

**Oakhurst Dairy – New Milk Cooler****SECTION 08550 - WOOD WINDOWS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes the following wood-window types:
  - 1. Nonoperative (fixed) windows.
- B. Related Sections include the following:
  - 1. Division 13 Section "Manufactured Insulated Metal Panels" for metal clad wood trim at windows installed in panels.

**1.3 DEFINITIONS**

- A. Performance-grade number, included as part of the window designation system, is the actual design pressure in pounds force per square foot used to determine the structural test pressure and water test pressure.
  - 1. Structural test pressure, wind-load test, is equivalent to 150 percent of the design pressure.
  - 2. Water-leakage-resistance test pressure is equivalent to 10 percent of the design pressure with 2.86 lbf/sq. ft. as a minimum.

**1.4 PERFORMANCE REQUIREMENTS**

- A. General: Provide wood windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, and sizes required for this Project according to test methods indicated.
- B. Standards: Performance requirements for operating force, air infiltration, water penetration, structural performance, and forced-entry resistance for wood windows are those specified in NWWDA I.S. 2, "Industry Standard for Wood Window Units."
- C. Test Criteria: Testing shall be performed by a qualified independent testing agency based on the following criteria:
  - 1. Design wind velocity at Project site is 80 mph.
  - 2. Heights of window units above grade at the window centerline are indicated or can be determined from the Drawings. Consult with the Engineer, if necessary, to confirm required loading and test pressures.
  - 3. Test Procedures: Test window units according to ASTM E 283 for air infiltration, ASTM E 547 for water penetration, and ASTM E 330 for structural performance.

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- D. Performance Requirements: Testing shall demonstrate compliance with requirements indicated in NWWDA I.S. 2 for air infiltration, water penetration, structural performance, and forced-entry resistance for the type and performance grade of window units required. Where required design pressure exceeds the minimum for the specified window grade, comply with requirements of NWWDA I.S. 2, Article 6, "Optional Performance Classifications," for higher than minimum performance grades.
1. Water Penetration: No water penetration as defined in the test method at an inward test pressure of 10 percent of the structural test pressure.
  2. Structural Performance: No failure or permanent deflection in excess of 0.4 percent of any member's span after removing the imposed load, for a positive (inward) and negative (outward) test pressure of 22.5 lbf/sq. ft.
  3. Thermal Transmittance: Provide window units, labeled and certified according to the National Fenestration Rating Council's Product Certification Program, with the following U-value as determined according to NFRC 100.
    - a) U-Value: 0.30 Btu/sq. ft. x h x deg F for fixed, double-glazed, vinyl-clad, wood window units.

**1.5 SUBMITTALS**

- A. Product Data: For each type of wood window required. Include the following:
1. Construction details and fabrication methods.
  2. Profiles and dimensions of individual components.
  3. Data on hardware, accessories, and finishes.
  4. Recommendations for maintenance and cleaning of exterior surfaces.
- B. Shop Drawings: For each type of window required. Include information not fully detailed in manufacturer's standard Product Data and the following:
1. Layout and installation details, including anchors.
  2. Elevations at 1/4 inch = 1 foot scale and typical window unit elevations at 3/4 inch = 1 foot scale.
  3. Full-size section details of typical composite members, including reinforcement and stiffeners.
  4. Glazing details.
  5. Accessories.
- C. Samples for Initial Selection: One 12-inch-long section of window members. Where finishes involve normal color variations, include Sample sets showing the full range of variations expected.
- D. Samples for Verification: The Engineer reserves the right to require additional Samples that show fabrication techniques, workmanship, and design of hardware and accessories.
- E. Test Reports: From a qualified independent testing agency indicating that each type, grade, and size of window unit complies with performance requirements indicated based on comprehensive testing within the last five years of current window units. Test results based on use of downsized test units will not be accepted.

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- F. Test Reports: From a qualified independent testing agency indicating that each type, grade, and size of window unit complies with performance requirements indicated. Test results based on use of downsized test units will not be accepted.

**1.6 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Firms whose windows have been certified under NWWDA's "Hallmark Program" for wood window units are listed in the current NWWDA "Membership and Product Directory" and comply with requirements indicated.
  - 1. Provide only wood window units bearing an NWWDA "Hallmark Program" label certifying compliance with NWWDA I.S. 2.
- B. Testing Agency Qualifications: To qualify for approval, an independent testing agency must demonstrate to Engineer's satisfaction, based on evaluation of agency-submitted criteria, that it has the experience and capability to conduct the testing indicated without delaying the Work.
- C. Source Limitations: Obtain wood window units through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, dimensional requirements, and aesthetic effects of wood windows and are based on the specific window types and models indicated. Other manufacturers' products with equal performance characteristics may be considered provided deviations in size, profile, and dimensions are minor and do not alter the aesthetic effect. Refer to Division 1 Section "Substitutions."
- E. Safety Glass Standard: Provide products complying with testing requirements of 16 CFR, Part 1201 for Category II materials.
  - 1. Subject to compliance with requirements, provide safety glass permanently marked with the certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
- F. Glazing Standards: Comply with recommendations of GANA's "Glazing Manual" and "Sealant Manual," unless more stringent requirements are indicated.
- G. Insulating-Glass Certification Program: Provide insulating-glass units permanently marked on spacers or at least on one component pane of units with the appropriate certification label of the inspecting agency indicated below:
  - 1. Insulating Glass Certification Council.
  - 2. Associated Laboratories, Inc.
  - 3. National Certification Testing Laboratories.

**1.7 PROJECT CONDITIONS**

- A. Field Measurements: Verify window openings by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating wood windows without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

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**Oakhurst Dairy – New Milk Cooler****1.8 WARRANTY**

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty, executed by wood window manufacturer, agreeing to repair or replace window components that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
  - 1. Structural failures, including excessive deflection, water leakage, air infiltration, or condensation.
  - 2. Faulty operation of sash and hardware.
  - 3. Deterioration of finishes and other materials beyond normal weathering.
- C. Warranty Period for Insulating Glass: Five years from date of Substantial Completion.

**PART 2 - PRODUCTS****2.1 MANUFACTURERS**

- A. Manufacturer: Subject to compliance with requirements, provide window units by one of the following:
  - 1. Vinyl-Clad Wood Window Units:
    - a) Andersen Corp.
    - b) Malta Wood Windows & Doors (Division of Tompkins Industries, Inc.).
    - c) Weather Shield Mfg., Inc.

**2.2 MATERIALS**

- A. General: Comply with NWWDA I.S. 2.
- B. Wood: Clear ponderosa pine or other suitable fine-grain lumber, kiln dried to a moisture content of 6 to 12 percent at time of fabrication and free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch wide by 2 inches long.
  - 1. Lumber shall be water-repellent preservative treated after machining per NWWDA I.S. 4.
- C. Vinyl Cladding: Manufacturer's standard vinyl cladding, consisting of a rigid PVC sheath, complying with ASTM D 1784, Class 14344-C, not less than 35-mil average thickness, in permanent white paintable finish, mechanically bonded to exterior wood sash and frame members.
  - 1. Trim Members: Vinyl-clad wood.
- D. Anchors, Clips, and Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with requirements of ASTM B 633 for SC 3 (severe) service condition; provide sufficient strength to withstand design pressure indicated.
- E. Fasteners: Comply with NWWDA I.S. 2 for fabrication and with manufacturer's recommendations and standard industry practices for type and size of installation fasteners.

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Oakhurst Dairy – New Milk Cooler**2.3 FIXED WINDOWS**

- A. Window Grade: Comply with requirements of NWWDA Performance Grade DP65.

**2.4 FABRICATION**

- A. General: Fabricate wood window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.
1. Comply with requirements of NWWDA I.S. 2 for moisture content of lumber at time of fabrication.
- B. Fabricate windows to produce units that are reglazable without dismantling sash framing. Provide openings and mortises precut, where possible, to receive hardware and other items.
1. Provide weather stripping at perimeter of each operating sash.
    - a) For double-hung sash, provide weather stripping only at horizontal rails of operable sash.
  2. Provide removable insect screen for each operating sash, with location determined by manufacturer.
  3. Provide glazing stops, nailed or snap-on type, coordinated with glass selection and glazing system indicated.

**2.5 GLAZING**

1. Factory-Glazed Window Units: Except for light sizes in excess of 125 united inches, glaze window units in the factory before delivery, unless factory glazing is not available from manufacturer.
  2. Glazing shall be: Low emissivity, Argon filled, double paned insulating glass capable of achieving performance requirements for "U" value, and structural pressures outlined in this section.
- B. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to the Project site, to the maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

**2.6 FINISHES**

- A. Wood Finish: Provide the following finish on exposed wood in units: Primed for final field finish.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Examine openings before installation. Verify that opening is correct and sill plate is level. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Masonry surfaces shall be dry and free of construction debris.
  2. Coordinate window installation with wall flashings and other built-in components.

**Oakhurst Dairy – New Milk Cooler****3.2 INSTALLATION**

- A. Comply with manufacturer's written instructions and recommendations for installing window units, hardware, operators, accessories, and other components of the Work.
- B. Set window units level, plumb, true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.
- C. Set sill members in a bed of sealant or with joint fillers or gaskets, as indicated, to provide weathertight construction.

**3.3 CLEANING**

- A. Clean interior and exterior surfaces immediately after installation. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealants, dirt, and other substances.
- B. Clean glass of factory-glazed units immediately after installing windows. Wash and polish glass on both faces before Substantial Completion. Comply with manufacturer's recommendations for final cleaning and maintenance. Remove nonpermanent labels from glass surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

**3.4 PROTECTION**

- A. Protect window units from damage or deterioration until the time of Substantial Completion.

END OF SECTION 08550