



# TxSTIC Meeting Notes

## October 24, 2016

### **Introductory Remarks**

**Mr. James Bass – Executive Director of TXDOT**

The last legislative session changed practice from State Highway to other agencies

Stopped – TXDOT \$1.3 Billion in additional funds.

Addressing choke points – Texas clear lanes.

Through, Prop 1 and 7, Voters have approved additional transportation funds.

Methodologies:

How to change status quo and how to implement new technologies and new designs

How to better serve our customers in our state

Looking at innovations in Texas is not new.

New delivery methods:

For example the Design Build of Harbor Bridge in Corpus Christi will be the longest cable cast bridge in state.

E-construction:

TxDOT and State - Moving toward digital devices are time and money savers.

Example - Michigan DOT

Saves \$12 million and millions of pieces of paper

Mobility:

Improve mobility for those we serve. I-35 is a “Lesson in patience” We want better mobility for I-35.

Construction:

Innovative diamond interchange.

Example - Roundrock and RM 1431. Second one – but very effective. Travel time improved 13% Traffic time - 50 % better

Safety:

Number 1 in many ways – bridges, amount of roads, etc.

Not proud of rank of #1 in road fatalities - 3500

Driver behavior is number one cause but we shouldn't just leave it at that

But rather address this bad behavior through new innovations

Not proud anniversary – last no fatality day Election Day 2000

We want to continue to make improvements and implement innovations

Benefits:

Not just better roads today but innovations of tomorrow

Help TXDOT develop programs you want to succeed

Help TXDOT improve



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### **Video Demonstrations (TXSTIC.ORG)**

Darran Anderson, TxDOT Director of Innovation and Strategy

How to better understand innovation  
Develop a way to implement innovations  
Combined feds and state – research and implement it  
Discuss recent research that is ready for implementation  
Adapt it to Texas

Council member Introductions:  
15 people

51 organizations were invited to participate as members of the TXSTIC (State Transportation Innovation Council)

There was a number of states that helped and let us sit in on their meetings  
Pennsylvania.

We got to see how they implemented research  
We want to take this research and give it a ‘Texas flavor’

Signed a charter with FHWA last March  
What do we want to achieve?  
To be inclusive!  
What is our research process?  
How do we test?  
What do we address?

The focus today is on implementation process  
This will give you a flavor of what has been done  
Bubble up from other councils  
Find what is most appealing to you

6 projects have already been proffered.

But now want input from the beginning  
Long list of people and organizations that we want to be a part of this  
Meetings - triannually or semiannually  
Depends on research  
Get to point where we are doing research projects or at least testing



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Today:

- Reviewing
- Commenting on projects
- Ask question of researchers
- Let us know if there are concerns about how to implement

Long term:

- Considerations for each agency
- Low tech readiness level
  - Maybe no tech yet – turn over to private industry
- Or is there a known solution and we can take it test?
- Bring feedback to forum – tested and can implement
  - Will take 2 – 3 years to do this, unless fed or other state has already done this and Texas can implement, which would takes less time
- Work with TxDOT about how to do it in Texas

Example –

Autonomous vehicles, drones – potential impact on transportation

How could this affect system?

Drone implementation

End stage:

- Implementation
- In the example above - Work to establish a policy that works within FAA Guidelines
- Maybe an example that other states can use

We will look at 6 projects today that covers breadth that our agency is interested in

**Questions-**

Broad overview of limitations but how we can move forward using this group

## **Every Day Counts**

Al Alonzi, FHWA Texas District Director

Background on how we got here

His charge as he sees it

Funding opportunities

What is Innovation?

Civil Engineers –



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By nature of what we do, have a very serious job. What we put out there has to be testable and repeatable because lives are at stake

Innovation:

- Not just at state DOT or Fed level, not just big sexy tech, but local level could be implemented too
- Not just tech but new way of doing things
- New processes
- Introducing something new
- New devices
- Improving mobility and productivity

2009- 10:

Every Day Counts was born – Victor Mendez – understanding that the issue and problems with getting things done.

Working together to find better ways of improving implementations  
Lots of proven technologies, but they can be hidden if no one is sharing the info  
How do we understand what those are (around country), and adapt them in Texas

Multiple New Technologies

Example –

Use of warm mix asphalt – Texas was best at this or first

2008 - 2% of all in country was warm mix

2010 – as EDC innovation

2013 – 30%

Next round of EDC – 2012:

A lot of initiatives in Texas as well

Example -

High Friction Surface Treatments

Between Jan '09 – Sep '11 219 crashes in WI interchange

So came up with High Friction Surface Treatments

Oct '11 to Oct '12 only 2 crashes

In TX we are using it and adapting now'

EDC 3 – 2015:

Example -

Ultra High Performance Concrete Connections for Prefabricated Bridge Elements

Use of steel fiber-reinforced, cementitious-based material

Use of this material – strengthened concrete to 10,000 psi much better than before



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### EDC 4:

Workshop in Austin –Sheraton on 11<sup>th</sup> – everyone here is invited, regional, talking about innovations, then state by state

Current authorizing legislation

Congress so impressed with EDC – put into law

Every Day Counts initiative – why they think important – creation of culture of innovations

Our administration came up with concept of how do we create innovations.

Creating state by state model of advancing innovation – STIC (State Transportation Innovation Council) is formed.

Innovation was happening in Texas but in pockets. So how do we come together and share across modes, private, public, academia, etc.

This group has helped create this culture of innovation

Some money involved

\$100,000 (fed money) nothing in Texas but STIC - to develop products, printing, lots of eligible activities

Demo project that is annual 10 mil a year to pilot a particular project

Codified in law is ability to increase fed share 80% but 5% for innovative technique

### 5 Things:

1. We continue this broad engagement across all modes
2. We are here to create this culture of innovation
3. We assure that there is a connection between identification of research needs and how
  - a. Back to full circle – research – and actually implement –
4. We individually identify innovative technologies – if important to Texas we are bring it here
5. We keep it multi modal – not just adding transit – pedestrian – safety- bikes, movement of free



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### **Using Data to Improve Traffic Incident Management**

Paul Jodoin

What is this innovation about?

Process of coordinating resources of many agencies and companies to detect, respond to, and clear traffic incidents as quickly as possible.

- Increase responder safety
- Prevent secondary crashes
- Reduce congestion

This is a safety program

Traffic Incidents:

Unplanned roadway occurrences that adversely affect traffic

- Crashes – 5.6 mil annually – national
- Disabled vehicles
- Roadway debris
- Police activity

Effective Mitigation of Roadway Incidents

TIM Programs – all over country

- 216,000 trained nationally
- 16,000 in Texas trained

Data collection – way to get better

Why should you collect TIM data?

Improve safety and operations

- Way to identify where improvements are possible
- If you do, it can reduce number of fatalities on secondary crashes

Better outcomes

- Saves lives, money, and time

Increase transparency

- Demonstrate program effectiveness
- Future funding and planning
  - Most well-funded programs in country – collecting data since 1990's
- Meet national goals



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3 standard performance measures:

1. Roadway clearance time
  - a. Want all lanes clear
2. Incident clearance time
3. Number of secondary crashes

How do we collect this info?

Transportation:

- TMC traffic management center,
- Service patrols,

Law Enforcement

- Electronic crash reports
- Incident reports
- Integrated CAD systems

Fire Department CAD

EMS CAD

Towing companies

When become more efficient – Fire, EMS, Towing

Who can benefit or use this?

State and Local DOTs

- Traffic Management Centers
- Crash record section
- Safety sections

State and local police,

- Responders
- Fire, EMS, towing

National Highway Safety Administration

Traffic Records Coordinating Committee

Governors Highway Safety Office

Example –

South west Michigan – collects data and makes monthly report.

- Averages
- Per type of incident
- Secondary crash info

Example - Virginia – monthly report and quarterly report–

- Trends
- Average for clearance times, etc.

Folks are already collecting it and some using it are getting better



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### Example –

Arizona has another way of collecting the data. They have a supplemental report to crash report. 3 measures and more. Added it to their crash report (Clearance time and secondary crashes).

### How do they apply TIM data in Arizona?

- Governor's Office Scorecard
- Department 28-Day Review - State patrol and state police captains
  - A review of their region and compare to other areas, add data to crash reports
- TraCS Office supports/trains other agencies to improve TIM data collection through electronic platform
- Ongoing analysis of TIM data to improve safety and accountability with other stakeholders
- Dedicated analysts review/analyze TIM data, identify trends, and inform Highway Patrol staff

We would like you to start collecting this data and analyzing the data too

### How do you reach the goals?

Collect all 3 TIM performance measures (PM)

Incorporate police data, not just DOT data

Add at least 1 PM to electronic crash reports

Increase one level when applying the TIM Capability Maturity Level

We can help by webinars, step by step guidance, and checklists. We have it all and can provide it

### Questions –

- 1) Darran Anderson – are working on performance measures and incident management

**Answer** – We are excited about it – being part of the overall program

TXDPS – excited about it too. Lots of training even before getting out of school

Not just about State highway system – but local level too!

- 2) On tollway – police never respond – but toll authority. DOT service patrols are there instead

SO how do we get these numbers?

**Answer** – Crash data, collects all incidents – debris, crashes, stalls, etc.





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FTE's – not most popular to throw in the mix. Tech can detect stalls, data is collected in laborious process, but without it not have all info. Need integration of DOT data and the police data

3) Joe Henry – Drone...

5.6 million crashes is a lot. Is it segmented? Drone technology can be some solution to TIM. Maybe drone tech can help with this.

**Answer** – There are some drone research projects. Lots of opportunities with drones. Deployment of drones help/assist law enforcement on sight. Speed up clearance, etc.

We could have webinar, extra add on, etc. for more of this info.

4) Chris Klaus – deliverables, tasks, etc.

**Answer** – Whatever support the entity is looking for, depends on what the needs are and where to next

5) K. Green – incidents already collected with in-house software  
New data software - can it be matched with other data collection

**Answer** – Integration is important –

6) MPLs – analyzing and data collection  
Do not have enough people or funds to do this

## Road Weather Management

**Gabriel Guevara**

Weather Savvy roads – Initiative for RWM leads  
Have necessary tools - Need tools for severe weather

2 Initiatives:

Pathfinder

Integrated Mobile Observations (IMO)

Pathfinder: Initiative to strengthen the working relationships across State DOTs and the Weather and Climate Enterprise for the dissemination of road weather information to travelers that is

- Clear



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- Concise
- Impact bases
- Consistent

So that drivers are well informed and able to make safe and efficient travel decisions

Who are Core Partners?

- National weather service
- Private sector weather providers
  - Experts of road weather forecasts
  - State DOTs
    - Experts at operating and maintaining the road ways
- Maybe state emergency managers too – to partner with them

Pathfinder states

- CA
- NV
- UT
- WY
- GA

Report consistently less vehicle travel during events – so Snow Plows can better do their jobs, and do them faster

Less accidents too

Integrating Mobile Observations (IMO) Goal

Deploy advanced, vehicle-based technologies to

- Collect,
- Transmit, and
- Use

Weather, road condition, and related vehicle data for improved transportation system management.

IMO Project Goal: exploring the feasibility of using vehicle based data to improve transportation safety and mobility

Example -

Minnesota DOT 590 vehicles

Data - air temp, relative humidity, surface temp, wiper status, brake status

Camera - images

AVL, Cellular, and DSRC (dedicated short range communication)



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Example –  
Nevada IMO System Framework:

In vehicle equipment

- Weather sensors
- Vehicle sensors (OBU, CANBus)
- Equipment sensors (spreader)
- Location sensor (GPS)
- Radio

Applications and management strategies

- Winter maintenance
  - Treatment recommendations
  - Material usage tracking
- Traffic management
  - Traveler info
- Data management systems
  - Weather data environment
  - Vehicle data translator

Benefits of IMO:

- Fill gaps in road weather observations
- Spur development of new applications
- Dramatically enhance existing systems
  - Aid in overall salt reduction strategies
  - Optimize the use of maintenance resources
  - Generate actionable, automated alerts and messages to TOC/TMCs maintenance personnel, work zone teams
  - Provide traveling public with more timely and valuable info
- Ultimately, it can improve efficiency (costs), effectiveness (results), and accountability (measurement)

Innovation Deployment Team:

Initiative Lead – Paul Pisano

FHWA Team – Roemer Alfelor, Gabriel Guevara, and Ray Murphy

NWS Team -

State DOT Subject Matter Experts

Implementing Weather-Savvy Roads

The following materials will be developed and promoted:

Pathfinder

- Implementation plan



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- Workbook

### Integrating mobile observations

- Implementation Tool kit
  - Materials to assist in deployment
- IMO final Reports – benefits, cost, lessons learned

### A variety of knowledge and tech transfer efforts

- Webinars
- Stakeholder meetings
- Peer exchange workshops
- Site visits
- Training

### Upcoming Events

Dec. 6<sup>th</sup> and 7<sup>th</sup> – most important for us

### Weather savvy roads involves multiple state DOTs:

- Maintenance
- Traffic operation / traffic management
- IT group

### Interested?

- Agencies can choose one or both of the weather-savvy roads solutions
- Contact your STIC/EDC Coordinator and the Local FHWA Divisio

### Questions:

1) DOT vehicles only or maybe first responder vehicles too? Some have very well equipped vehicles? Should this tech be limited to state DOT? Snowplow?

**Answer** - No!! But we can go for DOT first. It is easier to implement with DOTs. If we had chosen to go with private fleet it would have been more difficult.

1b) Are Law enforcement vehicles an option?

**Answer** - Yes a definite partner that we should consider. We left it up to State DOT.

But yes – State law enforcement should be a partner too. It would be helpful for them too.

2) In your specifications does it go into things like battery drain?

**Answer** – Has to be user friendly, not distracting, systems are very packed so not much power. But it is found to be very low demanding in terms of power use. This can be incorporated into what they already have. Sometimes it sends nothing back to



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person in truck. No interface. Some state DOTs already have some kind of equipment. But this is next level and put data into software.

## Data-Driven Safety Analysis

**Jerry Roche**

Most will see increase in fatalities  
7.2% increase in fatalities nationally

Performance measures including safety  
Before we build it or when

What is DDSA?

- The application of the latest evidence-based tools and approaches to safety analysis
- Provides reliable estimates of an existing or proposed roadway's expected safety performance
- Helps agencies quantify the safety impacts of transportation decisions, similar to the way agencies quantify:
  - Traffic growth
  - Environmental impacts
  - Traffic operations
  - Pavement life
  - Construction costs

Foundational DDSA Methods:  
Highway Safety Manual –

- 2010
- Supplemented with a couple of chapters 2014

(Highway capacity manual was first written in the 1950's)

HSM has resulted in the development of:

- Spreadsheets, software products, guidance documents, crash modification factors clearinghouse

Example of Data Driven Safety Analysis-  
3 options on slide

All meet current design standards

But if use these tools, will show how they perform differently.

Useful for elected officials too!



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Goal to integrate safety performance into all transportation implementation decisions  
DDSA has a role in each stage.

DDSA in the Planning Process: DDSA tools can be applied to help identify which roadways aren't performing as they should, design the scope and need of potential projects, and prioritize them.

### System level Planning

- Network Screening

### Project level Planning

- Establish Project Scope
- Project Prioritization

Network Screening: Which sites have most potential for safety improvement?

Steps:

1. Establish focus
2. Identify network
3. Select performance measures
4. Select screening method
5. Screen and evaluate results

### Traditional vs Advanced Network Screening

From simple safety performance measures:

- Crash frequency
- Crash rate
- Equivalent property damage only

To advanced safety performance measures:

- Excess predicted average crash frequency
- Level of service of safety
- Potential for safety improvement
- Systemic sites with promise

DDS in Alternative Analysis: DDSA tools can predict the number and severity of crashes for each project alternative, allowing safety performance to be considered along with other project criteria.

When might a more robust safety analysis in environmental phase be appropriate?

- When safety is included in the purpose and need
- Projects that claim a safety benefit
- Projects where there could be a substantial difference in safety for the alternatives being considered



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- Projects with existing safety issues

DDSA in Design Process: Can determine optimal design criteria. What is needed on this project? A performance based practical design. It helps justify flexibility in design.

DDSA in Construction, Operations, and Maintenance:

- Interstate access requests,
- Intersection control evaluation
- Traffic impact study
- Work zone
- Part-time shoulder use
- Performance Management
  - 7 national goals:
    - 1- Safety
    - 2- Infrastructure Condition
    - 3- Congestion Reduction
    - 4- System Reliability
    - 5- Freight Mobility and Economic Vitality
    - 6- Environmental Sustainability
    - 7- Reduced Project Delivery Delays

Available Resources:

- Info guides, webinars, presentations, training workshops, videos, free technical assistance

DDSA assistance under EDC-3:

- 43 states, 145 requests

**Questions:**

1) To what degree do you incorporate behavioral info into analyses?

**Answer** – We try and look at that. Depends on what agency has for data

A lot of agencies want to know about it

A systemic approach: Law enforcement, pedestrian in...some tools do allow for that is applicable to many strategies

2) I am assuming there is governmental immunity for choosing a less safe option?

**Answer** – Safety analysis is protected on Federal level from discovery

We don't want them to not collect data because of being sued

These agencies like this to be able to better analyze – safety performance

Analysis output for justification

Court cases- not engineering decisions... but negligence



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Tools and methods have helped them in court cases vs not helpful

### **LUNCH BREAK**

#### **Darran Anderson:**

Access to other funds. There are resources available. There will be something we want to implement. Pilot effort first. See how it goes. Then get with others to see what to do with it next.

There are funds to implement these research efforts. Can discuss with agencies

**Al Alonzi** – Think broadly about how some of these can be adapted to fit our needs

## **Automated Traffic Signal Performance Measures:**

### **Trinette Ballard**

Automated Traffic Signal Performance Measures (ATSPM): Suite of event based data collection and analysis tools to support a performance based approach to managing a traffic signal program

#### State of the Practice:

##### Program management

- Ad hoc business practices
- Resource constrained
- Outdated equipment

##### Performance Assessment

- Complaint driven
- Reactive operations & maintenance
- Project oriented before & after

#### Three Components:

- 1- Suite of performance measures
  - a. That support objectives and performance based approaches to traffic signals for maintenance and operations





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- 2- Data collection
- 3- Data analysis

### Examples - Operations

- Yellow and red actuations
- Arrivals on red
- Ped/Bike delay
- Split Failure
- Travel Time, etc.

### Maintenance

- False calls
- Preemption details
- Communication Failures
- Alarms

Connect operations and maintenance to achieve a systematic approach

### Example -

ATSPM=Fitness tracker for traffic signals

- Data collection and Data analysis

Useful and helpful to the program

This is an opportunity to transform the traditional approach to a proactive approach

### Benefits:

Transforms maintenance and operations activity from a reactive to proactive management program

- Lower costs
  - To better manage resources
- Higher quality of service to customers
  - Lessen complaints
- Improve safety and efficiency

### Improve Safety, Efficiency, and Reliability

- Monitor safety related performance measures
- Data driven allocation on green time
- Objectives & performance based approach

### Supports asset management

- Life cycle analysis
- Support for funding needs



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### Challenges:

#### Organizational Capability

- Shift to objectives & performance from ad-hoc management
  - What resources are needed
  - Workforce
  - Systems & Technology
- Dispersed Audience
  - Connecting with local agencies

Software – can target audience for implementation

#### Where?

- College Station and Richardson TX
- UT
- ID
- MN
- WI
- IN
- PA
- VA
- GA

#### How can FHWA help you?

- Build their business practices
- Advance implementation of ATSPM to support objective and performance based
- Increase awareness of ATSPM to support

#### Additional Resources:

- Train the Trainer Workshops
- Peer 2 Peer Support
- Technical Assistance

Eddie Curtis!! Reach out to him

#### Questions:

None



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### **Multi-Agency Coordination for Safety and Mobility Improvements related to Intermodal Freight Facility Access**

Caroline Mays

Moving toward implementation  
This project conducted by TTI  
Looked at some of the key issues for freight centers  
Challenges they face  
Using tech to improve access, mobility, and safety

What did the researchers do?

6 main components:

- 1- Literature review
- 2- Identified current challenges
- 3- Examined current freight planning/ mobility efforts
- 4- Identified potentially impacted freight centers
- 5- Developed applicable case studies
- 6- Developed guidance

How did the researchers do this?

- Lit review
- Site searches
- In-person contacts
- Site inspections
  - Gives a different perspective. Really see it
  - What are some innovative solutions?

Challenges Identified:

Overall communication

- Among governmental agencies
- Proprietary info – private sector

Rail operations

- Blocking at-grade crossing
- 9,000 of them – more than any other state
- Many issues

Road safety and operations

- Crashes
- Bottlenecks



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- Road widths
  - (Remember truck are bigger!! Need more room)

Predicting the future

- How much will freight traffic actually increase?
- Where will it increase?

Coming up with solutions Together! Many agencies working together can come up with solutions! Coordination

Discussion with various agencies

- Metropolitan Planning Organizations (MPOs)
- Port Authorities
- State DOTs
- Cities

Agency Coordination is extremely important

- Concepts
- Planning
- Funding

Identify potential impacted freight locations

- Houston
- Brownsville
- Corpus Christi
- San Antonio, etc.

Lessons Learned:

- Key finding of freight studies
- Panama Canal Stakeholder group document review
- Identified agencies involved
- Identified lessons learned and best practices

Intersection Solution Examples:

- Small-scale reliever
- Rerouted left-turn movements
- Cleared truck congestion
- Improved traffic flow
- Alum Creek Road in Columbus, OH

Multiple stake-holders that were part of this process  
State DOT, Private sector, etc.

Develop Guidance that Stakeholders Can Use:



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### Concept Development-

- Corridor perspective
- Reliever facilities
- Facility connectivity

### Planning Efforts-

- Project plans
- Metropolitan transportation plan (MTP)
- Public participation efforts

Funding is a key issue. We are never going to have enough, but how do we use what we have the most efficiently?!

### Funding:

- Funding Identification
  - Innovative funding techniques
  - Identify new sources
- Agency responsibilities
- Transportation Improvement Program (TIP) coordination

### Organizational Structure

- Port authority coordination
- Seaports and inland ports

### Safety:

- Truck queues
  - Facility entrances
  - Intersections
- At-grade railroad crossings
  - Crashes
  - Blockages- impacts at crossing and beyond
- Internal circulation
  - Bike/pedestrian
- Pavement
  - Condition
  - Appropriate strength
    - Overweight capabilities
- Wayfinding
  - Prior to 'last mile' connections



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- During last mile
- On-site
- Complicated intersections
- Geometric Designs
  - Roadway/intersection design
  - Roadway reconfiguration
  - Horizontal clearance
    - How do we strike the balance?
- Environmental issues
  - Hydrology
  - Permit management
  - Title VI/Environmental Justice
    - Re-routing
    - Ex – quiet zones

### Next Steps:

Develop and deliver training workshops and peer exchange

### Share research results

- Lessons learned
- Best practices
- Guidance

### Spur discussions

- Get stakeholders (from multiple agencies) together
- Catalyst for open discussions and coordination

Look at design and can start to implement too

### Questions:

1) Do you have a first site to have best practices?  
How can we implement these?

**Answer** – Go to TxDOT first and get them to implement it. Then spread it around

2) In title the word freight is used.  
When we talk about Barnett shale drilling and there are many big trucks on little roads, etc. What is being done about this?

**Answer** – Spent a lot of resources over years to address these issues. Much more proactive and strategic because we are not at a slow down time. We can talk to industry. We can improve this. We have resources and we can work together.



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- 3) This is very timely because there is the opportunity to get funding on a national level, but how do we do this?

**Answer** – 2 ways to get funding to address these issues:

Federal funds are now being dedicated to freight and we can submit projects.

Competitive grant – for innovations like Truck information system

## Implementing the Next Generation of Ultra-Fine Slurry Overlays

**Mike Arellano**

Ultra-Fine Slurry Overlays

What is an Ultra-Fine Slurry Overlay?

- Not a seal coat
- Less aggregate than traditional slurry seal and lower asphalt application
- 'Mastic Seal'
- Frictional Asphaltic Surface Treatment (FAST)

Material:

- Rapid setting asphalt emulsion
- Fine hard and angular aggregate
- Polymer
- Catalyst
- Recycled Materials

Application:

- Specialized distributor
- Tank with agitators to keep aggregate in suspension with emulsion
- Large, pneumatic nozzles
- Rate of 0.32-0.38 GAL/SY
- Set time varies 15-45 minutes

Frictional Asphaltic Surface Preservation Treatment (FAST):

- Reestablish or enhance surface friction
- Seal from water intrusion to preserve pavement structure
- Abate oxidation to existing asphalt surface
- Fills in fine cracks
- Prevents raveling



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### Thin overlay Mixtures (TOM)

- .5-1.0 high performance overlays
- Service life greater than 8 yrs
- Oxidation, fine cracks

### EXAMPLE -

#### I35 Project

- 2008 TOM IH-35 Service Life = 10yrs
- TOM with Mastic Seal = 13 yrs?
- 30 Life Cycle Cost Analysis
- Assumptions: 3% inflation, capital costs only, no user delay costs
- Total savings of ~ \$55,000 per lane mile
- Total savings for 2008 IH-35 TOM (82 lane miles) = \$4510,000 (deferred cost)

### Black Out Stripping for Phased Construction:

- Temporary Stripping for Phased Construction
- Conventional method for blacking out existing striping
  - Black thermoplastic
  - Glares in sunlight
  - Difficult to discern lanes and merging movements
- Fog seals for blacking out
  - Reduction in surface friction
  - Not durable
  - Long set up
- FAST for Blacking out Existing Striping for Phased construction
  - Full coverage
  - Very black
  - Fast application
  - Little delay to traffic
  - Promotes safety

### Ideal for New innovative Intersections – Diverging Diamonds

#### Future Work:

- Establish test section to evaluate all 2 intended applications
  - Evaluate durability to stopping and turning movements
  - Various surface types and conditions
- Austin, San Antonio, and Bryan Districts
- Validate research results
- Perform cost effective calculations and field performance evaluations





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- Identify new applications

### Questions:

1) Any prep work before applying?

**Answer** – Brooming and cleaning surface

2) Special specs for the aggregate?

**Answer** – Yes that is detailed in the Specs

3) Is this temp restrictions?

**Answer** – Yes

4) Are there spray reduction benefits?

**Answer** – No

5) Test about extend life of pavements?

**Answer** - Abrasion test and 1 other

6) Tests for Hydroplaning?

**Answer** – We tested wet weather, long-term skid crashing, and term life of road

## Every Day Counts Summit December 2016

### TxSTIC Moving Forward – Next Steps

Darran Anderson

(Train to standard and not to time – from military)



# TxSTIC Meeting Notes

## October 24, 2016

We have a large body of research. Most in realm of highways and environmental concerns. Many things coming forward for implementation

Right now we are part way through the process, so what you see today are about ready to go.

In future we will present problems and talk about solutions.

The six we have heard about today – can possibly bring them into pilot testing and also look at other states and pilot programs.

Also look at things that by nature are something that would work for some agencies

The above is the longer vision.

If you go to <http://txstic.org/>

There is a link to our research website. Then at the bottom under resources, link to Research Project Library. Go here to see research that has been done all over the nation.

Also there is a list of all our projects in progress right now.

Long range vision for research area: To further the state and then the nation. We want to be a leader and be a partner in research and better the nation and our state.

Reminders:

Smart State Mobility Summit –

Austin applied to federal government to be a smart city

What would they share? How would we proliferate?

Did not get it but the above did not die

Will host a meeting in December

Will allow agencies to come together and talk about and identify emerging technologies. Allow them or us to implement those technologies on their or ours systems

Everyday Counts Summit Dec – 6<sup>th</sup>-7<sup>th</sup>

Every 5 years Peer Exchange – Dec 6<sup>th</sup> -8<sup>th</sup>

ITS Texas – Intelligent Transportation Systems 9<sup>th</sup> – 11<sup>th</sup>

Lots of events that are technology related

Next summit in Jan or Feb

June for next TxSTIC meeting.

But maybe just semi-annually.

Will tie to research calendar.



# TxSTIC Meeting Notes

## October 24, 2016

Will update you on calendar.  
Quarterly updates and website updates.

Can vote for what you want to implement.  
Volunteers to champion or implement.  
Sunset Review – will know in next month how that went

What is the value add or return on investment? This is something we have been adding to documentation. Assess if we achieved ROI. To show state if it's of value. We will have documentation.

Autonomous vehicles: was asked about this today  
Fed government – issued guidelines about autonomous vehicles  
Will be up to elected official what we do in this state with new technology – as long as safe, secure, and valuable

## Open Discussion

**Darran Anderson** –

How did we do? What can we do better? Are there any questions? This is a top level strategy meeting. Need to get action items detailed (priorities of individual, government, etc.). Where do we want to put our investments?

We want to have a committee that looks at all the projects and says:  
Here are the best ones that we could implement soon.  
Will remind us what are mission and vision at TxDOT are.  
Criteria for underwriting proposals in field. How will you decide what measures up?  
We haven't laid them out, but we will do that.  
Who is ready and willing to champion this? Is there a place we can implement?  
Cost, performance, etc.

We have created a memorandum that talks about what our test approaches are.  
What we have historically done with proactive...So can share with others about what we do. Needs to be signed soon.

- 1) A traditional research method looks at Mega Regions. It asks questions like, "What will 2015 look like?" (The answer is 2/3rds of people will leave in 10-11 mega regions). Is this something that will be looked at?



# TxSTIC Meeting Notes

## October 24, 2016

Answer - Mega regional planning. We can look at this in next meetings. Good in terms of implementation.

Example -  
Freight

- Good to know not just what is happening in Corpus or Laredo when you leave but also Houston and Louisiana
- Plus -Trip length, Hours of service

**Al Alonzi -**

2 things:

1. I learned a lot about what is going on in other parts of the state. There were some good questions from group - mega regions, etc.
2. All of this collaborative discussion is exciting to me

**Darran Anderson-**

Thanks to everyone!

If you have something to say, please send that to us. If you want to get on with problem statements, also give that to us so we can share it with researchers, etc.

RTI - Oct 31<sup>st</sup> - accepting project statements for 2018