

Section 710—Permanent Soil Reinforcing Mat

710.1 General Description

This work includes furnishing and placing a permanent mat over prepared areas according to the Plans or as directed by the Engineer.

710.1.01 Definitions

General Provisions 101 through 150.

710.02 Related References

A. Standard Specifications

[Section 700—Grassing](#)

[Section 881—Fabrics](#)

B. Referenced Documents

[QPL 49](#)

710.1.03 Submittals

General Provisions 101 through 150.

710.2 Materials

Use materials listed in the [QPL 49](#).

Ensure that materials meet the following requirements.

A. Preformed Mat

Use mat with a web of mechanical or melt-bonded polymer nettings, monofilaments, or fibers entangled to form a dimensionally stable matrix. Bond the mat with one of the following:

- Polymer welding
- Thermal fusion
- Polymer fusion
- Fibers placed between two high-strength, biaxially oriented nets bound by parallel-lock stitching with polyolefin, nylon, or polyester threads

Use a mat with enough strength and elongation to limit stretching and maintain its shape before, during, and after installation under dry or wet conditions. Provide a mat with stabilized components that avoid ultraviolet degradation and are inert to chemicals normally encountered in a natural soil environment. Ensure that the mat conforms to the following physical properties:

Property	Minimum Value	Test Method
Thickness	1/2 in (13 mm)	
Weight	0.60 lbs/yd ² (325 g/m ²)	
Roll width	38 in (965 mm)	
Tensile strength		ASTM D 5034*
Length (50% elongation)	15 lbs/in (2.5 N/mm)	
Length (ultimate)	20 lbs/in (3.5 N/mm)	
Width (50% elongation)	5 lbs/in (1 N/mm)	
Width (ultimate)	10 lbs/in (2 N/mm)	
Ultraviolet stability	80%	ASTM D 4355
1,000 hours in an Atlas ARC Weatherometer (ASTM G 23, Type D)		ASTM D 822

Section 710—Permanent Soil Reinforcing Mat

Property	Minimum Value	Test Method
* Modified to use minimum 6 in (150 mm) wide test specimens.		

B. Stakes or Staples

Use 1 in by 3 in (25 mm by 75 mm) wood stakes made from sound stock cut in a triangular shape. Cut stakes 12 in to 18 in (300 mm to 450 mm) long depending on soil compaction. Use metal staples with the following characteristics:

- Diameter of 1/8 in (3 mm) or greater
- U shape
- Legs at least 8 in (200 mm) long
- Crown 2 in (50 mm) across

C. Filter Fabric

Use woven or nonwoven filter fabric that meets the requirements of [Subsection 881.2.05, “Plastic Filter Fabric.”](#)

710.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

710.3 Construction Requirements

710.3.01 Personnel

General Provisions 101 through 150.

710.3.02 Equipment

General Provisions 101 through 150.

710.3.03 Preparation

A. Site Preparation

Before protecting areas with mat, prepare the area according to [Section 700](#) with the following steps:

1. Bring to final grade
2. Plow
3. Lime
4. Fertilize

Provide a smooth, firm, and stable surface free of rocks, clods, roots, or other obstructions that would prevent the mat from contacting the soil directly.

710.3.04 Fabrication

General Provisions 101 through 150.

710.3.05 Construction

A. Installing Mat

Do not use a mat in areas with rock outcroppings or large rocks. Install the mat either in ditches or on slopes according to the following requirements:

1. Ditches

To install the mat in ditches:

- a. Cut a transverse trench 6 in wide by 9 in deep (150 mm wide by 225 mm deep) at the ends of the mat and at 25 ft (7.5 m) intervals along the ditch.
- b. Cut longitudinal, 4 in (100 mm) deep anchor slots along each side of the mat along the full length of the ditch, burying mat edges.

The Engineer will require additional or deeper anchor slots for large volumes of water.

- c. Roll out the center strip of matting, starting at the lower end of the ditch.
- d. Roll out each adjacent strip of matting to overlap the preceding strip at least 3 in (75 mm).

Section 710—Permanent Soil Reinforcing Mat

- e. Overlap the ends of each mat roll 3 ft (1 m) with the upslope mat on top. Stretch the mat to the bottom of the slot, folding it back and staking through two layers of material.
- f. Stake each strip of matting at 1 ft (300mm) intervals in each anchor slot, with one stake serving the overlapped edges of adjoining strips.
- g. Backfill and compact the slot.
- h. Fold the mat back over the slot and continue in the upstream direction (closed anchor slot).
- i. Stake the mat snugly in the longitudinal slots and at intervals a maximum of 5 ft (1.5 m) along the ditch (open anchor slot).
- j. Backfill and dress the longitudinal anchor slots.

Lay up to 10 ft (3 m) of filter fabric under runs of matting that begin at pipe outlets.

B. Grassing

Grass the entire soil-filled mat and disturbed soil area according to [Section 700](#).

710.3.06 Quality Acceptance

General Provisions 101 through 150.

710.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

710.4 Measurement

Permanent soil-reinforcing mat complete and accepted is measured for payment by the square yard (meter), surface measured.

710.4.01 Limits

Overlaps and anchor slots are incidental to the work and are not measured for payment.

710.5 Payment

This work will be paid for at the Contract Price per square yard (meter) for permanent soil-reinforcing mat, complete in place and accepted. Payment is full compensation for furnishing and installing the mat according to this Specification, including filter fabric and maintenance.

Preparing the area and grassing will be paid for according to [Section 700](#).

Payment will be made under:

Item No. 710	Permanent soil reinforcing mat	Per square yard (meter)
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710.5.01 Adjustments

General Provisions 101 through 150.