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The Effect of Gross Vehicle Weight on the Stability of Heavy Vehicle during Cornering

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Abstract : One of the functions of the commercial heavy vehicle is to safely and efficiently transport goods and people. Due to its size and carrying capacity, it is important to study the vehicle dynamic stability during cornering. Study has shown that there are a number of overloaded heavy vehicles or permissible gross vehicle weight (GVW) violations recorded at selected areas in Malaysia assigned by its type and category. Thus, the objective of this study is to investigate the correlation and effect of the GVW on heavy vehicle stability during cornering event using simulation. Various selected heavy vehicle types and category are simulated using IPG/Truck Maker® with different GVW and road condition (coefficient of friction of road surface), while the speed, driver characteristic, center of gravity of load and road geometry are constant. Based on the analysis, the relationship between GVW and lateral acceleration were established. As expected, on the same value of coefficient of friction, the maximum lateral acceleration would be increased as the GVW increases.

Keywords : heavy vehicle, road safety, vehicle stability, lateral acceleration, gross vehicle weight
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