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USACE / NAVFAC / AFCEA / NASA UFGS-07 46 19.00 40 (April 2006)  
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Preparing Activity: NASA

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 19 March 2007

Latest change not indicated by CHG tags

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04/06

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### SECTION 07 46 19.00 40

#### STEEL SIDING 04/06

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NOTE: This specification covers the requirements for preformed metal siding, including fasteners and accessories, complete.

Drawings must indicate flashings, closures, fasteners, accessories, locations, and installation details

Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

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).

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## PART 1 GENERAL

### 1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature

when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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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.

#### ASTM INTERNATIONAL (ASTM)

ASTM A 653/A 653M	(2004a) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 924/A 924M	(2004) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM C 920	(2005) Standard Specification for Elastomeric Joint Sealants
ASTM D 638	(2003) Standard Test Method for Tensile Properties of Plastics

#### 1.2 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

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, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army 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.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

Fabrication Drawings and Installation Drawings for metal siding panels shall be submitted in accordance with paragraph entitled, "General Information," of this section.

#### SD-03 Product Data

Manufacturer's catalog data for the following items shall include storage and erection instructions, fastener data, and a list of accessories and miscellaneous trim.

Sheet Steel  
Panel Sections  
Side Joints  
Primer Coating  
Polyvinylidene Fluoride Coating  
Translucent Panels  
Subgirts  
Flashings  
Accessories  
Closure Strips  
Adhesives  
Joint Sealants

#### SD-04 Samples

Contractor shall submit the following samples:

Three pieces of each profile to be used on the job, 230 millimeter 9-inches long by the width of the sheet.

Three each of the following items:

Steel Sheet  
Joint Sealants  
Fasteners  
Primer Coating  
Finish Coating

#### SD-07 Certificates

Certificates for **Siding Erectors** shall be submitted by the Contractor prior to the start of the work in accordance with paragraph entitled, "General Information," of this section.

### 1.3 DELIVERY, HANDLING, AND STORAGE

Metal siding shall be carefully handled at all times to prevent damage to the surfaces, edges, and ends. Contractor shall be responsible for arrangement with the manufacturer for adequate packaging and protection during shipment and during offsite storage. Upon arrival at the job site, the sheets shall be checked for damage, dampness, and wet storage stain. Moisture shall be removed from dampened or wetted sheets. Sheets not immediately used in the work shall be stored and protected in a covered dry location that provides good air circulation and is free from moisture and other corrosive environments. Sheets found damaged or stained shall not be used in the work.

### 1.4 GENERAL INFORMATION

**Fabrication Drawings** for metal siding panels shall indicate material, gage thickness, width and length of panels or bevel cuts, and size and location of holes to be cut prior to construction.

**Installation Drawings** shall be submitted for metal siding panels showing all accessories and special framing details, including corners, ridges, intersections and joints. Location and type of mastic, metal filler strips, and subgirts shall be clearly indicated.

Certificates for **Siding Erectors** shall show acceptance by the manufacturer and evidence that the erector has applied siding on 3 or more projects of similar size in the past [2] [\_\_\_\_\_] years. Personnel working pursuant to this section, may at the Contracting Officer's option, be required to demonstrate technical competence by performing sample work [and/or by displaying their state qualifications/certificates], at no additional cost to the Government.

## PART 2 PRODUCTS

### 2.1 SHEET STEEL

Sheet steel shall conform to requirements of **ASTM A 653/A 653M**, Grade A, coating designation **ASTM A 653/A 653M** and **ASTM A 924/A 924M**. Finish coating shall be as specified.

Panels shall be the interlocking side-joint type with concealed fasteners up to **12.2 meter 40 feet** above grade.

**Side Joints** shall provide a gasket-free metal-to-metal, snug, weathertight fit with a male-female lock joint that forms a standing rib.

**Panel Sections** shall be furnished in lengths that will minimize horizontal joints.

\*\*\*\*\*  
**NOTE: Fill in blank space. Wind loading shall be  
in accordance with ANSI A58.1.**  
\*\*\*\*\*

Panel design shall be verified by structural tests for both positive and

negative wind loads by the "chamber method." Standard loading shall be [\_\_\_\_\_] pascal pounds per square foot wind load and a deflection of 1/180 under positive loading.

\*\*\*\*\*  
NOTE: Include the following paragraph only if  
panels are to match adjacent buildings.  
\*\*\*\*\*

Wall panels shall be of widths, depths, and section to match existing adjacent buildings. Exterior color finish shall match the approved color sample.

#### 2.1.1 Metal Cleaning and Pretreatment

Metal surfaces shall be prepared for polyvinylidene fluoride coating on continuous process coating equipment to ensure uniformly clean, prepared surfaces. Process shall include alkali cleaning, hot water rinsing, chromate conversion coating, cold water rinse, acid rinse seal, and oven drying. Chromate conversion coating may be applied by roller coating, spray coating, or dip process.

#### 2.1.2 Primer Coating

Exterior surface of the galvanized steel siding shall be given a chromate-bearing modified-epoxy prime coat applied to a dry-film thickness of 0.005 millimeter 0.2 mil minimum and shall be oven-cured prior to the finish coat application to ensure a strong bond with finish coat.

#### 2.1.3 Finish Coating

Polyvinylidene Fluoride Coating shall be applied to a dry-film thickness of 0.025 millimeter 1.0 mil minimum and oven-cured.

### 2.2 PROTECTED METAL

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NOTE: Material specified in the first paragraph is produced only by the H. H. Robertson Company, under the trade name of "Galbestos." There are other "protected metal" siding materials available, but they are not similar in manufacturing process to "Galbestos."  
  
The second paragraph permits a contractor option to "Galbestos" and must be included as required.  
  
Drawings must indicate thickness gage, color, and profile of protected metal material.  
\*\*\*\*\*

Siding shall be factory color-coated, asphalt-saturated, non-asbestos-felt, zinc-coated steel sheets, in thickness gage, color, and profile as indicated. Sheets shall be commercial-quality steel sheets conforming to ASTM A 653/A 653M, Grade A. Material shall be fabricated in a continuous process assembly in which the flat steel sheet is dipped into molten zinc, after which non-asbestos felt is immediately rolled in and bonded to the still liquid zinc and the steel sheet. Laminated material shall then be asphalt-impregnated. After asphalt impregnation, sheets shall be given the

specified color coating applied to provide a minimum dry-film thickness of 0.152 millimeter 6 mils. Colored laminated sheet shall then be rolled to the indicated profile.

At the option of the Contractor, and in lieu of the zinc-coated non-asbestos-felt protection specified, metal sheets shall be commercial-quality galvanized steel sheets conforming to ASTM A 653/A 653M, Grade A, coating designation ASTM A 653/A 653M and ASTM A 924/A 924M. After zinc coating the sheets shall be heated and coated with adhesive. After the coated sheet has been cured, two separate coats of a weather-resistant and chemical- and fume-resistant protective bituminous compound shall be applied. Immediately after the second protective bituminous compound coat has been applied, a layer of mica shall be applied to both sides of the sheet under heat and pressure. Total dry-film thickness of bituminous compound and mica shall be not less than 0.635 millimeter 25 mils and shall average 0.762 millimeter 30 mils. Mica-coated sheets shall be uniform in appearance; nonuniform appearing sheets will be rejected. Dry-film thickness of the color coating shall be not less than 0.152 millimeter 0.006 inch and shall provide complete hiding to the extent that the application of additional paint will not cause a change in color.

### 2.3 TRANSLUCENT PANELS

Translucent siding panels shall be a polyester-resin glass-reinforced panel in the same shape as the steel siding panels. Panels shall be composed of polyester resins and a 60 gram 2-ounce glass-fiber reinforcement. They shall have a glass content of not less than 25 percent. Panels shall carry the Factory Mutual label and the Underwriters Laboratory label certifying the flame spread rating to be 35. Tensile strength shall be at least 96.5 Megapascal as specified in ASTM D 638 14,000 pounds per square inch. Nominal thickness shall be 1.52 millimeter 0.06 inch and the weight shall be approximately 2.5 kilogram per square meter 8 ounces per square foot. Color shall be light green with light transmission of 64 percent. Exterior surface exposed to weathering shall be smooth; the interior surface shall be embossed.

Panels shall be protected with film permanently bonded by heat and pressure to the exterior side of the panels.

### 2.4 PANEL SUBGIRTS

Panel subgirts shall be fabricated of 1.0 millimeter 20-gage minimum galvanized steel, die formed sections, and as indicated on approved drawings.

### 2.5 ACCESSORIES

Flashings and similar items shall be of the same basic materials as the sheets, shaped or formed as standard with the manufacturer of the sheets, and finished in the same manner as siding.

### 2.6 FASTENERS

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NOTE: Select applicable fastener type.  
\*\*\*\*\*

Fasteners shall be of the type required to securely fasten the siding to the structural members and subgirts. Exposed heads of fasteners shall be

the same color and protected with same material as the siding and shall be corrosion-resistant steel with molded neoprene washers bonded to dished corrosion-resistant steel washers. Fasteners shall be capable of withstanding a minimum torque of 17 newton-meter 150 inch-pounds.

Fasteners shall be concealed type required to securely fasten siding to the structural members and subgirts. Fasteners shall be capable of withstanding a minimum torque of 17 newton-meter 150 inch-pounds.

## 2.7 PROFILE CLOSURES

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**NOTE: Select one of the following types of profile closures.**  
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Steel Closure Strips shall be 1.0 millimeter 20 gage, prime painted, and shall be provided at open ends of metal wall panel.

Rubber or synthetic rubber closure strips shall be closed-cell and shall be cut or molded to the exact configuration of the wall panel. Closure strips shall be uniform in appearance and free of bubbles, cracks, and defects affecting serviceability.

Adhesives for use with rubber or synthetic-rubber closure strips shall be of the type recommended by the wall-panel manufacturer.

## 2.8 JOINT SEALANTS

### 2.8.1 General

Sealants shall be an approved gunnable type for use in hand or air-pressure calking guns at temperatures above 4 degrees C 40 degrees F (or frost-free application at temperatures above minus 12 degrees C) 10 degrees F). They shall be used around doors, windows, masonry, and other construction material. Sealant shall consist of a synthetic resin or elastomer-based system to provide controlled skinning, good color retention, and excellent workability. Solids content shall be a minimum of 85 percent of the total volume. Sealant shall dry with a tough, durable surface skin that permits it to remain soft and pliable underneath, providing a weathertight joint. No migratory staining will be permitted on painted or unpainted metal, stone, glass, vinyl, or wood.

Joints shall be primed with a compatible one-component or two-component primer as recommended by the sealant manufacturer.

### 2.8.2 Shop Applied

Sealant for shop-applied calking shall be an approved gun grade, nonsag one-component polysulfide or silicone conforming to ASTM C 920, Type II, and with a curing time to ensure the sealant's plasticity at the time of field erection.

### 2.8.3 Field Applied

Sealant for field-applied calking shall be an approved gun grade, nonsag one-component polysulfide conforming to ASTM C 920, Type II, except base material, or two-component polyurethane with an initial maximum Shore A durometer hardness of 25 conforming to ASTM C 920, Type II, except for base



material. Color shall match panel colors.

## PART 3 EXECUTION

### 3.1 GENERAL

Erection shall be by the manufacturer's authorized erector and shall be in strict accordance with manufacturer's instructions appearing on the manufacturer's approved drawings and specifications. Entire installation shall be in a neat, approved manner.

Sheets shall be of the greatest length to suit girt spacings and arrangement indicated and to minimize end laps. Laps shall be over girts. Panel sections shall be in full and firm contact with structural support. Extreme care shall be exercised in drilling or cutting. Metal filings and burrs shall be removed prior to installation of sheets. Where sheets are cut in the field, or where factory finish is damaged, the finish shall be repaired and made to match the factory finish. Sheets shall be inspected and approved prior to installation. Sheets having the metal core exposed shall not be used. Cut ends and edges, including those at openings through the sheets, shall be completely sealed.

### 3.2 ALIGNMENT

Alignment of structural steel girts or other steel supports to receive wall panels shall be examined prior to installation. Misalignment of such steel or other conditions not within the usual AISC tolerance shall be corrected before wall panel installation is started.

### 3.3 FASTENERS

Fasteners shall be spaced as follows:

At each rib, at end supports, and in each rib at intermediate supports

At side laps of sheet, 300 millimeter 12 inches on center (maximum)

At flashings, 200 millimeter 8 inches on center (maximum), except where flashings are fastened together with ends of covering sheets by the same fasteners used for the covering sheets

### 3.4 LAPPING SHEETS

Siding sheets shall be installed vertically with laps to the leeward of the prevailing wind direction. End laps of siding sheets shall be not less than 100 millimeter 4 inches.

### 3.5 ACCESSORIES

Accessories, including profile closures, fillers, and other accessories required to ensure a weatherproof and complete construction, shall be installed as shown on the approved drawings. Where not otherwise indicated, installation shall be in accordance with approved manufacturer's recommendations.

-- End of Section --