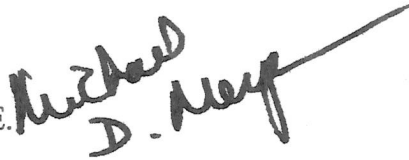


TO: Mr. Derrick Darby
Dr. Aris Georgakakos
Dr. James Jirsa
Dr. Ann Kiremidjian
Dr. Charles O'Melia
Mr. Brent Reid

FROM: Dr. Michael D. Meyer, P.E.
Chair, CEE

RE: Five-Year Program Review

DATE: June 2, 1999



I have attached several items for your upcoming meeting in the School of Civil and Environmental Engineering at Georgia Tech. The first is a proposed agenda. I emphasize the word "proposed" because having participated in such five-year reviews at other institutions, I know that such a panel might want to use their time differently than what is suggested. We believe the agenda provides the opportunities for you to gather information for your report to the Dean, but if there is something else you would like let me know. Your visit is occurring during final exams week, so our usual flexibility in responding to requests might be somewhat limited.

Other items attached include my assessment of where we are as a School, a benchmarking effort we recently completed, the executive summary of our recent ABET report, a Georgia Tech internal benchmark study, and the executive summary of our most recent strategic plan.

If you have any questions, give me a call. For those from out-of-state, I will be meeting you at 7:30 a.m. on Thursday in the lobby of your hotel. For those in Atlanta, I will meet you in the Lamar Allen Conference Room in the SEB building about 7:45 a.m.

I look forward to seeing you next week.

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The School of Civil and Environmental Engineering Program Review

AGENDA

Wednesday, June 9, 1999

7:00 p.m. Dinner with Dr. Narl Davidson, Associate Dean
 @ Terra Cotta, Virginia Highlands

Thursday, June 10, 1999

7:30 - 8:30 a.m. Breakfast Meeting
 Sustainable Education Building (SEB)
 Conference Room, 122

8:30 - 10:15 a.m. Overview of CEE
 Dr. Michael D. Meyer, Chair

10:30 - 11:15 a.m. Graduate Program
 Dr. Mac Will, Associate Chair
 for Graduate Programs

11:15 - 12:00 a.m. Undergraduate Program
 Dr. Larry Jacobs, Associate Chair
 For Undergraduate Programs

12:00 - 1:30 p.m. Lunch - (Committee Discussion)

1:30 - 3:30 p.m. Tour of the CEE Research Facilities
 - SEB
 - Hydraulics Laboratory
 - Geosystems Engineering Laboratories
 - Structural Engineering Laboratory
 - Daniel Engineering Lab

3:30 - 5:00 p.m. Meeting with CEE Students
 SEB, Room 122

5:00 p.m. Reception with CEE Faculty and Staff
 SEB Lobby

AGENDA (cont.)

Friday, June 11, 1999

- | | |
|-------------------|--|
| 8:00 a.m. | Breakfast and Planning Discussion
SEB, Room 122 |
| 8:30 - 9:30 a.m. | Meeting with Junior Faculty
SEB, Room 122 |
| 9:30 - 10:30 | Meeting with Senior Faculty
SEB, Room 122 |
| 10:30 - 11:30 a.m | Committee Discussion |
| 11:30 - 1:00 p.m | Lunch with Associate Dean, Narl J. Davidson
Exit Report
College of Engineering Conference Room |
| 1:00 p.m. | Adjourn |

TO: Mr. Derrick Darby
Dr. Aris Georgakakos
Dr. James Jirsa
Dr. Ann Kiremidjian
Dr. Charles O'Melia
Mr. Brent Reid

FROM: Dr. Michael D. Meyer, P.E.
Chair, CEE

Michael D. Meyer

RE: Five-Year Program Review

DATE: May 19, 1999

In preparation for your up-coming five-year evaluation visit, I thought it would be useful to provide you beforehand with a summary of the key points I will be making in my presentation. Much of the data that illustrates these points will be available at the meeting.

WHAT HAVE WE BEEN TRYING TO ACCOMPLISH?

In 1991, Georgia Tech adopted a strategic planning framework for guiding School activities. The last plan, implemented in 1993, focused on interdisciplinary research and education, emphasized several areas including, infrastructure rehabilitation and environmental quality engineering as focus areas, and generally established an ambitious goal for growth in both the research and education activities of the School. We are now in the process of updating the School's strategic plan. I will present what we have done so far at our meeting on June 10th. The 1993 strategic plan identified very specific action items that mostly dealt with very specific issues, as well as provided overall guidance for key decisions relating to faculty hires and resource allocation. The plan, as outlined in 1993, has largely been accomplished.

KEY ACCOMPLISHMENTS: 1994-1999

The most distinctive characteristic that describes the School over the past five years is "growth." Unlike other U.S. civil and environmental engineering programs during this period, we significantly expanded our faculty and physical plant. As we prepare our next strategic plan, we do so with incredible advantages over what we had five years ago. Some of the key accomplishments over the past five years have been the following:

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Faculty Size: We are a very large program compared to most others in the U.S. We currently have 49 professors on the faculty with new faculty being hired next year. The faculty is young compared to our peers simply because we have hired so many new professors over the past five years. Twenty-five new professors joined our faculty over this period. Due to retirements, resignations, and death, the net increase in faculty size has been 14 professors. I doubt that any other civil and environmental engineering program in the country experienced anywhere near this level of growth. Making sure this phenomenal expansion occurred in a "guided" manner has occupied much of my time.

Faculty Quality: The School has always had an excellent faculty, however, with the influx of new faculty, we have been able to greatly expand our research and educational activities. The quality of the faculty is outstanding. Almost 25% of the faculty have a NSF CAREER/PYI/PFF/NYI award. Members of our faculty win national and Institute awards, both for research and teaching. Because we are so young, we do not have comparable members of the National Academy of Engineering, however, I do believe we have many future members.

Research: Over the past five years, Georgia Tech has placed increasing emphasis on research. Even with increased competition for research dollars, we have been able to expand our research program. Currently, the program budget value of all research proposals in the School is \$32,000,000 (by this I mean the value of the research dollars over all budget years in current projects). This is a conservative estimate because many projects are multi-year, but only the current year is a "project," thus the "out" years are not represented. Over the past five years, the research dollars per faculty member rose from \$83,000 in FY1994 to \$135,000 in FY1998 and continues to rise, thus indicating a real increase in research activities. As more of the new faculty establish research programs, this level of research per faculty member is likely to expand greatly. This research has led to recognition in several areas of national interest including earthquake engineering, composite materials, transportation systems, air quality, sustainable technology, environmental remediation, nondestructive testing, water resources, and computational fluid dynamics.

Interdisciplinary Activities: Georgia Tech is known for its abilities to foster interdisciplinary research and education. Over the past five years, School faculty has played leading roles in the following research centers:

Air Quality Laboratory*	Air Research and Engineering Center*
Center for Applied Geomaterials Research	Center for Sustainable Technology
Computer-Aided Structural Engineering Center*	Composites Center
Construction Research Center*	Georgia Transportation Institute*
Mid-America Earthquake Center*	
Office of Environmental Science, Technology and Policy*	
Water Resources Institute*	

Those centers indicated with an asterisk are those led by a CEE faculty member.

Graduate Program: The 1993 strategic plan established a target of 1/3 Ph.D. and 2/3's M.S. students for the School's graduate program. In addition, the plan identified a goal of improving the quality of the students in the program. Over the past five years, the graduate program has increased in size, although enrollments have declined during the past two years. The current enrollment is approximately 325 students, with 40% being Ph.D. students. During the last three years the average GRE score of the incoming graduate students has risen steadily from 1350 in 1995 to 1442 in 1999. The average grade point average on incoming students increased from 3.25 to 3.4. Last year, the School graduated 25 Ph.D. students, the largest Ph.D. graduating class in School history. These students have accepted important positions in both academe and industry.

ABET Accreditation: Georgia Tech was one of the first major research universities to be accredited under EC2000. We chose to do so under the new criteria because we wanted to adopt a leadership role in undergraduate education, and to become a role model for other accredited programs. The School's undergraduate degrees and the masters program in environmental engineering were successfully accredited under the new criteria. In addition, ASCE and others have used us as a role model for others.

Undergraduate and Graduate Curriculum Revision: Georgia Tech will be converting from a quarter-based curriculum to semesters beginning in Fall, 1999. In preparation for this conversion, the faculty in cooperation with many others revised our curricula to reflect what we believe is required for success in a future professional career. The undergraduate curriculum incorporated several innovations that are truly different from other programs and that provide a unique educational experience to our students. This curriculum is already being pointed to as an example of a "future" civil and environmental engineering curriculum. This is perhaps one of the most important accomplishments during the past five years.

Improved Physical Infrastructure: Five years ago, the School's research and educational infrastructure were in very poor shape. We had just renovated the Daniel Environmental Engineering Laboratory, but the Structures Laboratory was woefully insufficient for a program of our size, and other physical space was found wanting. Over the past five years, we have renovated approximately 4,000 sq. ft. of space in Mason, added approximately 5,000 sq. ft. of new space in Mason by building a deck in the Hydraulics Laboratory, added 32,000 sq. ft. of new space in the SEB building, added 26,000 sq. ft. of research space in a brand new Structural Engineering Laboratory, and are planning an additional 20,000 sq. ft. for Environmental Engineering in the new Environmental Science and Technology (ES&T) building. We lost approximately 50,000 sq. ft. when the old structures laboratory and the geosystems building were razed for a new bioengineering complex. However the new net space increase and the quality of this space probably gives us one of the best physical plants of any CEE program in the country.

Computer Infrastructure: For many years, the School's computer teaching laboratories were obsolete and in poor condition. No money was provided in the budget to replace old equipment and thus updates or new acquisitions were subject to the availability of surplus funds. With the advent of student technology fees, the School has received approximately \$400,000 to upgrade the teaching laboratories. This has been a major accomplishment in that the School competed with other units on campus for these funds. We made our case. In addition, the position of Associate Chair for Information Technology was created to oversee all information system resources in the School. This position has provided a central focus for strategic thinking in what the School should be doing with regard to information technology. However, we still have major problems with computer support (see below).

Capital Campaign: Four years ago, Georgia Tech started a capital campaign that allowed Schools to actively pursue donations that stay with the School. At the time the School's endowment was minimal, perhaps in the \$250,000-\$300,000 range, and with these dollars allocated by the Registrar for undergraduate fellowships. Over the past four years we have raised close to \$9 million out of a \$15 million goal. This campaign has been successful so far because of the active involvement of our alumni and advisory board. Almost all of this \$9 million is in deferred gifts and charitable remainder trusts which means that the funds will not be available for 10 to 20 years. However, we are establishing a good endowment base for future faculty and students.

CHALLENGES

The accomplishments described above have placed the School in a strategic position for the next decade. With the quality of the faculty and facilities at our disposal, we should be able to conduct world-class research and education. However, we still face challenges. I have listed below those that I think are most important.

Graduate Program: We have made great strides over the past years in improving the quality of the School's graduate programs. However, we are losing too many applicants to other universities (this past year especially to Stanford and MIT). We are aware that many of the reasons for these decisions, e.g., better medical programs, more financial aid, and a program better suited to student interests, have little to do with the quality of the graduate program offered in the School. In addition, we are seeing a general decline in graduate enrollments, especially for U.S. students. A smaller program size is not necessarily bad, especially if the quality of student is going up which it has been. However, in an environment where the focus of limited resources is likely to be placed on expanding programs, this declining enrollment is cause for concern. This year the School added out of the School budget an additional \$2,400 per year on top of a normal GRA offer in order to attract 20 high-quality applicants.

Undergraduate Program: Similar to the graduate program, our undergraduate program has been declining in enrollment. Again, this is not something that is all that bad, especially when one realizes that civil/environmental engineering enrollment tends to

fluctuate with economic conditions. However, Institute support for education activities recognizes program teaching load. If enrollments continue in a declining trend, I can envision a reduction in the level of resources allocated to the School for the teaching program.

Cross-cutting Research/Education Thrusts: We have been operating under the 1993 Strategic Plan that identified several research and education “thrusts” in the School-- environmental quality engineering, transportation, infrastructure development and rehabilitation, engineered construction materials, computer-aided engineering and education, and hazard mitigation. I believe we have done a good job in maintaining the initiative in most of these thrusts. However, the organization of the School does not easily lend itself to efforts that cross across traditional disciplinary lines or cross College lines. In some cases, physical distance, i.e., environmental engineering being in a separate building, creates perceived barriers. We have tried to initiate movement in the infrastructure area by forming an “infrastructure and construction” group, but ran into issues of “identity” (e.g., every group views itself as relating to infrastructure, so how can you have a separate group on this topic?). We submitted an NSF proposal to form an Institute of Civil Infrastructure Systems which could have catalyzed this initiative, and we made it to the finals, but it was not funded. We are currently in a strategic planning process which will identify the thrust initiatives for the next five years. Although at this time it is too soon to tell what will come out of this process, I believe we will continue to emphasize the research thrusts mentioned above. I will be recommending to the faculty that we consider adding thrusts in the areas of: technology of civil and environmental engineering education delivery (which is more than just computer-aided education); computer-aided planning, design and management; applications of advanced technologies to infrastructure systems; innovation in civil engineering materials which goes beyond engineered construction materials; and sustainable development/technology.

Technical Support: One of the most pressing needs in the School is establishing a strong technical support staff for research and education. With the new Structures Lab, in particular, we are in need of technical staff that can help in experiments and running laboratory operations. This is true in other labs as well, and the need is particularly acute in the School’s computer support. Whereas from a budgetary perspective it is relatively easy to add faculty, the materials, supplies, and operations budget has remained relatively stable over the past five years. This does not allow for the hiring of technical support staff. However, even within these constraints, we were able to set aside funds to hire a Structures Laboratory manager and two new computer support personnel. We could not find a Laboratory manager that met the job description, and one of the two computer support staff left after one month on the job. The competition for qualified computer support staff in the Atlanta market is fierce, and given our constrained salary structure, we cannot compete.

Keeping Our Faculty: We have been able to hire some outstanding faculty over the past five years, often in an environment where other universities were unable to hire. Many other universities are now initiating faculty searches in some cases to play “catch up”. I fully expect (and it is already happening) to have many of the School’s faculty

approached for positions elsewhere. If we are to maintain our excellence, we need to be able to keep our outstanding faculty members. I expect the School Chair over the next few years will be spending a great deal of time in the Dean's Office asking for help in keeping professors at Tech.

Distance Learning: We have been asked to develop a distance-based undergraduate CE degree program that will be provide at least initially in south Georgia. I am viewing this as a wonderful opportunity to expand our program outreach and to incorporate new educational technologies and paradigms into program delivery. However, we have to be careful about how this program is structured. We are approaching the design of this program very carefully so that we learn about the best way of providing education over a distance as we go along.

These are but some of the accomplishments and challenges/opportunities we will be discussing with you. I look forward to participating with you in this important meeting. As note earlier, I will be providing more information at the meeting for your review. If there is anything you need please let me know.