Alaska Department of Transportation & Public Facilities

State Transportation Innovation Council

Anna Bosin, P.E.
RD&T2 Program Manager

July 16th, 2019

STIC in Alaska

STIC Co-Chairs:
John MacKinnon- Alaska DOT&PF Commissioner
Sandra Garcia-Aline - FHWA Division Administrator
https://www.fhwa.dot.gov/innovation/stic/

RD&T2 Linked Resource

State Transportation Innovation Council (STIC)

The Alaska Department of Transportation and Public Facilities (DOT&PF), local public agencies and tribal transportation agencies own and maintain the surface transportation system in Alaska and make key decisions on how to deliver projects, and how best to employ techniques and technologies in its operation and safety.

The State Transportation Innovation Council (STIC) brings together stakeholders that represent public policy and market forces to lead innovation in Alaska's transportation program. The STIC provides multistakeholder leadership to perpetuate the deployment of innovation in Alaska. The STIC serves as a forum for initiating and overseeing the rapid deployment of innovative strategies into routine practice to accelerate transportation project delivery and enhance project quality and effectiveness.

You can learn more from FHWA's STIC website and the Alaska STIC Charter:

- FHWA STIC Network
- Alaska STIC Charter

Public Notices

- NEW Alaska State Transportation Innovation Council (STIC) Innovation Project – FY19 Applications now available

Innovation Project Applications

- The STIC will be accepting applications for the 2019 innovation for Alaska through April 16, 2019 – Submit applications by email to gwen.mayo@alaska.gov.

Alaska STIC Contacts

- STIC Sponsor Contact List

For Further Questions Contact:

Dave Waldo
Training Specialist
(907) 451-5323

RD & T2 Information

- RD & T2 Home
- Training
- Meetings
- Research
- Request for Proposals
- State Transportation Innovation Council
- Resources
- Staff

Contact D&ES Webmaster

Staff area (authentication required)

Related Resources

STIC Charter

MISSION: Facilitate the rapid implementation of technology, tactics and techniques among transportation program delivery professionals starting at Alaska DOT&PF and moving toward all levels of tribal and local government and throughout the private and non-profit sector to ensure smart, efficient investment in Alaska's transportation services and infrastructure.

The Alaska STIC Charter summarized in three bullets:

- **Provide a forum** for discussing and proposing solutions to transportation-related problems.
- **Select technologies**, tactics and techniques on which to focus implementation efforts.
- **Share information** with stakeholders through meetings, workshops, reporting and conferences.

STIC Membership and Meetings

STIC Members-Current		Position	Agency/Company
Aaron	Christie	Senior Project Manager	Dowl
Alicia	Stevens	Transportation Planner	FMATS (Fairbanks Metropolitan Area Transportation System)
Billy	Connor	Director	University of Alaska Transportation Center (AUTC)
Cornelius	Sims	Lieutenant	AST-Support Svcs
Jackson	Fox	Executive Director	FMATS (Fairbanks Metropolitan Area Transportation System)
Jeremy	Miller	VP of Operations	Carlile
Craig	Lyon	AMATS Coordinator	Metropolitan Planning Organizations (AMATS and FMATS)
Mike	Miller	Life Board Member	Alaska Assoc of General Contractors
Jan	Hill	Mayor	Haines Borough
Rori	Vannortwick		APWA
Carolyn	Morehouse	Chief Engineer	AK DOT Design & Engineering Services
Kathleen	Graber	Asst. Division Director	FHWA Alaska Division
Peter	Forsling	Bridge, Research, & Marine Hwy Engineer	FHWA Alaska Division
Will	Ware		Tribal TTAP Coordinator or Governor's Tribal Rep
Staff Support			
Dave	Waldo	T2/LTAP Manager	AK DOT Design & Engineering Services - Research & T2
Gwen	Mayo	Accounting Tech I	AK DOT Design & Engineering Services

FHWA STIC Guidance

- Technology & Innovation Deployment Program (TIDP) Goals
- Requirements for eligibility
- Examples of allowable activities

FUNDING

The STIC Incentive program offers Federal funding of up to $100,000 per State, per Federal fiscal year to support or offset some of the costs of standardizing innovative practices in a State transportation agency or other public-sector STIC stakeholder. STIC Incentive funds provide a Federal share of 80 percent. The 20 percent non-Federal match may come from project sponsors or other allowable funding sources.

ELIGIBLE ACTIVITIES

STICs consider innovations from a variety of sources, including but not limited to, FHWA's ***Every Day Counts*** program, the ***American Association of State Highway and Transportation Officials' Innovation Initiative***, and the second ***Strategic Highway Research Program***.

STIC Incentive funds may be used to develop guidance, standards, and specifications; implement process changes; organize peer exchanges; offset implementation costs; or other activities the STIC identifies that address Technology and Innovation Deployment Program (TIDP) goals. More STIC Incentive program guidance is available at: ***https://www.fhwa.dot.gov/innovation/stic/guidance.cfm***

Outreach and Notification Plan

Public notification of grant:

- AK DOT&PF website State Transportation Innovation Council (STIC)
- Includes selection process in notification
- Applications due in springtime annually

Outreach plan:

- DOT's Research & Training list-serve
- LTAP local government contacts
- STIC member agencies and contacts
- Tribal agencies
- FHWA

Project Selection Process

1. Applications first screened by staff for accuracy and eligibility prior to STIC consideration.
2. All Proposed projects must have a STIC member as champion.

If the first two criteria met, then considered by STIC using following discussion points:

- Does your project improve a safety concern or stimulate economic growth?
- Does your project support cost savings or efficiency project delivery?
- Does your project have a high likelihood to improve the way we do business or foster a culture of innovation?
- Is your impact narrow or widespread (Statewide)?
- Does the proposal include match funds beyond the 20% requirement?

STIC votes – selection by majority (excluding FHWA)

STIC Projects Past and Present

- 2016 - NEPA Training (Ben White – STWD DOT)
- 2017 - Acceptance of Asphalt Paving Compaction (Rich Giessel – CR DOT Construction)
- 2018 - Development of a Manual for Implementation of an Alaska Utility Information Management System (Rex Young - NR DOT)
- 2019 - Creation and Implementation of a Comprehensive, Statewide, Multi-division Augmented and Virtual Reality Program (Paul Eckman - NR DOT)

2016 – NEPA Training

Developed training modules and associated materials to provide staff training on the Environmental Procedures Manual for the NEPA Assignment Program.

Chapter 1. Environmental Procedures Overview
Chapter 2. Class of Action Determination
Chapter 3. Categorical Exclusion
Chapter 4. Environmental Assessment and Finding of No Significant Impact
Chapter 5. Environmental Impact Statement
Chapter 6. Re-evaluation
Chapter 7. Public and Agency Involvement
Chapter 8. Section 4(f) and Section 6(f)
Chapter 9. Endangered Species Act and Marine Mammal Protection Act
Chapter 10. Cultural Resources

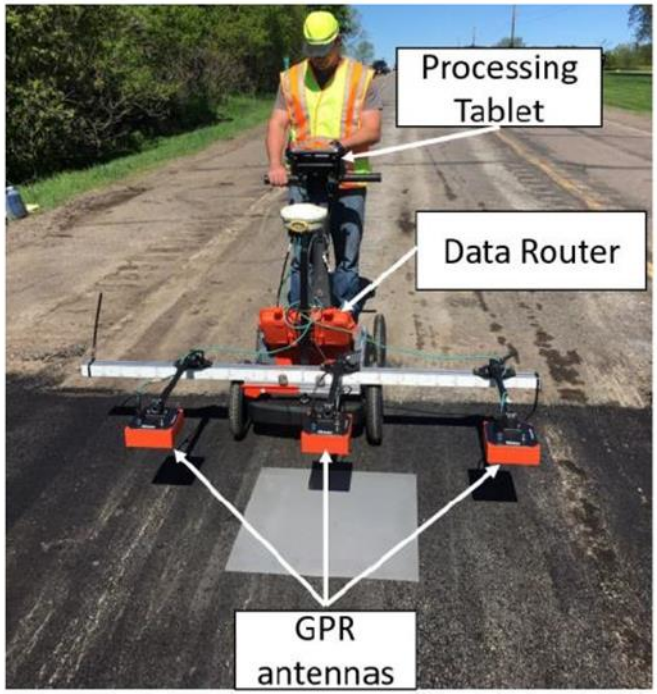
2016 – NEPA Training

The NEPA training modules can be accessed from the Statewide Environmental Office training website via a link to the introductory webpage:

- http://www.dot.state.ak.us/stwddes/desenviron/resources/final/website/index.html

2017 - Acceptance of Asphalt Paving Compaction

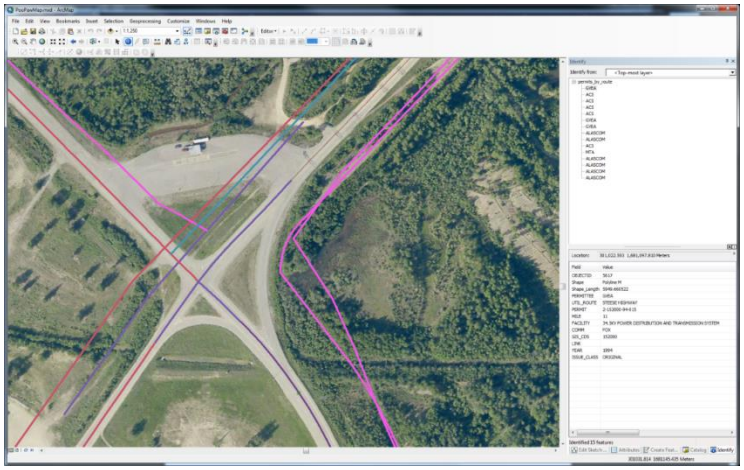
- Tested draft performance specification for acceptance of asphalt paving compaction based on full-coverage density data collected by ground-penetrating radar (GPR).
- GPR equipment measures and maps compaction of freshly placed asphalt right behind the paving equipment. That means defects can be identified and fixed during the paving process.



2017- Acceptance of Asphalt Paving Compaction

The GPR technology was demonstrated at a June meeting of the Alaska STIC, providing attendees with hands-on experience using the equipment. Deployment of a continuous full-coverage compaction specification for asphalt paving to enhance project quality and pavement life.

2018- Development of a Manual for Implementation of an Alaska Utility Information Management System



- Visualization tool
- Enterprise-wide access to utility data
- Establish data standards
- Implement in all 3 DOT regions

2019 - Creation and Implementation of a Comprehensive, Statewide, Multi-division Augmented and Virtual Reality Program

Purchase hardware necessary to implement a virtual reality (VR) and augmented reality, that includes training. What are the benefits?

- Help design engineers identify inconsistencies, errors, and omissions in design sets and interact with a 3D model in the real world at the site of construction . This will reduce design errors and cost of change orders in construction.
- Improve comprehensive design reviews to take place away from the project site. This will reduce travel costs and potentially make it possible for more experts to review plan sets and provide valuable insight prior to and during construction.

2019 - Creation and Implementation of a Comprehensive, Statewide, Multi-division Augmented and Virtual Reality Program

- Allow the public to view design alternatives through VR/AR to better understand our plans and provide more comprehensive and meaningful feedback.
- Assist with the training of new engineers to better identify mistakes. Some design mistakes are difficult to identify in a 2D model, but easy to identify in a 3D model, which ultimately reduces time and cost.

How Do You Submit a Project for Consideration?

The 2020 STIC incentive grant should be available by early February. The application deadline is usually around the middle of April. See the STIC link on the Research & T2 website: State Transportation Innovation Council (STIC)

Contacts for STIC questions:

- Dave Waldo at Research & T2

451-5323 david.waldo@alaska.gov

- Anna Bosin at Research Development & T2

269-6208 anna.bosin@alaska.gov

FHWA Innovator

Taking Inspection to New Heights

Unmanned aerial systems enhance safety and efficiency for highway agencies

Unmanned aerial systems (UAS), commonly known as drones, can benefit nearly all aspects of highway transportation by collecting data automatically or remotely. Multiuse aircraft controlled by certified operators on the ground, UAS offer improved safety, efficiency, and quality and reduced costs.

"It's compelling when you can touch on these four extremely important benefits with one technology," said James Gray, UAS and construction technology engineer for the Federal Highway Administration and a leader of the Every Day Counts round five (EDC-5) UAS team.

The EDC-5 team is promoting the use of UAS coupled with sensors such as high-definition cameras to enhance data acquisition for structural inspection, construction inspection, and emergency response. Forty-six States set a goal to demonstrate, assess, or institutionalize the use of UAS in transportation applications in 2019 and 2020.

EDC-5 Focus

The EDC-5 team is focusing on five UAS applications for structural inspection: bridges, high-mast lighting, confined spaces, retaining walls, and tunnels. Structural inspection enhanced by UAS improves safety for the inspection team and the traveling public by reducing the need for temporary work zones.

Construction inspection applications in which UAS are beneficial include surveying, project scoping, and work zone traffic monitoring. Construction inspection with UAS allows for an overhead view of a project's progress and for development of **three-dimensional (3D) models** that document construction processes and assist in earthwork quantity measurement.

UAS also prove useful in emergency response operations after roadway disturbances such as rockslides, avalanches, and floods and damage assessment after earthquakes, fires, and bridge hits. This relatively low-cost method allows agencies to obtain quality data quickly to make more informed decisions.

"We're seeing the emergence of UAS technology in all of these uses," said Gray. "There's a lot of excitement around UAS."

Gaining Access, Gathering Data

The Minnesota Department of Transportation (MnDOT) implemented UAS to support its bridge inspection program, particularly for bridges with difficult-to-access elements "We'll always use traditional inspection methods, but we were looking for other creative ways to gain access for bridge inspection," said Jennifer Wells, MnDOT State bridge inspection engineer.

As part of the UAS implementation process, MnDOT conducted field demonstrations to compare the effectiveness and safety of the technology to hands-on inspection methods. In one demonstration, the agency used UAS to inspect a small local bridge, a medium-size concrete arch bridge, a large steel truss bridge, and a railroad bridge over a river and compared the results to recent bridge inspection records.

MnDOT found that UAS can be an effective tool that reduces safety risks to inspectors from working in physically challenging situations and inconvenience to motorists from lane closures. UAS provided inspection detail that replicated some of the detail learned using under-bridge inspection vehicles while saving an average of 40 percent over the cost of traditional methods. UAS delivered infrared and 3D modeling detail of bridges, identified concrete delamination, and gathered topographic mapping detail.

"We learned that UAS can supplement inspections," said Wells. "We want to go statewide with this."

The Utah Department of Transportation (UDOT) uses UAS technology for rapid, high-quality data acquisition on jobs ranging from surveys to inspections. On a State Route 20 construction project, UDOT's first to use a 3D engineered model as the contract document, the agency deployed UAS to gather data to compare what was built with the 3D design model.

UAS technology can help agencies quickly and inexpensively survey damage during emergencies.

"By using this technology, we were able to get a bird's-eye view of the project," said Paul Wheeler, lead UAS coordinator for UDOT. "It gave us a whole new world of data to use."

Combining UAS use with the 3D model and **e-Construction** tools for inspection documentation resulted in overall project savings of about $83,000, increased workforce productivity by 45 percent, and enabled UDOT to complete the project 25 days ahead of schedule, Wheeler said. "We were surprised by how well the processes worked and plan to use them on more projects," he said.

MORE INFORMATION

- Visit FHWA's **UAS web page** for State policies, research reports, and webinars on UAS in transportation applications.
- Watch a **webinar** for an overview of how agencies use UAS in transportation applications.
- Read **"Successful Approaches for the Use of Unmanned Aerial Systems by Surface Transportation Agencies"** for recommendations on what to consider when getting started using UAS technology.
- Contact **James Gray** or **Connie Yew** of the FHWA Office of Infrastructure for information, technical assistance, and training, including workshops and peer exchanges.

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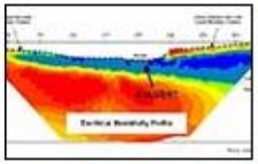
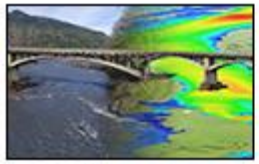
https://www.fhwa.dot.gov/innovation/innovator/

FHWA Every Day Counts

EDC-5 Innovations (2019-2020)

EDC Overview Video


Advanced Geotechnical Methods in Exploration


Collaborative Hydraulics

Project Bundling


Reducing Rural Roadway Departures


Safe Transportation for Every Pedestrian


Unmanned Aerial Systems

Crowdsourcing for Operations


Value Capture

Virtual Public Involvement


Weather-Responsive Strategies

https://www.fhwa.dot.gov/innovation/everydaycounts/about-edc.cfm