

SECTION 08589

HURRICANE RESISTANT WINDOWS AND DOORS



Display hidden notes to specifier by using “Tools”/“Options”/“View”/“Hidden Text”.

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Impact-resistant aluminum windows, including aluminum extrusions, finish, glass, operating hardware, screens, internal sealants and weather stripping, for high velocity hurricane zone (HVHZ) construction.
- B. Impact-resistant aluminum swing doors, frames, sidelites, transoms, and structural mullions, including aluminum extrusions, finish, glass, door hardware, water-barrier thresholds, and weather strips, for high velocity hurricane zone (HVHZ) construction.
- C. Impact-resistant aluminum sliding glass doors, frames, fixed panels, and structural mullions, including aluminum extrusions, finish, glass, door hardware, screens, water-barrier thresholds, and weather strips, for high velocity hurricane zone (HVHZ) construction.

1.2 RELATED SECTIONS:

- A. Section 06100 – Rough Carpentry: Wood blocking and fasteners to structure.
- B. Section 07920 – Joint Sealants: Exterior and interior sealants at window perimeters.
- C. Section 08800 - Glass and Glazing: Additional glazing requirements.

1.3 REFERENCES:

- A. American Architectural Manufacturers Association:
 - 1. AAMA 701/702: Pile weatherstripping and replaceable weatherseals.
 - 2. AAMA 2603: Organic coatings on aluminum.
 - 3. AAMA 2605: High-performance organic coatings on aluminum.
- B. American Society of Civil Engineers
 - 1. ASCE 7: Minimum Design Loads for Buildings and other Structures.
- C. American Society for Testing and Materials:
 - 1. ASTM B 221: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. ASTM E 283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - 3. ASTM E 330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 4. ASTM E 331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

- D. Florida Building Code – Building, 2004 (FBC):
 - 1. Sections governing construction in a high-velocity wind zone (HVWZ).
 - a. FBC 1620: HVWZ Wind Loads (Structural).
 - b. FBC 2410: HVWZ General (Glass and Glazing).
 - c. FBC 2411: HVWZ Windows, Doors, Glass and Glazing.
 - 2. Miami Dade County Test Application Standards (TAS) adopted by FBC:
 - a. TAS 201-95.1: Impact Test Procedures.
 - b. TAS 202-95.1: Criteria for Testing Impact Resistant Building Envelope Components (Uniform Static Air Pressure Method).
 - c. TAS 203-95.1: Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

1.4 PERFORMANCE REQUIREMENTS:

- A. Impact-Resistant Aluminum Window and Door Performance:
 - 1. Structural Test - ASTM E 330.
 - 2. Water infiltration resistance. ASTM ES47/E 331 and FBC TAS 202.
 - 3. Air infiltration resistance, ASTM E 283.
 - 4. Windborne debris impact resistance: Pass large missile impact tests; Florida Building Code, FBC TAS 201.
 - 5. Hurricane wind pressure resistance. After passing large missile impact test, pass cyclic pressure tests following FBC TAS 203.

1.5 SUBMITTALS:

- A. Shop Drawings: Refer to Section 01300 for complete submittal procedures. Indicate elevations, locations, markings, quantities, material, head jamb and sill conditions, metal thickness, sizes, shapes, dimensions, finishes and wind pressures.
- B. Product Data: Provide detailed data on Manufacturers catalog data on each product to be used, including Miami Dade County Product Approval (NOA) and Florida Building Code (FBC) HVHZ Product Approval.
- C. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

1.6 QUALITY ASSURANCE:

- A. Manufacturer Qualifications: Not less than 10 years of experience in manufacturing impact-resistant aluminum windows and doors.
- B. Installer Qualifications: Skilled and experienced to install manufacturer's units of the types specified.

1.7 DELIVERY, STORAGE, AND HANDLING:

- A. Store products in manufacturer's unopened packaging in a clean, dry area until ready for installation.
- B. Protect exposed metal and glass surfaces to prevent damage to finish.

1.8 WARRANTIES:

- A. Warranty Period: Contact CGI Windows and Doors, Inc. for details on 10 year limited warranty.

1. Structural, Hardware and Certain Finishes – 10 years.
2. Stress cracks on glass – 1 year.
3. Delamination on laminated glass units– 5 years.
4. Insulated Glass (sealed component) – 10 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS:

- A. Acceptable Manufacturer: CGI Windows and Doors, Inc.; 10100 N. W. 25th St., Miami, FL 33172. Tel: (305) 593-6590. Fax: (305) 593-6592. Web: <http://www.cgiwindows.com>.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 ALUMINUM WINDOWS:

- A. Fixed Windows: Series 238 Rectangular or Designer Fixed Windows by CGI Windows and Doors, Inc.
 1. Rectangular Fixed Windows – Example Sizes and Related Design Pressures: Refer to product approvals for latest results:
 - a. Unit Size: 24 by 54 inches, 110 psf Positive, 195 psf Negative.
 - b. Unit Size: 37 by 63 inches, 102.1 psf Positive, 111.3 psf Negative.
 - c. Unit Size: 48 by 72 inches, 90 psf Positive, 90 psf Negative.
 2. Designer Fixed Windows Options: (Design pressures same as rectangular fixed windows):
 - a. Half Circle.
 - b. Arch Top/Eyebrow.
 - c. Full Circle.
 - d. Octagon.
 - e. Hexagon.
 - f. Chord.
 - g. Tombstone.
 - h. Trapezoid.
 - i. Pentagon.
 - j. Gothic Pentagon.
 - k. Oval.
 - l. Standard or Custom Colonial as detailed.
 3. Air Infiltration Resistance: Air leakage no more than 0.07 cfm/sqft of glass area at pressure differential of 6.24 psf (air infiltration tests conducted at pressure differential of 1.57 psf may not be used to justify compliance).
 4. Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 16.5 psf.
 5. Construction: Heavy extruded aluminum-alloy sections, precision cut and assembled with sealed, mitered, hairline joints.
 6. Member Wall Thicknesses: Rectangular window fixed frames: At least 0.080 inch (2.03 mm). Designer Fixed window frames: At least 0.100 inch (2.54 mm). Rectangular window vents: At least 0.090 inch (2.29 mm). Designer fixed window vents: At least 0.100 inch (2.54 mm).
 7. Frame Depth: Rectangular fixed windows frames: At least 2.075 inches (53 mm). Designer fixed window frames: At least 2.085 (53 mm). Provide 0.50 (12.7 mm) inch flanges at perimeter frames.
 8. Sightlines:

- a. Rectangular fixed: Jambs, sill and head - 3.5 inches (89 mm)
- b. Designer fixed: Jambs, sill and head – 3.25 inches (82.6 mm).
- 9. Corner Construction at Rectangular Fixed Window Frames: Assemble with sealed, mitered, hairline joints, made rigid by fastening with No. 10 stainless steel screws.
- 10. At fixed window frames: 4 stainless steel corner keys and 4 aluminum corner keys.
- 11. Corner construction at designer fixed window frames: Welded corners with sealed hairline joints.
- 12. Fixed Window Frame Construction: Use the same vent and frame extrusions as are used in casement and project-out Series 238 windows, but screw vent extrusion to frame extrusion at interior using No. 10 x 1 inch (25 mm) stainless steel sheet metal screws around entire window, spaced as required by NOA. Apply plastic caps matching color of finish to screw heads.
- 13. Glazing beads: Rectangular fixed - extruded aluminum snap-in design, with 0.500 inch (12.7 mm) glass bite for impact-resistant glazing at rectangular fixed windows. Designer fixed - extruded aluminum 0.75 inch (19 mm) by .075 inch (19 mm) x 0.125 inch (3.2 mm) wall thickness square tube glazing stop.
- 14. Finish: Uniform at all visible surface exterior and interior, vents open or shut, as specified.
- 15. Glass: As specified, factory glazed.
 - a. Laminated impact resistant glass unit - 7/16 inch (11 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Outer and Inner Panes of Laminated Unit: 3/16 inch (4.8mm) annealed float glass (heat strengthened when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Interlayer: 0.090 inch / 90 mil (2.2 mm) Saflex PVB or Sentry Glass Plus.
 - (a) Clear-standard.
 - (b) Translucent.
 - (c) Dark gray (turtle code).
 - 3) Low E and high performance glass coatings as specified.
 - b. Insulated Laminated Impact Resistant Glass Unit: 3/4 inch (19 mm) thick (nominal) consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior sacrificial light/pane: 1/8 Inch (3.2mm) tempered.
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Airspace - 1/4 inch (6 mm) minimum air space.
 - 3) Low E and high performance glass coatings as specified.
 - 4) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and Inner Panes of Laminated Unit: 1/8 inch (3.2mm), using either annealed or tempered glass (when required by loads).
 - (c) Tint:
 - (1) None – clear.
 - (2) Clear, Low E.
- 16. Options:
 - a. Extruded double applied raised profile 1 inch (25.4 mm) and/or 3.5 inch (89mm) muntins at rectangular fixed windows. N/A with insulated glass.
 - b. Ogee glazing bead profile (colonial).

- c. Square glazing bead profile (contemporary).
 - 17. Standards: Miami Dade County NOA (Notices of Acceptance).
 - 18. Aluminum alloy and temper: AA 6063-T5 and T6 temper.
- B. Fixed Windows: Series 410 Rectangular Fixed Windows by CGI Windows and Doors, Inc.
1. Rectangular Fixed Windows - Example Sizes and Related Design Pressures: Refer to product approvals for latest results.
 - a. Large Missile Impact:
 - 1) Unit Size: 42 by 72 inches, 133 psf Pos, 150 psf Neg.
 - 2) Unit Size: 60 by 96 inches, 103.6 psf Pos, 103.6 psf Neg.
 - 3) Unit Size: 72 by 120 inches, 75 psf Pos, 75 psf Neg.
 - b. Small Missile Impact:
 - 1) Unit Size 36 by 54 inches, 133 psf Pos, 210 psf Neg.
 - 2) Unit Size: 42 by 72 inches, 133 psf Pos, 171.4 psf Neg.
 - 3) Unit Size: 60 by 96 inches, 107 psf Pos, 107 psf Neg.
 - 4) Unit Size: 72 by 120 inches, 75 psf Pos, 75 psf Neg.
 2. Air Infiltration Resistance: Air leakage no more than 0.02 cfm/sqft of glass area at pressure differential of 6.24 psf (air infiltration tests conducted at pressure differential of 1.57 psf may not be used to justify compliance).
 3. Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 20 psf.
 4. Construction: Heavy extruded aluminum-alloy sections, precision cut and assembled with sealed, hairline joints. System is inside glazed.
 5. Member Wall Thicknesses: Window frames: At least 0.090 inch (2.29 mm).
 6. Frame Depth: Windows frames, at least 4.1 inches (104.1 mm).
 7. Sightlines for flange window:
 - a. Jambs, sill and head: 2.5 inches (63.5 mm).
 8. Corner construction: Assemble with sealed, hairline joints, made rigid by fastening with No. 12 stainless steel screws.
 9. Glazing beads: Extruded aluminum concealed glass stops fastened to frame at interior with #10 stainless steel screws with 1 inch (nominal) glass bite.
 10. Finish: Uniform at all visible surface exterior and interior, as specified.
 11. Glass: As specified, factory glazed.
 - a. Laminated Impact Resistant Glass Unit: 7/16 inch (11 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Outer and Inner Panes of Laminated Unit: 3/16 inch (4.8mm) annealed float glass (heat strengthened when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Interlayer: 0.090 inch / 90 mil (2.2 mm) Sentry Glass Plus or Vanceva Storm (.075 inch – 1.91mm).
 - (a) Clear-standard.
 - (b) Translucent optional.
 - (c) Dark gray (turtle code) optional.
 - 3) Low E and high performance glass coatings as specified.
 - b. Insulated laminated impact resistant glass unit – 1 1/4 inch (31.75mm) thick (nominal) consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Interior sacrificial light/pane – 3/16 Inch (4.8 mm) annealed (tempered when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.

- (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Airspace: 9/16 inch (14.3 mm) minimum air space.
 - 3) Low E and high performance glass coatings as specified.
 - 4) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and inner panes of laminated unit – 3/16 inch (4.8 mm), using either annealed or tempered glass (when required by loads).
 - 12. Standards: Miami Dade County NOA (Notices of Acceptance).
 - 13. Aluminum alloy and temper: AA 6063-T5 and T6 temper.
- C. Casement Windows: Series 238 Casement Windows by CGI Windows and Doors, Inc.
1. Example Sizes and Related Design Pressures. Refer to product approvals for latest results:
 - a. Unit Size: 24 by 54 inches, 110 psf Positive, 195 psf Negative.
 - b. Unit Size: 37 by 63 inches, 110 psf Positive, 120 psf Negative.
 2. Air Infiltration Resistance: Air leakage no more than 0.04 cfm/sqft of glass area at pressure differential of 6.24 psf (air infiltration tests conducted at pressure differential of 1.57 psf may not be used to justify compliance).
 3. Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 16.5 psf.
 4. Construction: Heavy extruded aluminum-alloy sections, precision cut and assembled with sealed, mitered hairline joints and no visible fasteners when vents are closed. Provide grooves in extrusions to receive double weather stripping between vents and frames. Swing casement and project-out vents outward.
 5. Member Wall Thicknesses:
 - a. Frames: At least 0.080 inch (2.03 mm).
 - b. Vents: At least 0.090 inch (2.29 mm).
 6. Frame Depth: At least 2.075 inches (53 mm). Provide 0.50 (12.7 mm) inch flanges at perimeter frames.
 7. Sightlines: Jamb, Sill and Head: 3.5 inches (89 mm).
 8. Corner construction at casement window frames and vents: Assemble with sealed mitered, hairline joints, made rigid by fastening with No. 10 stainless steel screws and the following: At frames: 4 stainless steel corner keys and 4 aluminum corner keys. At vents: 4 stainless steel corner keys.
 9. Glazing beads. Extruded aluminum snap-in design, with 0.50 inch (12.7 mm) glass bite for impact-resistant glazing.
 10. Weatherstripping: Dual continuous rows of weatherstripping, one row of Schlegel Q-Lon and another row of Aptus.
 11. Finish: Uniform at all visible surface exterior and interior, vents open or shut, as specified.
 12. Glass: As specified, factory glazed.
 - a. Laminated Impact Resistant Glass Unit: 7/16 inch (11 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Outer and Inner Panes of Laminated Unit: 3/16 inch (4.8 mm) annealed float glass (heat strengthened when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Interlayer: 0.090 inch / 90 mil (2.2 mm) Sentry Glass Plus or Vanceva Storm (.075 inch – 1.91mm).
 - (a) Clear-standard.

- (b) Translucent.
 - (c) Dark gray (turtle code).
 - 3) Overall thickness: 7/16 inch (11 mm) nominal.
 - 4) Low E and high performance glass coatings as specified.
 - b. Insulated laminated impact resistant glass unit - 3/4 inch (19 mm) thick (nominal) insulated Saflex PVB laminated consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior sacrificial light/pane - 1/8 Inch (3.2mm) tempered
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Airspace - 1/4 inch (6 mm) minimum air space
 - 3) Low E and high performance glass coatings as specified.
 - 4) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and inner panes of laminated unit – 1/8 inch (3.2mm), using either annealed or tempered glass (when required by loads).
 - (c) Tint: None - clear, or clear Low E
 - (d) Interlayer: - 0.090 inch/90 Mil PVB
 - (1) Clear-standard.
 - (2) Translucent optional.
 - (3) Dark gray (turtle code) optional.
13. Window Options:
 - a. Extruded double applied raised profile 1 inch (25.4 mm) and/or 3.5 inch (89 mm) muntins. Not available with insulated glass.
 - b. Screens at interior of all vents. Charcoal fiberglass insect screen fabric, tightly splined into inconspicuous extruded aluminum-alloy frames with rigid corner construction.
 - c. Ogee glazing bead profile (colonial).
 - d. Square glazing bead profile (contemporary).
 - e. Folding crank handles.
14. Standards: Miami Dade County NOA (Notices of Acceptance).
15. Aluminum alloy and temper: AA 6063-T5 and T6 temper.
16. Hardware: As specified, factory applied and field adjusted.
 - a. Operator: Single-arm rotary operator with crank handle, running in stainless steel operator track. Provide snubber blocks.
 - b. Hinges: Pair of stainless steel 4-bar concealed hinges.
 - c. Sash locks, with Keepers: Two cam locks with lever handle; one at vents less than 30 in. (760 mm) high. Provide one 1/8 in. (3.2 mm) thick stainless steel keeper at each cam lock.
 - d. Hardware Colors: Salt-air resistant multi-coat baked enamel in metallic finish.
 - 1) Color: White.
 - 2) Color: Bronze.
 - 3) Color: Silver.
 - e. Operator finish - E-Gard Finish.
 - f. Hardware Options:
 - 1) CoastGard operator finish (for windows within 1 mile of coast).
 - 2) Stainless Steel operator (alternate coastal option for windows within 1 mile of coast).
 - 3) Optional limit opening devices, keyed and non-keyed (in addition to operator).
 - 4) Optional washability hinges, for window sizes 24 inches (610 mm) wide and above.

5) Optional Custodial type locks (for institutional use).

- D. Project-Out / Awning Windows: Series 238 Project-Out / Awning Windows by CGI Window and Doors, Inc.
1. Example Sizes and Related Design Pressures. Refer to product approvals for latest results:
 - a. Unit Size: 24 by 54 inches, 110 psf positive, 195 psf Negative.
 - b. Unit Size: 37 by 63 inches, 110 psf Positive, 120 psf Negative.
 2. Air Infiltration Resistance: Air leakage no more than 0.04 cfm/sqft of glass area at pressure differential of 6.24 psf (air infiltration tests conducted at pressure differential of 1.57 psf may not be used to justify compliance).
 3. Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 16.5 psf.
 4. Construction: Heavy extruded aluminum-alloy sections, precision cut and assembled with hairline joints and no visible fasteners when vents are closed. Provide grooves in extrusions to receive double weather stripping between vents and frames. Swing casement and project-out vents outward.
 5. Member Wall Thicknesses: Frames: At least 0.080 inch (2.03 mm). Vents: At least 0.090 inch (2.29 mm).
 6. Frame Depth: At least 2.075 inches (53 mm). Provide 0.50 (12.7 mm) inch flanges at perimeter frames.
 7. Sightlines: Jambs, sill and head - 3.5 inches (89 mm) from tip of flange to glass.
 8. Corner Construction at Casement and Project-Out Window Frames and Vents: Assemble with sealed hairline joints, made rigid by fastening with No. 10 stainless steel screws and the following.
 - a. At frames: 4 stainless steel corner keys and 4 aluminum corner keys.
 - b. At vents: 4 stainless steel corner keys.
 9. Glazing beads: Extruded aluminum snap-in design, with 0.500 inch (12.7 mm) glass bite for impact-resistant glazing.
 10. Weatherstripping: Dual continuous rows of weatherstripping.
 11. Finish: Uniform at all visible surface exterior and interior, vents open or shut, as specified.
 12. Glass: As specified, factory glazed.
 - a. Laminated impact resistant glass unit - 7/16 inch (11 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Outer and inner panes of laminated unit - 3/16 inch (4.8mm) annealed float glass (heat strengthened when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Interlayer: 0.090 inch / 90 mil (2.2 mm) Sentry Glass Plus or Vanceva Storm (.075 inch – 1.91mm).
 - (a) None-standard.
 - (b) Translucent optional.
 - (c) Dark gray (turtle code) optional.
 - 3) Overall thickness: 7/16 inch (11 mm) nominal.
 - 4) Low E and high performance glass coatings as specified.
 - b. Insulated laminated impact resistant glass unit - 3/4 inch (19 mm) thick (nominal) consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior sacrificial light/pane - 1/8 Inch (3.2mm) tempered.
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.

- (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Airspace: 1/4 inch (6 mm) minimum air space.
 - 3) Low E and high performance glass coatings as specified.
 - 4) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and inner panes of laminated unit - 1/8 inch (3.2mm), using either annealed or tempered glass (when required by loads).
 - (c) Tint:
 - (1) None – clear.
 - (2) Clear, Low E.
 - 13. Window Options:
 - a. Extruded double raised profile 1 inch (25.4 mm) and/or 3.5 inch (89 mm) muntins. N/A with insulated glass.
 - b. Screens at interior of all vents. Charcoal fiberglass insect screen fabric, tightly splined into inconspicuous extruded aluminum-alloy frames with rigid corner construction.
 - c. Ogee glazing bead profile (colonial).
 - d. Square glazing bead profile (contemporary).
 - e. Folding crank handles.
 - 14. Standards: Miami Dade County NOA (Notices of Acceptance).
 - 15. Aluminum Alloy and Temper: AA 6063-T5 and T6 temper.
 - 16. Hardware: As specified, factory applied and field adjusted.
 - a. Operator: Dual-arm rotary operator with crank handle, running in stainless steel operator track. Provide snubber blocks.
 - b. Hinges: Pair of stainless steel 4-bar concealed hinges.
 - c. Sash locks, with Keepers: Two cam locks with lever handle. Provide one 1/8 inch (3.2 mm) thick stainless steel keeper at each cam lock.
 - d. Hardware Color: Salt-air resistant multi-coat baked enamel in metallic finish.
 - 1) Color: White.
 - 2) Color: Bronze.
 - 3) Color: Silver.
 - e. Operator finish E-Gard Finish.
 - f. Hardware Options:
 - 1) CoastGard operator finish (for windows within 1 mile of coast).
 - 2) Stainless Steel operator (alternate coastal option for windows within 1 mile of coast).
 - 3) Optional custodial type locks (for institutional use).
 - 4) Short arm operator providing approximately 4 inches (102 mm) of ventilation area.
 - 5) Long arm operator providing approximately 8 inches (204 mm) of ventilation area.
 - 6) Manual push out window configuration option with pull handle, no screens. Available with limit devices.
- E. Single Hung Windows: Series 360 Aluminum Single Hung Windows by CGI Windows and Doors, Inc.
1. Example Sizes and Related Design Pressures. Refer to product approvals for latest results:
 - a. Large Missile Impact
 - 1) Unit Size: 37 by 76 inches, 100 psf Positive, 210 psf Negative.
 - 2) Unit Size: 54 by 96 inches, 100 psf Positive, 120 psf Negative.
 - 3) Unit Size: 42 by 120 inches, 100 psf Positive, 120 psf Negative.
 - b. Small Missile Impact
 - 1) Unit Size: 37 by 76 inches, 100 psf Positive, 200 psf Negative.

- 2) Unit Size: 54 by 96 inches, 100 psf Positive, 120 psf Negative.
- 3) Unit Size: 42 by 120 inches, 100 psf Positive, 195.9 psf Negative.
- 2. Air Infiltration Resistance: Air leakage no more than 0.076 cfm/sqft of glass area at pressure differential of 6.24 psf (air infiltration tests conducted at pressure differential of 1.57 psf may not be used to justify compliance).
- 3. Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 15 psf (with waterbar adaptor).
- 4. Construction: Heavy extruded aluminum-alloy sections, precision cut and assembled with hairline joints and no visible fasteners when sash is closed.
- 5. Member wall thicknesses: Frames, .075 - 0.080 inch (2.0 mm); sash, .070 - 0.080 inch (2.0 mm).
- 6. Frame depth and construction: At least 3.625 inches (92 mm). Provide enclosed sloped sill frame member. All sash/vent rails shall be tubular. Sash/vent to engage the jamb 0.50 inches (12.7 mm). Top fixed glass to be installed into a separate fixed sash, rather than to be glazed directly on the frame. Provide 0.50 inch (12.7 mm) flanges at perimeter frames.
- 7. Sightlines:
 - a. Head: 3.188 inches (81 mm).
 - b. Jambs: 3.5625 (90.5 mm).
 - c. Meeting rail: 2.658 inches (67.5 mm).
 - d. Sill (exterior): 4.5 inches (114.3 mm).
- 8. Corner construction: Assemble with sealed hairline joints, made rigid by fasteners with 3 #10 stainless steel screws per corner.
- 9. Glazing beads. Extruded aluminum snap-in design, with 0.50 inch (12.7 mm) glass bite for impact-resistant glazing.
- 10. Weatherstripping: Wool pile with center soft fin (gray), minimum two rows at all moving connections.
- 11. Finish: Uniform at all visible surface exterior and interior, as specified.
- 12. Glass: As specified, factory glazed.
 - a. Laminated impact resistant glass, 5/16 inch (8 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes or glass for Series 360 products.
 - b. Laminated impact resistant glass, 7/16 inch (11 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes or glass for Series 360 products.
 - 1) Outer and inner panes of laminated unit - 1/8 inch (3.2mm) annealed float glass (heat strengthened or tempered when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - (e) Tints in outer and inner panes: Dark Gray (turtle code)
 - 2) Interlayers:
 - (a) 0.075 inch / 75 Mil (1.91 mm) Vanceva Storm composite by Solutia.
 - (b) 0.090 inch / (2.28 mm) Sentry Glass Plus by Dupont
 - (c) Translucent interlayer optional.
 - 3) Low E and high performance glass coatings as specified.
 - c. Insulated Laminated Impact Resistant Glass Unit: 13/16 inch (21 mm) thick (nominal) insulated laminated unit consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior Sacrificial Light/Pane: 1/8 Inch (3.2 mm) annealed or heat strengthened when required by loads.
 - (a) Tint in Outer Pane: None - clear.

- (b) Tint in Outer Pane: Gray.
- (c) Tint in Outer Pane: Bronze.
- (d) Tint in Outer Pane: Green (Solexia).
- 2) Airspace: 3/8 inch (9.5 mm) minimum air space
- 3) Low E and high performance glass coatings as specified.
- 4) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and inner panes of laminated unit – 1/8 inch (3.2mm), using either annealed or heat strengthened glass (when required by loads).
 - (c) Tint – clear, or clear Low E, or dark gray (turtle code) optional
- 13. Hardware: As specified, factory applied and field adjusted.
 - a. Concealed block and tackle or spiral balances (both can be used) attached to an independent carrier with nylon guides for smooth operation and sash removal feature without disengaging the balance.
 - b. Covers for balances and jamb installation screws.
 - c. Combination Egress self closing lock and lift/pull (spring loaded): one at windows 28 inches (71.12 cm) wide and smaller/ two at windows over 28 inches (71.12 cm) wide.
- 14. Options:
 - a. Meeting rail mounted sweep lock and keeper and lift/pull: one at windows 28 inches (71.12 cm) wide and smaller/ two at windows over 28 inches (71.12 cm) wide.
 - b. Screens: Charcoal fiberglass insect screen fabric, tightly splined into inconspicuous extruded aluminum-alloy frames with rigid corner construction.
 - c. Extruded double applied raised profile 1 inch (25 mm) muntins, N/A with insulated glass.
 - d. Limit opening device.
 - e. Waterbar adaptor.
 - f. Ogee glazing bead profile (colonial).
 - g. Square glazing bead profile (contemporary).
- 15. Miami Dade County NOA (Notices of Acceptance).
- 16. Aluminum alloy and temper: AA 6063-T5 and T6 temper; ASTM B 221M.

F. Horizontal Rolling Windows: Series 375 Aluminum Horizontal Rolling Windows by CGI Windows and Doors, Inc.

- 1. Example Sizes and Related Design Pressures. Refer to product approvals for latest results:
 - a. Large Missile Impact:
 - 1) 160x60 (2 Eql Panels) or 90x60 (3 Eql Panels) +120psf Pos, -150 psf Neg.
 - 2) 72x76 (2 Eql Panels) or 108x76 (3 Eql Panels) +101.9psf Pos, -101.9 psf Neg.
 - b. Small Missile Impact
 - 1) 60x60 (2 Eql Panels) or 90x60 (3 Eql Panels) +120psf Pos, -209.6 psf Neg.
 - 2) 72x76 (2 Eql Panels) or 108x76 (3 Eql Panels) +120 Pos, -135.5 psf Neg.
- 2. Air Infiltration Resistance: Air leakage no more than 0.134 cfm/ft² of glass area at pressure differential of 6.24 psf (air infiltration tests conducted at pressure differential of 1.57 psf may not be used to justify compliance).
- 3. Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 18 psf (with waterbar adaptor).

4. Construction: Heavy extruded aluminum-alloy sections, precision cut and assembled with hairline joints and no visible fasteners when sash is closed.
5. Member wall thicknesses: Frames, .075 - 0.080 inch (2.0 mm); sash, .070 - 0.080 inch (2.0 mm).
6. Frame Depth and Construction: At least 3.72 inches (94.5 mm). All sash/vent rails shall be tubular. Sash/vent to engage the jamb 0.50 inches (12.7 mm). Fixed panels to be installed into a separate fixed sash, rather than to be glazed directly on the frame. Provide 0.50 inch (12.7 mm) flanges at perimeter frames.
7. Sightlines for flange product with ogee beads:
 - a. Head: 3.5 inches (81 mm).
 - b. Jambs: 3.375 (85.7 mm).
 - c. Meeting rail: 2.625 inches (66.8 mm).
 - d. Sill (exterior): 4.125 inches (104.8 mm).
8. Corner construction: Assemble with sealed hairline joints, made rigid by fasteners with 3 #10 stainless steel screws per corner.
9. Glazing beads. Extruded aluminum snap-in Ogee design (square bead available), with minimum 0.50 inch (12.7 mm) glass bite for impact-resistant glazing.
10. Weatherstripping: Wool pile with center soft fin (gray), minimum two rows at all moving connections.
11. Finish: Uniform at all visible surface exterior and interior, as specified.
12. Glass: As specified, factory glazed.
 - a. Laminated impact resistant glass, 5/16 inch (8 mm) thick (nominal) consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass for Series 375 products. 7/16ths glass optional (square glazing beads only)
 - 1) Outer and inner panes of laminated unit – 3/16 inch (4.8mm) annealed float glass (heat strengthened or tempered when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - (e) Tints in outer and inner panes: dark gray (turtle code)
 - 2) Interlayer:
 - (a) 0.075 inch (1.91 mm) Vanceva Storm by Solutia.
 - (b) 0.090 inch (2.28 mm) Sentry Glass Plus by Dupont
 - (c) Translucent interlayer optional.
 - 3) Low E and high performance glass coatings as specified.
 - b. Insulated laminated impact resistant glass unit - 13/16 inch (21 mm) thick (nominal) consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior sacrificial light/pane – 3/16 Inch (4.8 mm) annealed.
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Airspace – 5/16 inch (7.96 mm) minimum air space.
 - 3) Low E and high performance glass coatings as specified.
 - 4) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and inner panes of laminated unit: 1/8 inch (3.2mm), using either annealed or heat strengthened glass (when required by loads).
 - (c) Tint - clear, or clear Low E, or dark gray (turtle code) optional.
13. Hardware: As specified, factory applied and field adjusted.

- a. Quad roller system consisting of a 1-1/2 inches x 3 inches (38 mm x 76 mm) housing each containing four (4) 3/4 inch (19 mm) diameter nylon wheels with stainless steel raceways on stainless steel axels. Each operable panel to have 2 housings (8 wheels). Wheels to run on PVC track insert.
 - b. Self closing heavy duty cast 1-7/8 inch x 4-1/8 inch (47.6 mm x 105 mm) locks (spring loaded): one per operable panel.
14. Options:
- a. Screens: Charcoal fiberglass insect screen fabric, tightly splined into inconspicuous extruded aluminum-alloy frames with rigid corner construction.
 - b. Extruded double applied raised profile 1 inch (25 mm) muntins, N/A with insulated glass.
 - c. Limit opening device.
 - d. Waterbar adaptor.
 - e. Ogee glazing bead profile (colonial).
 - f. Square glazing bead profile (contemporary).
 - g. Unequal size vents
15. Miami Dade County NOA (Notices of Acceptance).
16. Aluminum alloy and temper: AA 6063-T5 and T6 temper; ASTM B 221M.

2.3 SWING DOORS

- A. Swing Doors: Series 450 Door, Sidelites and Transoms by CGI Windows and Doors, Inc.
- B. Design:
- 1. Out-swing configuration.
 - 2. In-swing configuration.
 - 3. 2 inches (51 mm) thick (nominal) door panels.
 - 4. Complete frame, threshold and weatherstripping.
 - 5. Extruded snap-on glazing beads.
 - 6. Extruded astragal adaptor.
 - 7. Options:
 - a. True horizontal muntin (4.625 inches (117 mm) wide).
 - b. 0.50 inch (12.7 mm) nominal thick panel (in lieu of glass where shown or scheduled). Panel can be used to replace part or all of the glass in the door.
 - c. Saddle threshold (commercial doors, not rated for water resistance).
 - d. Extruded raised profile 1 inch (25 mm) and/or 3.50 inch (89 mm) double applied muntins. N/A with insulated glass.
 - e. Ogee profiles.
 - f. Out-swing configuration.
 - g. In-swing configuration.
 - h. Ogee glazing bead profile (colonial).
 - i. Square glazing bead profile (contemporary).
 - 8. Size: Refer to Drawings.

- C. Performance Requirements:
1. Outswing Door, Transoms and Sidelites: 100 psf Positive and Negative (110 Negative with heat strengthened glass).
 2. Inswing Door (no water infiltration resistance required): 100 psf Positive and Negative (110 Negative with heat strengthened glass).
 3. Inswing Door: 50 psf Positive and 100 psf Negative (110 Negative with heat strengthened glass) where water infiltration resistance is required.
- D. Air Infiltration Resistance:
1. Outswing Door: Transoms and Sidelites: no more than 0.07 cfm/sqft of glass area at static air pressure difference of 6.24 psf.
 2. Inswing Door: air leakage no more than 0.04 cfm/sqft of glass area, at a static air pressure difference of 1.57 psf.
- E. Water Infiltration Resistance:
1. Outswing doors, transoms and sidelites: Water Infiltration Resistance: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 15 psf.
 2. Inswing doors: No water penetration at a static air pressure differential of 15 percent of positive design pressure with a maximum tested performance of 7.5 psf.
- F. Construction: Heavyweight extruded aluminum sections for wet glazing, precision cut and assembled with sealant filled hairline joints and no visible screws. Provide grooves in extrusions to receive 3 lines of weather stripping where doors abut frames.
1. Member wall thickness: 0.125 inch (3.2 mm) minimum; 0.150 inch (3.8 mm) at hardware mounting locations.
 2. Member Sizes (widths including glazing beads):
 - a. Top rail and stiles: 1.918 inches (48.7 mm) thick by 5.5 inches (157 mm).
 - b. Bottom rail: 1.918 inches (48.7 mm) thick by 8 inches (203 mm).
 3. Sightlines:
 - a. Top rail: 6.25 inches (15.88 cm).
 - b. Jamb: 6.75 inches (17.146 cm).
 - c. Sill: 8 inches (20.32 cm).
 4. Door corner construction: Assemble using two 3/8 inch (8.9 mm) threaded compression rods in rails, secured at each end with washers and hex nuts.
 5. Glazing Beads: Snap-in design, for interior wet glazing, 0.060 inch (1.5 mm) wall thickness, with at least 0.50 inch (12.7 mm) glass bite for impact-resistant glazing.
 6. Finish: Uniform at all visible surfaces exterior and interior, as specified.
 7. Residential Hardware: Including concealed three point locking mechanism with integrated key lock cylinder and thumbturn (single action/one step locking).
 8. Hinges: Hager – Standard weight, three knuckle with concealed anti-friction nylatron bearing, 134 brass or stainless leaves with .312 concealed brass or stainless pin and plug.
 9. Commercial Hardware: Including concealed three point locking mechanism with integrated key lock cylinder and thumbturn (single action/one step locking).
 10. Sidelite and Transom Panels:
 - a. Product: Series 450 Sidelite, Transom Panels, and Mullions, by CGI.
 - b. Design and Performance: Sidelite and transom panels shall interlock with each other and with any CGI approved vertical aluminum tube mullions, at all points of interface, to form a structural unit at each opening, having impact, wind, water, and structural deflection resistance as specified.
 - c. For assemblies with an overall height of less than 108.75 inches utilize self-mating sidelites. For assemblies with an overall height of 108.75 inches or greater, provide structural mullions between sidelites and sidelites, and between sidelites and doors.

- d. Transoms: Utilize CGI door material transoms with integrated transom/door framing system, or utilize CGI window material transoms with aluminum tube mullion.
 - e. Construction: See description above under the door section (excluding hardware).
11. Glass: As specified, factory glazed
- a. Laminated impact resistant glass unit - 7/16 inch (11 mm) thick (nominal) Saflex PVB laminated consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Outer and inner panes of laminated unit - 3/16 inch (4.8mm) annealed float glass (Heat strengthened when required by loads).
 - (a) Tint in Outer Pane: None - clear.
 - (b) Tint in Outer Pane: Gray.
 - (c) Tint in Outer Pane: Bronze.
 - (d) Tint in Outer Pane: Green (Solexia).
 - 2) Interlayer: 0.090 inch / 90 mil (2.2 mm) film.
 - (a) Clear – standard.
 - (b) Translucent optional.
 - (c) Dark gray optional (turtle code).
 - 3) Low E and high performance glass coatings as specified.
 - b. Insulated Laminated Impact Resistant Glass Unit: 1 inch (25.4 mm) thick (nominal) consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior sacrificial light/pane:
 - (a) 1/8 Inch (3.2 mm) tempered.
 - (b) 1/4 Inch (6 mm) tempered.
 - (c) Tint in Outer Pane: None - clear.
 - (d) Tint in Outer Pane: Gray.
 - (e) Tint in Outer Pane: Bronze.
 - (f) Tint in Outer Pane: Green (Solexia).
 - 2) Airspace:
 - (a) 5/16 inch (8 mm) minimum air space.
 - 3) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) Outer and Inner Panes of Laminated Unit: 3/16 Inch (4.8 mm) annealed (heat strengthened when required by loads).
 - (c) Tint: None - clear, or clear Low E.
- G. Standards:
- 1. Miami Dade County Notices of Acceptance (NOA): 03-0422.02 and 03-0422.03.
 - 2. Aluminum: alloy and temper: AA 6063-T5 and T6; ASTM B 221.

2.4 SLIDING DOORS

- A. Sliding Doors: Series 560 Aluminum Sliding Glass Doors by CGI Windows and Doors, Inc.
- B. Performance:
 - 1. Large Missile Rating:
 - a. 4 by 8 foot panels: 120 psf Positive, 167 psf Negative.
 - b. 4 by 10 foot panels: 120 psf Positive, 140 psf Negative.
 - c. 5 by 10 foot panels: 90 psf Positive, 90 psf Negative.
 - 2. Small Missile Rating:
 - a. 4 by 8 foot panels: 120 psf Positive, 167 psf Negative.
 - b. 4 by 10 foot panels: 120 psf Positive, 140 psf Negative.
 - c. 5 by 10 foot panels: 105 psf Positive, 105 psf Negative.

- C. Air Infiltration Resistance: No air leakage more than 0.28 cfm/sqft of glass area at static air pressure difference of 6.24 psf.
- D. Water infiltration resistance. No water penetration through doors with water bar as follows:
 - 1. At static air pressure difference of 9 psf w/ 2.50 Inch (63.5 mm) water-bar.
 - 2. At static air pressure difference of 12 psf w/ 3.062 Inch (77.8) water-bar.
 - 3. At static air pressure difference of 15 psf w/ 3.688 Inch (93.7 mm) water-bar.
 - 4. At static air pressure difference of 18 psf w/ 4.25 Inch (108 mm) water-bar.
- E. Construction: Heavyweight extruded aluminum sections for wet glazing, precision cut and assembled with sealant filled hairline joints. Provide grooves in extrusions to receive weather stripping where doors abut frames.
 - 1. Member wall thickness: At least 0.080 inch (2.0 mm) to 0.125 inch (3.2 mm) for framing, rails, astragals and interlock members. At least 0.812 inch (20.6 mm) glass bite.
 - 2. Member Sizes: 2.25 inch (57.2 mm) panels, 2.75 inch (70 mm) deep interlocks; 5.625 inch (14.29 cm) deep frames.
 - 3. Sightlines:
 - a. Head: 6.375 inches (16.19 mm).
 - b. Jambs: 6.875 inches (17.46 cm).
 - c. Astragal: 11.125 inches (28.26 cm).
 - d. Sill: 8.875 inches (22.54 cm).
 - 4. Door frame construction: Door frames must be assembled using a minimum of 3 #12 stainless steel screws per corner.
 - 5. Door Sill/track must be of tubular single piece construction, designed to drain to exterior through the tubular section, with class I Clear Anodized finish and with beveled adaptor (minimum 0.75 inch (19.05 mm) beveled area) painted to match balance of door.
 - 6. Glazing Beads: Snap-in design, for interior wet glazing, with at least 0.812 inch (20.64 cm) glass bite for impact-resistant glazing.
 - 7. Finish: Uniform at all visible surfaces exterior and interior as specified.
 - 8. Hardware:
 - a. Locking for Operable Panels:
 - 1) Maximum security stainless steel 0.625 (15.88 mm) inch thick laminated hook bolt lock similar to Adams-Rite MS-1950.
 - 2) Commercial quality 1.156 inch (29.36 mm) diameter mortised cam thumbturns on interior with solid brass barrel (optional minimum 5 pin keyed cylinder to match thumbturn specifications on exterior as noted on plans).
 - 3) 3.88 inch (98.55 mm) long by 0.875 (22.22 mm) inch wide cast stainless steel keeper, 0.25 (6 mm) inch thick at lock engagement points and secured with minimum (3) # 10 stainless steel screws secured into minimum 0.125 inch (3.2 mm) thick aluminum at frame jamb.
 - b. Door Pulls: Standard back to back tubular 0.75 inch (19 mm) diameter round pulls (10 inches (254 mm) center to center) with 1.50 (38.1 mm) inches by 12 inches (38 mm by 305 mm) escutcheon plate. Provide single sided pulls used at secondary operable panels of XX and OXXO units.
 - c. Rollers: Tandem stainless steel rollers with precision bearings in a stainless steel housing (2 rollers per operable door panel). Face adjusted rollers requiring exposed caps to conceal access hole for adjusting screws are not acceptable.
 - d. Door stop: Heavy duty metallic round door stop, mounted on head frame member with a single concealed #12 screw, and contain a rubber sleeve to stop door panel. Extruded rubber stops or angle lip stops are not accepted.
 - e. Hardware Finishes
 - 1) Satin Nickel PVD

- 2) Dark Bronze (simulating oil rubbed bronze).
9. Sightlines:
 - a. Head and Jambs: 5.25 inches (13.34 cm).
 - b. Sill: 8.125 inches (20.6 cm).
 - c. Interlock: 5 inches (12.7 cm).
 - d. Astragal: OXO and OXXO – 9.25 inches (23.5 cm).
10. Stainless steel fasteners throughout.
11. Clear anodized tubular aluminum sill with internal drain chamber. Sill is designed to facilitate the use of tiles on exterior side of door.
12. Interior sill face trim (waterbar) must be beveled (minimum 0.75 inch (19 mm) beveled area) painted to match door, and available for 9, 12, 15 and 18 psf water resistance.
13. Extruded snap-on glazing beads (in contoured ogee or contemporary square profiles).
14. Options:
 - a. Super duty screens with extruded 1.75 inches (44 mm) vertical members.
 - b. Concealed aluminum reinforcing (steel reinforcing not acceptable).
 - c. Small missile impact resistant option.
 - d. Keyed cylinder on exterior face.
 - e. Panel framing members must be contained within the plane of the frame. Panel framing members that protrude past the plane of the frame are not acceptable.
 - f. Extruded raised profile 1 inch (25 mm) and/or 3.50 inches (89 mm) double applied muntins. Not available with insulated glass.
15. Glass: As specified, factory glazed
 - a. Construction: Laminated impact resistant glass, 7/16 inch (11.12 mm) (nominal) consisting of clear, non-yellowish, non-grazing interlayer sandwiched between two panes of glass for Series 560 products.
 - 1) Laminated unit make up
 - (a) One of each on Inner or Outer pane:
 - (1) 1/4 inch (6 mm) annealed float glass (Heat strengthened when required by loads).
 - (2) 3/16 inch (4.8 mm) annealed float glass (heat strengthened when required by loads).
 - (b) Tint in outer pane. None - clear.
 - (c) Tint in outer pane. Gray.
 - (d) Tint in outer pane. Bronze.
 - (e) Tint in outer pane. Green (Solexia).
 - 2) Interlayer:
 - (a) 0.090 inch/ 90 Mil Sentryglass Plus by Dupont.
 - (b) 0.075 inch / 75 Mil Vanceva Storm composite by Solutia.
 - 3) Low E and high performance glass coatings as specified.
 - b. Insulated laminated impact resistant glass unit - 1 inch (25.4 mm) thick (nominal) consisting of a sacrificial exterior light and a clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - 1) Exterior sacrificial light/pane:
 - (a) 3/16 Inch (4.8 mm) tempered.
 - (b) Tint in outer pane. None - clear.
 - (c) Tint in outer pane. Gray.
 - (d) Tint in outer pane. Bronze.
 - (e) Tint in outer pane. Green (Solexia).
 - 2) Airspace:
 - (a) 5/16 inch (8 mm) minimum air space.
 - 3) Laminated Unit:
 - (a) Consisting of clear, non-yellowish, non-crazing interlayer sandwiched between two panes of glass.
 - (b) One of each on Inner and Outer Pane
 - (1) 1/4 inch (6 mm) annealed.

- (2) 3/16 inch (4.8 mm) annealed (heat strengthened when required by loads).
 - (c) Tint – None - clear, or clear Low E.
 - (d) Interlayer - 0.090 inch/90 Mil Sentry glass plus or 0.075 inch/75 Mil Vanceva Storm composite.
- 16. Standards: Miami Dade County NOA (Notice of Acceptance): 08-0304.05.
 - 17. Aluminum: alloy and temper: AA 6063-T5 and T6: ASTM B 221.

2.5 FINISH:

- A. AAMA 2603 ESP finish: Pretreatment plus 1 coat ESP Siliconized Polyester Coating.
 - 1. White.
 - 2. Bronze
 - 3. Driftwood.
- B. AAMA 2605 Kynar (or comparable) finish - pretreatment plus 2 coat, 70 percent polyvinylidene fluoride (PVDF) coating. Color as selected by Architect.
- C. Clear Anodized Finish: NAAMM AA-C2241, 215R1, Class I, minimum 0.7 mills, in natural aluminum color.
- D. Wood grain finish: Pretreatment plus base powder coat with textured ink sublimation.

PART 3 EXECUTION

3.1 PREPARATION:

- A. Before start of unit installation, check openings for adequacy of pressure preservative treated wood blocking that will receive frames. Check the size, quantity, spacing, clearances, and rigidity of fastenings and their conformance to the specified NOA.

3.2 PREPARATION:

- A. Coordinate with Section 06100 - Wood blocking and fasteners to structure:
 - 1. 3/4 inch (19 mm) or 1-1/2 inch (38.1 mm) as per specified NOA rectangular or beveled pressure preservative treated South Yellow Pine blocking, set in a full bed of sealant.
 - 2. Fasten with to structure with drilled concrete fasteners spaced as required in NOA, so that blocking is continuous and is tightly butted to fill corners of each opening.
- B. Coordinate with Section 07920 - Exterior and interior sealants at unit perimeters:
 - 1. Sealant at exterior perimeter of aluminum frames, in deeply grooved stucco or in 1/4 inch (6 mm) gaps where other exterior finish materials terminate next to frames.
 - 2. Sealant in 1/8 inch (3.2 mm) gap at frame interior perimeters where sills and interior finish materials such as gypsum board and tile terminate next to frames.
- C. Perform cutting, fitting, forming, drilling, and grinding of frames, without damage to finish, as needed to fit project conditions and make watertight. Replace components with damage to exposed finishes.

3.3 WINDOW INSTALLATION:

- A. Install windows following manufacturer's instructions.

- B. Attach window frame and shims to perimeter blocking at openings to accommodate construction tolerances and other irregularities. Maintain integrity of air barriers and vapor retarder sheets.
- C. Align windows plumb and level, free of warp or twist.
- D. Adjust vents to close snugly and put in smooth operating order.

3.4 DOOR INSTALLATION:

- A. Install doors and frames in accordance with manufacturer's instructions, requirements of NOA for hurricane and impact-resistant construction, and approved shop drawings.
- B. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations, requirements of governing NOA, and within specified tolerances.
- C. Where aluminum surfaces contact alkaline substrates such as concrete or mortar, and metals other than stainless steel or zinc, protect from direct contact by painting reactive substrate and dissimilar metals with a heavy coating of bituminous paint in the field.
- D. Hang doors and adjust hardware to achieve specified clearances and proper door operation.
- E. Demonstrate doors and hardware are in good working order.

3.5 CLEANING:

- A. Refer to manufacturers instructions for proper cleaning and maintenance of the products.

END OF SECTION