

A Case of Utilizing Results

Revision of Airport Pavement Design, Maintenance and Rehabilitation Manual

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1. Introduction

“Airport Pavement Design Manual” and “Airport Pavement Maintenance and Rehabilitation Manual” issued by Japan Civil Aviation Bureau were revised in March 2013 based on the results of research by the NILIM. These manuals provide standards and recommendations for design methods and materials of airport pavement in Japan. In this revision, new standards and recommendations for asphalt concrete were added to the manuals. This report mentions some of the major points of the revisions.

2. Revision for usage of modified asphalt binder

Straight asphalt binder has been commonly used for asphalt concrete of airport asphalt pavement in Japan. Nowadays, modified asphalt binder is sometimes used in the airport where large aircrafts often pass since large rutting sometimes occurs.

However, it was not clarified in what type of cases the modified asphalt binder should be used for airport asphalt pavement. Thus, new standards concerning to the usage of modified asphalt binder were added in the manuals as below.

1. Construction of new runways, taxiways, aprons and GSE roads where damage caused as rutting, deformation of grooves, potholes and stripping are strongly expected.
2. Repair of existing runways, taxiways, aprons and GSE roads where damage such as rutting, deformation of grooves, pothole and stripping occurred frequently.
3. Repair of existing runways, taxiways and aprons as countermeasure of blistering.

3. Revision for asphalt concrete of binder course

Repair of airport pavements is commonly conducted in nighttime so the restored facilities must be opened the

following morning. If both the existing surface and binder course are cut away, new binder course may be opened temporarily for aircrafts soon after repair, and new surface course will be constructed on top of the binder course later on.

However, the binder course is exposed to rain water for the duration that the pavement is opened to traffic temporarily. This exposure may lead to binder course being stripped away and de-bonding between surface course and binder course soon after the repair. Thus, it was added in the manual as new recommendations as of 2013 that asphalt concrete of new binder course which is temporarily opened to traffic should be dense graded asphalt concrete with virgin aggregate as same as the surface course.

Related to above revision, the test condition of immersed wheel tracking test was revised. This test has been used to confirm the stripping resistance of asphalt concrete with recycled aggregate used in the binder course. In the new standard, water immersed depth for the test specimen in case the binder course with recycled aggregate is to be exposed to rain water temporarily must be deeper than that in case the binder course with recycled aggregate is not to be exposed to rain water.



Photo 1 Specimen of asphalt concrete with recycled aggregate after immersed wheel tracking test