**GUIDE**

**SPECIFICATION**

Manufacturer:

**U.S. Aluminum**

2450 E. Vernon Ave.

Los Angeles, California 90058-1802

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**SECTION 08 41 13**

**ALUMINUM FRAMED ENTRANCES AND STOREFRONTS**

**STORM FRONT™ SERIES D900 IMPACT RESISTANT TERRACE DOOR**

Glass and glazing are referenced in Section 08 81 00, Glass and Glazing.

Where work of this section integrates with curtain wall, slope glazed system, skylight, windows or other glazing system, carefully coordinate all sections to function together.

Edit entire master to suit project requirements. Modify or add items as necessary. Delete items that are not applicable. Words and sentences within brackets [\_\_\_\_\_] reflect a choice to be made regarding inclusion or exclusion of a particular item or statement. This section in some cases may include performance, proprietary and descriptive type specifications. Edit to avoid conflicting requirements.

Editor notes are included within the text of this section to assist the specifier in knowledgeable decision-making. They should be deleted from the final text.

This guide specification is written using imperial measurements with metric conversions in parentheses. These may be switched or one may be deleted to suit project requirements. The conversion to metric is "soft" in the fact that rounding was utilized to the nearest unit.

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This suggested guide specification has been prepared by U.S. Aluminumin printed and electronic form as an aid to specifiers in preparing written construction documents for aluminum framed entrances and storefront systems.

**PART 1 - GENERAL**

* 1. *SUMMARY*

A. Related Documents: Conditions of the Contract, Division 1 - General Requirements, and Drawings apply to Work of this Section.

***Edit this paragraph to briefly describe the contents of the section***. ***After editing section, refer back to this paragraph to verify no conflicts exist.***

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B. Section Includes:

1. Entrances and Storefront Systems complete with reinforcing, fasteners, anchors, and attachment devices.

2. Aluminum doors complete with hardware, and corner key construction corners.

3. Accessories necessary to complete work.

***This document incorporates CSI (Construction Specifications Institute) Manual of Practice and Master Format (2012 edition) principles of cross-referencing to Division 1 sections and other sections. The cross references must be edited to retain only those other sections used. Other guide specifications for U.S. Aluminum products include:***

***Section 08 32 13 - Aluminum Framed Mall Sliding Doors***

***Section 08 42 36 - Aluminum Balance Entrances***

***Section 08 43 13 - Aluminum Framed Storefronts***

***Section 08 44 13 ‑ Aluminum Curtain Walls***

***Section 08 51 13 - Aluminum Windows***

***Section 08 70 00 - Hardware***

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C. Related Sections:

1.Section 08 80 00 – Glazing

2.Section 08 41 13 ‑ All Glass Entrances.

3.Section 08 42 33 ‑ Revolving Entrance Doors.

4.Section 08 32 13 ‑ Aluminum Framed Mall Sliding Doors.

5.Section 08 43 13 ‑ Aluminum Framed Storefronts and Window Walls.

6.Section 08 71 00 - Door Hardware.

7.Section 08 81 00 - Glass and Glazing.

8.Section 08 44 13 ‑ Glazed Aluminum Curtain Wall.

9.Section 08 44 33 ‑ Slope Glazed System.

***List reference standards that are included within the text of this section. Edit the following as required for project conditions.***

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*1.2 REFERENCES*

A. Aluminum Association (AA):

1. DAF-45 Designation System for Aluminum Finishes.

B. American Architectural Manufacturers Association (AAMA):

1. **1**503.1 Test Method for Condensation Resistance of Windows, Doors and Glazed Wall Systems.

2. 605.2-92 Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.

3. 607.1 Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.

4. 608.1 Specification and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.

5. 701.2 Specifications for Pile Weatherstripping.

6. Manual #10 Care and Handling of Architectural Aluminum From Shop to Site.

7. SFM‑1 Aluminum Storefront and Entrance Manual.

C. American National Standards Institute (ANSI):

1. A117.1 Safety Standards for the Handicapped.

D. American Society for Testing and Materials (ASTM):

1. A36 Structural Steel.

2. B209 Aluminum and Aluminum - Alloy Sheet and Plate.

3. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.

4. B308 Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.

1. C509 Cellular Elastomeric Pre-formed Gasket and Sealing Material.
2. C864 Dense Elastomeric Compression Seal Gaskets, Setting

Blocks and Spacers.

7. E283 Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.

E. Federal Specifications (FS):

1. TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.

F. Steel Structures Painting Council (SSPC):

1. Paint 12 Cold-Applied Asphalt Mastic (Extra Thick Film).

G. Florida Building Code

1. Testing Application Standard (TAS) 201-94.1 – Impact Test Procedures

2. Testing Application Standard (TAS) 202-94.1 – Criteria for Testing Impact and Non-Impact Resistant Building Envelope components Using Uniform Air Pressure.

3. Testing Application Standard (TAS) 203-94.1 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

***Use the article below carefully; restrict statements to describe components used to assemble the system. Do not repeat statements made in the SECTION INCLUDES article. Restrict statements to identify system performance requirements or function criteria only. Delete paragraphs not appropriate to project.***

***The following paragraphs represent a suggested listing of performance criteria.***

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*1.3 SYSTEM REQUIREMENTS*

A. Design Requirements:

1. General Performance: Comply with performance requirements specified, as determined by testing of glazed terrace doors representing those indicated for this project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Terrace Door Performance Requirements:

Provide aluminum terrace doors of performance indicated that comply with Florida Building Code 5th Edition 2014 test protocols for HVHZ, TAS 201-94.1, TAS 202-94.1, and TAS 203-94.1.

* + - * 1. Air Infiltration: When closed and locked, the test specimen shall be tested in accordance with ASTM E 283. Air infiltration shall not exceed 0.30 cfm/ft2 at a pressure differential of 6.24 psf (300 Pa).
        2. Water Resistance: When closed and locked, the test specimen shall be tested in accordance with TAS 202-94.1 and there shall be no uncontrolled leakage as defined in the test method at a static air pressure differential of 15psf (720 Pa).
        3. Uniform Design Load Test: When closed and locked, the test specimen shall be tested in accordance with TAS 202-94.1 at a minimum static air design pressure of 65 psf (3112 Pa) applied in a positive and negative direction
        4. Uniform Load Structural Test: When closed and locked, the test specimen shall be tested in accordance with TAS 202-94.1 at a minimum static air design pressure of 97.5 psf (4668 Pa) (1.5 x design load) applied in a positive and negative direction.
        5. Thermal Transmittance Test (U-Factor): When tested in accordance with AAMA 1503, the thermal transmittance (U-Factor) shall not be more than 0.45 BTU/hr/sf/F.
        6. Condensation Resistance Test (CRF): When tested in accordance with AAMA 1503, the condensation resistance factor (CRF) shall not be less than 63 frame, 69 glass.
        7. Windborne-Debris-Impact Resistance Performance: Shall be tested in accordance with TAS 201-94.1 .

Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1m) of grade.

Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.

***Include submittal requirements below that are consistent with scope of project and extent of work of this section. Only request submittals that are absolutely necessary.***

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*1.4 SUBMITTALS*

A. General: Submit in accordance with Section 01 30 00.

B. Product Data:

1. Submit manufacturer's descriptive literature and product specifications.

2. Include information for factory finishes, hardware, accessories and other required components.

3. [Include color charts for finish indicating manufacturer's standard colors available for selection.]

C. Shop Drawings:

1. Submit shop drawings covering fabrication, installation and finish of specified systems.

2. Include following:

a. Fully dimensioned plans and elevations with detail coordination keys.

b. Locations of exposed fasteners and joints.

3. Provide detailed drawings of:

a. Composite members.

b. Joint connections for framing systems and for entrance doors.

c. Anchorage.

d. System reinforcements.

e. Expansion and contraction provisions.

f. Hardware, including locations, mounting heights, reinforcements and special installation provisions.

g. Glazing methods and accessories.

h. Internal sealant requirements as recommended by sealant manufacturer.

4. Schedule of finishes.

D. Samples:

1. Submit samples indicating quality of finish, in required colors, on alloys used for work, in sizes as standard with manufacturer.

2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.

E. Test Reports:

1. Standard Systems: Submit certified copies of previous test reports substantiating performance of system in lieu of re-testing. Include other supportive data as necessary.

F. Certificates:

1. Submit manufacturer's certification stating that systems are in compliance with specified requirements and meets FBC.

G. Qualification Data:

1. Submit installer qualifications verifying years of experience.

2. Include list of projects having similar scope of work identified by Brand name, location, date, references, contact, and phone number.

H. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

***Include quality assurance requirements consistent with size and scope of project and extent of work of this section. Edit following article accordingly.***

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*1.5 QUALITY ASSURANCE*

A. Single Source Responsibility:

1. To ensure quality of appearance and performance, obtain materials for each system from either a single manufacturer or from manufacturer approved by each system manufacturer.

B. Installer Qualifications: Certified in writing by Contractor as qualified for installation of specified systems.

C. Perform Work in accordance with AAMA SFM‑1 and manufacturer's written instructions.

D. Conform to requirements of ANSI A117.1 and local amendments.

***Mock-ups are typically not required, however, depending on scope of work, a mock-up may be desirable; retain and edit following article accordingly. Ensure section 01400 includes details for each mock-up required.***

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*1.6 MOCK-UPS*

A. Visual Mock-up: Provide mock-up to demonstrate visual features and workmanship; refer to Section 01400 for requirements.

B. Test Mock-up: Provide mock-up for laboratory testing; refer to Section

01 40 00 for requirements. Architect shall have approved sample mock prior to construction of test mock-up.

*1.7 DELIVERY, STORAGE AND HANDLING*

A. Comply with requirements of Section 01 60 00.

B. Protect finished surfaces as necessary to prevent damage.

C. Do not use adhesive papers or sprayed coatings that become firmly bonded when exposed to sun.

D. Do not leave coating residue on any surfaces.

E. Replace damaged units.

***Contractor's statutory one-year warranty may be sufficient and following article can be deleted. U.S. Aluminum offers, at no additional cost, a 2 year warranty on products and materials. When special coatings, insulating glass, or high quality applications are specified or owner has requested an extended warranty, retain following article. Edit article commensurate with project conditions and/or owner's instructions.***

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*1.8 WARRANTY*

A. Provide warranties in accordance with Section 01 77 00.

B. Provide written manufacturer's warranty, executed by company official, warranting against defects in materials and products for 2 years from date of Substantial Completion.

C. [Provide written installer's warranty, warranting work to be watertight, free from defective materials, defective workmanship, glass breakage due to defective design, and agreeing to replace components that fail within [2] [\_\_] years from ship date.

1. Warranty shall cover following:

a. Complete watertight and airtight system installation within specified tolerances.

b. Completed installation will remain free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.

c. System is structurally sound and free from distortion.

d. Glass and glazing gaskets will not break or "pop" from frames due to design wind, expansion or contraction movement.

e. Glazing sealants and gaskets will remain free from abnormal deterioration or dislocation due to sunlight, weather or oxidation.

***Delete paragraph below if high performance fluoropolymer finish is not used.***

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D. Provide written warranty stating organic coating finish will be free from fading more than 10%, chalking, yellowing, peeling, cracking, pitting, corroding or non-uniformity of color, or gloss deterioration beyond manufacturer's descriptive standards for 2 years from date of Substantial Completion and agreeing to promptly correct defects.

***Delete paragraph below if thermal barrier framing system is not used.***

***A 2-year warranty is offered by U.S. Aluminum exclusively.***

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E. Provide a written thermal integrity warranty for 2 years from ship date against thermal barrier system failure resulting from the following:

1. Longitudinal and transverse thermal barrier shrinkage.

2. Thermal barrier cracking.

3. Structural failure of the thermal barrier material.

4. Loss of adhesion or loss of prescribed edge pressure on glazing material resulting in excessive air and water infiltration.

**PART 2 - PRODUCTS**

*2.1 MANUFACTURERS AND PRODUCTS*

***In this article, list the manufacturers acceptable for this project.***

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A. Basis of Design and subject to compliance with requirements indicated, provide products by one of the following:

1. **U.S. Aluminum**

2450 E. Vernon Ave Los Angeles, California 90058-1802

Toll Free Phone: (800) 262-5151 Phone: (323) 268-4230

Toll Free Fax: (866) 262-3299

Email: [usalum@crlaurence.com](mailto:usalum@crlaurence.com)

[www.usalum.com](http://www.usalum.com)

B. Substitutions: Submit under provisions of Section 01 60 00, a minimum of 10 days prior to bid date.

C. Acceptable Entrance Doors:

1. **Standard Duty Doors: Series** **D900 Aluminum Terrace Doors** Designed for Hurricane Impact with standard locking hardware consult factory for options available.
2. Entrance Member Profile: 3-3/4” (95.5) nominal face dimension, 2-1/4 (57.2) Depth and designed for Moderate Traffic Conditions
3. Doors with 0.125 Minimum Wall Thickness

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*2.2 TERRACE DOOR FRAMING MATERIALS AND ACCESSORIES*

A. Aluminum:

1. ASTM B221, alloy 6063-T6 for extrusions; ASTM B209, alloy 5005-H34 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.

B. Internal Reinforcing:

1. ASTM A36 for carbon steel; or ASTM B308 for structural aluminum.

2. Shapes and sizes to suit installation.

3. Shop coat steel components after fabrication with alkyd type zinc chromate primer complying with FS TT-P-645.]

C. Anchorage Devices:

1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.

D. Fasteners:

1. Aluminum, non-magnetic stainless steel or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.

2. Do not use exposed fasteners, except where unavoidable for application of hardware.

3. For exposed locations, provide countersunk Phillips head screws with finish matching items fastened.

4. For concealed locations, provide manufacturer's standard fasteners.

5. Provide nuts, washers of design having means to prevent disengagement; deforming of fastener threads is unacceptable.

E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.

F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil (0.77 mm) thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.

G. Glazing Gaskets:

1. Compression type design, replaceable, molded or extruded, of neoprene or ethylene propylene diene monomer (EPDM).

2. Conform to ASTM C509 or C864.

3. Profile and hardness as required to maintain uniform pressure for

watertight seal.

4. Provide in manufacturer's standard black color.

H. Weatherstripping:

1. Wool pile conforming to AAMA 701.2; or extruded EPDM elastomeric conforming to ASTM C509 or C864.
2. Provide EPDM or vinyl‑blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.

I. Internal Sealants: Types recommended by sealant manufacturer.

1. "Anti-Walk" Edge Blocking: "W" shaped EPDM blocks for use in keeping glazing material stationary under vibration or seismic loading.

K. Thermal Barrier: Shall be two continuous rows of polyamide glass reinforced 6/6 nylon at door rails, door stiles and frame.

*2.3 GLAZING*

* + - * 1. A. Refer to Section 08 81 00. “Glazing” for glass units and glazing requirements applicable to glazed aluminum terrace door units.
        2. Glass Make-Up to comply with Test reports & FBC (Florida Building Codes) for Hurricane Impact Glazing.

*2.4 DOOR HARDWARE*

A. Hardware Items:

1. Butt hinges: [\_\_Standard & Non Deviated\_\_].

2. Door Holder: [\_\_Standard & Non Deviated\_\_\_\_\_\_\_\_\_\_\_\_\_].

3. 5 Point Locking device: [\_\_Standard & Non Deviated\_].

4.. Cylinders/Thumb Turn [\_\_\_Standard & NON Deviated\_\_].

5. Thresholds: [\_Standard & Non Deviated\_].

6. Weatherstripping: Manufacturer's standard.

B. Trim Sets:

1. Hoppe solid brass style lever handle with escutcheon.

2. Keyed cylinder and thumbturn included:

Singles: Key exterior / thumbturn interior

*2.5 FABRICATION*

A. Coordination of Fabrication:

1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.

2. Fabricate units to withstand loads that will be applied when system is in place.

B. General:

1. Conceal fasteners wherever possible.

2. Reinforce work as necessary for performance requirements and for support to structure.

3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators that will prevent contact and corrosion.

4. Comply with Section 08 81 00 for glazing requirements.

***Glazing is normally done after system has been erected and done from inside or outside. Large plates of glass can normally be glazed most readily from outside. Headroom and space often make it impossible to glaze from inside. Glass replacement must also be considered. Edit item below for inside or outside glazing.***

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C. Aluminum Framing:

1. Supply size of members, shape, and profile designed to provide for glazing from [exterior] [interior].

2. Fabricate frame assemblies with joints straight and tight fitting.

3. Reinforce internally with structural members as necessary to support design loads.

4. Maintain accurate relation of planes and angles, with hairline fit of contacting members.

5. Seal horizontals and direct moisture accumulation to exterior.

6. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.

1. Provide manufacturer's extrusions and accessories to accommodate

expansion and contraction due to temperature changes without being

detrimental to appearance or performance.

1. Make provisions in framing for minimum edge clearance, nominal edge

cover and nominal pocket width for thickness and type of glazing or infill

used in accordance with recommendations of manufacturer and FGMA

Glazing Manual.

9. Provide tight fitting, injection molded, water deflectors at all intermediate horizontals.

D. Entrance Doors:

1. Fabricate with mitered mechanical joints using internal Corner Key Construction..

2. Provide extruded aluminum glazing stops of square 1” Impact glazing only.

E. Hardware:

1. Receive hardware supplied in accordance with Section 08 71 00 and install in accordance with requirements of this Section.

2. Cut, reinforce, drill and tap frames and doors as required to receive hardware.

3. Comply with hardware manufacturer's templates and instructions.

4. Use concealed fasteners wherever possible.

F. Welding:

1. Comply with recommendations of the American Welding Society.

2. Use recommended electrodes and methods to avoid distortion and discoloration.

3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

G. Flashings: Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

***Select and edit following items for appropriate finish; delete inapplicable types. U.S. Aluminum offers, at no additional cost, a 2 year warranty on either of the painted finishes below.***

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*2.6 FINISH*

A. Organic Coating (high performance DURANAR):

1. Comply with requirements of AAMA 2605.2-92.

2. Surfaces cleaned and given conversion coating pre-treatment prior to application of 0.2 mil dry film thickness of epoxy or acrylic primer following recommendations of finish coat manufacturer.

3. Finish coat of [70 percent] minimum fluoropolymer resin fused to primed surfaces at temperature recommended by manufacturer, 1.0 mil (0.25 mm) minimum dry film thickness.

4. Acceptable manufacturer's coatings: PPG Industries Inc.

5. Provide either 2, 3, or 4 coat system as required for color selected.

6. [Custom colors as selected by Architect.]

\*\*\*\*\* OR \*\*\*\*\*

7. [Manufacturer's standard colors as selected by Architect.]

\*\*\*\*\* OR \*\*\*\*\*

B. Clear Anodized:

1. Conforming to AA-M12C22A31 and AAMA 607.1.

2. Architectural Class II, etched, medium matte, clear anodic coating, 0.4 mil (0.010 mm) minimum thickness.

\*\*\*\*\* OR \*\*\*\*\*

***Note: AA class 44 is a type I coating and is 0.7 mil (0.018 mm) thick. AA Class 34 is a type II coating and is 0.4mil (0.010 mm) thick. U.S. Aluminum offers, at no additional cost, a two-year warranty on either of the finishes below.***

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C. [Color Anodized:

1. Conforming to AA-M12C22A [34] [44] and AAMA 608.1.

2. Architectural Class [II] [I], etched, medium matte, [black] [dark bronze] [medium bronze] [light bronze] colored anodic coating, [0.4] [0.7] mil ([0.010] [0.018] mm) minimum thickness.]

**PART 3 - EXECUTION**

*3.1 EXAMINATION*

1. Examine conditions and proceed with Work in accordance with

Section 01 40 00.

B. Verify dimensions, tolerances and method of attachment with other Work.

*3.2 INSTALLATION*

A. Erection Tolerances:

1. Limit variations from plumb and level:

a. 1/8 inch (3 mm) in 10 feet (3 M) vertically.

b. 1/8 inch (3 mm) in 20 feet (6 M) horizontally.

2. Limit variations from theoretical locations: 1/4 inch (6 mm) for any member at any location.

3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch (2 mm) from flush surfaces not more than 2 inches (51 mm) apart or out-of-flush by more than 1/4 inch (6 mm).

B. Install doors and hardware in accordance with manufacturer's printed instructions.

C. Set units plumb, level and true to line, without warp or rack of frame.

D. Anchor securely in place, allowing for required movement, including expansion and contraction.

E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or pre-formed separators to prevent contact and corrosion.

F. Seal perimeter members as shown on manufacturer’s installation instructions or as required for unique job conditions. Set other members with internal sealants and baffles as called for in manufacturer’s installation instructions. Use sealants as recommended by sealant manufacturer.

G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07920.

H. Glazing: Refer to requirements of Section 08 81 00. Using Impact Glazing per FBC (Florida Building Codes) .

*ADJUSTING*

A. Test door operating functions. Adjust closing speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.

* 1. *CLEANING*

A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.

B. Clean metal surfaces exercising care to avoid damage.

**END OF SECTION**