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ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

SECTION 07550

MODIFIED BITUMINOUS MEMBRANE ROOFING

09/02

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

NOTE: This guide specification covers requirements for modified bitumen sheet roofing, both APP modified for torching and SBS modified for hot mopping, with a minimum slope of one in 48. This guide specification does not include the structural roof deck, insulation, or sheet metal fascias, gravel stops, and flashings. Acids, hydrocarbons, oil, and cooking greases attack modified sheet roofing. When these contaminants may be a problem on a roof, contact modified bitumen sheet manufacturers for specific recommendations.

NOTE: On the drawings. show:

1. Roof-penetrating components such as roof drains and vents. Do not place within 450 mm of each other or from toe of cant strip at juncture of roof and wall or other vertical surface.
2. Roof drains. Provide with approved clamping rings and removable large dome strainers.
3. Roof-mounted equipment. Mount on curbs or structural supports of sufficient height to accommodate flashings and installation of roofing under the equipment. Provide circular structural supports (pipe columns) to greatest extent practicable to permit use of circular collars with flashing flanges and umbrella flashing with clamping rings. Do not allow curbs to restrict drainage of

water from roof.

4. Expansion joints in roofing. Provide at each expansion joint in structure. Place on curbs above water line. Do not restrict drainage of water from roof.

5. Area dividers in roofing:

a. At high points where practicable Do not obstruct drainage of water from roof. Place on curbs above water line.

b. Where roof deck changes direction and where substrate materials change.

c. Uniformly space not over 60 meters apart on section of roof that exceeds 60 meters in length or width.

d. At each intersection where L- or T-shaped roof deck changes direction.

e. At difference in elevation between adjoining decks.

6. Details for items mounted on or penetrating roof membrane and at points requiring atypical flashing; use isometric drawings to clearly indicate intersections of different types of flashings.

7. Slope of roof with directional arrows.

8. Wood nailers for backnailing of felts on non-nailable deck:

a. Spaced no more than 6400 mm apart, same thickness as insulation, and at right angles to slope on decks with insulation.

b. Spaced no more than 6400 mm apart, embedded flush with deck top surface, and parallel to slope on decks without insulation.

c. At right angles to roof slope of ridged roofs, spaced and installed as for decks with or without insulation, as applicable.

9. Live load limits of roof construction.

10. Roof walkways for traffic areas and access to mechanical equipment. Provide openings in walkways to permit drainage of water from roof.

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

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.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 834 (1999) Fire resistance tests - Elements of building construction

ITALIAN LAWS AND NORMS (D.M.)

D.M. 26/6/1984 Classification of reaction to fire and ratification of materials for fire prevention.

D.M. L.P. 16/01/1996 Technical norms related to safety criteria for building constructions, loads and live loads

ITALIAN NATIONAL ASSOCIATION FOR UNIFICATION OF STANDARDS (UNI)

NOTE: A UNI Norm is a technical normative recognized as Italian Law, submitted by a private organization "Ente Nazionale Italiano di Unificazione" for Italy and is available only in the Italian language. It is the National Standard.

UNI 4157 (1987) Building - Bitumen for roofing - Sampling and acceptance limits

UNI 4163 (1959) Waterproofing for roofs - Bitumen - Determination of the penetration index of

	bitumen
UNI 8202-1	(1981) Building - Water proof sheets - Generalities for test methods
UNI 8202-7	(1981) Building - Water proof sheets - Determination of areic mass
UNI 8202-25	(1984) Building - Water proof sheets - Determination of fire reaction
UNI 8202-32	(1988) Building - Water proof sheets - Determination of joint fatigue resistance
UNI 8490-3	(1984) Aqueous dispersions of polymers and copolymers - Test methods - Determination of viscosity by the Brookfield rotational viscometer
UNI 8898-3	(1987) Polimeric water proof sheets - Elastomeric reinforced sheets - Characteristics and acceptance limits

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures." Refer to paragraph entitled "Quality Assurance" for further submittal requirement explanation.

NOTE: Where a "G" in submittal tags follows a submittal item, it indicates Government approval for that item. Add "G" in submittal tags following any added or existing submittal items deemed sufficiently critical, complex, or aesthetically significantly to merit approval by the Government. Submittal items not designated with a "G" will be approved by the QC organization.

SD-03 Product Data

Modified bitumen sheet G

Felts

Primer

Asphalt roof cement

Fasteners

NOTE: Delete "Coating" when mineral granules are

specified.

[Coating]

Roof insulation

[Moisture release vents]

**NOTE: Include paragraph or bracketed requirement
when hot-mopped membranes are used or base sheets
are hot-mopped to non-nailable substrates.**

[asphalt]

SD-07 Certificates

Qualification of manufacturer

Qualification of applicator

Warranty

SD-08 Manufacturer's Instructions

Torches

Modified bitumen sheet

Felts

Primer

Asphalt roof cement

Fasteners

**NOTE: Delete "Coating" when mineral granules are
specified.**

[Coating]

Flashings

**NOTE: Include paragraph or bracketed requirement
when hot-mopped membranes are used or base sheets
are hot-mopped to non-nailable substrates.**

[Asphalt]

Cold weather installation

SD-11 Closeout Submittals

Information card

Instructions to Government personnel

1.3 QUALITY ASSURANCE

1.3.1 Product Data Requirements

Submit data for the roof insulation and modified bitumen sheet as required below:

1.3.1.1 Roof Insulation Product Data Requirements

Submit all data required by Section 07220, "Roof and Deck Insulation," together with requirements of this section. Data shall include written acceptance by the roof membrane manufacturer of the insulation provided.

1.3.1.2 Modified Bitumen Sheet Product Data Requirements

Manufacturers published catalog data shall include the following information for each sheet type specified. This information shall be presented in the same units of measure stated in this specification and as referenced in UNI 8202-1 for standard sampling and testing of sheets, UNI 8202-7 for Net Mass requirements, UNI 8202-32 for cycling joint fatigue resistance and UEATc directives.

a. Dimensions and Weight

- (1) Thickness
- (2) Net Mass (Weight)

b. Physical and Mechanical Properties

- (1) Sheet type
- (2) Load strain properties
- (3) Ultimate elongation (fiberglass reinforcing only)
- (4) Tear strength
- (5) Low temperature flexibility
- (6) Dimensional stability
- (7) Compound stability
- (8) Granule embedment

c. Performance

- (1) Cyclic joint displacement

1.3.2 Manufacturer's Instruction Requirements

Include detailed application instructions and standard drawings altered as required by these specifications for [torches,] [modified bitumen sheet,]

[felts,] [primer,] [fasteners,] [coating,] [asphalt roof cement,]
[flashings,] [asphalt,] and [cold weather installation]. Explicitly
identify in writing, differences between manufacturer's instructions and
the specified requirements.

1.3.3 Certificate Requirements

**NOTE: ICITE (Industrial Central Institute of
Building Technologies) is a body of UEAtc European
Association with the Authority of certifying
products in compliance with the European Market.**

**NOTE: Italian manufacturers do not provide a systems
warranty. They will only certify their materials to
not be defective.**

1.3.3.1 Manufacturers Qualifications Certificates

Certify that the manufacturer of the modified bitumen membrane meets
requirements specified under paragraph entitled "Qualification of
Manufacturer."

1.3.3.2 Applicator Qualifications Certificate

Contractor shall certify that the applicator of the modified bitumen
membrane meets requirements specified under paragraph entitled
"Qualification of Applicator."

1.3.4 Closeout Submittal Requirements

Submit instructions meeting the requirements for Field Quality Control of
paragraph entitled "Instructions of Government Personnel" and include
copies of Material Safety Data Sheets for maintenance/repair materials.
Furnish requirements as specified in paragraph entitled "Information Card"
in PART 3 of this section.

1.3.5 Qualification of Manufacturer

Modified bitumen sheet roofing system manufacturer shall have a minimum of
5 years experience in manufacturing modified bitumen roofing products
specified herein.

1.3.6 Qualification of Applicator

Roofing system applicator shall be approved, authorized, or licensed in
writing by the modified bitumen sheet roofing system manufacturer and shall
have a minimum of three years experience as an approved, authorized, or
licensed applicator with that manufacturer and be approved at a level
capable of providing the specified warranty. The applicator shall supply
the names and locations of 5 projects of similar size and scope that he has

constructed using the manufacturer's roofing products submitted for this project within the previous three years.

1.3.7 Fire Safety

Complete roof covering assembly shall be:

- a. Rated Class 1 in compliance with D.M. 26/6/1984 and with requirements of UNI 8202-25; and
- b. Be listed as part of Fire-Classified roof deck construction in accordance with ISO 834; and
- c. Be acceptable in all respects by the Contracting Officer.

1.3.8 Wind Uplift

NOTE: Italian roofing materials manufacturers do not test their materials for wind uplift. The fasteners are the only items tested (for pull-out capacity). The wind pressure varies from one region of Italy to another. Refer to wind zone maps and category tables in D.M. L.P. 16/01/1996, Chapter 7 to determine wind pressure formulas, various exposure coefficients, and site exposure categories for the specific project location. Coordinate wind velocity and pressure requirements with structural engineer design.

Complete roof covering assembly shall comply with Italian law D.M. L.P. 16/01/1996 in regard to wind pressure to be considered in the calculation of live loads to be applied to the structure.

1.3.9 Preroofing Conference

After approval of submittals and before performing roofing and insulation work, including associated work, the Contracting Officer will hold a preroofing conference to review the following:

- a. Drawings and specifications;
- b. Procedure for the roof manufacturer's technical representative's onsite inspection and acceptance of the roofing substrate, roof insulation, and installation of the roofing in accordance with the roof system warranty, the name of the manufacturer's technical representatives, the frequency of the onsite visits, copies of the roof status reports from the technical representatives to roof manufacturer, 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; and

d. Safety requirements.

Preroofing conference shall be attended by the Contracting Officer, the Contractor and personnel directly responsible for the installation of roofing and insulation, flashing and sheet metal work, [[mechanical] [and] [electrical] work], and representative of the roofing materials manufacturer. Before beginning roofing work, confirm in writing the resolution of conflicts among those attending the preroofing conference.

1.3.10 Field Samples and Tests

The Government reserves the right to sample roofing materials at random from the products delivered to the job site and test them to verify the products either conform to the referenced specifications. Products which do not conform shall be removed from the job site and replaced with new products that conform to the referenced specification.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery

**NOTE: Include paragraph or bracketed requirement
when hot-mopped membranes are used or base sheets
are hot-mopped to non-nailable substrates.**

Deliver materials in manufacturers' original unopened containers and rolls with labels intact and legible. Ship modified bitumen sheet rolls stacked vertically on pallets wrapped with shrink wrap or shrink bags. Pallets to be surfaced with a continuous smooth surface to avoid damage to ends of rolls. Mark and remove wet or damaged materials from the site. Where materials are covered by a referenced specification, the container shall bear the specification number, type, and class, as applicable. [Labels for roofing asphalt shall indicate asphalt type, FP [Flash Point], FBT [Finished Blowing Temperature], and EVT [Equiviscous Temperature], that is, the temperature at which the viscosity is either 125 centistokes or 75 centipoise when tested in accordance with UNI 8490-3.] Deliver materials in sufficient quantity to allow work to proceed without interruption.

1.4.2 Storage

Protect materials against moisture absorption. Store roll materials on end on clean raised platforms or pallets one level high in dry locations with adequate ventilation, such as an enclosed building or closed trailer. Do not store roll materials in buildings under construction until concrete, mortar, and plaster work is finished and dry. Maintain roll materials at temperatures above 10 degrees C for 24 hours immediately before application. Do not store materials outdoors unless approved by the Contracting Officer. Completely cover felts stored outdoors, on and off roof, with waterproof canvas protective covering. Do not use polyethylene sheet as a covering. Tie covering securely to pallets to make completely

weatherproof and yet provide sufficient ventilation to prevent condensation. Do not store more materials on roof than can be installed the same day and remove unused materials at end of each days work. Distribute materials temporarily stored on roof to stay within live load limits of the roof construction.

1.4.3 Handling

Select and operate material handling equipment so as not to damage applied roofing. Prevent damage to edges and ends of roll materials.

1.5 ENVIRONMENTAL REQUIREMENTS

Do not install roofing system when air temperature is below 4 degrees C, during any form of precipitation, including fog, or when there is ice, frost, moisture, or any other visible dampness on the roof deck. Provide manufacturer's printed directions for installation during cold weather conditions.

1.6 SEQUENCING

Coordinate the work with other trades to ensure that components which are to be secured to or stripped into the roofing system are available and that flashing and counter flashing are installed as the work progresses.

1.7 WARRANTY

NOTE: The General Contractor will provide a specific warranty for the entire roof waterproofing system/assembly. There are no industry standard forms; each Contractor issues its warranty differently, i.e. letterhead style letter that describes the particular roofing system installed. The warranty generally covers a defined period of time, usually 10 years. This warranty covers the risks against any kind of leakage or deterioration or defect that can affect the roof waterproofing system.

Provide the Contractor's standard form written warranty for the roof waterproofing system/assembly. The warranty shall run directly to the Government. In no event shall the warranty period be less than 10 years from the date of the Government's acceptance of the work, notwithstanding roofing applicator's or manufacturer's unpaid invoices for installation, supplies, or service. The warranty shall state that:

- a. When within the warranty period the roofing system becomes nonwatertight, splits, tears, blisters, or separates at the seams or shows any other evidence of excessive weathering, because of defective materials or workmanship, the repair or replacement of defective materials and correction of defective workmanship shall be the responsibility of the manufacturer; and

- b. When the Contractor fails to perform repairs within 72 hours of notification, emergency repairs performed by others will not void the warranty.

PART 2 PRODUCTS

2.1 SOURCE MANUFACTURERS

2.1.1 Modified Bituminous Membrane Roofing Systems

The following manufacturers provide both APP and SBS modified bitumen roofing systems and materials that generally comply with these specifications:

IMPER ITALIA S.p.A.
Strada di Lanzo 131
10148 Torino
Tel: 011/2282711
Fax: 011/2262332
www.imper.it

INDEX S.p.A.
V.G. Rossini, 22
37060 Castel D'Azzano (Verona)
Tel: 045/512233
Fax:045/518390

BITUVER
BALSARETTI MODIGLIANI S.p.A.
Via Romagnoli, 6
20146 Milano
Tel: 02/42431
Fax:02/4120325
www.isover.it

2.2 DESCRIPTION OF ROOFING SYSTEM

**NOTE: Delete roofing systems which do not apply.
Delete inapplicable substrates.**

Provide roofing system as described below and capable of passing UNI 8202-1 and UNI 8202-32. Passing results shall show no signs of membrane cracking or interply delamination after conditioning of sample. Conditioning of sample must be in accordance with requirements of UNI 8202-1.

[2.2.1 [SBS] [APP] Modified Bitumen Sheet on Nailable Substrate

**NOTE: Metal deck shall be covered with rigid board
roof insulation to provide a surface for the
modified bitumen sheet roofing. Coordinate these**

requirements with Section 05310, "Steel Decks," to ensure that metal deck is a minimum 0.8 mm thick.

[Substrate: Metal Deck

Components:	Quantity:
Insulation	See subpara. "a" below
Base Sheet (GB)(As required by manufacturer)	1 ply
Mechanical Fasteners	5 per sq. meter
Asphalt	12.5 kg/10 sq. meters
SBS Modified Bitumen Sheet (MB)	1 ply
Asphalt	12.5 kg/10 sq. meters
SBS Modified Bitumen Cap Sheet (RRS)	1 ply

][Substrate: Metal Deck

Components:	Quantity:
Insulation	See subpara. "a" below
Asphalt	See subpara. "b" below
Base Sheet (GB)	1 ply
Mechanical Fasteners	5 per sq. meter
APP Modified Bitumen Sheet (RSA)	1 ply
Top Surfacing	See subpara. "c" below

]

- [a. Roof insulation shall conform to the requirements specified in Section 07220, "Roof and Deck Insulation."]
- [b. Quantity of asphalt shall be in accordance with modified bitumen sheet manufacturer's requirements.]
- [c. If not factory-applied, protective coating shall be in conformance with modified bitumen sheet manufacturer's requirements.]

][2.2.2 [APP] [SBS] Modified Bitumen Sheet on Non-Nailable Substrate

NOTE: Include one or both of these system descriptions, as applicable, when roofing membrane is applied directly to substrate and not over roof insulation.

[Substrate: Poured-in-Place Concrete

Components:	Quantity:
Asphalt Primer	3 liters/10 sq. meters
Asphalt	Spot-mop
Ventilating Base Sheet (VB)	1 ply
APP Modified Bitumen Sheet (RSA)	1 ply
Top Surfacing	See subpara. "a" below

]

- a. If not factory-applied, protective coating shall be in conformance with modified bitumen sheet manufacturer's requirements.

][Substrate: Poured-in-Place Concrete

Components:	Quantity:
Asphalt Primer	3 liters/10 sq. meters
Asphalt	12.5 kg/10 sq. meters
Base Sheet (GB)	1 ply
Asphalt	12.5 kg/10 sq. meters
SBS Modified Base Sheet (MB)	1 ply
Asphalt	12.5 kg/10 sq. meters
SBS Modified Bitumen Cap Sheet (RSS)	1 ply

]2.3 MATERIALS

[2.3.1 Asphalt

NOTE: Include paragraph or bracketed requirement when hot-mopped membranes are used or base sheets are hot-mopped to non-nailable substrates.

Include requirements for temporary roofing and flashing when construction will require considerable work on roof, such as, installing cooling towers, antennas, pipes, ducts, solar collectors, or other equipment, and temporary roofing is considered necessary to ensure that permanent roofing is not damaged during construction.

NOTE: The following table data is based on ASTM D 312, Type IV asphalt. Modify as required for differing project requirements.

UNI 4163, suitable for use on slopes from 2 to 50 percent, with the following physical requirements:

<u>Property</u>	<u>Minimum</u>	<u>Maximum</u>
Softening Point	99 deg. C	107 deg. C
Flash Point	260 deg. C	...
Ductility at 25 deg. C	150 mm	...
Solubility in trichloroethylene	99 percent	...

2.3.2 Modified Bitumen Sheet and [Felts]

Provide all field sheets of the roofing membrane with the same type reinforcing material.

NOTE: Delete roofing sheet materials which are not applicable to the roofing system specified in paragraph entitled "Description of Roofing System."

2.3.2.1 Felt Base Sheet - GB

NOTE: Base sheet material is equivalent to ASTM D 4601, Type II non-perforated. Modify characteristics as needed for project requirements.

Asphalt impregnated and coated glass fiber base sheet, without perforations. Sheet shall be uniformly impregnated and coated with asphalt, free of visible defects such as holes, ragged or untrue edges, breaks, cracks, tears, and protrusions, and have the following physical requirements:

Breaking strength (minimum)	7.7 kN/m
Pliability at 13 mm radius	0 failures
Net dry mass (average)	756 g/sq. m
Moisture (max. at time of mfg)	1.0 percent
Asphalt (minimum)	342 g/sq. m

2.3.2.2 Felt Ventilating Base Sheet - VB

NOTE: Ventilating base sheet material is equivalent to ASTM D 4897, Type II with perforations. Modify characteristics as needed for project requirements.

Heavy-duty asphalt-coated glass-fiber venting base sheet, with the glass mat impregnated such that no white spots show, with coating applied to each side to the edges of the sheet. Top side of sheets shall be surfaced with

mineral surfacing to prevent sticking to packaging and bottom side shall be surfaced with coarse mineral matter, embedded in the asphalt coating. Sheet shall be uniformly impregnated and coated with asphalt, free of visible defects such as holes, ragged or untrue edges, breaks, cracks, tears, and protrusions, except for required holes, and have the following physical requirements:

Breaking strength (minimum)	7.7 kN/m
Pliability at 13 mm radius	2 failures in 10 tests
Net dry mass (average)	2.7 kg/sq. m
Moisture (max. at time of mfg)	1.0 percent
Asphalt (minimum)	586 g/sq. m
Diameter of holes	25 mm
Spacing of holes	50 mm to 100 mm on center each way

2.3.2.3 SBS Modified Bituminous Base Sheet - MB

NOTE: SBS sheet material is equivalent to Grade S smooth surfaced, Type II reinforcement, ASTM D 6162 combination polyester/glass fiber, [ASTM D 6163 glass fiber], and [ASTM D 6164 polyester]. Modify or add characteristics as needed for project requirements.

SBS (Styrene Butadiene Styrene) modified bituminous sheet materials reinforced with a combination of polyester fabric and glass fiber [polyester fabric][glass fiber] reinforcement, manufactured by saturating the reinforcement with SBS modified bituminous coating on both sides, smooth surfaced. The SBS coating material may be compounded with a fine mineral stabilizer. Sheet material shall be fabricated for application by heat welding (torching) and shall have the following minimum physical requirements:

Thickness (minimum)	2.2 [2.9] mm
Net mass unit area (minimum)	2.8 [3.3] [3.9] kg/sq. m
Bottom coating thickness	1.0 mm
Elongation at -18 +/- 2 deg. C	2 [20] percent
Elongation at 23 +/- 2 deg. C	4 [50] percent
Tear Strength at 23 +/- 2 deg. C	400 [311] [489] N
Low temperature flexibility (maximum)	-20 deg. C
Dimensional stability	0.5 percent

2.3.2.4 SBS Modified Bitumen Cap Sheet - RSS

NOTE: SBS sheet material is equivalent to Grade G granule surfaced, Type II reinforcement, ASTM D 6162 combination polyester/glass fiber, [ASTM D 6163 glass fiber], and [ASTM D 6164 polyester]. Modify characteristics as needed for project requirements.

SBS (Styrene Butadiene Styrene) modified bituminous sheet materials reinforced with a combination of polyester fabric and glass fiber [polyester fabric][glass fiber] reinforcement, manufactured by saturating the reinforcement with SBS modified bituminous coating on both sides, smooth surfaced on the bottom side and mineral granular surfaced on the weather side. The SBS coating material may be compounded with a fine mineral stabilizer. Sheet material shall be fabricated for application by heat welding (torching) and shall have the following minimum physical requirements:

Thickness (minimum)	2.4 [3.3] mm
Net mass unit area (minimum)	4.4 kg/sq. m
Bottom coating thickness	1.0 mm
Elongation at -18 +/- 2 deg. C	2 [20] percent
Elongation at 23 +/- 2 deg. C	4 [50] percent
Tear Strength at 23 +/- 2 deg. C	400 [310] [490] N
Low temperature flexibility (maximum)	-20 deg. C
Dimensional stability	0.5 percent
Granule embedment	2 grams

2.3.2.5 APP Modified Sheet Roofing - RSA

Modified bitumen sheet shall be a prefabricated atactic polypropylene (APP) modified bitumen sheet, 3.8 mm thick minimum, weighing 44 kg/10 sq. meters minimum, monolithic polymer modified matrix containing bitumen, polypropylene, and other resins, with a layer of fiberglass and/or polyester sheet reinforcement. The membrane shall contain a built-in adhesive on the underside so that the membrane and lapped joints are capable of being tack-applied.

2.3.3 Top Surfacing

NOTE: Coordinate surfacing requirements with the type of system specified in paragraph entitled "Description of Roofing System." Factory-applied granule surfacing should be used. Delete bracketed paragraphs below for protective coating and gravel if granules are specified.

Protect modified bitumen roofing system from direct exposure to the weather with one of the following surfacings as recommended by the modified bitumen roofing system manufacturer.

2.3.3.1 Mineral Roofing Granules

Factory applied, requiring no further coating. Granules shall completely obstruct the view of the SBS modified bituminous coating substrate. Three samples, 300 mm by 600 mm size, shall be taken from three different rolls of roofing materials delivered to the site and observed with the naked eye with daylighting as a distance of 900 mm. Material not having the appearance of meeting coverage requirements shall be replaced with specified material immediately.

[2.3.3.2 Protective Coating

The membrane manufacturer's standard protective coating applied in accordance with the roofing membrane manufacturer's printed application instructions.

][2.3.3.3 Gravel

Aggregate surfacing material shall be sized 2 mm to 25 mm mix and of the quantity recommended by the modified bitumen roofing system manufacturer.

][2.3.4 Primer

UNI 4157, roofing manufacturer's recommended asphalt primer suitable for use in roofing, for application to concrete, masonry, metal, and asphalt surfaces.

]2.3.5 Asphalt Roof Cement

UNI 4163, asbestos-free asphalt roof cement for trowel application to roofings and flashings. Provide manufacturer's recommended grades for both horizontal surfaces and vertical surfaces as needed.

2.3.6 Fasteners

Provide factory coated steel fasteners designed for fastening roofing membrane components to substrate, tested by manufacturer for required pullout strength, acceptable to roofing system manufacturer and conforming to wind pressure requirements of D.M. L.P. 16/01/1996. For felts, provide fasteners driven through metal discs, or one piece composite fasteners with heads not less than 25 mm in diameter or 25 mm square with rounded or 0.785 rad tapered corners.

2.3.6.1 [Masonry] [or] [Concrete] Walls and Vertical Surfaces

Provide hardened steel nails with flat heads, diamond shaped points, and mechanically deformed shanks not less than 25 mm long for securing felts, modified bitumen sheets, and metal Items to [masonry] [or] [concrete] walls and vertical surfaces. Use power-driven fasteners only when approved in writing by the Contracting Officer.

2.3.7 Metal Discs (Tin Caps)

Flat noncorrosive fasteners as recommended by the modified bitumen sheet manufacturer's printed instructions and according to wind pressure requirements of D.M. L.P. 16/01/1996; not less than 75 mm in diameter, when using screw type fasteners. Discs shall be formed to prevent dishing or cupping.

[2.3.8 Moisture Release Vents

NOTE: Venting of roof insulation is advisable when vapor retarder is provided beneath insulation. The vapor retarder should be specified in Section 07220, "Roof and Deck Insulation." Coordinate with Section 06100, "Rough Carpentry," to ensure that kerfed wood nailers are specified at edge of roof insulation and placed around periphery. For roofs more than 12000 mm wide, stack venting should be provided to supplement edge venting. Underside ventilation for steel decks should consist of continuous openings 3 to 5 mm wide between adjacent deck units. Coordinate these requirements with appropriate specification sections.

Vents shall be especially manufactured for the purpose of releasing moisture and vapor from the roofing system by heat and pressure. Vents shall be one-way type design to prevent reverse flow of moisture laden air into roofing system. Valve cap shall effectively seal out wind-blown rain and snow and shall not permit water entry if submerged.

]2.3.9 Precast Paver Blocks and Walkboards

NOTE: Use concrete pavers or walkboards as walkways where the roof or areas of the roof are intended to bear foot traffic for maintenance or other purposes once a month or more frequently.

Roof walkways shall be smooth-surfaced precast concrete paver blocks, reprocessed rubber, minimum 13 mm thick, or walkboards compatible with the modified bitumen sheet roofing and as recommended by the modified bitumen sheet roofing manufacturer.

]2.3.10 Roof Insulation Below Modified Bitumen Membrane System

NOTE: If the roofing system contains insulation, coordinate with the appropriate insulation specification section. The insulation specification should include materials and installation up to the substrate on which the base sheet and or membrane is to be installed. Coordinate base sheet attachment (mechanically fastened or mopped) with fire and wind uplift requirements.

Insulation shall be compatible with the membrane as recommended in modified bitumen manufacturer's printed instructions [and as specified in Section 07220, "Roof and Deck Insulation"].

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

Ensure that the following conditions exist prior to application of the roofing materials:

NOTE: Expansion joints should be at least 25 mm thick and should be made of material that will compress to one-half its original thickness under a stress of 175 kPa. Coordinate these requirements with the appropriate specifications section.

- a. [Drains,] [curbs,] [cants,] [control joints,] [expansion joints,] [perimeter walls,] [roof penetrating components,] [and] [equipment supports] are in place.
- b. Surfaces are rigid, dry, smooth, and free from cracks, holes, and sharp changes in elevation. Joints in the substrate are sealed to prevent dripping of bitumen into building or down exterior walls.
- c. The plane of the substrate does not vary more than 6 mm within an area 3 by 3 meters when checked with a 3 meter straight edge placed anywhere on the substrate.
- d. Substrate is sloped as indicated to provide positive drainage.
- e. Walls and vertical surfaces are constructed to receive counter flashing, and will permit nailing of the base flashing materials.

NOTE: Coordinate with Section 06100, "Rough Carpentry," to ensure that waterborne preservative treatment is specified for wood which will be in contact with roofing components.

- f. Treated wood nailers are fastened in place at eaves, gable ends, openings, and intersections with vertical surfaces for securing of felts, edging strips, gravel stops, and roof fixtures. [Embedded nailers are flush with deck surfaces.] [Surface-applied nailers are the same thickness as the roof insulation.]

NOTE: Use cant material in non-supported flashing and wood blocking details (expansion joints, area dividers, and wall/roof intersections where roof deck is not supported by a wall).

- g. Cants are securely fastened in place in the angles formed by walls and other vertical surfaces. The angle of the cant is 0.785 RAD and the height of the vertical leg is not less than nominal 100 mm. Cants are constructed of wood fiberboard roof insulation.

- h. Venting is provided in accordance with the following:
 - (1) [Edge Venting: Perimeter nailers are kerfed across the width of the nailers to permit escape of gaseous pressure at roof edges.]
 - (2) [Underside Venting: Vent openings are provided in steel form decking for cast-in-place concrete substrate.]
 - (3) [Moisture release vents: Holes equal to the outside diameter of vents are provided through the insulation where vents are required.]
- i. [Insulation boards are installed smoothly and evenly, and are not broken, cracked, or curled. Insulation is being roofed over on the same day the insulation is installed.]
- j. [Cast-in-place substrates have been allowed to cure and the surface dryness requirements specified under paragraph entitled "Field Quality Control" have been met.]
- k. [Joints between precast concrete deck units are grouted and leveled.]

3.2 PREPARATION

3.2.1 Protection of Property

3.2.1.1 Protective Coverings

NOTE: Include paragraph or bracketed requirement when hot-mopped membranes are used or base sheets are hot-mopped to non-nailable substrates.

Install protective coverings at paving and building walls adjacent to hoist [and kettles] prior to starting the work. Lap protective coverings not less than 150 mm, secure against wind, and vent to prevent collection of moisture on covered surfaces. Keep protective coverings in place for the duration of the roofing work.

[3.2.1.2 Flame-Heated Equipment

NOTE: Include paragraph or bracketed requirement when hot-mopped membranes are used or base sheets are hot-mopped to non-nailable substrates.

Do not place flame-heated equipment on roof. Provide and maintain a fire extinguisher adjacent to flame-heated equipment and on the roof.

]3.2.1.3 Open Flame Application Equipment

NOTE: Include this requirement when APP modified bitumen sheet roofing is specified in paragraph entitled "Description of Roofing System."

Torches and other open flame equipment shall be specifically designated for use in application of modified bitumen and approved by the modified bitumen sheet manufacturer. Open flame equipment shall not be ignited (burning) when left unattended. Provide and maintain a fire extinguisher adjacent to open flame equipment on the roof. [Apply a base sheet, in accordance with modified bitumen sheet manufacturer's recommendations, to combustible substrates prior to torch-application of modified bitumen membrane.] [Specific requirements for fire watches and burn permits exist. These requirements will be outlined at the prerooting conference.]

]3.2.1.4 Electric-Heated Equipment

Provide adequate electrical service as required by manufacturer of electrical equipment to ensure against damage to equipment and property and to ensure proper application of roofing materials.

3.2.2 Priming of Surfaces

Prime surfaces at the rate of 3 liters per 10 sq. meters or as recommended by modified bitumen sheet manufacturer's printed instructions and allow to dry.

[3.2.2.1 Priming of Concrete and Masonry Surfaces

NOTE: Include this paragraph when roofing and flashing are applied directly to concrete or masonry surfaces.

After surface dryness requirements have been met, coat concrete and masonry surfaces which are to receive base sheet and roofing materials uniformly with asphalt primer. Allow primer to dry prior to application of base sheet, roofing, and [temporary roofing,] flashing.

]3.2.2.2 Priming of Metal Surfaces

Prime flanges of metal edging strips, prior to stripping into roofing system in accordance with modified bitumen manufacturer's printed instructions and allow to dry.

[3.2.3 Heating of Asphalt

NOTE: Include paragraph or bracketed requirement when hot-mopped membranes are used or base sheets are hot-mopped to non-nailable substrates.

Break up solid asphalt on a surface free of dirt and debris. Heat asphalt in kettle designed to prevent contact of flame with surfaces in contact with the asphalt. Kettles shall have visible thermometer and thermostatic controls set to the temperature limits specified herein. Keep controls in working order and calibrated. Use immersion thermometer, accurate within a tolerance of plus or minus one degree C, to check temperatures of the asphalt frequently. When temperatures exceed maximums specified, remove asphalt from the site. Do not permit cutting back, adulterating, or fluxing of asphalt.

]3.3 APPLICATION

Apply roofing materials as specified herein unless specified or recommended otherwise by manufacturer's printed application instructions and approved by the Contracting Officer. Keep roofing materials dry before and during application. Do not permit phased construction. Complete application of roofing in a continuous operation. Begin and apply only as much roofing in one day as can be completed that same day. Maintain specified temperatures for asphalt. Modified Bitumen Base Sheet shall not remain exposed prior to application of the Modified Bitumen Cap Sheet unless approved by the Contracting Officer and supported by the manufacturer's standard written application instructions. [Provide temporary roofing and flashing as specified herein prior to application of permanent roofing system.]

[3.3.1 Temporary Roofing and Flashing

NOTE: Include requirements for temporary roofing and flashing when construction will require considerable work on roof, such as, installing cooling towers, antennas, pipes, ducts, solar collectors, or other equipment, and temporary roofing is considered necessary to ensure that permanent roofing is not damaged during construction.

Provide temporary roofing and flashing where considerable work by other trades, such as installing [cooling towers,] [antennas,] [pipes,] [ducts,] [_____,] is to be performed on the roof or where construction scheduling or weather conditions require protection of the building's interior before permanent roofing system can be installed. Do not install temporary roofing over permanently installed insulation. Provide rigid pads for traffic over temporary roofing.

] [3.3.1.1 Temporary Roofing Membrane

Install 2 plies of UNI 8898-3 fiberglass felts with asphalt in accordance with the application procedures specified [; except spot mop the first ply on cast-in-place concrete decks by brooming felts into 300 mm diameter spots of asphalt spaced 450 mm o.c].

] [3.3.1.2 Temporary Flashing

Install temporary flashing consisting of one ply of ply felt. Place ply felt in a trowel coat of asphalt roof cement and cover with a trowel coat of asphalt roof cement.

][3.3.1.3 Removal

Completely remove temporary roofing and flashing before continuing with application of the permanent roofing system.

][3.3.2 Bitumen Stops

NOTE: Include paragraph or bracketed requirement when hot-mopped membranes are used or base sheets are hot-mopped to non-nailable substrates.

Provide bitumen stops at roof edges, openings, and vertical projections before hot mopped application of the roofing membrane (base sheet and modified bitumen). Do not provide sheet metal bitumen stops. Form bitumen stops of two 450 mm wide strips of organic felt. Attach 225 mm of the width to the roof surface and extend 225 mm beyond the edge. Apply first strip in a 225 mm wide layer of asphalt roof cement and, where nailers are provided, nail on 150 mm spacing 13 mm from the edge. Apply second strip in a 225 mm wide mopping of asphalt. Protect the free portion of each strip from damage throughout the roofing period. After the roofing plies are in place, fold the free portion of each strip over the roofing membrane and embed in a continuous coating of asphalt roof cement and secure with fasteners 75 mm o.c.

][3.3.3 Ventilating Base Sheets

NOTE: Include this paragraph when ventilating base sheets are specified in the paragraph entitled "Description of Roofing System."

Apply ventilating base sheets in accordance with manufacturer's printed application instructions.

][3.3.4 Base Sheet

NOTE: Include this paragraph only if asphalt impregnated and coated glass fiber felt sheet is required. If felt base is not required, delete this paragraph in its entirety. Delete first bracketed requirement and include second where base sheet is applied to nailable substrate. Apply felts at right angles to roof slope, except on insulated roofs where nailers (insulation stops) have been applied at right angles to slope and on decks sloped one in

12 or more, apply felts parallel to roof slope.
Include requirements for applying felts to
barrel-type roofs when applicable.

Apply base sheets in shingle fashion [in hot mopping of asphalt]. [On nailable substrates, mechanically fasten base sheet in conformance with FM requirements and membrane manufacturer's printed instructions. Where applicable, base sheet may be mechanically fastened in conjunction with insulation to the substrate, in accordance with membrane manufacturers printed instructions.] Apply sheets in a continuous operation. Apply sheets with side laps at a minimum of 50 mm unless greater side lap is recommended by the manufacturer's standard written application instructions. Provide end laps of not less than 150 mm and staggered a minimum of 900 mm. Apply sheets [at right angles to the roof slope so that the direction of water flow is over and not against the laps] [parallel to the roof slope so that prevailing winds are over and not against the laps] [so that plies of sheets extend from eave line on one side of the barrel-type roof and 450 mm over the center line of the crown of the roof. Apply sheets on the other side in the same manner, resulting in twice the normal amount of roofing sheets and asphalt at the crown]. Extend sheets approximately 50 mm above the top of cant strips at vertical surfaces and to the top of cant strips elsewhere. Trim felt to a neat fit around vent pipes, roof drains, and other projections through the roof. Application shall be free of ridges, wrinkles, and buckles.

][3.3.5 Hot-Mopping of Base Sheets

NOTE: Include the bracketed requirement when hot-mopped bituminous membranes are used with felt base sheets. Felt base sheets are required when hot-mopped membranes are applied over non-nailable substrates.

Provide hot asphalt for embedding of modified bitumen base sheets [, including felt base sheets,] to the [insulation] [substrate]. Apply base sheets immediately following application of hot asphalt. Do not work ahead with asphalt. Asphalt shall be completely fluid, with mop temperatures within the specified EVT range, at the instant base sheets come into contact with asphalt. Application of bitumen between plies shall be such as to provide full, continuous, uniform coverage and complete penetration of asphalt into the sheet above and below. Embed sheets in asphalt. As sheets are being rolled into hot asphalt, immediately and thoroughly squeegee, roll, or broom down to eliminate trapped air and to provide tight, smooth laminations without wrinkles, buckles, kinks, and fish mouths. Completed system shall be free of air pockets and blisters.

][3.3.5.1 Temperature Limitations for Asphalt

NOTE: Include paragraph or bracketed requirement when hot-mopped membranes are used or base sheets

are hot-mopped to non-nailable substrates.

Heat and apply asphalt at the temperatures specified below unless specified otherwise by manufacturer's printed application instructions. Use thermometer to check temperature during heating and application. Have kettle attended constantly during heating process to ensure specified temperatures are maintained. Do not heat asphalt above its FBT. Do not heat asphalt between 260 and 274 degrees C for longer than four consecutive hours. Do not heat asphalt to the flash point (FP). Apply asphalt and embed base sheets when temperature of asphalt is within plus or minus 14 degrees C of the equiviscous temperature (EVT). Before heating and application of asphalt refer to the asphalt manufacturer's label or bill of lading for FP, FBT, and EVT of the asphalt used.

]3.3.6 Modified Bitumen Sheets

Sheets shall be watertight and visually free of pinholes, particles of foreign matter, undispersed raw material, or other manufacturing defects that might affect serviceability. Edges of seams shall be straight and flat so that they may be seamed to one another without forming fish mouths or wrinkles.

[3.3.6.1 APP Modified Bitumen Sheets

NOTE: Include this paragraph when APP modified bitumen sheet roofing is specified in paragraph entitled "Description of Roofing System."

Torch-on or electric heat-apply fully adhered sheets. Unroll sheets, set in place with 75 mm side laps and 150 mm end laps. Apply heat to underside of roll and 75 mm side lap of preceding roll and fully adhere membrane to the substrate by unrolling the heated portion of the roll onto the substrate. Ensure a minimum flow of modified bitumen of at least 10 mm, not to exceed 25 mm, on side and end laps as the membrane is rolled forward and adhered to the substrate. Care shall be taken so as not to overheat the top surface of the roll. After membrane has been adhered to substrate, check laps with a hot trowel to ensure laps are fully adhered. At areas where full adhesion of the laps are not obtained, reheat and trowel into place so that adhesion of the entire lap is accomplished.

]3.3.6.2 SBS Modified Bitumen Sheets

NOTE: Include this paragraph when SBS modified bitumen sheet roofing is specified in paragraph entitled "Description of Roofing System."

Solid mop top surface of base sheet with hot asphalt at the rate of 12.5 kg/10 sq. meter and embed one layer of roofing membrane into hot asphalt. Roll modified bitumen roofing membrane into place with a flow of hot

asphalt out of side and end laps. Side laps shall be 100 mm and end laps shall be 150 mm or as recommended by the manufacturer. Stagger end laps a minimum of 900 mm. Back mop end laps. Apply roofing in a continuous application. Start installation at the low point of the roof and progress to the high point. Provide tight, smooth laminations without wrinkles, ridges, buckles, kinks, and fishmouths. Completed system shall be free of air pockets, blisters, ridges, fishmouths, and open laps.

]3.3.7 Flashings

Apply metal clad modified bitumen sheet flashing in the angles formed where the roof deck abuts walls, curbs, ventilators, pipes, and other vertical surfaces, in accordance with membrane manufacturer's printed application instructions and where necessary to make the work watertight. Metal flashing collars and cap flashings are specified under Section 07600, "Flashing and Sheet Metal." Do not set metal flashing in hot asphalt.

[3.3.7.1 Flashing at Roof Drain

NOTE: Include this paragraph when interior roof drains are indicated.

Roof drains are specified under Section 15400, "Plumbing Systems." Flashing for roof drains, are specified under Section 07600, "Flashing and Sheet Metal." Extend [base sheet and] modified bitumen sheets to edge of drain bowl opening at the roof drain deck flange in accordance with membrane manufacturer's printed application instructions. Securely clamp base sheet, modified bitumen sheets, and metal roof drain flashing and strip flashing in the flashing clamping ring. Secure clamps so that sheets and metal flashing are free from wrinkles and folds.

]3.3.8 Roof Walkways

Install precast concrete paver block or asphalt plank roof walkways, where indicated, for traffic areas and for access to mechanical equipment, in accordance with the modified bitumen sheet roofing manufacturer's printed instructions. Provide an additional cap sheet under precast concrete paver blocks to protect the roofing.

[3.3.9 Moisture Release Vents

Set vents in a uniform pattern and at a minimum rate of one for each 100 square meters of roof area. Install in strict accordance with manufacturer's instructions.

]3.3.10 Fire Watch

Provide fire watch during torch application and continue for one hour after completion of torch application. Provide at least two 10 liter containers of water and two 7 kg CO2 extinguishers for use during the fire watch.

3.3.11 Clean Up

Remove debris, scraps, containers and other rubbish and trash resulting from installation of the roofing system from job site each day.

3.3.12 Protection of Applied Roofing Against Moisture Absorption

At the end of the day's work and when precipitation is imminent, protect applied modified bitumen roofing system as follows.

[3.3.12.1 Water Cutoffs

NOTE: Include this paragraph when roof insulation is a substrate for the modified bitumen sheet roofing.

Straighten insulation line using loose-laid cut insulation sheets and seal the terminated edge of modified bitumen roofing system with two full width strips of roofing felt set in and coated with asphalt roof cement. One-half width of the strips shall extend up and over the finished roofing and the other half-width extended out onto the bare deck unless recommended otherwise in membrane manufacturer's printed application instructions. [Seal off flutes in metal decking along the cutoff edge.] Pull membrane free or cut to expose the insulation when resuming work, and remove the insulation sheets used for fill-in.

]3.3.12.2 Temporary Flashing for Permanent Roofing

Provide temporary flashing at drains, curbs, walls and other penetrations and terminations of roofing sheets until permanent flashings can be applied. Temporary flashings shall consist of one ply of ply felt applied in a trowel coat of asphalt roof cement applied to a primed surface, and finished with a surface coat of asphalt roof cement. Remove temporary flashing before applying permanent flashing.

3.3.12.3 Temporary Walkways, Runways, and Platforms

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. Use rubber-tired equipment for roofing work.

3.4 FIELD QUALITY CONTROL

Perform field tests in the presence of the Contracting Officer. Notify the Contracting Officer one day before performing tests.

[3.4.1 Test for Surface Dryness

NOTE: Include paragraph or bracketed requirement

when hot-mopped membranes are used or base sheets are hot-mopped to non-nailable substrates.

Before application of base sheets and starting work on the area to be roofed, perform test for surface dryness in accordance with the following:

- a. Foaming: When poured on the surface to which felts are to be applied, one pint of asphalt when heated in the range of 176 to 204 degrees C, shall not foam upon contact.
- b. Strippability: After asphalt used in the foaming test application has cooled to ambient temperatures, test coating for adherence. Should a portion of the sample be readily stripped clean from the surface, do not consider the surface to be dry and do not start application. Should rain occur during application, stop work and do not resume until surface has been tested by the method above and found dry.

]3.4.2 Roof Drain Test

NOTE: Include this paragraph when interior roof drains are indicated. Consult with structural engineer to verify loading capability of roof structural system. Include bracketed requirements where secondary or overflow drains are provided.

After completing roofing but prior to Government acceptance, perform the following test for watertightness. Plug [primary] roof drains and fill with water to edge of drain sump for 24 hours. [Do not plug secondary overflow drains.] To ensure some drainage from roof, do not test all drains at same time. Measure water at beginning and end of the 24-hour period. When precipitation occurs during test period, repeat test. When water level falls, remove water, thoroughly dry, and inspect installation; repair or replace roofing at drain. Repeat test until there is no water leakage.

]3.4.3 Instructions to Government Personnel

Furnish written and verbal instructions on proper maintenance procedures to designated Government personnel. Furnish instructions by a competent representative of the modified bitumen membrane manufacturer and include a minimum of 4 hours on maintenance and emergency repair of the membrane. Include a demonstration of membrane repair, and give sources of required special tools. Furnish information on safety requirements during maintenance and emergency repair operations.

3.5 INFORMATION CARD

For each roof, furnish a typewritten card, laminated in plastic and framed for interior display, or a photoengraved 0.8 mm thick aluminum card for exterior display. Card shall be 220 by 280 mm minimum and shall contain

the information listed on Form 1 located at end of this section. Install card near point of access to roof, or where indicated. Send a photostatic paper copy to LANTNAVFACENGCOM, Code 1613, 1510 Gilbert Street Norfolk, VA 23511-2699.

FORM 1, ROOFING SYSTEM DESCRIPTION

1. Location _____ 2. Bldg. Name _____
3. Bldg. No. _____ 4. Roof Area (SM) _____ 5. Contract No. _____
6. New Construction: () Yes () No 7. Deck Slope: _____
8. Type of Deck:
() Metal () Wood Plank or Plywood
() Cast-In-Place Concrete () Other _____
() Precast/Prestressed Concrete
9. Type of Insulation Board:
() Polyisocyanurate/Composite () Polyisocyanurate Foam
() Polystyrene/Composite () Polystyrene
() Perlite () Mineral Fiber
() Other _____
10. Insulation Manufacturer: _____
11. Insulation Thickness: _____
12. Vapor Treatment: Total coverage () Yes () No
() No Vapor Retarder () Bituminous Vapor Retarder
() One Way Roof Vents () Laminated Kraft Paper
() Other _____
13. Vapor Treatment Manufacturer(s): _____
14. Roofing Type:
() Built-Up (Asphalt) () PIB () TPA
() Built-Up (Coal-Tar) () Modified Bitumen () EPDM
() Metal () CSPE () PVC
() Shingles () Other _____
15. Roofing Manufacturer: _____
16. Roofing Installer/Warrantor: _____
17. Roofing Application Method:
() Bitumen () Fully Adhered () Loose-Laid
() Mechanically Fastened () Torched Ballasted
() Mechanically Fastened/Fully Adhered () Other _____
18. Warranty Period: From _____ To _____
19. Warranty Serial Number: _____
20. Date Roofing Completed: _____ 21. Inspector: _____
22. Prime Contractor Name/Address: _____

Signature: _____ Date: _____

INSTRUCTIONS FOR FORM 1 (Do Not Post)

1. Location: Name of activity as shown on contract.
2. Bldg. Name: As shown on contract or as provided by Contracting Officer.
3. Bldg. Number: As provided by Contracting Officer.
4. Roof Area: Area in square meters of roof for which deck insulation, membrane, etc. are the same. A separate form is required if any part of roof system is different over other areas of the roof.
5. Contract Number: As shown on the contract.
7. Show deck slope.
8. Deck: Check appropriate block.
9. Type of Insulation Board: Check appropriate block.
11. Show minimum thickness of installed insulation.
12. Vapor Treatment: Check appropriate blocks.
13. Show vapor treatment system manufacturer's name.
14. Roofing Type: Check appropriate block.
15. Show roofing manufacturer's name.
16. Roofing Installer's or Contractor's name.
17. Roofing Application Method: Check appropriate block.
18. Warranty Period: Insert start and end dates.
20. Show date roofing was accepted by the Contracting Officer. Warranty period begins on this date.
21. Show Government Inspector's name.
22. Prime Contractor Name/Address/Signature: Must be signed and dated by [QC Manager] [an official of Contracting firm].

-- End of Section --