SECTION 08 33 00

Thermiser® CrossingGard with ThreatProtect® Emergency Response Door

Insulated rolling service Door

**GENERAL NOTES TO SPECIFIER:**

This specification section has been prepared to assist design professionals in the preparation of project or office master specifications. It follows guidelines established by the construction specifications institute, and therefore may be used with most master specification systems with minor editing.

Edit carefully to suit project requirements. Modify as necessary and delete items that are not applicable. Verify that referenced section numbers and titles are correct. (numbers and titles referenced are based on MasterFormat®, 2004 edition).

This section assumes the project manual will contain complete division 01 documents including sections 01 33 00 submittal procedures, 01 62 00 product options, 01 25 13 product substitution procedures, 01 66 00 product storage and handling requirements, 01 77 00 closeout procedures, and 01 78 00 closeout submittals. If the project manual does not contain these sections, additional information should be included under the appropriate articles.

This is an open proprietary specification allowing users the option of approving other manufacturers which comply with the criteria specified herein.

**\*\* NOTES TO SPECIFIER \*\*** are highlighted in red text and should be deleted from final copy.

Optional items requiring selection by the specifier are enclosed within brackets and highlighted, e.g.: [35] [40] [45]. In cases where one of the optional items is a standard feature of the door model, it is listed in the first position. Make appropriate selection and delete others.

Items requiring additional information are underlined and highlighted, e.g.: \_\_\_\_\_\_\_\_\_\_\_\_.

**PART 1** GENERAL

1.1 SUMMARY

A. **Section Includes:** Electric operated overhead insulated rolling doors

B. **Related Sections:**

1. 05 50 00 Metal Fabrications. Door opening jamb and head members.

 2. 06 10 00 Rough Carpentry. Door opening jamb and head members.

 3. 08 31 00 Access Doors and Panels. Access doors.

 4. 08 70 00 Hardware. Padlocks. Masterkeyed cylinder.

 5. 09 91 00 Painting. Field painting.

6. Division 26. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.

C. **Products That May Be Supplied, But Are Not Installed Under This Section:**

1. **Control Station**

1.2 SYSTEM DESCRIPTION

A. **Design Requirements:**

1. **Emergency Response:** Automatic alarm response to open or close the grille

depending on alarm signal type

**2. Wind Loading:**

a. Supply doors to withstand up to [\_\_] psf (\_\_\_ Pa) design wind load

a. Supply doors to be operational up to 20 PSF maximum wind load

3. **Cycle Life:**

a. Design doors of standard construction for normal use of up to 20 cycles per day maximum, and an overall maximum of 50,000 operating cycles for the life of the door

\*\* **NOTE TO SPECIFIER**\*\* For doors over 50,000 cycles, please select the 1024 High-Speed, High-Cycle Insulated Door.

4. **Seismic Performance:**

a. Provide manufacturer’s seismic calculations confirming ASCE7-10

5. **Insulated Door Slat Material Requirements:**

a. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84

b. Minimum R-value of 8.0 (U-value of 0.125) as calculated using the ASHRAE Handbook of Fundamentals

c. Insulation to be CFC Free with an Ozone Depletion Potential (ODP) rating of zero

\*\*NOTE TO SPECIFIER\*\* If your project does not involve a custom layout or custom product modifications, please delete 7 and 8. If you are unsure, please contact Architectural Design Support at 833-958-1273.

6. **New Product:**

a. This is a new product that has been developed by CornellCookson. Alternate manufacturers may be unable to meet the specification.

7. **Custom Layout:**

a. Product has been reconfigured for a custom layout, refer to drawings by CornellCookson.

8. **Customized Product:**

a. This product has custom modifications designed by CornellCookson. Contact Manufacturer for details.

1.3 SUBMITTALS

A. Reference Section 01 33 00 Submittal Procedures; submit the following items:

1. **Product Data**

2. **Shop Drawings:** Include special conditions not detailed in Product Data. Show interface with adjacent work.

3. **Quality Assurance/Control Submittals:**

a. Provide manufacturer ISO 9001:2015 registration

b. Provide manufacturer and installer qualifications - see below

c. Provide manufacturer's installation instructions

d. Provide manufacturer’s Health Product Declaration (HPD) for each

product

4. **Closeout Submittals:**

a. Operation and Maintenance Manual

b. Certificate stating that installed materials comply with this specification

1.4 QUALITY ASSURANCE

A. **Qualifications:**

1. **Manufacturer Qualifications:** ISO 9001:2015 registered and a minimum of five years experience in producing doors of the type specified

2. **Installer Qualifications:** Manufacturer's approval

1.5 DELIVERY STORAGE AND HANDLING

A. Reference Section 01 66 00 Product Storage and Handling Requirements

B. Follow manufacturer's instructions

1.6 WARRANTY

A. Standard Warranty: Two years from date of shipment against defects in material and workmanship

B. Maintenance: Submit for owner’s consideration and acceptance of a maintenance service agreement for installed products

**PART 2** PRODUCTS

2.1 MANUFACTURER

A. **Manufacturer:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

1. **Cornell:** 24 Elmwood Avenue, Mountain Top, PA 18707. Telephone: (800) 233-8366.

2. **Cookson**

3. **Clopay Building Products**

**Substitutions:** Not permitted

2.2 PRODUCT INFORMATION

A. **Model:** ERD20T

2.3 MATERIALS

A. **Curtain:**

1. **Fabrication:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **Slat Material:** No. 6F, (Listed Exterior/Interior):

1) **Galvanized Steel/Galvanized Steel (No Paint Finish):** Manufacturer recommended gauge based on performance requirements. Minimum 24/24 gauge, Grade 40, ASTM A 653 galvanized steel zinc coating.

1) **Stainless Steel/Galvanized Steel:** Minimum 22 gauge AISI type 304 #4 finish stainless steel/24gauge, Grade 40, ASTM A 653 galvanized steel zinc coating

1) **Stainless Steel/Stainless Steel:** Minimum 22/22 gauge AISI type 304 #4 finish series stainless steel

1) **Aluminum/Aluminum:** 0.040 inch (1.016 mm) aluminum

b. **Insulation:** 7/8 inch (22 mm) foamed-in-place, closed cell urethane

c. **Total Slat Thickness:** 15/16 inch (24 mm)

d. **Flame Spread Index** of 0 and a **Smoke Developed Index** of 10 as tested per ASTM E84

e. **R-value:** 8.0

2. **Exterior Slat Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **GalvaNex™ Coating System (Stock Colors):**

1) **GalvaNex™** - ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [tan] [white] [brown] [black] baked-on polyester enamel finish coat

2) **GalvaNex™Ultra**- Ultra Powder Coat to be applied as a protective top coat over GalvaNex finish. Top coat is a polyester based structured wear resistant clear powder coat of 2.5-3.5 mils cured film thickness. ASTM D-3363 pencil hardness: 2H or better. Tested per ASTM B117. Base coating of GalvaNex to be ASTM A 653 galvanized base coating treated with dual process rising agents in preparation for chemical bonding baked-on base coat and [gray] [tan] [white] [brown] baked-on polyester enamel finish coat.

a. **SpectraShield® Coating System (Color Selected by Architect):**

1) **SpectraShield** color as selected by Architect from manufacturer's color range, more than 180 colors

2) **SpectraShield Ultra** – Ultra Powder Coat to be applied as a protective top coat over SpectraShield finish. Top coat is a polyester based structured wear resistant clear powder coat of 2.5-3.5 mils cured film thickness. ASTM D-3363 pencil hardness: 2H or better. Tested per ASTM B117. Base coating of SpectraShield color as selected by Architect from manufacturer’s color range, more than 180 colors.

a. **Atmoshield**® **Powder Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat

2) Zirconium pre-treatment followed by baked-on polyester powder coat, with [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Stainless Steel:** type 304 #4 finish

a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

3. **Interior Slat Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **GalvaNex™ Coating System (Stock Colors):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester enamel finish coat

a. **SpectraShield® Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester finish coat

2) Zirconium treatment followed by baked-on polyester powder coat, with [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Atmoshield® Powder Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat

2) Zirconium pre-treatment followed by baked-on polyester powder coat, with [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Stainless Steel:** type 304 #4 finish

a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

B. **Endlocks:** Fabricate interlocking sections with high strength [nylon] [galvanized cast iron] endlocks on alternate slats each secured with two ¼” (6.35 mm) rivets. Provide windlocks as required to meet specified wind load.

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

1. **Nylon:** Required up to 21’-5” width (DBG - Distance Between Guides)

1. **Galvanized cast iron:** Required if above 21’-5” width (DBG - Distance Between Guides)

C. **Bottom Bar**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

1. **Configuration:**

a. **Insulated Bottom Bar:** Reinforced extruded aluminum interior face with full depth insulation and exterior skin slat to match curtain material and gauge. Minimum 4” tall x 1-1/16” thickness.

a. **Heavy Duty Bottom Bar:** 6” x 2” x 3/8” aluminum tubular extrusion configured to withstand 350% more impact than standard bottom bar. (Doors up to 12’ wide; interior mounted only).

2. **Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **Exterior:** Match slats

a. **Interior:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized] [Powder coat to match slats]

D. **Guides:**

1. **Fabrication:**

a. Minimum 3/16 inch (4.76 mm) [structural steel] [stainless steel] [aluminum] angles. Provide windlock bars of same material when windlocks are required to meet specified wind load. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar.

\*\* **NOTE TO SPECIFIER** \*\* If standard structural steel guides are selected above, add the following sentence below regarding removable top section. Delete if selecting stainless steel or aluminum guide angles.

Top 16 ½” (419.10 mm) of coil side guide angles to be removable for ease of curtain installation and as needed for future curtain service.

\*\* **NOTE TO SPECIFIER** \*\* Mill finish structural stainless steel guide angles are used for stainless steel guide components over 12’-0” (3.66 m) high and on units wider than 21’-4” (6.50 m).

2. **Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **Powder Coat (Stock Colors):** Zirconium treatment followed by a [gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

a.  **AtmoShield Powder Coat (Color Selected by Architect):** Zirconium pre-treatment followed by baked-on polyester powder coat, [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **SpectraShield® Coating System (Color Selected by Architect):** Zirconium treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Atmoshield®** **Powder Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat

2) Zirconium pre-treatment followed by baked-on polyester powder coat, with [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Corrosion Inhibitive:** Zirconium treatment followed by a corrosion inhibitive baked-on zinc enriched gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

a. **Hot-dip Galvanized:** ASTM A 123, Grade 85 zinc coating, hot-dip galvanized after fabrication

a. **Stainless Steel:** [type 304 #4 finish] [Mill finish]

a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

E. **Counterbalance Shaft Assembly:**

1. **Barrel:** Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width

2. **Spring Balance:** Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheel for applying and adjusting spring torque.

F. **Brackets:**

Fabricate from minimum 3/16 inch (5 mm) steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures

1. **Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **Powder Coat (Stock Colors):** Zirconium treatment followed by a [gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

a. **AtmoShield Powder Coat (Color Selected by Architect):** Zirconium pre-treatment followed by baked-on polyester powder coat, [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **SpectraShield® Coating System (Color Selected by Architect):** Zirconium treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Atmoshield®** **Powder Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat

2) Zirconium pre-treatment followed by baked-on polyester powder coat, with [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Corrosion Inhibitive:** Zirconium treatment followed by a corrosion inhibitive baked-on zinc enriched gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

a. **Hot-dip Galvanized:** ASTM A 123, Grade 85 zinc coating, hot-dip galvanized after fabrication

G. **Hood:**

Minimum [24 gauge galvanized steel] [24 gauge stainless steel] [0.040 inch (1.016 mm) aluminum] with reinforced top and bottom edges. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.

1. **Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **GalvaNex™ Coating System (Stock Colors):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester enamel finish coat

a. **SpectraShield® Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat

2) Zirconium treatment followed by baked-on polyester powder coat, with [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Atmoshield®** **Powder Coating System (Color Selected by Architect):**

1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat

2) Zirconium pre-treatment followed by baked-on polyester powder coat, with [Weathered iron] [Weathered brown] [Earth] [Weathered bronze] [Terra cotta] [Stucco] [Platinum] [Olde copper] [Rust] [Dark roast] [Weathered copper]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Stainless steel:** type 304 #4 finish

a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

H. **Weatherstripping:**

1. **Bottom Bar:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **Manually Operated Doors:** Replaceable, bulb-style, compressible EDPM gasket extending into guides

a. **Bottom Bar, Motor Operated Doors:** Sensing/weather edge with neoprene astragal extending full width of door bottom bar

\*\* **NOTE TO SPECIFIER** \*\* The following weather-strip options are available; delete those not desired.

2. **Guides:** Replaceable vinyl strip on guides sealing against [fascia side] [both sides] of curtain

3. **Hood:** Neoprene/rayon baffle to impede air flow above coil

4. **Lintel Seal:** Nylon brush seal fitted at door header to impede air flow

2.4 OPERATION

 A. **ThreatProtect Electric Motor Operator with back-up power control box**, Limited Duty (up to 10 cycles per hour), cULus listed, TENV gear head operator, 24DVC. Horsepower as recommended by manufacturer. Provide complete with electric motor and factory pre-wired motor control terminals, maintenance free solenoid actuated brake, emergency manual chain hoist and control station(s). Motor shall be high starting torque, industrial type, with overload protection. Primary speed reduction shall be heavy-duty gears running in maintenance free, sealed gear box with mechanical braking to hold the door in any position. The emergency manual chain hoist assembly is automatically disengaged when motor is energized. A disconnect chain shall not be required to engage or release the manual chain hoist. Operator drive and door driven sprockets shall be provided with minimum #50 roller chain. Operator shall be capable of driving the door at a speed of up to 9” per second or as recommended for door size. Fully adjustable, driven linear screw type cam limit switch mechanism shall synchronize the operator with the door. The motor shall be removable without affecting the limit switch settings. The electrical contractor shall mount the control stations and supply the appropriate disconnect switch, all conduit and wiring per the overhead door wiring instructions.

 1. **Supply model ThreatProtect with programmable logic board and back-up power**

 **supply**. 120v AC input power with auto switch to 24v DC back-up power. Back-up power

to provide minimum 10 open/close cycles and 48 hr stand-by.

a. (2) 12v rechargeable lead sealed batteries.

b. Programmable battery load testing

c. Monitoring points for open/close position, AC power loss and battery low voltage

d. 12’-0” (standard) wiring whip to connect control box and motor

 (up to 120’-0” available)

e. Door power indicator: Flush mounted voltage monitor for battery back-up system. Flashing red light indicates low battery power and maintenance check-up. Can be located up to 150 ft. away from motor control box.

f. Non-resettable cycle counter

g. UL325 & UL864 compliant system.

**h. Emergency open alarm input**

**i. Hostile Event alarm input**

B. **Control Station:**

1. **Flush mounted:** "Open/Close/Stop" push buttons; NEMA 1B

1. **Flush mounted:** "Open/Close" key switch with "Stop" push button; NEMA 1B

1. **Surface mounted:** "Open/Close/Stop" push buttons; NEMA 1

1. **Surface mounted:** "Open/Close" key switch with "Stop" push button; NEMA 3R

1. **Surface mounted:** "Open/Close/Stop" push buttons with keyed lock-out, not masterkeyable; NEMA 4

1. **Flush mounted:** "Open/Close" key switch with ["Stop" push button and] [small format Best type 7-pin cylinder] [Schlage 6-pin cylinder] [#5 U-Change cylinder]; NEMA 1B

C. **Primary Entrapment:** Fail- safe, UL325-2010 Compliant Entrapment Protection for Motor

Operation

a. **Continuously monitored, wireless sensing/weather edge** seal extending full width of door bottom bar.

2.5 ACCESSORIES

\*\* **NOTE TO SPECIFIER \*\*** Vision panels are available in slat 6F only. Show number and placement on drawings. Minimum spacing is 1-1/2 inches (40 mm) apart, 12” (305 mm) in from guides. Delete below if not required.

A. **Vision Panels:** 10 x 1-1/2 x 3/4 inch thick (254 x 38 x 19 mm) oval acrylic panes set with double-sided foam glazing tape and fully contained within slat assembly. Refer to drawings for number and placement. Smaller vision panels are not acceptable.

\*\* **NOTE TO SPECIFIER \*\*** Exposed moving operator components lower than 8 feet above floor level that create possible pinch points are required to be covered per UL 325. Specify an operator cover whenever this field condition exists.

B. **Operator [and Bracket Mechanism] Cover:** Minimum [24 gauge galvanized steel] [24 gauge stainless steel] [0.040 inch (1.016 mm) aluminum] sheet metal cover [to provide weather resistance] [to enclose exposed moving operating components] at coil area of unit. Finish to match door hood.

\*\* **NOTE TO SPECIFIER** \*\* A Trim Package is custom-made to hide visible bolts, fasteners and other exposed hardware.

C. **Trim Package:** Minimum 16 gauge [powder coated steel to match guides] [#4 type 304 finish stainless steel].

**\*\* NOTE TO SPECIFIER \*\*** Vibration isolators not available for units requiring wind load or seismic validation. Delete below if not required.

1. **Vibration Isolators:**
	1. Include continuous vibration isolators pre-installed on both guides to reduce vibration transferred from the door to the structure. Vibration isolators should be expected to reduce vibration by up to 14%. Dampening pads are to be manufactured from nitrile oil-resistant rubber, durometer 50A.

**PART 3** EXECUTION

3.1 EXAMINATION

A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings

B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates

C. Commencement of work by installer is acceptance of substrate

3.2 INSTALLATION

A. General: Install door and operating equipment with necessary hardware, anchors, inserts, hangers and supports

B. Follow manufacturer's installation instructions

3.3 ADJUSTING

A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion

3.4 CLEANING

A. Clean surfaces soiled by work as recommended by manufacturer

B. Remove surplus materials and debris from the site

3.5 DEMONSTRATION

A. Demonstrate proper operation to Owner's Representative

B. Instruct Owner's Representative in maintenance procedures

**END OF SECTION**