

STEM 2035 One Year \$50,000 Grant, Ralph Wilson Jr. Foundation, 2018

Organization Information

a) Organization name:

ACE Mentorship of Michigan

b) Organization description (200 words):

The ACE Mentor Program is open to any high school student who has the curiosity and drive to learn about a career in design and construction — from contracting and engineering to architecture and landscaping. Participants join a team of other students led by adult mentors who are practicing industry professionals. ACE isn't about merely describing specific professions, it's about immersion in the profession by engaging students in actual building projects. These can range from new schools and mixed-use developments, transportation and commercial construction, design, engineering and management. Students visit professional offices, job sites and other relevant locations. They discuss the same issues, and perform the same tasks, as the professionals who work in the industry. ACE gives a practical hands-on view of how abstract concepts get transformed into the buildings that make up our everyday reality. ACE Mentorship targets high school students just as they seriously start to explore career options. ACE instructs students about the entire process of designing and building a project and it relies exclusively on passionate industry professionals to excite and mentor students.

c) Tax ID

See Attached.

d) Organization Address

*Barton Malow
26500 American Drive
Southfield, MI 48034*

e) Contact person phone number and email address

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Proposal Narrative

a) Describe your existing STEM programming (what it does, who it serves, how many youth it serves, and its outcomes).

ACE Mentorship of Michigan is an affiliate to the national ACE Mentorship Program. ACE is an after-school program that provides a hands-on introduction to architecture, construction management, engineering and other construction careers for high school students to consider if they are interested in designing and/or building schools, stadiums and concert halls to bridges, tunnels, shopping malls, parks and more. ACE Mentorship of Michigan will focus on cohorts of up to 40 high school students, introducing them to mentors of construction industry professionals. They will have the opportunity to work with the mentors to learn about that particular industry sector focusing on Architecture, Construction, and Engineering. The program matches students with ACE professionals, or mentors, who volunteer their time and energy. They show the student where and how they work, the skills they use and some of their projects under construction. They also help design an actual project. Under the mentor's guidance, students will develop an actual engineering or architectural design project. You learn and apply important skills such as problem solving and drawing, to design a real-life school, bridge, park—whatever the team agrees on. Then, in the final big event of the season, student teams will present their projects to mentors, teachers, parents and fellow students. There is no cost to students for participating in the program. ACE Mentorship of Michigan helps to answer the following questions: What's the difference between an architect and an engineer, or a construction manager and a structural engineer? Do I need good math skills to be an engineer? How much does a person in the construction industry make? How is an underwater tunnel built? A bridge? Skyscraper? The students work at the mentor's place of business providing them with the opportunity to visualize what their future may hold. Mentors are also encouraged to hire, provide scholarships, and offer internship opportunities to the participants.

b) We are not interested in funding an organization to do the same work in the same way. Describe what you propose to do differently to better serve youth that are underrepresented in STEM fields. Examples may include bringing proven best-practices into local work, piloting a promising innovation, or iterating on an existing STEM program.

Funded entirely by generous sponsors, ACE students meet after school with dedicated mentors who guide them through engaging, hands-on projects and field trips. These activities reinforce classroom learning in math, physics, art, computer skills and other important subjects, establishing a direct link between curricular and career success. ACE mentors frequently provide qualified students with recommendations for college admissions, internships and full-time employment – these recommendations can have a significant effect on a student's success. The primary goal of the ACE Mentor Program is to excite high

school students about the many careers in the integrated construction industry – architecture, engineering, construction management, and related skilled trades. ACE realizes this goal by involving students in workshops and field trips and engaging them in a realistic process of designing a project and planning its construction. The ACE program extends over 15 to 20 afterschool sessions each lasting 2-3 hours, for an overall total of approximately 40 hours. Several mentors drawn from different design/construction fields, paired with 10-20 students, work as an integrated design team throughout the program. As an afterschool program, ACE is a form of informal education. It does not mandate a fixed curriculum or formally measure students' mastery of a prescribed body of knowledge or skills. Rather, mentors follow a general programmatic model and draw upon a tested body of hands-on activities which reflect many aspects of designing and constructing a building – for example, construction document reading, beam design, or cost estimation and bidding. ACE follows a project-based learning strategy. Mentors meaningfully engage students with realistic design projects that introduce them to the basic skills and knowledge of the design/construction industry. Through personal example, explanation, and tours of offices and construction sites, they also inform students about career paths and work-life in the design/construction professions.

c) Describe how the proposed idea would better expose and connect 6th - 12th graders to STEM jobs, post-secondary education and training, and careers. How do you expect the outcomes for your program to change and improve as compared to the current outcomes?

The ACE experience provides students with knowledge and skills. The knowledge they gain concerns the fundamental processes of designing and building a structure and the requirements and pathways for different careers in the design/construction industry. Students acquire two sets of skills, the first specifically related to the design/construction industry and the second pertaining more generally to the workplace and life. During the course of the program, each mentor-student team works toward development of a design project which is either set out for all teams within an affiliate or devised by individual teams. At the conclusion of the program, the students present their project in a public forum. "Deliverables" typically required for a final project include architectural drawings with sections and/or a model, site plans, landscape design drawings, structural design plans, finish boards, mechanical and electrical schematics, estimated construction costs, and a construction schedule. Students often produce computer-generated drawings and documents as well as virtual models. When meeting ACE's learning objectives, mentors may improvise and add/substitute creative elements that play to their strengths and knowledge.

d) Describe the youth you're interested in serving in better and new ways with this proposal. How would you improve outreach to and engagement of groups that are underrepresented in STEM professions (including, but not limited to, girls, African American, Latino, and Native American youth, economically disadvantaged youth)? How would you provide new or improve existing programs for these youth?

Relevant to Careers in the Design/Construction Industry

After completing a year in the ACE Mentor Program, students should:

- Know the working relationships and responsibilities of building owners, architects, engineers, construction managers, and skilled building trades.*
- Understand the major opportunities and career paths available in the design/construction industry – architecture (including landscape architecture and interior architecture), engineering (structural, civil, and mechanical, electrical, architectural), urban planning, construction management, and the skilled building trades.*
- Understand the preparation and training needed to enter careers in the design/construction industry.*
- Know about possible postsecondary school options and apprenticeships relevant to the design/construction industry.*
- Know about career requirements such as licensure or certification.*
- Experience the work places and work lives of design/construction industry professionals.*

e) We are primarily looking to fund community-based organizations however, are open to proposals that partner with larger organizations, such as universities and hospitals. List key partners for this proposal and their roles in achieving the proposal's goals.

Detroit based Architecture, Construction, and Engineering firms

f) If selected, you will be part of a peer learning community designed to provide tools, technical assistance, and training to improve program quality. Have you participated in a learning community? If yes, describe your experience and what you contributed and took away from the experience. If not, what do you expect to contribute and take away from the experience?

Ken Bertolini has been an Assistant Professor/Instructor in Construction Management over the past ten years. He has established learning communities with South Dakota State University freshmen; instructing students what learning communities are, what they could expect working within a learning community, the benefits, as well as helping to guide them through the experience.

g) Sustaining gains achieved during STEM 2035 once the initiative ends are critical. Share initial ideas on how gains might continue without Foundation support. Please think beyond seeking funds from other philanthropic sources.

The initial process of developing the advisory board consisting of Construction, Design, Engineering and Architecture firms has been established, and we are well on our way of launching this program. We intend on kicking off the program with industry funding. The STEM 2035 Grant offered by the Ralph C. Wilson, Jr Foundation was recently brought to the board's attention, and we believe it will help us launch our first cohort, and provide us with a tremendous opportunity to strongly establish our program and we greatly appreciate this opportunity.