

ALDOT-249
PROCEDURE FOR ACCEPTANCE OF FINE AND COARSE AGGREGATES

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Applicable Documents

- BMT 10 Notice Stamp for Acceptance
- BMT 18 Sample Card
- BMT 29 Aggregate Source Inspection Checklist
- BMT 29-A Verification Test
- BMT 91 Aggregate Test Report
- BMT-116 Aggregate Plant Checklist
- BMT 131 Request for Source Approval
- BMT 141 Agreement to Participate in Aggregate Control Program

1. Scope

- 1.1. This procedure provides the requirements and procedures for obtaining and maintaining Department approval of developed and operational aggregate sources, including redistribution terminals, which are intended to be the source of construction aggregates for use on Department projects. This source approval recognizes the existence of suitable raw materials; processing facilities capable of producing specified aggregates meeting Department specification requirements; and an effective Quality Control Program assuring the continuing quality and uniformity of that production. Source approval for aggregates is the initial step in the Department's method of acceptance of aggregates for use on Department projects.

2. Purpose

- 2.1. This procedure sets out a standardized method for the Department to approve sources or aggregates through a producer Quality Control Program (QCP). The Department's procedures for source approval and quality assurance, at the source and/or at the point of use or project, comprise the Department's method of accepting aggregate for use on Department projects.
- 2.2. A Quality Control Program requires producers of construction materials to be responsible for the quality of their products; to establish, maintain, and implement their own individualized process control system; and to certify to the Department compliance of their product with applicable standard and contract specifications.
- 2.3. Approval of a source by the Department and implementation of a Quality Assurance Program by the Department does not relieve the producer of the responsibility for shipping aggregates which meet specifications. Contractors are also responsible for transporting and handling aggregates in a manner which will preclude significant variation in the properties of the aggregates. The Department reserves the right to test all aggregates at the source, point of use, or project site to determine acceptability for use according to contract specifications.
- 2.4. Nothing in this procedure is intended to prohibit the evaluation and approval of any operation not specifically covered herein that, in the opinion of the Department, complies with the criteria set forth in this procedure.

3. Referenced Documents

- 3.1. BMT 10 Certificate from producer that documents the source of the aggregate.

- 3.2. BMT 18 Sample card that is submitted with each sample for testing.
- 3.3. BMT 91 Aggregate Test Report
- 3.4. BMT 116 Aggregate Plant Check List
- 3.5. BMT 91 Aggregate Test Report
- 3.6. BMT-116 Aggregate Plant Checklist
- 3.7. BMT 131 Request for Source Approval
- 3.8. BMT 141 Agreement to Participate in Aggregate Control Program
- 3.9. BMT-136 Application for Certification and Recertification
- 3.10. BMT-138 Certified Technician Warrant
- 3.11. BMT-141 Agreement for Participation in Quality Control Program for Acceptance of Fine and Coarse Aggregates
- 3.12. ALDOT-175 Method of Stockpiling Coarse Aggregate for all Purposes
- 3.13. ALDOT-239 Method of Sampling and Testing Riprap Stone (Classes 1 through 5)
- 3.14. ASTM D4791 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
- 3.15. ALDOT-50 Method for Determining Particle Size Analysis of Soils
- 3.16. ALDOT-321 Test for Glassy Particles in Crushed Slag
- 3.17. ALDOT-355 General Information Concerning Materials, Sources, and Devices with Special Acceptance Requirements
- 3.18. ALDOT-376 Certification Program for Aggregate Technicians
- 3.19. AASHTO T-2 Sampling Aggregates
- 3.20. AASHTO T-11 Materials Finer Than 75 μ m Sieve in Mineral Aggregates by Washing
- 3.21. AASHTO T-19 Unit Weight and Voids in Aggregate
- 3.22. AASHTO T-27 Sieve Analysis of Fine and Coarse Aggregate
- 3.23. AASHTO T-89 Determining Liquid Limit of Soils

- 3.24. AASHTO T-90 Determining Plastic Limit and Plasticity Index of Soils
- 3.25. AASHTO M-92 Wire-Cloth Sieves for Testing Purposes
- 3.26. AASHTO M-231 Weighing Devices Used in the Testing of Materials
- 3.27. AASHTO T-248 Reducing Field Samples of Aggregate to Testing Size
- 3.28. AASHTO T-289 Determining ph of Soil for Use in Corrosion Testing
- 3.29. AASHTO T-290 Determining Water Soluble Sulfate Ion Content of Soil

4. Definitions

- 4.1. The following words or phrases as used in this document shall have the following meaning, except where the context clearly indicates a different meaning.
- 4.2. "Aggregate" (coarse) - a granular mineral material such as crushed/uncrushed gravel, crushed stone (limestone, granite, sandstone) or crushed slag having hard strong durable pieces free from adherent coating, used as a component in mortar mixes, concrete or hot mix asphalt, or alone as a base or subbase course, or used loose for drainage, foundation, scour protection, water barrier, etc., meeting the requirements of Section 801 of the Department's specifications.
- 4.3. "Aggregate" (fine) - a natural or manufactured sand having hard, clean, durable, uncoated particles used as a component in mortar mixes, concrete, hot mix asphalt, or used loose for drainage, etc., meeting the requirements of Section 802 of the Department's specifications.
- 4.4. "Approved Sources List" means the Department's Manual entitled "Material, Sources, and Devices with Special Acceptance Requirements".
- 4.5. "Central Laboratory" means the Aggregate Laboratory of the Bureau of Materials and Tests located in Montgomery, Alabama.
- 4.6. "Certified Aggregate Technician" means a person who has been tested by the Department and has successfully passed both the written and practical examinations and certified by the Department or a person who has been certified in another state under a similar aggregate quality control program who has submitted the necessary documentation satisfying the Department's requirements for certification. See ALDOT Procedure 376, "Certification Program for Aggregate Technicians", for additional information.
- 4.7. "Comparison tests" means the quarterly gradation analysis (AASHTO T-27) performed by the producer's certified aggregate technician on each size aggregate shipped during that quarter.

- 4.8. "Department" means the Alabama Department of Transportation.
- 4.9. "Independent Assurance Samples and Tests" or "IAS&T" means samples and tests performed by Department personnel who do not normally have direct responsibilities for Quality Assurance sampling and testing. They are used for the purpose of making independent checks on the reliability of the QC-QA Program, and are not used for determining the quality and acceptability of aggregate.
- 4.10. "Point of production" means the physical location (excluding redistribution terminals) where the material is removed from the earth and/or processed for use as aggregate.
- 4.11. "Point of use" means the physical location where the aggregate is incorporated into the project (i.e., project site, asphalt plant or concrete plant).
- 4.12. "Producer" means any business or individual supplying or seeking to supply aggregate for use on Department projects.
- 4.13. "Quality assurance" or "QA" means the Department's management method of evaluating the effectiveness of the producers Quality Control Program including the use of comparison tests, verification tests, annual source approval tests and on-site inspections to monitor the quality, uniformity and acceptability of aggregate.
- 4.14. "Quality control" or "QC" means the producer's management method of controlling and making adjustments to processing techniques, including the use of QC samples, control charts, tests, and other available information to establish and maintain the specified quality and uniformity of a product.
- 4.15. "Quality Control Program" or "QCP" means the overall system implemented by the producer to ensure compliance with Department Specifications.
- 4.16. "Redistribution Terminal" means the physical location where aggregates are received from approved sources for use on Department projects and stockpiled according to Department Specifications.
- 4.17. "Source" means the physical location (excluding redistribution terminals) where the aggregate material is removed from the earth and/or processed for use as an aggregate.
- 4.18. "The Testing Manual" means the Department's Manual of standardized methods of sampling and testing of aggregates.
- 4.19. "Verification Tests" means gradation analysis (AASHTO T-27) and material finer than the 75 μ m Sieve (AASHTO T-11) performed by the Department's technician at the producer's source or redistribution terminal monthly when shipping.

- 4.20. "Weighmaster" means a person employed by the producer or a public weighmaster who has been qualified by the Alabama Department of Agriculture for the purpose of certifying weight tickets or certified in another state.

5. Source Approval Requirements

- 5.1. In order for a producer to qualify his aggregate for use on Department projects, the following requirements must be satisfied:
- 5.1.1. A completed BMT-131 "Request for Source Approval" shall be submitted to the Materials and Tests Engineer.
 - 5.1.2. The producer shall submit a quality control program and same shall be individualized for each source based on deposit characteristics, to include processing and handling techniques. The "QCP" shall be submitted to the Materials & Tests Engineer.
 - 5.1.3. A completed and signed BMT-141, "Agreement for Participation in the Aggregate Quality Control Program" shall be submitted to the Materials & Tests Engineer.
 - 5.1.4. Request Division personnel to sample and submit same to the Central Laboratory for initial testing and approval. Sample sizes shall be as per AASHTO T-2, Table 1.
 - 5.1.5. Submit a check as outlined in ALDOT-355, "General Information Concerning Materials, Sources, and Devices with Special Acceptance Requirements" made payable to the ALABAMA DEPARTMENT OF TRANSPORTATION.
 - 5.1.6. The producer shall employ a "Certified Aggregate Technician" who has been certified and/or approved by the Department.
 - 5.1.7. The producer shall employ a certified weighmaster or use a public weighmaster when shipping materials measured by weight for a direct pay item by the Department as per Department specifications.
 - 5.1.8. All sources must pass the initial on-site inspection conducted by the Department and subsequent monitoring and inspections necessary to verify compliance with this document and applicable Department specifications. Material must meet DOT Specifications, Section 801 or 802.
- 5.2. After all the above items have been satisfactorily met, the Central Laboratory will recommend approval of the source to the Product Evaluation Board, requesting the source be placed on List I-1, Approved Sources List. The Product Evaluation Board normally meets during the first week in each month. The producer will be notified of any item not meeting the Department's requirements.

- 5.3. It shall be the responsibility of the producer to ensure that all operations are in compliance with their Quality Control Program. Continuing approval is contingent upon the effectiveness of the producer's Quality Control Program as evidenced by the quality and uniformity of the aggregate.
- 5.4. Submit all required items to:

Materials and Tests Engineer
3700 Fairground Road
Montgomery, Al 36110
- 5.5. If a source is relocated or extended beyond the boundaries shown on the sketch of the original source approval, even though it is in the same general area, a new inspection will be required. Early notification to the Department of any relocation/extension will result in a mutual benefit to both parties.
- 5.6. A new inspection will be required if there are any significant changes in the engineering properties of the materials.
- 5.7. The producer is required to notify the Department of any pending changes in ownership and/or personnel. If the approved source is indeed, sold, the new owner is required to submit an updated Quality Control Plan.

6. Quality Control Program

- 6.1. The Quality Control Program, as developed, implemented and submitted for each individual source, shall contain, as a minimum, the following items:
 - 6.1.1. Name, address and telephone number of the source; names of company officers, i.e., Owner, President, Vice President, etc.;
 - 6.1.2. Names of key personnel, i.e., Superintendent, General Manager, Quality Control Manager, Certified Aggregate Technician, Production Foreman, etc.;
 - 6.1.3. A pinpoint location of the source, i.e., section, township, range, distances from any known landmarks such as highway intersections, etc., in order to find the location by automobile, and a sketch with dimensions of the boundaries.
 - 6.1.4. Statements to the effect that stockpiles will be constructed in accordance with ALDOT-175, "Method of Stockpiling Aggregate for All Purposes", so as to minimize segregation and prevent contamination with foreign materials;
 - 6.1.5. Loading and shipping controls including a detailed description of the methods by which the aggregate is to be loaded and shipped for use on Department projects and safeguards against contamination, degradation and segregation of the aggregate;

- 6.1.6. A detailed description of the material being produced, i.e., limestone, granite, sandstone, to include any geological information;
 - 6.1.7. A list of all production equipment to include brand name, size, capacity, etc.;
 - 6.1.8. Source of water;
 - 6.1.9. Location and size of aggregate testing facility;
 - 6.1.10. Duties of the Certified Aggregate Technician;
 - 6.1.11. Methods by which statistical data will be computed and plotted.
- 6.2. The producer shall furnish a fully equipped laboratory at the production site or redistribution terminal. The Department may allow a producer to use one centrally located testing laboratory to serve more than one (1) source, provided testing can be performed as per the frequency guide within a reasonable amount of time. The laboratory shall be furnished with the necessary testing equipment and supplies for performing producer quality control sampling and testing. To assure accuracy, the testing equipment shall be checked periodically as directed by the Bureau of Materials and Tests in accordance with applicable standards. Minimum requirements are as follows:
- 6.2.1. Weighing devices meeting the requirements of AASHTO M-231;
 - 6.2.2. Mechanical shakers for fine and coarse aggregate;
 - 6.2.3. Mechanical splitter as per AASHTO T-248;
 - 6.2.4. Hand sieves 8 in or 12 in (200 mm and/or 300 mm) meeting the requirements of AASHTO M-92;
 - 6.2.5. Unit weight measures meeting the requirements of AASHTO T-19;
 - 6.2.6. Drying apparatus;
 - 6.2.7. Water supply;
 - 6.2.8. Rammers and Molds meeting the requirements of AASHTO T-134;
 - 6.2.9. Miscellaneous utensils such as buckets, pans, stirring spoons, etc.;
 - 6.2.10. Copies of the most current testing methods.

- 6.3. It shall be the producer's responsibility to ensure that all testing equipment is checked, verified, and/or calibrated at the required frequency and documentation for same shall be maintained at the source. The Department may require actual demonstration of the accuracy of the testing equipment.
- 6.4. Required frequencies for checking, verifying and/or calibrating aggregate test equipment is as follows:
- | | | |
|---|-------|--------------|
| Unit Weight Measures | 12 mo | AASHTO T-19 |
| Mechanical Shakers | 12 mo | AASHTO T-27 |
| General Purpose Balances | 12 mo | AASHTO M-231 |
| Hand Sieves (Visual inspections) | 6 mo | AASHTO M-92 |
| Drying Apparatus (Hot plate, electric or gas) | | ALDOT-253 |
- 6.4.1. If producers are using drying ovens to dry aggregates, temperature settings shall be verified every four months as per AASHTO T-27.
- 6.5. All documentation (work sheets) shall be maintained to verify that all testing equipment has been checked, verified and/or calibrated at the required frequency.
- 6.6. The Department will furnish procedures and work sheets for checking, verifying and/or calibrating the above equipment if requested.

7. Approval Levels

- 7.1. Upon successful application for source approval, each source shall be assigned the appropriate level by the Department. No source shall be approved unless the source has at least one approved aggregate.
- 7.2. Full Approval. When a source or redistribution terminal is fully approved, the producer may ship and certify aggregate from Department usage without additional Department acceptance testing prior to usage. However, the Department reserves the right to reject defective material at any time.
- 7.3. Conditional Approval. When a source is placed on conditional approval status, the producer may ship aggregate for Department use, and must certify each shipment, but the material will be accepted based on results of the Department's quality assurance samples. A source placed on conditional approval status will be subject to increased sampling frequency, pre-testing of material prior to shipment, restriction on production of aggregate for Department usage from specific layers, pits, or locations, and other controls or tests as deemed necessary by the Department. The Department will place all new sources on conditional approval to determine if the source can maintain consistent production of aggregate meeting Department specifications.

- 7.4. Time Limits. A source will be kept on conditional approval status for only as long as it is deemed necessary, but not to exceed six months. Should the source not gain full approval during this time frame, it shall be revoked.
- 7.5. Revocation - when a source is revoked, the producer is restricted from shipping aggregates for use on Department projects. Source approval will be revoked by the Department if the producers Quality Control Program proves ineffective in controlling the production of aggregates which comply with Department specifications and standards.
- 7.6. A source shall be revoked when one of the following occurs:
 - 7.6.1. Failure of material to meet specification requirements;
 - 7.6.2. The producer fails to maintain proper or timely records, or the producer fails to have test data available for themselves and for the Department;
 - 7.6.3. The producer varies their procedures from the approved Quality Control Program without Department approval;
 - 7.6.4. The producer fails to correct any deficiency related to any requirement of this procedure and/or the producers Quality Control Program, having received notice from the Department within a reasonable amount of time not to exceed 30 days;
 - 7.6.5. The producer performs improper sampling and/or testing of aggregates;
 - 7.6.6. The producer adds or mixes aggregates or materials not processed according to the Quality Control Program;
 - 7.6.7. The producer fails to maintain aggregate testing equipment in compliance with the appropriate test method or fails to have the equipment checked;
 - 7.6.8. Other conditions related to the quality of aggregate.
- 7.7. A source that has been revoked must remain revoked for a minimum period of 60 days. If the problems are corrected within this time frame, the source will be placed on conditional approval.
- 7.8. The Department will closely monitor the source for at least 30 days and will reinstate approval status provided the producer has again demonstrated the effectiveness of the Quality Control Program assuring the continued quality and uniformity of the aggregates.
- 7.9. A source's approval will automatically expire if it has not furnished material for use on Department projects for a period of one calendar year, unless an extension of approval is requested in writing, prior to the expiration date, by the producer to the Materials & Tests Engineer.

- 7.10. Extension of approval will be predicated on the continued operation of the source's quality control program during the previous calendar year and the source's continuing to meet all the requirements of this procedure. Approval will be extended only once for an additional calendar year. If, at the end of the extension, the source still has not furnished aggregate for Department use, source approval will again expire and reapproval is subject to reapplication.
- 7.11. Individual products from any source which have not been supplied for use on Department projects for a period of one calendar year will be removed from the Approved Sources List for that source, unless an extension is requested. This includes existing stockpiles of material made under a QC Program, meeting specifications, and for which identification and specific records and test data are available.
- 7.12. Denial of Source Approval. A producer's request for source approval will be denied when any one of the following occurs:
 - 7.12.1. Incomplete or inadequate Quality Control Program.
 - 7.12.2. Failure of material to meet specification requirements.
 - 7.12.3. Results of the Department's inspection and testing do not agree with information and test results furnished by the producer.
 - 7.12.4. Results of the Department's inspection indicate material properties or characteristics which may be a potential problem.
 - 7.12.5. Falsification of any approval information submitted by the producer.
 - 7.12.6. Inadequate testing facility and/or equipment.
- 7.13. The producer may reapply for source approval as per Section 4, "Source Approval Requirements", when documented evidence is presented to the Department identifying all corrective actions.
- 7.14. Annual Recertification. Recertification of all sources is required annually. Each Division will sample all sources within their jurisdiction and submit same to the Central Laboratory for testing and reevaluation. If the source meets all applicable DOT Specifications, the source will again be placed on the Approved Sources List (I-1). There is no fee charged for the annual reevaluation. The producer must also sign, notarize and submit BMT-141, Agreement for Participation in the Department's Aggregate Quality Control Program.

8. Source Classifications

- 8.1. These classifications are based on the Department's ability and resources. In circumstances that preclude the Department's ability to perform its QA function at the

- source, the Department reserves the right to change a source classification with a minimum of a months notice given to the producer.
- 8.2. Type I sources are those sources located within Alabama. These sources will be inspected monthly by the Department. The source may ship directly to Department projects or Redistribution Terminals, self-certifying each shipment with a BMT-10.
 - 8.3. Type II sources include out-of-state sources which are more than a one way distance of a half day's (250 miles) travel by automobile from the appropriate Division but are within a one way distance of a day's (8 hours) travel by automobile from the appropriate Division. These sources will be inspected monthly by the Department. The source may ship directly to Department projects, or Redistribution Terminals, self-certifying each shipment with a BMT-10. QA samples will be obtained at the point-of-use or redistribution terminal.
 - 8.4. Type III sources include out-of-state (and out-of-country) sources which are more than a one-way distance of a day's (eight hours) travel by automobile or cannot be accessed by automobile from the Department's Central Laboratory. Shipments may only be made to redistribution terminals self-certifying each shipment. The source will be monitored at the redistribution terminal. These sources must provide their source numbers, material identifications and QC test data for each shipment to a terminal. These sources will be inspected annually by the Department. The producer shall pay all per diem and travel costs for the Department's Inspectors.
 - 8.5. Type IV sources are those sources located within the state and which produce aggregate solely for their own use. Testing shall be performed as per the frequency guide, e.g., concrete plant and HMA plant.
 - 8.6. Redistribution terminals may only be located in state. Approval of the terminal and the quality control program at the terminal will be required, and the Department will assign a terminal number. Material certification by the source will be accepted; however, additional quality control tests for those aggregate characteristics subject to change due to handling, shipping, stockpiling, or other actions affecting aggregate characteristics, will be required at the time of reshipment from the terminal. Certification by the terminal of materials for Department usage will require both source and terminal numbers. These terminals will be inspected monthly by the appropriate Division.
 - 8.7. The owner/operator of the redistribution terminal shall employ a full time Certified Aggregate Technician who will perform duties as listed.

9. Fees and Costs

- 9.1. All producers for proposed Type III sources of aggregate whose source locations are located more than eight hours travel by automobile or cannot be accessed by automobile

- from the Department's Central laboratory will be required to pay for the Department's per diem and transportation. This will apply for initial inspections, annual inspections, or at anytime deemed necessary by the Department. Costs shall include meals, lodging, airfare and vehicle rental cost if required, and/or mileage rates if a Department vehicle is used. Should multiple sources be evaluated/ inspected on the same trip, all costs will be proportionally divided.
- 9.2. All costs as mentioned above shall be borne by the producer(s). Payment for expenses shall be made by check, payable to the Alabama Department of Transportation prior to any visit or inspection.
- 9.3. Checks shall be submitted to:

Materials and Tests Engineer
3700 Fairground Road
Montgomery, Al 36110

10. Control Charts (Analysis and Recording of Data)

- 10.1. All test results of conforming and nonconforming aggregates shall be recorded on approved forms and charts which shall be kept up to date and complete, and shall be available at all times to the Department.
- 10.2. Aggregate quality during the production process can be effectively monitored by the control chart method of analysis. A control chart is simply a graphical record of the quality of a particular characteristic of the aggregate. Example control charts will be furnished by the Department. Computer generated control charts or control charts different from the examples provided by the Department must be approved by the Department.
- 10.3. The use of control charts by the aggregate producer serves the following purposes:
- 10.4. To provide early detection of trouble before rejections occur;
- 10.5. To decrease aggregate variability and provide information for quality improvement.
- 10.6. All test results of conforming and nonconforming aggregates shall be recorded on approved forms and charts which shall be kept up to date and complete, and shall be available at all times to the Department.
- 10.7. The producer must have the necessary equipment (i.e., calculator, and/or computer, etc.) to perform statistical analysis such as "mean and standard deviation" and maintain adequate records of all samples, tests and other data to substantiate aggregate compliance to Department specifications. Control charts shall be maintained and visibly displayed by

- the producer at the source and/or redistribution terminal on those aggregate characteristics designated by the Department.
- 10.8. A copy of the Quality Control Plan as well as current copies of the appropriate test methods (AASHTO/ASTM), ALDOT Procedures, Department specifications, and current test data shall be available and on-hand at all times.
 - 10.9. The producer shall submit copies of all control charts to the Central Laboratory or appropriate Division each month while shipping.
 - 10.10. Where there is an indication that the process is not being adequately controlled, the producer must immediately take the necessary actions to adjust the process.
 - 10.11. The producer is required to compute the mean and standard deviation for each sieve size for both coarse and fine aggregate each time gradation analysis is required by the Frequency Guide. The mean and standard deviation is also required for unit weight and fineness modulus. If there is not a gradation analysis required by the Frequency Guide, as a minimum, the producer shall perform one (1) gradation analysis per shipping day for coarse and fine aggregate, determine unit weight and compute the fineness modulus (FM). The means and standard deviations shall be computed, plotted, displayed on control charts and submitted to the Central Laboratory and appropriate Division each month while shipping.

11. Comparison/Verification Test, Test Reports and Shipping

- 11.1. Comparison Tests - To ensure uniformity and compliance with prescribed test procedures, all producers are required to sample and perform at least one (1) comparison test per quarter, per size aggregate shipped that quarter. Comparison tests will be performed by the producer's Certified Aggregate Technician at their facility. When the technician is finished, he/she will prepare sample cards (BMT-18) for each sample tested and maintain the identical samples until picked up by a DOT Inspector, who will, in turn, send same to the Central Laboratory in Montgomery for comparison testing. The Central Laboratory will compare gradation analysis to ensure a + 5 percent tolerance for each sieve size. Samples found to be out of tolerance will be resampled, retested and compared. Copies of comparison sample test results will be distributed by the Central Laboratory, Aggregate Control Section to the Division Materials Engineer, and to the Certified Aggregate Technician.
 - 11.1.1. If a producer does not ship any material during the quarter, no comparison tests are required.
- 11.2. All BMT-18s submitted with comparison samples will have the following information written on the card:

Front Side:

- DOT size number and type; such as #57 crushed slag;
- Producer's name, and source number;
- Date, name and number of technician who took sample;
- The word "comparison" written in large letters across the top of the card;

Back Side:

- Put gradation analysis, i.e., sieve size, percent passing each sieve, and total weight.

- 11.3. Shipping Control - Each producer's shipping unit and Quality Control Technician will be responsible for loading the specified sized or non-sized materials with special attention to the use intended for the ordered material, i.e., whether there is specification requirements applicable to Portland cement concrete, bituminous treatment layers or bituminous plant mix materials, etc.
- 11.4. Test Reports - A stamped (BMT-10) is REQUIRED with each load of aggregate shipped from a Source. A BMT-91 (Aggregate Test Report) is required as per the Frequency guide if the pay item for which the aggregate is to be used requires gradation analysis, otherwise a BMT-91 is not required. A list of all pay item numbers along with the sampling and testing frequencies for gradation and unit weight are shown on the last page for ready reference. BMT-91s will be checked, initialed and dated by the DOT inspector during his monthly verification visits. The DOT Inspector will keep copies of all BMT-91s on file in the Division Materials office.
- 11.5. Verification Sampling and Testing - Division personnel will visit each source or redistribution terminal located in their respective area at least monthly to perform verification testing. Division personnel will sample, from approved stockpiles, each size material being shipped during that period at each site and perform all verification tests at the producer's facility. It is important that verification tests be performed at the producer's facility. In the event problems are encountered, a resample can be taken, equipment can be checked and a more timely resolution to the problem can be found. When all verification tests are completed, the responsible DOT Division inspector will forward a copy of all verification test results to the Central Laboratory in Montgomery. If stockpiles have been exhausted, trucks or railroad cars that have been approved by the technician may be sampled. All samples shall be taken as per AASHTO T-2. During each verification visit, DOT personnel will check BMT-91s as per Section 11.4. Gradation and wash tests will be performed on all verification tests. Stockpiles or individual shipments that have not been approved by the Certified Aggregate Technician will not be sampled. If samples taken from stockpiles or shipments, either at the plant or on the project, are of questionable quality, they should be promptly submitted to the Central Laboratory with cards and bags marked RUSH, to prevent incorporation of possible failing material into the construction. These samples will be given top priority in testing. Failing results will initiate an immediate investigation by the Aggregate Control Section of the Central Laboratory. All testing will be performed in strict

compliance with the appropriate AASHTO, ASTM or ALDOT Procedures prescribed in the Specifications.

11.5.1. If the producer does not ship any material during the month, no verification tests are required. The appropriate Division should document same.

11.6. Sample Size - The appropriate sample size taken shall be as per AASHTO T-2.

11.7. Monitoring - The Aggregate Control Section of the Central Laboratory is assigned the responsibility of monitoring all aggregate test results. The bulk of these results will be collected from the verification sampling program. Records showing the current properties of each aggregate source will be maintained, and all significant changes in these properties will be investigated and promptly reported to the aggregate user laboratories in the Central Laboratory, e.g., Bituminous Concrete Laboratory, Concrete Section, etc. All failing test results will be investigated by the Aggregate Control Section of the Central Laboratory, and if, after evaluation, it is judged that the material would jeopardize the quality of construction, it will be reported to project and producer personnel in time to prevent further use of the material in question.

12. Responsibilities

12.1. The Department, in conjunction with the Academia, will administer a viable training program to train Quality Control Technicians as per ALDOT Procedure 376, "Certification Program for Aggregate Technicians."

12.2. The Certified Aggregate Technician must be capable of performing all applicable tests and must demonstrate proficiency to the Department and be certified by the Department for test procedures as applicable. Aggregate technicians shall be certified and/or recertified in accordance with ALDOT Procedure 376, "Certification Program for Aggregate Technicians".

12.3. The Certified Aggregate Technicians will:

12.3.1. Be responsible for the overall Aggregate Quality Control Program;

12.3.2. Take aggregate samples as per AASHTO T2, ALDOT-150 and ALDOT-239;

12.3.3. Ensure stockpiles are constructed as per ALDOT-175;

12.3.4. Perform gradations (AASHTO T-27) when required by the specifications and determine the amount of material finer than the No.200 (75 μ m sieve); (AASHTO T-11) (Document on BMT-91);

12.3.5. Determine loose unit weight (AASHTO T-19, Shoveling Procedure) as required by the pay item of the material;

- 12.3.6. Determine flat and elongated pieces in coarse aggregates as per ASTM D4791, if a visual inspection indicates the need;
 - 12.3.7. Determine glassy particles content if used in bituminous wearing surface layers as per ALDOT-321, if a visual inspection indicates the need;
 - 12.3.8. Perform additional tests on soil-cement (AASHTO T89, T90, T134, T310, etc.)
 - 12.3.9. Provide a signed BMT-10 with each load of aggregate shipped from each source;
 - 12.3.10. Provide a BMT-91 as per the frequency guide if gradation is required;
 - 12.3.11. Perform comparison tests;
 - 12.3.12. Assist DOT personnel with verification tests;
 - 12.3.13. Ensure all aggregate testing equipment is maintained as per the appropriate specification;
 - 12.3.14. Maintain a copy of the most current testing specifications;
 - 12.3.15. Display and maintain current control charts.
 - 12.3.16. Ensure that weighing scales are checked every four (4) months as per Department specifications.
- 12.4. The Contractor will:
- 12.4.1. Maintain and make available to Department personnel upon request all BMT-10s that will clearly document the tonnage and identify the source of all aggregates used or proposed to be used;
 - 12.4.2. Construct and maintain aggregate stockpiles as per ALDOT-175.
 - 12.4.3. DOT Division Personnel will:
 - 12.4.4. Visit each source twice per month;
 - 12.4.5. Check BMT-10s;
 - 12.4.6. Sample aggregate stockpiles at the source/ contractor's site each year (October 1 thru December 30) and submit same to the Central Laboratory in Montgomery for annual reevaluation;
 - 12.4.7. Notify the central laboratory of any problems;
 - 12.4.8. Perform verification tests monthly;

- 12.4.9. Check, date and initial producer's BMT-91s and maintain files in Division Materials section;
 - 12.4.10. Pick up "comparison" samples in a timely manner and ship to Central Laboratory in Montgomery;
 - 12.4.11. Perform annual inspections to all sources to include a visual inspection of plant operations, laboratory space and all test equipment as per the Aggregate Plant Check List, BMT-116. Conduct at least one (1) unannounced independent weight check as per DOT Specifications if the producer is shipping aggregates that are measured by weight for a direct pay item by the Department.
 - 12.4.12. Review control charts.
 - 12.4.13. Ensure that the producer's equipment is checked, verified and/or calibrated as per Section 6.4.
- 12.5. Central Laboratory, Aggregate Control Section will:
- 12.5.1. Administer the Aggregate Control Program and monitor effectiveness of same;
 - 12.5.2. Assist the Academia with classroom and practical laboratory training as required;
 - 12.5.3. Perform all initial on-site inspections for all potential sources.
 - 12.5.4. Provide classroom and laboratory space for training as required;
 - 12.5.5. Test and certify aggregate technicians;
 - 12.5.6. Perform annual reevaluation testing for all sources;
 - 12.5.7. Perform comparison tests;
 - 12.5.8. Review verification test results;
 - 12.5.9. Maintain files for all approved sources. Files will include evaluation reports, geological assessments, annual reevaluation test results and other data necessary to ensure aggregate source and quality;
 - 12.5.10. Approve new sources;
 - 12.5.11. Ensure oversight responsibilities by visiting all Divisions on a yearly basis. The visits will include a trip to one (1) of the approved sources located in the particular Division with a Division representative; Central Laboratory will generate a written report to document the visit;

- 12.5.12. Be the focal point for any aggregate problem;
- 12.5.13. Generate the required recommendations to the Product Evaluation Board when it appears necessary to remove a source from the Approved Sources Lists;
- 12.5.14. Conduct at least one (1) unannounced independent weight check as per DOT Specifications if the producer is shipping aggregates that are measured by weight for a direct pay item by the Department;
- 12.5.15. Review and maintain copies of producer control charts.
- 12.5.16. Sample and test coarse aggregates quarterly that have L.A. Abrasion values within 5% of the maximum allowable loss.

13. Tests and Frequency of Sampling Material for Quality Control Program, ALDOT-249

Section	Gradation Frequency*	Shoveling Method
	AASHTO T-27 and T-11	AASHTO T-19 Unit Weight
210	1 per day (Visual)	Not Required
214	1 per 500 T (450 t)	Not Required
215	1 per 500 T (450 t)	Not Required
219	1 per 500 T (450 t)	Not Required
224	1 per 500 T (450 t)	Not Required
231	1 per 500 T (450 t)	Not Required
301 Crushed Aggregate Base	1 per 1200T (1000t)	Not Required
304 Soil-Cement	1 per 500 T (450t)	Not Required
Clay Content, Liquid Limit, & Plasticity Index	1 per day	
pH, Sulfate Content	1 per 2000 T (t)	
315	1 per 500 T (450 t)/1 per day	Not Required
327	No Set Frequency	Not Required
401	1 per 225 T (t)	1 per month
402	1 per 225 T (t)	1 per month
414	No Set Frequency	Not Required
416	No Set Frequency	Not Required
417	No Set Frequency	Not Required
420	No Set Frequency	Not Required
430	1 per 500 T (450 t)	Not Required
450 Sand	1 per 225 T (t)	Not Required
450 Coarse Aggregate	1 per 500 T (450 t)	Not Required
501 Sand	1 per 225 T (t)	Not Required
501 Coarse Aggregate	1 per 500 T (450 t)	Not Required
503	1 per 500 T(450 t)	Not Required
524	1 per 500 T (450 t)	Not Required
525	1 per 500 T (450 t)	Not Required
526	1 per 500 T (450 t)	Not Required
530	1 per 500 T (450 t)	Not Required
531	1 per 500 T (450 t)	Not Required
533	1 per 500 T (450 t)	Not Required
536	1 per 500 T (450 t)	Not Required
605	1 per 500 T (450 t)	Not Required
606	1 per 500 T (450 t)	Not Required
609	1 per 500 T (450 t)	Not Required
610 Filter Blanket	1 per 500 T (450 t)	Not Required
610 Riprap	1 per 2000 T (1800 t) (Visual)	Not Required
612	1 per 225 T (t)	Not Required
623	1 per 500 T (450 t)	Not Required
629	1 per 500 T (450 t)	Not Required

*Minimum of one (1) per day while shipping.

Note: t = metric tons
 T= English Tons