



Global Traffic Technologies

# Canoga<sup>TM</sup> Traffic Sensing System

Better traffic management  
begins beneath the surface



Global Traffic  
Technologies

## Successful traffic operations require precise, real-time information.

Every year, more and more vehicles crowd the world's roadways aggravating congestion, increasing travel times and jeopardizing safety. In fact, the number of cars on our roads and highways is estimated to grow by another 50 percent in the next 10 years\*, stressing already high demand. The result is often chronic gridlock: tie-ups, frustrated drivers, decreased air quality and an estimated two billion hours\* — \$48 billion in productivity—wasted in stalled traffic every year. More than ever, as transportation budgets continue to be stretched thin, traffic professionals are challenged to squeeze the most out of every lane mile.

The Canoga™ Traffic Sensing System delivers precise, real-time traffic data, allowing you to monitor individual vehicle speeds and lengths, mean speed, count and occupancy, and speed and length classification. Built-in communications make remote access and data retrieval efficient and reliable. In addition, the system can generate outputs when a user-defined event occurs, such as a measure of traffic, or a combination of measures that exceed a user-defined threshold. For example, a real-time event may be a vehicle exceeding both a user-defined vehicle speed and length, such as a truck exceeding the defined vehicle speed level. Traffic can be monitored and actions taken when these events occur, improving both roadway safety and efficiency. The Canoga traffic sensing system is an essential tool for managing the new traffic realities of the 21st century.

### About Global Traffic Technologies

Global Traffic Technologies was formed from 3M's pioneering intelligent transportation systems. Our mission is to use our proven technologies and innovative mindset to improve traffic management and safety all over the world

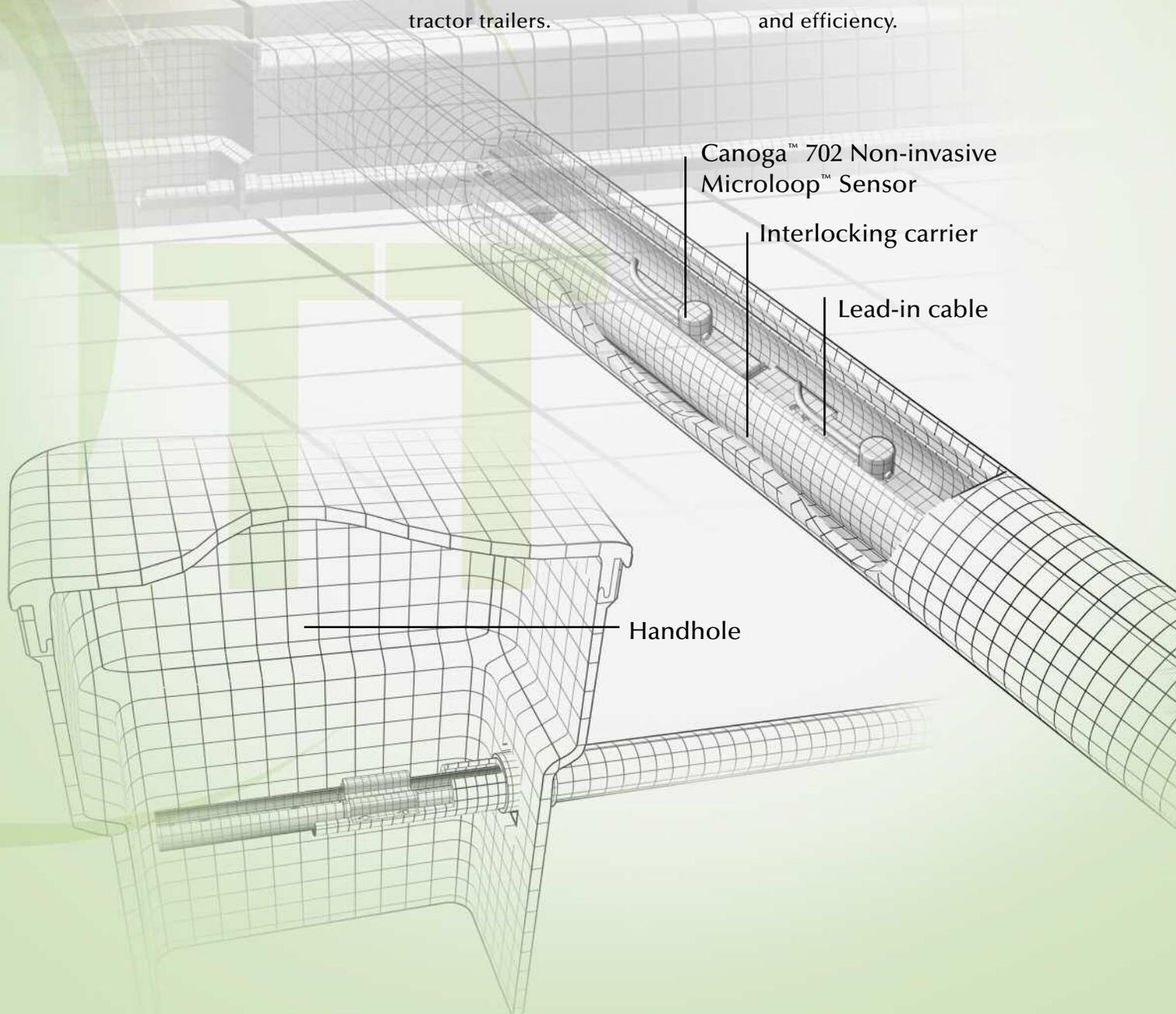
\*U.S. Federal Highway Administration, 2006

**Innovative. Practical. Reliable.**

The Canoga traffic sensing system is installed beneath the roadway pavement—the surface is left undisturbed. The Canoga™ 702 Non-invasive Microloop™ Sensor is installed in a protective 3-inch (7.6 cm) conduit located 18–24 inches (45.7–60.9 cm) below the pavement surface.

Canoga 702 Microloop carriers contain pre-set receptacles to firmly hold individual sensors at desired locations. One, two or three sensors are used per lane or per area, depending on the level of accuracy and lane coverage required to sense everything from bicycles to tractor trailers.

Lead-in or home-run cable is used to link Canoga 702 Microloop sensors to the Canoga™ Traffic Monitoring Card. In turn, the Canoga traffic monitoring card provides—in real-time—the traffic flow data you need to manage incidents and optimize traffic safety and efficiency.



Canoga™ 702 Non-invasive  
Microloop™ Sensor

Interlocking carrier

Lead-in cable

Handhole

## The Canoga™ Traffic Sensing System

Accurate, consistent, real-time data is the foundation for effective traffic management and planning. The Canoga traffic sensing system delivers on both counts. This matched component system installs unobtrusively below the road surface: no saw cuts, no weather exposure, no traffic interruptions.

### Eight reasons you can count on the Canoga traffic sensing system

#### 1 Consistency.

The Canoga traffic sensing system provides highly reliable measurements (99.5% accuracy of conventional 6 x 6 ft. [1.7 x 1.7 m] loops) under nearly all congestion levels in any weather. The system performs in fog, rain, hail, wind, snow or ice, 24 hours per day, 365 days per year.

#### 2 Non-intrusive.

The Canoga traffic sensing system is out of sight below the pavement, reducing visual clutter and making it ideal for scenic roadways.

#### 3 Non-invasive.

The Canoga traffic sensing system is contained in a protective conduit that is completely beneath the roadway. It is naturally shielded from weather and wear and is unaffected by pavement failure and milling operations.

#### 4 Low Cost

##### Installation.

Installation costs are especially low in new road construction. Traffic can flow normally and installation crews can work quickly and safely.

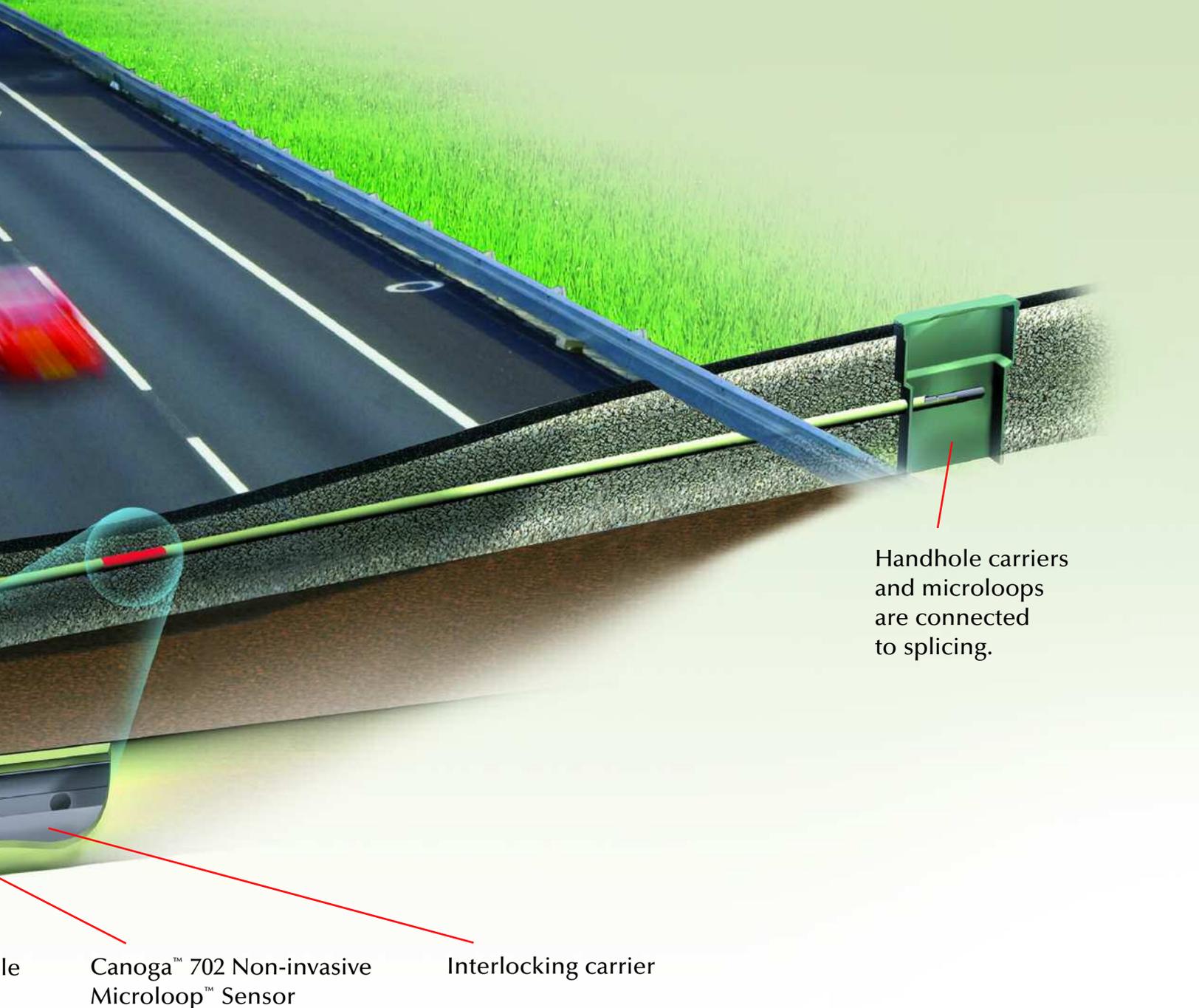
#### 5 No Maintenance.

Underground, protected from weather and traffic, the Canoga traffic sensing system operates without service or maintenance. Essentially, you install it and forget it.

#### 6 Low Life Cycle Cost.

Built to last and service-free, the Canoga traffic sensing system offers industry-leading value.





Handhole carriers and microloops are connected to splicing.

le Canoga™ 702 Non-invasive Microloop™ Sensor

Interlocking carrier

**7 Future Flexibility.**

The Canoga traffic sensing system's scalable design of matched components permits easy modification, reconfiguration and relocation. It can be readily integrated with nearly all traffic management system software.

**8 Real-Time Traffic Data.**

The Canoga traffic sensing system communicates the data you need to manage traffic—count, speed, length, roadway occupancy and vehicle classification data, all available in real time. Field processors such as 170 controllers become unnecessary. Canoga technology includes serial communications to automate roadway information and link to other traffic management products.

# Canoga™ Traffic Sensing System Components

The Canoga™ Traffic Sensing System consists of Microloop™ Sensors, traffic monitoring cards, home-run cable and configuration software.



## Canoga™ Microloop™ Sensors

Two Canoga Microloop sensors are available to meet the requirements of most applications:

- Canoga™ 702 Non-invasive Microloop™ Sensor
- Canoga™ 701 Microloop™ Sensor

Canoga Microloop sensors are used in single, double or triple assemblies connected in series to extend the coverage range.

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## Canoga™ Traffic Monitoring Cards

Canoga™ Traffic Monitoring Cards are the heart of the Canoga traffic sensing system:

- Detect all licensed vehicles
- Calculate individual vehicle speed and length
- Communicate mean speed, count and occupancy in real-time
- Classify vehicles by speed and length

The Canoga traffic monitoring card:

- Identifies unique traffic events based on user-defined, vehicle speed and/or length criteria

- Generates an output when an event occurs. Output might be used for activating a warning system

Historical traffic data is stored in the onboard memory:

- Mean speed, count and occupancy
- Classification of vehicles based on speed, length, and/or speed and length

Two- and four-channel cards are available for North America (NEMA compatible) and for Europe (CE certified).

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## Canoga™ 30003 Home-run Cable

Canoga™ 30003 Home-run Cable is a small-diameter, shielded, four-conductor, controlled capacitance cable designed for interconnecting Canoga 702 Microloop sensors, Canoga 701 Microloop sensors or inductive loops to Canoga traffic monitoring cards or Canoga™ C900 Series Vehicle Detectors. The Canoga 30003 cable has four #18 AWG color-coded conductors. The conductors are spirally laid and enclosed in an aluminized polyester shield, which is located inside a polyethylene jacket. The black, high-density polyethylene jacket provides excellent chemical resistance and mechanical protection, and the interior of the cable is filled with a water-blocking material. Low cable inductance and stable inter-lead capacitance make long runs possible with little or no sensitivity loss.

- Four-conductor cable of less than 1/4-inch (0.6 cm) diameter reduces space requirement for conduit or saw slot installations, minimizing installation cost.

- UV-stable, black, high-density polyethylene jacket is rated to exceed 600 volts. Permits direct burial—ideal for advanced detection applications—or conduit installations.
- Aluminized polyester shield protects against electromagnetic interference.
- Cable interior is filled with a water-blocking material that prevents moisture penetration and permits direct burial.
- Stable inter-lead capacitance maximizes performance with vehicle detectors.
- Long home-run distance—up to 2,500 feet (762 m) from Canoga Microloop sensors to Canoga™ C942 and C944 Vehicle Detectors—reduces the need for additional cabinets.
- Four conductors permit connection of two sensors per home-run cable, reducing the number of cables.

*“We use the Canoga™ Traffic Sensing System for ITS applications and the Canoga™ Microloop™ Sensors have proved 99.7% accurate—overall the best we’ve tested.”*

Troy Boyd,  
Indiana Department of Transportation

*“The Canoga traffic sensing system saves on manpower and reduces the costs of sending technicians out on the road. It’s virtually maintenance free and does the job with an excellent life cycle cost.”*

Tom Hicks,  
Maryland State Highway Administration

*“Lane closure requirements are reduced, and in many cases eliminated—we can see the benefits of Canoga non-invasive Microloop technology.”*

Robert Betts,  
Minnesota Department of Transportation



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75-0500-3574-2(A)