

VINYL (PVC) WINDOWS



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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Vinyl windows for New Construction or Replacement.
 - 1. Basis of Design: Spencer Walcott by Mathews Brothers.
 - 2. Type: Single hung windows.
 - 3. Type: Double hung windows.
 - 4. Type: Awning windows.
 - 5. Type: Single casement windows.
 - 6. Type: Double casement windows.
 - 7. Type: Horizontal single sliding windows.
 - 8. Type: Horizontal single hung windows.
 - 9. Type: Fixed windows.
 - 10. Type: Fixed architectural windows.

1.2 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures.
- B. Section 06 10 00 - Rough Carpentry: Window blocking and framing as indicated.
- C. Section 06 20 00 - Finish Carpentry: Wood trim other than furnished by window manufacturer.
- D. Section 06 22 00 - Millwork: Wood trim other than furnished by window manufacturer.
- E. Section 07 20 00 - Thermal Insulation: Insulation between unit and rough opening.
- F. Section 07 46 00 - Siding: Exterior siding.
- G. Section 07 92 00 - Joint Sealants: Sill sealant and perimeter caulking.
- H. Section 09 20 00 - Plaster and Gypsum Board: Interior Wall Finishing.
- I. Section 09 90 00 - Paints and Coatings: Paint other than factory applied finish.

1.3 REFERENCES

- A. AAMA/WDMA/CSA 101/I.S.2/A440-05, A440-08, and A440-11 – North American Fenestration Standard/Specification for windows, doors and skylights
- B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weather-strip and Replaceable Fenestration Weather Seals.
- C. AAMA 902 - Voluntary Specification for Sash Balances.
- D. American Society for Testing and Materials International (ASTM):
 - 1. 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.
 - 2. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 3. ASTM E 547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
 - 4. ASTM F 588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.
 - 5. ASTM E 2190 – Standard Specification for Insulating Glass Unit Performance and Evaluation
- E. National Fenestration Rating Council (NFRC) / American National Standards Institute (ANSI):
 - 1. ANSI/NFRC 100-2014 Procedure for Determining Fenestration Product U-Factors
 - 2. ANSI/NFRC 200-2014 Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
 - 3. NFRC 500-2014 Procedure for Determining Fenestration Product Condensation Resistance Values

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Manufacturer's technical data, product descriptions and installation guides.
 - 2. Manufacturer's head, jamb and sill details for each window specified.
 - 3. Storage and handling requirements and recommendations.
- C. Shop Drawings: Provide detailed elevations indicating size, glazing type, muntin type, and design of each window type; showing multiple window unit connection details and installation.
- 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: Provide operating units of each type and style of window specified.
 - 1. Verification samples, operable, scaled down, mock-up of specified window units.
 - 2. Verification samples shall include all hardware including but not limited to balances, sash lock, and weather-stripping.
- F. Test Reports: Submit certified independent testing agency reports indicating windows units meet or exceed specified performance requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum one hundred and sixty (160) years' experience manufacturing windows, Minimum twenty (20) years' experience manufacturing vinyl (PVC) windows.
 - B. Installer Qualifications: Utilize an installer having demonstrated experience on projects of a similar size with similar installation conditions.
 - C. Source Limitations: Obtain window units from one manufacturer through a single source.
 - D. Provide window units independently tested and found to be in compliance with AAMA/WDMA/CSA 101/I.S.2/A440-11, the most current testing protocols of The National Fenestration Rating Council (NFRC), American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), and all other performance standards specified in this section.
 - E. Compliance: Provide windows that are labeled in compliance with the jurisdiction having authority over the project.
 - 1. Windows glazed with one layer of sputter coated low-e on one surface (2 or 3), argon filled, insulating glass will perform to the 2015 ENERGY STAR® (Version 6.0) Standards. Glazing with low-e coating on the exterior surface (Surface 4), will not be accepted.
 - F. 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 and color are approved by architect.
 - 3. Refinish mock-up area as required to produce acceptable work.
- 1.6 DELIVERY, STORAGE, AND HANDLING**
- A. Deliver windows to project site in undamaged condition; handle window units to prevent damage to components and finishes.
 - B. Store products in manufacturer's unopened packaging, out of direct sunlight or high temperature locations, until ready for installation.
- 1.7 PROJECT CONDITIONS**
- A. 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.
- 1.8 WARRANTY**
- A. Submit manufacturer's standard warranty against defects in workmanship and materials.
 - 1. Limited Lifetime Transferable Residential Warranty on extruded solid vinyl member and component parts. Insulating glass has Lifetime Warranty for material obstruction of transparency resulting from film formation or dust collection on the interior glass surfaces in residential construction. Consult warranty for complete details.
 - 2. The warranty period for commercial project work such as apartments, housing authorities and other buildings not used by individual homeowners is twenty (20) years. Warranty covers all vinyl, glass, and component parts. Consult commercial warranty for complete details.
 - 3. Stress cracks in insulating glass is covered for five (5) years from date of manufacture.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturer: Mathews Brothers Company, 22 Perkins Rd, Belfast, ME 04915. Toll Free: (800) 615-2004 | Tel: (207) 338-6490 | Fax: (207) 338-6300
Email: info@mathewsbrothers.com | Web: <http://www.mathewsbrothers.com>
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 NEW CONSTRUCTION SINGLE HUNG WINDOWS

A. Single Hung Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.

1. Spencer Walcott - New Construction.

B. Components:

1. Frame and Top Sash: Nominal 0.065 inch (1.6 mm) thick, multi-chambered polyvinyl chloride (PVC) frame with miter cut and fusion-welded corners. Top sash fixed.
2. Channel Pocket: Recessed, integral 3/4 inch (19 mm), dual wall J-channel pocket.
3. Frame Color:
 - a. Frame Color: White, standard.
 - b. Frame Color: Desert Sand.
 - c. Frame Color: As indicated on the drawings.
4. Glazing: 3/4 inch nominal thickness insulating glass units secured to sash frame using dual adhesion closed cell foam fenestration glazing tape, vinyl glazing bead, and Duralite® composite spacer, with the glass/glazing option below.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E.
 - c. Glass Type: Low-E with Argon gas.
 - d. Glass Type: Passive Low-E with Argon Gas.
 - e. Glass Type: Obscure.
 - f. Glass Type: Laminated.
 - g. Glass Type: Tempered Low-E with Argon Gas and TGI®-Spacer.
 - h. Glass Type: As indicated on the drawings.
 - i. Glass Type: As selected by architect from manufacturer's full range of glazing options.
5. Sash Balances: 1/2 inch (13 mm) flat coil spring balances, complying with AAMA-902. The locking terminal and pivot bar system shall be designed to positively lock, to provide accurate alignment of the sash and the frame during installation and operation.
6. Sash Locks: Lead free composite with self-centering cam action type locks. Double locks where openings exceed 30-1/4 inches (768 mm) wide.
7. Weather-stripping: In compliance with AAMA 701.2.
8. Screens: Extruded aluminum frame with BetterVue™ 20 x 20 charcoal finished fiberglass mesh.
9. Grids:
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
10. Exterior Painted Colors:
 - a. Exterior Painted Colors: Pearl White.
 - b. Exterior Painted Colors: Adobe.
 - c. Exterior Painted Colors: Gray.
 - d. Exterior Painted Colors: Spruce Green.
 - e. Exterior Painted Colors: Black.
 - f. Exterior Painted Colors: Bronze.
 - g. Exterior Painted Colors: Dark Brown.
 - h. Exterior Painted Colors: Earth Brown.
 - i. Exterior Painted Colors: Barn Red.
 - j. Exterior Painted Colors: As indicated on the drawings.
 - k. Exterior Painted Colors: As selected by architect from manufacturer's full range of exterior painting options.

11. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Banded Casing.
 - e. Exterior Casing: Applied Northern Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6/13/16 inches (171 mm)
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2-5/8 inch (13-16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).

C. Performance:

1. Structural Rating: H-R30 (PG30) - Test Size: 48 inches by 72 inches (1168 mm by 1524 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
2. Structural Rating: H-LC35 (PG35) – Test Size: 48 inches by 72 inches (1168 mm by 1524 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
3. Structural Rating: H-R50 (PG50) – Test Size: 44 inches by 63 inches (1118 mm by 1600 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
4. Forced Entry: Type B, Grade 10 in accordance with ASTM F 588.
5. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.27 .
 - 2) SHGC: ≥ 0.31 .
 - 3) R-Value: ≥ 3.70 .
6. Condensation Resistance: The following values are in accordance with NFRC 500-2014.
 - a. Low-E with Argon:
 - 1) CR: ≥ 62

2.3 NEW CONSTRUCTION DOUBLE HUNG WINDOWS

- A. Double Hung Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.
 1. Spencer Walcott - New Construction*.
- B. Components:
 1. Frame: Nominal 0.065 inch (1.6 mm) multi-chambered polyvinyl chloride (PVC) frame with miter cut and fusion-welded corners. Sash shall be a nominal 0.065 inch (1.6 mm) thickness and fusion-welded corners.
 2. Channel Pocket: Recessed, integral 3/4 inch (19 mm), dual wall J-channel pocket.
 3. Sash Balances: 1/2 inch (13 mm) flat coil spring balance. The locking terminal and pivot bar system shall be designed to positively interlock, to provide accurate alignment of the sash and the frame during installation and operation.
 4. Sash Locks: Lead free composite with self-centering cam action type locks. Double locks where openings exceed 30-1/4 inches (768 mm) wide.
 5. Weather-stripping: In compliance with AAMA 701.2.
 6. Frame Color:
 - a. Frame Color: White, standard.
 - b. Frame Color: Desert Sand.
 - c. Frame Color: As indicated on the drawings.
 - d. Frame Color: As selected by architect from manufacturer's full range of frame color options.

7. Glazing: 3/4 inch nominal thickness insulating glass units secured to sash frame using dual adhesion closed cell foam fenestration glazing tape, vinyl glazing bead, and Duralite® composite spacer, with the glass/glazing option below.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E.
 - c. Glass Type: Low-E with Argon gas.
 - d. Glass Type: Tempered Low-E with Argon gas and TGI®-Spacer.
 - e. Glass Type: Obscure.
 - f. Glass Type: Laminated.
 - g. Glass Type: As indicated on the drawings.
 - h. Glass Type: As selected by architect from manufacturer's full range of glazing options.
8. Screens: Extruded aluminum frame with BetterVue™ 20 x 20 charcoal finished fiberglass mesh.
Weather-stripping: In compliance with AAMA 701.2.
9. Grids:
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
10. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
11. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Northern Casing
 - e. Exterior Casing: Applied Banded Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6 13/16 inches (171 mm).
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2 – 5/8 inch (13 - 16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).

C. Performance:

1. Structural Rating: H-R30 (PG30) – Test Size: 40 inches by 63 inches (1016 mm by 1600 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
2. Structural Rating: H-LC35 (PG35) – Test Size: 44 inches by 63 inches (1118 mm by 1600 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.

3. Structural Rating: H-R40 (PG40) – Test Size: 44 inches by 63 inches (1118 mm by 1600 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
4. Structural Rating: H-R50 (PG50) – Test Size: 38 inches by 62 inches (965 mm by 1575 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
Forced Entry: Type B, Grade 10 in accordance with ASTM F 588.
5. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.27 .
 - 2) SHGC: ≥ 0.31 .
 - 3) R-Value: ≥ 3.70 .
6. Condensation Resistance: The following values are in accordance with NFRC 500-2014.
 - a. Low-e with Argon:
 - 1) CR: ≥ 62

2.4 NEW CONSTRUCTION AWNING WINDOWS

A. Awning Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.

1. Spencer Walcott - New Construction.

B. Components:

1. Frame and Sash: Multi-chambered vinyl frame and sash, aluminum reinforced for hardware attachment, with miter cut and fusion-welded corners.
2. Frame Color:
 - a. Color: White, standard.
 - b. Color: Desert Sand.
 - c. Color: As indicated on the drawings.
 - d. Color: As selected by architect from manufacturer's full range of frame color options.
3. Glazing: 3/4 inch nominal thickness insulating glass units with Duralite® composite spacer secured to sash frame using a dual adhesion closed cell foam fenestration glazing tape and rigid PVC glazing bead.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E.
 - c. Glass Type: Low-E with Argon gas.
 - d. Glass Type: Tempered Low-E with Argon gas and TGI®-Spacer.
 - e. Glass Type: Obscure.
 - f. Glass Type: Laminated.
 - g. Glass Type: As indicated on the drawings.
 - h. Glass Type: As selected by architect from manufacturer's full range of glazing options.
4. Hinges: Truth with E-Gard® finish.
5. Sash Locks: Sequentially locking multi-point type with single handle actuator.
6. Weather-stripping: In compliance with AAMA 701.2.
7. Operator: Truth with E-Gard® finish.
8. Screens: Extruded aluminum frame with BetterVue™ 20 x 20 charcoal finished fiberglass mesh.
9. Grids:
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 1. With 5/8" Rectangular Aluminum Spacer

- 2. Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1. With 5/8" Rectangular Aluminum Spacer
 - 2. Without Spacer.
 - e. Simulated Divided Lites (SDL): 1-3/8" Flat Checkrail
 - f. Simulated Divided Lites (SDL): 2-1/8" Flat Checkrail
- 10. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
- 11. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Banded Casing
 - e. Exterior Casing: Applied Northern Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6-13/16 inches (171 mm).
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2 – 5/8 inch (13-16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).

C. Performance:

- 1. Structural Rating: AP-LC50 (PG50), Test Size
Test Sizes: 48 inches x 36 inches (1219 mm x 914 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
- 2. Forced Entry: Type B, Grade 30 in accordance with ASTM F 588.
- 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.26 .
 - 2) SHGC: ≥ 0.29 .
 - 3) R-Value: ≥ 3.85 .
- 4. Condensation Resistance: The following values are in accordance with NFRC 500-2014.
 - a. Low-E with Argon
 - 1) CR: ≥ 60

2.5 NEW CONSTRUCTION SINGLE CASEMENT WINDOWS

A. Single Casement Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.

- 1. Spencer Walcott - New Construction.

B. Components:

1. Frame and Sash: Multi-chambered aluminum reinforced vinyl frame and sash with miter cut and fusion-welded corners.
2. Frame Color: White, standard.
3. Frame Color: Desert Sand.
4. Frame Color: As indicated on the drawings.
5. Frame Color: As selected by architect from manufacturer's full range of frame color options.
6. Glazing: 3/4 inch nominal thickness insulating glass units with Duralite® composite spacer secured to sash frame using a dual adhesion closed cell foam fenestration glazing tape and rigid PVC glazing bead. Glazed with the glass package below.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E.
 - c. Glass Type: Low-E with Argon gas.
 - d. Glass Type: Tempered Low-E with Argon and TGI®-Spacer.
 - e. Glass Type: Obscure.
 - f. Glass Type: Laminated.
 - g. Glass Type: As indicated on the drawings.
 - h. Glass Type: As selected by Architect from manufacturer's full range of glazing options.
7. Hinges: Truth with E-Gard® finish.
8. Sash Locks: Sequentially locking multi-point type with single handle actuator.
9. Operator: Truth with E-Gard® finish.
10. Weather-stripping: In compliance with AAMA 701.2.
11. Screens: Extruded aluminum frame with BetterVue™ 20x20 charcoal finished fiberglass mesh.
12. Grids
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 1. With 5/8" Rectangular Aluminum Spacer
 2. Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 1. With 5/8" Rectangular Aluminum Spacer
 2. Without Spacer.
 - e. Simulated Divided Lites (SDL): 1-3/8" Flat Checkrail
 - f. Simulated Divided Lites (SDL): 2-1/8" Flat Checkrail
13. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
14. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).

- c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
- d. Exterior Casing: Applied Banded Casing
- e. Exterior Casing: Applied Northern Casing
- f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
- g. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
- h. Drywall Returns: Standard, none.
- i. Drywall Returns: Applied, 1/2 – 5/8 inch (13 - 16 mm).
- j. Drywall Returns: Applied, 3/4 inch (19 mm).

C. Performance:

- 1. Structural Rating: H-C40 (PG40), see Certified Structural Report.
Test Sizes: 36 inches x 72 inches in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
- 2. Forced Entry: Type B, Grade 30 in accordance with ASTM F 588.
- 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.27 .
 - 2) SHGC: ≥ 0.29 .
 - 3) R-Value: ≥ 3.70 .
- 4. Condensation Resistance: The following values are in accordance with NFRC 500-2014.
 - a. Low-E with Argon:
 - 1) CR: ≥ 61

2.6 NEW CONSTRUCTION DOUBLE CASEMENT WINDOWS

A. Double Casement Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.

- 1. Spencer Walcott - New Construction.

B. Components:

- 1. Frame and Sash: Multi-chambered, aluminum reinforced vinyl, with miter cut and fusion-welded corners.
- 2. Frame Color:
 - a. Frame Color: White, standard.
 - b. Frame Color: Desert Sand.
 - c. Frame Color: As indicated on the drawings.
 - d. Frame Color: As selected by architect from manufacturer's full range of frame color options.
- 3. Grids:
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer (flat)
 - 2) Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
 - e. Simulated Divided Lites (SDL): 1-3/8" Flat Checkrail
 - f. Simulated Divided Lites (SDL): 2-1/8" Flat Checkrail
- 4. Glazing: 3/4 inch Nominal thickness insulating glass units with Duralite® composite spacer, secured to sash frame using a dual adhesion closed cell foam fenestration glazing tape and rigid PVC glazing bead, with the glass/glazing option below.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E.
 - c. Glass Type: Low-E with Argon gas.

- d. Glass Type: Tempered Low-E with Argon and TGI® - Spacer
- e. Glass Type: Obscure.
- f. Glass Type: Laminated.
- g. Glass Type: As indicated on the drawings.
- h. Glass Type: As selected by architect from manufacturer's full range of glazing options.
- 5. Hinges: Truth with E-Gard® finish.
- 6. Sash Locks: Sequentially locking multi-point type with single handle actuator.
- 7. Operator: Truth with E-Gard® finish.
- 8. Weather-stripping: In compliance with AAMA 701.2.
- 9. Screens: Extruded aluminum frame with BetterVue™ 20x20 charcoal finished fiberglass mesh.
- 10. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
- 11. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - e. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
 - f. Drywall Returns: Standard, none.
 - g. Drywall Returns: Applied, 1/2-5/8" inch (13-16 mm).
 - h. Drywall Returns: Applied, 3/4 inch (19 mm).

C. Performance:

- 1. Structural Rating: Varies by size and configuration. See Certified Structural Report.
- 2. Forced Entry: Type B, Grade 30 in accordance with ASTM F 588.
- 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.27 .
 - 2) SHGC: ≥ 0.29 .
 - 3) R-Value: ≥ 3.70 .
- 4. Condensation Resistance: The following values are in accordance with NFRC 500-2014.
 - a. Low-E with Argon:
 - 1) CR: ≥ 61

2.7 NEW CONSTRUCTION HORIZONTAL SLIDING WINDOWS

- A. Horizontal Sliding Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.

1. Spencer Walcott - New Construction
- B. Horizontal Sliding (Glider) Vinyl Windows:
1. Configuration: Double slider.
 2. Configuration: 3-Lite end-vent slider.
 3. Configuration: As indicated on drawings.
 4. Sizes: As indicated on drawings.
- C. Window Attributes:
1. Frame and Top Sash: Nominal 0.065 inch (2 mm) frame thickness polyvinyl chloride (PVC) with miter cut and fusion-welded corners.
 2. Glazing: 3/4 inch nominal thickness insulating glass units with Duralite® composite spacer secured to sash frame using a dual adhesion closed cell foam fenestration glazing tape and rigid PVC glazing bead. Glazed with the glass package below.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E with Argon.
 - c. Glass Type: Low-E.
 - d. Glass Type: Tempered Low-E with Argon TGI®-Spacer.
 - e. Glass Type: Laminated.
 - f. Glass Type: Obscure.
 - g. Glass Type: As indicated on drawings.
 3. Sash Locks: Lead free composite with self-centering cam action type locks. Double locks where openings exceed 30-1/4 inches (768 mm) tall.
 4. Sash Locks: As indicated on drawings.
 5. Weather-stripping: In compliance with AAMA 701.2.
 6. Screens: Extruded aluminum frame with BetterVue™ 18x16 charcoal finished fiberglass mesh.
 7. Frame Color:
 - a. Color: White, standard.
 - b. Color: Desert Sand.
 - c. Color: As indicated on the drawings.
 1. Grids
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 1. With 5/8" Rectangular Aluminum Spacer
 2. Without Spacer
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 1. With 5/8" Rectangular Aluminum Spacer
 2. Without Spacer.
 - e. Simulated Divided Lites (SDL): 1-3/8" Flat Checkrail
 - f. Simulated Divided Lites (SDL): 2-1/8" Flat Checkrail
 2. Operating sash shall have heavy duty brass rollers.
 3. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.

- k. As selected by architect from manufacturer's full range of exterior painting options.
 - 4. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Banded Casing
 - e. Exterior Casing: Applied Northern Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6-9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6-13/16 inches (171 mm)
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2 – 5/8 (13-16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).
- D. Window Performance Requirements:
 - 1. Structural Rating: Certified Structural Report; H-R30 (PG30).
Test Sizes: 72 inches by 48 inches (1828 mm by 1219 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11.
 - 2. Forced Entry Resistance: In compliance with ASTM F 588, Type B, Grade 10.
 - 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014.
 - a. Glazing: Low-E, argon filled, insulating.
 - 1) U-Factor: ≤ 0.27 .
 - 2) SHGC: ≥ 0.30 .
 - 3) R-Value: ≥ 3.57 .
 - 4. Condensation Resistance: The following values are in accordance with NFRC 500-2014.
 - a. Low-E with Argon:
 - 1) CR: ≥ 62

2.8 NEW CONSTRUCTION HORIZONTAL SINGLE SLIDING WINDOWS

- A. Single Sliding Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.
 - 1. Spencer Walcott - New Construction.
- B. Components:
 - 1. Frame: Nominal 0.065 inch (1.6 mm) multi-chambered thickness vinyl frame.
 - 2. Sill and Jamb: Corners miter cut and fusion-welded.
 - 3. Sash Thickness: Nominal 0.065 inch (1.6 mm) with miter cut and welded corners.
 - 4. Sash Locks: Lead free composite with self-centering cam action type locks. Double locks where openings exceed 30-1/4 inches (768 mm) tall.
 - 5. Operating Sash: Manufacturer's standard with heavy duty brass rollers.
 - 6. Channel Pocket: Integral 3/4 inch (19 mm) dual wall recessed J-channel pocket.
 - 7. Screens: Extruded aluminum frame with BetterVue™ 20x20 charcoal finished fiberglass mesh.
 - 8. Weather-stripping: In compliance with AAMA 701.2.
 - 9. Glazing: 3/4 inch (19 mm) nominal thickness insulated glass units. Duralite® composite spacer secured to sash frame with dual adhesion, closed cell fenestration glazing tape, and glazing bead.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E with Argon.
 - c. Glass Type: Low-E.

- d. Glass Type: Tempered.
- e. Glass Type: Laminated.
- f. Glass Type: Obscure.
- g. Glass Type: As indicated on drawings.
- h. Glass Type: As selected by architect.
- 10. Frame Color
 - a. Color: White, standard.
 - b. Color: Desert Sand.
 - c. Color: As indicated on drawings.
- 11. Grids
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1. With 5/8" Rectangular Aluminum Spacer
 - 2. Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1. With 5/8" Rectangular Aluminum Spacer
 - 2. Without Spacer.
- 12. Exterior Painted Colors
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
- 13. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Banded Casing
 - e. Exterior Casing: Applied Northern Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6-13/16 inches (171 mm).
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2-5/8 inch (13-16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).

C. Performance

- 1. Structural Rating: H-R35 (PG35)- Test Size; 72 inches x 48 inches (1829 mm x 1219 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11. See Certified Structural Report.
- 2. Forced Entry: Type B, Grade 10 in accordance with ASTM F 588.
- 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.27 .
 - 2) SHGC: ≥ 0.31 .

- 3) R-Value: ≤ 3.57 .
4. Condensation Resistance: The following values are in accordance with NFRC 500-2014
 - a. Low-E with Argon
 - 1) CR: ≥ 63

2.9 NEW CONSTRUCTION FIXED WINDOWS

- A. Fixed Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.
 1. Spencer Walcott - New Construction.
- B. Vinyl Picture Windows:
 1. Sizes: As indicated on drawings.
- C. Components:
 1. Frame: Nominal 0.065 inch (1.6 mm) multi-chambered thickness vinyl frame.
 2. Sill and Jamb: Corners miter cut and fusion-welded.
 3. Channel Pocket: Integral 3/4 inch (19 mm) dual wall recessed J-channel pocket.
 4. Glazing: 3/4 inch (19 mm) nominal thickness insulated glass units. Duralite® composite spacer secured to sash frame with dual adhesion, closed cell fenestration glazing tape, and glazing bead.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E with Argon.
 - c. Glass Type: Low-E.
 - d. Glass Type: Tempered.
 - e. Glass Type: Laminated.
 - f. Glass Type: Obscure.
 - g. Glass Type: As indicated on drawings.
 - h. Glass Type: As selected by architect.
 5. Frame Color:
 - a. Color: White, standard.
 - b. Color: Desert Sand
 - c. Color: As indicated on drawings.
 6. Grids:
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
 - e. Simulated Divided Lites (SDL): 1-3/8" Flat Checkrail
 - f. Simulated Divided Lites (SDL): 2-1/8" Flat Checkrail
 7. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.

- i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
8. Accessories:
- a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Northern Casing
 - e. Exterior Casing: Applied Banded Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6-9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6-13/16 inches (171 mm)
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2 – 5/8 inch (13-16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).

D. Performance

- 1. Structural Rating: F-R35 (PG35) - Test Size; 64 inches x 84 inches (1829 mm x 1219 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11. See Certified Structural Report.
- 2. Forced Entry: Type B, Grade 10 in accordance with ASTM F 588.
- 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 1) U-Factor: ≤ 0.27
 - 2) SHGC: ≥ 0.32 .
 - 3) R-Value: ≥ 3.57 .
- 4. Condensation Resistance: The following values are in accordance with NFRC 500-2014
 - a. Low-E with Argon
 - 1) CR: ≥ 64
- 5. Accessory Materials:
 - Perimeter Joint Sealant: Type as recommended in printed installation instructions from manufacturer for use between nail fin and exterior sheathing.
 - Insulation: Type as recommended in printed installation instructions from manufacturer for use between window frame and rough opening.

E. Vinyl Transom Windows:

- 1. Sizes: As indicated on drawings.
- 2. Accessory Materials:
 - Perimeter Joint Sealant: Type as recommended in printed installation instructions from manufacturer for use between nail fin and exterior sheathing.
 - Insulation: Batt Insulation for use between window frame and rough opening. Do not use Expanding Foam Insulation.

F. Vinyl Extended Arch and Eyebrow Single Hung:

- 1. Sizes: As indicated on drawings.
- 2. Accessory Materials:
 - Perimeter Joint Sealant: Type as recommended in printed installation instructions from manufacturer for use between nail fin and exterior sheathing.
 - Insulation: Batt Insulation for use between window frame and rough opening. Do not use Expanding Foam Insulation.

G. Components:

1. Frame: Nominal 0.065 inch (1.6 mm) multi-chambered thickness vinyl frame.
2. Sill and Jamb: Corners miter cut and fusion-welded.
3. Channel Pocket: Integral 3/4 inch (19 mm) dual wall recessed J-channel pocket.
4. Glazing: 3/4 inch (19 mm) nominal thickness insulated glass units. Duralite® composite spacer secured to sash frame with dual adhesion, closed cell fenestration glazing tape, and glazing bead.
Glass Type: Clear.
 - a. Glass Type: Low-E with Argon.
 - b. Glass Type: Low-E.
 - c. Glass Type: Tempered.
 - d. Glass Type: Laminated.
 - e. Glass Type: Obscure.
 - f. Glass Type: As indicated on drawings.
 - g. Glass Type: As selected by architect.
5. Frame Color
 - a. Color: White, standard.
 - b. Color: Desert Sand
 - c. Color: As indicated on drawings.
6. Grids
 - a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1) With 5/8" Rectangular Aluminum Spacer
 - 2) Without Spacer.
7. Exterior Painted Colors:
 - a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
8. Accessories:
 - a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Exterior Casing: Applied Northern Casing
 - e. Exterior Casing: Applied Banded Casing
 - f. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - g. Interior Jamb: Applied extension jambs for 6-9/16 inches (167 mm).
 - h. Interior Jamb: Applied extension jambs for 6-13/16 inches (171 mm).
 - i. Drywall Returns: Standard, none.
 - j. Drywall Returns: Applied, 1/2 – 5/8 inch (13-16 mm).
 - k. Drywall Returns: Applied, 3/4 inch (19 mm).

2.10 NEW CONSTRUCTION FIXED ARCHITECTURAL WINDOWS

- A. Fixed Radius Architectural Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.
1. Spencer Walcott - New Construction.
 - a. Circle Architectural Fixed Windows:
 - b. Half Round Architectural Fixed Windows:
 - c. Quarter Round Architectural Fixed Windows
 - d. Extended Half Round Architectural Fixed Windows
 - e. Extended Quarter Round Architectural Fixed Windows
 - f. Elliptical Architectural Fixed Windows
 - g. Quarter Elliptical Architectural Fixed Windows
 - h. Extended Elliptical Architectural Fixed Windows
 - i. Extended Quarter Elliptical Architectural Fixed Windows
 - j. Eyebrow Architectural Fixed Windows
 - k. Quarter Eyebrow Architectural Fixed Windows
 - l. Extended Eyebrow Architectural Fixed Windows
 - m. Extended Quarter Eyebrow Architectural Fixed Windows
 - n. Gothic Architectural Fixed Windows
 - o. Extended Gothic Architectural Fixed Windows
 - p. Oval Architectural Fixed Windows
- B. Fixed Polygon Architectural Windows for New Construction: Provide units manufactured by Mathews Brothers Company from the following product line, in sizes as indicated on the drawings.
1. Spencer Walcott - New Construction.
 - a. Right Angle Triangle Architectural Fixed Windows
 - b. Isosceles Triangle Architectural Fixed Windows
 - c. Trapezoid Architectural Fixed Windows
 - d. Flat Parallelogram Architectural Fixed Windows
 - e. Pitched Parallelogram Architectural Fixed Windows
 - f. Pentagon Architectural Fixed Windows
 - g. Clipped Corner Architectural Fixed Windows
 - h. Double Clipped Corner Architectural Fixed Windows
 - i. Hexagon Architectural Fixed Windows
 - j. Octagon Architectural Fixed Windows.
- C. Components:
1. Frame: Nominal 0.065 inch (1.6 mm) multi-chambered thickness vinyl frame.
 2. Sill and Jamb: Corners miter cut and fusion-welded.
 3. Channel Pocket: Integral 3/4 inch (19 mm) dual wall recessed J-channel pocket.
 4. Glazing: 3/4 inch (19 mm) nominal thickness insulated glass units. Duralite® composite spacer secured to sash frame with dual adhesion, closed cell fenestration glazing tape, and glazing bead.
 - a. Glass Type: Clear.
 - b. Glass Type: Low-E with Argon.
 - c. Glass Type: Low-E.
 - d. Glass Type: Tempered.
 - e. Glass Type: Laminated.
 - f. Glass Type: Obscure.
 - g. Glass Type: As indicated on drawings.
 - h. Glass Type: As selected by architect.
 5. Frame Color:
 - a. Color: White, standard.
 - b. Color: Desert Sand
 - c. Color: As indicated on drawings.
 6. Grids:

- a. Grids Between Glass (GBG): 5 x 18 mm Contoured Aluminum
 - b. Grids Between Glass (GBG): 5/8" Rectangular Aluminum
 - c. Simulated Divided Lites (SDL): 5/8" Contoured
 - 1) Without Spacer.
 - d. Simulated Divided Lites (SDL): 7/8" Contoured
 - 1) Without Spacer.
7. Exterior Painted Colors:
- a. Pearl White.
 - b. Adobe.
 - c. Gray.
 - d. Spruce Green.
 - e. Black.
 - f. Bronze.
 - g. Dark Brown.
 - h. Earth Brown.
 - i. Barn Red.
 - j. As indicated on the drawings.
 - k. As selected by architect from manufacturer's full range of exterior painting options.
8. Accessories:
- a. Exterior Casing: None, standard.
 - b. Exterior Casing: Applied 3-1/2 inches by 1-1/4 inches (89 mm by 32 mm).
 - c. Exterior Casing: Applied 2 inches by 1-1/16 inches (51 mm by 27 mm), Brickmould 908.
 - d. Interior Jamb: Applied extension jambs for 4-9/16 inches (116 mm).
 - e. Interior Jamb: Applied extension jambs for 6 9/16 inches (167 mm).
 - f. Drywall Returns: Standard, none.
 - g. Drywall Returns: Applied, 1/2" – 5/8" inch (13-16 mm).
 - h. Drywall Returns: Applied, 3/4 inch (19 mm).

D. Performance

- 1. Structural Rating: F-R35 (PG35)- Test Size; 64 inches x 84 inches (1829 mm x 1219 mm) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11. See Certified Structural Report.
- 2. Forced Entry: Type B, Grade 10 in accordance with ASTM F 588.
- 3. Thermal Transmittance: The following values are in accordance with ANSI/NFRC 100/200-2014
 - a. Low-E with Argon:
 - 4) U-Factor: ≤ 0.27
 - 5) SHGC: ≥ 0.32 .
 - 6) R-Value: ≥ 3.57 .
- 4. Condensation Resistance: The following values are in accordance with NFRC 500-2014
 - a. Low-E with Argon
 - 1) CR: ≥ 64

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify rough opening size is of sufficient size to receive window unit and complies with manufacturer's requirements for opening clearances. Verify that sill plate is level.

- C. If rough opening preparation is the responsibility of another installer, notify architect of unsatisfactory preparation before proceeding. Beginning of installation constitutes acceptance of existing conditions.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation. 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 including the following:
 - 1. Apply sealant around perimeter of window unit between nail fin and exterior sheathing of wall in accordance with manufacturer's instructions.
 - 2. Install window unit level, plumb and square. Center window unit in opening and secure window unit by nailing through nail fin and screw through jambs as indicated in manufacturer's instructions.
 - 3. Flash window in accordance with AAMA's "Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction".
 - 4. Insulate between window frame and rough opening with insulation in accordance with manufacturer's instructions.
 - 5. Adjust units for smooth operation without binding or racking.
 - 6. Adjust sash locks and screens for smooth operation.

3.4 CLEANING AND PROTECTION

- A. Clean soiled surfaces and glass in accordance with manufacturer's instruction prior to substantial completion.
- B. Protect installed products until completion of project.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION