STUDY GUIDE
FOR
AGGREGATE CERTIFICATION

Revised: 10/05/2007
BASICS

OF

AGGREGATE CERTIFICATION
# TABLE OF CONTENTS

I. Introduction  
II. Common Sampling Devices  
   - Square Pointed Shovel  
   - Fine Aggregate Sampling Tube  
   - Coal Scuttle Bucket  
III. Sampling for Quality Control  
   - Why Sample  
   - Where to Sample  
   - Sampling Conveyor Belts  
   - Sampling Stopped Level Belts  
   - Sampling Inclined Stopped Belts  
   - Sampling Moving Belts  
   - Sampling Trucks or Railcars  
   - Sampling a Single Truck Dump  
   - Sampling a Stockpile of Single Lift Truck Dumps  
   - Sampling Stockpile Loading Faces  
   - Sampling Conical Shaped Stockpiles  
   - Stockpiling Considerations  
   - Quality Control Considerations  
IV. Standard Operating Procedure No. 1 (SOP 1)  
   - “Monitoring the Quality of Coarse and Fine Aggregates”  
V. Section 800 Specifications  
VI. Test Procedures  
   - AASHTO T 11 – Material Finer than No. 200 (75 µm) Sieve  
   - AASHTO T 21 – Organic Impurities in Aggregates for Concrete  
   - AASHTO T 27 – Sieve Analysis of Fine and Coarse Aggregates  
   - AASHTO T 96 – Resistance to Abrasion of Small Size Coarse Aggregate by use of the Los Angeles Machine  
   - AASHTO T 248 – Reducing Field Samples of Aggregate to Testing Size  
   - GDT-63 – Sand Equivalent of Fine Aggregates  
   - GDT-74 – Rapid Determination of the Apparent Specific Gravity of Coarse Aggregate  
   - GDT-75 – Method of Test for Determining Production of Plastic Fines in Fine Aggregate  
   - GDT-98 – Method of Test for Water Soluble Material in Granular Backfill  
   - GDT-104 – Determining Percent Schist, Phyllite or Shale by Weight of Coarse Aggregates  
   - GDT-129 – Method of Test for Determining Flat and Elongated Particles in Coarse Aggregates  
   - GDT-132 – Method of Test for Determining Friable Particles in Fine Aggregate  
   - GDT-133 – Method of Test for Determining Friable and/or Weathered Particles in Coarse Aggregate  
VII. Aggregate Rating System  
VIII. Policies Regarding Reporting of Data for Certification  
IX. Natural Sand
SECTION I

INTRODUCTION
INTRODUCTION

This text is intended as a study guide for Quality Control/Quality Assurance of aggregates at the mining and processing facility. Webster defines quality control as “a system for ensuring maintenance of proper standards in manufactured goods by random inspection.” For the purpose of the Georgia Producer Certification Program this is a good definition for Quality Assurance or “Certification Sampling.” Quality control on the other hand is a much larger and more complex issue for which representative sampling, although absolutely essential, is only a part of the process. Excellence in quality control requires a team effort on behalf of everyone associated with the product from top management all the way through the mining, processing, handling, storage, and shipment of the aggregates.

This text is basic in nature and explains the purposes for sampling as they relate to production control versus sampling for certification of aggregates. It also provides general guidelines for determining when and where samples should be taken. It also includes a discussion of sampling devices, Standard Operating Procedure No. 1 (SOP 1), sampling procedures, specifications, test procedures, the Aggregate Rating System, policies regarding the reporting of certification test data and policies regarding the written exam.
SECTION II

COMMON SAMPLING DEVICES
SQUARE POINTED SHOVEL

There hasn’t been a device specifically designed to sample aggregates. However, a squared pointed shovel is the accepted standard for coarse aggregate. It should be used when taking samples to represent gradation. A round pointed shovel or a spade may be used to facilitate collecting a mass of material when representing the gradation isn’t necessary. Although, all three of these devices distort gradation samples to the fine side, the square pointed shovel is the preferred tool for sampling products for gradation testing.

FINE AGGREGATE SAMPLING TUBE

A tube with an inside diameter of 2 inches (50 mm) to 3-1/2 inches (89 mm) and a minimum length of 30” (762 mm) should be used for sampling concrete sand.

COAL SCUTTLE BUCKET

A coal scuttle bucket or an approved alternate should be used to catch a cross sectional area of material being discharged from a conveyor belt. The narrow configuration of the opening of a coal bucket results in it being the most acceptable sampling device for this application that is readily available commercially.
SECTION III

SAMPLING FOR QUALITY CONTROL
WHY SAMPLE?

Samples are taken for two basic reasons.

One is to “control” product quality during the production and storage phase. Samples should be taken during production and the gradations adjusted and controlled based on the test results to allow for normal segregation and degradation that are expected to occur during further handling.

The second reason for sampling is to “verify” product quality during shipment. Provided the more complex issues of “control” have been properly addressed, the samples taken for verification of quality should be a simple matter of randomly taking representative samples during shipment and reporting the test results. These samples serve the purpose of quality assurance and for certification of product quality during shipment.
WHERE TO SAMPLE

There are three basic categories of locations where samples should be taken. Generally, samples should be taken at the point that is most representative of the product just after it is screened, just before it is stored and as it is shipped. Each has its purpose. Consider these examples:

Example No. 1
There is a gradation problem with No. 5 stone and screens have been changed to correct it. There are numerous points where the material could be sampled as indicated by the letters A, B, C, D, and E. For the purpose of evaluating the effect of the screen change samples should be taken from the conveyor belt at point A just after the material has been screened. Here the material can be sampled to precisely evaluate the effect of the screen change without degradation, contamination and segregation influencing test results and producing misleading data.

Example No. 2
Material is being shipped directly from the wash bin and certification samples need to be taken. Individual truck loads (point D) will vary due to normal segregation. The most representative sampling point to base any blend adjustment on and to represent the bulk of the delivered material would be from the belt at point C just after the material is washed and just before it enters the bin.

Example No. 3
Material is being stockpiled at point E for later shipment. For the same reasons indicated under Example No. 2, the belt samples at point C would be the best place to control the material that is going into the stockpile.
SAMPLING CONVEYOR BELTS

When sampling conveyors the following guidelines should be observed:

- For conveyors that are discharging current production, sampling a single cross section of it is considered acceptable.

- For conveyors discharging material from a loader or truck feed bin or hopper, segregation will influence results more so than the circumstances illustrated above. In this instance three cross sections of the conveyor should be sampled to produce a composite sample as shown below. Depending upon the length of the belt, the conveyor may have to be started and stopped three times in order to acquire a composite sample.

All of the materials, including fines, should be removed from each of the cross sectional cuts.
Now let’s look at specifics for physically removing a sample from the belt.

**STOPPED LEVEL BELTS**

To sample a level stopped belt simply remove all of the material from a cross section.

**INCLINED STOPPED BELTS**

To sample an inclined belt begin by moving material forward on the belt to create a sheer face for sampling at the downhill side of the cut. The sheer face at the downslope side of the cut can then be sampled with a minimum of segregated material rolling into the sample. Any particles that roll from the upper portion of the belt into the sampling area should be discarded.
MOVING BELTS

Moving belts are sampled by moving a container through the flow of aggregate as it discharges from the belt. Materials on the belt are always segregated with the top portion typically being coarser than the bottom. Oftentimes, one side of the belt will also be coarser than the other due to the direction from which material was discharged onto the belt. Therefore, catching an entire cross section sample of the material being discharged from the belt is very important. It is also important that the sampling container be “swiped” all the way through the flow without stopping, slowing down or overfilling the container. Allowing any of these errors to occur will render the sample non-representative. The sketches shown below are intended to illustrate the Do’s and Don’ts for sampling the discharge from a moving belt:
A WORD OF CAUTION ABOUT BELT SAMPLES: If free moisture is present, the sample should not be tested for minus No. 200 (75µm). This is because the fines are concentrated in the water and will drain off the shovel when the sample is taken. Samples for minus No. 200 (75µm) should be taken after free water has drained and the fines are more evenly distributed such as after the material has been stockpiled. A truck load of material discharged from a bin just after the material is washed is a good example of material that contains free water.

In this instance, a sample taken to represent minus No. 200 (75µm) would have to be taken after the material is stockpiled.

CAUTION: When materials containing free moisture are stockpiled the minus No. 200 (75 µm) material will drain inward with the water and concentrate within the load while the outside may appear to be clean. In this case it is important to establish a loading face wherein a mix of the material can be sampled after it has drained. The best control for minus No. 200 (75 µm) content in washed stone is a VISUAL inspection of the water and the material. The water supply should be clear and the stone should appear clean. Otherwise there is a production or handling problem that should be corrected.
SAMPLING TRUCKS OR RAILCARS

The same procedure is used to sample both trucks and rail cars. In many instances during load out from a bin a truck will begin loading at the front of the truck bed and pull up two more times before being completely loaded. This results in three conical shaped peaks. Depending upon the length of the truck and the bin configuration or the size of the loader being used to load the truck there may be only one peak. It really doesn’t matter, the same principal that is applied to sampling three peaks can be applied to sampling just one peak.

The X’s indicate the points that should be sampled in a direction from one corner straight across to the opposite corner. Point 1 is situated about 1/3 the way between the front corner and the first peak in the load. Point 2 is at the top of one of the peaks just away from the extremely fine material that may be directly in the center of the peak. The third point is about 1/3 the distance from the back corner of the load to the peak. It is important that these three points be represented to produce a single composite sample.
If sampling a single truck dump, use essentially the same pattern as for sampling a truck before it is dumped.

The X’s indicate the points that should be sampled in a direction from a front corner straight across to the opposite back corner. The first point is of an intermediate gradation and situated about 1/3 the way between the front corner and the peak of the pile. The middle point is at the peak of the pile just behind and out of extremely fine material that is in the heart section. The last point is about 1/3 the distance from the back corner to the peak of the pile and is of a coarse gradation. It is important that these three points be represented to produce a single composite sample. Further illustration is shown in the side view on the next page.
Now let’s look at a side view of the same dump. These are the same points shown in the top view and is intended to better illustrate where the shovel should be inserted. The 1/3 points that are shown on the sketch are referring to the distance from the bottom corner of the pile to the peak of the pile. This is not etched in stone. The idea is to get a shovel full that looks typical of the specific section being sampled.

**SIDE VIEW**

There are three things to remember about the actual shoveling of a sample from a stockpile:

1. Do not rake back or disturb the material before sampling. Sample it just like it is.
2. Push the shovel straight in at about 90° and as far as it will go.
3. Remove the shovel carefully to minimize spilling material off of the shovel blade. Material spilled off the shovel is coarser than that which is left on the shovel and distorts test results.
SAMPLING A STOCKPILE OF SINGLE LIFT TRUCK DUMPS

Now that sampling a single load has been discussed, let’s look at how to apply this same pattern but use three loads instead of one to produce a composite sample.

Looking at this sketch it is easy to see how this should be accomplished.

In the next sketch, one of the loads have been dumped from a different direction and it is a little more confusing to stick to the pattern.
Now it is a lot more difficult.

As shown in these illustrations the individual truck loads may vary in the direction from which they were dumped. It is very important to determine the direction so that you can follow the three point pattern to produce a representative composite sample. Depending upon how tightly the loads are dumped it may be impossible to determine the direction from which some loads were dumped. Unless there is a reason to single out a load, such as obvious contamination or the wrong size, sample only those piles where you can determine the direction of dumping. The circled number in the illustration are examples of points that would be used for composite samples. The same numbers would be combined for a sample and so on.
SAMPLING STOCKPILE LOADING FACES

GRADED AGGREGATE BASE

Graded aggregate should be sampled by the loader backdrag sampling procedure as shown below:

**Area to be Sampled**

A typical active loading face should be sampled. If there isn’t a loading face, remove enough material from the stockpile so that the entire face will slough downward to create a loading face.

**Sample Size**

Typically, three loader buckets should be used.
Sample Excavation

The loader that is used should not have teeth on the bucket. Each bucket load should be removed from the loading face in the same manner that represents loading a truck. The width of the area being sampled should be limited to no more than the width of two loader buckets and each of the three buckets should be poured one on top of the other as indicated in the sketch below.

Sample Preparation

The loader operator should reach across the sample, position the bucket at approximately 90° to the material, move the bucket downward to approximately 1/3 to ½ the height of the pile and drag through the material while backing up. The bucket should be maintained at a constant height during the back dragging process so that there will be a consistent depth of material upon completion of each drag. Care should be taken to not feather it out to a thin lift at the end of the drag.

This process should continue, with minimum tracking onto the material until the pile has been flattened to a relatively uniform thickness of approximately 12” to 24”.

21
The loader should back drag through the center of the pile each pull. The bucket should also extend beyond the forward edge of the preceding pull each time.

**Sampling**

The sample should be taken from the back one-third of the backdrag. This would be in the direction away from where the materials were originally dumped.

The sample shall be taken from three locations approximately equal distance from each other and the edges of the sampling area.

The shovel should be inserted at 90°, and pushed downward. The material should be extracted by pushing downward on the shovel blade before removing it from the back drag and emptying it into a container. Patting down helps to compact the material so that the larger particles don’t roll off the shovel.

Care should be taken at each of the three sampling points to insure that the shovel is inserted to the same depth each time. Sampling in the loader tracks should be avoided because those areas will have become more densified than the other areas being sampled.
ALL OTHER AGGREGATES

All other aggregates should be sampled directly from the slough without the use of a loader. A standard square pointed shovel should be used to sample all materials except concrete sand. The shovel should be inserted at 90° and pushed in, then gently remove to minimize spillage of material. A sampling tube should be used for concrete sand.

The stockpile slough should be sampled at a minimum of three points that are approximately equal distances apart in a diagonal direction from the bottom to the top of the slough. The space between the bottom of the stockpile and the first sampling point and the space between the highest sampling point and the top of the slough should also be approximately the same distance as between the sampling points.

The width of the area sampled should be confined to no more than two times the width of the loader bucket that is being used for loading out materials.
SAMPLING CONICAL SHAPED STOCKPILES

CONCRETE SAND

For production control purposes and for a standardized evaluation procedure, concrete sand may be sampled at equal points all the way around the cone at approximately ½ the height of the stockpile. These samples should always be compared to those that represent shipments. Typically shipping samples taken after the cone has been opened up or re-stocked will contain more fines than production samples. This is believed to be caused by free water migrating fines toward the heart of the cone during production. The difference between the two sampling locations should be noted and production adjusted accordingly.

ALL OTHER MATERIALS

The segregation pattern of all other materials in conical shaped stockpiles is so extreme and so variable that they shouldn’t be sampled. The misleading data that is likely to be obtained from such samples has no value.
Stockpiling Considerations

Aggregates that are used in construction should be stockpiled in a manner that will minimize segregation, contamination, and degradation. Thousands of dollars are lost each year through rejected materials, additional production and testing costs, replacement construction costs, delays to construction, lost man-hours and reduced life of the end product. Many of these problems can be minimized by the proper handling and stockpiling of aggregates.

Before any aggregates are stockpiled, a suitable location should be identified. A location should be identified that would minimize segregation, contamination and degradation. The mat should also be considered. The mat should be comprised of material that is the same or smaller size of the material being stockpiled. The mat should be placed on hard ground as opposed to soft soil to minimize the loss of aggregate that is mixed into the soil. Previously used sites where similar sized materials were stored make excellent stockpile sites because the mat has been stabilized and hardened. The loss of aggregate will be minimal and the potential for contamination with oversize is negligible.

The best way to build a stockpile is to use the Windrow Procedure. This consists of taking individual loads and stacking them side by side and then placing additional loads in between them. This results in a pyramid effect. Once the initial row is started, the base of the pile can be expanded in whatever direction space will permit. By placing loads in between other loads, the material is confined. The segregation cycle is interrupted and held to a minimum.

Segregation is the natural tendency for aggregate particles to separate from the mass. This can be minimized by proper restocking techniques. By keeping production cones under stationary conveyor belts to a manageable height, segregation is minimized. When these cones are left to build up, they become segregated to their fullest extent. When this material is restocked, that stockpile also becomes segregated. Restocking from production cones should be accomplished frequently by the loader entering the cone from a point of intermediate gradation. This is usually at a ninety-degree angle from the front of the production cone. In making the production cone, the coarsest material will be thrown to the front of the cone because it is the heaviest. The finer material will fall to the rear of the cone because it is the lightest. The point of intermediate gradation will be somewhere in between the two towards the side of the cone. For materials with cleanliness requirements, restocking should be only as high as the loader can reach without traveling over the material. Restocking material as high as the loader can reach may sound simple enough, but if not done properly severe segregation will occur.

Contamination is to pollute or make inferior by adding undesirable elements, to make dirty or to soil. Clean stone is usually regarded as material that has been washed in the manufacturing process. Examples of such are surface treatment stone and stone used in Portland cement concrete. These materials have a cleanliness specification. Again, the
choice of stockpile locations may seem insignificant in regards to contamination, but there are several points that should be considered.

*Trees* pose a contamination problem. If materials stockpiled near trees are not used promptly, contamination from leaves, sticks, twigs, etc., can cause construction problems. If stockpiling space is limited and conditions require that materials be stored near trees, the trees should be removed.

*Standing water* should also be avoided. A considerable amount of effort and money goes into washing and processing clean stone. These stockpiles should be located away from low areas that may accumulate and hold water. Do not let it be rejected due to vehicles contaminating it with muddy water and yard fines splashing onto the stockpile.

Stockpiles should also be guarded against *different size materials*. Load out from overlapped stockpiles of different sizes can cause gradation failure, workability problems and construction failures. Stockpiles should be separated as best as possible.

**Degradation** is to reduce in rank, status or grade, to reduce in quality or intensity. In stockpiling aggregate material, degradation comes mainly from equipment traveling over the material. For this reason, clean stone products should not be traveled over, but stockpiled in a single lift as high as the loader can reach. Material for asphalt and graded aggregate base may be traveled over provided a ramp is made and used. The ramp should not be loaded out or shipped and should be limited to a specific area in the stockpile. In addition, dozers and tracked loaders should not be used on granite aggregates. The brittle nature of this aggregate type tends to lead to rapid degradation under tracked equipment. This can lead to mix design and asphalt performance problems. Tracked dozers and loaders are permitted on limestone aggregates but, rubber-tired loaders are preferred. Limestone aggregates do not degrade as severely as granite aggregates. However, these materials do tend to polish and generate excessive minus 200 fines, so in this regard, a rubber-tired loader is the preferred piece of equipment. The primary difference in handling techniques is that equipment can be used on these stockpiles without adversely affecting the final product. These materials contain a variable range of particle sizes depending on the type of material specified. The important difference between these materials and those used for clean stone applications is they contain coarse and fine aggregate and include some dust of fracture or minus 200 material.

There is one aggregate product however, that equipment does not adversely affect. That is alluvial sand. This material is predominately-pure quartz with a marble like particle shape that can withstand the weight and the grinding effect of equipment without significant degradation. It is very important though, that the dozer or loader stay on a clean mat. Getting off the mat and getting mud and dirt in the cleats or tracks, or allowing trucks with muddy tires to back onto the mat may contaminate the material.
Quality Control Considerations

Many aspects of quality control are not found in this study guide. That is because those things are meant to be learned through experience gained working in a lab under a trained quality control technician. Even so, there are a few things that are worth noting and will not be found anywhere else in this study guide.

• In our specifications, weathered rock is limited to two (2) percent. It is acceptable to blend this material with specification material as long as the result is within the two percent limit.

• Along with sampling for certification, the quality control technician performs other tests depending upon the characteristics of the rock being mined. These include testing for weathered rock, specific gravity, flat and elongated, shale and any other tests that are to be recorded on our general-purpose log.

• There are no gradation specifications for coarse and fine aggregate for asphaltic concrete. This is because the aggregate is only a part of the complete product. Asphalt specifications are set for the complete product and can be found in Section 828 of our specifications.

• In most cases, a sand equivalent or weathered rock problem can be identified by a change in the color of the aggregate products, especially graded aggregate base. Soil and/or stained and weathered rock will give the aggregate a tan, brown or reddish tint.

• Before testing a sample, the quality control technician should inspect all equipment daily, especially the Gilson screens for enlarged openings and loose, sagging wire cloth.

• Because the specifications are different for Group I and Group II aggregates, the quality control technician should know which group is being mined at the source where they intend to work.
SECTION IV

STANDARD OPERATING PROCEDURE NO. 1

(SOP 1)
Georgia Department of Transportation  
Office of Materials and Research

Standard Operating Procedure (SOP) 1  
Monitoring the Quality of Coarse and Fine Aggregates

I. General
The Pit and Quarry Control Branch of the Office of Materials and Research is charged with the responsibility of monitoring all coarse and fine aggregates used on Department of Transportation projects. In order to facilitate the accomplishment of this task, lists of fine and coarse aggregate sources are maintained and published in the form of Qualified Products Lists 1 and 2, Sections A, B, C, and D. In addition, those sources that are listed on Qualified Products List 2, Sections A, B and C will be subject to the conditions of the Aggregate Rating System. Those sources that are listed on Section “A” of Qualified Products List 2 will also be required to transfer aggregate certification data electronically. A Producer desiring placement or re-instatement to one of these lists must meet the requirements set forth in this Standard Operating Procedure.

II. Fine and Coarse Aggregate Source Lists
The following is a general description of the Qualified Products Lists.

A. Qualified Products List 1 - “Fine Aggregate Sources”
This is a list of sources that may supply fine aggregate for use in Departmental construction as stipulated within the following sections:

1. Q.P.L. 1 - Section A - “Standard List”
This is a list of Fine Aggregate Sources that meet the quality requirements of Subsection 801.2.02 of the Specifications. All of these sources are approved to certify fine aggregates for use in Portland Cement Concrete. Acceptable Quality Assurance Programs have been established for these sources. These source code numbers will end in an F, designating specification sand or a B designating a gradation deficiency that requires blending at the point of use to correct the grading deficiency.

2. Q.P.L. 1 - Section B - “Temporary Sources”
This is a list of sources that are approved to certify fine aggregates only for those uses that are listed. Acceptable quality assurance procedures have been established. These source codes will end in a T, indicating the occasional use or temporary status of the source.

3. Q.P.L. 1 - Section C - “Vendor Sources”
This is a list of sources that are approved to vend and certify fine aggregates originating from an approved source or stockpile. Acceptable Quality Assurance Procedures have been established for handling and certification of the materials to be vended. These source codes will end in a V, designating them as Vendor Sources.

4. Q.P.L. 1 - Section D - “Stockpile Basis Only Sources”
This is a list of sources that do not meet the criteria for being placed under Sections A or B of Qualified Products List 1. However, these sources can supply fine aggregates for Departmental
use as they are available. Shipments from these sources will require prior approval by a Departmental representative on a stockpile basis. Materials delivered from these sources must also be sampled by Departmental personnel at the project or plant site and acceptability confirmed prior to use. These source codes will end in an S, designating Stockpile Basis. The current Qualified Products List 1 may not contain any stockpile-basis-only fine aggregate sources.

B. Qualified Products List 2 - “Coarse Aggregate Sources”

This is a list of sources that may supply coarse aggregate for Departmental use as stipulated under the following sections:

1. Q.P.L. 2 - Section A - “Standard List”

This is a list of sources that meet the quality requirements of Subsection 800.2.01 of the Specifications. All of these sources are approved to certify aggregates for use in Portland Cement Concrete and/or asphaltic concrete. Depending upon plant design and deposit characteristics, these sources typically supply a full range of products. Acceptable Quality Assurance Procedures have been established for routine control and documentation of all products potentially for DOT use. These source codes will end in a C, designating a coarse aggregate source.

2. Q.P.L. 2 - Section B - “Temporary Sources”

This is a list of sources that due to plant or deposit characteristics, or, simply not having a need to meet the criteria for Section A, are approved to certify only a limited number of items. Only those products that are specifically listed may be certified by the Producer. Acceptable Quality Assurance Procedures have been established for the specific items listed. These source codes will end in a T, indicating the occasional use or temporary status of the source.

3. Q.P.L. 2 - Section C - “Vendor Sources”

This is a list of sources that are approved to vend and certify aggregates originating from an approved source or stockpile. Acceptable Quality Assurance Procedures have been established for handling and certification of the various materials to be vended. These source codes will end in a V, designating them as Vendor Sources.

4. Q.P.L. 2 - Section D - “Stockpile Basis Only Sources”

This is a list of sources that do not meet the criteria for being placed under Sections A or B of QPL 2. However, these sources can supply aggregates for Departmental use as they are available. Shipments from these sources will require prior approval by a Departmental representative on a stockpile basis. Materials delivered from these sources must also be sampled by Departmental personnel at the project or plant site and acceptability confirmed prior to use. These source codes will end in an S, designating Stockpile Basis.

III. Source Evaluations

Initial inspection of aggregate sources is required in the following situations:

A. New Sources

This may be a totally new operation for which there is no previous listing or quality data, or an old operation that has not previously requested an evaluation.

B. Reopened Sources or Sources Requesting Reinstatement

Sources that have been removed from the Qualified Products List for whatever reason will require a reevaluation prior to approval. This action is necessary to evaluate any changes which may have occurred in the deposit, production processes and/or Quality Assurance Procedures.

C. New Owner

Since different owners can achieve varying results with the same source and since new owners often change equipment and manufacturing processes, a change in ownership may necessitate that a new evaluation of the source be made.
D. Relocated Sources

If a sand pit or quarry is relocated or if mining operations are extended into a new area, even if such extension or relocation is in the same general area, a new inspection is required.

E. Significant Change in Material

If a significant change in the character of the material occurs, a new study may be required. Early detection and investigation of a change often works to the Producer’s advantage by allowing applicable changes in the design mixtures at an early date.

IV. Source Approval Procedures—Qualified Products Lists 1 and 2

A. Sections A (Standard), B (Temporary) and C (Vendors)

A Producer desiring consideration for placement on one of these lists should direct a request in writing to the State Materials and Research Engineer or visit the Office of Materials and Research website at http://www.dot.state.ga.us/dot/construction/materials-research/qpl1_2.shtml to apply online.

After a formal request for source approval has been received, a thorough evaluation will be conducted. This will include an evaluation of the geology of the deposit as well as an evaluation of production facilities and finished products. Provided basic quality and production capabilities are determined acceptable for inclusion to Sections A or B of the Qualified Products Lists, an acceptable Quality Assurance Program must be established prior to source approval. Those sources that lack the capability to consistently produce specification aggregates through the plant operations will not be placed under Section A or B of the Qualified Products List.

In the case of Section C - “Vendor Sources”, evaluations will focus primarily on off-loading, stockpiling and shipping procedures as they relate to the character of material involved and intended uses. Once acceptable facilities and procedures have been determined, an acceptable Quality Assurance Program must be established prior to approval.

B. Section D (Stockpile Basis Only)

Sources that do not meet the criteria for being listed under Sections A or B of the Qualified Products Lists may be listed as a Stockpile Basis Only Source. This may be done provided the Producer has the potential to produce some specification aggregates through selective quarrying, selective stockpiling and/or mixing on the yard.

In these instances, a Quality Control Program will be established for Producer testing and shipping documentation for the specific item(s) to be supplied for Departmental construction.

Approval to ship materials must be obtained from a Departmental representative on a stockpile basis at the source prior to shipping.

Acceptance testing of materials delivered to the project or plant site shall be performed by Testing Management at the prescribed frequencies shown in the “Sampling, Testing, and Inspection Manual.” In addition, acceptability must be confirmed prior to the materials being incorporated into the work. The exceptions would be base, stabilizer and backfill materials. These materials may be placed but not covered up or otherwise rendered inaccessible for removal prior to completion of tests.

V. Establishing and Maintaining an Acceptable Quality Assurance Program

After a source of fine or coarse aggregate has been thoroughly investigated and found to meet basic quality and uniformity requirements, an acceptable Quality Assurance Program must be established prior to approval. Sources listed under Section A, B and C of the Qualified Products Lists will be allowed to certify their aggregates at the source, thereby eliminating the necessity of pretesting on the project, unless non-uniform or non-specification material is suspected. To qualify for an approved quality assurance program, the following control requirements must be met:
A. Control System

1. General

An acceptable Quality Assurance Program must be established based upon plant and deposit characteristics, and type materials to be certified as well as any available history. The items listed in the following subsections reflect standard policies of the Department. These policies are not all inclusive. There may be other handling procedures that are either permissible or non-permissible but are not specifically addressed herein. The Department will initiate and implement additional policies as necessary to insure adequate quality control.

2. Production

Production control will generally be at the producer’s discretion. However, the Department may specify production control measures for specific problems that are detected or anticipated due to characteristics of the deposit and/or production processes. This may be required as a prerequisite to source approval, or as an amendment necessary to maintain status of a source already on the Qualified Products List.

3. Certified Aggregate

a. Shipment from bins

Production and load out must be accomplished in such a manner that consistency in quality and specification compliance can be expected. Bins shall be maintained at least ¼ full during active load out. Bins shall be inspected daily for contamination. Contaminated materials are not to be shipped.

b. Shipment from stockpiles

1) Stockpiles under stationary conveyors

Coarse aggregate for asphaltic concrete may be supplied directly from a stockpile under a conveyor provided:

a) The height of the stockpile is controlled to minimize segregation.

b) The producer informs the customer and the customer agrees to and accomplishes proper restocking prior to use.

c) Gradation control problems are not experienced at the asphalt plant.

Problems experienced with any of the above listed items will result in discontinued use of this practice by the producer. No other aggregate products are to be supplied from stockpiles situated underneath a conveyor belt.

2) Stockpiles that were placed by Non-Telescoping Radial Stackers and have not been restocked

Graded aggregate base shall not be loaded out from these type stockpiles. It will generally be acceptable to load out other aggregate products from these type stockpiles provided:

a) The height of the stockpile is adequately controlled to minimize segregation.

b) Load out is accomplished from the ends only and not from front to back or back to front and not from current production.

c) Gradation control problems are not experienced.

Problems experienced with any of the above listed items will result in discontinued use of this practice.

3) Stockpiles that were placed by telescoping radial stackers and have not been restocked

All materials may be loaded out from the ends of stockpiles that have been placed in multiple arcs and lifts. The height of such stockpiles may be restricted for aggregate with specific gradations and cleanliness requirements to control segregation.
4) Stockpiles of aggregate with specific cleanliness and gradation Specifications
   These materials shall not be loaded out from stockpiles that have sporadic pockets, lenses
   or strata of non-specification materials, such as occurs from contamination and
degradation that results from ramping onto crushed stone products.

5) Stockpiles of graded aggregate base and fine aggregate for asphaltic concrete
   Load out shall not be from stockpiles that are being or were constructed by:
   a) Dumping production directly over the side, ends or loading face.
   b) Pushing production over the sides or ends prior to placing a quantity sufficient to
      represent the total product.
   c) Pushing over a loading face during active load out.
   d) Using materials that do not meet Specifications during the production process.
   e) Placing in a single lift only or in heights of less than 12 feet (applicable only to
      graded aggregate base)
   f) Are being added to when the existing inventory is less than 2000 tons (0.9 Mg).
   g) Consists of less than 2000 tons (0.9 Mg) prior to commencing shipment.

Correct handling and load out of materials, including cleanliness of haul units and accurate
identification of product, are recognized as the Producer’s responsibility, and are considered an
integral part of the Quality Assurance Program. Refer to the Appendix, “Correct Stockpiling
and Material Handling Procedures.”

Marginal quality materials are not to be certified.

B. Approved Laboratory

Laboratory equipment and facilities must be certified to meet the minimum requirements as set forth
by the Department of Transportation. A certification document must be posted in the laboratory, and
recertification must be made on a yearly basis or as indicated by need. Minimum laboratory
requirements are as follows:

- Capability to maintain a minimum temperature of 70ºF (21ºC).
- Scales having a maximum capacity of not less than 50 lbs. graduated to 0.1 lb. or less and
  calibrated to an accuracy of ±0.1 lb.
- Scales having a maximum capacity of not less than 2,500 grams, graduated to 0.1 gram or less
  and calibrated to an accuracy of ±0.5 grams.
- Fine Aggregate splitter.
- Adequate drying device.
- Sink and running water.
- Sand Equivalent kit.
- Gilson-type, coarse aggregate, sieving device in good working condition.
- Coarse aggregate sieves in good condition (no enlarged openings or loose mesh). Sizes:
  1½”, 1”, ¾”, ½”, ¼”, No. 4, No. 8, and No. 10.
- Fine aggregate sieves in good condition (no enlarged openings, holes or sagging mesh).
  Sizes: ¾”, No. 4, No. 8, No. 10, No. 16, No. 30, No. 50, No. 60, No. 100, No. 200, and pan.
- Fine aggregate shaker or approved alternate.
- An orderly filing system.
- An area free from vibrations for Sand Equivalent testing.
- Sand Equivalent solution jug placed 36” – 46” above working surface where graduated
cylinders are placed.
- Lab certificate and aggregate specification chart.
- A computer with the Field Data Collection System software and an internet service provider
  (ISP) connection. The minimum/preferred computer requirements are listed below.
  o Computer: IBM PC or compatible
In addition, the building itself shall have a minimum of 240 square feet of floor space. This area is to be separated into two parts, one for testing and the other for clerical and office type activities. The testing area shall have adequate table or counter space for preparing samples, as well as adequate cabinet space for equipment storage. The other area shall be environmentally acceptable for clerical and office type work. It shall contain a desk and adequate filing space.

Note: Any modifications to the above must be approved by Area Aggregate Engineer.

C. Certified Personnel

The producer’s sampling and testing personnel must be certified to sample aggregate and to perform the various tests required by the Office of Materials and Research. The individuals certified will be issued a certification which will be subject for review and revocation for cause.

1. Certification of Quality Control Technicians

The certification of quality control technicians will be administered by the Pit and Quarry Branch. The certification process will consist of a written examination (depending upon type of aggregate source) given at the Office of Materials and Research in Forest Park, Georgia and a laboratory examination (or “hands on” examination) conducted by Pit and Quarry personnel in the laboratory of the aggregate source where the technician is employed.

After passage of the written (if required) and laboratory examinations, a quality control technician will be assigned a technician number and issued a certification card. The certification card will list the tests the technician is certified to perform. The technician’s certification will be valid for three years.

a. Written Examination

Because of the various types of aggregate sources on Qualified Products Lists 1 and 2, the type of written examination will depend on the aggregate source where the technician is employed. Examinations will be tailored specifically for technicians working at the following types of aggregate sources.

- Standard coarse aggregate sources and coarse aggregate vending yards
- Temporary, coarse and fine, crushed stone sources
- Natural sand sources (standard and temporary)

Written examinations will be given on the first and last Thursdays of each month, unless the date falls on a State holiday. The examination will be open book, and a score of 80 or above will be required to pass. In the event that a person does not pass the examination, it may be taken again after a minimum period of 30 days. If the technician does not pass the examination on the second attempt, it may be retaken after a minimum period of 90
days. If the technician does not pass the examination on the third attempt, it may be taken annually thereafter at intervals of not less than one year between examinations.

Technicians conducting testing at temporary sources of recycled or excavated project material and at fine aggregate vending yards will be required to take the laboratory test only.

b. **Laboratory Examination**

For the laboratory examination, the technician will perform the tests that he/she will be required to perform to certify their aggregate. The types of tests performed may vary, depending upon the type of aggregate source or its geologic characteristics.

2. **Recertification of Quality Control Technicians**

A technician’s certification will expire three years from the date of issuance of the certification card. Technicians may renew their certification by retaking and passing the written and laboratory examinations prior to expiration of their certification. Training may be substituted for retaking the written examination. A minimum of 18 credit hours of training is required (Table 1). Any combination of the following training may be counted toward the 18 hour total. Specific training will be required for recertification only where indicated. Any of the listed training may be repeated annually. **Credit for training other than that listed below will be considered on a case-by-case basis.**

- Attendance of industry conferences, meetings, and symposia (such as those sponsored by the Georgia Construction Aggregate Association, the Portland Cement Association, the American Concrete Pavement Association, the Georgia Highway Contractors Association, or the Georgia Partnership for Transportation Quality, etc.). (4 hours)
- Attendance of the GDOT class, Quality Control/Principles of Aggregate Certification, which is offered twice annually. (6 hours)
- Attendance of the GDOT class, Field Data Collection System. (4 hours). This class will be required for newly certified technicians, but thereafter will be optional.
- Attainment of a regional or national certification, such as the American Concrete Institute certification. (6 hours)
- Attendance of industry-sponsored training given by outside consultants or internal training personnel (6 hours if comparable to the GDOT training class). The training must be approved by the State Materials and Research Engineer. The producer must inform the GDOT as to the date and location of the training at least one week prior to the training, and the GDOT reserves the right to attend the training.
- Attainment of another State’s certification. (2 to 4 hours, depending on requirements).
- Attendance of quality control/sampling training (“winter training”) conducted by the Pit and Quarry Branch for Testing Management Branch personnel. (1 to 4 hours, depending upon content). This training is usually conducted at a local quarry.

**Training may not be substituted for the laboratory examination.**

The requirement for recertification of technicians at natural sand sources (producers of products 10NS and 20NS), at temporary sources of recycled or excavated project material, at Type 2 temporary sources, and at fine aggregate vending yards will consist of the laboratory examination only. See Table 1.
<table>
<thead>
<tr>
<th>SOURCE TYPE</th>
<th>INITIAL CERTIFICATION</th>
<th>RECERTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard “C” Sources</td>
<td>Standard Examination Laboratory Examination</td>
<td>Standard Examination OR 18 hours training PLUS Laboratory Examination</td>
</tr>
<tr>
<td>Vendor Sources (Coarse aggregate products)</td>
<td>Standard Examination Laboratory Examination</td>
<td>Standard Examination OR 18 hours training PLUS Laboratory Examination</td>
</tr>
<tr>
<td>Vendor Sources (Fine aggregate products)</td>
<td>Laboratory Examination</td>
<td>Laboratory Examination</td>
</tr>
<tr>
<td>Temporary Sources – Type 1 (Crushed stone sources not able to certify sized stone for concrete or asphalt, but do certify all other products)</td>
<td>Standard Examination Laboratory Examination</td>
<td>Standard Examination OR 18 hours training PLUS Laboratory Examination</td>
</tr>
<tr>
<td>Temporary Sources – Type 2 (Mainly out-of-state, fine and coarse, crushed stone sources supplying precast or prestressed concrete plants)</td>
<td>Temporary Source Examination Laboratory Examination</td>
<td>Laboratory Examination</td>
</tr>
<tr>
<td>Natural Sand Sources (Standard, Blend, and Temporary)</td>
<td>Natural Sand Examination Laboratory Examination</td>
<td>Laboratory Examination</td>
</tr>
<tr>
<td>Temporary Sources of Material Excavated or Produced on a Project</td>
<td>Laboratory Examination</td>
<td>Laboratory Examination</td>
</tr>
</tbody>
</table>
D. Producer Testing
The Producer will sample and test at a specified frequency for each type of material being certified. Producer certification will be in the format of DOT forms 640 and 641. Test data will be reviewed during regular inspections by Pit & Quarry Control personnel. The certification data will be electronically transferred to the Office of Materials and Research at a frequency of not less than once per two weeks.

E. Frequency of Producer Tests
The minimum testing frequencies established for each type material in accordance with Item “D” will remain in effect until evidence of unacceptable material or proof of uniformly acceptable material warrants an increase or decrease, respectively, in the testing frequency.

F. Comparison Tests
To insure uniformity of testing between the Department and the Producer, comparison tests will be run at least annually by the Producer and the Department for each test the Producer’s technicians are certified to perform.

G. Product Certification Restrictions
Sources listed on Qualified Products List 2 - Section A, B or C, may be restricted from certifying a certain product or products. This may be due to deposit characteristics, production capabilities, inadequate Quality Assurance, lack of testing capability for a specific material or substandard product ratings. In these instances, use of such products may be allowed under stockpile basis or other stipulations as deemed necessary by the Department for adequate control. In the case of substandard product ratings, specific guidelines are outlined in the aggregate rating procedure for resuming certification of the product.

H. Separation of Sizes and/or Type Materials
Since different materials require different combinations for production of asphaltic concrete, Portland cement concrete, graded aggregate and other mixtures, material of different sizes and/or types must be kept separated and properly identified.

VI. Policy for Departmental Testing, Acceptance, and Use of Certified Aggregates
A. Use of Certified Aggregate
The eligibility of a source to certify material is defined under each section of the Qualified Products Lists. Aggregate delivered from a source with an approved quality assurance program will be certified by the Producer to comply with the Specifications. Use of materials delivered from these sources will not be delayed pending completion of agency testing unless non-uniform or non-specification material is suspected.

B. Agency Testing and Inspections
To verify the quality of materials actually incorporated into the Work and to evaluate the Quality Assurance Program, certain materials evaluation procedures will be followed. These are listed below:

1. Periodic Inspection by Geologists
   Thorough investigations will be made periodically by a geologist of the Pit and Quarry Control Branch. Generally, this will occur annually. The primary purpose of these investigations is to:
   a. Evaluate the condition of existing aggregate inventories which may be shipped for departmental use.
   b. Determine changes in material character and production processes which have occurred since the last inspection.
   c. To forecast problems so that control provisions can be established at an early date.
2. Quality Assurance Testing
   Personnel from the Pit and Quarry Control Branch will sample and test at an unspecified frequency at the source and as needed on the project. These tests will be used to assist in verification of compliance to Specifications and Quality Assurance Procedures.

3. Acceptance Sampling and Testing
   Project control or acceptance samples will be routinely taken by Testing Management personnel on the project or at the plant. Specific lots or shipments will not be tested for acceptance except as provided for in the “Sampling, Testing, and Inspection Manual.”

4. Independent Assurance Sampling
   Independent Assurance Samples are those obtained by DOT personnel other than Pit and Quarry Control or Testing Management. Independent Assurance Samples will be taken on the project at the same location as acceptance samples at least at the minimum frequencies prescribed in the “Sampling, Testing, and Inspection Manual.” These tests are required on federal-aid projects, and are utilized on all DOT projects as a check on the effectiveness of acceptance sampling and testing.

C. Review of Test Results
   The Pit & Quarry Control Branch of the Office of Materials and Research will review and evaluate all test reports from all parties to assess the effectiveness of the Quality Assurance Program. It will be the responsibility of the Pit & Quarry Control Branch to determine the need for further evaluation or changes in the Quality Assurance Programs and/or the approved status of sources. In addition, the Quarry Certification Samples and Quality Assurance Samples will be used to compute “ratings” for those sources listed on QPL 2, Section A, B and C.

VII. Removal and Reinstatement to Qualified Products List, Sections A, B, and C

A. Removal
   1. Inadequate Quality Assurance
      Producers having inadequate Quality Assurance will be removed from Sections A, B or C of the Qualified Products List, whichever is applicable. In this instance, provided the Producer desires to supply materials for Departmental use, the source may be placed under Section D - “Stockpile Basis Only” of the Qualified Products List.
   2. Change in Deposit or Specification
      Whenever a source is removed from Section A of the Qualified Products List due to reasons beyond the Producer’s control rather than failure of the Quality Assurance Program, the Producer, at his request, will be considered for placement under Section B - “Temporary Sources.” This would be in lieu of placement on the “Stockpile Basis Only” list and would allow for producer certification of specific items that meet applicable Specifications.
   3. Non Use
      It is the policy of the Department to remove sources from the Qualified Products List when materials are not received for a Departmental project for a period of twelve (12) months.

B. Reinstatement
   After being removed from Section A, B or C of the Qualified Products List, a source may be reinstated after meeting applicable requirements as outlined under Section IV and reestablishing an acceptable Quality Assurance Program as outlined under Section V of this Standard Operating Procedure.

VIII. Assistance to Producers
   In an effort to stimulate and promote the aggregate industry and to foster a competitive atmosphere in the production of high quality materials, a number of services are extended to producers. The services available are as follows:
A. Unofficial Samples and Evaluation of Results

A limited number of unofficial or preliminary samples of aggregate or cores supplied by owners of prospective sites or from pits or quarries currently being mined, will be subjected to quality tests in the Laboratory. The number of tests provided will only be those which can be accommodated by the personnel and facilities available after the normal workload is accomplished.

The Department will offer an informal interpretation of test results as to how the data may relate to specification aggregate production. These evaluations are advisory only and are not binding on any future action by the Department of Transportation. The Department also does not accept responsibility for the accuracy of any information provided.

B. Producer Quality Problems

The Pit and Quarry Control Branch will offer limited assistance in determining effective methods of controlling gradation or other quality problems that arise due to the production process, handling procedures or deposit characteristics. Early cooperation between the Producer and the Department can serve to prevent shortages of specification materials and construction delays at a later date.

IX. Monthly Samples for Complete Analysis

Samples for complete analysis will be secured from each source by Pit and Quarry Control personnel on a monthly basis. This data will be used to monitor compliance with the quality requirements of the Specifications. It will also be used to provide test data for annual publication of the Qualified Products Lists as well as to monitor consistency of characteristics that affect designs, batching and other construction applications.

A. Source of Samples

Samples will generally be taken from current production at the source. With consideration to economics, samples from out of state or other long distance sources may sometimes be taken from a project or plant site rather than at the source of origin.

B. Frequency of Complete Analysis Testing

In order to maximize efficient use of manpower, samples submitted for monthly complete analysis will not be subjected to the full range of specification tests unless specifically requested. Specific Gravity tests will be performed on all monthly samples. The frequency of other tests such as abrasion and soundness will be monthly, quarterly, biannually or annually based on the history and consistency of the deposit.

C. Sample Size

Samples submitted shall be representative of the quality of the material being sampled. Coarse aggregate samples should have a minimum weight of 75 pounds (35 kg). Fine aggregate samples should have a minimum weight of 15 pounds (10 kg). However, with consideration to handling and lifting safety, no single bag or container should weigh in excess of 40 pounds (20 kg).

X. Department Of Transportation Materials Producer Files

A file on each Aggregate Producer will be maintained at the Office of Materials and Research. These files contain source evaluations, geological reports and test results. Files will also include copies of Department of Transportation correspondence concerning the source. The Pit and Quarry Control Branch may also keep additional files as necessary to accomplish the responsibilities of the Branch.

A. Producer Review of Files

Producers may consult files for their respective source(s) upon notification to the Pit and Quarry Control Branch Chief. Appropriate personnel will be made available to assist in locating desired information and producing any copies needed.
B. Confidentiality of Producer Files

Data published on the Qualified Products List will be made available to the public in general. Any other information in the Producers’ files will not be released to Non-Departmental or Non-Company employed personnel without written consent of an appropriate company representative.

Georgene M. Geary, P.E.
State Materials and Research Engineer

David Graham, P.E.
Director of Construction
These procedures were developed in cooperation with the Georgia crushed stone industry, February 2000.
STOCKPILING TECHNIQUES FOR CLEAN STONE

DON'T CONE UP

DO DUMP TIGHTLY IN SINGLE PILES

DON'T DUMP OVER THE END

DO STACK AS HIGH AS LOADER WILL REACH

DON'T OVERLAP SIZES

DO SEPARATE DIFFERENT SIZES
STOCKPILING TECHNIQUES FOR CLEAN STONE

**DON'T** DIG UP THE MAT

**DO KEEP THE Bucket UP**

**CONTAMINATION**

**DON'T** STOCKPILE NEAR CONTAMINANTS

**DO REMOVE CONTAMINANTS**

**DON'T** STOCKPILE OVER LARGER SIZES

**DO STOCKPILE OVER**
SAME SIZE OR SMALLER
TO SHIP FROM PRODUCTION CONE

TO SHIP FROM THE PRODUCTION CONE
THE LOADOUT MUST BE EQUAL TO PRODUCTION

REALISTICALLY THIS DOESN’T HAPPEN

THEREFORE

NO SHIPPING
FROM UNDER CONVEYORS

THIS INCLUDES NOT SHIPPING FOR PRIVATE JOBS IF SOME MATERIAL IS BEING RESTOCKED FOR D.O.T. USE.
BIN SEGREGATION AND DEGRADATION SOLUTION

DON’T EMPTY THE BIN WHILE IN THE PROCESS OF SHIPPING. LEAVING MATERIAL IN THE BIN BREAKS THE FALL. ROCK ON ROCK DOESN’T BREAK AS BAD AS ROCK ON METAL. IT ALSO INTERRUPTS AND DISTORTS THE SEGREGATION CYCLE.

DO LEAVE THE BIN 1 / 4 OR MORE FULL, PREFERABLY 1 / 3

DON’T EMPTY IT!
G.A.B. STOCKPILE PUSHING METHODS

DON’T FAN OUT WHILE PUSHING A G.A.B. CONE

DO PUSH THE ENTIRE G.A.B. CONE IN ONE DIRECTION ONLY
RADIAL STACKER LOADOUT AND RESTOCKING

IT IS GENERALLY ACCEPTABLE TO LOAD OUT MATERIALS (OTHER THAN G.A.B.) FROM THE ENDS OF RADIAL STACKER STOCKPILES. THIS IS PROVIDED THE HEIGHT OF THE STOCKPILE IS CONTROLLED. A MAXIMUM HEIGHT OF 15 FEET IS USUALLY ACCEPTABLE.

DON'T LOAD OUT OR RESTOCK FROM HERE. NEVER LOAD FROM CURRENT PRODUCTION.

DO LOAD OUT OR RESTOCK FROM HERE, THE INACTIVE END
RE STOCKING TIP

MOVE THE CONE FREQUENTLY AND CONTINUOUSLY

THE SMALLER THIS IS THE BETTER THIS IS

THE CONE CAN BECOME SO SEGREGATED THAT IT SIMPLY CANNOT BE RECLAIMED WITHIN SPECIFICATIONS. THIS IS PARTICULARLY TRUE WITH CLEAN STONE BECAUSE YOU CAN’T RAMP ON THE MATERIAL TO MIX LAYERS. IF YOU STOCKPILE FIVE LOADS THAT FAIL (TOO COARSE), YOU WILL SHIP FIVE LOADS THAT FAIL (TOO COARSE).
SIMULTANEOUS CONSTRUCTION AND LOADOUT OF STOCKPILES

1. If trucks are being loaded here.
2. Put the production cone here.
3. Push this over the side after moving enough from the cone to represent the entire product.

OR

1. If production needs to go here.
2. Move loading face & trucks to here and then push over.
3. Wait until loadout inactive - then push all of it over.

TOP VIEW OF STOCKPILE
IMPROPER STOCKPILE CONSTRUCTION

IF AN ENTIRE STOCKPILE IS ALLOWED TO BE BUILT BY RAMPING ONTO IT AND DUMPING EACH LOAD OVER THE END...

IT WILL SEGREGATE TO ITS FULLEST EXTENT...

THE LARGER THE STOCKPILE BECOMES, THE WORSE THE PROBLEM IS.
G.A.B. AND ASPHALTIC MATERIALS

After placing each lift, flatten the top so that the next lift can be carried onto the stockpile. The ramp should be **no longer than necessary** to get onto the stockpile. During the placement of each lift, care should be taken not to dump or push material over the edge of the underlying lift. **Always stop just short of the edge.**

*Side view of stockpile*  *Top view of stockpile*

*Do leave terraces; don’t let rock roll over edges of underlying layers.*

Each layer should be the same thickness all across the stockpile. The completed stockpile should be relatively flat, **not wedge-shaped in appearance.**
IMPROPER LOADOUT METHODS

DON’T PULL THE BIN EMPTY

DON’T LOAD FROM UNDER THE BELT

DON’T DUMP OVER THE SIDE OR THE END OF A STOCKPILE

DON’T DUMP PRODUCTION IN FRONT OF THE LOADING FACE

DON’T PUSH OVER THE LOADING FACE DURING ACTIVE USE
WHERE TO PUT PRODUCTION

DUMPING PRODUCTION IN FRONT OF THE LOADING FACE IS NO DIFFERENT THAN LOADING FROM UNDER THE BELT.

NOT HERE

HERE
LOAD OUT FROM STOCKPILES

DON’T CONTAMINATE YOUR MATERIAL
BY DIGGING INTO THE MAT WHILE LOADING.

DO KEEP THE BUCKET UP AND MAKE SURE
THE BUCKET IS CLEANED OUT WHEN SWAPPING
FROM ONE SIZE TO ANOTHER.

DO CHECK THE TRUCK BEDS -
IT ISN’T YOUR FAULT IF THE BED IS HALF FULL OF DIRT,
BUT WHO WILL SUFFER THE CONSEQUENCES AFTER IT
IS DELIVERED? IS YOUR CUSTOMER GOING TO PAY FOR IT?
IS THE TRUCK DRIVER?
RADIAL STACKER STOCKPILE LOADOUT TIPS

DON’T
LOAD FROM CURRENT PRODUCTION

DO
LOAD FROM THE INACTIVE END ONLY

DON’T
LOAD FROM A STOCKPILE THAT IS TOO HIGH—MAXIMUM HEIGHT = 15 FEET

DO
KEEP THE STOCKPILE SMALL ENOUGH THAT A REPRESENTATIVE PORTION OF ALL OF IT CAN BE PUT ON EACH LOAD

DON’T
LEAVE THE TOES TO BE LOADED OUT BY THEMSELVES

DO
KEEP THEM CLEANED UP AS YOU GO
STOCKPILING CLEAN STONE WITH A LOADER

DON’T STOCKPILE ON A MAT OF LARGER SIZE STONE OR DIRTY MATERIAL

DO STOCKPILE ON A CLEAN MAT, PREFERABLY OF THE SAME SIZE MATERIAL

DON’T LET MATERIAL ROLL FROM THE TOP TO THE BOTTOM OF THE STOCKPILE

DO LEAVE A SLIGHT TERRACE AT THE END TO STOP MATERIAL FROM ROLLING

DO PLACE FIRST PILE ON BOTTOM AND SECOND ON TOP, AND STACK AS HIGH AS THE LOADER CAN REACH WITHOUT TRAVELING OVER THE STOCKPILE

DON’T CONE THE STOCKPILE UP
CONSTRUCTING LARGE STOCKPILES
OF CLEAN AGGREGATES

DO CONSTRUCT THE STOCKPILE USING MULTIPLE LIFTS OF RELATIVELY UNIFORM
THICKNESS, STOPPING JUST SHORT OF THE EDGE OF THE PREVIOUS LIFT.

DO THIS

![Diagram showing stockpile construction process](image)
THE MOST COMMON CONTAMINATIONS THAT OCCUR IN BINS ARE:

A) OVERSIZE THAT HANGS IN THE BINS
B) OVERSIZE THAT HANGS IN THE CHUTES
C) OVERSIZE THAT BOUNCES FROM SCREENS OR CONVEYORS
D) FINES AND DIRTY WATER THAT STICK TO CONVEYORS AND DRIBBLES OFF ONTO OTHER AGGREGATES

- CONTAMINATION FROM FINES IS TYPICALLY INSIGNIFICANT WHEN MATERIALS ARE STEADILY BEING LOADED OUT.
- CONTAMINATION BECOMES A PROBLEM WHEN A PARTICULAR BIN IS SUBJECTED TO IT FOR TOO LONG – INSPECT DAILY FOR FINES AND OVERSIZE.
- BE SURE TO INFORM THE SUPERVISOR OF WHAT YOU ARE OBSERVING – THERE MAY BE SOMETHING HE/SHE CAN DO TO MINIMIZE THIS TYPE OF CONTAMINATION.
- THERE IS NOTHING UNIQUE ABOUT THIS; IT HAPPENS ALL THE TIME. THE MAIN POINT HERE IS TO LOOK AT IT.
- BIN OPERATORS SHOULD ALSO CHECK TRUCK BEDS FOR CONTAMINATION PRIOR TO LOADING.
SECTION V

SECTION 800 SPECIFICATIONS

TO VIEW THE SECTION 800 SPECIFICATIONS, PLEASE VISIT “THE SOURCE” ON THE OMR WEBSITE.

at

http://tomcat2.dot.state.ga.us/thesource/specs/index.html
SECTION VI

TEST PROCEDURES

TO VIEW TEST PROCEDURES, PLEASE VISIT “THE SOURCE” ON THE OMR WEBSITE.

at

http://tomcat2.dot.state.ga.us/thesource/sti/index.html
SECTION VII

AGGREGATE RATING SYSTEM
GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS AND RESEARCH
RATING SYSTEM FOR COARSE AGGREGATE SOURCES THAT CERTIFY AGGREGATES

I. GENERAL

The Pit and Quarry Control Branch of the Office of Materials and Research is charged with the responsibility of monitoring all coarse and fine aggregates used on Department of Transportation projects. A major portion of this responsibility is devoted to ensuring that established standards for quality control are met or exceeded by the respective Aggregate Producers.

To facilitate accomplishment of this task, a rating system for Standard Coarse and Fine, Temporary and Vendor Sources has been developed. This system is designed to provide Industry and the Department with a management tool for measuring the success of the Producer Certification Program and to promote consistency of products.

II. DEFINITIONS

In order to produce the ratings, certain data must be calculated. The following definitions are applicable to producing data for the rating system:

A. Target Band

A gradation band for a product that when rated 70 or above, at the point of shipment, should allow for specification compliance at the point of use after normal degradation and stockpile variation has occurred.

Example:

Washed 0057 Concrete Stone
Passing 1/2"
(25-60) Spec
(32-48) Target Band

B. Range From Target Band (RFTB)

The range that either the upper or lower limit of the Target Band is exceeded by when the standard deviation is either added to or subtracted from the mean. When the upper limit is 100 and the mean plus the standard deviation exceeds 100, the RFTB factor will be zero. When the lower limit is zero and the mean minus the standard deviation is a negative number, the RFTB factor will be zero.
NOTE: The Mean, Standard Deviation and RFTB value are to rounded to the nearest tenth.

Example: Washed 0057 Concrete Stone
% Passing ½"
(25-60) Spec
(32-48) Target Band
37.4 Mean
5.0 Std. Deviation
37.4 (Mean) ± 5.0 (Std. Dev.) = 32.4 - 42.4 (Range)

(32-48) Target Band
Compared to
(32.4 - 42.4) Range
RFTB = 0

Example: Washed 0057 Concrete Stone
% Passing ½"
(25-60) Spec
(32-48) Target Band
37.4 Mean
8.0 Std. Deviation
37.4 (Mean) ± 8.0 (Std. Dev.) = 29.4 - 45.4 (Range)

(32-48) Target Band
Compared to
(29.4 - 45.4) Range
RFTB = 32 - 29.4 = 2.6

C. RFTB Factor

The factor (taken from tables) that the RFTB is multiplied by.

Example: Washed 0057 Concrete Stone
% Passing No. 8 Sieve
(0-5) Specifications
(0-1) Target Band
1.5 Mean
0.5 Std. Dev.

1.5 (Mean) ± 0.5 (Std. Dev.) = 1.0 - 2.0 (Range)

(0-1) Target Band
Compared to
(1.0 - 2.0) Range
RFTB = 1.0
RFTB Factor From Tables For Washed 0057’s

<table>
<thead>
<tr>
<th>No. 8 Sieve</th>
<th>RFTB</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1.1 - 1.5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>&gt;1.5</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Factor for RFTB of 1.0 = 0

Example:

Washed 0057 Concrete Stone
% Passing No. 8 Sieve
(0-5) Specification
(0-1) Target Band
2.0 Mean
0.5 Std.Dev.

2.0 (mean) ± 0.5 (Std. Dev.) = 1.5 to 2.5 (Range)

(0-1) Target Band
Compared to
(1.5 - 2.5) Range
RFTB = 1.5

RFTB Factor From Tables For Washed 0057's

<table>
<thead>
<tr>
<th>No. 8 Sieve</th>
<th>RFTB</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1.1 - 1.5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>&gt;1.5</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Factor for RFTB of 1.5 = 5

D. Product Rating (For all products except for asphaltic concrete aggregates)

The sum of RFTB per sieve multiplied by the appropriate factor per sieve (from the tables) and subtracted from 100.
Example:

**Washed 0057 Concrete Stone**

<table>
<thead>
<tr>
<th>% Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>1/2</td>
</tr>
<tr>
<td>No. 4</td>
</tr>
<tr>
<td>No. 8</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>95-100</td>
</tr>
<tr>
<td>25-60</td>
</tr>
<tr>
<td>0-10</td>
</tr>
<tr>
<td>0-5</td>
</tr>
<tr>
<td>Specification</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>97-100</td>
</tr>
<tr>
<td>32-48</td>
</tr>
<tr>
<td>0-5</td>
</tr>
<tr>
<td>0-1</td>
</tr>
<tr>
<td>Target Band</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>98</td>
</tr>
<tr>
<td>47</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>1.5</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>0.5</td>
</tr>
<tr>
<td>3.0</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>0.5</td>
</tr>
<tr>
<td>Std. Dev.</td>
</tr>
</tbody>
</table>

\[
x = 0 \
x = 0 \
x = 0 \
x = 0 \
x = 0 \
x = 0 \
\]

\[
RFTB = 0 \
Factor (From Tables) = 5.0 \
Deductions = 0 \
\]

Total Deductions = 10
Product Rating = 100 - 10 = 90
Very Good

**E. Product Rating (for Fine Aggregate for Asphaltic Concrete)**

The sum of the standard deviation for the 3/8, No. 4, No. 8, No. 16, No. 50, No. 100 and No. 200 sieves divided by 1.5 and subtracted from 100, when the minus No. 8 portion is computed as 100% minus No. 8. All products that are coded “used in B” will be rated.

Example:

<table>
<thead>
<tr>
<th>Total Sample</th>
<th>% Passing</th>
<th>Minus No. 8 Portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>No.4</td>
<td>No.8</td>
</tr>
<tr>
<td>100</td>
<td>98</td>
<td>82</td>
</tr>
<tr>
<td>0</td>
<td>1.6</td>
<td>4.1</td>
</tr>
<tr>
<td>100</td>
<td>85</td>
<td>49</td>
</tr>
<tr>
<td>0</td>
<td>1.5</td>
<td>1.8</td>
</tr>
<tr>
<td>100</td>
<td>27</td>
<td>13.7</td>
</tr>
<tr>
<td>100</td>
<td>1.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>Std. Dev.</td>
</tr>
</tbody>
</table>

\[
0 + 1.6 + 4.1 + 0 + 1.5 + 1.8 + 1.4 + 2.3 = 12.7 \text{ (Total Std.Dev.)} \\
Product Rating = 100 - \frac{12.7 \text{ (Total Std. Dev.)}}{1.5} = 91.5 \\
\]

Note: A division factor of 1.5 is used to condense the Total Standard Deviation so that the Product Rating can be expressed in common terms of Excellent, Very Good, etc.
F. **Product Rating for Coarse Aggregate for Asphaltic Concrete.**

The sum of the standard deviation per screen size divided by 1.5 and subtracted from 100. All products that are coded "used in B" will be rated.

Example:

Unwashed 0057's for Asphalt Stone

<table>
<thead>
<tr>
<th>% Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

\[ .9 + 5.0 + 1.0 + 0.5 = 7.4 \text{ (Total Std. Dev.)} \]

Product Rating \[ 100 - \frac{7.4 \text{ (Total Std. Dev.)}}{1.5 \text{ (Division Factor)}} = 95.1 \]

NOTE: A factor of 1.5 is used to condense the Total Standard Deviation so that the Product Rating can be expressed in common terms of Excellent, Very Good, etc.

G. **Category Rating**

The categories that will be rated are as follows:

- Concrete Aggregates
  - Coarse
  - Fine
- Asphalt Aggregates
  - Coarse
  - Fine
- Graded Aggregate
- Surface Treatment Stone
The category rating is defined as "The arithmetic average of the ratings for products within a specific category," except as follows:

1. **Concrete Aggregates Category**

   This rating will be computed based upon 80% of the coarse Aggregate Rating and 20% of the Fine Aggregate Rating.

   **Example:**

<table>
<thead>
<tr>
<th>Coarse Aggregate Products</th>
<th>Product Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washed 0057's</td>
<td>93</td>
</tr>
<tr>
<td>Washed 0067's</td>
<td>85</td>
</tr>
</tbody>
</table>

   \[ \frac{178}{2} = 89 \]

<table>
<thead>
<tr>
<th>Fine Aggregate Products</th>
<th>Product Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 SM</td>
<td>70</td>
</tr>
<tr>
<td>10 FM</td>
<td>90</td>
</tr>
</tbody>
</table>

   \[ \frac{160}{2} = 80 \]

<table>
<thead>
<tr>
<th>Rating</th>
<th>Value</th>
<th>Weighted Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Aggregate</td>
<td>89 X 80% = 71.2</td>
<td></td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>80 X 20% = 16.0</td>
<td></td>
</tr>
</tbody>
</table>

   \[ 87.2 = \text{Category Rating} \]

2. **Asphaltic Concrete Aggregate Category**

   This rating will be computed based upon 50% of the Coarse Aggregate Rating and 50% of the Fine Aggregate Rating.

   **Example:**

<table>
<thead>
<tr>
<th>Coarse Aggregate Products</th>
<th>Product Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unwashed 0005</td>
<td>75</td>
</tr>
<tr>
<td>Unwashed 0006</td>
<td>79</td>
</tr>
<tr>
<td>Unwashed 0067</td>
<td>88</td>
</tr>
<tr>
<td>Unwashed 0089</td>
<td>74</td>
</tr>
<tr>
<td>Unwashed 0057</td>
<td>92</td>
</tr>
<tr>
<td>Unwashed 0067</td>
<td>90</td>
</tr>
<tr>
<td>Unwashed 0078</td>
<td>84</td>
</tr>
<tr>
<td>Washed 0057</td>
<td>85</td>
</tr>
<tr>
<td>Washed 0007</td>
<td>94</td>
</tr>
</tbody>
</table>

   \[ \frac{761}{9} = 84.6 \]
Fine Aggregate

<table>
<thead>
<tr>
<th>Products</th>
<th>Product Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. M10's</td>
<td>79</td>
</tr>
<tr>
<td>No. 810's</td>
<td>85</td>
</tr>
<tr>
<td>W10's</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>$254 \div 3 = 84.7$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rating</th>
<th>Value</th>
<th>Weighted Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Aggregate</td>
<td>84.6 X 50%</td>
<td>42.3</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>84.7 X 50%</td>
<td>42.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>84.7 = Category Rating</td>
</tr>
</tbody>
</table>

H. **Source Rating**

The average of the category ratings with all values treated equally except Surface Treatment Stone. Surface Treatment Stone will be assigned a value of 10%.

Example:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Value</th>
<th>Weighted Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Aggregates</td>
<td>86.3 X .30</td>
<td>= 25.9</td>
<td></td>
</tr>
<tr>
<td>Asphalt Aggregates</td>
<td>80 X .30</td>
<td>= 24.0</td>
<td></td>
</tr>
<tr>
<td>Graded Aggregate</td>
<td>90 X .30</td>
<td>= 27.0</td>
<td></td>
</tr>
<tr>
<td>Surface Treatment</td>
<td>85 X .10</td>
<td>= 8.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>85.4</td>
<td></td>
</tr>
</tbody>
</table>

Source Rating = 85

In the event that a category is not rated, the categories that are rated will be given a proportionally higher value.

Example:

<table>
<thead>
<tr>
<th>Category</th>
<th>(Rating)</th>
<th>Value</th>
<th>Redistributed Value</th>
<th>Weighted Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Aggregates</td>
<td>(86.3)</td>
<td>X .30</td>
<td>.30 .70 = (.43)</td>
<td>37.1</td>
</tr>
<tr>
<td>Asphalt Aggregates</td>
<td>(80)</td>
<td>X .30</td>
<td>.30 .70 = (.43)</td>
<td>34.4</td>
</tr>
<tr>
<td>Grade Aggregate</td>
<td>not rated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Treatment</td>
<td>(85)</td>
<td>X .10</td>
<td>.10 .70 = (.14)</td>
<td>11.9</td>
</tr>
<tr>
<td></td>
<td>(total)</td>
<td>.70</td>
<td></td>
<td>83.4</td>
</tr>
</tbody>
</table>

Source Rating = 83.4
III. AUXILIARY PLANTS

Ratings for Auxiliary Plants will be produced per product only. The product ratings will then be given equal value and included in the arithmetic average for the category under the primary source number.

Example: Coarse Aggregate For Concrete

<table>
<thead>
<tr>
<th>Source</th>
<th>Product</th>
<th>Product Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Washed 0057</td>
<td>95</td>
</tr>
<tr>
<td>Primary</td>
<td>Washed 0067</td>
<td>85</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>Washed 0057</td>
<td>79</td>
</tr>
</tbody>
</table>

\[ \frac{259}{3} = 86.3 \]

IV. USE OF TEST DATA FOR COMPUTATIONS

A. Sample location, (belt, stockpile, truck, railcar, other)

The test data for a given product will be computed separately per sample location. The "Product Rating" will be the arithmetic average of the averages per product per sample location. A weighted average based upon the number of samples per location or quantities represented will not be computed.

B. Number of Samples

Products with less than 10 samples tested per required screen per sample location during a quarter will not be rated for that quarter. The product will be rated year to date when there are 10 or more samples on record.

V. FREQUENCY OF RATING

Rating periods will begin January 1 and end December 31 each year. Ratings will be produced as follows:

A. Per Quarter Rating

This rating will be based upon the data for the designated quarter only.

B. Year to Date Rating

This rating will be produced for the 2nd, and 4th quarters and will be based upon cumulative data to date for the year.

In the event that a below 70 rating is involved during the fourth quarter, any imposed restriction will carry over into the new year until the problem is resolved. Once the problem has been resolved, the rating for the new year will begin again as of the formal date that the problem was resolved.
VI. PUBLICATION OF RATINGS

The "Source Ratings" and "Category Ratings" will be published and issued to all sources semi-annually as follows:

<table>
<thead>
<tr>
<th>Source Rating</th>
<th></th>
</tr>
</thead>
</table>

**Category Ratings**

Concrete Aggregates
- Coarse
- Fine

Asphalt Aggregates
- Coarse
- Fine
- Graded Aggregate Base
- Surface Treatment Stone

In the event that there is a product rating below 70, it will be identified as shown in the following example:

<table>
<thead>
<tr>
<th>Source Rating</th>
<th>84</th>
</tr>
</thead>
</table>

**Concrete Aggregates**
- Coarse | 83 |

Note: The washed 0067's rated 65. The washed 0067's may be approved on a stockpile basis at the point of use only.

<table>
<thead>
<tr>
<th>Fine</th>
<th>90</th>
</tr>
</thead>
</table>

**Asphalt Aggregates**
- Coarse | 85 |
- Fine   | 75 |

Note: 0810's have a substandard consistency value.

<table>
<thead>
<tr>
<th>Graded Aggregate Base</th>
<th>88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Treatment Stone</td>
<td>80</td>
</tr>
</tbody>
</table>
VII. ADMINISTRATION OF RATING SYSTEM

A. "Product Ratings" (for all products except those for Asphaltic Concrete)

1. When the rating for a specific product falls below 70 for a given quarter or year to date, acceptance of Producer Certification for the product will be discontinued. There is an exception to this. If the year to date rating is below 70 but the current quarterly rating is 70 or above, the quarterly rating will take precedence.

2. In order for Producer Certification of the product to be resumed, the producer must:

   a) Take corrective action and notify the Department in writing as to the measures that have been taken.
   b) Request a re-evaluation and re-rating of the product. The request should specify a beginning date for the evaluation such that previously existing problems will not be reflected during the re-evaluation period. The request should also detail a plan for controlling the use of any existing inventories of the problem product.
   c) A quarterly product rating of 75 or greater must be achieved.

   During the interim the product may be accepted on a stockpile basis at the point of use only.

B. "Product Rating" (for Asphaltic Concrete Aggregate)

1. When the rating for a specific product falls below 70 for a given quarter or year to date, rating of the product will be discontinued. The published ratings for the product would then state, "This Product has a substandard consistency value." There is an exception to this. If the year to date rating is below 70 but the current quarterly rating is 70 or above, the quarterly rating will take precedence.

2. In order to resume participation in the rating system, the producer must:

   a) Take corrective action and notify the Department in writing as to the measures that have been taken.
   b) Request a re-evaluation and re-rating of the product. The request should specify a beginning date for the evaluation such that previously existing problems will not be reflected during the evaluation period. The request must also detail a plan for controlling the use of any existing inventories of the problem product.
### TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM

<table>
<thead>
<tr>
<th>Washed 0005 Surface Treatment Stone</th>
<th>Sieves</th>
<th>Specifications</th>
<th>Target Band</th>
<th>RFTB Range</th>
<th>RFTB Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 ½&quot;</td>
<td>1 ½&quot;</td>
<td>1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower Limit</td>
<td>Upper Limit</td>
<td>Lower Limit</td>
<td>Upper Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>¾&quot;</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>Specifications</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>20</td>
<td>55</td>
</tr>
<tr>
<td>Target Band</td>
<td>100</td>
<td>93</td>
<td>100</td>
<td>23</td>
<td>45</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-3</td>
<td>-</td>
<td>0-3</td>
<td>All</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>

### Washed 0006 Surface Treatment Stone

<table>
<thead>
<tr>
<th>Sieves</th>
<th>Specifications</th>
<th>Target Band</th>
<th>RFTB Range</th>
<th>RFTB Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td></td>
</tr>
<tr>
<td>Specifications</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>93</td>
<td>100</td>
<td>23</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-3</td>
<td>-</td>
<td>0-3</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>&gt; 3</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
# TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM

<table>
<thead>
<tr>
<th>Sieves</th>
<th>¾&quot;</th>
<th>Lower Limit ½&quot;</th>
<th>Upper Limit ½&quot;</th>
<th>Lower Limit 3/8&quot;</th>
<th>Upper Limit 3/8&quot;</th>
<th>Lower Limit No. 4</th>
<th>Upper Limit No. 4</th>
<th>Lower Limit No. 8</th>
<th>Upper Limit No. 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washed 0007 Surface Treatment Stone</td>
<td>Specifications</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>40</td>
<td>70</td>
<td>0</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>93</td>
<td>100</td>
<td>45</td>
<td>60</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-3</td>
<td>-</td>
<td>0-3</td>
<td>All</td>
<td>-</td>
<td>0-4</td>
<td>-</td>
<td>0-1</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>-</td>
<td>&gt; 4</td>
<td>-</td>
<td>1.1-1.5</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sieves</th>
<th>½&quot;</th>
<th>Lower Limit 3/8&quot;</th>
<th>Upper Limit 3/8&quot;</th>
<th>Lower Limit No. 4</th>
<th>Upper Limit No. 4</th>
<th>Lower Limit No. 8</th>
<th>Upper Limit No. 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washed 0089 Surface Treatment Stone</td>
<td>Specifications</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>20</td>
<td>55</td>
<td>0</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>93</td>
<td>100</td>
<td>23</td>
<td>43</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-3</td>
<td>-</td>
<td>0-3</td>
<td>0-4</td>
<td>-</td>
<td>0-4</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>&gt; 3</td>
<td>&gt; 4</td>
<td>-</td>
<td>&gt; 4</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
**TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM**

<table>
<thead>
<tr>
<th></th>
<th>Sieves</th>
<th>1 ½&quot;</th>
<th>Lower Limit 1&quot;</th>
<th>Upper Limit 1&quot;</th>
<th>Lower Limit ½&quot;</th>
<th>Upper Limit ½&quot;</th>
<th>Lower Limit No. 4</th>
<th>Upper Limit No. 4</th>
<th>Lower Limit No. 8</th>
<th>Upper Limit No. 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washed 0057</strong></td>
<td>Specifications</td>
<td>100</td>
<td>95</td>
<td>100</td>
<td>25</td>
<td>60</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td><strong>Concrete Stone</strong></td>
<td>Target Band</td>
<td>-</td>
<td>97</td>
<td>100</td>
<td>32</td>
<td>48</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>All</td>
<td>All</td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>1.1-1.5</td>
<td></td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&gt; 1.5</td>
<td></td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Sieves</th>
<th>1&quot;</th>
<th>Lower Limit ¼&quot;</th>
<th>Upper Limit ¼&quot;</th>
<th>Lower Limit 3/8&quot;</th>
<th>Upper Limit 3/8&quot;</th>
<th>Lower Limit No. 4</th>
<th>Upper Limit No. 4</th>
<th>Lower Limit No. 8</th>
<th>Upper Limit No. 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washed 0067</strong></td>
<td>Specifications</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>20</td>
<td>55</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td><strong>Concrete Stone</strong></td>
<td>Target Band</td>
<td>-</td>
<td>93</td>
<td>100</td>
<td>23</td>
<td>45</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-3</td>
<td>-</td>
<td>0-3</td>
<td>All</td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>1.1-1.5</td>
<td></td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&gt; 1.5</td>
<td></td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
## TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM

<table>
<thead>
<tr>
<th>No. 10SM Standard Manufactured Concrete Sand</th>
<th>Sieves</th>
<th>Specifications</th>
<th>Target Band</th>
<th>RFTB Range</th>
<th>RFTB Factor</th>
<th>10FM Fine Manufactured Concrete Sand</th>
<th>Sieves</th>
<th>Specifications</th>
<th>Target Band</th>
<th>RFTB Range</th>
<th>RFTB Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 10SM</td>
<td>Sieves</td>
<td>3/8''</td>
<td>Lower Limit No. 4</td>
<td>Upper Limit No. 4</td>
<td>Lower Limit No. 16</td>
<td>Upper Limit No. 16</td>
<td>Lower Limit No. 50</td>
<td>Upper Limit No. 50</td>
<td>Lower Limit No. 100</td>
<td>Upper Limit No. 100</td>
<td>Lower Limit No. 200</td>
</tr>
<tr>
<td>Standard</td>
<td></td>
<td></td>
<td>100</td>
<td>95</td>
<td>100</td>
<td>45</td>
<td>95</td>
<td>8</td>
<td>30</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Manufactured</td>
<td></td>
<td></td>
<td>--</td>
<td>97</td>
<td>100</td>
<td>51</td>
<td>90</td>
<td>12</td>
<td>24</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Concrete</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10FM</td>
<td>Sieves</td>
<td>3/8''</td>
<td>Lower Limit No. 4</td>
<td>Upper Limit No. 4</td>
<td>Lower Limit No. 16</td>
<td>Upper Limit No. 16</td>
<td>Lower Limit No. 50</td>
<td>Upper Limit No. 50</td>
<td>Lower Limit No. 100</td>
<td>Upper Limit No. 100</td>
<td>Lower Limit No. 200</td>
</tr>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
<td>100</td>
<td>95</td>
<td>100</td>
<td>45</td>
<td>95</td>
<td>15</td>
<td>42</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Target Band</td>
<td></td>
<td></td>
<td>--</td>
<td>97</td>
<td>100</td>
<td>51</td>
<td>90</td>
<td>19</td>
<td>36</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>RFTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10FM</td>
<td>Sieves</td>
<td>3/8''</td>
<td>Lower Limit No. 4</td>
<td>Upper Limit No. 4</td>
<td>Lower Limit No. 16</td>
<td>Upper Limit No. 16</td>
<td>Lower Limit No. 50</td>
<td>Upper Limit No. 50</td>
<td>Lower Limit No. 100</td>
<td>Upper Limit No. 100</td>
<td>Lower Limit No. 200</td>
</tr>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
<td>100</td>
<td>95</td>
<td>100</td>
<td>45</td>
<td>95</td>
<td>15</td>
<td>42</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Target Band</td>
<td></td>
<td></td>
<td>--</td>
<td>97</td>
<td>100</td>
<td>51</td>
<td>90</td>
<td>19</td>
<td>36</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>RFTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10FM</td>
<td>Sieves</td>
<td>3/8''</td>
<td>Lower Limit No. 4</td>
<td>Upper Limit No. 4</td>
<td>Lower Limit No. 16</td>
<td>Upper Limit No. 16</td>
<td>Lower Limit No. 50</td>
<td>Upper Limit No. 50</td>
<td>Lower Limit No. 100</td>
<td>Upper Limit No. 100</td>
<td>Lower Limit No. 200</td>
</tr>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
<td>100</td>
<td>95</td>
<td>100</td>
<td>45</td>
<td>95</td>
<td>15</td>
<td>42</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Target Band</td>
<td></td>
<td></td>
<td>--</td>
<td>97</td>
<td>100</td>
<td>51</td>
<td>90</td>
<td>19</td>
<td>36</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>RFTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM

<table>
<thead>
<tr>
<th>Product 15CR Group II GAB for Stockpile, Truck, and other Samples</th>
<th>Sieves</th>
<th>2&quot; Lower Limit 1 ½&quot;</th>
<th>Upper Limit 1 ½&quot;</th>
<th>Lower Limit ¾&quot;</th>
<th>Upper Limit ¾&quot;</th>
<th>Lower Limit No. 10</th>
<th>Upper Limit No. 10</th>
<th>Lower Limit No. 60</th>
<th>Upper Limit No. 60</th>
<th>Lower Limit No. 200</th>
<th>Upper Limit No. 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td>100</td>
<td>97</td>
<td>100</td>
<td>60</td>
<td>90</td>
<td>25</td>
<td>45</td>
<td>5</td>
<td>30</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>99</td>
<td>100</td>
<td>70</td>
<td>86</td>
<td>32</td>
<td>40</td>
<td>8</td>
<td>25</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>RFTB</strong></td>
<td><strong>Range</strong></td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>All</td>
<td>0-3</td>
<td>0-5</td>
<td>0-3</td>
<td>0-2</td>
<td>0-5</td>
<td>0-1</td>
</tr>
<tr>
<td><strong>Factor</strong></td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>RFTB</strong></td>
<td><strong>Range</strong></td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>-</td>
<td>&gt; 3</td>
<td>&gt; 5</td>
<td>&gt; 3</td>
<td>&gt; 2</td>
<td>&gt; 5</td>
<td>1.1-1.5</td>
</tr>
<tr>
<td><strong>Factor</strong></td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product 15CR Group II GAB for Belt Samples Only</th>
<th>Sieves</th>
<th>2&quot; Lower Limit 1 ½&quot;</th>
<th>Upper Limit 1 ½&quot;</th>
<th>Lower Limit ¾&quot;</th>
<th>Upper Limit ¾&quot;</th>
<th>Lower Limit No. 10</th>
<th>Upper Limit No. 10</th>
<th>Lower Limit No. 60</th>
<th>Upper Limit No. 60</th>
<th>Lower Limit No. 200</th>
<th>Upper Limit No. 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td>100</td>
<td>97</td>
<td>100</td>
<td>60</td>
<td>90</td>
<td>25</td>
<td>45</td>
<td>5</td>
<td>30</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>99</td>
<td>100</td>
<td>70</td>
<td>86</td>
<td>32</td>
<td>40</td>
<td>8</td>
<td>25</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>RFTB</strong></td>
<td><strong>Range</strong></td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>All</td>
<td>0-3</td>
<td>0-5</td>
<td>0-3</td>
<td>0-2</td>
<td>0-5</td>
<td>0-1</td>
</tr>
<tr>
<td><strong>Factor</strong></td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>RFTB</strong></td>
<td><strong>Range</strong></td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>-</td>
<td>&gt; 2</td>
<td>&gt; 3</td>
<td>&gt; 3</td>
<td>&gt; 2</td>
<td>&gt; 5</td>
<td>1.1-1.5</td>
</tr>
<tr>
<td><strong>Factor</strong></td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM

<table>
<thead>
<tr>
<th>Sieves</th>
<th>Lower Limit 2&quot;</th>
<th>Upper Limit 1 ½&quot;</th>
<th>Lower Limit 1 ½&quot;</th>
<th>Upper Limit ¾&quot;</th>
<th>Lower Limit ¾&quot;</th>
<th>Upper Limit No. 4</th>
<th>Lower Limit No. 4</th>
<th>Upper Limit No. 10</th>
<th>Lower Limit No. 10</th>
<th>Upper Limit No. 60</th>
<th>Lower Limit No. 60</th>
<th>Upper Limit No. 200</th>
<th>Lower Limit No. 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td>100</td>
<td>97</td>
<td>100</td>
<td>60</td>
<td>95</td>
<td>-</td>
<td>-</td>
<td>25</td>
<td>50</td>
<td>10</td>
<td>35</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>99</td>
<td>100</td>
<td>70</td>
<td>91</td>
<td>45</td>
<td>69</td>
<td>29</td>
<td>43</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>0-3</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>0-3</td>
<td>0-2</td>
<td>-</td>
<td>-</td>
<td>0-1.0</td>
<td>0-1.0</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>&gt; 3</td>
<td>&gt; 2</td>
<td>-</td>
<td>&gt; 1.0</td>
<td>-</td>
<td>-</td>
<td>&gt; 1.0</td>
<td>&gt; 1.0</td>
</tr>
<tr>
<td>RFTB Factor</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

* For Group I Aggregate having less than 37% passing the No. 10 sieve, a minimum of 9% passing the No. 200 sieve will be required.
### TARGET BANDS AND RFTB FACTORS / AGGREGATE RATING SYSTEM

<table>
<thead>
<tr>
<th>Sieves</th>
<th>2&quot;</th>
<th>Lower Limit 1 ½&quot;</th>
<th>Upper Limit 1 ½&quot;</th>
<th>Lower Limit ¾&quot;</th>
<th>Upper Limit ¾&quot;</th>
<th>Lower Limit No. 4</th>
<th>Upper Limit No. 4</th>
<th>Lower Limit No. 10</th>
<th>Upper Limit No. 10</th>
<th>Lower Limit No. 60</th>
<th>Upper Limit No. 60</th>
<th>Lower Limit No. 200</th>
<th>Upper Limit No. 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sources that are required to meet 37% passing the No. 10 Sieve</td>
<td>Specifications</td>
<td>100</td>
<td>97</td>
<td>100</td>
<td>60</td>
<td>95</td>
<td>-</td>
<td>-</td>
<td>37</td>
<td>50</td>
<td>10</td>
<td>35</td>
<td>7</td>
</tr>
<tr>
<td>Target Band</td>
<td>-</td>
<td>99</td>
<td>100</td>
<td>70</td>
<td>91</td>
<td>45</td>
<td>69</td>
<td>38</td>
<td>43</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>0-2</td>
<td>-</td>
<td>All</td>
<td>0-3</td>
<td>All</td>
<td>All</td>
<td>0-1.5</td>
<td>0-2</td>
<td>-</td>
<td>-</td>
<td>0-1</td>
<td>0-2</td>
</tr>
<tr>
<td>Factor</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RFTB Range</td>
<td>-</td>
<td>&gt; 2</td>
<td>-</td>
<td>-</td>
<td>&gt; 3</td>
<td>-</td>
<td>-</td>
<td>1.6-2.0</td>
<td>&gt; 2</td>
<td>-</td>
<td>-</td>
<td>&gt; 1</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Factor</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>15</td>
</tr>
</tbody>
</table>

* For Group I Aggregate having less than 37% passing the No. 10 sieve, a minimum of 9 % passing the No. 200 sieve will be required.
SECTION VIII

POLICIES REGARDING REPORTING OF DATA FOR CERTIFICATION
GUIDELINES FOR SUBMITTING TEST DATA
FOR PRODUCER CERTIFICATION OF AGGREGATES

PRODUCTION SAMPLES

All producers should sample and test materials during the production process. However, production samples should not be submitted for producer certification.

BELT SAMPLES

Belt samples shouldn’t be submitted for producer certification unless they are representing materials being loaded out through the bins.

CERTIFICATION SAMPLES

Sampling frequencies are specified in units of time or tons. When a frequency per ton is specified it is in reference to tons per day. In either case, all samples that are tested to represent shipments during the specified unit of time or tons must be submitted for certification. When materials weren’t shipped during the specified unit of time, or tons, the samples tested during that time aren’t to be submitted for certification.

Example of frequencies specified in units of time:

- The testing frequency for asphalt screenings is a minimum of two samples per week.
- During the week of 7/8/02 thru 7/12/02 a sample is tested every day but none of the screenings are shipped to an asphalt plant. In this event none of the samples would be submitted. If screenings had been shipped to an asphalt plant on one or more of those days, all five of the samples would have been submitted for the week.

Example of frequencies specified in units of tons per day:

- The testing frequency for graded aggregate base is one test per 1,000 tons, not less than one per day when shipping.
- During the week of 7/8/02 thru 7/12/02, three samples are tested each day, 900 tons are shipped to a State project on 7/8/02 and 200 tons are shipped to a State project on 7/11/02.
- All three samples tested on 7/8/02 and all three samples tested on 7/11/02 would be submitted for certification. None of the other samples would be submitted.
MINUS NO. 200 TESTING AND REPORTING PROBLEM STATEMENT

The most common discrepancy in the manner in which fine aggregate sieve analysis and minus No. 200 (75 µm) test results have been performed and reported is reporting the results of a sample that was dry sieved only. All fine aggregate gradation specifications are based upon the results obtained after shaking a sample that has been subjected to the washed minus No. 200 (75 µm) test procedure. The applicable procedures are AASHTO T11 and AASHTO T27.

BRIEF SUMMARY OF TEST PROCEDURE

1. Acquire a representative sample of at least 15 lb. (6.81 kilograms)
2. Dry the entire sample.
3. Using a fine aggregate splitter (maximum opening of ½” or 12.5 mm) reduce the sample to approximately 300 to 500 grams in size. (No single sieve shall retain more than 194 grams.)
4. Record the dry weight.
5. Subject the sample to the washed minus No. 200 (75 µm) test.
6. Dry the sample and record its weight. Subtract this weight from the weight recorded under step No. 4 above. Divide the difference by the weight recorded under No. 4 above to calculate the percent washed Minus No. 200 (75 µm).
7. Shake the sample in a nest of the required sieves for 10 minutes.
8. Calculate the gradation based upon the total sample weight recorded under No. 4 above and the accumulated weight retained per sieve including the No. 200 (75 µm) after shaking. The minus No. 200 (75 µm) calculated in this manner is the Total Minus 200 (75 µm).

REPORTING MINUS NO. 200 (75 µm) TEST RESULTS

1. The washed minus No. 200 (75 µm) test should be reported for 10SM (Standard Manufactured) concrete sand and 10NS (Natural Sand).
2. The total minus No. 200 (75 µm) should be reported for all other fine aggregates including 10FM (Fine Manufactured Sand) and the minus No. 10 (2 mm) portion of GAB.
3. Do not report any other type of minus No. 200 (75 µm) test results.

REPORTING SIEVE ANALYSIS RESULTS

1. Do not report ANY fine aggregate sieve analysis results except as obtained by the procedures outlined above.
The DOT 640 Aggregate Quality Data Entry Form

The DOT 640 Form:
This form enables easy and accurate entry of DOT 640 Aggregate Quality data. This form only allows viewing one product type at a time. This is because required sieve sizes are different for each product, and the data in the columns would become meaningless if all products were viewed at once.

The DOT 640 Aggregate Quality Producer information is the data obtained from a test sample of a specific product from an aggregate source.

A computerized database must have designated fields that in combination uniquely identify each record. The fields that identify an individual DOT 640 record are: Source Plant Code, Product Code, Washed/Unwashed, Sample Number, and the Year of the sample (because sample numbers repeat yearly). These fields are required and may not be left blank.

The fields in the DOT 640 are as follows:

Source Plant Code:
A Source Plant Code is the designation assigned by the DOT to producers that supply material to the DOT. The Source Plant Code entered must be the Code of the plant shipping the reported quantity of material. The plant code is a 4-character field. The first 3 characters are a zero padded right-justified number and the last character is an upper case letter.

Correct: 032C, 141C
Incorrect: 32C, 141

Aggregate Product Code:
The Aggregate Product Code is a designation assigned by the DOT to various aggregate materials supplied to the DOT. The Product Code field is a 4-character field that must contain a valid Product Code designation. To ensure the accuracy of this field, the designation is selected from a list.

Washed/Unwashed
Indicates that the product is (W)ashed or (U)nwashed.
Sample Number
This is the arbitrarily assigned number assigned to the sample by the testing technician. This is an integer numeric value. The same sample number may be used for different products.

Sample Year
Because the sample numbers restart at the beginning of each year, each sample number must also be accompanied by the year in which the sample was taken.
Used in codes 1-3
These fields specify up to three different ways in which the material will be used. These are each single character fields that may contain “A” through “Y”. A list of DOT used in-codes are provided in a drop-down box. Values may be left blank if there are less than 3 uses.

Sample Date
This is the date on which the sample was tested. The Date field is a date time object that can contain any date between 1/1/100 and 12/31/9999. Under the Microsoft Windows operating system a date can be entered and displayed in a number of different ways depending on the country settings in the Windows control panel.

Vendor Code:
This is the DOT assigned Vendor designation of a company that is to resell the material. This value is only supplied if the material is being re-sold instead of being delivered to a project. This is a 4-character code from QPL2, and is NOT the site manager code. If there is no vendor then leave this field blank.

Technician Group
Specifies the group the technician taking this sample belongs to. These samples may be taken by either Quarry Certification (Technicians employed by the aggregate plant) or Independent assurance (technicians employed by the DOT).

DOT Technician Code
The code assigned by the DOT to designated people who are authorized to submit test reports to the DOT

Aggregate Group
Specifies if the material falls in to aggregate group 1 (limestone) or aggregate group 2 (granite)

Sampled From
A generalized location from which the sample was taken. This is either (S)tockpile, (B)elt, (R)oadway, rail (C)ar, (T)ruck, or (O)ther.

Percent Passing 1-10
The percent of material passing each of the required sieves (ten max). The sieve sizes required for testing are pulled from a pre-programmed list and are displayed on the column heading on the entry form. Decimal values may be specified. Each percent passing value obtained from the test is required to be less than the previous value. A larger value would represent a physical impossibility.

Sand Equivalent
If applicable, the numeric results obtained from a GDT-63 sand equivalent test.

Meets Requirements
Indicates if the sample is passing or failing based on the results.
Remarks
The remark field is a memo field where users can enter any additional relevant data they want.

Send
Checking this box indicates that you have accurately and honestly entered your data and that it is ready to send to the GDOT. The label next to this box indicates if this record has been sent (or more accurately, extracted for sending).
The DOT 641 Aggregate Quantity Form

The DOT 641 Form:
This form enables easy and accurate entry of DOT 641 Aggregate Quantity data.

The DOT 641 Aggregate Quantity Producer Report is a report of the quantity of material supplied by a source plant on a specific day, separately reporting the quantities of each product for each use for each project.

The fields that uniquely identify a DOT 641 report are the Plant Code, Date Sampled, Project Code, Product Code, Washed/Unwashed and Used In.

The fields in the DOT 640 are as follows:

**Source Plant Code:**
A Source Plant Code is the designation assigned by the DOT to producers that supply material to the DOT. The Source Plant Code entered must be the Code of the plant shipping the reported quantity of material. This plant code is a 4-character field. The first 3 characters are a zero padded right-justified number and the last character is an upper case letter.

Correct: 032C, 141C
Incorrect: 32C, 141

**Date Sampled**
The date is the single date on which the quantity of material was supplied. The Date field is a date time object that can contain any date between 1/1/100 and 12/31/9999. Under the Microsoft Windows operating system a date can be displayed and entered in a number of different ways and depends on the country settings in the Windows control panel.

**Project Code:**
This is the project designation for the specific project being performed under the contract. You must type the project code in EXACTLY as it is issued; otherwise your data may not be filed properly.

**Aggregate Product Code:**
The Aggregate Product Code is a designation assigned by the DOT to various aggregate materials supplied to the DOT. The Product Code field is a 4-character field that must contain a valid Product Code designation. To ensure the accuracy of this field, the designation is selected from a list.

**Washed/Unwashed**

---

<table>
<thead>
<tr>
<th>DOT641</th>
<th>Plant Code</th>
<th>Date Sampled</th>
<th>Project Code</th>
<th>Product Code</th>
<th>Washed/Unwashed</th>
<th>Used In</th>
<th>Quantity (Tons)</th>
<th>Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>000C</td>
<td>2/28/2002</td>
<td>43</td>
<td></td>
<td></td>
<td>Unwash</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Indicates that the product is (W)ashed or (U)nwashed.

**Used In:**
The Used In code specifies what the material is going to be used for. The code is from a list of DOT Used In codes. The Used In code field is a single upper case letter from A to Z. Each letter represents a different way in which the material can be used.

**Quantity:**
The Quantity is the amount, in **TONS** of the specified product that the Supplier has shipped on that day for a specific contract for a specific use.

**Contract ID:**
This is the ID of the contract under which this work is being preformed and paid under. The Contract ID’s format is upper case, letter “O”s are not allowed, and dashes in the format: 000000-00-000-0.

**County Number:**
The DOT county designation code that the work for this contract is being preformed in.

**Vendor code:**
This is the DOT assigned Vendor designation of a company that is to resell the material. This value is only supplied if the material is being re-sold instead of being delivered to a project. This is a 4-character code from QPL2.

**Beginning Sample No**
**Ending Sample No**
The beginning and ending Sample Numbers are the sample numbers from the DOT 640 tests, which were run on the quantity of material being reported in this report. Because the sample numbers restart at the beginning of each year, the year of these samples MUST match the year on the report.

**Results passed**
This indicates if the test samples, specified above, were generally passing or failing from the DOT 640 tests run on the material.

**Send**
Checking this box indicates that you have accurately and honestly entered your data and that it is ready to send to the GDOT. The label next to this box indicates if this record has been sent (Or more accurately, extracted for sending)
Printing Aggregate Data and Statistical Reports

When you click the “Aggregate reports” button from the main menu, you will see the following screen:

From here, you may generate the following reports:

Before running any of the reports listed here, you must enter a range of dates that you wish to work with.

**Aggregate Quarry Rating**: This is the same rating that the GDOT runs on your data in combination with all other received data. This, however, will enable you to get immediate results on your own local data that you have entered.

**Aggregate Quarry Rating Summary**: A summary of the above rating report.

For the remainder of these reports you may additionally select data for the plant, product, sampled from location, used in, meets requirement, and washed/unwashed values you specify. These are optional, however you must still specify a date range.

**Aggregate Quality 640 Report Sheet** – This will print a sheet of all entered data for the specified 640 forms.

**Aggregate Quantity 641 Report Sheet** – This will print a sheet of all entered data for the specified 641 forms.

**Total Tests per Aggregate Product**: Is a summary report that shows how many tests were performed per aggregate product.

**Aggregate Producer Statistical Report**: Generates averages and standard deviations of percent passing for all specified Samples for each product.
SECTION IX

NATURAL SAND
NATURAL SAND

I. GENERAL

Natural sand is fine rock particles that have accumulated on the earth’s surface by natural weathering and erosional processes. It is mined by dredging from a floodplain or river and sometimes dry mined from a pit or hill side. After mining, the material must be subjected to a washing and classifying process to meet GDOT Specifications. Natural Sand (product No. 10NS) is used primarily in Portland Cement Concrete, but may also be used in Asphaltic Concrete. Most natural sand sources also produce mortar sand (product No. 20NS), which is considerably finer than the sand used in Portland Cement Concrete.

Sand can also be produced from the mining of overburden. Although the material mined by this type of operation does not technically meet the geologic definition of natural sand, it is designated as such by the GDOT for the sake of expediency.

II. SAMPLING

Samples are taken and tested for two basic reasons.

1. To control product quality during the production and stockpiling phase. Samples must be taken frequently during production to ensure that the end product meets GDOT Specification requirements. Adjustments made to plant operations should be based on the test results and allowances made for normal segregation and degradation that are expected to occur during further handling.

2. To verify product quality during shipment. Provided the more complex issues of “control” have been properly addressed, the verification of quality is simply a matter of randomly taking representative samples during shipment and reporting the test results through the Field Data Collection System (FDCS). These samples serve the dual purpose of quality assurance and product certification during shipment.

Testing frequencies are established in the Quality Assurance Program (source specific), which is provided by the Office of Materials and Research. Adjustments to the minimum testing frequencies may be made if deemed necessary.
LOAD FACE SAMPLING PROCEDURE

A fine aggregate sampling tube is the preferred device for sampling natural sand. This tube should have an inside diameter of 2 inches (50mm) to 3 ½ inches (89mm) and a minimum length of 30 inches (762mm).

The stockpile slough should be sampled at a minimum of three points that are equal distances apart (approximately) in a diagonal direction from the bottom to the top of the slough. The space between the bottom of the stockpile and the first sampling point and the space between the highest sampling point and the top of the slough should also be the same distance as between the sampling points.

Example of Slough Area

Note: The width of the area sampled should be confined to no more than two times the width of the loader bucket that is being used for loading out materials.
CONICAL STOCKPILE SAMPLING PROCEDURE

CONCRETE SAND

For production control and standardized evaluation procedures, concrete sand may be sampled at equal points around the cone at approximately 1/2 the height of the stockpile. These samples should always be compared to those that represent shipments. Typically, samples taken after the cone has been opened up or re-stocked will contain more fines than the production samples. This is believed to be caused by free water transporting fines toward the heart of the cone during production. The difference between the two sampling locations should be noted and production adjusted accordingly.
III. TEST PROCEDURES
Natural Sand must be subjected to the following tests at the frequency prescribed in the Quality Assurance Program designated by the Office of Materials and Research.

- AASHTO T-11 – Material Finer than No. 200 Sieve
- AASHTO T-21 – Organic Impurities in Aggregates for Concrete
- AASHTO T-27 – Sieve Analysis of Fine and Coarse Aggregate
- AASHTO T-248 – Reducing Field Samples of Aggregate to Testing Size
- GDT-63 – Sand Equivalent of Fine Aggregates
- GDT-75 – Durability (Required at only a few sources)

Performing these tests assures that the material meets gradation and is free from any detrimental material such as clay balls, organic material, coal or lignite. The limits for detrimental materials can be found in Section 801 of the GDOT Standard Specifications and in Section V of this study guide.

IV. STOCKPILING, HANDLING, AND SHIPPING PROCEDURES
When restocking Natural Sand, the material should be stockpiled only as high as the loader bucket can reach and should under no circumstances be stockpiled by ramping onto the material. Load out should be from a loading face on the restocked material. If the sand is stocked by a non-telescoping radial stacker, load out may be done from the inactive end of the stockpile as long as it is done from the end only and not from the front or back of the stockpile. For all other stockpiling and handling procedures refer to Standard Operating Procedure 1 in Section IV of this study guide.

V. QUALITY ASSURANCE PROGRAM
Quality Assurance Programs are based on the geology of the deposit and contain the minimum testing frequencies for producer certification. GDOT will only accept certified material from sources that have been evaluated and approved by the Office of Materials and Research. Below is a generic example of a Quality Assurance Program that you might see at a typical natural sand source.
QUALITY ASSURANCE PROCEDURES

NAME OF COMPANY
LOCATION
SOURCE NO

The following procedures are in accordance with SOP-1 as revised May 5, 2006, and are intended to allow producer certification of coarse aggregates.

1. Test all shipments as indicated in the attached Minimum Testing Frequencies Guide.

2. Maintain daily a record of project numbers, sizes, quantities and intended uses when shipping directly to Departmental projects, and record in the format of DOT Form 641.

3. Materials shipped for use in Portland cement concrete and Asphaltic concrete are generally stockpiled with the respective producer’s current inventory and may not be used in Departmental construction. It is imperative that all such shipments be certified to meet Georgia DOT Specifications. Since these shipments cannot be correlated to a specific project number, do not report the quantities in the format of DOT Form 641.

4. It is the responsibility of the Pit and Quarry Control Branch to notify testing personnel of Special Provisions modifying the Standard Specifications.

5. “The Company” will be responsible for the cleanliness of haul units and correct loading practices.

6. Any modification of standard testing procedures must have prior approval by the Office of Materials and Research.

7. Testing of production aggregate should be done by the producer to control quality during the manufacturing process. Do not report production samples to the DOT unless otherwise specified but maintain them in an orderly file at the source for future reference and as an aid in problem solving.

8. Take producer certification samples at the point and time of shipment.

9. Record all test run during the period of shipment in the format of DOT Form 640.

10. Maintain copies of all test data and DOT certifications in an orderly filing system at the source.

11. Complete and upload to the Field Data Collection System database producer certification reports at a minimum frequency of every two weeks.
MINIMUM TESTING FREQUENCIES GUIDE

NAME OF COMPANY
LOCATION
SOURCE NO.

TESTS FOR CERTIFIED AGGREGATE SHIPMENTS

<table>
<thead>
<tr>
<th>Test</th>
<th>Product</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AASHTO T27</td>
<td>NO.10 CONCRETE SAND</td>
<td>One test per 1,000 tons shipped. Not less than one test per week per size.</td>
</tr>
<tr>
<td>Gradation</td>
<td>NO.20 MORTAR SAND</td>
<td></td>
</tr>
<tr>
<td>2. AASHTO T11</td>
<td></td>
<td>One test per 4,000 tons shipped. Not less than one per month per size</td>
</tr>
<tr>
<td>Washed Minus 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. GDT-63</td>
<td></td>
<td>One test per week. Daily if results are below 80.</td>
</tr>
<tr>
<td>Sand Equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. AASHTO T21</td>
<td></td>
<td>One test per week as long as the colorimetric test results are 2 or less.</td>
</tr>
<tr>
<td>Organic impurities</td>
<td></td>
<td>Test daily when the results are 3.</td>
</tr>
</tbody>
</table>

TESTS FOR PRODUCTION CONTROL

| Test: GDT-132           | GRIABLE PARTICLES           | Not less than per when friable particles are present. All test results are |
| FRIABLE PARTICLES       |                              | to be listed on the attached log. The log will be submitted to the Forest   |
|                        |                              | Park Laboratory by the aggregate engineer on a monthly basis.               |
| 1. Fine Aggregate      |                              |                                                                           |
| (2% Maximum)           |                              |                                                                           |
ACKNOWLEDGEMENT OF INTENT TO COMPLY

I have read the preceding pages of the Quality Assurance Program for the Name of Mine or Quarry (Source No.). I agree to comply with this Program, Standard Operating Procedure No. 1 dated May 5, 2006, and the Georgia DOT Specifications.

Print: ___________________________

Signed: ________________________     ________________________     ________
President of Company                        Region or Division                  Date

Print: ___________________________

Signed: ________________________       ________________________
Quality Control Manager                                                                  Date