

ORIGINATION FORM

THE INFORMATION BELOW IS TO BE PROVIDED BY THE ORIGINATOR

Modify Specification _____ 204 _____
Section/File number

New Section _____
Section number

Subject: Graded Aggregate Base

Origination date: May 8, 2007

Originator: Tom Malerk
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Problem statement: The Department is trying to incorporate more recycled materials into the construction program. This specification allows the use of Reclaimed Concrete Aggregate (RCA, crushed concrete) from any source, not just from Department projects.

Information source: The Department has conducted research on this topic. Refer to **0510797**, Guidelines and Specifications for the Use of Reclaimed Aggregates in Pavement; Hard copy available, <http://www.ntis.gov/search/> Summary at http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_SMO/FDOT_797.pdf

Additionally, Ken Morgan, Turnpike District Materials and Research Engineer has experience with RCA from non-Department sources.

Background data: For more information please contact John Shoucair at 352-955-2925. Contractors need to be aware that RCA requires higher optimum moisture contents than materials they may have normally encountered in the past.

Recommended Usage Note: July 2007 letting
This product is to be used as a Graded Aggregate Base with a Structural Layer Coefficient of 0.15.

Expected fiscal impact, if implemented: Small savings expected if used on Department projects reflected in price difference between limerock base and RCA.



Florida Department of Transportation

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STEPHANIE KOPELOUSOS
SECRETARY

MEMORANDUM

DATE: June 7, 2007
TO: Specification Review Distribution List
FROM: Duane F. Brautigam, P.E., State Specifications Engineer
SUBJECT: Proposed Specifications Change: **2040000**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed new specification change for Graded Aggregate Base.

This change was proposed by Tom Malerk of the State Materials Office to provide for the use of Reclaimed Concrete Aggregate as an additional source for Graded Aggregate Base.

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 SP965DB or duane.brautigam@dot.state.fl.us. Comments received after July 5, 2007 may not be considered. Your input is encouraged.

DFB/dr

Attachment

COMMENTS:

Submitted by:

Phone #:

204 GRADED AGGREGATE BASE.
(REV 5-08-075-15-07)

SECTION 204 (Pages 206-208) is deleted and the following substituted:

SECTION 204
GRADED AGGREGATE BASE

204-1 Description.

Construct a base course composed of graded aggregate.

204-2 Materials.

Use graded aggregate material, produced from Department approved sources, which yields a satisfactory mixture meeting all the requirements of these Specifications after it has been crushed and processed as a part of the mining *or reclamation* operations.

~~— The Contractor may furnish the material in two sizes of such gradation that, when combined in a central mix plant pugmill, the resultant mixture meets the required specifications.~~

204-2.1: Mined Materials: Use ~~graded aggregate base~~ material of uniform quality throughout, ~~substantially~~ free from vegetable matter, shale, lumps and clay balls, and having a Limerock Bearing Ratio value of not less than 100. Use material retained on the No. 10 sieve composed of aggregate meeting the following requirements:

Soundness Loss, Sodium, Sulfate: AASHTO T 104 15%
 Percent Wear: AASHTO T 96 (Grading A)

Group 1 Aggregates 45%
 Group 2 Aggregates 65%

Group 1: This group of aggregates is composed of limestone, marble, or dolomite.

Group 2: This group of aggregates is composed of granite, gneiss, or quartzite.

204-2.1.1 Gradation: Use ~~graded aggregate base~~ material meeting *Meet* the following gradation *requirements*:

Sieve Size	Percent by Weight Passing
2 inch	100
1 1/2 inch	95 to 100
3/4 inch	65 to 90
3/8 inch	45 to 75
No. 4	35 to 60
No. 10	25 to 45
No. 50	5 to 25
No. 200	0 to 10

204-2.1.2 Liquid Limits and Plasticity Requirements: For Group 1 aggregates, ensure that the fraction passing the No. 40 sieve has a Plasticity Index (AASHTO T 90) of not more than 4.0 and a Liquid Limit (AASHTO T 89) of not more than 25, and contains not more than 67% of ~~the-its~~ weight passing the No. 200 sieve.

For Group 2 aggregates, ensure that the material passing the No. 10 sieve has a sand equivalent (AASHTO T 176) value of not less than 28.

The Contractor may use graded aggregate of either Group 1 or Group 2, but only use one group on any Contract. (Graded aggregate may be referred to hereinafter as “aggregate”.)

204-2.2 Reclaimed Concrete Aggregate Base Materials: Use reclaimed concrete aggregate base produced from Department approved sources meeting the requirements of this Section after crushing and processing. The reclaimed concrete aggregate base supplier shall have Department of Environmental Protection (DEP) permit requirements section 62-701.730 or be qualified as a clean debris source under DEP rules. The reclaimed concrete aggregate base shall consist of crushed concrete material and natural aggregate particles derived from the crushing of hard Portland cement concrete, durable fragments of stone, gravel, slag, and sand.

Obtain the Engineer’s approval prior to combining reclaimed concrete aggregates or reclaimed concrete aggregates and other approved materials. Provide the percentage of each material when requesting a combination of materials. Changes to approved combinations will require prior approval. The Engineer may require revised density acceptance testing for combined aggregates.

Combine the reclaimed concrete aggregates by mechanical interlock blending, belt blending or other Engineer approved methods to ensure uniform mixing.

204-2.2.1 Gradation: Meet the following gradation requirements:

Sieve Size	Percent by Weight Passing
2 inch	100
3/4 inch	65 to 95
3/8 inch	40 to 85
No. 4	25 to 65
No. 10	20 to 50
No. 50	5 to 25
No. 200	0 to 10

204-2.2.2 Plasticity: Reclaimed concrete aggregate base shall not contain plastic soils such that the minus 0.425 mm (No. 40) sieve material shall be non-plastic.

204-2.2.3 Limerock Bearing Ratio: Reclaimed concrete aggregate base shall have a minimum limerock bearing ratio (LBR) of 120.

204-2.2.4 Deleterious Substances: Reclaimed concrete aggregate base shall be free of all materials that fall under the category of solid waste or hazardous materials as defined by the state or local jurisdiction. Reclaimed concrete aggregate base shall meet all Department of Environmental Protection permit requirements which pertain to construction, demolition and recycling of these materials. Reclaimed concrete aggregate base shall be substantially free from other deleterious materials which are not classified as solid waste or hazardous materials. Reclaimed concrete aggregate base shall be asbestos free. The following limits shall not be exceeded:

- Bituminous Concrete.....1% by weight
- Bricks1% by weight
- Wood and other organic substances.....0.1% by weight
- Heavy Metals (except Lead)0.1% by weight
- Lead..... 5 parts per million
- Reinforcing Steel and Welded Wire Fabric1% by weight
- Plaster and gypsum board0.1% by weight

204-3 Equipment.

Provide equipment meeting the requirements of 200-3.

204-4 Transporting Aggregate.

Transport aggregate as specified in 200-4.

204-5 Spreading Aggregate.

Spread aggregate as specified in 200-5.

204-6 Compacting and Finishing Base.

204-6.1 General: Meet the requirements of 200-7.1 with density requirements of 204-6.3.

204-6.1.1 Single-Course Base: Construct as specified in 200-6.1.1.

204-6.1.2 Multiple-Course Base: Construct as specified in 200-6.1.2.

204-6.2 Moisture Content: Meet the requirements of 200-6.2.

204-6.3 Density Requirements: *Meet the requirements of 200-7.1, except* ~~After~~ *after* attaining the proper moisture conditions, uniformly compact the material to a density of not less than 100% of the maximum density as determined by FM 1-T 180. Ensure that the minimum density that will be acceptable at any location outside the traveled roadway (such as intersections, crossovers, turnouts, etc.) is 98% of the maximum density.

~~**204-6.4 Density Tests:** Meet the requirements of 200-7.2.~~

~~**204-6.5 Correction of Defects:** Meet the requirements of 200-6.4.~~

204-6.6 Dust Abatement: Minimize the dispersion of dust from the base material during construction and maintenance operations by applying water or other dust control materials.

204-7 Testing Surface.

Test the surface in accordance with the requirements of 200-~~7~~6.

204-8 Priming and Maintaining.

Meet the requirements of 200-8.

204-9 Thickness Requirements.

Meet the requirements of 285-6.

204-10 Calculations for Average Thickness of Base.

Calculations for determining the average thickness of base will be made in accordance with 285-7.

204-11 Method of Measurement.

204-11.1 General: The quantity to be paid for will be the area, in square yards, completed and accepted.

204-11.2 Authorized Normal Thickness Base: The surface area of authorized normal thickness base will be calculated as specified in 9-1.3, omitting any areas not allowed for payment under the provisions of 204-9 and omitting areas which are to be included for payment under 204-11.3. The area for payment, of authorized normal thickness base, will be the surface area determined as provided above, adjusted by adding or deducting, as appropriate, the area of base represented by the difference between the calculated average thickness, determined as

provided in 204-10, and the specified normal thickness, converted to equivalent square yards of normal thickness base.

204-11.3 Authorized Variable Thickness Base: As specified in 200-10.3.

204-12 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including dust abatement, correcting all defective surface and deficient thickness, removing cracks and checks and the additional aggregate required for such crack elimination.

Payment will be made under:

Item No. 285- 7- Optional Base - per square yard.

Implementation of these changes, if and when approved, will begin with the January 2008 letting.