This Specifications Sheet utilizes the Construction Specifications Institute (CSI) MasterFormat™. The 1995 edition numbers are listed first; *numbers in italics are from the 2004 edition.* Options and dimensions are indicated by brackets [ ]. Specifier Notes precede specification text; edit for project requirements or delete in final copy. Metric conversion is calculated by multiplying: Number of Inches x 25.4 = Millimeters, rounded off. Manufactured by Kolbe & Kolbe Millwork Co., Inc., Wausau, Wisconsin.

SECTION 08212B *or 08 14 00.02*
HERITAGE SERIES FIBERGLASS OUTSWING DOORS & SIDELITES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiberglass Outswing doors complete with [hardware], glazing, weatherstripping, [jamb extensions] [grilles-in-the-airspace] [performance divided lites] [stationary panel] [stationary sidelite] [operating sidelite] and standard or specified anchorages, trim, attachments, and accessories.

1.02 RELATED SECTIONS

SPECIFIER NOTE: Revise sections below to suit project requirements and to include desired options.
Consult state and local building codes for specific requirements.

The MasterFormat 1995 edition numbers are listed first; *numbers in italics are from the 2004 edition.*

- Section 01330 *or 01 33 00* – Submittal Procedures.
- Section 01620 *or 01 62 00* – Product Options.
- Section 01630 *or 01 25 00* – Product Substitution Procedures.
  (2004 title: Substitution Procedures.)
- Section 01650 *or 01 65 00* – Product Delivery Requirements.
- Section 01660 *or 01 66 00* – Product Storage and Handling Requirements.
- Section 01730 *or 01 73 00* – Execution.
- Section 01740 *or 01 74 00* – Cleaning.
  (2004 title: Cleaning and Waste Management.)
- Section 01760 *or 01 76 00* – Protecting Installed Construction.
- Section 06100 *or 06 10 00* – Rough Carpentry.
- Section 06200 *or 06 20 00* – Finish Carpentry.
- Section 07210 *or 07 21 00* – Building Insulation.
  (2004 title: Thermal Insulation.)
- Section 07900 *or 07 92 00* – Joint Sealants.
- Section 08800 *or 08 80 00* – Glazing.
- Section 09900 *or 09 90 00* – Paints and Coatings.
  (2004 title: Painting and Coating.)

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E283-04' - Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.
   2. ASTM E330-02' - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

3. ASTM E547-00' - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
4. ASTM E1425-07' or AAMA 1801-97 - Certification of Acoustical Performance.
5. ASTM F588-07' (Windows).
6. ASTM E 1996-04' - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes.
7. ASTM E 1886-04' - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
8. ASTM E2190-08' - Standard Specification for Insulating Glass Unit Performance and Evaluation.

B. American Architectural Manufacturers Association/Window and Door Manufacturers Association (AAMA/WDMA), American National Standards Institute/Window and Door Manufacturers Association (ANSI/WDMA), Canadian Standards Association (CSA).
   1. AAMA/WDMA/CSA 101/I.S.2/A440-05', 101/I.S.2/A440-08' - Standard / Specification for Windows, Doors and Skylights.
   2. WDMA I.S. 4-07'A Water Repellant Preservative Treatment for Millwork.

C. National Fenestration Rating Council (NFRC)
   1. NFRC 100-2004' & 2010' - Determining Fenestration U-Factor.
   2. NFRC 100-2004' & 2010' - Test Procedure for Thermal Transmittance of Fenestration.
   3. NFRC 200-2004' & 2010' - Determining Fenestration SHGC & Tv.
   4. ASTM E1423-06' - Determining Thermal Transmittance of Fenestration Systems.
   5. NFRC 500-2010' - Determining Fenestration Product Condensation Resistance.

D. WDMA Hallmark Program
   1. WDMA Hallmark Program Procedural Guide C.S.-1.

E. Consumer Product Safety Commission (CPSC)
   1. CPSC 16 CFR 1201 - Safety Glazing Standards.
   2. ANSI Z-97.1 - Safety Glazing Standards for Tempered Glass.

1.04 SYSTEM DESCRIPTION

See the Technical Information section at the beginning of this manual for Air, Water, Structural Test Reports and Energy Rating Reports. For updated reports, please visit our website at http://www.kolbewindows.com.

A. Design and Performance Requirements
   1. Applications of windows include:
      a. Residential application (design pressure required _____ psf).
      b. Light commercial application (design pressure required _____ psf).
   2. Air, water, structural, and forced entry resistance shall be at levels which meet the specified design pressure as per AAMA/WDMA/CSA 101/I.S.2/A440-05', 101/I.S.2/A440-08'.
   3. Unique, non-listed unit's performance, when not tested, may be addressed by a manufacturer's Statement of Qualification.
   4. Mullion design can be adequate for specified design pressure.

B. Energy Ratings
   All units tested are one-lite, residential, LoE^2-270, argon filled, with Kolbe ID No. as listed on the NFRC label adhered to each unit. Values are certified per NFRC and units are labeled per state requirements.
   1. Unique, non-listed units may have U & SHGC determined by NFRC procedures and listed on a manufacturer's Statement of Qualification.

1.05 SUBMITTALS

A. Shop Drawings: Submit shop drawings in accordance with Section 01330 Submittal Procedures *or Section 01 33 23 – Shop Drawings, Product Data, and Samples.*
B. Product Data: Submit catalog data in accordance with Section 01330 Submittal Procedures *or Section 01 33 23 – Shop Drawings, Product Data, and Samples.*
C. Samples: Submit corner section in accordance with Section 01330 Submittal Procedures *or Section 01 33 23 – Shop Drawings, Product Data, and Samples.* Include glazing system, quality of construction, specified finish, and color.
D. Installation Instructions.
E. Quality Control Submittals: Certificates: Submit performance test results reported by independent laboratory or manufacturer's Statement of Qualification indicating compliance with specified performance and design requirements.

1.06 QUALITY ASSURANCE

A. Insulating Glass – two certification programs: IGCC and IGMAC. Possible IGMA Certification (harmonized IGMAC & SIGMA).
B. NFRC Certification Program for Energy Rating of Fenestration.
C. WDMA Hallmark Program. Be sure to check the Air-Water-Structural Test Reports Manual on our website at http://www.kolbewindows.com.
D. IGMAC-Insulating Glass Manufacturer's Association Canada.
E. [If required: Mock Up: Provide sample installation for field testing unit performance requirements for approval - Contractor to perform tests in accordance with AAMA 502-02 using Method A and/or Method B.]

1.07 DELIVERY, STORAGE AND HANDLING

A. Proceed in accordance with Section 01650 *or 01 65 00* – Product Delivery Requirements, Section 01660 *or 01 66 00* – Product Storage and Handling Requirements, and Installation Instructions.
B. Deliver in original packaging, store in an upright position off the ground in a clean, dry area. Protect from weather and construction activities.
C. Prime or seal wood surfaces, including surfaces to be concealed by wall construction if more than 30 days will expire between delivery and installation.

1.08 WARRANTY

A. Glass: See Kolbe & Kolbe Glass Warranty for details and exclusions.
B. Pre-finishing: See Kolbe & Kolbe Finish Warranty for details and exclusions.
C. Product Defects: See Kolbe & Kolbe Product Warranty for details and exclusions.
D. International: See Kolbe & Kolbe International Warranty for details and exclusions.

These warranties are available on our website at http://www.kolbewindows.com.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Description: Fiberglass outswing doors and sidelites are factory assembled, as manufactured by Kolbe & Kolbe Millwork Co., Inc., Wausau, Wisconsin. Website: www.kolbewindows.com.
B. Units available: [Standard Performance]

2.02 MATERIALS

Edit for Project Requirements.

A. Frame: Constructed of kiln-dried pine, with pine interior stops, water repellent, preservative treated in accordance with WDMA I.S. 4-07'A. As standard, wood units have 1-15/16 inch (51mm) brickmould applied. Clad profile wood units have factory installed heavy vinyl nailing fins at head, side jambs, and sill with no exterior casing options available. Nailing fin at head has integral drip cap.
    1. Jamb thickness: Two piece assembled frame is 1-1/16 inch (27mm) thick at side jambs and head with a 1/2 inch (13mm) rabbeted-in interior stop for a total of 1-9/16 inches (40mm).
    2. Basic jamb width: 4-9/16 inch (116mm).
    3. Standard overall jamb with sill extensions applied: 5-5/32 inch (131mm).
    4. Sill height: 1-63/64 inch (50mm). [ADA-compliant sill is 1/4 inch (6mm).] [ADA-compliant sill with thermal break is 1/2 inch (13mm).]
    5. Sill: Bumper sill is made of [Bronze anodized 1/8 inch (3.2mm) thick 6063 extruded aluminum alloy 4-9/16 inch (116mm) wide with an oak interior threshold.] [4-9/16 inch (116mm) wide oak.] [6-7/16 inch (164mm) wide oak.] [Mahogany sill is 8-5/8 inch (219mm) wide.] [ADA-compliant sill with bumper is 8 inch (203mm) wide,] [ADA-compliant sill is 8-1/8 inch (206mm) wide with thermal break,] made of bronze anodized 1/8 inch (3.2mm) thick 6063 extruded aluminum alloy.
    6. Corner construction: Head and sill are dadoed with side jambs fastened by staples.
    7. Other wood species available: [Pine (standard)] [Alder] [Fir] [Maple] [Oak] [Cherry] [Mahogany] [Walnut] [Bamboo] [other] on exposed wood frame components.
    8. [FSC Certified wood requiring Chain of Custody (COC) label].

B. Deluxe Fiberglass Panels:
    1. Panel Options: [Cherry] [Oak] [Mahogany] [Fir]
    2. Door Skins: High impact compression molded fiberglass reinforced material.
    3. Top and Bottom Rails: Composite material. Bottom rail accommodates a range of door sweeps.
    4. Stiles: Alaskan Yellow Cyprus capped LSL (Laminated Strand Lumber), 4 inches (102mm) wide.
    5. Core: 100 percent CFC-free polyurethane insulation.
    6. 6'8", 7'0", and 8'0" height panels have 4 inch (102mm) wide stiles on both sides of door panel. No lock block required.
    7. Available with adjustable hinge plates installed into hinge edge of door.
    8. Styles, Sizes, and Glass options: Per product catalog.

C. Craftsman, Rustic, & Standard Fiberglass Panels:
    1. Panel Options: [Craftsman Fir] [Rustic Mahogany] [Standard Textured-Oak] [Standard Smooth]
    2. Door Skins: High impact compression molded fiberglass reinforced material.
    3. Top and Bottom Rails: Composite material. Bottom rail accommodates a range of door sweeps.
    4. Stiles: Composite material; full-length of door.
    5. Extended Lock block: Accommodates a minimum of 20 inches (508mm) of lock block.
    6. Core: 100 percent CFC-free polyurethane insulation.
    7. 8'0" Doors or Taller: Provided with a metal beam on the lock side of panel.
    8. Styles, Sizes, and Glass options: Per product catalog.

D. Surface Finish:
    1. Exterior Frame Finish - Wood
        a. Standard: Exterior wood is to be treated bare wood with a primer coat applied. [High-performance urethane primer]

   b. [Exterior wood is to be treated bare wood with no primer coat applied.]
   c. [Optional Exterior Paint Colors: Exterior frame is to have K-Kron II three-step coating process.] Color is to be [Abalone] [Alabaster] [Anchor Gray] [Basil] [Beige] [Camel] [Castlerock] [Chutney] [Cider] [Cloud] [Coastal Storm] [Copper Canyon] [Emerald Isle] [Gingersnap] [Green Tea Leaf] [Hartford Green] [Khaki] [Lunar] [Maize] [Mediterranean] [Mudpie] [Mystic Ivy] [Natural Cotton] [Nutmeg] [Papaya] [Roma] [Rustic] [Sahara] [Sapphire] [Shadow] [Shale] [Slate] [Smokestack] [Spiced Vinegar] [Steel Gray] [Timberwolf] [Truffle] [Ultra Pure White] [White].
   d. [Specify a custom paint color.]
2. Exterior Panel Finish - Fiberglass
   a. Standard: Exterior fiberglass panel to be unfinished.
   b. [Optional Exterior Paint Colors: Exterior panel is to have K-Kron II three-step coating process.] Color is to be [Abalone] [Alabaster] [Anchor Gray] [Basil] [Beige] [Camel] [Castlerock] [Chutney] [Cider] [Cloud] [Coastal Storm] [Copper Canyon] [Emerald Isle] [Gingersnap] [Green Tea Leaf] [Hartford Green] [Khaki] [Lunar] [Maize] [Mediterranean] [Mudpie] [Mystic Ivy] [Natural Cotton] [Nutmeg] [Papaya] [Roma] [Rustic] [Sahara] [Sapphire] [Shadow] [Shale] [Slate] [Smokestack] [Spiced Vinegar] [Steel Gray] [Timberwolf] [Truffle] [Ultra Pure White] [White].
   c. [Specify a custom paint color.]
   d. [Optional Exterior Stain Options: Exterior panel is to have stain application with a clear coat finish.] Stain color is to be [Cherry] [Light Oak 998] [Red Wheat] [Spiced Walnut] [Sunset Oak].
3. Interior Frame Finish - Wood
   a. [Interior wood is to be treated bare wood without stain or top coat.]
   b. [Interior wood is to be treated bare wood with an acrylic based double clear coat.]
   c. [Interior wood is to have a water based stain with a clear water based top coat. Stain color is to be [Cherry] [Chestnut] [Coffee Bean] [Ebony] [Library Red] [Light Oak 998] [Red Wheat] [Spiced Walnut] [Sunset Oak] [Wheat].
   d. [Specify a custom stain color]
   e. [Interior wood is to have a primer coat only] [High-performance urethane primer]
   f. [Interior wood is to have acrylic type paint applied. The interior paint color is to be [Abalone] [Bright White] [Coal Black] [Graystone] [Ivory Tusk] [Misty Gray] [Natural Cotton] [Silk] [Ultra Pure White].]
   g. [Specify a custom paint color.]
4. Interior Panel Finish - Fiberglass
   a. Standard: Interior fiberglass panel to be unfinished.
   b. [Optional Interior Paint Colors: Interior panel is to have K-Kron II three-step coating process.] Color is to be [Abalone] [Alabaster] [Anchor Gray] [Basil] [Beige] [Camel] [Castlerock] [Chutney] [Cider] [Cloud] [Coastal Storm] [Copper Canyon] [Emerald Isle] [Gingersnap] [Green Tea Leaf] [Hartford Green] [Khaki] [Lunar] [Maize] [Mediterranean] [Mudpie] [Mystic Ivy] [Natural Cotton] [Nutmeg] [Papaya] [Roma] [Rustic] [Sahara] [Sapphire] [Shadow] [Shale] [Slate] [Smokestack] [Spiced Vinegar] [Steel Gray] [Timberwolf] [Truffle] [Ultra Pure White] [White].
   c. [Specify a custom paint color.]
   d. [Optional Interior Stain Options: Interior panel is to have stain application with a clear coat finish.] Stain color is to be [Cherry] [Light Oak 998] [Red Wheat] [Spiced Walnut] [Sunset Oak].
   e. [Interior wood is to have acrylic type paint applied. The interior paint color is to be [Abalone] [Bright White] [Coal Black] [Graystone] [Ivory Tusk] [Misty Gray] [Natural Cotton] [Silk] [Ultra Pure White].]

f. [Specify a custom paint color.]

E. Hardware:
1. Handles and escutcheon plates: Active handle, inactive handle, interior and exterior escutcheon plates are made of solid brass. Gasket is made of Black Neoprene. All handles are shipped loose for field installation.
   a. Toronto handle set - standard. Optional handle sets: [München] [Verona] Color options: standard is Bright Brass PVD [Antique Brass] [Oil Rubbed Finish] [Satin Nickel PVD] [Antique Nickel PVD] [Rustic Umber] [Matte Black] [Smoky Gray PVD]. [Optional keyed cylinder.]
   b. Optional Dallas handle set is available in [Bright Brass PVD] [Satin Nickel PVD] [Smoky Gray PVD] [Matte Black]. [Optional keyed cylinder.]
   c. Optional Baldwin handle set styles [Boulder] [Bristol] [Cody] [Concord] [Kensington] [Lakeshore] [Richland] [Santa Monica] available in [Antique Brass] [Antique Nickel] [Bright Brass PVD] [Brushed Chrome] [Distressed Smoky Gray] [Matte Black] [Oil-Rubbed Bronze] [Rustic Umber] [Satin Brass] [Satin Nickel PVD].
2. Locking hardware has a 1 inch (25mm) throw deadbolt with Schlage® key lock cylinder. Color options: [Bright Brass] [Antique Brass] [Oil Rubbed Finish] [Satin Nickel] [Antique Nickel] [Rustic Umber] [Matte Black]. [Double keyed cylinder is available in Bright Brass.]
3. Locking System Options: All components are corrosion resistant.
   a. [Single Point: On single door. Made of stainless steel.

   For Three Point and Five Point locks: Lock strikes are color coordinated as indicated, to compliment handle and escutcheon color. Please indicate color of lock strike if a different color is required.
   b. [Three Point: On single door. Center gear strike [standard tongue strike] [extended tongue strike [for heavy architectural trim] [for standard trim] is made of solid Brass. Color options: both parts are lacquer coated [Solid Brass] [Stainless Steel] [Oil Rubbed Brass].
   c. [Five Point: On French double doors. [Two point: On secondary active panels only. Made of stainless steel. Head and Sill strike plates are made of Light Bronze anodized aluminum.] [Three point: On primary active panels. Center gear strike [Standard tongue strike] [Extended tongue strike [for heavy architectural trim] [for standard trim] is made of solid Brass. Color Options: both parts are lacquer coated [Solid Brass] [Stainless Steel] [Oil Rubbed Brass].
      1. [Five Point: On single, and primary active panels of French High and Impact Performance units. Made of stainless steel. Head and sill strike plates are made of Light Bronze Anodized aluminum].
      2. [Seven Point: On French units, for both High and Impact Performance options. Locking system consists of the five point lock on the active panel and the two point lock on the secondary active panel.]
   d. [Two Point Flush Bolt: On secondary active panel. Top and bottom threaded shoot rods are made of stainless steel and die cast parts, with a stainless steel finish. Lever face plate is stainless steel. Head and sill strike plates are made of Light Bronze anodized aluminum.] On High Performance units: Euro Multipoint channel is made of Champagne anodized aluminum, and “U” Channel is made of stainless steel.
   e. [6 inch (152mm) Flush Bolt: For sizes up to 6’-8” in height will receive 6 inch on both top and bottom, on secondary active panel. Top and bottom flush bolt is made of solid brass with a lacquer coated Bright Brass finish. Head and sill strike plates are lacquer coated solid Brass.] Color options: [Antique Brass] [Dull Chrome] [Oil Rubbed Finish] [Satin Nickel] [Antique Nickel] [Matte Black].

f. [12 inch (305mm) Flush Bolt: For sizes 7'-0" and taller in height will receive 6 inch flush bolt at the bottom and 12 inch at the top, on secondary active panel. Solid Brass top strike plate, main latch, and head jamb strike plate. Extension rod, head, and top flush bolt cover are made of steel. Standard color is lacquer coated Bright Brass.] Color options: [Brushed Chrome] [Oil Rubbed Finish] [Satin Nickel] [Antique Nickel] [Black].

For Operating Sidelites:

g. Lever Lock: Made of high-pressure die cast zinc and steel. Color Options: [White] [Beige] [Rustic].
h. Panel Lock and Keeper: Made of high-pressure die cast zinc and E-Gard® steel. Color Options: [White] [Brass] [Rustic].
i. Panel Centerhook: Made of E-Gard® or stainless steel.

4. Adjustable shoot bolt strike: made of [Solid Brass] [Stainless Steel] [Oil Rubbed Brass].
5. Hinge options:
   a. Optional adjustable set hinge: 4" x 3-5/8" (102 x 92mm) hinge with 5/8 inch (16mm) radius corners [with removable pin] [with non-removable pin]. Steel reinforced and corrosion resistant. Color Options: Gold painted is standard. [Bright Brass] [Bright Brass PVD] [Satin Nickel] [Satin Nickel PVD] [Antique Nickel] [Antique Brass] [Brushed Chrome PVD] [Oil Rubbed Finish] [Matte Black] [Rustic Umber] [Smoky Gray PVD].
   b. Optional adjustable guide hinge: 4" x 3-5/8" (102 x 92mm) with 5/8 inch (16mm) radius corner with removable pin. Steel reinforced and corrosion resistant. Color Options: Gold painted is standard. [Bright Brass] [Bright Brass PVD] [Satin Nickel] [Satin Nickel PVD] [Antique Nickel] [Antique Brass] [Brushed Chrome PVD] [Oil Rubbed Finish] [Matte Black] [Rustic Umber] [Smoky Gray PVD].
   c. Standard residential hinges: non-adjustable solid Brass base 4" x 4" (102 x 102mm) with 1/4 inch (6mm) radius corner in Bright Brass [with removable pin] [with non-removable pin]. Hinges with non-removable pin are also available in [Antique Brass] [Stainless Steel] [Oil Rubbed Finish] [Satin Nickel] [Antique Nickel] [Matte Black].
   d. Optional commercial grade hinges: solid Brass 4" x 4" (102 x 102mm) ball bearing square corner with non-removable pin. Color Options: [Bright Brass] [Antique Brass] [Stainless Steel] [Oil Rubbed] .
   e. Optional commercial grade hinges: available for Entrance doors only. Solid Brass 4-1/2" x 4-1/2" (114 x 114mm) ball bearing square corner with non-removable pin in [Bright Brass] [Stainless Steel] [Oil Rubbed Finish].
   f. Optional construction (commercial type) hinges: 4" x 4" (102 x 102mm) primed steel with square corners.

F. Weatherstripping: On all units except transoms.
   1. Frame head and side jambs: use a Beige bulb-fin weatherstrip made of glass filled polypropylene/santoprene/arloc slip coat.
   2. Sill: Beige [Brown] vistaflex skin/santoprene foam/polypropylene rigid and flex kerf-mounted weatherstrip.
   3. Panels: Along bottom panel is a leaf-type weatherstrip made of rigid and flexible Beige PVC. Beige leaf weatherstripping used on top of panels is made of rigid and flexible PVC.
   4. Operating panel bumper: made of Beige rigid PVC.
   5. Sweep: on oak and ADA-compliant sill. Made of Beige santoprene.
   6. Weatherstrip backer rod: made of Black PVC foam.
   7. Panel seal corner support: made of Grey santoprene foam.
   8. Stationary panel filler: made of Beige rigid and flexible PVC.

9. Margin cover: Made of .050 inch (1.3mm) thick 6063 extruded aluminum alloy.

Additional Weatherstrip for French Doors:

10. Astragal: uses a Black rigid PVC leaf weatherstrip on stationary units, and a bulb-fin weatherstrip made of glass filled Beige polypropylene/santoprene/arloc slip coat on active units.
11. Astragal end pad: made of closed cell foam.
12. Astragal wedge pad: made of Grey closed cell foam.

The following are optional materials and accessories. Edit for project requirements.

G. Jamb Extensions: Provide factory installed jamb extensions up to 10 inches (254mm) for wall thickness indicated or required. Jamb extensions over 10 inches (254mm) are shipped loose to be field installed.
   1. Finish: match interior frame finish.
   2. Other wood species available: [Pine (standard)] [Alder] [Fir] [Maple] [Oak] [Cherry] [Mahogany] [Walnut] [Bamboo] [other]

H. Grilles-in-the-Airspace: Installed inside the hermetically sealed glass unit.
   1. Material: [standard: aluminum profiled bars, 3/4 inch (19mm) wide, available for units with 7/8 inch (22mm) or 9/16 inch (14mm) insulating glass] [aluminum flat bars, 5/8 inch (16mm) wide] [Brass pencil bars, 5/16 inch (8mm) wide, available for units with 7/8 inch (22mm) insulating glass] [Pewter pencil bars, 5/16" (8mm) wide, available for units with 7/8 inch (22mm) insulating glass].
   2. Color options: [3/4 inch Profiled bars: White, Beige, Sand, Rustic, Hartford Green, Chutney, Light Wood & Dark Wood faux finishes] [5/8" Flat bars: White, Beige, Sand, Rustic, Hartford Green, Chutney, Light Wood & Dark Wood faux finishes, Brass] [Two-tone contour or flat grilles available with light or dark wood faux finishes to the interior and White to the exterior.

I. Performance Divided Lites (PDL): PDL system utilizes a permanently adhered wood grille bar to the interior and a permanently adhered aluminum grille bar to the exterior glass.
   1. Material: Muntin is constructed of .050 inch (1mm) thick 6063 extruded aluminum alloy on exterior, pine on interior [5/8 inch (16mm) wide] [7/8 inch (22mm) wide] [1-1/8 inch (29mm) wide] [1-3/8 inch (35mm) wide] [1-3/4 inch (44mm) wide] [2-1/4 inch (57mm) wide] [4-1/2 inch (114 mm)]. On some radius units and units with special grid patterns, muntin is made of composite material; this is optional on other units.
   2. Pattern: [rectangular] [custom lite cuts-subject to approval of Kolbe & Kolbe Millwork Co., Inc.].
   3. Spacer bar between the glass. Finish: Standard [Champagne]. Optional [Aluminum mill-finish] [Black finish].
   4. Exterior surface finish: To match frame and sash exterior. (Some limitations apply for PDL bars on radius and special grid patterns.)

J. Accessories & Trim
   1. Casings:
      a. [1-15/16 inch (49mm) profiled brickmould] [1-15/16 inch (49mm) flat casing] [2 inch (51mm) beaded casing] [3-1/2 inch (89mm) profiled brickmould] [3-1/2 inch (89mm) flat casing] [3-1/2 inch (89mm) beaded casing] [3-1/2 inch (89mm) profiled brickmould with backband; overall face dimension 4-1/4 inch (108mm)] [3-1/2 inch (89mm) flat casing with backband; overall face dimension 4-1/4 inch (108mm)] [4 inch (102mm) flat casing] [5-1/2 inch (140mm) flat casing] [Prospect Casing; overall face dimension 2 inch (51mm)] [no casing]

2.03 GLAZING

A. Glass:
   1. Standard one lite IG is 7/8 inch (23mm) with tempered LoE^2-270, argon filled.
   2. Standard IG or single glazed has standard design pressure of 20 psf (DP 20). See Website www.kolbewindows.com for performance ratings.
   3. High altitude IG has open breather tube.
   4. All glass is select quality complying with FS-DD-G-451D.
   5. IG complies with IGCC and ASTM E2190-08'.

B. Glazing Methods:
   1. Single glazed units are all silicone-glazed.
   2. Operating units and fixed units have K-Glaze with 3/16 inch (5mm) wide glazing tape and primary silicone on #1 surface along sight line paired with latex sealant on #4 surface at bottom saddle.

C. Glass Options:
   1. [LoE^3 340 – Glare Control - tempered] [LoE^3 366 - tempered]. [ThermaPlus LoE glass has a [LoE^2-270] [LoE^3-366] option on surface 2 and a LoE hard coat on surface 4 plus permanent coating (interior pane)-tempered].
   2. Tempered Patterned, bronze, or gray-lite.
   3. Laminated glass.
   4. Protective film.
   5. Other options: Standard to the industry. [With] [Without] argon gas. (Argon gas may not be included in units to be installed in or shipping through high altitude areas. Smaller TDL glass may not have argon gas.)

2.04 ACCESSORIES AND TRIM

Edit for project requirements.

A. Installation Accessories:

For Individual, Mulled Units, and Transoms:

   1. Galvanized steel installation clips (number required to meet DP20 may be factory applied to unit). Kolbe & Kolbe recommends that all units with exterior casing be installed using installation clips.
   2. Mull anchors.
   3. Strip mull anchors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Before installation, verify that openings are plumb and square and of proper dimension. Report frame defects or unsuitable conditions to the General Contractor before proceeding.
B. Acceptance: Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install windows according to manufacturer's installation instructions, reviewed shop drawings and in accordance with Section 01730 – Execution *or Section 01 73 19 – Installation.*
   Note: Certain codes require the use of pressure-treated lumber to line rough openings. Corrosion-resistant materials, such as stainless steel or hot-dip galvanized steel, must be used for fasteners and anchors having direct contact with pressure-treated lumber.

B. Install sealant and related flashing materials at perimeter of assembly in accordance with Section 07900 Joint Sealers *or 07 92 00 – Joint Sealants.*
C. Install accessory items as required.

3.03 ADJUSTING AND CLEANING

A. Adjust operable sash to work freely with hardware functioning properly. Re-adjust at completion of the project if directed.
B. Remove visible labels.
C. Leave windows in a job clean condition. Final cleaning of glass will be done in accordance with Section 01740 – Cleaning *or Section 01 74 00 - Cleaning and Waste Management.*

3.04 PROTECTION

A. Cover windows, in accordance with Section 01760 *or 01 76 00* – Protecting Installed Construction, during spray painting or other construction operations (such as muratic acid washing after completion of masonry) that might cause damage.

END OF SECTION