

## Not Just a Box of Rocks: An Introduction to the AASHTO re:source Proficiency Sample Program

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Thousands of laboratories in over 30 countries around the world participate in the AASHTO re:source Proficiency Sample Program ([PSP](#)). However, many of us never stop to think about the time, manpower, and logistics needed to produce and distribute these high-quality test samples. This article is intended to provide a better understanding of the complex process involved in proficiency sample production and analysis.

Let's begin with an example: The AASHTO re:source Fine Aggregate proficiency samples were recently processed, packaged, and shipped out to over 1800 laboratories around the world. To initiate the production process, approximately 40,000 lbs of material was ordered and delivered to AASHTO re:source from a local entity in the Baltimore, Maryland area. One might think that a truckload of material can be delivered and immediately packaged and shipped to customers. In reality, from start to finish, the Fine Aggregate samples take approximately a month and a half to complete.

After order and delivery of the raw material, the fine aggregate is examined to determine if it is suitable for testing. If so, the material is air-dried so that it can be sieved into size fractions and placed into drums for further preparation. Sieve analysis samples are selected from the material and individually weighed before the remaining fine aggregate is remoistened to package and ship. Prior to packaging and shipping, the material is removed from drums and moisture is added to prevent segregation. The material is then mixed to ensure that each sample is of a homogenous nature. Once all of these steps have been completed, the process of packaging the individual samples finally begins. This year alone, over 3,000 fine aggregate samples were packaged in less than two days by AASHTO re:source staff. Throughout the production and packaging process, care is taken to ensure uniformity in the size and physical properties of each sample.

Consistently producing quality and timely samples is a monumental task. AASHTO re:source produces 15 different sample types, each composed of different materials—including soil, aggregate, liquid asphalt, emulsions, hot mix asphalt, and paint. Each type of sample is sent out annually, with the exception of the liquid asphalt samples, which are sent out semiannually. Each sample has its own unique system for preparation and packaging, which generally takes several weeks to complete. If we multiply the types and number of samples AASHTO re:source distributes by the time it takes to process and package each material, the end result is enough work to keep the PSP staff very busy throughout the year.



After the samples are sent to the laboratories, they are given approximately 30 days to test them. Once each lab completes their analysis of the material and submits their results with the online data submission system, a rating system is formed. The rating system is based on the average of all of the submissions from participating testing facilities. The standard deviation is calculated for each data set, and a rating for each laboratory's submission is available for their review. Based on this information, a laboratory can see how their results compare to the other laboratories in the program. If the laboratory is accredited by the AASHTO Accreditation Program (AAP), ratings beyond two standard deviations from the grand average require a report on root cause analysis and corrective action. The report must be submitted to AASHTO re:source staff for review.

Proficiency samples serve as a valuable tool for evaluating laboratory performance and competency. Ensuring that a uniform, high-quality material is received by participating laboratories is a highly-evolved process that entails much more than just shoveling rocks into boxes. So, next time you get one of those brown cardboard boxes with our logo in the mail, remember this: That's not just a box of rocks!

*Editor's Note: This article was updated in June 2016 to accurately reflect the growth of the program.*