

SECTION 08565

VINYL (PVC) WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single Hung Windows.
- B. Double Hung Windows.
- C. Horizontal Gliding Windows.
- D. Casement Windows.
- E. Awning Windows.
- F. Bow Windows.
- G. Bay Windows.
- H. Operable Extended Arch Windows.
- I. Fixed Geometric Windows.
- J. Fixed Windows and Transoms.
- K. Patio Doors.
- L. Garden Windows.

1.2 RELATED SECTIONS

Section 05400 - Cold Formed Metal Framing.

Section 06100 - Rough Carpentry.

Section 09111 - Non-Load-Bearing Metal Framing.

1.3 REFERENCES

- A. AAMA 101 - Voluntary Specification for Aluminum and Polyvinyl Chloride (PVC) Prime Windows and Glass Doors.
- B. AAMA 303 - Voluntary Specification for Poly (Vinyl Chloride) (PVC) Exterior Profile Extrusions.
- C. AAMA 701 - Voluntary Specification for Pile Weatherstrip.

- D. AAMA 902 - Voluntary Specification for Sash Balances.
- E. ALI - Certification Program for Sealed Insulating Glass Units, SIG-901; Associated Laboratories, Inc.
- F. ASCE 7 - Minimum Design Loads for Buildings and other Structures.
- G. ASI B18-6-4 - Specification for Screw Fasteners; American Standards Institute.
- H. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- I. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- J. ASTM D 4726 - Standard Specification for White Rigid PolyVinyl Chloride (PVC) Exterior Profile Extrusions Used for Assembled Windows and Doors.
- K. ASTM E 774 - Standard Specification for Sealed Insulating Glass Units.
- L. CAWM 301 - Forced Entry Testing; California Association of Window Manufacturers.
- M. IGCC - Classification of Insulating Glass Units; Insulating Glass Certification Council.
- N. NFRC 100 (5M) - Thermal Properties; National Fenestration Rating Council.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide manufacturer's standard details and catalog data demonstrating compliance with referenced standards; include installation instructions and storage requirements.
- C. Shop Drawings: Submit for approval the following:
 - Elevation for each style window and door specified;
 - indicate sizes, glazing types, muntin types and designs.

Schedule: Indicate each window and door in project; reference each unit to specific elevation style.
Details: Head, jamb, and sill details for each project condition.

- D. Selection Samples: Manufacturer's full range of available colors.
- E. Verification Samples: Operating units of each style window and door specified; verification samples may be operating scaled-down mock-ups of actual-size units. Verification samples will be returned to manufacturer's representative at project closeout.
- F. Quality Assurance Submittals: Evidence of certifications of window units required in QUALITY ASSURANCE Article of this section.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Minimum three years documented experience producing products specified in this section.
 - 2. Installer: Minimum three years documented experience installing products specified in this section.
- B. Certifications: Provide window units independently tested and certified for air infiltration, water penetration, and structural performance by AAMA, for thermal transmission and solar heat gain performance by NFRC, and insulating glass certified by ALI/IGCC, to ASTM E 774, Class CBA.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect products from moisture, construction traffic, and damage in accord with manufacturer's instructions.
- B. Do not use non-vented plastic or canvas shelters; provide 1/4-inch (6.3 mm) space between units to promote air circulation.

1.7 WARRANTY

- A. Manufacturer's Warranty: Furnish manufacturer's Lifetime Limited Warranty on window products, including five year SureStart Protection, transferable to subsequent owners.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CertainTeed Corporation, Vinyl Building Products Group, or any of its licensed regional fabricators; 750 E. Swedesford Road, P.O. Box 860, Valley Forge, PA 19482; ASD. Tel. (800) 233-8990.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.

2.2 COMPONENTS

- A. Window Frame and Sash Members: Impact resistant, exterior grade polyvinyl chloride extrusions complying with AAMA 303 and ASTM D 4726.
 - 1. Ignition temperature, when tested in accordance with ASTM D 1929: Minimum of 824 degrees F (440 degrees C).
 - 2. Flammability, when tested in accordance with ASTM D 635: Burn time of less than 5 seconds and burn distance of less than 10 mm.
 - 3. Non-corroding, non-flaking, non-chipping, non-rotting; no electrical conductance; low thermal conductance
 - 4. Minimum external wall thickness: 0.070 inch (1.8 mm) nominal.
 - 5. Finish of sight-exposed surfaces: Smooth gloss finish with uniform consistent color.
- B. Insulating Unit Type __: Complying with ASTM E 774, Class CBA; unit thickness ___ inch (___ mm):
 - 1. Outer Pane: ___ inch (___ mm) thick glass, clear color.
 - 2. Outer Pane Coating: Thermaflex(R) double sputter-coat high-performance low-emissivity softcoat on air chamber side of pane.
 - 3. Air Chamber: Hermetically sealed space between panes, low-conductance spacer, desiccated butyl or polyisobutylene chamber sealant.

4. Air Chamber: Hermetically sealed space between panes, low-conductance spacer, desiccated butyl or polyisobutylene chamber sealant, Argon gas filled to minimum 97 percent initial fill.
 5. Inner Pane: ____ inch (____ mm) thick glass, clear color.
 6. Thermal Performance:
 - a. Total Unit U-Value: ____ (____ metric equivalent).
 - b. Daylight Transmittance: ____ percent.
 - c. Ultraviolet Block: ____.
 - d. Shading Coefficient: ____.
- C. Screens: Type installable from interior side, providing only reasonable insect control when operable sash is in open position; re-wirable glass fiber mesh, 14 x 18 mesh, secured in channel of aluminum box frame with continuous vinyl spline; frame color matching frame and sash interior color.
- D. Operating Hardware: Types for specified operable-sash windows; sight-exposed hardware of UV-stabilized engineered polycarbonate plastic, color matched to vinyl extrusions for uniform appearance.
- E. Fasteners: Corrosion-resistant, and conforming to ASI B18-6-4.
- F. Weatherstripping: Types for specified operable-sash windows and operable doors.
- G. Integral Muntins: Aluminum, pre-finished to match window frame, factory-mounted between panes of insulating glass unit before sealing glass unit.
- H. Applied Muntins: Polyvinyl chloride (PVC), color matching window frame, applied to interior side of window using proprietary attachment system.

2.3 SINGLE HUNG WINDOWS

- A. Acceptable Product: New Castle Single-Hung.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: ____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: ____ cubic feet per minute (____ cu m/hr).

- c. Structural Performance: ____ pounds per square foot (__ kPa).
 - d. Overall Rating: Grade __.
 - e. Operating Force: ____ pounds (__ kg).
2. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; tilt-in lower sash interlocking to stay bar, with surface-mounted tilt latches and molded-in lift rail; one operable lower sash, one upper fixed sash.
 3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Operating Hardware:
 - a. Locks: Cam-type sash lock and keeper meeting forced entry resistance requirements of CAWM 301, engineered to force meeting rails together, for minimum air infiltration.
 - b. Balances: Stainless steel constant-force spring balances, 3/4 inch (19 mm) wide, meeting AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
 5. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701; compression-type bulb seal at lower rail meeting sill.
 6. Screens: Frame color matching window frame and sash interior color.
 7. Muntins: Applied.
 8. Muntins: Integral.
 9. Color: _____.
 10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 11. Styles and Sizes: Indicated on Drawings.
 12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Acceptable Product: New Castle Twin Single-Hung and Triple Single-Hung; combined single-hung units.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: ____ cubic feet per minute (__ cu m/hr).
 - b. Water Penetration: ____ cubic feet per minute (__ cu m/hr).
 - c. Structural Performance: ____ pounds per square foot (__ kPa).
 - d. Overall Rating: Grade __.
 - e. Operating Force: ____ pounds (__ kg).

2. Frame and Sash Construction: Common frame and integral reinforced jamb/mullion system for improved structural performance and trimmer lines; mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; tilt-in lower sash interlocking to stay bar, with surface-mounted tilt latches and molded-in lift rail; one operable lower sash, one upper fixed sash.
3. Factory Glazing: Insulating Glass Unit, Type ____.
4. Operating Hardware:
 - a. Locks: Cam-type sash lock and keeper meeting forced entry resistance requirements of CAWM 301, engineered to force meeting rails together, for minimum air infiltration.
 - b. Balances: Stainless steel constant-force spring balances, 3/4 inch (19 mm) wide, meeting AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
5. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701; compression-type bulb seal at lower rail meeting sill.
6. Screens: Frame color matching window frame and sash interior color.
7. Muntins: Applied.
8. Muntins: Integral.
9. Color: _____.
10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
11. Styles and Sizes: Indicated on Drawings.
12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.4 DOUBLE-HUNG WINDOWS

- A. Acceptable Product: New Castle XT Double-Hung.
 1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: ____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: ____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: ____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: ____ pounds (____ kg).

2. Frame and Sash Construction: Mitered and fusion-welded corners, with molded-in receptor pockets for interior and exterior trim; welded sloped sill with 1 inch (25.4 mm) high welded sill dam; 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; tilt-in upper and lower sash with recess-mounted tilt latches; integral glazing provision for exterior glazing bead; lower sash with molded-in lift rail; operable lower and upper sash.
3. Factory Glazing: Insulating Glass Unit, Type ____.
4. Operating Hardware:
 - a. Locks: Cam-type sash lock and keeper, engineered to force meeting rails together to minimize air infiltration.
 - b. Balances: Stainless steel constant-force spring balances, 3/4 inch (19 mm) wide, meeting AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
5. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701; compression-type bulb seal at lower rail meeting sill.
6. Screens: Frame color matching window frame and sash interior color.
7. Muntins: Applied.
8. Muntins: Integral.
9. Color: _____.
10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
11. Styles and Sizes: Indicated on Drawings.
12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.5 HORIZONTAL GLIDING WINDOWS

- A. Acceptable Product: New Castle Glider.
 1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: _____ pounds (____ kg).
 2. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched

- nailing fin four sides; integral weep system;
integral glazing provision; molded-in glide rail;
operable sash interlocks to the staybar; one operable
sash, one fixed sash.
3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Operating Hardware:
 - a. Locks: Cam-type sash lock and keeper meeting forced entry resistance requirements of CAWM 301, engineered to force meeting stiles/rails, with interlock for minimum air infiltration.
 - b. Glides: Glide pads on track.
 - c. Glides: Glide rollers on track.
 5. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701.
 6. Screens: Frame color matching window frame and sash interior color.
 7. Muntins: Applied.
 8. Muntins: Integral.
 9. Color: _____.
 10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 11. Styles and Sizes: Indicated on Drawings.
 12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Acceptable Product: New Castle XT Glider.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: ____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: ____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: ____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: ____ pounds (____ kg).
 2. Frame and Sash Construction: Mitered and fusion-welded corners, with molded-in receptor pockets for interior and exterior trim; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; independent weep system for interior and exterior glide tracks; integral glazing provision for exterior glazing bead; molded-in glide rail; both sashes operable; sashes lifting out for cleaning from inside; sashes non-removable from outside.
 3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Operating Hardware:

- a. Locks: Cam-type sash lock and keeper, engineered to force meeting rails together to minimize air infiltration.
- b. Glides: Glide pads on track.
- c. Glides: Glide rollers on track.
- 5. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701.
- 6. Screens: Frame color matching window frame and sash interior color.
- 7. Muntins: Applied.
- 8. Muntins: Integral.
- 9. Color: _____.
- 10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
- 11. Styles and Sizes: Indicated on Drawings.
- 12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.6 CASEMENT WINDOWS

- A. Acceptable Product: New Castle Casement.
 - 1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: _____ pounds (____ kg).
 - 2. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; integral glazing provision.
 - 3. Factory Glazing: Insulating Glass Unit, Type ____.
 - 4. Operating Hardware:
 - a. Operator: Gear-actuated rotary operator and handle.
 - b. Locks: Single-lever actuated, with multiple locking points, meeting forced entry resistance requirements of CAWM 301.
 - 5. Weatherstripping: Double-row low-compression set bulb gaskets.
 - 6. Screens: Frame color matching window frame and sash interior color.

7. Muntins: Applied.
8. Muntins: Integral.
9. Color: _____.
10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
11. Styles and Sizes: Indicated on Drawings.
12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.7 AWNING WINDOWS

- A. Acceptable Product: New Castle Awning.
 1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: _____ pounds (____ kg).
 2. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; integral glazing provision.
 3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Operating Hardware:
 - a. Operator: Gear-actuated rotary operator and handle.
 - b. Locks: Single-lever actuated, meeting forced entry resistance requirements of CAWM 301, with multiple locking points.
 5. Weatherstripping: Double-row low-compression set bulb gaskets.
 6. Screens: Frame color matching window frame and sash interior color.
 7. Muntins: Applied.
 8. Muntins: Integral.
 9. Color: _____.
 10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 11. Styles and Sizes: Indicated on Drawings.
 12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.8 BOW WINDOWS

- A. Acceptable Product: New Castle Casement Bow.
1. Operable-sash Windows:
 - a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade ___.
 - 5) Operating Force: _____ pounds (___ kg).
 - b. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25 mm) pre-punched nailing fin; integral weep system; integral glazing provision.
 - c. Factory Glazing: Insulating Glass Unit, Type _____.
 - d. Operating Hardware:
 - 1) Operator: Gear-actuated rotary operator and handle.
 - 2) Locks: Single-lever actuated, meeting forced entry resistance requirements of CAWM 301, with multiple locking points.
 - e. Weatherstripping: Double-row low-compression set bulb gaskets.
 - f. Screens: Frame color matching window frame and sash interior color.
 - g. Muntins: Applied.
 - h. Muntins: Integral.
 2. Fixed-Sash Windows:
 - a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade ___.
 - b. Frame: Construction and profile matching operable-sash units; insulating glazing unit secured in integral glazing provision in frame.
 - c. Factory Glazing: Insulating Glass Unit, Type _____.
 - d. Muntins: Applied.

- e. Muntins: Integral.
 - 3. Color: _____.
 - 4. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 - 5. Styles and Sizes: Indicated on Drawings.
 - 6. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Installation Hardware: Threaded-rod mullion support system, adjustable.
 - C. Headboard and Seatboard: Birch, vinyl-backed, insulated.

2.9 BAY WINDOWS

- A. Acceptable Product: New Castle Bay; Fixed Center, Single-Hung Flankers.
 - 1. Fixed Center Window:
 - a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade ___.
 - b. Frame Construction: Mitered and fusion-welded corners; integral weep system; insulating glazing unit secured in integral glazing provision in frame.
 - c. Factory Glazing: Insulating Glass Unit, Type _____.
 - d. Muntins: Applied.
 - e. Muntins: Integral.
 - 2. Single-Hung Flanker Windows:
 - a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade ___.
 - 5) Operating Force: _____ pounds (___ kg).
 - b. Projection: 30 degrees from wall plane.
 - c. Projection: 45 degrees from wall plane.

- d. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin; integral weep system; tilt-in lower sash with integral lift rails; integral glazing provision; lower sash interlocks to the stay bar; one operable lower sash, one upper fixed sash.
 - e. Factory Glazing: Insulating Glass Unit, Type _____.
 - f. Operating Hardware:
 - 1) Locks: Cam-type sash lock and keeper meeting forced entry resistance requirements of CAWM 301, engineered to force meeting rails together to minimize air infiltration.
 - 2) Balances: Stainless steel constant-force spring balances, 3/4 inch (19 mm) wide, meeting AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
 - g. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701; compression-type bulb seal at lower rail meeting sill.
 - h. Screens: Frame color matching window frame and sash interior color.
 - i. Muntins: Applied.
 - j. Muntins: Integral.
- 3. Color: _____.
 - 4. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 - 5. Styles and Sizes: Indicated on Drawings.
 - 6. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Acceptable Product: New Castle Bay; Fixed Center, Casement Flankers.
 - 1. Fixed Center Window:
 - a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade _____.
 - b. Frame Construction: Mitered and fusion-welded corners; integral weep system; insulating glazing

- unit secured in integral glazing provision in frame.
- c. Factory Glazing: Insulating Glass Unit, Type ____.
- d. Muntins: Applied.
- e. Muntins: Integral.
- 2. Casement Flanker Windows:
 - a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: ____ cubic feet per minute (____ cu m/hr).
 - 2) Water Penetration: ____ pounds per square foot (____ kPa) pressure before water leakage.
 - 3) Structural Performance: ____ pounds per square foot (____ kPa).
 - 4) Overall Rating: Grade ____.
 - 5) Operating Force: ____ pounds (____ kg).
 - b. Projection: 30 degrees from wall plane.
 - c. Projection: 45 degrees from wall plane.
 - d. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin; integral weep system; integral glazing provision.
 - e. Factory Glazing: Insulating Glass Unit, Type ____.
 - f. Operating Hardware:
 - 1) Operator: Gear-actuated rotary operator and handle.
 - 2) Locks: Single-lever actuated, with multiple locking points, meeting forced entry resistance requirements of CAWM 301.
 - g. Weatherstripping: Double-row low-compression set bulb gaskets.
 - h. Screens: Frame color matching window frame and sash interior color.
 - i. Muntins: Applied.
 - j. Muntins: Integral.
- 3. Color: _____.
- 4. Color: Indicated in SCHEDULES Article in PART 3 of this section.
- 5. Styles and Sizes: Indicated on Drawings.
- 6. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- C. Acceptable Product: New Castle XT Bay; Fixed Center, Double-Hung Flankers.
 - 1. Fixed Center Window:

- a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade ___.
 - b. Frame Construction: Mitered and fusion-welded corners with molded-in receptor pockets for interior and exterior trim; 1 inch (25 mm) pre-punched nailing fin; integral weep system; insulating glazing unit secured in integral glazing provision in frame.
 - c. Factory Glazing: Insulating Glass Unit, Type _____.
 - d. Muntins: Applied.
 - e. Muntins: Integral.
2. Double-Hung Flanker Windows:
- a. Unit performance when tested in accordance with AAMA 101:
 - 1) Air Infiltration: _____ cubic feet per minute (___ cu m/hr).
 - 2) Water Penetration: _____ pounds per square foot (___ kPa) pressure before water leakage.
 - 3) Structural Performance: _____ pounds per square foot (___ kPa).
 - 4) Overall Rating: Grade ___.
 - 5) Operating Force: _____ pounds (___ kg).
 - b. Projection: 30 degrees from wall plane.
 - c. Projection: 45 degrees from wall plane.
 - d. Frame and Sash Construction: Mitered and fusion-welded corners, with molded-in receptor pockets for interior and exterior trim; welded sloped sill with 1 inch (25.4 mm) high welded sill dam; 1 inch (25.4 mm) pre-punched nailing fin; integral weep system; tilt-in upper and lower sash with recess-mounted tilt latches; integral glazing provision for exterior glazing bead; lower sash with molded-in lift rail; operable lower and upper sash.
 - e. Factory Glazing: Insulating Glass Unit, Type _____.
 - f. Operating Hardware:

- 1) Locks: Cam-type sash lock and keeper, engineered to force meeting rails together to minimize air infiltration.
 - 2) Balances: Stainless steel constant-force spring balances, 3/4 inch (19 mm) wide, meeting AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
 - g. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701; compression-type bulb seal at lower rail meeting sill.
 - h. Screens: Frame color matching window frame and sash interior color.
 - i. Muntins: Applied.
 - j. Muntins: Integral.
 3. Color: _____.
 4. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 5. Styles and Sizes: Indicated on Drawings.
 6. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- D. Installation Hardware: Threaded-rod mullion support system, adjustable.
- E. Headboard and Seatboard: Birch, vinyl-backed, insulated.

2.10 OPERABLE EXTENDED ARCH WINDOWS

- A. Acceptable Product: New Castle Operable Extended Arch.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: _____ pounds (____ kg).
 2. Frame and Sash Construction: Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; tilt-in lower sash with surface-mounted tilt latches; integral glazing provision; lower sash with molded-in

lift rail; one operable lower sash, one upper fixed sash.

3. Factory Glazing: Insulating Glass Unit, Type ____.
4. Operating Hardware:
 - a. Locks: Cam-type sash lock and keeper meeting forced entry resistance requirements of CAWM 301, engineered to force meeting rails together to minimize air infiltration.
 - b. Balances: Stainless steel constant-force spring balances, 3/4 inch (19 mm) wide, meeting AAMA 902, providing maintenance free operation without post-installation adjustment or lubrication.
5. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701; compression-type bulb seal at lower rail meeting sill.
6. Screens: Frame color matching window frame and sash interior color.
7. Muntins: Applied.
8. Muntins: Integral.
9. Color: _____.
10. Color: Indicated in SCHEDULES Article in PART 3 of this section.
11. Styles and Sizes: Indicated on Drawings.
12. Styles and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.11 FIXED GEOMETRIC WINDOWS

- A. Acceptable Product: New Castle Architectural Shape Windows, Style _____.
 1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 2. Frame Construction: Mitered and fusion-welded corners; integral weep system; insulating glazing unit secured in integral glazing provision in frame.
 3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Muntins: Applied.
 5. Muntins: Integral.
 6. Color: _____.

7. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 8. Styles, Patterns, and Sizes: Indicated on Drawings.
 9. Styles, Patterns, and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Acceptable Product: New Castle XT Architectural Shape Windows, Style _____.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 2. Frame Construction: Mitered and fusion-welded corners, with molded-in receptor pockets for interior and exterior trim; integral weep system; insulating glazing unit secured in integral glazing provision in frame; exterior glazing bead.
 3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Muntins: Applied.
 5. Muntins: Integral.
 6. Color: _____.
 7. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 8. Styles, Patterns, and Sizes: Indicated on Drawings.
 9. Styles, Patterns, and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.12 FIXED WINDOWS AND TRANSOMS

- A. Acceptable Product: New Castle Fixed windows.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 2. Frame Construction: Profile to complement New Castle Single Hung and Glider windows; mitered and fusion-welded corners; integral weep system; insulating

glazing unit secured in integral glazing provision in frame.

3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Muntins: Applied.
 5. Muntins: Integral.
 6. Color: _____.
 7. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 8. Styles, Patterns, and Sizes: Indicated on Drawings.
 9. Styles, Patterns, and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Acceptable Product: New Castle Casement Fixed windows.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 2. Frame Construction: Profile to complement New Castle Casement windows; insulating glazing unit secured in integral glazing provision in frame.
 3. Factory Glazing: Insulating Glass Unit, Type ____.
 4. Muntins: Applied.
 5. Muntins: Integral.
 6. Color: _____.
 7. Color: Indicated in SCHEDULES Article in PART 3 of this section.
 8. Styles, Patterns, and Sizes: Indicated on Drawings.
 9. Styles, Patterns, and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- C. Acceptable Product: New Castle XT Fixed windows.
1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: _____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: _____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: _____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.

2. Frame Construction: Profile to complement New Castle XT Double Hung and Glider windows; mitered and fusion-welded corners with molded-in receptor pockets for interior and exterior trim; integral weep system; insulating glazing unit secured in integral glazing provision in frame.
3. Factory Glazing: Insulating Glass Unit, Type ____.
4. Muntins: Applied.
5. Muntins: Integral.
6. Color: _____.
7. Color: Indicated in SCHEDULES Article in PART 3 of this section.
8. Styles, Patterns, and Sizes: Indicated on Drawings.
9. Styles, Patterns, and Sizes: Indicated in SCHEDULES Article in PART 3 of this section.

2.13 PATIO DOORS

- A. Acceptable Product: New Castle Patio Door.
 1. Unit performance when tested in accordance with AAMA 101:
 - a. Air Infiltration: ____ cubic feet per minute (____ cu m/hr).
 - b. Water Penetration: ____ pounds per square foot (____ kPa) pressure before water leakage.
 - c. Structural Performance: ____ pounds per square foot (____ kPa).
 - d. Overall Rating: Grade ____.
 - e. Operating Force: ____ pounds (____ kg).
 2. Frame and Sash Construction:
 - a. Mitered and fusion-welded corners; integral 1 inch (25.4 mm) pre-punched nailing fin four sides; integral weep system; integral glazing provision.
 - b. Stiles: Aluminum reinforced; interlocking meeting stiles.
 - c. Fixed Units: Frame profile matching operable units; fixed insulating glazing unit secured in integral glazing provision in frame.
 3. Glazing: Insulating Unit, thickness 7/8 inch (22.2 mm):
 - a. Inner Pane: Tempered 1/8 inch (3 mm) thick glass, clear color.
 - b. Hermetically sealed air space between panes; argon gas-filled, with low conductance spacer.
 - c. Outer Pane: Tempered 1/8 inch (3 mm) thick glass, clear color; manufacturer's proprietary

- Thermafect double sputter-coated high performance low-emissivity coating on air-space side.
- d. Outer Pane: Tempered 1/8 inch (3 mm) thick glass, clear color.
 - e. Hermetically sealed air space between panes, with low conductance spacer.
 - f. Inner Pane: Tempered 1/8 inch (3 mm) thick glass, clear color.
4. Operating Hardware:
- a. Roller Track: Anodized aluminum, thermally broken, with stainless steel cap.
 - b. Rollers: Adjustable tandem stainless steel rollers.
 - c. Stops: Anti-lift, preventing operable sash to be removed from exterior.
 - d. Locks: Single-lever actuated two-point locking; catch at locking points, meeting forced entry resistance requirements of CAWM 301; lock key-actuated from exterior; white baked enamel handle.
 - e. Locks: Single-lever actuated three-point locking; steel rods through head and sill, catch at locking point, meeting forced entry resistance requirements of CAWM 301; lock key-actuated from exterior; white baked enamel handle.
 - f. Locks: Single-lever actuated three-point locking; steel rods through head and sill, catch at locking point, meeting forced entry resistance requirements of CAWM 301; lock key-actuated from exterior; European design with solid brass handle.
5. Muntins: Applied.
6. Muntins: Integral.
7. Color: _____.
8. Color: Indicated in SCHEDULES Article in PART 3 of this section.
9. Weatherstripping: Double-row high-density silicone-treated polypropylene pile, with double mylar fin, meeting AAMA 701.
10. Screens: Frame color matching window frame and sash interior color.

2.14 GARDEN WINDOWS

- A. Acceptable Product: CertainTeed Garden Window.
 - 1. Fixed Center and Overhead Window:

- a. Frame: Solid vinyl extrusions; mitered and fusion-welded corners, with internal aluminum frame support; integral weep system; insulating glazing units secured in integral glazing provision in frame.
 - b. Factory Glazing: Insulating glass unit, 7/8 inch (22.2 mm) unit thickness, with clear glass inner pane, clear glass outer pane with Thermaflex(R) double sputter-coated high performance coating on air chamber side, argon gas-filled air chamber, and low-conductance seal.
2. Casement Flanker Windows:
- a. Sash: Solid vinyl extrusions; mitered and fusion-welded corners.
 - b. Factory Glazing: Insulating glass unit, 7/8 inch (22.2 mm) unit thickness, with clear glass inner pane, clear glass outer pane with Thermaflex(R) double sputter-coated high performance coating on air chamber side, argon gas-filled air chamber, and low-conductance seal.
 - c. Operating Hardware:
 - 1) Operator: Gear-actuated rotary operator and handle.
 - 2) Locks: Single-lever actuated, with multiple locking points, meeting forced entry resistance requirements of CAWM 301.
 - d. Weatherstripping: Double-row low-compression set bulb gaskets.
 - e. Screens: Frame color matching window frame and sash interior color.
3. Seatboard: Insulated, 2 inches (50 mm) thick, with birch interior capable of being field-finished.
4. Color: _____.
5. Color: Indicated in SCHEDULES Article in PART 3 of this section.
6. Sizes: Indicated on Drawings.
7. Sizes: Indicated in SCHEDULES Article in PART 3 of this section.
- B. Shelf: Clear tempered glass, on adjustable supports.
- 2.15 ACCESSORIES
- A. Mullions: Extruded rigid vinyl with concealed 16 gage galvanized steel or aluminum reinforcement; extruded rigid vinyl flashing clip; color to match adjacent window frames.
 - B. Mullions: Structural mullion system complying with AAMA Grade deflection requirements for supported windows;

extruded aluminum core; galvanized reinforcing strips if required; internal and external rigid PVC caps with compression gaskets; anchored to rough opening with reinforcement bracket; color to match adjacent window frames.

- C. Trim Accessories: Extruded rigid polyvinyl chloride (PVC) shapes for snap-in fit in molded-in receptor pockets in window frame:
1. J-channel for exterior siding up to 1/2 inch (12.8 mm) thick.
 2. J-channel for exterior siding up to 3/4 inch (19mm) thick.
 3. Return for interior drywall up to 1/2 inch (12.8 mm) thick.
 4. Return for interior wood trim up to 3/4 inch (19mm) thick.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Have installer verify that project conditions are acceptable before beginning installation of products; verify that rough openings are as indicated, and are correct sizes for clearance spaces specified in manufacturer's instructions.
- B. Correct unacceptable conditions before proceeding with installation.

3.2 INSTALLATION

- A. Install products in accordance manufacturer's instructions and approved shop drawings.
- B. Install products plumb and in true alignment; fasten to achieve maximum operational effectiveness and appearance of units.

3.3 ADJUSTING

- A. Ensure that windows and doors operate correctly, free from binding or other defects.

3.4 CLEANING

- A. Clean and restore soiled surfaces; remove scraps and debris, and leave site in clean condition.

3.5 SCHEDULE

- A. Window Schedule:
 - 1. Window Style ____:
 - a. Style: Casement-Fixed-Casement, with Transom.
 - b. Callout Size: CFC5436.
 - c. Color: Tan.
 - 2. Window Style ____:
 - a. Style: Geometric Half-Round, with Starburst muntin pattern.
 - b. Callout Size: HR6030.
 - c. Color: Tan.
- B. Patio Door Schedule:
 - 1. Door Style ____:
 - a. Style: OX, outside view.
 - b. Callout Size: PD7280.
 - c. Color: Tan.

END OF SECTION