Marvin Modern Casement/Awning Crank-out Window

Note: Turn on Hidden text to review Specifier Notes.

NOTES TO SPECIFIER: Select product options per 01 62 00

1. **GENERAL**
	1. SECTION INCLUDES:
		1. High-Density Fiberglass [Casement] [Awning] Crank-out windows complete with frame, sash, glazing and operating hardware.
		2. High-Density Fiberglass Casement Picture window complete with frame, sash and glazing.
	2. RELATED SECTIONS
		1. 01 33 00: Submittal Procedures: Shop Drawings, Product Data and Samples
		2. 01 33 26: Source Quality Control Reporting
		3. 01 62 00: Product Options
		4. 01 65 00: Product Delivery Requirements
		5. 01 66 00: Storage and Handling Requirements
		6. 01 71 00: Examination and Preparation
		7. 01 73 00: Installation
		8. 01 74 00: Final Cleaning
		9. 01 76 00: Protecting Installed Construction
		10. 07 92 00: Joint Sealants
	3. REFERENCES
		1. ASTM International (ASTM):
			1. C1036: Standard Specification for Flat Glass
			2. C1048: Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
			3. C1376: Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass
			4. E1105: Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference
			5. E1300: Standard Practice for Determining Load Resistance of Glass in Buildings
			6. E2190: Standard Specification for Insulating Glass Unit Performance and Evaluation
			7. E283: Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
			8. E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
			9. E547: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference
		2. American Architectural Manufacturer’s Association/Window and Door Manufacturer’s Association/Canadian Standards Association (AAMA/WDMA/CSA):
			1. 101/I.S.2/A440: North American Fenestration Standard (NAFS)/Specification for Windows, Doors and Skylights
		3. Window and Door Manufacturer’s Association (WDMA):
			1. 101/I.S.2 WDMA Hallmark Certification Program
		4. Insulating Glass Manufacturer’s Association/Insulating Glass Certification Council (IGMA/IGCC)
		5. Architectural Aluminum Manufacturer’s Association (AAMA):
			1. 502: Air and Water Leakage Resistance testing of Installed Windows and Doors
			2. 611: Voluntary Specification for Anodized Architecturally Finished Aluminum
			3. 625: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performance Organic Coatings on Fiber Reinforced Thermoset Profiles
			4. 2603: Voluntary Specification, performance requirements and test procedures for pigmented organic coatings on aluminum extrusions and panels
			5. 2605: Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminum extrusions and panels
		6. National Fenestration Rating Council (NFRC):
			1. 101: Procedure for Determining Fenestration Product Thermal Properties
			2. 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence
	4. SUBMITTALS
		1. Shop Drawings: Submit shop drawings under provision of CSI MasterFormat Section 01 33 00.
		2. Product Data: Submit product data for certified options under provision of CSI MasterFormat Section 01 33 00. Product performance rating information may be provided via quote, performance rating summary (NFRC Data), or certified performance grade summary (WDMA Hallmark data).
		3. Samples:
			1. Submit corner section under provision of CSI MasterFormat Section 01 33 00.
			2. Specified performance and design requirements under provisions of CSI MasterFormat Section 01 33 00.
	5. QUALITY ASSURANCE
		1. Requirements: Consult local code for International Building Code (IBC) and International Residential Code (IRC) adoption year and pertinent revisions
		2. Performance Grade as certified by AAMA/WDMA/CSA 101/I.S.2/A400
			1. [Single Units (Casement Crank-Out)]: NOTE TO SPECIFIER: Glass pane thickness varies per size and performance level
				1. CW-PG50-FW

Maximum frame size of 2’-8” (813 mm) by 9’-0” (2743 mm), 3’-0” (922 mm) by 8’-6” (2611 mm), or 3’-4” (1024 mm) by 8’-0” (2458 mm), or 3’-8” (1126 mm) by 7’-8” (2355 mm), tested to 1.57 psf Air, 12.1 psf Water, 50 psf Structural with annealed glass

* + - 1. [Single Units (Awning Crank-Out)]:
				1. CW-PG50-FW

Maximum frame size of 5’-4” (1638 mm) by 8’-0” (2458 mm), or 6’-0” (1843 mm) by 6’-0” (1843 mm), tested to 1.57 psf Air, 12.1 psf Water, 50 psf Structural with annealed glass

* + - 1. [Single Units (Awning Crank-Out)]:
				1. LC-PG45-FW

Maximum frame size of 8’-0” (2,438 mm) by 5’-4” (1638 mm) tested to 1.57 psf Air, 12.1 psf Water, 45 psf Structural with annealed glass

* + - * 1. CW-PG50-FW

Maximum frame size of 6’-0” (1,828 mm) by 6’-0” (1,828 mm) tested to 1.57 psf Air, 12.1 psf Water, 50 psf Structural with annealed glass

* + - 1. {Single Units (Casement Picture))]:
				1. CW-PG50-FW

[Maximum frame size of 9’-0” (2743mm) by 6’2” (1880mm), or 6’2” (1880mm) by 9’0” (2743mm), or 8’-6” (2591 mm) by 6’-7” (2007 mm), or 6’-7” (2007 mm) by 8’-6” (2591 mm), or 8’-0” (2438 mm) by 7’-0” (2134 mm), or 7’-0” (2134 mm) by 8’-0” (2438 mm), tested to 1.57 psf Air, 12.1 psf Water, 75 psf Structural with annealed glass]

* + - 1. [Mulled Units [Horizontal] [Vertical]]:
				1. CW-PG40-FW (Standard 1/2” x 2 ½” Aluminum)

Maximum frame size of 168” (4301 mm) by 8’-0” (2458 mm), or 8’-0” (2458 mm) by 14’-0” (4301 mm), tested to 1.57 psf Air, 12.1 psf Water, 40 psf Structural with annealed glass

* + - * 1. CW-PG-40-FW (1/2” x 2 ½” Flat Steel Mull)

Maximum assembly frame size of 9’-0” (2743 mm) by 14’-0” (4267 mm), or 14’-0” (4267 mm) by 9’-0” (2743 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 40 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + - * 1. LC-PG-50-FW (1/2” x 2 ½” Flat Steel Mull)

Maximum assembly frame size of 9’-0” (2743 mm) by 14’-0” (4267 mm), or 14’-0” (4267 mm) by 9’-0” (2743 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 50 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + - * 1. CW-PG-40-FW (1/2” x 4” Flat Steel Mull)

Maximum assembly frame size of 11’-9 3/8” (3591 mm) by 14’-0” (4267 mm), or 14’-0” (4267 mm) by 11’-9 3/8” (3591 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 40 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + - 1. [Mulled Units [Multi-High/Multi-Wide]]:
				1. LC-PG-50-FW (1/2” x 2 ½” Flat Steel Mull)

Maximum assembly frame size of 6’-0” (1828 mm) by 14’-0” (4267 mm), or 14’-0” (4267 mm) by 6’-0” (1828 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 50 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + - * 1. CW-PG-40-FW (1/2” x 2 ½” Flat Steel Mull)

Maximum assembly frame size of 6’-0” (1828 mm) by 14’-0” (4267 mm), or 14’-0” (4267 mm) by 6’-0” (3591 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 40 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + - * 1. CW-PG-40-FW (1/2” x 4” Flat Steel Mull)

Maximum assembly frame size of 9’-0” (2743 mm) by 14’-0” (4267 mm), or 14’-0” (4267 mm) by 9’-0” (2743 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 40 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + - * 1. CW-PG-40-FW (2” x 4” Tube Steel Mull)

Maximum assembly frame size of 10’-0” (3048 mm) by 16’-1 1/2” (4267 mm), or 16’-1 1/2” (4267 mm) by 10’-0” (3048 mm), tested to 1.57 psf Air, 7.5 psf Water, +/- 40 psf Structural, maximum tributary width of 7’-0” (2134 mm) for assemblies, glass type varies based on aspect ratios

* + 1. NFRC Certified U-Value:
			1. Gateway tested frame size of 2’-5” (737 mm) by 4’-11” (1499 mm)

NOTE TO SPECIFIER: Refer to the Certified Performance Directory at [www.NFRC.org](http://www.nfrc.org/) for U-Value ratings with various glass types

* + 1. Forced Entry Resistance: Grade 10
	1. DELIVERY, STORAGE, AND HANDLING
		1. Comply delivery, storage and handling per Section 01 65 00
		2. Deliver in original packaging and protect from weather
		3. Store window units in an upright position in a clean and dry storage area above ground to protect from weather under provision of Section 01 66 00
	2. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within the limits recommended by the manufacture for optimum results. Do not install products under environmental conditions outside of manufacture’s recommended limits.
	3. WARRANTY

# Complete and current warranty information is available at [www.marvin.com/warranty](http://www.marvin.com/warranty) (effective 10/29/2018). The following summary is subject to the terms, condition, limitations and exclusions set forth in the Marvin Windows and Door Limited Warranty and Products in Coastal Environments Limited Warranty Supplement:

* + 1. Glass Components:
			1. Glass warranties apply to factory-installed glass or Marvin supplied glass installed by Marvin-authorized service personnel. Standard insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years in sizes up to sixty (60) square feet, and for ten (10) years in sizes sixty (60) square feet and larger. Non-tempered glass is warranted against stress cracks caused by manufacturing defects for ten (10) years. All other glass and glass features are provided with the same warranties, limitations, and exclusions Marvin receives from its supplier; contact Marvin for further details.
		2. Exterior Finish:
			1. Exterior composite cladding finish is warranted against manufacturing defects per AAMA 625, Section 5, for ten (10) years.
		3. Interior Finish:
			1. Factory-applied interior coated aluminum finish is warranted to be free from Finish Defects for a period of ten (10) years. Anodized interior aluminum finish is warranted to be free from manufacturing defects for five (5) years.
		4. Non-Glass Components:
			1. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years. Stainless steel hardware and hardware with PVD finishes installed in coastal environments are warranted to be free from manufacturing defects that result in abnormal deterioration of the finish for a period of ten (10) years. Other hardware finishes are not warranted in coastal environments. Electric operators and other motorized accessories are provided with the same warranties, limitations, and exclusions Marvin receives from its supplier; contact Marvin for further details.
1. **PRODUCTS**
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Marvin Windows and Doors, States Avenue, Warroad, Minnesota 56763, 218-386-1430, [www.marvin.com](http://www.marvin.com/)
	2. FABRICATION
		1. Frame:
			1. Exterior: High-Density Fiberglass one piece frame with vinyl nailing fin

NOTE TO SPECIFIER: Installation is screw through jamb, nailing fin is intended for placement

* + - 1. Interior: Extruded Aluminum Covers
				1. 15/16” (24 mm) Dual-pane glass, covers are 2-7/8” (73 mm) deep
				2. 1-1/4” (32 mm) Triple-pane glass, covers are 2 19/32” (66 mm) deep
			2. Frame Filler (Optional): Extruded Aluminum 9/16” (14 mm) x 1/4” (6 mm)]

NOTE TO SPECIFIER: Use Frame Filler available for alternative drywall applications

* + - 1. Overall Thickness: 1-7/16” (37 mm)
			2. Jamb Depth: 4-1/2” (114 mm)
		1. Sash:
			1. Exterior: High-Density Fiberglass
			2. Interior: Extruded Aluminum
			3. Thickness: 2 1/4” (58 mm)
			4. Top rail height: 2” (51 mm)
			5. Bottom rail height: 2” (51 mm)
			6. Locking Stile width: 2” (51 mm)

NOTES TO SPECIFIER

Glazing General:

* Specifier: Select the applicable glazing type and configuration, refer to the Architectural Detail Manual or Marvin Representative for additional information.

Glazing Pane Thickness:

* Glass types are dependent thickness and availability. Consult ADM or OMS for availability
* Triple-Pane IG pane thicknesses are limited to 4.7mm and below
* Low ELR are limited to pane thicknesses of 5.7mm and below
* Low ERS with other Low E coatings are limited to pane thicknesses of 5.7mm and below
* Obscure (Pattern 62) with Low E are limited to pane thicknesses of 4.7mm and below
* Frost with Low E are limited to pane thicknesses of 5.7 and 3.9 mm
* Tints are limited to pane thicknesses of 5.7mm
* Capillary tubes are required in air spaces for high elevation

Glazing Spacer:

* Stainless Steel spacers on all shapes with angles 45 degrees and larger
* Aluminum spacers on all shapes with angles less than 45 degrees
	+ 1. Glazing:
			1. [Dual-Pane] [Triple-Pane] insulating annealed one lite glass with preserve film on interior and exterior panes
				1. Insulating glass per ASTM E2190
				2. Pane thickness shall be sized to rated design pressure per ASTM E-1300
			2. [Dual-Pane] [Triple-Pane] insulating tempered one lite glass
				1. Safety glazing per CPSC 16 CFR 1201, SGCC, & CAN/CGSB
			3. Configurations:
				1. Dual-Pane insulating glass:

15/16” (24 mm) Overall thickness

Surface Treatment:

Low E Coating: [Low E1] [Low E2] [Low E3] [Low E2/ERS] [Low ELR] [Low E3/ERS] [Obscure/Low E1] [Low E2/Obscure] [Low E3/Obscure] [Frost/E1] [E2/Frost] [E3/Frost] [Gray Tint] [Bronze Tint] [Gray Tint/Low E1] [Gray Tint/Low E2] [Bronze Tint/Low E1] [Bronze Bronze Tint/Low E2]

Gas Fill:

[Air with capillary tubes] [Argon]

* + - * 1. Triple-Pane insulating glass:

1-1/4” (32 mm) Overall thickness

Surface Treatment:

[Low E1/E1] [Low E2/E1] [Low E3/E1]

[Low E3/E1/ERS][Low E2/E1/ERS]

Gas Fill:

[Air with capillary tubes] [Argon]

* + - 1. Perimeter spacer material:
				1. Black painted Stainless Steel
				2. Seal: Black or Dark Gray primary seal with secondary silicone sealant
			2. Simulated Divider Options:
				1. 2-7/8” (73 mm) wide to simulate frame division on one lite units with aluminum interior and high-density fiberglass exterior bars
				2. 7/8” (22 mm) wide to simulate glass division on one lite units with aluminum interior and exterior bars
				3. 1 1/8” (29 mm) wide to simulate glass division on one lite units with aluminum interior and exterior bars
				4. Dual spacers in all air spaces
		1. Hardware:
			1. Handle Set: Folding crank handle with rotating tip to open and close the sash
			2. Lock lever/s:
				1. Casement: One lever to activate multi-point locks
				2. Awning: One lever on each jamb to activate multi-point locks
			3. Colors: [Matte Black] [Matte Bronze] [Satin Nickel] [Silver] [Stone White]
			4. Mechanisms:
				1. Operator arm is Silver painted
				2. Hinges are Stainless Steel
		2. Lock Status Sensor (Optional)
			1. Lock Status Sensor
				1. Unit is factory-prepared for an integrated lock status sensor system. Sensor and actuator (magnet) are mounted within the edges of the operating sash
				2. Lock Status Sensor is [wireless] [wired]

Wireless requires a secondary transmitter for operation, supplied by others

Wired requires a connection to a home security system, supplied by others

* + - * 1. Sensor route locations are at the locking stile with the actuator located on the face of the sash
				2. Lock Status Sensor includes:

Sensor: Reed

Actuator: Neodymium

* + 1. Automation (Optional)
			1. Automated Hardware
				1. Operation: Casement or awning with automated opening, closing and locking
				2. Sash and Lock position

Reed switch for validating sash position before locking

Reed switch for sensing a manually unlocked sash (only on casements taller than 38”)

* + - * 1. Control system powered by 1 amp of 24Vdc per window

Lock and sash motors

DC brushed motors with encoder

Capable of applying up to 100 pounds of force

Power backup

Supercapacitor bank with enough energy to close and lock automatically when power is lost.

System is comprised of control boards, sash and lock motors, backup energy storage, and moisture sensor.

Moisture Sensor

Sash will close and lock upon detection of moisture

Moisture set point is determined and reset when sash is opened.

Five (5) dry contact inputs for use with 3rd party devices or switches

Three contacts open the sash to various positions, one closes and locks, and one stops the sash.

* + - * 1. Control interface

Unit-mounted switch on the jamb

On-window switch can control window open or closed

Colors: White or Black

LED to indicate operational status and troubleshooting

Pinhole access to pairing button for connection to WiFi

Internet connectivity

Connects to a local network and enables optional control of the device via the internet

Manual egress capable on casements at least 27” wide and at least 38” high.

* + 1. Screen (Optional):
			1. Screen surround is extruded aluminum, integrated latches and high-transparency charcoal mesh. Screen and latches are color matched to the interior aluminum color.
		2. Configuration:
			1. Casement Crank-out [Left handed] [Right handed]
			2. Awning Crank-out
		3. Finish:
			1. Interior Frame and Exterior Covers:
				1. Painted extruded aluminum covers with 70% PVDF coating applied that meets AAMA 2605 requirements in [Gunmetal]
				2. Painted extruded aluminum covers with acrylic coating applied that meets AAMA 2603 requirements in [Bronze] [Ebony] [Stone White]
				3. Anodize extruded aluminum covers that meet Class 1, AAMA 611 requirements in Clear Anodize
			2. Exterior Mull Covers:
				1. Painted extruded aluminum covers with 70% PVDF coating applied that meets AAMA 2605 requirements in [Bronze] [Ebony] [Gunmetal] [Silver] [Stone White]
			3. Exterior Frame:
				1. High-Density Fiberglass coated with a Fluoropolymer FEVE (fluoroethylene vinyl ether) resin with ceramic pigments designed to meet AAMA 625 requirements [Bronze] [Ebony] [Gunmetal] [Silver] [Stone White]
			4. [Split finishes optional between Interior and Exterior]

**EXECUTION**

* 1. EXAMINATION AND PREPARATION
		1. Verification of Condition:
			1. Before installation, verify openings are plumb, square and of proper dimensions as required in Section 01 71 00
			2. Report frame defects or unsuitable conditions to the General contractor before proceeding
		2. Acceptance of Condition:
			1. Beginning of installation confirms acceptance of existing conditions
	2. INSTALLATION
		1. Assemble and install window/door unit(s) per manufacturer’s instruction and reviewed shop drawing
		2. Installation to comply with Section 01 73 19
		3. Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00. Do not use expansive foam sealant.
		4. Install accessory items as required
	3. FIELD QUALITY CONTROL
		1. Unless otherwise specified, air leakage resistance tests shall be conducted at a uniform static pressure of 75 Pa (~1.57 psf). The maximum allowable rate of air leakage shall not exceed 2.3 L/sm2 (~0.45 cfm/ft2)
		2. Unless otherwise specified, water penetration resistance testing shall be conducted per AAMA 502 and ASTM E1105 at 2/3 of the fenestration products design pressure (DP) rating using “Procedure B” – cyclic static air pressure difference. Water penetration shall be defined in accordance with the test method(s) applied
	4. CLEANING AND PROTECTION
		1. Protect installed construction as required in Section 01 76 00
		2. Remove visible labels and adhesive residue per manufacturer’s instruction
		3. Leave windows and glass in a clean condition, final cleaning as required in Section 01 74 23
		4. Protecting windows from damage by chemicals, solvents, paint or other construction operations that may cause damage

END OF SECTION