

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
PROPRIETARY PRODUCT CERTIFICATION

630-020-07
PROGRAM MANAGEMENT
08/14

To: Annette Brennan, P.E.
Design Engineer

Date: 11/20/2015

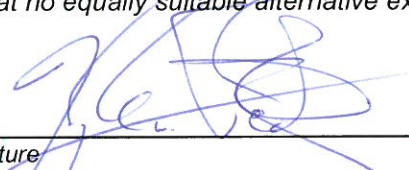
Financial Project ID: 436472-1-58-01 New Const. RRR
Federal Aid Number: N/A
Project Name: GPS Emergency Vehicle Preemption Traffic Signal Modifications in New Smyrna Beach, FL
State Road Number: SR 44, SR A1A & SR 5 Co. / Sec. / Sub.: Volusia County/ 13075
Begin Project MP: N/A End Project MP: N/A
Full Federal Oversight: No Yes Note: If Yes, submit to FHWA Director.

A justification and all supporting documents must be attached to this document.
Mark the appropriate certification:

"I, Kyle W. Fegley, P.E. 43933, City Engineer, of the City of New Smyrna Beach,
Print Name of Initiator Position Title Name of Agency

do hereby certify that in accordance with the requirements of 23 CFR 635.411(a)(2),
Mark appropriately (choose only one option):

- that this patented or proprietary item is essential for synchronization with existing highway facilities.
 that no equally suitable alternative exists for this patented or proprietary item."

 11/20/15
Signature Date

For Department Use Only

"I, _____, _____,
Print Name Position Title

of the Florida Department of Transportation, do hereby approve this certification request made in accordance with the requirements of 23 CFR 635.411(a)(2),
Mark appropriately (choose only one option):

that this patented or proprietary item is essential for synchronization with existing highway facilities.
 that no equally suitable alternative exists for this patented or proprietary item."
Identify any conditions and limitations:

Signature Date



City of New Smyrna Beach

November 20, 2015

Ms. Annette Brennan, P.E.
FDOT District Five Design Engineer
719 South Woodland Boulevard
DeLand, Florida 32720

Ms. Brennan,

Please refer to the attached Proprietary Product Certification Form 630-020-07, completed in accordance with Procedure 630-020-005 adopted August 20, 2014. Please also refer to the required justification for the use of a proprietary product below:

1. Description of project need for the proprietary product.

- a. Project Description: The LAP project 436472-1-58-01 includes the installation of GPS Emergency Vehicle Preemption equipment at 19 signalized intersections in the City of New Smyrna Beach, FL. This equipment will preempt traffic signals when a properly equipped emergency vehicle is approaching, thus providing safe and timely passage of emergency vehicles through properly equipped signalized intersections.
- b. Existing Conditions and Investment: The City of New Smyrna Beach has installed six instances of the Opticom GPS Preemption System (vehicle equipment), manufactured by Global Traffic Technologies, on various Fire Department first response vehicles. In addition, there are a number of signalized intersections throughout the City that currently have the Opticom GPS Preemption System (intersection equipment) installed, and the Opticom system is the only emergency vehicle preemption system currently deployed within the City.
- c. Compatibility with Existing Equipment: As described above, the City of New Smyrna has already made an investment in installing the Opticom GPS Preemption System (vehicle equipment) on six of its first response vehicles. To ensure that new deployments of the Opticom GPS Preemption intersection equipment, proposed by this project, function properly with the equipment already installed on first response vehicles, compatible intersection equipment created specifically for the purpose of communicating with the Opticom GPS Preemption System vehicle equipment must be utilized as part of this project. Furthermore, there is existing Opticom GPS Preemption System intersection equipment deployed throughout the City, and utilizing the same equipment on this project will ensure compatibility and enable, if desired, future deployments of advanced features (central management software, transit signal priority, etc.) of this system throughout the City.
- d. Proprietary Product Description: The Opticom GPS Preemption System equipment includes the following main components:
 - i. Vehicle Equipment (installed separately from this project):
 1. Radio/GPS unit containing a GPS receiver and a 2.4 GHz transceiver
 2. Radio/GPS antenna
 3. Vehicle control unit
 - ii. Intersection Equipment (part of this project):
 1. Pole mounted Radio/GPS unit with GPS receiver with antenna and a GPS transceiver with antenna (Model 1010).
 2. Or cabinet mounted Radio/GPS unit containing a GPS receiver and transceiver (Model 1012)
 3. Radio/GPS antenna (Model 1050)
 4. Phase selector (Model 1000)
 5. Card Rack/Input File (Model 1040)
 6. Auxiliary Interface Panel (Model 1030)
 7. Green Sense Harness (Model 1035)

2. Factual and technical supporting evidence for synchronization.

- a. Function: the proprietary product is necessary to ensure compatibility with existing equipment installed on first response vehicles in the City of New Smyrna Beach, and will enable future deployments of advanced features of this system.
 - i. A product brochure for the proposed equipment is attached: see Exhibit A.
 - ii. This product is currently installed in a number of intersections in the City of New Smyrna Beach, and is the only emergency vehicle preemption system currently deployed within the City.
 - iii. Compatible vehicle equipment has already been installed by the City of New Smyrna Beach on various first response vehicles.
- b. Logistics: the proprietary product is familiar to the signal maintaining agency (Volusia County).
 - i. This product is already in use, and is guaranteed to be interchangeable with the existing maintenance inventory.
 - ii. Volusia County traffic signal technicians are familiar with the maintenance, deployment, and functionality of this product.
- c. Training costs:
 - i. Volusia County's traffic signal maintenance staff is familiar with this product as it is deployed throughout the County. No additional training costs are anticipated.
 - ii. Emergency response staff are familiar with how this system responds to approaching (properly equipped) first response vehicles. Little, if any, new training costs are anticipated.

3. Explanation how the evidence links the proprietary product to the project need.

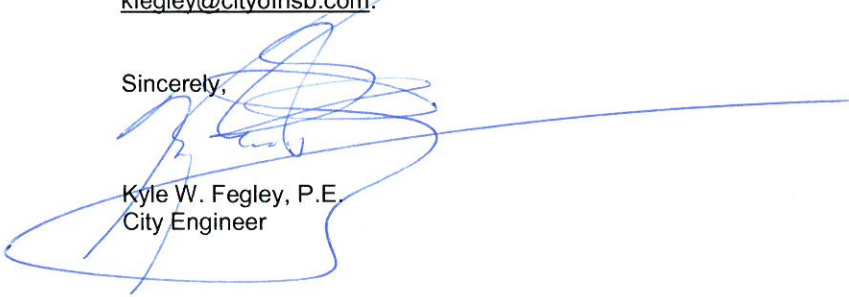
- a. Attached (Exhibit B) is an email correspondence with Volusia County Traffic Engineering staff (signal maintenance agency) confirming that the Opticom GPS Preemption System intersection equipment is currently deployed with the City of New Smyrna Beach, and that it is the only emergency vehicle preemption system currently installed in the City of New Smyrna Beach.
- b. Attached (Exhibit C) are email correspondences from the City Engineer for the City of New Smyrna Beach, and the Division Chief for the New Smyrna Beach Fire Department, confirming that the Opticom GPS Preemption System is currently installed in six first response vehicles.

4. Factual and technical supporting evidence that no alternatives are available.

- a. In order to ensure compatibility with existing equipment installed on first response vehicles and signalized intersections in the City of New Smyrna Beach, the Opticom GPS Preemption System intersection equipment must be installed.
- b. At this time there are no alternatives that guarantee compatibility, and allow for future activation of additional functionality, with the existing GPS preemption equipment deployed on City first response vehicles and signalized intersections within the City.

If you have any questions, or need additional information, please contact me at (386) 424-2168 or via email at kfegley@cityofnsb.com.

Sincerely,



Kyle W. Fegley, P.E.
City Engineer

EXHIBIT A



Global Traffic Technologies



OpticomTM

GPS System

The proven solution for both
emergency vehicle preemption
and transit signal priority.



Global Traffic
Technologies

Signaling a new paradigm in traffic management and safety.

More than 35 years ago, Opticom™ System Technology started a revolution in traffic management and safety. Today the world is a far busier and much more crowded place—and the need for better-managed roadways is greater than ever.

The Opticom™ GPS System addresses this need with the next generation of signal preemption and priority for intersection management.

Featuring global positioning satellite (GPS) technology, as well as highly secure radio communication, the Opticom GPS system delivers safe, efficient results for emergency service and transit vehicles everywhere. At the same time, it gives traffic engineers a new level of intersection management and control. And it's all protected with a full range of installation, training and setup services to ensure optimal, long-term system performance.

Find out how easy it is to improve the safety and management of your roadways. Call your Global Traffic Technologies systems consultant or visit www.gtt.com.

About Global Traffic Technologies

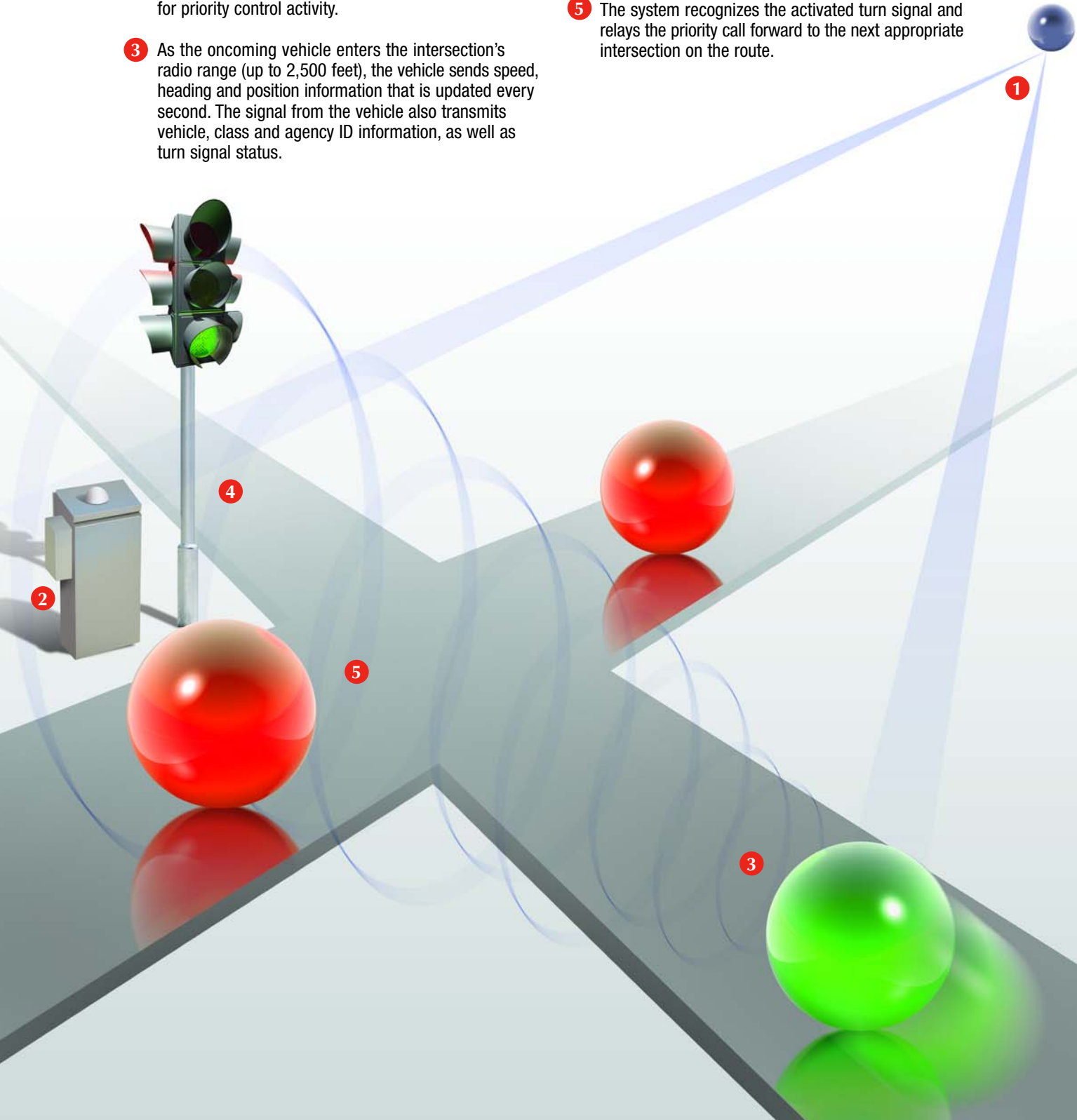
Global Traffic Technologies was formed from 3M's pioneering intelligent transportation systems. Our mission is to use our proven technologies and innovative mindset to improve traffic management and safety all over the world.



The intelligent intersection.

When an emergency vehicle responds to a 911 call or when a transit vehicle needs to pick up time, the Opticom™ GPS System gives those vehicles an advantage at intersections.

- 1 Using Department of Defense satellites, your Opticom GPS system vehicle equipment calculates vehicle speed, heading, longitude and latitude information.
- 2 The Opticom GPS system intersection equipment is programmed with an approach map to define corridors for priority control activity.
- 3 As the oncoming vehicle enters the intersection's radio range (up to 2,500 feet), the vehicle sends speed, heading and position information that is updated every second. The signal from the vehicle also transmits vehicle, class and agency ID information, as well as turn signal status.
- 4 The Opticom™ GPS system intersection equipment sends the priority request to the Opticom™ GPS Phase Selector in the controller cabinet, which requests green-light priority through normal controller functions.
- 5 The system recognizes the activated turn signal and relays the priority call forward to the next appropriate intersection on the route.





For emergency services:

Faster response for a world where every second counts.

Studies show that an effective signal preemption system improves response times by an average of 20%, while simultaneously reducing crashes at controlled intersections.¹ And it's no secret that response times and risk mitigation are critical in the emergency service world. The Opticom GPS system provides unique, precise control that anticipates vehicle movement and helps responders get to their destinations as quickly and safely as possible.

Improves safety by eliminating priority conflict at the intersection

- Authorization is granted on a “first-come, first-served” basis.
- Vehicle descriptors enable streamlined coding activity.

Facilitates safe, efficient movement through turns

- Turn signal recognition and relay leads preemption in the intended direction.
- Turn signal recognition clears right-of-way around corners.

Integrates easily with industry standard communication applications

- System provides GPS data output for other onboard devices.

Provides precise activation and data reporting

- Activation is based on estimated time of arrival (ETA) and/or distance.
- Superior preemption log accuracy improves liability identification.



For traffic engineers:

Easy integration into your current intersection management system.

The Opticom GPS system helps the people who manage intersections as much as it helps those who need to get through them. The system can be easily integrated into existing intersection systems. It's designed for efficient installation and compatibility with most traffic controllers. And it supports both emergency and transit services, with separate priority levels for signal preemption and priority—eliminating redundant systems and the potential for conflict at the intersection. One system for multiple agencies.

Streamlines intersection installation and maintenance

- Single intersection radio/GPS unit receives information from all directions.
- System accommodates hills, curves and varied distances without the need for advanced detectors.

Minimizes traffic disruption

- Turn-signal-dependent mode recognizes the need for protected left turns, reducing potential traffic delays.
- Adjustable activation, based on ETA and/or distance, enhances green time efficiency.

Integrates easily into current cabinets

- Opticom™ Phase Selector plugs directly into CA/NY 170 and most NEMA hardware.
- Opticom phase selectors are compatible with most traffic controllers with internal preemption and priority.

Software enables implementation and management

- Opticom™ ITS Explorer Software facilitates configuration, monitoring and diagnosis, and produces system reports.



For mass transit operations:

Lower costs, happier riders and reduced environmental impact.

Whether you're looking to improve headway, increase schedule adherence or activate queue jumping, the Opticom GPS system will serve you well. It provides a temporary advantage to individual buses, as needed, to help them catch up to schedules and maintain progression—crucial factors for maintaining a loyal rider base and attracting newcomers. Improving route timing by 10% or more may help you reduce your fleet needs.²

Provides precise activation of priority requests

- Activation can be based on ETA and/or distance, reducing traffic disruption.

Enables automated operation

- Unit communicates with AVL for conditional priority, enabling automated operation.

Integrates easily with industry standard communication applications

- System provides GPS data output for other onboard devices.

Provides per-vehicle identification data

- Detailed information eases creation of “before and after” effectiveness reports.
- Data enhances traffic signal controller reporting.



¹ *Traffic Signal Preemption for Emergency Vehicles: A Cross-Cutting Study*. January 2006: Federal Highway Administration, et al.

² *Transit Signal Priority (TSP): A Planning and Implementation Handbook*. May 2005: Smith, Hemily, Ivanovic for Intelligent Transportation Society of America.



Opticom™ GPS System Intersection Equipment Matched Components – Pole Mount: Opticom™ Model 1010 GPS Radio Unit, Opticom™ Model 1030 GPS Auxiliary Interface Panel, Opticom™ Model 1000 GPS Phase Selector



Opticom™ GPS System Vehicle Kit: Opticom™ Model 1020 or 1021 GPS Vehicle Control Unit, Opticom™ Model 1012 GPS Radio Unit, Opticom™ Model 1050 GPS/Radio Antenna



Opticom™ GPS System Intersection Equipment Matched Components – Cabinet Mount: Opticom™ Model 1012 GPS Radio Unit, Opticom™ Model 1050 GPS/Radio Antenna, Opticom™ Model 1030 GPS Auxiliary Interface Panel, Opticom™ Model 1000 GPS Phase Selector

Contact Global Traffic Technologies to learn more about service, maintenance and turnkey solutions in emergency vehicle preemption and transit signal priority that improve the quality of life for everyone in the community. Call **1-800-258-4610**, or visit us at **gtt.com**. The method of using the components of the Opticom™ GPS System may be covered by U.S. Patent Number 5,539,398 and Canada Patent Number 2,178,339. The use of Opticom GPS System components may be covered under one or more of the following U.S. Patent Numbers: 5,602,739; 5,926,113; 5,986,575; 6,243,026.



Global Traffic Technologies, LLC
7800 Third Street North
St. Paul, Minnesota 55128-5441
1-800-258-4610
651-789-7333
www.gtt.com

Global Traffic Technologies Canada, Inc.
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75-0301-3693-3 (A)

Alex Mims

From: Mark Tobin <mtobin@volusia.org>
Sent: Monday, November 16, 2015 9:49 AM
To: Alex Mims
Cc: Kyle Fegley; fferrell@teds-fl.com; Allen Cates; Bobby Maddox; Jon Cheney
Subject: Re: FM# 436472-1 NSB Citywide Pre-emption Signal System Plans - Proprietary Certification Justification

Follow Up Flag: Follow up
Flag Status: Completed

Alex,

Your statement below is correct. All the Emergency Pre-emption equipment in use by the City of NSB is the Opticom GPS brand manufactured by GTT (Global Traffic Technologies).

Thanks, Mark

Mark D. Tobin, P.E.
Civil Engineer III
Volusia County Traffic Engineering Division
123 W. Indiana Avenue, Room 400
DeLand, FL 32720-4262

DeLand (386) 736-5968 ext. 12574
Daytona (386) 257-6000 ext. 12574
New Smyrna Bch (386) 423-3300 ext. 12574
Mobile (386) 295-6311

>>> "Alex Mims" <amims@teds-fl.com> 11/16/2015 8:18 AM >>>
Bobby,

Please confirm that Volusia County, as the signal maintenance agency, has a number of intersections within the City of New Smyrna Beach that have the Opticom GPS and/or Infrared Preemption Intersection Equipment currently installed to provide signal preemption to emergency vehicles, and that Opticom (manufactured by GTT) is the only manufacture of preemption equipment currently in use in the City of New Smyrna Beach.

Your response will be included as justification for the use of proprietary equipment, as part of the FDOT Proprietary Product Certification process, for the subject project .

Alex T. Mims, PE

Project Engineer

Traffic Engineering Data Solutions, Inc.

80 Spring Vista Drive

DeBary, Florida 32713

386.753.0558 (o) 386.747.9101 (c)

<mailto:amims@teds-fl.com> amims@teds-fl.com

<http://www.teds-fl.com/> www.teds-fl.com

Alex Mims

From: Wright, Randy <rwright@cityofnsb.com>
Sent: Tuesday, November 17, 2015 11:26 AM
To: Alex Mims
Subject: RE: FM# 436472-1 NSB Citywide Pre-emption Signal System Plans - Proprietary Certification Justification

Follow Up Flag: Follow up
Flag Status: Flagged

Hello Alex,

Yes, we have 6 Opticom GPS Preemption systems installed in various Fire Department first response vehicles currently. The signal at S.R. 44 and Walmart near the I95 interchange has a Opticom GPS Preemption system installed on the signal and is used frequently by the our Fire Station 51 (located a 3151 S.R.) along with several other intersections.

Randle L. Wright
Division Chief

From: Alex Mims [mailto:amims@teds-fl.com]
Sent: Monday, November 16, 2015 8:02 AM
To: Fegley, Kyle <kfegley@cityofnsb.com>; Wright, Randy <rwright@cityofnsb.com>
Cc: fferrell@teds-fl.com
Subject: FM# 436472-1 NSB Citywide Pre-emption Signal System Plans - Proprietary Certification Justification

Kyle/Randy,

Please confirm, by responding to this email, that the City of New Smyrna Beach has the Opticom GPS Preemption System vehicle equipment installed on a number of its Fire Trucks and/or other emergency response vehicles, and that there are a number of existing signalized intersections in the City that have the Opticom GPS Preemption System Intersection equipment installed. This email will be provided as justification for the use of proprietary equipment as part of the Proprietary Product Certification submittal package.

Thank you,
Alex T. Mims, PE
Project Engineer



Traffic Engineering Data Solutions, Inc.
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DeBary, Florida 32713
386.753.0558 (o) 386.747.9101 (c)
amims@teds-fl.com
www.teds-fl.com

PLEASE NOTE: Florida has a very broad public records law. E-mail communications to or from City of New Smyrna Beach

Alex Mims

From: Fegley, Kyle <kfegley@cityofnsb.com>
Sent: Monday, November 16, 2015 5:20 PM
To: Alex Mims; Wright, Randy
Cc: fferrell@teds-fl.com
Subject: RE: FM# 436472-1 NSB Citywide Pre-emption Signal System Plans - Proprietary Certification Justification

Follow Up Flag: Follow up
Flag Status: Flagged

Alex,

Please know the City of New Smyrna Beach has made a substantial investment to install GPS preemption kits within our Fire Rescue vehicles as necessary to navigate safely through various intersections adapted with the corresponding GPS technology. For reference the City's preemption system as manufactured by Global Traffic Technologies is the Opticom GPS – series 2000.

Obviously compatibility with this manufacturer is necessary when implementing future devices at signalized intersections.

Regards,

Kyle W. Fegley, P.E.
City Engineer
New Smyrna Beach, FL 32168
P (386) 424-2168
F (386) 424-2148

From: Alex Mims [mailto:amims@teds-fl.com]
Sent: Monday, November 16, 2015 8:02 AM
To: Fegley, Kyle; Wright, Randy
Cc: fferrell@teds-fl.com
Subject: FM# 436472-1 NSB Citywide Pre-emption Signal System Plans - Proprietary Certification Justification

Kyle/Randy,

Please confirm, by responding to this email, that the City of New Smyrna Beach has the Opticom GPS Preemption System vehicle equipment installed on a number of its Fire Trucks and/or other emergency response vehicles, and that there are a number of existing signalized intersections in the City that have the Opticom GPS Preemption System Intersection equipment installed. This email will be provided as justification for the use of proprietary equipment as part of the Proprietary Product Certification submittal package.

Thank you,

Alex T. Mims, PE
Project Engineer



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amims@teds-fl.com
www.teds-fl.com

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