UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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SECTION 07 11 13

BITUMINOUS DAMPPROOFING
08/11, CHG 1: 05/17

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NOTE: This guide specification covers the requirements for bituminous dampproofing to resist passage of moisture/water in the absence of hydrostatic pressure. It is intended to be used where protection is required against ingress of water by capillary action resulting from occasional exposure to moisture or where reduced transfer of water vapor through the surface is necessary. Use of bituminous dampproofing should be considered for conditions such as the following:

1. Exterior side of exterior concrete or masonry walls enclosing occupied spaces below grade where a head of water or unusually wet soil conditions are not present (use Section 07 12 00, BUILT-UP BITUMINOUS WATERPROOFING when head of water exists).

2. Backside of concrete or masonry retaining walls and stone facing where percolating of water through the wall or facing would produce objectionable staining.

3. Inside surface of single wythe, exterior, furred concrete or masonry walls above grade where reduction of transfer of water vapor through the wall is necessary.

4. Cavity face of interior wythe of masonry cavity walls.

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).

****

PART 1 GENERAL

1.1 REFERENCES

****

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.

****

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

ASTM INTERNATIONAL (ASTM)

ASTM C208	(2012; R 2017; E 2017; E 2019) Standard Specification for Cellulosic Fiber Insulating Board
ASTM C728	(2017a) Standard Specification for Perlite Thermal Insulation Board
ASTM D41/D41M	(2011; R 2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D43/D43M	(2000; R 2012) Standard Specification for Coal Tar Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D226/D226M	(2017) Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D227/D227M	(2003; R 2011; E 2012) Coal-Tar-Saturated

	Organic Felt Used in Roofing and Waterproofing
ASTM D449/D449M	(2003; R 2014; E 2014) Asphalt Used in Dampproofing and Waterproofing
ASTM D450/D450M	(2007; E 2013; R 2013) Coal-Tar Pitch Used in Roofing, Dampproofing, and Waterproofing
ASTM D1187/D1187M	(1997; E 2011; R 2011) Asphalt-Base Emulsions for Use as Protective Coatings for Metal
ASTM D1227	(2013) Emulsified Asphalt Used as a Protective Coating for Roofing
ASTM D4263	(1983; R 2018) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4479/D4479M	(2007; E 2012; R 2012) Asphalt Roof Coatings - Asbestos-Free

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926	Safety and Health Regulations for Construction

1.2 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, 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, Air Force, and NASA 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.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.

****

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.][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-07 Certificates

Materials

1.3 DELIVERY AND STORAGE

Deliver materials in sealed containers bearing manufacturer's original labels. Labels shall include date of manufacture, contents of each container, performance standards that apply to the contents and recommended shelf life. While in storage, do not allow water based bituminous damproofing to freeze.

[1.4 SAFETY AND HEALTH REQUIREMENTS

****

NOTE: Retain this paragraph only if coal-tar pitch materials are used.

****

If coal-tar pitch materials are used, the Contractor shall conform to all OSHA 29 CFR 1926 and General Industry Health Standards as well as state and local standards.

]PART 2 PRODUCTS

****

NOTE: When requiring the hot-application method for dampproofing, use the following paragraph for asphalt. Where dampproofing would be exposed to temperatures of more than 50 degrees C 122 degrees F after application, paragraph ASPHALT should be modified to specify Type III in lieu of Type II; paragraph COAL-TAR PITCH should be deleted, and paragraph FIBROUS ASPHALT should be retained without modification. Paragraph COAL-TAR PITCH should be used when high resistance to acids or salts is required or when hydrostatic pressure below grade is high.

****

[2.1 ASPHALT

ASTM D449/D449M, Type I or Type II.

]2.2 ASPHALT PRIMER

ASTM D41/D41M.

[2.3 CREOSOTE PRIMER

****
NOTE: When cavity walls are to be dampproofed, delete this paragraph.
****

ASTM D43/D43M.

][2.4 COAL-TAR PITCH

****
NOTE: When cavity walls are to be dampproofed, delete this paragraph.
****

ASTM D450/D450M, Type II or Type III.

][2.5 FIBROUS ASPHALT

****
NOTE: Use fibrous asphalt for the cold-application method of dampproofing when applied to the masonry or concrete interior wall wythe surfaces of exterior cavity walls.
****

ASTM D4479/D4479M, Type I for horizontal surfaces, Type II for vertical surfaces.

][2.6 EMULSION-BASED ASPHALT DAMPPROOFING

2.6.1 Fibrated Emulsion-Based Asphalt

****
NOTE: Type II, Class 1 fibrated emulsion-based asphalt is typically used as a protective coating against dampness on interior surfaces above grade and exterior surfaces of concrete, metal and wood above or below grade. Type II, Class 1 is also used as a vapor barrier when applied to interior surfaces.
****

Fibrated emulsion-based asphalt dampproofing shall be cold-applied type conforming to ASTM D1227 Type II, Class 1, asbestos-free, manufactured of refined asphalt, emulsifiers and selected clay, fibrated with mineral fibers. For spray or brush application, emulsion shall contain a minimum of 59 percent solids by weight, 56 percent solids by volume. For trowel application, emulsion shall contain a minimum of 58 percent solids by weight, 55 percent solids by volume.

2.6.2 Non-Fibrated Emulsion-Based Asphalt

****
NOTE: Non-fibrated emulsion-based asphalt is

typically used as a protective coating against dampness on interior surfaces of concrete, metal and wood above or below grade.
****

Non-fibrated emulsion-based asphalt dampproofing shall be cold-applied type conforming to ASTM D1187/D1187M Type II or ASTM D1227 Type III, manufactured of refined asphalt, emulsifiers and selected clay. Asphalt shall contain a minimum 58 percent solids by weight, 55 percent solids by volume.

][2.7 SURFACE PROTECTION

****
NOTE: Use these paragraphs only when dampproofed surface against which backfill is to be placed will be exposed for an extended period of time or will be otherwise subjected to physical damage. Dampproofing material where protective covering is used must be limited to those materials which are applied hot. Heavier felt or mineral-surfaced roofing sheets, fiberboard, or perlite board may be specified as the protective covering where a higher degree of protection is necessary.
****

2.7.1 Saturated Felt

ASTM D226/D226M, Asphalt Saturated, Type I, 6.8 kilogram 15 pound; ASTM D227/D227M, Coal-Tar Saturated.

2.7.2 Protection Board

Wood Fiber Board, ASTM C208, or Perlite Board, ASTM C728.

]PART 3 EXECUTION

3.1 SURFACE PREPARATION

****
NOTE: Coordinate the requirements of this paragraph with other applicable sections, to assure that patching of holes and other operations necessary for providing a suitable base for dampproofing are adequately covered. Particular attention should be directed to the concrete section to assure that concrete surfaces to be dampproofed are specified to be cured by water methods.
****

[Remove or cut form ties and repair all surface defects as required in Section 03 30 00 CAST-IN-PLACE CONCRETE.] Clean [concrete and] masonry surfaces to receive dampproofing of foreign matter and loose particles. Apply dampproofing to clean dry surfaces. Moisture test in accordance with ASTM D4263. If test indicates moisture, allow a minimum of 7 additional days after test completion for curing. If moisture still exists, redo test until substrate is dry.

[3.1.1 Metal Surfaces

Metal surfaces shall be dry and be free of rust, scale, loose paint, oil, grease, dirt, frost and debris.

]3.2 Protection of Surrounding Areas

Before starting the dampproofing work, the surrounding areas and surfaces shall be protected from spillage and migration of dampproofing material onto other work.[Drains and conductors shall be protected from clogging with dampproofing material.]

3.3 APPLICATION

****
NOTE: When cavity walls are to be dampproofed, delete first bracketed requirements and include second bracketed requirements.
****

[Use either hot-application or cold-application method. Use cold-application method in confined spaces where hot bitumen would be hazardous.] [Prime surfaces to receive fibrous asphaltic dampproofing unless recommended otherwise by dampproofing materials manufacturer.] Apply dampproofing after priming coat is dry, but prior to any deterioration of primed surface, and when ambient temperature is above 4 degrees C 40 degrees F.

3.3.1 Surface Priming

****
NOTE: When cavity walls are to be dampproofed, delete first bracketed sentence and bracketed reference to asphalt in second sentence.
****

[Prime surfaces to receive coal-tar pitch dampproofing with creosote primer.] [Prime surfaces to receive [asphalt or] [fibrous asphalt dampproofing with asphalt primer].] Apply primer when ambient temperature is above 4 degrees C 40 degrees F and at rate of approximately 4 liters per 10 square meters one gallon per 100 square feet, fully covering entire surface to be dampproofed.

[3.3.2 Hot-Application Method

****
NOTE: When cavity walls are to be dampproofed, delete this paragraph in projects.
****

Apply two mop coats of hot coal-tar pitch or two mop coats of hot asphalt to surfaces. Apply mop coats uniformly using not less than 12.2 kilograms 25 pounds of coal-tar pitch or 9.8 kilograms 20 pounds of asphalt per 10 square meters 100 square feet for each coat. Do not heat asphalt above 232 degrees C 450 degrees F. Do not heat coal tar pitch above 204 degrees C 400 degrees F. Have kettlemen in attendance at all times during heating to ensure that maximum temperature specified is not exceeded. Apply hot asphalt bitumen or coal tar pitch and fully bond to primed surface. Provide finished surface that is smooth, lustrous, and impervious to

moisture. Recoat dull or porous spots.

]3.3.3 Cold-Application Method

****
NOTE: When cavity walls are to be dampproofed, include bracketed requirement in the paragraph for fibrous asphalt.
****

[3.3.3.1 Fibrous Asphalt

Apply two coats of fibrous asphalt to surfaces to be dampproofed. Apply each coat uniformly using not less than 4 liters one gallon fibrous asphalt per 5 square meters 50 square feet. Apply first coat by brush or spray to provide full bond with primed surface. Brush or spray second coat over thoroughly dry first coat [unless recommended otherwise by dampproofing materials manufacturer]. Provide finished surface that is of uniform thickness and impervious to moisture. Recoat porous areas.

][3.3.3.2 Emulsion-Based Asphalt

Emulsion-based asphalt dampproofing work shall not be performed in temperatures below 4 degrees C 40 degrees F. Emulsions shall have a smooth and uniform consistency at time of application. Dampproofing materials shall be applied in accordance with manufacturer's published instructions to produce a smooth uniform dry film of not less than 0.3 mm 12 mils thick without voids or defects. Dull or porous spots shall be recoated. Dampproofing materials shall seal tightly around pipes and other items projecting through dampproofing. Rates of application shall be as follows:

a. Primer: 0.2 liters per square meter 1/2 gallon per 100 square feet, cold-applied.

b. Fibrated Dampproofing: 0.8 liters per square meter 2 gallons per 100 square feet, cold-applied with spray, brush or trowel.

c. Non-fibrated Dampproofing: 0.8 liters per square meter 2 gallons per 100 square feet, cold-applied with spray, brush or trowel.

][3.4 PROTECTIVE COVERING

****
NOTE: Use this paragraph only when dampproofed surface against which backfill is to be placed will be exposed for an extended period of time or will be otherwise subjected to physical damage.
****

Protect dampproofed surfaces against which backfill will be placed with [one layer of 6.8 kilogram 15 pound saturated felt conforming to the requirements specified herein. Use asphalt-saturated felt where the

dampproofing material is asphalt and use coal-tar-saturated felt where the dampproofing material is coal-tar pitch. Embed felts in the second coating of bitumen and lap edges and ends not less than 25 mm one inch] [13 mm1/2 inch thick wood fiberboard or perlite board].

] -- End of Section --