

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**SPECIAL PROVISION**

**Project No.** \_\_\_\_\_

**County** \_\_\_\_\_

**P.I. No.** \_\_\_\_\_

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**Section 453 – Portland Cement Concrete Whitetopping**

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*Add the following:*

**453.1 General Description**

This Work consists of constructing a Portland cement concrete Whitetopping over an existing asphalt pavement according to the Specifications and Plan Details.

**453.1.01 Definitions**

Average Temperature—Average of predicted high and the predicted low in degrees Fahrenheit (Celsius)

**453.1.02 Related References**

**A. Related Specifications**

[Section 500](#)

[Section 800](#)

[Section 801](#)

[Section 830](#)

[Section 831](#)

[Section 832](#)

[Section 880](#)

**B. Related Documents**

ASTM C 1116

[GDT 26](#)

[GDT 27](#)

**453.1.03 Submittals**

General Provisions 101 through 150.

**453.2 Materials**

**A. Physical Properties**

Ensure the materials meet these requirements:

Material	Requirement
Coarse Aggregate (Size No. 7)*	<a href="#">Subsection 800.2.01</a>
Fine Aggregate (Size No. 10)**	<a href="#">Subsection 801.2.02</a>
Portland cement***	<a href="#">Section 830</a>
Admixtures	
Air Entraining Admixtures	<a href="#">Subsection 831.2.01</a>
Retarding Admixtures	<a href="#">Subsection 831.2.02</a>
Water Reducing Admixtures	<a href="#">Subsection 831.2.02</a>
Curing Agents	<a href="#">Section 832</a>
Water	<a href="#">Subsection 880.2.01</a>
Polypropylene Fibers	ASTM C 1116—Type III fibers
<p>*Coarse aggregate may be either Class A or B of the designated size except that when Limestone or Dolomite is used in whitetopping, Class A Coarse aggregate is required.</p> <p>**Use natural sand for fine aggregate</p> <p>***Use Type I or III Portland cement</p>	

## B. Concrete Mix Designs

Coarse Aggregate Size No.	Minimum Cement Content, lb/yd <sup>3</sup> (kg/m <sup>3</sup> )	Polypropylene Fibers, lb/yd <sup>3</sup> (kg/m <sup>3</sup> )	Maximum Water/Cement Ratio, lb/lb (kg/kg)	Entrained Air (%)	Minimum Compressive Strength @ 24 hours, PSI (MPa)
No. 7	800 (475 kg/m <sup>3</sup> )	3.0 (1.8 kg/m <sup>3</sup> )	0.43	5.0	3000 (20)

### 453.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

## 453.3 Construction Requirements

### 453.3.01 Personnel

General Provisions 101 through 150.

### 453.3.02 Equipment

General Provisions 101 through 150.

### 453.3.03 Preparation

General Provisions 101 through 150.

### 453.3.04 Fabrication

Manufacture the concrete for Portland cement concrete Whitetopping according to [Section 500](#) of the Specifications and the requirements herein.

#### A. Batch Concrete

Batch concrete at the plant to produce concrete at the jobsite with a slump range from 2 in. (50 mm) to 3 in. (75 mm). Additional water may be added at the jobsite to attain the desired consistency [2 in. (50 mm) to 3 in. (75 mm) slump] provided that the maximum water-cement ratio is not exceeded.

## **B. Admixtures**

Add an approved Type “F” high range water reducing admixture to promote workability. In addition to Type “F”, add Type “A” or “D” admixtures according to these requirements:

Type “D” retarding admixture—Use when the average temperature is at or above 65°F (18 °C).

Type “A” or “D”—Use when temperature is below 65°F (18 °C).

Accurately measure and add admixtures to the concrete mixture. Ensure addition rates, dispensing and mixing of the admixture is according to the manufacturer’s recommendations.

## **C. Polypropylene Fibers**

Use an approved polypropylene fiber meeting the requirements of ASTM C 1116—Type III fibers. Add fibers at a rate of 3.0 lb/yd<sup>3</sup> (1.8 kg/m<sup>3</sup>) at the plant site to insure uniformity of distribution throughout the mix, unless otherwise specified by the Engineer.

### **453.3.05 Construction**

Use the following procedures to construct the Whitetopping:

#### **A. Surface Milling**

Mill pavement surfaces to provide a minimum Whitetopping depth of 4 in. (100 mm) in all areas. Multiple milling passes may be necessary. Ensure that adjacent passes of the milling operation do not leave depth variations greater than ½ in. (12 mm).

Make a transverse saw cut at each end of the asphalt section to provide a clean vertical face and ensure proper concrete thickness.

After milling, thoroughly clean the area with compressed air to remove all laitance, dust, grit and all foreign material. Protect the area, as necessary, to prevent contamination until placement. When areas are not adequately protected, additional cleaning will be required as directed by the Engineer.

#### **B. Moisture Coat**

After the surface has been milled, air blasted, cleaned and accepted, wet the surface immediately prior to concrete placement.

Accomplish this wetting of the surface just ahead of the placement by spraying with a fine mist without excess water puddling on the surface.

#### **C. Placing and Consolidating**

Use finishing machines or screeds that are mechanically operated supported outside the area of Whitetopping. Use transverse type screeds.

Ensure screeds are equipped with surface vibrators sufficient to thoroughly consolidate the concrete full depth, unless other methods are approved by the Engineer.

Screed vibrators may be supplemented with hand held vibrators to accomplish proper consolidation.

Promptly after the moisture coat has been applied, deposit the concrete on the milled surface, consolidate it and strike it off.

As placement proceeds, keep the concrete surface screeded to the required grade. Ensure that depressions are filled ahead of the screed, and that a small roll of mortar is kept on the leading edge of the screed.

Ensure that sound concrete is obtained at all joint edges during the concreting and screeding operation. Do not place excess grout or allow any excess grout to remain in these areas.

Apply a broom finish as soon as the surface permits.

#### **D. Finishing**

Ensure that the surface of the whitetopping does not deviate more than 1/8 inch (3 mm) when tested with a 10-foot (3.0 m) straightedge placed in both directions.

Provide a surface that meets the requirements of [Section 439.3.06.H](#) and [Section 439.3.06.I](#) for “Final Finish” and “Texture Depth” respectively.

**E. Contraction Joints**

Saw contraction joints at 4 ft. (1.2 m) maximum intervals throughout the entire placement in the transverse and longitudinal directions.

Do not saw parallel joints in either direction closer than 2 ft. (600 mm) to any edge of any construction joint in the Whitetopping. Do not place any joint within 1 foot of a wheel path.

Commence sawing as soon as the surface will permit without marring.

Special saws made to cut concrete at or near initial set may be allowed by the Engineer to expedite sawing and control stresses that may produce wild cracking.

Make all saw cuts to a depth of 0.75 in. ±0.125 in (19 mm ± 3 mm) and 0.125 in. (3 mm) wide.

**F. Curing**

Apply a curing compound immediately after the water sheen disappears and the surface finish is applied.

Uniformly spray the entire surface of the pavement with white pigmented curing compound immediately after finishing the surface and before the concrete has set.

**453.3.06 Quality Acceptance**

**A. Concrete Acceptance Testing**

1. Slump

Determine the slump of concrete according to [GDT 27](#) immediately prior to placement. Do not exceed a slump value greater than 7 ½ in (190 mm). Perform this acceptance after the addition of Type “F” water reducer.

2. Air Content

Ensure the design air content is as shown above in the concrete design table. The concrete will be tested for air content according to [GDT 26](#) at the jobsite, prior to placement. No concrete will be accepted which has an air content beyond the following limits:

Lower acceptance limit 3.0%

High acceptance limit 7.5%

Perform the air content test for jobsite acceptance prior to the addition of Type “F” water reducing admixtures unless admixture is added at the plantsite.

**453.3.07 Contractor Warranty and Maintenance**

General Provisions 101 through 150.

**453.4 Measurement**

Whitetopping is measured by the cubic yard (meter).

**453.4.01 Limits**

General Provisions 101 through 150.

**453.5 Payment**

Whitetopping is paid for by the cubic yard (meter) in place and accepted. Payment includes all materials and labor to mill and clean the existing pavement, place, finish, cure and saw joints in the Whitetopping.

Payment will be made under:

Item No. 453	Portland cement concrete whitetopping	Per cubic yard (meter)
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**453.5.01 Adjustments**

General Provisions 101 through 150.