



TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

GDOT TRB 2014 Annual Meeting

EXECUTIVE REPORT

March 2014

2014 Attendees

Bridge Design

Ben Rabun
Bill Duvall
Paul Liles

Research

Georgene Geary
David Jared
Supriya Kamatkar

Materials

JT Rabun
Scott Harris

Districts

Stacy Aultman, District 4
Mike Lobdell, District 7

Planning

Kyle Mote
Krystal Harris

Program Delivery

Albert Shelby
Genetha Rice-
Singleton

Innovative Program Delivery

Darryl VanMeter
John Hancock

Environmental Services

Pam Baughman
Mathew Kear

Traffic Operations

Kathy Zahul
Paul DeNard

Maintenance

Norm Cressman

Performance Mgmt.

Melany Reynolds

Roadway Design

Chris Rudd

Transportation Data

Jane Smith
Paul Tanner

GDOT Presentations

Georgia's Experience Using the Concrete Pavement Road Map: **Georgene M. Geary**

Georgia Experience with SHRP 2 Products: **Genetha Rice-Singleton and Georgene M. Geary**

Assessing When Design-Build Contracting Is Most Effective: Expediting Project Delivery and Reducing Costs: **Darryl VanMeter**

Building the Infrastructure: Benefits of Section 106 in Georgia: **Matthew Kear**

Highway Engineering, History, and Archaeology: Intersecting the Present with the Past: **Pamela Baughman**

Comparison of Procedures to Predict Moisture Susceptibility Characteristics in Warm-Mix Asphalt: **David M. Jared**

Better Roads Magazine 2013 Bridge Inventory Ratings, AHD35 Committee meeting: **Paul Liles**

TRB Committee Meetings Attended

Management of Quality Assurance Committee, AFH20

Pavement Preservation Committee, AHD18

Project Delivery Methods Committee, AFH15

Managed Lanes Committee, AHB35

Bridge Management Committee, AHD35

Structures Maintenance Committee, AHD30

Regional Traffic Signal Operations Subc, AHB10

Rigid Pavement Design, AFD50

Flexible Pavement Construction and Rehab, AFH60

Steel Bridge Committee, AFF20

Concrete Bridge Committee, AFF30

Accelerated Bridge Construction SubC, AFF10(3)

Nanotechnology Based-Concrete Materials , AFN15T

Transportation Asset Management Committee, ABC40

Social and Economic Factors of Transportation, ADD20

Pavement Management Systems Committee, AFD10

Library and Information Science for Transp., ABG40

Historic and Archaeological Preservation, ADC50

EXECUTIVE SUMMARY

HIGHLIGHTS

TRB fosters information exchange through the Annual Meeting where approximately 12,000 transportation professionals from around the world gather to participate in the world's largest forum designed specifically for the formal and informal exchange of information among transportation researchers and practitioners. TRB maintains more than 200 standing committees and task forces that address all aspects and modes of transportation. Committee members identify research needs; provide information to the transportation community on research priorities and procedures; review papers for presentation at the Annual Meeting and for publication; encourage the incorporation of appropriate research findings into practice; and develop special programs, conferences, and workshops.

Prior to this year's TRB Annual Meeting GDOT attendees were instructed to be prepared to identify initiatives that could be implemented as a result of something heard or learned at the meeting. GDOT attendees brought back almost 50 implementation ideas that covered all four of GDOT's Strategic Goal Areas: Asset Management, Mobility, Workforce/Policy, and, Safety as shown in the following pages.

The attendees brought back ideas from other States and FHWA in many areas including performance measures of signal systems, new ways of engaging the public in Planning, best practices in asset management integration, new bridge joint systems, innovative project conflict scoping processes, pioneering ways to implement research and safety "report cards" for counties.

Attendees were also exposed to cutting edge transportation research in the areas of incorporating risk into bridge prioritization, self-driving vehicles, new methods of bicycle and pedestrian data collection, new steels that do not require painting, handheld spectroscopic equipment for quality assurance, and the latest in managed-lanes and design-build procurement.

Through presentations GDOT employees were able to share our successes in areas such as pavement rehabilitation, project risk management, incorporating operations and planning, design-build, environmental successes, warm-mix asphalt testing and the status of our bridges.

Several of the implementation ideas involved one-on-one discussions that were facilitated by the TRB Annual meeting. In just one of these meetings \$50,000 was saved. This was the anticipated amount to be spent on a research project to identify the state-of-the-art in landslide remediation for a North Georgia landslide location. A discussion at TRB resolved the issue at no additional cost.

Not all of the answers can come from the TRB annual meeting. But making connections and influencing the key direction of future research is one of the benefits of attending the meeting. One of our attendees identified and shared the need for quality assurance procedures for pavement preservation treatments, and now has access to the top minds in the World to discuss our proposed procedures and influence the future direction in this area.

Initiatives

TRB provides an opportunity to interact with industry peers and gain valuable knowledge of best practices around the country. There are several opportunities for implementation of innovative ideas gained or sparked from attending the TRB meeting. The following documents a summation of those ideas.

Asset Management

Proposed Initiative: Partner with Purdue University to implement a program similar to UDOT that measures the performance of signal systems across the state. This program can begin with the RTOP signals that are currently connected to TMC and GDOT network.

Potential Benefits: A comprehensive system that uses INRIX and other data to measure corridor travel times, queue clearing analyses, phase termination, and split monitors to maintain signal performance data and optimize timing plans. GDOT will also use the data to measure percent arrival on green, travel time savings, and possible travel time reliability for its most important corridors.

Implementation Plan: Work with FHWA and Purdue University to initiate a meeting to discuss costs, scope, and implementation details. Explore other products that are similar to this type of program by consultants currently familiar with GDOT signal systems. Access the current limitation/needs of our system to ensure a seamless and cost effective implementation.

Attendee & Session Paul DeNard, Traffic Operations: AHB10 – Regional Traffic Signal Ops Subc.

Proposed Initiative: Develop an Asset Management Process for underdrainage structures in high flooding areas on Georgia's Interstates

Potential Benefits: Because pavement is the Department's principal asset, the risk of underdrains failing could contribute heavily to pavement degradation. The potential for underdrains to fail can be due to the above average amount of rainfall in the state and the accumulation of sediment and debris over time. Conducting inspections and determining the condition of these assets in high flood areas in addition to defining the associated risk of failure can help the Department proactively plan maintenance and preservation activities. A more proactive approach could also contribute to overall cost savings.

Implementation Plan: Conduct informational interviews with SME's and District Maintenance staff to ascertain how the state's underdrainage structures are marked, being managed and the frequency of maintenance, specifically on interstates in high flooding areas. The risk factors to the interstate should an underdrainage structure fail can then be documented as well as mitigation steps.

Attendee & Session: Melany Reynolds, OPM: 267 – Data Collection and Analysis Methodologies in Support of Maintenance Programming Activities

Asset Management

Proposed Initiative: Investigate the use of AASHTO T 318, Water content of Fresh Concrete Using a Microwave Oven, which uses a microwave oven to measure water-cement ratio.

Potential Benefits: Maintaining the proper designed water-cement ratio of Portland cement concrete is critical to ensuring structural durability. Excess water can contribute to immediate performance issues including plastic shrinkage cracking. It can promote longer-term deleterious reactivity such as alkali-silica reactivity (ASR) and can make detrimental processes such as delayed ettringite formation (DEF) worse. During the last year, we have performed numerous forensic investigations of premature concrete distress that might have been avoided or significantly limited by accurate determination of the water-cement ratios during pouring.

Implementation Plan: Over a period of several months, conduct the test on routine fresh concrete samples produced during standard mix design testing performed by the Concrete Branch. The results would be collected and compared to the actual water-cement ratios. This also would provide an opportunity to produce a suite of standards with varying water-cement ratios to be used on all future forensic petrographic determinations. The goal would be to use and modify the test as necessary in order to establish routine errors of ± 0.02 before moving to field trials.

Attendee & Session: R. Scott Harris, OMAT: Workshop #102: Concrete Research for Transportation Applications: Celebrating Our Legacy and Anticipating Our Future, Part 1

Proposed Initiative: Develop quality assurance procedures for pavement preservation treatments.

Potential Benefits: GDOT is expanding the pavement preservation treatments used to maintain the highway network. The goal of pavement preservation is to extend the useful life of pavement while reducing the life-cycle cost. The right treatment is applied to the right pavement at the right time. The treatment criteria and distress triggers are being developed as part of the asset management system implementation. Discussions at TRB with representatives of the National Center for Pavement Preservation and members of the Pavement Preservation Committee and Management of Quality Assurance Committee confirmed a general dearth of quality assurance procedures for pavement preservation treatments. As with all materials used in the construction and maintenance of the highway network, quality assurance procedures for pavement preservation treatments are needed and are required by FHWA to qualify for federal participation.

Implementation Plan: As part of the implementation plan a meeting was held with OMAT and Maintenance in February. At this meeting we discussed and drafted quality assurance procedures for approximately 18 maintenance activities including several preservation treatments.

Attendee & Session: JT Rabun, OMAT: AFH20 – Management of Quality Assurance Committee and AHD18 – Pavement Preservation Committee

Asset Management

Proposed Initiative: Determining and Accounting for Noise Impacts to Historic Properties

Potential Benefits: GDOT follows a formulaic approach to assessing noise impacts to historic properties. An increase of a certain level will trigger an adverse effect for that property. The approach to mitigating that noise increase generally begins with the standard noise barrier varying with the nature of the property and its setting. This raises an important question: how do you resolve the issue of noise abatement measures to resolve an adverse effect, when the public is opposed or the wall itself could be considered an adverse effect? This workshop included an open discussion of different methods that have been used. When a noise wall is introduced in the vicinity of an historic property, some aesthetic treatment is typically proposed to minimize the impact to the view shed and setting of the property. Instead, we could investigate the use of aesthetic treatments as sound barriers. Examples could include the construction of a small berm to diminish highway sound and the use of vegetative buffers, where appropriate.

Implementation Plan: Investigate the use of natural buffers as sound barriers. A study of similar practices in other areas and testing of highway noise in the vicinity of existing natural buffers of varying types and distances, could help determine how realistic and effective this might be. Certain calculable factors would have to be considered, including vegetation types, buffer depth and height, and distance from the facility. With data on how effective these buffers can be at reducing highway noise, we can then apply models to different types of historic properties to determine whether or not the installation of natural noise barriers would be realistic and/or effective for historic properties.

Attendee & Session: Matthew Kear, OES: Transportation Noise and Historic Properties, Reimagining the Public Meeting

Proposed Initiative: Incorporation of risk into asset management decision making process

Potential Benefits: Development of GDOT Bridge Management Principles related to; Identification/mitigation of risk factors, decision trees, prioritization, MAP-21 requirements, etc.

Implementation Plan: Identify additional potential risks to be considered (ie. truck, vessel, fatigue, deterioration, blast, fire, etc) Modify Prioritization Formula to account for these risks and then identify training for Bridge Maintenance personnel related to asset management to include deterioration models and Multi-Objective Optimization. Discussions with the Asset Management developer should include the capabilities, methodologies, customizations, and changes required to insure compliance with MAP-21 requirements for asset management systems.

Attendee & Session: Ben Rabun, Bridge: Bridge Management Committee, AHD35

Asset Management

Proposed Initiative: One item that is becoming a hot topic that may well become part of our real considerations is the concept of Self Driving Vehicles. The session I attended on Thursday of TRB hosted a “debate” forum that considered not whether to implement the technology, but the pace at which it is done; that is, should it be done fast and comprehensive, or incremental.

Potential Benefits: This concept could drive policy and design changes that could affect the long term investments in Managed Lanes. Keeping informed on this technology can help the Department proactively prepare for changes and potentially have an influence on policies and investments.

Implementation Plan: Identify a resource that will “stay current and informed” on the technology advancement, since its most likely initial deployment would be in a controlled environment that is in a barrier separated Managed Lane system.

Attendee & Session: Darryl D. VanMeter, OIPD

Proposed Initiative: Engaging the Public in Planning

Potential Benefits: The public is a tricky animal to engage. They are an amorphous group that is never together at once, always busy, often untrusting, and rarely well-represented in formal public meetings. The Florida DOT (FDOT) recognized this issue and took a local approach to addressing it on particularly large projects. Two examples shared by FDOT professionals included the concept of the Drive-Thru Open House. FDOT set up tents on highly-visible street corners where people can stop by at their convenience to ask questions and provide feedback. FDOT has also taken this approach to major community events, like fairs, setting up their booth to connect with locals. By making an effort to go to them, rather than asking the public to come to us, we are more likely to have more meaningful and natural communication. **Implementation Plan:** This method is not going to be cost effective for widespread use. It should be reserved for major projects, where major impacts are anticipated and positive public involvement is absolutely critical. A project could be identified where this approach could be used on an experimental basis.

Attendee & Session: Matthew Kear, OES

Asset Management

Proposed Initiative: Promote FHWA Bridge Preservation Training Opportunities to both GDOT and Local Bridge Owners

Potential Benefits: Increased structure life through preventative maintenance activities

Implementation Plan: Promote the 3 free web based modules available from FHWA through LTAP. Investigate NHI-134029 training for both Bridge Maintenance personnel and local governments.

Attendee & Session: Ben Rabun, Bridge: Structures Maintenance Committee, AHD30 - FHWA Bridge Office Update, Anwar Ahmad

Proposed Initiative: A full chapter of the 2013 Traffic Monitoring Guide (TMG) published by the FHWA is devoted to non-motorized traffic monitoring. This is the first edition of the TMG to include information on monitoring pedestrians, bicyclists, and other non-motorized road and trail users. The monitoring of non-motorized traffic has not been systematic or widespread in the US and therefore guidance is limited and this emerging area will require more research to determine the best and most cost effective ways to collect non-motorized traffic data. Although non-motorized traffic data collection and reporting is not currently required by the FHWA today it is widely recognized by the transportation community that it will be required in the future because a significant portion on the latest version of the TMG is dedicated to this area. To prepare GDOT for the anticipated future data collection reporting requirements in this area I have volunteered to serve on the Bike/Pedestrian TRB subcommittee.

Potential Benefits: Proactive preparation for compliance with future Federal collection and reporting requirements Planned administration of the most fiscally efficient non-motorized collection and reporting program

Implementation Plan: The goal is to prepare GDOT with the most efficient collection and reporting plan for this area that will meet the anticipated reporting requirements in the future. Parameters that typically apply to motor vehicle traffic data collection do not necessarily translate to non-motorized traffic data collection. Due to continued funding limitations it is imperative that this program area be planned for and administered in the most efficient manner possible.

Attendee & Session: Paul Tanner, OTD: Workshop 194: Bike, Pedestrian, and Motorized Local Traffic Counting on all Roads and Session 408: Bicycle and pedestrian Counts, Factoring, and Forecasting: Employment in Diverse Applications

Asset Management

Proposed Initiative: Preclude the use of GRS abutments in DB contracts

Potential Benefits: By default, this would preclude the contractor from selecting this type of foundation. Should the Department decide that GRS abutments are an acceptable alternative, the contract could be modified on a case by case basis.

Implementation Plan: Begin discussions with the Office of Innovative Delivery to modify contract language.

Attendee & Session: Ben Rabun, Bridge: 391 - Geosynthetic-Reinforced Soil for Bridge Applications

Proposed Initiative: Work with the lighting office and Design offices to incorporate roadside vegetation, retro-reflective delineators, and luminaires to provide a low-lighting alternative for rural roundabouts.

Potential Benefits: Encourages the use of roundabouts at rural locations that have been prevented due to mitigate lighting costs.

Implementation Plan: Present research to Design Policy & Support and the design offices. Coordinate with the RAID team to explore the possibility for implementation in various projects.

Attendee & Session: Paul DeNard, OTO: Session 341 - Roadway Lighting: Technologies, Visibility, and Safety

Proposed Initiative: ASTM 1010 steel is a stainless steel that Oregon DOT used for bridges in a mildly corrosive environment. I-beams were fabricated from stainless steel plates and were erected over tidal streams with low clearance over water. They were used in locations where weathering steel was not appropriate (tidal conditions) and painting was not an option (low clearance over the water). Special welding techniques were required for the fabrication of these beams and were detailed in the presentation by Bruce Johnson, the Oregon State Bridge Engineer to the AFF20 Steel Bridges Committee.

Potential Benefits: The benefit to the GA DOT is that we would have a steel bridge that doesn't require painting.

Implementation Plan: Identify a potential bridge. This is a change from our present use of steel and could be implemented if we had a site with similar requirements.

Attendee & Session: Paul Liles, ADE: AFF20 Steel Bridges Committee

Asset Management

Proposed Initiative: Reggie Holt of FHWA outlined FHWA Technical Advisory T 5140.33 on chloride contaminated grout in post tensioned bridges and how states should respond. Georgia DOT has two bridges listed as potentially having grout contaminated with elevated chlorides. The Technical Advisory lists five steps that need to be performed in order to determine the long term performance of possible grout contaminated bridges.

Potential Benefits: We have the latest information on this issue and direct access to the experts to assist us in resolving the issue.

Implementation Plan: The implementation plan for the Technical Advisory is to proceed with the five steps listed in the document. We are currently in the process of implementing the first two steps.

Attendee & Session: Paul Liles, ADE: Concrete Bridge Committee meeting & LTBP Workshop

Proposed Initiative: Develop more robust contract specifications for crack sealing. In addition to various university research presented, an update on NCHRP Project 20-07, Task 339: Best Practices for Crack Sealing and Crack Filling of Asphalt Pavements Preparation was presented. While current GDOT Maintenance forces may lack the resources to implement many best practices within its own routine maintenance, these are certainly worthwhile to include within current and future maintenance contracts i.e. crack sealing, crash filling, fog sealing, white topping, chip sealing, etc.

Potential Benefits: As GDOT continues to see its budget for maintenance resurfacing continue to decrease, it is critical that GDOT implement methods to optimize the life of existing pavements. Crack sealing is one tried activity that has the potential to be revisited for potential enhancements.

Implementation Plan: Research crack sealing and crack filling specifications from those state DOTs already participating in the aforementioned NCHRP project (WI, MN, NH, IL, WY, TX).

Attendee & Session: Norm Cressman, Maintenance: Session 730- Crack Sealing & Crack Filling of Asphalt Pavements

Asset Management

Proposed Initiative: Learn from best practices at other state DOTs like NCDOT. Similar to GDOT, NCDOT has developed a comprehensive Asset Management System. GDOT currently has several operational engineering management systems in place, including pavement, bridge, and maintenance management systems that can support decisions regarding individual asset classes independently. However, these systems have not been integrated in a Comprehensive Asset Management System and it is difficult for these systems to share information between one another readily. As GDOT moves forward, one lesson learned from other DOTs is the importance of defining data collection procedures and expectations as clearly as possible.

Potential Benefits: As GDOT continues to see its annual routine budgets for maintenance continue to decrease, funding allocation decisions will need to be more data driven. Once GDOT reaches a point where a performance-based budget for achieving a certain level of performance is reached, these numbers can be shared with the districts, and the districts held accountable for attaining these goals.

Implementation Plan: Develop Level-Of-Service (LOS) metrics and goals for certain asset types identified. A methodology for evaluating district performance and measuring the condition of their highway assets will also need to be developed.

Attendee & Session: Norm Cressman, Maintenance: Session 267- Data Collection & Analysis Methodologies in Support of Maintenance Programming Activities

Proposed Initiative: Reduce the number of bridge expansion joints on existing structures

Potential Benefits: Joint seals typically have the shortest operating period of any bridge component and if not properly maintained can lead to deteriorated beam ends, bearings, bent caps etc. By eliminating existing expansion joints will provide long term protection and minimize maintenance activities.

Implementation Plan: Develop a matrix or flow chart to evaluate the expansion/contraction limitations for bridges that are associated with maintenance projects. Develop standard details for elimination of the expansion joints.

Attendee & Session: Bill DuVall, Bridge: General Structures Committee, AFF10

Asset Management

Proposed Initiative: Develop details and procedure for converting existing expansion bridge abutments semi-integral abutments.

Potential Benefits: The semi-integral abutment eliminates the joint at the bridge endwall and allows expansion / contraction to occur at the end of the approach slab limiting the potential for water to penetrate the fill under the approach slab.

Implementation Plan: Evaluate details done by NYDOT and other states, compare details to existing GDOT bridges and develop details.

Attendee & Session: Bill DuVall, Bridge: General Structures Committee, AFF10

Mobility

Proposed Initiative: Develop a means of self-analysis for the Cultural Resources Section to evaluate its program productivity and efficiency in relation to Section 106's mandate. A measure of program evaluation was discussed at TBR by addressing questions such as: What is the per unit cost of each eligible property in relation to the amount of survey done for a project? How many projects don't need to be surveyed and how many surveys are negative? Do areas need to be resurveyed for multiple projects in an area? At what interval should a survey be repeated - 10 years or 20 years (or more or less)? GDOT does not have the answers to these questions readily available.

Potential Benefits: Information compiled from such a study could be used to guide negotiations of the Programmatic Agreement (PA) for Section 106 for GDOT's Cultural Resources Section since it could provide an overall awareness of the program's activities, instead of a project-specific view.

Implementation Plan: The initial strategy for implementation would involve the development of the data gathering tool (perhaps a spreadsheet or database), along with the definition of the meaning of evaluative terms, such as productivity and efficiency. Second, correspondence with other state DOTs or agencies that have engaged in such tracking and who have done or attempted a PA for Section 106 should be pursued; Virginia DOT is an example.

Attendee & Session: Pam Baughman (OES): ADC50(2) – Historic and Archeological Preservation Research Needs Subcommittee Meeting & Session #667 – Programmatic Approaches to Environmental and Historic Preservation Review

Proposed Initiative: CalTrans uses a software for Falling Weight Deflectometer (FWD) analysis called "CalBack" which is used to calculate variability of stiffness.

Potential Benefits: We could compare the CalBack program with our current ModTag program to identify potential benefits for pavement design and analysis.

Implementation Plan: Request program from CalTrans and test.

Attendee & Session: Monzy Mathews, OMAT: Session 478 Application of Asphalt Mix Performance Based Specification

Mobility

- Proposed Initiative:** The Department has several new construction bypass projects programmed; more specifically designated as Truck bypass projects. The issue is proving the project's need when writing project justification statements to show that there is a benefit to having a truck bypass. Determining where the trucks are actually going is not easy without the appropriate data. We are left to rely on truck volumes on surrounding routes to make an assumption as to what direction trucks are going in order to verify whether a bypass would be used by the trucks and will be beneficial.
- Potential Benefits:** Process GPS data to obtain truck trips and tours. Most every commercial truck (class 8-13) is equipped with GPS tracking device. This can also be used to identify land use information (i.e. commercial, industrial. Identify a cost effective way to collect large amounts of truck and use it to compare with trip base models. This can determine how many stops are made within a TAZ.
- Implementation Plan:** Set up small study to purchase and analyze data to see if this is in fact useful and beneficial for department by focusing on one of the truck bypass projects
- Attendee & Session:** Krystal Harris, Planning: Session 291-Development of Tour-Based Truck Travel Demand Model Using Truck GPS Data

- Proposed Initiative:** Alternative Delivery throughout the country is advancing on new frontiers, compared with the standard Design Bid Build.
- Potential Benefits:** In order to come to terms with the opportunities in alternative delivery, including structuring and procuring the contracts, new business processes are necessary to address the shift in risk transfer and management. There are unique administrative needs for a program of alternatively delivered projects that are not readily identified until the process(es) unfold, including records retention, confidentiality, Alternative Technical Concepts, and financial statements. Foresight on this is needed to make informed decisions regarding resource needs. As the Administrator of the Office of Innovative Delivery, it is currently part of my duty to assess what critical staffing needs are necessary in the near and longer terms.
- Implementation Plan:** My implementation plan on this element consists of drafting a research needs statement on "Best Practices in Administrative Procedures for Alternative Delivery", and following through on its potential advancement from actual research product to implementation. As a product of participating in this research in this manner, this can add value to forecasting resource needs and broadening the source of the knowledge, so as to have a healthy and unbiased viewpoint for decision makers.
- Attendee & Session:** Darryl D. VanMeter, OIPD: Project Delivery Methods Committee

Mobility

Proposed Initiative: Improve the information and testing protocol used on WMA moisture susceptibility testing (lab). While presenting a poster on GDOT's work in this area several different university representatives came by and discussed our research and suggested some potential improvements to our methods and offered to share the results of their testing.

Potential Benefits: This information will help GDOT select the best lab test method for gauging WMA moisture susceptibility, one of the main concerns with WMA in Georgia.

Implementation Plan: Contact the university representatives to gather additional data. Discuss with OMAT regarding testing temperatures and loading cycles to scope follow-up research.

Attendee & Session: David Jared, Research: Session 624: Warm Mix Asphalt

Proposed Initiative: Currently the Department is conducting a study on the potential economic benefits for future transportation projects. This study is being managed in the Office of Planning, and is about ¼ of the way complete. A presentation given by the Missouri DOT researched transportation projects in the past and analyzed the economic benefits that previous transportation spending has brought the local communities and the state. Once MODOT calculates the economic benefit, for a few selected projects, the economic benefit information for those projects is featured in the MODOT STIP. Inserting an economic benefit section in the STIP can illustrate potential benefits to the public and would be beneficial to the Department.

Potential Benefits: The Department will be able to prove or predict economic benefits of transportation investments. This provides an opportunity to allow the public to understand the economic benefits of transportation investments.

Implementation Plan: The Office of Planning, once the ongoing study is complete, will take this idea of an economic benefits section in the STIP under advisement. This decision is dependent on many variables (Executive Management, outcome of the study, time, the STIP, etc), and will take a lot of discussion, thought, and research.

Attendee & Session: Kyle Mote, Planning: Session 750 "Building Credibility One Story at a Time: Linking Economic Growth to Transportation Improvements"

Mobility

- Proposed Initiative:** In brainstorming during a Committee meeting, we identified smaller, less experienced workforces as a potential risk to quality on roadway construction projects. A potential risk mitigation strategy is the implementation of 3-year warranties on projects as have been used in Florida.
- Potential Benefits:** Shortcomings in Contractor’s quality control procedures and adherence to quality workmanship practices routinely manifest as roadway failures during this 3-year timeframe following project acceptance. A few recent examples include Turtle River, SR 74 compaction issues, and the LaGrange Bypass. When failures occur shortly after construction is complete, the Department is responsible for the repair as well as for answering the inevitable questions from the public and the media. One potential way of addressing this issue is to transfer the risk of premature failure from the Department to the Contractor through the implementation of 3-year warranties on materials and workmanship. A warranty would provide incentive to the Contractor to provide adequate quality control as required.
- Implementation Plan:** Investigate current State Highway Agency practices especially Florida DOT which currently has a 3-year warranty Evaluate and compare current GDOT practice with practices of other states and with the proposed practice. Present the findings to GDOT Management for input, comments, and support.
- Attendee & Session:** JT Rabun, OMAT: AFH20 – Management of Quality Assurance Committee
-
- Proposed Initiative:** Conflict of Interest in alternatively delivered projects becomes a larger area of concern, due to the nature of the necessary due diligence on the Owner’s part and the breadth of team members that participate in this arena. One Panel session was focused on this topic. There are elements in this session that should examine more closely and if appropriate, fold into the current OPD Design Build Manual.
- Potential Benefits:** The benefit to Georgia is that there can potentially be fewer “problems” relating to DB procurements if the Conflict of Interest element is well-considered and addressed in the Department’s DB and P3 procurement procedures.
- Implementation Plan:** A part of this follow up implementation will consist of contacting a panelist, Katie Nees, to better understand where the Texas DOT philosophy and hard earned experience had landed them with such COI policies. Upon follow up and consideration, this might drive some changes to our current COI policies on alternatively delivered projects.
- Attendee & Session:** Darryl D. VanMeter, OIPD:

Mobility

Proposed Initiative: Quality assurance/quality control (QA/QC) procedures routinely used in highway construction are time consuming, expensive, and not always reliable. SHRP 2 R06B project had as its main objective to identify and evaluate handheld spectroscopic equipment for in-situ analysis of commonly used construction materials such as: Structural coatings, traffic paints, epoxy adhesives, RAP- containing binders, Portland cement, Asphalt emulsions, Oxidation in reclaimed asphalt pavement, HMA, Anti-stripping agents in asphalt concrete, and Aggregate minerals. The objective is to find the verification of chemical composition, Detection of prohibited chemicals/modifiers, Metal contamination, Type and water content, etc. Various portable units were tested for this purpose: 1. Compact ATR –FTIR, 2. Raman Analyzer, 3. XRF instrument

Potential Benefits: Verification of polymer presence in asphalt binders and emulsions was possible using the portable spectrometer. Furthermore, composite material such as PCC allowed for the identification of chemical admixtures in fresh mix samples. Fe presence in aggregates can be identified. Water content in the emulsion may be obtained. Verification of chemical composition in coatings, traffic paints, epoxy, etc. could be found.

Implementation Plan: The results presented for the compact ATR spectrometer, handheld XRF instrument, and RTA's Raman analyzer were successful in the identification of chemical structure, or fingerprinting, of both simple and complex organic compounds such as epoxy coatings and adhesives, curing compounds, and waterborne traffic paints. Further investigation is required on one of these devices for QA application.

Attendee & Session: Monzy Mathews, OMAT: Session 872- SHRP 2 Asphalt and Pavement Related Products

Proposed Initiative: Currently the 511 App will send email notifications and/or text notifications for a single route and time set up in advance. Current state of the industry practice for mobility apps is to push notifications to the device based on the location of the device. It should be investigated whether the app can be updated to determine the location of the mobile device and send information about that route in real time. Such notifications could include incidents, lane-closures, trip times, and general advisories. In addition, it may be useful to add a feature to call a HERO or identify an incident directly from the app.

Potential Benefits: Routine commuter traffic might be able to make more informed decisions about their commute options. State visitors could be made aware of upcoming hazards without needing to identify a route ahead of time.

Implementation Plan: Share information with Office of Traffic Operations

Attendee & Session: Chris Rudd, Road Design: Session 280-There's an App For That: Changing the Face of Urban Mobility

Mobility

Proposed Initiative: The presenters discussed in this seminar the implementation of large projects by streamlined project delivery, using Design-Build methodology. MassDOT used co-location of the design-build project team, and pre- and post- planning meetings for every weekend of work to assess what worked or did not work. Additionally they used the “big room” approach to the collaborative design and construction process. They used the Last Planner™ system for production. Connecticut DOT did a workshop for the contractors to show DB benefits and address concerns of smaller contractors on DB projects. The challenge for large projects with a lot of resources put on the projects, including a time commitment for senior staff was also discussed.

Potential Benefits: OIPD may benefit from this information. It also provided a better idea of what design-build is all about.

Implementation Plan: These ideas can be passed to Darryl VanMeter of Innovative Program Delivery

Attendee & Session: Albert Shelby, OPD: Session #236 Bringing Lean into Transportation Projects

Proposed Initiative: Minnesota DOT has a Conflict Scoping Process being used to reduce the impacts to project scopes, costs and schedule. This initiative would explore the opportunity of implementing a similar process in Georgia.

Potential Benefits: Reduce impacts to project scopes, costs and schedule.

Implementation Plan: Discuss Conflict Scoping process with Minnesota DOT

Attendee & Session: Albert Shelby, OPD: Session 825-Context Sensitive Solutions in a Design Build Environment

Proposed Initiative: Implement new methods for measuring congestion on Atlanta freeways and arterials using various forms of data visualization learned at TRB. Specifically using the measurement of “congestions hours” based on speed measurements (hours under 45mph) by milepoint to access where key recurring bottlenecks are.

Potential Benefits: GDOT management and Traffic Ops will have a speed profile diagram for various reports and performance measurement visualization to determine bottlenecks and places to improve freeway congestion. GDOT will also be able to determine the most improved segments and most degraded segments.

Implementation Plan: Work with Mark Demidovich and the TMC Data specialists to incorporate this type of reporting.

Attendee & Session: Paul DeNard, OTO: 502 – Congestion and Reliability Measurement and Management

Mobility

Proposed Initiative: Pursue the development of an inverted pavement pooled fund project. Scott Harris (OMAT), I, Virginia DOT and some industry members held a ‘lobby meeting’ to discuss “Inverted Pavements” (IP). The Aggregates Committee is planning a Workshop on IP at next year’s TRB Annual meeting. The idea of a pooled fund study to further the research on this alternative pavement system was discussed. In follow-up emails the State of New Mexico also was interested.

Potential Benefits: IP would provide an alternative pavement that provides a better cross-sectional use of material and is not as reliant on asphalt binders, which have been somewhat volatile for almost the past 10 years. After returning from TRB the GCAA expressed interest in further research on IP. A pooled fund study would provide that additional effort, while also pooling other States money into Georgia to the benefit of our economy.

Implementation Plan: Follow-up with OMAT Office Head and GDOT Management to gauge interest.

Attendee & Session: Georgene Geary, Research & Scott Harris, OMAT, “lobby meeting”

Proposed Initiative: Develop a research project to establish LRFD Seismic Zone criteria for Georgia.

Potential Benefits: With the implementation of LRFD, the level of seismic design depends on the spectral acceleration for the location as well as the site characteristics. The spectral acceleration has been rectified into a map for Georgia; however the site conditions vary throughout the state and can vary within a region as small as a county. It would be very beneficial to evaluate the risk associated with the site characteristics with respect to typical Georgia bridges and set a map for choosing the level of seismic design. This will be extremely important in scoping consultant designed projects when foundation information is not available.

Implementation Plan: Add as a research topic.

Attendee & Session: Bill DuVall, Bridge: Consultation outside meetings with Dr. DesRoches

Mobility

Proposed Initiative: Two-lift concrete paving

Potential Benefits: Two-lift concrete paving could allow GDOT to reduce costs associated with aggregate by placing off-specification aggregates or recycled concrete in the lower-lift PCC. This especially might be beneficial in Districts 4 and 5, where granitic aggregates are at a premium because of shipping from distant quarries. Limerock producers in Florida, the Bahamas, and Mexico, which provide base materials to Georgia, often ask GDOT to consider using their size-stone in concrete. We have resisted the requests because the materials typically demonstrate marginal performance in required magnesium sulfate soundness and Wash 200 testing. Two-lift paving could provide a simple way to use these materials. That possibly could have an additional consequence of reopening closed limerock producers in Georgia.

Implementation Plan: Identify a section of highway in District 4 or District 5 to participate in testing of two-lift concrete pavements. The test section should be divided in order to test the performance using three aggregate types in the lower lift: 1) Recycled concrete, 2) Size-stone produced by a Gulf-region limerock producer, and 3) Non-specification Type 2 aggregates with increased fines.

Attendee & Session: R. Scott Harris, OMAT: Session #695: Construction of Two-lift Concrete Pavements (and resulting references in other aggregate sessions and committee discussions)

Proposed Initiative: Assist FHWA in hosting an AASHTO Pavement ME Design workshop in Atlanta, Summer 2014. FHWA announced a new pooled-fund project at TRB that will create User Groups for States and Consultants that are using the AASHTO Pavement ME Design software program. As a lead-in to the pooled-fund they are sponsoring 4 regional workshops this Summer to kick off the pooled fund effort.

Potential Benefits: GDOT will be in the middle of training and implementation of the ME Design software this Summer. We potentially will be able to send additional pavement engineers to the workshop by its being held in Atlanta.

Implementation Plan: Discussed with Chris Wagner (FHWA Lead on the pooled fund) at TRB. Chris came to Forest Park to meet with our Consultant on the Implementation effort and provided positive feedback on our implementation plan. Work with Chris to get the word to other SE States, the Joint Technical Committee on Pavements and Georgia Consultants.

Attendee & Session: Georgene Geary, Research: Session 820- So You are Trying to Implement the Mechanistic-Empirical Pavement Design Guide?

Mobility

Proposed Initiative: Utilize Ultra-High Performance Concrete UHPC for closure pours between precast elements.

Potential Benefits: The UHPC allows for tighter joints between precast elements and facilitates rapid construction. In addition, Dr. Azizinamini has studied this use and recommends tighter hooks for lapping the joining reinforcement.

Implementation Plan: Develop details for closure joints and Special Provision for UHPC on an ABC design project.

Attendee & Session: Bill DuVall, Bridge: Session 657-Field and Laboratory Studies of Concrete Bridges

Proposed Initiative: Investigate the use of StreetSeen for conducting public informational decisions.

Potential Benefits: StreetSeen is a simple technique that allows the public to participate in web based surveys. Research conducted by Ohio State University utilized Google Street View to develop simple surveys. Using the Street View images they were able to poll citizens to obtain feedback on transportation projects. For instance, they could take photo of an urban intersection and gain public opinion on proposed enhancements.

Implementation Plan: The Office of Planning could investigate this research and see if there are applications for its use in GDOT.

Attendee & Session: Bill DuVall, Bridge: Session 753- Cycling and the Built Environment

Workforce/Policy

Proposed Initiative: Adopt research implementation documentation (formal plans; prioritization criteria, etc.) from peer state DOTs' to develop similar documentation for GDOT.

Potential Benefits: Promote more extensive and more effective implementation of GDOT research project deliverables.

Implementation Plan: Review materials received at TRB and follow up regarding others that may be available. Determine which materials can be used by GDOT. Develop a plan for adapting, organizing, and distributing these materials within GDOT. Follow up with other state DOTs' present at meeting regarding appropriate funding levels for research implementation activities.

Attendee & Session: David Jared, Research: AASHTO RAC Research Implementation Facilitators Meeting

Proposed Initiative: Knowledge Management (KM) and providing Executive Management (CEO's, Commissioners, etc.) with the best/most appropriate information must work together to maximize organizational efficiency. GDOT has partnered with GA Tech on a KM project and training has been offered within the organization to individuals to capture institutional knowledge within an office. With the high rate of staff turn-over within offices in recent years it is not uncommon for the individuals that have been trained to capture knowledge to move to other offices or leave GDOT. Train and retain knowledge within the office. OTD crated "knowledge transfer documentation" for each position a couple of years ago. The office is transitioning to a more streamlined office (fewer positions supplemented with in-house consultants). In FY 2015 the knowledge transfer documentation will be updated not only for internal positions but for in-house consultant positions as well.

Potential Benefits: Improved "institutional knowledge" retention that will aid in providing the best and most appropriate information needed for office operations and for executive GDOT management.

Implementation Plan: FY 2015 - focus on updated knowledge retention/transfer documentation. This will be a requirement for all FY 2015 performance plans within OTD.

Attendee & Session: Paul Tanner, OTD: Session 499: Advancing Practice in Knowledge Management

Workforce/Policy

Proposed Initiative: During this CEO Roundtable, staffing levels were repeatedly discussed. Several heads of DOTs made the point that because the work force is shrinking, the state DOT's workforce must be stronger than it has been on average in the past. It was mentioned in passing that the NY DOT uses a type of junior engineer's exam. A series of questions asked online as part of the prescreening portion of entry-level positions (external candidates only) may be used to ascertain a potential candidate's overall aptitude. Certain online aptitude tests are very often employed by private organizations and may serve the GDOT by identifying candidates that have a high probability of success in the future. Potential Benefits: Over a prolonged use, this may result in a more productive work force.

Implementation Plan: Identify key employee attributes that are beneficial for key employment positions. Compose an exam (or contract with a system already in place). Include a link to be completed in the application process for external candidates. This would all be done in cooperation with HR and other key offices.

Attendee & Session: Chris Rudd, Road Design: 650-State DOT CEO Critical Issues Roundtable: Evolving to Systems Management and Operations Culture

Proposed Initiative: GDOT is developing a research project, "STEM and our Future Transportation Leaders". Getting Georgia students interested in STEM (Science, Technology, Engineering and Math) fields, particularly in transportation related areas, early will provide the best scenario for the future of transportation. K-12 has been identified as the opportune time to reach students, with middle school being a decision point especially for the STEM disciplines. Attendance at this session provided some ideas to be discussed in scoping this project.

Potential Benefits: Short term benefit is to bring the latest information to the research project scoping meeting so we develop the best research project. Long term benefit is to attract students to transportation careers in the future.

Implementation Plan: A scope discussion meeting will be scheduled soon with the interested researchers for defining the scope of the research and the proposal(s) will be requested.

Attendee & Session: Supriya Kamatkar, Research: Session 608-Student Learning and Training: What Works and What Doesn't and Why

Workforce/Policy

Proposed Initiative: As budgets continue to decline, staff expects that data will be available or that OTD will collect what they need. Every Federal Transportation Bill adds requirements and funding for Transportation Data's programs has been declining. MAP-21 and FHWA have recently mandated that 38 data items be collected for all public roads. The methodology outlined in the "Market Analysis of Collecting Fundamental Roadway Data Elements to Support the Highway Safety Improvement Program" (FHWA-SA-11-40) can be used to show the true cost of road data collection to support the mandates of both HPMS and the Highway Safety Improvement Program (HSIP).

Potential Benefits: Compliance with Federal code: HPMS, Traffic Collection and collection of the fundamental data items are federal requirements. Reductions in these programs could cause FHWA to reduce our federal funds. More reliable data sources: By having the guaranteed funding, OTD can ensure that Department continues to make informed decisions. Ability to continue to expand collection programs: Videolog and the Weigh-in-Motion programs can continue to expand to stay current and deliver the data needed for planning, bridge maintenance, pavements and freight corridors.

Implementation Plan: Determine estimated costs to collect traffic and road data using the methodology proposed above (FHWA-SA-11-40). Present costs to senior management during the FY 2015 Transportation Planning Work Program (TPWP) budget meetings. Secure funding.

Attendee & Session: Jane Smith, OTD: Session 508 - The Boss Is Looking: Support from Transportation CEOs on the Role of Data and Information for Better Decisions

Proposed Initiative: GDOT Women in Transportation Support Group. Initiate a support group for GDOT female employees. To provide support for GDOT women as they juggle family, work and community service and introduce young ladies to the transportation field.

Potential Benefits: Investment in the future of the Department and a healthier Department. Shared knowledge and experience. Assist in leadership development.

Implementation Plan: Partner with Atlanta Chapter of WTS and support their efforts with Transportation YOU, and STEM

Attendee & Session: Genetha Rice-Singleton, OPD: Session 674 – Women in Transportation: Support for Research, Professional Development, and Training

Safety

Proposed Initiative: The Office of Traffic Operations will develop safety “report cards” for all counties in Georgia that reflect the fatality and serious injury trends by crash type, roadway type, and road users. (i.e. intersection, run off road, intersection, on-system, off-system, pedestrian, bicycle, motorcycle, heavy vehicle). These reports will be used to educate local officials on the safety needs of their jurisdictions.

Potential Benefits: The philosophy behind usRAP (US road assessment program) is that projects can be selected using a data driven approach even if crash data is not available, sparse or poorly located. There is no such thing as a site with no crash risk. Crash locations tend to be random and move around. Systemic approaches are risk-based and proactive-based on geometric features that experience consistent crashes in some locations but also exist elsewhere.

Implementation Plan: We will select the top 10 counties in the state (and at least one in each GDOT District) to conduct a pilot project. The project will consist of collaboratively developing a local road safety plan. Counties will be encouraged to use usRAP to develop projects that will be funded by GDOT. It can also offer a safer roads investment plan. The output is a plan that includes countermeasures, length of segments over which it will be applied, an estimate of cost, anticipated benefits, and the b/c ratio. It explicitly considers risk to motorcycles, bicycles, and pedestrians in addition to vehicles. Segments of roadway will be prioritized based on safety features present or not, then countermeasures will be identified.

Attendee & Session: Kathy Zahul, Traffic Operations:

Proposed Initiative: Develop an improved methodology for determining seasonal factors computed from the continuous counts collected in the same year. The current practice converts a short-term count into an AADT, using last year’s seasonal factors once verified using historical data. At the conclusion of the count year, determining seasonal factors using the current method can take quite a bit of time; AADTs for the previous year are not available until 2-6 months after the end of the calendar.

Potential Benefits: Reduce work for GDOT, make traffic available sooner and improve HPMS reporting.

Implementation Plan: Schedule a meeting to present the methodology to the statistical traffic staff. Review the methodology with the current and previous count years. Determine whether this methodology can be implemented in GDOT.

Attendee & Session: Jane Smith, OTD: Poster Session 378 – Advances in Traffic Survey Methods

Safety

Proposed Initiative: The session on Road Weather Information Systems (RWIS), Variable Speed Limits (VSL), discussed the effects of climate change on transportation models, and a software program that calculates the best mode of transportation during extreme weather events and natural disasters. Another looked at operational strategies for extreme weather events such as the Maintenance Decision Support System (MDSS), Good Government in Action Program that minimizes user delays, Smart (drone) Equipment, RWIS, GPS capabilities for EOC software, tow plows, climatology studies, and infrastructure maximization based on vulnerability studies.

Potential Benefits: The items mentioned below are already paying dividends in reduced costs for resurfacing, extending the life of our infrastructure, and stretching the funding that we have. Variable speed limit signs, MDS Systems, reduced user delays, Smart Equipment, and sensed pavement ratings could decrease the vulnerability of our system and make us a more nimble, user-friendly organization, which is priceless.

Implementation Plan: District Four is already implementing some of the information taken from TRB such as ground speeds for distributing salt/rock during snow & ice events, using RWIS, EOC software, climatology, crack sealing/filling best practices, using seasonal workers, staggered work shifts, and increased use of chip seals for preservation & reduced costs.

Attendee & Session: Stacy Aultman, District 4: Session 397- Safety and Weather in Surface Transportation and Session 470 – Maintenance and Operations Management

Proposed Initiative: Resolve a landslide problem in North Georgia faster. I was introduced to a Consultant from the NorthWest with 30+ years in the landslide business by a Materials Engineer from another State DOT that knew him well. I discussed a District 1 slide that Bayne Smith and I had recently discussed. Bayne noted that it was moving again and we considered doing a research project to see if there were any new methods to resolve, since it had been about 25 years since it had been originally repaired. (I had worked on this slide back in the 1980s.)

Potential Benefits: The Consultant convinced me that the research was not necessary and that the previous repair method (horizontal drains) was still the best method, saving us time and money. He also informed me that the company that performed the original horizontal drilling was still in business and had a good reputation, so they would be the best one to contact.

Implementation Plan: Discuss with Bayne Smith and Glen Foster from Geotechnical.

Attendee & Session: Georgene Geary, Research, “lobby meeting”

Safety

Proposed Initiative: Texas A&M Study showed that drivers recognized the presence of pedestrians much sooner at an RRFB (Rectangular rapid flash beacon) when the beacon was above the sign instead of below.

Potential Benefits: Safer RRFBs.

Implementation Plan: Recommend modifying our designs to put beacon above pedestrian crossing sign. Will coordinate a discussion with OTO.

Attendee & Session: Mike Lobdell, District 7: Session 444-Innovative Pedestrian Transportation Research

Proposed Initiative: Drivers are much less likely to dangerously misinterpret a Flashing Yellow Arrow (FYA) at a permissive left-turn when accompanied by sign instructing drivers to yield on FYA

Potential Benefits: Safer FYA.

Implementation Plan: Continue to use sign until FYA are more widespread.

Attendee & Session: Mike Lobdell, District 7: Session 486-Research of Flashing Yellow Arrows and Permissive Left-Turn Displays