

## 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 *	AFP20
Committee Name *	Standing Committee on Geotechnical Site Characterization
- Date(s) reviewed	1/10/2018
- Change, if proposed***	Not Applicable
- No. of official members approving change/total number of members **	Name review, change and approval occurred under the DCG Strategic Review 2015-2016.
Committee Scope *	This committee is concerned with traditional and emerging investigation techniques and effective classification systems for characterizing geomaterials.
- Date(s) reviewed	1/10/2018
- Change, if proposed ***	Not Applicable
- No. of official members approving change/total number of members **	Scope review, change and approval occurred under the DCG Strategic Review 2015-2016.

\* 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		9	9	15
Number of Visitors in Attendance at Annual Meeting		15	33	38
Number of Papers Reviewed		2	5	6
Total Number in Attendance at Mid-Year Meeting	30	35	34	

### 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).

**2015 Mid-year meeting** TRB Session at Highway Geology Symposium (HGS) – “Geotechnical Risk: Assessment and Performance Management” cosponsored with AFP10, Standing Committee on Geotechnical Site Characterization, on September 14, 2015 at the HGS held in Sturbridge, Massachusetts.

**2016 Mid-year meeting** TRB Session at Highway Geology Symposium (HGS) “Geological Modeling: Methods and Methodologies” cosponsored AFP20/AFP10 – July 11, 2016

**2017 Mid-year** TRB Session at HGS “State of Art Practices in Subsurface Investigations” cosponsored AFP20/AFP10 - Monday, May 1, 2017

**2018 Mid-year meeting proposed** – session at HGS proposed: “Geotechnical Asset Management: Implementation of Programs and Advances in Technology”. Sponsored by the Joint Section Subcommittee on Geotechnical Asset Management (AFP00(1)), Standing Committee on Geotechnical Site Characterization (AFP20), and Standing Committee on Engineering Geology (AFP10)

### 2.3

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

**2015 Mid-Year Presentations titles and authors:**

1. “Oso Landslide and Risk” – Joe Wartman
2. “Oso Landslide from the perspective of a DOT” – Tom Badger
3. “GAM background and status” – Scott Anderson and Dave Stanley
4. “Determining risk for geotechnical assets” – Herbert H. Einstein

5. “Connecting performance and risk management” – Chad Allan
6. “GAM state of practice: Colorado DOT” – Mark Vessely and Ty Ortiz

**2016 Mid-Year meeting presentations titles and authors:**

1. “Infiltration-induced instability of an embankment along interstate highway near the Colorado continental divide” Alexandra Wallace, PhD
2. “On the importance of displacement monitoring for the prediction of landslide time of failure” Paolo Mazzanti, PhD NHAZCA
3. “Rock slope monitoring and rockfall prediction from LiDAR and photogrammetry: state of art”, Dave Gauthier, PhD
4. “Modeling implications from observations of rockfall and earth slope movements using ground-based interferometric RADAR”- Paco Gomez PhD University of Missouri

**2017 Mid-Year Presentations titles and authors:**

1. “Geophysical Applications to Subsurface Investigations”  
Warren T. “Ted” Dean, PG Draper Aden Associates
2. “KDOT implementation and Integration of 3D Geologic Subsurface Modeling in the Highway Design Process”  
Kyle Halverson, PG
3. “Transformative Subsurface Investigation Practices: 80% Art @ 20% Effort”  
Benjamin S. Rivers, P.E., Geotechnical Engineer, FHWA Resource Center, Atlanta, GA
4. “Introduction and Implementation of DIGGS”  
Robert C. Bachus, Ph.D., P.E., D.GE, Principal, Geosyntec Consultants, Kennesaw, GA

**2016 Annual Meeting Presentations titles and authors:**

1. “Instrumented Drilling, Diagraphy Drilling, Drilling Parameters”  
Benjamin River
2. “Digital image analysis”  
Jeff Keaton
3. “Failure investigation of highway slopes using Electrical Resistivity Imaging method”  
Sadik Khan
4. “Near-surface site characterization using downhole seismic testing”  
Gerald Verbeek

**2017 Annual Meeting Presentations titles and authors:**

1. “KDOT implementation and integration of 3D geologic subsurface modeling in the highway design process”  
Kyle Halverson/John Szturo/Craig Cogan
2. “Landslide Site Characterization using Sonic Drilling “  
Jeff Lloyd
3. “Interval Velocity Classification in Downhole Seismic Testing “  
Gerald Verbeek
4. “GEC 5 FHWA updates “  
Erik Loehr
5. “GIS terrain roughness for visualizing landslide areas with a comment on the Oso landslide roughness profile of LaHusen et al. (2016).”  
Jeff Keaton

**2018 Annual Meeting Presentations titles and authors:**

1. "Impact of Site Characterization on Reliability-Based Mechanistic-Empirical Pavement Design"  
Ahmad Alhasan
2. "DIGGS"  
Scott Deaton
3. "CPT Visualization"  
Anand Puppala/Tejo Bheemasetti
4. "Experiences with Sonic Drilling"  
Jeff Lloyd
5. "Geotechnical Logging Standardization"  
John Szturo

**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.

**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 committee membership make-up indicates a greater representation from the central area of the US. Committee has room for additional members, and has initiated recruitment from friends and interested candidates from the 2018 meeting. Additional representation from the industry, state DOT's, international members, and young members as the young members had 'aged' out of that category, will be considered in evaluating candidates as interest presents itself. Attendance at the annual meeting is predominately from academia, industry, and consultants as funding sources to attend these meetings is often unavailable or out of state travel is limited for state employees. The AFP20 google web site will post committee presentations and be a resource to enable those who cannot attend at the annual meeting and choose to remain friends to continue to participate and be a valuable part of the committee activities. State DOT members unable to attend the annual meeting have found the mid-year meeting held in conjunction with HGS beneficial as travel is easier as this held on the west coast biannually. Potential candidates for vacancies in the committee membership will be evaluated at the mid-year meeting as well.

**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)

Committee regularly co-sponsors a midyear meeting and provides support for the Highway Geology Symposium held annually. Committee works primarily with Engineering Geology (AFP10) to sponsor ½ day to 1 day sessions at this conference. This allows committees to bring speakers, sessions and ideas from the TRB to a wider audience who may not always be able to attend the annual meeting in Washington DC. AFP20 will be a co-organizer for the 2018 HGS meeting to be held in Maine. AFP20 is developing an E-Circular based on the 2018 AM Workshop – “Managing Highway Rock Slope Scaling: Design and Construction State of the Practice.

### **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 committee will continue to focus its efforts on assessing new innovative technologies and methods for geotechnical field exploration/subsurface investigation that do not have widespread use by the DOT's and other agencies. The committee will take the lead on assessment coupled with technology transfer. Methods included will be ones that are more environmentally friendly, efficient, and cost effective. Assessments will include and provide information on the pros, cons and challenges to implementing newer technologies, tools, economic benefits, and methods. Highlighted through these assessments of new investigation techniques will be the economic benefits to their inclusion and effective implementation. The committee will work collaboratively with TRB sections, groups, committees, outside professional organizations, and task forces to evaluate innovative and enhance subsurface investigation methods utilized for evaluation of unknown foundations and evaluation of scour at critical bridges. Additional cross cutting issues worked on by our committee will be the use and or visualization of digital data to enhance exploration programs and support classification of materials. Additionally with visualization of data the use of aerial methods and data standardization will be discussed and assessed.

Subcommittee: The Geophysics subcommittee will continue to address the need of providing information on geophysical methods, and their effective utilization and limitations. The dissemination of this information is critical to designers, engineers, geologists and others who do not have the expertise to use these new technologies. The sub-committee will assist in the planning of International Conferences (Geophysics) and joining the parent committee in various other endeavors to promote the effective use of geophysical methods.

#### **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.*

As stated in the outlook statement, AFP20 committee plans to continue to assess both current technologies/methods (non-destructive testing such as geophysical testing) that do not have widespread use by the DOTs and other agencies as well as assessing new technologies or emerging methods that are developed. This committee plans to take a lead in technology transfer for these new technologies and methods.

AFP20 plans to organize and co-sponsor meetings, symposia, and technical activities; reviewing and publishing technical papers; hosting informational presentations at the committee and subcommittee meetings; sponsoring TRB poster and podium sessions, TRB webinars, and identifying research needs. To complete this, we will rely on our membership and relationships with DOT’s, other TRB committees, and outside professional organizations (and their committees) such as Deep Foundations Institute, the Highway Geology Symposium, and various FHWA-sponsored regional geotechnical conferences and workshops. Topics intended for the TRB activities may include drilling methods, application of Cone Penetration Test (CPT), methods to evaluate soil properties, a panel discussion with experts to discuss geophysics applications, in-situ testing and probabilistic modeling, methods to execute investigations and provide information in GEC-5, methods to evaluate and assess road sinks and karst.

Webinars that have been held were extremely well attended and received. AFP20 parent committee and subcommittee will continue to develop additional webinars to reach out to a wider audience and assist state DOT’s and other transportation agencies in implementing geophysical exploration techniques within the framework of a traditional geotechnical exploration program. The webinars will promote their effective use while highlighting economic benefits. A survey will be generated by AFP20 for distribution and results will be incorporated into a webinar to be proposed in the future to provide insight to state DOT’s that don’t use geophysics on its use and to showcase the added value by state DOT’s that do use geophysics on their projects.

In addition to the webinars the committee will continue to sponsor sessions that serve as a vehicle for technology transfer, evaluations of new tools and techniques and implementation of these tools/techniques and methods within state DOTs and other transportation agencies as well as with consultants and other stakeholders. To that end, while we continue to support paper submissions to the TRB, we plan to organize no-paper, invited speaker sessions to provide a venue for implementation issues and emerging technologies and research updates. In 2019 we plan to expand on the discussion regarding standardizing digital data and utilization of the data. This will discuss the types of formats that are used and the proven benefits to a consistent

method of reporting subsurface information. The committee recognizes the potential for an e-circular describing the state of the practice. Additionally a discussion with case histories and emerging techniques of subsurface investigation utilizing geophysical methodologies will be planned.

The committee plans to continue its long-standing support of sessions outside of the context of the main TRB meeting. This included co-sponsoring mid-year meetings at the Highway Geology Symposium. We continue to look for other opportunities to co-sponsor or sponsor sessions at other meetings such as AEG or regional geotechnical meetings or have volunteers provide liaisons at meetings like Deep Foundations Institute (DFI).

**Work with other Committees:** The committee plans to continue its' practice of co-sponsoring sessions, workshops and meetings both during and outside of the context of the main TRB meeting. The committee further intends to explore co-sponsoring a session, workshop or research needs with AFP30 on geotechnical parameters with Load and Resistance Factor Design (LRFD).

**Research Needs Statements:** The committee plans to continue support and submission of research needs statements, but plans to broaden its' approach by submitting more co-sponsored RNS's rather than simply providing a list solely from our committee. Topics may include the advancement in technology for full waveform seismic inversion and tomography, evaluation of unknown foundation issues, and digital data representation and implementation and data visualization. With the committees new volunteer to manage the RNS database the committee will be removing statements that are no longer valid and updating some.

**Committee Participation:** The committee plans to continue its effort to maintain a balanced membership and to recruit new members who will actively participate. DOT budgets have been limiting travel significantly or simply cutting back sending multiple attendees to one event in the last several years, so the committee plans to continue to seek methods of communication and volunteer opportunities for our members whose travel budgets have been severely restricted and encourage participation by those friends and members in other ways. The web-page for members, friends and others in order to facilitate communication and continue to look for opportunities for those who have not been able to attend the TRB meeting to participate will continue to be updated. The committee has been supportive of TRB's efforts to make more sessions available after the meeting through electronic means, and the committee wishes to support those efforts. Presentations including those from the meetings that are not otherwise posted by TRB will be posted to the committee's website. We plan to make sure all of our committee members and friends are aware of any e-sessions sponsored (or co-sponsored) by our committee, or those that may be of interest to the committee. We also plan to develop webinars on emerging geophysical techniques and case studies and post committee presentations to our website.

**Technology Transfer:** The committee plans to continue to serve as a spring board for technology transfer; this can be done through presentations on emerging technologies such as non-invasive techniques, and as a venue to distribute information. It is extremely important that the compilation and dissemination of information be retrievable by Local Governments, State DOTs and academia alike. The committee will continue to encourage all members to review their



additional committees, organizations and societies that they are part of and look for opportunities for our committee and subcommittee to assist.

Short- Term Activities and Goals to Support this Plan (2018):

- Improve communication and collaboration with communities from related organizations such as Highway Geology Symposium, AEG, and TRB committees.
- Developing a webinar on state of the practice for use of geophysics within geotechnical exploration programs (an expansion on techniques from prior webinars)
- Continue to be an active partner in the Mid-Year meetings help at all future Highway Geology symposium (HGS) meetings.
- Continue to work on new ways the communication coordinator and the committee can serve the industry in supporting technology transfer.
- Identify TRB annual meeting podium and poster sessions to include emerging geophysical techniques, digital data representation and consistency in collection, expanding on discussions at the 2018 meetings. A follow up poster session or podium on this topic exploring the cost benefit to state DOT's in developing efficient exploration programs with emerging technologies.
- Utilize information from the session 170 (2018) to generate a circular on the state of the practice for exploration units in state government.

Long- Term Activities and Goals to Support this Plan (2018-2021):

- Continue to review exploration techniques and methods to be written up as State of the Art and Research Pays Off Articles in the Future.
- Develop geophysics implementation webinars.
- Committee will discuss topics for symposiums at HGS in 2019 and 2020. Potential topics being considered include digital data standardization, representation, visualization, investigation techniques and tools for geophysical investigations.
- Develop opportunities to enhance technology transfer and participation of members, state DOT personnel, transportation agency personnel and interested parties who are unable to attend the annual TRB meeting or other mid-year meetings such as the Highway Geology Symposium. Committee will write and submit at least one NCHRP Synthesis topic per year. The committee will obtain feedback from NCHRP reviewers if topic is not accepted and will revise and resubmit the following year if appropriate.

**TRB 97th Annual Meeting**

January 7–11, 2018

**Standing Committee on Geotechnical Site Characterization**

<b>Session Type</b>	<b>Committee Code</b>	<b>Title</b>
Poster Session	AFP20	Investigation and Design of Geotechnical and Geological Slope and Subsurface Hazards
Published Meeting - Committee	AFP20	Geotechnical Site Characterization Committee
Published Meeting - Committee	AFP20	Geophysics Subcommittee, AFP20(1)

**TRB 96th Annual Meeting**

January 8–12, 2017

**Standing Committee on Geotechnical Site Characterization**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting	AFP20	Geophysics Subcommittee, AFP20(1)
Published Meeting	AFP20	Geotechnical Site Characterization Committee
Workshop	AFP20	Mobile Apps for Geological and Geotechnical Data Collection and Analysis: Review of Value-Added Features
Poster Session	AFP20	Innovative Approaches for Subsurface Investigations

**TRB 95th Annual Meeting**

January 10–14, 2016

**Standing Committee on Geotechnical Site Characterization**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting -	AFP20	Exploration and Classification of Earth Materials Committee
Published Meeting -	AFP20	Geophysics Subcommittee, AFP20(1)
Workshop	AFP20	Improving Communication Between Geologists and Engineers with Digital Data Technologies
Lectern Session	AFP20	Three-Dimensional Modeling for Subsurface Characterization

**Attachment B**

**Coupling Seismic Waveform Tomography with CPT Data for Site Characterization of Foundation Design**

Committee: AFP20, Exploration and Classification of Earth Materials

Date Posted: 3/23/2015

Date Modified: 5/18/2015



**Development of Tools for "First Cut" Evaluation of Carbonate Aggregate Durability**

Committee: AFP20, Exploration and Classification of Earth Materials

Date Posted: 3/21/2007

Date Modified: 4/14/2007



**Time-Domain Reflectometry for In-Situ Determination of Moisture Content in Unsaturated Soils**

Committee: AFP20, Exploration and Classification of Earth Materials

Date Posted: 3/21/2007

Date Modified: 4/14/2007



**Digital Image Analysis in Exploration and Classification of Earth Materials**

Committee: AFP20, Exploration and Classification of Earth Materials

Date Posted: 3/21/2007

Date Modified: 4/15/2007



**Use of Micro-Sensors and Automated Data Acquisition for Improved Exploration and Classification of Earth Materials**

Committee: AFP20, Exploration and Classification of Earth Materials

Date Posted: 3/21/2007

Date Modified: 4/14/2007

## ATTACHMENT C COUNT OF COMMITTEE MEMBERS

Committee Members as of December 4, 2017

<b>Main Members</b>	18
<b>International Members</b>	2
<b>Minority</b>	3
<b>Female</b>	4
<b>Room for more Members</b>	<b>13 available slots</b> Main Member: 7 International Member: 3 State DOT Member: 1 Young Member: 2

### Membership Make-up

<b>Northwest</b>	<b>Southwest</b>	<b>Central</b>	<b>Northeast</b>	<b>Southeast</b>
1	3	7	3	4

<b>Women</b>	<b>Non-US</b>	<b>Emeritus</b>	<b>Young</b>
4	2	1	2

<b>Federal</b>	<b>Local</b>	<b>Academia</b>	<b>Industry</b>	<b>Consultant</b>	<b>Other</b>
1	3	7	2	8	2

[Type text]

## 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 *	AFP30
Committee Name *	Standing Committee on Soil and Rock Properties
- Date(s) reviewed	January 12, 2016, January 11, 2017, January 9, 2018
- Change, if proposed***	Not Applicable
- No. of official members approving change/total number of members **	No name change was recommended by the committee. Therefore, no vote was taken.
Committee Scope *	This committee is concerned with engineering properties of soil and rock measured in the field/laboratory and the analysis/interpretation of these properties in terms of design, construction, and performance. Areas of concern include properties that characterize geotechnical assets, spatial variability of these properties, sustainability aspects, and other emerging areas.
- Date(s) reviewed	January 12, 2016, January 11, 2017, January 9, 2018 Scope reviewed, changed and approved during the 2015-2016 DCG Strategic Review.
- Change, if proposed ***	Not Applicable
- No. of official members approving change/total number of members **	

\* 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		18	15	18
Number of Visitors in Attendance at Annual Meeting		41	41	33
Number of Papers Reviewed		8	11	6
Total Number in Attendance at Mid-Year Meeting	n/a	n/a	n/a	n/a

**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).

See Attachment A for Annual Meeting sessions and workshops. No mid-year meetings were held.

**2.3**

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

**2016**

**Committee Meeting Presentations:**

1. **Construction Phase Foundation Design R-Evaluation**  
By: Sayed M. Sayed, PhD, PE, DBIA - GCI Inc., Hisham N. Sunna, PhD, PE – Ayres Associates, Pamela R. Moore, MSCE, PE - GCI Inc.
2. **Using New and Old Technologies for Economical Approach to Rock Stabilization.**  
By: Saieb Haddad, Senior Transportation Project Specialist - Materials & Tests Division/Geotechnical Section, Tennessee DOT
3. **Simulating Vertical Plate Loading on Cohesionless Soil with a Combined Discrete Element (DE) Finite Element (FE) Approach**  
By: Christopher T. Senseney, Lt Col, PhD, PE, Assistant Professor and Deputy for Resources, Department of Civil and Environmental Engineering.
4. **NCHRP 20-05/Topic 47-03 Current Practices and Guidelines for the Reuse of Bridge Foundations**  
By: Andrew Boeckmann, P.E. University of Missouri Columbia

**2017****Committee Meeting Presentations:**

- 1. In-situ Stabilization of Soils by Injection of High-Density Polyurethane: Principles and Applications**  
By: Randall W. Brown, PhD, PE, Vice President for Engineering, URETEK USA
- 2. Lightweight Pervious/Non-Pervious Cellular Concrete (Less Than 50 lbs/ft<sup>3</sup>) as a Backfill Option for the Foundation of Bridges and Other Structures Addressing Hydrostatic Concerns.**  
By: Nico Suttmoller, Lightweight Fill Specialist at Aerix Industries
- 3. Development and Use of Foundation Load Test Databases**  
By: Naser Abu-Hejleh, PhD, PE, FHWA
- 4. A Discrete Element Method (DEM) Fracture Model with Spheropolyhedra**  
By: Christopher T. Senseney, Lt Col, PhD, PE
- 5. On High-Speed Rail Embankments**  
By: Negin Yousefpour, PhD, PE; Nick O'Riordan, PhD; Alan Phear – Arup

**2018****Committee Meeting Presentations:**

- 1. Influence of Particle Morphology on Friction and Dilatancy of Granular Materials**  
By: Prof. Khalid Alshibli, University of Tennessee, Department of Civil Engineering.
- 2. Nondestructive Testing of Pile Foundations Using Effective Dispersion Analysis of Reflections (EDAR)**  
By: Prof. Murthy N. Guddati, North Carolina State University, Department of Civil Engineering.
- 3. Evaluation of Approach Embankment Movement and Redesign at PAU-24-1348 Bridge in Paulding County, Ohio**  
By: Jamal Nusairat, PhD., P.E. Geotechnical Group Manager at E.L. Robinson Engineering
- 4. Data Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS) Update with Graphics**  
By: Allen Cadden, Principal, Director of Strategic Development at Schnabel Engineering, Inc.
- 5. The Complexities of Determining Properties of Diatomaceous Deposits: In Particular, Properties that Help in Assessing Settlement due to Highway Embankment Loading**  
By: George Machan, P.E. Senior Associate Engineer at Landslide Technologies



**2.4**

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

**2016**

- 1. Evaluation and Consideration of Site Variability in the Geotechnical LRFD Design**
- 2. National Quality Database for Foundations Load Tests**
- 3. Defining Sampling and Performance Data Parameters for Asset Management and Accelerated Design Benefits**

**2017**

- 4. Development of CPT Based Design Manual (by Paul Lane).** Performance of our earth structures and how to determine if the structure is performing well or poorly.
- 5. Develop Guidance on Reusing Existing Deep Foundations (Drilled Shafts and Driven Piles).** How to verify capacity (with the absence of construction records) and how we verify integrity of the foundation elements to estimate remaining service life.

**2018**

- 6. Defining Geotechnical Test and Performance Data for Asset Management and Accelerated Design Benefits**
- 7. “Improving Processes for Characterizing Corrosion Potential of Soils and Fill Materials.”** already an active NCHRP project.
- 8. Development of High-Quality Databases of Deep Foundations Load Tests**  
See section 2.5 below

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). The following RNS was sent to NCHRP for funding consideration.

**Development of High-Quality Databases of Deep Foundations Load Tests**

**2.6**

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

**2016**

1. **Alternative Methods to Determine Atterberg Limits of Soil (2012)**
2. **Practice and Guidelines for Tort Liability Protection and Construction Vibrations in Highway Projects:** This synthesis is cosponsored with AFS30

**2017**

1. **Alternative Methods to Determine Atterberg Limits of Soil (2012)**
2. **Practice and Guidelines for tort Liability Protection and Construction Vibrations in Highway Projects:** This synthesis is cosponsored with AFS30

**2018**

1. **Cone Penetration Testing - National and International Practices for Design of Geotechnical Features**

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

**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.

As seen in Attachment C, committee membership is almost well balanced and improvements could be made by adding more from Northwest and Central parts of the country. Also, finding females to serve as members and finding more young members to fill the openings available in this special category should be a priority.

The chair recently completed the committee's 2018 membership rotation. Great efforts was placed on making significant improvements in the balance and diversity of the committee membership including, a young members, females, as well as representation from the Southwest and Central. The percentage of female (19%), minorities (26%) and underrepresented minorities (4%) increased. The number of state and federal agencies continues to be well represented with some representation from other employer types.

**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)

**2016 Workshops**

- 1. Implementation of Data Interchange for Geotechnical and Geoenvironmental Specialists**

**2015 Webinars**

- 1. Non-nuclear Methods for Compaction Control of Unbound Materials.** In this webinar, Munir Nazzal gave an overview of NCHRP Synthesis 456. Held on December 3, 2015, which had 448 attendees with 40 DOT's represented.

**2017 Workshops**

- 1. Biomediated and Bioinspired Soil Modifications and Applications, 177,** Jan 8, 2017. Co-sponsored by AFP20, AFP40, AFS30 and AFS80

**2017 Webinars**

- 1. Guidelines for Geofoam Applications in Slope Stability Projects.** This webinar was co-sponsored with AFS10 committee. The chair of this committee moderated this webinar. About 320 sites logged in and an estimated 498 people attended.

### **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).*

#### **Short-Term Goals**

In the short term, the committee will continue to focus its efforts on promoting research, technology, and improvement of subsurface material properties as determined by field and laboratory testing. Emerging areas are related to new tests that are gaining acceptance in practice (e.g., direct simple shear), sensor technology for both laboratory and field, and data management. Some of the short term goals will be accomplished by proposing workshops, sessions, call for papers and webinars for 2019, 2020, and 2021.

This committee will address topics both inside and outside the committee scope. Topics within the committee scope include:

- Disseminate information related to improving the reliability of material property estimates used for foundation design.
- Define role of soil properties in the characterization of geotechnical assets
- Provide technology transfer on implementation of good practice of quality assurance for testing, analysis, and interpretation of test results for all geomaterial used in engineering.
- Improve and increase use of the CPT, geophysical tests, and PMT.
- Compile and disseminate information on new improved methods of interpretation, to include: higher reliability of soil property and parameters including unit weight, friction angle, modulus, stiffness, liquefaction potential, etc.
- Prepare a circular on state –of–the–practice of CPT for design that is useful to practitioners.
- Formally establish interface with other related committees to understand how the Soil and Rock Properties Committee can be more helpful and engaged in the other committees.
- Develop internal working groups to help coordinate AFP30 activities as a means of promoting more engagement by committee members.
- Develop (or at least explore) guidance document related to geotechnical data management.

#### **Long-Term Goals**

Many of the short-term goals are anticipated to grow and become long-term efforts by the Committee. Specific long-term goals are anticipated to include:

- Prepare guidance document related to selection of engineering properties for specific transportation engineering applications.
- Explore concepts of providing guidance for performing and interpreting dynamic tests and tests to assess small-strain response
- Implement data management guidance protocols

For both short-and long-term goals, the committee will actively develop themes for the annual meetings and develop training sessions. A task force will be convened over the next year (and before the 2019 Annual Meeting) to review the following short and long-term goals for AFP30 and recommend modifications and additions to the proposed goals. The recommendations from this task force are anticipated to form the basis for the next Triennial Strategic Plan for AFP30.

### **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.*

### **Future Committee Goals:**

The three-year plan for the committee includes plans for addressing each of the topical areas identified above. Specifically, we will reach out to all committee members and encourage their participation and being a “champion” for developing a strategy to prepare Research Need Statements, develop Synthesis Proposals, plan Sessions and Webinars, and suggest/coordinate preparation of Circulars. We are already scheduled plans include the following topics.

- **Site and Spatial Variability of Soil Properties.** Site variability will be addressed in an upcoming TRB Meeting. AFP30 and AFS30 are in the process of organizing a workshop or no-paper session (2020).
- **Pile Capacity Assessment with Cone Penetration Test (CPT) Data.** This topic will be cosponsored with AFS30, AFP30, and AFS20 (2020).
- **Survey members and if desired, plan, prepare, and promote for a midyear conference. Topic?** This is a proposal for midyear meeting with our committee

members and friends. It will include other committees such as AFS-30, AFS-20, AFS-70, AFS-80 (2019)

The committee will continue to work with the established task forces and goals:

- Research Need task force
  - Draft research proposal to develop a CPT-based design guide for various geotechnical applications (20120)
  - Calibration of CPT/CPTu/SCPT results to full-scale performance of embankments and ground modification projects, including long-term settlement, time-rate of consolidation, etc., comparison of before and after results for site improvement and QA/QC control, and direct use of dissipation tests to evaluate wick drain response and spacing. (2021)

Other activities of the committee will include:

1. The Committee's fundamental future goal for AFP30 will continue to be advancing knowledge concerning the nature and performance of testing of soil and rock by defining research needs, encouraging research in those areas and providing a forum for the dissemination of this information to practitioners in the transportation industry.
2. The committee will continue to serve the industry by seeking partnerships with other technical associations to determine industry needs, foster research, and offer forums for technology transfer events. Specifically, the committee will also assess potential for co-sponsoring conferences, workshops and training events with other engineering organizations such as AASHTO, DFI, ASCE, USACE, ADSC, PDCA, etc. The committee will also actively seek support for research by presenting AFP30 research priorities to other organizations.
3. The specific focus of the committee will promote and prepare Workshops, Sessions, Synthesis, Presentations, Circulars, and Research need statement that address committee short- and long-term goals and future vision. The following topics will be discussed and proposed for future committee activities (but will not be limited to these topics):
  - **Site and spatial variability of soil properties.** Site variability will be addressed in an upcoming TRB. AFP30 and AFS30 are in the process of organizing a workshop or no-paper session to address. (2020)
  - **Real time determination of soil and rock parameters.** This would be a logical extension of the efforts extended for intelligent compaction control. (2021)
  - **Synthesis Topics:** The following are proposed for discussion for (2019) meeting. The following will be addressed and prioritize for full study by the committee members:
    - a. Alternative Methods to Determine Atterberg Limits of Soil
    - b. How many boreholes are enough for LRFD discussion as well as Asset Management
    - c. Degradation Aggregate During Construction
    - d. Reasonable Soil Resilient Modulus Value for MEPDG Design Input
    - e. Practice and Guidelines for Tort Liability Protection and Construction Vibrations in Highway Projects: This synthesis is cosponsored with AFS30
  - **Webinar Modules:** Opportunities to provide Web based instruction on topics of interest to the geotechnical engineering community.
    - a. Aggregates and the effects of fines in the aggregate for base and subbase, Overview of GEC 5 with AFP-70 and AFS-80 (2019)

- b. State of the Practice of Quality Assurance / Quality Control for Soil and Rock Testing (2020)
- c. Promote Existing Knowledge and Updates on CPT to Users (2020)

- **Development of Circulars:** The following are proposed for discussion during our annual meeting 2019 by the committee members and friends.

- a. Fall Cone Method to Assess Liquid Limit of Soils: State of the Practice
- b. Description and Summary of Methods for Determining Site Class that is Used for Seismic Design
- c. The Adaptation of Passive and Active Surface Seismic Methods Measuring Materials Stiffness Properties and Determining the Site Seismic Class for Seismic Structural Design
- d. Advancements in Electromagnetic Methods for Profiling Water Content in Cohesive Soils that have Detrimental Effects on Pavements and Landslides
- e. Flat Shale Geology, Uniform Coastal Deposits.... How Statistics may Allow Leveraging Existing Information and Increase Spacing between Exploration Points.
- f. How Much Can We Count On Old Data? Does the Database Indicate That Information More Than 20 Years Old Is Less Reliable Than More Recent?
- g. Equipment Used for Subgrade Compaction/ Construction Depending on Soil Type
- h. Guidelines and Procedures for Improved Geotechnical Data Management

4. **Research Needs Statements (RNS):** Areas presently identified as requiring research – To improve and be innovative to create, modify, and replace outdated testing of soil and rock with practical, simple, inexpensive, and easy to use equipment and testing methods.

The following are some of the Research Needs Statements are listed for consideration

- a. **Defining Geotechnical Test and Performance Data for Asset Management and Accelerated Design Benefits**  
This RNS would be co-sponsored with AFS30 and AFP20 (1).
- b. **Development of High-Quality Databases of Deep Foundations Load Tests**  
This RNS would be co-sponsored with AFS30.
- c. **Improving Processes for Characterizing Corrosion Potential of Soils and Fill Materials**

The committee will consider these proposed topics at upcoming meetings to determine priority, need and strategy for development of appropriate scopes.

**TRB 96th Annual Meeting**

January 7–11, 2018

**Standing Committee on Soil and Rock Properties**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting - Committee	AFP30	Soil and Rock Properties Committee
Lectern Session	AFP30	Lasers for Particle Size Distribution, Depth Influence of Intelligent Compaction, Prediction of Subgrade Resilient Modulus, and Moisture Effects on Pavement Rutting
Lectern Session	AFP30	Expansion of the Use of the Cone Penetration Test by U.S. Highway Agencies
Poster Session	AFP30	Assessment of the Moisture Effect on Road Bases and a Cohesive Clay Study with High Liquid Limit in Yellow River Flood Area in China



**TRB 96th Annual Meeting**

January 8–12, 2017

**Standing Committee on Soil and Rock Properties**

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Poster Session	AFP30	Comparing Burrowing Behavior of Atlantic Razor Clam to Static Penetration Simulation and Use and Operation of a Mini Piezocone
Lectern Session	AFP30	QC/QA of Aggregate Layers, California Bearing Ratio of Aggregate, and Nondestructive Testing for Unpaved Roads and Correlation of DCPI with Proof Roller Test
Lectern Session	AFP30	Quality Control of Compaction, Resilient Modulus of Subgrade, and Correlation Between Light-Weight Deflectometer and Dynamic Cone Penetrometer
Workshop	AFP30	Biomediated and Bioinspired Soil Modifications and Applications
Published Meeting	AFP30	Soil and Rock Properties Committee

**TRB 95th Annual Meeting**

January 10–14, 2016

<b>Session Type</b>	<b>Committee Code (including sponsoring committees)</b>	<b>Title</b>
Published Meeting - Committee	AFP30	Soil and Rock Properties Committee
Workshop	AFP30	Implementation of Data Interchange for Geotechnical and Geoenvironmental Specialists
Lectern Session	AFP30	Reuse of Bridge Foundations
Lectern Session	AFP30	Determination of Soil Properties, Consolidation Properties, and Shear Stress Factors Including Resilient Modulus of Subgrade

**Attachment B**

**Defining Geotechnical Test and Performance Data for Asset Management and Accelerated Design Benefits**

Committee: AFP30, Soil and Rock Properties

Date Posted: 3/21/2017

Date Modified: 3/22/2017



**Development of High-Quality Databases of Deep Foundations Load Tests**

Committee: AFP30, Soil and Rock Properties

Date Posted: 3/20/2017

Date Modified: 3/22/2017

## ATTACHMENT C COUNT OF COMMITTEE MEMBERS

Committee Members as of December 4, 2017

<b>Main Members</b>	25
<b>International Members</b>	3
<b>Minority</b>	5
<b>Female</b>	4
<b>Room for more Members</b>	<b>Available Slots: 2</b> International Member: 2

### Membership Make-up

<b>Northwest</b>	<b>Southwest</b>	<b>Central</b>	<b>Northeast</b>	<b>Southeast</b>
3	5	7	5	11

<b>Women</b>	<b>Non-US</b>	<b>Emeritus</b>	<b>Young</b>
4	31	2	4

<b>Federal</b>	<b>Local</b>	<b>Academia</b>	<b>Industry</b>	<b>Consultant</b>	<b>Other</b>
3	10	10	1	10	0