



# **Fire & Rescue Commission**

## **Montgomery County, MD**

### **The Effects of Speed Humps and Traffic Circles on Responding Fire-Rescue Apparatus in Montgomery County, MD**

TESTS CONDUCTED JOINTLY BY  
THE FIRE AND RESCUE COMMISSION AND  
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION  
WITH ASSISTANCE PROVIDED BY:

Department of Fire and Rescue Services  
Montgomery County Police Department  
Cabin John Park Volunteer Fire Department  
Hillandale Volunteer Fire Department  
Bethesda Fire Department

**AUGUST 1997**

### **EXECUTIVE SUMMARY**

**D**ue to their concern for the alleged adverse effects of speed humps and traffic circles on fire-rescue response, the Montgomery County Fire and Rescue Commission, at its October 10, 1996 meeting, passed two motions concerning this issue:

1. Field tests be conducted to quantify and analyze the effect of speed humps and traffic circles on response times.
2. The Department of Public Works and Transportation provide these test results to the public when applications for speed humps and traffic circles are submitted to them.

**T**hese motions came about as the result of concerns of how speed humps and traffic circles adversely affect response times, and they were based upon the results of speed hump and traffic circle tests conducted in Portland, Oregon and Austin, Texas where quantitative data showed significant delays for fire-rescue apparatus.

On April 30, 1997, the Fire and Rescue Commission (FRC) and Department of Public Works and Transportation (DPWT), with assistance from other local fire-rescue and police organizations, conducted field tests of fire-rescue apparatus traversing speed humps and traffic circles of the types typically found throughout Montgomery County. Two courses were utilized for this purpose, one having three<sup>1</sup> 12-ft Watts-type speed humps and the other having a single traffic circle. Twelve test runs were conducted on each course, featuring four types of apparatus (i.e., engine, tiller-style ladder truck, aerial tower, ambulance) and three different drivers per vehicle. The test runs were timed and the results compared to calculated times for courses of similar distances without speed humps and traffic circles in order to determine delays attributed to these devices.

The results of the Montgomery County speed hump and traffic circle tests confirmed that these two types of traffic calming devices cause delays for fire-rescue vehicles en route to incidents. The amount of delay was found to be dependent upon three factors -- vehicle type/size, type of traffic calming device, and driver discretion regarding speed.

On the speed hump course, where the units were attempting to maintain a constant speed of 25 mph, the average impact delay per hump was found to range between a high of 7.3 seconds for the Ladder Truck and a low of 2.8 seconds for the Aerial Tower. The higher delay is equivalent to responding from a station .05 mile per speed hump further away from the incident location along an unimpeded route. More importantly, the four vehicles averaged slightly less than 20 mph across the speed hump test route, about half the response cruising speed of 35-40 mph typically attained by fire-rescue vehicles on unimpeded roads. Should speed hump-impeded routes taken by responding units limit average speed to 20 mph, the amount of area they can serve within 5 minutes<sup>2</sup> may drop to 1.3 linear miles (equivalent to 6.8 sq. mi. surrounding the station) versus the 2.0 linear miles (16 sq. mi.) served within 5 minutes along unimpeded routes whereby a cruising speed of 35-40 mph is attainable.

On the traffic circle course, where the units were attempting to maintain a constant speed of 35 mph, the average delay ranged between a high of 7.0 seconds for the Ladder Truck and a low of 3.2 seconds for the Ambulance. Similar to the speed hump test results, the higher delay is equivalent to responding from a station about .05 mile per traffic circle further away from the incident location along a route free of traffic circles. Of greater importance, the four test vehicles averaged slightly less than 28 mph on the traffic circle test course, about 7-12 mph less than the response cruising speed of 35-40 mph attained on unimpeded roads.

It is important to emphasize that these TCD tests were conducted at speeds appropriate for the two test courses, but somewhat slower than the typical response cruising speed (i.e., 35-40 mph) of fire-rescue apparatus. If similar tests were conducted in Montgomery County at speeds approaching 40 mph, greater delays would be expected, as indicated by the results of the Portland and Austin tests. The Montgomery County test results could, therefore, be considered as representing **minimum delays** that one would expect for responding fire-rescue vehicles in the County.

The Montgomery County tests results, in combination with those of the Portland and Austin tests, confirm that speed humps and traffic circles cause considerable delays for responding fire-rescue

apparatus, which may adversely impact the outcome of certain life-threatening incidents such as those involving cardiac arrest, uncontrolled bleeding, or persons trapped in burning buildings or vehicles. Delays of this nature must be given serious attention by the public and government officials who determine the employment and specific placement of speed humps and traffic circles in their communities and jurisdictions. Those in favor of these devices must be willing to accept the likely probability of slower fire-rescue service delivery in their community and neighborhoods. While speed humps and traffic circles offer a cost-efficient approach to reducing vehicular speed and reducing the number of traffic accidents in neighborhoods, they present the disadvantage of slowing fire-rescue vehicles.

---

1) Multiple speed humps spaced over short distances are commonplace in the County. 2) 5-minutes represents a response time goal, unadopted in Montgomery County, which assumes 1.5 minutes for dispatch, turnout, and acceleration of units up to response cruising speed; and 3.5 minutes for travel time once cruising speed has been attained.

---

## NOTICE

The complete 65-page report is available at all 22 Public Libraries in Montgomery County. The report is a reference document, therefore it cannot be removed from the library; however, the report can be copied on library photocopiers.

Questions concerning the report can be directed to the Montgomery County Fire and Rescue Commission on (301) 217-2461. Correspondence can be sent to the Commission at the following address:

**Fire and Rescue Commission  
Executive Office Building  
101 Monroe Street, 12th Floor  
Rockville, Maryland 20850**

**[Return to "Reports / Newsletters" Page](#)**

**DFRS HOME PAGE**