

## TRIENNIAL STRATEGIC PLAN (TSP)

**Evaluation Period: February 1, 2015 to January 31, 2018**

*Please note that rows and boxes below expand as you enter the information*

### PART 1: Committee Name and Scope

*This is an opportunity to review the officially approved name and scope that are posted on the TRB website and consider any necessary changes. If changes are needed, include the proposed scope statement and/or name and justification for the changes.*

**NOTE: A proposed committee name and/or scope change must have the approval of 2/3 of the official members of the committee. The balloting done at a committee meeting that has less than 2/3 of the members in attendance must be augmented with e-mail balloting of the members not in attendance.**

Committee Code *	AFP40
Committee Name *	Standing Committee on Geo-Environmental Processes
- Date(s) reviewed	January 2016
- Change, if proposed***	Not Applicable
- No. of official members approving change/total number of members **	Committee Name was reviewed, changed and approved in 2016 as part of the DCG Strategic Review.
Committee Scope *	This committee is concerned with physical, chemical, and biological processes and interactions under various environmental conditions in geo and recycled materials.
- Date(s) reviewed	January 2016
- Change, if proposed ***	Not Applicable
- No. of official members approving change/total number of members **	Committee Scope reviewed, changed and approved in 2016 as part of the DCG Strategic Review.

\* Show current, as it currently appears in the [TRB Online Directory](#)

\*\* Includes Chair, Standing Committee Members, Emeritus Members, and Young Members

\*\*\* Show proposed, or Not Applicable

**PART 2: Committee Accomplishments**

NOTE: We have provided much of the information you need for boxes 2.2, 2.4, and 2.7 below and in attachments A, B, and C. We ask that you provide the remaining information.

**2.1**

Year	2015	2016	2017	2018
Number of Members in Attendance at Annual Meeting		10	7	8
Number of Visitors in Attendance at Annual Meeting		13	14	17
Number of Papers Reviewed		6	8	11
Total Number in Attendance at Mid-Year Meeting	NA			

**2.2**

*This committee primarily focuses on activities at the Annual Meeting.*

Sessions and workshops sponsored/cosponsored at the Annual Meetings are listed in **Attachment A**. All co-sponsored activities are also outlined in Section 2.8.

NOTE: Sessions and workshops sponsored/cosponsored at the Annual Meeting are listed in attachment A. **List** below all sessions and workshops sponsored/cosponsored at Mid-Year meeting, including name of co-sponsoring committee(s) if applicable (by year).

2018  
 Co-Sponsored Lectern Session not included in Attachment A:  
 “Characterization of Alternative Aggregates”, Session 814, with AFP70

**2.3**

**Titles and presenters for informal presentations made at Annual Meeting Committee meetings:**

**2016 Annual Meeting:**  
*Use of Recycled Concrete Aggregate As Base Course in Presence of Geotextiles*  
 Mr. Aiyoub Abbaspour, graduate student, Sustainable Geo-transportation Infrastructure (SGI) Research Group <http://geotrans.vse.gmu.edu/home>  
 George Mason University, Fairfax, VA

**2017 Annual Meeting:**  
*Research Needs and Opportunities for the Use of Coal Ash in Transportation Infrastructure*  
 Dr. John Daniels, Professor and Chair, Department of Civil and Environmental Engineering, University of North Carolina, Charlotte.

**2018 Annual Meeting:**  
*Reducing Stormwater Runoff and Pollutant Loading with Biochar Addition to Highway Greenways*  
 Dr. Paul Imhoff, Professor, Department of Civil and Environmental Engineering, University of Delaware

*Optimizing the Gradation of Fine Processed Reclaimed Asphalt Pavement and Aggregate Blends for Unbound Base Courses*  
 Mr. Saad Ullah, Graduate Research Assistant, Department of Civil, Environmental, and Infrastructure Engineering, George Mason University

**2.4**

**Provide** titles of new research need statements (RNS) posted in TRB's RNS database (by year):

2016

Temperature Effects on Soil Behavior in Relation to Transportation Infrastructure

**2.5**

**Provide** title(s) of RNS submitted for funding consideration:

N/A

**2.6**

**Provide** titles of synthesis topics submitted (by year):

2017

Utilization of Coal Ash in Un-encapsulated Highway Applications

**2.7**

Membership Make-up: Please see Attachment C provided by TRB for summary details.

NOTE: **Comment** on demographics, balance or lack of balance of membership. Provide an action plan to address any deficiencies. See attachment C for summary details.

Task force 1: Will focus on increasing membership while simultaneously diversifying the committee based on organization (i.e. increase state/federal agency members), areas of expertise, level of experience (i.e. increase number of young members), and geographical region. We anticipate that this will be the primary focus of the committee for the year 2018.

Please see **Attachment C** provided by TRB for summary details. This is the make-up of the committee as of now and does not reflect the rotations taking place in 2018.

The committee has 16 members from all regions of the U.S. as well as international members. The ratio between the academicians and non-academicians is 15 to 3. The practitioners cover a range of industry, consultant, state, and federal representatives.

This committee is one of the unique committees in TRB that focuses on providing new scientific advancements as it relates to Geo-Environmental processes in soils and recycled materials to the transportation community. Therefore, it is not unusual to have more academicians in the make-up than practitioners. However, in order to be effective

in our outreach and also consider the emerging issues that are of particular concern within our transportation community, we would like to increase the number of members from other related areas of expertise, level of experience, state/federal government, and practice. As described in the subsequent section, we have developed a focus group to address this interest with a well-outlined plan. With the 2018 rotations, we will work to recruit members to reflect these goals.

## 2.8

Provide any of the following:

### 2017

Summer Workshop. “Natural Resources, Sustainability and their Intermodal Connection”  
Duluth, MN (July 18-21), led by ADC60 (Resource Conservation and Recovery Committee) and  
Co-sponsored by AFP40 and AFP70

### **PART 3: Committee Future Outlook Statement and Committee Three-Year Plan (Limit 1,500 words total)**

#### **Committee Future Outlook Statement**

*The committee future outlook statement should include a discussion of the primary factors and influences that will shape the transportation community and topic(s) within the committee's scope over the short- (one to three years) and long-term (four to seven years). This statement should include:*

- *identification of emerging, critical, and cross-cutting issues **within the committee scope** (these issues could have been identified by the committee, Section, Group, Technical Activities Council, TRB Executive Committee, or other transportation committees and organizations);*
- *identification of emerging, critical, and cross-cutting issues **outside the committee scope** that provide opportunities for liaison and collaborative efforts (these issues could also come from a wide range of sources).*

The AFP40 committee focuses on issues related to mechanical, physical, chemical, and biological processes and interactions in geo and recycled materials under various environmental conditions. Our collective expertise will be needed to address emergent and critical issues challenging the transportation community. The following is the list of critical topics anticipated to be addressed by our committee along with potential collaborations with other committees.

- Investigate environmentally-sound methods of soil stabilization, including promoting calcite precipitation with microbial activity to improve strength and reduce compressibility, improving slope instability by developing vegetated slopes to change the surface water regime, developing soil stabilizing structures from waste materials and geosynthetics. Potential committee collaboration(s): AFS80 Standing Committee on Stabilization of Geomaterials and Recycled Materials, AFS70 Standing Committee on Geosynthetics.
- Identify and develop useful applications for alternative byproducts such as biochar, a byproduct of biofuel production and known as a heavy metal sorbent. Potential collaboration with AFS80 Standing Committee on Stabilization of Geomaterials and Recycled Materials
- Develop the framework for disseminating relevant research findings to regulatory agencies for utilization of large-volume waste materials and take part in policy development regarding these materials. Potential committee collaboration(s): ADC60 Standing Committee on Resource Conservation and Recovery.
- Identify and collaborate with water resources experts in contaminant runoff mitigation and/or geologists with insight into pyritic-bearing media. Potential committee collaboration(s): AFB60 Standing Committee on Hydrology and Hydraulics, ADC60 Standing Committee on Resource Conservation and Recovery.
- Investigate the implementation, monitoring, and intelligent control of Geo-Environmental processes in-situ.

Our committee is unique in that we have the expertise to address relevant current and future environmental concerns as they relate to transportation infrastructure, such as understanding the potential inverse and benign effects of using recycled materials, understanding the adverse effects of high acidic content within soil, consequences of utilizing aggregates created from source that contains asbestos, etc.

Our committee will gather the findings from the scientific and applied research through our academician members and promote the implementation of groundbreaking and innovative knowledge to solve the needs of the transportation community listed above through our industry, consultant and state/federal agency members. To achieve this objective, our future plans include :

- Actively recruit members who can contribute their geo-environmentally related expertise to the growing needs of the transportation community. We realize that if we all work as a group with a well-defined focus, we will better serve the community.
- We will continue to work within our three focus areas:
  - Focus Area 1: Increase membership while simultaneously diversifying the committee as described previously.

- Focus Area 2: Continue to develop RNS and synthesis statements.
- Focus Area 3: Continue to organize outreach activities related to developing podium/poster sessions, workshops, and discussion panels during the annual meeting.

Details of the continued steps for each of these task forces are discussed in the subsequent section and the overall goals are listed below:

#### Focus Area 1: Membership Make-up and Connections

- Increase the Federal/State/Local DOT representation on the committee. The goal is to obtain a 30-35% DOT representation. One of the AFP40 DOT members will lead this effort with support from other DOT/FHWA members as well as any other members who would like to contribute. During the next year, we will focus on increasing our membership with municipal, county, State and Federal representatives. Each committee member will be tasked with contacting at least one state DOT person who is not currently a member as a first step.
- Recruit members from areas of expertise that overlap with geo-environmental-transportation, e.g. water resources experts in contaminant runoff mitigation or geologists with insight into pyritic-bearing media.
- Increase participation from of low-participant members and identify members who are inactive. Each member will be assigned (after requesting volunteers) specific tasks linked to developing RNSs, contacting state DOT employees, organizing paper/podium sessions, etc.
- Identify and establish liaisons for AFP40 and other TRB committees, AFS80, ADC60, AFS70, and AFB60. Establishing strong relationships between AFP40 and these committees will provide a basis for pursuing the critical transportation infrastructure issues outlined above.
- Arrange mid-summer meetings either through webinar or teleconference specifically geared towards reviewing DOTs involvement to obtain their input and share information. Coordinate this effort with the Focus Group on research needs.
- With the help of communications coordinator, explore the possibility to provide webcast capabilities during the annual Committee meetings to allow interested and invited parties that were not able to attend the annual TRB meeting to participate during the meeting. We will coordinate with TRB about providing this option.

#### Focus Area 2: Research Needs

- Develop relationships with FHWA local field offices and State DOTs to solicit specific research needs and incorporate their needs into RNSs related to the critical issues defined above. For example, we can provide expertise in addressing regulatory challenges limiting the use of recycled materials in roadway applications.
- Annually identify concepts to develop RNS and target developing these concepts into RNS. Target about five new RNS over the next three years.
- Select the top RNS each year and develop a mechanism for it to be submitted for funding consideration in the NCHRP process.
- Develop and revise, as needed, at least one Synthesis topic per year and submit it through the NCHRP Synthesis proposal process. If not accepted determine the reason(s) and revise based on feedback for reconsideration the following year, if applicable.
- Advertise RNSs and proposed Synthesis topics on the Committee's website to encourage interaction with and solicit input from DOTs and other TRB committees.
- When appropriate, identify other TRB committees for collaboration, input, and/or endorsement of specific RNSs.

#### Focus Area 3: Outreach During Annual Meetings

- Read the scopes and annual call for Papers of other committees within AFP00 and AFS00 sections to identify opportunities to co-sponsor sessions, workshops, and webinars and recognize topics and issues unique to AFP40 that can be developed into sessions, workshops, etc.
- Target organizing two technical sessions on annual basis. At least have one of the two sessions sponsored solely by the AFP40. The following methodologies will be followed during the organization of sessions.
  - a. The topic of the sessions must align with the scope of the committee.
  - b. Relevant specific individuals will be contacted and encouraged to submit papers.

- c. Any potential co-sponsored session will be targeted with collaboration of liaisons, who will report back to the committee.
- d. The committee will also focus on organizing discussion panels with invited speakers with no paper requests on biannual basis on developing topics that the transportation community should be aware of but the research may not be at a stage for an immediate implementation.
- Organize webinars or workshops every other year. These events can be done via collaboration with other technical committees.

With the upcoming new members we look forward to expanding the above list. AFP40 is an active and critical part of TRB and is the only committee within the geology/geotechnical engineering sections that provides a venue to address and provide technical knowledge of geoenvironmental processes that are of concern to geo-practitioners.

### **Committee Three-Year Plan**

*The committee plan is a short, focused statement of where the committee wants to go and how to get there. The committee plan may include, but is not limited to:*

- *projects, activities and products that the committee will undertake during the next three years to address the emerging, critical, and cross-cutting issues identified above;*
- *how the current or proposed changed membership composition will respond to issues identified above;*
- *strategies to encourage significant involvement by the committee's Young Members, state DOT members, and other key constituents, both during committee meetings and at other times;*
- *committee's communication activities, and efforts to provide assistance and technology transfer to the transportation community;*
- *research – for the TRB committees, “research” is a very broad concept that can begin with providing the user perspective on research needs, writing research needs statements, tracking research, understanding the funding available for research in their topic area, developing case studies, lessons learned, disseminating research, technology transfer, and other activities that will advance the state of the practice. Potential research activities are:*
  - *research directions, results, and needs or gaps;*
  - *plan for maintaining and augmenting the Research Need Statements (RNS) database;*
  - *efforts to address research implementation and user needs, and ways to identify research use and implementation.*

The following describes the detailed plan of the task forces described in the future outlook plan. The implementation of these plans will start in April 2018 and will continue over the next three years as we will revisit these plans annually during our meetings in DC:

#### **Task Force 1: Membership Make-up and Connections**

Given the current committee make-up, one of the more critical focuses of the committee will be to recruit and diversify the membership as well as engage current members. Task Force 1 will focus on increasing membership while simultaneously diversifying the committee based on areas of expertise, organization, level of experience (i.e. increase number of young members), and geographical region. We anticipate that this will be the primary focus of the committee for the year 2018.

**Increase representation of members from peripheral areas of expertise**

- Recruit members that have overlapping interests and expertise with the committee. The goal is to increase the technical breadth of the committee, while maintaining the geo-environmental focus, in order to better meet the anticipated transportation challenges.
- Members of this task force will work to identify and recommend individuals from industry, academia, or state/federal agencies for membership who can contribute to the overarching goals of the committee to address geo-environmental transportation issues.

Increase Federal/State/Local DOT representation on the committee:

- Recruiting members who are also DOT employees.
- Document friends of the committee who are DOT employees; the current DOT members' potential rotation time line; and geographic distribution of current DOT members to develop a plan of actions where the efforts may be conducted accordingly;
- Members of this task force will contact State DOTs to solicit interest in committee. Current members will be tasked with identifying and contacting at least one person from her/his State DOT. Emphasis will be placed on DOT employees who have already shown interest in contributing to TRB activities such as attendance at the Annual Meeting. The members of the task force will work with the committee members to follow up with this recruitment effort. Interested DOT employees will be invited to participate in midyear conference calls and any other relevant activities. It is anticipated that this recruitment effort will result in identifying those from the DOT whose interests align with the interests of the committee, including byproduct utilization, materials for environmentally sound soil stabilization, in-situ monitoring of Geo-Environmental processes, etc. Furthermore, one of the goals of the committee is to increase the committee diversity by recruiting those from state/federal agencies, which are currently underrepresented.
- Encourage State DOTs to participate in committee as friends if membership opportunities may not be fulfilled;
- As committee positions open up, contact DOT personnel to solicit membership in committee;
- Have committee members recommend specific DOT personnel for membership upon their rotation out of the committee.
- Create webinars or virtual committee meetings to connect and invite DOT representatives to webinars or virtual meetings of the committee, especially those that may not be able to attend the TRB annual meeting due to funding/travel/time constraints.
- Create a listing of DOT research liaisons (e.g. research engineers, research directors, project managers, etc.) and coordinate this with the task force on research needs. Periodically contact these individuals for recommendations of DOT employees that may be interested in committee's activities.

Increase participation from low-participation members:

- Develop a paragraph defining expectations to be a member of the committee and post this on committee's web site to refer all members and potentials. Clarify that the committee reserves the right to rotate members based on consistent low-participation even before their term ends.
- Coordinate with the chair to identify those members with low participation rates;
- Task force members will contact those members who did not attend the annual TRB meeting and recent committee conference calls or responding to emails sent out by the committee to understand their continued interest;
- Send out a survey by August 2018 to all committee members and friends of the committee to determine how they could increase their participation and their interests. Identify topics that they are interested in. Post the survey results on our web site and share with the members and friends to be used as a tool to develop research needs statements sponsored by the committee;
- Assign each member a task that is part of the committee needs/activities so everybody is involved in activities and decision process. The interest of each member will be documented based on the August 2018 survey;
- Encourage committee members to attend the next TRB annual/committee meeting;
- Have a member work with the Communications Coordinator to explore means of setting-up web-conference access at the annual meetings to provide access to those members and friends who cannot attend the meeting in-person.
- Have a member in-charge of recruiting guest speakers for the annual meeting and encourage the members to lead a presentation/workshop/poster session of interest to them as it relates to the needs of the transportation community and our committee;



- Encourage members to be liaisons for other TRB committees
- Request each member to identify the DOT representative in their district. The membership task force may then reach out to those individuals.

#### Identify and Establish liaisons for AFP40 and other TRB committees

- Create a table summarizing the members who are also members of other committees. Request these members to be a liaison for that committee and provide input to those committees about the activities performed in AFP40 as well as report back to AFP40 the activities of the other committees. During the upcoming annual meeting, identify other members to consider being a liaison to other committees that are of interest to AFP40.
- Identify other TRB committees that AFP40 could collaborate with. Utilize the TRB Coordinator and Section Chair for guidance and ideas.
- Develop a Liaison needs list.
- Ask members/friends if they would be an AFP40 liaison and share this committee's objectives and current interests with other committees, such as developing research needs and call-for-papers; and,
- Reach out to other TRB committees and request that they establish a liaison or friend of committee for AFP40;
- Create a standing agenda item for the annual meeting of the committee to identify liaisons for AFP40 and identify liaisons from other committees.

#### Task Force 2: Research Needs

This task force will be led by the Committee's Research Coordinator (CRC).

- Contact select (3-5 per year) FHWA and State DOT Geotechnical and Material Engineers to solicit their research needs and prepare a summary to be presented at the annual meetings of 2019, 2020, and 2021. These contacts will also be invited to participate in any midyear meetings held within those years.
- Identify three concepts/ideas on an annual basis for potential development into RNSs. Regular quarterly meetings among the Research Needs Statements task force will be held throughout the year to complete this task. One of the members will present the findings during the annual meeting.
- Identify a research liaison (State DOT or FHWA local office) and invite him/her to speak about relevant research needs at the TRB AFP40 committee meeting. A member of the task force will be charged with identifying, coordinating with, and inviting the speaker.
- Develop a Research Needs Survey and administer to at least 10 different State DOT/FHWA research liaisons. The liaisons should be identified and approached at least 6 months prior to the annual TRB AFP40 committee meeting 2019, so that the information gathered can be presented to the committee during the 2020 Annual Meeting. It is anticipated that the results of this survey will lead to RNSs and Synthesis topics that directly address the needs of the public transportation sector.
- Develop Research Needs Statements within the proposed themes and partner with other interested TRB committees.

#### Task Force 3: Outreach During Annual Meetings

This task force will be led by the member who will rotate off of this responsibility every 2 years.

#### **Identify Current and Emerging technical Concerns of Practitioners and Researchers:**

The task force 3 will have a member who will team-up with task forces 1 and 2 to communicate with practitioners and researchers to identify the current and emerging technical concerns in the areas that are covered under the scope of AFP40 committee. The findings of these interactions as well as the interest and technical background of each member will be utilized when developing topics for sessions, workshops or webinars.

#### **Identify Concerns That Require Cooperative Effort with Other Committees and/or Outside Organizations:**

A subgroup will be formed which will include 1 or 2 people. This group will follow up with the Task Force 1 on the identification of other TRB committees to collaborate with. Then, this group will contact with these committees to propose joint sessions, workshops or webinars.

#### **Proposed Activities Related to Task Forces.**

In addition to activities centered on the Annual Meeting, at least 2 midyear meetings will be held over the next 3-year period (summer 2019 and 2020). This will provide an opportunity to keep members on track with tasks, interact with DOT members, and plan for the Annual Meeting, workshops, etc.

Based on the committee's collective areas of expertise and target critical issues, the following preliminary topics for RNSs/Sessions/Workshops/Webinars include:

- Sustainable Transportation Infrastructure Using Recycled Materials
- Geoenvironmental Processes for Sustainable Infrastructure
- Geotechnics in Transportation
- Sustainable Geoenvironmental Processes
- Infiltration of Recycled Materials: Linking Laboratory and Field Testing and Measurement
- Implementation and Monitoring of Geoenvironmental Processes – invited session
- Bio-Inspired/Mediated Geo-Environmental Processes
- Adaptation of Bio-geotechnics into Geoenvironmental Processes
- Biochar – webinar

**TRB 96th Annual Meeting**

January 7–11, 2018

**Standing Committee on Geo-Environmental Processes**

<b>Session Type</b>	<b>Committee Code</b>	<b>Title</b>
Lectern Session	AFP40	Use of Recycled Materials in Transportation Infrastructure
Lectern Session	AFP40	Recycled Materials and Chemical and Biological Processes in Infrastructure
Published Meeting - Committee	AFP40	Geo-Environmental Processes Committee
Workshop	AFP40	Geoenvironmental Aspects of Design, Permitting, and Construction of Transportation Infrastructure

**TRB 96th Annual Meeting**

January 8–12, 2017

**Standing Committee on Geo-Environmental Processes**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting	AFP40	Geo-Environmental Processes Committee
Lectern Session	AFP40	Performance of Recycled Materials in Geotransportation

**TRB 95th Annual Meeting**

January 10–14, 2016

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting -	AFP40	Physicochemical and Biological Processes in Soils Committee
Poster Session	AFP40	Geomaterials in Transportation Infrastructure: Deformation, Leaching, and Erosion

**Attachment B**

**Temperature Effects on Soil Behavior in Relation to Transportation Infrastructure**

Committee: AFP40, Physicochemical and Biological Processes in Soils

Date Posted: 2/23/2016

Date Modified: 3/8/2016



**Improving Processes for Characterizing Corrosion Potential of Soils and Fill Materials**

Committee: AFS10, Transportation Earthworks

Date Posted: 5/15/2014

Date Modified: 5/29/2014



**Evaluation of the Effect of Fine Content on the Permeability of Highway Graded Aggregate Base**

Committee: AFP40, Physicochemical and Biological Processes in Soils

Date Posted: 1/11/2012

Date Modified: 3/5/2014



**Guide for Optimizing the Remediation Potential of Highway Right-of-Way for Environmental Stewardship**

Committee: AFP40, Physicochemical and Biological Processes in Soils

Date Posted: 3/21/2007

Date Modified: 3/5/2014

## ATTACHMENT C COUNT OF COMMITTEE MEMBERS

Committee Members as of December 4, 2017

<b>Main Members</b>	16
<b>International Members</b>	3
<b>Minority</b>	10
<b>Female</b>	2
<b>Room for more Members</b>	<b>Available Slots:13</b> Main Member: 9 International Member: 2 State DOT Member: 2

### Membership Make-up

<b>Northwest</b>	<b>Southwest</b>	<b>Central</b>	<b>Northeast</b>	<b>Southeast</b>
1	1	3	4	9

<b>Women</b>	<b>Non-US</b>	<b>Emeritus</b>	<b>Young</b>
2	20	1	2

<b>Federal</b>	<b>Local</b>	<b>Academia</b>	<b>Industry</b>	<b>Consultant</b>	<b>Other</b>
0	3	15	1	2	0

[Type text]

## TRIENNIAL STRATEGIC PLAN (TSP)

**Evaluation Period: February 1, 2015 to January 31, 2018**

### PART 1: Committee Name and Scope

*This is an opportunity to review the officially approved name and scope that are posted on the TRB website and consider any necessary changes. If changes are needed, include the proposed scope statement and/or name and justification for the changes.*

**NOTE: A proposed committee name and/or scope change must have the approval of 2/3 of the official members of the committee. The balloting done at a committee meeting that has less than 2/3 of the members in attendance must be augmented with e-mail balloting of the members not in attendance.**

Committee Code *	AFP50
Committee Name *	Standing Committee on Seasonal Climatic Effects on Transportation Infrastructure
- Date(s) reviewed	January 2016
- Change, if proposed***	Not Applicable
- No. of official members approving change/total number of members **	Not Applicable
Committee Scope *	This committee is concerned with the engineering behavior of natural and synthetic geomaterials subjected to seasonal climatic effects including dynamically changing moisture contents and temperatures.
- Date(s) reviewed	January 2016
- Change, if proposed ***	Proposed
- No. of official members approving change/total number of members **	14 members approving change / 21 total number of members (16 members participated in the voting). Changes proposed and approved as part of the DCG Strategic Review.

\* Show current, as it currently appears in the [TRB Online Directory](#)

\*\* Includes Chair, Standing Committee Members, Emeritus Members, and Young Members

\*\*\* Show proposed, or Not Applicable

**PART 2: Committee Accomplishments**

NOTE: We have provided much of the information you need for boxes 2.2, 2.4, and 2.7 below and in attachments A, B, and C. We ask that you provide the remaining information.

**2.1**

Year	2015	2016	2017	2018
Number of Members in Attendance at Annual Meeting		13	21	20
Number of Visitors in Attendance at Annual Meeting		35	18	11
Number of Papers Reviewed		8	7	8
Total Number in Attendance at Mid-Year Meeting	NA	NA	NA	

**2.2**

Sessions and workshops sponsored/cosponsored at the Mid-Year meeting, including name of co-sponsoring committee(s) if applicable (by year):

NOTE: Sessions and workshops sponsored/cosponsored at the Annual Meeting are listed in attachment A. **List** below all sessions and workshops sponsored/cosponsored at Mid-Year meeting, including name of co-sponsoring committee(s) if applicable (by year).

Attachment A is incomplete. Below are Sessions sponsored/cosponsored at the AM:

2018 AM:

- Session 390: Moisture and Temperature Effects on Pavement Layers
- Session 484: Effects of Flooding and Increased Moisture on Pavements

2017 AM:

- Session 383: Sustainability in Geological and Geoenvironmental Engineering
- Session 642: Seasonal Climatic Effects on Geomaterials
- Session 792: Seasonal Effects on Soils and Pavements

2016 AM:

- Session 320: Seasonal Effects on Soils and Pavements
- Session 495: Influence of Seasonal Climatic Effects on Pavements

**2.3**

**Provide** title(s) and presenter(s) for informal presentations made at Annual Meeting and Mid-Year Committee meetings (by year):

2018 AM:

- *Seasonal Variation of Subgrade Resilient Modulus and Moisture Content: Case Studies in Louisiana*. Kevin Gaspard, Louisiana Dept. of Transportation and Development
- *Pavement Layer Seasonal Variations and Modular Ratios*. Gabriel Bazi, Lebanese American University
- *Michigan DOT's Development of Web-based Spring Load Restriction Decision Support Tool*. Zhen 'Leo' Liu, Michigan Technological University

2017 AM:

- *Tools for Monitoring Seasonality of Highways*. David Orr, Cornell University
- *Frost Depth and Thawing Index*. Pegah Rajaei, Intertek-PSI
- *Current and Future Use of MnDOT/MnROAD's Frost Data*. Ben Worel, Minnesota DOT.



**2016 AM:**

- *Towards a Robust Transportation Infrastructure to Respond to Extreme Weather Events in Norway.* Bjørn Kristoffer Dolva, Norwegian Public Roads Administration.
- *Pavement Unbound Layers and Subgrades Climate Dependency – Experience from Sweden.* Sigurdur Erlingsson, Swedish National Road and Transport Research Institute.
- *Thermal Effects on Natural, Recycled and Stabilized Highway Materials.* Tuncer Edil, University of Wisconsin.

**2.4**

**Provide** titles of new research need statements (RNS) posted in TRB's RNS database (by year):

NOTE: Attachment B shows all statements currently posted in TRB's RNS database.

**2.5**

**Provide** title(s) of RNS submitted for funding consideration:

NOTE: If funded, include research project title/number and name of funding organization(s).

**2.6**

**Provide** titles of synthesis topics submitted (by year):

NOTE: **List** any synthesis topic(s) funded in a research program.

A submittal was prepared this year (2018) but the task group missed the submittal deadline. Ready to submit for 2019 consideration.

**2.7**

Membership Make-up: Please see Attachment C provided by TRB for summary details.

NOTE: **Comment** on demographics, balance or lack of balance of membership. Provide an action plan to address any deficiencies. See attachment C for summary details.

The 2016 membership rotation increased committee membership by about 50%, expanding scope and geographic diversity, as well as the female and minority base. A membership increase from the US Southwest and Southeast was achieved. During the next rotation, we will further expand the diversity of the membership base to include more members representing state, local government, industry, consultants and young members. Priority will be given to friends who have been to the meetings and contributing to paper reviews. Participation from International, Minority and Young Members will also be encouraged.

**2.8**

Provide any of the following:

- Any special publications, such as TR circular, and conference proceedings
- Sponsored or co-sponsored specialty conferences, symposia, workshops, webinars or other joint efforts with other TRB committees, other TRB entities, or other organizations (i.e. AASHTO, FHWA, State DOTs, ASTM, ASCE, and/or other modes of transportation)

Co-sponsorship of the *3rd International Symposium on Transportation Soil Engineering in Cold Regions* - TRANSOILCOLD-2017; June 28-30, 2017, Qinghai, China

Co-sponsorship of the publication of a special issue of the ASCE's Journal of Cold Regions Engineering which will publish selected papers from the 2015 ISSAEST (sponsored by the committee); Two committee members are guest editors of the special issue.

Sponsored and held a TRB webinar on 2/22/17 entitled *Springtime Damage to Roads and Seasonal Load Limits*; About 394 attended the webinar.

### **PART 3: Committee Future Outlook Statement and Committee Three-Year Plan (Limit 1,500 words total)**

#### **Committee Future Outlook Statement**

*The committee future outlook statement should include a discussion of the primary factors and influences that will shape the transportation community and topic(s) within the committee's scope over the short- (one to three years) and long-term (four to seven years). This statement should include:*

- *identification of emerging, critical, and cross-cutting issues **within the committee scope** (these issues could have been identified by the committee, Section, Group, Technical Activities Council, TRB Executive Committee, or other transportation committees and organizations);*
- *identification of emerging, critical, and cross-cutting issues **outside the committee scope** that provide opportunities for liaison and collaborative efforts (these issues could also come from a wide range of sources).*

AFP50 will focus on development of research needs that provide a better understanding of the influence of seasonal effects on geomaterials and development of tools that will impact how we design, build and maintain our transportation infrastructure in the future. This will be done through maintaining a diverse technical membership that is able to see the big picture on the need for teaming with other TRB committees. AFP50 cannot do it alone. Having members who are able to communicate and have working relationships with other committees will be required to develop the products that will make an impact on the long term performance of our infrastructure systems subjected to seasonal climatic effects. To this end, we will designate committee member liaisons who are also members of other committees for potential collaboration and joint activities.

The primary emphasis in the past has been frost action and influence of freeze-thaw cycling on engineering behavior of geomaterials and roadway pavements; however, the committee has expanded its scope to also include seasonal climatic issues that exist everywhere and for any type of geomaterial and transportation infrastructure. For example this will promote joint activities with AFP60 with which we share many members.

Currently climate change issues are the focus of many agencies and scientific communities. It would seem obvious that our committee should be tackling these issues too. The seasonality of response and deterioration of infrastructure as influenced by climate change will be one of our focus areas. We will pursue collaboration and co-sponsorship of activities with other committees/sub-committees concerned with climate change issues. Critical issues that can be addressed in a cross-cutting manner include: (1) Planning for impacts of climate change, (2) Adjusting and adapting geo-hazard risk assessments and mitigation strategies for changing climates, (3) Diverting traffic from high-volume to low-volume roads during road emergencies, which can have negative impacts on pavements and other infrastructure, (4) Retrofitting to accommodate climate change, specifically for low-volume roads.

Our Committee has the opportunity to tackle many of the above issues in a cross-cutting manner with A0020T, the Task Force on Climate Change and Energy, the Low-Volume Roads committee (AFB30), and other sister committees within AFP00, AFD00, AFS00.

Another emerging issue that has been the focus of many entities is sustainability. Industrial byproducts, recycled materials and marginal geomaterials have seen an increased use in infrastructure construction. A better understanding of the effects of temperature, moisture content and freeze-and-thaw cycles on these materials is needed. Many other committees would be interested in the use of sustainable materials. Cooperative efforts would therefore accelerate finding solutions and enhance our understanding of the engineering behavior of these materials.

Seasonal climatic effects are recognized in the newly adopted AASHTOWare Pavement ME Design procedure through the Enhanced Integrated Climatic Model (EICM). It is anticipated that improvements to the EICM model can be introduced through enhanced modeling, calibration to local conditions, and obtaining and manipulating climatic data from nontraditional sources (e.g. MERRA-2). Consequently a next-generation Pavement ME is expected to require updated models that take advantage of new technology and advanced understanding of materials' behavior throughout the seasons. Our committee and many pavement committees (accelerated pavement testing-AFD40, rigid-AFD50, flexible-AFD60, structural modeling and evaluation-AFD80) have also been researching common EICM-based issues. Cooperative efforts will be required by all these committees to fully develop implementable products for pavement technologists.

The impact of temperature and moisture variations on geomaterials has been traditionally assessed through laboratory testing and non-destructive field evaluation of infrastructure such as pavements. Currently we are witnessing the use of new technologies and increased computing power that are making technologies like LiDAR (Laser Interferometry Detection and Ranging) and GPR (Ground Penetrating Radar) more powerful in understanding the effects that seasonality, frost heaving and thaw weakening has on pavements. Cooperation with AFP20 on these cross-cutting non-destructive testing technologies should be beneficial in better understanding seasonal climatic effects on infrastructure.

It is possible that seasonal climatic issues regarding pipelines (e.g. exploration of new oil and gas fields) may become an emerging issue in regions with seasonally frozen soils, and /or swelling soils. It would be beneficial to cooperate with other appropriate committees if this issue becomes a significant concern.

We will continue to work with outside organizations such as the International Symposium on Cold Regions Development (ISCORD), ASCE's Cold Regions Engineering Division (CRED), Transportation Soil Engineering in Cold Regions (Transoilcold), USACE CRREL and the Center for Environmentally Sustainable Transportation in Cold Climates (CESTiCC). We will continue to co-sponsor with these organizations in future conferences, as we have done in the past.

### **Committee Three-Year Plan**

*The committee plan is a short, focused statement of where the committee wants to go and how to get there. The committee plan may include, but is not limited to:*

- **projects, activities and products** that the committee will undertake during the next three years to address the emerging, critical, and cross-cutting issues identified above;
- how the current or proposed changed membership composition will respond to issues identified above;
- strategies to encourage significant involvement by the committee's Young Members, state DOT members, and other key constituents, both during committee meetings and at other times;
- committee's communication activities, and efforts to provide assistance and technology transfer to the transportation community;
- research – for the TRB committees, “research” is a very broad concept that can begin with providing the user perspective on research needs, writing research needs statements, tracking research, understanding the funding available for research in their topic area, developing case studies, lessons learned, disseminating research, technology transfer, and other activities that will advance the state of the practice. Potential research activities are:
  - research directions, results, and needs or gaps;
  - plan for maintaining and augmenting the Research Need Statements (RNS) database;
  - efforts to address research implementation and user needs, and ways to identify research use and implementation.

AFP50 plans to continue organizing and co-sponsoring sessions, identifying emerging and cross-cutting issues and assessing current methodologies, techniques and tools used in characterizing the behavior of geomaterials subjected to seasonal climatic effects. Communication is understood as the key factor in both the interactions within the committee but also the effectiveness of the committee to develop products that can best utilized and provide the highest payback for our efforts. In the next three years, our committee intends to focus on the following:

#### Research Need Statements:

Our Committee will focus on revitalizing the RNS development process, creating an RNS task force led by our CRC and reporting to the Chair. This will help prepare for the annual and mid-year meetings. We will seek support from other committees for cross-cutting topics and focus on topics that have high impact. The top RNS will be prepared annually and approved by the committee. Examples and associated target years include:

- Simple performance testing for soil freezing characteristic curve (2019)
- Pavement design guide inputs related to seasonal moisture variations and their effects on material modulus/stiffness values, for both virgin and recycled geomaterials (2020)
- Design and maintenance of infrastructure for extreme climate such as flooding or increased ground water levels due to climate change (2020)
- Seasonal issues regarding culverts, pipelines in swelling soils and in freeze-thaw areas (2021)
- Bridge abutments, appurtenances: seasonal issues not addressed presently (2021)

#### Synthesis Reports / Circulars:

The committee will again focus on topics that provide a high payback for our efforts and will be working with other committees. We plan to focus on helping States and practitioners

improve their understanding and use of seasonal climatic issues on infrastructure and transportation materials. Examples and associated target years include:

- Roadway springtime load restrictions and winter premiums (2019): state-of-the-practice/art, models, decision support tools, applications, case studies: significant work has been done on this topic and the information is ripe for inclusion in a Synthesis.
- Seasonal effects on recycled materials related to pavement design guide inputs (2020)
- Advanced methods and tools for selecting geomaterials for long term pavement performance (2020)
- Climate change in permafrost regions: adaptation and mitigation techniques for infrastructure (2021)

#### Webinars / Workshops:

Over the next three years the committee will work to sponsor/co-sponsor one TRB-hosted webinar and one workshop during the TRB annual meeting. Technical topics would be designed around our committee but also the interaction of other committees depending on the topic. Topics and associated target years include:

- Roadway springtime damage, load restrictions, and winter premiums (2019)
- Prediction of frost/thaw depths, and surface icing through the current and updated EICMs (2020)
- Novel information about seasonal effects on roadways through LiDAR and GPR tools (2020)
- Advances and challenges in the design and construction of infrastructure in cold regions (2021)
- Pavement design in cold climates: state-of-the-practice, state-of-the-art (2021)
- Vulnerability of transportation infrastructure to climate change and impact of variability of seasonality on roadway design and maintenance (2021)

The committee will also work to hold a mid-year meeting and develop short informal committee online meetings on specific topics throughout the year that also include a committee update on the current activities. For instance a 40-minute technical talk followed by a 20 minute committee overview. The idea is to keep people updated on new technology/research topic areas and keep the momentum going for the committee's efforts developed in January.

#### Committee Website:

We will continue providing assistance and technology transfer to the transportation community and practitioners. Our Committee Communication Coordinator will continue to constantly update the committee's website with meeting and session information, as well as posting the presentations held at committee meetings. We will use our website and maybe social media to expand outreach to a broader audience and to increase involvement of agencies, minorities and international colleagues.

#### Committee Membership:

In the long-term, we will work on expanding the representation of the committee to include more minorities, international and agency members, and expanding the existing liaisons between our committee and other organizations such as ASCE-CRED committees (Frozen Ground, Transportation and Infrastructure). We hope these added connections will enable the committee to better get research needs funded and products developed that will increase our committee's effectiveness in developing products for our customers.

**Conferences and Technology Transfer:**

The committee will continue co-sponsoring future ASCE-CRED conferences, ISCORD, CESTiCC and Transoilcold symposia, and other ASCE Geo-conferences. We will appoint liaisons and seek opportunities to co-sponsor these activities to aid in technology transfer and teaming on our research efforts. We also want to participate and provide input to the upcoming 2020/2021 TRB centennial celebration, looking back at our accomplishments and looking forward to the future.

**TRB 96th Annual Meeting**

January 7–11, 2018

**Standing Committee on Seasonal Climatic Effects on Transportation Infrastructure**

<b>Session Type</b>	<b>Committee Code</b>	<b>Title</b>
Published Meeting - Committee	AFP50	Seasonal Climatic Effects on Transportation Infrastructure Committee
Poster Session	AFP50	Moisture and Temperature Effects on Pavement Layers
Lectern Session	AFP50	Effects of Flooding and Increased Moisture on Pavements



**TRB 96th Annual Meeting**

January 8–12, 2017

**Standing Committee on Seasonal Climatic Effects on Transportation Infrastructure**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting	AFP50	Seasonal Climatic Effects on Transportation Infrastructure Committee
Lectern Session	AFP50	Seasonal Climatic Effects on Geomaterials
Poster Session	AFP50	Seasonal Effects on Soils and Pavements

**TRB 95th Annual Meeting**

January 10–14, 2016

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting -	AFP50	Seasonal Climatic Effects on Transportation Infrastructure Committee
Lectern Session	AFP50	Influence of Seasonal Climatic Effects on Pavements
Poster Session	AFP50	Seasonal Effects on Soils and Pavements

## Attachment B

### **Climatic Issues: Performance Models for Pavements Subjected to Seasonal Frost Action**

Committee: AFP50, Frost Action

Date Posted: 12/15/2006

Date Modified: 4/15/2007



### **Investigation of Water Movement by Vapor Transport in Pavement Systems**

Committee: AFP50, Frost Action

Date Posted: 12/15/2006

Date Modified: 3/2/2015

**ATTACHMENT C**  
**COUNT OF COMMITTEE MEMBERS**  
 Committee Members as of December 4, 2017

<b>Main Members</b>	23
<b>International Members</b>	4
<b>Minority</b>	12
<b>Female</b>	6
<b>Room for more Members</b>	<b>Available Slots: 6</b> Main Member: 2 International Member: 1 State DOT Member: 1 Young Member: 3

**Membership Make-up**

<b>Northwest</b>	<b>Southwest</b>	<b>Central</b>	<b>Northeast</b>	<b>Southeast</b>
4	5	6	5	3

<b>Women</b>	<b>Non-US</b>	<b>Emeritus</b>	<b>Young</b>
6	26	1	1

<b>Federal</b>	<b>Local</b>	<b>Academia</b>	<b>Industry</b>	<b>Consultant</b>	<b>Other</b>
3	8	14	2	2	1

[Type text]

**TRB 96th Annual Meeting**

January 7–11, 2018

**Standing Committee on Geo-Environmental Processes**

<b>Session Type</b>	<b>Committee Code</b>	<b>Title</b>
Lectern Session	AFP40	Use of Recycled Materials in Transportation Infrastructure
Lectern Session	AFP40	Recycled Materials and Chemical and Biological Processes in Infrastructure
Published Meeting - Committee	AFP40	Geo-Environmental Processes Committee
Workshop	AFP40	Geoenvironmental Aspects of Design, Permitting, and Construction of Transportation Infrastructure

**TRB 96th Annual Meeting**

January 8–12, 2017

**Standing Committee on Geo-Environmental Processes**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting	AFP40	Geo-Environmental Processes Committee
Lectern Session	AFP40	Performance of Recycled Materials in Geotransportation

**TRB 95th Annual Meeting**

January 10–14, 2016

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting -	AFP40	Physicochemical and Biological Processes in Soils Committee
Poster Session	AFP40	Geomaterials in Transportation Infrastructure: Deformation, Leaching, and Erosion

**Attachment B**

**Temperature Effects on Soil Behavior in Relation to Transportation Infrastructure**

Committee: AFP40, Physicochemical and Biological Processes in Soils

Date Posted: 2/23/2016

Date Modified: 3/8/2016



**Improving Processes for Characterizing Corrosion Potential of Soils and Fill Materials**

Committee: AFS10, Transportation Earthworks

Date Posted: 5/15/2014

Date Modified: 5/29/2014



**Evaluation of the Effect of Fine Content on the Permeability of Highway Graded Aggregate Base**

Committee: AFP40, Physicochemical and Biological Processes in Soils

Date Posted: 1/11/2012

Date Modified: 3/5/2014



**Guide for Optimizing the Remediation Potential of Highway Right-of-Way for Environmental Stewardship**

Committee: AFP40, Physicochemical and Biological Processes in Soils

Date Posted: 3/21/2007

Date Modified: 3/5/2014

## ATTACHMENT C COUNT OF COMMITTEE MEMBERS

Committee Members as of December 4, 2017

<b>Main Members</b>	16
<b>International Members</b>	3
<b>Minority</b>	10
<b>Female</b>	2
<b>Room for more Members</b>	<b>Available Slots:13</b> Main Member: 9 International Member: 2 State DOT Member: 2

### Membership Make-up

<b>Northwest</b>	<b>Southwest</b>	<b>Central</b>	<b>Northeast</b>	<b>Southeast</b>
1	1	3	4	9

<b>Women</b>	<b>Non-US</b>	<b>Emeritus</b>	<b>Young</b>
2	20	1	2

<b>Federal</b>	<b>Local</b>	<b>Academia</b>	<b>Industry</b>	<b>Consultant</b>	<b>Other</b>
0	3	15	1	2	0