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Testimony to:

The U.S. House of Representatives
Committee on Science and Technology

Subcommittee on
Research and Science Education

"Encouraging the Participation of Female Students in STEM Fields"

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BUILDING PATHS TO SUCCESS

"Encouraging the Participation of Female Students in STEM Fields"

STEM Witness Testimony before the House Sub-Committee on Research and Science Education:

Good morning distinguished members of Congress, colleagues, and all in attendance. I am both humbled and pleased that I have been asked to testify before you today in such august company as the other witnesses.

Rather than a direct academic pursuit of engineering, I came to the field by quite a circuitous route. Although I always had a curiosity at a very young age of building objects, I really did not know anyone personally who was an engineer. However, through the encouragement and development of my scientific and mathematical aptitudes, and the forward thinking of the leaders in my life, my mother, teachers and mentors, I became what you now know as a leader in the Science, Technology, Engineering, and Mathematics industry.

I hope you can bear with me while I give you a brief synopsis of my career path.

What influenced your decision to pursue a career in engineering, and what were some of the greatest barriers you faced as a woman in a STEM field?

My earliest recollection of building materials was a Christmas morning when I spied a very large box of Tinker Toys. These were for my oldest brother. He admonished me 'not to put my sticky paws on his Tinker Toys. They were special for him to build things.' Of course, I couldn't wait to set the Big Ben alarm clock to get up in the middle of the night and play with that set. As fortune would intervene, eventually my brothers got an Erector Set. The Tinker Toys cast aside became mine. The first thing I built was a windmill. All these years later when I see the wind turbines doting the landscape in rural areas, I have wondered how many of the engineers, who have designed or built wind turbines, had their interests sparked, in their youth, by a simple set of Tinker Toys.

Throughout my academic career, I was always interested in the sciences and I was encouraged to think about or pursue the biological sciences. In high school, I demonstrated an aptitude for Chemistry. My career path was set: I would concentrate on Biology and Chemistry and think about medicine or scientific research. I received awards for participating in science fairs all four years of high school. One Saturday a month, I went to the Science Academy in Lincoln Park. And every other Sunday to the Museum of Science and Industry, close to where I lived.

Armed with this foundation, I went off to university prepared to major in biology and chemistry.

I completed my undergraduate studies and went to work for The Department of Water and Sewers in the City of Chicago as a Research Chemist. I was quite content in this role. I completed a master's degree while working for the city; and began course work for a doctorate. The latter was interrupted when I was chosen as the first woman to participate in a program of sending young people (up until this point in time young male engineers) to work in various units of the Department of Water and Sewers to cultivate an understanding of how the department worked, not as units, but in total. It is very important to note that this decision was made by the Commissioner of the Department. I was assigned to the Chief Engineer in the Commissioner's office. The time period was the early seventies; this was not a simple or easy decision to make. To complicate matters I was not a degreed engineer. Instead, I was learning on the job. To his credit, and I thank him always, the Chief Engineer convinced me to go back to school and to take engineering courses. That was the end of the biological sciences and the beginning of a new endeavor.

I was the first woman to work in the field on a shut-off crew for the Bureau of Water. The barriers I faced were:

1. This was unusual.
2. Women were not supposed to work shifts.
3. There were no facilities for women.

And quite frankly,

4. Women would interfere with the way men talked and worked.

Of course, over a short period of time, their fears and mine were assuaged. We were all there to do a job. In hind sight: what a great experience!

I worked many years for the Water Department before going on to work in various other Infrastructure Departments which culminated in my overseeing all of the Infrastructure Departments when I went to work in Mayor Daley's Office as his Deputy Chief of Staff.

In 1994 the Mayor appointed me as Commissioner of the Department of Buildings. I was the first woman to hold this position. In this role, my field experience and practical side of engineering would have to get me through learning and understanding the design side. I do credit the discipline of being involved in the sciences as preparation for this demanding role, and as preparation for successful completion of any daunting task.

What are the biggest challenges to attracting and retaining young women and girls in STEM fields, and what are the most promising solutions to these challenges?

The biggest challenges to attracting and retaining young women and girls to STEM fields are:

1. Exposure at an early age
2. Encouragement and nurturing of ideas
3. The pervasive tendency to promote the sciences as career fields for boys and men. (Although medicine is the exception to this rule).

The most promising solutions are:

1. Continuing to work as a committee such as this to study and lend credence to the problem.
2. Funding to add programs of mathematics, chemistry and physics to primary as well as secondary education.
3. Exposing girls and young women to other women who are pursuing these fields.
4. Adding an academic standard to the national curriculum of teachers and counselors that trains them to identify and value STEM aptitudes in girls and young women; and provides them with academic and career path tools to develop STEM aptitudes in those girls and young women.
5. In a humble way I do think drawing attention to women like myself who have come through the ranks, who have persevered and now are presidents and CEO's of their own engineering firms, helps to promote the value of being smart girls and women with STEM field aptitudes.

In closing, I would like to thank you again for inviting me to testify before you today. I am committed through various organizations and academic institutions to promoting not only women and minorities in the sciences, but also to developing interest and skills and expanding STEM opportunities to people as a whole. I heard a very disturbing statistic: that only about four (4) percent of our young people in this country seek to have careers in the sciences. Those seeking to have careers in the sciences in some other countries are as high as forty (40) percent. If we do not address this issue, who will build our roads and bridges? It is a question that we must answer.

Thank you.

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Cherryl Thomas is President and Chief Executive Officer of Ardmore Associates, a full-service engineering, land surveying, program, project and construction management firm.

From 1998 – 2003, she was appointed by President William J. Clinton as Chairman of the United States Railroad Retirement Board. She was responsible for the $18 billion comprehensive retirement, survivor and unemployment/sickness insurance benefit program for the nation's railroad workers and their families.

Ms. Thomas was appointed Commissioner of Chicago's Department of Buildings by Mayor Richard M. Daley where she served from 1994 to 1998. She was responsible for the operation and management of the Department of Buildings with a $28 million budget, the second largest building department in the country. She interfaced with developers, architects and engineers relative to building code issues. Ms. Thomas oversaw the review of architectural plans prior to permit issuance for new construction, rehabilitation and conservation of approximately 450,000 buildings. This department also conducted examinations and issued licenses and/or certificates for multiple building trade disciplines.

Prior to service as Commissioner of the Department of Buildings, Ms. Thomas served as Deputy Chief of Staff in Chicago's Office of the Mayor from 1991 to 1994. She was responsible for the day-to-day interaction with commissioners of city departments and state and local governmental officials. Her primary focus was on infrastructure departments. She initiated the timeline reporting system for all City departments. She served as Chairperson assisting in the development of the Information Technology Steering Committee including geographic information systems, monitored infrastructure construction projects, and worked with various boards, associations and commissions.

Ms. Thomas' career with the City of Chicago began as an engineer-in-training with the old Department of Public Works. During her career, she held various technical and management positions in the departments of Public Works, Water, Sewers and Aviation.

She has an honorary Doctorate Degree from Boston College, a Master's of Science Degree in Physiology from the University of Illinois and a Bachelor of Science Degree in Chemistry and Biology from Marquette University. Ms. Thomas enhanced her career by taking engineering courses at the Illinois Institute of Technology as a non-degree student.

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