Unipart Dorman North America - Road

Improving driver awareness and road safety with innovative LED solutions

Making Roads Safer

UNIPART DORMAN

INTELLIGENT ENGINEERING, UNIQUE PEOPLE, WORKING TOGETHER

World class leaders in innovation

At Unipart Dorman we listen to and understand our customers needs, enabling us to deliver innovation with true value.

We have over 140 years experience in developing products and solutions that deliver real benefits, without compromising safety and performance, in a challenging environment of a safety critical nature.

At our UK facility in Southport, we have created an engaging environment and culture that enables our people to explore new ideas, nurture and develop concepts and work with our industry and innovation partners in bringing new technologies to life.

We are driven to create value for our customers, for our stakeholders and for our people by spearheading innovative LED safety improvements into the road industry worldwide.

Why collaborate with us?

Unipart Dorman has shone a light on Road Safety for over 50 years, primarily in highway work zone applications and more recently established a growing position in the field of Vehicle Activated Traffic Calming with our unique range of LED VATCS Signs, independently proven to have a long term impact on driver behaviour.

Changing the face of Work Zone safety across the Americas with the introduction of our award winning Synchro family of wireless sequential taper guide LED lamps, is yet another first and exemplifies our collaboration at its best and defines who we are and the value we bring.

Our commitment to collaborating with customers by listening to their needs and aspirations is key and has brought truly innovative solutions to road networks across the world. Deeply understanding our client's challenges underpins every benefit we deliver.

Inspiration unrealized? Product potential unfulfilled?

We can help bring your ideas to life.

Our Expertise

With over 140 years of operation under our belts, experience is a true differentiator for our business and provides clients with the confidence that we have the know how to deliver.

We avoid the trap of thinking like experts as true intuitive expertise is based on learning from the past, but also being open minded and continuing to learn new things every day.

Clients and strategic partners who place their trust in Unipart Dorman to deliver:

The road industry is a challenging environment to work in and has many standards and safety controls and we understand that everything we do needs to conform to ensure safety and interoperability of systems.

That is why we are members of all relevant industry organisations and have certifications and accreditations for the standards which underpin safety, security and quality - in our products, services and people.

Our accreditations and association partnerships provide our customers with the peace of mind and confidence required to ensure that they have selected the right partner and the most suitable products for the job.

Changing the face of work zone safety

Intelligent Sequential LED Taper Guides

Taper collisions account for a significant percentage of near miss incidents, which not only lead to injuries and fatalities, but can also cause highway congestion, delays and secondary incidents. Better informed drivers and saving lives apart, recognized experts in highway traffic safety have independently endorsed the wireless LED sequential warning technology as worthy of nationwide consideration.

Better driver recognition of the merging taper with SynchroGUIDE will:

- Deliver safer driver approach speeds
- Maximize traffic flow and promote smooth lane merge
- Prevent last second decisions/taper merge maneuvers
- Enhance work zone throughput
- Save lives in the Work Zone

Every state DOT's aim is to provide safe, reliable journeys and informed drivers. Reducing congestion and improving reliability of the road network inevitably involves road maintenance and improvement projects. The resultant Work Zones present a significant challenge in maintaining a safe and informed highway environment for both road users and construction workers.

The cones and barricades at the beginning of a work zone, referred to as the taper, double up as the first line of defense for the construction worker and the main guidance tool for the approaching driver. Currently the tapers are frequently struck by vehicles that have failed to see them or have not exited the closed lane in sufficient time resulting in accidents, delays, congestion and fatalities.

The SynchroGUIDE LED lamp series was designed to be a simply deployable low cost counter measure device, which would not only dynamically enhance the visibility of the work zone merging taper, but at the same time improve driver lane discipline and recognition by providing a directional taper guide.

It combines the latest in LED and lens technology with intelligent wireless communications to enable taper deployment lengths of up to 256 lamps with no master or slave relationships. Rapidly deploy in any order and they will sequence instantly.

Unlike arrow boards, the delineation is not spot based but is continual for the entire taper length, a critically important feature during hours of darkness and poor weather conditions where visibility is reduced. The ITE and NCHRP 350 crash compliant technology fully complies with the 2009 edition of the Federal Highway MUTCD guidelines for better merging taper recognition.

6F.63 08 A series of sequential flashing warning lights may be placed on channelizing devices that form a merging taper in order to increase driver detection and recognition of the merging taper.

Work Zone Facts

- 2012, 609 work zone traffic crash fatalities recorded
- NHTSA estimate $3m cost per fatality, $1.8 Billion/annum
- 85% + of work zone fatalities are drivers or passengers
- Night time fatality to crash ratio is 2.6/100, while daytime is 1.8/100
- High degree 32% of public dissatisfaction with work zone delays
- Night-time zones to increase from current 40% of all work zones
- Majority of incidents occur during hours of darkness when visibility is reduced
- Motorist exposure to work zones is set to grow

A Proven Track Record Backed By Industry Research

1995 University of Minnesota - Lighted Guidance Devices Study by Vercruyssen, Williams and Wade

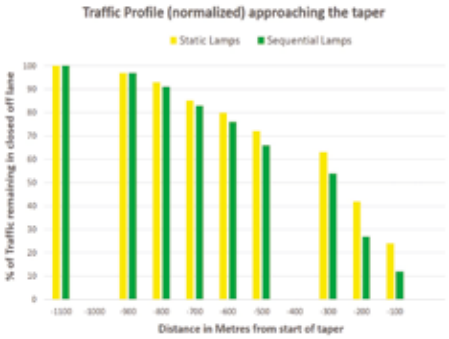
Examined the effectiveness of manipulations of environmental lighting on driving behavior through a simulated work zone. Specifically, testing the hypothesis that flashing lights positioned on the side of the roadway, parallel to the motorist producing the illusion of apparent motion would cause the motorist to spontaneously and unconsciously adjust their speed to synchronize with the speed of the light flashes.

1999 Texas Transportation Institute – Work Zone Lane Closure Warning Light System Study by Finley, Ullman and Dudek

When the warning light system was activated there was a 7% and 12% reduction in the number of passenger vehicles and trucks, respectively in the closed lane 1000ft upstream of the lane closure. Led to FHWA incorporating guidelines for improving driver recognition of the merging taper by deployment of sequential lights in 2009 MUTCD Clause 6F.83.08A

2005 TRL UK – Safe Temporary Traffic Operations Initiative – Sequential Flashing Cone Lamps

The field research recorded comparisons of traffic behavior on approach to work zones with static flashing lamps and sequential lamps and noted a significant improvement in lane discipline when the sequential lamps were deployed. Improvement in lane discipline starting at 1500 feet and increasing in significance by up to 50% less vehicles in the closed off lane at 500 feet. SynchroGUIDE was originally developed to meet chapter 8 of the UK MUTCD to afford better driver recognition at a change of delineation. UK highways agency adopted mandated sequential taper guide deployment on high speed work zone tapers as a national standard in 2006.



2011 SynchroGUIDE Selected as focus technology by AASHTO TIG

The ASSHTO TIG Technology Implementation Group, which was set up to scan the horizon for outstanding advancements in transportation technology, selected sequential barricade taper warning light systems as one of 3 focus technologies for 2011. Daniel Smith P.E. headed up the project at MODOT and chaired the 2011 lead states team. ASSHTO TIG are committed to supporting Missouri DOT efforts to share their experiences with other DOTS and believe the technology is worthy of nationwide consideration.

2011 University of Missouri - Smart Work Zone deployment Initiative (SWZDI) Cost Benefit Analysis of Sequential Warning Lights in Night-Time Work Zone Tapers by Sun, Edara, Hou, Robertson and Smith

Sequential warning lights had a net positive effect in reducing the speeds of approaching vehicles, enhancing driver compliance and reducing late taper merges. Statistically significant decreases of 2.21 mph mean speed and 1 mph 85% speed achieved through the use of sequential lights and the percentage of vehicles that merged earlier increased from 53.49% to 65.3%. Based on Nilsson's power model and MODOT's work zone crash data, the study showed that the total annual benefits for the state was estimated to be $3.65 million on annual costs of $705,008 or $341,580 depending on formula for labor. A 5 or 10 to 1 return. Estimates assumed that sequential lights were deployed on all night-time interstates and major highway work zones. Estimates assumed that sequential lights were deployed on all night-time interstates and major highway work zones. Missouri DOT had *14 work zone fatalities and 1,036 injuries during 2010 and in August 2012 fully implemented the use of sequential lights in their guidelines, with emphasis on night-time interstate projects.

Changing the face of work zone safety Intelligent Sequential LED TaperGuides

Deploying SynchroGUIDE is a highly visible safety action for your work zones with proven safety benefits and results that can be achieved fast. Only slightly more costly than conventional warning lights and with a high return on investment it will engender public support, recognition and appreciation for an easy to understand safety improvement.
The SynchroGUIDE meets 2009 FHWA MUTCD requirements and is normally available ex stock. It can be easily deployed on all category 1 barricade devices in the same manner as normal barricade lights. Speed of implementation can be both quick and effective with minimal product familiarization required.
Contact us now for an evaluation field trial.

*source FARS fatality Analysis Reporting Systems, OHSA

Tackling Specific Road Hazards with Hazard Specific Solutions

It is independently proven that most successful changes in driver behaviour to unsafe speed are attained through adhering to the following key criteria:

- Clarity of message
- Consistency of message
- Targeted message
- Reasoned message e.g. Hazard specific
- Dynamic message

Numeric speed feedback signs are effective when looking for improved speed limit adherence, but far too often these ubiquitous devices are being used as a panacea for other hazard specific road challenges and lack clarity and reasoning with no way of communicating the nature of the upcoming hazard.

City of Orange selects new approach to calming unsafe driver speeds

The City of Orange is leading the way in southern California by installing School Zone, Curve Warning and Posted Speed Limit VATCS as part of an HSIP Highway Safety Improvement Program.
Deployed on Cannon, Santiago Canyon, Serrano, Chapman and LaVeta Ave, the signs work in tandem with existing static signs by targeting speeding drivers, with a clear reminder to slow down whilst educating them as to the reason behind the request.

Inappropriate Driver Speed - by the numbers

- Circa 30,000 people are killed on North America's roads each year
- Inappropriate speed is the major contributory factor in over 32% of road fatalities
- The economic cost to society of road fatalities is significant, NHTSA estimate each fatality at $3m, equating to $120b/annum
- The greatest numbers of traffic fatalities occur away from the major highways on rural county and urban conventional roads
- Nearly 25% of people who die each year on the Nation's roadways are killed in vehicle crashes at curves

Why VATCS and not Speed Feedback Signs (SFS)?

Independent Data

VATCS are the only traffic calming display technology to have been independently large scale field tested to prove long term effectiveness, with driver respect of the technology being maintained over a 3 year period. See report TRL548 Vehicle Activated Signs - A Large Scale Evaluation.

- A 7MPH reduction of average speed in advance of horizontal curves
- A 4MPH reduction of average speed in posted speed limit zones
- A 1/3 reduction in accidents recorded over the 3 year period

Clarity of Message

Drivers are not informed what speed they are travelling as is the case with SFS, which could encourage racing the sign, rather they are clearly advised of the posted speed limit or approaching hazard and to Slow Down where excessive speed has been detected. There is no ambiguity in the message.

Consistency of Message

In line with the core philosophy of a consistent road speed management strategy, VATCS utilize diagrams that are already recognized in the MUTCD. The display uses the MUTCD font alphabet rather than a seven segment display and is available in a range of MUTCD sizes to match the road speed. SFS come in a variety of sizes and types, providing a potential lack of consistency across a community.

Dynamic

VATCS are dynamic but at the same time recognise the importance of message clarity. A wide range of driver ages are out on today's roads. All drivers have a limited time to read and react to warning messages, so VATCS incorporate flashing corner beacons to attract the drivers attention whilst keeping the main warning steady. They don't attempt to flash the whole display as SFS invariably do to try to indicate unsafe speed.

Hazard Specific

By Incorporating recognized diagrams from the MUTCD, VATCS educate drivers to particular hazards that call for more attention to their speed than normal. e.g. Sharp Curve Ahead, Entering a School Zone. SFS just can't deliver the same reasonable educational impact by providing one basic message for all scenarios.

Reasoned Message

The MUTCD requires that SFS are used in conjunction with posted or advisory speed fixed sign plates to ensure drivers can correlate their speed to the posted speed. VATCS are also designed to work in tandem with static plate regulatory and warning signage but don't need to be on the same post and can hence be more effectively deployed downstream as a targeted reminder as their message is both clear and reasoned.

Targeted Message

When not activated, VATCS are entirely blank giving them a much better driver impact than SFS, which have a Your Speed reflective sign fascia present whether sign is active or not. The increased driver impact ensures better long term effectiveness with less potential for drivers to tune out.

"A well thought out product, which offers a consistent hazard specific approach, a welcome addition to our traffic calming toolbox."
Amir Farahani, City of Orange Traffic Engineer

Unipart Dorman in conjunction with our regional partners is pleased to be able to offer and support the unique award winning VATCS sign series. Please contact us now to set up a demonstration and learn more about this exciting new advancement in vehicle activated based traffic calming.

Combining Retro-reflective, LED and Radar technologies to deliver real curve safety improvement

The SBC steady burn chevron sign series was originally developed at the request of British Columbia Ministry of Transport to be deployed at curve locations in the province with a known history of high accident and fatality rates.

The first pilot deployment was installed in the Cariboo district at Walkers Curve in the fall of 2010 and the 1st year anniversary results of zero incidents provided an excellent endorsement for the safety enhancement.

SBC chevrons have since established themselves as an important tool in the challenge of eliminating fatalities on hazardous curves in BC.

The SBC chevron combination of high intensity LED and reflective sign sheeting provides an enhanced display visibility in all types of light and weather conditions. The sign design also significantly reduces the cost of maintenance for cleaning in comparison to a standard reflective sign.

A full range of SBC chevrons models are available in 18 x 24" (400 x 510), 24 x 30" (600 x 750) sizes, ensuring the sign is appropriate for the road speed.

Features

- Independently proven to be long term effective
- Chevrons offer uniform visibility throughout entire curve
- Enhanced visibility in all weather and light conditions
- Affords better driver recognition of the curve in poor weather conditions and at night when potential for accidents is increased.
- Design significantly reduces requirement for cleaning - snow doesn't stick to sign as it does on static sign plate

Over the past 8 years, Unipart Dorman has also installed a number of highly successful Dynamic radar activated curve warning VATCS across the province and BCMOT inquired as to the possibility of incorporating radar into the steady burn chevrons.

Further collaboration resulted in the development of the CMRU Sequential LED Chevron Sign Series.

Staying Ahead of the Curve

The CMRU (Chevron Master Radar Unit) pictured opposite, is installed alongside the lead chevron and tracks vehicle approach speeds to the curve. When unsafe speed is detected it triggers a high intensity sequential pulse to travel along the chevron chain providing continual delineation of the curve.

Importantly, the chevrons remain steady burn at all other times to provide all drivers with enhanced visibility of the curve in all types of light and weather conditions. The first installation of the CMRU sequential SBC chevrons took place in the fall of 2015 on Highway 97 at Monte Lake, Monte Creek, BC.

The CMRU has been designed so that it may also be supplied as an upgrade kit allowing existing steady burn chevron installation to be converted to sequential if required.

The range of LED enhanced chevrons have fast established themselves as an important tool in enhancing road curve safety. Photos and videos of the enhanced chevrons in steady burn and sequential operation may be viewed on our website (www.unipartdorman.com)

Improving traffic flow and supporting rapid transit

Another Canadian first for Unipart Dorman was the development of the LED High Occupany Vehicle Sign otherwise known as LED HOV. As municpalities grow and expand so do the transportation demands and needs of its residents. Improving traffic flow by time of day and supporting rapid transit are two key challenges that HOV lanes are employed to assist with.

HOV lanes are lanes of traffic which have certain restrictions based on the occupancy level of the vehicle by time of day and are designed to improve traffic flow by encouraging car pooling and the use of public transport.

A number of municipalities were looking to find ways of improving driver compliance to HOV lane rules by providing targeted time of day LED signage to enhance the already present static signage and raise driver awareness of the restrictions when in effect. In response, Unipart Dorman developed the LED HOV. The signs combine text and MUTCD pictograms in red and white LED to provide a dynamic display and are supplied with scheduling software, which allows the operator to program their operation to coincide with reserved lane regulations. Seasonal time changes are automatic and changes to schedule can be uploaded over USB weather proof cable link via mast arm or wireless comms.

Features

- Dynamic LED sign, highly visible in all ambient light conditions
- Scheduler software with auto seasonal time change updates to work in conjunction with HOV lane operation times
- Incorporates recognized MUTCD diagrams for consistent message in highly reliable LED display
- Equipped with adjustable bracketry for mast arm or side of pole mounting, allowing optimum alignment and including safety cable
- Equipped with top and side visors to aid visibility in mast arm installations above traffic lanes.

Eco Synchro4D

by Unipart Dorman

A technology worthy of nationwide consideration

…….that was the statement made when AASHTO TIG first selected wireless sequential LED as one of three focus technologies in the fall of 2011.

Prior to 2011, based on independent research, the Federal Highway Agency had also included guidelines in the 2009 Edition of the MUTCD (Manual for Uniform Traffic Control Devices), for the optional deployment of sequential warning lights on channelizing devices to increase driver detection and recognition of the merging taper.

Back home in our UK market, the technology was first introduced in the early 2000's and after independent testing became mandated on all high speed work zone tapers in 2005 and to this day continues to endure as a highly successful, low cost, high payback work zone safety countermeasure.

Folks at our UK Head Quarters, based on the FHWA and AASHTO recognition and UK success were understandably getting excited as to the potential for translating this on the other side of the pond. ***'No Brainer, the only difference being they drive on the wrong side of the road. Right?'.....***

…….Well, it has been a longer journey than we first anticipated with a number of challenges we didn't expect, including agencies not wanting to consider intelligent lamps, having only just removed steady burn and flashing lights because of retroreflective sheeting improvements.

But as the saying goes ***'if it was easy, everyone would be doing it.'***

As predicted numerous DOTs and Transportation Agencies are now building on the pioneering efforts of Missouri DOT and the ASSHTO TIG initiative through the adoption of Sequential warning lights.

The majority of the adoption has been geared to night time deployments and in support of these agencies and our hard working distribution partners, we are delighted to be able to launch 'Eco Synchro4D' our first Dusk till Dawn, photocell controlled, D Cell powered, wireless sequential 'Type A' LED lamp.

New product rollout at ATSSA Expo 2019, Tampa, Florida

Eco Synchro4D has been selected to feature in the new product rollout showcase at this year's show.

NEW PRODUCT

Eco Synchro4D™

- Introduces an Economy Model to the range
- Dusk till Dawn operation in line with current market preference
- D Cell battery power 5 x life of 24/7 operation models
- Compliments 24/7 SynchroGUIDE and ConeLITE Synchro models

Regaining Respect for the Taper

In an era of ever increasing forms of distraction, how do we regain the driver respect for the taper?

With distracted drivers on the increase, the above goal is never more tested than by the changes that occur to a driver's routine journey when Work Zones (WZ) or Traffic Incident Management (TIM) events take place.

Significant regional investment in improved planning, better IT, more effective scene communications and wider training of personnel are having a major impact on making WZ and TIM events smarter, but importantly we should not lose sight of the simple low cost, high payback tools that advances in technology and research have made, allowing the potential for a consistent and reasoned nationwide strategy to attain the most important buy in of all.... you guessed it....the driver!

Continual delineation of emergency cone tapers with wireless sequential LED taper guides is one such innovation that policy makers should look at more closely. Selected as a 2011 Focus technology by AASHTO TIG as "A technology worthy of nationwide consideration" it also already features in the guidance of the FHWA MUTCD as a optional tool to attain better driver recognition of the merging taper.

ConeLITE Synchro transfers all the SynchroGUIDE benefits from Drums to Cones

As an industry first for 2016, Unipart Dorman introduced ConeLITE Synchro™, the first cone mountable MASH and ITE approved wireless sequential LED lamp, allowing all of the benefits of the SynchroGUIDE™ work zone system to be transferred to the defacto cone tapers invariably used in TIM and other short term temporary traffic control events.

- Better Driver Recognition
- Reduced Approach Speeds
- Engenders Drivers Support
- Low Cost v High Payback

Did you know?

Work Zone Facts

- High % of fatalities occur or start in transition area
- 24% of fatal crashes in work zones involve a large truck
- NHTSA estimate $3m cost per fatality, $1.8billion per annum
- 85% of fatalities are drivers or passengers
- Annually, 100-200 construction worker fatalities
- Annually 600-700 traffic crash fatalities recorded

Traffic Incident Management Facts

- Annually 5 fire, 10 Police and 50 Tow Trucks struck by fatalities
- 20-25% of all incidents are secondary & often more severe than primary
- 27 responders "working in moving traffic" every minute, 24/7/365
- Night time fatality rates to crash ratio is 2.6/100, while daytime is 1.8/100
- Majority of incidents occur during hours of darkness when visibility is reduced
- Likelihood of a secondary incident raises 2.8% every minute

Manufacturing Excellence

Safety is built into our products during design and testing and is carried through our manufacturing processes, where the most important link in the chain is the skilled operators who build our products from component level to full assembly. Manufacturing excellence driven by safety culture is deeply embedded within the business and is regularly tested by customers and Notified Bodies as part of an ongoing compliance audit regime.

Only using high quality suppliers and a digital tracking system within the factory delivers complete traceability. These impeccable manufacturing and supply standards are underpinned with a robust quality assurance regime.

Continual Improvement

Manufacturing Excellence has been key to achieving our leading position in LED solutions. Our customers look to us to provide valuable resources and insight necessary to help them grow. We are committed to continual improvement. We implement lean manufacturing and deploy six sigma business management strategies to improve manufacturing processes whilst eliminating defects.

Our people make the difference.

Our workforce fully embraces our continuous improvement culture and are totally engaged in providing the best possible service and products to our customers.

Our Capabilities

- Assembly
- Electrical and Electronic Engineering
- Design Engineering
- Optical Engineering
- Mechanical Engineering
- Procurement and Logistics
- OEM and Contract Manufacture Management
- Quality Management
- Lean and Continuous Improvement Philosophy

We do much more than just signs.

In this continuously changing industry, adopting a flexible and responsive approach is essential. We support you by offering tailored solutions and innovations. Our unique service meets the demanding needs of our customers. Every time. With on-site linkages to the Unipart Dorman Innovation Centre of Excellence, our manufacturing service includes whole life cycle asset support.

The underpinning Operational Excellence standard provides a just in time service to suit our customers.

Our Service Features

- State of the art manufacturing facilities
- Access to mechanical, optical, thermal and electronic engineers
- Devising specifications for electrical and electronic equipment, castings and housings
- Electronic circuit board design
- Alternatives to OEM specification parts
- 3D CAD/CAM modelling/prototyping
- Undertaking light, EMC, vibration and all other necessary testing
- Guaranteed compliance with industry standards and approvals
- Supply chain management and logistics support using Unipart Group's expertise and infrastructure
- Dedicated account management focussed on the design interface

Your Operational Benefits

- Cost effective, increased productivity
- Collaborative approach, sharing knowledge and best practice
- Reliable, quality products
- Proven track record of products used in harsh environments
- Experienced supplier of safety critical products
- Cost savings and quality assurance realised through lean production techniques
- Experienced in creating and managing complex supply chains
- Local collaboration for cost effective and environmental benefits

About Unipart

The Unipart Group is a leading UK manufacturer, full service logistics provider and consultant in operational excellence. Operating across a range of market sectors, including automotive, manufacturing, mobile telecoms, rail, retail and technology, Unipart offers a breadth of services to a wide range of blue chip clients internationally.

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