



# Technical Guidelines on Speed Humps

*Research & Quality Control Unit*

*Ref: TG\_001/2017\_R&QCU/RTDA*

Planning & Research Division,  
Rwanda Transport Development Agency (RTDA), RWANDA

July 2017

---

## EXECUTIVE SUMMARY

Speed humps have gained acceptance as a traffic-calming device by Rwanda Road Authority. However, design and application varies widely between projects and speed humps often meet resistance from residents and road users. In 2012, the City of Kigali, the Ministry of Infrastructure and Rwanda Transport Development Agency (RTDA) recommended a practice for the design and application of speed humps in the project of 36 Km of Kigali City. The recommended practice is now being updated to provide Rwanda practice guidelines for speed humps.

To update the RTDA speed humps recommended practice, the experiences of agencies implementing speed humps were obtained through a consultation with the line Ministry of Infrastructure and learning from East African Community (EAC) practices.

To this end, a trapezoidal hump was proposed with slant and top varying from vehicle speed, comfort and volume of passenger. In addition, the painting of the hump as well as warning signs was proposed to assure the safety of road users.

---

## INTRODUCTION

Speed humps are one tool available in the traffic calming toolbox, and have gained acceptance by Rwanda and international jurisdictions since their development. However, design and application varies widely between project to project and speed humps often-meet resistance from residents and road users.

The feedback from the road users proves that the shapes of some of the humps have unacceptable functionality as follows:

- Uncomfortable maneuverability,
- Belly shape scratch the bottom of the small vehicles,

- The entry and exit of the humps create impact forces to the vehicles,
- It is easily damaged by heavy vehicles,
- Etc....

In 2012, the City of Kigali, the Ministry of Infrastructure and Rwanda Transport Development Agency (RTDA) recommended a practice for the design and application of speed humps in the project of 36 Km of Kigali City. Lessons have been learned through experience regarding the design and implementation of speed humps since the publication of this guideline.

As a result, following the meeting on Road safety held in MININFRA on 24<sup>th</sup> July 2017, RTDA initiated an update to the recommended practice to provide country of the practice guidelines for the design and construction speed humps. (List of requirements is attached for details)

---

## **CONSTRUCTION AND SAFETY OF SPEED HUMPS**

Speed humps are most often constructed on existing road ways (i.e., retrofit); however, speed humps and speed tables may be constructed on new roadways or during resurfacing projects. It is recommended that planning to implement speed humps develop construction procedures. Following these procedures will ensure more uniform speed humps. The procedures should be used by both administration staff and private contractors engaged to work on roads.

The construction procedures should contain detailed working drawings showing development of the desired profile and allowable tolerances for speed hump height. Material specifications and construction guidelines can also be included.

For the purpose of this concept note, all new speed humps shall have the trapezoidal shape with the following shape, dimensions and markings (Figure 1)<sup>1</sup>:

- Top length varying from 4m to 6m and height from 0.075 to 0.1m;
- A slant varying between 0.714 m to 4 m for both side;
- The total length of road humps are varying from 4.0 to 9.5m.

---

<sup>1</sup>“Preparation of Transport Facilitation strategy for EAC”(EATTF)Pg. 18

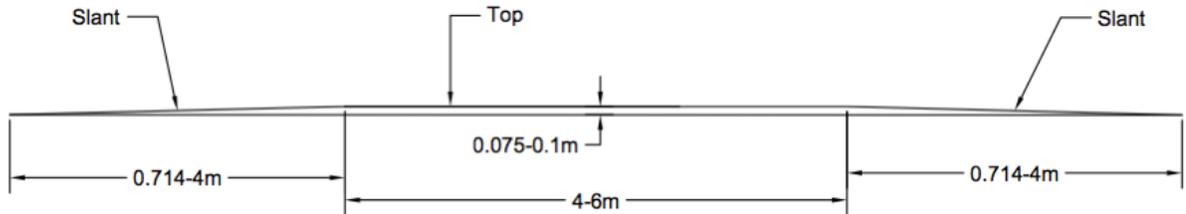


Figure 1: Cross section of the trapezoidal humps recommended in EAC.

The top is varying depending on comfort of users and volume of pedestrian crossing the area.

Vehicle speed(km/h)	Slant distances(m)
<25	0.714
25	0.8
30	1
35	1.333
40	1.667
45	2
50	2.5
55	3.333
60	4

Table 1: Detailed design of flat-topped speed hump.

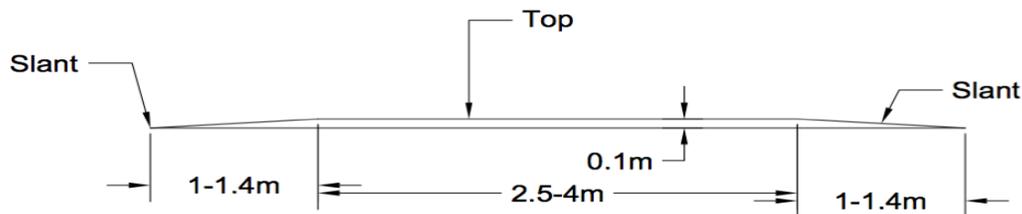
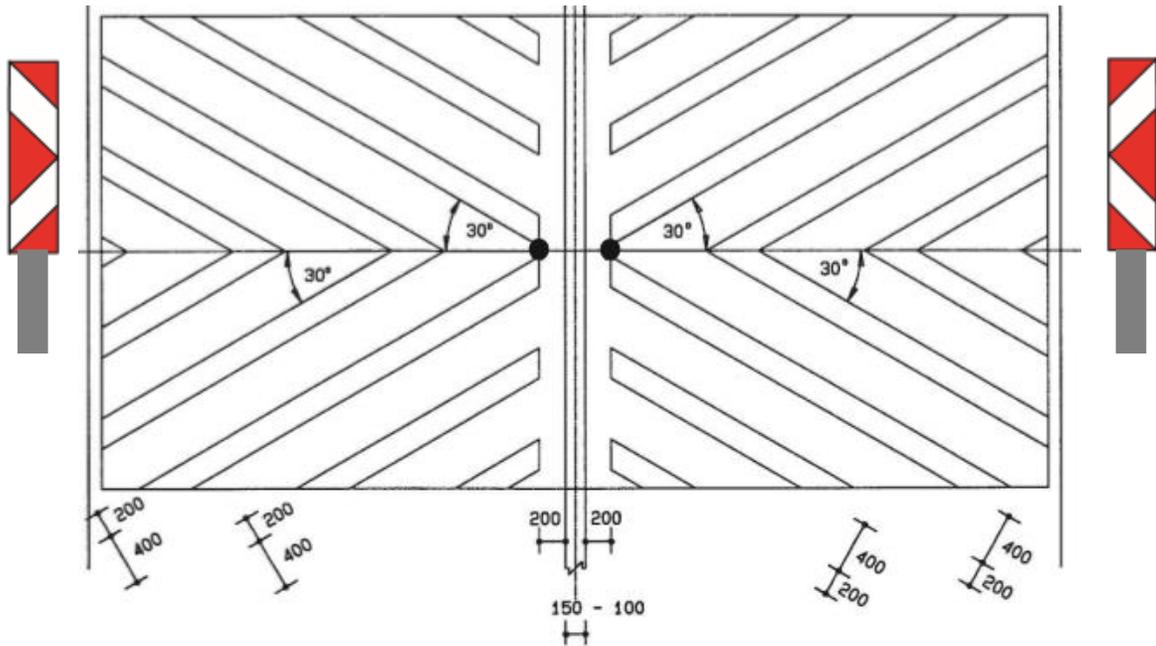


Figure 2: Typical Cross section currently in use for the trapezoidal humps.

In other to meet the standard highlighted in the figure 1 (EAC standard), it is recommended to adopt its cross section when rehabilitating the existing or new humps in road network.

### Paint and Marking:

Each speed hump must be painted with a pattern that makes them visible to drivers as described in figure 3.1:



*Figure 3.1: Typical painting plan view of the trapezoidal humps with appropriate warning sign.*

In addition to *warning signs*, we would propose to install:

1. *Danger plate signs*;
2. *Humps Ahead* marking signs placed before the humps (80m);
3. Warning reflectors at edge of humps for guidance during night.

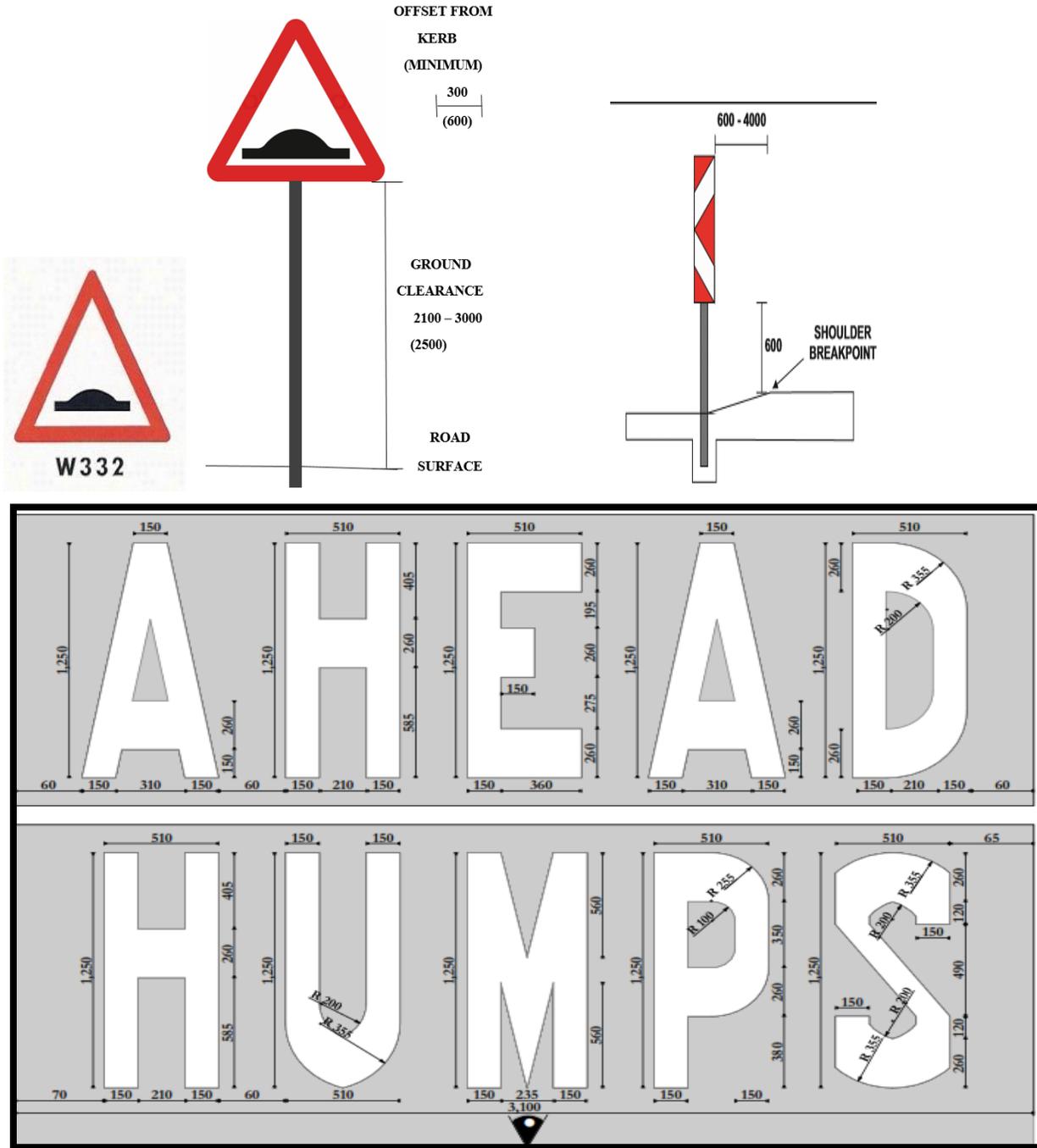


Figure 3.2: Typical Warning Sign, Danger plate, warning marking “HUMPS AHEAD”

### **Installation Process:**

Before installation of the devices, the exact location of speed hump along the study location must be determined. The installation location must be chosen based on several factors:

- The speed hump have to be located so a vehicle would encounter it at a 90-degree angle and with enough sight distance to allow drivers to see and react \to the device, so that those traveling at excessive speeds could maintain control of the vehicle when traversing the device;
  - The speed hump should not interfere with existing drainage or obstruct any drainage structures;
  - The speed hump should not hinder utility work or interfere with emergency equipment;
  - The speed hump should not interfere with points of access. Therefore, we recommend to avoid inserting the devices within driveways, intersections, or other points of access.
- 

### **ENFORCEMENT**

RTDA would like to acknowledge the significant contributions of the stakeholders that will ensure implementation of the guidelines mentioned herein.

---

### **REFERENCES**

AASHTO's "A Policy on Geometric Design of Highways and Streets" (AASHTO 2004, pg 12; TAC 1998).

Guidelines for the Design and Application of Speed Humps – A Recommended Practice, Institute of Transportation Engineers Speed Humps Task Force, Washington, D.C., 1997.

"Preparation of Transport Facilitation strategy for EAC" East African Trade and Transport Facilitation Project (EATTF), Volume 1, University of Dar es Salaam, March 2014

"A Study on Speed Humps" Center for Transportation Research and Education Iowa State University, Ames, IA 50011, Duane E. Smith, P.E., Karen L. Giese, September 1997, <http://www.ctre.iastate.edu/research/roadhump/>



## APPENDIX

### Speed Humps Checklist

---

Prepared by:

*Quality Control Technician*

*David Nyirimanzi*

*Dir. Research & Quality Control Unit*

*Fio Logan Mpayana*

With consultation of:

*OSBP Specialist.*

*Hadelin Verjus*

Approved by:

*Planning & Research Division Manager* *Fabrice Barisanga*

*Manager of Public Transport Division* *Rutera Rose*

## **SPEED HUMPS CHECK LIST**

---

While checking speed hump, there are many things that we must take into consideration:

1. Humps should be placed near street lights to increase nighttime visibility;
2. If possible, speed humps should be placed on property lines for noise abatement;
3. To be effective along a section of roadway speed humps should be placed in series at 60 -180 m intervals when considering the geometries of the roadway, for maintain speed of 40 Km/h, we must use 80 m intervals;
5. Each speed hump must be accompanying by warning signs in accordance with the guidelines ( Marking Signs, Danger Plate and reflectors);
6. Each speed hump must be painted with a pattern that makes them visible to drivers and provide a safe and reasonable sight distance;
7. Speed humps should not be placed on sharp curves (either vertical or horizontal). if the curves are too sharp, it can result in lateral and/or vertical forces on the vehicles when traversing the speed hump;
8. Speed humps should not be placed on vertical curve with less than the safe stopping sight distance. Placing humps on horizontal curves increase the risk of losing control of a vehicle because it will not be approaching perpendicular to the hump;
9. Standard *Top* speed hump vary between 4m and 6m long and *Slant* 0.714 m to 4m;
10. Speed hump should not be placed on major emergency vehicle response routes;

Note: Speed humps if not installed properly, property damage or personal injury occur.