

**SECTION 08 51 23**  
**STEEL WINDOWS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies restoration of steel windows.

**1.2 RELATED WORK**

- A. Removal of existing asbestos glazing compound: Section 02 82 11, TRADITIONAL ASBESTOS ABATEMENT
- B. Removal of existing lead-based paint: Section 02 83 33.13, LEAD-BASED PAINT REMOVAL AND DISPOSAL
- C. Painted finish: Section 09 91 00, PAINTING and 09 06 00
- D. Replacement Glass and Glazing Compound: Section 08 80 00, GLAZING
- E. Identification of broken glass to be replaced and windows to be restored to operation: Appendix A, ADDITIONAL INSTRUCTIONS.

**1.3 SUBMITTALS**

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
  - 1. Glazing cushion and other accessories.
  - 2. Sealing compound.
  - 3. Weatherstripping
- C. Test Window
  - 1. Restore 1/3 of steel window system (one of three panes) as designated, to include:
    - a. Removal and re-installation of existing architectural glass.
    - b. Installation of new glass replacement for broken glass.
    - c. Restoration of operable panel to working condition, including weatherstripping.
- D. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

**1.4 DELIVERY, STORAGE AND HANDLING**

- A. Deliver to project site in undamaged condition in unopened containers labeled plainly with manufacturer's names and brands.

- B. Store setting materials in safe, enclosed dry locations and do not unpack until needed for installation. Handle and install materials in a manner that will protect them from damage.

**1.5 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):
  - Z97.1-09.....Safety Glazing Material Used in Building - Safety Performance Specifications and Methods of Test.
- C. American Society for Testing and Materials (ASTM):
  - C542-05.....Lock-Strip Gaskets
  - C716-06.....Installing Lock-Strip Gaskets and Infill Glazing Materials.
  - C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants
  - C864-05.....Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
  - C920-11.....Elastomeric Joint Sealants
- D. Code of Federal Regulations (CFR):
  - 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; 2010
- E. National Fenestration Rating Council (NFRC)
- F. Safety Glazing Certification Council (SGCC) 2012:
  - Certified Products Directory (Issued Semi-Annually).
- G. Glass Association of North America (GANA):
  - Glazing Manual (Latest Edition)
  - Sealant Manual (2009)

**PART 2 - PRODUCT**

**2.1 RESTORATION OF WINDOWS**

- A. Glazing systems shall be fabricated and installed watertight and airtight to withstand thermal movement and wind loading without glass breakage, gasket failure, deterioration of glazing accessories, and defects in the work.
- B. Provide treatment of metal and any rust on existing windows systems
- C. Provide full restoration of operable pane systems.

**2.2 WINDOW FINISH**

- A. Remove existing glazing compound and existing paint finish as indicated in Section 02 82 11, TRADITIONAL ASBESTOS ABATEMENT and Section 02 83 33.13, LEAD-BASED PAINT REMOVAL AND DISPOSAL.
- B. Clean all surfaces of windows and provide a rust prohibitive and shop-primed finish.
- C. Conform to SWI SWS for methods of cleaning, chemical treatment, galvanizing and painting.
- D. See Section 09 91 00, PAINTING for finish paint.

### **2.3 GLAZING SEALANTS**

- A. Provide as specified in the GANA Glazing Manual, IGMA TM-300, IGMA TB-3001, and manufacturer's recommendations, unless specified otherwise herein. Do not use metal sash putty, nonskinning compounds, nonresilient preformed sealers, or impregnated preformed gaskets.
- B. Glazing Compound: glazing compound shall conform to ASTM C 669 for face-glazing metal sash.
- C. Color:
  - 1. Color of glazing compounds, gaskets, and sealants used shall be paintable or shall match color of the finished paint and be nonstaining, see Section 09 60 00 SCHEDULE FOR FINISHES.
  - 2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black, gray, or neutral color.

### **2.4 ACCESSORIES**

- A. Provide as required for a complete installation, including glazing points, clips, shims, angles, beads and spacer strips. Provide non-corroding metal accessories. Provide primer-sealers and cleaners as recommended by the glass and sealant manufacturers.
- B. Provide weatherstripping appropriate for historic operable window panels. Consultant VA in choosing application that is compliant with Minnesota State Historic Preservation Office (SHPO).
  - 1. **SPRING-METAL** comes in bronze, brass or stainless steel with an integral friction fit clip. The weatherstripping is applied after the repaired windows are painted to avoid galvanic corrosion. This type of thin weatherstripping is intended for windows in good condition.
  - 2. **VINYL STRIPS** are scored and fold into a "V" configuration. Applied adhesive is necessary which will increase the thickness of the

- weatherstripping, making it inappropriate for some situations. The weatherstripping is generally applied to the window after painting.
3. Closed cell **FOAM TAPE** comes either with or without an adhesive backing. It is effective for windows with a gap of approximately 1/4" and is easy to install. However, this type of weatherstripping will need frequent replacement on windows in regular use. The metal section should be cleaned of all dirt and grease prior to its application.
  4. **SEALANT BEAD**. This very effective type of weatherstripping involves the application of a clean bead of firm setting caulk on the primed frame with a polyethelene bond breaker tape on the operable sash. The window is then closed until the bead has set and takes the form of the gap. The sash is then opened and the tape is removed leaving the set caulk as the weatherstripping.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

##### A. Verification of Conditions:

1. Evaluate presence and degree of corrosion, deterioration of metal sections, presence and condition of all hardware, screws, bolts and hinges; and condition of the masonry surround, including the need for caulking at sills.

#### **3.2 BASIC MAINTENANCE**

1. Removal of light rust, wiping with a cleaning solvent and priming of metal with rust-inhibiting primer. Two coats of primer should be used.
2. Reinstallation of existing glass, replacement of broken glass as identified and replacement of all glazing compound with new glazing compound. See Appendix A for identification of broken glass.
3. Replacement of missing screws or fasteners.
4. Cleaning and lubrication of hinges for operable panels with a cleaning solvent and fine bronze wool, then lubricate with a non-greasy lubricant specially formulated for metals and with an anti-corrosive agent.
5. Repainting of all steel sections with two coats of finish paint compatible with the primer.

6. Installation of weather-stripping at operable windows, sealing of operable windows not designated for operation. See Appendix A for designations of operable windows.
6. Caulking the masonry surrounds with a high quality elastomeric caulk.

### **3.3 REPAIR**

1. For areas with medium to heavy corrosion that has not done any structural damage, remove corrosion by chemical cleaning process or by sandblasting and prime as soon as possible. Patch as needed with a patching material of steel fibers and an epoxy binder. After these repairs, continue with other basic maintenance repairs.

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