



SECTION 08570 [08 54 00]

COMPOSITE WINDOWS

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

- A. Composite Windows.

### 1.2 RELATED SECTIONS

- A. Section 05400 - Cold Formed Metal Framing.
- B. Section 06100 - Rough Carpentry: Framed openings.
- C. Section 06200 - Finish Carpentry: Interior wood casing.
- D. Section 07210 - Building Insulation: Batt insulation at window perimeter.
- E. Section 07455 – Simulated wood trim.
- F. Section 07460 - Siding and trim.
- G. Section 07620 - Flashing and Sheet Metal: Flashing associated with windows and doors.
- H. Section 07900 - Joint Sealers: Perimeter joint sealant and backer rod.
- I. Section 08260 – Vinyl Patio Doors
- J. Section 09200 - Plaster and Gypsum Board.

### 1.3 REFERENCES

- A. AAMA/WDMA/CSA 101/I.S.2/A440-05, A440-08, and A440-11 - NAFS - North American Fenestration Standard Specification for windows, doors, and skylights.
- B. AAMA 615-13 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Plastic Profiles.

- C. AAMA 701/702 - Voluntary Specification For Pile Weatherstripping And Replaceable Fenestration Weatherseals.
- D. AAMA 902 - Voluntary Specification for Sash Balances.
- E. ASTM A 386 - Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).
- F. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- G. ASTM E 547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
- H. ASTM E 2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights.
- I. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
- J. ASTM F 588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.
- K. ASTM F 842 - Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.
- L. Consumer Products Safety Commission (CPSC): 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.
- M. Energy Star Rating System: US EPA and US DoE.
- N. Safety glass tested in accordance with ANSI Z97.1.

#### 1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Products shall meet or exceed the requirements of American Architectural Manufacturers Association (AAMA), the National Fenestration Rating Council (NFRC), and shall carry the Energy STAR label.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Manufacturer's head, jamb and sill details for each unit specified.
  4. Installation methods.
- C. Shop Drawings: For each unit type specified include elevations indicating size, glazing type, sections, details, hardware, relationship to adjacent construction, operational clearances and installation details showing multiple unit connections.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

- E. Verification Samples: For each interior and exterior finish specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and finish.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for adjustment and maintenance of components.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. Minimum ten years experience manufacturing composite windows.
  - 2. Capable of fabricating vinyl windows and doors that meet or exceed performance requirements indicated.
  - 3. Capable of providing documentation of performance characteristics by inclusion in lists and by labels, test reports, and calculations.
- B. Installer Qualifications: Installer with a minimum of 2 years experience on projects of a similar size and scope with similar installation conditions.
- C. Testing: Provide window units independently tested and found to be in compliance with AAMA/WDMA/CSA 101/I.S.2/A440-05, A440-08, or A440-11 performance standards.
- D. Code Compliance: Provide windows that are labeled in compliance with the jurisdiction having authority in the location of the project
- E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.
  - 4. Accepted mock-ups shall be comparison standard for remaining Work.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original unopened packaging with intact until ready for installation.
- B. Store products off the ground, out of direct sunlight in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer until ready for installation. Protect from damage.

## 1.8 SEQUENCING

- A. Ensure that information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

## 1.9 PROJECT CONDITIONS

- A. Field Measurements: Verify rough openings by field measurements before fabrication and indicate measurements on Shop Drawings.

- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.10 WARRANTY

- A. Manufacturer's Lifetime Limited Warranty that all windows will be free from manufacturing defects for life; to include screens and glass.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: AMSCO Windows; 1880 South 1045 West, Salt Lake City, UT 84104; Telephone: (888) 82-AMSCO (888-822-6726); E-mail: [amsco@amscowindows.com](mailto:amsco@amscowindows.com); website: [www.amscowindows.com](http://www.amscowindows.com).
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 RENAISSANCE SERIES COMPOSITE WINDOWS

- A. Type: AMSCO Windows Renaissance Series.
  - 1. Double Hung/Tilt:
    - a. Air Infiltration, ASTM E 283:
    - b. Water Resistance, ASTM E 547:
    - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: R-PG50 / LC-25. Maximum size: 48 inches by 78 inches. / 44 inches by 63 inches.
    - d. U-Value: 0.34 – 0.20 as measured in accordance with NFRC 100.
    - e. Solar Heat Gain Coefficient (SWGC): 0.27 – 0.11
    - f. Visible Transmission (VT): 0.21 – 0.34
  - 2. Horizontal Sliding:
    - a. Air Infiltration, ASTM E 283:
    - b. Water Resistance, ASTM E 547:
    - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: R-PG15 / LC-PG25. Maximum size: 120 inches by 72 inches. / 72 inches by 72 inches.
    - d. U-Value: 0.34 – 0.20 as measured in accordance with NFRC 100.
    - e. Solar Heat Gain Coefficient (SWGC): 0.27 – 0.11
    - f. Visible Transmission (VT): 0.21 – 0.34
  - 3. Casement:
    - a. Air Infiltration, ASTM E 283:
    - b. Water Resistance, ASTM E 547:
    - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: LC-PG40. Maximum size: 36 inches by 72 inches.
    - d. U-Value: 0.31 – 0.19 as measured in accordance with NFRC 100.
    - e. Solar Heat Gain Coefficient (SWGC): 0.27 – 0.17
    - f. Visible Transmission (VT): 0.50 – 0.33
  - 4. Awning:
    - a. Air Infiltration, ASTM E 283:
    - b. Water Resistance, ASTM E 547:

- c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: LC-PG30. Maximum size: 60 inches by 36 inches.
  - d. U-Value: 0.31 – 0.19 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.27 – 0.17
  - f. Visible Transmission (VT): 0.50 – 0.33
5. Picture Window, Direct Set:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: CW-PG50. Maximum size: 120 inches by 72 inches.
  - d. U-Value: 0.32 – 0.17 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.33 – 0.21
  - f. Visible Transmission (VT): 0.63 – 0.42
6. Picture Window, Transom:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: LC-PG30. Maximum size: 96 inches by 72 inches.
  - d. U-Value: 0.32 – 0.19 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.29 – 0.18
  - f. Visible Transmission (VT): 0.54 – 0.35
7. Picture Window, Casement:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: CW-PG40. Maximum size: 72 inches by 72 inches.
  - d. U-Value: 0.31 – 0.19 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.30 – 0.17
  - f. Visible Transmission (VT): 0.57 – 0.33
8. Picture Window, Double Hung:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: LC-PG250. Maximum size: 96 inches by 72 inches.
  - d. U-Value: 0.32 – 0.19 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.28 – 0.19
  - f. Visible Transmission (VT): 0.52 – 0.36
- B. Construction:
- 1. General:
    - a. Main Frame: Solid composite frame 4-9/16 inches deep fabricated with tongue and groove joinery techniques and mortise and tenon sash corners.
    - b. Jamb Extension: Provide with 6-9/16 inch jamb extension.
    - c. Head Expander
    - d. Sloped Sill Adapter
    - e. Jamb and Head Exterior-Applied Foam Wrap
  - 2. Frame Style:
    - a. Nail Fin frame depth with an integral 1-3/8 inch nail fin setback for new construction applications.
    - b. Retrofit-Flush Fin Integral 1-1/2 inch dual wall retrofit flush fin on the exterior of the frame for retrofit application without removing the old window frame.
  - 3. Glazing System: Secured to sash frame using glazing tape and snap-in glazing bead color matched to exterior window finish. Factory exterior glazed

except where field glazing is required due to large window unit dimensions. Units shall be re-glazeable without dismantling sash framing.

4. Double Hung with Tilt Sash
  - a. Block and tackle balances.
  - b. Neutral or matching jamb liners.
  - c. Sloped sill.
  - d. Traditional wide rail look in bottom sash.
  - e. Recessed finger pulls in sash.
  - f. Recessed tilt latches.
  - g. Tilt sash for ease of cleaning.
5. Casement
  - a. Centered sash for ease of cleaning (excludes egress hardware).
  - b. Unison lock with concealed hardware.
  - c. Matched or neutral color hardware.
  - d. Standard color-matched or optional plated hardware.
6. Awning
  - a. Scissor-style hardware for smooth operation
  - b. Two locks with concealed hardware
  - c. Standard folding handle
  - d. Standard color-matched or optional plated hardware
7. Horizontal Slider
  - a. Heavy-duty brass rollers.
  - b. Recessed finger pull hardware.
  - c. Cam-action lock.
8. Picture/Fixed Windows, Sash and Frame
  - a. Matching sight lines align with vent units.
9. Picture/Fixed Windows, Direct Set
  - a. Maximum glass viewing area.
10. Specialty Shapes
  - a. Round Tops
  - b. Arch Tops
  - c. Octagons
  - d. Full Circles
  - e. Half Circles
  - f. Quarter Circles
  - g. Quarter Angles
  - h. Trapezoids
  - i. Quarter Rectangles
  - j. Eyebrows
11. Window Screens:
  - a. Mesh: 18 x 16 fiberglass mesh secured with continuous vinyl gasket.
  - b. Frames: Roll form aluminum channel type.

C. Finish/Color:

1. Integral Vinyl Color:
  - a. White
  - b. Almond
  - c. Taupe
2. SuperCapSR Acrylic Color Cap:
  - a. Bronze
  - b. Autumn Red
  - c. Pine Wood
3. Painted Colors:
  - a. Almond
  - b. Clay.
  - c. Gray.

- d. Red.
- e. Cream.
- f. Dark Brown.
- g. Medium Brown.
- h. Olive.
- i. Bronze.
- j. Silver.
- k. Green.
- l. Black.

- D. Glass: Nominal Thickness: Insulated 7/8 inch glass with warm edge spacers.
- 1. Type: Insulated, CōzE (Standard Low E Glass, Cardinal 270). Insulating value over 35 percent more efficient than clear insulated glass
  - 2. Type: Insulated, CōzE Tint (Low-E Glass, Cardinal 240). Blocks 84 percent of ultraviolet radiation.
  - 3. Type: Insulated, CōzE HV (Low-E Glass, Cardinal 366) triple-layer silver coating. Blocks 95 percent of ultraviolet radiation. Triple-layer silver coating.
  - 4. Type: Insulated, CōzE Vantage (Low-E Glass) Hard Coat Low E technology with Low E on two surfaces.
  - 5. Argon Fill: Provide insulated glass with argon gas fill.
  - 6. Bright Glass: Provide with glass designed to be easier to clean and to stay clean longer.

- E. Hardware:
- 1. Standard Casement Locks: Hardware color to match the interior vinyl color
    - a. White
    - b. Almond
    - c. Taupe
    - d. Black
  - 2. Standard Cam Lock.
    - a. White
    - b. Almond
    - c. Taupe
    - d. Black
  - 3. Plated Cam Lock.
    - a. Oil Rubbed Bronze • Brushed Nickel
    - b. Antique Brass
    - c. Polished Brass
  - 4. Weatherstripping: To AAMA 701/702.

- F. Grids:
- 1. Surface-Applied Grids: Vinyl, simulated divided lite grids, surface applied, with aluminum, bronze, between-the-glass shadow bar grid, color matched to frame.
    - a. SLD 7/8 inch.
    - b. SLD 1-1/8 inch.
  - 2. Airspace Grids: Aluminum grids sealed between the glass, color-matched to frame.
    - a. Sculptured 1 inch
    - b. Flat 5/8 inch.

### 2.3 COMPOSITE WINDOWS RENAISSANCE SERIES POCKET WINDOWS

- A. Type: AMSCO Windows Renaissance Series Pocket Windows.
- 1. Double Hung/Tilt:
    - a. Air Infiltration, ASTM E 283:

- b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: LC-25 / R-50.  
Maximum size: 48 inches by 78 inches. / 44 inches by 63 inches.
  - d. U-Value: 0.31 – 0.19 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.25 – 0.10
  - f. Visible Transmission (VT): 0.48 – 0.32
2. Casement:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: CW-PG40.  
Maximum size: 36 inches by 72 inches.
  - d. U-Value: 0.29 – 0.17 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.25 – 0.09
  - f. Visible Transmission (VT): 0.48 – 0.32
3. Fixed Window, Casement:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: CW-PG40.  
Maximum size: 72 inches by 72 inches.
  - d. U-Value: 0.29 – 0.17 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.25 – 0.09
  - f. Visible Transmission (VT): 0.48 – 0.32
4. Awning:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: CW-PG30.  
Maximum size: 60 inches by 36 inches.
  - d. U-Value: 0.32 – 0.17 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.25 – 0.10
  - f. Visible Transmission (VT): 0.48 – 0.32
5. Picture Window, Direct Set:
- a. Air Infiltration, ASTM E 283:
  - b. Water Resistance, ASTM E 547:
  - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: AW-PG50.  
Maximum size: 120 inches by 72 inches.
  - d. U-Value: 0.32 – 0.16 as measured in accordance with NFRC 100.
  - e. Solar Heat Gain Coefficient (SWGC): 0.25 – 0.10
  - f. Visible Transmission (VT): 0.63 – 0.42
- B. Construction:
1. General:
- a. Main Frame: Solid composite frame 3-1/4 inches deep fabricated with tongue and groove joinery techniques and mortise and tenon sash corners. Designed for installation into the pocket of an existing wood window frame openings.
  - b. Jamb Extension: Provide with 6-9/16 inch jamb extension.
  - c. Head Expander
  - d. Sloped Sill Adapter
  - e. Jamb and Head Exterior-Applied Foam Wrap
2. Frame Style:
- a. Nail Fin 3-1/4 inch frame depth with an integral 1-3/8 inch nail fin setback for new construction applications.
  - b. Retrofit-Flush Fin Integral 1-1/2 inch dual wall retrofit flush fin on the exterior of the frame for retrofit application without removing the old window frame.



3. Glazing System: Secured to sash frame using glazing tape and snap-in glazing bead color matched to exterior window finish. Factory exterior glazed except where field glazing is required due to large window unit dimensions. Units shall be re-glazeable without dismantling sash framing.
4. Double Hung with Tilt Sash
  - a. Block and tackle balances.
  - b. Neutral or matching jamb liners.
  - c. Sloped sill.
  - d. Traditional wide rail look in bottom sash.
  - e. Recessed finger pulls in sash.
  - f. Recessed tilt latches.
  - g. Tilt sash for ease of cleaning.
5. Casement
  - a. Centered sash for ease of cleaning (excludes egress hardware).
  - b. Unison lock with concealed hardware.
  - c. Matched or neutral color hardware.
  - d. Standard color-matched or optional plated hardware.
6. Awning
  - a. Scissor-style hardware for smooth operation
  - b. Two locks with concealed hardware
  - c. Standard folding handle
  - d. Standard color-matched or optional plated hardware
7. Horizontal Slider
  - a. Heavy-duty brass rollers.
  - b. Recessed finger pull hardware.
  - c. Cam-action lock.
8. Picture/Fixed Windows, Sash and Frame
  - a. Matching sight lines align with vent units.
9. Picture/Fixed Windows, Direct Set
  - a. Maximum glass viewing area.
10. Specialty Shapes
  - a. Round Tops
  - b. Arch Tops
  - c. Octagons
  - d. Full Circles
  - e. Half Circles
  - f. Quarter Circles
  - g. Quarter Angles
  - h. Trapezoids
  - i. Quarter Rectangles
  - j. Eyebrows
11. Window Screens:
  - a. Mesh: 18 x 16 fiberglass mesh secured with continuous vinyl gasket.
  - b. Frames: Roll form aluminum channel type.

C. Finish/Color:

1. Integral Vinyl Color:
  - a. White
  - b. Almond
  - c. Taupe
2. SuperCapSR Acrylic Color Cap:
  - a. Bronze
  - b. Autumn Red
  - c. Pine Wood
3. Painted Colors:
  - a. Almond

- b. Clay.
- c. Gray.
- d. Red.
- e. Cream.
- f. Dark Brown.
- g. Medium Brown.
- h. Olive.
- i. Bronze.
- j. Silver.
- k. Green.
- l. Black.

- D. Glass: Nominal Thickness: Insulated 3/4 inch glass with warm edge spacers.
- 1. Type: Insulated, CōzE (Standard Low E Glass, Cardinal 270). Insulating value over 35 percent more efficient than clear insulated glass
  - 2. Type: Insulated, CōzE Tint (Low-E Glass, Cardinal 240). Blocks 84 percent of ultraviolet radiation.
  - 3. Type: Insulated, CōzE HV (Low-E Glass, Cardinal 366) triple-layer silver coating. Blocks 95 percent of ultraviolet radiation. Triple-layer silver coating.
  - 4. Type: Insulated, CōzE Vantage (Low-E Glass) Hard Coat Low E technology with Low E on two surfaces.
  - 5. Argon Fill: Provide insulated glass with argon gas fill.
  - 6. Bright Glass: Provide with glass designed to be easier to clean and to stay clean longer.
- E. Hardware:
- 1. Standard Cam Locks: Hardware color to match the interior vinyl color
    - a. White
    - b. Almond
    - c. Taupe
    - d. Black
  - 2. Standard Cam Lock.
    - a. White
    - b. Almond
    - c. Taupe
    - d. Black
  - 3. Plated Cam Lock.
    - a. Oil Rubbed Bronze • Brushed Nickel
    - b. Antique Brass
    - c. Polished Brass
    - d.
  - 4. Weatherstripping: To AAMA 701/702.
- F. Grids:
- 1. Surface-Applied Grids: Vinyl, simulated divided lite grids, surface applied, with aluminum, bronze, between-the-glass shadow bar grid, color matched to frame.
    - a. SLD 7/8 inch.
    - b. SLD 1-1/8 inch.
  - 2. Airspace Grids: Aluminum grids sealed between the glass, color-matched to frame.
    - a. Sculptured 1 inch
    - b. Flat 5/8 inch.

## 2.4 COMPOSITE PATIO DOORS

- A. Type: AMSCO Windows Renaissance Series Patio Doors.
  - 1. Sliding Patio Door:
    - a. Air Infiltration, ASTM E 283:
    - b. Water Resistance, ASTM E 547:
    - c. Structural Rating, AAMA/WDMA/CSA 101/I.S.2/A440-05: LC-PG25 / LC-PG30. Maximum size: 192 inches by 96 inches / 96 inches by 96 inches.
    - d. U-Value: 0.32 – 0.19 as measured in accordance with NFRC 100.
    - e. Solar Heat Gain Coefficient (SWGC): 0.28 – 0.10
    - f. Visible Transmission (VT): 0.52 – 0.36
  
- B. Construction:
  - 1. General:
    - a. Main Frame: Solid composite frame 4-9/16 inches deep fabricated with tongue and groove joinery techniques and mortise and tenon sash corners.
  - 2. Frame Style:
    - a. Nail Fin 3-1/4 inch frame depth with an integral 1-3/8 inch nail fin setback for new construction applications.
    - b. Retrofit-Flush Fin Integral 1-1/2 inch dual wall retrofit flush fin on the exterior of the frame for retrofit application without removing the old window frame.
  - 3. Patio Door
    - a. 2 panel (OX or XO) doors.
    - b. 3 panel (OOX, XOO or OXO) doors.
    - c. 4 panel (OXXO) doors.
    - d. Nail fin option.
    - e. Retrofit flush fin option
  
- C. Color:
  - 1. Integral Vinyl Color:
    - a. White
    - b. Almond
    - c. Taupe
  - 2. SuperCapSR Acrylic Color Cap:
    - a. Bronze
    - b. Autumn Red
    - c. Pine Wood
  - 3. Painted Colors:
    - a. Almond
    - b. Clay.
    - c. Gray.
    - d. Red.
    - e. Cream.
    - f. Dark Brown.
    - g. Medium Brown.
    - h. Olive.
    - i. Bronze.
    - j. Silver.
    - k. Green.
    - l. Black.
  
- D. Glass: Nominal Thickness: Insulated 3/4 inch glass with warm edge spacers.
  - 1. Type: Insulated, CōzE (Standard Low E Glass, Cardinal 270). Insulating value over 35 percent more efficient than clear insulated glass

2. Type: Insulated, CōzE Tint (Low-E Glass, Cardinal 240). Blocks 84 percent of ultraviolet radiation.
3. Type: Insulated, CōzE HV (Low-E Glass, Cardinal 366) triple-layer silver coating. Blocks 95 percent of ultraviolet radiation. Triple-layer silver coating.
4. Type: Insulated, CōzE Vantage (Low-E Glass) Hard Coat Low E technology with Low E on two surfaces.
5. Argon Fill: Provide insulated glass with argon gas fill.
6. Bright Glass: Provide with glass designed to be easier to clean and to stay clean longer.

E. Hardware:

1. Sliding Patio Door Handle: Sliding Patio Door system hardware with 2-point mortise latch.
  - a. Standard
    - 1) White
    - 2) Almond
    - 3) Taupe
    - 4) Black
  - b. Plated
    - 1) Oil Rubbed Bronze • Brushed Nickel
    - 2) Antique Brass
    - 3) Polished Brass
2. Vent Rollers: Nylon; adjustable tandem type.
3. Weatherstripping: To AAMA 701/702.

F. Grids:

1. Surface-Applied Grids: Vinyl, simulated divided lite grids, surface applied, with aluminum, bronze, between-the-glass shadow bar grid, color matched to frame.
  - a. SLD 7/8 inch.
  - b. SLD 1-1/8 inch.
2. Airspace Grids: Aluminum grids sealed between the glass, color-matched to frame.
  - a. Sculptured 1 inch
  - b. Flat 5/8 inch.

## 2.5 MATERIALS - GENERAL

A. Composite Material: Thermal Cell Composite material used in Renaissance Signature Series windows is a mix of thermoplastic resins.

1. Comply with requirement of AAMA/WDMA/CSA 101/I.S.2/A440-05.

B. Accessories:

1. Sealant: Provide sealant type recommended by window manufacturer for the joint size and movement, to remain permanently elastic, non-shrinking and non-migrating.

C. Fasteners:

1. Stainless steel or other metallic or non-metallic material recommended by the manufacturer as non-corrosive and compatible with window member, trim, anchors and other components of the window units.
2. Anchors, Clips, Window Accessories: Depending on strength and corrosion-inhibiting requirements, fabricate units of stainless steel or hot-dip zinc-coated steel or iron complying with ASTM A 386.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify rough opening sizes are of sufficient size to receive units and complies with manufacturer's requirements for opening clearances.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's Master Installation Method instructions for installation of window units, hardware, operator, accessories and other window components and with ASTM E 2112.
- B. Coordinate window installation work with work of other trades for proper time and sequence to avoid construction delays.
- C. Install windows plumb, level and square with 1/4 inch clearance on all sides and with weep holes at bottom. Opening panels must be closed and locked during installation
- D. Headers must not be nailed. Nail through the fin into framing along jambs and sill while staying 4 inches from corners. At the head, finishing nails may be placed 1/2 inch above fin and bent down over fin to allow for header deflection. Full support is required along entire length of sill.
- E. Accurately fit, align, securely fasten and install free from distortion or defects.
- F. Apply sealant around perimeter of units between nail fin and exterior sheathing of wall in accordance with manufacturer's instructions.
- G. Insulate perimeter of window frame with acceptable approved insulation material as recommended by window manufacturer. Do not use expansive foam insulation.
- H. Flash units in accordance with AAMA guidelines.

### 3.4 ADJUSTING

- A. Adjust operators and components for correct function and operation in accordance with manufacturer's written instructions.
- B. Lubricate moving parts to operate smoothly and fit accurately.
- C. Inspect latch for proper operation.

- D. After installation adjust door units for proper operation, without binding, sticking, or racking.
- E. Remove excess sealant materials and visible labels from glass. Clean glass surfaces promptly after installation.
- F. Initiate and maintain all protection and other precautions required to ensure windows are in acceptable condition at time of substantial completion.

### 3.5 CLEANING

- A. Vacuum clean tracks and remove any foreign debris that may affect smooth operation
- B. Remove protective covers and marking tapes from windows. Clean interior and exterior glass and surfaces of windows. Provide temporary window labels to Owner for safe keeping.
- C. Wash down surfaces with solution of mild detergent in warm water applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- D. Do not use petroleum-based distillates to clean windows.
- E. Remove any excess glazing and sealant compounds, dirt and other substances.
- F. Upon completion, remove surplus materials, rubbish, tools and equipment.

### 3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

### 3.7 SCHEDULES

- A. North Elevation:
  - 1. Opening No. W1: Size \_\_\_ by \_\_\_ inch (\_\_\_ mm by \_\_\_ mm); \_\_\_\_\_ Series Vinyl Double-Hung Windows.
  - 2.
  - 3.
- B. East Elevation:
  - 1. Opening No. W10: Size \_\_\_ by \_\_\_ inch (\_\_\_ mm by \_\_\_ mm); \_\_\_\_\_ Series Vinyl Double-Hung Windows.
  - 2.
  - 3.

END OF SECTION