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Comparison of Pavement Response Analysis between a 18-Axles Truck and Standard Thai Truck

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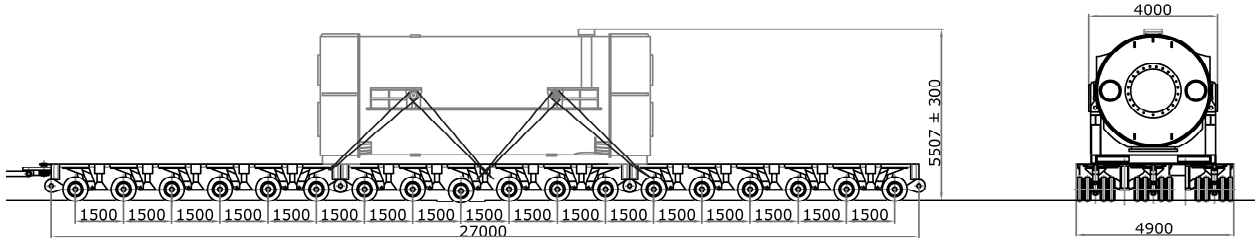
Abstract. This article intends to present the pavement response analysis due to the 18-axles special truck used to transport a 400 tons generator parts. According to the DOH Declarations issued in 2005, DOH had issued the additional declarations containing special trucks or vehicles for overloaded transportation, proper axle and gross weights of each type of vehicles. However, the strain of the special truck must be less than the standard Thai truck (Truck25). The typical asphalt pavement is modeled and performed based on layered elastic analysis theory. The pavement is loaded with 18-axle truck. The maximum tensile strains under asphaltic concrete layer and compression strains on base, subbase, selected material and subgrade for special truck load are 234.4 ,618.1, 494.4, 422.9, and 772.3 με, respectively. However, the maximum compressive strains on selected material and subgrade of the special 18-axle truck was exceeded the standard Thai truck.

Introduction

Due to the dramatically increase in power energy consumption, the cooperative project between Thai and Lao government has been established. This mega project needs to construct dam and electricity power plant at Hong-Sa, the province close to the Thai-Lao boundary. This lead to the increase in transportation of heavy equipment imported from China pass through Thai Kingdom by trucks. Since the weight of heavy equipment is typically greater than the gross weight of conventional trucks allowed by Department of Highways (DOH) of Thailand, the pavement analysis is required in order to ensure the service of national highways of Thailand. According to the DOH Declarations issued in 2005 [1- 3], DOH had issued the additional declarations that the strain of the special truck must be less than the standard Thai truck. Hence, this paper aimed to compare the pavement response on the typical pavement of DOH between the 18-axles special truck used to transport a 400 tons Generator Stator as shown in Fig. 1 and the standard Thai truck (Truck 25).



Remarks : (1) Overweight vehicle is composed of 18 axles of loading. (2) Total weight of trailer and cargo is 400 tons. (3) All Dimensions are shown in millimeters.

Fig. 1 Overweight vehicles with multi-axle loading