

Suphawatt Homuem 2009: An Analysis of Truck Loading Effect on Highway Maintenance by using HDM-4. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Mr. Varameth Vicheinsan, Ph.D. 93 pages.

Trucks are used as the main means of transporting goods in Thailand. Their hauling weights, in particular, when transporting agricultural products and building materials usually exceed weight regulations specified by the law. This excess weight damages the road surface. In particular, asphaltic concrete types of pavement, being the predominant type of pavements in Thailand are most affected. The damage greatly shortens the time interval to the next resurfacing. The substantial costs incurred in repair are paid by the government. These huge sums of money required to repair roads.

This research aims to study the cost in repairing the damage to asphaltic concrete type of pavement. Truck gross weight excess (to impacted cost damage) ratios are documented. Study of the highway is the responsibility of the bureau of highway 12th (Chonburi). The study is divided into 4 scenarios. The first scenario is the current condition, where the hauling weight exceeded the limit (25 tons for 10 wheelers). In the second scenario, the excess was 10% over that specified by law. In the third scenario, the excess weight regulation is exceeded by 20%, and in the fourth scenario, the excess weight regulation is exceeded by 25%. Only to be analyzed is the effect of 6 wheeler and, 10 wheeler, semi trailer and full trailer, for 5 years by using HDM-4.

This study revealed that in the first scenario, there was surface repair expense of 7,901.71 million baht and the value of IRI (International Roughness Index) is 4.06 m/km. In the second scenario, the surface repair expense increased to 9,083.70 million baht and the value of IRI is 4.34 m/km. In the third scenario, the surface repair expense increased to 10,614.89 million baht and the value of IRI is 4.66 m/km. Finally in the fourth scenario, the surface repair expense increased to 11,383.48 million baht and the value of IRI is 4.92 m/km. As a result of this study, it is concluded the Department of Highways should not increase the hauling weight limits. It causes costly maintenance, due to the impact on the road surface, and greatly reduces the economic life expected. In addition the huge cost to the government impacts heavily on government finances at earlier than to be expected intervals, impact on funding availability that could have been used for developing other infrastructure. These case studies should be of advantage for future maintenance planning and to distribute appropriate budgets in the future.

---

Student's signature

---

Thesis Advisor's signature

/ /