STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
M E M O R A N D U M

HWY-L 2.3186

TO: HWY-D, HWY-O, HWY-M, HWY-H, HWY-K, HWY-C, HWY-P, HWY-T, HWY-A **DATE:** JUNE 25, 2020

THRU: SERGIO GEORGE G. ABCEDE, ACTING HWY

FROM: MUNG FA CHUNG, ACTING HWY-L Mung Fa Chung

SUBJECT: SMA AND PMA GUIDELINES

This memorandum is effective immediately and shall be applied to all projects under design that meet the criteria specified herein.

In order to build longer lasting roads that have better life-cycle cost, we need to leverage new technology and use advanced pavement materials to build the roads.

Stone Matrix Asphalt (SMA) pavement and Polymer-Modified Asphalt (PMA) pavement are much more durable and resistant to pavement deformation than regular Hot Mix Asphalt (HMA). Therefore, Hawaii Department of Transportation decided to move forward with SMA and PMA for the majority of future construction projects.

This memorandum is intended to provide general guidelines for pavement material selection for roadway projects.

General Consideration:

There are 2 major factors to consider when it comes to pavement material selection.

1) Traffic volume
    - The high traffic volume road shall use more durable materials. SMA is more durable than PMA, PMA is more durable than HMA.
    - For the location with high Truck Traffic percentage and Truck Traffic loading, SMA is recommended.
2) Economic Analysis
    - Not all the islands have ability to produce SMA and PMA mix, the cost of bringing in SMA and PMA shall be considered.
    - SMA and PMA are more expensive than HMA, so it is not economical to use these special materials on temporary roads.
    - SMA can't be hand-compacted and the contractor cannot produce small quantity of SMA at a time, so it is not cost-effective to use SMA for the locations that have a lot of manholes. Instead, PMA shall be used at these locations.

After considering these factors and obtaining input from HWY-D and HWY-L, the District Engineer (O, M, H, K) shall make the final decision of the material selection for a particular project.

General Guidelines of Using SMA:

- SMA shall be used when current Two-Way AADT is 45,000 or greater.
- SMA shall be used for locations with high truck percentage or truck Traffic loading.
- SMA shall be used on Oahu only (due to the traffic volume consideration).
- SMA shall not be used directly on cold-planed surface.
- SMA shall be placed on new HMA.
- SMA shall not be used on bridge or culvert.
- SMA shall not be used in locations with a lot of manholes.
- SMA shall not be used on ramps or tight curves.
- Joint adhesive should be applied at the pavement material transition.

In general, SMA shall be used for the following locations (except for Portland Cement Concrete pavement locations or otherwise determined by District Engineer after consultation with HWY-L and D):

- H-1, MP 0-27.15 (entire route).
- H-2, MP 0-3.32 (entire route).
- H-3, MP 0-15.32 (entire route).
- H-201, Moanalua Freeway, MP 0-4.08 (entire route).
- RTE 61, Pali Highway, MP 2.63 – 9.45.
- RTE 63, Likelike Highway, MP 2.67 -8.30.
- RTE 76, Fort Weaver Road, MP 5.53 -6.62.
- RTE 78, Moanalua Freeway, MP 0-0.74 (entire route).
- RTE 93. Farrington Highway, MP 0-1.25.

General Guidelines of Using PMA:

- PMA shall be used when current Two-Way AADT is less than 45,000.
- PMA shall be used on all roads on Oahu, Maui, Big Island, and Kauai except for locations specified for SMA and HMA in these guidelines.
- PMA shall be used on bridges and culverts.
- PMA shall be used on ramps and tight curves.
- Joint adhesive should be applied for pavement material transition.

General Guidelines of Using HMA:

- HMA shall be used on Molokai and Lanai (due to economic consideration).
- HMA shall be used on temporary roads.

This guideline does not account for all possible SMA and PMA locations. Some locations may need special consideration. Therefore, it may be necessary for the designer in collaboration with HWY-L, D, and District Engineer to determine pavement material for a particular location.

MC:jf

c: HWY, HWY-L