

7 Habits of Highly Effective Producers

Field experience, and that is the field experience primarily associated with comparing the habits of successful producers against those that have problems, shows that if producers follow the following best practices and they end up becoming the “habits” of the organization, mix success dramatically improves and is assured. It is my firm conviction that anyone can produce consistent high-quality mix if they follow these steps of other highly effective producers.

1. Know Your Stockpiles ...

- **Gradation Will Vary From the Quarry ...** so check material gradations as they enter the yard. Gradation changes when screens are changed, when crushers are adjusted, when different veins of rock are encountered. Know if your stockpiles are changing prior to mix production.
- **“Map” Your Stockpiles.** Know what is in each pile. Know if the back of the pile is different than the front of the pile. Know if the left side of the pile is different than the right side of the pile. White boards come in very handy for this so everyone has a visual picture of the differences in the stockpiles. I refer to this process as “mapping your stockpiles”.
- **“LIFO” vs “FIFO” is the Best Approach.** Using the last material that comes into the yard does not give you a chance to test the material and verify the gradation. It is better to use older material where you know what the gradations are.
- **Separate Material Into “Cells”.** Stockpile material “left” and “right”, or “front” and “back”, or into completely separate piles (they can touch – you just need to be able to visually see the difference), so that you can know the gradation of the material you are feeding into the plant.
- **Use “Blend Sheets” to Adjust “Bin Pulls”.** Each owner/agency group allows for minor adjustments in “cold feed bin pulls” of “cold feed percentages” to maintain the final desired composite mix formula. Use spread sheets so you can enter new gradations of the individual material and see the impact on the final mix gradation. This will allow you to determine which cold feed bin adjustments will keep you on final mix target. Relay this information to the plant prior to production. Do this proactively, not after you have mix problems.

2. Keep Your Plant Calibrated ...

- **Calibrations Do Shift and Will shift.** Plant calibrations do shift and will shift. Accept this fact. Some plants “drift” more than others.
- **Routinely Check Plant Calibrations.** The best idea is to proactively check plant calibrations.
- **Don’t Wait Until “Mix is Bad”.** Calibrations often “drift” their way into being out of spec. If you run calibration checks prior to mix going completely out of spec you can stay ahead of the curve financially.
- **Electrical / Mechanical Problems are Typically at Fault.** The reason for calibration “drift” is typically a worn part or electrical connection. Worn parts can be mechanical or electrical.
- **Calibration Checks Typically Only Take 30-45 Minutes per Test.** It does not take a long time to run a calibration check on any individual item. A good time to do this is

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when you are “on hold” in the afternoon, the plant is not running, and you waiting to ship the final loads. Early morning hours can also be a convenient time for this. You don’t have to check every calibration item on the plant. You can just do one at a time.

- **Proactively Verify Calibrations Are OK.** A proactive approach is better than a reactive approach. See the points above.
- **Producers With High Quality Do This.** Producers that consistently achieve bonus and have a track record of mix consistency do this.

3. Produce in Long Runs ...

- **Don’t Bounce Between Mixes Rapidly.** There is a certain amount of “magic mix” made between mix changes, and depending on how well your plant is adjusted / calibrated, and depending on the automation algorithm this amount will be more or less. Obviously, the minimal amount of changes you make, the less of this potentially out of tolerance mix you will have; and
- **Takes Time for Plants to “Level Out”.** See the note above. Realize it takes time for plants to “level out” so short tonnage runs between mix changes jeopardizes mix quality for both mixes.
- **PID Loops in Automation Affect This.** The control system PID loop that affects the proportion or rate of the change, and the interval of the time between the next change, affects this amount of “magic mix” between mix changes. This control algorithm is typically not adjustable by the operator, so it is important to realize the amount of “cross over” mix between mix changes is not always under the control of the plant operator.
- **Stagger Your Start Times on Different Mixes.** By “staggering” you start times between jobs you create an opportunity for the plant to be able to make a protracted amount of material for each job and avoid “bouncing back and forth” between different mixes, which again, protects mix quality.
- **Try to Produce a “Silo at a Time”.** So ... this should be the goal. Try to “stagger” project start times so you can produce a silo at a time as you change back and forth between mixes. You have a chance to stay “ahead of the trucks”. If you can store mixes overnight, consider producing a silo the day before to get a head start on the next day. You must take care, however, and balance paving speed to plant production. If you have more than one crew all trying to pave at a rate equal with the plant rate, they are going to “catch the plant” mid-morning. Balancing start times and paving speeds to plant production and storage capability helps create a condition whereby you can meet the goal of producing a “silo at a time”.
- **100 Ton Minimums per Run.** If you can’t produce a silo at a time, set a goal of producing at least 100 tons with each run. You have a better chance of producing a consistent mix. Mixes can “overlap” on “switchovers”, so minimize the quantity of “switchover mix” in the silo by producing in at least 100 tons runs.

4. Produce in Steady Runs ...

- **Don’t Raise & Lower TPH Rapidly.** Consistent mix is best produced if production rate changes occur slowly.
- **Takes Time for Controls to Adjust.** It takes time for the controls to adjust to new production rate changes. See the comments above about PID loops in controls. The same issue that occurs with mix changes occurs with production rate changes. Small incremental changes to production rates ensure the mix stays within specification.

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- **Takes Time for BH Fines to Stabilize.** It takes time for the baghouse fines to “catch up” to the cold feed and asphalt changes, which is another reason for small incremental changes to production rates. Baghouse fines delay times can be as long as 30-40 minutes, so small changes in production rate allow the fines delay to not drastically affect the mix.
- **Steady Running Produces Steady Mix.** Steady runs produce consistent mix. It is best to slowly ramp up to your running rate on startup and then try to stay at the rate rather than changing production rates up and down. If rate changes are required, small tph rate changes (incremental changes) are better than large increases and decreases for all the reasons stated above. The goal should be steady production rates “once you get into the run”.

5. Control Mix Temperature +/- 10° ...

- **Production Temperature is the First Step in Achieving Consistent Field Density.** Controlling mix temperature is the first step in achieving field density.
- **Mix Temperature Influences the Rolling Pattern.** Mix temperature on the road affects the ideal rolling pattern. Rolling patterns change for different mix temperatures.
- **Holding Mix Temperature Consistent Helps Achieve Consistent Density...** therefore, holding mix temperature consistent at the plant and in the truck dramatically helps the paving operation control field density as this ensures that the rolling pattern they establish will not have to be changed and consistent field compaction will result.

6. Load in Multiple Drops ...

- **“Socket Load” the Trucks (Front / Back / Middle).** It is universally recognized that loading trucks in multiple drops, and furthermore loading in the front, then in the back, and then finally in the middle is the best practice for loading square bodied dump trucks. The term “socket loading” explains this sequence, as the last load into the truck body gets deposited in the “socket” created from the first two drops.
- **Test Consistency & Mix Trends Frequently Improve with Properly Loaded Trucks (1/2” Greater Mixes Typically).** My own experience has shown in multiple states and provinces test result consistency improves on large stone mixes with this approach. If you are chasing bonus, strongly consider multiple drop and front / back / middle load out sequence as part of your best practice regimen.
- **“Chatter Loads” Should Not be Tested.** “Chatter loads” are loads that get “topped off” with small amounts at the end of the load sequence to maximize net tonnage in the truck. Because small quantities are “batched” onto the truck at the very end, this can affect the mix samples being taken from the truck, if the technician does not dig down deeply into the mass of material in the truck. If you are sampling from the truck to test mix quality, strongly consider not “chatter feeding” the truck being sampled and just live with a smaller quantity of mix in the sampled load.

7. Make Calculated Mix Changes ...

- **Wait and Look for a Trend.** It is best to wait for a trend in mix results before making a mix change at the plant.
- **Don’t Make Mix Changes Based on One Test Result (except “test batches”).** Making mix changes based on only one test result is a dangerous practice. The

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exception, of course, is when you are running test batches or trial batches and are trying to “dial in” a mix.

- **Wait for 2-3 Samples Before Making Changes & Only if Trending.** It is best to wait for a consistent mix trend before making a change to plant settings.