

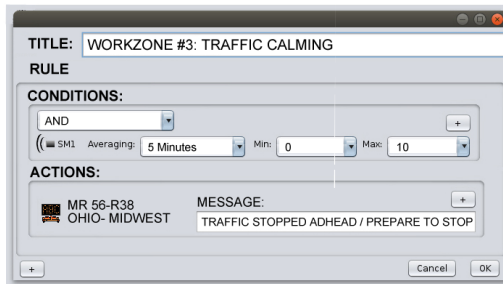
I N T R O D U C I N G

Smart Zone

SolarTech's work zone ITS software

Solar Tech's new Smart Zone software makes work zones safer for both motorists and workers. Built on a private network, Smart Zone safely gathers and analyzes data from various sensors, and sends the data to your traffic management system. From there, either with or without human intervention, messages can be triggered on portable changeable message signs (PCMS), which will reduce traffic speeds, display travel times, and suggest

alternate routes, thus reducing accidents and keeping workers and motorists safer.



Smart Zone is an important component in work zone Intelligent Transportation Systems (ITS). Cameras, radar (Doppler and/or Side Fire), traffic volume detectors and weather sensors can be used to gather data in real time. Modems transmit the data wirelessly and securely to servers which process and analyze it and then communicate instructions to motorists.

Unlike other software, Smart Zone requires no third party programming to establish parameters for message changes. You determine what you want to have happen, and configure the software to trigger messages based on those desired outcomes.

Traffic Calming Example:

Smart Zone is used to create a dynamic traffic control system that warns and informs traffic based on real-time conditions. For example, using data analysis for time of day and traffic volume, here's how Smart Zone might help calm traffic:

At 5 a.m., a workzone with a lane closure and light traffic volume may only need warnings to alert drivers to reduce speeds.



At 5 p.m., the same workzone with rush hour traffic may need – in addition to speed reduction messages - to display more advanced warnings, show travel times through the zone, offer alternate routes, and merge traffic at a specific point.



Real-time data from Smart Zone can be used for:

Driver Info – By knowing current conditions, drivers can anticipate delays or choose alternate routes.

Queue Warning – Automatically displaying messages to warn motorists of slowing or stopped traffic ahead.

Dynamic Lane Mergers – Encourages merges at a specific point.

Incident Management – Faster detection of incidents, and quicker response and clearance.

Variable Speed Limits – Speed control to calm traffic for slow or stopped traffic ahead.

Entering/Exiting Vehicles – Notifications can be displayed for emergency or construction vehicles entering or exiting the zone.

Performance Measurement – By monitoring and archiving traffic data, Smart Zone can be used to evaluate and critique performance-based contracting.



Putting the "Smart" in Smart Work Zones
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Smart Zone



Using Smart Zone benefits the traveling public, the contracted construction company and the community at large. Here's how:



SAFETY:

Smart Zone helps minimize the risks to both motorists and workers by slowing traffic and ensuring smooth merges.

CUSTOMER SATISFACTION:

Data gathered by Smart Zone can be relayed to websites, the media, even phone apps. By keeping motorists informed using real time data, they can make wise decisions about altering their travel time or routes.

MOBILITY:

A major source of stress to motorists is travel time delays in work zones. By using Smart Zone, motorists are advised as to actual travel times, and know what to expect.



PRODUCTIVITY:

Contractors find that by using Smart Zone as part of their ITS, their productivity improves, thus lowering costs and days of construction. For example, lane closures don't need to occur at set times (e.g. dawn to dusk) but can vary due to volume and road conditions.



HOW SMART ZONE IS DIFFERENT:

Smart Zone uses a private network to transfer the data. Private networks include authentication controls, with both personal and location protections, making them more secure than public networks, thus increasing privacy and security.



Scan Me!



Ask to see a demo: 800-475-5442



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DYNAMIC MERGE SYSTEM

SAFETY FIRST

Smart Zone's Dynamic Merge System provides a flexible approach to work zone lane closures by implementing a late or early merge option based on current traffic conditions.

Utilizing a combination of traffic detection sensors (Side Fire, Doppler), dynamically activated message boards and Smart Zone software, this system presents motorists with real-time lane merge information.

Sensors placed upstream from a work zone continuously monitor traffic volume and speed to determine the best solution to keep traffic flowing. As traffic conditions change, message boards will automatically update to inform motorists of the current merge strategy.

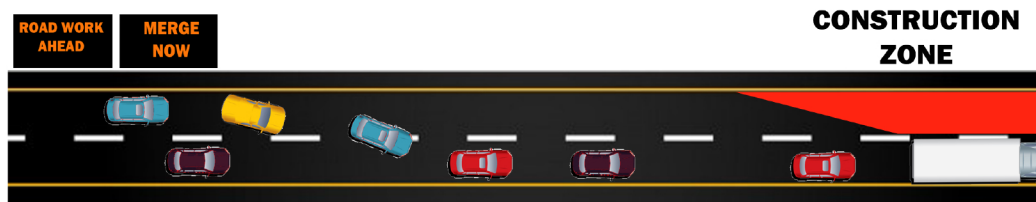
LATE OR EARLY MERGE

A late merge approach benefits motorists during times of high traffic volume, as it allows vehicles to continue traveling until just prior to the work zone area. This option maximizes the use of all travel lanes, encourages continuous traffic flow, as well as zippered merging.

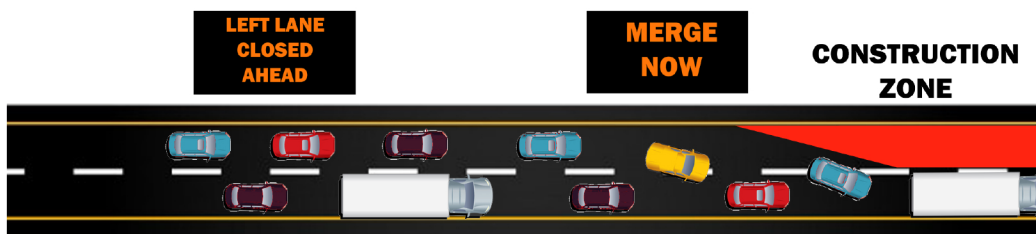
Alternatively, when the traffic volume is low and average speed is high, an early merge method has drivers merging lanes well before the work zone. Implementing this strategy will aid in avoiding congestion, and promote a steady flow of traffic.

Smart Zone offers remote monitoring and message updating, automatic user-notification via text message or email, and is designed to work with any traffic management system.

SCENARIOS



EARLY MERGE SCENARIO



LATE MERGE SCENARIO

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INCIDENT DETECTION SYSTEM

REAL-TIME NOTIFICATIONS

An Incident Detection System provides real-time notifications to traffic managers when traffic volume in a work zone unexpectedly slows or stops.

Sensors (Side Fire Radar, Doppler Radar, etc.) placed prior to or in a work zone will detect changes in normal traffic flow. As the average speed drops below a user-defined threshold, a message is relayed to designated personnel. With the aid of cameras installed in and around the work zone, the incident location is identified, and the proper response (emergency responders, DOT maintenance crew, tow vehicle, etc.) can be dispatched. Motorists can be informed of incidents and delays via navigation software, 511 Travel Information Systems, and/or changeable message signs around the work zone.

SAFE TRAVELS

Deployment of an Incident Detection System improves work zone safety, and reduces delays and secondary accidents.

Providing traffic managers with real-time information allows for swift incident verification and correct dispatch of response vehicles. This is not only a cost and time savings for responders and motorists, but for DOT's as well.

Smart Zone can be **integrated into existing ITS configurations**, can use data from **third party navigation platforms** (Waze, INRIX, Google Maps, etc.), and is designed to work with **traffic management systems**. The software offers the ability to monitor remotely, update messages, and send notifications via email and text.

SCENARIO

CONSTRUCTION ZONE



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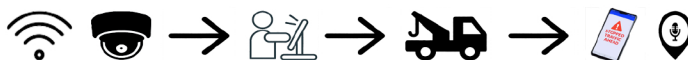
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P/N 500-900-105 REV A 11.2021

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QUEUE WARNING SYSTEM

SAFETY FIRST

Queue Warning Systems are a key factor in keeping drivers informed of heavy traffic conditions or work zones that lie ahead. Use of these systems will greatly reduce the rate of primary and secondary crashes.

Setting up a queue warning system can be as easy or complex a scenario as conditions demand. Single or multiple sensors are placed upstream from a congested area or construction zone. Real-time data is sent via private network to servers, and analyzed by Smart Zone software. As traffic conditions change, messages on message boards are updated to inform travelers of potential delays or incidents ahead.

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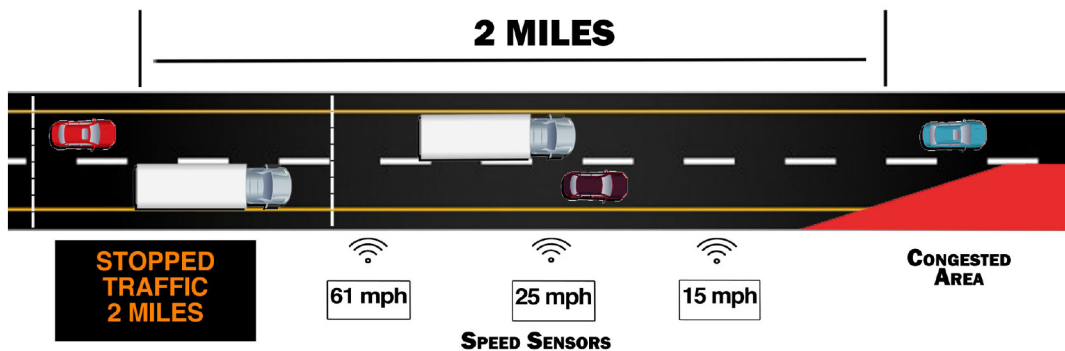
REAL-TIME INFORMATION

Real-time data can include average speed (one lane, multiple lanes or specific lanes), traffic volume, and much more, and is easily retrieved.

Your scenario-based messages will allow for improved traffic flow and increased safety for motorists and work zone employees.



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TRAVEL TIME INFORMATION SYSTEM

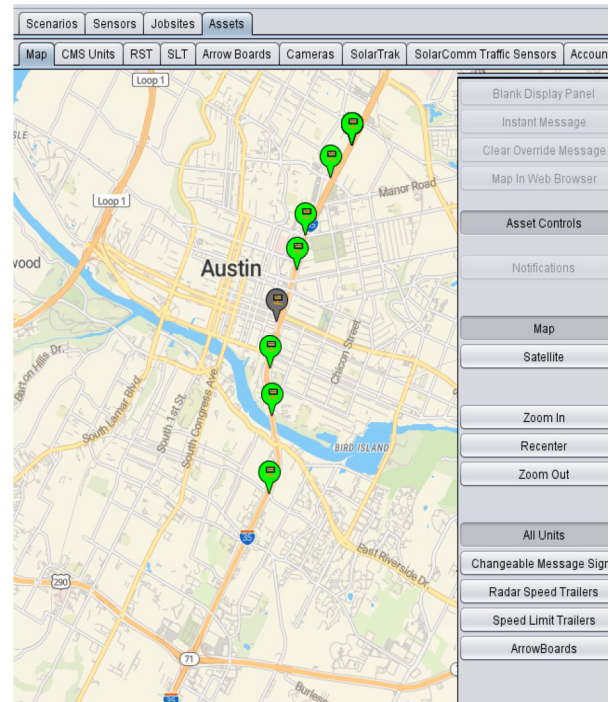
INFORMED DRIVERS

Smart Zone's Travel Time Information System notifies motorists of expected travel times between two locations. Providing this information in real-time allows motorists to adjust to conditions, or take an alternate route alleviating further delays.

HOW IT WORKS

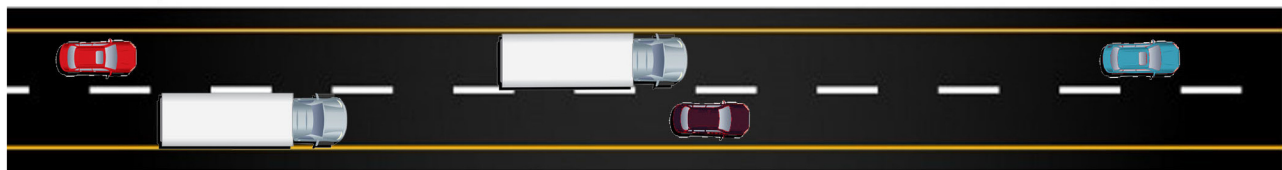
Data gathered by sensors placed upstream from a targeted area is analyzed by Smart Zone software. Based on previously defined parameters, real-time travel time information will be displayed on message boards. These messages will continue to adjust as traffic volume changes.

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11 MILES BETWEEN EXITS



**DELAY
AHEAD**

**11 MILES
27 MIN TO
NEXT EXIT**

**NEXT EXIT
5 MILES
7 MINUTES**

EXIT

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VARIABLE SPEED LIMIT SYSTEM

MAINTAINING A SAFE SPEED

The goal of a Variable Speed Limit System is to allow motorists to maintain a safe speed, yet keep traffic moving without endangering others sharing the roadway.

Studies show that reducing the speed limit in less than ideal conditions decreases the possibility of accidents, helps manage traffic flow, and increases safety.

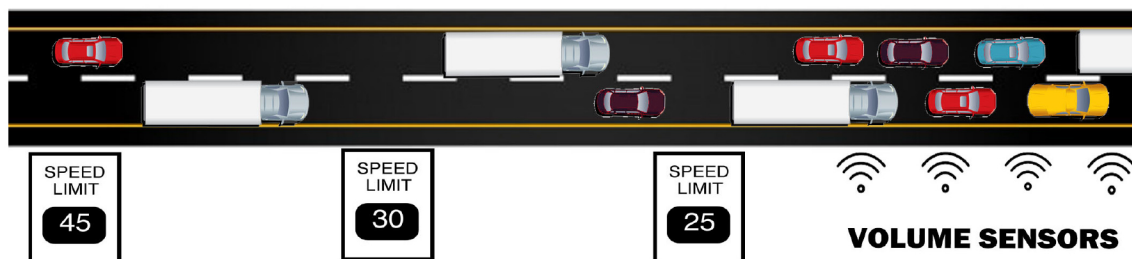
CONDITIONS AND SPEED

There are numerous factors that can affect travel speed including work zones, traffic volume, weather conditions, and roadway surface conditions.

Sensors will gather the specified data to be analyzed by Smart Zone software, and based on the outcome, a safe traveling speed will be determined and displayed on speed limit signs upstream. As traffic flow improves, speed limits can be automatically adjusted.

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Sources	
Message Board DRS Demo 7 Average Speed	Current average speed: 40.00 MPH
Message Board DRS Demo 8 Average Speed	Current average speed: 54.00 MPH

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Sources	
Houston Radar doppler [10.1.1.2002] Average Speed	Current average speed: 54.00 MPH
Houston Radar sidefire [10.1.1.2001] Average Speed - Lane 1	Current average speed: 31.00 MPH
Message Board SRS Demo 2 Average Speed - Lane 3	Current average speed: 32.00 MPH



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CONSTRUCTION VEHICLE INGRESS NOTIFICATION SYSTEM

WORK ZONE SAFETY

Smart Zone's Vehicle Ingress Notification System informs motorists of construction vehicles merging into traffic within the work zone. Providing this real-time information allows the traveling public to adjust vehicle speed and safely travel through the work zone.

KEEPING TRAFFIC FLOWING

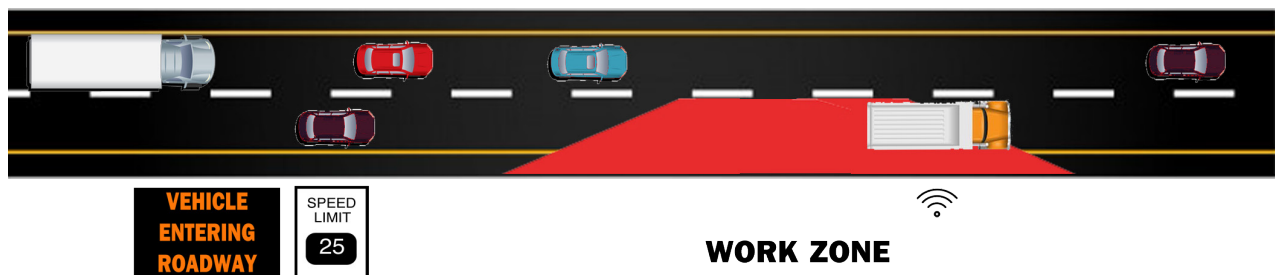
Sensors placed in a work zone will detect construction vehicles exiting the zone and attempting to merge into traffic. Smart Zone software will analyze the data gathered by the sensors, and instantly relay instructions to message boards located upstream.

Motorists will be advised of the impending merge, and speed limits may be decreased to allow the construction vehicle access to the travel lane with minimal effect on traffic.



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