



Highlights of March 11, 2016 Joint RSTF and I-76/I-476 Crossroads IMTF Meeting

Most presentations and related meeting handouts are located on the RSTF website:
<http://www.dvrpc.org/ASP/committee/Presentations/RSTF/2016-03.pdf>

NOTE: The presentation given by Jacobs Engineering on the I-76 Schuylkill Expressway Integrated Corridor Management Project is available by request. If interested, contact Regina Moore at rmoore@dvrpc.org.

1. Welcome and Introductions

Frank Hand, chairman of the I-76/I-476 Crossroads Incident Management Task Force (IMTF) and Deputy Fire Marshall for Lower Merion Fire Department, welcomed everyone to the joint meeting of the Regional Safety Task Force (RSTF) and the I-76/I-476 IMTF. After the pledge of allegiance and a moment of silence for Sean Cullen, a New Jersey State Trooper recently struck and killed on I-295 while responding to a vehicle crash, Mr. Hand introduced Tom Sullivan.



Tom Sullivan, Director of Public Safety for Montgomery County, welcomed everyone to the Montgomery County Fire Academy Training Center, 'the hidden gem' of Montgomery County. This facility, renovated in 1986, 2001, and again in 2007 is used to train members of the bomb squad, fire, police, and EMS departments of Montgomery County. Mr. Sullivan encouraged attendees to have a look around the facility following adjournment.

Vehicle crashes are a continuing problem in Montgomery County: in 2015, countywide emergency medical services (EMS) responded to 4,271 crashes with injuries, 470 incidents of pedestrians struck by vehicles, and 246 motorcycle crashes. The county is proud of its continued efforts and 10-year relationship with PennDOT's Traffic Management Center on improving safety and mitigating congestion. The county has applied for and received grants for Variable Message Signs (VMS), safety vests for first responders, and related safety equipment and services. Mr. Sullivan expressed the county's continual goal of improving safety in every incident and values the opportunity that the IMTF provides to connect with other agencies and stakeholders.

John Ward, Deputy Executive Director of the Delaware Valley Regional Planning Commission (DVRPC), welcomed everyone and highlighted the importance of the RSTF and IMTFs. Both groups have a long and important history: the RSTF just celebrated its 10-year anniversary, and the I-76/I-476 Crossroads IMTF is one of the oldest in the region. Both groups considered this joint meeting an opportunity to encourage communication and develop relationships across task forces. The leadership of RSTF co-chairs, Bill Beans, Program Manager, MBO Engineering, and Peggy Schmidt, Executive Director, Partnership TMA, and Mr. Hand for the I-76/I-476 Crossroads IMTF contribute significantly to the success and direction of both Task Forces. Mr. Ward then reviewed the agenda, emphasized the importance of stakeholder input gained through survey responses, and offered DVRPC assistance on any related projects.

2. Introduction on What is Incident Management and Traffic Safety

DVRPC Traffic Incident Management (TIM) Program

Chris King, Principal Transportation Planner for DVRPC, introduced TIM and specifically the I-76/I-476 Crossroads IMTF, and began by explaining that a traffic incident is anything on or near a roadway that negatively affects traffic flow. Considering 60% of all congestion is nonrecurring and one minute of a blocked lane creates four minutes of congestion, traffic incidents and their recovery times are a major contributor to congestion levels. TIM uses a multi-agency approach to improve traffic flow and ensure the safety of all responders. Essential to this process is the TIM timeline protocol used when a crash occurs: Detection; Notification; Arrival; Response Activity; Clearance and Termination; and Recovery. Efficient execution of this timeline decreases the duration of traffic disruption while increasing the safety of all stakeholders. Additionally, safe vehicle placement at traffic incidents is a TIM continuing goal and a priority for all first responders.

TIM receives guidance from the National Unified Goal (NUG), which is broken into three equally important components: (1) first responder safety; (2) safe, quick crash clearance; and (3) prompt, reliable, interoperable communication. These protocols are appropriate on local roads as well as interstates. Despite current efforts, high numbers of fatalities directly associated with crash response persists: on average 12 law enforcement officers, five fire and rescue responders, 60 tow truck drivers, and a number of other transportation personnel are killed each year in the United State while responding to incidents.

In 1998, the Pennsylvania Department of Transportation (PennDOT) asked DVRPC to create an IMTF in order to provide an opportunity away from the scene of an incident for emergency responders to build relationships and identify critical response needs. The purpose of IMTFs is to: improve coordinated response; foster interaction among stakeholders; identify and address critical needs; give other organizational perspectives; and promote the NUG. The Delaware Valley is now home to eight IMTFs and incorporates a wide-range of stakeholders, including but not limited to local and state police, fire and EMS departments, DOT maintenance divisions, hazardous materials (HAZMAT) agencies, and towing agencies. Quarterly IMTF meetings are held for first responders to provide training, discuss post-incident reviews, and for construction briefings. Along with enhanced interagency coordination and supporting statewide TIM training efforts, IMTFs have worked specifically towards improving ramp designation and mile marker signage on Delaware Valley roadways, and on installing center median guide rails along NJ 42.

Beginning with the New Jersey Southern Area First Responders (NJ SAFR) IMTF, all the IMTFs have created or are in the process of creating area-specific Traffic Safety Guidelines. The goal of these guidelines is to instruct stakeholders as to what is expected at an incident, improve the safety of responding agency personnel, promote safe, quick clearance to reduce the risk of secondary crashes, restore the roadway to pre-incident condition, and minimize apparatus deployment and the number of personnel responding to an incident.

Vital to the TIM process, Quick Clearance Laws fall into three primary categories: Move Over Laws, Driver Removal Laws, and Authority Removal Laws. Move Over Laws require drivers to change lanes and/or slow down when approaching a scene where emergency responders are present. Driver Removal Laws require vehicles, if drivable, to be moved out of travel lanes following a traffic crash. Authority Removal Laws give a pre-designated agency the right to clear vehicles or cargo from the lanes of traffic to avoid secondary crashes. Pennsylvania currently has all three Quick Clearance Laws in effect, whereas New Jersey only has the Move Over Law.

I-76/I-476 Crossroads IMTF

A first responder perspective to TIM and IMTFs was offered by Mr. Hand who explained that these forums provide the opportunity to discuss incidents and make changes that will improve the outcome of the next incident response. These discussions include best practices, equipment needs, and increased communication among agencies. Mr. Hand said that overall the sharing of information has been a success, especially for the Crossroads IMTF. For example, when flooding occurs along I-76, multiple agencies are now aware of drain locations and are often able to mitigate the situation. IMTFs also have the ability to share camera coverage through the Regional Integrated Multimodal Information Sharing (RIMIS) provided by DVRPC.

Regional Safety Task Force

Ms. Schmidt apologized for the absence of Mr. Beans, the intended presenter, while expressing excitement for the joint meeting and coordination between the RSTF and I-76/I-476 Crossroads IMTF and their associated stakeholders. Growing partnerships and multiplying the number of relationships are 'key' to improving roadway safety for everyone, drivers, bicyclists and pedestrians alike.

Kevin Murphy, Assistant Manager of Safety Programs, DVRPC, reiterated the RSTF's recent 10-year anniversary and its overall purpose of addressing the 4Es (education, engineering, enforcement, and emergency response) and policy of road safety. Through collaborative, quarterly meetings, the RSTF strives to understand why crashes happen and what can be done to reduce their frequency and severity in the region, and to share this information broadly. Each RSTF meeting focuses on one of the eight AASHTO¹ data-driven safety emphasis areas identified as a priority in the current regional Transportation Safety Action Plan: Curb Aggressive Driving; Keep Vehicles on the Roadway and Minimize the Consequences of Leaving the Roadway; Improve the Design and Operation of Intersections; Reduce Impaired and Distracted Driving; Increase Seatbelt Usage; Ensure Pedestrian Safety; Sustain Safe Senior Mobility; and Ensure Young Driver Safety. Partnering with the IMTFs helps the RSTF better understand the needs of first responders.

3. I-76 Intelligent Transportation System (ITS) Enhancement Project

Leo Bagley, Special Assistant to the Secretary of Transportation for PennDOT, introduced the I-76 Intelligent Transportation Systems (ITS) Enhancement project. Mr. Bagley, former Chief of Transportation Planning for Montgomery County and Whitmarsh Township supervisor for eight years, conveyed his familiarity with I-76 and its many complexities and numerous stakeholders. This familiarity is shared by Leslie Richards, the Secretary of Transportation for PennDOT and former Montgomery County Commissioner. Mr. Bagley has been working for years to develop solutions to improve overall traffic flow and incident response along I-76, and emphasized the importance of engaging emergency responders to ensure this project meets their needs as well as PennDOT's. Mr. Bagley then introduced Stan Niemczak, Project Manager, Jacobs Engineering, to provide an overview of I-76 and the ITS project parameters.

The I-76 ITS Enhancements Concept of Operations is a plan for the 13-mile section of I-76 between the Pennsylvania Turnpike and Route 1. The goal is to reduce congestion, better manage unbalanced traffic flow, improve safety, and incentivize multi-modal uses. Evaluation of I-76 requires a multi-agency effort in order to fully understand the current infrastructure opportunities, volume demand, and availability of parallel routes. This team approach was also used in the development and implementation of current ITS along the corridor. The current Project

¹ American Association of State Highway Transportation Officials

Management Team includes representatives from the following agencies: PennDOT, Philadelphia Streets Department, DVRPC, Southeastern Pennsylvania Transportation Authority (SEPTA), Federal Highway Administration (FHWA), Montgomery County Planning Commission, and the Pennsylvania State Police. The next generation of ITS along the corridor will employ Active Traffic Management (ATM), which is the ability to dynamically manage recurrent and non-recurrent congestion based on prevailing and predicted conditions. ATM includes variable speed limits, queue warning, junction control, dynamic lane assignment, Dynamic Shoulder Lanes (DSL), ramp metering, connected vehicle applications, and multi-modal improvements.

Since opening in 1970, I-76's volume has far exceeded design expectations. Designed for 30,000 vehicles per day (VPD), as of 2012 the volume had reached 115,000 VPD. As opposed to customary AM/PM peak congestion times found on many roadways (e.g.: US 422 eastbound AM volumes), the high volume on I-76, combined with multiple merge points, has created a nearly constant level of congestion along the study corridor. Persistent congestion combined with vehicles frequently entering and exiting the corridor leads to a high number of crashes; an average of 1.2 per day from years 2009 to 2014. The majority of these crashes are rear-end collisions occurring near interchanges, with 22 of 50 (44%) corridor segments experiencing more than double the state-wide average for rear-end crashes.

Currently, the corridor is home to a large network of Transportation Systems Management and Operations (TSMO) and ITS infrastructure centralized within the PennDOT District 6-0 Regional Traffic Management Center (RTMC). This command center, complete with six operator workstations and a video wall, operates on a 24/7 basis and monitors real time operations using traffic detectors, TRANSMIT E-ZPass Tag Readers, INRIX (historical and real-time traffic information), and Closed Circuit TV (CCTV) cameras.

Brian DePan, Project Manager, Jacobs Engineering, reviewed the system concepts and operations scenarios along the study corridor. Mr. DePan explained that variable speed limits and queue warning could lead to a crash reduction of 5 to 30% and 15-60%, respectively.

Dynamically adjusted by PennDOT operators, the implementation and enforcement of variable speed limits is still being examined. Queue detection, a system of Dynamic Message Signs (DMS) used in combination with variable speed limits would warn drivers of upstream events, yielding a 15%-60% reduction in crashes. The use of Dynamic Lanes/Junctions would vastly improve traffic flow at merge points which is where the highest traffic volumes exist—e.g.: junction of I-76 and US Rt. 1—due to the density of vehicles entering and existing as compared to through traffic volumes alone. Ramp metering would further improve flow efficiency at merge points. Dynamic Shoulder Lanes (DSL), also known as hard shoulder running, is estimated to increase capacity from 1,000 vehicles per hour (VPH) to 1,500 VPH.

DSL, opening and closing the shoulder to through traffic based on demand and incidents would be implemented in six separate segments and require significant infrastructure changes, including widening shoulders along 85% of the study corridor and widening 14 bridges, three bridge replacements, and a number of overhead bridge expansions. Controlled either onsite or remotely from an operations center, DSLs could open or close based on congestion levels and/or emergency situations. Connected vehicle opportunities will grow as technologies become commonplace. Transit information through coordination with SEPTA including next train, travel times, and parking availability will be posted on DMS to encourage multimodal usage. The section of I-76 between US 202 and I-476 is proposed as a first section for extensive implementation, including DSL. It is proposed as a project in the draft FY 2017 TIP to be called I-76 Integrated Corridor Management.

The estimated cost to implement all elements of the concept of operations plan is \$315 million dollars. The early actions deployment (0 - 2 years) phase is currently set for completion in 2017, and includes design, construction and integration of variable speed limits and queue detection technologies, for an estimated \$2.48 million dollars. Other cost considerations include maintenance, operations, and enforcement. Additional challenges include clearing regulatory hurdles, public outreach, and addressing accessibility for emergency service providers. Short term deployments (3 - 6 years) will commence in 2017, and long term deployments (6+ years) in 2018. Integration of all project components is forecasted to be complete in 2026.

There were a number of questions and comments from the attendees concerning corridor-wide ITS implementation.

- Ian Stoddart, a paramedic for Narberth Ambulance, which serves the majority of the I-76 study corridor, stated he understood the concept of DSL and the goal of improved traffic flow with additional lane access, but expressed concern that implementation will prevent emergency vehicle access and create gridlock when a lane closure occurs. Additionally, he stressed the importance of the “Golden Hour”—professional treatment within one hour or less following a traumatic injury greatly increases a patient’s likelihood of survival—saying it is paramount to patient survival rates. Further, Mr. Stoddart expressed concern that if all lanes and the shoulder are blocked with traffic, how can emergency responders reach the crash scene? Mr. Niemczak and Mr. Ward encouraged Mr. Stoddart to participate in the peer-to-peer exchanges that will take place to hear of specific successes from around the country, and for the opportunity to ask questions. Mr. King added that the process is very much in its emerging form and there will be several opportunities for stakeholder involvement.
- Mr. Niemczak mentioned Seattle and Minnesota as successful DSL implementation locations, and that drivers would be required to obey VSL through increased enforcement, though it will pose a challenge to state police.
- Joe Fiocco, Principal, SAFE Highway Engineering, questioned if DSL and Dynamic Lanes/Junctions would actually increase the number of rear-end crashes due to drivers changing lanes. Mr. Ward and Mr. DePan explained that the resulting steady traffic flow and reduced merging would ultimately reduce the frequency of these crashes.
- In response to why the enhancements would stop at Route 1, Emmanuel Anastasiadis, Traffic Operations Manager, PennDOT, explained I-76 opens to three lanes at that location and another study is looking at extending this effort from Vine Street to I-95.
- Warren Strumpfer, concerned citizen, inquired about connected vehicle availability along the corridor. According to representatives from Jacobs Engineering, because that technology is driven by the automobile industry, it is difficult to develop a precise timeline.

4. Run-off-Road (ROR) Emphasis Area

Roadway Departure Implementation Program (RDIP)

Lou Belmonte, Acting Assistant District Engineer, PennDOT District 6-0, presented information about PennDOT’s RDIP. Nationwide, from 2010-2013 ROR crashes accounted for 56% of all crash fatalities and 17,791 fatalities in 2014. Driver error, such as texting or speeding, is a contributing factor in 93% of all ROR crashes. Other contributing factors include roadway condition, collision avoidance, and vehicle component error. Engineering solutions take a tiered approach, with the primary goal being to reduce the likelihood of leaving the roadway. This is followed by reducing the likelihood of hitting a hazard, reducing the impact if a hazard is struck, and finally, managing the risk of any resulting impact. When possible, engineering fixes are

implemented on a systematic level, however, budget constraints and situational uniqueness may require they be done on a spot location basis.

PennDOT currently manages the RDIP using several engineering improvements to reduce the number of ROR crashes. Centerline rumble strips, which are highly effective in reducing head-on crashes, have been systematically placed on over 5,000 miles of Pennsylvania roadways. Edge line and shoulder rumble strips, which have also proven effective in reducing ROR crash fatalities, are now on over 4,000 miles of the state's roadways. Though rumble strips may lead to increased surface deterioration, they are relatively inexpensive and highly effective.

High friction surface treatment (HFST) and NOVACHIP™ Surface Treatment are designed to increase skid resistance. PennDOT is using these technologies on curves and hydroplaning locations. Though relatively new, with limited data available, the results appear to be positive for the use of HFST. NOVACHIP™, where implemented has contributed to a 75% reduction in wet pavement crashes, including notable successes on PA Rt. 100. A future installation of NOVACHIP™ is planned for Kelly Drive in Philadelphia.

Cable median barrier, a relatively low cost approach for eliminating cross-over crashes on interstates, has been used extensively within District 6-0 and has led to significant reductions in these crash types.

Positive guidance, such as signage improvements and pavement marking enhancements are applied on a location by location basis. To reduce the consequences of leaving the roadway, PennDOT is focusing on shielding fixed objects, such as concrete piers, creating a more forgiving impact in the event of a crash. With DVRPC GIS mapping assistance, PennDOT tracks progress via web-mapping, which expedites RDIP management.

I-76 Embankment Crash Incident Recap

Mr. Hand shared information about an incident involving a specific ROR crash along I-76 westbound that occurred February 15th, 2014. The unique circumstances and number of agencies involved showcased both the benefits of the incident management process as well as the need for continued advancement.

At roughly 6:00 AM on a cold and snowy morning, a driver had gone over the guide rail and plunged down a 300-foot drop-off onto a snow-covered embankment. Beginning with a vague 911 call reporting a possible crash, once on the scene, first responders safely reached the vehicle within 12 minutes. Heavy and awkward equipment had to be transported $\frac{3}{4}$ of a mile through nearly a foot of snow. Reaching the scene by the steep embankment, from the icy river, and from the adjoining snow covered railroad tracks required a multi-agency approach. Tasks included snow clearance and dealing with railroad facilities in order to get emergency responders to and from the scene safely. Properly securing the vehicle from above before safely removing the injured driver also demanded reliable and constant communication. Though ultimately successful (patient was transported to a trauma center), this complicated crash response effort provided opportunities for incident improvement, including identifying additional equipment needed, continued preparation for all weather conditions, and coordination and communication between multiple site locations among multiple agencies—FaceTime proved to be a reliable medium for communication.

5. Building Partnerships

Due to time constraints, the planned building partnerships activity was not able to take place. Ms. Schmidt thanked attendees, asked everyone to complete the exit survey, and reiterated the RSTF's ongoing goal to promote partnerships and develop relationships across agency lines, including, but not limited to, the RSTF and IMTFs. In closing, Ms. Schmidt encouraged continued discussion during lunch. Mr. King expressed his appreciation and reminded attendees to visit the emergency vehicles made available through the generosity of the I-76/I-476 Crossroads IMTF member agencies.

6. After Meeting Activity – Tour of Local Area Emergency Vehicles

After the meeting, attendees were invited to tour the emergency vehicles on display behind the training center, and to build partnerships between the two groups. Listed below are the organizations that participated in the emergency vehicle display.

<u>Organization</u>	<u>Type of Equipment</u>
1. Autobase – PennDOT	Freeway Service Patrol Vehicle
2. EVB Towing – PennDOT	Freeway Service Patrol Vehicle Medium/Heavy Duty Wrecker
3. Janeway Towing	75 Ton Rotator Tow Truck
4. Montgomery Co. Dept. of Public Safety	Field Command and Communications Unit HAZMAT Foam Unit
5. PA Turnpike	Ice Cream Sandwich LED Sequencing Road Surface Flares
6. Plymouth Community Ambulance Assoc.	Ambulance
7. Plymouth Fire Company	Rescue 43-Truck
8. Swedeland Fire Company	Utility 48-Fire Police Vehicle
9. VMSC Narberth Ambulance	Rehab/Mass Casualty Transit Bus

List of Meeting Attendees

Amato, Gregory	Lafayette Ambulance
Anastasiadis, Emmanuel	PennDOT District 6
Backer, Derrick	TMA Bucks
Bagley, Leo	PennDOT
Bair, Walt	PA Department of Environmental Protection
Belmonte, Lou	PennDOT District 6
Bertsch, Michael	PennDOT District 6
Bowe, Kevin	EVB Towing/PennDOT Freeway Safety Patrol
Bright, Sgt. Jeremy	Burlington City Police Department
Buerk, Jesse	DVRPC
Carafides, Paul	DVRPC
Dannenber, Susan	Bicycle Coalition of Greater Philadelphia
Deguffroy, Bill	Chester County Planning Commission
DePan, Brian	Jacobs
Diamond, Officer James	Philadelphia Police Department – Traffic Unit
Dougherty, Jamie	Janeway Towing

Elliott, Michael	PennDOT District 6 – RTMC
Elverson, Sgt. Al	Upper Merion Township Police Department
Ewald, Jon	TMA of Chester County
Felske, Douglas	Radnor Fire Company
Fiocco, Joe	SAFE Highway Engineering
Fiscina, Carmine	FHWA
Fogel, James	PennDOT
Hand, Frank	Lower Merion Fire Department
Hudock, David	PA State Police – King of Prussia
Jackson, Charles	Pennsylvania Turnpike Commission
Jenaway, Bill	King of Prussia Volunteer Fire Company
King, Chris	DVRPC
Leiss, Todd	Pennsylvania Turnpike Commission
Lynch, Keith	FHWA
MacKavanagh, Kelvin	DVRPC Goods Movement Task Force
Maguire, Joseph	Radnor Fire Company
Matkowski, Laurie	DVRPC
McLean, James	Gladwyne Fire Company
Moore, Regina	DVRPC
Murphy, Bob	EVB Towing/PennDOT Freeway Safety Patrol
Murphy, Kevin	DVRPC
Naderland, Zoe	DVRPC
Neff, Justin	DVRPC
Niemczak, Stan	Jacobs
Noble, Tracy	AAA Mid-Atlantic (New Jersey)
Nuble, Patrice	Philadelphia Streets Department
Orangers, Dennis	Montgomery County – DPS & Swedeland Vol. Fire Co.
Ott, Pat	MBO Engineering
Paral, James	FHWA
Park, Seri	Villanova University
Patel, Ashwin	PennDOT District 6 – Traffic
Popek, Matthew	Montgomery County Planning Commission
Reagle, Ed	PennDOT District 6 – Consultant PM
Roop, Randy	Autobase/PennDOT Freeway Safety Patrol
Rudzik, Stephen	Pennsylvania Turnpike Commission
Ruggiero, Sgt. Bob	Lower Merion Police Department – Traffic Safety Unit
Schmidt, Peggy	Partnership TMA
Schoonmaker, Elizabeth	DVRPC
Stemple, Beverlee	Montgomery County Department of Safety
Stemple, Officer Richard	Whitemarsh Township Police Department
Stocchi, Brandon	Plymouth Fire Company
Stoddert, Ian	Narberth Ambulance
Strumpfer, Warren	Citizen
Sullivan, Tom	Montgomery County Department of Safety
Tidwell, Jana	AAA Mid-Atlantic (Pennsylvania)
Turner, Elise	DVRPC
U'Selis, Sgt. Stephen	PA State Police – Troop K
Ward, John	DVRPC
Wilson, Jason	Montgomery County Department of Safety