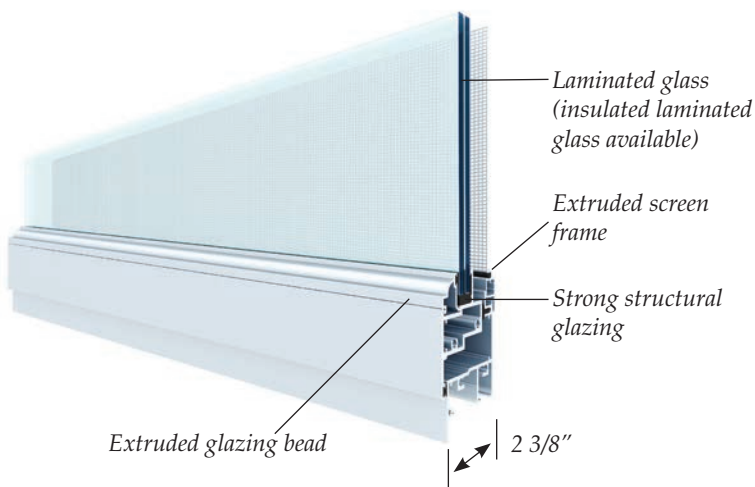


## 238 CASEMENT WINDOW

Industry leading casement with design pressures up to +110/-195 PSF, Ogee glazing beads and muntins, standard stainless steel package, multipoint locks and matching sightlines to the fixed and project out windows.



### Available Finishes

White, Bronze, Bone White Kynar or equivalent, Class I Clear Anodized, Aspen Wood Grain Finishes, Custom Colors

### Standard Glass Colors

Clear, Gray, Dark Gray (Turtle Code), Bronze, Solexia Green, Azuria Blue, White Interlayer, Mist (Pattern 62), Rain

### Glass Types

- 7/16" Laminated
- 3/4" Insulated Laminated

### Glass Coatings

- Energy Efficient LoE Coatings

### Standard Hardware

- Single arm stainless steel roto operator and nesting crank handle
- Stainless steel operator track
- Pair of stainless steel 4 bar concealed hinges
- All stainless steel multipoint lock bars
- Snubber blocks
- Small operator on units less than 24", Large operator on units 24" or more

### Standard Features

- Extruded screen frame with Super-View™ screen fiberglass mesh
- Extruded snap on glazing beads (in contoured ogee or contemporary square profiles)
- Stainless steel assembly screws and corner keys
- Double Weatherstripping
- 1/2" exterior flange frame

### Optional Items

- Limit opening devices
- Hinges with washability feature (for high-rise use)
- Custodial type locks (for institutional use)
- Equal leg frames
- Square glazing beads
- Extruded double applied raised profile 1" and 3 1/2" muntins (not applicable with insulated glass)
- Muntin grids inside insulated glass (GBGs)



### SIZE LIMITATIONS (In inches)

Minimum	Size	Maximum	Size
Minimum Width	18	Maximum Width	42
Minimum Height	17	Maximum Height	84

### MODULAR SIZES (In inches)

20 x 24	24 x 24	28 x 24	30 x 24	32 x 24	36 x 24
20 x 30	24 x 30	28 x 30	30 x 30	32 x 30	36 x 30
20 x 36	24 x 36	28 x 36	30 x 36	32 x 36	36 x 36 e
20 x 42	24 x 42	28 x 42	30 x 42 e	32 x 42 e	36 x 42 e
20 x 48	24 x 48	28 x 48 e	30 x 48 e	32 x 48 e	36 x 48 e
20 x 54	24 x 54	28 x 54 e	30 x 54 e	32 x 54 e	36 x 54 e
20 x 60	24 x 60	28 x 60 e	30 x 60 e	32 x 60 e	36 x 60 e
20 x 66	24 x 66	28 x 66 e	30 x 66 e	32 x 66 e	
20 x 72	24 x 72	28 x 72 e	30 x 72 e	32 x 72 e	
20 x 78	24 x 78	28 x 78 e			
20 x 84	24 x 84				

All window dimensions shown are tip to tip of exterior 1/2" flange on frame.

e = Indicates windows that comply with egress (emergency escape) opening requirements when properly located on wall opening.

### COMMODITY SIZES (In inches)

19 1/8 x 17	26 1/2 x 17	37 x 17
19 1/8 x 26	26 1/2 x 26	37 x 26
19 1/8 x 38 3/8	26 1/2 x 38 3/8	37 x 38 3/8 e
19 1/8 x 50 5/8	26 1/2 x 50 5/8 e	37 x 50 5/8 e
19 1/8 x 63	26 1/2 x 63 e	37 x 63 e
19 1/8 x 72	26 1/2 x 72 e	37 x 76 e

### PERFORMANCE RESULTS

Maximum Water Resistance		16.5 PSF
Large Missile Laminated Glass	26 1/2" x 50 5/8" Window (Ann/Ann or HS/HS Glass) 37" x 63" Window (Ann/Ann or HS/HS Glass) 37" x 76" Window (Ann/Ann or HS/HS Glass)	+110 /-195 PSF +110 /-120 PSF +56.3/-56.3 PSF
Large Missile Insulated Laminated Glass	26 1/2" x 50 5/8" Window (Temp-Air-Ann/Ann Glass) 37" x 63" Window (Temp-Air-Ann/Ann Glass) 37" x 76" Window (Temp-Air-Ann/Ann Glass) 26 1/2" x 50 5/8" Window (Temp-Air-Temp/Temp Glass) 37" x 63" Window (Temp-Air-Temp/Temp Glass)	+99.7 /-104.3 PSF +60 /-60 PSF +56.3/-56.3 PSF +110 /-195 PSF +110 /-117 PSF
Forced Entry Test (AAMA 1302.5)		Passed

\* Performance values for small missile are also available.

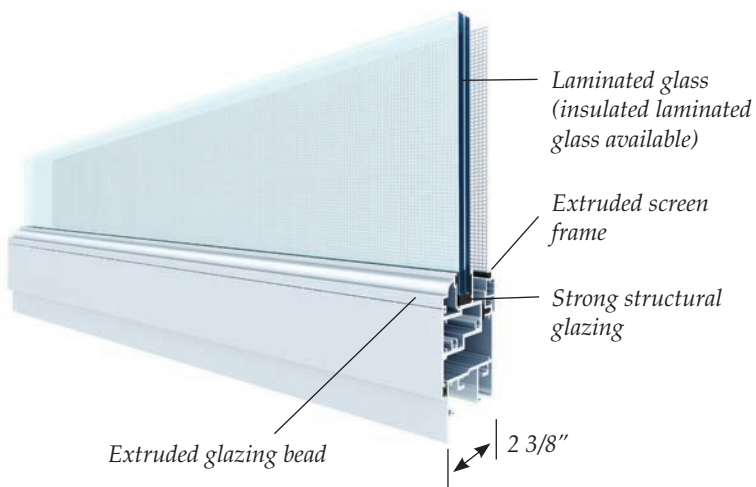
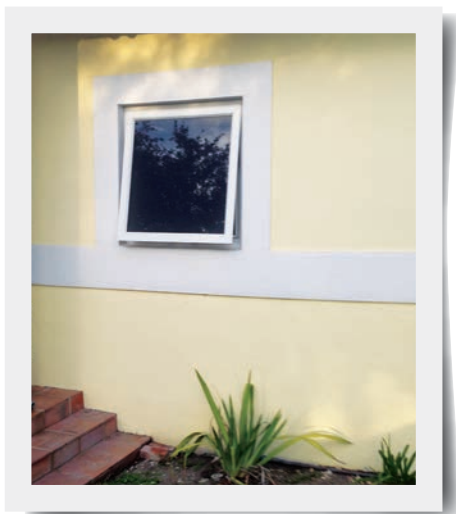
### ENERGY VALUES (NFRC Approved)

238 Casement	U-Factor	SHGC	VT
7/16" Laminated Gray	1.02	0.40	0.33
7/16" Laminated Clear	1.02	0.51	0.58
7/16" Laminated Clear LoE 366	1.02	0.26	0.40
3/4" Insulated Laminated Clear LoE 366	0.63	0.21	0.42
3/4" Insulated Laminated Clear LoE 270	0.63	0.27	0.46

\* For turtle code, please refer to center of glass values.

## 238 PROJECT OUT WINDOW

Industry leading Project Out with design pressures up to +110/-195 PSF, Ogee glazing beads and muntins, standard stainless steel package and matching sightlines to the fixed and casement windows.



### Available Finishes

White, Bronze, Bone White Kynar or equivalent, Class I Clear Anodized, Aspen Wood Grain Finishes, Custom Colors

### Standard Glass Colors

Clear, Gray, Dark Gray (Turtle Code), Bronze, Solexia Green, Azuria Blue, White Interlayer, Mist (Pattern 62), Rain

### Glass Types

- 7/16" Laminated
- 3/4" Insulated Laminated

### Glass Coatings

- Energy Efficient LoE Coatings

### Standard Hardware

- Dual arm stainless steel roto operator and crank handle
- Stainless steel operator track
- Pair of stainless steel 4 bar concealed hinges
- Pair of Cam locks
- Pair of stainless steel lock keepers
- Snubber blocks
- Small operator on units less than 32", Large operator on units 32" or more

### Standard Features

- Extruded screen frame with Super-View™ screen fiberglass mesh
- Extruded snap on glazing beads (in contoured ogee or contemporary square profiles)
- Stainless steel assembly screws and corner keys
- Double weatherstripping
- 1/2" exterior flange frame

### Optional Items

- Limit opening devices
- Custodial type locks (for institutional use)
- Equal leg frame
- Collapsible cranks
- Extruded double applied raised profile 1" and 3 1/2" muntins (not applicable with insulated glass)
- Muntin grids inside insulated glass (GBGs)



### SIZE LIMITATIONS (In inches)

Minimum	Size	Maximum	Size
Minimum Width	18	Maximum Width	72
Minimum Height	17	Maximum Height	72

Use of small arm operator will limit window opening (ventilation) to 2 3/4". Use of large arm operator will limit window opening (ventilation) to 8"

### MODULAR SIZES (In inches)

20 x 24	24 x 24	28 x 24	30 x 24	32 x 24	36 x 24	40 x 24	42 x 24	48 x 24	54 x 24	60 x 24	66 x 24	72 x 24
20 x 30	24 x 30	28 x 30	30 x 30	32 x 30	36 x 30	40 x 30	42 x 30	48 x 30	54 x 30	60 x 30	66 x 30	72 x 30
20 x 36	24 x 36	28 x 36	30 x 36	32 x 36	36 x 36	40 x 36	42 x 36	48 x 36	54 x 36	60 x 36		
20 x 42	24 x 42	28 x 42	30 x 42	32 x 42	36 x 42	40 x 42	42 x 42	48 x 42	54 x 42			
20 x 48	24 x 48	28 x 48	30 x 48	32 x 48	36 x 48	40 x 48	42 x 48	48 x 48				
20 x 54	24 x 54	28 x 54	30 x 54	32 x 54	36 x 54	40 x 54	42 x 54					
20 x 60	24 x 60	28 x 60	30 x 60	32 x 60	36 x 60							
20 x 66	24 x 66	28 x 66	30 x 66	32 x 66								
20 x 72	24 x 72	28 x 72	30 x 72	32 x 72								

All window dimensions shown are tip to tip of exterior 1/2" flange on frame.  
Do not use Project Out windows where Egress (Emergency Escape) is required.

### COMMODITY SIZES (In inches)

19 1/8 x 17	26 1/2 x 17	37 x 17	53 1/8 x 17
19 1/8 x 26	26 1/2 x 26	37 x 26	53 1/8 x 26
19 1/8 x 38 3/8	26 1/2 x 38 3/8	37 x 38 3/8	53 1/8 x 38 3/8
19 1/8 x 50 5/8	26 1/2 x 50 5/8	37 x 50 5/8	
19 1/8 x 63	26 1/2 x 63	37 x 63	
19 1/8 x 72	26 1/2 x 72		

### PERFORMANCE RESULTS

Maximum Water Resistance		16.5 PSF
Large Missile Laminated Glass	53 1/8" x 26" Window (Ann/Ann Glass) 54" x 24" Window (Ann/Ann Glass) 53 1/8" x 26" Window (HS/HS Glass) 54" x 24" window (HS/HS Glass)	+110 /-195 PSF +110 /-195 PSF +110 /-120 PSF +110 /-195 PSF
Large Missile Insulated Laminated Glass	53 1/8" x 26" Window (Ann-Air-Ann/Ann Glass) 54" x 24" Window (Ann-Air-Ann/Ann Glass) 53 1/8" x 26" Window (Temp-Air-Temp/Temp Glass) 54" x 24" Window (Temp-Air-Temp/Temp Glass)	+101.30 /-120 PSF +107.9 /-107.9 PSF +110 /-120 PSF +110 /-195 PSF
Forced Entry Test (AAMA 1302.5)		Passed

\* Performance values for small missile are also available.

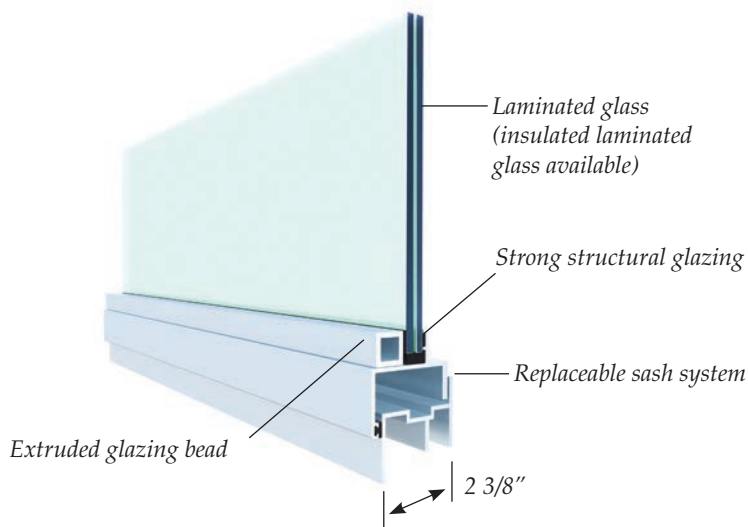
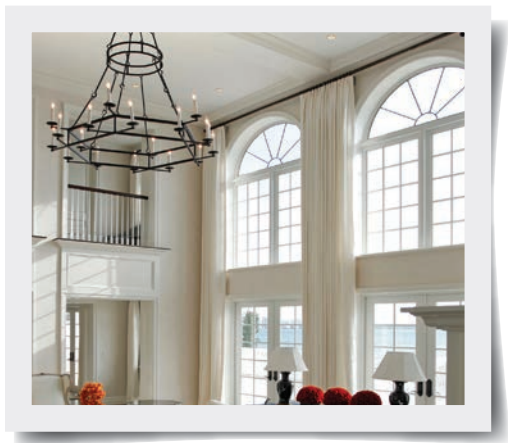
### ENERGY VALUES (NFRC Approved)

238 Project Out	U-Factor	SHGC	VT
7/16" Laminated Gray	1.05	0.40	0.33
7/16" Laminated Clear	1.05	0.51	0.58
7/16" Laminated Clear LoE 366	1.05	0.26	0.40
3/4" Insulated Laminated Clear LoE 366	0.63	0.21	0.42
3/4" Insulated Laminated Clear LoE 270	0.63	0.27	0.46

\* For turtle code, please refer to center of glass values.

## 238 FIXED AND DESIGNER FIXED WINDOW

Available up to 45 Sq ft, architecturally correct sightlines, sash and frame construction allowing for easy sash replacement and install.



Designer window shown. See profile of casement for rectangular fixed windows.

### Available Finishes

White, Bronze, Bone White Kynar or equivalent, Class I Clear Anodized, Aspen Wood Grain Finishes, Custom Colors

### Standard Glass Colors

Clear, Gray, Dark Gray (Turtle Code), Bronze, Solexia Green, Azuria Blue, White Interlayer, Mist (Pattern 62), Rain

### Glass Types

- 7/16" Laminated
- 3/4" Insulated Laminated

### Glass Coatings

- Energy Efficient LoE Coatings

### Standard Features

- Extruded glazing beads (contoured ogee for rectangular window, and contemporary square bead for designer)
- Stainless steel assembly screws
- Corner keys for rectangular units and welded corner in designer units
- Double Weatherstripping
- 1/2" exterior flange frame

### Optional Items

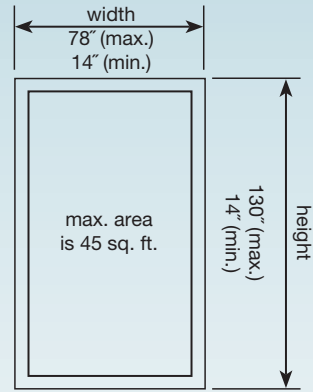
- Decorative screw covers for rectangular fixed window
- Square glazing beads
- Equal leg frame (rectangular fixed only)
- Extruded double applied raised profile 1" and 3 1/2" muntins (not applicable with insulated glass)
- Muntin grids inside insulated glass (GBGs)



– See page 29 for some of our Designer Fixed configurations.

## SIZE LIMITATIONS ON RECTANGULAR FIXED WINDOW

- Visible glass area (daylight dimension) equals window “width” or “height”- 7”
- Maximum area 25 square feet for insulated laminated glass
- Overall square footage area not to exceed 45 square feet for laminated glass
- Maximum window width is 130” (Maximum height at this width is 48”)
- Minimum window width is 14”
- Please contact your CGI provider for Designer Fixed window size limitations



## PERFORMANCE RESULTS

### SERIES 238 RECTANGULAR FIXED WINDOW

Maximum Water Resistance		16.5 PSF
Large Missile Laminated Glass	26 1/2" x 50 5/8" Window (Ann/Ann or HS/HS Glass) 37" x 63" Window (Ann/Ann or HS/HS Glass) 48" x 72" Window (Ann/Ann or HS/HS Glass) 26 1/2" x 50 5/8" Window (HS/HS Glass) 48" x 72" Window (HS/HS Glass) 54" x 120" Window (HS/HS Glass)	+110 /-148.7 PSF +102.1/-111.3 PSF +85.5 /-85.5 PSF +110 /-195 PSF +90 /-90 PSF +50 /-50 PSF
Large Missile Insulated Laminated Glass	26 1/2" x 50 5/8" Window (Ann-Air-Ann/Ann Glass) 37" x 63" Window (Ann-Air-Ann/Ann Glass) 48" x 72" Window (Ann-Air-Ann/Ann Glass) 26 1/2" x 50 5/8" Window (Temp-Air-Temp/Temp Glass) 37" x 63" Window (Temp-Air-Temp/Temp Glass) 48" x 72" Window (Temp-Air-Temp/Temp Glass)	+110 /-139.4 PSF +74.9 /-74.9 PSF +53.7 /-53.7 PSF +110 /-147.2 PSF +110.2 /-110.2 PSF +90 /-90 PSF
Forced Entry Test (AAMA 1302.5)		Passed

\* Design Load Capacities with Reinforcement

## PERFORMANCE RESULTS

### SERIES 238 DESIGNER FIXED WINDOW

Maximum Water Resistance		16.5 PSF
Large Missile Laminated Glass	26 1/2" x 50 5/8" Window (Ann/Ann Glass) 37" x 63" Window (Ann/Ann Glass) 48" x 72" Window (Ann/Ann Glass) 26 1/2" x 50 5/8" Window (HS/HS Glass) 37" x 63" Window (HS/HS Glass) 48" x 72" Window (HS/HS Glass)	+110 /-147.2 PSF +110 /-110.2 PSF +83.9 /-83.9 PSF +110 /-169.7 PSF +110 /-120 PSF +90.0 /-90.0 PSF
Large Missile Insulated Laminated Glass	26 1/2" x 50 5/8" Window (Temp-Air-Ann/Ann Glass) 37" x 63" Window (Temp-Air-Ann/Ann Glass) 48" x 72" Window (Temp-Air-Ann/Ann Glass) 26 1/2" x 50 5/8" Window (Temp-Air-Temp/Temp Glass) 37" x 63" Window (Temp-Air-Temp/Temp Glass) 48" x 72" Window (Temp-Air-Temp/Temp Glass)	+110 /-133 PSF +72.9 /-72.9 PSF +52.9 /-52.9 PSF +110 /-169.7 PSF +110 /-120 PSF +90.0 /-90.0 PSF
Forced Entry Test (AAMA 1302.5)		Passed

\* Performance values for small missile are also available.

## ENERGY VALUES (NFRC Approved)

238 Designer/Fixed	U-Factor	SHGC	VT
7/16" Laminated Gray	0.99	0.46	0.38
7/16" Laminated Clear	0.99	0.58	0.68
7/16" Laminated Clear LoE 366	0.99	0.29	0.47
3/4" Insulated Laminated Clear LoE 366	0.52	0.23	0.49
3/4" Insulated Laminated Clear LoE 270	0.52	0.30	0.54

\* For turtle code, please refer to center of glass values.