SECTION 08 71 00

AUTOMATIC DOOR ACCESSORIES

Display hidden notes to specifier. (Don't know how? [Click Here](http://www.arcat.com/sd/display_hidden_notes.shtml))

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\*\* NOTE TO SPECIFIER \*\* Camden Door Controls; emergency call systems.  
This section is based on the products of Camden Door Controls, which is located at:  
5502 Timberlea Blvd.  
Mississauga, ON, Canada L4W 2T7  
Toll Free Tel: 877-226-3369  
Tel: 905-366-3377  
Email: [request info (csr@camdencontrols.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=Camden+Door+Controls&coid=47997&rep=&fax=&message=RE:%20Spec%20Question%20(08710cdc):%20%20&mf=)  
Web: [www.camdencontrols.com](http://www.camdencontrols.com)   
 [ [Click Here](http://www.arcat.com/arcatcos/cos47/arc47997.html) ] for additional information.  
Camden Door Controls brings the best combination of product quality, performance and value to the access control marketplace. From hardware to electronics, we offer complete access and egress solutions in stock for immediate delivery!  
Camden offers the most extensive range of door control products and accessories in the industry. From ADA and UL compliant door activation switches, to UL/ULC listed strikes and magnetic locks and advanced access control systems, we have the right product, at the right price, to meet your project requirements. In addition, Camden offers extensive customizing services - languages, colors, logos, switch configurations, consoles, and more. Contact customer service for assistance with product selection or a quotation.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. Automatic door controls for restrooms.
    2. Emergency call systems for universal and barrier free restrooms.
    3. Automatic door relay controls.
    4. Automatic door activation.
    5. Automatic door wireless activation.
  1. RELATED SECTIONS

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

* + 1. Section 08 71 53 - Security Door Hardware.
    2. Section 26 05 00 - Common Work Results for Electrical.
    3. Division 16 - Electrical: Emergency power scheduled for automatic restroom egress doors to comply with building code requirements.
  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 - Accessible and Usable Buildings and Facilities.
    2. ANSI A156.19 - Standard for Power Assist and Low Energy Power Operated Doors.
  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.
     3. Shop Drawings: Electrical schematic, device mounting requirements and rough-in for recessed devices.
     4. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
  2. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Minimum 5 years experience manufacturing similar products.
     2. Installer Qualifications: Minimum 2 years experience installing similar products.

\*\* 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 surface preparation techniques and application workmanship.
       1. Finish areas designated by Architect.
       2. Do not proceed with remaining work until workmanship is approved by Architect.
       3. Rework mock-up area as required to produce acceptable work.
  1. PRE-INSTALLATION MEETINGS
     1. Convene minimum two weeks prior to starting work of this section.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
     2. Handling: Handle materials to avoid damage.
  3. 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 recommended limits.
  4. SEQUENCING
     1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  5. WARRANTY
     1. Manufacturer's Warranty: Provide manufacturer's warranty for defective parts for a three year period from date of Substantial Completion.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Camden Door Controls, which is located at: 5502 Timberlea Blvd.; Mississauga, ON, Canada L4W 2T7; Toll Free Tel: 877-226-3369; Tel: 905-366-3377; Email: [request info (csr@camdencontrols.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=Camden+Door+Controls&coid=47997&rep=&fax=&message=RE:%20Spec%20Question%20(08710cdc):%20%20&mf=); Web: [www.camdencontrols.com](http://www.camdencontrols.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.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. AUTOMATIC DOOR CONTROLS FOR RESTROOMS
     1. Performance:

\*\* NOTE TO SPECIFIER \*\* Delete code requirements not required for jurisdiction.

* + - 1. Automatic door controls shall comply with Americans with Disability Act.
         1. Regulatory compliance with Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standard (UFAS) as required by Authority Having Jurisdiction (AHJ).
      2. Automatic door controls shall comply with National Building Code of Canada.
      3. Automatic door controls shall comply with NFPA National Fire Code or International Fire Code for restroom doors acting as egress doors as required by Authority Having Jurisdiction (AHJ).

\*\* NOTE TO SPECIFIER \*\* An important note regarding Fire Codes and the system designs of the specified systems. Designs contained in this guide are based upon the use of fail-safe electric strikes and mechanical ' swing-free' door locking hardware (i.e. handles that do not lock on the inside of the restroom). Further, where an emergency power generator is not in place to provide standby power to the automatic door operator in the case of power failure, 2hr. battery standby power shall be installed to provide power to the electric strike.

* + - 1. Emergency Power: System shall be provided with emergency power connection.

\*\* NOTE TO SPECIFIER \*\* BASIC PUSH BUTTON SYSTEM, no annunciation of door lock status. System kit includes; CX-33 Advanced Logic Control, CM-400/8 Mushroom PUSH TO LOCK' Button, CX-MDC Magnetic Door. Delete if not required.

* + 1. Product: Basic Push Button System - CX-WC 10 as manufactured by Camden Door Controls.
       1. Operation:
          1. The door is normally closed and either locked or unlocked. Pressing the exterior push plate switch opens the door. Once inside and the door is closed, pressing the ' Push to Lock' mushroom push button locks the door. The electric strike is energized and the exterior push plate switch is deactivated. Press the interior push plate switch to exit the restroom and reset the system. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.

\*\* NOTE TO SPECIFIER \*\* Delete wired status not required.

* + - * 1. Status: Normally locked. Fail secure electric strike.
        2. Status: Normally unlocked. Fail safe electric strike.
      1. Components:
         1. The following items are part of the CX-WC10 equipment package:

CX-33: Advanced Logic Control Relay with 14 modes of operation, secured and unsecured restroom control modes, three 3 form ' C' relay outputs rated 3 Amp at 30VDC and surge protection.

CM 400/8: ' Push to Lock' Mushroom Push Button with heavy duty brushed stainless steel faceplate, 1-5/8 inch (40mm) vandal resistant red button and N/O contacts rated 10 Amps at 30VDC.

CX MDC: surface mount Door Contacts.

* + - * 1. The following items are required, but not included in CX-WC10 equipment package:

Door Operator (by others).

CX-ED2079: Electric Strike, grade 2 ' universal' strike for cylindrical locksets c/w 3 faceplates, 12/24V AC/DC, selectable fail safe/fail secure. The strike shall have horizontal faceplate adjustment.

CM-60/4: 6 inch (165.1mm) Activation wall switches, 2 required, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and paint filled debossed wheelchair symbol and ' Push to Open' graphics in blue.

CX-TRX-2450: 12/24V UL listed 40VA transformer and AC/DC rectifier.

\*\* NOTE TO SPECIFIER \*\* PUSH BUTTON & ANNUNCIATOR SYSTEM. System kit includes CX-33 Advanced Logic Control, CM-400/8 Mushroom PUSH TO LOCK' Button, CM-AF500 Occupied When Lit' Single Gang LED Annunciator, CX-MDC Magnetic Door. Delete if not required.

* + 1. Product: Push Button & Annunciator System - CX-WC 11 as manufactured by Camden Door Controls.
       1. Operation:
          1. The door is normally closed and either locked or unlocked. Pressing the exterior push plate unlocks and opens the door. Once inside and the door is closed, pressing the ' Push to Lock' mushroom pushbutton, locks the door, disables the exterior ' Push to Open' push plate switch and illuminates the exterior annunciator to show ' Occupied when lit'. Pressing the interior push plate switch unlocks the door, deactivates the illuminated annunciator and resets the system. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.

\*\* NOTE TO SPECIFIER \*\* Delete wired status not required.

* + - * 1. Status: Normally locked. Fail secure electric strike.
        2. Status: Normally unlocked. Fail safe electric strike.
      1. Components:
         1. The following items are part of the CX-WC11 equipment package:

CX-33: Advanced Logic Control Relay with 14 modes of operation, secured and unsecured restroom control modes, three 3 form ' C' relay outputs rated 3 Amp at 30VDC and surge protection.

CM 400/8: ' Push to Lock' Mushroom Push Button with heavy duty brushed stainless steel faceplate, 1-5/8 inch (40mm) vandal resistant red button and N/O contacts rated 10 Amps at 30VDC.

CM-AF500: Single Gang LED Annunciator, with heavy duty 18 gauge, vandal resistant stainless steel faceplate, ' Occupied When Lit' ' white out' text, super-bright LEDs, 10 to 36VDC voltage, maximum 40mA current draw.

CX-MDC: surface mount Magnetic Door Contact.

* + - * 1. The following items are required, but not included in CX-WC11 equipment package:

Door Operator (by others).

CX-ED2079: Electric Strike, grade 2 ' universal' strike for cylindrical locksets c/w 3 faceplates, 12/24V AC/DC, selectable fail safe/fail secure. The strike shall have horizontal faceplate adjustment.

CM-60/4: 6 inch (165.1mm) activation wall switches, 2 required, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and paint filled debossed wheelchair symbol and ' Push To Open' graphics in blue.

CX-PS13: 12/24V linear power supply and CX-TRX-4024 UL listed 40VA transformer.

\*\* NOTE TO SPECIFIER \*\* 4" PUSH PLATE & ANNUNCIATOR SYSTEM. System kit includes CX-33 Advanced Logic Control, CM-40/8 All Active Push Plate Switch, CM-AF500 Occupied When Lit' Single Gang LED Annunciator, CX-MDC Magnetic Door. Delete if not required.

* + 1. Product: Round Push Plate and Annunciator System - CX-WC 12 as manufactured by Camden Door Controls.
       1. Operation:
          1. The door is normally closed and either locked or unlocked. Pressing the exterior push plate unlocks and opens the door. Once inside and the door is closed, pressing the 4 inches (102 mm) ' Push to Lock' push plate, locks the door and illuminates the exterior annunciator showing ' Occupied when lit'. Pressing the interior push plate switch unlocks the door, deactivates the illuminated annunciator and resets the system. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.

\*\* NOTE TO SPECIFIER \*\* Delete wired status not required.

* + - * 1. Status: Normally locked. Fail secure electric strike.
        2. Status: Normally unlocked. Fail safe electric strike.
      1. Components:
         1. The following items are part of the CX-WC12 equipment package:

CX-33: Advanced Logic Control Relay with 14 modes of operation, secured and unsecured restroom control modes, three 3 form ' C' relay outputs rated 3 Amp. at 30VDC and surge protection.

CM-40/8: 4-1/2 inch (114.3mm) round activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC, ' Push To Lock' permanently laser etched, black.

CM-AF500: Single Gang LED Annunciator, with heavy duty 18 gauge, vandal resistant stainless steel faceplate, ' Occupied When Lit' ' white out' text, super-bright LEDs, 10 to 36VDC voltage, maximum 40mA current draw.

CX-MDC: surface mount Magnetic Door Contact.

* + - * 1. The following items are required, but not included in CX-WC12 equipment package:

Door Operator (by others).

CX-ED2079: Electric Strike, grade 2 ' universal' strike for cylindrical locksets c/w 3 faceplates, 12/24V AC/DC, selectable fail safe/fail secure. The strike shall have horizontal faceplate adjustment.

CM-40/4: 4-1/2 inch (114.3mm) round activation wall switch, 2 required, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and paint filled debossed wheelchair symbol and ' Push To Open' graphics in blue.

* + - * 1. CX-PS13: 12/24V linear power supply and CX-TRX-4024 UL listed 40VA transformer.

\*\* NOTE TO SPECIFIER \*\* AURA™ PUSH PLATE SWITCH & ANNUNCATOR SYSTEM. System kit includes CM-45/8GRSE1 4-1/2 inches (102 mm) Illuminated Push Plate Switch (PUSH TO LOCK), with sign, CM-45/3GRSE1 4 " Illuminated Push Plate Switch (PUSH TO OPEN), with sign CX-33 Advanced Logic Control, Push Plate and CX-MDC Magnetic Door. Delete if not required.

* + 1. Product: Aura Illuminated Push Plate Switch System - CX-WC13FM as manufactured by Camden Door Controls.
       1. Operation:
          1. The door is normally closed and either locked or unlocked. Pressing the exterior ' Push to Open' Aura push plate opens the door. The Aura push plate ring turns red. Once inside and the door is closed, pressing the illuminated ' Push to Lock' Aura push plate, changes the color to red and locks the door. To exit, press the interior push plate to unlock the door and reset the system. The ' Push to Lock' Aura push plate switch illuminated ring turns green and the exterior ' Push to Open' Aura push plate outer ring turns green. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.

\*\* NOTE TO SPECIFIER \*\* Delete wired status not required.

* + - * 1. Status: Normally locked. Fail secure electric strike.
        2. Status: Normally unlocked. Fail safe electric strike.
      1. Components:
         1. The following items are part of the CX-WC13FM equipment package:

CX-33: Advanced Logic Control Relay with 14 modes of operation, secured and unsecured restroom control modes, three 3 form ' C' relay outputs rated 3 Amp at 30VDC and surge protection.

CM-45/8GRFSE1: with CM-45/8 flush mount 4-1/2 inch (114 mm) activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and permanently laser etched ' Push to Lock' graphics, CM-55GR Illuminated Push Plate switch enclosure, Green/Red, with selectable 12/24V, AC/DC, built-in 85db sounder, max 110mA current draw and form ' C' contact rated 3 Amp at 30VDC, and CM-SE1 double sided sign ' DOOR LOCKED WHEN RED' / ' UNLOCKED WHEN GREEN' AND ' OCCUPIED WHEN RED' / ' VACANT WHEN GREEN'.

CM-45/4GRFSE1: with CM-45/4 flush mount 4-1/2 inches (114 mm) activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC, debossed and paint filled wheelchair symbol and ' Push to Open' graphics, CM-55GR, Illuminated Push Plate switch enclosure, Green/Red, with selectable 12/24V, AC/DC, built-in 85db sounder, max 110mA current draw and form ' C' contact rated 3 Amp at 30VDC and CM-SE1 double sided sign ' DOOR LOCKED WHEN RED' / ' UNLOCKED WHEN GREEN' AND ' OCCUPIED WHEN RED' / ' VACANT WHEN GREEN'.

CX-MDC: surface mount Door Contact.

* + - * 1. The following items are required, but not included in CX-WC13FM equipment package:

Door Operator (by others).

CX-ED2079: Electric Strike, grade 2 ' universal' strike for cylindrical locksets c/w 3 faceplates, 12/24V AC/DC, selectable fail safe/fail secure. The strike shall have horizontal faceplate adjustment.

CM-45/4: 4-1/2 inch (114.3mm) square activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and paint filled debossed wheelchair symbol and ' Push To Open' graphics in blue.

CM-55CBL: flush mount box for CM-45/4 switch, impact and flame resistant ABS.

* + - * 1. CX-PS13: 12/24V linear power supply and CX-TRX-4024 UL listed 40VA transformer.

\*\* NOTE TO SPECIFIER \*\* TWO DOOR RESTROOM AURA PUSH PLATE SWITCH & ANNUNCATOR SYSTEM. System kit includes CX-EMF-2 Multi-Function Relay, CM-45/8GRSE1 4 " Illuminated Push Plate Switch (PUSH TO LOCK), with sign, (2) CM-45/3GRSE1 4 " Illuminated Push Plate Switch (PUSH TO OPEN), with sign, (2) CX-MDC Magnetic Door. Delete if not required.

* + 1. Product: Two Door Restroom System - CX-WC14FM as manufactured by Camden Door Controls.
       1. Operation:
          1. The doors are normally closed and unlocked. The exterior ' Push to Open' Aura illuminated push plate switches outer rings are green indicating the restroom is vacant. Pressing either ' Push to Open' switch will open the respective door. Once the door is closed, pressing the ' Push to Lock' Aura illuminated push plate switch will lock both doors. The ' Push to Lock' outer ring will glow red indicating the doors are locked. The exterior Aura illuminated push plate rings will turn red indicating the restroom is occupied. Pressing either All-Active push plate switch will open the respective door and reset the system. Aura illuminated push plate switches will glow green indicating the restroom is vacant. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.

\*\* NOTE TO SPECIFIER \*\* Delete wired status not required.

* + - * 1. Status: Normally locked. Fail secure electric strike.
        2. Status: Normally unlocked. Fail safe electric strike.
      1. Components:
         1. The following items are part of the CX-WC14FM equipment package:

CX-EMF2: multi-function door control relay, 7 dry momentary and 1 digital inputs, 5 form ' C' contacts, rated 3 Amp at 30VDC, 1 digital output, 12/24VDC AC/DC operation, maximum 500mA current draw and surge protection.

CM-45/8GRFSE1: with CM-45/8 flush mount 4-1/2 inches (114 mm) activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and permanently laser etched ' Push to Lock' graphics, CM-55GR Illuminated Push Plate switch enclosure, Green/Red, with selectable 12/24V, AC/DC, built-in 85db sounder, max 110mA current draw and form ' C' contact rated 3 Amp at 30VDC, and CM-SE1 double sided sign ' DOOR LOCKED WHEN RED' / ' UNLOCKED WHEN GREEN' AND ' OCCUPIED WHEN RED' / ' VACANT WHEN GREEN'.

CM-45/4GRFSE1: with CM-45/4 flush mount 4-1/2 inches (114 mm) activation wall switches (2 supplied), stainless steel construction, N/O contacts rated 15 Amps at 30VDC, debossed and paint filled wheelchair symbol and ' Push to Open' graphics, CM-55GR Illuminated Push Plate switch enclosure, Green/Red, with selectable 12/24V, AC/DC, built-in 85db sounder, max 110mA current draw and form ' C' contact rated 3 Amp at 30VDC and CM-SE1 double sided sign ' DOOR LOCKED WHEN RED' / ' UNLOCKED WHEN GREEN' AND ' OCCUPIED WHEN RED' / ' VACANT WHEN GREEN'.

CX-MDC: surface mount Door Contact.

* + - * 1. The following items are required, but not included in CX-WC14FM equipment package:

Door Operator (by others).

CX-ED2079: Electric Strike, grade 2 ' universal' strike for cylindrical locksets c/w 3 faceplates, 12/24V AC/DC, selectable fail safe/fail secure. The strike shall have horizontal faceplate adjustment.

CM-45/4: 4-1/2 inch (114.3mm) square activation wall switches (2 required), stainless steel construction, N/O contacts rated 15 Amps at 30VDC and paint filled debossed wheelchair symbol and ' Push To Open' graphics in blue.

CM-55CBL: Flush mount box for CM-45/4 switch, (2 required) impact and flame resistant ABS.

CX-PS13: 12/24V linear power supply and CX-TRX-4024 UL listed 40VA transformer, (2 required).

\*\* NOTE TO SPECIFIER \*\* ASSISTANCE REQUIRED' RESTROOM SYSTEM, does not include emergency signal devices or sign. System kit includes CX-EMF-2 Multi-Function Relay, CM-45/8 GRSE1 4 inches (102 mm) Illuminated Push Plate Switch (PUSH TO LOCK), with sign, CM-45/3GRSE1 4 inches (102 mm) Illuminated Push Plate Switch (PUSH TO OPEN), with sign, CM-450R/12 Mushroom Push Button 'Push For Emergency Assistance', CX-MDC Magnetic Door Contact. Delete if not required.

* + 1. Product: Assistance Required Restroom System - CX-WC15FM as manufactured by Camden Door Controls.
       1. Operation:
          1. The door is normally closed and unlocked. The exterior ' Push to Open' Aura illuminated push plate switch outer ring is green indicating the restroom is vacant. Pressing the ' Push to Open' switch will open the door. Once the door is closed, pressing the ' Push to Lock' Aura illuminated push plate switch will lock the doors. The ' Push to Lock' outer ring will glow red indicating the door is locked. Also, the exterior Aura illuminated push plate rings will glow red indicating the restroom is occupied. While the restroom is occupied, pressing the "Press for Emergency Assistance" push button will send a signal to the assistance required appliance and unlock the door. Pressing the interior All-Active push plate switch will open the door and reset the system. The exterior Aura illuminated push plate switches will glow green indicating the restroom is now vacant. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.
          2. If the time-out function of the CX-EMF-2 is configured, the restroom door will automatically unlock after a period of time and the ' assistance required' signal appliance will activate, allowing attendant staff (primarily in health care facilities) to intercede.

\*\* NOTE TO SPECIFIER \*\* Delete wired status not required.

* + - * 1. Status: Normally locked. Fail secure electric strike.
        2. Status: Normally unlocked. Fail safe electric strike.
      1. Components:
         1. The following items are part of the CX-WC15FM equipment package:

CX-EMF2: Multi-function door control relay, 7 dry momentary and 1 digital inputs, 5 form ' C' contacts, rated 3 Amp at 30VDC, 1 digital output, 12/24VDC AC/DC operation, maximum 500mA current draw and surge protection.

CM-45/8GRFSE1: with CM-45/8 flush mount 4-1/2 inches (114 mm) activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and permanently laser etched ' Push to Lock' graphics, CM-55GR Illuminated Push Plate switch enclosure, Green/Red, with selectable 12/24V, AC/DC, built-in 85db sounder, max 110mA current draw and form ' C' contact rated 3 Amp at 30VDC, and CM-SE1 double sided sign ' DOOR LOCKED WHEN RED' / ' UNLOCKED WHEN GREEN' AND ' OCCUPIED WHEN RED' / ' VACANT WHEN GREEN'.

CM-45/4GRFSE1: with CM-45/4 flush mount 4-1/2 inches (114 mm) activation wall switch (2 supplied), stainless steel construction, N/O contacts rated 15 Amps at 30VDC, debossed and paint filled wheelchair symbol and ' Push to Open' graphics, CM-55GR Illuminated Push Plate switch enclosure, Green/Red, with selectable 12/24V, AC/DC, built-in 85db sounder, max 110mA current draw and form ' C' contact rated 3 Amp at 30VDC and CM-SE1 double sided sign ' DOOR LOCKED WHEN RED' / ' UNLOCKED WHEN GREEN' AND ' OCCUPIED WHEN RED' / ' VACANT WHEN GREEN'.

CM-450R/12: ' Press for Emergency Assistance' switch, ' Push/Pull' operation with heavy gauge stainless steel faceplate, 1-5/8 inch (41.27mm) vandal resistant red button, N/O and N/C contacts, rated 10 Amp at 30VDC and permanently laser etched graphics in black.

CX-MDC: surface mount Door Contact.

* + - * 1. The following items are required, but not included in CX-WC15FM equipment package:

Door Operator (by others).

CX-ED2079: Electric Strike, grade 2 universal' strike for cylindrical locksets c/w 3 faceplates, 12/24V AC/DC, selectable fail safe/fail secure. The strike shall have horizontal faceplate adjustment.

CM-45/4: 4-1/2 inch (114.3 mm) square activation wall switch, stainless steel construction, N/O contacts rated 15 Amps at 30VDC and paint filled debossed wheelchair symbol and ' Push To Open' graphics in blue.

CM-55CBL: Flush mount box for CM-45/4 switch, impact and flame resistant ABS.

CX-PS13: 12/24V linear power supply and CX-TRX-4024 UL listed 40VA transformer (2 required).

\*\* NOTE TO SPECIFIER \*\* The products have been created to address the latest requirements of the Ontario Building Code (OBC), effective January 1, 2015. This code mandates the installation of emergency call systems in barrier-free and universal washrooms. Although the code requirements are only applicable to the province of Ontario, Canada, they can also be viewed as a model for emerging code requirements for emergency call systems in universal washrooms across North America. Delete if not required.

* 1. EMERGENCY CALL SYSTEMS FOR UNIVERSAL AND BARRIER FREE RESTROOMS
     1. Performance:
        1. Emergency Call System shall comply with the latest requirements of the Ontario Building Code (OBC), effective January 1, 2015.
        2. Emergency Call System shall be designed to provide a washroom occupant with the ability to request emergency assistance, to receive visual and audible confirmation that their request has been made, and visual and audible notification to building staff and occupants outside the restroom of an emergency condition.

\*\* NOTE TO SPECIFIER \*\* Universal Restroom Kit for use without automatic door operator, or with CX-WC 10, 11, 12, 13 & 14 barrier-free restroom control kit. Includes: CM-450R/12 ' PRESS FOR EMERGENCY ASSISTANCE' mushroom push button, CM-AF501SO LED annunciator with sounder, CM-AF140SO Dome light with sounder AND CM- SE21 white panel sign 6 inches X 10-5/8 inches (152 mm X 270 mm). Add suffix 'F' to model number for French language. Delete if not required.

* + 1. Product: Emergency Call Systems For Universal and Barrier Free Restrooms - CX-WEC 10 Series Systems as manufactured by Camden Door Controls.
       1. Operation: The ' Press For Emergency Assistance' mushroom push button is activated by the occupant. This energizes the LED annunciator and sounder within the washroom, and the dome light with sounder outside the washroom. Both annunciators will be energized until the latching mushroom push button switch is pulled out.
       2. Components:
          1. CM-450R/12: ' Press for Emergency Assistance' switch, ' Push/Pull' operation with heavy gauge stainless steel faceplate, 1-5/8 inch (41.27mm) vandal resistant red button, N/O and N/C contacts, rated 10 Amp at 30VDC and permanently laser etched graphics in black.
          2. CM-AF501SO: Single gang LED annunciator with sounder, rated 85dB at 4 inch (102 mm), weather and vandal resistant construction, brushed stainless steel faceplate, with 'ASSISTANCE REQUESTED'. ' White Out' text shall not be legible unless the annunciator is energized.
          3. CM-AF140SO: Single gang dome light with piezo sounder, rated 93dB at 3 feet (1 meter), brushed stainless steel faceplate and 24V incandescent bulb. Text shall be 'ASSISTANCE REQUIRED'.
          4. CM-SE21A: Sign, to be located above the activation switch, 1/16 inch (1.6 mm), 6 inch high by 10-5/8 inch wide (152 mm by 270 mm), fire rated expanded PVC white with, 1 inch (25 mm) red lettering. Text shall be ' IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE'.

\*\* NOTE TO SPECIFIER \*\* Universal Restroom Kit for use with CX-WC15FM barrier -free restroom control kit. Add suffix 'F' to model number for French language. Delete if not required.

* + 1. Product: Emergency Call Systems For Universal and Barrier Free Restrooms - CX-WEC 11 Series Systems as manufactured by Camden Door Controls.
       1. Operation: The ' Press For Emergency Assistance' mushroom push button is activated by the occupant. This energizes the LED annunciator and sounder within the washroom, and the dome light with sounder outside the washroom. Both annunciators will be energized until the latching mushroom push button switch is pulled out.

\*\* NOTE TO SPECIFIER \*\* The function of the CX-WEC11 system is identical to the CX-WEC10 system, however, the ' Press For Emergency Assistance' mushroom push button, is supplied as part of a Camden CX-WC15FM (barrier-free) restroom control kit.

* + - 1. Components:
         1. CM-450R/12: ' Press for Emergency Assistance' switch, ' Push/Pull' operation with heavy gauge stainless steel faceplate, 1-5/8 inch (41.27mm) vandal resistant red button, N/O and N/C contacts, rated 10 Amp at 30VDC and permanently laser etched graphics in black.
         2. CM-AF501SO: Single gang LED annunciator with sounder, rated 85dB at 4 inch (102 mm), weather and vandal resistant construction, brushed stainless steel faceplate, with 'ASSISTANCE REQUESTED' message text, that is not legible unless the annunciator is energized.
         3. CM-AF140SO: Single gang dome light with piezo sounder, rated 93dB at 3 feet (1 meter), brushed stainless steel faceplate and 24V incandescent bulb. Text shall be 'ASSISTANCE REQUIRED'.
         4. CM-SE21A: Sign, to be located above the activation switch, 1/16 inch (1.6 mm), 6 inch high by 10-5/8 inch wide (152 mm x 270 mm), fire rated expanded PVC white with, 1 inch (25 mm) red lettering. Text shall be 'IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE'.

\*\* NOTE TO SPECIFIER \*\* The CX-33 is included as the door relay in the Automatic door controls for restrooms. Delete if not required.

* 1. AUTOMATIC DOOR RELAY CONTROLS

\*\* NOTE TO SPECIFIER \*\* Camden's CX-33 is a 'state of the art' logic relay designed to support virtually any automatic door application. The CX-33 features 13 operating modes, with sub-modes, and easy programming with large LCD display and push button selection.  
Applications: One advanced relay for nearly every automatic door control application; including; up to 3 door sequencing, airlocks, lock-out-relay, fire door in stairwells, and for control of automatic operators in restroom applications, with support of illuminated indicator of occupancy status. Delete if not required.

* + 1. Product: Advanced Logic Control - CX-33 as manufactured by Camden Door Controls.
       1. Voltage: 12 to 24V AC/DC.
       2. Current Draw: 105mA Typical, 320mA Maximum.
       3. Response Time: 0.5 Seconds.
       4. Display: Blue LED: 1 Alpha/Numeric and 2 x 7-Segment.
       5. Input: 4 x Dry.
       6. 1 x Wet: 4.5 - 120V AC/DC.
       7. Output: 3 x Form C (SPDT).
       8. Contact Rating: 3A at 24V DC.
       9. Temp Range: -22F to +185F (-30C to +85C).
       10. Electrical Life: 100,000 Operations at Rated Capacity.
       11. Time Delay: Hold 1 timer: 0-50 Seconds.
       12. Delay 1 Timer: 0-15 Seconds.
       13. Hold 2 timer: 0-50 Seconds.
       14. Delay 2 timer: 0-60 Seconds.
       15. Hold 3 Timer: 0-50 Seconds.
       16. Delay on Activate: 0-10 Seconds.
       17. Dimensions: 2 inches long by 6 inches wide by 7/8 inch high (51mm x 152mm x 22mm).
       18. Mounting: 2 x #6 Screws or Velcro.

\*\* NOTE TO SPECIFIER \*\* EMF-2 is Camden's most sophisticated door control relay and is designed to easily and quickly support a variety of specialized door-control applications. A dedicated 12V/5V LED output suitable for an illuminated "Occupied" sign is also provided. The EMF-2 is also available in secure lockable metal cabinet versions (EMF-2M or EMF-2ABM) suitable for wall mounting.  
Applications: Advanced automatic door and security control including ATM Vestibule Control (Banks), two-door unsecured washroom in shared-use facility, 2 or 3 door Airlock (with auto-crossing), 2 to 5 door Airlock and 2 door Mantrap. Used where 'Assistance Required' input/output required in restroom applications. Delete if not required.

* + 1. Product: Multi-Function Relay - CX-EMF2 as manufactured by Camden Door Controls.
       1. Voltage: 12/24V AC/DC.
       2. Current Draw: 150mA Nominal, 500mA Maximum.
       3. Response Time: .3 Seconds.
       4. Input: 7 Dry Momentary Contacts and 1 Digital.
       5. Output: 5 x Form C (SPDT), 1 Digital Output.
       6. Contact Rating: 3A at 30V DC.
       7. Electrical Life: 500,000 Operations at 1/2 rated Capacity.
       8. Time Delay: 5 Pots adjustable from 1-30 Seconds.
       9. Dimensions CX-EMF-2: 6-7/8 inch long by 2-7/8 inch wide by 7/8 inch deep (173mm x 72mm x 22mm).
       10. Dimensions CX-EMF-2M/2ABM: 12 inch long by 7-1/2 inch wide by 3-3/4 inch deep (305mm x 190mm x 95mm).
       11. Mounting: CX-EMF-2: Double Sided Foam Tape.
       12. Mounting: CX-EMF-2M/2ABM: 4 x #8 Metal Screws.
       13. Enclosure: CX-EMF-2: Gray Plastic Case.
       14. Enclosure: CX-EMF-2M/2ABM: Beige Metal Cabinet.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. AUTOMATIC DOOR ACTIVATION

\*\* NOTE TO SPECIFIER \*\* CM-25 and CM-35 Series all-active switches are heavy-duty, ADA-compliant door controls. The 1 5/8" x 4 1/2" rectangular faceplates are stainless steel or solid brass. The CM-25 is designed to mount directly on a metal door frame or narrow surface box in vertical or horizontal orientation ("H"). The CM-35 is designed for mounting on a single gang box. Delete if not required.

* + 1. Product: Narrow Push Plate Switches - CM-25/35 Series as manufactured by Camden Door Controls.
       1. Voltage: 12/24V AC/DC.
       2. Contact Type: N/O SPST.
       3. Switch Type: Momentary.
       4. Contact Rating: 3 Amps.
       5. Temperature Range: -40F to 140F (-40C to +60C).
       6. Dimensions CM-254 3/16 inch by 1-3/4 inch by 1-3/16 inch (113mm x 44mm x 30mm).
       7. Dimensions CM-35: 4-1/2 inch by 2-3/4 inch by 1-3/16 inch (114mm x 70mm x 30mm).

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: US32 / C32D (standard).
      2. Finish: Satin brass finish (US4 / 606).
      3. Finish: Oil rub bronze finish (US10B / 613).
      4. Finish: Polished brass (US3 / 605).
      5. Finish: Antique brass finish (US5 / 609).
      6. Faceplate Graphics: As scheduled, indicated or required. Refer to manufacturer's literature.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide weather resistant boot (WR).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide boot and water tight coating (WT).

\*\* NOTE TO SPECIFIER \*\* CM-45 and CM-46 Series 'All-Active' push plate switches are heavy-duty, ADA-compliant door controls. Faceplates are stainless steel or solid brass, and the assembly is designed for easy installation. The CM-45 features concealed mounting screws while the CM-46 provides visible mounting screws. Available in DPDT ("DP") switch in lieu of SPDT switch. Delete if not required.

* + 1. Product: Push Plates - CM-45/46 Series as manufactured by Camden Door Controls.

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + - 1. CM-45: 4-1/2 inch (114 mm) Square Push Plate Switch, Concealed Screws.
      2. CM-46: 4-1/2 inch (114 mm) Square Push Plate Switch, Exposed Screws.
      3. Voltage: 12/24 AC/DC
      4. Switch Type: Momentary.
      5. Contact Type: SPDT Form 'C'.
      6. Current Rating: 15 Amps.

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: US32 / C32D (standard).
      2. Finish: Satin brass finish (US4 / 606).
      3. Finish: Oil rub bronze finish (US10B / 613).
      4. Finish: Polished brass (US3 / 605).
      5. Finish: Antique brass finish (US5 / 609).
      6. Faceplate Graphics: As scheduled, indicated or required. Refer to manufacturer's literature.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide weather resistant boot (WR).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide boot and water tight coating (WT).

\*\* NOTE TO SPECIFIER \*\* CM-75 Series Column™ push plate switches offer an elegant design that is attractive, easy to operate and built to last . The innovative end cap is designed for easy snap-in' installation of Lazerpoint RF wireless transmitters. For installations that require an exterior freestanding switch, CM-75 series switches are compatible with color matched Camden CM-42 and CM-48 Series anodized aluminum and dark bronze bollards. Delete if not required.

* + 1. Product: Push Plate Switches - CM-75 Series 9 inches & 36 inches as manufactured by Camden Door Controls.

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + - 1. CM-7509: 9 inch (229 mm) Long Column push plate switch.
      2. CM-7536: 36 inch (914 mm) Long 'Column push plate switch.
      3. Meets or exceeds California building code, section 1117B.6 requirements.
      4. Voltage: 12/24V AC/DC.
      5. Contact Type: SPDT Form 'C'.
      6. Switch Type: (2 Internal) Momentary.
      7. Contact Rating: 15 Amps.

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: Clear aluminum.
      2. Finish: Dark bronze.
      3. Faceplate Graphics: As scheduled, indicated or required. Refer to manufacturer's literature.

\*\* NOTE TO SPECIFIER \*\* Aura™ CM-54 Series illuminated push plate enclosures and switch kits provide high visibility and enhanced user convenience in ADA compliant automatic door and other applications. Delete if not required.

* + 1. Product: Illuminated Push Plate Switch Enclosures - CM-54 Series as manufactured by Camden Door Controls.
       1. Illuminated surface mount box compatible with any CM-45 or CM-46 'All Active' push plate switch.

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + - 1. CM-45/X/B: 4-1/2 inch (114 mm) Square push plate with illuminated BLUE surface mount box.
      2. CM-45/X/BR: 4-1/2 inch (114 mm) Square push plate with sounder, illuminated BLUE/RED surface mount box.
      3. CM-45/X/GR: 4-1/2 inch (114 mm) Square push plate with sounder, illuminated GREEN/RED surface mount box.
      4. Dimensions: 5-1/4 inch wide by 5-1/4 inch long by 2-1/8 inch deep (133mm x 133mm x 54mm).
      5. Voltage: 12 or 24V AC/DC.
      6. Current Draw: CM-54B: 80 mA. , CM-54BR/GR: 110 mA.
      7. Lumina: Blue: 1500 MCD, Red: 5750 MCD, Green: 3780 MCD.
      8. Contact Type: CM-54BR/GR: 1 SPDT Form 'C'.
      9. Contact Rating: 3 Amps.
      10. Sounder: 85 DB.

\*\* NOTE TO SPECIFIER \*\* CM-54BR and CM-54GR models offer 3 additional features: selection of backlight colors (blue/red or green/red), an audible sounder that confirms switch activation and Form 'C' contacts, used to switch your device. Aura™ illuminated mounting boxes are compatible with the widest range of 4-1/2" square All-Active push plate switches in the industry. Options include a complete selection of stock and custom graphic designs, 9 architectural finishes (including polished brass and bronze) and water tight and weather resistant models. Delete if not required.

* + 1. Product: Illuminated Push Plate Switch Enclosures - CM-54B model features a continuous back lit, blue illumination as manufactured by Camden Door Controls.
       1. AURA Illuminated Enclosures.

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + - 1. CM-54B: Illuminated, BLUE, surface mount box.
      2. CM-54BR: Illuminated, BLUE/RED, sounder, surface mount box.
      3. CM-54GR: Illuminated, GREEN/RED, sounder, surface mount box.

\*\* NOTE TO SPECIFIER \*\* Camden offers a range of flame and vandal resistant low profile escutcheons for mounting 4-1/2" and 6" round push plate switches. ABS escutcheons feature a patented 2-piece design and may be ordered as complete 'kits' or individual parts. Stainless steel escutcheons feature one piece heavy gauge construction. Delete if not required.

* + 1. Product: Round Escutcheons - CM Series as manufactured by Camden Door Controls.
       1. Provide Escutcheons (for round push plate switches).

\*\* NOTE TO SPECIFIER \*\* Delete mount not required.

* + - * 1. Mount: Flush.
        2. Mount: Surface.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* + - * 1. Material: ABS.
        2. Material: Stainless steel.

\*\* NOTE TO SPECIFIER \*\* CM-40, CM-41 and CM-60 Series 'All-Active' push plate switches are heavy-duty, ADA-compliant door controls. Faceplates are stainless steel or solid brass, and the assembly is designed for easy installation. The CM-41 4 1/2" square stainless steel backplate is large enough to dress-up (cover) a poorly installed electrical box. It will also fit perfectly on most 4 1/2" surface boxes. Delete if not required.

* + 1. Product: Round escutcheons - CM-40/41/60 Series as manufactured by Camden Door Controls.

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + - 1. CM-40: 4-1/2 inch (114 mm) Round Push Plate Switch.
      2. CM-41: 4-1/2 inch (114 mm) Round Push Plate Switch with Square Back Plate.
      3. CM-60: 6 inches (152 mm) Round Push Plate Switch.
      4. Voltage: 12/24 AC/DC.
      5. Switch Type: Momentary.
      6. Contact Type: SPDT Form 'C'.
      7. Current Rating: 15 Amps.

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: US32 / C32D (standard).
      2. Finish: Satin brass finish (US4 / 606).
      3. Finish: Oil rub bronze finish (US10B / 613).
      4. Finish: Polished brass (US3 / 605).
      5. Finish: Antique brass finish (US5 / 609).
      6. Faceplate Graphics: As scheduled, indicated or required. Refer to manufacturer's literature.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide weather resistant boot (WR).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide boot and water tight coating (WT).

\*\* NOTE TO SPECIFIER \*\* Camden mounting posts are available in 42" (38" switch height) and 48" (44" switch height) models and feature heavy duty 1/8" thick extruded aluminum. They are available in clear aluminum, dark bronze and mill (suitable for painting) finishes. The posts are supplied with a flame and vandal resistant cap. heavy duty steel mounting base, and stainless steel fasteners. An optional in-ground (concrete) mounting base is also available. Delete if not required.

* + 1. Product: Bollards - CM Series as manufactured by Camden Door Controls.

\*\* NOTE TO SPECIFIER \*\* Delete height not required.

* + - 1. Height; 42 inches (1067 mm).
      2. Height: 48 inches (1219 mm).

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: Clear aluminum.
      2. Finish: Mill finish,
      3. Finish: bronze finish.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Provide in ground mounting.
      2. Provide factory prep for switch scheduled.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. AUTOMATIC DOOR WIRELESS ACTIVATION

\*\* NOTE TO SPECIFIER \*\* Lazerpoint RF is a completely new wireless solution for automatic door operators. The system introduces the many advantages of 915MHz. spread spectrum wireless technology to the market. The system encompasses the widest range of transmitters, receivers, activation devices and switch enclosures available today. Lazerpoint RF has been designed to provide the very best performance and value in new installations and is 'backwards compatible' for use in retrofit upgrades with 300MHz, 390MHz, and 433MHz. RF systems. Delete if not required.

* + 1. Product: Spread Spectrum Wireless System - Lazerpoint RF 915 Mhz as manufactured by Camden Door Controls.
       1. Components:
          1. Switch Transmitters:

CM-TX-9: Wall Switch Transmitter.

CM-TX-99: Plug-in two-channel transmitter (for CM-330 and CM-120 series devices).

* + - * 1. Key FOB Transmitters:

CM-TXLF-1: One button key FOB.

CM-TXLF-2: Two-button key FOB.

CM-TXLF-4: Four-button key FOB.

CM-TXLFB: Key FOB base, for wall, belt/visor or wheelchair mounting.

* + - * 1. Receivers:

CM-RX-91: Basic Single Relay Receiver.

CM-RX-92: Full Function Dual Relay Receiver.

* + - * 1. Optional Plug In Receiver Boards:

CM-RX-DBB: 300Mhz. Daughterboard (Blue Antenna)

CM-RX-DBO: 318Mhz. Daughterboard (Orange Antenna).

CM-RX-DBR: 390 Mhz. Daughterboard (Red Antenna).

CM-RX-DBW: 433 Mhz. Daughterboard (Orange Antenna).

* + - 1. Specifications:
         1. Wireless Frequency: 905.25 / 915.25 / 925.25 MHz Spread Spectrum.
         2. Wireless Range:

CM-TX9/99: 500 feet (152m) open area.

CM-TXLF Series: 250 feet (76m) open area.

* + - * 1. Receiver Capacity: 40 CM-TX Series Transmitters.
        2. Codes: 1 Million Unique (20 Bit) Codes.
        3. Power/Voltage:

CM-RX91/92: 12/24 V, AC/DC.

CM-TX9: (2) AAA alkaline batteries (supplied).

CM-TX99: Plug-in, power by device.

CM-TXLF Series: CR2032 Lithium battery.

* + - * 1. Battery Life:

CM-TX9: 500,000 cycles.

CM-TXLF 115,000 cycles.

* + - * 1. Status and Alarm Indicators:

CM-TX9/99/TXLF: Transmission confirmation, low battery, battery test and stuck switch.

CM-91/92: Relay status, signal strength, erase mode & pot position.

* + - * 1. Output:

CM-RX91: (1) SPDT relay.

CM-RX92: (2) SPDT relays.

* + - * 1. Contact Rating: 3 Amps at 30VDC.
        2. Current Draw:

CM-TX9: 2 mA.

CM-RX91/92: 150 Ma - 500 Ma.

* + - * 1. Time Delay:

CM-RX91: 1-30 seconds.

CM-RX92:

#1 D.O.R. 1-30 seconds.

#2 D.O.O. 1-15 seconds.

#2 D.O.R. 1-30 seconds.

* + - * 1. Temperature Range: -40 F to 185 F (-40 C to +85 C).

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. 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. Test for proper operation and adjust until satisfactory results are obtained.
   4. DEMONSTRATION AND TRAINING
      1. Manufacturer's representative shall provide on-site training of staff and maintenance of operation, maintenance and "trouble/error" detection/correction.
   5. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION