

# OptaSense Traffic Monitoring Solution deployed on I-29 Highway, Fargo, North Dakota

First deployment of fiber-optic based traffic monitoring in the United States of America



North Dakota Department of Transport (NDDOT) became the first state DOT within the United States to deploy distributed fiber optic-based traffic monitoring and traffic counting technology when it successfully deployed the OptaSense Traffic Monitoring Solution (TMS) onto a section of the I-29 highway in Fargo, North Dakota during 2016.

Following a thorough analysis of the benefits of the technology NDDOT installed a dedicated fiber to enable monitoring of both sides of the I-29 and selected ramps on a 4.5 mile trial section. This initial project has been completed successfully and NDDOT has presented their findings and future plans for the technology to the national State Transportation Innovation Council (STIC).

## Project Objectives

Access to accurate and up to date traffic flow and traffic count information is essential in helping NDDOT plan, design and manage their highways. Current point-based solutions for providing this information, such as inductive loop based technology and temporary pneumatic tube-based traffic counting systems, suffer from a number of operational drawbacks. Specifically, the inductive loop based technology are installed in the pavement, are prone to failure and are vulnerable to damage during roadway maintenance.

NDDOTs wishes to improve the quality of available traffic information, lower their data collection costs and lessen the impact of operational issues associated with existing sensor solutions. The OptaSense TMS delivers on these objectives by converting roadside fiber optic cable into an intelligent sensor which monitors the entire road. Each roadside deployment can monitor up to fifty miles of highway which offers the opportunity to replace multiple point sensors with a single roadside implementation to significantly reduce the maintenance burden.

## Background

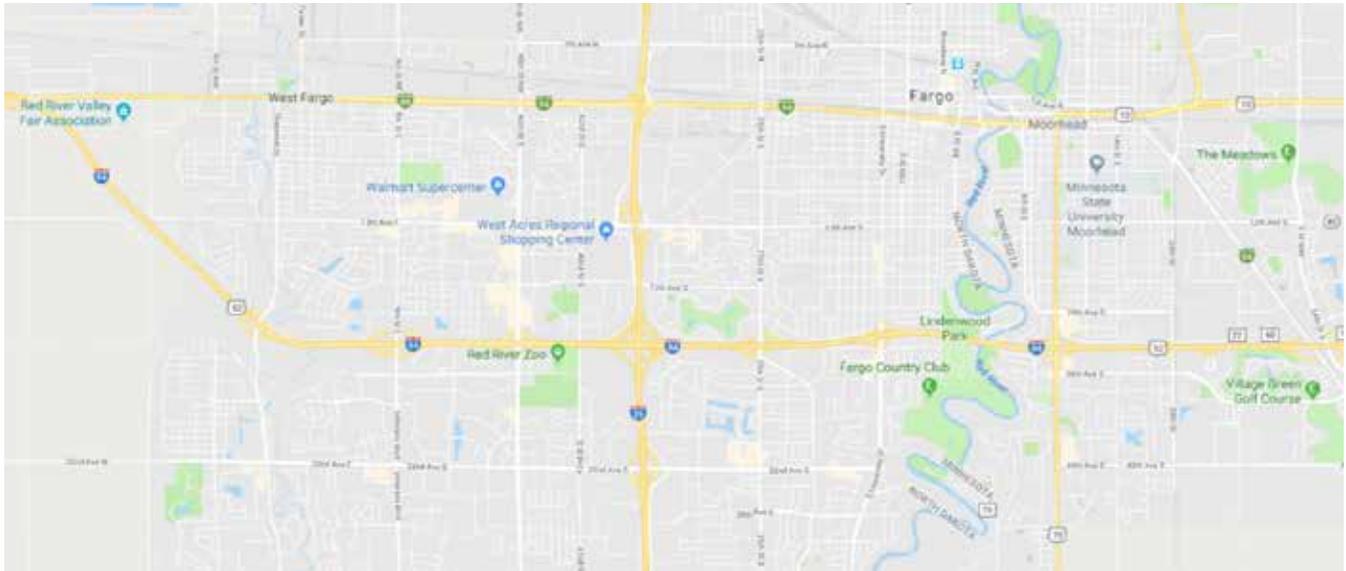
- I-29 in Fargo, North Dakota
- Delivery of fiber-optic based Traffic Monitoring Solution
- Implemented by NDDOT, Global Innovative Solutions and OptaSense

## Solution

- OptaSense Traffic Monitoring Solution delivering:
  - Average Speed
  - Journey Time(s)
  - Congested Detection
  - Queue Detection

## Value Delivered

- High quality, real time traffic information delivered to Traffic Management Centre
- Opportunity for further deployments



### Future Opportunities

Having completed the initial trial NDDOT intends to look at additional applications for the existing solution and will work with OptaSense to introduce required solution enhancements. Additional applications include using the OptaSense TMS to better understand the effects of weather on traffic flow, potentially informing the rapid deployment of snow and ice control forces and better understanding the need and benefits of investment in adverse weather control capabilities.

Solution enhancements include a second project phase to assess the viability of using the OptaSense TMS for vehicle classification according to the Federal Highway Administration (FHWA) classification classes.

### Deployment Options

The OptaSense Traffic Monitoring Solution can deliver the following real-time traffic monitoring applications:

- Average Traffic Speed
- Automated Congestion Detection
- Automated Queue Detection
- Average Journey Times
- Vehicle Count
- Flow Rate

To learn how the OptaSense Traffic Monitoring Solution can improve your ability to make effective traffic management decisions, contact an OptaSense representative.

OptaSense is the trusted partner for fiber optic sensing solutions worldwide, supporting customers in more than 50 countries and more than 37,000km of assets under contract.

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