# Highways

APRIL 2019

PART OF TRANSPORT NETWORK


# ALARM SURVEY

## 'The haves and have nots'

## ANALYSIS: Game over for flyovers?

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Traffex Parkex
A BPA EVENT

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Dedicated to highways maintenance and traffic management

# Protection from all angles

**GRAMM Barrier Systems Ltd has been a designer, supplier and installer of acoustic barriers for over 20 years and exclusively markets and installs SmogStop barriers in the United Kingdom and Europe. Steve Barnes, business development manager, discusses what could be the world's first roadside pollution barrier proven to reduce hazardous traffic emissions**

The SmogStop Barrier is thought to be the world's first roadside barrier to significantly reduce noise, hazardous nitrogen oxides (NOx) and volatile organic compounds (VOC) emissions. Independent research at universities found that the patented technology can remove up to 16 tonnes of NOx from the air each year; the equivalent of removing 200,000 vehicles from the road every day.

## Pollution

The barrier has also been specially designed to reduce traffic emissions in neighbouring communities by more than half, helping reduce occurrences of cancer, stroke, cardiovascular disease, asthma and other respiratory problems linked to motor vehicles. Based on a single kilometre of roadside the barrier can create up to £6m in benefits each year by reducing premature death. Also, the technology has no electricity and no moving parts and does not form any harmful by-products. Instead, it's powered entirely by light (sunlight or artificial light) and the natural flow of air.

SmogStop Barrier attacks air pollution in two ways. The aerodynamic design disperses pollution, while the photocatalytic coating on the barrier actually breaks down the NOx and VOC into harmless by-products. It also reduces noise.

Over the course of its development, the SmogStop Barrier has undergone a variety of independent testing at universities across Ontario.

A recently concluded year-long field study conducted by the University of Guelph and the Ministry of Transportation Ontario (MTO) – using results from a field study – found the overall average removal of NOx was calculated to be 49% with the highest monthly average reduction being 54%.

The highest daily and hourly reductions were determined to be 92% and 95%, respectively. The study also showed that the photocatalyst continues to work during night-time hours, provided that some ambient lighting is in the area.

SmogStop is currently engaging with clients and contractors with live and trial sites across UK and EU.

SmogStop Field Trial on Highway 401 in Ontario, Canada for MTO

## Wind

GRAMM's WINDBlok barrier system has been designed to tackle wind over bridges and structures. The system was recently specified on the Mersey Gateway.

Due to the large span of the bridge and its exposed nature, at the design stage there were concerns about the effect of high winds on crossing vehicles, particularly high-sided ones. The wind deflection barrier was designed to withstand a once in 50-year wind event, based on historical data, and protect the crossing vehicles.

Due to local prevailing winds, the barrier was designed to be higher on one side (4m) than the other (2.5m), as it would be

*CLEARSoundBlok panels are suitable for motorways and highways, airports, and sports venues. The system offers high visibility, noise insulation and is compatible with other noise barrier systems*

more susceptible to higher winds from that direction.

Involved at an early stage in the design process, GRAMM designed and installed the support posts and clamping brackets that carry the C-shaped CLEARSoundBlok horizontal members to form the important wind deflection barriers.

A huge amount of steel was needed for the project. A total of 1,370 posts and 10,750 clamping brackets weighed in at 250 tonnes of steel, with over 37km of welding.

## Noise

COMBISoundBlok is an integrated noise and parapet system developed in partnership with Varley & Gulliver. It combines an H4a parapet system with CLEARSoundBlok panels.

The system is fully CE marked for both vehicle containment and noise attenuation and has been tested to EN 1317 for vehicle containment and EN 14388 for noise attenuation, making it a unique integrated solution for use on strategic road networks.

Recently installed on the River Dee Crossing for the Aberdeen Western Peripheral Route (AWPR) where it was specified in early contractor involvement, the integrated system removed the need for two separate systems comprising parapet and noise barrier installations. It also allowed the bridge deck to be reduced in width along hundreds of metres.

This saved the project hundreds of thousands of pounds in installation time, materials and bridge building costs.

Consultants have specified this integrated system for areas where before they could not introduce a noise barrier system due to lack of space.

There is also the possibility that some systems could be retrofitted to existing parapets.