Single-Measure Traffic Calming in Gilbert, Iowa

tech transfer summary

A speed table was installed and evaluated as a single-measure traffic-calming treatment in Gilbert, Iowa.

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RESEARCH PROJECT TITLE
Evaluation of Gateway and Low-Cost Traffic-Calming Treatments for Major Routes in Small Rural Communities

SPONSORS
Iowa Highway Research Board (TR-523)
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Objective

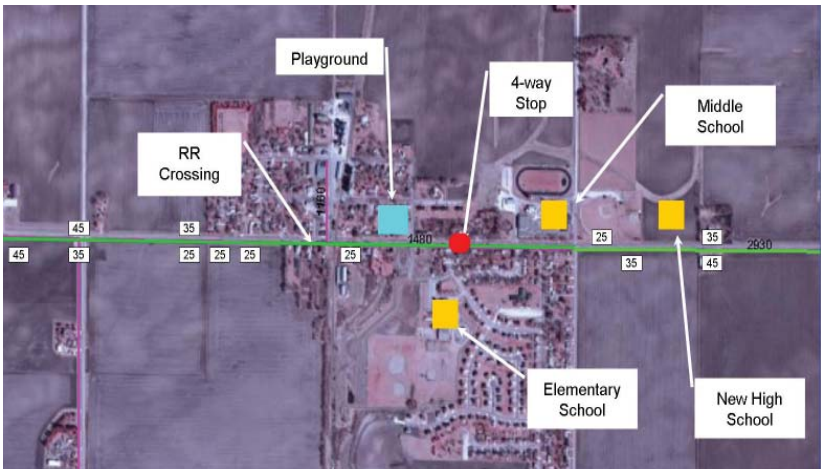
The purpose of the project was to evaluate traffic-calming treatments on major roads through small Iowa communities using either single-measure, low-cost treatments or gateway treatments. For this portion of the project, a speed table was installed and evaluated as a single-measure traffic-calming treatment in Gilbert, Iowa.

Problem Statement

The main street through many small rural Iowa communities is a state or county highway with high speeds outside the city limits and a reduced speed section through the rural community. Consequently, drivers passing through the community often enter at high speeds and then maintain those speeds throughout. When speeds in rural communities are problematic, traffic calming provides a potential solution. However, traffic-calming measures are generally used in larger urban areas; their effectiveness in small communities is unknown. The Center for Transportation Research and Education (CTRE) at Iowa State University teamed up with the Iowa DOT to evaluate a traffic-calming treatment in Gilbert, Iowa.

Community Description

Gilbert is located approximately 40 miles north of Des Moines and has a population of 987. The main road through Gilbert is County Highway E-23, which is a two-lane roadway oriented east/west through the middle of the community. The posted speed limit is 55 mph outside of town and 25 mph at the center of town, with transition zones on each end of town. There is also a four-way, stop-controlled intersection at the center of town.



Layout of Gilbert, Iowa

IOWA STATE UNIVERSITY

The town was in the process of building a new high school near Highway E-23 as the study commenced, and two other schools were already near the route. Furthermore, there were two parks nearby that generated additional pedestrian traffic. A total of nine crashes occurred along E-23 in the vicinity of Gilbert from 2001 to 2005.

Research Description

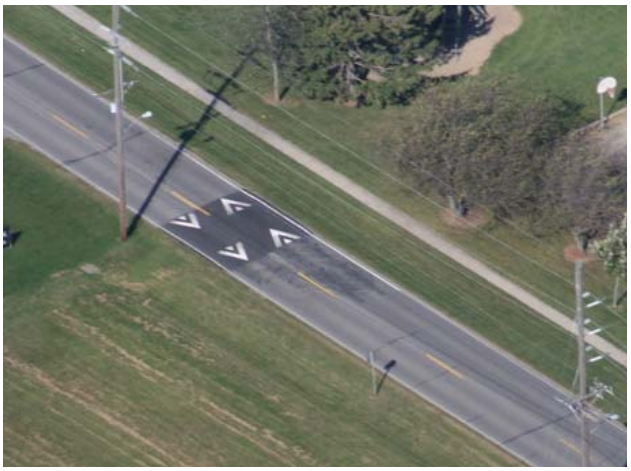
Gilbert was selected as a single-measure traffic calming community. To alleviate speeding problems at the center of town, a Seminole profile speed table was installed and evaluated.

Speed tables are asphalt or rubber mounds that cover the full width of the roadway. Speed tables are essentially speed humps that have been modified with a flat top, thus reducing the disruption to vehicle operation. The ramps of the speed table are sloped more gently than speed humps; therefore, design speeds for speed tables are higher than for speed humps. The Gilbert speed table was designed to accommodate vehicles traveling at 30 mph.

To evaluate the effectiveness of the speed hump, data were collected using pneumatic road tubes placed at locations both upstream and downstream of the speed table. Speed and volume data were collected before the speed table was installed and at one month and three months after installation. Data will also be collected at six, nine, and twelve months after installation.

Key Findings

The speed table was successful in decreasing speeds both immediately upstream and downstream of the speed table. The table slowed speeds in both directions. Several residents have complained because they do not like the speed table. The effectiveness of the speed table remained relatively constant over time. This was expected, since the device physically forces vehicles to slow down.



Aerial view of speed table in Gilbert, Iowa

Implementation Benefits

Lower vehicle speeds produce several safety benefits. For drivers, the area of focus is significantly increased at lower speeds, giving them a greater awareness of their surroundings and more time to react to potential problems.

Lower speeds also reduce the likelihood and severity of vehicle crashes. The Oregon DOT, in a handbook created for rural communities, reported speed statistics indicating that there is an 85% likelihood of death for a pedestrian struck at 40 mph. One struck at 30 mph has a 45% chance of being killed and the risk drops to 15% if the pedestrian is struck at 20 mph.

Implementation Readiness

Speed tables are a moderately expensive traffic-calming measure, but they are highly effective at reducing speeds. When installing speed tables in rural communities, consideration should be given to the accomodation of farm vehicles and heavy trucks that may travel through the community.

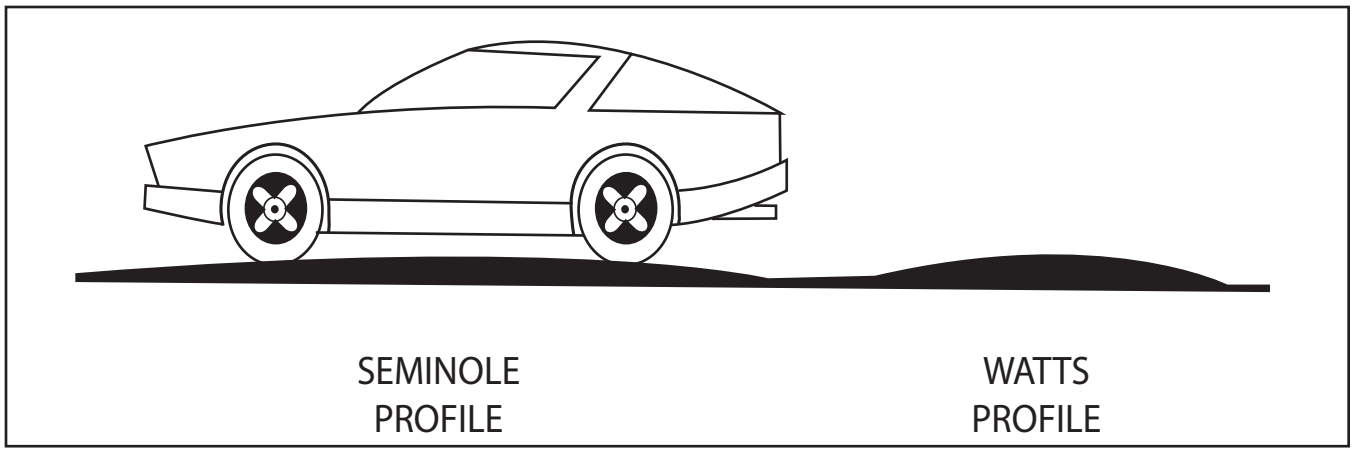


Diagram illustrating the difference between a Seminole profile speed table and a traditional Watts profile speed hump