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Tennessee Department of Transportation
Division of Materials and Tests

Procedures for Borrow Excavation Approval and Quality Monitoring (SOP 2-2)

Purpose: The purpose of this document is to establish a formal process for evaluating, testing, and approving borrow excavation solid rock and graded solid rock sources for use in general Tennessee Department of Transportation (TDOT) construction.

Background: Borrow excavation solid rock and graded solid rock sources must exhibit certain physical and chemical properties that reflect their ultimate quality and durability. The TDOT Standard Specifications have aggregate properties specified, including a maximum sodium sulfate soundness loss, as specified in 903.25. The borrow sources must also be free of any acid producing material as specified in 203.04.

1. Approval Process

All borrow excavation solid rock and graded solid rock sources shall submit the following required documents to M&T Field Services and the Project Supervisor and complete the following procedures to have their products be considered for use in TDOT projects.

1.1 Quality Control Plan (QCP)

The Contractor shall prepare a written QCP that is specific to the site requesting approval. At minimum, the following shall be addressed in the QCP:

- Indicate in detail how the Contractor proposes to control the equipment, materials, and production methods to ensure that the specified products are obtained. Include the processes taken to ensure minimal fines will be produced.
- List the personnel responsible for production and quality control at the site and include information on how to contact each person (phone, email, etc.).
- Identification of the physical location of the source, to include a description of the property site and reference to the nearest identifiable points such as highways and towns. The physical address and map shall be included.
- Approximate depth locations of rock layers identified in pre-blasting coring.

- A loading and shipping control plan which includes a description of the methods by which the products are to be loaded and shipped for use by TDOT, including safeguards against loading improper aggregate, contamination, degradation, and segregation of the aggregate. The plan must also include methods of ensuring that all products are accurately identified and that all shipping units are clean.

- Indicate the proposed means and methods to determine the quantity of material used.

- A statement shall be included that all applicable local, state, and federal laws.

- A copy of the agreement between the landowner and the Contractor to use the property as a borrow site.

1.2 Independent Lab Test Results

1.2.1 The Contractor shall submit test results from an AASHTO Re:Source accredited independent laboratory. The representative material sample used for the independent lab tests may be from excavated material or from cores taken during the contractor's initial investigation of the proposed borrow site. The tests shall include, at minimum, the following:

- Sodium Sulfate Soundness (ASTM C88/AASHTO T104)

1.2.2 The Contractor shall submit a certified letter stating that the proposed borrow material does not contain acid producing material. In areas of geology known to contain potentially acid producing material, representative samples of the proposed borrow material shall be tested for the following:

- pH (EPA600/2-78-054/ASTM D4239)

1.3 Verification

Upon receipt of a complete QCP and satisfactory independent test data, M&T Field Services will then acquire a sample and submit it to the HQMT lab for complete verification testing. The representative sample shall not be taken from a core. The sample shall be taken from material that has been excavated at the production site.

1.4 Referee Sample

If a sample fails to meet the requirements of any of the approval criteria, then a "referee" sample of the same material shall be obtained for testing. The Contractor may request a split sample to give them an option of testing the material independently. If the "referee" sample fails to meet any of the approval criteria, then the Department will not test anymore borrow material and the borrow source will not be approved.

1.5 Approval

Once the above process is complete and all requirements are met, the Contractor will be notified by M&T Field Services that the material is approved for use on the proposed project.

2. Quality Monitoring Process

An aggregate's approval status is contingent on satisfactory field performance and periodic laboratory evaluation. In addition to the quality monitoring outlined below, an aggregate's approval status may also be rescinded if there is any concern for safety or unsatisfactory performance that may be related to the approved material.

2.1 Quality Testing Program

2.1.1 All active aggregate sources will be continuously sampled and tested for quality by TDOT. A sample of the approved material shall be obtained by M&T Field Services personnel every 100,000 tons or 50,000 cubic yards of material produced or when there is a visual change in material or ledge. The sample shall be submitted to the HQMT laboratory for a verification of the applicable aggregate properties. The sample shall be split with the Contractor to give them an option of testing the material independently. Aggregate that does not meet TDOT Standard Specifications will not be accepted for use on projects for TDOT.

2.1.2 If there is any change to the Contractor's QCP (changes in procedures, key personnel, etc.), then an updated QCP shall be submitted to M&T Field Services and the Project Supervisor.

2.2 Quality Failure

2.2.1 If a sample fails to meet any of the approval criteria, then a "referee" sample of the same material shall be obtained for testing. The sample shall be split with the Contractor to give them an option of testing the material independently. When two consecutive samples fail quality testing, the aggregate source's approval shall be immediately rescinded, and the use of the failing material shall cease.

2.2.2 M&T Field Services and/or the Project Supervisor shall notify the Contractor of the failing test results as soon as possible; at which time a representative from the Contractor, M&T Field Services, and HQMT will hold a conference to identify the location/distribution of the failing material and to develop a plan for both the utilization of any existing material and the acceptance of newly produced material.