

HURRICANE IMPACT-RESISTANT ENTRANCES

Series 281 Narrow Stile

Series 381 Medium Stile

	<i>Section</i>	<i>Page</i>
Specifications (281 and 381 Combined)	(A2)	HS1-6
Options and Limitations	(A2)	1-2
Hardware and Hinging Locations	(A2)	3
Impact Door Details	(A2)	4-9

281 and 381 HURRICANE ENTRANCES

GUIDE SPECIFICATIONS

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONTS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MASTERSPEC Program have been recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Aluminum Entrances, glass and glazing, and door hardware and components.
1. Types of Coral Aluminum Entrances:
 - a. Impact-resistant Series 281 Swing Door, **Narrow** stile, 2-1/8" vertical face dimension, 1-3/4" depth, Interior structural silicone glazed, Normal to Heavy traffic Impact-resistant applications. (Select)
 - b. Impact-resistant Series 381 Swing Door, **Medium** stile, 3-3/4" vertical face dimension, 1-3/4" depth, Interior structural silicone glazed, Heavy to Abusive traffic Impact-resistant applications. (Select)

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSEWHERE, HOWEVER CORAL RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
1. Section 08450 – All Glass Entrances
 2. Section 08491 – Sliding Doors
 3. Section 08491 – Aluminum Mall Sliding Doors
 4. Section 08520 – Aluminum Framed Window Wall
 5. Section 08700 – Finish Hardware
 6. Section 08900 – Curtain Wall Systems

1.02 References (Industry Standards)

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.03 System Description

- A. Entrance Performance Requirements:
1. Wind loads: Provide immediate door framing for swing doors, including anchorage capable of withstanding design pressures of () PSF inward and () outward. These design pressures are based upon () Building Code: () Edition.
 2. Air Infiltration: For a pair of single acting butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with DCBCCO Protocol PA 202 and ASTM E 283 at a pressure differential of 1.57 PSF for a pair of doors. The air infiltration shall not exceed 0.46 CFM/ft.2 for door opening sizes of 6'-0" x 7'-0" (Series 281) or 7'-0" x 8'-0" (Series 381).
 3. Structural: Corner strength shall be tested in accordance with cyclic load test as specified by Florida Building Code TAS 201 and ASTM E1886/1996 to ensure corner integrity without welded corners. Upon completion of positive and negative cyclic testing, the structural integrity of each corner shall remain intact. Manufacturer shall provide a limited lifetime warranty for the life of the door under normal use without welded corner construction for Hurricane Impact –Resistant doors.
 4. Uniform Load: A static air design load shall be applied in the positive and negative direction in accordance with DCBCCO Protocol 202 and ASTM E 330. The design load for a pair of doors shall be +/- 65 PSF for Series 281 and +70/-80 PSF for Series 381. At a structural test load equal to 1.5 times the specified design load, the measured permanent set deflection at midpoint of the meeting stiles shall not exceed 50% of the allowable and no glass breakage shall occur.
 5. Impact Resistance: Large Missile, tested in accordance with DCBCCO Protocols PA 201, OA 203, SBCCI SSTD-12 and ASTM E 1886 at a door opening sizes of 6'-0" x 7'-0" (Series 281) or 7'-0" x 8'-0" (Series 381). (Select)
 6. Forced Entry: Tested in accordance with SFBC 3603.2 (B) (5).

281 and 381 HURRICANE ENTRANCES

GUIDE SPECIFICATIONS

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for entrance system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however, that the Limited Warranty shall begin in no event later than six months from date of shipment by Coral. In addition, door corner construction without welded corners shall be supported with a limited lifetime warranty for the life of the door under normal use.

1.06 Quality Assurance

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle entrance doors and components to avoid damage. Protect entrance doors against damage from elements, construction activities, and other hazards before, during and after entrance installation.

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAUSES AMBIGUITY IN THE SPECIFICATIONS BECAUSE OF THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY, AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

PART 2 – PRODUCTS

2.01 Manufacturers (Acceptable Manufacturers/Products)

Acceptable Manufacturers:

- 1. Address: Coral Architectural Products
 3010 Rice Mine Road
 Tuscaloosa, AL 35406
 - a. Telephone: 205-345-1013
 - b. Fax: 800-443-6261
- 2. Proprietary Product(s)/System(s): Coral Aluminum Hurricane Resistant Entrances
 - a. Series: (281) or (381) Swing Doors (Select)
 - b. Finish/Color: (See 2.06 Finishes)

281 and 381 HURRICANE ENTRANCES

GUIDE SPECIFICATIONS

- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING (10) DAYS PRIOR TO CLOSE.

1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Aluminum Hurricane Impact Resistant Entrances
 - b. Series: (281) or (381) Swing Doors (Select)
 - c. Product Attributes:
 - 1.) Entrance Member Profile: 2-1/8" vertical stile, 2-1/4" top rail, 7-1/2" bottom rail (Series 281)
 3-3/4" vertical stile, 4" top rail, 7-1/2" bottom rail (Series 381)
 2. Alternate # ___ Manufacturer/Product:
 - a. Product:
 - b. Series:
 - c. Product Attributes:
 - 1.) Entrance Member Profile:
 3. Alternate # ___ Manufacturer/Product:
 - a. Product:
 - b. Series:
 - c. Product Attributes:
 - 1.) Entrance Member Profile:
- C. Substitutions:
1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid entrance installation and construction delays.
 2. Substitution Documentation:
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for entrance system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
 - d. Product Sample and Finish: Submit product sample, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Entrances and Components):
1. Material Standard: ASTM B 221; 6063-T6 alloy and temper
 2. The door stile and rail face dimension of the Series 281 or 381 Entrance doors shall be as follows: (Select)

Door	Vertical Stile	Top Rail	Bottom Rail	ADA Bottom Rail	Traffic Application
281	2-1/8"	2-1/4"	7-1/2"	9-1/2"(optional)	Normal to heavy
381	3-3/4"	4"	7-1/2"	9-1/2"(optional)	Heavy to abusive

3. Major portions of the door members to be 0.125" nominal in thickness and glazing molding to be 0.055" thick.
4. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.

281 and 381 HURRICANE ENTRANCES

GUIDE SPECIFICATIONS

- B. Glazing gaskets shall be an EPDM elastomeric extrusion on the exterior. The interior shall have a EPDM spacer gasket followed by a single row of Dow Corning 995 structural silicone providing for metal to glass adhesion.
- C. Provide adjustable glass jack to help center the glass in the door opening.

2.03 Accessories

- A. Fasteners: Only those fasteners shown within Coral Architectural Products Installation Instructions for FL500 framing and entrances may be used for assembly.
- B. Perimeter Anchors: Structural attachment of Series FL500 framing members to the various substrates must be in compliance with the anchor charts contained within Coral's Installation Instructions and be supported by structural calculations bearing a Florida P.E. seal.
 - 1. Weather-stripping:

EDITOR NOTE: CORAL RECOMMENDS THAT YOUR FINISH HARDWARE REQUIREMENTS BE INCLUDED IN THIS SECTION. SERIES FL500 HURRICANE FRAMING SYSTEMS WITH SERIES 281 AND 381 ENTRANCES WERE TESTED AND CERTIFIED AS AN INTEGRAL UNIT. THE COMBINATIONS SHOWN IN THE OPTIONS AND LIMITATION CHARTS FOR THESE TWO SYSTEMS ARE BASED ON ACTUAL PERFORMANCE TESTING AND CANNOT BE ALTERED WITHOUT SACRIFICING THE INTEGRITY OF THE SYSTEM.

- a. Meeting stiles on pairs of doors shall be equipped with a spring-loaded adjustable astragal with a double row of wool pile weather-stripping. Gaps in weathering at lock location of meeting stile on door pair shall not be allowed.
- b. The door weathering at the immediate entrance frame shall have EPDM bulb gasket.
- 2. Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners. (Necessary to meet specified performance tests.)
- 3. Threshold: Extruded aluminum, one piece per door opening, with ribbed surfaces.
- 4. Butt Hinge: [Minimum of 1-1/2 Pair 4-1/2" x 4" hinges per door leaf].
- 5. Push/Pull: [] style.
- 6. Panic Device: [See Options and Limitations for Hurricane Impact Applications].
- 7. Surface Closer: [] or Concealed Overhead: [] for Offset Hung entrance.
- 8. Security Lock/Dead Lock: Active Leaf []; Inactive Leaf [See Options and Limitations for Hurricane Impact Applications].
- 9. Latch Handle: [See Options and Limitations for Hurricane Impact Applications].
- 10. Cylinder(s)/Thumbturn: [].
- 11. Electric Strike/Strike Keeper: [].

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Options and Limitation Charts for Impact Resistant Glass for Series 281 and 381 entrances.

2.05 Fabrication

- A. Entrance System Fabrication:
 - 1. Door corner construction shall consist of an interlocking corner block mechanical fastened to door stile with 3/8" diameter bolts at all four corners threaded into steel zinc plated square nut positioned inside the stile. Top and bottom rails are mechanical attached to corner blocks at all four corners with #10 x 1" steel fasteners. Exterior glazing stops shall be snap-in type with EPDM glazing gaskets and interior glass stops shall be mechanically locked into position with aluminum clips.
 - 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 - 3. Prepare components with internal reinforcement for door hardware.
 - 4. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL'S STANDARD COLORS. POWDER COATINGS ARE AN EPA RECOMMENDED FINISHING METHOD FOR ARCHITECTURAL ALUMINUM AND FURTHER CONTRIBUTES TOWARDS THE "GREEN BUILDING INITIATIVE" OF THE U.S. GOVERNMENT. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS. OTHER POLYESTER POWDER COATINGS CONFORMING TO AAMA 2604 ARE AVAILABLE. CONSULT WITH YOUR CORAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

281 and 381 HURRICANE ENTRANCES

GUIDE SPECIFICATIONS

A. Shop Finishing:

1. Color Anodizing Conforming to AA-M12C22A34, AAMA 608.1, Color Anodic Coating (Color: # 20 Dark Bronze). (Standard)
2. Clear Anodizing Coating Conforming to AA-M12C22A31, AAMA 607 1, Clear Anodic Coating (Clear #10) (Standard)
3. Interpon D2000™, AAMA 2604, Thermosetting Fluorocarbon Powder Coating (Color: _____).
4. Interpon D3000™ (70%) Fluoropolymer, AAMA 2605, Thermosetting Fluorocarbon Powder Coating (Color: _____).
5. Other: Manufacturer _____ Type _____ (Color _____).

2.07 Source Quality Control

A. Source Quality: Provide aluminum entrances specified herein from a single source.

1. Building Enclosure System: When aluminum entrances are part of a building enclosure system, including storefront framing, window wall systems, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.

B. Fabrication Tolerances: Fabricate aluminum entrances in accordance with entrance manufacturer's prescribed tolerances.

PART 3 – EXECUTION

3.01 Examination

A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive entrance system and sill is level in accordance with manufacturer's acceptable tolerances.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTRUCTIONS.

3.02 Installation

A. General: Install entrance system in accordance with manufacturer's instructions for hurricane impact storefront and entrance doors. Reference the Options and Limitation Charts for each Coral Architectural Products system.

1. Attachment to structure must be in compliance with Coral Architectural Products Installation Instructions for Series FL500 Hurricane Impact Resistant system and remain within the scope shown on the **Options and Limitation Charts** for Series FL500 Framing and Series 281 or Series 381 entrances.
2. Provide alignment attachments and shims to permanently fasten system to building structure.
3. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.
4. Install thresholds and secure to structure with fasteners as shown in **Coral's Structural Anchor Charts**.
5. Adjusting: Adjust operating hardware for smooth operation.

B. Related Products Installation Requirements:

1. Sealants: Perimeter: Dow Corning 795 structural silicone: Glass to metal adhesion: Dow Corning 995 Structural Silicone
2. Framing Joint Treatment: Schnee-Moorehead SM5601 TackyTape® Sealant. Reference CORAL Instructions
3. Glass: Refer to Coral Architectural Products **Options and Limitation Charts** for Series FL500 Hurricane Impact Storefront framing and Series 281 or Series 381 Impact entrances.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual and GANA Laminated Glazing Reference.



281 and 381 HURRICANE ENTRANCES

GUIDE SPECIFICATIONS

3.03 Cleaning and Protection

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Installed products must be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- B. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum entrances from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants. Remove and replace damaged aluminum entrances at no extra cost.

DISCLAIMER STATEMENT

This guide specification is to only be used by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm, and the particular requirements of a specific construction project.

END OF SECTION 08410

Interpon D2000™ is a trademark of Akzo Nobel Coatings, Inc.

Interpon D3000™ is a trademark of Akzo Nobel Coatings, Inc.

Dade County Applications

OPTIONS AND LIMITATIONS

Series 281 Narrow Stile Doors for Large Missile Impact (NOA Pending)

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Single	Double	D.L.O. W x H	Sq. Ft.	
+65/-65	36" x 84"	72" x 84"	29 9/16" x 71 7/16 "	14.7	B & U

Locking and Closer Options	
Active Leaf	DH072 3-Point Lock with DH078 Cylinder & DH079 Thumbturn
Inactive Leaf	2 ea. DH176 Steel Tip Flush Bolts
Surface	Heavy Duty ANSI Grade 1 Closer
C.O.C.	Jackson ANSI Grade 1 or Equal

Hinging Options		
Type	Description	Quantity
Butts	DH109 4 1/2" x 4"	1 1/2 Pair

Panic Exit Devices Options		
Manufacturer	Series	Type
Jackson Corporation	2086 HR ANSI Grade 1	Concealed Vertical Rod

Glass Composition	Manufacturer	Glass Type
9/16" Laminated Glass consisting of Two 1/4" HS Glass Lites with .090 Solutia Saflex PVB Interlayer NOA # 03-0105.02	Solutia	B
9/16" Laminated Glass consisting of Two 1/4" HS Glass Lites with .120 Uvekol Interlayer NOA # 03-1117.05	Coral Industries, Inc.	U



Dade County Applications

OPTIONS AND LIMITATIONS

Series 381 Medium Stile Doors for Large Missile Impact (NOA Pending)

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Single	Double	D.L.O. W x H	Sq. Ft.	
+70/-80	42" x 96"	84" x 96"	32 5/16" x 81 11/16 "	18.3	B & U

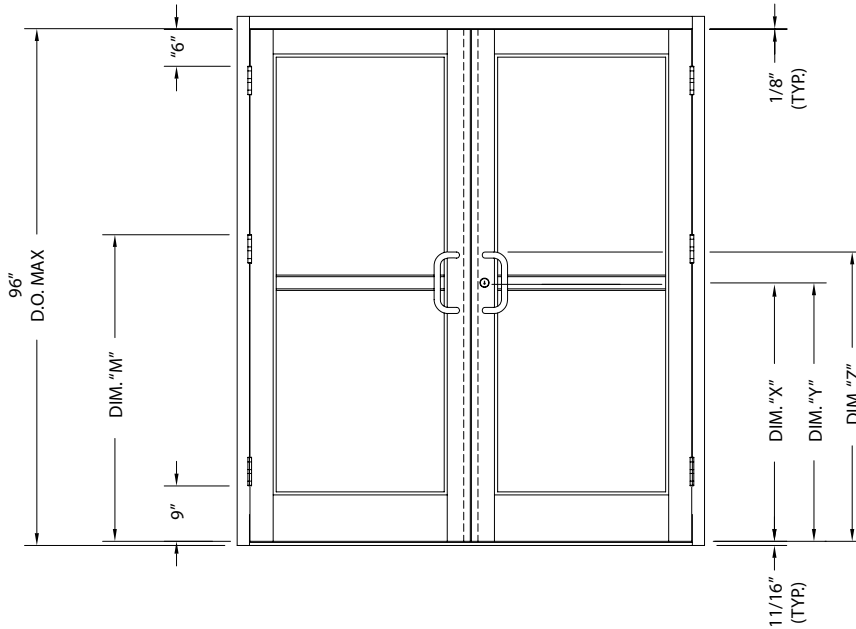
Locking and Closer Options	
Active Leaf	DH072 3-Point Lock with DH078 Cylinder & DH079 Thumbturn
Inactive Leaf	2 ea. DH176 Steel Tip Flush Bolts
Surface	Heavy Duty ANSI Grade 1 Closer
C.O.C.	Jackson ANSI Grade 1 or Equal

Hinging Options		
Type	Description	Quantity
Butts	DH109 4 1/2" x 4"	1 1/2 Pair

Panic Exit Devices Options		
Manufacturer	Series	Type
Jackson Corporation	2086 HR ANSI Grade 1	Concealed Vertical Rod

Glass Composition	Manufacturer	Glass Type
9/16" Laminated Glass consisting of Two 1/4" HS Glass Lites with .090 Solutia Saflex PVB Interlayer NOA # 03-0105.02	Solutia	B
9/16" Laminated Glass consisting of Two 1/4" HS Glass Lites with .120 Uvekol Interlayer NOA # 03-1117.05	Coral Industries, Inc.	U

Series 281 and 381 Hurricane Impact-Resistant Doors



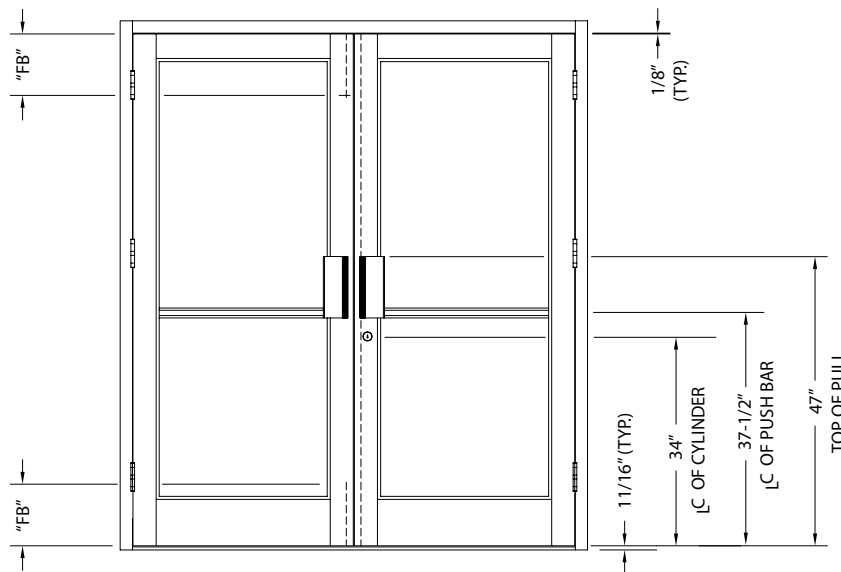
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HUNG ONLY

INTERMEDIATE HINGE	
D.O. HEIGHT	DIM. "M"
	BUTT HUNG
84"	45-11/32"
96"	51-11/32"

Note: All doors require an intermediate hinge.

HARDWARE LOCATIONS FOR PANIC DOORS

MANUFACTURER	PANIC DEVICE	DIM "X" ☉ OF CYLINDER	DIM "Y" ☉ OF PANIC	DIM "Z" TOP OF PULL
JACKSON	2086 C.V.R.	37 - 7/8"	38 - 5/32"	42 - 7/8"



STANDARD HARDWARE LOCATIONS, LOCK & FLUSH BOLT

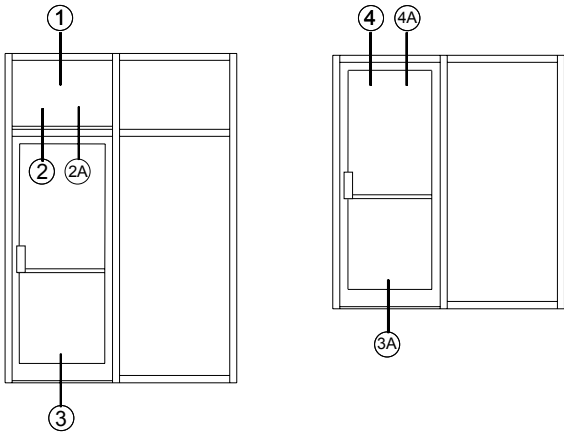
PART NO.	DESCRIPTION	DIM. "FB"
DH176-96	TOP FLUSH BOLT (FOR 96" DOOR)	22"
DH176	TOP FLUSH BOLT (FOR 84" DOOR)	10"
DH176	BOTTOM FLUSH BOLT (FOR 84" / 96" DOOR)	10"



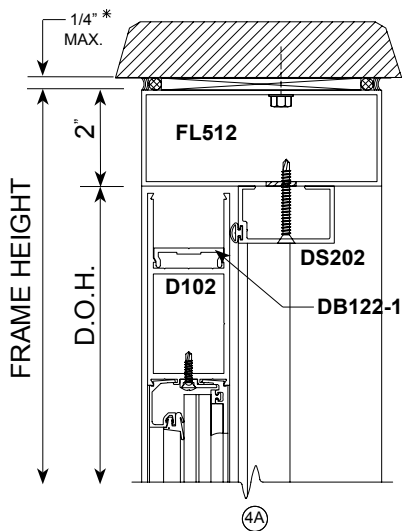
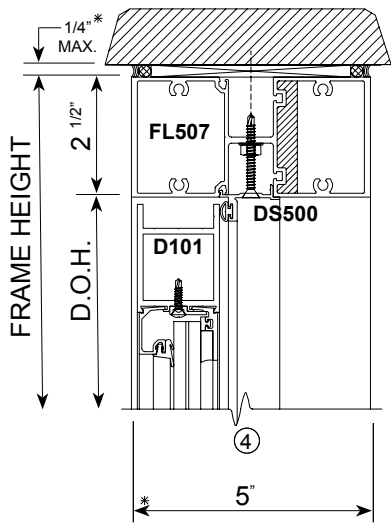
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Series 281 Entrance Doors

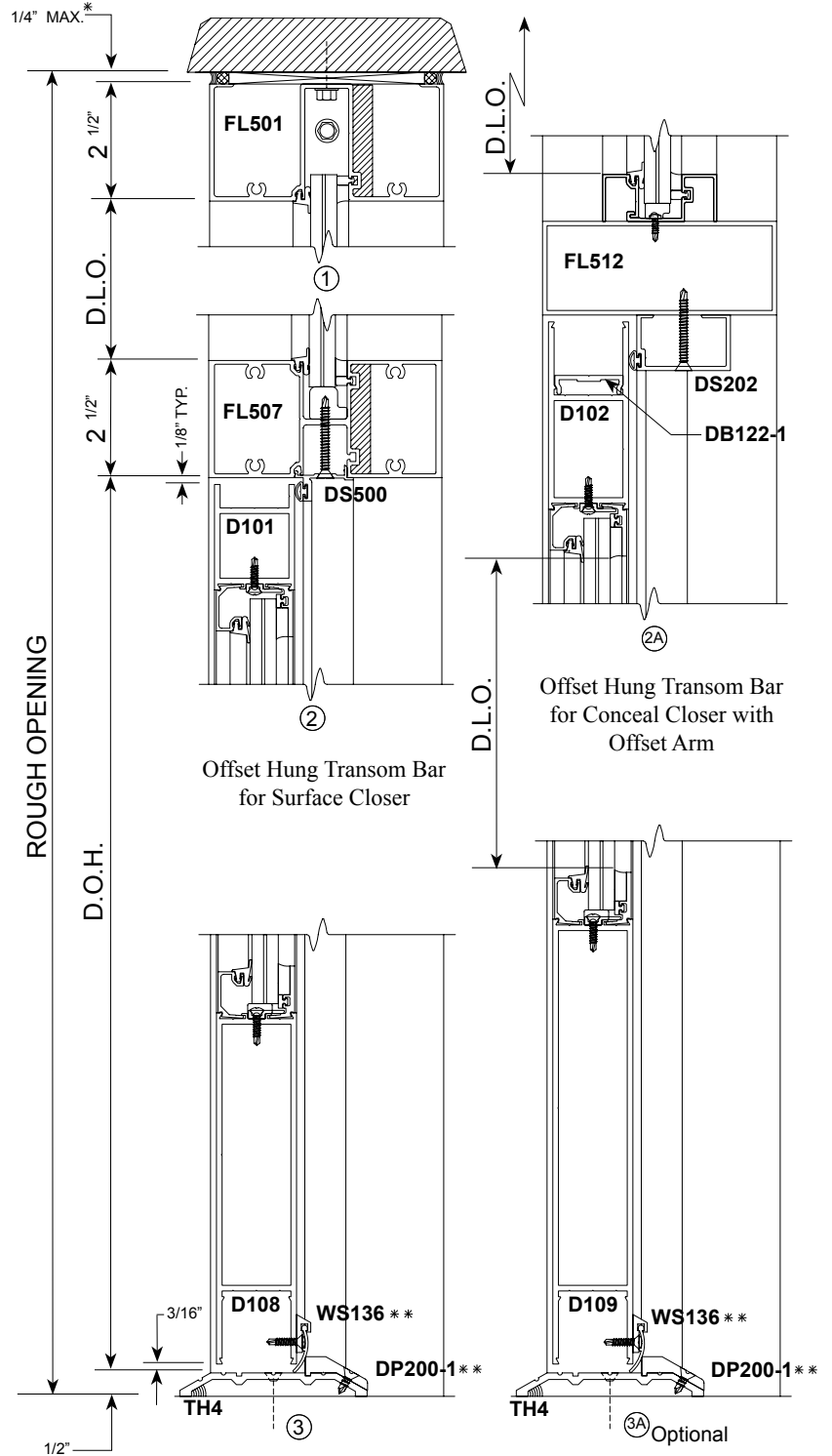
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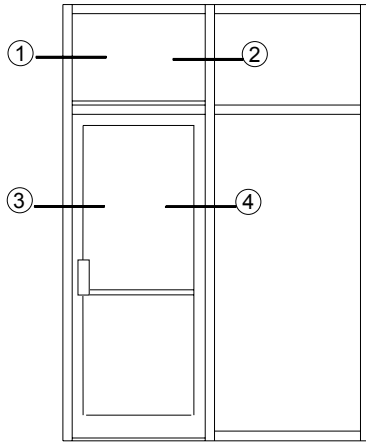


TYPICAL ELEVATION



** Required at all door pairs to meet specified performance test. (Typ.)

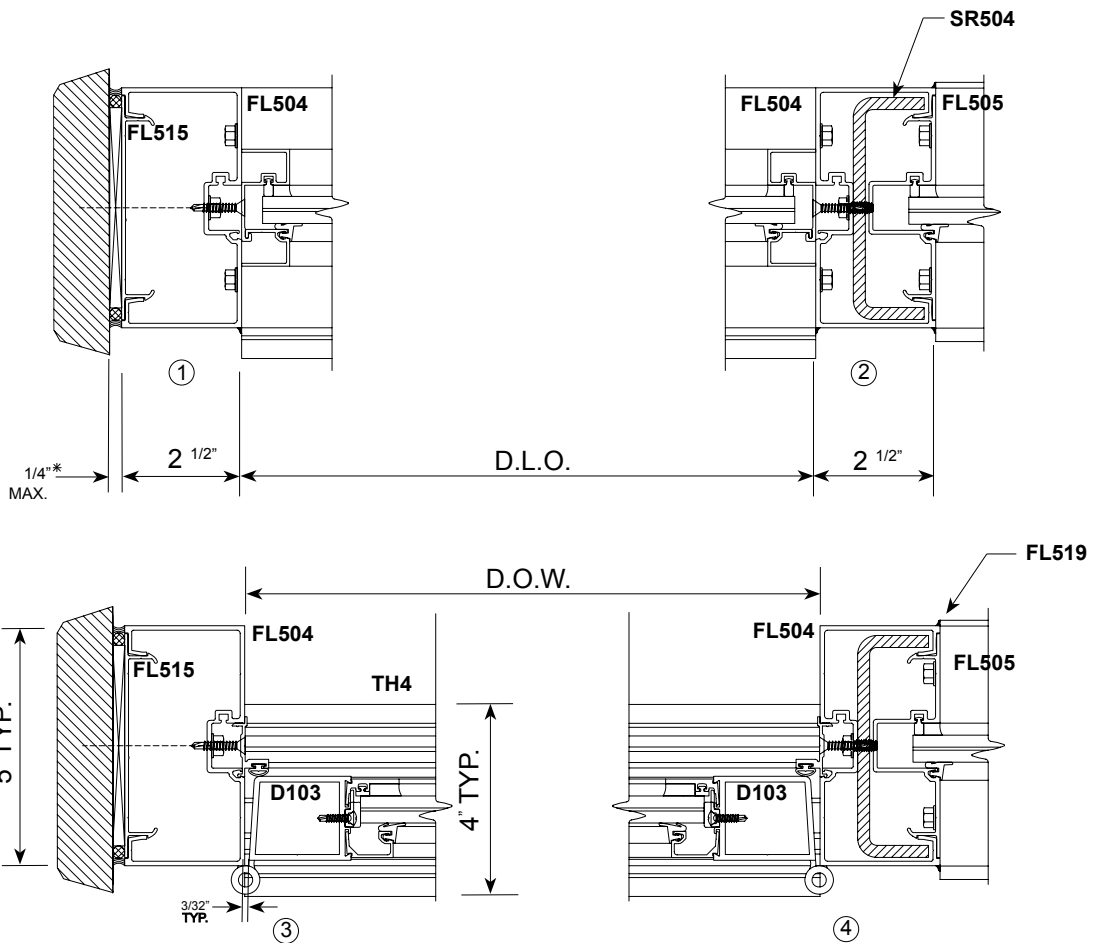




TYPICAL ELEVATION

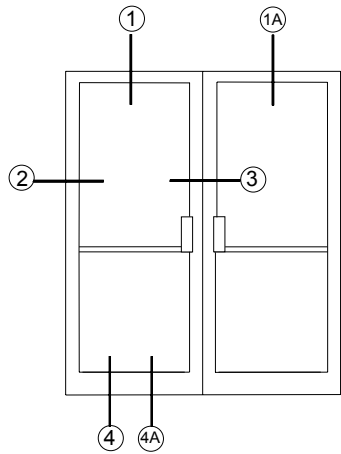
Series 281 Entrance Doors

OFFSET HUNG





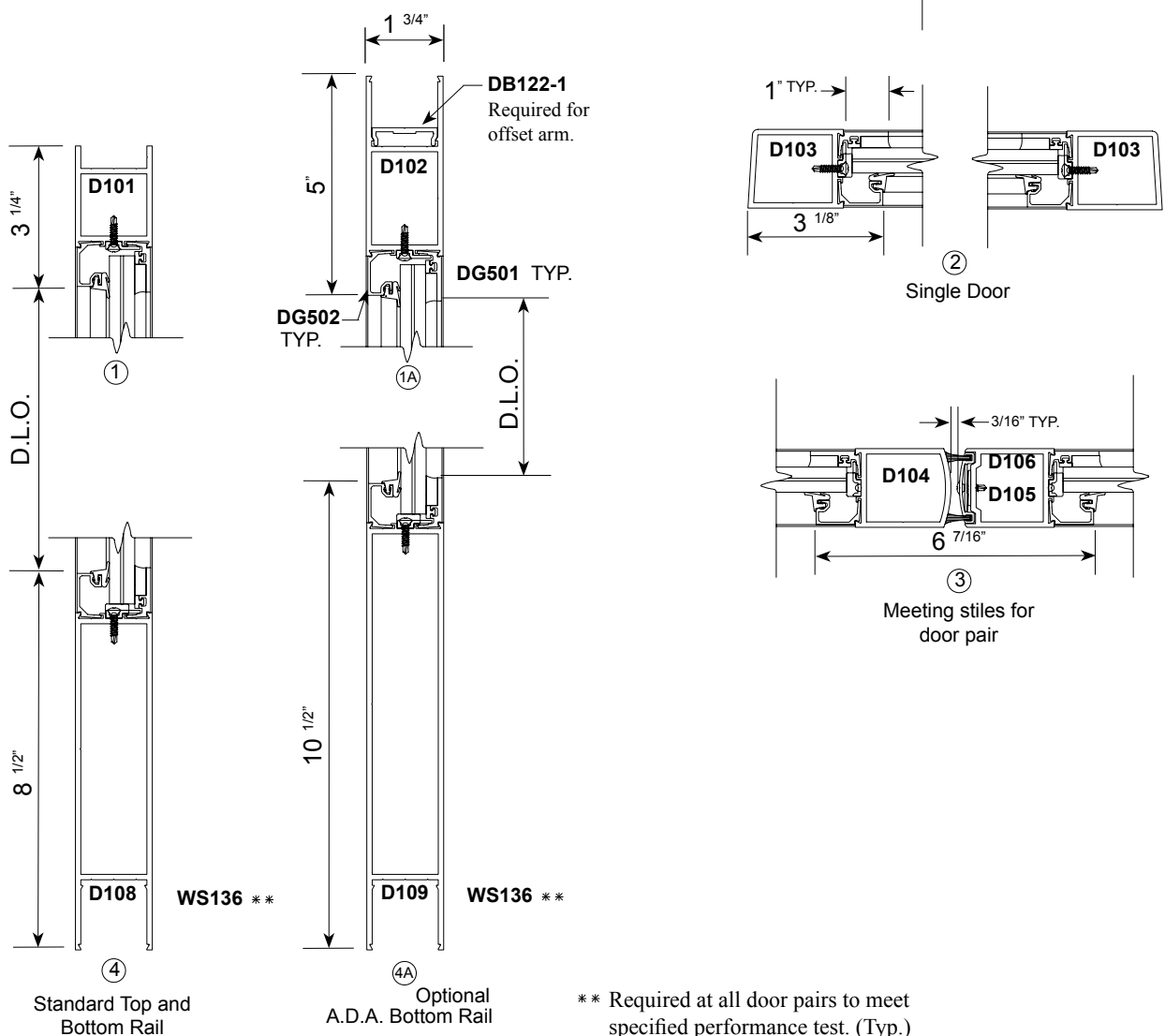
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TYPICAL ELEVATION

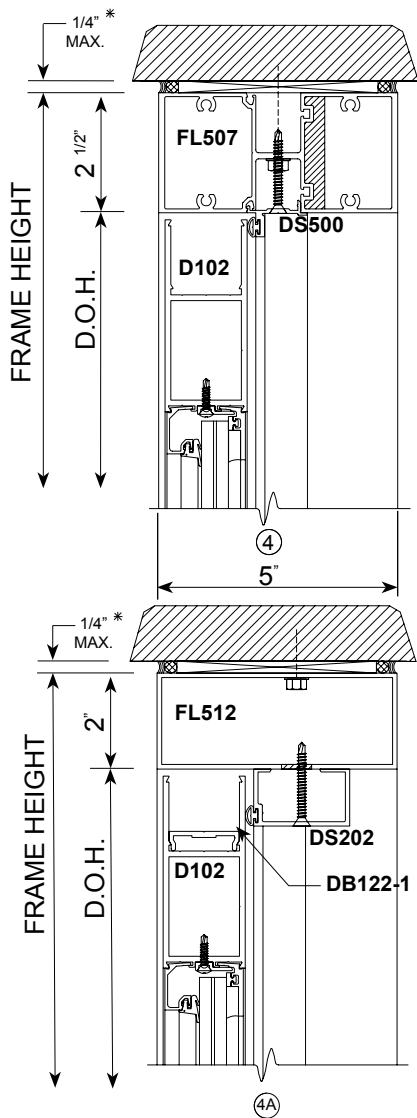
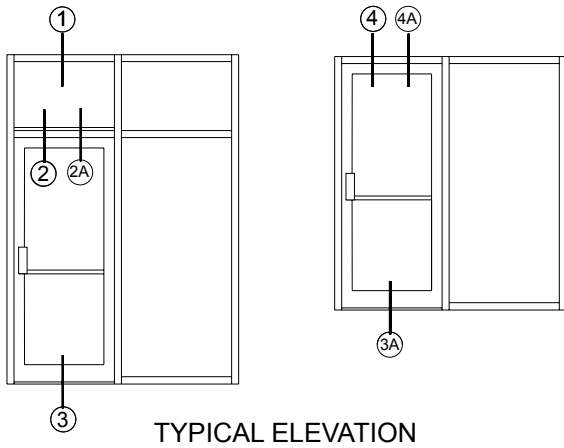
Series 281 Entrance Doors

OFFSET HUNG

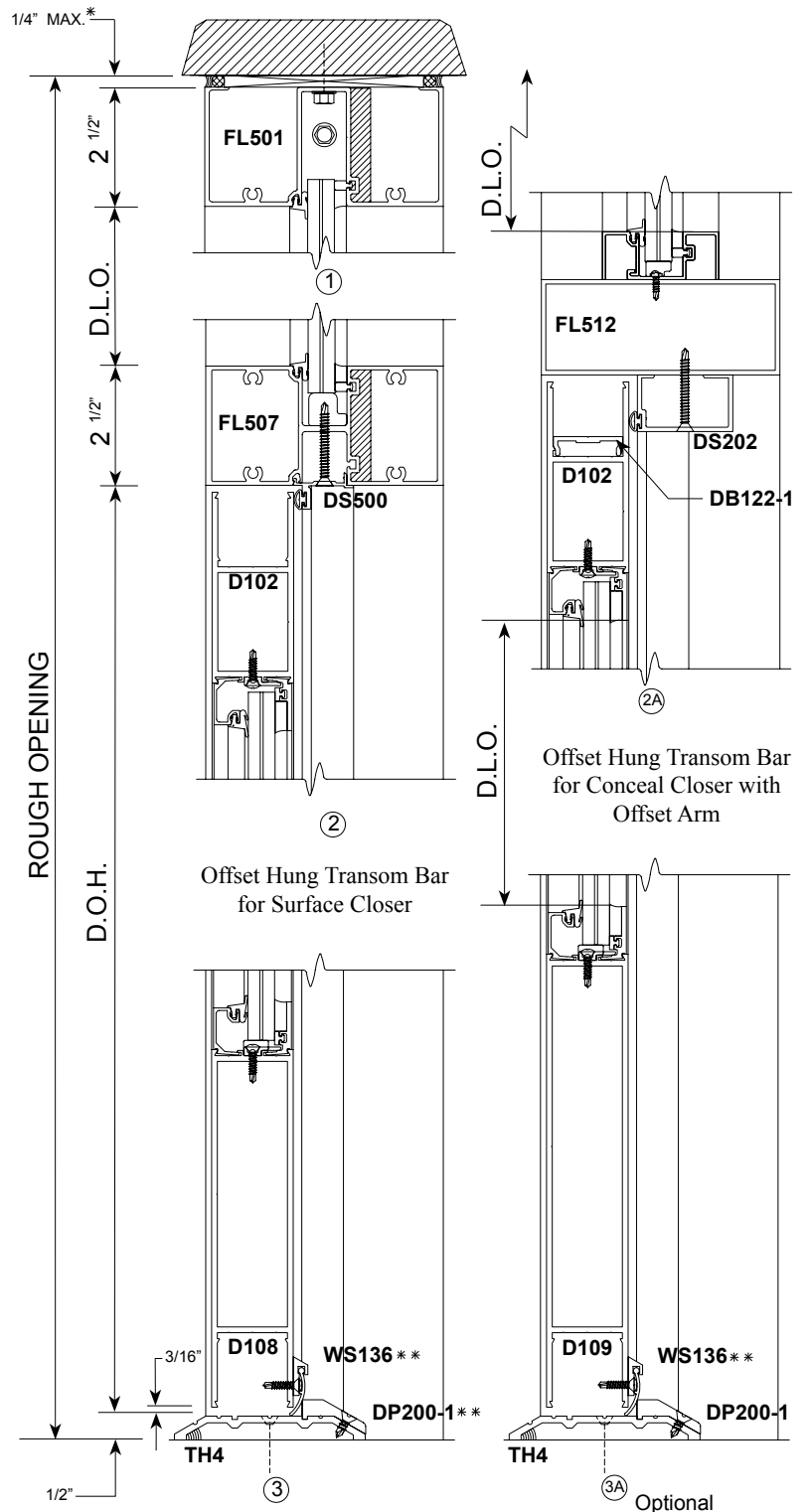


Series 381 Entrance Doors

OFFSET HUNG



** Required at all door pairs to meet specified performance test. (Typ.)

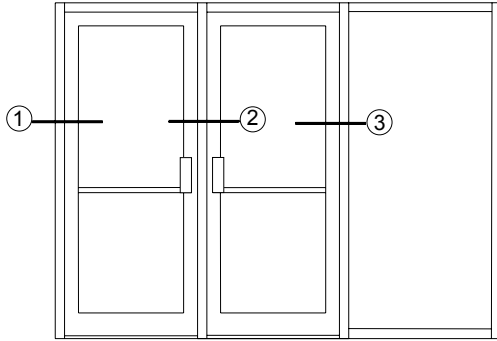




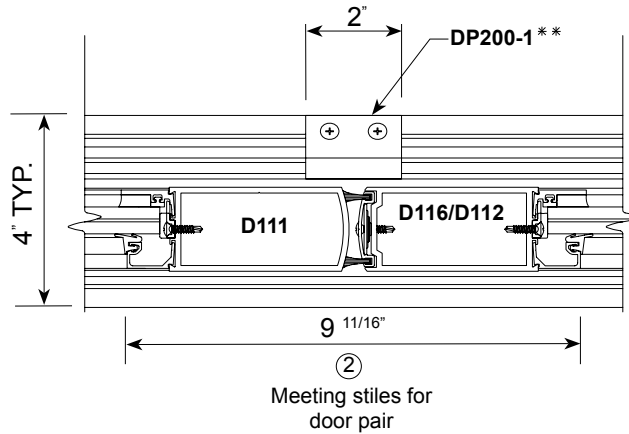
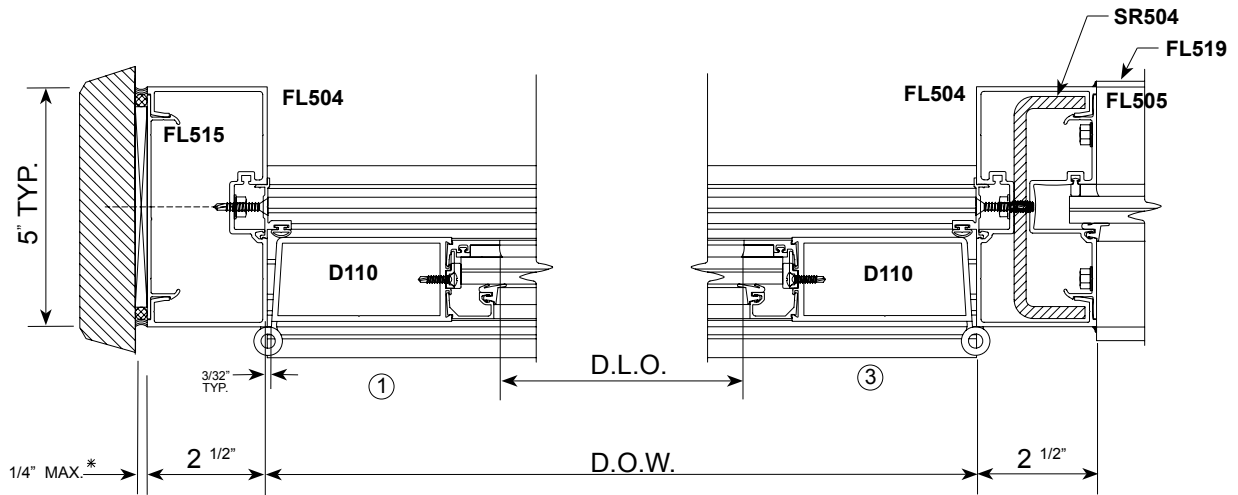
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Series 381 Entrance Doors

OFFSET HUNG



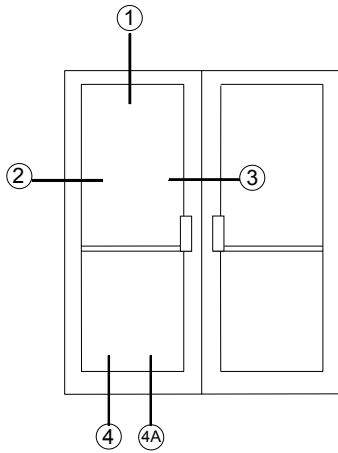
TYPICAL ELEVATION



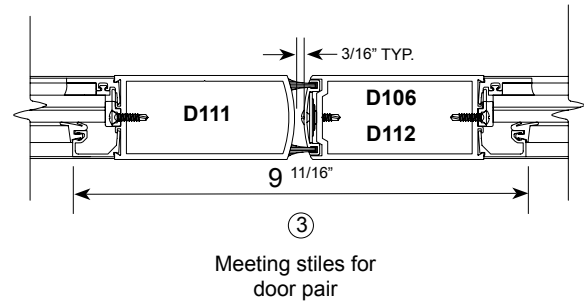
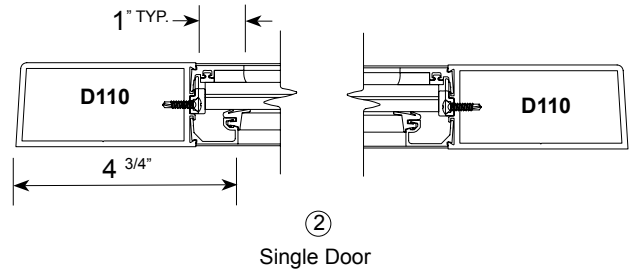
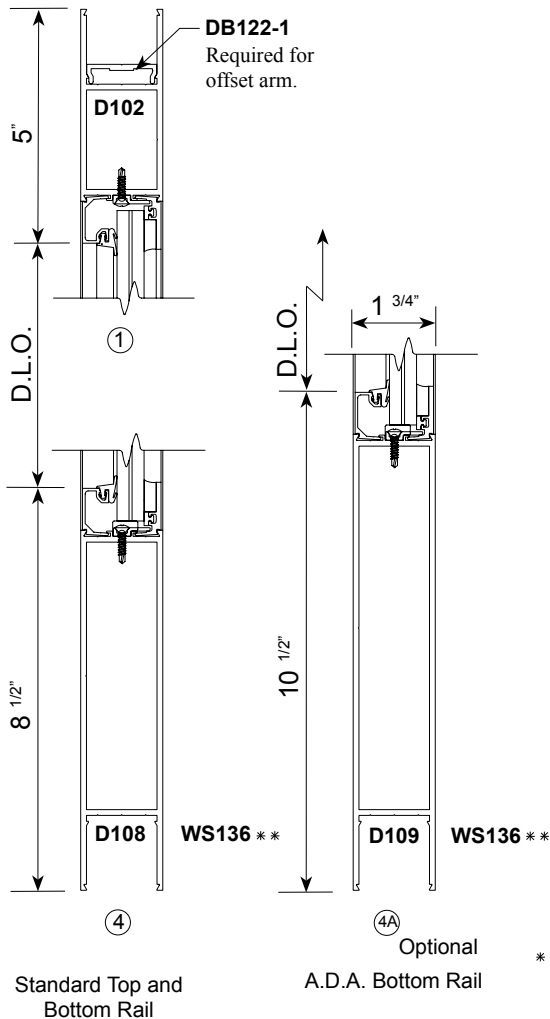
** Required at all door pairs to meet specified performance test. (Typ.)

Series 381 Entrance Doors

OFFSET HUNG



TYPICAL ELEVATION



** Required at all door pairs to meet specified performance test. (Typ.)

