

**Operating speed models as a tool to ensure geometric consistency and safety on the
Tanzania national road network: the case of
Bagamoyo-Msata and Chalinze-Segera road sections**

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This study evaluated design and operating speed consistency of successive design elements and developed an operating speed model for tangents and curves on two-lane rural roads. The road geometric design manual and relevant literatures were reviewed to extract methods and evaluate the guidance on design consistency provided in the road design manuals. Tangent lengths and horizontal curve radii and super elevation compared with specified limiting values. Assessment of change of speed on consecutive design elements and deviation from design speed was performed. Operating speed models were developed by regression analysis. The road design manual provides the maximum limit of the tangent length of 2 km and the guidance for minimum values of radius. It does not specify the maximum radius values for different design speeds. The design drawings and field observation conducted by the study show that 22.4% of the tangent length in the selected road sections exceeded the maximum limit of tangent length. While 60.5% of the maximum safe speed on curve radius sections exceeded the design speed by more than 20 km/h. Furthermore, the change of the operating speed from tangent to curve and vice versa is exceeded 20 km/h. And the comparison between the operating speed and design speed on tangents and curves show that, 68.9% and 8.3% of the operating speed exceeded the design speed by more than 20 km/h respectively. To ensure the consistency on the roadways the operating speed models has been developed and can be used to evaluate consistency of the proposed designs.