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**Part 1 GENERAL**

1.1 GENERAL REQUIREMENTS

1. Conform to Sections of Division 1 as applicable.

1.2 RELATED WORK

1. Rough Carpentry: Section 06 10 00
2. Finish Carpentry: Section 06 20 00
3. Sprayed Foam Insulation: Section 07 21 29
4. Sealants: Section 07 92 00
5. Heritage Finish Hardware: Section 08 01 75
6. Glass and Glazing: Section 08 81 00
7. Painting and Finishing: Section 09 90 00

1.3 REFERENCES

1. American Society for Testing Materials (ASTM):
  - .1 E283: Standard Test method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors
  - .2 E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Door by Uniform Static Air Pressure Difference
  - .3 E547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential
  - .4 E2190: Specification for Sealed Insulated Glass Units
  - .5 C1036: Standard Specification for Flat Glass
  - .6 E1996: Standard Specification or Performance of Exterior Windows, Curtain Walls, Door and Storm Shutters Impacted by Windborne Debris in Hurricanes
  - .7 E1886: Standard Test Method for Performance Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
2. American Architectural Manufacturer's Association/Window and Door Manufacturer's Association (AAMA/WDMA/CSA):
  - .1 AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/Specification for window,

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- doors and unit skylights
  - .2 AAMA/WDMA/CSA 101/I.S.2/A440-08, North American Fenestration, Standard/Specification for window, doors and skylights
  - .3 AAMA/WDMA/CSA 101/I.S.2/A440-11,NAFS 2011 – North American Fenestration, Standard/Specification for windows, doors and skylights
  - 3. WDMA I.S.4: Industry Standard for Water Repellant Preservative Treatment for Millwork
  - 4. Window and Door Manufacturer's Association (WDMA): 101/I.S.2 WDMA Hallmark Certification Program
  - 5. Sealed Insulating Glass Manufacturer's Association/Insulating Glass Certification Council (SIGMA/IGCC)
  - 6. American Architectural Manufacturer's Association (AAMA): 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels
  - 7. National Fenestration rating Council (NFRC):
    - .1 101: Procedure for Determining Fenestration Product thermal Properties
    - .2 200: Procedure for Determining Solar Heat Grain Coefficients at Normal Incidence

#### 1.4 SYSTEM DESCRIPTION

- 1. Design and Performance Requirements:
  - 1. Window units shall be designed to comply with ASTM E1996 Wind Zone 3 Missile Level D Rating +65/-65 psf
  - 2. Air leakage shall not exceed the following when tested at 6.24 psf according to ASTM E283: 0.30 cfm per square foot of frame
  - 3. No water penetration when tested at the following pressure according to ASTM E547: 9.75 psf
  - 4. Assembly shall withstand a positive or negative uniform static air pressure difference of 97.5 psf without damage when tested according to ASTM E330
  - 5. Impact and Cycling per ASTM E1996 and E 1886 with passing results for Missile Level D and Pressure Cycling of +65/-65 psf

#### 1.5 SUBMITTALS

- 1. Shop Drawings
  - 1. Comply with pertinent provisions of Section 01 33 00 Submittals.

2. Indicate proposed joinery, profiles and general assembly techniques. Include glass manufacturer's calculations, thickness and type of glass and conformity to OBC requirements.
  3. Before shop drawings and fabrication are started, take critical measurements for each window and exterior wood door at the site to facilitate installation and fitting of work.
  4. All sections to be drawn full size.
2. Maintenance Instructions: Three copies of window manufacturer's Information Manual with recommendations for routine owner maintenance of window units, hardware and wood finishes; and instructions for removing and replacing sash and glass.

#### 1.6 GUARANTEE

1. The work and materials of this Section shall be guaranteed in accordance with the conditions of GC 12 of CCDC Document 5B. Provide extended warranties as follows:
  1. for a period of 5 years against defects in materials and workmanship and
  2. all insulated glass shall be guaranteed for a period of 10 years
  3. factory finish shall be guaranteed for a period of 15 years

#### 1.7 QUALITY ASSURANCE

1. Work of this section shall be done by a company with experience in successful fabrication of windows of the type and quality specified. Submit proof of such experience at request of the architect.

#### 1.8 SAMPLES

1. Glass
  1. Weatherstripping Components
  2. 1'-0" x 1'-0" corner showing joinery and glass rebate, sash stile and rail connection for each window type. For double glazed unit, include a glazing sample incorporating sealed edge detail at frame including method of venting and coloured spacer bar.
  3. Submit 300 mm x 300 mm samples of wood window construction with specified finishes, for review as specified in Section 01 33 00.
  4. 1'-0" Representative piece of interior stops and exterior moulding.

#### 1.9 STORAGE AND HANDLING

1. Prime and seal wood surfaces, including to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation

2. Store window units in an upright position in a clean and dry storage area above ground to protect from weather under provision of Section 01 11 00.

## **Part 2 PRODUCTS**

### **2.1 MATERIALS**

#### **1. Window Frame Description**

##### **1. Clear pine:**

- .1 Kiln-dried to moisture content no greater than 12 percent at the time of fabrication.
- .2 Water repellant, preservative treated in accordance with ANSI/WDMA I.S.4
- .3 Frame dimensions to match existing windows: refer to drawings where indicated or provide extant drawings of existing conditions.

#### **2. Window Sash Description**

Interior: Clear pine

- .1 Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication
- .2 Water repellant preservative treated with accordance with WDMA I.S.4
- .3 Sash dimensions to match existing second floor windows but to accommodate double glazed unit: refer to drawings.

#### **2. Glazing**

- .1 To match sealed Insulating Glass (IG) for heritage style wood storm windows as specified in 08 81 00 Glass and Glazing:
  1. Insulating glass units: to CAN/CGSB-12.8, double unit, 19mm overall thickness (refer to drawings).
  2. Acceptable Manufacturer: Vitro Architectural Glass or approved equal.
  3. Glass: to CAN/CGSB-12.3.
  4. Glass Thickness: 3.175 mm each light
  5. Inter-cavity space thickness: 6 mm or 13 mm (Refer to drawings)
  6. Argon filled cavity space
  7. Indoor Lite: clear
  8. Outdoor Lite: clear, Solarban 60 on second surface (2).

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9. Low-E Coating: Solarban 60
    - Location: Second Surface (2)
    - Visible Light Transmission: 70%
    - U-Value Winter: 0.24
    - Solar heat Gain Coefficient: 0.39
    - Outdoor Visible Light Reflectance: 11%
  - .2 Glazing seal: Silicone bedding at interior and exterior
  3. Finish
    1. Exterior & Interior Finish: Three part Factory-applied finish comprised of preservative coating, polymer primer and topcoat electrostatically bonded prior to final assembly.
  4. Window Hardware
    1. Lock & Keeper: Bronze 03 finish
    2. Tilt Latch: Regular in Bronze 03 finish.
  5. Weather Strip
    1. Weather strip at the frame is a hollow foamed material bent around 90 degree corner to allow for seamless corner joints; Colour: black
    2. Sash weather strip bulb shaped glass filled material; Colour: black
  6. Jamb Extension
    1. Provide jamb extensions as required to suit wall thicknesses; factory-applied.
    2. Finish: Match interior frame finish
  7. Insect Screen Under Sash
    1. Aluminum frame with High Transparency Black Aluminum Mesh.
  8. Simulated Divided Lites (SDL)
    1. N/A
  9. Accessories and Trim
    1. Factory installed nailing/drip cap
    2. Installation brackets: 6 3/8" (162mm), 9 3/8" (283mm), 15 3/8" (390mm)
  10. Exterior Wood Moulding:
    1. Profile: Custom to match exterior frame at existing second floor windows.
  11. Glazing Compound: Top quality material only

12. Caulking Compound: Polysulphide base, 2 component sealant, CAN/CGSB-19.24-M. Colour selected by Architect.
13. Urethane Sprayed-On Foam Insulation: Touch 'N' Seal RX fire retardant foam insulation as distributed by Foamtec.
14. Backer Rod: Polyethylene foam rope, closed cell type, round.

## 2.2 FABRICATION

1. CAN/CSA-A440-M except as otherwise indicated on Drawings or specified herein.
2. Quality Assurance and Compliance: Units to comply with requirements of ANSI/NWWDA I.S. 2- 87, Industry Standard for wood windows – Best Grade.
3. Fabricate windows in accordance with drawings, specifications, reviewed shop drawings and Contractor's site measurements

## Part 3 EXECUTION

### 3.1 INSTALLATION

1. Install windows and frames into openings after having Section 09900, Painting and Finishing, back-prime surfaces that will be concealed.
2. Stand door frame, with door closed, in opening making sure unit is positioned properly within wall.
3. Securely anchor frames at sill, head and jambs.
4. Fill voids between wood windows and adjoining surfaces with urethane foam spray-applied insulation to prevent movement or infiltration of air.
5. Pack and caulk joints.
6. Install window glass rigidly and securely to withstand wind and other loads imposed on them under normal conditions of services.

### 3.1 PROTECTION

1. Institute protective measures required throughout the construction period to ensure that both interior and exterior of wood windows and doors will be without damage or deterioration, other than normal weathering.