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USACE / NAVFAC / AFCESA **UFGS-11191 (September 1999)**

Preparing Activity: NAVFAC **Replacing without revision NFGS of same number and date**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 22 December 2004
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DIVISION 11 - EQUIPMENT

SECTION 11191

DETENTION AND SECURITY WINDOWS

09/99

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SECTION 11191

DETENTION AND SECURITY WINDOWS
09/99

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NOTE: This guide specification covers the requirements for detention steel cell windows.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.
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NOTE: The following information shall be shown on the project drawings:

1. Jamb, head and sill sections.

2. Method of anchoring and spacing; type of anchor.

3. Window elevations and dimensions.

4. Type of glazing.

5. Elevations above finished floor.

6. Details of non-structural mullions and mullion covers.
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PART 1 GENERAL

1.1 REFERENCES

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NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest guide specification. Use of SpecsIntact automated reference checking is recommended for projects based on older guide specifications.
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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B18.6.3	(1972; R 1997) Machine Screws and Machine Screw Nuts
ANSI B18.6.4	(1981) Thread Forming and Threaded Cutting Tapping Screws and Metallic Drive Screws (Inch Series)

ASTM INTERNATIONAL (ASTM)

ASTM A 123	(1989a) Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	(2004) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 167	(2004) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A 239	(2004) Locating the Thinnest Spot in a Zinc (Galvanized) Coating on Iron or Steel Articles
ASTM A 569/A 569M	(1998) Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial
ASTM A 627	(2003) Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional Facilities
ASTM A 629	(1988; R 1994e1) Tool-Resisting Steel Flat Bars and Shapes for Security Applications
ASTM A 653/A 653M	(2004a) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 90/A 90M	(2001) Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy

	Coatings
ASTM B 766	(1986; R 2003) Electrodeposited Coatings of Cadmium
ASTM E 283	(2004) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
ASTM E 330	(2002) Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E 331	(2000) Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

STEEL WINDOW INSTITUTE (SWI)

SWI SGSW	(2002) Architect's Guide to Steel Windows

1.2 SUBMITTALS

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NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Window units

Indicate the elevations of windows, half-size sections, thicknesses and gages of metal, fastenings, proposed method of anchoring, the size and spacing of anchors, details of construction, method of glazing, mullion details, casings, sills, trim, other related items, and installation details.

SD-03 Product Data

Window units

Fasteners

Accessories

Include finishes.

SD-06 Test Reports

Air infiltration

Water infiltration

Mullion and transom bar wind load

1.3 QUALITY ASSURANCE

The requirements specified in this section govern where there is a difference between this section and the referenced industry specifications.

1.3.1 Test Reports

1.3.1.1 Air and Water Infiltration Tests

ASTM E 283 and ASTM E 331. Air infiltration shall not exceed 0.8 L/s per meter one-half cubic foot per minute per foot of crack length when subjected to a static pressure of 75 Pa 1.56 pounds per square foot (equivalent to a wind velocity of 40 km/hr 25 miles per hour). The amount of water infiltration shall be "zero" when tested in accordance with ASTM E 331.

1.3.1.2 Mullion and Transom Bar Wind Load Tests

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NOTE: Specify wind loading requirements in areas subject to high wind velocities in excess of 110 km/hr 70 MPH; otherwise delete. The wind loading of

960 Pa 20 psf is based on a 145 km/hr 90 mph wind velocity at 61 m 200 feet above grade.

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NOTE: Delete when not applicable.

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ASTM E 330. Members shall withstand a uniform wind load of 960 Pa 20 pounds per square foot of window area without deflecting more than 1/175 of the span.

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver windows to project site in an undamaged condition. Store windows and components at the site on edge, out of contact with the ground, and under a weathertight covering.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Steel Bars

SWI SGSW.

2.1.2 Sheet Steel

ASTM A 569/A 569M.

2.1.3 Zinc-Coated Sheet Steel

ASTM A 653/A 653M.

2.1.4 Zinc-Coated Steel

ASTM A 90/A 90M, ASTM A 123 or ASTM A 153/A 153M.

2.1.5 Corrosion Resisting Sheet Steel

ASTM A 167.

2.1.6 Screws and Bolts

ASTM B 766, ANSI B18.6.3, or ANSI B18.6.4, as applicable.

2.2 WINDOW UNITS

Units shall conform to the SWI SGSW, except as modified herein.

2.3 FABRICATION

Form permanent joints by welding or by mechanically fastening as specified [for each type window]. Use joints of strength required to maintain the structural value of members connected. Weld joints solid, remove excess metal, and dress smooth on exposed and contact surfaces. Closely fit joints formed with mechanical fastenings and make permanently watertight. Assemble frames at the plant, and ship as a unit with hardware unattached.

2.3.1 Window Sections

Where fixed window sections adjoin, provide a fixed sash, fabricated from similar frame members and of the manufacturer's standard type suitable for the purpose. [Roll weathering surfaces integrally to provide two-point, parallel-surface contact with an overlap at both inside and outside points of closure.]

2.3.2 Drainage Holes

Provide drips and weep holes, as required, to return water to outside, minimum of two per window.

2.3.3 Fasteners

Use flat or oval head spanner, twist-off or safety head screws and bolts with standard threads on windows, trim and accessories. Self tapping sheet-metal screws are not acceptable.

2.3.4 Fastener Finish

Fabricate windows with hot-dipped galvanized finish, using stainless steel or hot-spun galvanized steel fasteners. Use heavily cadmium plated steel fasteners for windows with painted finish or electrogalvanized in accordance with ASTM A 239. Finish exposed heads of fasteners to match finish of windows.

2.3.5 Frames

Form frames from low carbon steel not less than 12 U.S. gage. Frames shall be one piece, channel shaped sections, at each jamb and between jamb at head and sill. Cope or miter and weld frame members at corners full depth of the frame for maximum strength and weathertightness; dress exposed welds smooth. Provide frame members with dimensions and profiles indicated. Provide 20 by 57 mm 3/8 by 2 1/4 inch, tool resistant steel flats conforming to ASTM A 629, penetrated by 22 mm 7/8 inch tool-resistant steel rounds conforming to ASTM A 627 in frame members.

2.4 PROVISIONS FOR GLAZING

Design for outside single glazing and for securing glass with metal beads and glazing compound. Glazing specified in Section 11192 DETENTION AND SECURITY GLAZING.

2.5 SCREENS

Provide manufacturer's standard screens for window units with movable sash, galvanized frame.

2.6 ACCESSORIES

Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation of windows.

2.7 ANCHORS

Use hot-dip, zinc-coated steel anchors of the type indicated or specified. Use cadmium or zinc-coated nuts, bolts, and other fasteners for ferrous

material.

2.8 SHOP PRIMED FINISH

After fabrication, clean surfaces of windows, fins, mullions, cover plates [and screen frames], provide a hot-dip galvanized, phosphate-treated and shop primed finish. The methods of cleaning, chemical treating, galvanizing, and painting shall conform to SWI SGSW. Windows shall receive finish paint coats as specified in Section 09900 PAINTS AND COATINGS.

PART 3 EXECUTION

3.1 INSTALLATION

Install windows in accordance with the manufacturer's printed instructions and details, except as specified otherwise in this section. Build in windows as the work progresses. Set windows at indicated elevation, location, and reveal. Set plumb, square, level, and in alignment. Brace, strut, and stay to prevent distortion and misalignment.

3.2 ANCHORS AND FASTENINGS

Place anchorage as wall construction progresses. Build in anchors or bolt anchors and fastenings to the jambs of openings and weld securely to the windows or frames and to the adjoining construction. Space anchors not more than 400 mm 16 inches apart on jambs, and install a minimum of four anchors on each side of each opening. Anchors and fastenings shall have sufficient strength to hold the member firmly in position.

3.3 SEALANTS

Section 07920 JOINT SEALANTS.

3.4 CLEANING

Clean metal surfaces of windows, inside and outside, of mortar, plaster, paint, and other foreign matter to present a neat appearance and to prevent fouling of weathering surfaces. Clean and touch-up abraded surfaces of steel windows. Replace stained, discolored, or abraded windows that cannot be restored to their original condition with new windows.

-- End of Section --