UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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05/20

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USACE / NAVFAC / AFCEC / NASA	**UFGS-32 01 17.62 (May 2020)**

Preparing Activity: NAVFAC	**Superseding**
	UFGS-32 01 17.62 (May 2011)

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SECTION 32 01 17.62

PAVING FABRIC INTERLAYER
05/20

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NOTE: This guide specification covers the requirements for geosynthetic paving fabric interlayer for asphaltic overlays and surface treatments for roads, streets, and airfield pavements.

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: To achieve maximum performance with the use of paving fabrics in asphalt pavement, do not overextend their range of application. Consult UFC 3-250-01, Chapter 15-8, for additional guidance on geosynthetic paving fabrics. The paving fabric not only retards or reduces low-severity reflection cracking but prevents surface infiltration of water. Paving fabrics have performed well when used on pavements with oxidation cracking, on longitudinal construction joint cracks in asphalt pavement, and on the longitudinal joint between portland cement concrete pavement widened with flexible pavement. Cracks that are greater than 6 mm 1/4 inch wide should be filled with a suitable crack filler prior to installing the paving fabric.

Cover the paving fabric with a hot-mix asphalt

overlay or an asphalt surface treatment.
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PART 1 GENERAL

1.1 UNIT PRICES

****
NOTE: Delete paragraphs MEASUREMENT and PAYMENT when lump sum bidding is used.
****

1.1.1 Measurement

Measure the as-built surface area, covered by geosynthetic paving fabrics, in square meters square yards. No allowance will be made for waste, overlaps, damaged materials, repairs, or materials used for the convenience of the Contractor.

1.1.2 Payment

Geosynthetic paving fabric installed and accepted will be paid for at the respective contract unit price in the bidding schedule. This unit price will include the cost of geosynthetic paving fabric, asphalt binder, equipment, installation, testing, and other costs associated with placement of the geosynthetic paving fabric.

1.2 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.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 288	(2017) Standard Specification for Geosynthetic Specification for Highway

Applications

ASTM INTERNATIONAL (ASTM)

ASTM D4873/D4873M	(2017) Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D6373	(2016) Standard Specification for Performance Graded Asphalt Binder

1.3 STATE STANDARD SPECIFICATIONS

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NOTE: Where SSS-[_____] is found in the text, insert the appropriate State Standard Specification.

Do not specify state standards for airfield paving projects.
****

Provide materials and workmanship specified herein with the reference State Standard specifications (SSS) in accordance with the referenced articles, sections and paragraphs of the standard except that contractual and payment provisions do not apply. Where the term "Engineer" is used, it means the Contracting Officer. Where the term "state" is used, it means "Federal Government."

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, 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-03 Product Data

Plant, Equipment, Machines, And Tools

SD-06 Test Reports

Asphalt Distributor Calibration Documentation

SD-07 Certificates

Asphalt Cement; G[, [_____]]

Geosynthetic Paving Fabric; G[, [_____]]

1.5 QUALITY CONTROL

1.5.1 Design Conformance

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NOTE: Cover the paving fabric with a hot-mix asphalt overlay or an asphalt surface treatment. Select the choice in brackets and delete the other.

Check with agency Subject Matter Expert before specifying an asphalt surface treatment for airfield paving projects.

****

[Provide an asphalt concrete conforming to the requirements of Section 32 12 16.16 ROAD-MIX ASPHALT PAVING.][Provide an asphalt surface treatment conforming to the requirements of Section 32 01 13.62 ASPHALT SURFACE TREATMENT.] [Provide an asphalt concrete conforming to the requirements of Section 32 12 15.13 ASPHALT PAVING FOR AIRFIELDS.]

1.6 DELIVERY AND STORAGE

Deliver materials to job site in original unopened rolls, packages, cartons, bundles, or containers. Handle and store geosynthetic paving fabric in accordance with ASTM D4873/D4873M. Prevent damage to materials during loading, transporting, and unloading. Inspect materials for contamination. Protect geosynthetic materials against sunlight, UV radiation, moisture, rain, dust, or rodents. Replace defective or damaged materials. Remove rejected materials from Government property.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Placement Conditions

Place geosynthetic paving fabric under the following conditions:

a. Ambient air temperature for asphalt cements above 10 degrees C 50 degrees F and rising.

b. Dry pavement surface temperature above 4.5 degrees C 40 degrees F and rising.

1.8 ACCEPTANCE

1.8.1 Tolerances

Acceptance of the paving fabric interlayer is based on compliance with the tolerances presented in Table 1. Remove and replace paving fabric interlayer represented by the failing tests or submit repair plan for approval.

TABLE 1

Attribute	Tolerance
Asphalt Binder Application Rate	Within specified range
Asphalt Binder Application Temperature	Within specified range
Paving Fabric Overlap	Maximum 150 mm 6 inches
Paving Fabric Wrinkles	Maximum 25 mm 1 inch

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Asphalt Cement

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NOTE: Specify Performance Grade (PG) asphalt wherever available. When selecting PG asphalt cements, the asphalt cement grade should be the same as specified for the hot mix asphalt overlay or surface treatment.
****

****
NOTE: Add appropriate State Standard specification (SSS) in the blanks below.
****

Asphalt cement binder conforming to [ASTM D6373] [Section [_____] of SSS-[_____]], Performance Grade (PG) [_____].

2.1.2 Geosynthetic Paving Fabric

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NOTE: Paving fabrics are fabrics designed with higher ultimate elongation and are manufactured with synthetic polymers. All paving fabrics available that meet these specifications are nonwoven. Check properties against any other manufacturers' literature or information or data that may be more current.
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Geosynthetic paving fabric conforming to AASHTO M 288, Type II. The numeric values in AASHTO M 288 are Minimum Average Roll Values (MARV) in the weaker principal direction.

2.2 EQUIPMENT

Submit list of proposed equipment to be used in performance of construction work, including descriptive data. Plant, equipment, machines, and tools used in the work are subject to approval. Maintain in a satisfactory working condition at all times.

2.2.1 Asphalt Distributor

Provide a distributor capable of spraying asphalt binder at the prescribed temperature and application rate without streaking, skipping, or dripping. Equip distributor with hand spray having single nozzle and positive shut-off valve. Check and clean the filters at the start of each day during the installation. Provide calibrated instruments to determine temperature of asphaltic binder in both the distributor and its application site as well as instrumentation for securing uniformity at the junction of the two loads. Submit current asphalt distributor calibration documentation for all calibrated equipment, certified by an approved calibration laboratory within [12] [_____] months prior to commencing work[and every [_____] month, thereafter during the term of the contract].

2.2.2 Geosynthetic Paving Fabric Handling Equipment

Provide mechanical or manual laydown equipment capable of laying fabric smoothly with minimum wrinkles or folds.

2.2.3 Vacuum Sweeper

Provide a Self-propelled, vacuum pickup capable of completely removing loose material and debris from pavement surface.

2.2.4 Miscellaneous Equipment

Additional equipment includes, but not limited to, stiff bristle brooms; squeegees to spread asphalt binder; rollers to smooth paving fabric; scissors or blades to cut paving fabric; and brushes for applying binder at paving fabric overlaps.

2.2.5 Condition of Equipment

Keep storage tanks, piping, retorts, booster tanks, and distributors used in storing and handling asphalt material clean and in good operating condition throughout the duration of the work. Do not allow contamination

of asphaltic material with foreign material in equipment during operation. Provide and maintain a recording thermometer in good working order in storage heating unit. Submit calibration documentation as required in paragraph: Asphalt Distributor.

PART 3 EXECUTION

3.1 PREPARATION

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NOTE: Consult UFC 3-270-01 for methods and materials used to repair underlying asphalt concrete pavement. Do not seal cracks under 6 mm 1/4 inch wide.

****

3.1.1 Cracks

Seal all cracks wider than 6 mm 1/4 inch in accordance with 32 01 17.61 SEALING CRACKS IN ASPHALT PAVING

3.1.2 Potholes

Remove surface pavement and base course as indicated. Make saw cuts to provide a square or rectangular shape with vertical straight faces around the pothole. Make one pair of faces at right angles to traffic flow. Spray vertical surfaces with emulsified asphalt. Fill with asphalt concrete, and compact patch level with existing pavement using a vibratory plate compactor for small patches or a roller for large patches.

3.1.3 Surface Preparation

[Cold-mill existing pavement in accordance with Section 32 01 16.71 COLD MILLING ASPHALT PAVING. Use micro-milling equipment if required by the geosynthetic manufacturer.]Clean pavement surfaces immediately prior to application of asphalt binder by using a power broom followed by a power blower using compressed air.

3.2 PAVING FABRIC INSTALLATION

3.2.1 Asphalt Binder

****

NOTE: The amount of asphalt cement required depends on the condition and texture of the asphaltic surface on which the paving fabric is to be placed and on the type of paving fabric. Most common paving fabrics require about 0.9 - 1.58 L/sq.m 0.20 - 0.35 gal/sq.yd. of residual asphalt to achieve installation. Use 1.13 - 1.36 L/sq.m 0.25 - 0.30 gal/sq.yd. for cracked and weathered surface of existing asphalt pavement. Use 1.36 - 1.58 L/sq.m 0.30 - 0.35 gal/sq.yd. for heavily distressed, oxidized, or milled surfaces.

****

Spray area to receive paving fabric with asphalt binder at a rate of residual asphalt content of [1.0 - 1.31] [_____] L per square meter [0.22-0.29] [_____] gallon per square yard. Maintain the application

temperature within the range of 135 to 175 degrees C 275 to 350 degrees F for asphalt cement. Where the paving fabric will be joined with another layer of paving fabric, apply asphalt binder to cover a minimum width of the paving fabric plus 150 mm 6 inches. Minimize time interval between placing asphalt binder and placing paving fabric so that temperature loss of asphalt binder due to dust, wind, or cooler temperatures does not cause loss of adhesion. Keep newly placed paving fabric free of traffic and debris until asphalt overlay or surface treatment is complete.

3.2.2 Paving Fabric Placement

Place paving fabric with minimal wrinkles and folds. In cold and windy conditions, shorten the incremental length of paving fabric that is placed to accommodate the rapid cooling of the applied asphalt cement. Place paving fabric manually on areas where it cannot be mechanically installed. In the event of improper alignment during placement which causes the paving fabric to wrinkle or fold in excess of the tolerances provided in Table 1, slit the paving fabric and realign by overlapping the previous material and proceed as before. Overlap the paving fabric not to exceed the tolerances shown in Table 1 at all joints[, except as otherwise shown]. Do not lap joints with more than two paving fabric layers. Construct transverse joints by shingling in the direction of placement to prevent paving fabric disturbance by paver. Use a pneumatic tire roller to roll the paving fabric to remove air bubbles that form under the paving fabric. In case binder bleeds through paving fabric, blot binder with sand before overlay is placed. Remove excess sand before placing overlay. Neatly cut and contour paving fabric at joints. Remove and replace damaged paving fabric before resurfacing.

3.2.2.1 Traffic Control

Prohibit vehicles, except handling equipment, from traveling on paving fabric. Limit equipment speed to 8 kph 5 miles per hour. During construction and at intersections and corners, turn equipment gradually to avoid damaging paving fabric.

3.2.2.2 Additional Asphalt Binder

If the paving fabric does not stay bonded with the underlying surface, apply additional binder at a residual asphalt content of at least 0.09 L per square meter 0.02 gallon per square yard to paving fabric surface.

3.2.3 [Asphalt Concrete Overlay][Asphalt Surface Treatment]

****
NOTE: Cover the paving fabric with a hot-mix asphalt overlay or an asphalt surface treatment. Select the choice in brackets and delete the other.
****

[Place overlay in accordance with [Section 32 12 16.16 ROAD-MIX ASPHALT PAVING] [Section 32 12 15.13 ASPHALT PAVING FOR AIRFIELDS].][Construct asphalt surface treatment in accordance with Section 32 01 13.62 ASPHALT SURFACE TREATMENT.]Do not place paving fabric that cannot be covered with overlay the same day. If rain is imminent, and the paving fabric cannot be covered in time, use a pneumatic tire roller on top of the

installed paving fabric. After the rainfall stops, if water is displaced while walking on the paving fabric, do not proceed with paving. If the paving fabric is still wet, but no free water is visible underfoot, paving can proceed.

-- End of Section --