



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

November 12, 2013

MEMORANDUM

TO: Division Engineers

FROM: Terry R. Gibson, P.E.
Chief Engineer

A handwritten signature in black ink, appearing to read "T. Gibson", written over the printed name of Terry R. Gibson.

SUBJECT: Efficient Use of Aggregate Materials

North Carolina benefits from having some of the highest quality aggregates in the United States. Over the last few years we have been working with aggregate producers to ensure maximum use of local materials. The use of local material minimizes costs associated with transporting material long distances as well as helps keep jobs associated with this work in North Carolina. We have also collaborated with the producers to better understand their production processes and what changes we can make to our specifications to improve efficiency and reduce costs. Overuse of coarse products and clean stone leads to an excess of fine materials that must be stored or wasted which leads to increases in the overall product cost. Maintaining a balance of different products is important to keeping our costs as low as possible. Some examples of related changes we have implemented over the last few years are listed below:

- MSE wall backfill was previously limited to #57 stone. For most walls, we now allow the use of various classes of clean coarse material (57, 57M, 67, 78M) as well as fine aggregate (1S, 2S, 2MS, 4S and washed screenings). The use of fine aggregate does require certain design changes and chemical testing of the material but this option has proved to be more cost effective in many cases.
- We added Class III, Type 3 select material to section 1016 of the standard specifications. The use of this class of material allows more options for quarries that do not produce manufactured sand (2MS) Class III, type 1. This select backfill material is comprised of washed screenings that are suitable for various operations including pipe bedding and backfill, temporary and permanent wall backfill, and reinforced bridge approach fill.
- We implemented the use of Aggregate Shoulder Borrow (ASB) to be used, where practical, as shoulder backfill material on resurfacing type projects. This material is similar to ABC but with a wider gradation acceptance band. Use of ASB has proved to be an economical option and eliminates costs associated with seeding and mulching and NPDES monitoring while providing immediate safety benefits by minimizing edge rutting. It also beneficially uses fines left over from production of coarse materials helping keep a cost lane.

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We revised the required aggregate gradation for Open-Graded Asphalt Friction Course (OGAFC). The gradation limits on 4 sieve sizes were increased by 5% each so that local 78M could be utilized. Previously quarries had to produce non-standard material since 78M was not within specified gradation limits. This required the material to be specially produced and stockpiled separately for a relatively small gradation difference.

Fairly minor adjustments to our requirements have proven to have a significant positive impact on costs. Please review this information with your staff to ensure they are aware of these changes and encourage them to look for ways to increase the use of these local materials on Maintenance and Construction activities in lieu of specialty aggregates which require longer haul routes.

RH/bs

cc: Mr. R. E. Greene, Jr., P.E.
Mr. C. A. Peoples, P.E.
Mr. R. A. Hancock, P.E.
Ms. J. P. Brandenburg, P.E.
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