

Series D4540 & D4640 Product Catalogue

Aluminum Compression Seal Sliding Balcony Door
Available in Double & Triple Glazed

Quality, Comfort & Peace of Mind



Foreword

This Product Catalogue provides design guidelines, manufacturing capabilities and specifications on the Series D4540 (4 ½" deep) & D4640 (6" deep) Aluminum Compression Seal Sliding Door. The D4540 & D4640 are available in double and triple glazing.

This document is intended to provide information on our standard products. Non-standard designs and applications can be reviewed to determine the feasibility on a project-specific basis.

Please email any project specific enquiries to technical@starlinewindows.com or architectural@starlinewindows.com.

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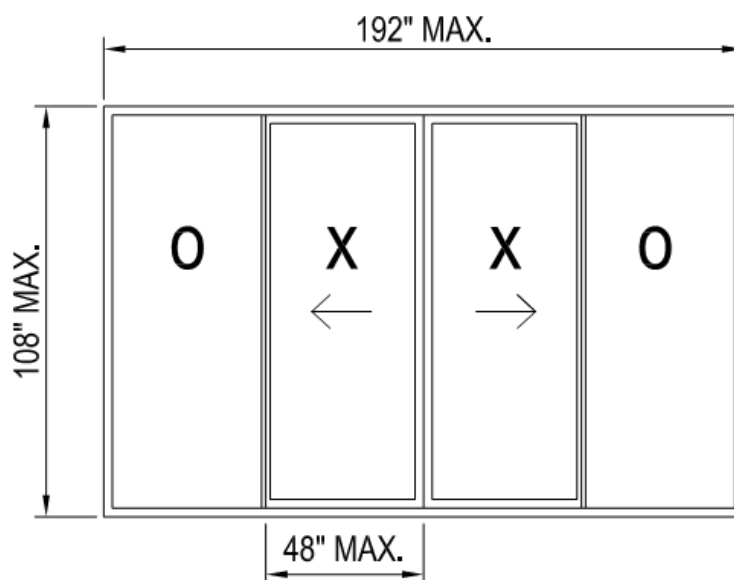
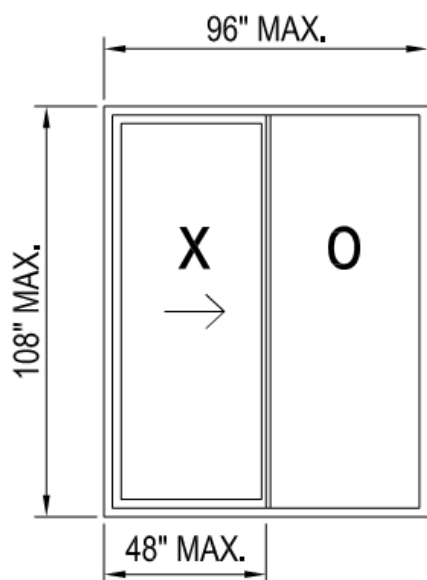
Compression Seal Sliding Door Limitations

The D4540 and D4640 Compression Seal Sliding Door are exterior sliding door systems.

The D4540 can be integrated (coupled) to any of our 4 1/2" deep window wall series.

The D4640 can be integrated (coupled) to any of our 6" deep window wall series.

SLIDER CONFIGURATION	XO, OX	OXXO	
FRAME DEPTH	4.5"		
TRANSOM AVAILABLE	Yes	No	
HEEL DIMENSION HEIGHT	Min. = 60" Max. = 108" + Transom Height		
SLIDER WIDTH	Min. = 30" Max. = 48"		
HEEL DIMENSION WIDTH	Min. = 60" Max. = 96"	Min. = 120" up to 144"	Max. 192" >144" - 192"
DEFLECTION ALLOWANCE	+/- 3/4"	+/- 1/2"	1/8" Max.



Note:

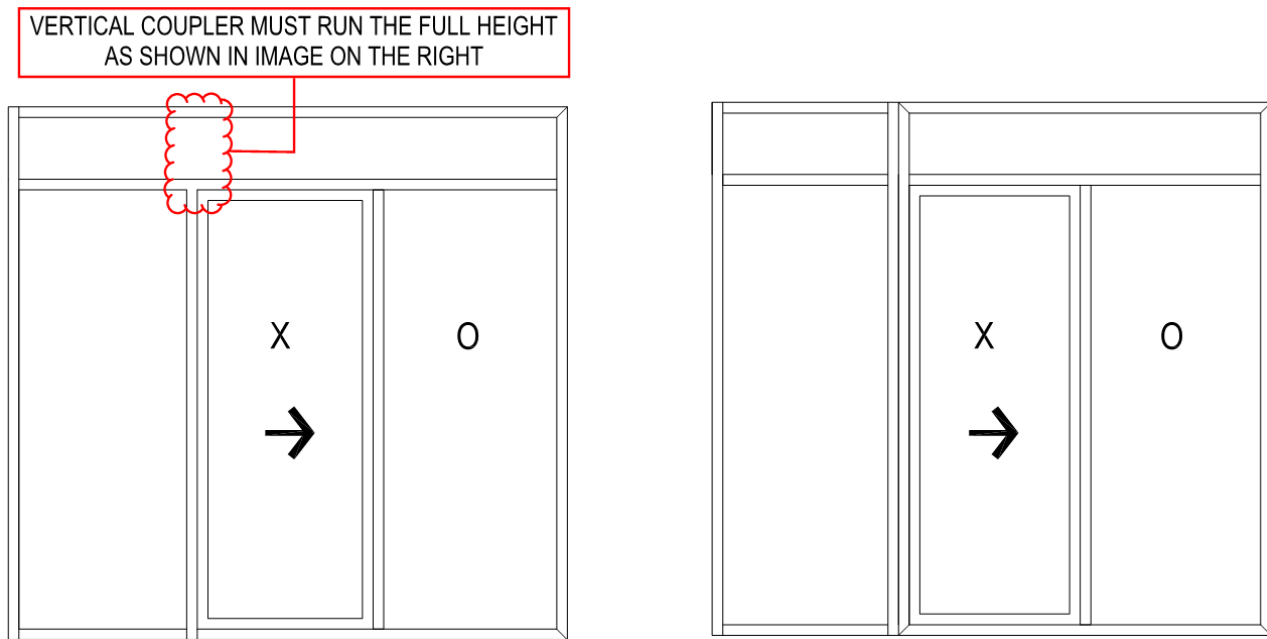
- Transoms are available in an OX or OX configuration only. No transoms are available for the OXXO configuration. Transom windows are available with vision glazing and spandrel options.
- Horizontal coupling is not available.

Radius Door and Transom

Starline Windows does not offer radius sliding doors or radius transoms.

Crippled Mullions

Starline cannot manufacture windows and doors with crippled mullions/couplers. All vertical mullions/couplers and horizontal mullions within a window or door module must run full height and width of the window or door module.



FIXED WINDOW COUPLED TO A SLIDING DOOR

Hardware Options

The Series D4540 and D4640 Compression Seal Sliding Balcony Doors have a sliding door with an interior handle made from die-cast aluminum. The interior handle is a multi-point locking handle that positively engages with an adjustable keeper at the frame jamb. The interior handle is available in white and black.

The exterior handle is a raised pull tab made from made of high impact polycarbonate¹. The exterior handle is available in black or white.

The sliding panel slides on stainless steel ball bearing wheels.

Foot locks are not available.

Insect Screens are not available through Starline Windows. A retractable screen (such as Mirage or Phantom) can be installed to the structure after the door installation and Building Envelope is complete. This screen cannot be purchased from Starline however it can be purchased from a third-party supplier.

¹ If a reinforced sash is used, there is no exterior handle as the frame profile for a reinforced sash provides a place to grip to allow you to open and close the door. See the next page for an image.

Standard Interior Handle

The D4540 and D4640 handles are a multi-point locking interior handle that positively engages with an adjustable keeper at the frame jamb.

- Die-cast aluminum handle.
- Available in black and white.



High Profile Exterior Handle¹

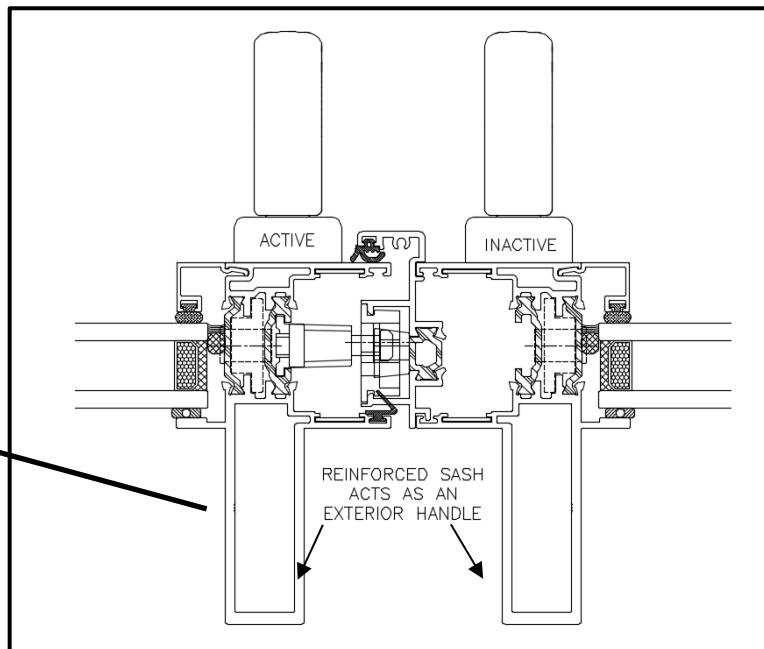
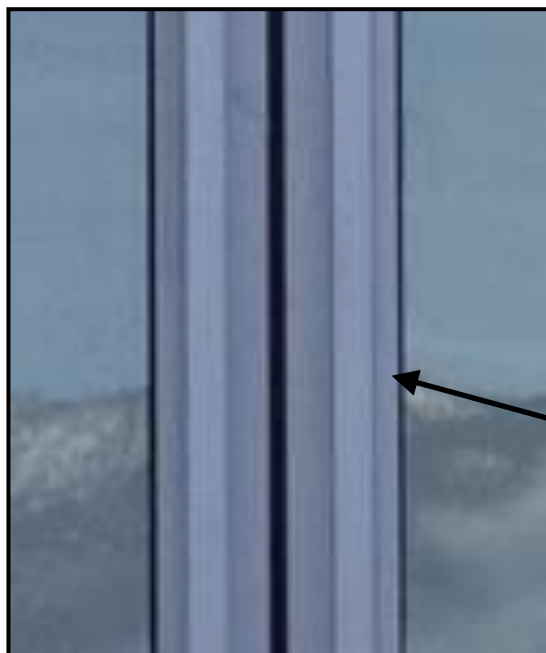
The high-profile exterior handle is raised 1.030”.

Molded in high-impact polycarbonate.

Available in black and white.



Exterior Reinforced Sash That Acts as an Exterior Handle – OXXO Configuration Only



Optional Exterior Handle

Made from die-cast aluminum.

Available in black and white.

HARWARE TYPE	COLOUR
CS4	BLK
	WHT



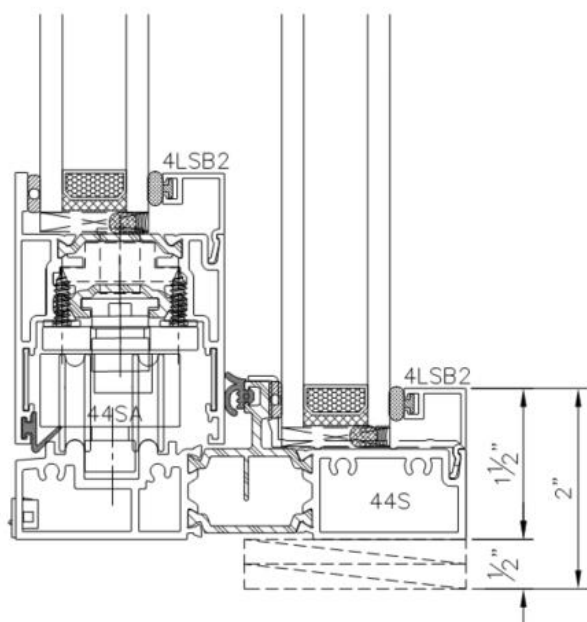
Threshold Height

When detailing curb heights on a project; be mindful that the overall curb height does not exceed the maximum height / allowable step by the building code.

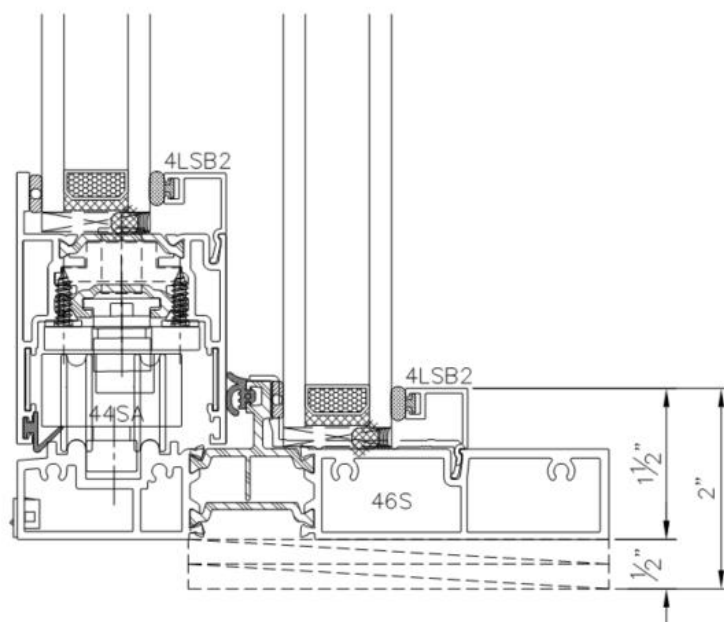
For example, as per the BC Building code, the maximum step allowed is 8" (200mm). If a 6" (150mm) curb was detailed, the maximum step allowed by code would be exceeded once you include the door threshold plus the 1/2" shim at the sill to allow for water drainage.

The D4540 & D4640 provides a water penetration resistance field test water rating up to 500Pa (10.4 psf).

Note: The maximum step height allowed will depend on the project-specific location.



D4540 SERIES - 4 1/2" FRAME DEPTH



D4640 SERIES - 6" FRAME DEPTH

Finishes (Powder Coating)

Starline uses a thermoset coating specifically designed for architectural systems. This coating complies with the American Architectural Manufacturers Association (AAMA) 2603 specification standard which covers pigmented organic coatings on aluminum extrusions.

There are options to upgrade the powder to meet the AAMA 2604 or AAMA 2605 specification on the exterior which is noted in the **Options** section below.

Options

There is an option to upgrade the powder coating to meet the following AAMA standards:

- A thermoset super durable coating which complies with the AAMA 2604 specification standards. The AAMA 2604 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 specification standard.
- A thermoset fluorocarbon coating which is a superior coating that complies with the AAMA 2605 specification standard. The AAMA 2605 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 and AAMA 2604 specification standards.

Note: AAMA 2604 or AAMA 2605 specification standard on exterior of frames may be required in some building codes, bylaws, jurisdictions, etc.

Custom colours may be available on a project-specific basis.

Dual frame colour is available.

Items listed in this **Options** section are available at an additional cost.

Colour Options

The following **standard colours** are available in AAMA 2603, AAMA 2604 and AAMA 2605 specification standards:

White	Black	Brown	Silver	Charcoal Grey
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Custom colours are also available. Virtually any colour can be matched or very closely matched. The scope of work and overall custom colour quantity will be reviewed by Starline on a project specific basis to determine the feasibility of the custom colour request.

Note: Custom colours are available for an additional cost premium. An approximate 12-week lead time is required to procure custom colour requests.

Refer to the **Aluminum Finishes (Powder Coating)** document in the Miscellaneous section of the catalogue for images of the standard colours available, a comparison of some attributes which are tested for in the AAMA 2603, AAMA 2604 and AAMA 2605 specification standards, information on colour retention, and details to consider when selecting colours.

Insulation

The Series D4540 and D4640 insulation is as follows:

- Rockwool Fabrock 30 and / or Rockwool Fabrock LT mineral wool fibre insulation, or equivalent, with an overall thickness of 3" for spandrel glass, aluminum panel and galvanized panel application.
- The R-value/inch @ 75°F is 4.1 hr.ft².F/Btu.

The insulation will be installed as follows:

- The deflection header clip, seismic jambs and couplers will be insulated onsite.
- The corner posts (except seismic pocket), jambs, head and transoms will be insulated in the factory.
- The sill cannot be insulated due to wicking concerns.

Glazing

Starline Windows standard insulated glass unit (IGU) will be comprised of the following glass make-up:

- Double glazed, double sealed IGU with an overall nominal thickness of 1 1/16" (27 mm).
- Standard high performance soft coat (sputtered) Low E which is applied to surface #2.
- Black warm edge spacer with argon fill.
- Minimum glass thickness is 4mm and is tempered.

Option

There is an option to upgrade to a triple glazed IGU, which will provide enhanced energy performance. The triple glazed IGU will be comprised of the following glass make-up:

- Triple glazing, double seal insulated glass unit with an overall thickness of 1 5/8" (41 mm).
- Standard high performance soft coat (sputtered) Low E which is applied to surface #2.
- Black warm edge spacer with air fill.
- Minimum glass thickness is 4mm and is tempered.

Additional options are available for an additional cost.

Maximum Area of IGU

GLASS TYPE	SINGLE LITE	DOUBLE GLAZED			TRIPLE GLAZED		
	6mm	4mm	5mm	6mm & THICKER	4mm	5mm	6mm & THICKER
Annealed	–	30 sq.ft.	40 sq.ft.	40 sq.ft.	30 sq.ft.	35 sq.ft.	35 sq.ft.
Tempered	–	30 sq.ft.	40 sq.ft.	40 sq.ft.	30 sq.ft.	35 sq.ft.	35 sq.ft.
Laminated ¹	–	–	–	28 sq.ft. ¹	–	–	28 sq.ft. ¹
Spandrel ²	40 sq.ft.	–	–	–	–	–	–
Spandrel IGU ²	–	30 sq.ft.	40 sq.ft.	40 sq.ft.	–	–	–

¹ Note:

- 6mm laminated glass can be to a max area of 28 sq.ft.
- 6mm tempered laminated glass can be to a max area of 19.5 sq.ft.; max united inches <105".
- 8mm laminated can be to a max area of 35 sq.ft.
- 8mm tempered laminated glass can be to a max area of 30 sq.ft.; max united inches <150".
- 10mm laminated can be to a max area of 40 sq.ft.
- 10mm tempered laminated glass can be to a max area of 41 sq.ft.; max united inches <175".

United inches = One width + one height.

² The Spandrel glass lite is always 6mm thick.

Aspect Ratio of Glass

The maximum width to height ratio is 5:1 for any glass selected, less single lite spandrel glass which is 8:1.

Refer to the **Aluminum Glass & IGU Design Guidelines** document for more detailed information regarding size limitations, available configurations, defects, and definitions.

IGU Charts

Double Glazed

Based on a 27mm IGU

Overall thickness of primary seal (Butyl): 0.8mm

EXTERIOR		SPACER		INTERIOR	
mm	inch	mm	inch	mm	inch
4	5/32	19	3/4	4	5/32
5	3/16	17.6	11/16	4	5/32
6	1/4	15.6	5/8	4	5/32
6	1/4	15.6	5/8	5	3/16
6	1/4	14.6	9/16	6	1/4
6	1/4	12.6	1/2	6LAM .030	1/4 .030
6	1/4	12.6	1/2	8	5/16
6	1/4	12.6	1/2	8LAM .030	5/16 .030

Series D4540 & D4640 Aluminum Compression Seal Sliding Balcony Door Design Guidelines



Triple Glazed

Based on a 41 mm IGU

Overall thickness of primary seal (Butyl): 0.8mm

EXTERIOR		SPACER		CENTRE		SPACER		INTERIOR	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
4	5/32	14.6	9/16	4	5/32	14.6	9/16	4	5/32
5	3/16	12.6	1/2	4	5/32	12.6	1/2	4	5/32
6	1/4	12.6	1/2	4	5/32	12.6	1/2	4	5/32
6	1/4	12.6	1/2	4	5/32	11.6	7/16	6	1/4
6	1/4	12.6	1/2	4	5/32	11.6	7/16	6LAM .030	1/4 .030
6	1/4	11.6	7/16	4	5/32	11.6	7/16	8LAM .030	5/16 .030

Note:

- The IGU, glass thickness, and spacer bar size are based on nominal dimension. Actual dimensions will vary.
- There are other glass make-up combinations available other than noted in the above chart. The chart's purpose is to provide a few examples.

Acoustical Ratings

Double Glazed – Based on a 27mm IGU

GLASS EXT.	GAP	GLASS INT.	TEST NUMBER	STC	OITC
4mm Temp.	16mm AIR	4mm Temp.	TL8551A	32	25
6mm Temp.	12mm AIR	6mm Temp.	TL8554	33	28
6mm Temp.	14mm AIR	4mm Temp.	TL8555	35	29
4mm Temp.	14mm AIR	6mm Lam. (PVB 0.8mm)	TL8549	35	29
6mm Temp.	12mm AIR	6mm Lam. (PVB 0.8mm)	TL8548	35	29
6mm Temp.	14mm AIR	5mm Temp.	TL8550	36	29
6mm Temp.	10mm AIR	8mm Temp.	TL8553	36	31
6mm Temp.	11mm AIR	8mm Lam. (PVB 0.8mm)	TL8552	38	32

Triple Glazed – Based on a 41mm IGU

GLASS EXT.	GAP	GLASS CENTRE	GAP	GLASS INT.	TEST NUMBER	STC	OITC
6mm Temp.	10mm	4mm Temp.	16mm	4mm Temp.	TL8558	34	26
6mm Temp.	10mm	4mm Temp.	14mm	6mm Temp.	TL8560	36	28
6mm Temp.	10mm	4mm Temp.	14mm	6mm Lam. (PVB 0.8mm)	TL8559	37	28
6mm Temp.	10mm	4mm Temp.	12mm	8mm Lam. (PVB 0.8mm)	TL8557	39	30
6mm Temp.	8mm	4mm Temp.	12mm	10mm Lam. (PVB 0.8mm)	TL8556	39	33

Performance Test Results

Canada

PRODUCT DESIGNATOR	AIR TIGHTNESS	WATER PENETRATION RESISTANCE		UNIFORM LOAD DEFLECTION
		LAB TESTED	FIELD TEST ^{1,2}	
AW-PG65	A3	720Pa	500Pa	3120Pa

The compression sliding door has been tested to AAMA/WDMA/CSA 101 I.S.2/A440-11, AAMA/WDMA/CSA 101 I.S.2/A440-17, CSA A440SI-17, and CSA A440SI-19

USA

PRODUCT DESIGNATOR	AIR TIGHTNESS	WATER PENETRATION RESISTANCE		UNIFORM LOAD STRUCTURAL
		LAB TESTED	FIELD TEST ^{1,2}	
AW-PG65	0.02 CFM/ft ² @ 6.24 psf	15.0 psf	10.4 psf	97.7 psf

The compression sliding door has been tested to AAMA/WDMA/CSA 101 I.S.2/A440-11, AAMA/WDMA/CSA 101 I.S.2/A440-17, CSA A440SI-17, and CSA A440SI-19

¹ Water penetration resistance field tests follow the criteria and testing procedures as outlined in the AAMA 502-21 specification standard.

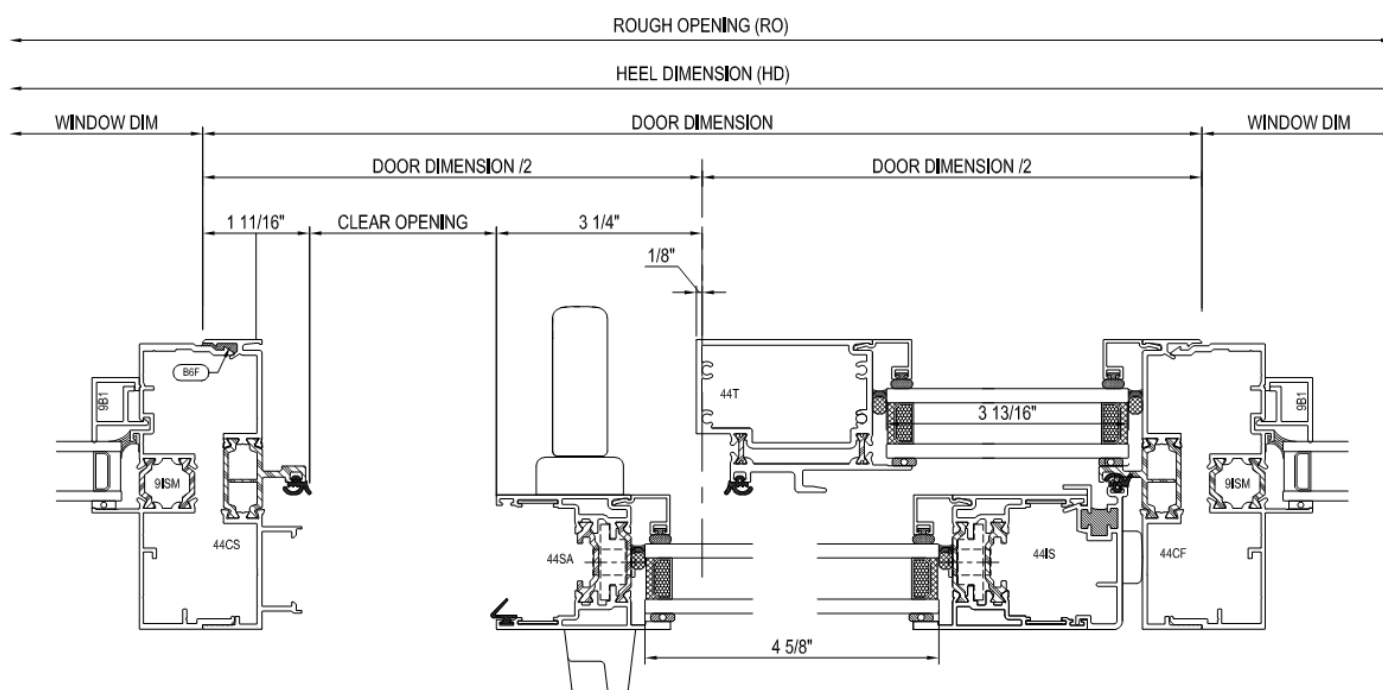
² 500Pa / 10.4 psf is the maximum field test result that can be achieved. Should the Project Specifications state a water penetration resistance field test pressure of a lesser value, the project specified values shall govern.

D4540 & D4640 Clear Opening Diagrams

The series D4540 & D4640 have the same clear opening deductions for the conditions noted below. The D4540 diagrams are shown below.

XO or OX Sliding Door Clear Opening Diagrams

Clear Opening Between Couplers



32" CLEAR OPENING

$$\text{CLEAR OPENING} = 73.875" / 2 - 4.9375" = \underline{32"}$$

$$\text{MINIMUM DOOR DIMENSION} = 73.875"$$

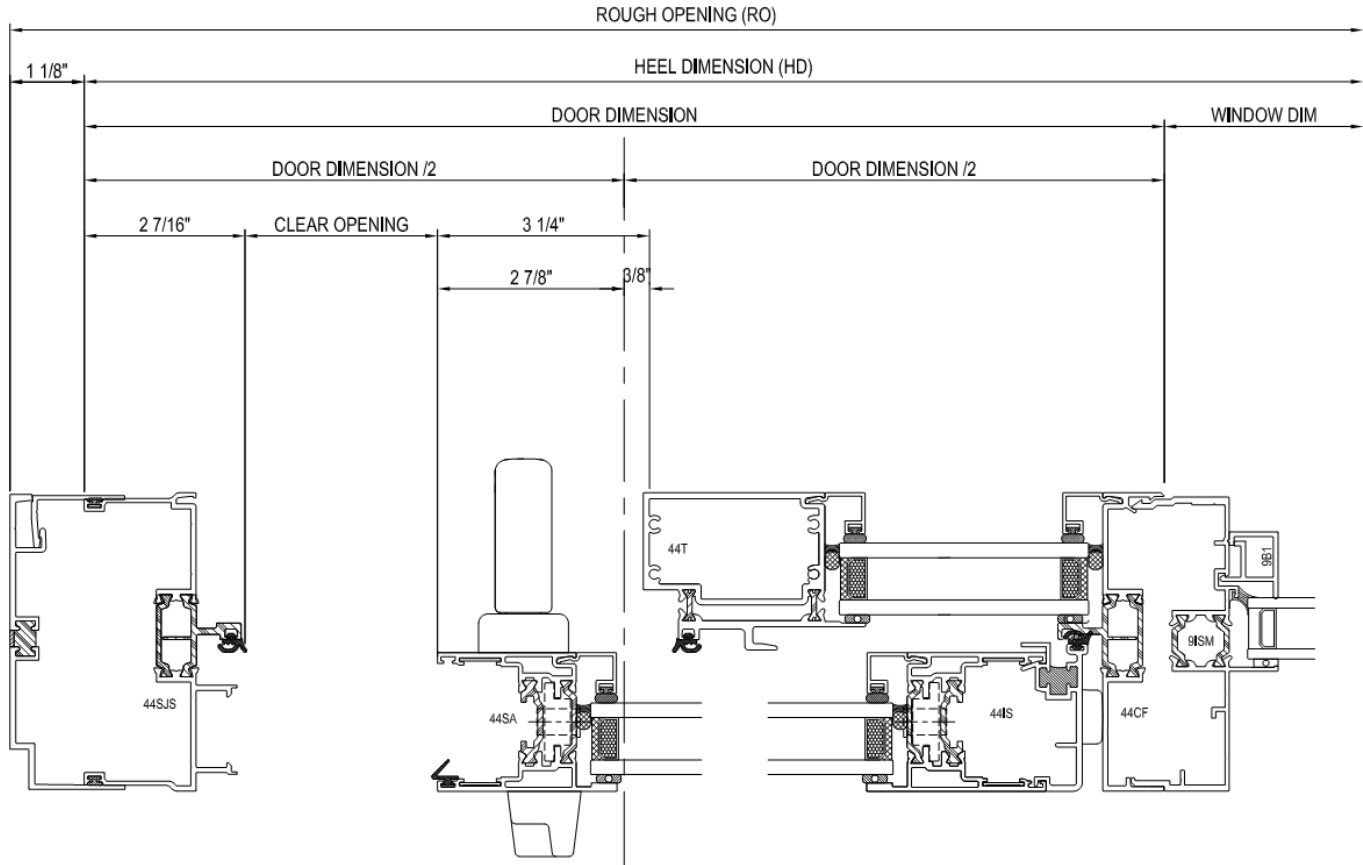
$$\text{CLEAR OPENING} = \text{DOOR DIMENSION} / 2 - 4.9375"$$

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION. IT IS UP TO THE PROJECT CONSULTANT(S) TO CONFIRM THE C.O. REQUIREMENT FOR ADA AND ACCESSIBLE SUITES AS IT CAN VARY FROM A 32" TO 34" C.O. DEPENDING ON THE JURISDICTION.

LIMITATIONS OF THE XO OR OX SLIDING DOOR:

- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (HEEL DIMENSION) = 96"
- MAX. WIDTH (LEAF DIMENSION) = 48"

Clear Opening Between Seismic Jamb and Coupler



32" CLEAR OPENING

$$\text{CLEAR OPENING} = 74.625" / 2 - 5.3125" = 32"$$

$$\text{MINIMUM DOOR DIMENSION} = 74.625"$$

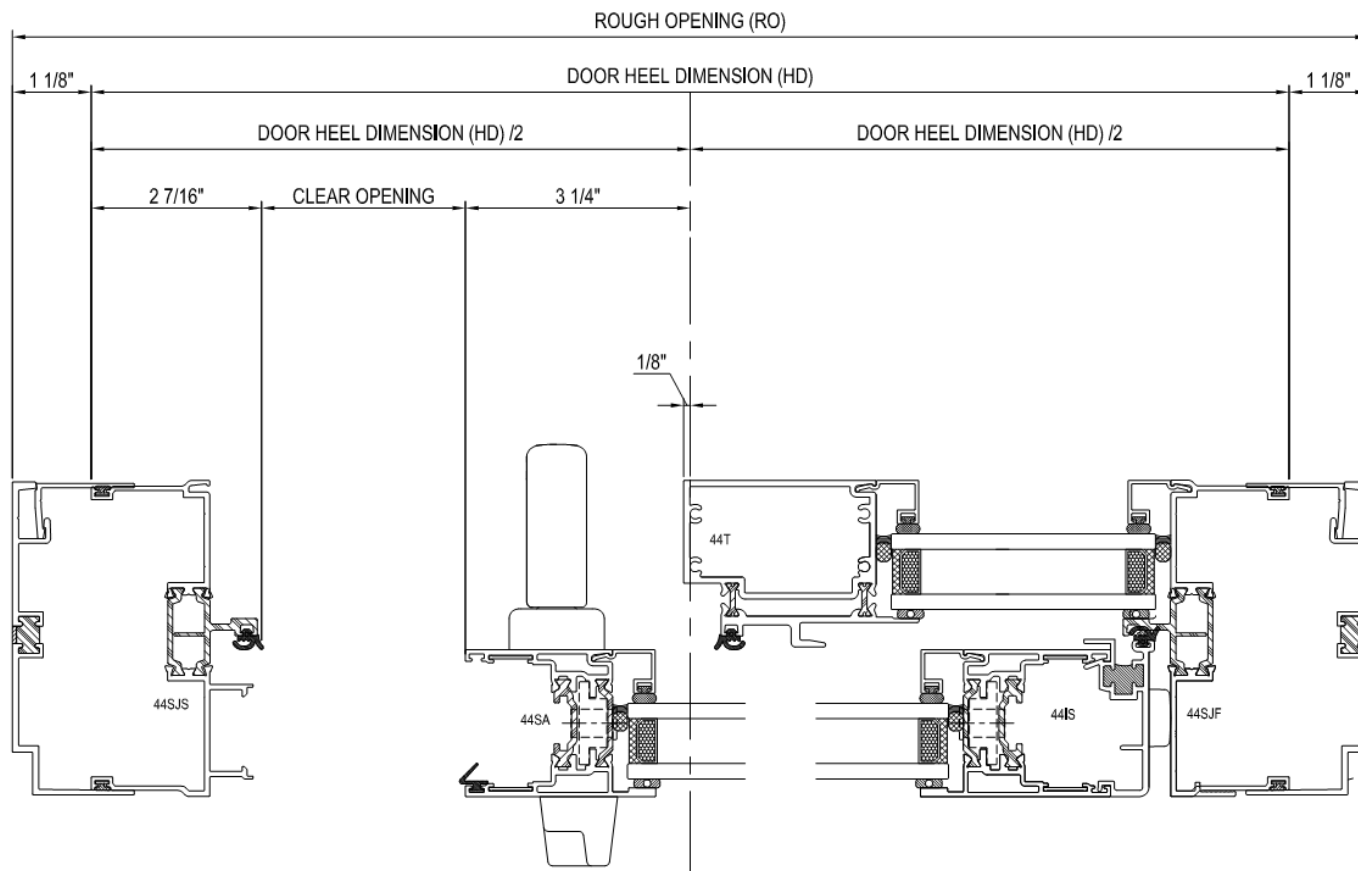
$$\text{CLEAR OPENING} = \text{DOOR DIMENSION} / 2 - 5.3125"$$

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION. IT IS UP TO THE PROJECT CONSULTANT(S) TO CONFIRM THE C.O. REQUIREMENT FOR ADA AND ACCESSIBLE SUITES AS IT CAN VARY FROM A 32" TO 34" C.O. DEPENDING ON THE JURISDICTION.

LIMITATIONS OF THE XO OR OX SLIDING DOOR:

- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (HEEL DIMENSION) = 96"
- MAX. WIDTH (LEAF DIMENSION) = 48"

Clear Opening Between Seismic Jamb



32" CLEAR OPENING

$$\text{CLEAR OPENING} = 75.375" / 2 - 5.6875" = 32"$$

$$\text{MINIMUM HEEL DIMENSION} = 75.375"$$

$$\text{CLEAR OPENING} = (\text{HEEL DIMENSION} / 2) - 5.6875"$$

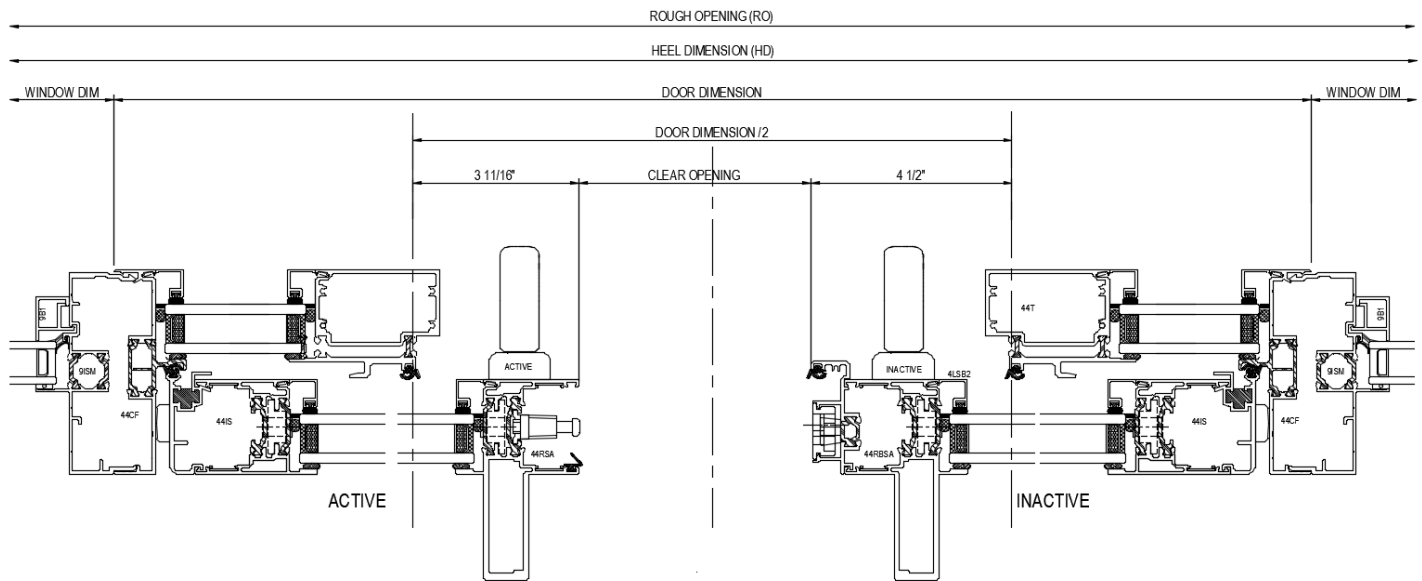
STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION. IT IS UP TO THE PROJECT CONSULTANT(S) TO CONFIRM THE C.O. REQUIREMENT FOR ADA AND ACCESSIBLE SUITES AS IT CAN VARY FROM A 32" TO 34" C.O. DEPENDING ON THE JURISDICTION.

LIMITATIONS OF THE XO OR OX SLIDING DOOR:

- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (HEEL DIMENSION) = 96"
- MAX. WIDTH (LEAF DIMENSION) = 48"

OXXO Sliding Door Clear Opening Diagrams – Both Panels Open

Clear Opening Between Couplers



**32" – 34" CLEAR OPENING WILL BE ACHIEVED
WITH AN OXXO SLIDER DUE TO THE MINIMUM
SLIDER WIDTH OF 30" BEING REQUIRED.
MINIMUM DOOR DIMENSION = 120"**

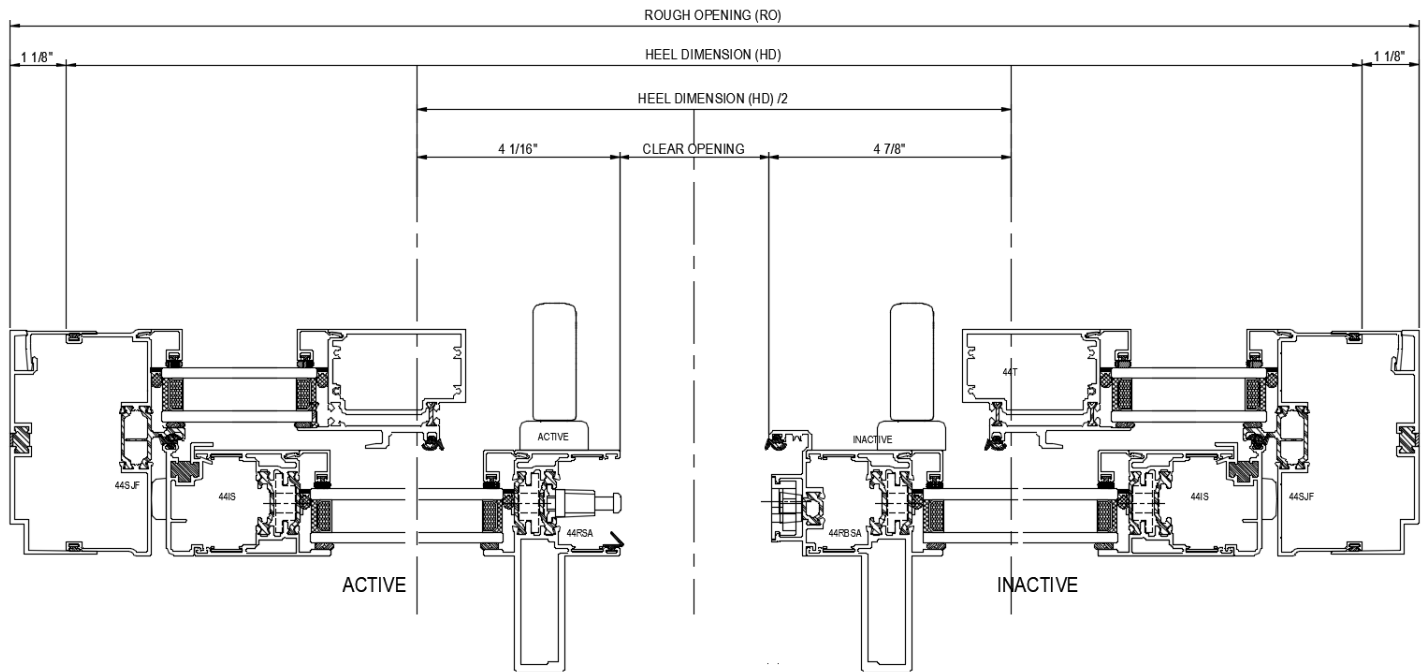
$$\text{CLEAR OPENING} = \text{DOOR DIMENSION} / 2 - 8.1875"$$

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION. IT IS UP TO THE PROJECT CONSULTANT(S) TO CONFIRM THE C.O. REQUIREMENT FOR ADA AND ACCESSIBLE SUITES AS IT CAN VARY FROM A 32" TO 34" C.O. DEPENDING ON THE JURISDICTION.

LIMITATIONS OF THE XO OR OX SLIDING DOOR:

- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (HEEL DIMENSION) = 192"
- MAX. WIDTH (LEAF DIMENSION) = 48"

Clear Opening Between Seismic Jamb



**32" – 34" CLEAR OPENING WILL BE ACHIEVED
WITH AN OXO SLIDER DUE TO THE MINIMUM
SLIDER WIDTH OF 30" BEING REQUIRED.**

MINIMUM DOOR DIMENSION = 120"

$$\text{CLEAR OPENING} = (\text{HEEL DIMENSION} / 2) - 8.9375"$$

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION. IT IS UP TO THE PROJECT CONSULTANT(S) TO CONFIRM THE C.O. REQUIREMENT FOR ADA AND ACCESSIBLE SUITES AS IT CAN VARY FROM A 32" TO 34" C.O. DEPENDING ON THE JURISDICTION.

LIMITATIONS OF THE XO OR OX SLIDING DOOR:

- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (HEEL DIMENSION) = 192"
- MAX. WIDTH (LEAF DIMENSION) = 48"

Product Specification 08 32 13 – Sliding Aluminum – Framed Glass Door



Note: **Bolded** text in this specification are options that are highlighted for the specifier to select or to list requirements.

Part 1 - General

A high-quality thermally broken aluminum compression seal balcony door designed for residential high-rise construction.

1.1 Summary

A. Section Includes: Sliding Aluminum-Framed Glass Doors:

1. Aluminum framed sliding glass balcony door shall be Starline's Series **D4540 (4 ½" deep) or D4640 (6" deep)** Compression Seal Sliding Balcony Door manufactured by Starline Windows with seismic jambs and a deflection header.
2. Work included: Furnish labor, material and other services to complete the fabrication and installation of the doors, including all materials and fitments required for the operation of the units in the manner, direction and performance shown on the shop drawings and specified herein.

Work not included: Structural support of door framing, interior trims. (**Specifier list others**).

Related work specified elsewhere: (**Specifier to list**).

B. Related Sections: (**Specifier to select the following related sections**)

1. 07 27 00 – Air Barriers
2. 07 60 00 – Flashing and Trim
3. 07 92 00 – Joint Sealants
4. 08 13 16 – Aluminum Doors (Outswing Aluminum Framed Glass Door)
5. 08 44 13 – Glazed Aluminum Curtain Wall
6. 08 46 13 – Glazed Aluminum Window Wall
7. 08 51 13 – Aluminum Windows
8. 08 80 00 – Glazing

1.2 Quality Assurance

- A. Drawings and specifications for Work of this Section are based upon the Series **D4540 or D4640** Compression Seal Sliding Balcony Door manufactured by Starline Windows. Whenever alternative products are offered, submit supporting technical literature, samples, drawings and performance data for comparison 10 days prior to closing date. Test reports must be made available on request.
- B. Doors shall be tested to and will conform to the AAMA/WDMA/CSA 101 I.S.2/A440-11, AAMA/WDMA/CSA 101 I.S.2/A440-17, CSA A440SI-17, and CSA A440SI-19: requirements¹.
- C. Manufacturer Qualifications:
1. Manufacturer to have a minimum 10 years of documented experience.

2. Manufacturer capable of providing an aluminum framed sliding glass door system that meet or exceed the performance requirements indicated.
3. Manufacturer capable of providing field representation during window installation.
- D. Installer Qualifications: Installer performing the Work in this Section to have a minimum of 3 years documented experience and approved by the manufacturer.
- E. Mock-Up: If requested by Consultant, a mock up is to be provided and installed at project site. Mock-up to include acceptable products and manufacturer approved installation methods. Obtain Owner's and Consultant's acceptance of finish colour, and workmanship standard.

¹ Note to specifier: The NAFS testing has not been completed for the 4506. The perimeter frame of the 4504 is 4 ½" deep, therefore, the results carried are conservative, as the 6" deep frame will yield better performance.

1.3 Structural requirements

- A. Structural performance shall be based on CSA Standard CSA S157-17 "Strength Design in Aluminum".
- B. Limit mullion deflection to L/175.
- C. Allow for deflection of building structure. Aluminum door frames with a head deflection channel and seismic compensation channel shall be designed, fabricated and installed to withstand slab edge vertical differential deflections of maximum 3/4"¹ and seismic inter-story lateral drift movements of elastic +/- 3/4"¹ without significant damage to the fenestration system or in-elastic +/- 2 1/2"¹ with significant damage expected but framing to be designed to remain anchored to the structure.

¹ Note to specifier: Values may change based on the configuration of the doors. Values to be specified by a Professional Engineer.

1.4 Test and Performance Requirements

Specifier to select from the following performance requirements.

- A. Doors shall meet performance class **AW-PG65**¹ when tested to AAMA/WDMA/CSA 101 I.S.2/A440-11, AAMA/WDMA/CSA 101 I.S.2/A440-17, CSA A440SI-17, and CSA A440SI-19:
 1. Air Infiltration: Sliding door air infiltration shall not exceed 0.02 cfm/ft² (A3) when tested in accordance with ASTM E 283 with a pressure difference of 6.24 psf / 300 Pa.
 2. Water Penetration Resistance:
 - i. There shall be no water infiltration for doors when tested in accordance with ASTM E547 with a pressure difference of 15.04 psf / 720 Pa (Laboratory Test).
 - ii. There shall be no water infiltration for doors when tested in accordance with AAMA 502-08 with a pressure difference up to a maximum of 10.4 psf / 500 Pa (Field Test) ²
 3. Uniform Load Deflection Test: The deflection of fixed window shall not exceed L/175 and there shall be no permanent set when tested in accordance with ASTM E330 with a design pressure of 70.2 psf / 3360 Pa, positive and negative.
 4. Uniform Load Structural Test: There shall be no damage to hardware, accessories, fasteners, or any other damage that would render the window in operable when tested in accordance with ASTM E330 with a structural test pressure of 97.7 psf / 4680 Pa, positive and negative.
 5. Thermal Performance^{3,4}
 - i. **D4540**³
 - a. U-value: The maximum door thermal transmittance U-value shall be **0.36 BTU/hr*ft²*°F (2.02 W/m²*K) for double glazed and / or 0.29 BTU/hr*ft²*°F (1.65 W/m²*k) for triple glazed** when tested in accordance with AAMA 1503.1 and

CAN/CSA-A440.2. Door shall be tested and labeled to N.F.R.C. standard 100 & 200. (Specifier to select)

- b. Solar Heat Gain Coefficient: A (**maximum or minimum**) of **0.31 for double glazed and /or 0.28 for triple glazed**.
- c. Visible Light Transmittance: A (**maximum or minimum**) of **0.55 for double glazed and /or 0.50 for triple glazed**.
- ii. **4506⁴**
 - a. U-value: The maximum door thermal transmittance U-value shall be **0.36 BTU/ hr*ft²*°F (2.03 W/m²*K) for double glazed and /or 0.29 BTU/ hr*ft²*°F (1.67 W/m²*K) for triple glazed** when tested in accordance with AAMA 1503.1 and CAN/CSA-A440.2. Door shall be tested and labeled to N.F.R.C. standard 100 & 200. (Specifier to select)
 - b. Solar Heat Gain Coefficient: A (**maximum or minimum**) of **0.31 for double glazed and /or 0.29 for triple glazed**.
 - c. Visible Light Transmittance: A (**maximum or minimum**) of **0.60 for double glazed and /or 0.50 for triple glazed**.

¹ Note to specifier: Performance class result is based on lab testing and will vary by configuration and glass type. Contact Starline Windows for information on how the product can be engineered to achieve higher performance class than specified above.

² Note to specifier: 500Pa / 10.44 psf is the maximum field test result that can be achieved. Should the Project Specifications state a water penetration resistance field test pressure of a lesser value, the project specified values shall govern.

³ Note to specifier: The NFRC certification for the D4540 sliding door is a work in progress and has not been completed at this time. The values in this section have been provided by Starline's NFRC in-house certified Simulator using NFRC methodology using Windows and Therm, based on the glazing matrix noted below in footnote⁴.

⁴ Note to specifier: Thermal performance depends on glass specified. For double glazed values the above test was performed using 27mm double glazed insulated glass unit (6mm/Argon/4mm) with standard high-performance soft coat (sputtered) Low E which is applied to surface #2, 90% argon + 10% air fill with warm edge spacer bar. For triple glazed values the above test was performed using 41mm triple glazed insulated glass unit (6mm/Argon/4mm/Argon/4mm) with standard high-performance soft coat (sputtered) Low E which is applied to surface #2, 90% argon + 10% air fill with warm edge spacer bar. Please note: A second low E coating can be applied to surface #4 for the double glazed unit and surface #4 & #6 for the triple glazed unit to further increase the thermal performance. For both double and triple glazed the NFRC door test size was 79" x79" (2000mm x 2000mm).

1.5 Submittals

- A. Product Data: Submit complete product data on system being used.
- B. Shop Drawings: Submit complete shop drawings which include floor plans, elevations, door schedule, and product components including anchorage, fasteners, accessories and finish colour.
- C. Samples: Submit glass and frame colour(s) samples.
- D. Close-out Submittals:
 - 1. Warranty: Submit executed Manufacturer's warranty which provides a guarantee for the complete installation provided under this section against defective material and workmanship which appears within a period of two years from the date of substantial completion.
 - 2. Project Record Documents: Submit operation and maintenance data for installed product in accordance with General Conditions.

1.6 Project Conditions

- A. Field Measurements: Verify actual measurements / openings by field measurements prior to fabrication, until it is agreed upon in writing between the Window Manufacturer and the General Contractor that floors become "typical". Once typical the doors can be ordered off the previous field measurements.
- B. Indicate field measurements on shop drawings.

Part 2 – Products

2.1 Manufacturers

- A. Acceptable Manufacturers: Starline Windows
 - 1. Sliding Aluminum-Framed Compression Seal Glass Door: Series **D4540 or D4640**.
- B. Substitutions: Approved alternates

2.2 Material

- A. Aluminum Extrusion: **2" wide & 4 1/2" or 6"** deep perimeter frame member for XO, OX, and OXXO configurations.
- B. Frame member and intermediate bars are extruded from aluminum sections of 6063 alloy, T5 temper with a minimum thickness of 0.064".
- C. Fasteners: Stainless steel and of sufficient size and quantity to perform their intended function.
- D. Glazing Gaskets: Extruded Santoprene.
- E. Glass Setting Blocks & Edge Blocks: FPVC, Neoprene, EPDM, Santoprene or silicone with an 80 to 90 ± Shore A durometer hardness. Block material shall be compatible with sealed unit edge sealant. Setting blocks for sealed units with silicone edge seals must be silicone.
- F. Glazing bead: Extruded aluminum and glazed from the interior.
- G. Thermal break: Polyamide, multi chamber, 32mm.

2.3 Fabrication

- A. Fabricate framing from extrusions of size and shape shown on shop drawings.
- B. Interior and exterior extruded aluminum framing sections shall be integrated with a Polyamide thermal break to form a rigid composite assembly without the use of fasteners or other thermal bridging elements. Dry shrinkage of polyamide thermal break shall not exceed 0.10% of the framing member length.
- C. Main framing extrusions shall be butt corner construction.
- D. Sliding ventilator extrusions shall be mitre corner construction.
- E. All framing profiles shall be straight and free of deformations and defects.
- F. Joints shall be accurately machined, fitted and sealed.
- G. Coupling mullions shall be designed to provide a functional split to permit modular construction and allow for thermal expansion.
- H. Perimeter frame shall be **4 1/2" or 6"** deep with a minimum wall thickness of .064" (1.60mm) and be thermally broken.

- I. Sliding ventilator shall be 2 1/8" deep with a minimum wall thickness of .064" (1.60mm) and be thermally broken.
- J. All frame corners are mechanically joined by stainless steel screws.
- K. All interior joints and interior screw heads shall be sealed with a non-hardening sealant.
- A. Sliding ventilator shall have a single EPDM seal at the interlock. The sill, the head and the jamb at the frame shall have an EPDM compression seal.
- L. All glazing pockets shall be vented, pressure equalized, and drained to the vertical extrusions.
- M. Glass bead shall be aluminum and a snap-in screw less type.
- N. Silicone heel bead shall be applied at perimeter of insulated glass units.

2.4 Glazing¹

- A. Double glazed, double seal insulated glass unit with an overall thickness of 1 1/16" (27 mm). Triple glazed available (Refer to [2.7.A.1](#) of this specification).
- B. Standard high performance soft coat (sputtered) Low E applied to surface #2.
- C. Black warm edge spacer with argon fill.
- D. Minimum glass thickness shall be 4mm. Glass thickness and quality shall conform to the requirements of the U.S.A. and Canadian Code for commercial construction, current edition.
- E. Glass shall be tempered.
- F. Where practical, glazing shall be installed at the factory before shipping to site.

¹ Note to specifier: Glazing noted above is based on Starline Windows standard product offering. There are various other options available. See [2.7.A.](#) of this specification.

2.5 Hardware

- A. Hardware shall be furnished by the door manufacturer.
- B. Where practical, all hardware fittings shall be installed at the factory before shipping to site.
- C. Hardware shall be as follows:
 - 2. Sliding panel shall slide on adjustable stainless steel ball bearing steel wheels.
 - 3. Equipped with an interior multi-point locking handle that positively engages with an adjustable keeper at the frame jamb. Interior handle to be made from die cast aluminum. The interior handle is available in black and white.
 - 4. Equipped with an exterior raised pull tab handle made of high impact plastic.¹ The exterior handle is available in black or white.

¹ Note to Specifier: If a reinforced sash is used there is no exterior handle as the frame profile for a reinforced sash provides a place to grip to allow you to open and close the door.

2.6 Finishes (Powder Coating)

- A. All exposed surfaces of aluminum door and framing members shall be free of scratches and other serious surface blemishes.
- B. Finishes¹.
 - 1. **Thermoset coating specifically designed for architectural systems. Coating to comply with AAMA 2603 specification and / or**
 - 2. **Upgrade to a thermoset super durable coating which complies with the AAMA 2604 specification standards. The AAMA 2604 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 specification standard.**
 - 3. **Upgrade to a thermoset fluorocarbon coating which is a superior coating that complies with the AAMA 2605 specification standard. The AAMA 2605 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 and AAMA 2604 specification standards.**
- C. Colour Options².
 - 1. Standard colours are as follows. **(Specifier to select from the standard colour(s) listed below).** These standard colours are **available in the AAMA 2603, AAMA 2604 and AAMA 2605 specification.**

White

Black

Brown

Silver

Charcoal Grey

¹ Note to Specifier: Select 2.6.B.1 and/or 2.6.B.2 and/or 2.6.B.3. Option to have dual frame colour and / or AAMA 2603 coating on interior and AAMA 2604 or AAMA 2605 coating on exterior is available, if standard and / or custom colour is selected. Refer to [2.7.C.1](#) of this specification. AAMA 2604 or AAMA 2605 specification standard on exterior of frames may be required in some building codes, bylaws, jurisdictions, etc.

² Note to Specifier: Refer to [2.7.C.2](#) of this specification for Custom Colours.

2.7 Optional Items

A. Glazing

1. Triple glazed, double seal insulated glass unit with an overall thickness of 1 5/8" (41mm), complete with black warm edge spacer. Glass thickness shall be 4mm and tempered.
2. Varying glass thickness available in 4mm or greater (**Specifier to select glass thickness required**).
3. Tinted, obscured & reflective glass
4. Laminated glass

B. Transoms. Available for OX and XO configurations only.

1. Vision Glazing
2. Opaque Options – Spandrel Glass, Metal Panels (flush and raised).

C. Finishes (Powder Coating)

1. Dual frame colour – 1 colour on exterior and 1 colour on interior (refer to [2.6.C](#) for colour options)
 - i. Finish to comply with AAMA 2603 standard on both interior and exterior.
 - ii. Finish to comply with AAMA 2604 standard on both interior and exterior.
 - iii. Finish to comply with AAMA 2605 standard on both interior and exterior.
 - iv. Finishes to comply with AAMA 2603 standard on interior and AAMA 2604 standard on exterior.
 - v. Finishes to comply with AAMA 2603 standard on interior and AAMA 2605 standard on exterior.
2. **Custom colours**¹. Virtually any colour can be matched or very closely matched. The scope of work and overall custom colour quantity will be reviewed by Starline on a project specific basis to determine the feasibility of the custom colour request.

¹ Note to Specifier: Custom colours are available for an additional cost premium. An approximate 12-week lead time is required to procure custom colour requests.

Part 3 - Execution

3.1 Examination

- A. Installer to examine openings, structural support, substrates and any other conditions that would affect the installation, for compliance with manufacturer's instructions.
- B. Verify rough opening dimensions.
- C. Verify sill is within tolerance of levelness to ensure adequate shimming to obtain proper drainage.

3.2 Installation

- A. Install manufacturer's system in accordance with manufacturer's approved shop drawings.
- B. Doors shall be installed and adjusted by experienced personnel in accordance with the manufacturer instructions and approved shop drawings.
- C. All items in this section shall be set in their correct location and shall be set level, square, plumb and at proper elevations and in alignment with other work.
- D. The doors are installed at site with a maximum variance to plumb of +/- 0.25%. (+/- 1/4" / 96").

3.3 Field Quality and Control

- A. Manufacturer's Field Services: Upon Owner and/or Consultants written request, provide manufacturer's field service representative for site visit to inspect installation and to ensure accordance with manufacturer's instruction and approved shop drawings.
- B. Field Tests: Owner and/or Consultant may choose to conduct tests for water penetration and air infiltration.
 - 1. Testing Standard per AAMA 502.
 - 2. Field testing shall be performed by a qualified independent testing agency.
 - 3. Field testing should not occur until the window has been installed and the caulking is cured. Ensure the products used to complete building envelope tie in (membrane, caulking, flashing, cladding, etc.) are installed complete and have cured.

3.4 Protection and Cleaning

- A. Protection:
 - 1. Doors shall be protected with blue poly during and after installation until acceptance by the General Contractor. Thereafter, it shall be the responsibility of the General Contractor to protect the installed product from construction damage.
 - 2. Windows shall be isolated from concrete, mortar, plaster and dissimilar metals with bituminous paint or other isolation coatings.
- B. Cleaning: It shall be the responsibility of the General Contractor to maintain protection and provide final cleaning.

Note: This specification is intended to be used by a qualified Specifier and will require modifications for the project specific requirements. This specification is not intended to be use verbatim as the project specific specification.

Laws, building and safety codes governing the design and use of this product vary widely. Starline Windows does not control the selection and use of this product and assumes no responsibility therefor.

Series D4540 & D4640 NFRC Product Energy Chart

DOUBLE / TRIPLE (27mm / 41mm IGU)	GLAZING (Ext/Gap/Int)	U VALUE (W/m ² K)	U VALUE (Btu/hft ² F)	Shading Coefficient	Solar Heat Gain Coefficient	Visible Light Transmittance	CPD (Certified Product Directory)
Center of Glass (COG)	6mm SB60 (#2) / 4mm Clear	1.44	0.25	0.44	0.39	0.71	
	6mm SB67* (#2) / 4mm Clear	1.45	0.26	0.33	0.29	0.54	
	6mm SN68 (#2) / 4mm Clear	1.45	0.26	0.43	0.37	0.68	
	6mm SN68 (#2) / 4mm IS20* (#4)	1.19	0.21	0.42	0.36	0.66	
	6mm SNR50* (#2) / 4mm Clear	1.43	0.25	0.28	0.24	0.48	
	6mm SNX51/23* (#2) / 4mm Clear	1.40	0.25	0.26	0.22	0.51	
	6mm SNX62/27* (#2) / 4mm Clear	1.40	0.25	0.30	0.26	0.62	
	6mm SB60 (#2) / 4mm Clear / 4mm Clear	1.05	0.19	0.41	0.35	0.64	
	6mm SB60 (#2) / 4mm SB60 (#4) / 4mm Clear	0.69	0.12	0.36	0.31	0.57	
	6mm SB67* (#2) / 4mm Clear / 4mm Clear	1.05	0.19	0.30	0.26	0.49	
	6mm SN68 (#2) / 4mm Clear / 4mm Clear	1.06	0.19	0.39	0.34	0.62	
	6mm SN68 (#2) / 4mm RLE70/36 (#4) / 4mm Clear	0.69	0.12	0.34	0.29	0.53	
	6mm SNR50* (#2) / 4mm Clear / 4mm Clear	1.04	0.18	0.26	0.23	0.44	
	6mm SNX51/23* (#2) / 4mm Clear / 4mm Clear	1.03	0.18	0.24	0.21	0.46	
	6mm SNX62/27* (#2) / 4mm Clear / 4mm Clear	1.03	0.18	0.27	0.24	0.56	
D4540 Sliding Door (4.5" Deep System)	6mm SB60 (#2) / 4mm Clear	2.02	0.36	0.37	0.32	0.58	Work In Progress
	6mm SB67* (#2) / 4mm Clear	1.99	0.35	0.27	0.24	0.44	
	6mm SN68 (#2) / 4mm Clear	2.02	0.36	0.36	0.31	0.55	
	6mm SN68 (#2) / 4mm IS20* (#4)	1.78	0.31	0.35	0.30	0.54	
	6mm SNR50* (#2) / 4mm Clear	1.98	0.35	0.24	0.21	0.39	
	6mm SNX51/23* (#2) / 4mm Clear	1.96	0.35	0.22	0.19	0.42	
	6mm SNX62/27* (#2) / 4mm Clear	1.96	0.35	0.25	0.22	0.50	
	6mm SB60 (#2) / 4mm Clear / 4mm Clear	1.64	0.29	0.34	0.29	0.52	
	6mm SB60 (#2) / 4mm SB60 (#4) / 4mm Clear	1.36	0.24	0.30	0.26	0.47	
	6mm SB67* (#2) / 4mm Clear / 4mm Clear	1.64	0.29	0.25	0.22	0.40	
	6mm SN68 (#2) / 4mm Clear / 4mm Clear	1.65	0.29	0.33	0.28	0.50	
	6mm SN68 (#2) / 4mm RLE70/36 (#4) / 4mm Clear	1.37	0.24	0.28	0.25	0.43	
	6mm SNR50* (#2) / 4mm Clear / 4mm Clear	1.63	0.29	0.22	0.19	0.36	
	6mm SNX51/23* (#2) / 4mm Clear / 4mm Clear	1.62	0.29	0.20	0.17	0.38	
	6mm SNX62/27* (#2) / 4mm Clear / 4mm Clear	1.62	0.29	0.23	0.20	0.46	
D4640 Sliding Door (6" Deep System)	6mm SB60 (#2) / 4mm Clear	2.02	0.36	0.37	0.32	0.59	STL-A-49-00007-00001
	6mm SB67* (#2) / 4mm Clear	2.02	0.36	0.28	0.24	0.45	
	6mm SN68 (#2) / 4mm Clear	2.03	0.36	0.36	0.31	0.56	STL-A-49-00036-00001
	6mm SN68 (#2) / 4mm IS20* (#4)	1.81	0.32	0.35	0.30	0.55	STL-A-49-00056-00001
	6mm SNR50* (#2) / 4mm Clear	2.02	0.36	0.24	0.21	0.40	
	6mm SNX51/23* (#2) / 4mm Clear	2.00	0.35	0.22	0.19	0.42	STL-A-49-00067-00001
	6mm SNX62/27* (#2) / 4mm Clear	2.00	0.35	0.26	0.22	0.51	STL-A-49-00063-00001
	6mm SB60 (#2) / 4mm Clear / 4mm Clear	1.67	0.29	0.34	0.30	0.53	STL-A-49-00089-00001
	6mm SB60 (#2) / 4mm SB60 (#4) / 4mm Clear	1.39	0.24	0.30	0.26	0.47	STL-A-49-00091-00001
	6mm SB67* (#2) / 4mm Clear / 4mm Clear	1.67	0.29	0.26	0.22	0.41	
	6mm SN68 (#2) / 4mm Clear / 4mm Clear	1.67	0.29	0.33	0.29	0.51	STL-A-49-00124-00001
	6mm SN68 (#2) / 4mm RLE70/36 (#4) / 4mm Clear	1.39	0.25	0.29	0.25	0.44	STL-A-49-00126-00001
	6mm SNR50* (#2) / 4mm Clear / 4mm Clear	1.66	0.29	0.22	0.19	0.36	
	6mm SNX51/23* (#2) / 4mm Clear / 4mm Clear	1.65	0.29	0.20	0.18	0.38	STL-A-49-00151-00001
	6mm SNX62/27* (#2) / 4mm Clear / 4mm Clear	1.65	0.29	0.23	0.20	0.46	STL-A-49-00150-00001
I.G.U. (Insulated Glass Unit)	GLASS		WARM EDGE SPACER		GAS FILL		
	Guardian IS20*, SN68, SNR50*, SNX51/23*, SNX62/27*, Vitro SB60, SB67*		DG - 15.6mm (5/8") TG - 2 x 13.6mm (1/2")		90% Argon & 10% Air		

D4540 - Based on NFRC CPD - Certification Date: - Expiration Date: -
D4640 - Based on NFRC CPD - Certification Date: March 24, 2022 Expiration Date: August 28, 2026

Fenestration = Frame, mullions, sash and vision glass. Refer to www.nfrc.org for more information.

* - Available at a cost premium.



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