

SECTION 08 3324
COILING FIRE DOORS
Model 4200



PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Rolling Steel Doors
- B. Guides and Framing

1.2 RELATED SECTIONS

- A. Section 04810 - Unit Masonry Assemblies: Prepared opening in masonry.
- B. Section 05500 – Metal Fabrications: - Steel framed door openings.
- C. Section 06100 – Rough Carpentry: Wood framing and blocking for door opening.
- D. Section 07900 - Joint Sealers: Perimeter sealant and backup materials.

1.3 REFERENCES

- A. ASTM A 653/A 653M – Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Operation and maintenance data.
- C. Shop Drawings: Include opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

1.5 WIND PERFORMANCE REQUIREMENTS

- A. Exterior rolling service doors shall be designed to withstand at least a twenty (20) pounds per square foot windload.

- B. Design doors to withstand positive and negative wind loads as calculated in accordance with applicable governing building codes.

1.6 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** Company specializing in manufacturing the types of doors specified in this section.
- B. **Installer Qualifications:** Installation to be by qualified dealer in accordance with the manufacturer's installation instructions.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. **Acceptable Manufacturer:** Amarr Garage Doors; 165 Carriage Court, Winston-Salem, NC 27105. ASD. Tel: (800) 503-3667. Fax: (336) 251-1851. Email: marketing@amarr.com www.amrr.com.
- B. **Substitutions:** Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 FIRE RATED ROLLING STEEL DOORS –MODEL 4200

- A. Provide each door with curtains, bottom bars, guides, brackets, hoods, operating mechanisms and any special features.
- B. **Curtain:** The door curtain shall be constructed of interconnected strip steel slats conforming to ASTM A-653. The proper gauge of steel shall be chosen as follows:
 - 1. 22 gauge with a No. 5 (measuring 2-1/4" high by 5/8" deep) flat slat if the door width does not exceed 18'4" and the door height does not exceed 18'4".
 - 2. 20 gauge with a No. 5 flat slat if the door width is between 18'5" and 24'4" and the door height is between 18'5" and 24'4".
 - 3. 18 gauge No. 4 (measuring 2-3/4" high by 3/4" deep) flat slat if the door width exceeds 24'4" and the door height exceeds 24'4".
- C. **Finish Coat:** The finish on the door curtain shall consist of the following:
 - 1. Hot dipped galvanized G-90 coating consistent with ASTM A-653
 - 2. Bonderized coating for prime coat adhesion.
 - 3. Corrosion inhibiting primer .2 mils per side

4. Thermosetting gray polyester top coat with a minimum thickness of .6 mils each side.
5. Factory applied Thermosetting Powder Coating applied with a minimum thickness of 2 mils. The color shall be selected by the architect and shall be chosen from:
 - a. standard color chart.
 - b. custom color selection.

D. Bottom Bar:

1. The bottom bar shall consist of two 1/8" steel angles mechanically joined together.
 - a. The finish on the bottom bar shall be one (1) coat of bronze rust-inhibiting prime paint.
 - b. The finish on the bottom bar shall be the Thermosetting Powder Coating finish as indicated in the curtain section.

E. Guide Assembly:

1. The guides shall consist of 3 steel angles bolted together with 3/8" fasteners to form a channel for the curtain to travel. The wall angle portion shall be continuous and fastened to the surrounding structure with either minimum 1/2" fasteners or welds, both on 36" centers.
 - a. The finish on the guide angles shall be one (1) coat of bronze rust-inhibiting prime paint.
 - b. The finish on the guide angles shall be one the Thermosetting Powder Coating finish as indicated in the curtain section.

F. Brackets:

1. The brackets shall be constructed of steel not less than 1/4" thick and shall be bolted to the wall angle with minimum 1/2" fasteners.
 - a. The finish on the brackets shall be one (1) coat of bronze rust-inhibiting prime paint.
 - b. The finish on the brackets shall be one the Thermosetting Powder Coating finish as indicated in the curtain section.

G. Gears:

1. All gears shall be cast iron with teeth cast from machine cut patterns.
2. The pinion gear shall not be less than a 3" pitch diameter.
3. The gear ratio shall be designed for a maximum effort of not more than 30 pounds.

H. Barrel:

1. The barrel shall be steel tubing of not less than 4" in diameter. Oil tempered torsion springs shall be capable of correctly counter balancing the weight of the curtain and shall have both a main and an auxiliary spring. The barrel shall be designed to limit the maximum deflection to .03" per foot of opening width. The springs shall be adjusted by means of an exterior wheel.
 - a. The finish on the barrel shall be one (1) coat of bronze rust-inhibiting prime paint.

I. Hood:

1. The hood shall be fabricated from 24 gauge galvanized steel and shall be formed to fit the curvature of the brackets.
 - a. The finish on the hood shall be the finish as indicated in the curtain section.

2.3 OPERATION

- A. Chain operated doors shall open and close with a maximum of 30 pounds of effort utilizing an endless chain and cast iron reduction gears.
 - 1. All chain operated fire doors shall have an automatic closing device, release spring, and governor to control the downward speed of the door which shall become operational upon the fusing of a 160 degree fusible link. The door shall have an average closing speed of not less than six (6) inches per second and not more than twenty-four (24) inches per second as indicated in NFPA Bulletin 80. The governor shall be fail-safe, maintenance-free, fully enclosed and warranted for the life time of the door. Once the door has closed, it should be able to be reset by one person on one side of the door only.

- B. Push-up operated doors shall open and close with a maximum of 30 pounds of effort utilizing handles in the curtain. This type of operation should not be used for doors over 80 square feet or doors over 14 feet in height.
 - 1. All push-up fire doors shall have an automatic closing device, release spring, and governor to control the downward speed of the door which shall become operational upon the fusing of a 160 degree fusible link. The door shall have an average closing speed of not less than six (6) inches per second and not more than twenty-four (24) inches per second as indicated in NFPA Bulletin 80. The governor shall be fail-safe, maintenance-free, fully enclosed and warranted for the life time of the door. Once the door has closed, it should be able to be reset by one person on one side of the door only.

- C. Crank operated doors shall open and close utilizing a guide mounted crank box through shafting and precision cast iron reduction gears.
 - 1. All crank fire doors shall have an automatic closing device, release spring, and governor to control the downward speed of the door which shall become operational upon the fusing of a 160 degree fusible link. The door shall have an average closing speed of not less than six (6) inches per second and not more than twenty-four (24) inches per second as indicated in NFPA Bulletin 80. The governor shall be fail-safe, maintenance-free, fully enclosed and warranted for the life time of the door. Once the door has closed, it should be able to be reset by one person on one side of the door only.

- D. Motor: All motor operated fire doors shall have an automatic closing device and governor to control the downward speed of the door which shall become operational upon the fusing of a 160 degree fusible link. The door shall be operated at a speed of 2/3 foot per second by an open drip-proof electric motor with belt drive and roller chain sprocket reducer. The motor operator shall include a geared limit switch, and an electrically interlocked emergency chain operator. The motor starter shall be housed in a NEMA 1 housing and include a magnetic reversing starter size 0, a 24 volt control transformer, and complete terminal strip to facilitate field wiring. The motor operator shall be activated by [a 3 button push-button station] [other controls as selected] in a NEMA 1 enclosure. The motor shall be size as required by the door [115 volts single phase] [230 volts single phase] [230 volts three phase] [460 volts three phase]. The motor operator shall be mounted to the door bracket as shown on drawings. All motor operators shall be U.L. listed. The motor operator shall have the following options:

1. **Belt Drive:** The door shall be operated at a speed of 2/3 foot per second by an open drip-proof electric motor with belt drive and roller chain sprocket reducer.
2. **Gear Head:** The door shall be operated at a speed of 2/3 foot per second by an open drip-proof electric motor with gear reducer in oil bath.
3. The motor shall have the correct voltage and phase needed.
 - a. 115 volts single phase.
 - b. 230 volts single phase.
 - c. 230 volts three phase.
 - d. 460 volts three phase.

E. Safety Edge

1. The safety edge shall be installed on the bottom bar of the door and shall automatically reverse the door if the device detects an obstruction in the downward travel of the door
2. The safety edge shall consist of a rubber boot attached below the bottom bar with an electrical switch secured to the back of the bottom bar. The safety edge shall operate with air wave technology and shall not rely on pneumatic pressure or electrical strip contacts to operate properly. The safety edge shall create an air wave that shall be detected and reverse the direction of the rolling door.
3. The operation of the safety edge shall not be subject to interferences by temperature, barometric pressure, water infiltration, or cuts in the rubber boot.
4. The safety edge shall be connected to the motor operator with a coil cord

F. Time Delayed Electromagnetic Release Device: All fire doors shall be equipped with a Time Delayed Electromagnetic Release Device.

1. The electromagnetic release device shall be wired directly into the building's [110 volt AC] [24 volt AC] [24 volt DC] fire alarm or smoke detector system.
2. During installation and subsequent resetting of the fire door, the electromagnetic release device's latching mechanism shall hold the door in the set position. Energizing the alarm system shall automatically set the electromagnetic release device by releasing the latching mechanism.
3. The electromagnetic release device shall hold the fire door in the set position until the alarm or smoke detection system is activated. Upon activation, the electromagnetic release device shall mechanically release the fire door after a delay of not more than 10 seconds. If the fire alarm activation is canceled before the 10 second delay, the electromagnetic release device shall automatically reset itself. Power outages of less than 10 seconds shall have the same effect as a canceled alarm activation. If the power outage is longer than the 10 second delay, the fire door shall be closed mechanically.
4. If the electromagnetic release device mechanically closes the fire door, the door will have to be reset by an authorized trained technician.
5. Power outages of 10 seconds or less shall not effect the operation of the electromagnetic release device and the fire door shall not be released.

G. Time Delayed Electromagnetic Release Device with Battery Backup: All Fire Doors shall be equipped with a Time Delayed Electromagnetic Release Device with Battery Backup.

1. The electromagnetic release device shall be wired directly into the building's [110 volt AC] [24 volt AC] [24 volt DC] fire alarm or smoke detector system.

2. During installation and subsequent resetting of the fire door, the electromagnetic release device's latching mechanism shall hold the door in the set position. Energizing the alarm system shall automatically set the electromagnetic release device by releasing the latching mechanism.
3. The electromagnetic release device shall hold the fire door in the set position until the alarm or smoke detection system is activated. Upon activation, the electromagnetic release device shall mechanically release the fire door after a delay of not more than 10 seconds. If the fire alarm activation is canceled before the 10 second delay, the electromagnetic release device shall automatically reset itself. Power outages of less than 10 seconds shall have the same effect as a canceled alarm activation. If the power outage is longer than the 10 second delay, the fire door shall be closed mechanically.
4. If the electromagnetic release device mechanically closes the fire door, the door will have to be reset by an authorized trained technician.
5. Power outages of 10 seconds or less shall not effect the operation of the electromagnetic release device and the fire door shall not be released.
6. The electromagnetic release device shall have an integral 4 amp hour battery that is capable of powering the release device and 3 auxiliary devices (smoke detectors, sounder strobes, etc.) for up to 72 hours. During a power outage the electromagnetic release device shall automatically switch to battery power. If normal power is resumed within 72 hours, the electromagnetic release device shall automatically reset itself and charge the battery. If the power outage is longer than 72 hours, the fire door will be closed mechanically.

2.4 LOCKING MECHANISM

- A. Door shall be secured by means of a chain lock.
- B. Door shall be secured by means of cylinder locks, one at each jamb.
- C. Door shall be secured by means of cylinder locks, operable from both sides.
- D. Door shall be secured by means of slide bolts.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
 1. Doors to be face mounted on a prepared surface.

2. Doors to be between jamb mounted on a prepared surface.
- B. Anchor assembly to wall construction and building framing without distortion.
- C. Secure guides to structural members or solid backing only.
- D. Fit and align curtain assembly, guides and operating hardware.
- E. Adjust door assembly and counter balance to smooth operation.

3.4 CLEANING

- A. Clean doors, frames and glass.
- B. Remove packing labels and visible markings.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION