54th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGION

Ulaanbaatar, Mongolia

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AGENDA ITEM 6: TECHNICAL AND REGIONAL COOPERATION

TECHNICAL CODE FOR HIGH FILLING ENGINEERING OF AIRPORT (MH/T 5035-2017)

(Presented by People's Republic of China)

INFORMATION PAPER

SUMMARY

Civil Aviation Administration of China (CAAC) has issued the Technical Code for High Filling Engineering of Airport (MH/T 5035-2017), the Chinese industry standards. The Code sums up the experience in high filling airport construction and relevant research results in China over the years. The Code applies to the survey, design, construction, test and monitoring, etc. of high filling airports, concerning technologies, including survey and measurement, test section, original foundations handling, filling engineering, slope engineering, drainage engineering, construction process control, quality test, monitoring and analysis, and dynamic control. There are no sufficient domestic or international technical criteria for high filling airport construction. The Code can be applied and promoted in this field.

TECHNICAL CODE FOR HIGH FILLING ENGINEERING OF AIRPORT (MH/T 5035-2017)

1. INTRODUCTION

1.1 With the development of China's civil aviation industry and the increasing shortage of land resources in the plain area, more and more new airports are located in the mountainous area. As mountainous areas are of great relief amplitudes, large amounts of filling are required for airport construction, thus giving rise to numerous engineering problems.

1.2 The Technical Code for High Filling Engineering of Airport (MH/T 5035-2017) is the industry standard issued by the CAAC, which became effective as of May 1, 2017. The Code was developed to meet the needs of constructing high filling airports in China and standardize the criteria for high filling engineering. The Code sums up China's experience in high filling engineering and construction and relevant research results over the years. The Code was developed with reference to relevant domestic and international technical criteria and literature.

1.3 The relevant administrations in the APAC region lacking land resources may refer to the Code in airport construction, when dealing with engineering problems.

2. DISCUSSION

2.1 In regions with insufficient land resources in China, more than 10 airports have seen their filling height exceed 20m, such as Kunming Changshui Airport (52m) (maximum filling height or filling slope height in brackets), Jiuzhai Huanglong Airport (138m), Chongqing Jiangbei Airport (164m) etc. Airports with maximum filling height or filling slope height exceeding 20m are high filling airports, whose technical complexity is much greater than that of airports in the plain area.

2.2 High filling airports have typically original relief of great amplitudes and complex geological conditions, and require diverse engineering materials and onerous engineering efforts, thus causing problems in site stability, subsidence of foundations and structures and differential subsidence, and high slope stability, etc. Airport runways have strict demands for high filling deformation and slope stability, and accidents will incur huge losses. With the development of civil aviation, more high filling airports will be built, posing such engineering difficulties.

2.3 With regard to the technical challenges above, basic research at home and abroad currently far lag behind engineering construction, and there is no other standard. The Technical Code for High Filling Engineering of Airport sums up China's experience in building high filling airports over the years, and also draws upon findings of the research on the dam and high filling road bed, etc. The Code has distinct industry characteristics and strong relevance and operability, provides significant guidance on high filling engineering of civil airports, and makes the first industry standard in this field.

2.4 Major technical contents of the Code are contained in 12 chapters: 1: General; 2. Terminology and Signs; 3. Basic Provisions; 4. Survey and Measurement; 5. Test Sections; 6. Original Foundations Handling; 7. Filling Engineering; 8. Slope Engineering; 9. Drainage Engineering; 10. Construction Process Control; 11. Quality Test; 12. Monitoring and Analysis and Dynamic Control, and there are 8 additional appendices. Solutions to the engineering challenges above are comprehensive, which cover main technical issues in different construction stages and aspects.

2.5 The Code has proven successful in its application to high filling airports in China. Member states may encounter the engineering risks above in their construction of airports in mountainous areas, and promotion of the Code's application may resolve such problems.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.

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