Research Peer Exchange
Collaborating with Institutes of Higher Learning to Ensure Quality Research

August 28-30, 2018
Clemson University
Clemson, SC

Report Prepared by:
South Carolina Transportation Technology Transfer Service
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Executive Summary

The South Carolina Department of Transportation (SCDOT) hosted a peer exchange of its research program August 28-30, 2018. The peer exchange was held on the Clemson University campus in Clemson, SC. The peer exchange team included representatives from the Kansas, Maryland, Tennessee, and South Carolina DOTs, as well as the Kentucky Transportation Center, and a representative from the Federal Highway Administration (FHWA).

For the first time, the peer exchange team included representatives from in-state institutes of higher learning. The University of South Carolina, The Citadel, Tri-County Technical College, and Clemson University were invited to participate in the exchange and to provide their perspective on the SCDOT research process. Personnel from the SC Transportation Technology Transfer Service (T3S) also attended.

The SCDOT’s main goal for the peer exchange was to identify ways to improve future collaborations with institutes of higher learning to ensure quality research. To this end, the following focus areas were discussed in the peer exchange:

1. Solicitation Process
2. Project Administration
   a. Steering and Implementation Committee
   b. Proposal Guidelines
   c. Final Reporting
      i. Page Limits
      ii. Writing Quality
      iii. Timeliness
3. Marketing and Implementation

The discussions during the peer exchange identified both strengths of the SCDOT research program as well as possible opportunities for improving the program. The project administrative portion included discussions of SCDOT’s newly proposed guidelines for project proposal and final reporting, which were shared with the attendees prior to the exchange.

Some of the identified strengths include (not in prioritized order):

- Having a well-defined, inclusive, open, and formal solicitation process
- Having a solicitation process that includes input from SCDOT personnel, institutes of higher learning, other government agencies, and industry representatives
- Utilizing an easy-to-use online topic solicitation form
Requiring a DOT champion prior to final topic selection
Having multiple topic screening opportunities during the solicitation process
Having “Implementation” in the steering committee's name gives emphasis for implementation for the duration of the project
Having the research unit coordinate and administer all committee meetings
Having a steering committee for each project with clearly-defined roles and expectations and including multiple stakeholders
Requiring the steering committee chair to complete an Implementation Statement at the end of the project detailing the implementation plan
Presenting research results to the Department’s Research and Development Executive Committee

Improvement opportunities include (not in prioritized order):

- Allow all selected research topic submitters to attend the solicitation meeting
- If capacity allows, invite newly hired institutes of higher learning faculty members to attend solicitation meeting to “learn the ropes”
- Explore establishing a Master Research Agreement with in-state institutes of higher learning where new projects may be started with work orders
- Explore audio/video meetings with just the PI and Chair to supplement full, in-person steering committee meetings
- Explore ways to utilize PIs with implementation after the completion of project where appropriate
- Investigate the adoption of an early Preliminary Implementation Assessment similar to Kentucky’s process
- Work with DOT communications personnel to develop short videos promoting research findings on YouTube and other online venues

A research peer exchange is a focused event that requires extensive preparation not only by the host State, but also by the participating team members. The SCDOT is very grateful to the peer exchange team for their time and efforts in this endeavor and for the professionalism exhibited throughout the process. The information gathered during this peer exchange will greatly enhance the operations of the SCDOT research program.

At the end of the first day, the group visited the Center for Connected Multimodal Mobility (C2M2) for a demonstration of connected and autonomous vehicles. C2M2 is a Tier 1 University Transportation Center (UTC) and under the direction of Dr. Ronnie Chowdhury.
Introduction
The SCDOT hosted a peer exchange of its research program August 28-30, 2018. The peer exchange was held on the Clemson University campus in Clemson, SC. Contact information for the peer exchange participants is included in Attachment 1.

The members of the peer exchange team were:
- Rick Kreider, Kansas DOT
- Joe Crabtree, Kentucky Transportation Center
- Allison Hardt, Maryland DOT
- Anne Freeman, Tennessee DOT
- Jim Garling, FHWA
- Terry Swygert, SCDOT

The University representatives were:
- Nathan Huynh, University of South Carolina
- Wayne Sarasua, Clemson University
- Jeff Davis, The Citadel
- Mary Corley, Tri-County Technical College

Others who participated in the peer exchange included:
- Claude Ipock, SCDOT
- Merrill Zwanka, SCDOT
- Meredith Heaps, SCDOT
- Jim Burati, South Carolina T³S
- Erin Gary, South Carolina T³S
- Shaun Gaines, South Carolina T³S
Peer Exchange Participants *(back to front, left to right)*: Claude Ipock, Jeff Davis, Wayne Sarasua, Jim Garling, Merrill Zwanka, Joe Crabtree, Jim Burati, Terry Swygert, Erin Gary, Nathan Huynh, Rick Kreider, Mary Corley, Meredith Heaps, Allison Hardt, and Anne Freeman

**Focus Areas**

The SCDOT’s main goal for the peer exchange was to identify ways to improve future collaborations with institutes of higher learning to ensure quality research. To this end, the following focus areas were discussed in the peer exchange:

1. Solicitation Process
2. Project Administration
   a. Steering Committee
   b. Proposal Guidelines
   c. Final Report Format
      i. Page Limit
      ii. Report Quality
      iii. Report Timeliness
3. Marketing and Implementation
1. Solicitation Process

SCDOT would like input on the effectiveness and inclusivity of the current Research Topic Solicitation process:

- How do other states administer their research solicitation process?
- Are the university representatives comfortable with the current process and feel they are adequately represented?

2. Project Administration

The SCDOT would like to know how other states perform project administration. SCDOT is proposing new guidelines for both Research Proposals and Final Reports, which were forwarded to all participants prior to the Peer Exchange. Key areas of interest include:

- Do other states utilize a steering, technical, or other type of committee to direct and monitor projects?
- Do other states use proposal and final report guidelines to aid the submission process?
- How do other states address late reports and poorly written documents?
- Do other states have a page limit for final reports?

3. Marketing and Implementation

SCDOT would like to know how other states market completed research and handle implementation:

- Do other states have a process for handling and tracking implementation?
- How do other states market completed research, in addition to the final report?
- Are other states receiving assistance from Universities (and/or PIs) with implementation and marketing?
Peer Exchange Format and Activities

To prepare for the peer exchange, the team reviewed documentation describing the SCDOT’s research procedures and program. In addition to the printed documentation, SCDOT research personnel presented a 30-minute overview of the SCDOT’s organizational structure, research budget, and the research management process. Each member of the peer exchange team also made short presentations of his/her agency’s research program. During the peer exchange, the team discussed South Carolina’s procedures, as well as those used in the other team members’ respective agencies. Representatives from four Institutes of Higher Learning also participated in the second day of the peer exchange to describe their experiences regarding the focus areas. The agenda for the peer exchange is shown in Attachment 2.

A general format for the peer exchange was agreed upon at the beginning of the meeting. It was decided that each of the three SCDOT focus areas would be addressed using the following procedure:

- SCDOT presented its interests, concerns, and expectations regarding the focus area
- Each member of the peer exchange team then described how the focus area is addressed in their agency and provided any additional comments that they felt were appropriate to the topic
- Each representative from the Institutes of Higher Learning then described their experience regarding the focus area
- A brainstorming process was then used to identify both existing strengths of the SCDOT program as well as potential opportunities for improving the SCDOT program
- Each team member then identified items that they will take home for consideration in their own agency
- The items identified in the previous steps were then reviewed and discussion on the focus area was concluded

At the last session, the peer exchange team reviewed a draft of the peer exchange report. The team discussed the draft report and made suggestions for additions and modifications. The final report was then prepared for distribution.

The findings of the peer exchange regarding current SCDOT strengths as well as potential opportunities for improvement are presented for each of the focus areas in the following sections. These findings will be presented to the SCDOT Research and Development Executive Committee (RDEC).
Summary of Peer Exchange Findings

Focus Area 1. Solicitation Process

Current Strengths:

- Having a well-defined, inclusive, open, and formal solicitation process
- Having a solicitation process that includes input from SCDOT personnel, institutes of higher learning, other government agencies, and industry representatives
- Soliciting research topics every two-years helps with strategic project selection and staggered, flexible start dates
- Having a plan to address urgent topics that arise
- Including a brief literature search as a part of the topic screening process
- Utilizing an easy-to-use online topic solicitation form
- Requiring a DOT champion prior to final topic selection
- Having multiple topic screening opportunities during the solicitation process

Improvement Opportunities:

- Allow all selected research topic submitters to attend the solicitation meeting
- If capacity allows, invite newly hired institutes of higher learning faculty members to attend solicitation meeting to “learn the ropes”
- A two-year solicitation cycle with projects having staggered starting dates may create issues, such as research relevancy and champion motivation, especially with long (2+ year) projects
- Should directors have initial veto power on submitted topics?
- A six to nine month lead time can help in the hiring of graduate student process

Although not directly related to the focus area, there was some discussion on the research contract process. Opportunities identified from this discussion include:

- Explore establishing a Master Research Agreement with in-state institutes of higher learning where new projects may be started with work orders
- Investigate initiating (not beginning) all projects within the first of the two-year solicitation cycle
Focus Area 2.  Project Administration
   Subset Area A.  Steering Committee

Current Strengths:

- Having “Implementation” in the steering committee’s name gives emphasis for implementation for the duration of the project
- Having the research unit coordinate and administer all committee meetings
- Synergistic meetings are effective
- Having a steering committee for each project with clearly-defined roles and expectations and including multiple stakeholders
- Including industry representation on committees as a non-voting members where appropriate

Improvement Opportunities

- Explore audio/video meetings with just the PI and Chair to supplement full, in-person steering committee meetings

Focus Area 2.  Project Administration
   Subset Area B.  Proposal Guidelines

Discussion

As mentioned earlier, SCDOT’s proposed new guidelines and administration documents for Research Proposals were forwarded to all participants for their review prior to the Peer Exchange. Due to time constraints there was a limited discussion. Some of the input included:

- Kentucky does not typically solicit proposals and therefore does not have proposal guidelines, but they do have a template for work plans
- Kansas mentioned that their proposal guideline document is not as in-depth as what South Carolina has proposed
- Maryland has a similar document to South Carolina’s proposed document on their website with numerous hyperlinks for reference. Maryland does not allow co-PIs to work on projects
- Tennessee has a fillable proposal form on their website
- The suggestion was made to do away with paper copies of proposals

Conclusion

The general consensus of the group was that SCDOT’s proposed guidelines will help simplify the process and add consistency in what is submitted.
Focus Area 2. Project Administration

Subset Area C. Final Report Format

Discussion
As mentioned earlier, SCDOT’s proposed new guidelines and project administration documents for final reporting were forwarded to all participants for their review prior to the exchange. The discussion regarding final reports centered around three basic areas:

**Page Limit**
Two states do not currently have page limits, while two states have a maximum limit of 75 pages. One of those states has a process to allow for increased page length. After discussion, it was suggested that SCDOT maintain their proposed 75 page limit, but also give the research steering and implementation committees the right to increase the limit on a project-by-project basis.

The possibility of offering an alternative deliverable in lieu of a final report was discussed but may not meet FHWA reporting requirements.

**Conclusion**
It was agreed that the 75 page limit should not include table of contents, list of figures, appendices, etc., and that the executive summary should be limited to two pages with exceptions allowed.

**Report Quality**
All participants agreed that report quality was often not sufficient and that a review by a professional technical writer would improve the report preparation and submission process. One state requires the use of a technical writer before report submittal. It was noted that this service might require additional costs that most states indicated a willingness to cover. It was noted that the use of a single technical writer by each university would ensure consistency and that not all technical writers have the background necessary to properly edit DOT-type research reports. University members mentioned that SCDOT’s newly developed check-list was helpful regarding grammar, content, and format.

**Conclusion**
After discussion, no consensus was reached regarding how to best utilize a technical writer as part of the submission process. However, all states agreed that this review could be a valuable addition to final report submittal requirements.
Report Timeliness
All the states acknowledged a problem with late submission of final project reports. Two states indicated that they have not taken action, but realize that they need to begin to do so. One state indicated that if a PI or state champion was late on three project final reports, then they would not be able to submit new proposals for additional projects. During the discussion, some felt that three projects was too lenient, and that the number should be two or less.

At least two states have a policy of paying no more than 90% of the contract amount until the final report has been approved. One state has recently changed this policy to make it consistent with retainage on other types of projects. That is, withholding 10% of each progress payment rather than limiting payment to 90%. They indicated that this was recommend by their university and seemed to be preferred by both parties. One university representative pointed out that PIs who are continually late will likely not receive funding for future projects.

Conclusion
The general consensus was that there needs to be clearly defined repercussions for delinquent final reporting by PIs.
Focus Area 3. Marketing and Implementation

Current Strengths

- Requiring the steering committee chair to complete an Implementation Statement at the end of the project detailing the implementation plan
- Providing final project reports online for the general public
- Presenting research results to the Department’s Research and Development Executive Committee

Improvement Opportunities

- Explore ways to utilize PIs with implementation after the completion of project where appropriate
- Investigate the adoption of an early Preliminary Implementation Assessment similar to Kentucky’s process
- Establish/hire an implementation coordinator
- Explore tracking early implementation
- Explore adding specific implementation questions to the current Implementation Statement template
- Consider a benefit/cost analysis to evaluate the success of the implementation process
- Consider displaying posters of research findings at the annual Highway Engineers Conference and other meetings
- Work with DOT communications personnel to develop short videos promoting research findings on YouTube and other online venues
- Submit research findings for possible publication in the TRB newsletter
- Perhaps add a one-page market summary for management to encourage implementation
- Work within DOT to advocate for program and policy implementation of project results
Observations and Planned Actions to Take Home

In the following sections, each of the peer exchange team members present some general observations and list actions that they may try to implement in their home agencies.

Rick Kreider
Kansas Department of Transportation

Observations
I would like to thank the South Carolina DOT Research unit for inviting me to participate in this peer exchange. The atmosphere, cordial environment, organized and productive conversation made this a memorable experience. Having the various universities present helped to provide perspective that could not have been achieved if not present. KUDOs to Clemson and the T3S for an excellent administration of the exchange. OUTSTANDING!

Planned Actions to Take Home

- An attempt to improve on the marketing of KDOT research. Some possible areas for consideration include the required inclusion of posters and brochures by the principal investigator.
- KDOT is attempting to create a master contract agreement with each of the two primary universities (KU and KSU). MDOT and KYTC apparently have such an agreement and KDOT will pursue this possible contract language.
- MDOT invites the PI to present within the division, so the research effort can be heard by all the impacted staff.
Observations
I greatly appreciate the opportunity to participate in this Peer Exchange. The event was extremely well organized, well run, and informative, and the hospitality was exceptional!

My overall impression of the SCDOT research program is highly positive. The program is led by knowledgeable, experienced professionals who are highly motivated to achieve excellence in everything they do. It is clear that they have given a lot of thought to what they do and the way they do it, and they appear to be on a path of continuous improvement.

Based on my observations, here are some notable strengths of the SCDOT research program:

- The process for soliciting research ideas and selecting projects is well-organized and well-established, and highly inclusive of varied stakeholders (SCDOT, universities, and industry).
- The two-year cycle for selecting research projects allows a longer-term, strategic focus.
- Staggering project start dates allows a distribution of workload.
- Inclusion of “Implementation” in the name of project steering and implementation committees makes a clear statement of the importance of implementation and the responsibility of the committee.
- The requirement for final project deliverables realizes the importance of other tools (e.g., one-page summaries and posters), since not many people will read a full final report.

Planned Actions to Take Home

- Consider including trade organizations in our project idea solicitation process.
- Consider eliminating the requirement to have a KYTC champion already identified for initial project idea submissions.
- Consider staggering project start dates; don’t start all projects on July 1.
  - Better distribution of workload
Better utilization of summer construction seasons
Better alignment with academic calendar

- Consider re-introducing a face-to-face meeting of stakeholders in our project idea solicitation process—not every year, but perhaps every two or three years.
- Consider revising the name of our study advisory committees to include “implementation.”
- Put in place a methodology to centrally track when the study advisory committee meets for each project, so we can ensure that meetings are taking place on a regular basis (at least twice per year).
Observations
It is clear from the meeting that the SCDOT has a well-established, mature research program that is providing a valuable service to the Department. The use of internal and external stakeholders to help determine which research to fund and establishing well rounded Steering and Implementation Committees to provide oversight for research projects, are great practices. These are good examples of collaboration that other states may want to consider adopting. They have also done a tremendous amount of work to document various processes. During the Peer Exchange they shared their guidelines for research proposals, formatting and guidelines for research reports and summaries, quarterly report template, and checklist for closing an SPR project. These documents will help internal research staff as well as the researchers who partner with the DOT. SCDOT also has a close working relationship with their LTAP Center. The research program is able to leverage the resources of the LTAP program including providing a website for research program information, producing reports (research annual report and peer exchange reports), and facilitating meetings such as this Peer Exchange.
Planned Actions to Take Home

- Identify a better balance of considering research ideas from internal and external groups (currently only consider them from internal managers).
- Explore adding an on-line form for submitting research ideas and proposal submissions.
- Begin tracking meeting dates. This will ensure that every project meets at least twice a year.
- Implement a more formal committee structure to provide oversight to a project similar to SCDOT’s Steering and Implementation Committee.
- Create a checklist for final reports for P.I.s to use.
- Review Kentucky’s preliminary implementation assessment document and consider implementing it.
- Establish a closer working relationship with the Office of Communications and identify a project to pilot the use of a short video or other media to help transfer research results to practice.
Observations
I want to thank South Carolina Department of Transportation (SCDOT) and the Local Technical Assistance Program (LTAP) in inviting Tennessee Department of Transportation (TDOT) to participate in a Peer Exchange on “Collaborating with Institutes of Higher Learning to Ensure Quality Research”. This is my first peer exchange and the event has allowed me to experience a high energy and intellectual dialogue with four other state DOTs on producing quality research.

The event was held on the beautiful campus of Clemson University. Holding the event at The Madren Conference Center and Inn in Clemson, provided LTAP and SCDOT staff a unique opportunity to explore current and proposed processes for our research projects. The event was carefully planned and produced a high-quality exchange of ideas between the DOTs, Federal Highways Administration, university stakeholders, and the LTAP staff.

The organization of the agenda and the materials developed for providing overall structure of this peer exchange were impressive. These materials allowed the participants to be prepared for an in-depth discussion not only with other state DOTs but also with SCDOTs university partners. I discovered we have similar solicitation processes such as screening systems for early submitted research need statements and the use of a voting ballot for potential research projects. However, I believe SCDOT more effectively uses a Steering Committee and Implementation Plan on their research projects as they move forward to completion, close out, and implementation of project deliverables.

Listed below are several new ideas for TDOT to consider while adding to and streamlining TDOTs research program.

Planned Actions to Take Home
- Include trade organizations and university stakeholders in the solicitation process
- Use one meeting (100 + participants) in the early solicitation process
Meeting with TDOTs FHWA division to discuss timing on SPR Work Program Amendments

Document in the progress report when the Steering Committee/Lead Staff/University meet

Schedule a project presentation three months out before end of contract

Capture implementation throughout the project

Include in the Final Report an executive summary, page limit, formatting guidelines, etc.

Consider a contract stipulation and use of a technical writer in the final reporting document

Consider adding protocol for delinquent reporting

Focus on further development of an Implementation Plan, Implementation Statement and performance metric

Include our university stakeholders in assisting with implementation of projects after completion

Develop additional technology transfer processes (project deliverable) such as posters for use as marketing materials within TDOT headquarters, Region Offices, Freight Advisory Committee (FAC) meetings, and TDOT Human Resources for workforce development
Observations
This was my first time attending a Research Peer Exchange, and I am grateful to SCDOT for inviting representatives from the state’s research institutions this time around. The T3S staff ran the meeting smoothly, and the location and refreshments were very good. It was very eye-opening for me to see the entire SCDOT research program process from topic solicitation through implementation. It was also interesting to hear about the differences and similarities in the research programs in Kentucky, Kansas, Maryland, and Tennessee. In addition, I think it was beneficial for the research institutions to express how the different aspects of the research program process affect them as well. I think having individuals from various entities (SCDOT, other states, FHWA, and research institutions) allowed for thought-provoking discussion and hopefully more suggestions for improvement than could be achieved without those different viewpoints. I was personally interested to learn that SCDOT would like for researchers to contact SCDOT regarding potential SCDOT Project Champions prior to submitting those topics for consideration in the Research Topic Solicitation. In addition, I appreciated the opportunity to review the new guidelines for proposals and reports and offer some suggestions. The new guidelines will be very helpful since they provide very clear direction regarding SCDOT’s needs for proposals and reports.

Planned Actions to Take Home

- Contact SCDOT representatives about potential research topics prior to submitting for the Research Topic Solicitation.
- Utilize the new guidelines and templates for proposal and report preparation.
Observations
I would like to thank the SCDOT for inviting me to participate in its 2018 Research Peer Exchange. I understand that this is the first time the SCDOT has invited university researchers to participate in the discussion. This initiative clearly indicates that the SCDOT is earnest in improving its research program and is willing to “think outside the box.” The SCDOT did an excellent job of organizing the event and taking care of the lodging and logistics for the participants. I am particularly grateful for the opportunity to have dinner with SCDOT staff and other DOT participants in an informal setting. Regarding the research program, I found the dialogue between the SCDOT staff and other DOT representatives (from Kansas, Kentucky, Maryland and Tennessee) very informative. The university researchers were also given an opportunity to provide input along the way. I came away feeling very assured that the SCDOT’s research program is very well managed and that it will be even better as the SCDOT seeks to implement some of the suggestions made by other state DOT representatives and university researchers. I also gained a lot of respect for the SCDOT staff knowing they do a lot more with less resources compared to other states.

Planned Actions to Take Home

- Encourage colleagues to contact SCDOT staff to discuss research topic and to identify SCDOT champion for the research problem to be submitted.
- Encourage colleagues who have SCDOT funded projects to meet with the project steering and implementation committee more frequently to keep the project on schedule.
- Inform colleagues about the need to deliver high-quality final reports that are free of grammatical errors since they represent SCDOT products. They should consider hiring a technical editor, if necessary.
Observations
We have a great partnership between SCDOT office of Materials and Research and university researchers in South Carolina. Methods used to perform research program are well thought out and fair for participating colleges and universities. Some improvements need to be made in delivery of research reports and recommended implementation plans.

In the discussion of research deliverables, I believe there are some important explanatory factors to acknowledge. As universities use graduate students as the primary workforce for conducting research, there is an inherit problem that this labor force is not prepared to produce well-written and highly useful research reports for SCDOT implementation. Engineering consulting companies are generally to produce high quality engineering reports, however, are not as capable of designing innovative knowledge-producing research plans. Additionally, their overhead costs would be much higher than universities and these companies would also charge profit against the work performed, necessitating the need for increased funds to conduct comparable research projects. The ability of colleges and universities to publish equivalent engineering consultant high quality reports falls solely on the professors.

Planned Actions to Take Home

- Adopt more comprehensive strategy for preparation and submittal of SCDOT research statements.
- Always work collaboratively to identify SCDOT champion prior to submittal of research statements.
- Promote more collaborative on going approach to administering research program between SCDOT and colleges/universities.
- Work to continue to adopt best practices from other states similar to Maryland, Tennessee, Kansas, Kentucky and others.
- Engage more engineering faculty in research problem statement submittal.
Observations
I am in favor of SCDOT’s current process for allowing virtually unlimited submission of ideas regardless of whether or not there is an SCDOT Champion already identified. There is a lot of healthy discussion at the topic meeting which facilitates identifying a potential champion or even an alternative champion.

The vetting process seems very fair. An added challenge is in the initial screening process for cross disciplinary topics.

I am very strongly in favor of not limiting the number of topic meeting attendees (within reason). SCDOT is considering opening the meeting to all topic submitters. This is MUCH better than the previous format where there was a limit to the number of attendees. Because Clemson has four transportation professors plus faculty in a number of areas relevant to SCDOT research, only two of the transportation professors were able to attend. The problem with this is that a colleague would have to describe a research topic submitted by someone else. This is problematic because SCDOT may not get a clear understanding of what is being proposed.

Further, I don’t believe there is an unfair advantage if one university has more attendees than another—especially since there is no guarantee that the submitter of a topic will win the project. On the contrary, I have had to topics that I have submitted that were awarded to investigators from another university. One of my colleagues indicated that one of his topics was actually awarded to a university from another state.

The problem with limiting the meeting to only topic submitters is that assistant professors who are interested in attending to learn about the process and also network with SCDOT professors may be left out unless they submit. I’ve encouraged our junior faculty to submit for that reason even if the topic may not be very well developed.

There was mention that faculty may be submitting to drive their own agenda. I think this is true, however I do not think that this is necessarily a bad thing from a DOT standpoint. On
the contrary, faculty ideas may be based on previous research results of DOT projects. These faculty may have a unique perspective and an understanding of aspects of DOT operations such as crash data, etc. Being able to present these ideas may provide DOT staff with food for thought. I personally think it is much more beneficial to a DOT to have too many ideas rather than not enough. That is where the vetting process is important.

Over all, I really like SCDOT research topic identification and solicitation process. This has only been reaffirmed after hearing from other DOTs at the Peer Exchange Meeting.
**Observations**
The LTAP/T³S staff organized another outstanding Research Peer Exchange. The facilities and meals were again excellent. The participants from Kentucky, Kansas, Maryland, and Tennessee provided valuable input and comments with respect to SCDOT’s Research Topic Solicitation, research award, and contract execution. There was very meaningful interaction and all parties had “take-aways” from the exchange.

Day One included a visit to Clemson’s University Transportation Center, C2M2 (Center for Connected Multimodal Mobility) to observe some of the latest research in Connected Autonomous Vehicles. Day Two included comments from some in-state Colleges and Universities who regularly perform research for SCDOT-Clemson University, University of South Carolina, The Citadel, and Tri-County Technical College. The researchers provided candid insight into the “research process” from their perspective. The LTAP staff was spectacular and provided an atmosphere that encouraged discussion and the exchange of ideas.

**Planned Actions to Take Home**

- Consider an overarching research agreement that would allow SCDOT to execute research projects as “Work Orders or Tasks” in a quicker fashion.
- There should be a monthly call, at a minimum, between the Principle Researcher and the SCDOT Champion to make sure the projects are running smoothly.
- SCDOT Research should utilize their Office of Communications to promote their research activities through short videos, Twitter, and Facebook. Marketing their research will go a long way in showcasing the importance of their research program. One-Page Executive Summaries, an “eye on the research” in electronic and print versions will be very helpful for some of the higher-level decision makers. Promote the Research website better.
Claude Ipock, Merrill Zwanka, Terry Swygert, & Meredith Heaps
South Carolina Department of Transportation

Host State

Observations
We would like to thank all of the participants from the other states, institutes of higher learning, and South Carolina’s FHWA representative for their time and efforts in making this a very successful Peer Exchange. The observations and suggestions made during discussions of the focus points will help us improve the quality of our program.

The T3 Service at Clemson should also be commended for once again doing an excellent job of facilitating this meeting.

Planned Actions to Take Home

Solicitation Process
- Do not limit the number of attending faculty members from each University (allow all faculty members whose submitted projects were chosen to attend)
- Investigate inviting new faculty members as capacity allows

Project Administration
- Contract Process
  - Investigate a Master Agreement with Universities
  - Investigate initiating (not beginning) all projects within the first year
- Steering and Implementation Committee Meetings
  - Explore monthly communication options (in-person and or audio/video) for key members in addition to routine full committee meetings
- Bound Copies (Proposals, Draft Final Reports, Final Reports)
  - Explore electronic submission for all reports
- Report Length
  - The body of the Final Report will be limited to 75 pages, with exceptions to the limit approved prior to submission
Report Timeliness

- Investigate restricting new project development/proposal submissions until the PI’s delinquent projects are resolved
- Explore withholding ten percent of each invoice for the duration of the project, with the expectation that all retained funds will be released upon receipt of an accepted Final Report

Report Quality

- Explore the need to require a technical writer’s review prior to report submission

Marketing and Implementation

Marketing

- Invite PIs to make presentation of findings to relevant divisions in SCDOT
- Explore avenues for highlighting research with the SCDOT Communications Department
- Consider submitting selected projects for publication in the SCDOT Connector
- Add TRB to distribution for inclusion in their E-Newsletter

Implementation

- Investigate the adoption of a Preliminary Implementation Plan to be defined in the early stages of a project
- Explore PI’s involvement in implementation after the project’s conclusion
# Attachment 1: Participant List

<table>
<thead>
<tr>
<th>Peer Exchange Team</th>
<th>SCDOT Participants</th>
</tr>
</thead>
</table>
| **Richard E. Kreider, Jr.**  
Chief, Bureau of Research  
Kansas DOT Materials and Research Center  
2300 SW Van Buren Street  
Topeka, KS 66611  
Phone: 785-296-1195; Fax: 785-296-2526  
E-mail: Richard.kreider@ks.gov | **Claude Ipock**  
Director of Construction  
SCDOT  
955 Park Street, Room 330  
PO Box 191, Columbia, SC 29201  
Phone: 803-737-1308; Fax: 803-737-2389  
E-mail: ipockCR@scdot.org |
| **Dr. Joseph D. Crabtree**  
Transportation Center Director  
University of Kentucky  
176 Oliver Raymond Building  
Lexington, KY 40506-0281  
Phone: 859-257-4508; Fax: 859-257-1815  
E-mail: joe.crabtree@uky.edu | **Merrill Zwanka**  
Materials & Research Engineer  
SCDOT  
Office of Materials & Research  
1406 Shop Road, Columbia, SC 29201  
Phone: 803-737-6681; Fax: 803-737-6649  
E-mail: zwankame@scdot.org |
| **Allison R. Hardt**  
Deputy Director, Policy and Research  
Maryland State Highway Administration  
Office of Policy and Research, C-412  
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Baltimore, MD 21202  
Phone: 410-545-2916  
E-mail: ahardt@sha.state.md.us | **Terry Swygert**  
Research Engineer  
SCDOT  
Office of Materials & Research  
1406 Shop Road, Columbia, SC 29201  
Phone: 803-737-6691; Fax: 803-737-6649  
E-mail: swygerttl@scdot.org |
| **Anne Freeman**  
Transportation Planning Manager,  
Long Range Planning Division  
Tennessee DOT  
James K. Polk Building, 9th Floor  
505 Deaderick Street  
Nashville, TN 37243  
Phone: 615-253-2430  
E-mail: anne.freeman@tn.gov | **Meredith Heaps**  
Research Program Manager  
SCDOT  
Office of Materials & Research  
1406 Shop Road, Columbia, SC 29201  
Phone: 803-737-1969; Fax: 803-737-6649  
E-mail: heapsmw@scdot.org |
| **Jim Garling**  
FHWA, South Carolina Division  
Strom Thurmond Federal Building  
1835 Assembly St, Suite 1270, Columbia, SC 29201  
Phone: 803-253-3883; Fax: 803-253-3989  
E-mail: Jim.Garling@dot.gov | |
## University Representatives

<table>
<thead>
<tr>
<th>University Representatives</th>
<th>T'S Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dr. W. Jeff Davis</strong>&lt;br&gt;Department Head and Professor&lt;br&gt;The Citadel&lt;br&gt;Department of Civil and Environmental Engineering&lt;br&gt;171 Moultrie Street, LeTellier 207&lt;br&gt;Charleston, SC 29409&lt;br&gt;Phone: 843-953-7687&lt;br&gt;E-mail: <a href="mailto:jeff.davis@citadel.edu">jeff.davis@citadel.edu</a></td>
<td><strong>Dr. Jim Burati</strong>&lt;br&gt;Professor, Civil Engineering Department&lt;br&gt;LTAP Director&lt;br&gt;202-C Lowry Hall, Clemson, SC 29634&lt;br&gt;Phone: 864-656-3315; Fax: 864-656-2670&lt;br&gt;E-mail: <a href="mailto:jlbrrt@clemson.edu">jlbrrt@clemson.edu</a></td>
</tr>
<tr>
<td><strong>Dr. Wayne A. Sarasua</strong>&lt;br&gt;Associate Professor&lt;br&gt;Clemson University&lt;br&gt;Glenn Department of Civil Engineering&lt;br&gt;310-B Lowry Hall&lt;br&gt;Clemson, SC 29634&lt;br&gt;Phone: 864-656-3318; Fax: 864-656-2670&lt;br&gt;E-mail: <a href="mailto:sarasua@clemson.edu">sarasua@clemson.edu</a></td>
<td><strong>Shaun Gaines</strong>&lt;br&gt;LTAP Associate Director&lt;br&gt;202 Hugo Drive, Clemson, SC 29634&lt;br&gt;Phone: 864-656-1456; Fax: 864-656-2670&lt;br&gt;E-mail: <a href="mailto:jgaines@clemson.edu">jgaines@clemson.edu</a></td>
</tr>
<tr>
<td><strong>Ms. Mary Corley</strong>&lt;br&gt;Program Manager&lt;br&gt;Tri-County Technical College&lt;br&gt;7900 U.S. Hwy 76&lt;br&gt;Pendleton, SC 29670&lt;br&gt;Phone: 864-646-2047; Fax: 864-646-1894&lt;br&gt;E-mail: <a href="mailto:mcorley1@tctc.edu">mcorley1@tctc.edu</a></td>
<td><strong>Erin Gary</strong>&lt;br&gt;LTAP Program Manager&lt;br&gt;202 Hugo Drive, Clemson, SC 29634&lt;br&gt;Phone: 864-656-6141; Fax: 864-656-2670&lt;br&gt;E-mail: <a href="mailto:amcchri@clemson.edu">amcchri@clemson.edu</a></td>
</tr>
<tr>
<td><strong>Dr. Nathan Huynh</strong>&lt;br&gt;Associate Professor&lt;br&gt;The University of South Carolina&lt;br&gt;Department of Civil and Environmental Engineering&lt;br&gt;300 Main Street&lt;br&gt;Columbia, SC 29208&lt;br&gt;Phone: 803-777-8947; Fax: 803-777-0670&lt;br&gt;E-mail: <a href="mailto:huynhn@cec.sc.edu">huynhn@cec.sc.edu</a></td>
<td></td>
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</table>
# Attachment 2: Agenda

**SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**RESEARCH PEER EXCHANGE**  
“Collaborating with Institutes of Higher Learning to Ensure Quality Research”  
**AUGUST 28-30, 2018**  
**AGENDA**

## Tuesday, August 28

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 – 2:15</td>
<td>Welcome and Introductions</td>
<td>Merrill Zwanka, Claude Ipoke</td>
</tr>
<tr>
<td>2:15 – 2:30</td>
<td>Focus Points, Goals, Expectations, &amp; Game Plan</td>
<td>Jim Burati</td>
</tr>
<tr>
<td>2:30 – 3:00</td>
<td>South Carolina Research Program Overview</td>
<td>Terry Swygert, Meredith Heaps</td>
</tr>
<tr>
<td>3:00 – 4:30</td>
<td>Brief Overview of Participants’ Organizations</td>
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<tr>
<td></td>
<td>Kansas DOT</td>
<td>Rick Kreider</td>
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<tr>
<td></td>
<td>Kentucky Transportation Center</td>
<td>Joe Crabtree</td>
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<tr>
<td></td>
<td>Maryland DOT</td>
<td>Allison Hardt</td>
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<tr>
<td></td>
<td>Tennessee DOT</td>
<td>Anne Freeman</td>
</tr>
<tr>
<td>4:30 – 5:00</td>
<td>Wrap-up and Announcements</td>
<td>Jim Burati</td>
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<tr>
<td>5:30 – 6:30</td>
<td>C²M² Connected and Autonomous Vehicle Technology Demonstration</td>
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<tr>
<td>7:00 – 9:00</td>
<td>Group Dinner</td>
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## Wednesday, August 29

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 – 9:00</td>
<td>Welcome and Introduction of Institutes of Higher Learning Representatives</td>
<td>Terry Swygert</td>
</tr>
<tr>
<td></td>
<td>Clemson University</td>
<td>Wayne Sarasua</td>
</tr>
<tr>
<td></td>
<td>The Citadel</td>
<td>Jeff Davis</td>
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<td></td>
<td>Tri-County Technical College</td>
<td>Mary Corley</td>
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<tr>
<td></td>
<td>University of South Carolina</td>
<td>Nathan Huynh</td>
</tr>
<tr>
<td>9:00 – 10:00</td>
<td>Focus Point 1: Solicitation Process</td>
<td>Jim Burati, Team</td>
</tr>
<tr>
<td>10:00 – 10:30</td>
<td>Report Preparation</td>
<td>Team</td>
</tr>
<tr>
<td>10:30 – 10:45</td>
<td>Break</td>
<td>Team</td>
</tr>
<tr>
<td>10:45 – 12:00</td>
<td>Focus Point 2: Project Administration</td>
<td>Jim Burati, Team</td>
</tr>
<tr>
<td>12:00 – 1:00</td>
<td>Lunch</td>
<td>Team</td>
</tr>
<tr>
<td>1:00 – 2:15</td>
<td>Focus Point 2: Project Administration (cont.)</td>
<td>Jim Burati, Team</td>
</tr>
<tr>
<td>2:15 – 2:45</td>
<td>Report Preparation</td>
<td>Team</td>
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<tr>
<td>2:45 – 3:00</td>
<td>Break</td>
<td>Team</td>
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<tr>
<td>3:00 – 4:00</td>
<td>Focus Point 3: Marketing and Implementation</td>
<td>Jim Burati, Team</td>
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<tr>
<td>4:00 – 4:30</td>
<td>Report Preparation</td>
<td>Team</td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td>Presenter</td>
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<tr>
<td>4:30 – 5:00</td>
<td>Wrap-up and Announcements</td>
<td>Jim Burati</td>
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<td></td>
<td>Group Dinner</td>
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<tr>
<td>Thursday, August 30</td>
<td>Review and Comment on the Draft Peer Exchange Report</td>
<td>Team</td>
</tr>
<tr>
<td>8:30 – 10:00</td>
<td></td>
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</tr>
<tr>
<td>10:00 – 10:15</td>
<td>Break</td>
<td>Erin Gary</td>
</tr>
<tr>
<td>10:15 – 10:45</td>
<td>Travel Expenses, Other Admin Activities</td>
<td>Jim Burati</td>
</tr>
<tr>
<td>10:45 – 11:00</td>
<td>Closing Remarks</td>
<td>Merrill Zwanka</td>
</tr>
</tbody>
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