SECTION 08550

WOOD WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Clad wood windows.

B. Clad wood doors.

C. Glazing and accessories.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete: Openings in cast-in-place concrete.

B. Section 03450 - Precast Concrete Wall Panels: Openings in precast concrete wall panels.

C. Section 04810 - Unit Masonry Assemblies: Openings in masonry.

D. Section 05400 - Cold Formed Metal Framing: Framed Openings.

E. Section 06100 - Rough Carpentry: Framed openings.

F. Section 06200 - Finish Carpentry: Interior wood casing.

G. Section 07210 - Building Insulation: Batt insulation at window perimeter.

H. Section 07460 - Siding and trim.

I. Section 07620 - Flashing and Sheet Metal: Flashing associated with windows and doors.

J. Section 07900 - Joint Sealers: Perimeter joint sealant and backer rod.

1.3 REFERENCES

A. AAMA/WDMA/CSA 101/I.S.2/A440-08 NAFS - North American Fenestration Standard/Specification for windows, doors, and skylights.

B. AAMA 611-98 - Voluntary Specification for Anodized Architectural Aluminum.

C. AAMA 2604-05 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

D. AAMA 2605-05 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

E. ASTM C 1036-06 - Standard Specification for Flat Glass.

F. ASTM C 1048-04 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.

G. ASTM C1172-03 - Standard Specification for Laminated Architectural Flat Glass.

H. ASTM D 2244 - Standard Test Method for Calculation of Color Differences From Instrumentally Measured Color Coordinates; 1993 (Reapproved 2000).

I. ASTM D 4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films; 1998.

J. ASTM E 774-97 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units.

K. ASTM E 330-02 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

L. ASTM E 1886 - Standard Test method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials.

M. ASTM E 1996-06 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

N. WDMA I.S.4-07A - Water-Repellent Preservative Treatment for Millwork.

1.4 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. Installation methods.

C. Certification: Evidence of certification to specified ratings.

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 finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Impact Rated Windows and Doors:
   1. High Velocity Hurricane Zone: Eagle Harbor Master Windows conform to ASTM E 330-02 for Static Air Pressure.
   2. Large Missile Impact and Cyclic Pressure Loading: Eagle Harbor Master Windows conform to ASTM E 1886 and ASTM E 1996-06 for large missile impact and cyclic pressure loading.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver units to project site until ready to install, unless indoor storage area is available.

B. Store products in manufacturer's unopened packaging until ready for installation.

1.7 WARRANTY

A. Provide manufacturer's standard warranty for:
   1. Wood Members: 10 years.
   2. Aluminum Cladding Structural Performance: Lifetime.
   3. Exterior Aluminum Finish: Thermoset siliconized polyester finish 20 years.
   4. Exterior Aluminum Finish: Kynar finish 20 years.
   5. Anodized Aluminum Finish: 5 years.
   6. Insulating Glass: 20 years.
   7. Other Components: 10 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Eagle Window & Door, which is located at: 2045 Kerper Blvd. ; Dubuque, IA 52001; Toll Free Tel: 800-324-5354; Tel: 563-556-2270; Fax: 563-556-4408; Email: architecturalsupport@andersencorp.com; Web: www.EagleWindow.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 WINDOWS AND DOORS - GENERAL

A. Windows and Doors: Complying with AAMA/WDMA/CSA 101/I.S.2/A440-08; factory assembled and glazed, complete with weatherstripping, operating hardware and specified accessories.
   1. Total Jamb Depth: As indicated on Drawings; provide factory installed jamb extensions.
   2. NFRC certified thermal performance.

2.3 CLAD WOOD WINDOWS

A. Casement Windows:
   1. Type: Standard casement, outswinging.
   2. Rating: CW-PG50; maximum size 30 by 72 inches (762 by 1829 mm), standard casement.
   3. Rating: CW-PG60; maximum size 36 by 60 inches (813 by 1524 mm).
   4. Rating: Impact Rated casement with impact resistant glazing.
   5. Frame Depth: 2-7/8 inches (22.5 mm).
   6. Nailing Fin:
      a. No nailing fin.
      b. Vinyl nailing fin with clear drip cap.
      c. Vinyl nailing fin with extruded aluminum drip cap.
   7. Screens:
      a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
      b. Screen Mesh: Aluminum.
      c. Screen Mesh: Tru-Scene.
      d. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
         1) Bronze.
         2) White.
         3) Black.
         4) Gold.

5) Veneer wrapped to match interior wood finish.

e. Retractable Screen: Wood veneered aluminum, with case enclosure, screen rails and lift. Wood species as follows:

1) Ponderosa Pine.
2) Oak.
3) Fir.
4) Vertical Grain Fir.
5) Maple.
6) Walnut.
7) Alder.
8) African Mahogany.
9) Cherry.
10) Hickory.
11) Match window wood species.

8. Casement Hardware and Weatherstripping:

a. Weatherstripping: Compression type on all sash and frame meeting surfaces. Weatherstrip color as follows:

1) White.
2) Black.

b. Operator: Gear type with hardened steel gears and stainless steel arms.

c. Operator Handle: Folding crank type.

d. Hinges: Concealed from exterior, with stainless steel hinge track and screws.

e. Hinges: Continuous piano hinges, stainless steel.

f. Locks: Sequential concealed sash locks; two sequential locks on sash over 36 inches (915 mm) tall; provide temporary construction lock lever/operator handle for each unit.

9. Hardware Finishes:

a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:

1) White.
2) Black.
3) Bronze.
4) Gold.
5) As selected from manufacturer's standard selection.

b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:

1) Antique Brass.
2) Satin Chrome.
3) Oil Rubbed Bronze.
4) Bright Chrome.
5) Pewter.
6) Brass.

c. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard stainless steel hardware.

B. French Casement Windows:

1. Type: French casement, outswinging pair without meeting stile mullion.
2. Rating: LC-PG40; maximum size 60 by 60 inches (1524 by 1524 mm).
3. Jamb Depth: 2-7/8 inches (22.5 mm).
4. Nailing Fin:

a. No nailing fin.

b. Vinyl nailing fin with clear drip cap.
c. Vinyl nailing fin with extruded aluminum drip cap.

5. Screens:
   a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
   b. Screen Mesh: Aluminum.
   c. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
      1) Bronze.
      2) White.
      3) Black.
      4) Gold.
   d. Screen Frame: Wood Veneered Aluminum, with corners mitered and secured with corner locks, spring-loaded
      1) Ponderosa Pine,
      2) Oak.
      3) Fir.
      4) Vertical Grain Fir.
      5) Maple.
      6) Walnut.
      7) Alder.
      8) African Mahogany.
      9) Cherry.
      10) Hickory.
      11) Match window wood species
6. Casement Hardware and Weatherstripping:
   a. Weatherstripping: Compression type on all sash and frame meeting surfaces. Weatherstrip color as follows:
      1) White.
      2) Black.
   b. Operator: Gear type with hardened steel gears, Lexan cover, and high-pressure zinc die cast handle.
   c. Operator Handle: Folding crank type.
   d. Hinges: Continuous piano hinges, stainless steel.
   e. Locks: Cam action concealed sash locks; two sequential locks on sash over 36 inches (915 mm) tall; provide temporary construction lock lever/operator handle for each unit.
7. Hardware Finishes:
   a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:
      1) White.
      2) Black.
      3) Gold.
      4) Bronze.
      5) As selected from manufacturer's standard selection.
   b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:
      1) Antique Brass.
      2) Satin Chrome.
      3) Oil Rubbed Bronze.
      4) Bright Chrome.
      5) Pewter.
      6) Polished Brass.
   c. Finish of Hardware Exposed to Weather or Concealed from View When

Window is Closed: Manufacturer's standard corrosion resistant coating.

C. Awning Windows:
1. Rating: LC-PG50; maximum size 48 by 36 inches (1220 by 914 mm).
2. Rating: Impact Rated Awning with Impact resistant glazing.
3. Frame Depth: 2-7/8 inches (22.5 mm).
4. Nailing Fin:
   a. No nailing fin.
   b. Vinyl nailing fin with clear drip cap.
   c. Vinyl nailing fin with extruded aluminum drip cap.
5. Screens:
   a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
   b. Screen Mesh: Aluminum.
   c. Screen Mesh: Tru-Scene.
   d. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
      1) Bronze.
      2) White.
      3) Black.
      4) Gold.
      5) Veneer wrapped to match interior wood finish.
   e. Retractable Screen: Wood veneered aluminum, with case enclosure, screen rails and lift. Wood species as follows:
      1) Ponderosa Pine.
      2) Oak.
      3) Fir.
      4) Vertical Grain Fir.
      5) Maple.
      6) Walnut.
      7) Alder.
      8) African Mahogany.
      9) Cherry.
      10) Hickory.
      11) Match window wood species.
6. Awning Hardware:
   a. Weatherstripping: Compression type on all sash and frame meeting surfaces. Weatherstrip color as follows:
      1) White.
      2) Black.
   b. Operator: Gear type with hardened steel gears and stainless steel arms.
   c. Operator Handle: Folding crank type.
   d. Remote Operator: Electric motor with wall switch control; manufacturer's standard color.
   e. Hinges: Concealed from exterior, with stainless steel hinge track and screws.
   f. Locks: Two cam action concealed sash locks on each sash; provide temporary construction lock lever/operator handle for each unit.
7. Hardware Finishes:
   a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:
      1) White.
      2) Black.
      3) Gold.

4) Bronze.
5) As selected from manufacturer's standard selection.

b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:
1) Antique Brass.
2) Satin Chrome.
3) Oil Rubbed Bronze.
4) Bright Chrome.
5) Pewter.
6) Polished Brass.

c. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard stainless steel hardware.

D. Double Hung Windows:
1. Type: Talon(tm) double-hung; Rating LC-PG50, maximum size 44 by 78 inches (1118 by 1981 mm).
2. Type: Talon(tm) double-hung; Rating LC-PG50, maximum size 48 by 72 inches (1219 by 1829 mm).
3. Type: Impact Rated with impact resistant glazing.
4. Jamb Depth: 4-9/16 inches (115 mm).
5. Stile Width: 1-5/8 inches (41 mm).
6. Top Rail Height: 1-5/8 inches (41 mm).
7. Check Rail Height: 1-5/8 inches (41 mm).
8. Bottom Height: 3-3/4 inches (95 mm).
9. Nailing Fin:
a. No nailing fin.
b. Vinyl nailing fin with clear drip cap.
c. Vinyl nailing fin with extruded aluminum drip cap.
10. Screens:
a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
b. Screen Mesh: Aluminum.
c. Screen Mesh: Tru-Scene.
d. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
1) Match frame color.
2) Match Sash color.
3) As selected from full range of manufacturers standard colors.
4) Custom color.
11. Double-Hung Jamb Liners, Hardware, and Weatherstripping:
a. Jamb Liners: Talon type; patent pending vinyl jamb liners; color as selected from manufacturer's standard colors.
1) Jamb Liner Inserts: Exterior and interior inserts of vinyl; color as selected from manufacturer's standard colors.
2) Jamb Liner Inserts: Wood veneer-wrapped interior inserts; aluminum exterior insert finished to match exterior frame.
3) Weatherstripping: Compression bulb type at bottom of sash, head jamb, at check rail, and on side jambs.
4) Locks: High-pressure zinc die cast lock/tilt mechanism designed to open and tilt sash in one operation.
5) Balances: Factory installed, concealed in jambs; block and tackle assemblies as appropriate for sash weight; two on each sash.
b. Sash Lifts: High-pressure zinc die cast; two lifts on sash 36 inches (915 mm) wide or more.

c. Sash Lifts: None.
d. Pivot Locking: Each venting sash provide two specially designed mechanisms that permit sash to be tilted 90 degrees inward from bottom pivot and positively held in place for washing.
e. Sash Limiter: Required.
f. Sash Limiter: Not required.

12. Hardware Finishes:
    a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:
        1) White.
        2) Black.
        3) Gold.
        4) Bronze.
        5) As selected from manufacturer's standard selection.
    b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:
        1) Antique Brass.
        2) Satin Chrome.
        3) Oil Rubbed Bronze.
        4) Bright Chrome.
        5) Pewter.
        6) Polished Brass.
    c. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard finish.
    d. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard corrosion resistant coating.
    e. Hardware Exposed to Weather or Concealed from View When Window is Closed: Stainless steel.

E. Radius Top Single Hung Windows:
1. Type: Talon(tm) double-hung; Rating LC-PG50, maximum size 44 by 78 inches (1118 by 1981 mm).
2. Type: Talon(tm) double-hung; Rating LC-PG50, maximum size 48 by 72 inches (1219 by 1829 mm).
3. Type: Impact Rated with impact resistant glazing.
4. Jamb Depth: 4-9/16 inches (115 mm).
5. Stile Width: 1-5/8 inches (41 mm).
6. Top Rail Height: 1-5/8 inches (41 mm).
7. Check Rail Height: 1-5/8 inches (41 mm).
8. Bottom Height: 3-3/4 inches (95 mm).
9. Nailing Fin:
    a. No nailing fin.
    b. Vinyl nailing fin with no drip cap.
    c. Vinyl nailing fin with extruded aluminum drip cap.
10. Screens:
    a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
    b. Screen Mesh: Aluminum.
    c. Screen Mesh: Tru-Scene.
    d. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
        1) Match frame color.
        2) Match Sash color.

3) As selected from full range of manufacturers standard colors.
4) Custom color.

11. Double-Hung Jamb Liners, Hardware, and Weatherstripping:
    a. Jamb Liners: Talon type; patent pending vinyl jamb liners; color as selected from manufacturer's standard colors.
        1) Jamb Liner Inserts: Exterior and interior inserts of vinyl; color as selected from manufacturer's standard colors.
        2) Jamb Liner Inserts: Wood veneer-wrapped interior inserts; aluminum exterior insert finished to match exterior frame.
        3) Weatherstripping: Compression bulb type at bottom of sash, head jamb, at check rail, and on side jambs.
        4) Locks: High-pressure zinc die cast lock/tilt mechanism designed to open and tilt sash in one operation.
        5) Balances: Factory installed, concealed in jambs; block and tackle assemblies as appropriate for sash weight; two on each sash.
    b. Sash Lifts: High-pressure zinc die cast; two lifts on sash 36 inches (915 mm) wide or more.
    c. Sash Lifts: None.
    d. Pivot Locking: Each venting sash provide two specially designed mechanisms that permit sash to be tilted 90 degrees inward from bottom pivot and positively held in place for washing.
        1) Sash Limiter: Required.
        2) Sash Limiter: Not required.
12. Hardware Finishes:
    a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:
        1) White.
        2) Black.
        3) Gold.
        4) Bronze.
        5) As selected from manufacturer's standard selection.
    b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:
        1) Antique Brass.
        2) Satin Chrome.
        3) Oil Rubbed Bronze.
        4) Bright Chrome.
        5) Pewter.
        6) Polished Brass.
    c. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard corrosion resistant coating.

F. Monumental Single Hung Windows:
    1. Type: Monumental single-hung; Rating LC-PG35, maximum size 60 by 108 inches (1524 by 2743 mm).
    2. Type: Monumental single-hung; Rating LC-PG35, maximum size 48 by 120 inches (1220 by 3048 mm).
    3. Jamb Depth: 4-9/16 inches (115 mm).
    4. Stile Width: 1-5/8 inches (41 mm).
    5. Top Rail Height: 1-5/8 inches (41 mm).
    6. Check Rail Height: 1-5/8 inches (41 mm).

7. Bottom Height: 3-3/4 inches (95 mm).
8. Nailing Fin:
    a. No nailing fin.
    b. Vinyl nailing fin with clear drip cap.
    c. Vinyl nailing fin with extruded aluminum drip cap.
9. Screens:
    a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
    b. Screen Mesh: Aluminum.
    c. Screen Mesh: Tru-Scene.
    d. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
        1) Match frame color.
        2) Match Sash color.
        3) As selected from full range of manufacturers standard colors.
        4) Custom color.
10. Double-Hung Jamb Liners, Hardware, and Weatherstripping:
    a. Jamb Liners: Talon type; patent pending vinyl jamb liners; color as selected from manufacturer's standard colors.
        1) Jamb Liner Inserts: Exterior and interior inserts of vinyl; color as selected from manufacturer's standard colors.
        2) Jamb Liner Inserts: Wood veneer-wrapped interior inserts; aluminum exterior insert finished to match exterior frame.
        3) Weatherstripping: Compression bulb type at bottom of sash, head jamb, at check rail, and on side jambs.
        4) Locks: High-pressure zinc die cast lock/tilt mechanism designed to open and tilt sash in one operation.
        5) Balances: Factory installed, concealed in jambs; block and tackle assemblies as appropriate for sash weight; two on each sash.
    b. Sash Lifts: High-pressure zinc die cast; two lifts on sash 36 inches (915 mm) wide or more.
    c. Sash Lifts: None.
    d. Sash Limiter: Required.
    e. Sash Limiter: Not required.
11. Hardware Finishes:
    a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:
        1) White.
        2) Black.
        3) Gold.
        4) Bronze.
        5) As selected from manufacturer's standard selection.
    b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:
        1) Antique Brass.
        2) Satin Chrome.
        3) Oil Rubbed Bronze.
        4) Bright Chrome.
        5) Pewter.
        6) Polished Brass.
    c. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard corrosion resistant coating.

G. Double Hung Replacement Windows:
1. Type: Talon RetroFit double-hung.
2. Rating: H-LC50; maximum size 44 by 78 inches (1118 by 1981 mm)
3. Jamb Depth: 3-1/4 inches (mm).
4. Stile Width: 1-5/8 inches (41 mm).
5. Top Rail Height: 1-5/8 inches (41 mm).
6. Check Rail Height: 1-5/8 inches (41 mm).
7. Bottom Height: 3-3/4 inches (95 mm).
8. Screens:
   a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
   b. Screen Mesh: Aluminum.
   c. Screen Mesh: Tru-Scene.
   d. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
      1) Match frame color.
      2) Match Sash color.
      3) As selected from full range of manufacturers standard colors.
      4) Custom color.
9. Double-Hung Jamb Liners, Hardware, and Weatherstripping:
   a. Jamb Liners: Compression type rigid extruded vinyl jamb liner backed with flexible hinges.
      1) Jamb Liner color as selected from manufacturer's standard colors.
      2) Jamb Liner white color.
      3) Jamb Liner beige color.
      4) Jamb Liner wood veneer inserts.
      5) Weatherstripping: Compression bulb type at bottom of sash, head jamb, and at check rail.
      6) Locks: High-pressure zinc die cast; two locks on sash 36 inches (915 mm) wide but less than 48 inches (1220 mm) wide; three locks on sash 48 inches wide (1220 mm) or more.
      7) Balances: Factory installed, concealed in jambs; spring balances or block and tackle assemblies as appropriate for sash weight; two on each sash.
   b. Sash Lifts: High-pressure zinc die cast; two lifts on sash 36 inches (915 mm) wide or more.
   c. Sash Lifts: None.
   d. Pivot Locking: Each venting sash provide two specially designed mechanisms that permit sash to be tilted 90 degrees inward from bottom pivot and positively held in place for washing.
   e. Sash Limiter: Required.
   f. Sash Limiter: Not required.
10. Hardware Finishes:
   a. Window Hardware Exposed to View on Interior when window is closed. Finish in color selected from manufacturer's standard selection as follows:
      1) White.
      2) Black.
      3) Gold.
      4) Bronze.
      5) As selected from manufacturer's standard selection.
   b. Window Hardware Exposed to View on Interior When Window is Closed: Alternative finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternative finishes as follows:
      1) Antique Brass.

2) Satin Chrome.
3) Oil Rubbed Bronze.
4) Bright Chrome.
5) Pewter.
6) Polished Brass.

c. Finish of Hardware Exposed to Weather or Concealed from View When Window is Closed: Manufacturer's standard corrosion resistant coating.

H. Horizontal Sliding Windows:
1. Rating: LC-PG30, maximum size 72 by 60 inches (1829 by 1524 mm).
2. Jamb Depth: 4-9/16 inches (115 mm).
3. Nailing Fin:
a. No nailing fin.
b. Vinyl nailing fin with clear drip cap.
c. Vinyl nailing fin with extruded aluminum drip cap.
4. Full Screens:
a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
b. Screen Mesh: Aluminum.
c. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
1) Match frame color.
2) Match Sash color.
3) As selected from full range of manufacturers standard colors.
4) Custom color.
5. Half Screens:
a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh.
b. Screen Mesh: Aluminum.
c. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring-loaded. Color as follows:
1) Match frame color.
2) Match Sash color.
3) As selected from full range of manufacturers standard colors.
4) Custom color.
6. Horizontal Sliding Hardware and Weatherstripping:
a. Weatherstripping: Compression foam-filled bulb weatherstripping on sill; compression bulb weatherstripping at interlock between sashes.
b. Jamb Track: Rigid vinyl head and sill "jamb" track backed with flexible hinges, creating positive seal between sash and frame; color as selected from manufacturer's standard colors.
c. Fixed Sash Setting Block: Color as selected from manufacturer's standard colors.
d. Locks: High-pressure zinc die cast; two locks on sash over 48 inches (1220 mm) tall.
e. Lifts: High-pressure zinc die cast.
f. Rollers: Two brass tandem rollers for each sash.

2.4 CLAD WOOD DOORS

A. Ascent Sliding Patio Doors and Sidelights:
1. Rating: LC-PG30, maximum size 96 by 96 inches (2438 by 2428 mm).
2. Rating: LC-PG25, maximum size 190 by 96 inches (4826 by 2428 mm).
3. Rating: Sliding patio door sidelight, CW-PG50, maximum size 48 by 96 inches (1219 by 2428 mm).
4. Jamb Depth: 4-9/16 inches (116 mm).
5. Stile Width: 2-3/4 inches (69 mm).

6. Bottom and Top Rail Height: 2-3/4 inches (69 mm).
7. Nailing Fin:
    a. No nailing fin.
    b. Vinyl nailing fin with clear drip cap.
    c. Vinyl nailing fin with extruded aluminum drip cap.
8. Provide sliding top-hung screen; screen frame with charcoal colored fiberglass mesh:
    a. Match Frame color
    b. Match Sash color
    c. As selected from manufacturers standard colors
    d. Custom color
9. Provide concealed retractable screen; screen frame with charcoal colored fiberglass mesh:
    a. Match Frame color
    b. Match Sash color
    c. As selected from manufacturers standard colors
    d. Custom color
10. Sliding Door Hardware and Weatherstripping:
    a. Sill: Pultruded fiberglass, sloped to drain; color as selected from manufacturer's standard colors.
    b. Weatherstripping: Dual leaf weatherstripping on wood stops on head and side jamb; sash interlocking by means of two vinyl extrusions with woven pile weatherstripping; pile sweep weatherstripping at sill; compression foam weatherstripping on bi-parting stiles.
    c. Rollers: Two tandem ball bearing steel rollers mounted in bottom rail of each operating panel.
    d. Rollers: Two tandem corrosion resistant ball bearing steel rollers mounted in bottom rail of each operating panel.
    e. Locks: Two-point opposing hook lock, gear driven and complying with WDMA standards for forced entry; lockable from inside only.
    f. Locks: Two-point opposing hook lock, gear driven and complying with WDMA standards for forced entry; allowing entry from outside.
    g. Locks: Keyed-differently Two-point opposing hook lock, gear driven and complying with WDMA standards for forced entry; allowing entry from outside.
    h. Single Door Supplementary Lock: Security foot bolt locking in fully closed and variable open positions.
    i. Single Door Handle: Handle set on interior.
    j. Bi-Parting Door Supplementary Locks: Security foot bolts on each operating panel locking in fully closed and variable open positions.
    k. Bi-Parting Door Handles: Operating and dummy handle sets.
    l. Exposed Hardware Finish:
        1) Color as selected from manufacturer's standard colors.
        2) Polished Brass.
        3) Antique Brass.
        4) Oil-rubbed bronze.
        5) Pewter.
        6) Bright Chrome.
        7) Black.
        8) Satin Chrome.
        9) White.

B. Ascent Sliding French Doors and Sidelights:
    1. Style: Standard, single glazed panel.
    2. Style: Standard two glazed panels with horizontal midrail.
    3. Rating: LC-PG40, maximum size 96 by 96 inches (2438 by 2438 mm).

4. Rating: R-PG50, maximum size 72 by 96 inches (1829 by 2438 mm).
5. Rating: Sliding patio door sidelight, CW-PG50, maximum size 48 by 96 inches (1219 by 2428 mm).
6. Rating: Impact Rated with impact resistant glazing.
7. Jamb Depth: 4-9/16 inches (116 mm).
8. Nailing Fin:
    a. No nailing fin.
    b. Vinyl nailing fin with clear drip cap.
    c. Vinyl nailing fin with extruded aluminum drip cap.
9. Panel Configuration:
    a. Traditional Panel 4-11/16 inch (119 mm) Stile width and 8 inch (203 mm) bottom rail height.
    b. Traditional Panel 12 inch (305 mm) optional bottom rail height.
10. Provide sliding top-hung screen; screen frame with charcoal colored fiberglass mesh:
    a. Match Frame color
    b. Match Sash color
    c. As selected from manufacturers standard colors
    d. Custom color
11. Provide concealed retractable screen; screen frame with charcoal colored fiberglass mesh:
    a. Match Frame color
    b. Match Sash color
    c. As selected from manufacturers standard colors
    d. Custom color
12. Sliding Door Hardware and Weatherstripping:
    a. Sill: Pultruded fiberglass, sloped to drain; color as selected from manufacturer's standard colors.
    b. Weatherstripping: Dual leaf weatherstripping on wood stops on head and side jamb; sash interlocking by means of two vinyl extrusions with woven pile weatherstripping; pile sweep weatherstripping at sill; compression foam weatherstripping on bi-parting stiles.
    c. Rollers: Two tandem ball bearing steel rollers mounted in bottom rail of each operating panel.
    d. Rollers: Two tandem corrosion resistant ball bearing steel rollers mounted in bottom rail of each operating panel.
    e. Locks: Two-point opposing hook lock, gear driven and complying with WDMA standards for forced entry; lockable from inside only.
    f. Locks: Two-point opposing hook lock, gear driven and complying with WDMA standards for forced entry; allowing entry from outside.
    g. Locks: Keyed-differently Two-point opposing hook lock, gear driven and complying with WDMA standards for forced entry; allowing entry from outside.
    h. Single Door Supplementary Lock: Security foot bolt locking in fully closed and variable open positions.
    i. Single Door Handle: Handle set on interior.
    j. Bi-Parting Door Supplementary Locks: Security foot bolts on each operating panel locking in fully closed and variable open positions.
    k. Bi-Parting Door Handles: Operating and dummy handle sets.
    l. Exposed Hardware Finish:
        1) Color as selected from manufacturer's standard colors.
        2) Polished Brass.
        3) Antique Brass.
        4) Oil-rubbed bronze.
        5) Pewter.
        6) Bright Chrome.

7) Black.
8) Satin Chrome.
9) White.

C. Ascent In-Swinging French Doors and Sidelights:
1. Style: Standard, one glazed panel.
2. Style: Standard, two glazed panels with horizontal mid rail.
3. Style: Standard, one glazed panel, mid rail and 1/2 lite raised panel.
4. Style: Standard, one glazed panel, mid rail and 3/4 lite raised panel.
5. Style: Arch top, one glazed panel.
6. Style: Arch top, two glazed panels with horizontal mid rail.
7. Style: Arch top, one glazed panel, mid rail and 1/2 lite raised panel.
8. Style: Arch top, one glazed panel, mid rail and 3/4 lite raised panel.
9. Single Standard Doors: Rating CW-PG45, maximum size 40 by 102 inches (1016 by 2591 mm), standard door.
10. Double Standard Doors: Rating LC-PG35, maximum size 79 by 96 inches (2007 by 2438 mm).
11. Single Inswing Sidelite: Rating LC-PG45; maximum size 40 by 96 inches (1016 by 2438 mm).
12. Single Inswing Venting Sidelite: Rating CW-PG45; maximum size 24 by 96 inches (610 by 2438 mm).
13. Center Post Double Doors: Rating AW-PG45, maximum size 79 by 96 inches (2007 by 2489 mm).
14. Jamb Depth: 3-1/2 inches (89 mm).
15. Jamb Depth: Adjustable 4-9/16 inches (116 mm); adjustable from 3-9/16 inches to 5-9/16 inches (90 mm to 141 mm).
16. Jamb Depth: Adjustable 6-9/16 inches (167 mm); adjustable from 5-9/16 inches to 7-9/16 inches (141 mm to 192 mm)
17. Nailing Fin:
    a. No nailing fin.
    b. Vinyl nailing fin with clear drip cap (only available at 3-1/2", 4-9/16", or 6-9/16" wall depths).
    c. Vinyl nailing fin with extruded aluminum drip cap (only available at 3-1/2", 4-9/16", or 6-9/16" wall depths).
    d. Metal nail fin.
    e. Metal nail fin with extruded aluminum drip cap.
18. Panel Configuration:
    a. Traditional Panel 4-11/16 inch (119 mm) stile width and top rail height.
    b. Traditional Panel 8 inch (203 mm) bottom rail height.
    c. Traditional Panel 12 inch (305 mm) optional bottom rail height.
    d. Commercial Panel 6-1/2 inch (165 mm) stile width and top rail height.
    e. Commercial Panel 12 inch 305 mm) bottom rail height.
19. Provide hinged screen; screen frame with spring latch and door closer and charcoal colored fiberglass mesh. Screen frames to:
    a. Match Frame color.
    b. Match Sash color.
    c. As selected from manufacturers standard colors.
    d. Custom color.
20. Provide sliding top-hung screen for post doors; screen frame with charcoal colored fiberglass mesh:
    a. Match Frame color
    b. Match Sash color
    c. As selected from manufacturers standard colors
    d. Custom color
21. Provide concealed retractable screen; screen frame with charcoal colored fiberglass mesh:

a. Match Frame color
b. Match Sash color
c. As selected from manufacturers standard colors
d. Custom color

22. Swinging Door Hardware and Weatherstripping:
    a. Inswing Door Sill: Sloped extruded aluminum with thermal break and interior oak threshold; with internal drainage to exterior, top plate removable for cleaning.
        1) Sill Finish: Bronze anodized.
    b. Inswing Door Sill: Low-rise saddle type, extruded aluminum with thermal break.
        1) Sill Finish: Mill aluminum
        2) Sill Finish: Bronze anodized.
    c. Weatherstripping: High performance compression weatherstripping on frame stop.
    d. Locks: Three-point concealed locking, all bolts operated by single mechanism; keyed deadbolt with interior turn knob placed above handle.
        1) Operation: Automatic locking upon closing door.
        2) Operation: Manual activation of locking mechanism.
        3) Provide U.S. standard key cylinders keyed alike.
        4) Provide U.S. standard key cylinders keyed differently.
        5) Allow for U.S. standard key cylinder to be furnished by others.
    e. Locks: Prepare door and frame for standard bored lockset by others.
    f. Locks: No lock, no lock preparation.
    g. Handle Set: Provide handles and trim plates both sides; style as follows.
        1) Style selected from manufacturer's standard line.
        2) Capri.
        3) Athens.
        4) Bellagio.
        5) Luxor.
        6) Normandy.
        7) Piedmont.
        8) Riviera.
        9) Tuscany.
    h. Provide matching dummy trim on inactive leaves.
    i. Hinges:
        1) Type: Commercial grade hinges.
        2) Provide 3 hinges on each leaf up to 90 inches (2286 mm) tall.
        3) Provide 4 hinges on each leaf up to 90 inches (2286 mm) tall.
        4) Provide 4 hinges on each leaf 90 inches (2286 mm) or taller.
    j. Exposed Hardware Finish:
        1) Color as selected from manufacturer's standard colors.
        2) Polished Brass.
        3) Lifetime Brass.
        4) Antique Brass.
        5) Oil-rubbed bronze.
        6) Pewter.
        7) Bright Chrome.
        8) Black.
        9) Satin Chrome.
        10) Stainless Steel.
        11) White.

D. Ascent Out-Swinging French Doors:

1. Style: Standard, one glazed panel.
2. Style: Standard, two glazed panels with horizontal mid rail.
3. Style: Standard, one glazed panel, mid rail and 1/2 lite raised panel.
4. Style: Standard, one glazed panel, mid rail and 3/4 lite raised panel.
5. Style: Arch top, one glazed panel.
6. Style: Arch top, two glazed panels with horizontal mid rail.
7. Style: Arch top, one glazed panel, mid rail and 1/2 lite raised panel.
8. Style: Arch top, one glazed panel, mid rail and 3/4 lite raised panel.
9. Single Standard Doors: Rating LC-PG60, maximum size 40 by 95 inches (1016 by 2413 mm), with high performance sill.
10. Single Standard Doors: Rated Outswing Door with impact resistant glazing.
11. Double Standard Doors: Rating LC-PG60, maximum size 79 by 95 inches (2007 by 2413 mm), with high performance sill.
12. Single Outswing Sidelite: Rating LC-PG80, maximum size 40 by 96 inches (1016 by 2438 mm).
13. Double Standard Doors: Impact Rated with impact resistant glazing.
14. Jamb Depth: 4-9/16 inches (115 mm).
15. Panel Configuration:
    a. Traditional Panel 4-11/16 inch (119 mm) stile width and 8 inch (203 mm) bottom rail height.
    b. Traditional Panel 12 inch (305 mm) optional bottom rail height.
    c. Commercial Panel 6-1/2 inch (165 mm) stile width and 12 inch 305 mm) bottom rail height.
16. Swinging Door Hardware and Weatherstripping:
    a. Out-swing Door Sill: Bumper type, extruded aluminum with interior oak threshold; compression weatherstripping on bumper.
        1) Sill Finish: Mill aluminum
        2) Sill Finish: Bronze anodized.
    b. Out-swing Door Sill: Low-rise saddle type, extruded aluminum with thermal break.
        1) Sill Finish: Bronze anodized.
    c. Weatherstripping: High performance compression weatherstripping on frame stop.
    d. Out-swinging Doors: Provide extruded drip cap and flange.
    e. Locks: Three-point concealed locking, all bolts operated by single mechanism; keyed deadbolt with interior turn knob placed above handle.
        1) Operation: Automatic locking upon closing door.
        2) Operation: Manual activation of locking mechanism.
        3) Provide U.S. standard key cylinders keyed alike.
        4) Provide U.S. standard key cylinders keyed differently.
        5) Allow for U.S. standard key cylinder to be furnished by others.
    f. Locks: Prepare door and frame for standard bored lockset by others.
    g. Locks: No lock, no lock preparation.
    h. Handle Set: Provide handles and trim plates both sides; style as follows.
        1) Style selected from manufacturer's standard line.
        2) Capri.
        3) Athens.
        4) Bellagio.
        5) Luxor.
        6) Normandy.
        7) Piedmont.
        8) Riviera.
        9) Tuscany.
    i. Provide dummy trim on inactive leaves.

j. Hinges:
    1) Type: Commercial grade hinges.
    2) Provide 3 hinges on each leaf up to 96 inches (2440 mm) tall.
    3) Provide 4 hinges on each leaf up to 96 inches (2440 mm) tall.
    4) Provide 4 hinges on each leaf 96 inches (2440 mm) or taller.
k. Exposed Hardware Finish:
    1) Color as selected from manufacturer's standard colors.
    2) Polished Brass.
    3) Lifetime Brass.
    4) Antique Brass.
    5) Oil-rubbed bronze.
    6) Pewter.
    7) Bright Chrome.
    8) Black.
    9) Satin Chrome.
    10) Stainless Steel.
    11) White.

E. Ascent In-Swing Sash Set Transom
1. Rating: CW-PG60; maximum size 79 by 24 inches (2006 by 610 mm).
2. Depth: Match In-swing Door Wall depth.

F. Ascent Out-Swing Sash Set Transom
1. Rating: LC-PG80; maximum size 79 by 24 inches (2006 by 610 mm).
2. Depth: 4-9/16 inches (73 mm).

G. Ascent In-Swinging Venting Sidelites:
1. Style: Standard, one glazed panel.
2. Style: Standard, two glazed panels with horizontal mid rail.
3. Style: Standard, one glazed panel, mid rail and 1/2 lite raised panel.
4. Style: Standard, one glazed panel, mid rail and 3/4 lite raised panel.
5. In-Swing Venting Sidelite: Rating CW-PG45, maximum size 24 by 96 inches (610 by 2438 mm), venting sidelite.
6. Jamb Depth: 3-1/2 inches (89 mm).
7. Jamb Depth: 4-9/16 inches (116 mm); adjustable from 3-9/16 inches to 5-9/16 inches (90 mm to 141 mm).
8. Jamb Depth: 6-9/16 inches (167 mm); adjustable from 5-9/16 inches to 7-9/16 inches (141 mm to 192 mm)
9. Panel Configuration:
    a. Traditional Panel 4-11/16 inch (119 mm) stile width and 8 inch (203 mm) bottom rail height.
    b. Traditional Panel 12 inch (305 mm) optional bottom rail height.
10. Screens:
    a. Screen Mesh: 18 by 16 charcoal colored fiberglass mesh
    b. Screen Mesh: Aluminum
    c. Screen Frame: Aluminum, with corners mitered and secured with corner locks; spring loaded. Color as follows:
        1) Match frame color
        2) Match Sash color
        3) As selected from full range of manufacturer's standard colors
        4) Custom color
11. Swinging Door Hardware and Weatherstripping:
    a. Inswing Door Sill: Sloped extruded aluminum with thermal break and interior oak threshold; with internal drainage to exterior, top plate removable for cleaning.
        1) Sill Finish: Mill finish.

2) Sill Finish: Bronze anodized.

b. Weatherstripping: High performance compression weatherstripping on frame stop.

c. Locks: Three-point concealed locking, all bolts operated by single mechanism.

1) Operation: Single manual activation of locking mechanism.

d. Handle Set: Provide handles and trim plates both sides; style as follows.

1) Style selected from manufacturer's standard line.
2) Capri.
3) Athens.
4) Bellagio.
5) Luxor.
6) Normandy.
7) Piedmont.
8) Riviera.
9) Tuscany.

e. Provide matching dummy trim on inactive leaves.

f. Hinges:

1) Type: Commercial grade hinges.
2) Provide 3 hinges on each leaf up to 96 inches (2440 mm) tall.
3) Provide 4 hinges on each leaf up to 96 inches (2440 mm) tall.
4) Provide 4 hinges on each leaf 96 inches (2440 mm) or taller.

g. Exposed Interior and Exterior Hardware Finish:

1) Color as selected from manufacturer's standard colors.
2) Polished Brass.
3) Lifetime Brass.
4) Antique Brass.
5) Oil-rubbed bronze.
6) Pewter.
7) Bright Chrome.
8) Black.
9) Satin Chrome.
10) Stainless Steel.
11) White.

H. Ascent Out-Swinging French Door Venting Sidelites:

1. Style: Standard, one glazed panel.
2. Style: Standard, two glazed panels with horizontal mid rail.
3. Style: Standard, one glazed panel, mid rail and 1/2 lite raised panel.
4. Style: Standard, one glazed panel, mid rail and 3/4 lite raised panel.
5. Single Outswing Venting Sidelite: Rating LC-PG50, maximum size 24 by 96 inches (610 by 2438 mm), venting sidelite.
6. Jamb Depth: 4-9/16 inches (115 mm).
7. Panel Configuration:

a. Traditional Panel 4-11/16 inch (119 mm) stile width and 8 inch (203 mm) bottom rail height.

b. Traditional Panel 12 inch (305 mm) optional bottom rail height.

8. Swinging Door Hardware and Weatherstripping:

a. Out-swing Door Sill: Bumper type, extruded aluminum with interior oak threshold; compression weatherstripping on bumper.

1) Sill Finish: Mill finish.
2) Sill Finish: Bronze anodized.

b. Weatherstripping: High performance compression weatherstripping on frame stop.

c. Out-swinging Doors: Provide extruded drip cap and flange.

d. Locks: Sequential concealed sash locks; two sequential locks on sash over 36 inches (915 mm) tall; provide temporary construction lock lever/operator handle for each unit.
   1) Operation: Gear type with hardened steel gears and stainless steel arms.

e. Operator Handle: Folding crank type.

9. Hardware Finish
   a. Sidelite Hardware exposed to view on the interior when sidelite is closed. Finish in color selected from manufacturers standard selection as follows:
      1) White
      2) Black
      3) Bronze
      4) Gold
      5) As selected from manufacturer's standard selection.
   b. Window Hardware exposed to view on the interior when sidelite is closed. Alternate finishes in colors selected from manufacturer's optional selection. Finish in color selected from manufacturer's alternate finishes as follows:
      1) Antique Brass.
      2) Satin Chrome.
      3) Oil Rubbed Bronze
      4) Bright Chrome
      5) Pewter
      6) Brass.
   c. Hinges:
      1) Type: Commercial grade.
      2) Provide 3 hinges on each leaf up to 96 inches (2440 mm) tall.
      3) Provide 4 hinges on each leaf up to 96 inches (2440 mm) tall.
      4) Provide 4 hinges on each leaf 96 inches (2440 mm) or taller.
   d. Exposed Interior and Exterior Hardware Finish:
      1) Color as selected from manufacturer's standard colors.
      2) Polished Brass.
      3) Lifetime Brass.
      4) Antique Brass.
      5) Oil-rubbed bronze.
      6) Pewter.
      7) Bright Chrome.
      8) Black.
      9) Satin Chrome.
      10) Stainless Steel.
      11) White.

I. Fixed, Direct Set Windows: Glazing set directly into frame without separate sash members.
   1. Profile: Standard Auxiliary profile.
   2. Profile: Double Hung Auxiliary profile.
   3. Rating: CW-PG75, maximum size 60 by 96 inches (1524 by 2438 mm).
   4. Rating: CW-PG90, maximum size 60 by 96 inches (1524 by 2438 mm), with non-standard glazing.
   5. Rating: Impact Rated, with impact resistant glazing.
   6. Jamb Depth: 2-7/8 inches (53 mm).

J. Wood Frame and Sash Members: Select kiln dried wood, water and insect repellent and preservative treated in accordance with WDMA I.S.4; wood members not fastened or adhered to cladding.

1. Wood Species: Ponderosa pine.
2. Wood Species: Oak.
3. Wood Species: Hickory.
4. Wood Species: African mahogany.
5. Wood Species: Cherry.
6. Wood Species: Fir.
7. Wood Species: Vertical Grain fir.
8. Wood Species: Walnut.
9. Wood Species: Maple.
10. Wood Species: Alder.
11. Windows: Frames laminated veneer lumber (LVL), sash solid wood.
12. Doors: Frames finger jointed, panel veneer-wrapped.
13. Frame Corners: Block mitered, stapled, and sealed with silicone.
14. Sash Corners: Mortised and tenoned, glued, mechanically fastened, and sealed with silicone.
15. Curved Members: Solid laminated wood bonded with water resistant glue; interior surfaces veneered and suitable for stained or painted finish.
16. Interior Finish: Factory applied off-white primer (water based).
17. Interior Finish: Unprimed; no finger jointed members (water based).
18. Interior Finish: Factory applied stain with clear satin finish polyurethane topcoat (water based).
    a. White.
    b. Traditional Cherry.
    c. Wheat.
    d. Autumn Oak.
    e. Golden Hickory.
    f. Fruitwood.
    g. Dark Oak.
    h. Mahogany.
    i. Color as selected from manufacturer's full line.
19. Interior Finish: Factory applied clear satin finish polyurethane top coat over natural wood.
20. Interior Finish: Factory applied primer and opaque finish.
    a. Glacier white base coat.
    b. Frost white base coat.
    c. Color as selected from manufacturer's full line.

K. Aluminum Cladding: Aluminum extrusions, 0.045 inch thick minimum on both frame and sash, one piece in any one length; with mitered corners mechanically fastened with corner locks and stainless steel screws; sash cladding applied by sliding onto wood members, not fastened or adhered to wood.
1. Standard Finish: Factory-applied Thermoset siliconized polyester enamel coating complying with AAMA 2604, warranted for 20 years against cracking, checking, peeling, flaking, blistering and loss of adhesion, for 10 years against chalking in excess of number 8 rating in accordance with ASTM D 4214, and for 10 years against color change of more than 5 Delta E units in accordance with ASTM D 2244.
2. Kynar Finish: Factory-applied Thermoset Kynar finish complying with AAMA 2605.
3. Anodized Finish: Class 1 anodized finishes complying with AAMA 611-98.
    a. Clear Anodized.
    b. Champagne.
    c. Light Bronze.
    d. Medium Bronze.
    e. Dark Bronze.
    f. Black.

g. Copper.
h. As selected from manufacturer's full line.

4. Frame Color:
   a. Colony White (WHT).
   b. Antique White (101).
   c. Sandstone (105).
   d. Pebble Tan (TAN).
   e. Sierra Bronze (BRZ).
   f. Cinnamon Toast (111).
   g. Slate (132).
   h. Forest Green (GRN).
   i. Country Blue (106).
   j. Harbor Mist (122).
   k. Pink Chablis (143).
   l. Cardinal (145).
   m. Bing Cherry (144).
   n. Fire Engine Red (146).
   o. Clay Canyon (119).
   p. Linen (158).
   q. Balsa White (103).
   r. Maple Syrup (129).
   s. Harvest Gold (123).
   t. Butterscotch (115).
   u. Elephant (139).
   v. Carmel (117).
   w. Bourbon (152).
   x. Hot Chocolate (133).
   y. Acorn (151).
   z. Cappuccino (153).
   aa. Coffee Bean (154).
   bb. Chocolate Chip (116).
   cc. Spearmint (141).
   dd. Aquamarine (140).
   ee. Patina (147).
   ff. Olive (108).
   gg. Sage (155).
   hh. Billiard Green (120).
   ii. Mallard Green (109).
   jj. Moss (149).
   kk. Sky Blue (113).
   ll. Blue Mist (142).
   mm. Caribbean Blue (137).
   nn. Watercolor Blue (118).
   oo. Blue Denim (130).
   pp. Moody Blue (114).
   qq. Stormy Blue (104).
   rr. Abalone (125).
   ss. Gray Flannel (124).
   tt. Smokey Gray (150).
   uu. Yorktown Pewter (121).
   vv. Mystic Gray (157).
   ww. Dark Ash (156).
   xx. Black (128).
   yy. As selected from manufacturer's full line of standard colors.
5. Sash Color: Same as frame.
6. Sash Color: Different color as follows:

a. Colony White (WHT).
b. Antique White (101).
c. Sandstone (105).
d. Pebble Tan (TAN).
e. Sierra Bronze (BRZ).
f. Cinnamon Toast (111).
g. Slate (132).
h. Forest Green (GRN).
i. Country Blue (106).
j. Harbor Mist (122).
k. Pink Chablis (143).
l. Cardinal (145).
m. Bing Cherry (144).
n. Fire Engine Red (146).
o. Clay Canyon (119).
p. Linen (158).
q. Balsa White (103).
r. Maple Syrup (129).
s. Harvest Gold (123).
t. Butterscotch (115).
u. Elephant (139).
v. Carmel (117).
w. Bourbon (152).
x. Hot Chocolate (133).
y. Acorn (151).
z. Cappuccino (153).
aa. Coffee Bean (154).
bb. Chocolate Chip (116).
cc. Spearmint (141).
dd. Aquamarine (140).
ee. Patina (147).
ff. Olive (108).
gg. Sage (155).
hh. Billiard Green (120).
ii. Mallard Green (109).
jj. Moss (149).
kk. Sky Blue (113).
ll. Blue Mist (142).
mm. Caribbean Blue (137).
nn. Watercolor Blue (118).
oo. Blue Denim (130).
pp. Moody Blue (114).
qq. Stormy Blue (104).
rr. Abalone (125).
ss. Gray Flannel (124).
tt. Smokey Gray (150).
uu. Yorktown Pewter (121).
vv. Mystic Gray (157).
ww. Dark Ash (156).
xx. Black (128).
yy. As selected from manufacturer's full line.

7. Provide matching exterior trim in profiles as indicated on the drawings.

2.5 MATERIALS

A. Insulated Glazing: Sealed insulating glass; glass of thickness recommended by

manufacturer for size and application; rated CBA in accordance with ASTM E 774.

1. All windows, without Decorative glass or between-the-glass blinds, shall be covered with a protective film applied to the interior and exterior lites to protect against damage and aid in final cleaning.
2. Doors and Sidelights: Both lites fully tempered, complying with ASTM C 1036 quality Q3 and ASTM C 1048, Kind FT.
3. Windows, Unless Indicated as Impact Resistant: Inboard and outboard lite annealed, complying with ASTM C 1036 quality Q3.
4. Type: High Performance Low-E4; Titanium Dioxide and Silicone Dioxide hydrophilic low-emissivity coated with Argon gas blend fill and a translucent protective film.
    a. Low-Emissivity Coating: Magnetron sputtering vapor deposition (MSVD) type applied to No.2 surface.
    b. Performance at Center of Glass: NFRC validated:
        1) Thermal Transmission: U-value of 0.25.
        2) Solar Heat Gain Coefficient (SHGC): 0.41.
        3) Visible Light Transmittance (Vtc): 72 percent.
        4) Ultraviolet Transmittance (Tuv): 16 percent.
        5) ISO-CIE Damage Weighted Transmission (300 to 700 nm): 55 percent.
5. Type: Sun 240 Low SHGC; High Performance Low-E4; Titanium Dioxide and Silicone Dioxide hydrophilic low-emissivity coated with Argon gas blend fill and a translucent protective film.
    a. Performance at Center of Glass: NFRC validated:
        1) Thermal Transmission: U-value of 0.26.
        2) Solar Heat Gain Coefficient (SHGC): 0.25.
        3) Visible Light Transmittance (Vtc): 40 percent.
        4) Ultraviolet Transmittance (Tuv): 16 percent.
        5) ISO-CIE Damage Weighted Transmission (300 to 700 nm): 35 percent.
6. Type: LowE-366 Low SHGC, High Performance Low-E4, Titanium Dioxide and Silicone Dioxide hydrophilic low-emissivity coated, with Argon glass blend fill and a translucent protective film.
    a. Low-Emissivity Coating. Three layers of silver Magnetron sputtering vapor deposition (MSVD) type applied to No. 2 surface.
    b. Performance at Center of Glass. NFRC validated.
        1) Thermal Transmission: U-value of 0.24.
        2) Solar Heat Gain Coefficient (SHGC): 0.27.
        3) Visible Light Transmittance (Vtc): 66 percent.
        4) Ultraviolet Transmittance (Tuv): 5 percent.
        5) Krochmann Damage Weighted Fading Function (Tdw): 43 percent.
        6) ISO-CIE Damage Weighted Transmission (300 to 700 nm): 43 percent.
7. Tint: None.
8. Tint: Gray tinted.
9. Tint: Bronze tinted.
10. Provide obscure glass at _____.
11. Decorative Effect: No.2 or 3 face grooved in grilled pattern; clear polished grooves (Decorelle) 100).
12. Decorative Effect: No.2 or 3 face grooved in grilled pattern; frosted, etched grooves (Decorelle) 100).
13. Decorative Effect: No.2 or 3 face step grooved in grille pattern; clear polished grooves (Decorelle) 150).
14. Decorative Effect: No.2 or 3 face step grooved in grille pattern; frosted, etched grooves (Decorelle) 150).

15. Decorative Effect: Leaded art glass in air space; _____, with _____ caming and _____ glass.

B. Impact Rated Glazing: Thickness in accordance with performance requirements specified for Impact Rated windows and doors.
   1. HarborMaster Monolithic Glazing: Laminated Safety Glass conforming to ASTM C1172. Type as follows:
      a. Clear.
      b. Clear w/Low-E coating.
      c. Clear w/Gray tint SGP.
      d. Clear w/Low-E coating and Gray tint SGP.
      e. Clear w/Green tint PVB
      f. Clear w/Low-E coating and Green tint SGP.
      g. Clear w/bronze tint PVB.
      h. Clear w/Low-E coating and Bronze tint SGP.
      i. Total Thickness as required.
   2. HarborMaster Insulated Glazing: Cardinal LG, HarborMaster Insulated Laminated Safety Glass conforming to ASTM C1172 and ASTM E 774. Performance as follows:
      a. Clear.
      b. Clear w/Low-E coating.
      c. Clear w/Gray tint SGP.
      d. Clear w/Low-E coating and Gray tint SGP.
      e. Clear w/Bronze tint SGP
      f. Clear w/Low-E coating and Bronze tint SGP.
      g. Total Thickness as required.

C. Grilles: Removable; unfinished wood; 7/8 inches (22 mm) wide; factory installed.
   1. Style: Rectangular lites without surrounding frame.
   2. Style: Rectangular lites with surrounding frame.
   3. Style: Diamond lites with surrounding frame.
   4. Style: As indicated on drawings.

D. Muntins: Adhered muntins on interior face, muntin bar spacers in air space and muntin bars adhered to exterior face. Muntin width as follows:
   1. 5/8 Inch (16 mm).
   2. 7/8 inch (22 mm).
   3. 1-1/8 inch (28.6 mm).
   4. 1-1/2 inch (38 mm).
   5. Mixed as follows _____.

E. Muntins: Adhered muntins on interior face, no muntin bar spacers in air space and muntin bars adhered to exterior face. Muntin width as follows:
   1. 5/8 Inch (16 mm).
   2. 7/8 inch (22 mm).
   3. 1-1/8 inch (28.6 mm).
   4. 1-1/2 inch (38 mm).
   5. Mixed as follows _____.

F. Muntins: Removable muntins on interior face, muntin bars adhered to exterior face; 7/8 inch (22 mm) wide muntins.

G. Muntins: Muntin bars in air space; muntin width, pattern, and color as selected from manufacturer's full line (Between-the-Glass muntin bars). muntin width as follows:
   1. Flat, 5/8 inch (16 mm).
   2. Profiled, 1 inch (25 mm)

H. Between Glass Blinds With Supplementary Glass Panel: Supplementary glass panel in extruded aluminum frame with head rail of blind fastened at top.
   1. Panel Frame: Extruded aluminum.
   2. Operation: Slat tilt knob at bottom, cord to raise and lower.
   3. Panel Frame Finish: Color as selected from manufacturer's full line.
   4. Panel Frame Finish: Veneer-wrapped to match interior wood finish.
   5. Blinds: 5/8 inch (16 mm) aluminum slats, extruded aluminum head and bottom rail.
   6. Blind Color: As selected from manufacturer's full line.
   7. Use this style at casements, awnings, and rectangular fixed direct set windows.

I. Between Glass Shades With Supplementary Glass Panel: Supplementary glass panel in extruded aluminum frame with head rail of blind fastened at top.
   1. Panel Frame: Extruded aluminum.
   2. Operation: Cord to raise and lower.
   3. Panel Frame Finish: Color as selected from manufacturer's full line.
   4. Panel Frame Finish: Veneer-wrapped to match interior wood finish.
   5. Shades: 5/8 inch (16 mm) fabric pleated shades, extruded aluminum head and bottom rail.
   6. Shade Color: As selected from manufacturer's full line.
   7. Use this style at casements, awnings, and rectangular fixed direct set windows.

J. Blinds Mounted in Air Space of Sealed Insulating Glass Unit: Factory installed; single cord to tilt, raise and lower blind, with magnetic operator, finished white.
   1. Blinds: 5/8 inch (16 mm) aluminum slats, extruded aluminum head and bottom rail.
   2. Blind Color: Color as follows.
      a. Tan.
      b. White.
      c. Almond.
      d. Gold.
      e. Color as selected from manufacturer's full line.
   3. Provide this style at sliding patio doors, sliding french doors, swinging french doors, sidelights, and fixed direct set windows.

K. Interior Trim and Casings: Profiles as indicated on the drawings; same species as interior frame and sash; finger jointing is acceptable for opaque finishing.

L. Structural Mullion Reinforcement: As indicated on the drawings or required to comply with local code requirements; provide drip cap at horizontal zero mullions.

M. Metal Trim Accessories: Type and configuration as required to make a complete, weatherproof installation; same finish as exterior frame.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. 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 instructions.

B. After installation adjust units for proper operation, without binding, sticking, or racking.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION