

SECTION 1119X – FIXED DETENTION WINDOWS

PART 1 - GENERAL

1.01 SUMMARY

This Section includes fixed detention windows as shown in the contract drawings.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Fixed Detention Windows as shown in the door schedule. Detention windows shall be of the types and sizes shown on the contract documents and as specified herein.
- B. Glass and Glazing furnished and factory installed as required by the contract documents and as specified herein.

1.03 RELATED SECTIONS

- A. Section 03300 - Cast in Place Concrete
- C. Section 03400 - Pre-cast Concrete
- D. Section 04200 - Masonry System
- E. Section 05120 - Structural Steel
- F. Section 09900 - Painting

1.04 REFERENCES

- A. ASTM A 653 / A 653M-04a, Standard Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
- B. ASTM A 666-03 Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
- C. ASTM A 1008 / A 1008M-04b, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- D. ASTM A 1011 / A 1011M-04a, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- E. ASTM A 514 / A 514M-00a, Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
- F. ASTM A 29 / A 29M-04e1, Standard Specification for Steel Bars, Carbon and Alloy, Hot-Wrought, General Requirements for
- G. ASTM A 514 / A 514M-00a, Standard Specification for High-Yield-Strength, Quenched and Tempered Steel Plate, Suitable for Welding
- H. ASTM A 627-03, Standard Test Methods for Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional Facilities.
- I. ASTM B 117-03, Standard Practice for Operating Salt Spray (Fog) Apparatus

1.05 TESTING AND PERFORMANCE

A. Detention Hollow Metal Vision System Impact Test In Accordance With ASTM F 1592

A multi-light detention window assembly, overall dimensions of 50 in. (1270 mm) wide x 50 in. (1270 mm), shall be constructed in accordance with this specification, Section 2.01, and shall be impact tested in accordance with ASTM F1592, Section 7.2, Table 1, Figure 2, Grade #1. The test assembly shall meet the acceptance criteria in Section 7.2 in order to qualify under this Section 1.05.

B. Air Infiltration Test in accordance with ASTM E283

A multi-light detention window assembly, overall dimensions of 48 in. (1219 mm) wide x 48 in. (1219 mm), shall be constructed in accordance with this specification, Section 2.01, and shall be air infiltration tested and shall allow no more than 0.20 CFM air leakage at a test pressure of 1.57 PSF.

C. Water Resistance Test in accordance with ASTM E331

The same assembly tested for air infiltration (paragraph B) shall be additionally tested for water resistance and shall allow no water leakage at a test pressure of 2.86 PSF.

D. Test Reports

Test reports shall be written by the independent testing laboratory performing the tests, and shall meet the reporting requirements of the applicable standards. All tests shall be performed under the manufacturer's current organizational structure.

1.06 QUALITY ASSURANCE

Approval as a Qualified Manufacturer shall require, as a minimum, substantiation of the following requirements no less than ten (15) days prior to bid date: No substitutions will be allowed thereafter.

A. Manufacturer's Qualifications

1. Qualified manufacturers shall have personnel, plant equipment, and capacity capable of fabricating fixed detention windows of the types and quantities required for this project. These capabilities shall be substantiated by current documentation of number of employees, a current listing of production equipment, and production space.
2. Qualified manufacturers shall employ production welders qualified to weld material types, thicknesses, and joint types typical for the hollow metal doors and frames on this project. These qualifications shall be substantiated by a copy of "Welders Certification" in accordance with AWS QC-3, D1.3, for employees performing welding operations on hollow metal for this project.
3. Qualified manufacturers shall have a minimum of ten (10) consecutive years of experience regularly and successfully producing fixed detention windows of the type required for this project. This experience shall be substantiated by a list of representative projects for which the manufacturer has supplied fixed detention windows including dates of the project completion.

4. Qualified manufacturers shall have tested fixed detention window construction specified in section 2.01 in accordance with Section 1.05 "Testing and Performance" and successfully met the performance criteria of the same. This qualification shall be substantiated by independent laboratory test reports in accordance with Section 1.05 "Testing and Performance" as specified herein.
5. Qualified manufacturers shall present a copy of their "Certificate of Registration" certifying that the manufacturer's Quality System is in conformance with, and functions as required under ISO-9001: 2000. The manufacturer's registrar shall be a nationally recognized, independent and accredited registrar that provides periodic factory follow-up surveillance audits assuring the manufacturer's continuing compliance with their certified Quality System.

B. Quality Criteria

1. All fixed detention window construction shall be in accordance with construction of assemblies, which meet the requirements of Section 1.05 "Testing and Performance".
 - a. The fixed detention window manufacturer shall submit a notarized certificate stating that the construction, materials, and methods used are in accordance with these specifications and have been proven to meet performance standards described in Section 1.06 "Testing Performance".
2. Fabrication methods and product quality shall meet standards set by the Hollow Metal Manufacturers Association, HMMA, a division of the National Association of Architectural Metal Manufacturers, NAAMM, as set forth in these specifications.

1.07 SUBMITTALS

A. Submittal Drawings

1. Show fixed detention window elevations, sections and construction.
2. Show listing of opening descriptions including quantities, gages, locations, and anchors.
3. Identify materials on the submittal such that they may be referenced by markings used on the contract drawings.

B. Submit samples as follows, upon the request of the Architect:

1. An 18 in. (457 mm) X 18 in. (457 mm) corner sample of the fixed detention window that includes a sample of the anchor system, the glazing stop installed, the security bar system if applicable, and the thermal break system if applicable.
2. Samples submitted shall be of the production type and shall represent in all respects the minimum quality of work to be furnished by the manufacturer. No work represented by the samples shall be fabricated until the samples are approved, and any downgrading of quality demonstrated by comparison with the samples may be cause for rejection of the work.

- C. If glazing is not furnished and factory installed in the fixed detention windows, it shall be the direct responsibility of the manufacturer of the fixed detention windows to furnish to the General Contractor guaranteed clear opening sizes for the glass and glazing within 2 weeks after the subject frames/doors have been detailed for production.**

The “approved submittal drawings” are the versions that have been provided to the fixed detention window manufacturer at the time of release for fabrication. These drawings are considered part of the project “contract documents.”

1.08 WARRANTY

All hollow metal work shall be warranted from defects in workmanship and quality for a period of one (1) year from shipment.

1.09 ACCEPTABLE MANUFACTURERS

Habersham Metal Products, Co. – Cornelia, GA – Phone: 706.778.2212, Fax: 706.778.2769, website: www.habershammetal.com

PART 2 – PRODUCTS

2.01 FIXED DETENTION WINDOWS

A. Materials

1. Fixed detention windows shall be constructed of commercial quality, cold rolled steel conforming to ASTM A 1008A / A 1008M or hot rolled, pickled and oiled steel conforming to ASTM A 1011A / A 1011M. The steel shall be free of scale, pitting, coil breaks or other surface defects.
2. Exterior fixed detention windows: Steel for these openings shall be 12 gage minimum thickness and shall have a zinc coating applied by the hot-dip process conforming to ASTM A 653/A 653M (A60).
3. Interior fixed detention windows: Steel for these openings shall be 12 gage minimum thickness. Where scheduled, interior frames shall have a zinc coating conforming to ASTM A 653/A 653M (A60).
4. Where scheduled, fixed detention windows shall be fabricated from stainless steel conforming to ASTM A 666, Type #304.

B. Construction:

1. All fixed detention windows shall have integral stops and be welded units of the sizes and types shown in the contract documents and on the approved submittal drawings. Fixed detention windows shall be constructed in accordance with these specifications and as tested in accordance with applicable performance criteria specified in Section 1.05.
2. All finished work shall be neat in appearance, square, and free of defects, warp or buckle. Pressed steel members shall be straight and of uniform profile throughout their lengths.
3. Jamb, header, mullion and sill profiles shall be in accordance with the contract drawings and as shown on the approved submittal drawings.

4. Corner joints shall have all contact edges closed tight with faces mitered and stops butted. Corner joints shall be continuously welded and faces finished smooth. The use of gussets or splice plates shall not be acceptable. In the case of stainless steel windows, corner joints shall be welded and mechanically joined in such a manner as to result in a tight exposed line joint that meets the performance requirements of 1.05.A.
5. Minimum height of stops in door openings shall be 1-1/4 in. (31 mm).
6. Frames for multiple openings shall have mullion members which, after fabrication, are closed tubular shapes conforming to profiles shown on approved submittal drawings, and having no visible seams or joints. All joints between faces of abutted members shall be continuously welded and finished smooth.
7. At maximum security locations as indicated on the contract drawings, horizontal or vertical 7/8 in. (22 mm) diameter steel detention bars conforming to ASTM A 29, AISI #C1055 shall be installed around the perimeter of the window, adjacent and parallel to the integral stop, and through each mullion. At the intersections the round bars shall protrude through 1/4 in. (6.3 mm) X 2-1/4 in. (57 mm) flat steel bars conforming to ASTM A 514. Each intersecting joint shall be continuously welded, and each bar around the perimeter shall be welded to the window frame, 1 in. (25 mm) welds, 12 in. (304 mm) O.C. maximum. Detention bars shall meet the requirements of ASTM A 627, Grade #4.
8. Where thermal break construction is required as indicated on the contract drawings, 1/8 in. (3.1 mm) thick vinyl strip shall provide the separations between the interior and exterior sections of the window frame. The sections shall be joined by 1/4-20, SAE Grade #8, Torx drive, tamper resistant, flat head security screws, spaced 9 in. (228 mm) O.C. maximum, and welded at the perimeter corners.
9. When shipping limitations dictate, fixed detention windows for large openings shall be fabricated in sections designed for assembly in the field by others. Alignment plates or angles shall be installed at the corners of the profile, and shall extend at least 4" on either side of the joint. Such components shall be the same gage as the frame. Field joints shall be made in accordance with the approved submittal drawings. The contractor responsible for installation shall provide for welding and finishing all field joints between faces of abutted members.
10. Grout guards shall be provided at all glazing stop screws. Grout guards shall be sufficient to protect screws from grout of a 4 in. (102 mm) maximum slump consistency, which is hand troweled into place.
 - a. Grout guards for glazing screws shall be tight fitting plastic caps covering the exposed portion of the screws inside the frame throat, around the perimeter. Where mullions are required to be grouted, screws inside mullions shall be protected with steel grout guards welded in place.
11. Jamb Anchors:
 - a. Fixed detention windows for installation in masonry walls shall be provided with adjustable jamb anchors of the strap and stirrup type made from the same gage steel as the frame. Straps shall be not less than 2 in. (51 mm) x 10 in. (254 mm) in size and perforated. The number of anchors provided on each jamb shall be as follows:

2 anchors plus 1 for each 18 in. (457 mm) or fraction thereof over
3 ft. 0 in. (914 mm), spaced at 18 in. (457 mm) maximum between anchors

b. Embedment Masonry Type

1. Fixed detention windows for installation in pre-finished masonry or concrete openings shall be provided with removable faces at the jambs, and 0.167 in. (4.2 mm) x 2 in. (51 mm) x 2 in. (51 mm) angle anchors 4 in. (102 mm) long spaced as described in Paragraph 2.01.B.11.a. The frame anchors shall be located to coincide with matching embedded anchors to be provided for installation in the wall.
2. Embedded wall anchors shall consist of a 0.167 in. (4.2 mm) x 4 in. (102 mm) wide x 6 in. (152 mm) plate with 0.167 in. (4.2 mm) x 2 in. (51 mm) x 2 in. (51 mm) angle anchors 4 in. (102 mm) long welded in place at locations to match angle anchors in frames. The embed plate shall be provided with two #4 re-bar wall anchors 10" long minimum, with 2 in. (51 mm) x 90 degree turn down on ends continuously welded in place, and spaced as described in Paragraph 2.01.B.11.a. Embedments shall be prime painted in accordance with Paragraph 2.03.
3. Angle anchors shall each be secured to jamb and to embed plate with two 1 in. (25.4 mm) long arc welds at each end of the anchor. Anchors shall be shipped loose.
4. The complete anchorage system shall provide that the jamb faces be removed from the windows in the field by the contractor responsible for installation, and the window be moved into the opening until the window anchors contact and match the embedded anchors. The contractor responsible for installation shall field weld all anchors and install the jamb faces in place. Embedment anchoring details shall be provided on approved submittal drawings.

c. Expansion Bolt Type

1. Fixed detention windows for installation in existing masonry or concrete walls shall be prepared for expansion bolt type anchors. The preparation shall consist of a countersunk hole for a 3/8 in. (9.5 mm) diameter bolt and a spacer from the unexposed surface of the frame to the wall. The spacer shall be welded to the frame and the preparation spaced as described in Paragraph 2.01.B.11.a.
2. After sufficient tightening of the bolt, the bolt head shall be welded by the installation contractor so as to provide a non-removable condition. The welded bolt head shall be ground, dressed and finished smooth.

d. Frames to be installed in pre-finished concrete, masonry or steel openings, shall be constructed and provided with anchoring systems of suitable design as shown on the approved submittal drawings.

12. Frames indicated to be installed in pre-finished openings and required to have jambs grouted shall be provided with grout holes at each jamb to allow for grouting after installation.

- a. Grout holes shall consist of a 1-1/4 in. (32 mm) square hole in the face of each jamb at the top of the frame. The square hole shall be backed up by a plate with a 1-1/4 in. (32 mm) round hole to allow for grouting. Frames shall be furnished with plugs to be installed by the responsible contractor after grouting. Plugs shall be welded in place and finished smooth.

- b. Precautions shall be taken by the installation contractor to protect all frame preparations from grout leakage resulting from the use of a light consistency grout (greater than a 4 in. (102 mm) slump).

13. Removable glazing stops:

- a. Removable glazing stop in fixed detention windows shall be pressed steel angle, not less than 10 gage thickness. Angle stops shall be notched and tight fitting at the corner joints, and secured in place using 1/4-20, SAE grade #8, button head, Torx drive tamper resistant screws, 6 in. (152 mm) o.c. maximum, and 3 in. (76 mm) maximum from each end. Glazing stops and screws shall satisfy the performance criteria outlined in Section 1.05.A.
- b. The metal surfaces to which glazing stops are secured and the inside of the glazing stops shall be chemically treated for maximum paint adhesion and painted with a rust inhibitive primer prior to installation in the frame.

14. Stainless steel fixed detention windows shall be manufactured using fabrication and finishing methods outlined in ANSI/NAAMM/HMMA-866, for “Moderately Corrosive” conditions (P.2.03.A.3-Note). Stainless steel fixed detention windows shall also be manufactured using the same fabrication methods and material thicknesses outlined in ANSI/NAAMM/HMMA-863, and in this specification, for the grade levels specified for individual openings. Finish shall be Satin Glass Bead finish.

2.02 CLEARANCES AND TOLERANCES

A. Manufacturing tolerance shall be maintained within the following limits:

Cross sectional profile dimensions:

Face.....	+/- 1/32 in. (0.8 mm)
Stop.....	+/- 1/32 in. (0.8 mm)
Rabbet.....	+/- 1/32 in. (0.8 mm)
Depth.....	+/- 1/32 in. (0.8 mm)
Throat.....	+/- 1/16 in. (1.6 mm)

Windows overlapping walls to have throat dimension 1/8 in. (3.2 mm) greater than dimensioned wall thickness to accommodate irregularities in wall construction.

2.03 FINISH

After fabrication, all tool marks and surface imperfections shall be filled and sanded as required to make exposed surfaces smooth and free from irregularities. After appropriate metal preparation, all exposed surfaces of windows shall receive a rust inhibitive primer that meets or exceeds ASTM B 117 Salt Spray for 150 hours with a rust grade of not less than 6 as defined in ASTM D 610, and ASTM D 1735 Water Fog Test for Organic Coatings for 200 hours with any quantity of #8 blisters but no more than "few" #6 blisters as illustrated in ASTM D 714.

PART 3 - EXECUTION

3.01 SITE STORAGE AND PROTECTION OF MATERIALS

The Contractor responsible for storage and installation shall perform the following in accordance with HMMA-840.

- A. The contractor responsible for storage and installation shall remove wraps or covers from fixed detention windows upon delivery at the building site. The contractor responsible for installation shall see that any scratches or disfigurements caused in shipping or handling are promptly sanded smooth, cleaned and touched up with a compatible rust inhibitive primer.
- B. The contractor responsible for storage and installation shall see that windows are properly stored on planks in a dry location. Windows shall be covered to protect them from damage but in such a manner as to permit air circulation.

3.02 INSTALLATION

The Contractor responsible for installation shall perform the following in accordance with HMMA-840 “Installation and Storage of Hollow Metal Doors and Frames.”

- A. Prior to installation, all fixed detention windows shall be checked for size and corrected for squareness, alignment, twist and plumbness. Permissible installation tolerances shall not exceed the following:

Squareness:..... +/- 1/16 in. (1.6 mm) measured on a line, 90 degrees from one jamb, at the upper corner of the other jamb

Alignment +/- 1/16 in. (1.6 mm) measured on jambs on a horizontal line parallel to the plane of the wall.

Twist: +/- 1/16 in. (1.6 mm) measured on jambs on horizontal lines perpendicular to the plane of the wall.

Plumbness: +/- 1/16 in. (1.6 mm) measured on the jamb from the head to the sill.

These tolerances provide a guideline for proper installation of fixed detention windows. The cumulative affect of the tolerances at their maximum levels will result in sufficient misalignment to prevent the door from functioning properly. Installers should take care not to create a tolerance buildup. Tolerance buildup occurs when more than one dimension is at or near its maximum tolerance.

- B. Any grout or other bonding material shall be cleaned off of windows immediately following installation. Window surfaces shall be kept free of grout, tar, or other bonding material or sealer.
- C. Primed or painted surfaces that have been scratched or otherwise marred during installation (including field welding) and/or cleaning shall promptly be finished smooth, cleaned, treated for maximum paint adhesion and touched up with a rust inhibitive primer.

END OF SECTION