CERTIFIED AGGREGATE PRODUCER PROGRAM AUDIT CHECKLIST

Date _____

Source No. _____ ***Q No**. _____

Plant/Redistribution Terminal Name _____

Plant/Redistribution Terminal Location _____

District Testing Engineer or _____

INDOT Audit Team Members

	Name	Position
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____

Plant/Redistribution Terminal Members

	Name	Position
1.	_____	Certified Aggregate Technician
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

* If applicable

Source # _____

1. GENERAL INSTRUCTIONS

Certified Aggregate Producer Program (CAPP)
Quality Control Plan (QCP)
Indiana Test Method (ITM)
Certified Aggregate Technician (CAT)
Quality Assurance (QA)
Percent Within Limits (PWL)

Any square bracket marked by an X on the Audit Checklist requires a Corrective Action Sheet to be prepared. The Corrective Action Sheet will be prepared when a deficiency is found, and a copy provided to the Producer at the end of the audit. All other square brackets will have a check, if the item is satisfactory, or NA if not applicable.

Begin the audit by comparing the producer's copy of the QCP with the copy stored on the Aggregate Section shared drive.

A listing of applicable INDOT documents and Indiana Test Methods are maintained in the CAPP Document List. The current revision date for each publication is provided in the list.

The Addenda Summary Sheet and the QCP Annex are required to be maintained in the QCP Appendix. Items on these two sheets should be reviewed and discussed during the audit. The Producer should be instructed that any necessary addenda for these items must be submitted at the close-out meeting.

1.1 [ ] Addenda Summary Sheet and QCP Annex reviewed (if applicable)

Source # _____

2. PRODUCTION FLOW DIAGRAM

ITM 211 Reference 14.2.10

INDOT Auditor_____

2.1 [ ] The Annual Aggregate Source Report for Stone Producers represents conditions found at the source and as required by ITM 203

Review the diary and note locations where material has been extracted.

2.2 [ ] Locations noted in the diary match areas that have been mined as shown on the grid in the Annual Aggregate Source Report

Begin at the origin of the material, which is the quarry or the pit. Inspect the site and review the process. Ask the producer about any changes to the production process since the last audit, and whether the QCP flow diagram is up-to-date.

Ask the producer about any changes in the ledge processing or changes in the plant, including crushers, washers, bins, belt routes, screen combinations, delivery and off-loading processes, etc. Specific details, such as manufacturers names, screen sizes, dimensions, etc., are not required on the flow diagram.

2.3 [ ] Producer indicated that the plant is in accordance with QCP
2.4 [ ] All plant and process changes noted in diary

Identify all material stockpiles and bins within the Producer's yard.

2.5 [ ] All stockpiles and bins (if applicable) have signs in accordance with ITM 211 14.2.16 or the QCP
2.6 [ ] Stockpile map (if applicable) is current and located as indicated in the QCP
2.7 [ ] All material stockpiles and bins are listed as materials or otherwise accounted for in the QCP
2.8 [ ] (if applicable) Air-cooled blast furnace slag stockpiles designated for leachate testing are approximately 2000 tons
2.9 [ ] (if applicable) Steel furnace slag stockpiles designated for deleterious testing are approximately 2000 tons

The QCP covers any other process control techniques used beyond the minimums established by INDOT specifications and policies.

2.10 [ ]* Other process control techniques, if any, are as defined in QCP

Source # _____

3. QUALITY CLASSIFICATIONS	ITM 211 References
	14.2.3
	14.2.4
INDOT Auditor_____	14.2.8

A list and description of all portions of the mineral deposits indicating the different quality classes as described in ITM 203, ITM 205, and ITM 210 will be provided in the QCP. The manner in which each quality class is processed, handled, and stockpiled will be covered.

3.1 [ ] Each quality class is processed, handled, and stockpiled in accordance with the QCP

An explanation for each product having marginal quality characteristics and the plans or controls to be used for such products shall be provided in the QCP.

3.2 [ ]* Each marginal quality class material is processed, handled, and stockpiled in accordance with QCP

* Only applicable if Producer has materials with marginal quality characteristics

4. MATERIALS	ITM 211 References
	3.10
INDOT Auditor_____	5.2

If the Producer is a Redistribution Terminal, prior source documentation of a material obtained from another aggregate source shall be provided by the Producer.

4.1 [ ] Quality is satisfactory, as verified by being from a Certified Producer and a Certified Material, or traced to original INDOT approved source

The list of Certified Materials for the Producer as reported in the Certified Aggregate Producers Product List, CAPP D-List agrees with the list of materials indicated in the QCP.

4.2 [ ] The list of Certified Materials is in accordance with the QCP.

If the source has yet to be CAPP approved, a list of products, ledges, if applicable, and source code numbers will be tabulated and included with the Audit Checklist

Source # _____

5. PRODUCER GENERAL INFORMATION ITM 211 References 5.1 5.2 14.2.1

INDOT Auditor_____

5.1 [ ] Plant location and address in the QCP is correct
5.2 [ ] Plant telephone numbers in the QCP are correct
5.3 [ ] Producer's name and address in the QCP are correct and ownership has not changed
5.4 [ ] Producers telephone numbers in the QCP are correct
5.5 [ ] Key personnel contact information in the QCP is correct. (Management Rep and CAT mobile numbers and email addresses.)
5.6 [ ] Type of Producer (plant, redistribution terminal, or plant and redistribution terminal) identified in the QCP is correct

6. PRODUCER PERSONNEL ITM 211 References 6.1 6.2 14.2.2

The Producer employees occupy the following positions.

6.1 [ ] Management Representative listed in the QCP
6.2 [ ] CAT(s) listed in the QCP
6.3 [ ] Appointed CAT(s) Certification has not expired

CAT Name	On Certification Technician List

Source # _____

Personnel (continued)

6.4 [ ] All personnel conducting sampling and testing for the CAPP are Qualified Technicians

Qualified Tech Name	District Qualified/Expiration Date

Source # _____

7. DOCUMENTS ITM 211 References 2.5, 17.3

INDOT Auditor_____

Determine whether the following documents are current and on file at the Producer's site or location indicated in the QCP. (The documents may be maintained either in electronic or hard copy format.) Check the CAPP Document List for the most current dates of these items.

7.1 [ ] INDOT Certified Aggregate Producer Program (ITM 211)
7.2 [ ] INDOT Standard Specifications sections 211, 301, 302, 303, 404, 904 and 917
7.3 [ ] CAPP Training Manual for Producer Technicians
7.4 [ ] Summary of Production Quality Test Results Letter, Summary of Ledge Quality Letter, and the AP Aggregate Approval Letter for all applicable materials produced at the Plant
7.5 [ ] All applicable INDOT, AASHTO, and ASTM Test Methods **referenced in the QCP**. The documents are in accordance with the CAPP Document List.

ITM 206 _____	AASHTO R 76 _____
ITM 207 _____	AASHTO R 90 _____
ITM 212 _____	AASHTO T 11 _____
ITM 219 _____	AASHTO T 27 _____
ITM 902 _____	AASHTO T 84 _____
ITM 906 _____	AASHTO T 85 _____
ITM 910 _____	AASHTO T 112 _____
_____	ASTM D 4791 _____
_____	ASTM D 5821 _____
_____	_____

Obtain weigh tickets for each certified product for material shipped for Department use. For multiple ledges and composite stockpiling from two or more ledge combinations, one ticket from each ledge combination or composite stockpiling will suffice. Check for accuracy and minimum requirements as follows:

7.6 [ ] Q number listed (if applicable)
7.7 [ ] For Redistribution Terminals, originating source name, and source number listed
7.8 [ ] Source name and number listed and is correct
7.9 [ ] Aggregate size and class listed as per ITM 211 Section 17.3
7.10 [ ] Ledge combination of actual sold material is listed for stone products. In the case of approved composite stockpiling from two or more ledge combinations the multiples may be listed.

Source # _____

8. CONTROL CHARTS

ITM 211 Reference 13.0

INDOT Auditor_____

ALL CONTROL CHARTS

8.1 [ ] All control chart construction and symbols are in accordance with ITM 211 Section 13.4 or as allowed by the software used by the producer.

8.2 [ ] All materials identified as products in the QCP have a control chart which is available to view

8.3 [ ] All materials identified as products in the QCP have a control chart which have upper and lower control limits as indicated in the QCP or in accordance with INDOT Specifications 904.03(e)

8.4 [ ] Aggregate sizes are clearly shown on the control charts

8.5 [ ] Control charts are maintained as indicated in the QCP

8.6 [ ] Control charts are generated electronically

8.7 [ ] Control charts are hand plotted

*Check the **critical sieve** material control charts for compliance with the QCP and ITM 211. Production and load-out charts (if load-out tests are plotted on a separate chart) are required to be checked.*

Target Mean

8.8 [ ] Values are the same as indicated in QCP

8.9 [ ] Numerically identified in the left margin of charts or in accordance with the QCP and indicated to the tenths decimal place (0.0)

Control Limits

8.10 [ ] Upper and lower control limits are the same as indicated in the QCP

8.11 [ ] Numerically identified in the left margin of charts or in accordance with the QCP and indicated to the tenths decimal place (0.0) or whole number (0)

***Critical sieve** materials that have not achieved a minimum of 10 normal production tests are required to have the specification limits plotted for all sieves.*

*N**on-critical sieve** material control charts are required to be checked for compliance with the QCP and ITM 211. Production and load-out charts (if load-out tests are plotted on a separate chart) are required to be checked.*
For non-critical sieve materials, check the following:

Specification Limits

8.12 [ ] Upper and lower limits indicated on all sieves

8.13 [ ] Values are the same as Section 904 for Standard Specification materials or as indicated in the QCP for QA materials and multiple gradation products

8.14 [ ] Numerically identified in left margin of charts or in accordance with QCP and indicated to the tenths decimal place (0.0) or whole number (0)

Source # _____

CONTROL CHARTS (continued)

Select one control chart for a material from each of the following categories:

Material selected for production control charts with critical sieves: _____

Material selected for load-out control charts with critical sieves: _____

Material selected for production control charts with no critical sieves:_____

Material selected for load-out charts with no critical sieves: _____

For each of the categories listed above, check for conformance with the criteria below. Mark the square bracket with a Q for any deviation from the CAPP that is in accordance with the QCP.

8.15 [ ] Charting displays 30 production or 30 load-out points if plotted electronically on separate charts, or up to 30 hand plotted production and load-out points per chart as they occur. Less than 30 points may be applicable if the product is new and 30 points do not exist or a significant change in process has occurred and justifies a new start to a chart.

8.16 [ ] If in the Trial Phase, charts are maintained since entering into the Trial Phase

8.17 [ ] All charts have been retained at least 3 years for Certified Producers that have been in CAPP more than 3 Years

8.18 [ ] Points plotted left to right in chronological order

8.19 [ ] Test dates shown along the horizontal axis

Obtain production test reports and load-out test reports (if plotted on same chart) to check for accuracy in reporting and plotting. For hand-plotted charts, check all tests during an active period of one week. For computer generated charts, check two randomly selected tests.

8.20 [ ] All production test dates for points plotted on charts are the same as dates reported on test reports and in the daily diary

8.21 [ ] All load-out test are all reported and plotted in accordance with ITM 211 Section 11.3.3 Table Note 4.

8.22 [ ] All points are plotted correctly

8.23 [ ] Five point moving average calculated and plotted correctly for two randomly selected points

8.24 [ ] Nonconforming trend in 5-point moving average of control chart (7 or more points in a row are above or below target mean, or 7 or more points in a row are increasing or decreasing) noted in the daily diary.

Source # _____

CONTROL CHARTS (continued)

Any nonconforming (failing decant, gradation, deleterious) normal production or load-out test shall be followed immediately by the appropriate action taken. Search control charts for nonconforming tests. If nonconforming tests are found, review the diary on the date of each test for notations regarding action taken.

8.25 [ ] Nonconforming tests are noted in the diary
8.26 [ ] Corrective action was taken
8.27 [ ] (If applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated
8.28 [ ] (If applicable) After the second consecutive nonconforming load-out test, notations indicate that shipping from the stockpile was stopped

COMPLIANCE RATE AND LOAD-OUT PWL RATE

Compliance Rate

Review the 30 most recent normal production tests in the current and previous year that are charted for each Standard Specification or QA product controlled by a critical sieve. If 30 tests are not available, the number of tests taken shall be used with at least 10 tests required. For hand-plotted charts, calculate the test compliance rate using the Compliance Rate Worksheet for all materials. For computer generated charts, check the compliance rate for all materials and calculate the compliance rate for one material using the Compliance Rate Worksheet.

8.29 [ ] Compliance rate ≥ 95% and $\sigma \leq 5.0$for each material
*Compliance rate is < 95% and $\sigma \leq 5.0$ for a material (The target mean, σ, is required to be adjusted by a QCP Annex)
*Compliance is < 95% and $\sigma > 5.0$ for a material. (The stockpile is required to be designated as a non-Certified material)

***If the number of tests is less than 30, additional testing is required before the target mean is adjusted or the material is designated as a non-Certified material. An additional compliance rate check on the material is required after five additional tests have been taken. To close out the audit in a timely manner, additional testing and compliance rate check can happen after the audit close-out, once all the data has been collected.*

PWL Load-out Rate

Review the 30 most recent load-out production tests in the current PWL Load-out Worksheet that the Department provided for each Standard Specification or QA product controlled by a critical sieve for the accuracy of the worksheet calculated PWL Rate. If applicable, repeat this step for the Producer Yard.

8.30 [ ] Are the PWL worksheets updated? If not, the producer has 10 business days from the date of this audit to update the PWL charts.
8.31 [ ] Are the control limits accurate in the PWL worksheet.
8.32 [ ] PWL rate ≥ 90% for each material with 5 or more data points
*PWL rate is < 90%, the producer shall develop a plan to bring PWL of the product above 90%

Source # _____

9. DIARY ITM 211 References 10.0, 12.5, 12.7

INDOT Auditor _____

Review at least 1 month of active diary entries for the following:

9.1 [ ] Diary is in electronic and/or hard copy format
9.2 [ ] One page for each day that there is a material-related operation
9.3 [ ] General weather conditions
9.4 [ ] Areas of mining operation – ledges or pit area
9.5 [ ] Materials produced and estimated quantities
9.6 [ ] Materials sampled and tested
9.7 [ ] Time samples were obtained and tests completed (may state that all samples obtained were tested the same day)
9.8 [ ] Compliance rate for all critical-sieve products and PWL rates for 8's and 11's are noted in the diary on a weekly basis
9.9 [ ] If compliance rate, standard deviation, or PWL is reported below the minimum limit on any diary page reviewed, was the District Geologist notified?
9.10 [ ] Any changes in key personnel have been noted in the diary.
9.11 [ ] Significant changes in equipment, plant, screens, etc. have been noted in the diary.
9.12 [ ] Significant events or problems have been noted in the diary.
9.13 [ ] Signature by CAT or another person's signature has been counter-signed
9.14 [ ] All diaries have been retained at least 3 years for Certified Producers that have been in CAPP more than 3 years.

10. SAMPLING AND TESTING

ITM 211 References
11.0, 14.2.6, 14.2.7, 14.2.8

*The method of recording the quantities of materials **produced** and **shipped** at the Plant per day or time period will be identified in the QCP. Select an active one-month period at random from this record. Obtain all production and load-out test reports for materials produced and shipped during the one-month period. Perform calculations as needed and determine that the proper testing frequency has been demonstrated. The previous or subsequent monthly record may need to be obtained to verify the frequency of tests.*

10.1 [ ] Start of production frequency is in accordance with the QCP, but is not less than once every 1000 t for the first 5000 t (except not required to exceed 2 per day)
*if applicable, go to the month that start of production frequency occurred to review.

10.2 [ ] Normal frequency is in accordance with QCP, but is not less than once every 2000 t (except not required to exceed 2 per day)

10.3 [ ] Load-out frequency is in accordance with the QCP and ITM 211 Section 11.3.3 and the additional notes in the table.

10.4 [ ] Load-out samples obtained within the first 1000 t shipped in the calendar year in accordance with ITM 211 Section 11.3.3 Table Note 1.

10.5 [ ] Load-out samples obtained based on tonnage without daily, weekly, or monthly limits in accordance with ITM 211 Section 11.3.3 Table Note 2.

10.6 [ ] Load-out samples obtained within ±1 business day or ±1000 t shipped at the completion of each full interval in accordance with ITM 211 Section 11.3.3 Table Note 3.

10.7 [ ] All load-out samples for Standard Specifications and QA aggregates were decanted and tests are within specification requirements

If material is obtained from another Certified Producer and is a Certified Material, then load-out tests are required. If the material is obtained from a non-Certified Producer or is not a Certified Material, then the start of production, normal production, and load-out tests are required. Search the records for these materials, if applicable, and verify that the required tests have been conducted.

10.8 [ ] Load-out test conducted for Certified Material from another Producer per ITM 211 Section 11.3.3. If any redistribution product has shipped more than 1000 t to date in current year, then review at least 1 load-out test performed in current year.

10.9 [ ] Start of production, normal production, and load-out tests conducted for material that is not Certified and is received from another Producer

The Producer shall check coarse aggregates for deleterious materials. Select an active week randomly from the record for quantities of materials made and note all coarse aggregates produced. Find production test reports for that week and search for deleterious test results.

10.10 [ ] Start of production and normal production frequency is in accordance with the QCP but is not less than once per week for each size of Certified Material. (no test is required if the week's production is less than 100 t)

10.11 [ ] Tests are within specification requirements

Source # _____

SAMPLING AND TESTING (continued)

The Producer shall check seal coat aggregates for ITM 224 Flakiness testing. Select an active week randomly from the record for quantities of materials made and note all coarse aggregates produced. Find production test reports for that week and search for flakiness test results.

10.12 [ ] Normal production frequency is in accordance with the QCP but is not less than once per week for each size of Certified Material. (no test is required if the week's production is less than 100 t)
10.13 [ ] Tests are within specification requirements
10.14 [ ] Nonconforming tests are noted in the diary
10.15 [ ] Corrective action was taken
10.16 [ ] (if applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

Randomly select three production test reports and two load-out test reports for any one product and check all calculations performed on the sheets. If test reports are electronic, check calculations on one production test report and one load-out test report.

Indicate type of Report: Electronic Reports: _____ Hand Calculated Reports: _____

10.17 [ ] Calculations on all sheets are correct and rounded to the nearest tenths decimal place (0.0) (crushed particle content values shall be rounded to the nearest whole number (0))
10.18 [ ] For production and load-out test reports reviewed, verify the original dry weight test mass is in accordance with INDOT Specifications 904.07(c)
10.19 [ ] All tests have been retained at least 3 years for Certified Producers that have been in CAPP more than 3 years

Gravel for seal coat and other gravel products required to meet criteria for crushed testing per ASTM D5821 as outlined in INDOT Specifications 404.04 and 904.03(a) unless the QCP states otherwise. Select a random week from the record for quantities of products made and note all coarse aggregates produced. Find the production test reports for that week and search for crushed particle test results.

10.20 [ ] Start of production and normal production frequency is in accordance with the QCP, but is not less than once per week for each size of Certified Material. (no test is required if the week's production is less than 100 t)
10.21 [ ] Tests are within specification requirements for one- and two-face fractured particles (or total fractured particles, as applicable)
10.22 [ ] Nonconforming tests are noted in the diary
10.23 [ ] Corrective action was taken
10.24 [ ] (if applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

Source # _____

SAMPLING AND TESTING (continued)

Air-Cooled Blast Furnace Slag, except for use in HMA or PCC, shall be sampled and tested for leachate in accordance with ITM 212. Randomly select an active month from the record for quantities made and verify the frequency of testing.

10.25 [ ] The frequency of testing is in accordance with QCP, but is not less than once for each stockpile of approximately 2000 t
10.26 [ ] Tests are within specification requirements
10.27 [ ] Nonconforming tests are noted in the diary
10.28 [ ] Corrective action was taken
10.29 [ ] (if applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

Steel Furnace Slag shall be sampled and tested for determination of bulk specific gravity when this material is used in SMA mixtures. Randomly select an active month of production of the steel slag and verify the frequency of testing and compliance with the specification requirements.

10.30 [ ] The frequency of testing is in accordance with QCP, but is not less than once every 2000 t.
10.31 [ ] Individual test results are within 0.050 of the target bulk specific gravity
10.32 [ ] The moving average of four consecutive test results is within 0.040 of the target bulk specific gravity
10.33 [ ] Nonconforming tests are noted in the diary
10.34 [ ] Corrective action was taken
10.35 [ ] (if applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

Steel Furnace Slag shall be sampled and tested for determination of deleterious when this material is used in HMA Base and Intermediate mixtures. Randomly select an active month of production of the steel slag and verify the frequency of testing and compliance with the specification requirements.

10.36 [ ] The frequency of testing is in accordance with QCP, but is not less than once every 2000 t.
10.37 [ ] Individual test results are less than 4.0 % (Stockpiles not meeting this acceptance criteria may be tested again after 30 days from the test date)
10.38 [ ] Nonconforming tests are noted in the diary
10.39 [ ] Corrective action was taken
10.40 [ ] (if applicable)After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

Source # _____

SAMPLING AND TESTING (continued)

Composite stockpiling of natural sand fine aggregate from multiple sources into one stockpile may be done provided the fine aggregate is within a range of 0.030 for the bulk specific gravity (dry) and 0.5 % for the absorption for all of the contributing sources. Randomly select an active month of composite stockpiling from the monthly summary reports and verify the test results are within the bulk specific gravity (dry) and absorption specification requirements.

10.41 [ ] Bulk specific gravity (dry) test results of all contributing sources are within a range of 0.030.
10.42 [ ] Absorption test results of all contributing sources are within a range of 0.5%
10.43 [ ] Nonconforming tests are noted in the diary
10.44 [ ] Corrective action was taken
10.45 [ ] (if applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

Additional required testing as specified in source's QCP. Randomly select an active month of production and verify the frequency is in accordance with the QCP. Type of test _____

10.46 [ ] Testing frequency meets the requirements of the QCP
10.47 [ ] Test results are within specification requirements
10.48 [ ] Test results outside the specification requirements are handled in accordance with the QCP.
10.49 [ ] Nonconforming tests are noted in the diary
10.50 [ ] Corrective action was taken
10.51 [ ] (if applicable) After the second consecutive nonconforming normal production test, notations indicate that the material was isolated

11. PRODUCER YARDS

ITM 211 Reference 5.1

Area Supervisor or _____

If a source has Producer Yards, separate load-out charts are required to be maintained for the materials at these locations. Obtain the load-out charts and check the following:

11.1 [ ] All certified materials have a load-out chart
11.2 [ ] Aggregate sizes are clearly shown on the charts
11.3 [ ] Target means, control limits, and specification limits for all charts are in accordance with the QCP

Obtain load-out test reports for one material during an active period of one week. Find the corresponding control chart and check the following:

11.4 [ ] All test dates have points plotted
11.5 [ ] Points are surrounded by a small square or in accordance with the QCP and plotted to the tenths decimal place (0.0)
11.6 [ ] All points are plotted correctly
11.7 [ ] Consecutive points are connected by solid straight line

Source # _____

PRODUCER YARDS (continued)

Obtain all load-out test reports for materials shipped from the Producer Yard during a one-month period. Perform calculations as needed and compare the quantities of materials shipped against the load-out test reports, thereby determining the demonstrated frequency of testing. The previous or subsequent monthly record may need to be obtained to verify the frequency of tests.

11.8 [ ] Load-out frequency is in accordance with QCP and ITM 211 Section 11.3.3 and the additional notes in the table.

11.9 [ ] Load-out samples obtained within the first 1000 t shipped in the calendar year in accordance with ITM 211 Section 11.3.3 Table Note 1.

11.10 [ ] Load-out samples obtained based on tonnage without daily, weekly, or monthly limits in accordance with ITM 211 Section 11.3.3 Table Note 2.

11.11 [ ] Load-out samples obtained within ±1 business day at the completion of each full interval in accordance with ITM 211 Section 11.3.3 Table Note 3.

11.12 [ ] Load-out frequency is in accordance with QCP and ITM 211 Section 11.3.3 and the additional notes in the table.

11.13 [ ] All load-out samples for Standard Specification and QA aggregates were decanted and tests are within specification requirements

Source # _____

12. MATERIAL SAMPLES ITM 211 References

11.0
14.2.10
14.2.11
15.7

INDOT Auditor _____

Standard Specification and QA materials under production at the site on the day of the audit will be reviewed by the audit team. At least one production sample of Standard Specification or QA material shall be obtained.

The audit team will review the shipment records of the Standard Specification and QA materials for the previous 6 months of production. A minimum of 3 load-out samples shall be obtained of the materials with the highest tonnages of shipment. (Some producers may have less than 3 load-out samples.) If limited products are available, a combination of 4 or fewer samples of either production or load-out samples may be requested.

The samples shall be obtained by the CAT and reduced to the proper testing size. The INDOT audit team members will take custody of the samples and deliver them to the appropriate state testing lab. Side-by-side style testing is not required but can be performed by the producer at their own discretion. The comparison spec (ITM 211 Section 15.7) will not be used to compare the side-by-side test nor the 10% within wet weights of the samples, if the producer decides to do the side-by-side testing. For the purpose of the audit, all passing and failing results will be determined by the samples processed in the state testing laboratories.

Sampling shall be in accordance with the QCP, and the following requirements shall be verified.

12.1 [ ] Sample locations are as described or as shown in the QCP
12.2 [ ] Devices are as described in the QCP
12.3 [ ] Techniques are as described in the QCP including strike-off procedures as described in ITM 207.
12.4 [ ] CAT obtained the sample and will reduce it to testing size, in accordance with CAPP

The following production and load-out test results will be determined:

12.5 [ ] Gradation is within control limits for critical sieve materials and within specification requirements for all other sieves
12.6 [ ] Gradation is within specification requirements or QCP identified limits on all sieves for materials without a critical sieve
12.7 [ ] Decant is within specification requirements
12.8 [ ] Deleterious content is within specification requirements
12.9 [ ] Crushed particles for gravel producers and redistribution terminals are within specification requirements
12.10 [ ] Flakiness testing for Seal Coat products are within specification requirements per ITM 224.

Source # _____

13. LABORATORY ITM 211 References 8.0 9.0

INDOT Auditor _____

The laboratory will be inspected for compliance with the QCP.

13.1 [ ] Location as described and/or shown in the QCP
13.2 [ ] Facility is acceptable for testing of materials
13.3 [ ] All equipment listed in the QCP is at the laboratory
13.4 [ ] All equipment appears to be in good working order

Check the testing equipment verification records to verify that the documentation includes the following:

1. Description of equipment including Model or Serial Number, if applicable.
2. Name of the person performing verification
3. Identification of verification equipment, if applicable
4. Date of verification and next due date
5. Reference of procedure used
6. Verification results

DATE VERIFIED

13.5 [ ] Balance(s) -- 12 mo. _____
13.6 [ ] Weights used (Class 1, 2, or 3) -- 12 mo. _____
13.7 [ ] Mechanical Shaker(s) -- 12 mo. _____
13.8 [ ] Sieves -- 12 mo. _____
13.9 [ ] Go No-Go Gauges procedures in accordance with the QCP and ITM 902 6.2 (if applicable)
_____
13.10 [ ] Additional information can be placed here for calipers, stop watches, etc. that the producer has done but is not required by ITM 211
_____
_____
_____
_____

Any other additional laboratories will be inspected for compliance with the QCP. If the laboratories are in another district, contact that District Geologist to see if everything is current. If the laboratory is used for another audit, mark everything current in the other audit packet.

13.11 [ ] Is the lab current with paperwork? If so, list the District or Audit where the paperwork is provided from. _____

Source # _____

14. AUDIT CLOSE-OUT

INDOT District Personnel

The Audit Close-Out meeting with the Producer will typically be held within 10 business days from the date of the audit, however it may be longer if directed by INDOT district personnel. At the close-out meeting, the results of the audit will be discussed and all outstanding matters will be completely resolved, or solutions with deadlines will be established. Any addenda required by items listed on the Addenda Summary Sheet, QCP Annex, or Corrective Action Sheets shall be submitted at this time.

If the Audit is not completed within the original time frame provided by the District Geologist, then a reminder email will be sent to the Producer informing the Producer they are non-compliant. The producer can request a one-time extension of 14 business days.

Upon completion of the Audit Close-Out meeting, district personnel should review all audit documents to verify that they are prepared properly and are complete. All documents should be scanned and uploaded to the Aggregate Section folder on the shared drive and stored in the source's folder. A copy of the completed audit packet including any relevant documents, corrective actions, and resolutions shall be provided to the Producer.

_____ _____

INDOT District Geologist Date

1/1/26

COMPLIANCE RATE WORKSHEET
(Critical Sieve Only)

SC # _____

Product _____ Critical Sieve _____ QCP Target Mean _____

Record the most recent 30 normal production sample test results.

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Calculate the following Statistics:

$\overline{x}$ = _____ σ_{n-1} = _____

$$Z_{max} = \frac{(\text{QCP Target Mean} + 10) - \overline{x}}{\sigma}$$

= _____ = _____

Z_{max} Area of Probability = _____* x 100 = _____

$$Z_{min} = \frac{\overline{x} - (\text{QCP Target Mean} - 10)}{\sigma}$$

= _____ = _____

Z_{min} Area of Probability = _____* x 100 = _____

% Compliance Σ = _____
(Whole No.)

* From Area of Probability Table

1/1/26

AREA OF PROBABILITY TABLE
FOR BOTH SPECIFICATIONS >0% AND <100%

When the z values to each limit are known, this table will indicate the area of probability between limits where summing the area left of the $\bar{x}$ with the area right of the $\bar{x}$. The sum of the 2 area factors should be multiplied by 100 to give the percent probability of compliance.

		.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0		0.0000	0.0040	0.0080	0.0120	0.0159	0.0199	0.0239	0.0279	0.0319	0.0359
0.1		0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2		0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3		0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4		0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5		0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6		0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7		0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8		0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9		0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0		0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1		0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2		0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3		0.4032	0.4049	0.4066	0.4083	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4		0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5		0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4430	0.4441
1.6		0.4452	0.4463	0.4474	0.4485	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7		0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8		0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9		0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4758	0.4762	0.4767
2.0		0.4773	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1		0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2		0.4861	0.4865	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3		0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4		0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5		0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6		0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7		0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8		0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4980	0.4980	0.4981
2.9		0.4981	0.4982	0.4983	0.4984	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0		0.4986	0.4987	0.4987	0.4988	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990
3.1		0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2		0.4993									
3.3		0.4995									
3.4		0.4997									

EXAMPLE

COMPLIANCE RATE WORKSHEET
(Critical Sieve Only)

SC # **2799**

Product **#8 Stone** Critical Sieve **12.5 mm** QCP Target Mean **52.2**

Record the most recent 30 normal production sample test results.

55.5	49.4	50.3	56.1	53.6	54.6
51.2	46.0	49.5	59.1	52.6	58.1
53.2	42.4	50.8	55.6	52.1	56.4
56.4	53.1	50.5	53.8	61.3	50.9
54.2	65.7	55.2	52.8	49.7	48.1

Calculate the following Statistics:

$\bar{x}$ = **53.3** σ_{n-1} = **4.53**

$$Z_{max} = \frac{(\text{QCP Target Mean} + 10) - \bar{x}}{\sigma}$$

$$= \frac{(52.2 + 10) - 53.3}{4.53} = 1.96$$

Z_{max} Area of Probability = **.4750** * x 100 = **47.50**

$$Z_{min} = \frac{\bar{x} - (\text{QCP Target Mean} - 10)}{\sigma}$$

$$= \frac{53.3 - (52.2 - 10)}{4.53} = 2.45$$

Z_{min} Area of Probability = **.4929** * x 100 = **49.29**

% Compliance Σ = **97** (Whole No.)

* From Area of Probability Table

DECANTATION (AASHTO T 11)

$$\% \text{ Decant} = \frac{\text{Original Dry Weight - Dry Weight after Decant}}{\text{Original Dry Weight}} \times 100$$

GRADATION (AASHTO T 27)

$$\% \text{ Passing} = \frac{\text{Weight Passing Each Sieve}}{\text{Original Dry Sample Weight}} \times 100$$

CLAY LUMPS and FRIABLE PARTICLES (AASHTO T 112)

$$\% \text{ Clay or Friable} = \frac{\text{Dry Wt. of Sample - Dry Wt. Retained (Wet Sieving)}}{\text{Dry Wt. of Sample}} \times 100$$

NON-DURABLE MATERIALS (ITM 206)

$$\% \text{ Non-Durable} = \frac{\text{Weight of Non-Durable Material above 3/8 in. Sieve}}{\text{Weight of Sample above 3/8 in. Sieve}} \times 100$$

CHERT

For aggregate sizes 2 through 8, 43, 53, and 73:

$$\% \text{ Total Chert} = \frac{\text{Weight of Chert above the 3/8 in. Sieve}}{\text{Total Weight of Sample above the 3/8 in. Sieve}} \times 100$$

For aggregate sizes 9, 11, 12, and 91:

$$\% \text{ Total Chert} = \frac{\text{Weight of Chert above the No. 4 Sieve}}{\text{Total Weight of Sample above the No. 4 Sieve}} \times 100$$

CRUSHED PARTICLES (ASTM D 5821)

$$\% \text{ Crushed} = \frac{\text{Weight of Crushed Particles}}{\text{Weight of Crushed Particles + Weight of Uncrushed Particles}} \times 100$$

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CORRECTIVE ACTION SHEET

SOURCE # ___ ___ ___ ___

DATE _____

ITEM _____

Problem Explanation: _____

_____

_____

_____

_____

_____

_____

Corrective Action to Be Taken Is : _____

_____

_____

_____

_____

_____

_____

Deadline Date Is : _____

Follow-up Date _____

Finding: _____

_____

_____

_____

If NOT corrected, prepare another Corrective Action Sheet .

1/1/26

OBSERVATIONS