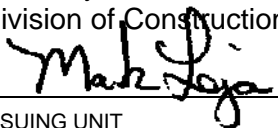


MANUAL CHANGE TRANSMITTAL		NO. 13-3
TITLE: Department of Transportation <i>Construction Manual</i>	APPROVED BY: Mark Leja, Chief Division of Construction 	DATE ISSUED: April 11, 2013
SUBJECT AREA Table of Contents and various sections of the <i>Construction Manual</i>	ISSUING UNIT Division of Construction	
SUPERSEDES None	DISTRIBUTION All Requested Manual Holders	

This manual change transmittal delivers the revisions of Chapter 4, Sections 17, 88, and 93 of the *Construction Manual*. Updated sections may contain updated language, information, corrections, and references resulting from updates to the 2010 *Standard Specifications*, and from policy, and procedural changes. Change lines in the margins of the revised sections indicate text that was changed, moved, or added.

Please update your manual according to the table below.

Section	Incorporates	Remove Old Page(s)	Insert New/Revised Page(s)
Chapter 4, Section 17, “Watering”	None	4-17.1	4-17.1
Chapter 4, Section 88, “Geosynthetics”	None	4-88.1	4-88.1 thru 4-88.2
Chapter 4, Section 93, “Liquid Asphalts”	None	4-93.1 thru 4-93.2	4-93.1 thru 4-93.2

Section 4-17, “Watering”

- Updates references to align with 2010 *Standard Specifications*.
- Clarifies the contractor’s responsibility.
- Clarifies the contractor’s responsibility in obtaining permits.
- Clarifies the payment for applying water.

Section 4-88, “Geosynthetics”

- Updates section title to align with 2010 *Standard Specifications*
- Provides information on new products.
- Updates language to align with other *Construction Manual* sections.
- Update references to align with 2010 *Standard Specifications*.

Section 4-93, “Liquid Asphalts”

- Updates section title to align with 2010 *Standard Specifications*.
- Updates language to align with other *Construction Manual* sections.
- Updates information to clarify inclusion of payment for liquid asphalt in payment for the work.
- Updates references to align with 2010 *Standard Specifications*.
- Updates information to reflect changes in the *Highway Design Manual*, Chapter 600.

This manual is being updated to reflect changes from the 2006 to the 2010 *Standard Specifications*. Bracketed section numbers refer to the 2006 *Standard Specifications*.

Section 17 Watering

Section 17 Watering

4-1701 General

4-1701 General

The contractor is responsible for developing a water supply, including any permits, and applying water.

4-1702 Before Work Begins

4-1702 Before Work Begins

Take these steps during preliminary inspection:

- Determine the quality of the water to be used in products with specific water quality requirements.
- Determine if the contractor intends to use chemical additives in water, and ensure that the additives are appropriate for their use.
- If the contract requires a mobile watering unit, ensure that one is available on the project at all times.
- Ensure that all necessary watering equipment is the type specified.
- Ensure that the contractor has acquired all applicable permits.

4-1703 During the Course of Work

4-1703 During the Course of Work

Take these steps during the course of work:

- Determine whether the developed water supply is enough for the project not to have extensive work delays and is adequate for dust control.
- If the contractor uses a fire hydrant, ensure that arrangements have been made with the local water utility company.

4-1704 Measurement and Payment

4-1704 Measurement and Payment

Once the water supply is developed and the entire project's needs are met, authorize progress payment for 100 percent of the item, subject to limiting pay clauses. When determining percentages for partial payments, consider work possibly required in future stages. Payment for applying water is included in other items.

This manual is being updated to reflect changes from the 2006 to the 2010 *Standard Specifications*. Bracketed section numbers refer to the 2006 *Standard Specifications*.

Section 88 Geosynthetics

4-8801 General

Section 88, “Geosynthetics,” of the *Standard Specifications* provides material requirements for various types of geosynthetics for use as geosynthetic pavement interlayer, paving mat, paving grid, paving geocomposite grid, geocomposite strip membrane, filter fabric, subgrade enhancement geotextiles (SEG), biaxial geogrids, silt fence fabric, gravel-filled bags, sediment filter bags, and temporary cover for water pollution control.

Geosynthetic pavement interlayer is used as an interlayer in asphalt concrete overlays to minimize surface water infiltration and to minimize reflective cracking through the overlay. Filter fabric is placed between a freely draining aggregate and soil to allow passage of water and to retain fine soil particles. Rock slope protection (RSP) fabric serves the same purpose. As with filter fabric, RSP fabric is placed between rock slope protection and the underlying foundation material. Geocomposite wall drains provide drainage in backfill applications on retaining walls and structure approaches. Geotechnical subsurface reinforcement stabilizes embankments. Subgrade enhancement geotextiles are placed between the pavement and the subgrade providing filtration and separation of the base materials. Biaxial geogrids stabilize the subbase or the base aggregate by interlocking with the apertures in the geogrid.

The following sections of the *Standard Specifications* give geosynthetic placement requirements:

- Section 39, “Hot Mix Asphalt,” includes requirements for placing geosynthetic pavement interlayer.
- Section 68, “Subsurface Drains,” provides requirements for placing filter fabric used with underdrains and edge drains and placement of geocomposite wall drains.
- Section 72, “Slope Protection,” provides specifications for placing RSP fabric.
- Section 19, “Earthwork,” details the requirements for placing subsurface reinforcement and SEG.
- Section 26, “Aggregate Bases,” provides the placement requirements for biaxial geogrids.
- Section 13, “Water Pollution Control,” provides specifications for placing silt fence fabric, gravel filled bags, sediment filter bags, and temporary cover.

4-8802 Before Work Begins

Before work begins, verify that Form CEM-3101, “Notice of Materials to Be Used,” includes geosynthetics. Refer to Section 6-202, “Responsibilities and Procedures for Acceptance of Materials,” of this manual for details.

Section 88 Geosynthetics

4-8801 General

4-8802 Before Work Begins

4-8803
During the Course
of Work

4-8803 During the Course of Work

Do not permit the use of geosynthetics until certificates of compliance covering the material have been submitted.

4-8804
Measurement and
Payment

4-8804 Measurement and Payment

Measurement and payment clauses are included in the *Standard Specification* sections or special provisions providing for placement of the various types of engineering fabrics.

This manual is being updated to reflect changes from the 2006 to the 2010 *Standard Specifications*. Bracketed section numbers refer to the 2006 *Standard Specifications*.

Section 93 Liquid Asphalts

4-9301 General

Liquid asphalt is used for penetration treatment of untreated material or as a prime coat. The application of liquid asphalt will not contribute to the strength of the treated base.

Penetration treatment consists of an application of liquid asphalt to an underlying compacted roadbed material. It is used principally as a surface stabilizing agent on light traffic detours, medians, and parking areas and as a dust palliative.

Prime coat is used to prepare an untreated base for hot mix asphalt (HMA) surface course or treated permeable base. The purpose of prime coat is to reduce the raveling or displacement of underlying material, reduce the likelihood of erosion of fines, and enhance the adherence of thin-lift HMA to base.

In addition to the specifications for liquid asphalts in Section 93, "Liquid Asphalts," of the *Standard Specifications*, refer to the requirements for liquid asphalts in Section 37, "Bituminous Seals," of the *Standard Specifications* and project special provisions covering work in which liquid asphalts are used.

4-9302 Before Work Begins

Before work begins, take the following steps:

- Verify that Form CEM-3101, "Notice of Materials to Be Used," includes liquid asphalt. Refer to Section 6-202, "Responsibilities and Procedures for Acceptance of Materials," of this manual for additional information.
- Examine the distributor truck to ensure it meets the specified requirements.
- When required, ensure the contractor properly equips delivery trucks, storage tanks, and spreading equipment with the specified devices for measuring the volume of liquid asphalt.

4-9303 During the Course of Work

During the work, take the following steps:

- Designate the area that will receive the surface treatment using liquid asphalt.
- Determine prime coat quantities under the specifications for liquid asphalt.
- If liquid asphalt is used before sampling and testing, obtain a certificate of compliance containing the specified information.
- Check the temperature of the liquid asphalt to ensure it is within the specified range when applied.
- Before applying liquid asphalt, ensure the surface to be treated is clean and dry.

Section 93 Liquid Asphalts

4-9301 General

4-9302 Before Work Begins

4-9303 During the Course of Work

- Ensure that liquid asphalt is not sprayed outside designated areas and that bituminous material does not drip from distribution equipment.
- Ensure prime coat is not applied to a geosynthetic pavement interlayer.
- Check the application rate of liquid asphalt to ensure the designated rate. After the first few hundred feet of application, check the initial spread rate. The frequency for checking the spread rate will depend on the accuracy and consistency of the first few checks. Record the spot-check results and the overall daily spread rate in the daily report.
- Sample liquid asphalt in accordance with the table in Section 6-1, “Sample Types and Frequencies,” and the instructions in Section 6-202E, “Materials Accepted on the Basis of a Certificate of Compliance,” of this manual.

4-9304 Measurement and Payment

4-9304 Measurement and Payment

Section 93, “Liquid Asphalts,” of the *Standard Specifications*, contains provisions for payment. Payment clauses for liquid asphalts are in the various sections covering work in which liquid asphalts are used.

If there is no bid item for liquid asphalt, the payment is included in the payment for the work involved.

Determine pay quantity for liquid asphalt by collecting initial load slips or weight certificates from each load of liquid asphalt and, if partial loads were used, collect weigh-back slips or certificates to determine pay quantities.

It is a good practice, before the asphalt is discharged, to measure the volume in the distributor truck and to make this volumetric measurement again whenever a partial load leaves the work. These actions result in a good check against scale weights, and the second measurement may be used if the contractor fails to submit a weight ticket for the unused asphalt.

When making volumetric measurements, measure the temperature and apply the proper factors for converting volume to mass.