DIVISION 8

SECTION 8C-FRSW FIRE RATED STEEL WINDOWS

8C-FRSW.01 GENERAL: Comply with all of the Contract Documents.

8C-FRSW.02 SCOPE OF WORK: Refer to "Division Scope of Work"

8C-FRSW.03 WORK INCLUDED IN THIS SECTION

A. Material: Steel windows as shown on drawings and specified in this section.

B. Installation of the windows.

C. Glass and glazing.

8C-FRSW.04 MANUFACTURERS

A. Window shall be product of Optimum Window Mfg. Corp. Series SC7650 3/4" Fire Rated Steel Double Hung Window, or equivalent products approved by Architect/Engineer.

B. Other acceptable manufacturers must demonstrate a successful history of steel windows manufacturing for five (5) years.

8C-FRSW.05 WINDOW MATERIALS AND CONSTRUCTION

A. ¾ hour * Fire Rated UL Listed Single Hung Steel Window, System description:

1. Fire rated steel window designed to withstand temperatures of 1650° F (899° C). Fusible links shall melt at 165° F (74° C) allowing the window to automatically seal shut, preventing spread of fire to adjacent buildings.

* NOTE: TESTED AND CERTIFIED FOR ¾ HOUR RATED APPLICATIONS, IN ACCORDANCE WITH THE STANDARDS SET FORTH BY NFPA 80 & 257.

B. Performance Requirements:

1. American National Standards Institute (ANSI);

a. ANCI Z97.1 – glazing materials used in buildings, safety performance specifications, and methods of test.

2. American Society for Testing & Materials (ASTM);

a. ASTM E283 – Standards Test Method for determining the rate or air leakage through exterior windows, curtain walls, and doors under specified.

b. Pressure differences across the specimen.

c. ASTM E331 – Standards Test Method for Water penetration of exterior windows, curtain walls, and doors by uniform static air pressure difference.

d. ASTM C1036 – Standard Specification for flat glass

3. Underwriters Laboratories, Inc. (UL)

a. Standards for classification of Fire Resistance on window frames

4. National Fire Protection Association (NFPA)

a. NFPA 80 – Standards for Fire Doors and Fire Windows.

b. NFPA 257 – Standards for Fire Test for Window and Glass Block Assemblies.

NOTE: ALL PRODUCTS MUST COMPLY WITH ABOVE STANDARDS.

C. Frame construction:

1. Cold rolled frame members are ASTM A528 low carbon steel, formed from a minimum of 18 gage steel, with a depth not less than 4 1/8" (104mm) with reinforced mitered corners. Corner joints are fully sealed to prevent water leakage and are then mechanically fastened. Muntins, when required, are formed "T" sections that are mechanically fastened to the perimeter frame. Intersections are crossed notched.

2. Window manufacturer shall provide recommendations for minimum and maximum window sizes.

D. Glazing:

1. Fire Rated windows shall be factory glazed with 1/4" thick wire glass. Glass shall be held in window sash by 3/4" (19mm) uniform edge steel bite (molding).

2. Fire rated glass shall have a minimum of 24 gage wire with a maximum mesh size of one (1) square inch, and individual lites of glass shall not exceed a daylight dimensions of 1296 square inches each as per Underwriters Laboratories. Glass shall be polished clear or obscure lites as indicated on drawings.

E. Weather stripping:

1. Operating sash shall receive factory applied EPDM gaskets throughout the entire perimeter.

F. Hardware:

1. Operating sash shall be supported on heavy-duty pair of window pre-tensioned ultra-lift balances, as fabricated by Caldwell Manufacturer.

2. Sweep locks and pull handles shall be white bronze alloy.

3. The quantity of sweep locks and pull handles shall be determined by manufacturer, based on overall size of the window.

4. Operating sash shall be provided with self-closing hardware, which is activated via fusible link during course of fire.

8C-FRSW.06 SUBMITTALS

A. Manufacturer's shop drawings: typical window elevation; details of assemblies, hardware, and glazing details for factory assembled and glazed units.

8C-FRSW.07 FINISHES

A. All cold rolled steel sections shall receive zinc coatings throughout as per ASTM A525 Z200, applied by a continuous hot dipped process (the Sendzmir system), followed by skin pass (smoothing procedure) which eliminates roughness.
Coating thickness: Primer consists of thermosetting epoxy-ureic paint, at thickness of 5 microns.
A finish coat of polyester powder coating shall be baked on at 180° to 200° degrees C for 15-20 minutes with an average thickness of 80 microns.

B. Standard color shall be brown, or selected and approved by Architect/Engineer from manufacturer's color chart.

8C-FRSW.08 MEASUREMENTS VERIFICATIONS

A. All openings to receive windows shall be field measured for verification of dimensions prior fabrications.

8C-FRSW.09 WINDOW INSTALLATIONS

A. The windows shall be installed in openings in strict accordance with approved shop drawings.

B. The windows shall be set level, plumb and square without distortion. All window units shall be anchored to surrounding construction with approved galvanized steel installation straps, provided by manufacturer.

D. Contractor shall carefully adjust hardware for all windows. All windows shall work freely and smoothly and the entire installation shall be of proper condition.

E. The windows shall be installed so exposed surfaces are uniformly proportioned, both inside and outside, for attractive appearance. Proper tolerances must be allowed to install the windows square and aligned. Any window not installed in accordance with such requirements will be rejected and must be reinstalled in accordance with good window installation practice.

8C-FRSW.10 WINDOW CAULKING

A. Exterior caulking shall meet Federal Specification TT-S-00230. It shall be self-priming silicon caulking. Caulking shall be applied in accordance with manufacturer's instructions, including surface preparation but excluding any weep holes in the frame. Closed-sell polyethylene backer-rod must be used in all joints deeper or wider than ¼ inch; such joints shall be kept to a minimum in any event. Caulk shall be a guaranteed non-staining, non-sagging type capable of 100% elongation under ASTM D412-68. Caulk color shall match closely the finish of the newly installed windows.

B. Interior caulking shall be paintable non-silicone caulk sealer.

C. Joints and spaces to be caulked shall be thoroughly clean, dry, free of paint, putty oils, grease, dust and other foreign matters, and shall be primed if necessary. All old caulking shall be removed from areas to receive new caulk. All surfaces to accept caulk shall be left broom clean before new application.

D. Application of caulk to the masonry, plaster and metal surfaces shall be provided in a manner recommended by the manufacturer. Caulk beads should be smooth and slightly concave. Excess, messy, or convex caulking will not be permitted, nor beads in excess of 3/8" width.

E. All caulking shall be done using approved type of caulking gun and applying the material under pressure, except where the use of gun is not practicable. Caulk joint shall be tooled immediately upon application to assure maximum adhesion and neat joint appearance.

8C-FRSW.11 FINAL CLEANING AND ADJUSTMENTS OF WINDOWS

A. All broken and defective parts, hardware, and glass shall be replaced by this contractor.

B. Immediately prior occupancy, all window components shall be cleaned on inside and outside of all mortar, plaster, paint, caulking, and other foreign matters to present a neat appearance and prevent from fouling of weathering surfaces and weather-stripping.

C. Lubricate as necessary window components in accordance with manufacturer's recommendations.

8C-FRSW.12 GUARANTEES

A. Guarantee all items of work furnished and installed under this Section for (1) one year, in addition to manufacturer's standard warranties, [one (1) year on operable parts and three (3) years on finish]. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings.

END OF SECTION