SECTION 08 42 29 - Automatic Entrances

AUTOMATIC SWING/FOLD DOORS

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\*\* NOTE TO SPECIFIER \*\* DORMA; Automatic swing/fold entrance door products.  
This section is based on the products of DORMA, which is located at:  
Dorma Dr. Drawer AC  
Reamstown, PA 17567-0411  
Toll Free Tel: 800-523-8483  
Tel: 717-336-3881  
Fax: 800-274-9724  
Email: [request info (paul.licata@dorma.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=DORMA&coid=48160&rep=&fax=800-274-9724&message=RE:%20Spec%20Question%20(08462dor):%20%20&mf=)  
Web: [www.dorma.com](http://www.dorma.com)   
 [ [Click Here](http://www.arcat.com/arcatcos/cos48/arc48160.html) ] for additional information.  
DORMA incorporates Safety, Innovation, Functionality, and Superior Design into each automatic door system it produces. From its world-class manufacturing plant in Lake Bluff, Illinois, DORMA designs and markets an extensive and innovative line of sliding, swinging, folding and revolving door systems that meet and exceed industry standards.  
Each product offers exclusive features such as advanced microprocessor control for precision performance and long lasting reliability. A variety of sensors all engineered to provide optimum safety are available to meet every application. Other features setting DORMA apart from competitors include a handheld CPU for quick commissioning and diagnostic servicing, as well as sound-dampening designs to reduce noise.  
This specification includes DORMA doors and controls for overhead concealed swinging door systems and operators for overhead surface applied doors to cover a wide range of applications and finishes. DORMA also manufactures equipment for automatic sliding doors and manual sliding doors that are not contained in this specification. DORMA are widely recognized for displaying attractive looks, superior functionality, and design versatility. Contact DORMA for any additional information required.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Concealed Overhead Automatic Operator and Door for Swinging Entrance Doors.
    2. Concealed Overhead Automatic Low Energy Operator and Doors for Barrier Free Swinging Entrance Doors.
    3. Surface Applied Automatic Operator for Swinging Entrance Doors.
    4. Surface Applied Automatic Low Energy Operator for Barrier Free Swinging Entrance Doors.
    5. Surface Applied Automatic Operator for Bi-Folding Entrance Doors.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 05 10 00 - Structural Metal Framing.
    2. Section 06 10 00 - Rough Carpentry.
    3. Section 08 11 00 - Metal Doors and Frames.
    4. Section 08 10 00 - Doors and Frames.
    5. Section 07 90 00 - Joint Protection.
    6. Section 08 32 13 - Sliding Aluminum-Framed Glass Doors.
    7. Section 08 41 00 - Entrances and Storefronts.
    8. Section 08 42 29 - Automatic Entrances.
    9. Section 08 71 53 - Security Door Hardware.
    10. Section 08 83 13 - Mirrored Glass Glazing.
    11. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
    12. Section 26 05 00 - Common Work Results for Electrical.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ANSI A117.1 - American National Standard for Accessible and Useable Buildings and Facilities.
    2. ANSI A156.10 - Power Operated Pedestrian Doors.
    3. ANSI A156.19 - Power Assist and Low Energy Power Operated Doors.
    4. ANSI-Z97.1.2 - Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings.
    5. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
    6. Aluminum Association Standard AA DAF-45 - Designation System for Aluminum Finishes.
    7. NFPA 70 - National Electric Code.
    8. NFPA 101 - Life Safety Code.
    9. UL 325 - Door, Drapery, Gate, Louver, and Window Operators and Systems - (UL) listed.
  1. DESIGN / PERFORMANCE REQUIREMENTS
     1. Automatic swinging door system shall be certified by the manufacturer to meet performance design criteria according to the following test standards.
        1. ANSI A156.10.
        2. NFPA 101.
        3. Underwriter's Laboratories 325 (UL) listed.
     2. Accessibility Requirements: Comply with requirements of Local building code, and Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities.

\*\* NOTE TO SPECIFIER \*\* Coordinate with mechanical engineer to determine if artificially induced air pressure and suction loads in building interior will adversely affect requirements of the following paragraph.

* + 1. System Design: Operate, hold open, and close doors under design wind and suction loads calculated in accordance with applicable building code.
    2. Operating Temperature Range: Minus 30 to plus 131 degrees F (minus 35 to plus 55 degrees C) ambient.
    3. Operators: Fully adjustable for opening and closing speeds, checking speeds, hold open time.
    4. Electrical: 120 VAC, 60 Hz, 5 Amp service provided to the header.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. 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.
     3. Shop Drawings: Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, adjacent construction interface, recesses, materials, and finishes, electrical characteristics and connection requirements.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
    2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
    3. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
    4. Manufacturers warranties.
    5. Contract Closeout: Submit
       1. As-Built Record Documents showing actual installation conditions and wiring.
       2. Manufacturer's Warranty.
       3. Parts lists and maintenance instructions including data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
       4. American Association of Automatic Door Manufacturers (AAADM) inspection form completed and signed by certified AAADM inspector prior to doors being placed into operation.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Manufacturer to have minimum five years documented experience in the fabrication of automatic doors of the type required for this project and be capable of providing field service representation during installation.
     2. Installer Qualifications: Installer to be experienced in the work of this section who has specialized in the installation of work similar to that required for this project.
     3. Certified Inspector: Copy of current AAADM Certification for AAADM inspector prior inspection.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of installation techniques and application workmanship.
       1. Finish areas designated by Architect.
       2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
       3. Refinish mock-up area as required to produce acceptable work.
       4. Accepted mock-up may become part of the Work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Package hardware items individually with necessary fasteners and installation templates when necessary; label and identify each package with door opening code to match door schedule.
     2. Store products in manufacturer's unopened packaging until ready for installation.
     3. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
     4. Store materials in a dry, warm, ventilated weathertight location.
  2. PROJECT CONDITIONS
     1. 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.
  3. MAINTENANCE MATERIALS
     1. Provide special wrenches and tools applicable to each different or special hardware component.
  4. COORDINATION
     1. Coordinate work with other directly affected components involving manufacture or fabrication of reinforcement for door hardware and recessed items.
     2. Coordinate work with other directly affected components involving electrical wiring and components.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: DORMA, which is located at: Dorma Dr. Drawer AC; Reamstown, PA 17567-0411; Toll Free Tel: 800-523-8483; Tel: 717-336-3881; Fax: 800-274-9724; Email: [request info (paul.licata@dorma.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=DORMA&coid=48160&rep=&fax=800-274-9724&message=RE:%20Spec%20Question%20(08462dor):%20%20&mf=); Web: [www.dorma.com](http://www.dorma.com)

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. COMPONENTS
     1. Extruded Aluminum: ASTM B 221; 6063 alloy, T5 temper typical, 6061 alloy, T6 temper for extruded structural members.
     2. Glass: Glass shall be in accordance with Safety Glazing standard ANSI-Z97.1.2.
        1. Single pane of fully tempered select glazing quality clear float glass, safety glass, minimum 1/4 inch (6 mm) thick, conforming with requirements in Section 08 83 13 - Mirrored Glass Glazing.
        2. Sealed double pane units, consisting of fully tempered select glazing quality clear float glass, safety glass, total thickness 1 inch (25 mm), conforming with requirements in Section 08 83 13 - Mirrored Glass Glazing.
     3. Glazing Materials: Entrance manufacturer's standard types to suit application and conforming with requirements specified in Section 08 83 13 - Mirrored Glass Glazing.
     4. Weatherstripping: Entrance manufacturer's standard types to suit application.
     5. Fasteners: Stainless steel or corrosion resistant steel.

\*\* NOTE TO SPECIFIER \*\* DORMA ED 1200 is a overhead concealed system with full breakout design in the direction of egress for applications requiring emergency egress through sliding door panels.

* 1. AUTOMATIC FOLDING DOOR SYSTEM
     1. Automatic Folding Door System: DORMA ED 1200, Overhead-concealed breakout design with header, door panel(s), jambs, electromechanical self lubricating gear box with microprocessor control, connecting hardware, actuating controls, and On-Off-Hold Open Switch. Provide to dimension heights and widths indicated on the Drawings.
        1. Folding Doors:

\*\* NOTE TO SPECIFIER \*\* Select the following paragraphs as required for the project and delete those not required.

* + - * 1. Aluminum Doors as specified in Section 08 41 00 - Entrances and Storefronts.
        2. Metal Doors as specified in Section 08 11 00 - Metal Doors and Frames.
        3. Wood Doors as specified in Section 08 10 00 - Doors and Frames.
      1. Aluminum header, 6 inches by 6 inches (212 mm by 212 mm).
      2. All structural wall thickness .125 inches (3 mm) minimum.
      3. All operator components factory assembled.
      4. Door functions in accordance with ANSI A156.10
      5. AAADM compliance inspection shall be completed after the door system is completely installed.
      6. Door Operation: Powered using ED400 operator.
         1. Full Power Pedestrian Door:

Operator uses a 1/8 HP permanent magnet motor through bevel and spur gears with a minimum of 120/1 gear ratio reduction. Mechanism loads torsion springs during the opening cycle.

Motor serves as a dynamic brake to control speed during the closing cycle.

Provide with a digital encoder to continuously supply the microprocessor control with door velocity and position information.

Performance parameters shall not exceed applicable ANSI A156.10 and/or ETL/UL standards.

All door functions such as opening speed, closing speed, check locations, hold open, etc., and shall be fully programmable without the use of limit switches by utilizing the microprocessor control.

* + - * 1. Performance functions are adjustable or selectable as follows:

Opening Time: Adjustable from 2.3 to 5.0 seconds to back check.

Power Hold Close: Extra closing force for stack pressure problems

Closing Time: Adjustable from 2.5 to 5.0 seconds to latch check.

Open Angle: Adjustable from 85 to 110 degrees.

Back Check angle: Adjustable from 65 to 95 degrees.

Latch Check: Adjustable from 10 to 30 degrees.

Hold Open Delay: Adjustable from 2 to 30 seconds.

Delay before Opening: Adjustable from 0.0 to 3.0 seconds.

Sensor Masking: Adjustable from 60 to 110 degrees.

Power Hold Close: An adjustable feature that ensures latching.

Hold Open: A selectable feature that indefinitely holds the door open until release.

* + - * 1. Emergency Breakout: Concealed system has an emergency breakaway capability that enables a folding overhead door to breakaway manually in the direction of egress. System, by use of a breakaway track in the header will not activate until the door has been restored to the closed position.
      1. Fold/Swing and Threshold Area Sensors: Active infrared presence sensors meeting ANSI A156.10 requirements.
      2. Activation Sensor: Motion sensor utilizes K-band frequency (24.125 GHz) for improved detection of slow-moving pedestrian traffic, and shall be switchable between bi-directional and uni-directional operation. Circuitry is included to eliminate Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI). Relay hold time is adjustable from 0.5 seconds to 9 seconds and adjustable to meet ANSI/BHMA 156.10.
      3. Guide Rails:
         1. Full energy operation: Guide rails must be installed per BHMA/ANSI 156.10.

\*\* NOTE TO SPECIFIER \*\* Select the following paragraph for automatic swinging door applications as required for the project. DORMA's swing doors meet all ADA requirements and features a variety of sensors that can detect obstacles and pause door operation until the swing path has cleared. Available overhead concealed with doors and surface mounting options for inswing or outswing applications. Coordinate surface applied systems with doors specified elsewhere. Consult with Dorma for additional information on sizes and installation limitations.

* 1. AUTOMATIC OVERHEAD CONCEALED SWINGING DOORS

\*\* NOTE TO SPECIFIER \*\* DORMA ED400-OHC is an overhead concealed system with full breakout design in the direction of egress for applications requiring emergency egress through sliding door panels.

* + 1. Automatic Swinging Door System: DORMA ED400-OHC, Overhead-concealed breakout design with header, door panel(s), jambs, electromechanical self lubricating gear box with microprocessor control, connecting hardware, actuating controls, and On-Off-Hold Open Switch. Provide to dimension heights and widths indicated on the Drawings.
       1. Swinging Aluminum Doors:

\*\* NOTE TO SPECIFIER \*\* Select one of the following two stile paragraphs and delete the one not required.

* + - * 1. Narrow stile.
        2. Medium stile.

\*\* NOTE TO SPECIFIER \*\* Select one of the following two glazing paragraphs and delete the one not required.

* + - * 1. Glazing 1/4 inch (6 mm) tempered glass.
        2. Glazing 1 inch (25 mm) tempered glass.
        3. Intermediate muntin 3.25 inches (83 mm) including glass stops.

\*\* NOTE TO SPECIFIER \*\* Select one of the following two bottom rail paragraphs and delete the one not required.

* + - * 1. Bottom rail 7.5 inches (190.5 mm) including glass stops.
        2. Bottom rail 10 inches (254mm) including glass stops.
        3. Provide one-point lock for single panels and a two-point lock for pairs.
        4. Active door provided with a maximum security hookbolt lock, with provisions for a key cylinder on the exterior and a thumb turn on the interior in accordance with NFPA 101.
      1. Aluminum header, 6 inches by 6 inches (212 mm by 212 mm).
      2. All structural wall thickness .125 inches (3 mm) minimum.
      3. All operator components factory assembled.
      4. Door functions in accordance with ANSI A156.10
      5. AAADM compliance inspection shall be completed after the door system is completely installed.
      6. Door Operation:

\*\* NOTE TO SPECIFIER \*\* Select one of the following Full Power or Low Energy paragraphs as required for the project and delete the one not required.

* + - * 1. Full Power Pedestrian Door:

Operator uses a 1/8 HP permanent magnet motor through bevel and spur gears with a minimum of 120/1 gear ratio reduction. Mechanism loads torsion springs during the opening cycle.

Motor serves as a dynamic brake to control speed during the closing cycle.

Provide with a digital encoder to continuously supply the microprocessor control with door velocity and position information.

Performance parameters shall not exceed applicable ANSI A156.10 and/or ETL/UL standards.

All door functions such as opening speed, closing speed, check locations, hold open, etc., and shall be fully programmable without the use of limit switches by utilizing the microprocessor control.

* + - * 1. Low Energy Pedestrian Door:

Operator uses a 1/8 HP permanent magnet motor through bevel and spur gears with a minimum of 120/1 gear ratio reduction. Mechanism loads torsion springs during the opening cycle.

Motor serves as a dynamic brake to control speed during the closing cycle.

Provide with a digital encoder to continuously supply the microprocessor control with door velocity and position information.

Performance parameters shall not exceed applicable ANSI A156.19 and/or ETL/UL standards.

All door functions such as opening speed, closing speed, check locations, hold open, etc., and shall be fully programmable without the use of limit switches by utilizing the microprocessor control.

* + - * 1. Performance functions are adjustable or selectable as follows:

Opening Time: Adjustable from 2.3 to 5.0 seconds to back check.

Closing Time: Adjustable from 2.5 to 5.0 seconds to latch check.

Open Angle: Adjustable from 85 to 110 degrees.

Back Check angle: Adjustable from 65 to 95 degrees.

Latch Check: Adjustable from 10 to 30 degrees.

Hold Open Delay: Adjustable from 2 to 30 seconds.

Delay before Opening: Adjustable from 0.0 to 3.0 seconds.

Sensor Masking: Adjustable from 60 to 110 degrees.

Power Hold Close: An adjustable feature that ensures proper latching.

Hold Open: A selectable feature that indefinitely holds the door open until release.

* + - * 1. Emergency Breakout: Concealed system has an emergency breakaway capability that enables an in-swing overhead concealed door to breakaway manually in the direction of egress. System, by use of a breakaway stop in the header will not activate until the door has been restored to the closed position.
      1. Swing and Threshold Area Sensors: Active infrared presence sensors meeting ANSI A156.10 requirements.
      2. Activation Sensor: Motion sensor utilizes K-band frequency (24.125 GHz) for improved detection of slow-moving pedestrian traffic, and shall be switchable between bi-directional and uni-directional operation. Circuitry is included to eliminate Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI). Relay hold time is adjustable from 0.5 seconds to 9 seconds and adjustable to meet ANSI/BHMA 156.10.
      3. Guide Rails:

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs as required for the project and delete the one not required.

* + - * 1. Full energy operation: Guide rails must be installed per BHMA/ANSI 156.10.
        2. Low energy door operation: No guide rails are required per BHMA/ANSI 156.19.
  1. AUTOMATIC OPERATING SYSTEM FOR SWINGING DOORS

\*\* NOTE TO SPECIFIER \*\* DORMA ED400 is an overhead surface applied system with full breakout design in the direction of egress for applications requiring emergency egress through sliding door panels.

* + 1. Automatic Operating System: DORMA ED400-SA, surface applied mount consisting of electromechanical self lubricating gear box with microprocessor control, aluminum header, connecting hardware, actuating controls, and On-Off-Hold Open Switch.
       1. Swinging Doors:

\*\* NOTE TO SPECIFIER \*\* Select the following paragraphs as required for the project and delete those not required.

* + - * 1. Aluminum Doors as specified in Section 08 41 00 - Entrances and Storefronts.
        2. Metal Doors as specified in Section 08 11 00 - Metal Doors and Frames.
        3. Wood Doors as specified in Section 08 10 00 - Doors and Frames.
      1. Aluminum header, 6 inches by 6 inches (212 mm by 212 mm).
      2. All structural wall thickness .125 inches (3 mm) minimum.
      3. All operator components factory assembled.
      4. Door functions shall be in accordance with ANSI A156.10 or ANSI A156.19.
      5. AAADM compliance inspection shall be completed after the door system is completely installed.
      6. Door Operation:

\*\* NOTE TO SPECIFIER \*\* Select one of the following Full Power or Low Energy paragraphs as required for the project and delete the one not required.

* + - * 1. Full Power Pedestrian Door:

Operator uses a 1/8 HP permanent magnet motor through bevel and spur gears with a minimum of 150/1 gear ratio reduction. Mechanism loads torsion springs during the opening cycle.

Motor serves as a dynamic brake to control speed during the closing cycle.

Provide with a digital encoder to continuously supply the microprocessor control with door velocity and position information.

Performance parameters shall not exceed applicable ANSI A156.10 and/or ETL/UL standards.

All door functions such as opening speed, closing speed, check locations, hold open, etc., and shall be fully programmable without the use of limit switches by utilizing the microprocessor control.

* + - * 1. Low Energy Pedestrian Door:

Operator uses a 1/8 HP permanent magnet motor through bevel and spur gears with a minimum of 150/1 gear ratio reduction. Mechanism loads torsion springs during the opening cycle.

Motor serves as a dynamic brake to control speed during the closing cycle.

Provide with a digital encoder to continuously supply the microprocessor control with door velocity and position information.

Performance parameters shall not exceed applicable ANSI A156.19 and/or ETL/UL standards.

All door functions such as opening speed, closing speed, check locations, hold open, etc., and shall be fully programmable without the use of limit switches by utilizing the microprocessor control.

* + - * 1. Performance functions are adjustable or selectable as follows:

Opening Time: Adjustable from 2.3 to 5.0 seconds to back check.

Power Hold Close: Extra closing force for stack pressure problems

Closing Time: Adjustable from 2.5 to 5.0 seconds to latch check.

Open Angle: Adjustable soft stop from 85 to 110 degrees with additional adjustable hard stop.

Back Check angle: Adjustable from 65 to 95 degrees.

Latch Check: Adjustable from 10 to 30 degrees.

Hold Open Delay: Adjustable from 2 to 30 seconds.

Delay before Opening: Adjustable from 0.0 to 3.0 seconds.

Sensor Masking: Adjustable from 60 to 110 degrees.

Power Hold Close: An adjustable feature that ensures latching.

Hold Open: A selectable feature that indefinitely holds the door open until release.

* + - 1. Swing and Threshold Area Sensors: Active infrared presence sensors meeting ANSI A156.10 requirements.
      2. Activation Sensor: Motion sensor utilizes K-band frequency (24.125 GHz) for improved detection of slow-moving pedestrian traffic, and shall be switchable between bi-directional and uni-directional operation. Circuitry is included to eliminate Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI). Relay hold time is adjustable from 0.5 seconds to 9 seconds and adjustable to meet ANSI/BHMA 156.10.
      3. Guide Rails:

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs as required for the project and delete the one not required.

* + - * 1. Full energy operation: Guide rails must be installed per BHMA/ANSI 156.10.
        2. Low energy door operation: No guide rails are required per BHMA/ANSI 156.19.

\*\* NOTE TO SPECIFIER \*\* DORMA ED700 is a overhead surface applied, low energy system for swinging doors. The operator will allow both manual opening of the door, and/or provide controlled power opening of the door in response to an input signal.

* + 1. Automatic Swinging Door System: DORMA ED700, Overhead surface applied design with electro mechanical low energy swing door operator enclosed in an aluminum header, door panel(s), jambs, connecting hardware, actuating controls, and On-Off-Hold Open Switch. Provide to dimension heights and widths indicated on the Drawings.
       1. Swinging Doors:

\*\* NOTE TO SPECIFIER \*\* Select the following paragraphs as required for the project and delete those not required.

* + - * 1. Aluminum Doors as specified in Section 08 41 00 - Entrances and Storefronts.
        2. Metal Doors as specified in Section 08 11 00 - Metal Doors and Frames.
        3. Wood Doors as specified in Section 08 10 00 - Doors and Frames.

\*\* NOTE TO SPECIFIER \*\* Note that minimum length is 30 inches (762 mm).

* + - 1. Aluminum header, 5.5 inches by 5 inches (140 mm by 127 mm) by length required.
      2. All structural wall thickness .125 inches (3 mm) minimum.
      3. All operator components factory assembled.
      4. Door functions in accordance with ANSI A156.19
      5. AAADM compliance inspection shall be completed after the door system is completely installed.
      6. Door Operation:

\*\* NOTE TO SPECIFIER \*\* Select one of the following Manual or Low Energy paragraphs as required for the project and delete the one not required.

* + - * 1. Manual Operation:

Force required (to overcome) the mechanics of the motor/gear drive and the closing spring is field adjustable from a minimum of 5lbf. (21N) to maximum 15 lbf. (67N).

Closing force will vary with this adjustment.

When the operator does not have 120 VAC power, it will physically operate in a manual mode.

* + - * 1. Low Energy Pedestrian Door:

Operator uses a 1/8 HP permanent magnet motor through bevel and spur gears with a minimum of 95/1 gear ratio reduction. Mechanism loads torsion springs during the opening cycle.

Motor serves as a dynamic brake to control speed during the closing cycle.

Provide with a digital encoder to continuously supply the microprocessor control with door velocity and position information.

Performance parameters shall not exceed applicable ANSI A156.19 and/or ETL/UL standards.

All door functions such as opening speed, closing speed, check locations, hold open, etc., and shall be fully programmable without the use of limit switches by utilizing the microprocessor control.

* + - * 1. Performance functions are adjustable or selectable as follows:

Opening Time: Adjustable from 2.3 to 5.0 seconds to back check.

Power Hold Close: Extra closing force for stack pressure problems

Closing Time: Adjustable from 2.5 to 5.0 seconds to latch check.

Open Angle: Adjustable soft stop from 85 to 110 degrees with additional adjustable hard stop.

Back Check angle: Adjustable from 65 to 95 degrees.

Latch Check: Adjustable from 10 to 30 degrees.

Hold Open Delay: Adjustable from 2 to 30 seconds.

Delay before Opening: Adjustable from 0.0 to 3.0 seconds.

Sensor Masking: Adjustable from 60 to 110 degrees.

Power Hold Close: An adjustable feature that ensures latching.

Hold Open: A selectable feature that indefinitely holds the door open until release.

* + - 1. Mounting Base plate and Assembly Enclosure: Components shall be aesthetically acceptable and capable of changing the operator hand and direction of swing in the field or shop. Completed assembly shall be capable of withstanding normal exterior installation conditions.
      2. Door Connecting Hardware and Miscellaneous Installation Hardware
         1. Use with DORMA components such as push arms and slide track pull channels.

\*\* NOTE TO SPECIFIER \*\* DORMA CD 80 is a overhead surface applied operating system for existing or new swinging door panels.

* + 1. Automatic Operating System: DORMA CD 80 Surface Applied mount consisting of electromechanical self lubricating gear box with microprocessor control, aluminum header, connecting hardware, actuating controls, and On-Off-Hold Open Switch.
       1. Swinging Doors:

\*\* NOTE TO SPECIFIER \*\* Select the following paragraphs as required for the project and delete those not required.

* + - * 1. Aluminum Doors as specified in Section 08 41 00 - Entrances and Storefronts.
        2. Metal Doors as specified in Section 08 11 00 - Metal Doors and Frames.
        3. Wood Doors as specified in Section 08 10 00 - Doors and Frames.
      1. Steel header, 2-3/4 inches high by 3-1/2 inches deep by 26 inches long (70 mm by 90 mm by 660 mm).
      2. All operator components factory assembled.
      3. Door functions shall be in accordance with ANSI A156.10
      4. AAADM compliance inspection shall be completed after the door system is completely installed.
      5. Door Operation:
         1. Operator opens door by using a combination of a hydraulic door closer and electric motor.
         2. Mechanism loads a compression spring during the opening cycle.
         3. Closer serves as the control speed during the closing cycle.
         4. A digital encoder continuously supplies the microprocessor control with door velocity and position information.
         5. Performance parameters shall not exceed applicable ANSI A156.10 and/or ETL/UL standards. All door functions such as opening speed, closing speed, check locations, hold open, etc., are be fully programmable without the use of limit switches and is accomplished by utilizing the microprocessor control.
         6. Performance functions are adjustable or selectable as follows:

Opening Time: Adjustable from 3.0 to 6.0 seconds to back check.

Power Hold Close: Extra closing force for stack pressure problems

Closing Time: Adjustable from 3.0 to 10.0 seconds to latch check.

Open Angle: Adjustable to 110 degrees.

Back Check angle: Adjustable from 65 to 85 degrees.

Latch Check: Adjustable from 10 to 25 degrees.

Hold Open Delay: Adjustable from 0 to 30 seconds.

Sensor Masking: Adjustable from 60 to 110 degrees.

Power Hold Close: An adjustable feature that ensures latching.

Hold Open: A selectable feature that indefinitely holds the door open until release.

* + - 1. Swing and Threshold Area Sensors: Active infrared presence sensors meeting ANSI A156.10 requirements.
      2. Activation Sensor: Motion sensor utilizes K-band frequency (24.125 GHz) for improved detection of slow-moving pedestrian traffic, and shall be switchable between bi-directional and uni-directional operation. Circuitry is included to eliminate Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI). Relay hold time is adjustable from 0.5 seconds to 9 seconds and adjustable to meet ANSI/BHMA 156.10.
      3. Guide Rails:
         1. Full energy operation: Guide rails must be installed per BHMA/ANSI 156.10.
  1. ELECTRICAL CHARACTERISTICS AND COMPONENTS
     1. Section 26 05 00 - Common Work Results for Electrical.
     2. Electrical: 120 VAC, 60 Hz, 5 Amp service.
     3. Section 26 05 00 - Common Work Results for Electrical.
     4. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

\*\* NOTE TO SPECIFIER \*\* Select the finish required from the following paragraphs as required for the project and delete the finishes not required.

* 1. FACTORY FINISH
     1. Provide aluminum finishes in accordance with Aluminum Association Standard AA DAF-45.

\*\* NOTE TO SPECIFIER \*\* Select one of the following 4 paragraphs for the finish required for the project and delete the finishes not required.

* + 1. Clear Anodized Aluminum Surfaces: 204-R1 Class-II anodized aluminum coating.
    2. Dark Bronze Color Anodized Aluminum Surfaces: 313-R1 Class-II Dark Bronze anodized aluminum coating.
    3. Other Anodized Color: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    4. Painted Aluminum Surfaces: As fabricated mechanical finish, chemically cleaned, and prepared for applied coating; with organic coating.

\*\* NOTE TO SPECIFIER \*\* Select one of the following 2 paragraphs for the coating finish required and delete the finish not required.

* + - 1. Organic Coating:

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs for the organic finish required and delete the one not required.

* + - * 1. Manufacturer's standard powder coat finish.
        2. Thermosetting modified acrylic enamel.
      1. High Performance Organic Coating:
         1. Fluoropolymer coating system with minimum 70 percent polyvinylidene fluoride resin.
      2. Color:

\*\* NOTE TO SPECIFIER \*\* Select one of the following color paragraphs and delete those not required.

* + - * 1. As selected from manufacturer's standard range.
        2. Custom color as selected by the Architect.
        3. To match glazed aluminum curtain wall.
    1. Exposed Operator and Components: Finish

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs for the finish required and delete the one not required.

* + - 1. To match door and door hardware finish.
      2. As selected from manufacturer's standard range.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. Verify that other trades are complete with their required work before installing the automatic swing door operating system.
      3. Mounting surfaces shall be plumb, straight and secure; substrates shall be of proper dimension and material; material which door is anchored to shall be capable of supporting the automatic door system and associated loads.
      4. Verify electric power is available and has correct characteristics.
      5. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions.
      2. Set all units plumb, level and secure.
      3. Provide all fasteners required for installation of the automatic sliding door system.
      4. After repeated operation of the completed installation, inspect door operators and controls for optimum operating condition and safety.
      5. Adjust door equipment for correct function and smooth operation.
      6. Clean all metal surfaces promptly after installation.
      7. Remove temporary protection, clean exposed surfaces.
   4. FIELD QUALITY CONTROL
      1. Manufacturers representative to verify that installation of doors and controls are in conformance to the manufacturer's recommendations.
      2. Installation of doors and controls shall be inspected and certified by an AAADM Certified Inspector prior to doors being placed into operation.
      3. Provide a completed AAADM inspection form signed by a certified AAADM inspector after the door system is completely installed and tested including glazing.
   5. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION