

DATE: July 13, 2011

TO: MAG Specification and Details Committee Members

FROM: Brian Gallimore, Materials Working Group/AGC

RE: Section 702 – Base Material

PURPOSE: Moved all ABC material to 310 section

REVISIONS: a) Removed AB order of preference

SECTION 702

BASE MATERIALS

702.1 GENERAL:

Base materials shall consist of appropriately sized aggregate as defined in section 701, or other approved inert materials of similar characteristics, including recycled material, and materials that have been treated for plasticity index mitigation. Base materials shall be clean and free from vegetable matter and other deleterious substances. The Contractor shall notify the Engineer, in writing, at least 10 days prior to use of the material unless the material is currently acceptable for use as determined by the Engineer.

702.1.1 Aggregate base course shall be used primarily in roadway applications or where otherwise specified by project special provisions.

702.1.2 Select material shall be primarily used, but not limited to applicable structure and pipe backfill installations, shoulders, turnouts, driveways, and tapers or where otherwise specified by project special provisions.

702.2.1 The base material shall meet the physical properties listed in Table 702-2.

Table 702-1			
Sieve Analysis			
Test Methods AASHTO T-27, T-11			
Sieve Size	Accumulative Percentage Passing Sieve, by Weight		
	Select Material		Aggregate Base Course
	Type A	Type B	
3 in.	100	--	--
1-1/2 in.	--	100	100
1 in.	--	--	90 – 100
No. 4	30 - 75	30 - 70	38 - 65
No. 8	20 - 60	20 - 60	25 – 60
No. 30	10 - 40	10 - 40	10 – 40
No. 200	0 - 12	0 - 12	3 – 12
Plasticity Index			
Test Methods AASHTO T-89 Method A, T-90, T146 Method A			
Maximum allowable value	5	5	5
Fractured Face			
Test Method ARIZ 212, One Face			
Minimum required value	30	30	30
Resistance to Degradation			
Test Method AASHTO T-96			
Maximum allowable value at 100 revolutions	10	10	10
Maximum allowable value at 500 revolutions	40	40	40

702.2.2: Base material that does not meet Table 702-2 properties may be approved, at the Engineer's discretion, if the R-Value is a minimum of 70 when determined by test method AASHTO T-190.

End of Section

SECTION 702
BASE MATERIALS

702.1 GENERAL:

~~Materials for use as aggregate base shall be classified in the order of preference as follows: Base materials shall consist of appropriately sized aggregate as defined in section 701, or other approved inert materials of similar characteristics, including recycled material, and materials that have been treated for plasticity index mitigation. Base materials shall be clean and free from vegetable matter and other deleterious substances. The Contractor shall notify the Engineer, in writing, at least 10 days prior to use of the material unless the material is currently acceptable for use as determined by the Engineer.~~

~~(A) Crushed Aggregate.~~

~~(B) Processed Natural Material.~~

~~(C) Processed Steel Slag.~~

~~(D) Decomposed Granite.~~

~~When base material without further qualification is specified, the Contractor shall supply crushed aggregate. When a particular classification of base material is specified, the Contractor may substitute any higher classification of base material for the specified classification.~~

~~702.1.1 Aggregate base course material shall be used primarily in roadway applications except or where otherwise specified by project special provisions. Aggregate base shall conform to the requirements listed below.~~

~~702.1.2 Select material shall be primarily used, but not limited to applicable structure and pipe backfill installations, shoulders, turnouts, driveways, and tapers or where otherwise specified by project special provisions. Select material shall meet the requirements listed below.~~

~~Except where base materials are being obtained from a previously approved source, the Contractor shall give the Engineer 10 days advance notice, in writing, of the source of the base material he intends to use in order to allow sufficient time to perform the necessary tests.~~

702.2 CRUSHED AGGREGATE PHYSICAL PROPERTIES:

~~Crushed aggregate shall consist of crushed rock or crushed gravel or a combination thereof as defined in Section 701.~~

~~702.2.1 Soundness/Abrasion: The percentage of wear of crushed aggregate to be used as base will be determined as in Section 701, except that using Grading B of ASTM C 131, grading B shall be used. The percentage of wear of the material shall not exceed 40 after 500 revolutions.~~

~~702.2.2 Angularity: The amount of coarse aggregate particles retained in the No. 4 sieve shall be a minimum of 50% as determined in accordance with test method Ariz 212.~~

Comment [DR6]: Included in table?

Comment [DR7]: Included in table?

~~702.2.2.13- Grading: -The aggregate base material shall be well-graded when tested in accordance with ASTM C-436 and C-117. The percentage composition by weight shall be within Table 702-1. meet the physical properties listed in Table 702-2.~~

Table 702-12			
Sieve Analysis			
Test Methods AASHTO T-27, T-11			
Sieve Size	Accumulative Percentage Passing Sieve, by Weight		
	Select Material		Aggregate Base Course
	Type A	Type B	
3 in.	100	--	--
1-1/2 in.	--	100	100
1 in.	--	--	90 - 100
No. 4	30 - 75	30 - 70	38 - 65
No. 8	20 - 60	20 - 60	25 - 60
No. 30	10 - 40	10 - 40	10 - 40
No. 200	0 - 12	0 - 12	3 - 12
Plasticity Index			
Test Methods AASHTO T-89 Method A, T-90, T146 Method A			
Maximum allowable value	5	5	5
Fractured Face			
Test Method ARIZ 212, One Face			
Minimum required value	30	30	3050
Resistance to Degradation			
Test Method AASHTO T-96			
Maximum allowable value at 100 revolutions	10	10	10
Maximum allowable value at 500 revolutions	40	40	40

Table 702-1

CRUSHED AGGREGATE GRADATION

Sieve Sizes (Square Openings)	Percentage by Weight Passing Sieve		Aggregate Base
	Select Material		
	Type A	Type B	
3"	100		
1 1/2"		100	
1 1/4"			100
No. 4	30-75	30-70	38-65
No. 8	20-60	20-60	25-60
No. 30	10-40	10-40	10-40
No. 200	0-12	0-12	3-12

702.2.2: Base material that does not meet Table 702-2 properties may be approved, at the Engineer's discretion, if the R-Value is a minimum of 70 when determined by test method AASHTO T-190.

702.2.3 Plasticity Index: Unless otherwise noted, the Plasticity Index as tested in accordance with AASHTO T 146 Method A (Wet Preparation), T 89 and T 90 shall not be more than 5.

Comment [DR8]: Table to be re-written by Mike Whitman

702.3 PROCESSED NATURAL MATERIAL:

702.3.1 General: Processed natural material shall consist of hard, durable fragments of stone or gravel and a filler of sand or other finely divided mineral matter. It shall be free from an excess of soft or disintegrated pieces, alkali, adobe, vegetable matter, loam, or other deleterious substances.

702.3.2 Physical Requirements: When sampled and tested in accordance with standard test methods, the aggregate shall meet the following requirements:

(A) Percentage of Wear: When tested in accordance with ASTM C 131, the percentage of wear shall not exceed 40 percent after 500 revolutions.

(B) Plasticity Index: When tested in accordance with AASHTO T 146 Method A (Wet Preparation), T 89 and T 90, the plasticity index shall not be more than 5.

(C) Liquid Limit: When tested in accordance with AASHTO T 89, the liquid limit shall not be more than 25 percent.

702.3.3 Crushed Material: Crushed material is not required, but may be incorporated in the finished product.

702.3.4 Grading: The aggregate shall conform to the sieve analysis in this specification except that the least dimension of the maximum particle size shall not exceed 2/3 of the compacted thickness of the specified lift being placed.

702.4 DECOMPOSED GRANITE:

Decomposed granite shall be any granitoid igneous rock which has been weathered in place and which has as principal constituents granular fragments of quartz and feldspar. It may also contain fragments of granitic rock not yet broken down into the component minerals. This material shall remain stable when saturated with water. Particles larger than 3 inches, which will not be broken in the process of rolling and tamping during construction, shall not be used.

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Decomposed granite shall conform to the following requirements:

(A) When tested in accordance with this specification, not more than 20 percent shall pass the No. 200 mesh sieve.

(B) The P.I. of material passing the No. 200 sieve prior to testing shall not be less than 3 nor greater than 10. The Plasticity Index shall be tested in accordance with AASHTO T 146 Method A (Wet Preparation), T 89 and T 90.

702.4.1 Preparation of Test Specimens: A quantity of sufficient size to have a dry weight of 15 pounds shall be selected and dried to constant weight at a temperature between 215°F. and 230°F. Fifteen pounds of this material shall then be subjected to 500 revolutions in a Los Angeles abrasion machine, as described in Section 701, except that nothing shall be placed in the drum other than the material to be tested.

The material that has been subjected to the breakdown shall be tested in accordance with ASTM C 117 to determine the percentage of material finer than a No. 200 mesh sieve by washing.

End of Section