Section 831—Admixtures

831.1 General Description

This section includes the requirements for the following Portland cement concrete and bituminous concrete admixtures:

- Air-entraining admixtures
- Chemical admixtures
- Fly ash, raw or calcined natural pozzolan, slag, and microsilica
- Heat-stable, anti-stripping additive
- Silicone fluid

831.1.01 Related References

A. Standard Specifications

Section 500—Concrete Structures

Section 828—Hot Mix Asphaltic Concrete Mixtures

Section 830—Portland Cement

B. Referenced Documents

AASHTO M 154

AASHTO M 194

AASHTO M 295

AASHTO M 302

AASHTO M 307

Federal Specification VV-D-1078B

GDT 56

GDT 66

QPL 13

QPL 14

QPL 26

QPL 30

QPL 40

831.2 Materials

Use only admixtures that are listed on the specific Georgia Department of Transportation Qualified Products List (QPL). For a list of Heat Stable Anti-Stripping Additives sources, see QPL 26.

831.2.01 Air-Entraining Admixtures

A. Requirements

1. Use only air-entraining admixtures that are listed in QPL 13.
2. Use air-entraining admixture materials that meet AASHTO M 154 requirements.
3. Test compression and flexure strengths at 7 and 28 days.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

See requirements of AASHTO M 154.

D. Material Warranty

General Provisions 101 through 150.

831.2.02 Chemical Admixtures for Concrete

A. Requirements

1. Use only chemical admixtures that are described in QPL 14.
2. Use chemical admixture materials that meet AASHTO M 194 requirements for Types A, B, C, D, E, F, or G, unless otherwise specified.
   a. Waive the length change requirements.
   b. Ensure that the admixtures contain no more than 0.8 percent chloride, calculated as calcium chloride.
   c. Ensure that the air content does not exceed 4 percent when prepared in a standard batch without an added air-entraining agent.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

See the requirements of AASHTO M 194 for chemical admixtures.

D. Material Warranty

General Provisions 101 through 150.

831.2.03 Fly Ash, Raw or Calcined Natural Pozzolan, Slag, and Microsilica

A. Requirements

1. Fly Ash

   Fly ash is finely divided residue from the combustion of ground or powdered coal that is transported from the boiler by flue gases.

   Use fly ash that meets the requirements of AASHTO M 295, Class F or C and that are listed in QPL-30.
2. Raw or Calcined Natural Pozzolan

   This is a siliceous or siliceous and aluminous material.

   Use Pozzolan that meets the requirements of AASHTO M 295, Class N and that are listed in QPL-30.
3. Granulated Iron Blast-Furnace Slag

   This is a glassy granular material formed when molten blast-furnace slag is rapidly chilled and then finely ground.

   Use slag that meets the requirements of AASHTO M 302, Grade 100 or 120 and that are listed in QPL-30.
4. Microsilica (Silica Fume)

   This is an amorphous material with high silica content and purity, made as a by-product of high purity quartz that is reduced with other ingredients in an electric-arc furnace.

   Use microsilica that meets the requirements of AASHTO M 307.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Engineer will select the laboratory tests for acceptance and project control.

D. Material Warranty

General Provisions 101 through 150.

831.2.04 Heat-Stable Anti-Stripping Additive

A. Requirements

1. Use heat-stable, anti-stripping additives listed in QPL 26.
2. Submit samples of the proposed heat-stable, anti-stripping additive, asphalt cement, and aggregates to the laboratory for approval before use.

3. Ensure that materials meet the requirements of Section 828 for retained coating and tensile strength ratio when tested with GDT 56 and GDT 66, respectively.
4. Do not use an additive that contains harmful ingredients or adversely alters the specified characteristics of the bituminous material when added in the recommended proportions.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Retained coating	GDT 56
Tensile strength ratio	GDT 66

D. Material Warranty

General Provisions 101 through 150.

831.2.05 Silicone Fluid

A. Requirements

Use silicone fluid that meets Federal Specification VV-D-1078B, Viscosity Grade 1,000. For a list of sources, see QPL 40.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

See Federal Specification VV-D-1078B.

D. Material Warranty

General Provisions 101 through 150.

Section 832—Curing Agents

832.1 General Description

This section includes the requirements for the following curing agents:

- Burlap or cotton fabric
- Sheet materials
- Membrane curing compound

832.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

AASHTO M 148

AASHTO M 171

QPL 16