

SECTION 08 33 00
TORNADO AND HURRICANE RESISTANT INSULATED FIRE RATED COILING DOORS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. Provide all materials, labor, equipment and services necessary to furnish, deliver and install all work under this section as shown on the contract documents, specified herein, and as specified by the job conditions.

1.02 DESCRIPTION

- A. Related work specified elsewhere:
 - 1. Metal Fabrication. Section 05 50 00
 - 2. Rough Carpentry. Section 06 10 00
 - 3. Access Panels & Doors: Section 08 31 00
 - 4. Painting: Section 09 91 00
 - 5. Electrical: Division 26

1.03 SUBMITTALS

- A. Procedures: Furnish submittals in accordance with the general requirements specified.
- B. Shop Drawing: Furnish shop drawings for architect's approval. Include elevations, sections, and details indicating dimensions, materials, finishes, conditions for anchorage and support of each door.
- C. Listings and Certifications:
 - 1. Submit manufacturer's Underwriters Laboratories (UL), Warnock Hersey (WH) or Factory Mutual Research (FM) laboratory listing report verifying product compliance in accordance with the required fire and smoke ratings.
 - 2. Submit manufacturer's Code Compliance Research Report published by an IAS accredited nationally recognized independent agency confirming compliance of the fire door assembly in accordance with the International Building Code.
 - 3. Listed, labeled and certified by an IAS accredited nationally recognized testing laboratory for product compliance with FEMA 361 Safe Rooms for Tornadoes and Hurricanes.
 - 4. Listed, labeled and certified by an IAS accredited nationally recognized testing laboratory to ICC 500-2020 Standard for Design and Construction of Storm Shelters.
 - 5. Listed, labeled and certified by an IAS accredited nationally recognized testing laboratory for a wind pressure rating of 302psf (1.2 times the design wind pressure of 252psf) in accordance with ASTM E330.
 - 6. Listed, labeled and certified by an IAS accredited nationally recognized testing laboratory for Large Missile Impact rating in accordance with the requirements of ASTM E1886 for FEMA 361 Safe Rooms for Tornadoes and Hurricanes.
- D. Product Literature: Submit manufacturer's technical literature describing the product to be used under this section.
- E. Maintenance and Operating Manuals: Furnish complete manuals describing the materials, devices and procedures to be followed in operating and maintaining all doors under this section. Include manufacturer's brochures and parts lists describing the actual materials used in the product.

1.04 QUALITY ASSURANCE

- A. Fire & Smoke Rated Assemblies: Provide all doors with fire and smoke resistance rating required to comply with governing regulations which are inspected, tested, listed and labeled by UL, WH or FM and complying with NFPA 80 for class of opening. Provide units tested in accordance with the requirements of UL 10B, UL 1784, NFPA 252, ASTM E-152. Provide testing laboratory label permanently fastened to

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each fire and smoke door assembly.

- B. Regulatory Requirements:
 - 1. Comply with applicable FEMA requirements as well as laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction.
 - 2. Listed under a certified Code Compliance Research Report in accordance with the applicable sections of the International Building Code.
- C. Manufacturer Requirements: Door manufacturer shall have been in the business of and have experience in manufacturing the type of product covered under this specification section as well as giving credible service for a minimum of five (5) years. Provide list of at least ten (10) completed projects which include the products covered under this section.
- D. Operational Cycle Life: Tornado and hurricane resistant coiling doors shall be designed and constructed for a minimum 10,000 operating cycles for the life of the door assembly. Cycles shall be verifiable by a non-resettable cycle counter located within the door's motor operator control panel.

1.05 DELIVERY, STORAGE AND HANDLING

- A. General: Deliver and store materials in manufacturer's original packaging, labeled to show name, brand and type. Store materials in a protected dry location off the ground in accordance with manufacturer's instructions.

1.06 WARRANTY

- A. Door Warranty: Provide Two (2) Year, 10,000 Cycle Warranty signed by the manufacturer and installer agreeing to repair or replace work which has failed as a result of defects in materials or workmanship. Upon notification within the warranty period, such defects shall be repaired at no cost to the owner.

PART 2 PRODUCTS

2.01 TORNADO AND HURRICANE RESISTANT INSULATED FIRE RATED COILING DOORS

- A. Manufacturer: Tornado and hurricane resistant coiling doors shall be the model SafeSpace™ SS500F-IS-PC as manufactured by McKEON. Assembly shall be tested, listed and labeled by an IAS accredited nationally recognized testing laboratory, approved for use in FEMA 361 and ICC 500-2020 safe rooms and storm shelters.

2.02 MATERIALS

- A. Curtain: Shall be assembled of G90 galvanized steel interlocking slats. Curtain shall be formed of slat profile sections of gauge as required to sustain the minimum required design wind pressure.
 - 1. Slats shall be filled with rockwool thermal insulation with the front and back panel slats having a positive interlock, snap-in back panel slats are not acceptable. Provide assembly with a minimum 9.3 R value.
 - 2. Slat cross section shall not be less than 3" wide by 1-1/2" deep.
- B. Bottom Bar: Shall consist of a double 2" x 3" structural steel angle assembly formed to fit and engage the curtain assembly.
- C. Guides: Each guide assembly shall be fabricated of structural steel support angles no greater than 4" x 4" and guide retaining angles of a minimum 6" depth to retain curtain in the guides under the design wind pressure and impact forces specified.
 - 1. Provide internally concealed UL Classified smoke seals located within each guide assembly. Externally mounted smoke seals shall not be acceptable.

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- D. Mounting Brackets: Fabricated of hot rolled 3/16" minimum steel plates, brackets shall be provided to house ends of the counterbalance barrel assembly.
- E. Hood: Shall be provided to entirely enclose coiled curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge G90 galvanized steel, designed and formed to match brackets. Top and bottom shall be bent and reinforced to provide for proper stiffness.
 - 1. Provide internally concealed UL Classified smoke seals located within the hood assembly. Externally lintel mounted smoke seals shall not be acceptable.
- F. Counterbalance Assembly: Coiling door shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks or rings for attachment of curtain. Grease sealed bearings or self-lubricating graphite bearings shall be attached to the spring barrel which shall be fabricated of hot formed structural quality carbon steel seamless pipe.
- G. Electric Motor Operator: Door shall be provided with a compact power unit designed and laboratory listed by the door manufacturer. Operator shall be equipped with an adjustable screw-type limit switch to break the circuit at termination of travel. High efficiency planetary gearing running in an oil bath, shall be furnished together with a centrifugal governor, magnetic operated brake and a fail-safe magnetic release device, completely housed to protect against damage, dust and moisture. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit. Operator is to be housed in a NEMA type 1 enclosure.
 - 1. Motor: Shall be intermediate duty, thermally protected, ball bearing type with a class A or better insulation. Horsepower of motor is to be 1/2hp minimum or of manufacturer's recommended size, whichever is greater.
 - 2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
 - 3. Reducer: Planetary gear type, 80% efficiency minimum.
 - 4. Cycle Counter: Non-resettable operational cycle counter.
- H. Control Stations: Each fire rated tornado and hurricane storm door shall be provided with flush mount three position push button control station marked open, close and stop that is active during normal conditions and as long as there is no main power failure to the motor operator.
- I. Master Control Station: Provide a single master control station that can simultaneously activate all of the fire rated tornado and hurricane storm doors in the facility to the emergency closed or open positions. The master control station shall remain operable as long as there is no main power failure to the door's motor operators.
- J. FS Self-Closing Mechanism: The fire rated tornado and hurricane storm door with automatic release mechanism shall be activated by a fusible link, fire alarm, emergency alarm or power failure. When activated the door shall be released and begin to self-close under gravitational force. The speed of the door shall be governed by a centrifugal governor at a rate of not greater than 9" per second or less than 6" per second.
- K. Magnetic Release with 10 Second Time Delay: A fail-safe magnetic release device shall be built into the operator as an integral part of the release mechanism. When power is interrupted to the release mechanism by the facility's smoke detection or fire alarm system, the door shall begin to self-close. In the event of power failure, the time delay shall prevent the fire door from closing for a period of 10 seconds. Once the 10 seconds have lapsed, the fire door shall self-close.
- L. Emergency and Fire Alarm Activation: Upon activation by the facility's alarm system the fire rated hurricane and tornado storm door shall immediately self-close to the fully closed position. Once the emergency or fire alarm condition has been cleared and main power has been restored, the door shall automatically power itself back to the fully open position.

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- M. Emergency Manual Operation: In the event of power failure, a time delay shall prevent the door assembly from closing for a period of 10 seconds. Once the 10 seconds have lapsed, the door assembly shall immediately self-close. The door assembly shall be equipped with an emergency hand chain that shall be operable during main power failure lasting up to six hours, as long as there is no alarm condition present. After the six hours have lapsed, the door shall automatically self-close and remain in the closed position until the main power has been restored. Upon activation of the facility's emergency alarm system the door assembly shall immediately self-close to the fully closed position and the emergency hand chain shall become inoperable. Once the emergency alarm condition has been cleared and main power has been restored, the door shall automatically power itself back to the fully open position and the emergency hand chain will now become operable.
- N. Obstruction Sensing Safety Edge: The obstruction sensing safety edge shall be programable to either stop or reverse upon coming in contact with an obstruction during the close cycle of the door. During normal operation the obstruction sensing safety edge shall remain active and operable as long as there is no main power failure to the motor operator. During an alarm condition, the obstruction sensing safety edge shall reverse a maximum of three times and then comes to contact on the obstruction until the obstruction has been removed and the door returns to the fully closed position. During main power failure, if the obstruction sensing safety edge comes in contact with an obstruction during the self-closing mode, the door shall stop and remain in contact with the obstruction until it is removed and the door can continue to the fully closed position.
- O. True Test Panel: Fire rated tornado and hurricane storm doors shall be provided with a True Test panel. The test panel shall be designed so that it simulates an actual emergency alarm condition and activates all of the doors to self-close to the fully closed position. Once all of the doors have satisfactorily closed and the test panel has been reset, all of the doors shall automatically power themselves back to the fully open and alarm ready reset condition. Only one test panel shall be required to test all the fire rated tornado and hurricane storm doors on this project simultaneously.
- P. Finish: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for powder coat adhesion. Provide powder coat finish of color as selected by architect from manufacturer's standard RAL powder coat selection chart.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces and field conditions to which this work is to be performed and notify architect if conditions of surfaces exist which are detrimental to proper installation and timely completion of work.
- B. Verify all dimensions taken at job site affecting the work. Notify the architect in any instance where dimensions vary.
- C. Coordinate and schedule work under this section with work of other sections so as not to delay job progress.

3.02 INSTALLATION

- A. Perform installation using only factory approved and certified representatives of the door manufacturer.
- B. Install door assemblies at locations shown in perfect alignment and elevation, plumb, level, straight and true.
- C. Adjust door installation to provide uniform clearances and smooth non-binding operation.

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- D. Install wiring in accordance with applicable local codes and the National Electrical Code Standard. Materials shall be UL listed.
- E. Test door closing sequence when activated by the building's fire alarm system. Reset door after successful test.

3.03 PROTECTION AND CLEANING

- A. Protect installed work using adequate and suitable means during and after installation until accepted by owner.
- B. Remove, repair or replace materials which have been damaged in any way.
- C. Clean surfaces of grime and dirt using acceptable and recommended means and methods.