

GUIDE SPECIFICATION

Manufacturer:

U.S. Aluminum

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SECTION 08 41 00 – ALUMINUM ENTRANCES SERIES 375TC and Series 500TC THERMAL ENTRANCES

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

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.

PART 1 - GENERAL

1.1 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.

- B. Section Includes:
1. Aluminum Doors and complete hardware.
 2. 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 41 13 - Aluminum Framed Entrances and Storefronts*
- Section 08 42 36 - Aluminum Balance Entrances*
- Section 08 44 13 - Aluminum Curtain Walls*
- Section 08 51 13 - Aluminum Windows*
- Section 08 70 00 - Hardware*

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

1.2 REFERENCES

- A. Aluminum Association (AA):
1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
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.
 - 5. C509 Cellular Elastomeric Pre-formed Gasket and Sealing Material.
 - 6. 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.
 - 8. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 - 9. E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- 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).

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.

1.3 SYSTEM REQUIREMENTS

- A. Design Requirements:
- 1. Drawings are diagrammatic and do not purport to identify nor solve problems of

- thermal or structural movement, glazing, anchorage or moisture disposal.
2. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
 3. Provide concealed fastening.
 4. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
 5. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
 6. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
 7. Provide for expansion and contraction without detriment to appearance or performance.
 8. Assemblies shall be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 9. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.
- B. Thermal Requirements:
1. Thermal Transmittance (U-Factor) When tested in accordance with NFRC Specification 102, the thermal (U-factor) shall not be more than 0.40 BTU/hr/sf/°F (2.38 W/m²-K) when used with 1" (25.4mm) low-E insulated glazing (Low-E glass e=0.021 / 90% Argon / clear / TS-D spacer). When tested in accordance with AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than 0.42 BTU/hr/sf/°F (2.38 W/m²-K) when used with 1" (25.4mm) low-E insulated glazing (Low-E glass e=0.021 / 90% Argon / clear / TS-D spacer).
- C. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than 64 for 1" (25.4mm) glazing.
- D. Performance Requirements:
- Single Door:**
1. Air infiltration @ 1.57 (75 PA) psf: Air leakage for single doors shall not exceed 0.20 CFM/FT² when tested in accordance with ASTM E283.
Air infiltration @ 6.24 (300 PA) psf: Air leakage for single doors shall not exceed 0.50 CFM/FT² when tested in accordance with ASTM E283.
 3. Wind loads: Provide framing system capable of withstanding wind load design pressures of 50 psf (2394 PA) acting inward and 50 psf (2394 PA) acting outward. The design pressures are to be tested per ASTM E-330.
 4. Forced Entry testing per AAMA1304
 5. Cycle Test per AAMA 920-16 for 500,000 cycles.

Pairs of Doors

1. Air infiltration @ 1.57 (75 PA) psf: Air leakage for pairs of doors shall not exceed 1.00 CFM/FT² (when tested in accordance with ASTM E283).
2. Wind loads: Provide framing system capable of withstanding wind load design pressures of 50 psf (2394 PA) acting inward and 50 (2394 PA) psf acting outward. The design pressures are to be tested per ASTM E-330.
3. Forced Entry testing per AAMA1304

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.

1.4SUBMITTALS

- 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.
- 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.

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.

1.6 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.

1.7 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.

- 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.**

- 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.

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

Edit the following paragraphs for appropriate system in each category and delete remaining. Refer to U.S. Aluminum technical literature for additional information.

When specifying manufacturer's standard product or manufacturer's standard product with modifications, describe using manufacturer's name and model numbers.

- C. Acceptable Entrance Systems:

U.S. Aluminum Storefront Framing Systems included in this section are as follows:

Standard duty systems (0.125" (3.17mm) wall thickness; 2-1/4" (57.15mm) deep)

Model: **Series 375TC - Medium Stile** thermal (8" (203.2mm)(10" (254mm)) bottom rail, 4" (101.6mm) top rail, 3-3/4" (95.25mm) verticals)
Series 500TC - Wide Stile thermal (8" (203.2mm)(10" (254mm)) bottom rail, 4" (101.6mm) top rail, 5" (127mm) verticals)

2.2 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. Fasteners:

1. Aluminum, non-magnetic stainless steel or other materials Compatible with items 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.

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

D. 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.

E. Touch-Up Primer for Galvanized Components: Zinc oxide conforming to FS TT-P-641

G. Glazing Gaskets:

1. Compression type design, replaceable, molded or extruded, of neoprene or (EPDM).
2. Conform to ASTM C509 or C864.
3. Profile and hardness as required too maintain uniform pressure for a water tight seal.
4. Provide in manufacturer's standard black color.

2.03 GLASS AND GLAZING ACCESSORRIES

Entrance manufacturer's standard hardware should be specified here and all other non-standard hardware can be specified here or in section 08710 - Door Hardware. However, door hardware, should be installed by storefront and entrance manufacturer. Coordinate requirements.

List each item of hardware to be furnished. Describe each item by giving manufacturer's name, catalog number, size, finish, and special features. Add, delete and edit as required.

2.04 DOOR HARDWARE

A. Hardware Items:

1. Butt hinges: [PBB Heavy Duty 4.5 X 4.5 Butt Hinge].
2. Gear hinges: [Pemko FMSLI]
3. Surface closers: [_____].
4. Push bar: [PR034].
5. Pulls: [PR032].
6. Panic devices: [Jackson 1285 Concealed Vertical Rod] [Jackson 1295 Rim Panic] [Von Duprin 98 or 99 Rim Panic].
7. Deadlocks: [Adams Rite 1853-450] Cyl back to back.
8. Dead-latch: [Adams Rite 4900xPaddlexOrx3900TrimxPaddle]].
- 9.. Cylinders: Specified in Section 08710.
10. Thresholds: [Pemko 279x224FGT or equivalent]
11. [Door Weather-stripping: Manufacturer's standard].

B. Hardware Set 1, each single door shall have:

1. 1-1/2 pair butt hinges.
2. 1 each deadlock.
3. 1 each closer.
4. 1 set push/pull bars.
5. 1 each stop.
6. 1 each threshold.

C. Hardware Set 2, each single door shall have:

1. 1-1/2 pair butt hinges.
2. 1 each Panic Device.
3. 1 each closer.
4. 1 set push/pull bars.
5. 1 each stop.
6. 1 each threshold.

C. Hardware Set 3, each Pair door shall have:

1. 1-1/2 pair butt hinges.
2. 2 each Panic Device.
3. 2 each closer.
4. 2 set pull bars.
5. 2 each stop.
6. 1 each threshold.

2.05 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.

- C. Entrance Doors:
 1. Fabricate with mechanical joints using internal [steel] reinforcing plates and shear blocks attached with fasteners and by welding.
 2. Provide extruded aluminum glazing stops of square design.
 3. Extruded rigid fiberglass reinforced polyamide struts are used as a thermal separator between interior and exterior of door.
4. Pairs of doors shall have twin pile seals at the exterior with an adjustable astragal on active stile and twin adjustable co-extruded astragals at the interior.]
- D. Hardware:
 - [1. Receive hardware supplied in accordance with Section 08710 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.
- E. 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..
- E. 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.

2.6FINISH

- 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.

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

- A. 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. Utilize "anti-walk" edge blocking on all vertical edges of glazing.

3.3 ADJUSTING

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

3.4 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