



# Is Balanced Mix Design In Our Future?

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Balanced Mix Design (BMD) is an enhanced approach to designing asphalt paving mixtures to achieve a satisfactory balance between rutting resistance and crack resistance. It promises to result in longer lasting asphalt pavements. Can this approach be used in Hawaii?

To learn more about BMD, I recently attended a 1-day Regional Balanced Mix workshop in Taylorsville, Utah conducted by the National Center for Asphalt Technology. Anita Joaquin and Ken Kawakami from the Hawaii Department of Transportation, Highways Division (HDOT) also attended. The objective of the workshop was to share current information on BMD and encourage state highway agencies and asphalt contractors to move forward with implementation.

## What did we learn at the workshop?

- BMD uses mixture performance tests to indicate a mixture's resistance to types of distresses that could occur in the pavement.
- Performance testing is conducted to evaluate three distresses: moisture damage susceptibility, rutting and cracking.
- There are many tests for each of these distresses.
- Research has been conducted. For example, the National Cooperative Highway Research Program (NCHRP) 2020/Task 406 presents a draft AASHTO standard practice and specification.
- As of September 2019:
  - 8 states have implemented BMD.
  - 25 states use a rutting test in their mix design specifications.
  - Several states use tests for various types of cracking, such as bottom-up fatigue, in their mix design specifications.
  - 47 state DOTs use a moisture damage test in their mix design



specifications.

- The biggest concern for both state DOTs and contractors was the validity of current performance tests.
- Other concerns included long testing and specimen preparation time and the acceptance testing protocols of the BMD approach.
- Even with their concerns, 34 state DOTs were interested in constructing BMD trial projects.

## Closing thoughts from the workshop

- Most highway agencies and contractors recognize the need for a simple performance test that can be used in mix design and quality assurances.
- Using a performance test in routine practice will unleash innovations (i.e. new additives)
- Different performance tests will be selected by the DOTs.
- There are still major gaps to fill for mixture performance tests.

- Don't expect the tests to be perfect but do expect an improvement in pavement performance.

## Can we move forward with BMD in Hawaii?

It's possible to move forward with BMD in Hawaii. The first step would be to establish an HDOT and Hawaii Asphalt Paving Industry (HAPI) task group. Once established, the task group would discuss the need for implementing BMD. If the need for BMD exists, the group would reach consensus on which rutting, cracking and moisture damage tests would be used. Once that consensus is reached it would likely take five years for a complete implementation of a BMD specification.

It's clear that the concept of BMD is gaining momentum on the mainland and may someday spill over to Hawaii.