SUMMARY FROM THE VIII PAVEMENT MAINTENANCE RAPID COURSE ON PFC (POROUS FRICTION COURSE), SMA (STONE MATRIX ASPHALT) & GROOVED DENSE ASPHALT CONCRETE

(Presented by ALACPA Board)

SUMMARY

This paper summarizes the 8th Pavement Maintenance Rapid Course on PFC (POROUS FRICTION COURSE), SMA (STONE MATRIX ASPHALT) & GROOVED DENSE ASPHALT CONCRETE.

ICAO Strategic objective(s)	*A – Safety*

1 Background

1.1 ICAO in its Annex 14, Vol. I, establishes the obligation for States to establish pavement maintenance programs in their Chapter 10:

10.2.1 The surfaces of all movement areas including pavements (runways, taxiways and aprons) and adjacent areas shall be inspected and their conditions monitored regularly as part of an aerodrome preventive and corrective maintenance programme with the objective of avoiding and eliminating any foreign object debris (FOD) that might cause damage to aircraft or impair the operation of aircraft systems.

1.2 The fifteenth version of the ALACPA Seminar had as its main objective to promote the implementation of Pavement Management Programs (PMS for its acronym in English). PMS have been identified by States and ICAO as an acceptable mechanism to maintain aerodrome pavements in conditions that do not impair the safety, regularity or efficiency of air navigation.

1.3 The rapid course of 2019 aimed to generate a discussion among the participants, about the advantages and disadvantages of implementing a dense mixture of asphalt concrete with application of grooving vs (PFC) Porous Friction Course vs. SMA (Stone Matrix Asphalt).

1.4 The intention is to generate a document that allows discussion and future work (action plan) to be followed by ALACPA on measures to support States and Operators in the decision-making process of the different solutions to maintain the pavements according to international standards.

2 Organization

2.1 The facilitator of the activity, Dr. Samuel Cardoso, requested the support of the following persons to take notes on the matters discussed:

- Dr. David Brill, Ph.D., P.E. – FAA: pavement expert
- Mr. Fabio Salvatierra, M.Sc. – ICAO: ICAO
- Dr. Erwin Kohler, Ph.D. – 3ipe: pavement industry
- Mr. Evanicio Costa – Boeing: lead engineer, aircraft manufacturer
- Dr. Ernie Heymsfield, Ph.D. – University of Arkansas: academia
- Ms. Karen Camarena – DGAC Perú/ALACPA: ALACPA & State regulator

2.2 The methodology was that each facilitator would take notes of the comments and topics discussed, to translate it into a document that will serve ALACPA as a guide to prepare future action plans in conjunction with ICAO.

3 Conclusions from facilitators

On PFC

3.1 On PFC, it is acknowledged that its installation has its challenges and may not be recommended as the first solution, due to:

3.1.1 High maintenance costs
3.1.2 Performance problem
3.1.3 Delamination
3.1.4 Potential FOD
3.1.5 Some States, like the US, are not recommending its use anymore.

On SMA

3.2 On SMA, the group acknowledges that it is durable and resistant, and there is an increasing interest on it, however, care should be taken on aspects such as:

3.2.1 Limited experience worldwide, implementations on runways in Germany, China, Norway
3.2.2 Mixed experience on 2 airports in Australia. Groove closure
3.2.3 Much more experience on highways
3.2.4 Higher initial costs
3.2.5 Cracking is not as visible as on dense graded mixtures
3.2.6 Low initial friction characteristics. Need to pay attention and mitigate
3.2.7 Very specific installation process and quality control
3.2.8 Applicator (staff) training
3.2.9 SMA must be shown to be compatible with grooves, not a groove alternative.
3.2.10 If an airport operator will consider SMA, it is recommended to do tryouts first at taxiways
3.2.11 Removing rubber may need higher pressure from rubber removal equipment.

3.3 There is a need to consider “when” to do runway friction testing, as it can vary with temperature and seasons.

3.4 A side-by-side comparison between PFC and SMA may not be comparable.

On GROOVING

3.5 On grooving, we want to state that the possibility of trapezoidal section seems interesting and FAA would like to research it more. As far as we know, they have not been used anywhere as of today.

On HMA vs SMA

3.6 Attempted correlation between field tests on friction and laboratory tests simulating traffic cycles.

3.7 Limited data – to improve correlation need more extensive data.

3.8 On selecting the solution (any of the above), consider aircraft operator point of view, as solutions may have different impacts on aircraft maintenance.

4 ICAO input

4.1 ICAO is currently working to update ADM Part III (doc 9157) on Pavements, but the work is still on-going.

4.2 The new guidance material will include aspects such as State experience on SMA (China, Germany, etc.), guidance on grooving and PFC.

4.3 On selecting the solution (between PFC, SMA, HMA), focus must be on performance (safety). In addition, solutions need to consider local conditions (expertise, materials, environment, traffic, etc.).

5 Recommendations from facilitators

5.1 ALACPA is encouraged to take note of the facilitator notes and consider solutions to address the subjects of interest gather at the workshop.

5.2 Although it is a common sense that the number of operations planned for each airport typical area (runways, taxiways, taxilanes, aprons, etc.) has some room for extra aircraft movements, it is worthwhile to keep in mind that unexpected traffic, in one of these facilities, may generate damage to the pavement surface. Reinforcement is necessary to avoid aircraft U-turns on the runway pavement, mainly if the surface course is SMA. FOD must be one of the main precautions on runway pavement maintenance.

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