Bliss Nor-Am Windows & Doors
"W-20" Series steel windows

PART 1 - GENERAL
1.01 Description
A. Work Included: Furnish all labor and materials to complete the fabrication of windows as shown on architect's drawings and as specified herein. All windows covered by this specification shall be fabricated by Bliss Nor-Am Steel Windows & Doors. Other bidders must be approved by the architect at least ten days prior to the bid date, through submission of samples and evidence showing that the bidder has been fabricating window products of this type and quality for at least five years. All work shall include, but not be limited to, the following:
   1. Steel weatherstripped frame and sash with projected or casement ventilators, or fixed windows.
   2. Mullions, covers and trim.
   3. Insect screens (optional) for all operating ventilators.
   4. Factory applied finishes.

B. Related work specified elsewhere:
   1. Glass, glazing and glazing materials, Section _____
   2. Perimeter caulking, Section _____
   3. Miscellaneous structural items, Section _____

1.02 Quality Assurance
A. Manufacturer shall have not less than five years experience in fabrication of heavy intermediate steel windows.
B. Installation of windows shall be done by experienced installers.
C. Allowable tolerances: Size dimensions ±1/16th inch.
D. Source quality control:
   1. Air infiltration test
      a. ASTM E283-84
      b. Maximum air infiltration .05 CFM/Ft. of crack length for windows with operable ventilators.
   2. Water penetration test
      a. ASTM E547-86
      b. No water penetration using successively higher pressure differentials to determine the level attainable without leakage. Each completed test period consisting of four cycles each having 5 minutes with pressure applied and 1 minute with the pressure released, during which the water spray is maintained.
   3. Structural performance test
      a. ASTM E330 (exceeds)
      b. Sustained no apparent damage when tested in accordance with test procedures at pressures ±97 PSF
   4. Resistance to forced entry test
      a. ASTM F588-85 (Grade 40)
      b. No entry gained using hand manipulation test, tool manipulation test, static load test and locking devices strength resistance test at maximum 300 lbs.
   5. CSA A440-00 (Canadian)
   6. Upon request, the window manufacturer shall provide a test report from a qualified independent testing laboratory regularly engaged in testing windows to verify that products conform to these test requirements.

1.03 Submittals
A. Samples (as requested by architect):
   1. Typical sash corner.
   2. Typical muntin section.
   3. Color sample of finish.
   4. Hardware.

B. Shop drawings and manufacturers literature:
   1. Submit for approval shop drawings showing sash and installation details, including anchorage, fastening and sealing methods.
   2. The manufacturer shall not commence any work until shop drawings have been approved and sizes guaranteed
   3. Color charts of standard finishes.

1.04 Product Storage and Handling
A. The General Contractor shall be responsible for the protection and storage of the windows after delivery to the site.
B. Store in designated areas as close as possible to point of installation.

1.05 Guarantee
A. Guarantee all materials and workmanship furnished to be free from defects for a period of 12 months from the date of final acceptance or from date of substantial completion, whichever may be earlier. Repair or replace, at manufacturers option and expense, any materials or workmanship found to be defective under conditions of normal use during this period.

PART 2 - PRODUCT
2.01 Materials
A. Heavy intermediate weatherstripped steel sections manufactured from solid hot rolled carbon steel shapes.
   1. Sections made from new billet steel with flanges rolled integral at the mill.
   2. Perimeter frames and ventilator sections shall have glazing rebates providing an unobstructed glazing surface of at least 1/2" in height.
   3. Combined weight of frame and ventilator sections shall be a minimum of 3.65 pounds per linear foot. Frame sections alone shall not weigh less than 1.02 pounds per lineal foot.
   4. The ventilator sections shall have an integral groove for the reception of weatherstripping.
   5. Vent frame section shall receive applied weatherstripping.

B. Muntins
   1. Steel Tee Muntins
      a. Muntins shall be solid hot rolled from new billet steel with flanges rolled integral at the mill.
      b. 1 1/8" tee shall weigh .957 pounds per lineal foot.

C. Weatherstripping shall be extruded PVC.
D. Thermal break for 1" o/a glazing to be extruded PVC.
E. Hardware shall be as follows (standard US25D finish or optional US10B finish if available):
   1. Casement ventilators
      a. Side hung open-out casements.
         i. Locking Handle
         ii. Hinges
         iii. Roto-Operator
      b. Side hung open-in casements.
         i. Locking Handle
         ii. Hinges
         iii. Friction and/or Limit Device

2. Projected-in Ventilators
    i. Cam Handle (optional Pole Catch)
    ii. Stainless Steel 4-Bar Hinges
3. Projected-out Ventilators
    i. Spring Catch or Cam Handle (optional Pushbar)
    ii. Stainless Steel 4-Bar Hinges

F. Insect Screens: (Optional)
1. Frames shall be extruded aluminum.
2. Screens shall be .011 diameter wire, woven to 14x18 mesh count. Mesh to be fibreglass. (optional aluminum, specify bright or dark).

2.02 Fabrication

A. Fabricate steel windows in accordance with approved shop drawings.
B. Corners of frame and ventilators shall be mitered then flash welded. Exposed and contact surfaces shall be ground smooth, flush with adjacent surfaces.
C. Steel tee muntins shall be tenoned and welded to the perimeter frame. Muntin intersections shall be slotted and cross-notched and shall extend continuous from jamb to jamb and head to sill. All joints shall be face welded and exposed surfaces shall be finished smooth flush with adjacent surfaces.
D. Glazing
1. All sash shall be designed for interior (or optional exterior) glazing.
2. Provide continuous snap-on (optional screw-on or sloped aluminum snap-on) glazing beads to suit 1/8" to 1/2" glass as specified.
3. Provide 1 1/2" x 1/8" steel screw-on glazing bar with 1/8" PVC thermal break for 1" o/a glass.

E. Double continuous PVC weatherstripping shall be applied to the frame and integral weatherstrip groove of the ventilator sections, and shall be on the same plane around the interior perimeter of the ventilated area. Weatherstripping that is surface applied or requires an additional retainer or requires screws for application shall not be acceptable.
F. Operable Hardware: (specify)
1. Casement Ventilators
    a. Side hung open-out casements
        i. Casement ventilator shall be hung on ball bearing type hinges.
        ii. Provide 3 hinges when vent height exceeds 66".
        iii. Provide duplex locking handles when vent height exceeds 48".
        iv. Provide roto-operator
        v. Locking handles and roto-operators shall be shipped loose for field installation.
    b. Side hung open-in casements
        i. Casement ventilator shall be hung on ball bearing type hinges.
        ii. Provide three hinges when vent height exceeds 66".
        iii. Provide duplex locking handles when vent height exceeds 48".
        iv. Friction/Limit device shall be applied at the head of the ventilator.
        v. Locking handles and friction/limit device shall be shipped loose for field installation.
2. Projected-in or Projected-out Ventilators
    a. Ventilators are hung on heavy duty stainless steel four bar hinges, having friction maintained by a sliding brass shoe with a screw adjustment.
    b. Provide two cam handles, spring catches or pushbars per ventilator were sash width exceeds 56".
    c. Cam handles or spring catches shall be shipped loose for field installation.

G. Insect Screens: (Optional)
1. Screen frames shall be finished to match the sash (mill finish if sash is primed).
2. Screens shall be rewirable to allow for mesh replacement
3. Screen clips shall permit easy attachment and removal.

2.03 Factory Finishing

A. After fabrication, steel windows, mullions, covers and trim shall receive a Grey Oxide primer finish.
B. (Optional) After fabrication, steel windows, mullions, covers and trim shall receive one or both of the following finishes:
1. Hot-Dipped Galvanizing
2. Duracron or Duranar (Kynar) baked on enamel. Color shall be as selected by the architect from manufacturers standard colors (custom colors are also available, consult Bliss Nor-Am).

2.04 Accessories

A. Pole Hook with ¾" diameter unfinished wood or aluminum pole (specify length).
B. Power Drive (Electric Operator): Compatible with home automation systems. Some restrictions apply. Consult with Bliss Nor-Am.
C. Advance Hinge
D. Wicket: Aluminum frame finished to match flyscreen. Used with cam handle hardware on projected-out ventilators.

PART 3 - EXECUTION

3.01 Inspection

A. Window openings shall conform with details, dimensions and tolerances shown on the window manufacturers approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected before installation commences.

3.02 Installation

A. Windows specified under this section shall be installed by experienced personnel.
B. Install windows in openings in strict accordance with approved shop drawings.
1. Set units plumb, level and true to line, without warp or rack of frames.
2. Anchor units securely to surrounding construction with approved fasteners.
3. The exterior joints between the sash, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.

C. Attach ventilator hardware, as required, and adjust ventilators to operate smoothly free from twist and to be weather tight when closed.
D. Repair any abraded areas of the factory finish with supplied touch-up paint.

3.03 Cleaning

A. Window installer shall leave window surfaces clean after installation and ready to receive glass and glazing. The window installer will not be responsible for final cleaning.