

ORIGINATION FORM

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(The person who receives or originates the issue and needs to forward the issue for action.)

Specification: 901, Coarse Aggregate

Subject: Deleterious Substances, 901-1.2; Granite 901-2.2

Origination date: 10/23/2008

Originator: Tom Malerk

Office/Phone: 352-955-6622

Problem statement: 1) The Specification's current definition of Deleterious Substances is ambiguous and inadequate to account for roots and wood. 2) The Specification's referenced test method for mica schist is currently out of date and has not been replaced by an AASHTO method.

The root issue affected at least two bridge jobs in the last six months. Industry brought up at a technical meeting on 10/22/2008 that the roots may also be an issue at other locations.

The mica schist appeared as a contaminant at a large mine in Alabama that potentially may be added under an existing FDOT contract to supply granite to Florida. To some extent, Florida has relied on Georgia DOT to identify and prevent Mica schist contamination, but Georgia's allowable limit is 10% as opposed to FDOT's 5%. Mica Schist recently turned up in one other Georgia mine, and could be at another mine five miles away.

Proposed solution: The proposed solution involves incorporating into the specification working solutions that have already been voluntarily put into place in the Mines' Quality Control Plans and appear to be working.

Information source:

- John Shoucair, FDOT Gainesville, 352-955-2925;
- Mark Hall, FDOT Brooksville, 352-754-6770;
- Rick Phillips, Vulcan Materials Company, (205) 298-3698

Recommended Usage Note: All Jobs

Estimated fiscal impact, if implemented:



Florida Department of Transportation

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M E M O R A N D U M

DATE: December 2, 2008

TO: Specification Review Distribution List

FROM: Rudy Powell, Jr., P.E., State Specifications Engineer

SUBJECT: Proposed Specification: 9010102, Coarse Aggregate

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Tom Malerk of the State Materials Office to establish a maximum permissible percentage of wood matter, and to reference the AASHTO test method for determining mica schist.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via e-mail at ST986RP or rudy.powell@dot.state.fl.us. Comments received after January 2, 2009 may not be considered. Your input is encouraged.

RP/dr
Attachment

COARSE AGGREGATE.
(REV 11-3-08)

SUBARTICLE 901-1.2 (of the Supplemental Specifications) is deleted and the following substituted:

901-1.2 Deleterious Substances: All coarse aggregates shall be reasonably free of clay lumps, soft and friable particles, salt, alkali, organic matter, adherent coatings, and other substances not defined which may possess undesirable characteristics. The weight of deleterious substances shall not exceed the following percentages:

Coal and lignite (AASHTO T 113).....	1.00
Soft and friable particles (AASHTO T 112).....	2.00*
Clay lumps (AASHTO T 112).....	2.00*
<i>Plant root matter (visual inspection in AASHTO T 27)....</i>	<i>0.005****</i>
<i>Wood and wood matter (visual inspection in AASHTO T 27)</i>	<i>0.005****</i>
Cinders and clinkers.....	0.50
Free shell.....	1.00**
Total Material passing the No. 200 sieve (FM 1-T 011)	
At Source	1.75
At Point of Use.....	3.75
<i>Fine-Grained Organic Matter (wet AASHTO 194).....</i>	<i>0.03</i>
Chert (less than 2.40 specific gravity SSD) (AASHTO T-113)	3.00****

*The maximum percent by weight of soft and friable particles and clay lumps together shall not exceed 3.00.

**Aggregates to be used in asphalt concrete may contain up to 5% free shell. Free shell is defined as that portion of the coarse aggregate retained on the No. 4 sieve consisting of loose, whole, or broken shell, or the external skeletal remains of other marine life, having a ratio of the maximum length of the particle to the shell wall thickness exceeding five to one. Coral, molds, or casts of other shells, and crushed clam and oyster shell indigenous to the formation will not be considered as free shell.

***This limitation applies only to coarse aggregates in which chert appears as an impurity. It is not applicable to aggregates which are predominantly chert.

*****Plant root matter, and wood and wood matter shall be considered deleterious when any piece exceeds two inches in length or 1/2 inch in width.*

SUBARTICLE 901-2.2 (of the Supplemental Specifications) is deleted and the following substituted:

901-2.2 Granites: Coarse aggregate produced from the crushing of granites shall be sound and durable. For granites to be used in bituminous mixtures and surface treatments, the Los Angeles Abrasion requirement of 901-1.3 is modified to permit a maximum loss up to 50 (FM 1-T 096). Maximum amount of mica schist permitted is 5% (~~AASHTO T 189~~ *FM 5-584*).

9010102
All Jobs

901-1.2:

Fiscal Impact to Mine: Minor Negative. The mines are already hiring workers at certain production stations to pick roots. Testing for wood involves visually picking out the wood, if present, while the producer is running a routine gradation test. In this case the impact is very minor. If the producer runs additional wood and root tests, they can set up the material for a gradation test in a pan, count the wood but not run the gradation test through the sieve nests. This is a quick test that may add 15 minutes of technician-time to complete.

Fiscal Impact to Department: Major positive. If deleterious materials end up in concrete structures, the life expectancy will be shortened.

901-2.2:

Fiscal Impact to Mine: Minor Negative. This will only apply to granite mines with a geologic record of mica schist presence. The test requires a person with geology training to identify the mica schist for example. The test may 30 to 60 minutes of technician-time to complete depending on the gradation of the rock.

Fiscal Impact to Department: Major positive. If deleterious materials end up in asphalt roadways, the life expectancy will be shortened.