



CURTAIN WALLS

Table of Contents

◆ Series 4250

Section D4	Page
SPECIFICATIONS	3-D4 and 4-D4
TECHNICAL DATA	5-D4
SPECIAL FEATURES	6-D4
TYPICAL DETAILS	7-D4 thru 14-D4
ACCESSORIES	15-D4 & 16-D4
WINDLOAD CHARTS	17-D4 & 18-D4
DEADLOAD CHARTS	19-D4

Due to the diversity in state/provincial, local and federal laws and codes that govern the design and application of architectural products, it is the responsibility of the individual architect, owner and installer to assure that products selected for use on projects comply with all applicable building codes and laws. United States Aluminum exercises no control over the use or application of its products, glazing materials and operating hardware and assumes no responsibility therefor.

The rapidly changing technology within the architectural aluminum products industry demands that United States Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

NOTE: Dimensions in parentheses () are millimeters unless otherwise noted.

Other metric units shown in this manual are:

m - meter	Kg - kilogram
Pa - pascal	KPa - kilopascal
MPa - megapascal	



CURTAIN WALLS

Specifications

- ◆ Series 4250
Non Thermal

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
4250	2 1/2" (63.5)	6" (152.4)	1" (25)	Interior

I. GENERAL DESCRIPTION

Work Included: Furnish all necessary materials, labor and equipment for the complete installation of aluminum framing as shown on the drawings and specified herein. (Specifier Note: It is suggested that related items such as aluminum entrance doors, glass, and sealants be included whenever possible.)

Work Not Included: Structural support of the framing system, interior closures, trim. (Specifier list other exclusions).

Related Work Specified Elsewhere: (Specifier list).

QUALITY ASSURANCE

Drawings and specifications are based on the Series 4250 CURTAIN WALL system as manufactured by United States Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings and performance data must be submitted ten (10) days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

PERFORMANCE REQUIREMENTS

Air infiltration - shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 CFM per square foot (.0003m³/sm²) of fixed area when tested at 6.24 P.S.F. (300 Pa).

Water Infiltration - shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 12 P.S.F. (574 Pa).

Structural Performance - shall be tested in accordance with ASTM E 330 and based on:

- Maximum deflection of 1/175 of the span
 - Allowable stress with a safety factor of 1.65
- The system shall perform to this criteria under a windload of (Specify) P.S.F.

System shall exceed maximum seismic lateral displacement requirements specified in section 1628.8.2 of the Uniform Building Code, 1994 edition. Upon successful completion of the Phase I seismic testing, the curtain wall shall once again be subjected to and must successfully pass the air and water infiltration tests specified above before proceeding to Phase II testing.

II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain ... (Specify one of the following):

- ___ #11 Clear anodic coating
- ___ #22 Dark Bronze anodic coating
- ___ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 605.2-92. Color shall be (Specify a U. S. Aluminum standard color).

FABRICATION

The curtain wall system shall provide for both vertical and horizontal members to project a maximum of 3/4" (19) to the exterior.

Provisions shall be made at sealed horizontals to weep moisture accumulations to the exterior.

Spandrel horizontals shall feature a gutter to collect moisture and weep it to the exterior. Vertical and horizontal components shall be designed for complete inside glazing of spandrel and vision glass. Provisions shall be made for re-glazing of spandrel from exterior without removal of vision lights.

Vertical splices shall be designed to provide adequate space for thermal expansion. Splice sleeves will ensure the seal and weatherability of the splice joints.

System shall provide for expansion and contraction of component materials as will be required by an ambient temperature range of 120 degrees F (49° C) without causing harmful buckling or cracking, opening of joints, undue stress on fasteners or other effects detrimental to weathering performance.

The system shall accommodate 1" (25) infill with provision for 1/4" (6) infill at spandrel areas.

III. EXECUTION INSTALLATION

All glass framing shall be set in correct locations as shown in the details and shall be level, square, plumb and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.

PROTECTION AND CLEANING

After installation the General Contractor shall adequately protect exposed portions of aluminum surfaces from damage by grinding and polishing compounds, plaster, lime, acid, cement, or other contaminants. The General Contractor shall be responsible for final cleaning.

CURTAIN WALLS



Specifications

◆ Series 4250T
Thermal

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
4250T	2 1/2" (63.5)	6" (152.4)	1" (25)	Interior

I. GENERAL DESCRIPTION

Work Included: Furnish all necessary materials, labor and equipment for the complete installation of aluminum framing as shown on the drawings and specified herein. (Specifier Note: It is suggested that related items such as aluminum entrance doors, glass, and sealants be included whenever possible.)

Work Not Included: Structural support of the framing system, interior closures, trim. (Specifier list other exclusions.)

Related Work Specified Elsewhere: (Specifier list).

QUALITY ASSURANCE

Drawings and specifications are based on the Series **4250T THERMAL CURTAIN WALL** system as manufactured by United States Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings and performance data must be submitted ten (10) days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

PERFORMANCE REQUIREMENTS

Air Infiltration - shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 CFM per square foot (.0003m³/sm²) of fixed area when tested at 6.24 P.S.F. (300 Pa).

Water Infiltration - shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 12 P.S.F. (574 Pa).

Structural Performance - shall be tested in accordance with ASTM E 330 and based on:

- Maximum deflection of $1/175$ of the span
- Allowable stress with a safety factor of 1.65

The system shall perform to this criteria under a windload of (*Specify*) P.S.F.

System shall exceed maximum seismic lateral displacement requirements specified in section 1628.8.2 of the Uniform Building Code, 1994 edition. Upon successful completion of the Phase I seismic testing, the curtain wall shall once again be subjected to and must successfully pass the air and water infiltration tests specified above before proceeding to Phase II testing.

Structural Integrity - To ensure guaranteed structural integrity all framing components

shall be intermittently debridged leaving a small portion of the thermal pocket remaining intact to create a structural link between the exterior and interior surfaces without compromising materially the thermal performance of the system.

Manufacturer shall provide a **Two Year Warranty** on thermal framing against failure resulting from the following:

- Longitudinal or transverse thermal barrier shrinkage.
- Thermal barrier cracking.
- Structural failure of the thermal barrier material.
- Loss of adhesion or loss of prescribed edge pressure on the glazed material resulting in excessive air and water infiltration.

Thermal Performance - Series 4250T shall be tested in accordance with AAMA 1503.1-88.

II. PRODUCTS

MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper), thermally broken by a two part chemically cured high density polyurethane.

To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer.

Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain ...(*Specify one of the following*):

- ___ #11 Clear anodic coating
- ___ #22 Dark Bronze anodic coating
- ___ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 605.2-92. Color shall be (*Specify a U. S. Aluminum standard color*).

FABRICATION

The curtain wall system shall provide for both vertical and horizontal members to project a maximum of $3/4$ " (19) to the exterior.

Provisions shall be made at sealed horizontals to weep moisture accumulations to the exterior.

Spandrel horizontals shall feature a gutter to collect moisture and weep it to the exterior. Vertical and horizontal components shall be designed for complete inside glazing of spandrel and vision glass. Provisions shall be made for re-glazing of spandrel from exterior without removal of vision lights.

Vertical splices shall be designed to provide adequate space for thermal expansion. Splice sleeves will ensure the seal and weatherability of the splice joints.

System shall provide for expansion and contraction of component materials as will be required by an ambient temperature range of 120 degrees F (49°C) without causing harmful buckling or cracking, opening of joints, undue stress on fasteners or other effects detrimental to weathering performance.

The system shall accommodate 1" (25) infill with provision for $1/4$ " (6) infill at spandrel areas.

III. EXECUTION

INSTALLATION

All glass framing shall be set in correct locations as shown in the details and shall be level, square, plumb and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.

PROTECTION AND CLEANING

After installation the General Contractor shall adequately protect exposed portions of aluminum surfaces from damage by grinding and polishing compounds, plaster, lime, acid, cement, or other contaminants. The General Contractor shall be responsible for final cleaning.



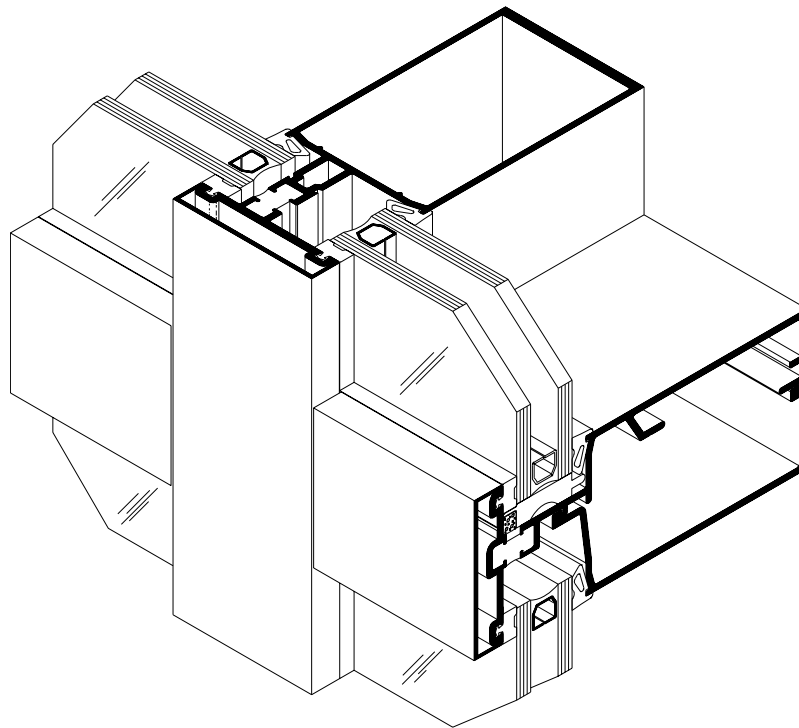
CURTAIN WALLS

Technical Data

- ◆ Series 4250T
- ◆ Series 4250

Series 4250T Curtain Wall is a stick-erected, interior-glazed curtain wall utilizing a pocket set design and E.P.D.M. compression glazing gaskets. This system features the Poly-Aluminizer™ and Struct-Link™ thermal break technology and **two year warranty** as described in the Warranty For Thermally Broken Framing Systems. It was especially engineered to satisfy the increasing demands for energy conservation. Dual or two-tone colors can be achieved by specifying different finishes for the exterior face covers and the interior mullions. Two piece horizontals and shear blocks allow for a concealed horizontal to vertical joinery without exposed screws. These joint intersections also have concealed injection molded plastic end dams for controlling any infiltrated water.

Series 4250 offers the same features except it is not thermally broken.



SERIES	WIDTH	DEPTH	GLAZING INFILL	APPLICATIONS
4250T	2½" (63.5)	6" (152.4)	1" (25)	Low-rise to mid-rise buildings where interior glazing is desired.
4250				

Glass Sizes* Glass Width and Height = Daylite Opening + 7/8" (22.2)

* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

January 1998

CURTAIN WALLS

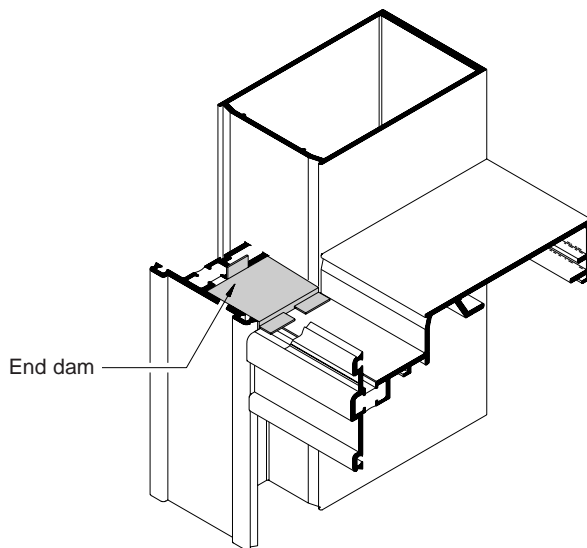
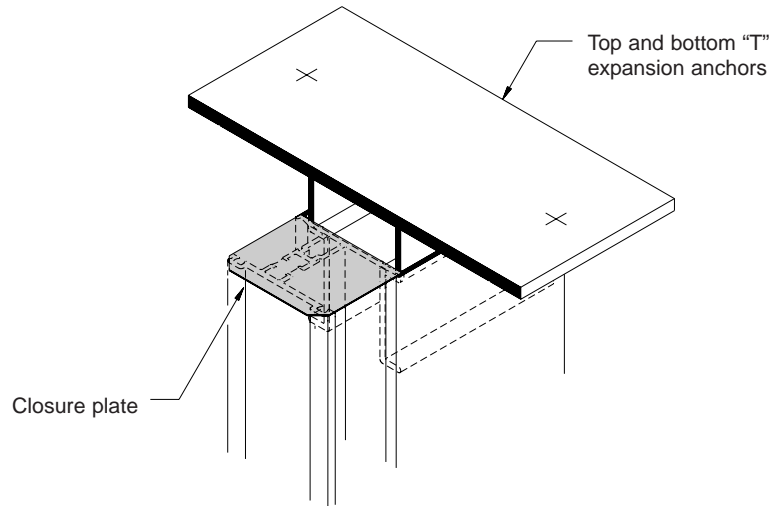


Special Features

- ◆ Series 4250T
- ◆ Series 4250

Install injection molded plastic closure plates at top and bottom of verticals to ensure a continuous perimeter seal.

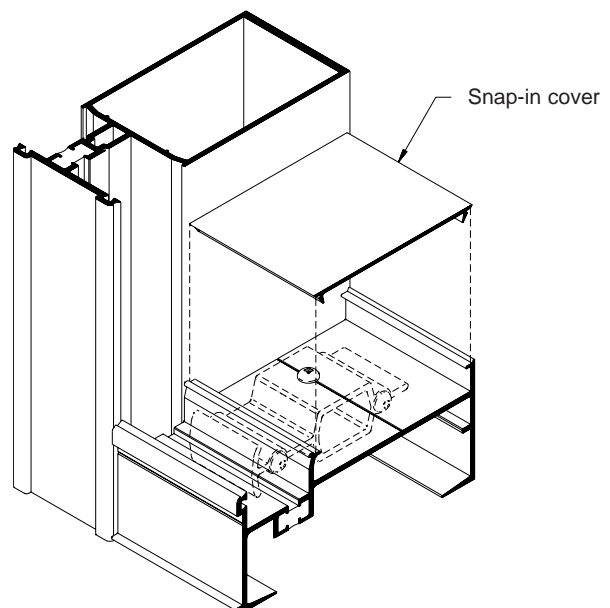
Slide top and bottom "T" anchors into vertical members. Install vertical members plumb and level. Secure top and bottom "T" anchors to structure.



Injected molded end dams are for controlling any infiltrated water. Apply sealant to the four contact sides of end dams and slide between vertical and horizontal joint as shown.

Sill members are designed with snap-in covers to conceal fasteners.

Head and intermediate horizontal members are also designed to conceal the fasteners which attach to the anchor clip.





CURTAIN WALLS

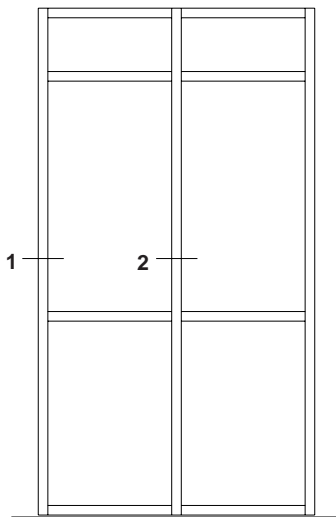
Typical Details

VERTICAL MEMBERS

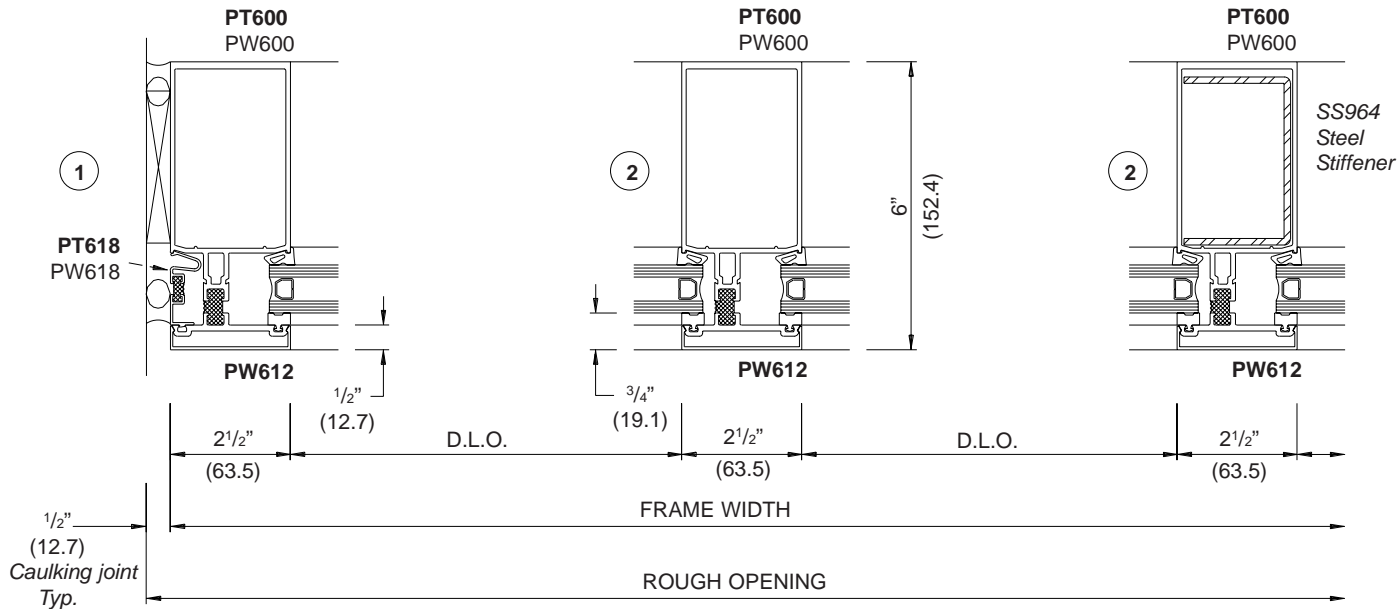
- ◆ Series 4250T
- ◆ Series 4250

P	T	6	0	0
---	---	---	---	---

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.



TYPICAL ELEVATION



Scale 3" = 1' - 0"

Effective 08/2005

CURTAIN WALLS



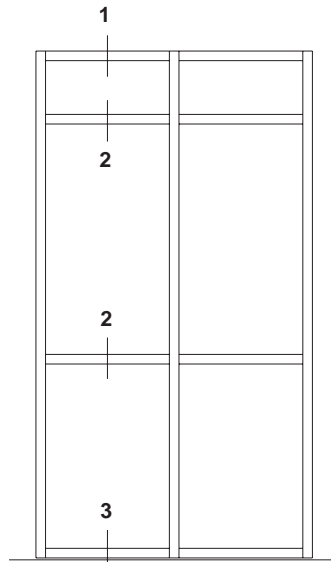
Typical Details

HORIZONTAL MEMBERS

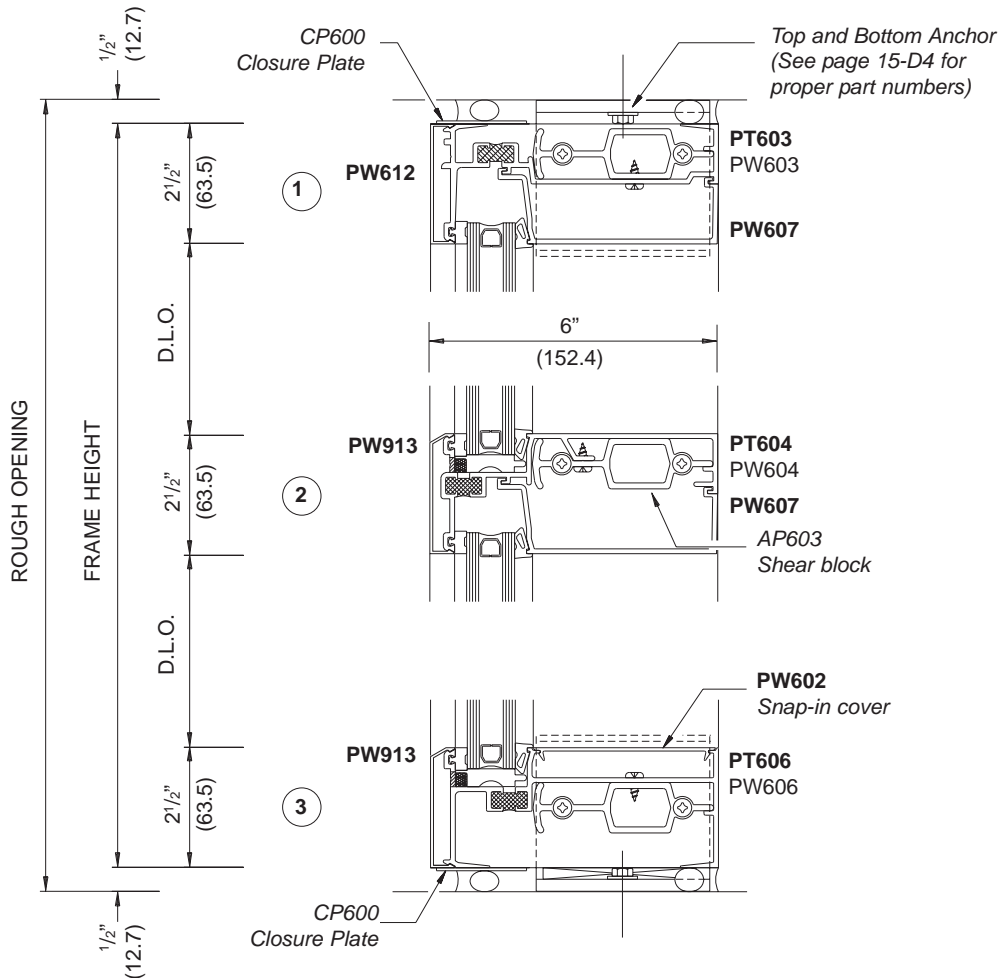
- ◆ Series 4250T
- ◆ Series 4250

P	T	6	0	0
---	---	---	---	---

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.



TYPICAL ELEVATION



Scale 3" = 1' - 0"

Effective 08/2005



CURTAIN WALLS

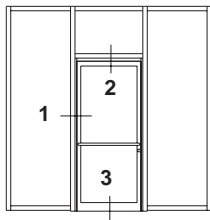
Typical Details

DOOR FRAMING

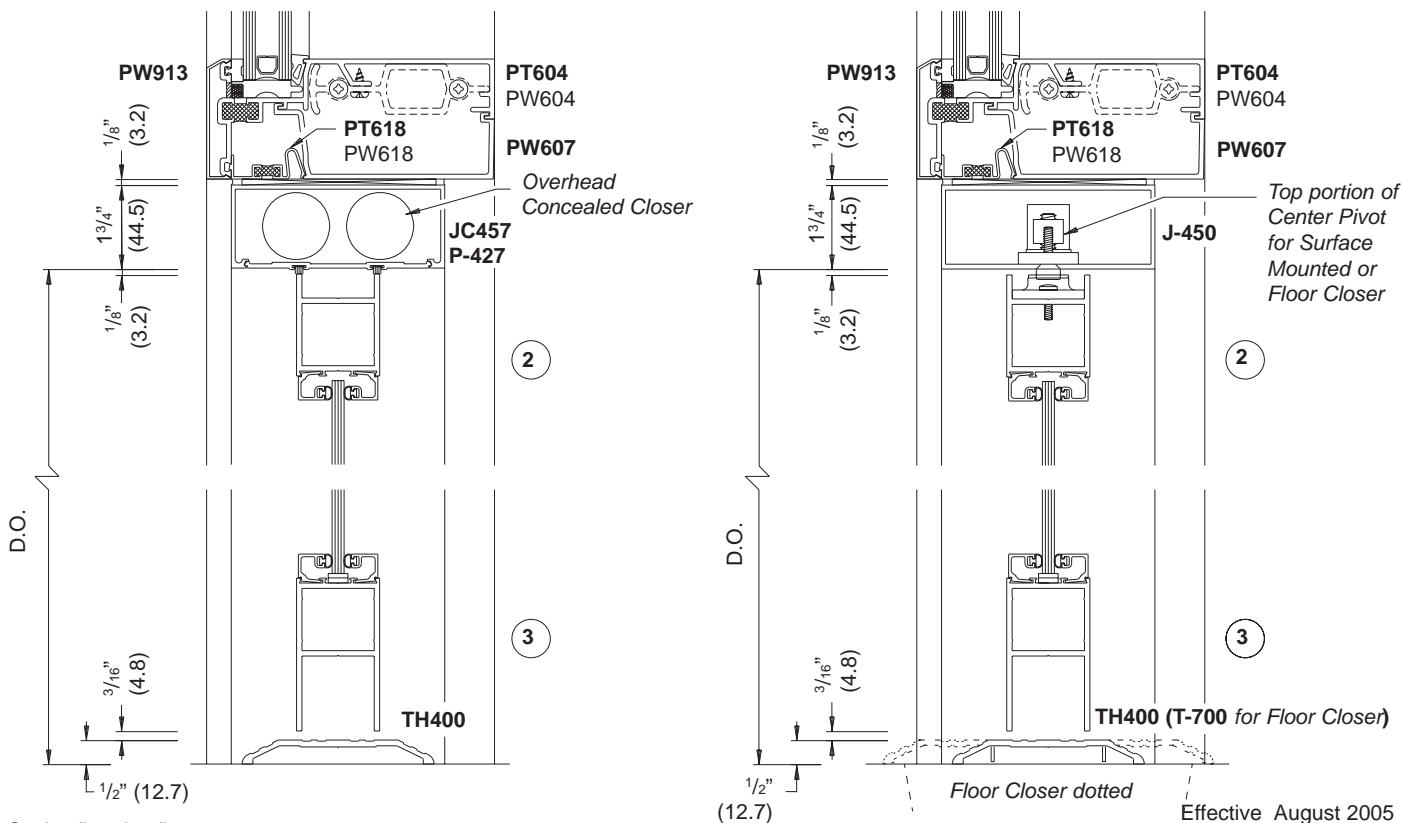
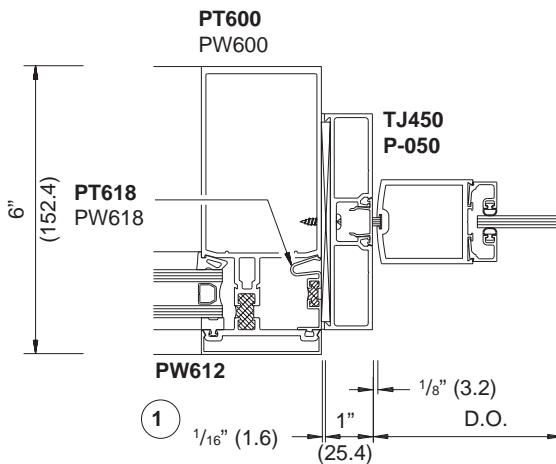
- ◆ Series 4250T
- ◆ Series 4250

P	T	6	0	0
---	---	---	---	---

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.



CENTER HUNG DOOR



Scale 3" = 1' - 0"

Effective August 2005
Revised March 2006

CURTAIN WALLS



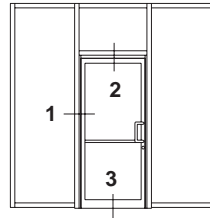
Typical Details

- ◆ Series 4250T
- ◆ Series 4250

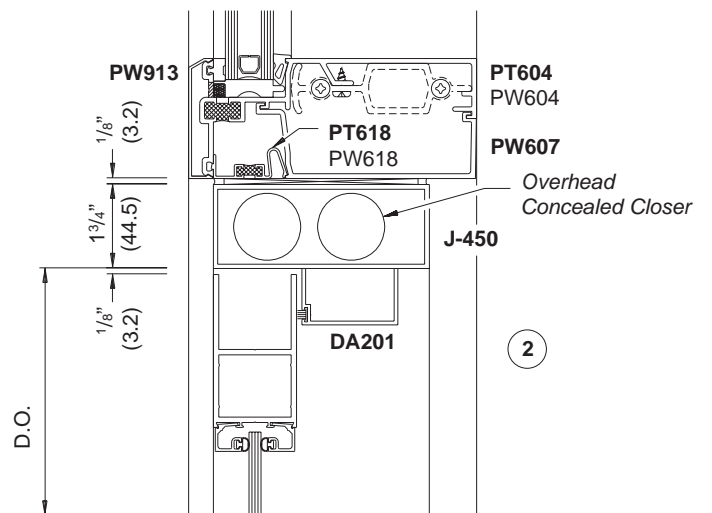
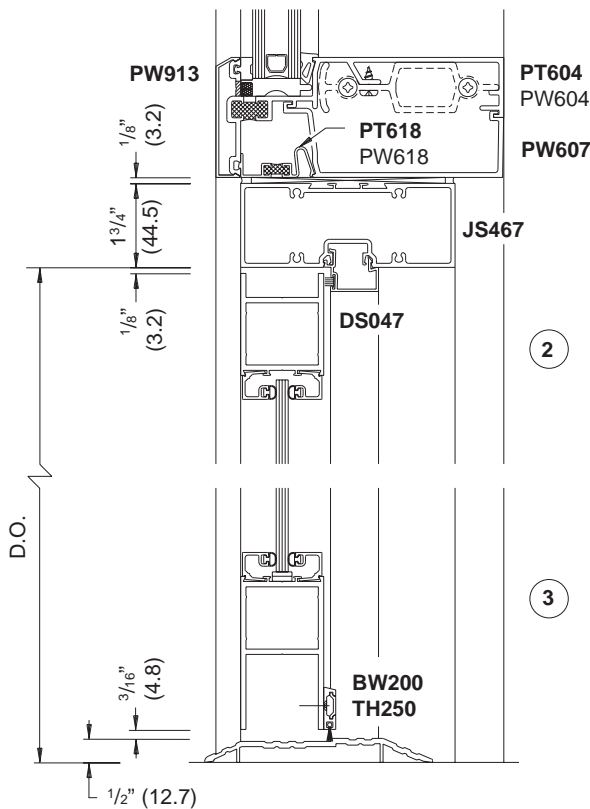
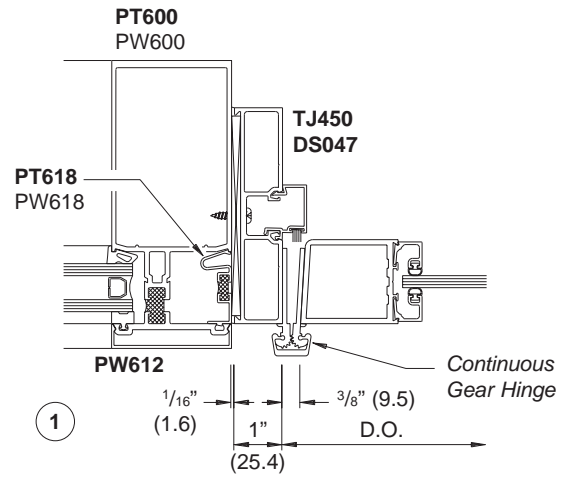
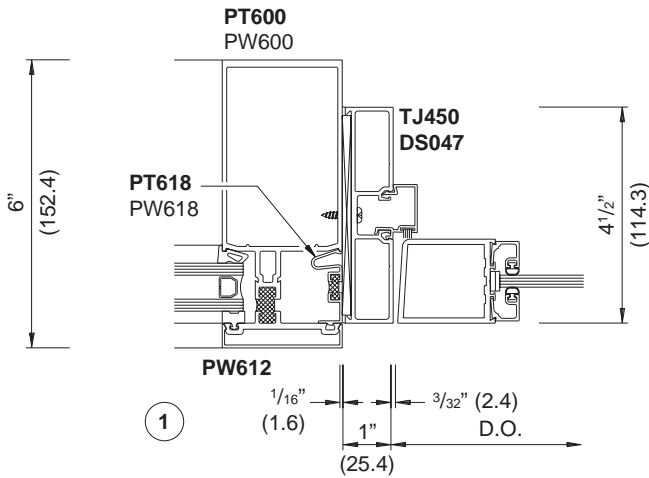
DOOR FRAMING

P T 6 0 0

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.



OFFSET HUNG DOOR



Scale 3" = 1' - 0"

Effective August 2005
Revised March 2006



CURTAIN WALLS

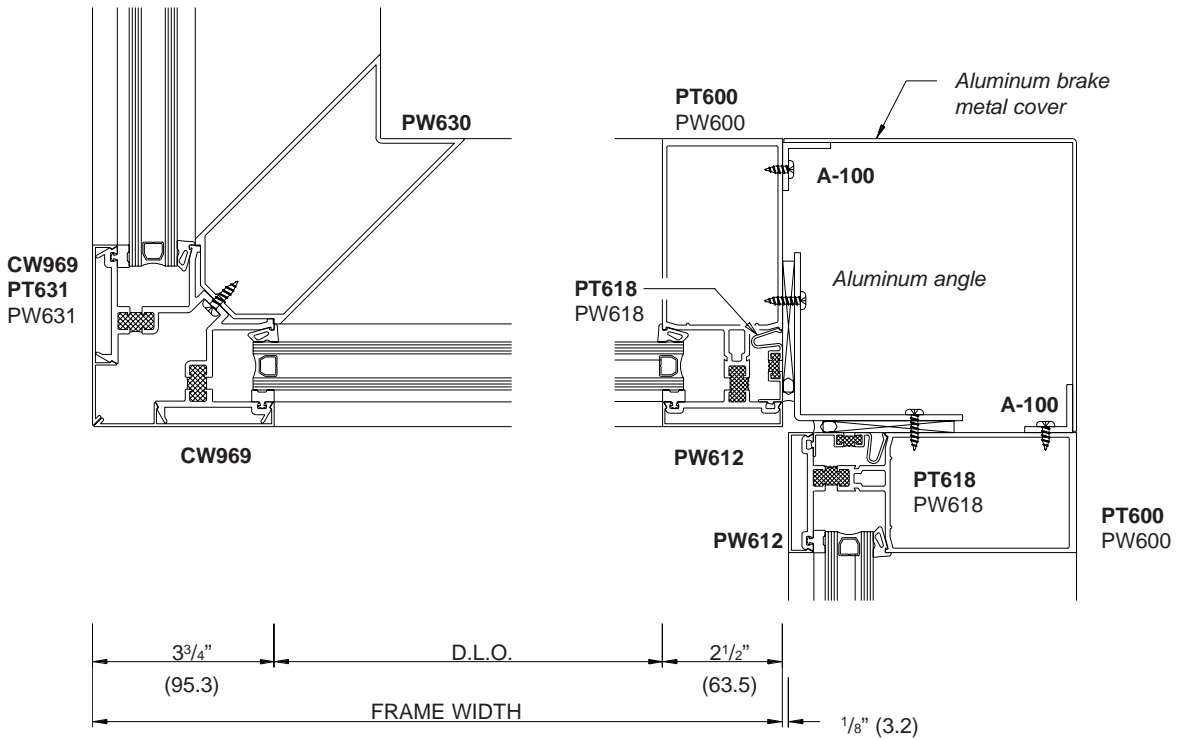
Typical Details

90° CORNER CONDITIONS

- ◆ Series 4250T
- ◆ Series 4250

P	T	6	0	0
---	---	---	---	---

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.



CURTAIN WALLS



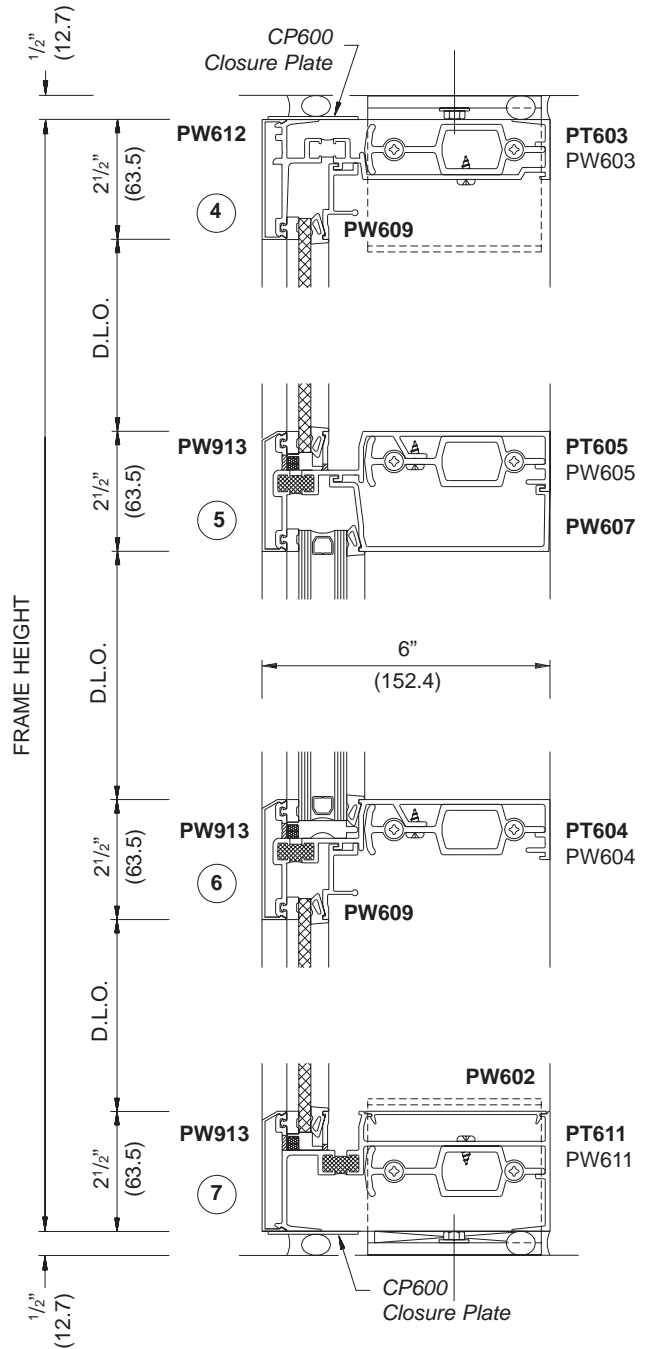
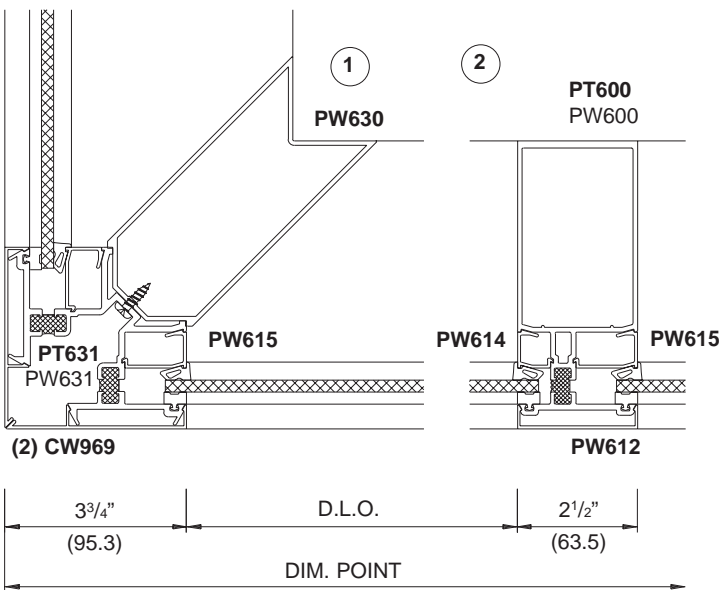
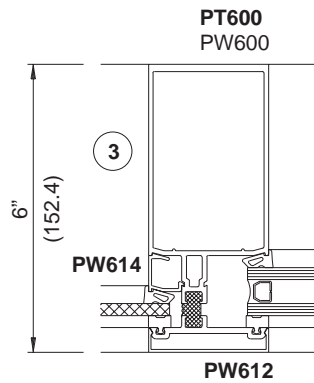
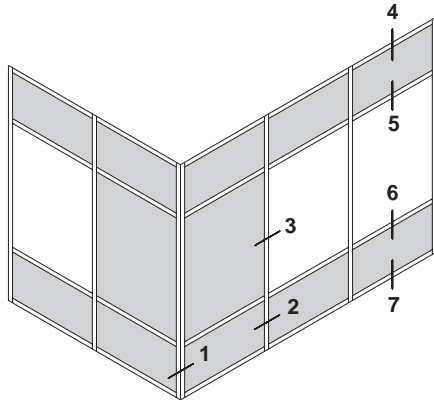
Typical Details

TRANSITION GLAZING - 1" (25) TO 1/4" (6)

- ◆ Series 4250T
- ◆ Series 4250

P T 6 0 0

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.





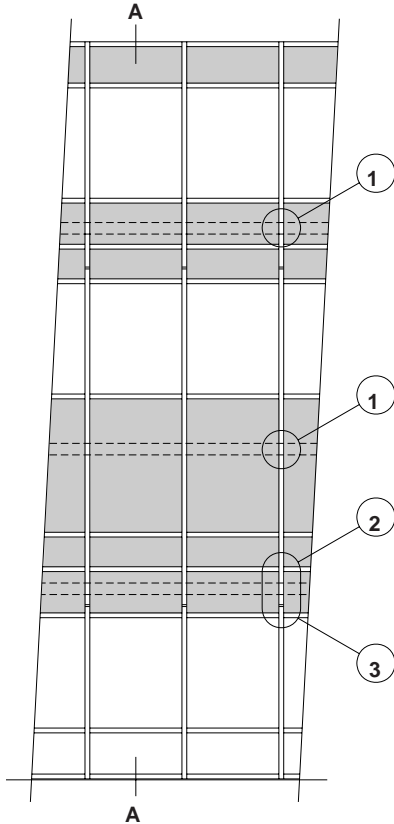
CURTAIN WALLS

Typical Details

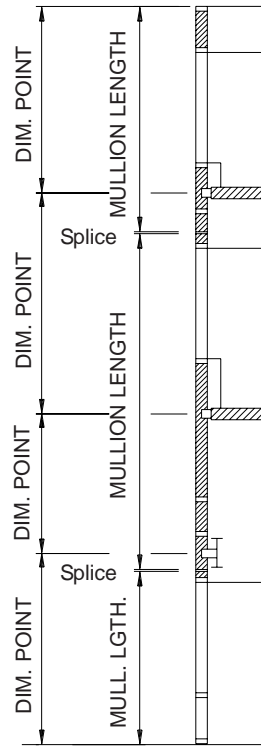
- ◆ Series 4250T
- ◆ Series 4250

P	T	6	0	0
---	---	---	---	---

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.



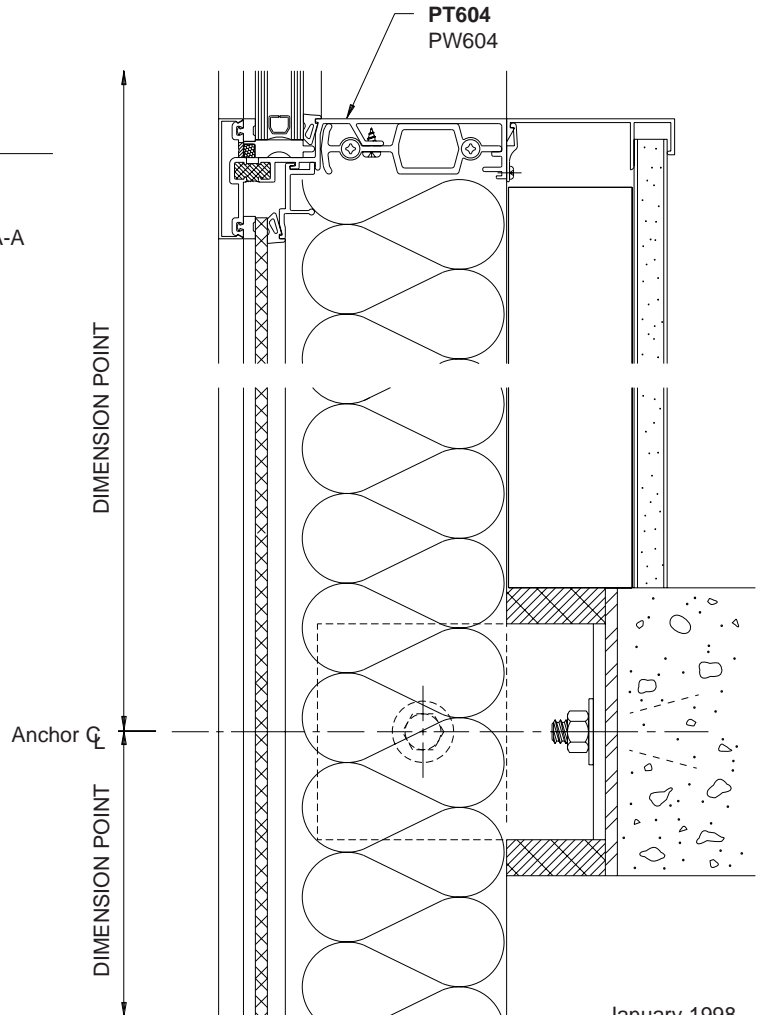
TYPICAL ELEVATION



WALL SECTION A-A



FIXED ANCHOR (DEADLOAD ANCHOR)
NOTE: Anchor type and size varies per job requirements



CURTAIN WALLS



Typical Details

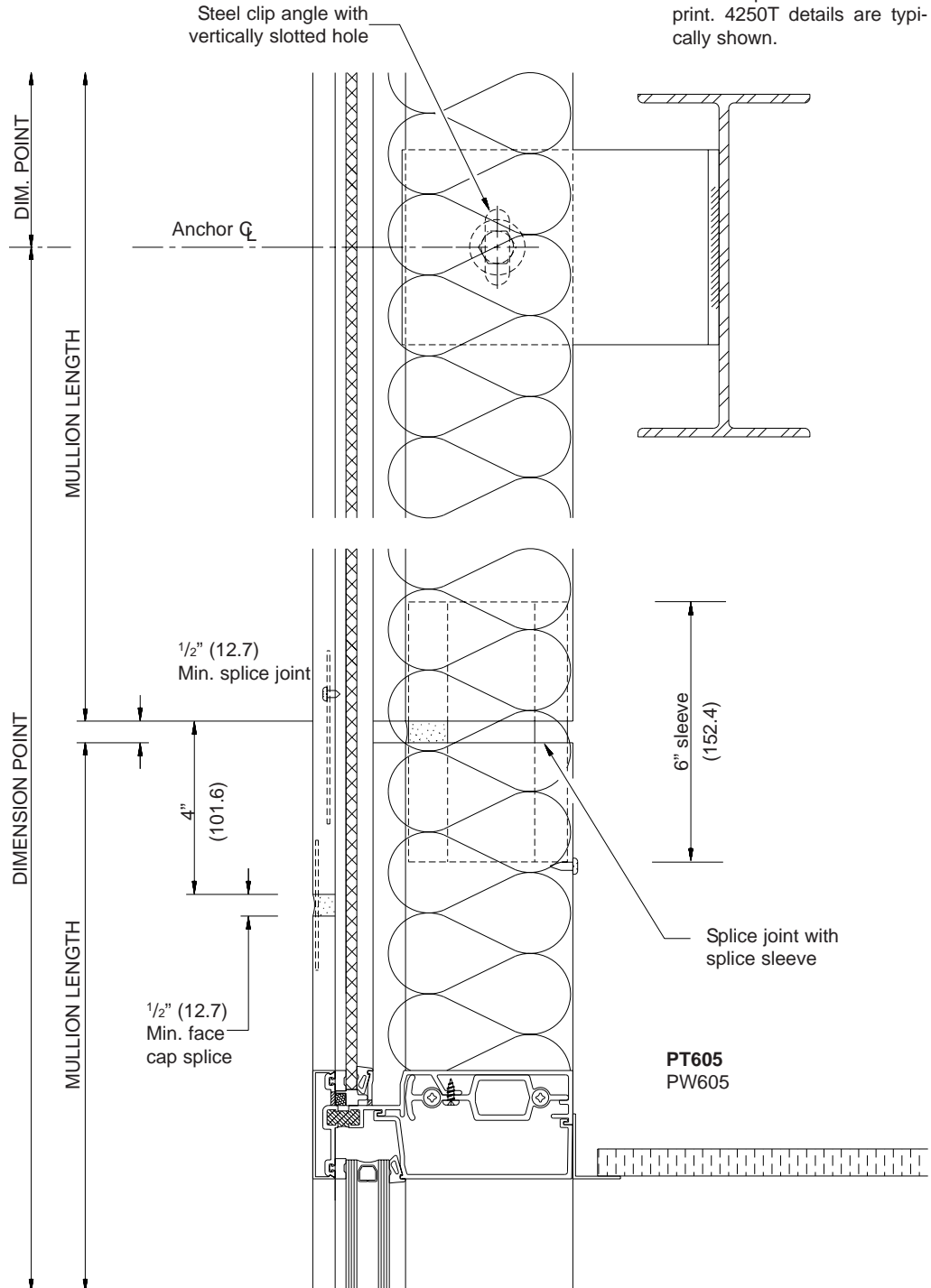
- ◆ Series 4250T
- ◆ Series 4250

P	T	6	0	0
---	---	---	---	---

Two digit Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. 4250T details are typically shown.

2
EXPANSION ANCHOR (WINDLOAD ANCHOR)

NOTE: Anchor type and size varies per job requirements



3
SPLICE JOINT

NOTE: Joint width should be based on mullion length and temperature differential. A 1/2" (12.7) gap allows for 1/4" (6.4) movement

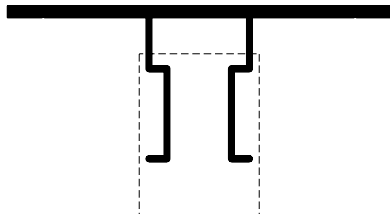


CURTAIN WALLS

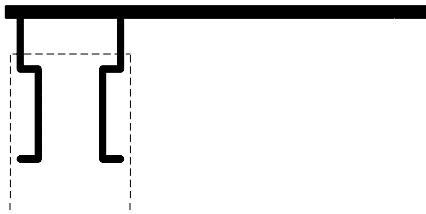
Accessories

- ◆ Series 4250T
- ◆ Series 4250

TOP AND BOTTOM ANCHORS

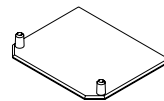


AP660 for PT600/PW600 verticals
AP661 for PT610/PW610 verticals

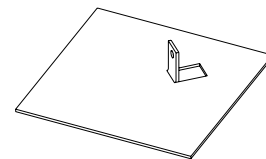


AP670 for PT600/PW600 wall jambs
AP671 for PT610/PW610 wall jambs

CLOSURE PLATES

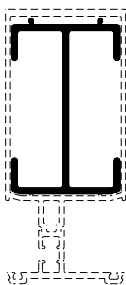


CP600
Top and bottom
closure plate for
standard vertical

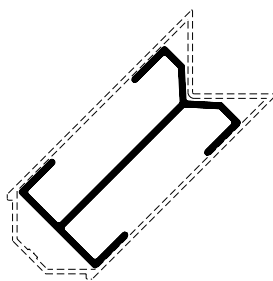


CP690
Top and bottom
closure plate for
90° outside corner

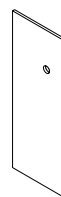
SPLICE SLEEVES



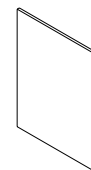
SL400
for PT600/PW600
and PT610/PW610



SL960
for PW630

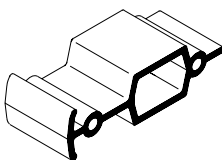


SL404
for PT600/PW600
and PT610/PW610

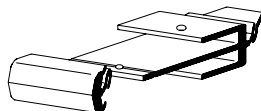


SL403
for CW901

SHEAR BLOCKS

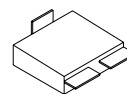


AP603
for typical horizontals
and head/sill members

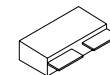


AP601
for horizontals
at 90° outside corner

END DAMS

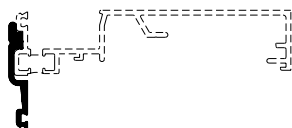


WD600
for verticals
at deep pocket



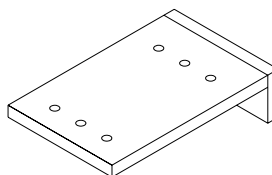
WD601
for verticals
at shallow pocket

RE-GLAZING

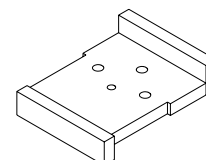


PW616
Re-glazing leg

DRILL JIGS



DJ610
for vertical mullions



DJ620
for horizontal mullions

CURTAIN WALLS



Accessories

- ◆ Series 4250T
- ◆ Series 4250

GLAZING GASKETS

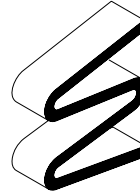


NP425 **NP606**
Standard gaskets

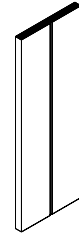


NP610 **NP620**
Replacement gaskets

SIDE BLOCKS

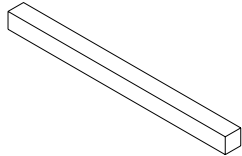


WB600
"W" Edge block
(Deep pocket)

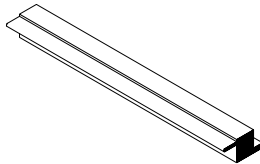


WB601
Edge block
(Shallow pocket)

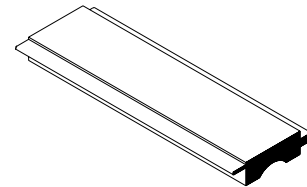
SETTING BLOCKS AND MISCELLANEOUS



UB600
Baffle



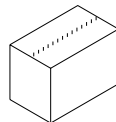
SB655
Setting block
for 1/4" glass



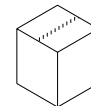
SB650
Setting block
for 1" glass



WD602
Dam at thermal void



BA603
Foam baffle at deep pocket
for **PW615** adaptor



BA602
Foam baffle at shallow pocket
for **PW614** adaptor



CURTAIN WALLS

Windload Charts

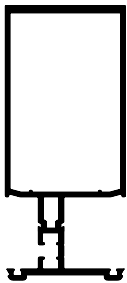
- ◆ Series 4250T
- ◆ Series 4250

Mullions designed for $1/175$ deflection ratio and for the following allowable working stresses:

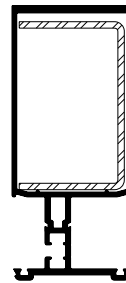
Aluminum alloy 6063-T5: allowable stress for windload 12,929 psi. (89 MPa)
 Steel reinforcing allowable stress for windload 26,666 psi. (183 MPa)

Curves represent the limit values and are based on criteria for simple beam, uniformly loaded, using the distribution of wind forces on the wall with rectangular loading. Glass is not considered as contributing to resistance of deflection.

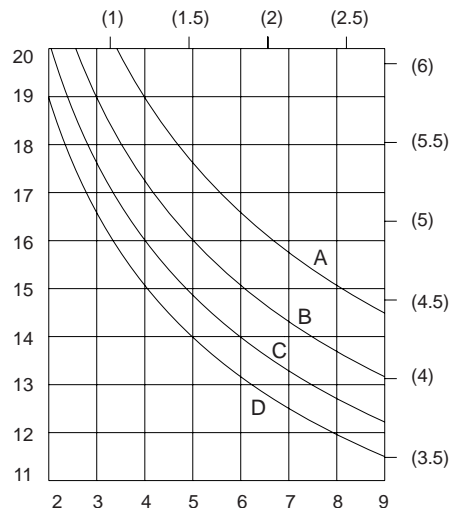
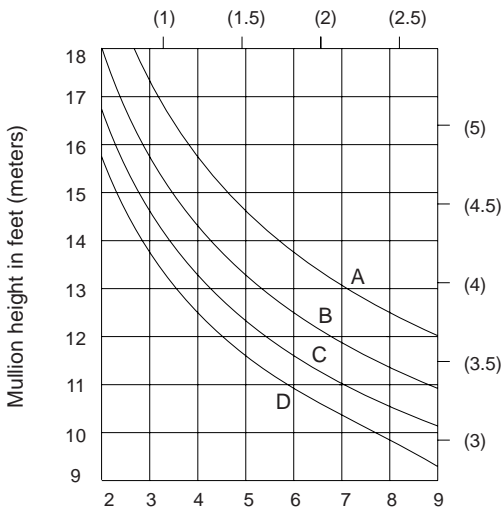
Limitation of vertical mullions for:
 CURVES A = 15 PSF (718 Pa)
 CURVES B = 20 PSF (957 Pa)
 CURVES C = 25 PSF (1197 Pa)
 CURVES D = 30 PSF (1436 Pa)



PW600 (shown)
PT600
 $I = 7.701 (320.54 \times 10^4)$
 $S = 2.698 (44.21 \times 10^3)$



PW600 (shown)
PT600
W/SS964
 Steel Stiffener
 $I = 1.996 (83.08 \times 10^4)$
 $S = 1.141 (18.70 \times 10^3)$
 $I_{AL+STL} = 13.489 (561.45 \times 10^4)$



CURTAIN WALLS



Windload Charts

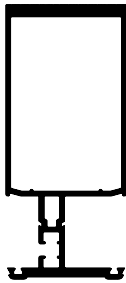
- ◆ Series 4250T
- ◆ Series 4250

Mullions designed for $1/175$ deflection ratio and for the following allowable working stresses:

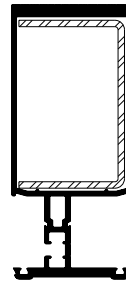
Aluminum alloy 6063-T5: allowable stress for windload 12,929 psi. (89 MPa)
 Steel reinforcing allowable stress for windload 26,666 psi. (183 MPa)

Curves represent the limit values and are based on criteria for simple beam, uniformly loaded, using the distribution of wind forces on the wall with rectangular loading. Glass is not considered as contributing to resistance of deflection.

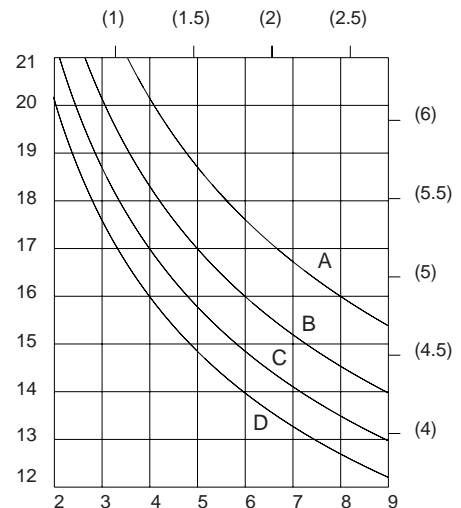
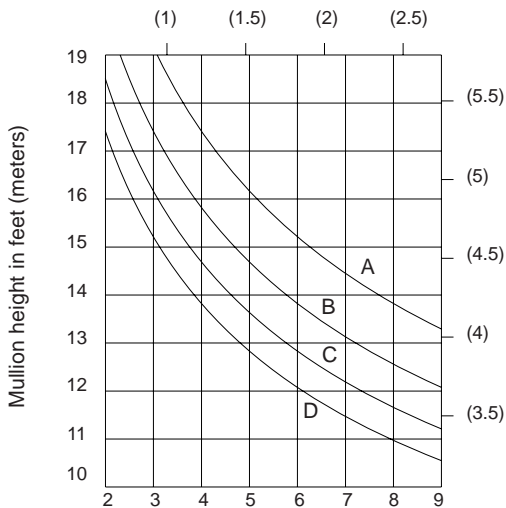
Limitation of vertical mullions for:
 CURVES A = 15 PSF (718 Pa)
 CURVES B = 20 PSF (957 Pa)
 CURVES C = 25 PSF (1197 Pa)
 CURVES D = 30 PSF (1436 Pa)



PW610 (shown)
PT610
 $I = 10.413 (433.42 \times 10^4)$
 $S = 3.520 (57.68 \times 10^3)$



PW610 (shown)
PT610
W/SS964
 Steel Stiffener
 $I = 1.996 (83.08 \times 10^4)$
 $S = 1.141 (18.7 \times 10^3)$
 $I_{AL+STL} = 16.201 (674.34 \times 10^4)$



Mullion spacing in feet (meters)



CURTAIN WALLS

Deadload Charts

- ◆ Series 4250T
- ◆ Series 4250

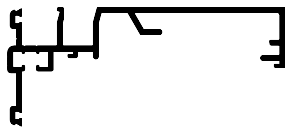
Deadload charts are based on 1/8" (3.2) maximum deflection at the center point of the horizontal member and on a glass weight of 3.25 P.S.F. (15.87 Kg/m²) for 1/4" (6) glass and 6.5 PSF (31.74 Kg/m²) for 1" (25) glass.

Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

CURVES B: 1/8 points or 8" (203.2) from corners, whichever is larger

FOR 1/4" (6) GLAZING

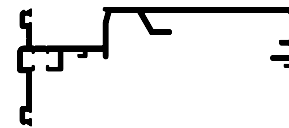


PW605 (shown)

PT605

$I_{yy} = .484 (20.15 \times 10^4)$

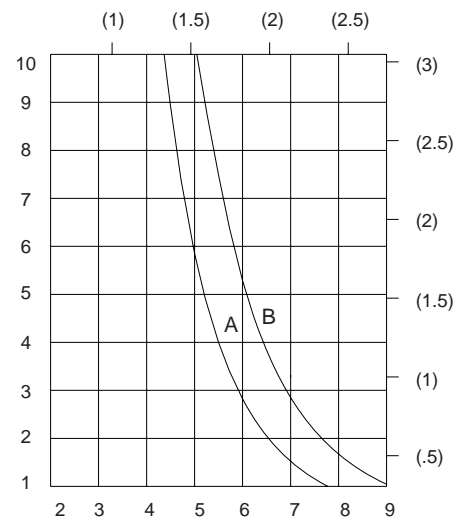
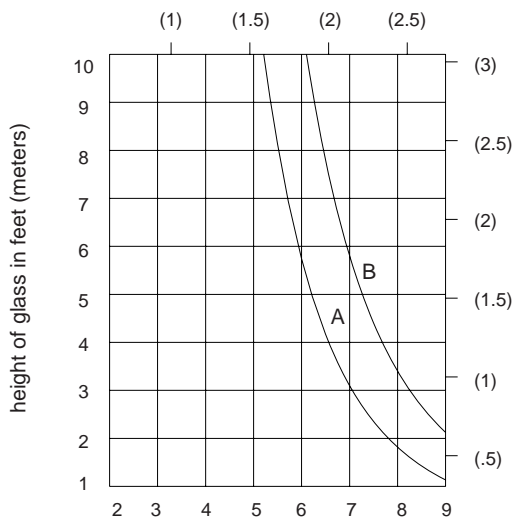
FOR 1" (25) GLAZING



PW604 (shown)

PT604

$I_{yy} = .476 (19.81 \times 10^4)$



Mullion span in feet (meters)