Aggregate Fines—Problem or Opportunity

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The crushing of stone inevitably produces unwanted fine-grained (<75 µm) materials (fines). Fines are also separated from more desirable, coarser sands and gravels during screening of unconsolidated deposits and are collected in suppressing dust during screening or cutting operations. In Indiana, the cutting and shaping of dimension stone also generates large amounts of fines. Most are washed into settling ponds for drying and disposal (often as quarry backfill). Environmental concerns about escape of stored fines also exist. Finding economic uses of aggregate and dimension stone fines could reduce such concerns and generate additional revenue for stone operations.

Some fine-grained (<75 µm) materials are used for agricultural lime, pH control, and engineering applications, but quarries usually have large stacks of unused fines that potentially can be used if they have proper chemistry, physical characteristics, and advantageous properties such as brightness, oil absorption, surface area, electrical properties, or meet even more esoteric specifications.

Many specialized, relatively small markets could accept fines having the correct properties. Producers have begun to deliberately produce fines. Four plants in Indiana purposely produce very fine limestone fillers, and a new operation opened in 2010. Determining special properties such as grindability and reactivity (with SO₂) of Indiana limestones helped to start a new and growing market for flue gas desulfurization scrubber stone in the state. Fine heavy minerals (some of which contain strategic metals) that are screened from sands of glacial origins may also become an important by-product of aggregate production. Increased knowledge about stones having other positive, special properties should open additional markets for fines.