
NAVFAC IGS-07410 (MAY 2002)

Preparing Activity: LANTNAVFACENGCOM Based on UFGS-07410N

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

SECTION 07410

METAL ROOF AND WALL PANELS

05/02

NOTE: This guide specification is issued by the Atlantic Division, Naval Facilities Engineering Command for regional use in Italy.

NOTE: This guide specification covers preformed, finished metal roofing, including architectural standing seam, corrugated, and ribbed type, and siding for industrial and commercial buildings. It does not cover light-gage siding for temporary construction, housing, or prefabricated metal buildings or decorative metal panels. Specify wall and roof insulation in another section in Division 07. Sandwich panels and special systems are not covered in this guide specification and should be specified in another section in Division 07. If factory-applied color coating is not required, modify the guide specification to delete the prefinishing requirements and test.

NOTE: On the drawings, show:

1. Roof slope.
2. Location, sizes, and details of flashing, closure strips, and accessories.
3. Schedule indicating factory-finished surface colors.
4. Depth and configuration of roof and wall panels.
5. Spacing of girts and purlins.
6. Design loads.

NOTE: Manufacturer's literature indicates more "products" than "systems". The designer/specifier is faced with two choices:

- 1) Select components and engineer and detail the connections and support assemblies required.
- 2) Select a panel, write performance criteria (wind loads, allowable deflection, etc. and require that the supplier/manufacturer provide detailed drawings and calculations certified by an engineer that performs as specified.

The choice of which course to take will affect the level of detailing required and the level of technical criteria to be specified.

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

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.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

EUROPEAN COMMITTEE FOR STANDARDIZATION (CEN)

| | |
|--------------|---|
| CEN EN 1396 | (1996) Aluminum and Aluminum Alloys - Coil Coated Sheet and Strip for General Applications - Specifications |
| CEN EN 10147 | (2000) Continuously Hot-Dip Zinc Coated Structural Steels Strip and Sheet - Technical Delivery Conditions |
| CEN EN 10215 | (1995) Continuously Hot-Dip Aluminum-Zinc (AZ) Coated Steel Strip and Sheet - Technical Delivery Conditions |

CEN EN 10154

(1996) Continuously Hot-Dip
Aluminum-Silicon (AS) Coated Steel Strip
and Sheet - Technical Delivery Conditions

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

- ISO 1519 (1973) Paints and Varnishes - Bend Test
(Cylindrical Mandrel)
- ISO 2813 (1994) Paints and Varnishes -
Determination of Specular Gloss of
Non-Metallic Paint Films at 20 Degrees, 60
Degrees and 85 Degrees
- ISO 7253 (1996) Paints and Varnishes -
Determination of Resistance to Neutral
Salt Spray (Fog)
- ISO 7724-1 (1984) Paints and Varnishes - Colorimetry,
Part 1, Principles
- ISO 7724-2 (1984) Paints and Varnishes - Colorimetry,
Part 2, Color Measurements
- ISO 7724-3 (1984) Paints and Varnishes - Colorimetry,
Part 3, Calculation of Color Differences
- ISO 4628-2 (1990) Paints and Varnishes - Evaluation
of Degradation of Paint Coatings -
Designation of Intensity, Quantity and
Size of Common Defect - Part 2, Rating of
Degree of Blistering
- ISO 4628/3 (1982) Paints and Varnishes - Evaluation
of Degradation of Paint Coatings -
Designation of Intensity, Quantity and
Size of Common Types of Defect - Part 3:
Designation of Degree of Rusting First
Edition
- ISO 4628-6 (1990) Paints and Varnishes - Evaluation
of Degradation of Paint Coatings -
Designation of Intensity, Quantity and
Size of Common Defect, Part 6, Rating of
Degree of Chalking by Tape Method First
Edition
- ISO 11341 (1994) Paints and Varnishes - Artificial
Weathering and Exposure to Artificial
Radiation - Exposure to Filtered Xenon-arc
Radiation First Edition

1.2 DEFINITIONS

1.2.1 Field-Formed Seam

Seams of panels so configured that when adjacent sheets are installed the seam is sealed utilizing mechanical or hand seamers. Crimped (45 degree bend), roll formed (180 degree bend), double roll formed (2-180 degree bends), and roll and lock systems are types of field-formed seam systems.

1.2.1.1 Snap Together Seam

Panels so configured that the male and female portions of the seam interlock through the application of foot pressure or tamping with a mallet. Snap-on cap configurations are a type of snap together system.

1.2.2 Corrugated Sheet

Metal sheet with finish coating system which is bent into standard corrugated shapes by roll-forming.

1.2.3 Finish Coating System

Factory-applied, organic coating system which is applied over sheet.

1.2.4 Flat Metal Sheet

Relatively thin, rectangular in cross-section and form, protected from corrosion by metallic coating bonded to base metal (with exception of aluminum), produced in commercial sizes, and usually furnished in coiled lengths for further processing.

1.2.5 Panel

One of series of standard-sized units produced by factory cutting of longer lengths of corrugated sheet, ready for installation as preformed metal roofing or siding.

1.2.6 Edge Creepage

Measurement of expected performance at conditions of field cut panel edges, drilled hole edges or site scratches of protective coating through handling or tool misuse.

1.3 PERFORMANCE REQUIREMENT

1.3.1 Deflection

When subjected to full design loads, [steel [wall] [and] [roof] panels shall not deflect more than 1/180 of panels' clear span] [and] [aluminum

[wall] [and] [roof] panels shall not deflect more than 1/60 of panels' clear span].

1.3.2 Wind Uplift

NOTE: Determine uplift requirements utilizing ASCE 7-98 for computations and ITG 01-2 for wind speeds. If attachment point spacings are not known, use the minimum spacings allowed in the ASCE 7-98 Tables. Interim Technical Guidance (ITG) 01-2 is available at NAVFAC Criteria website <http://Criteria.navfac.navy.mil/criteria>; then choose "Publications"; "Design Criteria"; and "Minimum Design Loads for Buildings and Other Structures."

Roof systems and attachments shall resist the following wind loads, in kilopascals, with a factor of safety appropriate for the material holding the anchor [wood = 5] [concrete or masonry = 4] [steel = 2.5]:

- | | Negative |
|------------------------|----------|
| a. At eaves | [_____] |
| b. At rakes | [_____] |
| c. At ridge | [_____] |
| d. At building corners | [_____] |
| e. At central areas | [_____] |

1.3.3 Formability Test

In accordance with ISO 1519, finish coating system shall show no microchecking of exterior film with no loss of adhesion, when subjected to 180-degree bend over 3 mm 1/8 inch diameter mandrel and 10 mm 3/8 inch diameter mandrel for coatings 0.10 mm 4 mils or thicker.

1.3.4 Weathering Test

Sample of finished-coated sheet shall withstand weathering test for minimum of 2,000 hours in accordance with ISO 11341 without cracking, peeling, blistering, loss of adhesion of finish coating system or corrosion of base metal. Finish coating system that can be readily removed from base metal with penknife blade or similar instrument shall be considered to indicate loss of adhesion.

1.3.5 Chalking Resistance

After 2,000-hour weathering test, finish coating system shall not chalk greater than No. 1 rating when measured in accordance with ISO 4628-6 test procedures.

1.3.6 Color Change

NOTE: In general, only colors such as white, beige, and tan will not exceed the 2 NBS requirement. To allow for heavier pigmented colors, specify color change not to exceed 5 NBS units for a 2,000-hour weathering test.

After 2,000-hour weathering test, color change of finish coating system shall not exceed [_____] [2] [5] NBS units when measured in accordance with ISO 7724-1, ISO 7724-2, ISO 7724-3 test procedures.

1.3.7 Specular Gloss

NOTE: First bracketed option: Use for all projects except aircraft maintenance facilities. Second bracketed option: Use for aircraft maintenance facilities. MIL-HDBK-1028/1, "Aircraft Maintenance Facilities" requires this for surfaces where glare may be an operational hazard. Manufacturers producing prefinished sheets meeting second bracketed option as standard item are limited, and sheets are available only in certain colors. Second option should not be included unless there is a definite requirement for it.

[Finished surface shall have specular gloss value of 30 to 70 at angle of 60 degrees when measured in accordance with ISO 2813.] [Finished surfaces exposed on building exterior shall have maximum specular gloss value of 10, at angle of 85 degrees when measured in accordance with ISO 2813. Requirements specified under paragraph entitled "Formability Test" of this section will be waived if necessary to conform to this requirement.]

1.3.8 Salt Spray Test

Withstand a salt spray test for a minimum of 1000 hours in accordance with ISO 7253, including the scribe requirement in the test. Immediately upon removal of the panel from the test, coating shall receive a rating of D2/S2 [few blisters, none larger than No. 8] [no blisters, rating of No. 10] in field as determined by ISO 4628-2; and an average rating of [6, 3 mm] [7, 2 mm] [6, 1/8 inch] [7, 1/16 inch] failure at scribe, as determined by ISO 4628/3. Rating Ri- 1.

1.3.9 Humidity Test

When subjected to humidity cabinet test in accordance with ISO 11503 for

1,000 hours, factory-finished, organic-coated panel shall show no signs of blistering, cracking, creepage, or corrosion with no loss of adhesion.

1.4 SUBMITTALS

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 is 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. Recommended codes for Army projects are "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval. 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.

Submit the following in accordance with section entitled "Submittal Procedures."

SD-02 Shop Drawings

- Panels; G
- Fastener installation; G
- Supports; G
- Flashing; G
- Closures; G

NOTE: No equivalent to UL 580 uplift testing had been found in the Euronorms. Designers are cautioned that the product literature generally describes components, not systems. The designer has two approaches:

1. Design, detail and specify all components, including fasteners and require submittals confirming that the components meet the requirements.

2. Specify the wind pressures on the various parts of the building and require that the contractor submit calculations and design drawings prepared and certified by a registered professional engineer indicating that all the components will resist those loads. Refer to interim Technical (ITG) 01-2 "Minimum Design Loads for Buildings and Other Structures".

Submit drawings to supplement the instructions and diagrams. Drawings shall be thorough and show typical and special conditions including flashings, materials and thickness, dimensions, fixing lines, anchoring methods, sealant locations, sealant tape locations, fastener layout, sizes, and spacing, terminations, penetrations, attachments, and provisions for thermal movement. Details of installation shall be in accordance with the manufacturer's standard instructions and details. Drawings shall show the adjustments to manufacturer's standard system, required to meet the wind loading criteria specified. Prior to submitting shop drawings, have drawings reviewed and approved by the manufacturer's technical engineering department.

SD-03 Product Data

Panels; G

Accessories

Fasteners

Sample warranty certificate; G

Submit catalog cuts, technical data sheets, and descriptive literature.

SD-04 Samples

Color of Panels; G

Submit one sample of each color indicated. When colors are not indicated, submit minimum six different samples of manufacturer's standard colors for selection.

SD-06 Test Reports

Formability test

Weathering test

Chalking resistance

Color change

Specular gloss

Salt spray test

Humidity test

Submit reports performed by independent qualified testing laboratories.

SD-07 Certificates

Qualification of installer

Certify that the installer meets requirements specified under paragraph entitled "Qualification of Installer," and include the roofing system manufacturer's written approval of the installer.

SD-11 Closeout Submittals

Information Card

For each roofing installation, submit a typewritten card or photoengraved aluminum card containing the information listed on Form 1 located at the end of this section.

1.5 QUALITY ASSURANCE

1.5.1 Preroofing Conference

After submittals are received and approved but before roofing [and insulation] work, including associated work, is performed, the Contracting Officer will hold a preroofing conference to review the following:

- a. The drawings and specifications
- b. Procedure for on site inspection and acceptance of the roofing substrate and pertinent structural details relating to the roofing system
- c. Contractor's plan for coordination of the work of the various trades involved in providing the roofing system and other components secured to the roofing

d. Safety requirements.

The preroofting conference shall be attended by the Contractor and personnel directly responsible for the roofing [and insulation] installation, [[mechanical] [and] [electrical] work], and the roofing manufacturer's technical representative having qualifications specified under paragraph entitled "Manufacturer's Technical Representative." Conflicts among those attending the preroofting conference shall be resolved and confirmed in writing before roofing work, including associated work, is begun.

1.5.2 Manufacturer's Technical Representative

The representative shall have authorization from manufacturer to approve field changes and be thoroughly familiar with the products and with installations in the geographical area where construction will take place.

1.5.3 Qualification of Installer

The roofing system installer shall be factory-trained and approved by the metal roofing system manufacturer to install the system.

1.6 DELIVERY, STORAGE, AND HANDLING

Carefully deliver, store, and handle panels and other manufactured products. Stack materials stored on site on platforms or pallets, and cover with tarpaulins or other weathertight covering. Do not use plastic which may cause sweating or condensation. Store panels so that water which may have accumulated during transit or storage, drains off. Do not store panels in contact with materials that might cause staining. Inspect panels upon arrival at jobsite; if wet, remove moisture, and restack and protect panels until used.

1.7 Warranty

Furnish manufacturer's warranty for the roofing system. The warranty period shall be not less than 5 years from the date of Government acceptance of the work. The warranty shall be issued directly to the Government. The warranty shall provide that if within the warranty period the metal roofing system becomes non-watertight or shows evidence of corrosion, perforation, rupture or excess weathering due to deterioration of the roofing system resulting from defective materials or workmanship the repair or replacement of the defective materials and correction of the defective workmanship shall be the responsibility of the roofing system manufacturer. Repairs that become necessary because of defective materials and workmanship while roofing is under warranty shall be performed within 7 days after notification, unless additional time is approved by the Contracting Officer. Failure to perform repairs within the specified period of time will constitute grounds for having the repairs performed by others and the cost billed to the manufacturer.

PART 2 PRODUCTS

2.1 [ROOFING] [AND] [SIDING] PANELS

[Roof] [and] [wall] panels shall be [either] [steel] [or] [aluminum] and shall have a factory color finish meeting the specified requirements. [Wall panels shall have [configurations for overlapping adjacent sheets] [or] [interlocking ribs for securing adjacent sheets.]] [System for securing the roof covering to structural framing members shall be [concealed clip fastening system with nonpenetrating fasteners] [or] [exposed, penetrating fastener type]. [Concealed clip-fastened roof covering shall be [batten] [snap-lock] [mechanically field crimped] standing seam type.] [Roof covering using concealed clip fastener system shall have no fasteners penetrating the panels except at the ridge, eave, or rake and end laps.] The ridge cap shall not have exposed fasteners except where recommended by the metal roofing system manufacturer.] [Wall covering shall be fastened to framework using [exposed] [or] [concealed] fasteners.] Length of sheets shall be sufficient to cover [the entire length of any unbroken roof slope] [or] [the entire height of any unbroken wall surface] when such dimension is 9140 millimeters 30 feet, or less. [When length of run at roof exceeds 9140 millimeters 30 feet, each sheet in the run shall extend over two or more spans.] Sheets may be longer than 9140 millimeters 30 feet if approved by the Contracting Officer. Design provisions shall be made for expansion and contraction. Thickness of sheet for panels shall be not less than specified. Where gages are specified, gages are subject to normal manufacturing tolerances.

2.1.1 Coated Steel Panels

2.1.1.1 Shape

NOTE: European manufacturers offer a wide variety of panel profiles and depths, sheet thickness and lap alternatives. Consult manufacturer's technical literature and select appropriate shape based on span, building scale, deflection, wind loads and availability.

[Standard corrugated type having 67.8 mm 2.67 inch pitch and 13 to 22 mm 0.5 to 0.875 inch depth, exclusive of coating.] [V-beam or boxed beam type having 125 to 200 mm 5 to 8 inch pitch and 38 mm 1.5 inch overall depth, exclusive of coating.] [[_____] -type having [_____] mm inch pitch and [_____] mm inch overall depth exclusive of coating.] [Type having cross-sectional profile and depth, as indicated.] Wide variety of profiles available. Designer to select based on span, scale, deflection, etc.

2.1.1.2 Material and Coating

Form sheets from steel conforming to CEN EN 10147, Grade Fe E 280 G with galvanized coating designation Z275, aluminum-coated steel conforming to CEN EN 10154; or steel-coated with aluminum-zinc alloy conforming to CEN EN 10215, except that coating chemical composition shall be approximately 55 percent aluminum, 1.6 percent silicon, and 43.4 percent zinc with minimum coating weight of 0.15 kilograms per square meter 0.5 ounce per square foot.

2.1.1.3 Gage

[0.8 mm thick 22 U.S. Standard Gage for wall panels] [and] [Minimum 0.8 mm thick 22 U.S. Standard Gage for roof panels], but in no case lighter than required to meet maximum deflection requirements specified.

2.1.1.4 Factory Color Finish

NOTE: Check with the facility regarding color selection. Use only manufacturer's standard colors. For interior, specify the same coating as exterior if undersides of panels are to be exposed and a premium coating is desired or [0.005 mm] prime coat if undersides of panels are to be field painted. Otherwise specify [0.0125 mm] backer coat for interior.

NOTE: NOTE: Consult the manufacturer's literature for available colors. Colors may be specified; 1) to match a color in the RAL color system, 2) from the manufacturer's standard colors, or 3) to match a paint color from a widely recognized paint company. Consult with manufacturer's representative to determine the economic impact (if any) of the use of custom (non-standard to the manufacturer) colors. RAL color library is available for purchase and is widely recognized in Europe. When specifying manufacturer's standard colors, add the statement, "Color selected does not indicate a preference of one manufacturer over others. Products of other manufacturers meeting the requirements of this specification are acceptable." Specify whether color match is critical (to match an existing surface) or general and may vary somewhat from that indicated.

Provide factory applied, thermally cured coating to the exterior and interior of metal roof and wall panels and metal accessories. Provide exterior finish top coat of [70 percent polyvinylidene fluoride resin] [_____] with not less than [0.020 mm 0.8 mil] [0.025 mm 1.0 mil] [_____] dry film thickness. Provide exterior primer [standard with panel manufacturer] [_____] with not less than [0.005 mm 0.2 mil] [0.020 mm 0.8 mil] [_____] dry film thickness. Interior finish shall consist of [0.005 mm 0.2 mil dry film thick prime coat] [0.0125 mm 0.5 mil dry film thick backer coat] [the same coating and dry film thickness as the exterior coating] [_____]. Provide exterior [and interior] coating meeting the test requirements specified. Tests shall have been performed on the same factory finish and thickness provided. Color shall be [_____] [as indicated].

2.1.2 Coated Aluminum Alloy Panels

2.1.2.1 Shape

NOTE: European manufacturers offer a wide variety of panel materials. Consult manufacturer's technical literature and select appropriate materials based on durability, corrosion resistance, finishes and availability.

[Standard corrugated type having 68 mm 2.67 inch pitch and 22 mm 0.875 inch overall depth exclusive of coating.] [V-beam or box-beam type having 100 to 200 mm 4 to 8 inch pitch and 45 mm 1.50 inch overall depth exclusive of coating.] [[_____] -type having [_____] mm inch pitch and [_____] mm inch overall depth exclusive of coating.] [[Trapezoidal-] [L-] [or] [T-] shaped standing seam.] [Type having cross-sectional profile and depth as indicated.]

2.1.2.2 Material and Coating

Form sheets of ENAW3004 conforming to CEN EN 1396 having proper temper to suit respective forming operations.

2.1.2.3 Thickness

[Minimum 0.84 mm 0.032 inch nominal for wall panels] [and] [minimum 1.02 mm 0.040 inch nominal for roof panels], but in no case thinner than that required to meet maximum deflection requirements specified.

2.1.2.4 Factory Color Finish

NOTE: Check with the facility regarding color selection. Use only manufacturer's standard colors. For interior, specify the same coating as exterior if undersides of panels are to be exposed and a premium coating is desired or [0.005 mm] [0.2 mil] prime coat if undersides of panels are to be field painted. Otherwise, specify [0.0125 mm] [0.5 mil] backer coat for interior.

Provide factory applied, thermally cured coating to the exterior and interior of metal roof and wall panels and metal accessories. Provide exterior finish top coat of [70 percent polyvinylidene fluoride resin] [_____] with not less than [0.020 mm 0.8 mil] [0.025 mm 1.0 mil] [_____] dry film thickness. Provide exterior primer [standard with panel manufacturer] [_____] with not less than [0.005 mm 0.2 mil] [0.020 mm 0.8 mil] [_____] dry film thickness. Interior finish shall consist of [0.005 mm 0.2 mil dry film thick prime coat] [0.0125 mm 0.5 mil dry film thick backer coat] [the same coating and dry film thickness as the exterior coating] [_____]. Provide exterior [and interior] coating meeting the test

requirements specified. Tests shall have been performed on the same factory finish and thickness provided.

2.1.3 [2.1.3 Liner Panels

Formed of same material as wall panels with 0.025 mm one milminimum on the face and a prime coat on the liner side. [Provide types of insulation, as appropriate, as specified in Section [07212, "Mineral Fiber Blanket Insulation"] [07214, "Board and Block Insulation."]]

2.1.4]2.1.4 Accessories

Provide sheet metal flashings, trim moldings, closure strips, caps, and other preformed metal panel accessories, of same material and finish as panels, except accessories that are concealed after installation, and are aluminum or zinc-coated steel may be provided unfinished. Provide metal thickness not less than that of panels. Provide molded closure strips of closed-cell or solid-cell synthetic rubber, neoprene, or polyvinyl chloride premolded to match configurations of preformed metal panels.

2.1.5 Fasteners

Provide fasteners for attaching panels to structural supports and to adjoining panels as approved and in accordance with printed manufacturer's recommendations; unless specified otherwise, fasteners shall be any of the following: self-tapping screws, bolts and nuts and self-locking rivets, self-locking bolts, end-welded studs, bolted or riveted studs, and stem rivets held by aluminum straps. Provide fastening system to withstand design loads indicated. Fasteners shall be [stainless steel] for panels. Fasteners, except those having integral hexagonal washer heads and those having aluminum drive caps, shall have composite metal and neoprene washers. Provide fasteners having integral hexagonal washer heads and fasteners having aluminum drive caps with polychloroprene washers. [Heads of screws or bolts exposed on exterior face of factory-finished wall shall be nylon headed to match color of wall.]

2.1.5.1 Screws

Not less than 6 mm No. 14 diameter self-tapping type or self-drilling and self-tapping type.

2.1.5.2 Stud Welding

Provide shouldered type studs with minimum shank diameter of 4.76 mm^{3/16} inch and with cap or nut for holding preformed metal panels against shoulder.

2.1.5.3 Powder-Actuated Fasteners

Provide type to be fastened with powder-actuated tools and with shank diameter of adequate size to support loads imposed. Provide 13 mm^{1/2} inch minimum shank length for fastening panels to steel and 25 mm one inch for fastening panels to concrete. [Provide fasteners for securing wall panels with threaded studs suitable for attaching approved color-coated nuts or

caps.]

2.1.5.4 Blind Rivets

Stainless steel with nominal 5 mm 3/16 inch diameter shank or aluminum with nominal 5 mm 3/16 inch diameter shank. Provide thread-stem-type rivets for other than fastening of trim. Close rivets with hollow stems.

2.1.5.5 Bolts

Minimum 6 mm 1/4 inch diameter, shouldered or plain shank nuts.

2.1.6 Joint-Sealing Material

Compressible adhesive-cohesive butyl polyisobutylene rubber tape.

2.1.7 Available Products

Products that meet the requirements of these specifications are manufactured by the following:

Ceria Isolpack S.p.A.
Corso Vittorio Emanuele II, 99
10128 Torino Italia
Tel: 11/561.2650
Fax: 11/561.1713

Metecno
via per Cassino, 19
20067 Tribiano (MI) Italia
Tel: 02/906.951
Fax: 02/906.34.238

PART 3 EXECUTION

3.1 INSTALLATION

In accordance with manufacturer's approved installation instructions, and approved drawings, except as specified otherwise. Install panels in full and firm contact with each other at side and end laps. Where panels are cut in field or where factory-applied coating is damaged and necessary repairs have been made with material of same type and color as finish coating, obtain approval of the Contracting Officer before installation. Correct defects in materials. Remove defective materials which cannot be corrected, and provide non-defective materials. Provide molded closure strips where indicated and whenever panels terminate with open ends after installation.

3.1.1 Wall Panels

Apply panels with longitudinal configurations in vertical position. Provide panels in [longest obtainable lengths, with end laps occurring only at girts and structural members] [full wall heights from base to eave with no horizontal joints except at junctions of door frames, window frames,

louver panels, and similar locations]. Seal side and end laps with joint-sealing material. Flash seal walls at base and at top, around windows, door frames, framed louvers, and other similar openings. Place closures, flashing, and sealing materials to achieve complete water tightness. Flashing is not required where approved [interlocking, concealed-type side joints with concealed fasteners for wall panels] ["self-flashing" panels] are used. Minimum end laps for panels shall be [50] [100] [150] mm [2] [4] [6] inches and shall occur only over girt and structural members. Side laps shall be standard overlap or interlocking ribs based on manufacturer's standard.

3.1.2 Roof Panels

NOTE: First bracketed option: Use minimum end laps for roof panels on projects located in inland areas where hurricane forces are not expected to occur. Second bracketed option: Use minimum end laps for roof panels on projects located in areas where hurricane velocity of 113 kilometers 70 miles, or more, per hour is expected to occur.

Apply roofing panels with longitudinal configurations in the direction of the roof slope. Provide roofing panels in [longest lengths obtainable, with end laps occurring only at purlins and structural members] [full lengths from ridge] [or ridge panel] to eaves [or top to eaves on shed roofs], with no transverse joints except at junction of ventilators, curbs, skylights, chimneys, and similar openings. Lay side laps away from prevailing wind, and seal side and end laps with joint-sealing material. Flash seal roof at ridge, eaves, rakes, and at projections through roof. Provide closure strips, flashing, and sealing material to achieve complete weathertightness. Minimum end laps shall be [200] [300] mm [8] [12] inches, shall occur only over purlins and structural members, and shall be aligned in a staggered pattern with adjoining panels. Side laps shall be standard overlap or interlocking rib based on manufacturer's standard.

3.1.3 Flashings

Provide flashings, related closures, and accessories provided with preformed metal panels where indicated to provide watertight installation. Install flashing, related closure, and accessories not indicated in accordance with panel manufacturer's printed instructions and details or approved shop drawings. Installation shall allow for expansion and contraction of flashing.

3.1.4 Fastener Installation

Provide fastener spacings in accordance with manufacturer's recommendations to withstand design loads indicated. Install fasteners in valleys or crowns in accordance with manufacturer's recommendations. Install fasteners in straight lines within tolerance of 13 mm 1/2 inch in length of bay. Drive exposed, penetrating-type fasteners normal to surface and to uniform depth to seat washers with gaskets. Drive so as not to damage

factory-applied coating. Provide thermal space blocks at each fastener to provide thermal barrier and to eliminate condensation. Exercise extreme care when drilling pilot hole for fastenings to keep drills perpendicular and centered in valleys or crowns, as applicable. After drilling, remove metal filings and burrs from holes prior to installing fasteners and washers. Torque used when applying fasteners shall not exceed that recommended by manufacturer. Remove panels damaged by over-torqued fastenings, and provide new panels. Remove metal shavings and fillings from roofs upon completion to prevent rusting and discoloration of panels.

3.1.5 [Standing Seam and Batten Roofing - Field Formed and Snap-Together Seam Types

Provide roofing in full lengths from eaves to ridge where possible. Where transverse joints are required, all sheets shall be the same length, except as required to complete a run or to maintain a pattern. Locate the transverse joints of each panel half way between the joints in adjacent panels. Align the joints of alternate sheets horizontally to produce a uniform pattern. Fasten the sheets to the substrate with clips concealed in the seams or battens, and secure the seams as recommended by the roofing manufacturer. Flash and seal the roof at the ridge, eaves, rakes, projections through the roof, and elsewhere as necessary to produce a weathertight installation.]

3.2 PROTECTION OF APPLIED ROOFING

Do not permit storing, walking, wheeling, and trucking directly on applied roofing materials. Provide temporary walkways, runways, and platforms of smooth clean boards or planks as necessary to avoid damage to applied roofing materials, and to distribute weight to conform to indicated live load limits of roof construction.

3.3 CLEANING

Clean exposed sheet metal work at completion of installation. Remove metal shavings, filings, nails, bolts, and wires from roofs. Remove grease and oil films, excess sealants, handling marks, contamination from steel wool, fittings and drilling debris and scrub the work clean. Exposed metal surfaces shall be free of dents, creases, waves, scratch marks, and solder or weld marks.

3.4 INFORMATION CARD

For each roof, provide a typewritten card, laminated in plastic and framed for interior display, or a photoengraved 0.8 mm 0.032 inch thick aluminum card for exterior display. Card shall be 220 by 280 mm 8 1/2 by 11 inches minimum and contain the information listed on Form 1 located at the end of this section. Install card near point of access to roof or where indicated. Send photostatic paper copy to LANTNAVFACENCOM, Code 1613, 1510 Gilbert Street, Norfolk, VA 23511-2699.

FORM 1 - ROOFING SYSTEM DESCRIPTION

1. Location: _____ 2. Bldg. No.: _____
 3. Bldg. Name: _____ 4. Contract No.: _____
 5. Specification No.: _____ 6. Deck Slope: _____
 7. Substrate Type: _____
 8. Insulation Type & Thickness: _____
 9. Insulation Manufacturer: _____
 10. Vapor Retarder: Yes No
 11. Vapor Retarder Type: _____
 12. Preformed Roofing Description:
 - a. Manufacturer (Name, Address, Phone No.): _____

 - b. Product Name: _____
 - c. Width: _____
 - d. Gage: _____
 - e. Base Metal: _____
 - f. Method of Attachment: _____

 13. Repair of Color Coating:
 - a. Coating Manufacturer (Name, Address, Phone No.): _____

 - b. Product Name: _____
 - c. Required Surface Preparation: _____
 - d. Recoating Formula: _____

 - e. Application Method: _____

 14. Statement of Compliance or Exception: _____

 15. Warranty Period: From _____ To _____
 16. Date Roof Completed: _____ 17. Inspector: _____
 17. Roofing Contractor Name/Address: _____
 18. Prime Contractor Name/Address: _____

- Prime Contractor's Signature: _____ Date: _____
- Inspector's Signature: _____ Date: _____

INSTRUCTIONS FOR FORM 1 (DO NOT POST)

1. Location: Name of activity as shown on contract.
2. Bldg. Number: As provided by Contracting Officer.
3. Bldg. Name: As shown on contract or as provided by Contracting Officer.
4. Contract Number: As shown on the contract.
5. Specification Number: As shown on this contract.
6. Show deck slope.
8. Show minimum thickness of installed insulation.
11. Show generic type of vapor retardant and manufacturer's name.
13. Show information for coating material used during construction and recommended coating(s) for future repairs.
14. Show variances from contract requirements, if any.
15. Warranty Period: Insert start and end dates.
16. Show date roofing was accepted by the Contracting Officer. Warranty period begins on this date.
17. Show Government Inspector's name.
18. Roofing Installer's or Contractor's name.
19. Prime Contractor Name/Address/Signature: Must be signed and dated by [QC Manager] [an official of Contracting firm].

NOTE: Suggestions for improvement of this specification will be welcomed using the Navy "Change Request Forms" subdirectory located in SPECSINTACT in Jobs or Masters under "Forms/Documents" directory or DD Form 1426. Suggestions should be forwarded to:

**Commanding Officer
Naval Construction Battalion Center
NAVFAC 15G/CESO 158
1000 23rd Avenue
Port Hueneme, CA 93043-4301**

FAX: (805) 985-6465 or (805) 982-5196

-- End of Section --