. If applicable, identify doors.
****

Conform to NFPA 70. In addition to meeting other requirements specified, electrical materials, equipment, and devices for installation in hazardous locations must be specifically approved by Underwriters Laboratories or by an independent testing agency using equivalent standards, for the particular chemical group and the class and division of hazardous location involved.

]2.7 WEATHER SEALS [AND SENSING EDGES]

Provide exterior doors with weatherproof joints between sections by means of tongue-and-groove joints, rabbetted joints, shiplap joints, or wool pile, vinyl or rubber weatherstripping; a rubber, or vinyl adjustable weatherstrip at the top and jambs; and a compressible neoprene or rubber weather seal attached to the bottom of the door.[On exterior doors that are electrically operated, where a sensing edge is employed, the bottom seal must be combination compressible weather seal and sensing edge for stopping [and reversing] door movement.][On interior doors that are electrically operated, where a sensing edge is employed, the bottom seal must be a compressible type of sensing edge for stopping[and reversing] door movement.]

2.8 FINISHES

Hot-dip galvanize concealed metal surfaces and tracks in accordance with ASTM A123/A123M. Hot-dip galvanized and other ferrous metal surfaces, except rollers and lock components, which are galvanized or plated shop primed.

2.8.1 Galvanized and Shop Primed

Provide a zinc coating on specified surfaces, a phosphate treatment, and a

shop prime coat of rust-inhibitive paint. Conform to ASTM A653/A653M for galvanized coating, coating designation Z180 G60, for steel sheets, and ASTM A123/A123M for assembled steel products. The weight of coatings for assembled products must be as designated in Table I of ASTM A123/A123M for the class of material to be coated. Provide a prime coat especially developed for materials treated by phosphates and adapted to application by dipping or spraying. Repair damaged zinc-coated surfaces with galvanizing repair paint and spot prime. At the Contractor's option, a two-part system including bonderizing, baked-on epoxy primer, and baked-on enamel topcoat may be applied in lieu of prime coat specified.

2.8.2 Aluminum

Provide a clear anodized finish to aluminum surfaces in accordance with AA-M10-C22-A41 contained in AA DAF45 and NAAMM AMP 500. Pretreat exposed surfaces and apply a [white] [_____] baked-on enamel finish in accordance with manufacturer's standard.

PART 3 EXECUTION

3.1 INSTALLATION

NFPA 70. Install doors in accordance with approved shop drawings and manufacturer's written installation instructions. Lubricate and adjust doors to operate freely.

Provide a weathertight installation and free from warp, twist, or distortion. Adjust and lubricate doors to operate freely.

Provide all items and accessories for a complete installation in every respect.

3.2 ELECTRICAL WORK

NFPA 70. Conduit, wiring, and mounting of controls.

3.3 TESTING

After installation is complete, operate doors to demonstrate installation and function of operators, safety features, and controls. Correct deficiencies.

-- End of Section --