



Center for Transportation  
Research and Education

# Gateway Traffic Calming in Roland, Iowa

tech transfer summary

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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)  
Federal Highway Administration

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## CTRE

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The mission of the Center for Transportation Research and Education (CTRE) at Iowa State University is to develop and implement innovative methods, materials, and technologies for improving transportation efficiency, safety, and reliability while improving the learning environment of students, faculty, and staff in transportation-related fields.

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Gateway traffic-calming treatments were installed and evaluated in Roland, Iowa.

## 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 or gateway treatments. For this portion of the project, gateway traffic-calming treatments were evaluated in Roland, 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 traffic-calming treatments in Roland, Iowa.

## Community Description

Roland is located approximately 45 miles north of Des Moines and has a population of 1,324. City officials requested to be a pilot-study community, indicating that they encountered frequent problems with speeding on County Highway E-18, which is the main route through town. The posted speed limit is 55 mph outside of town and 25 mph at the center of town, with long transition zones on the west end of town and short transition zones on the east end of town. The intersection of E-18 and Main Street is four-way-stop controlled. Some sensitive areas along this road include a middle school, a park, and a swimming pool.



Layout of Roland, Iowa

## Research Description

Roland was selected as gateway treatment location. Gateway treatments include a range of measures designed to slow vehicles entering a community and reinforce speeds throughout the community. The gateway treatment for Roland consisted of converging chevrons, on-pavement speed markings, and lane narrowing.

Converging chevrons were used to slow incoming traffic at the east and west community entrances. They were placed with decreasing space between each chevron as drivers enter the transition zone, giving drivers the perception of going too fast, or speeding up, and encouraging them to reduce their speeds.

On-pavement speed limit markings, reading “25 mph,” were placed at regularly spaced intervals throughout both the eastern and western sections of the gateway treatment area to remind drivers of the speed limit. In addition, lanes were narrowed by painting wider shoulders. This technique has two benefits. First, narrowed lanes provide a feeling of constraint and cause drivers to reduce their speed. Second, wider shoulders provide more space for bicycle lanes and sidewalks.

To evaluate the effectiveness of the traffic-calming treatment, data were collected using pneumatic road tubes placed at a number of locations around traffic calming treatments and other locations. Data were collected before the treatments were installed and at one month, three months, six months, nine months, and twelve months after the treatments were installed.

## Key Findings

The gateway entrance treatments, which consisted of converging chevrons and a “25 mph” on-street pavement marking, were reasonably effective. Speeds decreased at all of the data-collection locations and decreases remained constant over the year-long data collection period.

## 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.



*E-18 before implementation of traffic-calming treatments*



*Converging chevrons at east entrance*



*On-pavement "25 mph" speed markings and lane narrowing using painted shoulders*

## Implementation Readiness

Many rural communities do not have the resources to implement high-cost, elaborate traffic-calming measures. The measures used in Roland were low cost and simply involved painting the roadway and maintaining the painted markings. These measures were also designed to accommodate large farm vehicles, which are prevalent in rural communities. In short, the traffic-calming treatments in Roland, Iowa could easily be implemented in other rural communities.