



Committee for Pavement Technology Review and Evaluation Letter Report: January 15, 2010

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TRANSPORTATION RESEARCH BOARD

OF THE NATIONAL ACADEMIES

January 15, 2010

Mr. Victor M. Mendez
Administrator
Federal Highway Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Mr. Mendez:

This is the fourth letter report of the Transportation Research Board's (TRB's) Committee for Pavement Technology Review and Evaluation. The committee was established at the request of the Federal Highway Administration (FHWA) to provide strategic advice and guidance to FHWA in the conduct of its Pavement Technology Program as authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The committee membership has been drawn from the executive and senior professional levels of state highway agencies, private industry, academia, and the highway user community and represents a broad range of expertise in disciplines relevant to pavement materials, engineering, technology transfer, and management. A roster of the committee is attached.

The committee held its fourth meeting on November 9 and 10, 2009, in Washington, D.C. This letter report presents the committee's assessment of the program as developed in a closed session at the end of the meeting and completed through correspondence. The report was reviewed by an independent group of peers in accordance with the policies and procedures of the National Research Council. The assessment and recommendations of this report represent the committee's best collective judgment based on the information provided and discussed at the meeting.

This report marks 3 years of the committee's involvement in FHWA's Pavement and Materials Program under the current agreement between FHWA and TRB. During this period, the program has made significant progress in moving toward its goals. FHWA has improved its internal process in the conduct of the program and has made a concerted effort to involve external stakeholders more effectively in its activities. The committee commends FHWA staff for their dedicated efforts under the leadership of Mr. Peter Stephanos and Mr. Gary Henderson and anticipates that the pace of progress will accelerate with the arrival of Mr. Jorge Pagan as the new Director at the Office of Infrastructure Research and Development. The committee particularly acknowledges the efforts of Mr. Stephanos in streamlining the program's process. These changes will help the program both internally and externally and improve its transparency.

As before, this annual forum provided an excellent opportunity for the committee members to continue their dialogue with FHWA staff on various aspects of the Pavement and Materials Program. By all accounts, it was a productive and positive interaction. The committee

appreciates the FHWA staff's hard work in arranging the meeting in these final days of SAFETEA-LU, when they must have been busy with plans for the next surface transportation legislation. The committee benefits from the advance meeting material in preparing for the issues to be discussed and recommends the continued development of such material if future meetings are contemplated.

Stakeholders' Involvement

The committee had a useful discussion with FHWA staff on what stakeholders were seeking in the Pavement and Materials Program. The discussion, initiated by FHWA to learn more about stakeholders' expectations from the program, identified a number of issues important to stakeholders. Stakeholders want meaningful involvement in setting the program's goals and priorities. A good match between the priorities of FHWA and those of stakeholders would help the program and facilitate buy-in by others, reducing the time it takes to implement results into practice. Better information on the program would allow stakeholders to base their positions on facts instead of assumptions. The information needs to be readily available, dynamic, and transparent, and it should address whether there is an adequate return for the money that is spent. It should also be concise; it would greatly help if research findings and communications on implementation activities were accompanied by executive reports. FHWA also needs to improve in communicating its successes. Web-based solutions for communication suggested by FHWA staff would be helpful. The committee sees many opportunities for sharing information on research results and implementation efforts with stakeholders through electronic newsletters. Stakeholders want a clearer understanding of what FHWA is doing from a strategic or broader viewpoint and how the pavement and materials technology program fits with other aspects of FHWA's overall program. They also want to see increased coordination and better communication between FHWA's central and divisional offices. Since the divisional offices are generally the first point of contact for most stakeholders, particularly the state people, those offices should be well informed about developments elsewhere within FHWA and must align with the goals, advisories, and policies of FHWA to effect the improvements desired by the program. In addition, the input of divisional offices should be sought when the program's goals and objectives are set.

An important occurrence at the meeting was FHWA's proposal of a new mechanism for expanded stakeholders' involvement in the Pavement and Materials Program. The suggested framework gives stakeholders an opportunity to provide input at various levels of the program. At the top level, an organization comparable with this committee will provide strategic input to FHWA on the program and help set its goals and objectives. At the next level, advisory groups will identify gaps and needs in specific areas and set priorities. At a third level, expert task groups and technical working groups will provide technical know-how to fill needs and gaps in the execution and delivery phases of the program. All stakeholder groups will be linked through a feedback loop, and all will be involved in assessment of the program.

The committee was favorably impressed with the proposed expanded mechanism for stakeholders' involvement. The approach represents new thinking and addresses a long-standing concern of the committee as noted in its previous reports. In its third letter report, the committee had specifically recommended development of a structured approach in which one set of

stakeholders would help in determining program goals and priorities and another would assist with project oversight and delivery. The new mechanism for stakeholders' involvement will lead to better coordination and integration of the program within FHWA and with existing programs such as the National Cooperative Highway Research Program, the Strategic Highway Research Program 2, and State Planning and Research programs. In turn, this will lead to additional positive outcomes and buy-in throughout the pavement industry. The committee encourages FHWA to put the proposed new mechanism in place as soon as possible.

Appropriate resource allocation will be critical in developing and sustaining the proposed comprehensive process for goal setting, program development and assessment, and project adjustment in collaboration with appropriate stakeholders. The committee believes that the benefits more than justify the needed resources, but much depends on the allocation the program will receive in the next surface transportation authorization. The effectiveness of the new approach will depend on clear operational guidelines. The roles of various stakeholder groups should be clearly defined, and the parameters under which different groups will operate should be clearly established. The mechanism should be applied uniformly and consistently, and the whole process should be transparent to enhance its effectiveness and acceptance. Most important, ownership of the process needs to be at a high level at FHWA.

The new feature in FHWA's proposal for expanded stakeholder involvement is the addition of advisory groups. The groups will help formalize gaps and priorities and will need to have some consistency. The relationship between the relevant advisory groups and the expert task groups or technical working groups will need to be clearly defined. In any case, flexibility within the charge of all proposed groups would be desirable so that input can come from both the top and the bottom. Although stakeholders should be involved, care should be taken not to overburden them. This could happen if the same people are involved in expert task groups, TRB committees, and industry groups, among others. Expanding the pool of people with the required talent and expertise should help alleviate the problem. Such expansion would not only help stakeholder involvement but also benefit the pavement and materials community in the mentoring of future experts.

The new process will work if it is remembered that the main purpose of involving stakeholders in the program is to seek their input rather than their reaction. FHWA will need to demonstrate greater willingness to act on the advice received, and it should provide feedback to the advisory groups on how their input was used, what advice was or was not followed, why or why not, and what difference the input made. Only with this level of transparency will these groups believe that their input has been meaningful and effective and be motivated to continue their involvement.

The committee acknowledges the increased level of communication between FHWA and various pavement industry groups in recent years as evidence of FHWA's commitment to seek external input. Pavement industry groups such as the National Asphalt Pavement Association and the American Concrete Pavement Association now maintain close interaction with FHWA through regular meetings (annually, quarterly, and even weekly). Issues of mutual interest are discussed at the meetings, and they provide an opportunity to industry stakeholders for involvement in FHWA's Pavement and Materials Program. The committee commends FHWA

for maintaining this interaction with the industry and encourages FHWA to continue the interaction even after the new mechanism is implemented.

FY 2009 Accomplishments, FY 2010 Plan, and Longer-Term Context for Program Planning

The committee was briefed on the strategic plan for highway infrastructure research and development in the longer-term context for annual program planning. The plan, developed about 1½ years ago, proposed seven strategies to direct the outcomes. How those strategies were developed and whether any external stakeholder input was sought in the process were unclear. The initiatives outlined in the document “Highways of the Future: Strategies, Objectives, and Initiatives,” which was presented at the meeting, need to be prioritized. A formal prioritization process with fixed criteria should be developed to select which activities to fund, focusing on key initiatives and priorities. The process should also account for work that is under way. There appears to be an FHWA policy to provide some funds to all programmatic areas rather than make substantial strategic investment in a given higher-priority area to produce substantial progress in meeting the area’s goals. To address high priority needs and gaps more effectively, FHWA should consider limiting its activities on the basis of its own program assessment and feedback from external stakeholders.

The committee was unclear as to how the Pavement and Materials Program’s focus areas aligned with the strategic plan’s strategies, objectives, initiatives, and outcomes. The content and apparent separation in the briefings provided by the Office of Infrastructure Research and Development (“Highways of the Future: Strategies, Objectives, and Initiatives”) and the Office of Pavement Technology (“FY 2010 Focus Area Emphasis Topics – Pavement and Materials Technology Program”) gave the committee cause for concern about the overall coordination within FHWA with regard to pavement technology. The two documents did not appear connected in either program structure or content, and it was not clear which of the two documents was driving the Pavement and Materials Program. In an overall strategic plan for pavements at FHWA, one main document would be expected to guide all others. If the “Highways of the Future: Strategies, Objectives, and Initiatives,” is the driving document, then it should clearly show how the Pavement and Materials Technology Program fits in the overall scheme, highlighting its focus areas and topics of emphasis. The committee wants to ensure that there is close communication and coordination among all involved offices. Such coordination is necessary if FHWA is to deliver pavement technology, research findings, and technology transfer to the stakeholders in an efficient and effective manner.

A clear definition of the roles and responsibilities of all units involved in the program could be helpful for better coordination and alignment of activities. While some differences and overlap in activities are to be expected, close coordination and cooperation among units are crucial. A unified focus on pavement activities is needed, with a consistency of direction and organizational goals among all involved entities, including the central office, the Turner-Fairbank Highway Research Center, divisional offices, and resource centers. Strategies that have been agreed on need to be carried out consistently. The need for improved communication and coordination among all involved units was also pointed out by the Focus Area Leadership

and Coordination (FALCON) teams' survey. Addressing this need should help remove any disconnect among them if it does indeed exist.

The role of divisional offices in program implementation should not be overlooked. The divisional offices interact closely with states and have a deeper knowledge of their issues and needs. The central office and the divisional offices should be aligned on priorities and policies. For example, it is not helpful if federal policy requires maximizing the amount of recycled asphalt while the divisional offices place limitations on recycling levels. It is also confusing to find longitudinal surface tining allowable in the official FHWA Technical Advisory but disallowed as a technique locally by divisional offices. The most prudent manner to avoid such inconsistencies would be to involve divisional offices in the process. The involvement of divisional offices can also be helpful to other FHWA units as the source of information on states' research and implementation activities as these units develop their own research and implementation initiatives.

The committee was briefed on FY 2009 accomplishments and plans for FY 2010. Accomplishments in each of the focus areas were described. The list of activities completed or under way was extensive and impressive. Often, however, there was a lack of clarity about the relationship among focus areas, goals, emphasis areas, outcomes, and strategies. Apparently, the terminology was partly responsible for this confusion. The following terms were clarified: topics represented focus areas, outcome statements were objectives, targets were emphasis areas, and activities or specific projects were strategies to fill the gaps. Use of the same terminology across the program, or at least an advance explanation of terminology, would be helpful in avoiding confusion. Since all activities should ultimately relate to the program's goals, the extent to which the work done has helped FHWA progress toward those goals should be indicated.

The committee was pleased to learn that the designated or earmarked programs at Western Research Institute (WRI) and the Asphalt Research Consortium (ARC) had become more responsive than they had been in the past to the needs and priorities of the Pavement and Materials Program. FHWA's asphalt expert task groups also have been allowed to provide input to the activities at WRI and ARC. The committee encourages FHWA to continue to use this opportunity to leverage earmarked programs' activities for the benefit of the Pavement and Materials Program.

The committee was presented with an overview of the FY 2010 plans. The presentation highlighted the active role played by the FALCON teams in the planning process. The FALCON teams have been participating in all of the important stages of the process. They help identify gaps and decide on activities and projects to address those gaps. Since the FALCON team membership includes staff from all involved FHWA entities, coordination and alignment of activities among those entities are improved. The FALCON process appears to be working well for the program and will be further streamlined if the issues identified by the FALCON teams in their survey of the process are addressed promptly. The committee commends FHWA staff for envisioning and implementing this innovative concept.

The issues raised by the FALCON teams in their review process appear to be similar to those raised by this committee when the concept was introduced about 2 years ago, particularly with respect to communication and coordination. The committee agrees that the FALCON process should be better defined and streamlined, that expectations should be clearly delineated, and that communication and coordination should be improved among all teams and across all units. The FALCON teams also recognized the need for improving communication with those outside the program. The committee agrees. Improved coordination would follow improved communication among all program participants. The issues raised by the FALCON teams need early attention.

The discussion of the FY 2010 planning process gave the impression that the process was still all internal and that all key decisions were made by FHWA, with no apparent involvement of external stakeholders. Implementation of the newly proposed strategy should address this issue effectively and provide ample opportunity to external stakeholders for input to the program at various levels.

Prioritization

The issue of prioritizing needs, gaps, and projects came up frequently. Prioritization also plays a role in allocating funds for various planned activities. This is especially important in view of looming transportation legislation and changes in budget levels. Prioritization will allow FHWA to react in a timely manner to future budget allocations. As discussed at length in the third letter report, prioritization should follow goals, objectives, and outcomes, and the prioritization process needs to be owned by senior leadership at FHWA for it to be effective. Now that FHWA will involve external stakeholders in the prioritization process, the proposed advisory groups will be able to provide their input in a structured manner. Listening to external stakeholders will result in increased support and buy-in.

The prioritization process should continue to make use of the available road maps, and the FALCON teams and the advisory groups should be encouraged to consult them while identifying gaps and needs and prioritizing activities. As the committee has noted in its previous letter reports, the asphalt and concrete pavement industries have invested much time, effort, and expertise in developing their respective road maps. Using those road maps in the prioritization process also means bringing external stakeholders indirectly into the process.

Program Assessment

One of the meeting agenda items dealt with program assessment. The process and results for pavement management assessment conducted by FHWA were presented. The pace of the assessment process needs to be accelerated. Assessments are helpful if they are based on outcomes rather than on whether a particular process is followed. Only then will they serve to determine the effectiveness of the program. Meaningful assessment can also help identify gaps and set priorities. The briefing at the meeting gave the impression that the assessment process was internal without the involvement of any external stakeholders. Buy-in is important even in the assessment process. Assessments made without the involvement of external stakeholders may not be widely accepted. Assessments carried out in partnership with states would help achieve a better buy-in.

Performance measures are related to assessment. Nothing specific on performance measures was presented at this meeting. Appropriate performance measures still need to be developed to gauge progress toward program goals. The committee is well aware of the inherent difficulty and complexity in developing true performance measures. In addition, these measures may take a long time before they are well established and accepted. Nonetheless they need to be developed and should involve external stakeholders to enhance their credibility and acceptability. The measures should be based on outcomes rather than on whether a particular state has adopted a recommended innovation. The number of states implementing a particular technology could be an interim measure, but it should ultimately lead to a true indicator of effectiveness. The committee urges FHWA to reenergize its efforts in developing appropriate performance measures.

Training

The committee has discussed the issue of training of highway personnel in each of its previous letter reports. The issue, brought up by committee members representing state highway agencies, has assumed greater urgency because the experienced workforce at state highway agencies is retiring and is not being replaced by adequately trained personnel. The states also have reduced their allocation for training as a result of the prevailing economic situation. Both FHWA and external stakeholders need to realize that training of highway personnel to use the latest technology deserves the same high level of urgency in terms of resources as that given to programs that developed or are developing those technologies.

As this committee suggested in its third letter report, Technology Transfer Centers and University Transportation Centers across the nation are also useful but still underutilized resources that could be tapped to address the lack of training opportunities for state personnel. States under financial constraints may also find the online web-based courses developed by FHWA helpful. Most of these courses are free. The September 2009 issue of the FHWA newsletter, *Focus*, lists a number of online courses on materials and construction practices for concrete pavement developed by the Transportation Curriculum Coordination Council in partnership with FHWA's National Highway Institute and Iowa State University's National Concrete Pavement Center. FHWA also has been working with the National Center for Asphalt Technology and the National Asphalt Pavement Association to develop online courses on asphalt pavement and materials technology. Some of these courses are expected to be available in 2010. Although online courses are no substitute for real hands-on training sessions, they can still serve as an additional helpful resource. The committee, however, recognizes that only a handful of web-based online courses are currently available and it will be some time before a comprehensive catalog of such courses will be available.

Although FHWA did not specifically discuss training at this meeting, it indicated an allocation of about \$1 million for training for FY 2010. The committee values FHWA's commitment to training and encourages regular assessment of its training program to determine how effective it has been and how it can be improved to meet changing needs. Training is vital in implementing current and new technology and research findings.

Communication

The committee is pleased to note the steps that FHWA has taken to improve communication of the Pavement and Materials Program. The completed and current projects within the program are being posted on FHWA's Internet site. The information is also being entered into TRB's Transportation Research Information Services and Research in Progress databases. The program could further benefit from these information resources by determining what activities are occurring elsewhere and planning or adjusting its activities accordingly.

Process for Future Committees

The committee has the following thoughts on how future oversight and technical advisory committees could be more helpful to the Pavement and Materials Program:

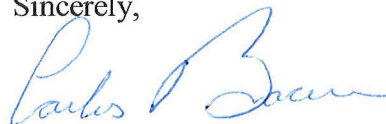
- First, clearly define the roles and responsibilities of each stakeholder group and let it clearly understand what it can and cannot do. The oversight committee should be concerned primarily with the goals of the program and what has been accomplished, not with the process in use to achieve the goals. The technical advisory groups should be more concerned with the process.
- Improve delineation of the process and be clear about where and how the stakeholders fit in. Invite new people into the process and spread the load among stakeholders to garner consistent and beneficial participation.
- Provide a better understanding of how various FHWA entities work together, with a clear explanation of who does what and how it all ties together for the program. Present a better alignment of what is being done at various units for the program and, in particular, at the central office and the Turner-Fairbank Highway Research Center. Also, explain how various FHWA units involved in the program have been working with TRB, the Strategic Highway Research Program 2, State Planning and Research activities, and pooled fund studies.
- For any stakeholder meeting, set clear objectives with clear expectations in line with what the committee or group can provide. Provide relevant material in advance to give participants an opportunity to think about the issues to be discussed at the meeting.
- Be willing and able to follow up on the advice and priorities. Develop a formal feedback process to keep every group in the loop.
- For the benefit of new committees, explain the FALCON process. Take one FALCON team and go through the entire process to show how it works in all phases of the program.

These simple guidelines should help everyone involved in the program understand his or her role, responsibilities, and limitations; eliminate confusion; and make the interaction more efficient and productive.

Closing Remarks

As we complete our 3 years of involvement with FHWA in the Pavement and Materials Program under the present agreement, we acknowledge and compliment FHWA staff for their impressive achievements. The program has greatly benefited from the dynamic leadership of Mr. Stephanos, Mr. Henderson, and Mr. Pagan, who were ably assisted by Mr. John Bukowski, Dr. Cheryl Richter, and their team leaders and staff engineers. As a result of their forward thinking and sustained efforts, the program is making needed operational changes, improving its internal focus, and enhancing its internal coordination through the innovative FALCON process, which works and provides a basis for improved organizational alignment within FHWA. We also acknowledge FHWA's efforts to seek external feedback and its willingness to expand the role of external stakeholders in the program. We encourage FHWA to follow through on the new ideas that it shared with us. We remain confident that the program is in capable hands and that it will continue its strides toward its ultimate goal: to provide tools and technology to build and maintain better-quality roads more quickly and at less expense, with less impact on the traveling public.

Sincerely,

A handwritten signature in blue ink, appearing to read "Carlos M. Braceras". The signature is fluid and cursive, with the first name "Carlos" being the most prominent.

Carlos M. Braceras
Chair, TRB Committee for Pavement
Technology Review and Evaluation

Committee for Pavement Technology Review and Evaluation

Note: Names of members present at meeting are in boldface.

Chair

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