

TRIENNIAL STRATEGIC PLAN (TSP)

Evaluation Period: February 1, 2007 to January 31, 2010

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 Name *	Foundations of Bridges and Other Structures
- Date(s) reviewed	February 2010 (email ballot)
- No. of members participating	21/27 members + 1 Emeritus + 1 young
- Change, if proposed **	N/A
Committee Scope *	This committee is concerned with the local and global behavior, stability, and interaction of structural foundations, and their supporting materials, for permanent and temporary transportation structures (bridges, retaining walls, box culverts, buildings, overhead signs, and other transportation structures).
- Date(s) reviewed	February 2010 (email ballot)
- No. of members participating	21/27 members + 1 Emeritus +1 young
- Change, if proposed **	N/A

* Show current

** Show proposed, or Not Applicable

PART 2: Performance Evaluation and Future Goals

Please Note That Rows and Boxes Below Expand As You Enter the Information

To begin, reiterate the committee's future goals **from the previous Triennial Strategic Plan (TSP -- former Triennial Self-Evaluation) report:**

Committee Goals from 2006 TSP:

1. The Committee's fundamental future goal for AFS30 will continue to be advancing knowledge concerning the nature and performance of foundation related systems by defining research needs, encouraging research in those areas, evaluating research activities, 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 transfer of technology events. Specifically, the committee will also assess potential for cosponsoring conferences, workshops and training events with other engineering organizations such as AASHTO, DFI, ASCE, COE, etc. The committee will also actively seek support for research by presenting AFS30 research priorities to other organizations.
3. The specific focus of the committee will be:
 - a. LRFD practical implementation, state experience, data collection.
 - b. Optimization of driven pile foundations (soil set-up, high capacity piles, etc.).
 - c. Foundation Systems and ground improvement methods that enhance accelerated construction (CIP piles, micropiles, deep soil stabilization, etc.).
 - d. Field testing and design methodology of shafts in rock sockets.
 - e. Performance based design for extreme events.
 - f. Guidelines for assessing different site conditions.
 - g. Mitigation of defects within deep foundations.
 - h. Evaluation of foundations of Existing Structures (corrosion, unknown Foundations, re-use).
4. Research Needs Statements: Ranking of New Research Needs Statements Topics for 2007:
 - a. Performance base design of foundation elements and earth structures for extreme event loadings
 - b. Full scale lateral load tests on rock-socket drilled shafts to aid in developing p-y curves for lateral design
 - c. Development of Pile Set-up and relaxation for use in Deep Foundation Design
5. Development of Circulars: The following topics were proposed:
 - a. DOT implementation of LRFD specifications
 - b. Rapid construction techniques for foundations
 - c. QA/QC for deep foundations

CATEGORY I: TECHNOLOGY TRANSFER

Year	2007 ¹	2008	2009	2010 ²
Number of Members in Attendance at Annual Meeting		10	19	20
Number of Visitors in Attendance at Annual Meeting		44	46	49
Number of Sessions * Sponsored/Cosponsored		3	3	3
Number of Presentations ** at Annual Committee Meeting		5	5	3
Number of Papers Reviewed ³		10	18	13
Number of Papers Presented in Podium Sessions		2	4	4
Number of Papers Presented in Poster Sessions		4	3	4
Number of Papers Published from Podium Sessions		2	2	1
Number of Papers Published from Poster Sessions		1	2	2
Number of Webinars Organized and Conducted @	0	0	0	
Number of Members in Attendance at Mid-Year Meeting	NA	NA	NA	
Number of Visitors in Attendance at Mid-Year Meeting	NA	NA	NA	
Number of Presentations *** at Mid-Year Committee Meeting	NA	NA	NA	
Number of Circulars/State-of-the-Art/etc Published #	0	0	1	
Number of TRB Workshops/Specialty Conferences Sponsored/Cosponsored ##	0	1	0	
Number of Workshops/Specialty Conferences Cosponsored with Other Organizations ###	0		0	

¹Show only activities after January 31 for this year (rows 10 to 15)

²Show only activities before February 1 for this year (rows 1 to 9 & 13 to 15)

³Paper reviews (Row 5) are to be shown in the year in which the papers are presented/published

⁴Show number of papers recommended for publication for this year

* Give Session Title(s), and name of co-sponsoring committee(s) if it applies:

TRB Annual Meeting Sessions

2008

Lectern Session – Implementation of Load and Resistance Factor Design Method for Bridge Substructures (+60 attendees)

Poster Session –Evaluation and Analysis of Bridge Foundation Elements and Approaches (+200 visitors)

Lectern Session – Seismic Site Response at Bridges Not on National Earthquake Hazards Reduction Program, Sponsored by GeoSeismic Subcommittee, **AFF50-01** (co-sponsored by AFS30)

2009

Lectern Session - Innovative Bridge Foundation Specifications and Projects (+50 attendees)

Poster Session - Performance of Retained Fill Structures and Foundation Elements Subjected to Lateral Loads (+100 visitors)

Panel Discussion Session 565 Geotechnical Data for Design-Build Projects: How Much Should the Owner Provide?, Co-sponsored by Committee on Project Delivery Methods, AFH15 (+75 attendees)

2010

Lectern Session - Continued Calibration Efforts and Implementation of Load and Resistance Factor Design (LRFD) Specifications for Foundation Design

Poster Session - Foundation Design and Analysis

Panel Discussion Session - Service Limit State Design of Deep Foundations for

Compatibility with Structural Performance, Co-sponsored by Committee on General Structures, AFF10

** Give Presentation Title(s), Presenter(s), and Year(s) for Annual Meeting Committee Presentations:

TRB Annual Meeting Committee Presentations

2008

- *LRFD Design of Driven Piles in Nebraska* by Andy Nowak
- *Practical Suggestions for Implementation of LRFD Specifications for Geotechnical Features* : Naresh Samtani
- *Consideration of QA/QC Results in LRFD for Deep Foundations of Transportation Bridges* : Frank Rausche
- *Design Guidelines for Increasing the Lateral Resistance of Highway Bridge Pile Foundations by Improving Weak Soils NCHRP (NCHRP 24-30)*: Kyle Rollings
- *Drilled Shafts in Marl and Chalk Formations*: Dan Brown

2009

- *Performance-Based Design of Deep Foundations within the LRFD Framework* : Lance Roberts
- *Foundation Design for the main river pier for KY-60 over Tennessee River* : Jamal Nusairat
- *Overview of the Upcoming Full Scale Lateral Load Test of Group-Pile-Pier at I-10 Twin Span Bridge in New Orleans* : Murad Abu-Farsakh
- *Instrumentation plan for long term health monitoring of the foundation and superstructure of the I-10 Twin Span Bridge in New Orleans* : Alan Marr
- *Field test of H-shaped Ultra High Performance Concrete Pile under vertical and lateral loads* : Muhannad T. Suleiman

2010

- *FHWA manual and new NHI course on drilled shafts* : Silas Nichols
- *Implementation of LRFD for Foundations Geotechnical Design*: Naser Abu-Hejleh
- *Design Guidelines for Increasing the Lateral Resistance of Highway Bridge Pile Foundations by Improving Weak Soils (NCHRP 24-30)* : Kyle Rollings

@ Give Webinar Title (s) and name of co-sponsoring committee(s):

*** Give Presentation Title(s), Presenter(s), and Year(s) for Mid-Year Meeting Committee Presentations:

NA

Give Title(s) of Circulars, etc:

2009 E-circular: Implementation Status for Geotechnical LRFD in State DOTs

Give Title(s) of Workshops/Conferences and Name(s) of co-sponsoring TRB committee(s):

TRB Annual Meeting Workshops

2008

Implementation Status of Geotechnical Load and Resistance Factor Design in State
Departments of Transportation

Give Title(s) of Workshops/Conferences and Name(s) of co-sponsoring organization(s):

Membership Make-up

North West US*	South West US*	Central US*	North East US*	South East US*
3	5	9	7	5

Federal Government	State Government	Local Government	Academia	Consultant	Industry	Other
3	7	0	8	10	1	0

Women	Non-US	Minority	Emeritus	Young
2	2	7	1	2

* **North West US** = AK, ID, MT, ND, OR, SD, WA, WY; **South West US** = AZ, CA, CO, HI, NM, NV, OK, TX, UT; **Central US** = IL, IN, IA, KS, MI, MN, MO, NE, OH, WI; **North East US** = CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT, DC, PR; **South East US** = AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV;

Liaison Membership (Please add rows to the following table as needed)

Committee / Society / Organization	Names of Liaison Members
Member - Committee on Seismic Design of Bridges AFF50 Chair - GeoSeismic Subcommittee AFF50-01, TRB; Chair - National Research Council Committee on Geological and Geotechnical Engineering, National Academies of Science and Engineering; Member - National Research Council Board of Earth Sciences and Resources, National Academies of Science and Engineering; President - Board of Governors, ASCE Geo-Institute	Ed Kavazanjian
Member - SHRP2 R02 Geotechnical Solutions Technical -Advisory Board Member - NCHRP Project 20-63B Performance Measurement Tool Box and Reporting System for Research Programs and Projects Technical Review Panel	Mark Morvant
Member - AASHTO T13 Member - AASHTO T15 Member - SHRP2 R02 Geotechnical Solutions Technical Advisory Board Member - TRB AFS10 Member - TRB AFP60 Member - TRB AFF70	James Brennan

<p>Member- Deep Foundations Institute Member - Geo-Institute Deep Foundations Committee</p>	Dan Brown
<p>Member - SHRP2 R19B Serviceability Limit States including foundations Member - TRB General Structures Committee AFF10 Member - SEI-ASCE Technical Council on Life-Cycle Performance, Safety, Reliability and Risk of Structural Systems</p>	Andrzej Nowak
<p>Member – TRB Soil and Rock Instrumentation Committee AFS20 Member - FHWA Non-Destructive Testing Technical Working Group West Coast Chapter Caltrans Liaison Member - Association of Drilled Shaft Contractors California Honorary Member - Deep Foundations Institute Caltrans Liaison Member - Association of General Contractors Pile-driving Committee Member – American Society of Civil Engineers</p>	Brian Liebich
<p>Member - AASHTO T-15 Technical Committee for Foundations and Walls</p>	Tony Allen
<p>Member - TRB Committee AFP40 "Physicochemical and Biological Processes in Soils" Editor - ASCE Journal of Geotechnical and Geoenvironmental Engineering (until Dec. 31, 2009) Principal Investigator - NCHRP Project 24-28 - "LRFD Metal Loss and Service-Life Strength Reduction Factors for Metal Reinforced Systems in Geotechnical Applications,"</p>	Ken Fishman

Committee Self-Evaluation for Category I, Technology Transfer

Based on above information evaluate how well the committee has met the Future Goals for technology transfer and committee makeup and interaction from the previous TSP report:

The Committee on Foundations and Other Structures continues to be a robust and active committee as related to technology transfer. The majority of the goals from the previous TSP report have been met or exceeded through numerous paper sessions, panel discussion sessions, a workshop and publication of a circular. The specific list of accomplishments directly addressing goals is listed below:

Technology Transfer:

- a. LRFD practical implementation, state experience, data collection.
 - i. TRB workshop with six presentations and panel discussion

- ii. Seven paper/poster session presentations
- iii. Four committee meeting presentations
- b. Optimization of driven pile foundations (soil set-up, high capacity piles, etc.).
 - i. Four paper/poster session presentations
 - ii. Three committee meeting presentations
- c. Foundation Systems and ground improvement methods that enhance accelerated construction (CIP piles, micropiles, deep soil stabilization, etc.).
 - i. Two paper/poster session presentations
 - ii. One full session panel discussion
 - iii. One committee meeting presentation
- d. Field testing and design methodology of shafts in rock sockets.
 - i. One paper/poster session presentation
 - ii. One committee meeting presentation
- e. Performance based design for extreme events.
 - i. One paper/poster session presentation
 - ii. One full session panel discussion
- f. Guidelines for assessing different site conditions.
 - i. Two paper/poster session presentations
- g. Mitigation of defects within deep foundations.
- h. Evaluation of foundations of Existing Structures (corrosion, unknown Foundations, re-use).

Circulars:

- a. DOT implementation of LRFD specifications
 - i. E-Circular completed and posted on TRB website
- b. Rapid construction techniques for foundations
 - i. No action
- c. QA/QC for deep foundations
 - i. Committee deferred development of circular due to acceptance of topic as a NCHRP Synthesis project.

Committee Interaction:

- a. AFS30 provided numerous reviewers for the 2007 GeoInstitute Field Measurements in Geomechanics Conference (FMGM)
- b. The update to the National Highway Institute (NHI) training course and associated reference manual have required extensive work to align with Load and Resistance Factor Design (LRFD) design procedures and the state of the practice in construction. AFS30 assisted FHWA by providing a review of the reference manual: Drilled Shafts: Construction Procedures and LRFD Design Methods.

CATEGORY II: RESEARCH NEEDS

Year	2007 ¹	2008	2009	2010 ²
Total No. of RNS Posted on TRB Homepage	3	3	3	3
No. of New RNS included in item above *	3	0	0	0
No. of RNS Submitted for Funding**	2			
No. of Synthesis Topics Submitted***	0	0	1	

¹Show only activities after January 31 for this year

²Show only activities before February 1 for this year

Please Note That Rows and Boxes Below Expand As You Enter the Information

* Give Titles of New RNS Prepared (by year):

2007

- Setup and Relaxation Effects on Load Carrying Capacity of Driven Piles
- Performance of Laterally Loaded Drilled Shafts in Rock
- Performance-Based Design of Foundation Elements and Earth Structures for Extreme Event Loading.

** Give Title(s) of RNS Submitted for funding consideration; **and if funded, give research project title/number and name of funding organization(s):**

2007

- Setup and Relaxation Effects on Load Carrying Capacity of Driven Piles submitted by Louisiana DOTD
- Performance of Laterally Loaded Drilled Shafts in Rock submitted by Oregon DOTD

*** Give titles of Synthesis topics (by year):

Published Nov 2007

NCHRP 20-05 Cone Penetration Testing

Funded in Fiscal Year 2009[New]

NCHRP Synthesis 20-05/Topic 41-10 Developing Production Pile Driving Criteria from Test Pile Data

Committee Self-Evaluation for Category II, Research Needs

Based on above information evaluate how well the committee has met the Future Goals for research needs from the previous TSP report:

The committee prepared and posted the three Research Needs Statements identified in the previous TSP report. Two of the three statements were submitted to NCHRP by state DOTs. The RNS were also presented to AASHTO Bridge Subcommittee Technical Group T-15 at its 2008 annual meeting to garner support. The statements were not perceived as being a high priority for T-15. Funding from NCHRP for these statements was not successful.

In 2008, AFS30 developed a priority topic description list for RNS. This list is posted on the committee website. In preparation for the 2009 Annual TRB meeting, AFS30

submitted the list to T-15 with a request to provide its priority preferences or alternate topics. No response has been received.

CATEGORY III: FUTURE GOALS

Provide the following information:

- Identify current and emerging critical and cross-cutting technical concerns of practitioners and researchers covered by the scope of your committee; and
- For cross-cutting concerns, identify entities needed for cooperative efforts

Describe how the committee plans to address these concerns by providing specific information on the following and any other appropriate measures.

As a minimum, short-term plans (next three years) should provide specific information on:

- Topics selected for sessions, workshops, etc at the annual and mid-year committee meetings
- Topics selected for developing new RNS
- Topics selected for synthesis suggestions
- Strategy towards attaining balanced membership
- Strategy of involving all members in committee activities
- Strategy to identify emerging areas and trends
- Strategy to achieve cross-cutting goals

Long-term plans should provide specific and/or general information on:

- Topics selected for preparation of Circulars, State-of-the-Art reports, etc with target dates for publication
- Potential for sponsoring or cosponsoring conferences with target dates
- Participation in development of Section's strategic plan on how to address concerns of practitioners
- Identification of emerging areas and their impact on transportation, and thoughts on creation of subcommittees, task forces to address such concerns
- Plans on outreach regarding dissemination of information well beyond the TRB audience, e.g. national and international conferences.
- Cross-cutting goals to increase the interaction among committees, societies, and organizations, e.g., State DOTs

Please Enter the Text Below and on Additional Sheets

Future Committee Goals:

1. The Committee's fundamental future goal for AFS30 will continue to be advancing knowledge concerning the nature and performance of foundation related systems 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 transfer of technology events. Specifically, the committee will also assess potential for cosponsoring conferences, workshops and training events with other engineering organizations such as AASHTO, DFI, ASCE, COE, ADSC, PDCA, etc. The committee

will also actively seek support for research by presenting AFS30 research priorities to other organizations.

3. The specific focus of the committee will be to promote Sessions, Presentations and Research that:
 - a) Highlight Innovative and Emerging Foundation Systems: Hybrid Piles, Pile – Soil Improvement Systems, Large Diameter Piling, Non-Traditional Installation Methods and Equipment
 - b) Present Effective Methodologies to Evaluate and Address Anomalies Within Deep Foundations: Characterization and Design Review, Techniques for Grouting of Drilled Shaft Defects, Structural System Supplements, Consequences of Repairs
 - c) Enhance and Optimize the Economic Use of Traditional Foundations: Post-Grouting, Better Characterization of Soil Set-Up, Creative Use of Foundations in Non-Traditional Applications, Integrated Testing Programs
 - d) Evaluate Foundations of Existing Structures: Re-use, Unknown Foundations, Health Monitoring
 - e) Provide Guidance on Resolution of Contractual Issues for Foundation Systems: Coordination with Innovative Contracting Methods, Differing Site Assessment, Consideration of How Contractor Means and Methods Affect Design Assumptions
 - f) Accelerate the Construction of Reliable Foundation Systems: Integration with Project Acceleration Methods, Site Soil Enhancements, Emerging Materials for Foundations Use
 - g) Integrate Field Testing into Design and Construction to Maximize Efficiency: Load and Resistance Factor Design Ramifications, Methodology of Shafts in Rock Sockets, Performance Based Design for Extreme Events
 - h) Reduce Environmental Impact and Enhance Sustainability: Optimized Designs, Efficient Use and Recycling of Materials, Contextually Appropriate Design, Protection of Existing Structures, Construction Vibrations, Cooperative Environmental Solutions
4. Research Needs Statements: Areas presently identified as requiring research to better delineate foundation design and construction:
 - a. Comparisons of Full Scale Load Testing Methods for Foundations with Controlled Blind Capacity Predictions
 - b. Examination of Real-World Performance Compared to Predicted Design: Case Studies and Conclusions Using Smart Bridges
 - c. Adjusting Resistance Factors to Account for the Effect of Site Variability and Thoroughness of Subsurface Investigation on Geotechnical Design Reliability
5. Synthesis Topics: Areas presently identified as requiring research to better delineate foundation design and construction:
 - a. Geotechnical Information Strategies for Design-Build Transportation Projects

6. Webinar Modules: Opportunities to provide Web based instruction on topics of interest to the engineering community:
 - a. State of the Practice of Quality Assurance / Quality Control for Drilled Shafts
7. Development of Circulars: The following topics are proposed to be developed into TRB circulars:
 - a. Optimized Use of Instrumentation in Foundations for Testing Assessment, Construction Evaluation and Health Monitoring

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