

SECTION 08 42 33.13
SECURITY REVOLVING DOOR ENTRANCES

Specifier Note: This specification document shall serve as a guide specification for typical projects where the CJ Rush Series 4900 ASR security revolving door entrance will be the basis of design. Specification must be reviewed for applicability on a per project basis. Specification is not appropriate for projects where a wind force and/or impact rating are required. The specifier is directed to select appropriate options included herein. Consult with the local CJ Rush Entrance Systems LTD. authorized distributor, when options, not specified, are required. See last page of this document for a summary of unspecified options.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

Specifier Note: Revise paragraph below to suit project requirements. Please note the following basic design considerations standard product.

- **Series 4900 ASR**
- **Wings: 4**
- **Diameter Range: 6'-0", 6'-6", 7'-0" (6'-6' Standard)**
- **Speed Control: Automatic**
- **Security: Anti-Tailgating/Anti-Piggybacking (Time of Flight Sensors)**
- **Egress: Collapsible Door Wings**
- **Center Shaft: Included with Collapsible Door Wings**

- A. This Section includes conventional, circular, security revolving entrance doors of the following configurations and operations:
1. Four wing.
 2. Automatic speed control.
- B. Related Sections:
1. Division 7 Sections for caulking to the extent not specified in this section.
 2. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrances furnished separately in Division 8 Section.
 3. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.

Specifier Note: Retain reference to "standby power" when "fail secure" operation is required on the project.

4. Division 26 Sections for electrical connections including conduit and wiring for power to, and control of, revolving door entrances. **[Power shall be from circuit on standby power system.]**
5. Division 28 Section "Electronic Safety and Security" for systems not specified in this section.

1.3 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
 - B. American National Standards Institute (ANSI) / Builders' Hardware Manufacturers Association (BHMA):
 - 1. ANSI/BHMA A156.27: Standard for Power and Manual Operated Revolving Pedestrian Doors.
 - 2. ANSI/BHMA A156.5: Standard for Auxiliary Locks and Associated Products.
 - 3. ANSI Z97.1: Standard for Safety Glazing Materials Used In Buildings - Safety Performance Specifications And Methods Of Test.
 - C. Consumer Product Safety Commission (CPSC):
 - 1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials.
 - D. Canadian General Standards Board:
 - 1. CAN/CGSB 19.13 M87 – Sealing Compound, One Component, Elastomeric, Chemical curing.
 - 2. CAN/CGSB 12.3 M91 – Flat, Clear float glass.
 - 3. CAN/CGSB 12.1 for tempered and laminate glass.
 - E. American Society for Testing and Materials (ASTM):
 - 1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - F. American Welding Society (AWS):
 - 1. AWS A5.10/A5.10M - Specification for Bare Aluminum and Aluminum-Alloy Welding Electrodes and Rods.
 - G. American Association of Automatic Door Manufacturers (AAADM):
 - H. National Fire Protection Association (NFPA):
 - 1. NFPA 70 – National Electric Code.
 - I. National Association of Architectural Metal Manufacturers (NAAMM):
 - 1. Metal Finishes Manual for Architectural and Metal Products.
 - J. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 607.1 - Clear Anodic Finishes for Architectural Aluminum.
 - 2. AAMA 701 Voluntary Specification for Pile Weather-stripping and Replaceable Fenestration Weather seals.
- 1.4 PERFORMANCE REQUIREMENTS
- A. General: Provide revolving entrance door assemblies that have the following capability based on testing manufacturer's standard units similar to those indicated for this Project:
 - B. Operating Range: Minus 20 deg F to plus 130 deg F (Minus 29 deg C to plus 54 deg C).

1.5 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware mounting heights, schedule of hardware, and attachments to other work.
- C. Color Samples for selection of factory-applied color finishes.
- D. Closeout Submittals:
 - 1. Owner's Manual.
 - 2. Warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative, with certificate issued by AAADM, who is trained for installation and maintenance of units required for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer having been in revolving door manufacturing for a minimum of 10 years in North America.
- C. Manufacturer shall have in place a national service dispatch center providing 24 hours a day, 7 days a week, emergency call back service.
- D. Certifications: Revolving door entrance systems shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards:
 - 1. ANSI/BHMA A156.27.
- E. Source Limitations: Obtain revolving entrance door assemblies through one source from a single manufacturer.
- F. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of revolving entrance door assemblies and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- G. Welding: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code--Aluminum."
- H. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201. Subject to compliance with requirements, permanently mark safety glass with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.

1.7 PROJECT CONDITIONS

- A. Field Measurements: General Contractor shall verify openings to receive revolving door assemblies by field measurements before fabrication and indicate measurements on Shop Drawings.
- B. Mounting Surfaces: General Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.
- C. Other trades: General Contractor shall advise of any inadequate conditions or equipment.

1.8 COORDINATION

- A. Templates: Obtain and distribute, to parties involved, templates for doors, frames, and other work specified to be factory prepared for installing revolving entrance doors. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing revolving entrance doors to comply with indicated requirements.

Specifier Note: Revise paragraph below as required for electrical coordination.

- B. Electrical System Roughing-in: Coordinate layout and installation of security revolving door entrance assemblies with connections to power supplies, **[standby power supplies,]** remote monitoring systems, and security access control system. See Division 28 Section "Electronic Safety and Security" for systems not provided under this section.
- C. System Integration: Integrate security revolving door entrances with other systems as required for a complete working installation. Provide electrical interface control capability for activation of security revolving door entrances by security access system.

1.9 WARRANTY

- A. Revolving Entrance Doors shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.
- B. During the warranty period the Owner shall engage a factory-trained technician to perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Owner.
- C. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal working hours.

PART 2 - PRODUCTS

2.1 REVOLVING ENTRANCE DOORS

- A. Manufacturer: CJ Rush Entrance Systems Ltd; Series 4900 ASR security revolving door entrances.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 - 2. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 - 3. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.
- B. Stainless Steel:
 - 1. Bars and Shapes: ASTM A 276, Type 304.
 - 2. Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304.
 - 3. Tubing: ASTM A 554, Grade MT 304.
 - 4. Cladding: ASTM A 666, Type 304.
 - 5. Welding Electrodes and Rods: AWS A5.9.

- C. Fasteners: Manufacturer's standard, of same basic metal as fastened metal, unless otherwise indicated.

2.3 REVOLVING ENTRANCE DOOR ASSEMBLIES

- A. General: Provide manufacturer's standard revolving entrance door assembly, complete with door wings, enclosure walls, ceiling, hardware, glass, controls, operators, activation devices, safety devices, and accessories as indicated.

Specifier Note: Select option for "Activation" from interior based on project requirements.

- B. Revolving Entrance Door Assembly:
 - 1. Operation: Automatic with overhead speed control.
 - 2. Configuration: 4 Wing
 - 3. Construction: Fully framed enclosure and door wings.
 - 4. Activation Devices:
 - a. Exterior: Secure knowing act activation device to activate automatic speed-control unit.
 - b. Interior: **[Motion Sensor to activate automatic speed-control unit.] [Secure knowing act activation device to activate automatic speed-control unit.]**
 - 5. Security: Overhead Anti-Tailgating/Anti-Piggybacking Sensors.
 - 6. Emergency Egress: Collapsible door wings.
- C. Safety Devices: Control door operation by the following equipment:
 - 1. Vertical compression safety strip, located on leading edge of enclosure wall posts, which stops the unit when impacted by an object.
 - 2. Emergency Stop Button: Provide a minimum of one emergency stop button per door, located within 48 inches of the door and 24 to 48 inches above the floor, that will stop the door's operation. Door operation will not resume until the button is manually reset. Button shall be 1 inch (25 mm) diameter minimum; red.

2.4 COMPONENTS

- A. Stile-and-Rail Door Wings: Manufacturer's standard 1-1/4 inch (32 mm) thick, glazed doors with tubular stile-and-rail members.
 - 1. Material: Extruded aluminum
 - 2. Glazing: CAN/CGSB 12.3 M91:CAN/CGSB12.1:ASTM C 1048; Quality Q3; Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent flat glass).
 - a. Class 1 (clear).
 - b. Thickness: 1/4 inch (6 mm).
 - 3. Stile Design: Narrow stile; 1 1/2-inch (38 mm) nominal width.
 - 4. Bottom Rail Design: 6 inch (152 mm) nominal height.
- B. Center Shaft: Manufacturer's standard, fabricated as follows:
 - 1. Shaft: Solid steel shaft with anodized aluminum extrusion cover
- C. Enclosure Walls: Manufacturer's standard 1-1/2 inch (38 mm) thick, glazed framing with tubular members.
 - 1. Configuration: Curved with single-bend glass lites.
 - 2. Material: Extruded aluminum
 - 3. Glazing: ASTM C 1048; Quality Q3;CAN/CGSB 12.3 M91:CAN/CGSB 12.1; Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent flat glass) float glass, laminated.
 - a. Bent Glass: ASTM C 1464; Kind BFT.
 - b. Class 1 (clear).

- c. Thickness: 1/4 inch (6 mm) tempered glass.
 4. Bottom Rail Design: 6 inch (152 mm) nominal height.
- D. Ceilings: Manufacturer's standard, complying with the following:
1. Metal: Fabricate soffit from minimum 0.125 inch (3.2 mm) thick, formed metal sheet matching enclosure walls on brake-formed galvanized sheet or clear anodized aluminum extrusion sub-frame. Ceiling to be fabricated from brake shape formed aluminum panels fabricated in pie shapes to fit snugly together with no gaps. Pies are fastened in place with security clips. Provide access panels for repairs or maintenance to speed controls and collapsing mechanisms on secure side.
 2. Construction: Segmented, pie shaped, with integrated overhead sensors, fitting the contour of the revolving door entrance enclosure. Sensors shall be secured in place with security fastening that is removable from the secure side of revolving door only.
 3. Roof: 0.062 inch (1.6 mm) thick roof sheet fastened to canopy sub-frame and caulked when appropriate for weather proofing.
 4. Ceiling Lights: Manufacturer's standard consisting of two recessed LED light fixtures within the revolving entrance door enclosure ceiling, complete with lamps and lenses; 120 VAC power provided under separate section.
- E. Canopy: Manufacturer's standard units with minimum 1/8 inch (3 mm) wall thickness, with layout matching diameter of enclosure walls and with panel sides of material and finish matching enclosure walls.
- F. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
- G. Signage: Provide signage in accordance with ANSI/BHMA A156.27.

2.5 EQUIPMENT

- A. Automatic Speed-Control Unit: Provide a powered electric speed regulator to permit automatic rotation of revolving entrance door wings. Unit shall allow for manual operation when power is off.
1. Automatic Operation: Signal from activation device activates unit and revolves door 180 degrees.
 2. Unauthorized Entry: When an unauthorized entry is sensed by anti-tailgating/anti-piggybacking systems, automatic speed control shall reverse up to 90 degrees.
 3. Maximum Speed: 4.9 rpm.
 4. Location: Overhead.
- B. Turnstile Brake: Provide manufacturers standard brake integral with the electric motor for speed control and braking of security revolving door entrances.
- C. Panic-Collapsing Mechanism: Manufacturer's standard concealed security panic collapsing system, programmable for fail-secure or fail-safe operation. During normal secure operation an overhead mounted, linear actuated, wedge-lock, engages a spring loaded locking cover plate to prevent manual collapsing of door wings.
1. Fire Alarm: Signal from fire alarm system disengages locking cover plate allowing manual collapsing of door wings.
 2. Power Loss: On loss of power locking cover plate is engaged, preventing manual collapsing of door wings; fail-secure.
 3. Panic-collapsing mechanism shall allow pressure adjustment from 130 to 180 lbf (445 to 800 N) and shall be set in accordance with ANSI/BHMA A156.27.
 4. Systems incorporating visible collapsing mechanism attached to the door wings or between door wings are not permitted.

- D. Locks: Manufacturer's standard deadbolt locks to receive cylinders; two for each revolving entrance door.
 - 1. Cylinders: Comply with requirements in Division 8 Section "Door Hardware."
 - 2. Mounting: Mortised.
 - 3. Location: Extend bolt from bottom of door wing into base of wall enclosure canopy.
- E. Control Switch: Provide manufacturer's standard key switch to allow for full control of the automatic revolving door.
 - 1. Functions: Off, Automatic, maintenance mode, one or two way security function, unlock, reset mode.
 - 2. Mounting: On interior corner post.
- F. Weather Seals: Manufacturer's standard replaceable components as follows:
 - 1. Top Rail and Vertical Stile: Brush.
 - 2. Bottom Rail and Shaft: Brush.

2.6 DOOR OPERATORS

- A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under normal traffic load for type of occupancy indicated.
- B. Electromechanical Operators: Self-contained overhead unit powered by a fractional horsepower helical bevel geared motor with integral braking.
- C. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 20 amps.

2.7 ELECTRICAL CONTROLS

- A. Electrical Control System: Provide a control system based on programmable control with the versatility of expansion for additional inputs and outputs, and having the capability of being programmed to change functions and having full diagnostic capability and compatibility with all types of card readers. Capability of being interconnected with a central control for monitoring and data acquisition.
- B. The controller shall be programmed to meet Owner's operational requirements Owner provided card readers shall be mounted in accordance with door manufacturer's recommendations adjacent to the entrance on both sides of the revolving door. The door shall include a visual card validation light device.
- C. Operation: Upon acceptance of valid activation signal, the user will be able to enter the revolving door's glazed enclosure. The door will then operate automatically counter clockwise to allow single passage only.

2.8 SECURITY COMPONENTS

- A. General: Secure control system shall include integrated anti-tailgating and anti-piggybacking components specifically designed for use with security revolving door entrances provided herein. Provide means to disable security functions upon activation of fire alarm system or by authorized security personnel.
- B. Combined Anti-Tailgating/Anti-Piggybacking Sensing: Provide overhead, "Time of Flight" range imaging sensing system incorporating an infrared transmitter, CMOS camera, and

microprocessor capable of measuring the distance between, shapes of, of varying targets. An associated processing system shall provide:

1. Anti-Tailgating: By detecting unauthorized person or persons entering the revolving door without a valid security signal.
2. Anti-Piggybacking: By detecting two persons entering a single chamber of the revolving door; then reversing direction of operation to clear the chamber.

2.9 ACTIVATION AND SAFETY DEVICES

- A. Presence Detectors: Self-contained, infrared-scanner units with metal or plastic housing; to provide adjustable detection field sizes, patterns, and functions, recessed in ceiling within entry chamber.
- B. Safety Switches: Furnish safety switches in accordance with ANSI A156.27.
 1. Emergency Stop: An emergency stop button shall be provided on the secure side of the door to stop the doors operation. The door will not restart until the switch is reset.
- C. Vertical Safety Strip: Manufacturer's standard compressible safety switch consisting of a compression activated, internal contact switch plate encapsulated in a flexible housing. Minimum 1 unit per entry point of enclosure on the drum wall corner post.

2.10 FABRICATION

- A. General: Fabricate revolving entrance door assembly components to designs, sizes, thicknesses, and configurations indicated.
 1. Main Extrusions and Tubing: Minimum wall thickness of 0.125 inch (3.2 mm).
 2. Glazing Stops and Gaskets: Manufacturer's standard snap-on, extruded-aluminum, square glazing stops with minimum wall thickness of 0.062 inch (1.6 mm); and preformed resilient glazing gaskets.
 3. Form aluminum shapes before finishing.
- B. Prefabrication: Provide revolving entrance doors as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
 1. Prefit all hardware at the factory. Remove surface-mounted hardware and carefully package for reinstallation at Project site.
 2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces. For hardware, perform these operations before applying finishes.
 3. Form profiles that are sharp, straight, and free of defects or deformations.
 4. Prepare components to receive concealed fasteners and anchor and connection devices.
 5. Fabricate components with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
 6. Fabricate exterior components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
 7. Provide anchorage and alignment brackets for concealed support of assembly from the building structure.
 8. Allow for thermal expansion of exterior units.
- C. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- D. Mechanically Joined Construction: Joints shall be tightly bolted together.

- E. Fasteners: Provide concealed fasteners for interconnecting metal components and for attaching them to other work, unless otherwise indicated.
 - 1. Reinforcement: Reinforce members as required to retain fastener threads.
 - 2. Exposed Fasteners: Do not use exposed fasteners unless unavoidable for assembly of units and for application of hardware. For exposed fasteners, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated. Equally space exposed fasteners.
- F. Hardware: Factory install hardware to greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.
 - 1. Provide sliding weather stripping, mortised into stiles and rails of door wings, to be adjustable and replaceable without dismantling door wings.
- G. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.
- H. Enclosure Walls and Ceilings: Fabricate tubular and channel frame assemblies in configuration indicated, with welded or mechanical joints according to manufacturer's standards and as specified. Provide subframes and reinforcement of types indicated or, if not indicated, as required for a complete system to support required loads.
- I. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to GANA's "Glazing Manual."
- J. Factory-Glazed Door Fabrication: Glaze door wings at the factory. Comply with glazing requirements specified.
- K. Activation and Safety Devices: Factory installed and tested.

2.11 ALUMINUM FINISHES

- A. General: Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes.
- B. Class II, Clear Anodic Finish: AA-M12C22A31 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.40 mils minimum complying with AAMA 611-98, and the following:
 - 1. AAMA 607.1
 - 2. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine conditions for compliance with requirements for installation tolerances, and other conditions affecting performance of revolving entrance doors.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Do not install damaged components. Fit frame joints to produce joints free of burrs and distortion. Rigidly secure non-movement joints.
- B. Entrances: Install revolving entrance doors plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
 - 1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Cut and trim framing during installation only with approval of manufacturer and according to manufacturer's written instructions.
 - a. Restore finish and remove and replace members, as directed, where cutting and trimming have impaired strength or appearance.
 - b. Do not install members that are warped, bowed, deformed, or otherwise damaged or defaced to such an extent as to impair strength or appearance. Remove and replace members, as directed, that have been damaged during installation.
- C. Electrical Connections: Connect speed control units, controls, and lighting to electrical power distribution system as specified in Division 26 Sections.
- D. Glazing: Glaze revolving entrance doors in accordance with, the Glass Association of North America (GANA) Glazing Manual, and published recommendations of glass product manufacturer.
- E. Sealants: Comply with requirements specified in Division 7 Section "Joint Sealants" and CAN/CGSB 19.13 M87.

3.3 FIELD QUALITY CONTROL

- A. Testing Services: Factory Trained Installer shall test and inspect each revolving entrance door to determine compliance of installed systems with applicable ANSI standards.

3.4 ADJUSTING

- A. Adjust speed control units, controls, and hardware for smooth and safe operation, for tight closure, and complying with requirements in ANSI/BHMA A156.27.

3.5 CLEANING AND PROTECTION

- A. Clean glass and aluminum surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish. Comply with requirements in Division 8 Section "Glazing", for cleaning and maintaining glass.

END OF SECTION 08 42 33.13

Available options not specified in this document are summarized as follows:

1. Finish Options (Class 2 Clear Anodized Specified):
 - a. Class 1 Clear Anodized
 - b. Color anodizing options; "Champagne" to "Black"
 - c. Multi-coat Fluoropolymer painted finishes.
 - d. Cladding; Stainless Steel, Bronze.
2. Security Options (Anti-Tailgating/Anti-Piggybacking Sensors Specified)
 - a. Anti-Tailgating by Overhead Active Infrared Sensors.
3. Egress Options (Egressable with Panic Collapsible Door Wings Specified)
 - a. Non-Egressable with Fixed Door Wings

Contact your local CJ Rush Entrance Systems Ltd. representative for more information on specifying the right security revolving door entrance for your project.

These specifications represent a "sample" door configuration and depict design features that are commonly used. These specifications do not reflect "standard" features and are provided for informational purposes only. Please note that there is no standard "off the shelf" product. CJ Rush custom manufactures each product to its customers' specifications. It is the customer's responsibility to validate that a particular configuration of CJ Rush's products is suitable for a specific application. All specifications and designs contained herein are subject to change without notice or obligation.