



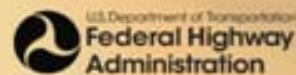
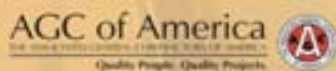
Construction Peer Network Southeast Peer Exchange

Summary Report

March 6-7, 2013
Orlando, Florida



Hosted by the Florida Department of Transportation



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1 Background

The Florida Department of Transportation (FDOT) hosted the Construction Peer Network (CPN) Southeast Peer Exchange in Orlando, Florida on March 6-7, 2013 (Peer Exchange). The CPN's purpose is to widely deploy proven, effective construction practices that will benefit the U.S. transportation system and the American people.

The CPN is a collaboration of the American Association of State Highway and Transportation Officials (AASHTO), the American Road and Transportation Builders Association (ARTBA), the Associated General Contractors of America (AGC), and the Federal Highway Administration (FHWA). The Peer Exchange was the fourth in a series of five regional events designed to showcase innovation in construction, allow peers to network and share information, and generate ideas for implementation of proven practices and processes.

Construction leaders from the States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Tennessee, Virginia, West Virginia, the Commonwealth of Puerto Rico, and the FHWA Eastern Federal Lands Highway Division attended the peer exchange. A representative from the Idaho Transportation Department (ITD) participated to help ITD prepare as host to the fifth Peer Exchange scheduled for July 2013. State agency representatives and FHWA Division Office representatives from each State participated in the Peer Exchange. The list of attendees, along with contact information for each, is provided as an appendix to this document.

This report is designed to facilitate additional networking and discussion on the topics summarized from the event. In addition, for more information, please contact:

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Topics for the Peer Exchange agenda were determined after analyzing State DOT survey responses from the CPN's Program Information Tool (PI Tool). Based on analysis of the PI Tool results, lead States were identified and asked to present their successful practices as a way to introduce the topic and initiate the roundtable discussions. The five exchange topics are listed below in Table 1. The User's Guide for the Program Information Tool that describes in greater detail the approach for gathering exemplary construction practices from the States, along with a flyer describing the program, can be accessed at: <http://construction.transportation.org/Pages/ConstructionPeerNetworking.aspx>.

Table 1. Peer Exchange Agenda Topics

Agenda Topic	Construction “Core Element” Category	Number of States Selecting as Peer Exchange Topic	Lead State
1. Implementing Innovative Practices and Tools for Inspection	Inspection and Workmanship	5	North Carolina
2. Using Innovative Methods to Reduce Contract Claims and Disputes	Contract Conflicts and Claims	6	Florida
3. Conducting Post Construction Reviews	Types of Feedback Used to Share Data and Communicate Issues	5	Eastern Federal Lands Highway Division
4. Developing and Tracking Meaningful Performance Measures	Performance Measures and Metrics	6	Virginia DOT
5. Implementing Innovative Products for Worker Safety	Agency Safety Culture	5	ARTBA Representative

In addition to these lead State presentations, FDOT made a host State presentation to highlight noteworthy practices, and Arkansas Highway and Transportation Department facilitated an open session for “Other Regional Priorities” that allowed the group to discuss topics of importance to the States that were not already included in the five formal agenda topics.

The following section highlights primary findings from the peer exchange. Summaries from the Peer Exchange discussions for the host State presentation, the five exchange topics, and the “Other Regional Priorities” are included in the appendices.

2 Ideas for Implementation – Key Takeaways from the Peer Exchange

The Peer Exchange produced several relevant and practical “takeaways” identified by the group roundtable discussions. The following sections address 12 items that were highlighted by the group as practices that hold promise for future implementation within the States’ construction programs. Web site links are provided for some of the practices currently in use by the Southeast States. Documents referenced are also available from those individual States, although they are not available online. Use the State references along with contact information included in the appendix to gather more information for implementation.

Agenda Topic #1: Implementing Innovative Practices and Tools for Inspection

1. Using Maintenance Personnel for Construction Inspection

Because of the seasonal nature of construction and maintenance work, some agencies are cross training staff to perform both jobs. In addition, many States use consultant inspectors to expand inspection staff; however, construction consultant inspector qualification requirements vary across States.

Tennessee (TDOT) Staff Matrix for Identification of Training Needs for Consultant Inspectors

http://www.tdot.state.tn.us/construction/CEI_Advertisement_plans/2012_29_January/Staff%20Chart%20-%20All%20Projects.pdf

NCDOT Inspection Training

<https://connect.ncdot.gov/resources/Materials/Pages/default.aspx>
<http://www.bae.ncsu.edu/workshops/dot/index.html>

2. Implementing Intelligent Compaction

Intelligent compaction (IC) refers to the compaction of soil and roadway materials using vibratory rollers equipped with an onboard computer with GPS and feedback control. IC technologies help agencies and contractors ensure quality and uniformity of subgrade and pavement density, thereby ensuring stability and longer lasting material performance. Tennessee will be experimenting in 2013 with IC on asphalt road resurfacing projects to potentially eliminate the need for nuclear gauge testing for density.

Information on IC, implementation, and findings from a pooled fund study are available at:

<http://www.intelligentcompaction.com/>

See TDOT Special Provision Regarding IC for Hot Mix Asphalt

3. Using RFID Tags for Inspection Information

Radio Frequency Identification Devices (RFID) have been used successfully in some States (including North Carolina) for scanning approved materials products linked to inspection and testing data. This technology provides for better inventory control for the contractor and minimizes the risk of non-tested materials being incorporated into the project.

4. Use of Field Data Collection Technologies such as Tablets, Video, LiDAR, and Maturity Meters

Tablets are being used in States such as Idaho, Louisiana, and North Carolina to electronically document field inspections with the data linked to SiteManager software as part of the digital jobsite. Other examples of innovative technology applications include:

- GPS rovers for field measurement to check quantities and grades;
- Video cameras on equipment for inspection and data collection;
- LiDAR for data to supplement surveys (initial and final cross sections) and to develop as-builts;
- Automated machine guidance for construction projects;
- Maturity meters to monitor curing of concrete pavement to allow for faster reopening of roadways; and
- Ground penetrating radar to calculate the thickness of pavement.

Collectively, these technologies can help decrease construction times and reduce costs.

Agenda Topic #2: Using Innovative Methods to Resolve Contract Claims and Disputes

5. Joint Utility Plan

Utility work can greatly impact project schedules. Partnering helps both the contractor and owner-agency to share the responsibility for the utility work and mitigate impacts to the project schedule. Implementation of a joint utility plan aligns project goals (e.g. safety, environmental, and quality) to ensure both parties have a stake in proactively addressing utility needs.

See United Infrastructure Group Joint Utility Management Plan

6. Use of Partnering, Industry Input, and Dispute Review Boards

A claim settlement becomes a long and costly process for both owners and contractors. Often, claims result from one or both parties delaying the resolution of a problem or making a decision. A “team” approach to anticipating potential issues early on can help alleviate problems that may ultimately lead to a claim. Florida uses a multi-faceted approach to resolving claims and disputes. One aspect of this approach is the use of Dispute Review Boards (DRBs), which is available during a project in order to promote early resolution of issues. Florida also has an “open door policy” for specification development (including reviews by industry prior to finalizing specifications), uses partnering to resolve issues early, and has a State arbitration board. Other southeast States vary in their use of review panels and DRBs.

FDOT DRB Special Provisions

<http://www.dot.state.fl.us/specificationoffice/Implemented/Workbooks/JanWorkbook2013/Files/SP0080307DRB.pdf>

<http://www.dot.state.fl.us/specificationoffice/Implemented/Workbooks/JanWorkbook2013/Files/SP0080307RDRB.pdf>

<http://www.dot.state.fl.us/specificationoffice/Implemented/Workbooks/JanWorkbook2013/Files/SP0080308SDRB.pdf>

FDOT Specification Development Procedure

<http://www2.dot.state.fl.us/proceduraldocuments/procedures/bin/630010001.pdf>

FDOT Specification Industry Review Website

<http://www2.dot.state.fl.us/SpecificationsEstimates/Development/IndustryReview.aspx>

FDOT Claims by Contractor Standard Specification

<http://www.dot.state.fl.us/specificationsoffice/Implemented/SpecBooks/2013/Files/005-2013.pdf>

FDOT Partnering Program and Special Provision

<http://www.dot.state.fl.us/construction/ContractorIssues/Partnering/Partnering.shtm>
<http://www.dot.state.fl.us/specificationsoffice/Implemented/Workbooks/JanWorkbook2013/Files/SP0080306.pdf>

FDOT State Arbitration Board

<http://www.yodaslair.com/ftba/const-issues-10.htm>

Agenda Topic #3: Conducting Post Construction Reviews

7. Project Constructability Evaluation

Agencies are using project evaluation checklists and reviews during design to improve constructability. Some States look at trends in change orders to determine how to improve designs for constructability.

See Eastern Federal Lands Constructability Evaluation Spreadsheet

See North Carolina DOT Construction Quality Index Form

Virginia DOT Design Quality Index Evaluation Form

<http://vdotforms.vdot.virginia.gov/SearchResults.aspx?strFormNumber=LD-433>

Suggested Action: AASHTO could work with States to research and develop a contractor rating process and format that provides consistency for contractors working in multiple States.

Agenda Topic #4: Developing and Tracking Meaningful Performance Measures

8. Best Performance Measures (PMs) in Use at Individual DOTs

States commonly use construction performance measures and goals that relate to safety, project time, and project cost. One less common performance measure that might provide benefit is motorists and pedestrian access to businesses during construction, which was mentioned by the representative from Idaho. Some information on the performance measures being tracked is included in the following links.

TDOT PMs in Use:

- 1 - Construction Projects Completed by Original Contract Completion Date
- 2 - Construction Projects Completed by Original Contract Completion Date, Plus TDOT Approved Time Extensions
- 3 - Motor Vehicle Crashes in Tennessee Work Zones

Virginia DOT Dashboard

<http://dashboard.virginiadot.org/>

North Carolina DOT Dashboard

<https://apps.dot.state.nc.us/dot/dashboard/>

Agenda Topic #5: Implementing Innovative Products for Worker Safety

9. Improved Safety Through Mentoring

Contractors have been successful in implementing mentoring programs. These programs include a formal agreement between mentors and protégés to pass along experiences and lessons learned. This can be especially important in worker safety as a practical supplement to formal training. Formal mentoring programs can help field staff make better and faster decisions and provide for succession planning.

See Granite Construction mentoring program presentation and handbook

10. Work Zone Safety Information Clearinghouse and Roadway Safety+ Program

ARTBA has worked together with FHWA and other partners to provide a set of safety training courses, collectively called the Roadway Safety+ Program, covering many of the situations encountered on highway construction and maintenance projects. The program also has self-guided, computer-based training modules and materials that can be downloaded for free and used for project/company/DOT safety training. The materials can be used either as a full training course or for specific areas of safety concern at weekly safety meetings. The program is funded by a Work Zone Safety Grant that also allows for an instructor to present the course to highway agencies free of charge, including train the trainer sessions.

ARTBA Link to Roadway Safety+ Program

http://www.workzonesafety.org/training/courses_programs/rsa_program

National Work Zone Safety Information Clearinghouse

<http://www.workzonesafety.org>

Agenda Topic: Other Regional Priorities

11. Project Closeout Conferences

After final inspection and as-builts are completed, agencies, contractors, and other stakeholders may meet for a project closeout conference. This process may include evaluating various activities, including the contractor's evaluation of resident engineers/field staff and the agency's evaluation of the contractor. Stakeholders may hold weekly meetings and confirm results during the project closeout meeting. North Carolina has been successful with its approach to small project closeout through an in-person conference.

Agencies are also using post-construction project evaluation reviews and multi-disciplinary teams (environment/scoping, design, construction, maintenance/operations) to improve construction processes and specifications. Agencies perform some reviews one to two years after the project is complete to evaluate facility performance and receive maintenance feedback. Including project designers in closeout meetings will help designers understand potential challenges during construction and how to minimize the impacts of these challenges early on.

See Florida DOT "Extinguish the Torch" Process Documents

See Georgia DOT Post Construction Evaluation Documents

See North Carolina DOT Project Closeout Conference Process and Closeout Form

12. Training for Project Scheduling

Coordination between the owner and contractor is important to ensure a realistic schedule is in place and used to manage the project proactively. Given the possible financial impacts of a poor schedule and the availability of better scheduling software today, many contractors have become more advanced in use of Critical Path Method (CPM) schedules to manage projects. Several contractors suggested that DOT field staff would benefit from training on project scheduling so they could better manage the schedule together with the contractor. Several DOTs believe a CPM schedule should be required on all projects regardless of size, although small projects may have less detailed schedules. NHI and ASCE have training available. FHWA and AASHTO can consider updates to existing materials or new training module development to help address this need.

Suggested Action: AASHTO or FHWA could review existing project scheduling training programs and materials and develop practical examples to add to existing courses on how to develop realistic schedules.

NHI Training Course on Project Scheduling

http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-134049&cat=&key=schedule&num=&loc=&sta=%25&typ=&ava=&str=&end=&tit=&lev=&drl

Appendix A – Peer Exchange Discussion Notes

This section provides additional notes following the organization of the agenda to facilitate additional networking and discussion on the topics summarized from the event. The full agenda for the Peer Exchange is included as Appendix B, and Appendix C contains a roster of participants with contact information for each.

Agenda Topic: Host Agency Presentation – Florida DOT

David Sadler with the Florida Department of Transportation (FDOT) gave the host agency presentation. He presented information on the State’s construction program, including statistics on population, the highway system, construction investments, and projected growth statewide. He also discussed various aspects of several standout projects including several large design-build projects and the use of public-private partnerships for project delivery. Discussion ensued after the presentation on the techniques used for contractor financing on projects – a strategy that has provided FDOT with benefits.

After Florida DOT’s host agency presentation, the CPN team presented information on the flow of the peer exchange and answered questions. Each subsequent presentation and discussion session covered the questions below and the following notes are structured similarly.

- What other innovative practices (related to this topic) have you used?
- What are some of the challenges associated with expanding use?
- What actions can be taken to further implementation?

Topic 1: Implementing Innovative Practices and Tools for Inspection

10:15am – 10:45am	<p>Exchange Topic #1: Implementing Innovative Practices and Tools for Inspection</p> <ul style="list-style-type: none"> • Use of Tablets for Project Inspection and Pilot Project Using Bar Coding for Materials Tracking 	<p>Ron Hancock, North Carolina DOT Chris Peoples, North Carolina DOT</p>
10:45am – 11:45am	<p>Participant Roundtable Discussion of Exchange Topic #1</p>	<p>Facilitator – Tim Brown, FHWA – Eastern Federal Lands</p>

Ron Hancock and Chris Peoples from the North Carolina Department of Transportation gave a presentation on the use of tablet applications for project inspection. They also presented on the use of bar coding for materials tracking. Technology applications include use of Radio Frequency Identification Devices (RFID) for scanning approved materials products to link inspection and testing information to the product.

Q: Are you using consultant inspectors and how do you get through firewalls?

A: Yes, for tablets we are using consultants. There is an IT process developed where consultants and contractors can access the NCDOT system to gather information and populate a database.

Following the presentation, Tim Brown from FHWA Eastern Federal Lands Highway Division facilitated a roundtable discussion with the group.

The following notes represent a summary of the presentation session.

Other States, including Idaho and Louisiana are using tablets for inspection activities. Practitioners cited a challenge in maintaining the equipment – dirt can compromise a tablet in the field and there is a need to keep them clean. One solution is a sleeve to cover the tablet.

Arkansas plans to utilize consultant inspectors and also will link information to SiteManager for documentation. They will set up an outside network for uploading information so that firewalls are not an issue in implementation. Also, they are piloting rovers for GPS field measurement through an FHWA funded project to purchase devices, which could be linked to electronic information storing and access.

North Carolina also uses rovers for checking materials quantities and grades.

TDOT is looking to use LIDAR to set up initial and final cross sections for projects. The precision of LIDAR technology is very good to gather specific information and reduce time in surveying. It was recently used to capture cross section information for a rock slide along I-75. Also, LiDAR provides efficiencies in capturing as-built information.

Virginia formed a committee as part of a construction resource guidebook – consultant inspection teams were not always aware of all policies related to construction inspection and this practice helped.

North Carolina DOT provides training classes for both NCDOT inspectors and consultant inspectors. NCDOT reviews the experience and certifications from proposed inspection staff from other states for applicability to NCDOT specifications and issues provisional certifications, where applicable, until the out-of-state inspectors can attend NCDOT certification classes.

Florida DOT is using 3D engineered models with automated machine guidance and allowing flexibility in use of these technologies on projects. This may help later in the project with inspection activities including verification of grades and quantities. Eliminating staking and string lines can help reduce costs and time and improve safety on projects by reducing personnel exposure to equipment in the field.

In June of 2012, NCDOT began two pilot studies on incorporating barcodes and RFID tags into the materials testing, inspection and acceptance process. The first study focuses on manufactured products and to this date has been mainly isolated to non-structural precast concrete. The plant is provided with tags encased in a durable plastic covering that has been designed for insertion into steel forms and ultimately anchored into the face of concrete members. Each tag contains a lined (1D) barcode, a numerical barcode and an RFID chip. The plant drills holes in an appropriate location on the forms and inserts the tag. Prior to placement, the barcode is scanned using a specialized scanner that allows for QC data to be entered by plant personnel and associated with that specific barcode. Before shipment, the member is inspected by a Materials and Tests (NCDOT) representative and upon approval the tag is scanned and all inspection information is linked to that particular code or id. This information is then able to be scanned into the Highway Construction and Materials System (HiCAMS) database. Upon delivery to the project, the project inspector is able to scan that same tag and link the product and inspection report with a materials received report and has instantaneous confirmation that the product has been inspected and meets specifications.

The second study focuses on project produced materials such as aggregate base course, concrete cylinders, reinforcing steel, asphalt cores and many other samples. For this pilot, the tag contains a

square (2D) barcode, a numerical barcode and an RFID chip. The project inspector takes the materials sample, enters all pertinent information into HiCAMS, and then attaches a barcode/RFID tag to the sample with a zip tie, rubber band or by placing into the sample bag. The code is entered into HiCAMS with the sample details. Upon receipt at the Materials and Tests Laboratory, the tag is scanned and HiCAMS automatically pulls up the pertinent sample information.

Bar coding is not cast into concrete cylinders directly in North Carolina, but painted bar codes are used, or, for wet cast projects, the bar code is built into the form. The DOT has also tried bar codes on asphalt tickets. In Florida, each plant had separate software and the DOT required plants to all use the same software.

Practitioners cited a challenge in who is controlling number sequences so that numbers do not repeat given that so many entities may be printing bar code labels. Need to tie information back to SiteManager.

Apps developed for various technologies and bar code scanners that are commercially available may not work for these types of applications.

Setting up QA processes for design build is important. For example, there is a need to supplement inspection teams to ensure quality on smaller components of projects (curb and gutter as an example). In Virginia, QC is separate from activities performed by a quality assurance manager. An inspector needs to measure pay items on typical projects, while in design-build quality control inspection processes are different. Often, agencies rely on the QC process that the contractor is providing. Tennessee maintains the same level of acceptance for inspection items during design-build as compared with traditional design-bid-build.

In Idaho a licensed professional engineer serves as quality control manager.

Paying plan quantities and risk-based inspection are other practices that can help reduce inspection needs while not sacrificing quality on projects.

Practitioners cited a challenge in maintaining cash flow but not overpaying for the project over time. Plan quantity and lump sum are more common in Florida as opposed to bid item contract payments. Florida is also using warranty specifications on projects.

Improved quality of the asset and increased life span are two of the most significant benefits from using digital technology on projects. Consultants in Florida have opted to go completely paperless, using video technology applications to connect field personnel with office personnel to review the issue and make a decision about the next steps to alleviate it. Another application had a camera attached to a hardhat or hood of a truck to capture field video. This application kept a record of temporary traffic control setup items on a daily basis. This process affects quality in real-time as opposed to lagging effects on quality from less advanced means.

Maturity meters are being used to allow traffic back onto concrete pavement faster than with other methods. Ground penetrating radar is another technology used to calculate the thickness of pavement.

A practitioner mentioned the potential for placing RFID tags on dowel bars to determine location.

Tennessee is using intelligent compaction on surfaces to eliminate nuclear gauge testing for density. This may help improve accuracy on variables such as pavement texture.

In Puerto Rico, contractors install chips in pavement to store information.

Topic 2: Using Innovative Methods to Resolve Contract Claims and Disputes

1:00pm - 1:30pm	<p>Exchange Topic #2: Using Innovative Methods to Resolve Contract Claims and Disputes</p> <ul style="list-style-type: none"> • FDOT's Approach to Claims and Dispute Resolution 	Rudy Powell, Florida DOT
1:30pm - 2:30pm	Participant Roundtable Discussion of Exchange Topic #2	Facilitator - Brian Egan, Tennessee DOT

Rudy Powell from the Florida Department of Transportation presented on FDOT's processes for specification development, partnering, dispute review boards, and a State arbitration board. The presentation covered the 6-month cycle for specification updates, including the process for any stakeholder to provide comments on the specification. A website houses the change management process for specifications including older versions of the documents. Florida DOT also has a formal partnering process to create a culture of teamwork. Partnering activities are included in the project as a pay item and the total dollar amount is provided by FDOT for bidding purposes. Dispute review boards are handled at the project level, regional level, and statewide level in Florida. There is a cooperative process that results in the use of a dispute review board only when all other resolution procedures have been expended.

After the presentation, a question and answer session ensued.

Q: Are the findings of the DRB binding?

A: Only statewide DRB is binding.

Q: Is there a rule or statute that has narrative on claims process?

A: Contract language includes DRB – designer includes language in specification.

Q: With meetings occurring throughout the project, are decisions made more rapidly?

A: Yes, monthly progress meetings help provide a more timely resolution to the issues.

Roundtable discussion notes:

Tennessee does not have a dispute resolution board but is in the process of rewriting standard specifications. TDOT uses the Eichleay Formula, which is widely used as a method of calculating home office overhead damages in construction delay cases.

Contractor – it's a time issue, and having a mechanism in the contract to move to resolution is good. The question about home office overhead rate should be added to the contract. Florida uses 8%, Tennessee uses 7%.

Louisiana – the NHI model uses unabsorbed home office overhead (does not use Eichleay Formula). A percentage included may alleviate further costs for all parties later.

Project postponed prior to construction beginning – overhead applies to personnel, equipment, supplies, but if contract has not broken ground and there are engineers in an office working then their overhead will be much higher.

Idaho had an environmentally sensitive project that included in the bid schedule if the project was stopped by a lawsuit then contractors could add in a value for overhead during the delay period. Contractors included a zero overhead figure in the bids.

Florida DOT has senior management and executives visit projects and discuss how to handle project issues. This practice is used in addition to the formal partnering process to alleviate the potential for claims. FDOT requires up front information on employees that will be on each project.

Contractor – for utilities and right-of-way, some States have aligned goals of the two parties financially. Joint utility plans are used, where owners and contractors both proactively address utilities. Alignment of goals (safety, environmental, quality, etc.) is needed. DOT originally has a budget for relocation of utilities – many of which can be improved upon working together.

West Virginia uses DRBs and only one has gone to a full blown hearing. They have a three party board or one person board that will hear claims. With just the simple presence of a DRB, the parties involved may be more agreeable to compromise.

Arkansas has not considered using DRBs. Specifications are in place that define the process for an engineer of record and if claim is unresolved an appeal is made to the chief engineer. The chief engineer decides on the claim and then a State claim board can review claims for all State agencies. An appeal can then be filed to a judiciary board for a final decision.

Louisiana has a few projects that used DRBs but prefers to solve claims at the lowest level possible. Appeals to chief engineer are also used, and court is a final resort for claims.

Alabama has a five person claims committee that will hear both sides of a claim. Once a decision is made by the earlier processes a director can make a binding decision to accept it or set it aside.

In Virginia a formal claim is only made after final acceptance and during a 60 day window of time. Others may consider a notice of intent to be a claim. Formal claims in Virginia are down significantly over the last decade. VDOT switched from calendar day contracts to a completion date and the contractor provides a schedule for the project.

A solution is to have someone on site that can address an issue when it arises and help resolve issues quickly.

In some States, formal partnering sessions are paid for and informal partnering sessions are not paid for. Each occur, and there are benefits to using both.

A detailed, managed schedule must be in place on large projects to avoid issues later.

Some States evaluate dollar cost expended versus time expended. Smaller projects have less float so there is less time to deal with potential delays.

Look at adding scheduling examples, lessons learned, and successful practices to existing training materials – some practical examples for how to develop realistic schedules. This could be useful for those that are computer savvy to help them understand how to better focus on scheduling and associated detail. Present what is important in detail and what may be too much detail. MS Project, CPM, and other types of schedule tracking tools should be highlighted.

Louisiana uses A+B bidding, but with an added “O” component to bid the overhead for the project.

Alabama escrows bid documents – in some States this practice only occurs on design-build projects. There are often claims in design-build projects, but the magnitude of claims may be lower.

Construction Manager General Contractor (CMGC) is another practice that allows industry to deal with risks and work out the allocation of risks among parties involved.

Topic 3: Conducting Post Construction Reviews

2:45pm - 3:15pm	<p>Exchange Topic #3: Conducting Post Construction Reviews</p> <ul style="list-style-type: none"> • Post Construction Reviews on Eastern Federal Lands Highway Projects 	Rajan Patel, FHWA – Eastern Federal Lands
3:15pm - 4:15pm	Participant Roundtable Discussion of Exchange Topic #3	Facilitator – Fran Hood, Idaho Transportation Department

Tim Brown from the Eastern Federal Lands Highway Division presented information on post construction reviews. Practices include the use of the Quality Business System, which links three databases that include information on PS&E reviews. Contractors provide ratings for projects after the project engineer rates the process.

After the presentation, a question and answer session produced the following items.

Q: Does each project have a weekly meeting and if so do you keep a running list of communication items?

A: Yes, by the time the project end is reached, documentation of all discussions during weekly meetings is in place.

Q: Do you have consultant design?

A: Only 5% of design occurs by consultants. With internal design processes, we want to make sure we identify issues so that we don’t repeat them.

Q: How are you classifying that information in the database?

A: Designers can get benefit from the information in the database but they also get feedback during the course of the project.

Q: Do you also track change orders and categorize issues for focus?

A: Project managers bring designers in and help them understand issues. With consultant designers it makes communication a little more involved to bring all parties together.

Suggested Action: AASHTO or FHWA could review existing project scheduling training programs and materials and develop practical examples to add to existing courses on how to develop realistic schedules.

Q: Do you have constructability review of plans?

A: Project engineers were covering two or three projects over the last few years and were unable to perform a full review of all the plans.

Roundtable discussion:

AASHTO could work with States to develop a single, consistent contractor rating process. It would be helpful for contractors who perform work in multiple States, as supplemental questions could be included in addition to the base set of questions to provide tailoring opportunities for each State. Designers could use feedback from construction personnel during the project development process as opposed to after plans and specifications are completed.

Contractors have participated in post construction reviews and concluded that a meaningful set of lessons learned is an important outcome in addition to a survey that can be used for future projects. Another contractor noted that the review provided some information but lacked tangible findings for an action plan for future projects. Some use informal get-togethers to discuss after-action lessons learned.

One issue is the funding and time available for development of an after-action and follow through to accomplish it.

Post construction reviews only happen on certain projects but designers can benefit from the reviews. In some States only those involved in the project under review have access to the information.

Districts in Florida have an “extinguish the torch” meeting where the positive and negative aspects of the project are discussed. Also, the design office maintains a “hot list” of items that need to be considered during future plan development activities. The project team has an internal meeting and then invites the contractor to participate in the review.

Practitioners cited a challenge in how to get this information out to industry and others not involved in that particular project. Quarterly meetings are a good forum.

In Florida, if trends are found in claims then the issue is analyzed to determine how to prevent it from occurring in the future. Peer exchanges could help if focused on lessons learned from a documented list of items that can lead to a blanket memo to designers to ensure that issues do not surface on future projects. Pulse meetings can get the pulse of all involved.

Suggested Action: AASHTO could work with States to research and develop a contractor rating process and format that provides consistency for contractors working in multiple States.

Practitioners cited a challenge in getting information to newer employees, and consistency across districts for decentralized organizations.

A recommendation was also made to include positive feedback from inspectors and construction personnel to engineers on things that work.

District 7 in FDOT ties constructability scores to the performance evaluation of the designer. Also, agencies should ask the designer about the issue to get assistance with solving the issue and also to get

designer to share information with others for future mitigation. “Pass the torch” meetings also occur to share information between various phases of the project including design issues, right of way agreements for items not included in plans, etc. Florida also performs in process reviews to evaluate construction activities in real-time for quality improvement.

“Livability” was noted as an area of focus for the future and after a project is completed. A focus on how well the project performed and what elements of the project could have been improved would be beneficial.

North Carolina uses a rating database on a 10 point scale. Anything below a six requires corrective action. Florida has a maintenance rating program that has criteria that a roadway section is supposed to meet. This might change design criteria for future projects based on performance.

Several States noted use of SiteManager, with information added to a drop down feature to document comments related to change orders. Tracking these items may help recover costs later from a utility company or may tie to a performance rating for a designer.

Virginia has a construction community of practice where they rate the training needs for construction inspection and other stakeholders to put lessons learned from post construction reviews back into a learning partnership program.

An EDC-II initiative entitled “alternate technical concepts” provides information on a value engineering process that occurs pre-bid. Information is confidential to each contractor in terms of what they provide as alternate concepts.

Topic 4: Developing and Tracking Meaningful Performance Measures

8:15am – 8:45am	<p>Exchange Topic #4: Developing and Tracking Meaningful Performance Measures</p> <ul style="list-style-type: none"> • VDOT Performance Measures: Continuous Improvement 	<p>Lloyd Arnold, Virginia DOT Dennis Motley, Virginia DOT</p>
8:45am – 9:45am	<p>Participant Roundtable Discussion of Exchange Topic #4</p>	<p>Facilitator – Carrie Stanbridge, Florida DOT</p>

Lloyd Arnold and Dennis Motley from Virginia DOT presented on the performance measurement process currently in use in Virginia. They covered some of the 54 performance measures currently used by the DOT. When set up correctly, performance measures can help States manage their construction program. VDOT uses a dashboard, construction quality improvement program, and contractor performance evaluations as three primary areas for performance measurement. To get to performance measures, agencies have to look at the big picture: the DOT’s mission, vision, values, and goals. VDOT uses the mantra “on time and on budget” for their program.

A question and answer session followed the presentation, as documented below.

Q&A

Q: Does the contractor performance evaluation occur monthly so that quick action can be taken?

A: Project inspectors do the objective portion of the evaluation monthly, which is a subset of questions that are based on the specifications.

Q: Are the objective and subjective portions rated equally?

A: Will provide further information on weighting.

Q: How is a score developed? Is financial a portion of the rating?

A: The overall CPE combined score is 70% and the EMR is 30%. The links within the presentation can be shared. Financial has been taken out – focus is on performance and safety.

Roundtable Discussion:

Safety is a top performance measure in addition to time and cost. Other States focus on cost, schedule, and quality. Idaho uses how many facilities have been improved as a measure within their dashboard.

Tennessee uses system or program based measures versus project based. Some States have a few measures, while others use a higher number of measures for process improvement. It is important to share the information with key stakeholders after the analysis.

Grading systems vary across States for contractors – it would be beneficial to have consistent guidance for contractor ratings. This could be developed and promoted by AASHTO.

During final closeout, contractors receive a survey and may be hesitant to complete it. The information can be valuable for process improvement and assessment.

Contractors may also evaluate the consultant representatives in some locations in addition to evaluating the owner representatives. This may also help process improvement.

FDOT provides objective reports to contractor so that they can make any course corrections needed. As an agency, FDOT uses the ratings in the pre-qualification process equation for calculating bid capacity. Ratings can then affect bid capacity and contractors understand the process and this may promote immediate corrections in practice. This may impact capacity as well as selection for future design-build projects. Timely completion, environmental impacts, coordination, and communication are all measured. Verbal warnings and deficiency letters are used to notify contractors of the issues. Bonus points are also given for exceeding requirements such as contract time.

VDOT has a public dashboard with color coding similar to traffic signal colors to provide public information in a very simple way. Users can select a project to look at performance. Other States agreed that it is important to understand how the public perceives projects and to gather input from the public at the project level. Information obtained anonymously can also be useful.

Incentive/disincentive clauses in contracts can be tracked – many consultant CEIs and contractors have countdown clocks to project completion on site due to the incentives. With time as an important metric, it allows for quick resolution to be able to achieve the schedule milestone in question.

MAP-21 related performance measures are being developed and focus more on system-wide operation of assets, but States may also be looking at how these will affect construction.

Topic: Other Regional Priorities - Ideas for Implementation (open session)

10:00am - 11:30am	Discussion on Other Regional Priorities (any topic)	Facilitator - Emanuel Banks, Arkansas Highway and Transportation Department
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Emanuel Banks with Arkansas Highway and Transportation Department facilitated this session, as the group brainstormed on topics that were of greatest interest to the group but not already covered in the agenda. The following sections highlight discussion notes for the topics selected.

- Project closeout – once the project is accepted, making sure all the paperwork is in order and dealing with any fund balances that need to be taken care of is important. Also material certification – after final acceptance and final payment there is a certain amount of money budgeted. If money is left over it needs to be moved to another project and this process is not always simple (accounting issues). Retainage on projects to aid in closeout is another mechanism to provide leverage. West Virginia has no retainage, but gives contractor 30 days to complete punch list work and if it is not completed, the owner contacts the bonding company as leverage to complete. Challenge – accepting short term subcontractor work that may be complete but with much calendar time left on the overall project as it relates to retainage. Contractor – lack of quantity and quality of communication impacts project closeout – if communication breaks down, project closeout items may linger without resolution.
- Training needs and uniform requirements for training (question about whether it is important to coordinate and make uniform across States) – specifically for owner-agency employees who are performing construction inspection. Florida has a qualification program for training construction personnel. Contractors, inspectors, consultants, and DOT staff must have successful qualification programs. Differences in State material specifications (allowable placement temperatures, etc.) may limit training uniformity across various States. Arkansas requires all inspectors who will perform materials testing to be certified in all areas in which they will test. North Carolina allows provisional approval of testers based on qualifications since it often takes months to obtain certifications needed even though they may already have the experience. Inspection may see more project impacts from workmanship as opposed to materials test results. Transportation Curriculum Coordination Council is a pooled fund study developed in 2000 and has online curriculum for a national audience. Florida – contractor quality control plans are required and allow for evaluation of materials and workmanship. Materials items relate directly to specifications, but workmanship is looser in terms of how to evaluate them.
- With increased use of CEIs, what is the agency’s role and how much do they coordinate? Louisiana is considering requiring the same qualifications for consultant inspectors as for owner-agency staff. Florida has increased interaction with CEIs as they have the same authority as the owner-agency personnel who might also perform the work. Communication is important to ensure requirements are understood for policy issues, change orders, etc. Georgia uses CEIs as an extension of current staff – will have a CEI and also an agency representative on staff. Need to hire and train staff to continue to have expertise needed to ensure CEIs are performing. Alabama leaves management of CEIs up to divisions within the State. Tennessee has two-pronged approach with on-call support staff (2-3 year contracts) for short-term needs, but for regular projects TDOT hires CEIs with a DOT person overseeing that inspection work. Challenge – consultants may not want to make decisions due to potential risk of incorrect decisions.

- Network connectivity or access in rural areas and issues with using technology applications for construction. Virginia has high-speed connectivity at all VDOT facilities so that inspectors can have access and transfer information. Include lack of phone service in emergency response plan and site safety plan and determine who will initiate response if needed.
- Customer satisfaction is an important component of construction programs. Tax referendums have been attempted in some States to help with funding projects but there may be a lack of trust as referendums are often not approved by voters. The money in one State’s referendum was planned for local areas for resurfacing, transit projects, etc. Some States have been successful with terms on a proposed half-cent tax (10 year period only for example) along with showing what will be accomplished and how it will be done. In Alabama, a lot of funding goes toward asphalt pavements so looking for innovative ways to handle consistency and reduce costs and improve quality. Florida uses an incentive/disincentive ride specification for pavements.
- There are benefits to cross training construction and maintenance staff to allow for use of all personnel throughout different seasons.

Topic 5: Implementing Innovative Products for Worker Safety

12:45pm - 1:15pm	<p>Exchange Topic #5: Implementing Innovative Products for Worker Safety</p> <ul style="list-style-type: none"> • Innovative Worker Training Tools - Roadway Safety+ 	Emmett Russell, International Union of Operating Engineers (Retired)
1:15pm - 2:15pm	Participant Roundtable Discussion of Exchange Topic #5	Facilitators - Jason Richins, AASHTO, and Mark Ligon, Ranger Construction

Emmett Russell with ARTBA gave a presentation on the Roadway Safety+ Program. The program is PC based and includes various modules on worker safety needs and requirements. It also includes management tools such as a temporary traffic control toolkit and a module on potential motorcycle and bicycle hazards. The presentation included a demonstration of the Roadway Safety+ CDROM and some of the modules on high visibility apparel, flagging, and runover/backover prevention.

Roundtable discussion:

Many contractors have daily and weekly safety meetings with personnel. OSHA may inspect traffic control and other aspects of work zone safety and bring issues up based on general duty clause. The OSHA fatal four include 251 fatalities by falls, 67 electrocutions, 73 stuck by fatalities, 19 caught in between fatalities. These statistics are from 2011.

In Florida, for bridges that have plywood form work a safety person monitors conditions to ensure that adequate protection exists. Contractors perform job safety hazards analysis and engage project owners to be part of the discussion. Safety is a topic in progress meetings and owners and inspections crews and contractor personnel should be involved in these meetings. In Pennsylvania, requirements for height of barriers are being increased to meet fall protection requirements and block disabling glare from headlights. Glare screens are also used on top of portable concrete barriers to prevent disabling glare.

Some States use online training for construction inspectors prior to working so that they can identify hazards and understand how to perform duties safely.

A safety issue or incident may go against a contractor's rating and there is an incentive to focus on safety given that it may also affect performance ratings for individuals.

A contractor representative mentioned having power companies become involved and shield or cover power lines to help avoid issues with overhead lines. Participants discussed appropriate ways to leave an area where electrical arcing occurs or where a piece of equipment is electrified (shuffle feet or jump to avoid leaving only one foot on the ground at a time).

Use of law enforcement personnel is also common practice on construction sites for slowing traffic and providing enhanced visibility. Florida also uses a motorist awareness system, radar speed display units, variable message signs, and speed management devices such as radar displays. It is common in States to also use off-duty police officers for presence in and around the work zone. Police officers also perform "queue detail" to help drivers know of an impending speed variability issue downstream. Other officers are also placed in downstream areas to perform an enforcement function if drivers do not comply with posted speeds. Some States also have a not-to-exceed hourly rate for police officers hired through the contract.

One practice mentioned from a past project in Florida involved the use of a portable changeable message sign to display the dollar value of citations issued in or around the project (updated annually). For longer term projects this may be beneficial for reducing speeds.

Cameras are also designed into newer construction equipment to allow for reducing blind spots. Another practice is to have a different color vest for a spotter to draw extra attention to the person assisting with equipment movement issues.

Appendix B – Southeast CPN Peer Exchange Agenda

Day 1 Wednesday, March 6		Chris Schneider, FHWA (Moderator)
Time	Topic	Presenters / Facilitators
7:00am – 8:00am	Continental Breakfast	
8:00am – 8:30am	Welcoming Remarks	Brian Blanchard, Florida DOT Alicia Nolan, FHWA – Florida
8:30am – 8:45am	Self Introductions	All Participants
8:45am – 9:30am	Florida DOT Host Agency Presentation	David Sadler, Florida DOT
9:30am – 10:00am	<ul style="list-style-type: none"> Summary of PI Tool Analysis & Results Peer Exchange Overview 	Tim Luttrell, SAIC Chris Schneider, FHWA
10:00am – 10:15am	Break	
10:15am – 10:45am	Exchange Topic #1: Implementing Innovative Practices and Tools for Inspection <ul style="list-style-type: none"> Use of Tablets for Project Inspection and Pilot Project Using Bar Coding for Materials Tracking 	Ron Hancock, North Carolina DOT Chris Peoples, North Carolina DOT
10:45am – 11:45am	Participant Roundtable Discussion of Exchange Topic #1	Facilitator – Tim Brown, FHWA – Eastern Federal Lands
11:45am – 1:00pm	Lunch	
1:00pm – 1:30pm	Exchange Topic #2: Using Innovative Methods to Resolve Contract Claims and Disputes <ul style="list-style-type: none"> FDOT's Approach to Claims and Dispute Resolution 	Rudy Powell, Florida DOT
1:30pm – 2:30pm	Participant Roundtable Discussion of Exchange Topic #2	Facilitator – Brian Egan, Tennessee DOT
2:30pm – 2:45pm	Break	
2:45pm – 3:15pm	Exchange Topic #3: Conducting Post Construction Reviews <ul style="list-style-type: none"> Post Construction Reviews on Eastern Federal Lands Highway Projects 	Rajan Patel, FHWA – Eastern Federal Lands
3:15pm – 4:15pm	Participant Roundtable Discussion of Exchange Topic #3	Facilitator – Fran Hood, Idaho Transportation Department

Day 1 Wednesday, March 6		Chris Schneider, FHWA (Moderator)
Time	Topic	Presenters / Facilitators
4:15pm – 4:30pm	Discussion on Takeaways for Implementation	Dean Testa, Applied Pavement Technology
4:30pm	Adjourn	
Dinner on your own		

Day 2 – Thursday, March 7		Chris Schneider, FHWA (Moderator)
Time	Topic	Presenters / Facilitators
7:00am – 8:00am	Continental Breakfast	
8:00am – 8:15am	Recap of Day 1 Discussion – Challenges and Themes	Dean Testa, Applied Pavement Technology
8:15am – 8:45am	Exchange Topic #4: Developing and Tracking Meaningful Performance Measures <ul style="list-style-type: none"> • VDOT Performance Measures: Continuous Improvement 	Lloyd Arnold, Virginia DOT Dennis Motley, Virginia DOT
8:45am – 9:45am	Participant Roundtable Discussion of Exchange Topic #4	Facilitator – Carrie Stanbridge, Florida DOT
9:45am – 10:00am	Break	
10:00am – 11:30am	Discussion on Other Regional Priorities (any topic)	Facilitator – Emanuel Banks, Arkansas Highway and Transportation Department
11:30am – 12:45pm	Lunch	

Time	Topic	Presenters / Facilitators
12:45pm – 1:15pm	Exchange Topic #5: Implementing Innovative Products for Worker Safety <ul style="list-style-type: none"> Innovative Worker Training Tools – Roadway Safety+ 	Emmett Russell, International Union of Operating Engineers (Retired)
1:15pm – 2:15pm	Participant Roundtable Discussion of Exchange Topic #5	Facilitators – Jason Richins, AASHTO, and Mark Ligon, Ranger Construction
2:15pm – 2:30pm	Break	
2:30pm – 3:15pm	Discussion on Takeaways for Implementation	Dean Testa, Applied Pavement Technology
3:15pm – 3:30pm	Closing Remarks, Feedback on Peer Exchange, and Next Steps	David Sadler, Florida DOT David Unkefer, FHWA
3:30pm	Adjourn	



Appendix C – Southeast CPN Peer Exchange Roster

Name	Agency/Organization	Position	Email Address
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Emanuel Banks	Arkansas State Highway and Transportation Department	Assistant Chief Engineer Operations	emanuel.banks@arkansashighways.com
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