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USACE / NAVFAC / AFCEC **UFGS-07 61 15 (August 2025)**

Preparing Activity: NAVFAC **Superseding**
UFGS-07 61 15.00 20 (August 2016)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2025
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DIVISION 07 - THERMAL AND MOISTURE PROTECTION

SECTION 07 61 15

ALUMINUM STANDING SEAM ROOFING

08/25

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SECTION 07 61 15

ALUMINUM STANDING SEAM ROOFING
08/25

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NOTE: This guide specification covers the requirements for structural-type aluminum standing seam roofing systems designed to span from purlin to purlin versus architectural (non-structural) cladding systems. For Steel Structural Standing Seam Metal Roofing Systems (SSMRS) use Section 07 61 14 STEEL STANDING SEAM ROOFING. For architectural (non-structural) systems use Section 07 41 13 METAL ROOF PANELS.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

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

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

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NOTE: Design exterior envelope to meet the requirements of UFC 1-200-02, "High Performance and Sustainable Building Requirements" which invokes the requirements within UFC 3-101-01, "Architecture". UFC 1-200-02 and UFC 3-101-01 make references throughout to various ASHRAE documents governing energy efficiency and requirements for the components of building envelope design including moisture control and thermal performance.

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NOTE: On the drawings, show:

1. Design loads.

2. Roof slope (minimum 2 in 24 1 inch per foot).

3. Line(s) of fixity.

4. Supporting structural framework.

5. Track spacing and attachment details, when applicable.

6. Attachment clip spacing (list capacity of each type in spec).

7. Flashing support and fastening spacing.

8. Roof venting. (Pay particular attention to preventing infiltration of wind-driven rain).

9. Sealant and closure locations.

10. Locations for dissimilar metal protection.

11. Details of accessories such as ladders, walkways, antenna mounts, guy wire fastening, ventilation equipment, snow restraints, and lighting.

12. Details of flashing at roof penetrations.

13. Location and attachment of permanent fall protection devices.

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NOTE: When designing standing seam roofs, consider:

1. Consult with manufacturers early in design stage to obtain current design manuals and structural information regarding roof attachments. Early contact will reduce need for corrections and changes during review process and construction phase.

2. Calculate wind uplift forces in accordance with UFC 3-110-03, "Roofing" and UFC 3-301-01, "Structural Engineering"..

3. Minimum guidelines are 2 in 24 1 inch per foot for roof slopes. Provide greater slope if possible. In renovation of existing buildings, adequate slope must often be obtained by imaginative solutions. Sleepers and stub walls have been successfully used, but attachment and structural stability of these must be assured. In some existing structures it will be difficult to design strong connections to structural system, or

modifications to existing structural shimming system will be necessary to resist wind forces adequately.

4. It will be necessary to diagram a number of attachment clips for varying roof conditions. Individually designate each type on the drawings with spacing shown. Spacing will be a function of allowable panel span and holding capability assumed for the clip(s). Specify the minimum holding force for each type as subparagraphs under paragraph ATTACHMENT CLIPS. Assure that fasteners used to attach clips to structure develop full capacity of clip. Check existing structures to assure that the forces can be resisted by existing structural system. Make provisions for thermal expansion of roof structure.

5. Flashing presents a particular design problem in preventing wind and water infiltration. High winds create stresses in flashing which must be resisted by careful detailing of attachments.

While standing seam roofing presents continuous, sealed surface to the elements, flashing transitions are often the cause of serious problems. Overhangs, especially, are susceptible to high wind forces and attachment should be at much closer spacing than usual. Copious use of sealants and closure pieces molded to conform to roof panels is imperative.

6. Building may require equipment such as antennae, ladders, or lighting installed on roof. Access to roof-mounted mechanical equipment is often required. Provide walking surfaces and attachment accessories which do not compromise integrity of roof system. Design these accessories to provide support without penetrating roofing panels. Usually this is done with clamps attached to standing seam, or other specially designed clips. Provide curbs for mechanical equipment.

7. Specify insulation in appropriate Division 07 Section.

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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 Reference Identifier (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.

ALUMINUM ASSOCIATION (AA)

AA ADM	(2020) Aluminum Design Manual
AA ASM-35	(2000) Specifications for Aluminum Sheet Metal Work in Building Construction, Construction Manual Series Section 5

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

AAMA 2605	(2022) Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels

AMERICAN IRON AND STEEL INSTITUTE (AISI)

AISI D100	(2017) Cold-Formed Steel Design Manual

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7-22	(2022; Supp 1 2023; Supp 2 2023) Minimum Design Loads and Associated Criteria for Buildings and Other Structures

AMERICAN WOOD COUNCIL (AWC)

AWC NDS	(2018) National Design Specification (NDS) for Wood Construction

ASTM INTERNATIONAL (ASTM)

ASTM B117	(2019) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B209/B209M	(2021a) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM D522/D522M	(2017; R 2021) Mandrel Bend Test of Attached Organic Coatings
ASTM D523	(2014; R 2018) Standard Test Method for Specular Gloss

ASTM D714	(2002; R 2017) Standard Test Method for Evaluating Degree of Blistering of Paints
ASTM D968	(2022) Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1654	(2008; R 2016; E 2017) Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D2244	(2025) Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
ASTM D2247	(2025) Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity
ASTM D2565	(2016) Standard Practice for Xenon Arc Exposure of Plastics Intended for Outdoor Applications
ASTM D4214	(2023) Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films
ASTM E84	(2024) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E330/E330M	(2014; R 2021) Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E1592	(2017) Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
ASTM E1980	(2024) Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces

COOL ROOF RATING COUNCIL (CRRC)

ANSI/CRRC S100	(2021) Standard Test Methods for Determining Radiative Properties of Materials

FM GLOBAL (FM)

FM 4471	(2025) Class I Panel Roofs

NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)

NRCA CONDET	(2025) Construction Details Manual

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA 1793	(2012) Architectural Sheet Metal Manual, 7th Edition

UL SOLUTIONS (UL)

UL 580	(2006; Reprint Apr 2024) UL Standard for Safety Tests for Uplift Resistance of Roof Assemblies

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 bend), and roll and lock systems are types of field-formed seam systems.

1.2.2 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.

1.2.3 Pre-Formed

Formed to the final, less field-formed seam, profile and configuration in the factory.

1.2.4 Field-Formed

Formed to the final, less field-formed seam, profile and configuration at the site of work prior to installation.

1.2.5 Roofing System

The roofing system is defined as the assembly of roofing components, including roofing panels, flashing, fasteners, and accessories which, when assembled properly result in a watertight installation.

1.2.6 SSMRS

Standing Seam Metal Roof System (SSMRS) is abbreviation of the entire roof system specified herein with all components and parts coming from a single manufacturer's system.

1.3 SYSTEM DESCRIPTION

1.3.1 Design Requirements

a. Provide continuous length panels with no joints or seams, except where indicated. Individual panels must be removable for replacement of

damaged material.

b. There must be no exposed or penetrating fasteners except where shown on the approved shop drawings. Fasteners into wood must have full length threads. Fastener material must be as specified herein and approved by the manufacturer. Length and diameter of screws must be sufficient to meet the design loads with a suitable factor of safety for the material to which the roofing components are attached. Calculate fastener capacity in accordance with AISI D100, AA ADM or AWC NDS as applicable.

c. Roof panel standing seam must include a capillary break and be mechanically locked closed by the manufacturer's locking tool. The seam must include a continuous sealant or sealant tape when required by the manufacturer to withstand the rainfall and wind specified in paragraph PERFORMANCE REQUIREMENTS.

d. Roof panel anchor clips must be concealed and designed to allow for thermal movement of the panels, except where specific fixed points are indicated.

e. The system must resist the positive and negative loads specified herein in accordance with "Sheet Building Sheathing Design Guide" of the AA ADM. Determine capacity in accordance with principles of ASTM E330/E330M modified as follows:

(1) Test panels must be production material of the type proposed for use. Use either full length or partial length panels with attachment representative of the main part of the roof.

(2) Test specimens must be five panels wide, span one or more supports, and must have no end or edge attachment or seals that will restrict crosswise movement of the panels under load. Do not bridge longitudinal seams with tape or film that can restrict separation.

(3) Test panels to failure. Report load at failure.

f. Panels must support walking loads without excessive distortion or telegraphing of the structural supports. Panels must support a 115 kilogram 250 pound load concentrated on a 2500 square millimeter (mm) 4 square inch area at the center of the panel without buckling or permanent distortion.

1.3.2 Performance Requirements

1.3.2.1 Wind Loads

Provide metal roof panel system that conforms to the requirements of ASTM E1592 and UL 580. Uplift force due to wind action governs the design for panels. Submit wind uplift test report prior to commencing installation.

Provide roof system and attachments that resist the wind loads as determined by ASCE 7-22, in pounds per square foot. Metal roof panels and component materials are to comply with the requirements in FM 4471 as part of a panel roofing system as listed in Factory Mutual Guide (FMG) "Approval Guide" for class 1 or noncombustible construction, as applicable. Identify all materials with FMG markings.

1.3.2.2 Resistance to Water Infiltration

Roofing system must show no infiltration at seams, edges, flashings, counterflashings and penetrations when subjected to a rainfall of [125][_____] mm [5][_____] inches per hour with [200][_____] km/h [124][_____] mph wind.

1.3.2.3 Thermal Movement

****
NOTE: Select the temperature range appropriate for the finish and color specified.
****

The system must be capable of withstanding thermal movement based on a temperature range of 5 degrees C 10 degrees F below design low air temperature and[60 degrees C 140 degrees F for mill finish and light colors.][82 degrees C 180 degrees F for dark colors.]

1.3.2.4 Deflection

Panel deflection must not exceed L/140.

1.3.2.5 Structural Performance

The structural performance test methods and requirements must be in accordance with ASTM E1592.

1.4 SUBMITTALS

****
NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters 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 and Air Force projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding

Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification 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

Roofing Shop Drawings; G, [_____]

SD-03 Product Data

Roofing Panels; G, [_____]

Recycled Content of Aluminum Roofing Products; S

[Heat Island Reduction; S

] Attachment Clips

Closures

Accessories

Sample Warranty Certificate; G, [_____]

SD-04 Samples

Roofing Panels

Color Finish

Accessories

SD-05 Design Data

Load Calculations; G, [_____]

SD-06 Test Reports

Wind Uplift Test Report; G, [_____]

Structural Performance; G, [_____]

Panel Finish; G, [_____]

[Manufacturer's Field Inspection; G, [_____]

] SD-07 Certificates

Technical Representative

Qualification of Installer

Coil Stock Compatibility; G, [_____]

SD-08 Manufacturer's Instructions

Sealant

Installation Manual; G, [_____]

SD-11 Closeout Submittals

Information Card

Warranty

1.5 LOAD CALCULATIONS

****
NOTE: Ensure that appropriate design loads are specified in paragraph WIND LOADS.
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****
NOTE: Use 200 km/h 124 mph at Adak, Alaska.
****

Submit load calculations for the following by a structural engineer registered as a Professional Engineer in any jurisdiction verifying that the system supplied meets the design loads indicated. Coordinate calculations with manufacturer's test results.

a. Wind load uplift design pressure at roof locations specified in paragraph WIND LOADS.

b. Clip spacing and allowable load per clip calculations.

c. The fastening of clips to structure or intermediate support spacing.

d. Intermediate support spacing and fastening to structure when required.

e. Allowable panel span at anchorage spacing indicated.

f. Safety factor used in determining loading.

1.6 QUALITY ASSURANCE

1.6.1 Roofing Shop Drawings

Submit drawings as necessary to supplement the instructions and diagrams. Include design and erection drawings containing an isometric view of the roof showing the design uplift pressures and dimensions of edge, ridge and corner zones. Show typical and special conditions including flashings, accessory installation, materials and thicknesses, all dimensions, anchoring methods, sealant locations, sealant tape locations, fastener layout, sizes, spacing, provisions for thermal movement, terminations, penetrations, and attachments. Details of installation must be in accordance with the manufacturer's Standard Instructions and details or the NRCA CONDET or SMACNA 1793. The manufacturer's technical engineering

department must approve the drawings before they are submitted.

1.6.2 Preroofing Conference

****
NOTE: Consult with the Contracting Officer responsible for construction of the project to determine who should conduct the conference. For NAVFAC SE administered projects, delete the option of Contractor conducting the conference and delete the last bracketed sentence.
****

After submittals are received and approved but before roofing[and insulation] work, including associated work, is preformed, the[Contracting Officer will][Contractor must] 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 preroofing conference must 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. Conflicts among those attending the preroofing conference must be resolved and confirmed in writing before roofing work, including associated work, is begun.[Prepare written minutes of the preroofing conference and submit to the Contracting Officer.]

1.6.3 Manufacturer's Technical Representative

The representative must 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. The manufacturer's representative must be an employee of the manufacturer with at least 5 years experience in installing the roof system. The representative must be available to perform field inspections and attend meetings as required herein, and as requested by the Contracting Officer.

1.6.4 Qualification of Installer

****
NOTE: Specify 3 years as an approved Contractor unless directed otherwise by the Government.
****

The roofing system installer must be approved, authorized, or licensed in writing by the aluminum roofing system manufacturer to install the system, and have a minimum of [3][_____] years experience as an approved

applicator with that manufacturer, approved at a level capable of providing the specified warranty. The applicator must have applied five installations from the manufacturer being submitted of similar size, scope, and the same system as this project within the previous 3 years. Submit the names, locations, and client contact information of five projects of similar size and scope constructed by applicator using the manufacturer's roofing products submitted for this project within the previous 3 years.

1.6.5 Single Source

Provide roofing panels, clips, closures and other accessories from a single manufacturer.

1.6.6 Manufacturer

The SSMRS must be the product of an aluminum roofing industry recognized SSMRS manufacturer who has been in the practice of manufacturing SSMRS for a period of not less than 5 years and who has been involved in at least 5 projects similar in size and complexity to this project.

1.6.7 Laboratory Tests For Panel Finish

Previously manufactured panels of the same type and finish as proposed for the project must have been tested by an approved testing laboratory to ensure conformance to specifications. The term "appearance of base metal" refers to the aluminum base metal. Panels must meet the following test requirements. Submit reports of the tests required by this Section.

1.6.7.1 Salt Spray Test

****

NOTE: Use 2000-hour test for products to be installed in project locations with Environmental Severity Classifications (ESC) of C4 or C5. See UFC 1-200-01 for determination of ESC for project locations. Select 1000 hours for ESC C1 thru C3 locations.

****

Panels must withstand a salt spray test for a minimum of [1000][2000] hours in accordance with ASTM B117, including the scribe requirement in the test. Immediately upon removal of the panel from the test, coating must receive a rating of 10, no blistering, as determined by ASTM D714; and a rating of 7, 2 mm 1/16 inch failure at scribe, as determined by ASTM D1654, Rating Schedule No. 1.

1.6.7.2 Formability Test

For formability test, when subjected to a 180 degree bend over a 3 mm 1/8 inch diameter mandrel in accordance with ASTM D522/D522M, exterior coating film must show only microchecking of the exterior film and there must be no loss of adhesion.

1.6.7.3 Accelerated Weathering Test

Panels must withstand an accelerated weathering test for a minimum of 2000 hours in accordance with AAMA 2605 or ASTM D2565 without cracking, peeling, blistering, loss of adhesion of the protective coating, or

corrosion of the base metal. Protective coating that can be readily removed from the base metal with a penknife blade or similar instrument will be considered to indicate loss of adhesion.

1.6.7.4 Chalking Resistance

After the 2000-hour weatherometer test, exterior coating may not chalk greater than No. 8 rating when measured in accordance with ASTM D4214 test procedures.

1.6.7.5 Abrasion Resistance Test for Color Coating

****

NOTE: For projects located in humid locations or project locations with Environmental Severity Classifications (ESC) of C3 thru C5 or where premium finish would be justified, use 100 liters. Select 50 liters for projects in ESC locations C1 and C2. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations.

****

When subjected to the falling sand test in accordance with ASTM D968, coating system must withstand a minimum of [50][100] liters of sand per 0.025 mm (mil) of coating thickness before appearance of base metal.

1.6.7.6 Humidity Test

When subjected to a humidity cabinet test in accordance with ASTM D2247 for 1000 hours, a scored panel must show no signs of blistering, cracking, creepage, or corrosion.

[1.6.7.7 Fire Hazard

****

NOTE: Delete this paragraph if mill finish has been selected. If roofing is exposed in exit areas, use a flame spread of 25; if exposed in non-exit areas, use flame spread of 75; otherwise delete the paragraph.

****

The finish on factory-fabricated panels must have a flame spread rating of not more than [25][75] when tested in accordance with ASTM E84.

]1.6.7.8 Gloss

The gloss of the finish must be 30 plus or minus 5 at an angle of 60 degrees, when measured in accordance with ASTM D523.

[1.6.7.9 Glare Resistance

****

NOTE: Include the requirements for glare resistance only when specifically required by the facility for critical glare areas such as control towers or other structures where glare can be an operational

hazard. Refer to UFC 4-211-01, "Aircraft Maintenance Hangars" for assistance in determining critical glare areas. Delete gloss test above if this paragraph is included.

****

Surfaces of panels that will be exposed to the exterior must have a specular reflectance of not more than 10 when measured in accordance with ASTM D523 at an angle of 85 degrees. Requirements specified under FORMABILITY TEST will be waived if necessary to conform to this requirement.

]1.6.7.10 Color Change Test

****

NOTE: In general, only neutral colors such as white, beige, and tan will not exceed the 2 NBS units requirement. To allow for bold, heavier pigmented colors, specify color change not to exceed 5 NBS units for a 3000-hour weatherometer test.

****

After the [2000] [_____]-hour weatherometer test, exterior coating color change must not exceed [2][5] [_____] NBS units when measured in accordance with ASTM D2244 test procedure.

1.7 DELIVERY, STORAGE, AND HANDLING

Deliver, store, and handle preformed panels, bulk roofing products and other manufactured items in a manner to prevent damage or deformation.

1.7.1 Delivery

Provide adequate packaging to protect materials during shipment. Do not uncrate materials until ready for use except for inspection. Immediately upon arrival of materials at jobsite, inspect materials for damage, dampness, and staining. Replace damaged or permanently stained materials that cannot be restored to like-new condition with new material. If materials are wet, remove moisture, restack and protect panels until used.

1.7.2 Handling

Handle material carefully to avoid damage to surfaces, edges and ends.

1.7.3 Storage

Stack materials stored on the site on platforms or pallets and cover with tarpaulins or other suitable weathertight coverings which prevent water trapping or condensation. Store panels so that water which might have accumulated during transit or storage will drain off. Do not store the panels in contact with materials that might cause staining, such as mud, lime, cement, fresh concrete or chemicals. Protect stored panels from wind damage.

1.8 WARRANTY

Provide metal roof system material and workmanship warranties meeting specified requirements. Provide revision or amendment to manufacturer's standard warranty as required to comply with the specified requirements.

Submit a sample warranty certificate during the pre-construction phase to prove all warranty requirements will be achieved.

1.8.1 Metal Roof Panel Manufacturer Warranty

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NOTE: Select the appropriate warranty duration. Specify a minimum 20-year warranty unless directed otherwise by the Government.
****

Furnish the metal roof panel manufacturer's [20][30]-year no dollar limit roof system materials and installation workmanship warranty, including flashing,[insulation,] components, trim, and accessories necessary for a watertight roof system construction. Write warranty directly to the Government, commencing at time of Government's acceptance of the roof work. The warranty is required to state that:

a. If within the warranty period, the metal roof system, as installed for its intended use in the normal climatic and environmental conditions of the facility, becomes non-watertight, shows evidence of moisture intrusion within the assembly, displaces, corrodes, perforates, separates at the seams, or shows evidence of excessive weathering due to defective materials or installation workmanship, the repair or replacement of the defective and damaged materials of the metal roof system and correction of defective workmanship is the responsibility of the metal roof panel manufacturer. All costs associated with the repair or replacement work are the responsibility of the metal roof panel manufacturer.

b. If the manufacturer or his approved applicator fail to perform the repairs within 72 hours of notification, emergency temporary repairs performed by others does not void the warranty.

[1.8.2 Manufacturer's Finish Warranty

****
NOTE: Include the following paragraph when factory color finish panels are specified.
****

Provide a manufacturer's no-dollar-limit 20-year warranty for the roofing system. Issue the warranty directly to the Government at the date of Government acceptance, warranting that the factory color finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of 8 when measured in accordance with ASTM D4214; or fade or change colors in excess of 5 NBS units as measured in accordance with ASTM D2244.

]1.8.3 Contractor Warranty

****
NOTE: Select 5 years for Army and Air Force projects and 2 years for all other projects.
****

Provide Contractor's No Dollar Limit warranty for a period of not less than [2][5] years that the roof system, as installed, is free from defects in installation workmanship, to include the roof panel installation,

flashing,[insulation,] accessories, attachments, and sheet metal installation integral to a complete watertight roof system assembly. Issue warranty directly to the Government. Correction of defective workmanship and replacement of damaged or affected materials is the responsibility of the Contractor. All costs associated with the repair or replacement work are the responsibility of the Contractor.

PART 2 PRODUCTS

2.1 ROOFING PANELS

****
NOTE: Panel width must be between 300 and 600 mm 12 and 24 in. A 400 mm 16 in. panel width is widely available. The height of vertical legs should not be less than 50 mm 2 inches on roofs having a slope less than 2 in 12. Consider the occurrence of ice dams or other water flow obstructions when determining the vertical leg height.
****

Provide panels of continuous lengths from ridge to eaves or from top to eaves on shed roof designs. Panels must be [400][_____] mm [16][_____] inches wide with a minimum [50][_____] mm [2.0][_____] inch high vertical legs and two [9.4 mm] [0.37 inch] [_____] stiffening ribs at 100 mm 4 inches on center between the legs to minimize oil-canning and telegraphing of structural members.[Panel profile as indicated on drawings.] Leading vertical leg must have a continuous groove in the rib top for anti-siphon protection when hook-rib top of next panel is locked over leading vertical leg to form the standing seam. Panels from coil stock must be formed without warping, waviness or ripples not a part of the panel profile, and must be free of damage to the finish coating system. Provide certification of coil stock compatibility with roll forming machinery to be used for forming panels without warping, waviness, and rippling not part of panel profile; to be done without damage, abrasion or marking of finish coating. Submit a 300 mm 12 inch long section of typical panel[in color specified] [in color selected] showing metal gage and seam.

2.1.1 Material

****
NOTE: Use materials with recycled content where appropriate for use. Verify suitability, availability within the region, cost effectiveness and adequate competition before specifying product recycled content requirements. A resource that can be used to identify products with recycled content is the "Comprehensive Procurement Guidelines (CPG)" page within the EPA's website at https://www.epa.gov. Other products with recycled content are also acceptable when meeting all requirements of this specification.

Research shows the product is available from U.S. national manufacturers above the minimum recycled content stated. Some manufacturers and regions have higher percentages.
****

3004 aluminum, ASTM B209/B209M. Aluminum roofing materials must contain a minimum of 30 percent total recycled content. Provide data identifying percentage of recycled content of aluminum roofing products.

2.1.1.1 Thickness

****
NOTE: UFC 3-110-03 allows minimum 0.81 mm 0.032 inch thickness except where heavier thickness is required to meet wind uplift criteria. However, a heavier section thickness of minimum 1.0 mm 0.040 inch may improve the aesthetic with respect to oil canning.
****

[0.81 mm][1.0 mm] [0.032 inch][0.040 inch] minimum.

2.1.1.2 Texture

****
NOTE: Stucco embossing is a mechanical process that imparts some structural strength and reduces the visual effect of oil-canning. Embossed texture is slightly more expensive than smooth texture but should be considered for use on high visibility projects.
****

[Stucco embossed.][Smooth.][Smooth with raised intermediate ribs for added stiffness][Smooth with striations across roof panel width].

2.1.1.3 Solar Reflectance

****
NOTE: Facilities with dominant cooling loads or in mild or warm climate zones are required to meet "cool roofing" requirements of FEMP. Cool roof design must follow the requirements in UFC 3-110-03, "Roofing", ASHRAE 90.1 Chapter 5, for the design of insulation and energy performance of the building. Design insulation for cool roofs to meet at a minimum the ASHRAE 90.1 Chapter 5 zone requirements.

If the project includes a low-slope roof (less than 2:12) and a cool roof is selected, meet the ASHRAE 90.1 Chapter 5 values for roof insulation roof Solar Reflectance Index (SRI), roof solar reflectance and thermal emittance. If a cool roof is not selected in ASHRAE zones 0 thru 3, design must meet one of the exception requirements listed in ASHRAE 90.1 Chapter 5 or provide thermal insulation as stated therein. Coordinate these requirements with insulation design and specifications.

Retain the first bracketed sentence for low-slope roofing projects in ASHRAE climate zones 0 thru 3 with cool roof requirement. When a designer desires IgCC compliance with cool roof requirements, include the second set of bracketed sentences for projects

in ASHRAE climate zones 0 thru 3; see IgCC Chapter 5 for exceptions when design conditions eliminate these requirements. Retain the last bracketed sentence for project with sustainable third party certification credit requirement for reduced heat island effect.

****

Provide roof finishes for more than 75 percent of the roof surface having a minimum 3-year aged solar reflectance of 0.55, and a minimum 3-year aged thermal emittance of 0.75 when tested in accordance with ANSI/CRRC S100, or, a minimum 3-year aged Solar Reflectance Index of 64 when determined in accordance with the Solar Reflectance Index method in ASTM E1980 using a convection coefficient of 6.62 W per m^2 2.1 BTU per ft^2.[Use roofing materials having minimum 3-year aged SRI for more than 75 percent of roof surface (less than or equal to 2:12 slope, SRI greater than 64; greater than 2:12 slope, SRI greater than 25).][Provide emittance and reflectance percentages, solar reflectance index values,[and] slopes [_____], to meet sustainable third party certification requirements for Heat Island Reduction.]

2.1.1.4 Finish

****

NOTE: Choose the finish appropriate for the project. In general, hangars, warehouses, and other utilitarian structures may use mill finish to reduce cost. Mill finish Alclad is more economical than fluorocarbon painted finish. Some colors in the painted finish are substantially more costly than others, due to the scarcity of certain pigments.

****

****

NOTE: Use coated alclad in locations with an Environmental Severity Classification (ESC) of C3 through C5. Unpainted aluminum, mill finish, may be used in locations with an ESC of C1 or C2 unless there are factors which may lead to a locally corrosive microenvironment (such as local source of industrial pollution). See UFC 1-200-01 for determination of ESC for project locations.

****

[Alclad mill finish, unpainted][Alclad fluorocarbon baked enamel exterior and neutral washcoat interior].

2.1.1.5 Color Finish

****

NOTE: Check with the facility regarding color selection. Use only manufacturer's standard colors. Delete this paragraph if mill finish has been selected.

****

[Blue][Red][[_____], No. [_____]]exterior as selected from the manufacturer's standard colors.

[When colors are not indicated, submit samples of not less than six different manufacturer's standard colors for selection.

][2.1.1.6 Prefinished Coating System

****

NOTE: Delete this paragraph if mill finish has been selected.Coating thicknesses and materials are for panels in exterior applications; if panels will be used in interior conditioned spaces, edit information as appropriate.

For projects in humid locations and locations with Environmental Severity Classifications (ESC) of C3 thru C5, select the thicker options for prime coating, finish coating, backer coating, and total thickness; for projects in ESC locations C1 or C2, utilize the thinner coatings. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations.

For panels with bold colors, include a clear coat. Panels with neutral colors (such as white, tan or beige) do not require a clear coat. For projects in locations with Environmental Severity Classifications (ESC) of C1 or C2, select the thinner clear coating. For projects in humid locations and locations with Environmental Severity Classifications (ESC) of C3 thru C5, select the thicker option for clear coating.

For interior/underside finish, include the thicker coatings (0.4 mil prime and 0.4 mil backer coating) in humid locations or project locations with Environmental Severity Classifications (ESC) of C3 thru C5; for projects in ESC locations of C1 and C2, select the thinner coatings (0.2 mil prime and 0.3 mil backer coats). Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations. Include the bracketed sentence for additional acrylic coating on unpainted panels.

****

Provide exterior finish coat of[70 percent resin polyvinylidene fluoride containing 100 percent inorganic pigments] [_____] with not less than [0.025 mm][0.045 mm] [1.0 mil][1.8 mil] dry film thickness, consisting of [0.005 mm][0.020 mm] [0.2 mil][0.8 mil] prime coat and 0.020 mm 0.8 mil finish coat minimum applied by the continuous coil coating method. Provide prefinished coating system on[both faces.][the exterior face.][Apply the clear coating over finish coating to a dry film thickness of [0.0125 mm][0.020 mm] [0.50 mil][0.80 mil].][Interior/underside finish must consist of minimum [0.005 mm][0.010 mm] [0.2 mil][0.4 mil] dry film thickness prime coat and [0.075 mm][0.0100 mm] [0.3 mil][0.4 mil] dry film thickness backer coat.][Interior face must receive same coating system, or, at the manufacturer's option, receive a coat of acrylic wash coat

applied to a minimum total dry film nominal thickness of 0.0075 mm 0.30 mil.]

]2.2 ATTACHMENT CLIPS

****
NOTE: Add the appropriate choice(s) for the attachment clip(s) used in the design. Insert design value for minimum load capacity.
****

Series 300 non-magnetic stainless steel.

a. Type 1: [_____] clip, minimum capacity [_____] kgs lbs.

b. Type 2: [_____] clip, minimum capacity [_____] kgs lbs.

c. Type 3: [_____] clip, minimum capacity [_____] kgs lbs.

2.3 ACCESSORIES

Sheet metal flashings, trim, moldings, closure strips, caps, preformed crickets, equipment curbs,[gutters,][down spouts,] and other similar sheet aluminum accessories provided in conjunction with preformed aluminum panels must be of the same material and finish as panels, except that such items which will be concealed after installation may be provided without the finish if they are aluminum or stainless steel. Provide ridge and rib closures, as specified. Aluminum must be of thickness not less than that of panels. Molded closure strips must be closed-cell synthetic rubber, neoprene, or polyvinyl chloride premolded to match configurations of preformed aluminum panels. Thermal spacer blocks and other thermal barriers at concealed fasteners must be as recommended by the roofing panel manufacturer. Submit samples of each type of accessory item used in the project including, but not limited to: each type of anchor clip, closures, fasteners and leg clamps.

2.3.1 Closures

2.3.1.1 Ridge Closure

Aluminum-clad foam or aluminum closure with foam secondary closure matching panel configuration for installation on surface of roof panel between panel ribs at ridge and headwall roof panel flashing conditions and terminations. Foam material must not absorb water.

2.3.1.2 Rib Closure

Aluminum, closed-cell or solid-cell synthetic rubber, neoprene or polyvinyl chloride pre-molded to match configuration of rib opening. Material for closures must not absorb water.

2.3.2 Fasteners

****
NOTE: In the high winds, metal will vibrate and fatigue at fasteners on "normal" spacings. For this reason, cleated (blind fastened) flashings are not acceptable, and attachment at 50 to 200 mm 6 to 8 inches on center is customary. Flashing should not extend more than 25 mm 1 inch beyond a support or

fastener.
****

****
NOTE: "304 stainless cast head" or "304 stainless bi-metal" are preferred when the base metal (structural member or decking being attached to) consists of steel, cast iron, zinc, galvanized, galvalume or coated steel. These fasteners have a bimetallic construction and differ from "304 stainless steel" fasteners. "304 stainless steel" refers to fasteners which are fabricated entirely from 304 stainless steel. These may accelerate corrosion of certain base metals in some conditions. Consult with manufacturer for specific conditions where they are acceptable.
****

[304 stainless steel,]304 stainless cast head or 304 stainless bi-metal with compatible metal and neoprene composition washers. Fasteners for attachment to structural supports and fasteners for attachment of panels must be as approved and in accordance with manufacturer's recommendation. Unless specified otherwise herein, fasteners must be either self-tapping screws, bolts and nuts, or self-locking bolts. Design fastening system to withstand design loads indicated. Exposed fasteners must be gasketed or have gasketed washers on the exterior side of the covering to waterproof the penetration. Washer material must be compatible with the covering; have a minimum diameter of 10 mm 3/8 inch for structural connections; and gasketed portion of fasteners or washers must be neoprene or other equally durable elastomeric material approximately 3 mm 1/8 inch thick. Fasteners must not be over-torqued and must develop full capacity of attachment clips.

2.3.2.1 Screws

Provide not less than 0.242 mm No. 14 diameter for self-tapping type and not less than 0.216 mm No. 12 diameter for self-drilling and self-tapping.

2.3.2.2 Bolts

Provide not less than 6 mm 1/4 inch diameter, shouldered or plain shank as required, with proper nuts.

2.3.2.3 Automatic End-Welded Studs

Provide shouldered type with a shank diameter of not less than 5 mm 3/16 inch and cap or nut for holding covering against the shoulder.

2.3.2.4 Explosive Driven Fasteners

Provide fasteners to be driven with explosive actuated tools and with a shank diameter of not less than 13 mm 1/2 inch for fastening to steel and not less than 25 mm 1 inch for fastening to concrete.

2.3.2.5 Rivets

Blind rivets must be aluminum with 5 mm 3/16 inch nominal diameter shank or stainless steel with 3 mm 1/8 inch nominal diameter shank. Rivets must be threaded stem type if used for other than fastening trim. Rivets with

hollow stems must have closed ends.

2.3.3 Sealant

Elastomeric type containing no oil or asphalt. Exposed sealant must cure to a rubberlike consistency. Concealed sealant must be the non-hardening type. Seam sealant must be factory-applied, non-skinning, non-drying, and must conform to the roofing manufacturer's recommendations. Do not use silicone-based sealants in contact with finished metal panels and components unless approved otherwise by the Contracting Officer.

2.3.4 Sealant Tape

Polyvinyl chloride closed cell foam tape or composed of 99 percent solids in a base of butyl polyisobutylene rubber with the following properties and characteristics:

a. Webbing and Elongation: 100 percent minimum at 25 degrees C 77 degrees F

b. Adhesion: Excellent to surfaces used

c. U-V light exposure: No effect

d. Ozone: No effect

e. Weathering: 1000 hours in QUV Test Apparatus - Excellent, no cracking, bleeding, or significant changes.

f. Moisture Transmission: 0.05 to 0.15 grams per 62500 square mm 100 square inches in 24 hours.

g. Service Temperature Tests: Bending over 13 mm 1/2 inchmandrel at minus 50 degrees C minus 60 degrees F with no cracking. Expose sealed typical metal lap joint to plus 176 degrees C plus 350 degrees F for 24 hours with no significant loss of original properties.

h. Reaction to Metals: Non-corrosive to aluminum

[2.4 THERMAL INSULATION

****

NOTE: Include insulation in appropriate Section; use this paragraph if a Division 07 Section is not included in project specifications. Insulation must meet minimum requirements in ASHRAE 90.1. Most manufacturers recommend batts with minimum thickness of 38 mm 1-1/2 inches for standing seam systems to minimize condensation on underside of roofing sheets and for sound attenuation. Spacer blocks should be required with insulation. 100 mm 4 inches (R 25) is the recommended maximum thickness; thicker insulation when compressed with thermal spacer/block affects lay of panel and setting of attachment clips over area of compressed insulation.

****

Flexible blanket, rigid, or semi-rigid faced[with a flexible vapor retarder]. Insulation and facing must have a flame-spread rating of 50 or

less in accordance with ASTM E84.[Vapor retarder facing must have a permeance rating of 0.05 perm or less.] Provide a thermal resistance "R" value of [____] or more.[Exposed insulation must have a white nondusting and nonshedding finish.] Facings[and finishes] must be factory-applied.

]2.5 LINER PANELS

Fabricate liner panels of the same material as roof panels, and formed or patterned to prevent waviness and distortion. Liner panels must have a factory applied, 0.025 mm one mil thick minimum painted coating on the inside face, and a prime coat on the liner side.

PART 3 EXECUTION

3.1 EXAMINATION

Do not use building construction materials that show visible evidence of biological growth.

Examine surfaces to receive standing seam aluminum roofing and flashing. Provide plumb and true surfaces, clean, even, smooth and as dry as possible. Ensure that surfaces are free from defects and projections which might affect the installation. Report unsuitable conditions to Contracting Officer.

3.2 PROTECTION OF DISSIMILAR METALS

****

NOTE: Galvanized steel will deteriorate in humid conditions, and project locations with Environmental Severity Classifications (ESC) of C3 thru C5 and should be considered a dissimilar metal unless it is known that the contact surface will remain dry and free from condensation. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations. Wood which has been pressure treated will also react with aluminum. Provide protection if aluminum could contact treated wood.

****

Where an aluminum component is in contact with, fastened to, or contacted by drainage from dissimilar metals other than stainless steel, give such dissimilar metals one of the following treatments:

a. A heavy brush coat of primer followed by two coats of aluminum metal and masonry paint.

b. A heavy coat of alkali-resistant bituminous paint.

c. Separate contact surfaces with non-absorptive tape or gasket.

3.2.1 Contact with Masonry

Where aluminum is in contact with masonry, concrete, or plaster, apply a heavy coat of alkali-resistant bituminous paint.

3.2.2 Contact with Wood

Where aluminum is in contact with wood or other absorptive material subject to wetting, or with wood treated with a preservative not compatible with aluminum, seal joints with sealing compound and apply one heavy brush coat of aluminum pigmented bituminous paint.

3.3 INSTALLATION

Install in accordance with approved manufacturer's erection instructions shop drawings, and diagrams, except as specified otherwise herein. Submit manufacturer's printed installation manual/instructions and standard details. Provide panels in full and firm contact with clips. Obtain approval prior to installation on prefinished panels cut in the field, and factory applied coverings or coatings that were repaired after being abraded or damaged during handling or installation. Make repairs with material of same color as weather coating. Completely seal openings through panels. Correct defects or errors in materials in an approved manner. Replace materials which cannot be corrected in an approved manner with new materials. Provide molded closure strips where indicated and where necessary for weathertight construction. Use shims as required to ensure clip line is true. Use a spacing gage at each row of panels to ensure that panel width is not stretched or shortened.

3.3.1 Roof Panels

Apply roofing panels with standing seams parallel to slope of roof. Provide roofing panels in full lengths from ridge to eaves (top to eaves on shed roofs), with no transverse joints except at the junction of ventilators, curbs, skylights, chimneys, and similar openings. Form interlocking rib type panel seams in the field with an automatic mechanical seamer approved by the manufacturer. Attach panels to structure with concealed clips which are incorporated into the panel seams. Clip attachment must allow roof to move freely and independently of the structure, except at fixed points as indicated.

[3.3.2 Insulation Installation

****
NOTE: For applications where permeability is a critical consideration, specify sealing of the insulation joints or other methods of providing continuity of the vapor retarder. Review overall roof construction to assure permeability is consistent with requirements specified for the vapor retarder.
****

Install between covering and supporting members to present a neat appearance. Fold and staple and tape seams unless approved otherwise by the Contracting Officer.

3.3.2.1 Rigid or Semi-Rigid Insulation

Install in areas where insulation is exposed to view. Fasten securely without loose joints or unsightly sags.

3.3.2.2 Blanket Insulation

May be used in concealed locations. Lap facing at joints and fasten in a manner that will provide tight joints.

]3.3.3 Flashings

****

NOTE: In high winds, metal will vibrate and fatigue at fasteners on "normal" spacings. For this reason, cleated (blind fastened) flashings are not acceptable, and attachment at 100 to 150 mm 4 to 6 inches on center is customary. Flashing should not extend more than 25 mm 1 inch beyond a support or fastener.

****

Provide flashing and related closures and accessories in connection with preformed metal panels[as indicated and] as necessary to provide a weathertight installation. Install flashing to ensure positive water drainage away from roof penetrations. Flash and seal roof at ridge, eaves and rakes, at projections through roof, and elsewhere as necessary. Accomplish placement of closure strips, flashing, and sealing material in an approved manner that will ensure complete weathertightness. Details of installation which are not indicated must be in accordance with the NRCA CONDET, SMACNA 1793, AA ASM-35, panel manufacturer's printed instructions and details of the approved shop drawings. Installation must allow for expansion and contraction of flashing.

3.3.4 Flashing Fasteners

****

NOTE: In high winds, metal will vibrate and fatigue at fasteners on "normal" spacings. For this reason, cleated (blind fastened) flashings are not acceptable, and attachment at 100 to 150 mm 4 to 6 inches on center is customary. Flashing should not extend more than 25 mm 1 inch beyond a support or fastener.

****

Fastener spacings must be in accordance with the panel manufacturer's recommendations and as necessary to withstand the indicated design loads. Install fasteners in roof valleys as recommended by the manufacturer of the panels. Install fasteners in straight lines within a tolerance of 13 mm 1/2 inch in the length of a bay. Drive exposed penetrating type fasteners normal to the surface and to a uniform depth to seat gasketed washers properly and drive so as not to damage factory applied coating. Exercise extreme care in drilling pilot holes for fastenings to keep drills perpendicular and centered. Do not drill through sealant tapes. After drilling, remove metal filings and burrs from holes prior to installing fasteners and washers. Torque used in applying fasteners must not exceed that recommended by the manufacturer. Remove panels deformed or otherwise damaged by over-torqued fastenings and provide new panels.

3.3.5 Closure/Closure Strips

Set closure/closure strips in joint sealant material.

3.4 CORRECTION OF DEFICIENCIES

Where any form of deficiency is found, take additional measures as deemed necessary by the Contracting Officer to determine the extent of the deficiency and perform corrective actions as directed by the Contracting Officer.

3.5 CLEANING

Clean exposed sheet metal work at completion of installation. Remove metal shavings, filings, nails, bolts, and wires from roofs on completion to prevent discoloration and harm to the panels and flashing. 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 must be free of dents, creases, waves, scratch marks, and solder or weld marks.

[3.6 MANUFACTURER'S FIELD INSPECTION

****

NOTE: Include this paragraph when manufacturer's inspection of work is required. Use bracketed option in second paragraph to specify minimum number of required visits. The minimum and default is three visits during installation. To help determine if more than three visits should be specified, divide the total project roof area in squares by 100 and round to the nearest whole number. Coordinate this requirement with Section 01 45 00 QUALITY CONTROL, paragraph QUALITY CONTROL (QC) SPECIALISTS - Experience Matrix.

****

The roofing material manufacturer's technical representative must visit the work site to inspect ongoing work. Inspections are to include observing installation technique and verifying the quality of work-in-place for compliance with the manufacturer's instructions. Deficiencies identified by the manufacturer's technical representative must be corrected and re-inspected by the manufacturer's technical representative.

3.6.1 Frequency

The manufacturer's technical representative must visit the work site to inspect and document ongoing work a minimum of [three][_____] separate occasions during the course of the installation. One visit must occur during the first 20 squares of installation, one at substantial completion of the roof work, and all others during different periods of installation. Notify the Contracting officer a minimum of 5 working days prior to each visit by the manufacturer's technical representative.

3.6.2 Field Inspection Report

Document inspection results in a report prepared and signed by the manufacturer's technical representative for each visit. Submit the report to the Contracting Officer with the contractor's daily Quality Control report. The manufacturer's field inspection report must include a description of ongoing work observed and whether the inspected work was satisfactory or unsatisfactory. The final report must include

certification by the manufacturer's technical representative that the work was performed in accordance with the manufacturer's instructions and contains no deficiencies. Submit the final manufacturer's field inspection report to the Contracting Officer within 5 working days of the final visit.

]3.7 COMPLETED WORK

Completed work must be plumb and true without oil canning, dents, ripples, abrasion, rust, staining, or other damage detrimental to the performance or aesthetics of the completed roof assembly.

3.8 INFORMATION CARD

For each roof, provide a typewritten card, laminated in plastic and framed for interior display or a photoengraved 0.8 mm thick 0.032 inch thick aluminum card for exterior display. Card to be 220 by 280 mm 8 1/2 by 11 inches minimum and contain the information listed on Form 1 at end of this Section. Install card near point of access to roof, or where indicated. Provide an electronic copy of the Information Card to the Contracting Officer's Representative.

3.9 SCHEDULE

Some metric measurements in this Section are based on mathematical conversion of English unit measurements, and not on metric measurement commonly agreed to by the manufacturers or other parties. The English and metric units for the measurements shown are as follows:

PRODUCTS	ENGLISH UNITS	METRIC UNITS
a. Sheet Aluminum	0.040 inch	1.0 mm
b. Panels	12 inches	300 mm
- vertical legs	2 inches	50 mm
- stiffening ribs	4 inches	100 mm
c. Screws	No. 14	0.242 mm
	No. 12	0.216 mm
d. Bolts	1/4 inch	6 mm
e. Studs	3/16 inch	5 mm
f. Fasteners	1/2 inch	13 mm
	One inch	25 mm
g. Rivets	1/16 inch	5 mm
	1/8 inch	3 mm

3.10 FORM ONE

FORM 1 - PREFORMED STEEL STANDING SEAM ROOFING SYSTEM COMPONENTS

1. Contract Number:

2. Building Number & Location:

3. NAVFAC Specification Number:

4. Deck/Substrate Type:

5. Slopes of Deck/Roof Structure:

6. Insulation Type & Thickness:

7. Insulation Manufacturer:

8. Vapor Retarder: ( )Yes ( )No

9. Vapor Retarder Type:

10. Preformed Steel Standing Seam Roofing Description:

a. Manufacturer (Name, Address, & Phone No.):
b. Product Name: c. Width: d. Gage:
e. Base Metal: f. Method of Attachment:

11. Repair of Color Coating:

a. Coating Manufacturer (Name, Address & Phone No.):
b. Product Name:
c. Surface Preparation:
d. Recoating Formula:
e. Application Method:

12. Statement of Compliance or Exception:_____
_____
_____

13. Date Roof Completed:

14. Warranty Period: From_____ To_____

15. Roofing Contractor (Name & Address):

16. Prime Contractor (Name & Address):

Contractor's Signature _____ Date:

Inspector's Signature _____ Date:

-- End of Section --