ACE Mentor Program of Central Ohio 2010-2011

Linden McKinley STEM Academy

The ACE Mentor Program of Central Ohio
2010-2011 ACE Yearbook

To Our ACE Students

From Your Mentors

To: The ACE Students of Linden-McKinley STEM Academy

Dear ACE Students:

We recognize the progress you've made during your participation in this year's ACE Mentor Program, and we hope this yearbook provides some lasting memories of your time spent with us. We sincerely hope it was a fun and exciting program for each of you.

Some of you were introduced to the ACE Mentor Program last year when a 5-week pilot program was introduced at Linden McKinley STEM Academy, and it was there that you began to learn about the different aspects of the building design, construction and engineering industries. In this year's 15-week after-school program, your understanding of the building design and construction business was increased through listening to mentors and industry professionals describe their roles in various construction projects, performing hands-on exercises, participating in design challenge discussions, and working together as teams on communal projects. You responded to real-world needs, created concepts, and developed your ideas into project design models using the same tools that industry professionals use to communicate their ideas. Through your participation in this ACE Program, you've learned a lot about how the building design process works and the importance of teams working together. As a result, you now have a better understanding of the many opportunities open to you in architecture, construction and engineering.

As mentors, we shared with you our passion for our industry in hopes that you will continue to think about the kinds of jobs that will motivate you to be your best. We look forward to seeing you again next year as we explore even bigger and bolder ideas together.

Sincerely,

The ACE Program Mentors of Central Ohio

2010-2011 ACE Yearbook

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Section One
Focus on Students

"ACE will help me fulfill my dream."
-Tyree Tillman

Brick Squad
Linden McKinley Sophomores

Angelica Thomas

Awards & Honors:
Mayor Michael B. Coleman Award
Honor Roll

Hobbies & Interests:
Volleyball
Track and Field

Sharquira Hill

Extracurricular Activities:
Boys & Girls Club of Columbus
Job COSI

Awards & Honors:
Honor Roll
Perfect Attendance

Hobbies & Interests:
Basketball
Choir
Cooking

Linden McKinley ACE Sophomores

Brick Squad

Company Overview

The Brick Squad was comprised of two sophomores who originally participated in the ACE Mentor Pilot Program during their freshman year: Angelica Thomas and Sharquira Hill. Together, they planned an athletic complex for the City of Columbus Recreation and Parks Department. Their final project consisted of a complex of structures which included a football field, basketball courts, sand volleyball courts, a go-kart track, and supporting administration buildings.

Brick Squad

Four Stems and a Leaf
Linden McKinley Sophomores

DC Curry

Hobbies & Interests:
Poetry
Art

Ean Mitchell

Tyree Tillman

Extracurricular Activities:
Ambassadors Club
SAVES NET

Awards & Honors:
$100 Most Creative Award
for Short Stories and Scripts

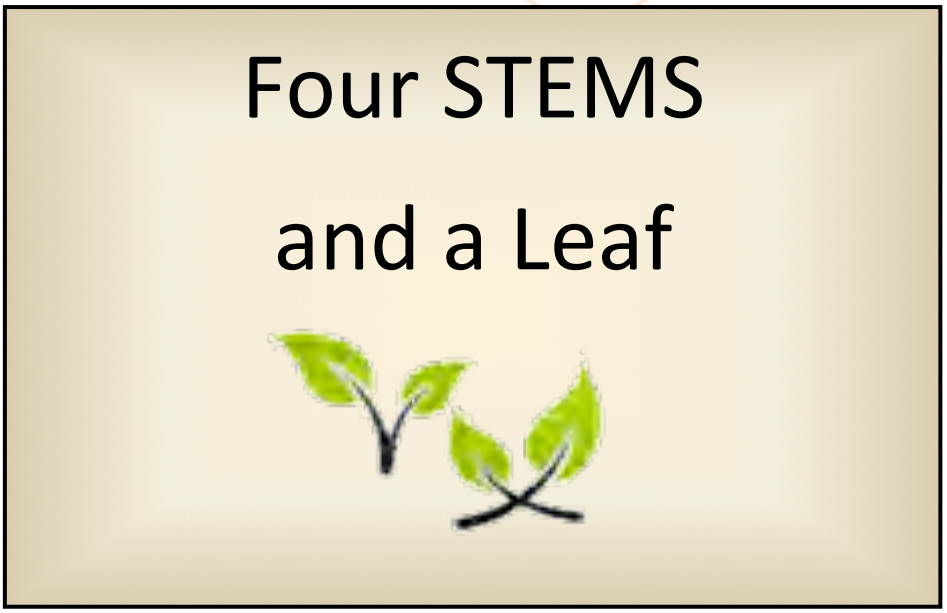
Hobbies & Interests:
Writing Stories
Building Cruise Ship Models

Linden McKinley ACE Sophomores

Four Stems and a Leaf

Company Overview

Four STEMS and a Leaf was represented by two sophomores who were new to the ACE program, Ean Mitchell and Daniel "DC" Curry, and one returning student from the 2009-2010 ACE pilot program, Tyree Tillman. These team members combined forces to design a unique activities complex for use by visitors to the City of Columbus. Their design included elements such as a laser tag arena, gymnasium, ice-skating rink, haunted house, Ferris wheel and water feature.



Four Stems and a Leaf

The Pacers
Linden McKinley Sophomores

Bryan Shackelford

Extracurricular Activities:
Upward Bound

Hobbies & Interests:
Video Games
Singing

Nicole Hill

Extracurricular Activities:
SAVES NET

Hobbies & Interests:
Computer Engineering

Breanna Spelhaug

Extracurricular Activities:
Otterbein College
Upward Bound
SAVES NET

Awards & Honors:
Honor Roll

Hobbies & Interests:
Basketball
Track & Field

Linden McKinley ACE Sophomores

The Pacers

Company Overview

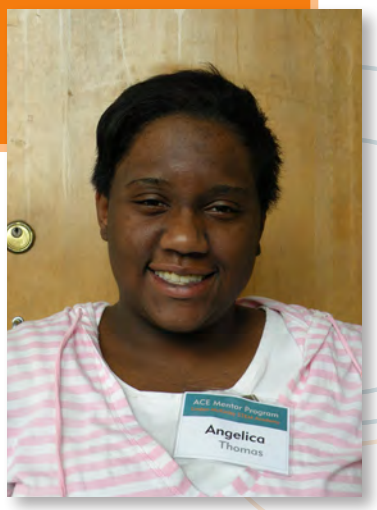
The Pacers team consisted of ACE Mentor veterans Bryan Shackleford and Breanna Spelhaug, and newcomer Nicole Hill. Combining their efforts, they proposed a sports complex for the City of Columbus Recreation and Parks Department that utilized each of their own ideas. Design elements included an exercise facility with day care, a water feature with slide, an indoor pool with Jacuzzi, and a bike/skate park.

The Pacers

Section Two
Mentoring Sessions

"I would like to learn more about design, and being in the ACE progam will give me the opportunity"

-Angelica Thomas



Session 1

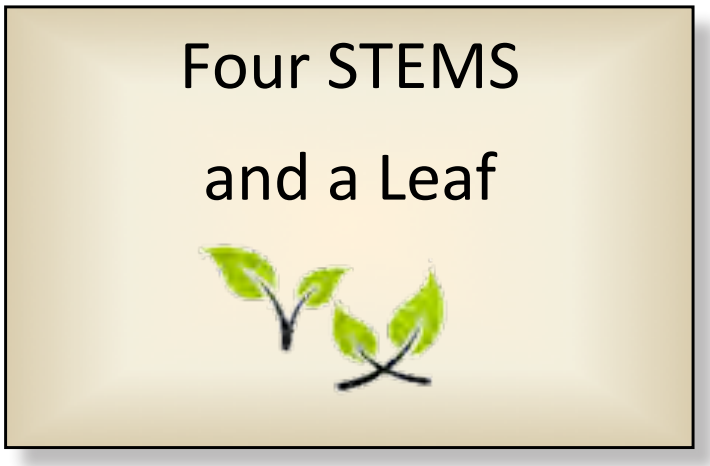
Introduction to Program an Establish Teams

The first session of the ACE Mentor Program kicked off with a summary of the program. Students were given instruction for enrollment into the program, and advised of the expectations as well as the benefits.

Introductions were made, and an ice-breaker activity was played that allowed everyone to learn a fun fact about each participant.

Students were divided into three groups that would be their teams for the remainder of the program, and were assigned to come up with a team name. Teams were established as follows:

Brick Squad:	Angelica Thomas & Sharquira Hill
Four Stems and a Leaf:	Tyree Tillman, Ean Mitchell & "DC" Curry
The Pacers:	Bryan Shackelford, Breanna Spelhaug & Nicole Hill



Session 2

Issue RFP & Develop Preliminary Concepts

Students were introduced to the concept of an RFP . . . Requests for Proposal. Mentors explained the competitive nature of providing RFP's in the construction market and the importance of carefully following the guidelines established by the owner. An RFP was issued for the ACE Mentor Program's final project: The Columbus Commons Project. The RFP stipulated that each team was to design/build a complex of structures that would serve multi-functional purposes for the community of Columbus to enjoy, and the objective was to propose the most creative, yet applicable, concept for the City of Columbus. Brainstorming ensued among the teams to come up with unique design ideas and concepts.

- ✓Trampoline Room
- ✓Zip Line
- ✓Anti-Gravity Room
- ✓Circuit Training Course
- ✓Spa
- ✓Conservatory
- ✓Movie Theater
- ✓Game Room
- ✓Art Museum
- ✓Recreation Center
- ✓Swimming Pools
- ✓Swings
- ✓Skate Parks
- ✓Ferris Wheels
- ✓Roller Coasters
- ✓Green Houses
- ✓Ice Skating
- ✓Basketball Courts
- ✓Sand Volleyball Courts
- ✓Food Courts / Restaurants
- ✓Bunji Jumping
- ✓Laser Tag
- ✓Day Care
- ✓Community Center

Program

This complex must meet the following space requirements for the desired building types and purposes:

Lobby/Reception Hall	2,300 SF	
Public Bathrooms (Men/Women)	2 x 150 SF	300 SF
Multi-purpose Rooms	2 x 600 SF	1200 SF
Administration Offices	3 x 100 SF	300 SF
Kitchen/Food Prep Area	1,500 SF	
Storage	1,000 SF	
Outdoor Performance Stage	2,200 SF	
Undetermined Entertainment Area*	411,000 SF	
Total:	420,000 SF	

* The undetermined entertainment area has been left for your firm to decide which type of area this will become. This will be a key factor in the selection process. The Columbus Recreation and Parks Department were open to and liked many of the public suggestions (water feature, skate park, Ferris wheel, playground, etc.)

Budget

The budget has not been determined at this point, but the city feels that the cost of the model project, North Bank Park, was a reasonable and achievable amount. This RFP must include cost for the following:

Construction Costs
Design Fees
Permitting Fees
Escalation
Overhead and Fee for the Project Management
Contingency

General Requirements

The department requires certain standards when funding the construction of a public facility this size. Therefore, these are requirements for the RFP:

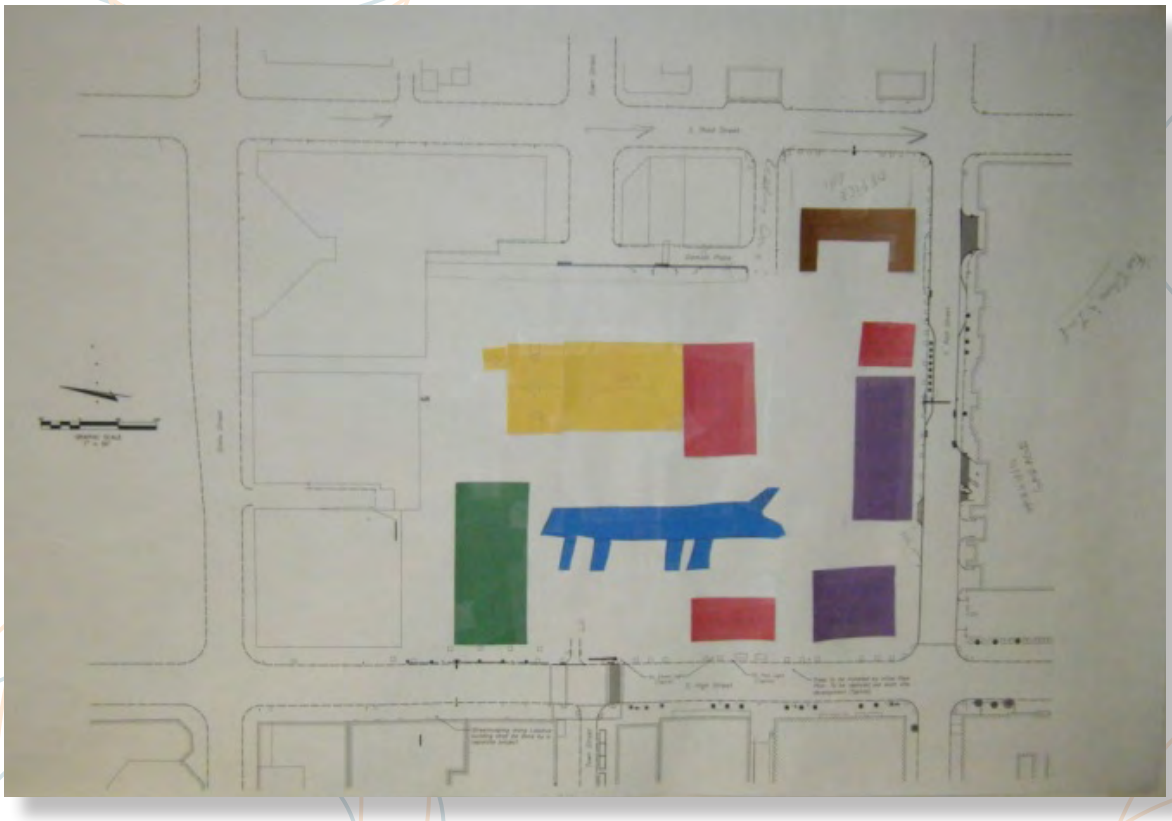
- The facility must be able to accommodate a minimum of 200 people indoors, and 400 people outdoors, totaling 600 people.
- Public transportation must be incorporated into location and logistics of the site.
- Adequate parking must be provided within 500 feet from the facility. A shuttle may be used to transport individuals the remaining distance.

Sessions 3 & 4

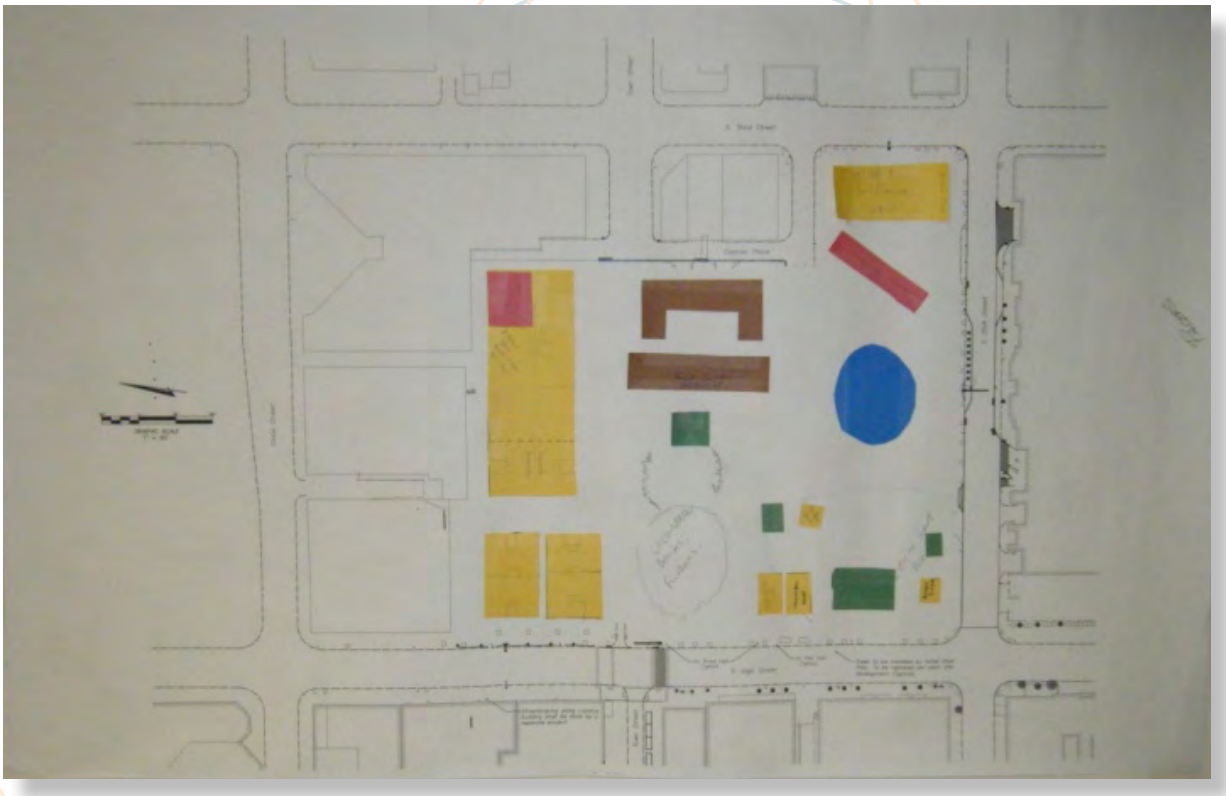
Develop Site & Define Entertainment Features

Students were instructed to consider layout and design of the site to accommodate the client's needs, including access to the site, streets, sidewalks, parking, buildings and entertainment areas, and providing utility service for the site.

Students were provided simple shapes of colored paper that represented the potential design elements determined at the previous brain-storming session. The students were directed to take the various shapes that were "to scale" and situate them on their site plans in order to determine a workable massing plan.



Four STEMS and a Leaf



The Pacers

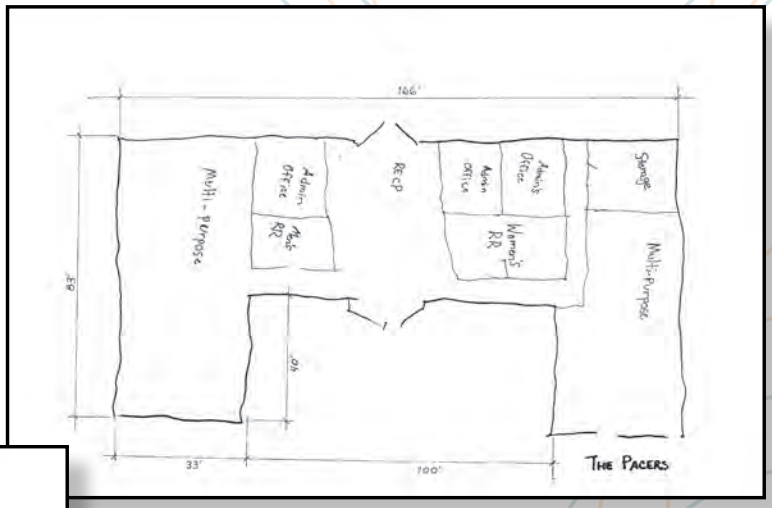
Brick Squad

Session 5

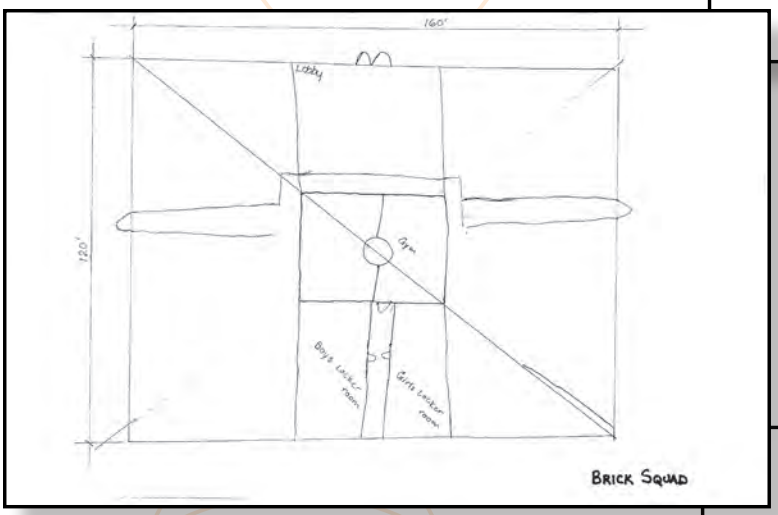
Design Building Layouts

One of the main elements of the RFP was to design a multi-purpose building that would accommodate large activities (like basketball) and include administrative spaces such as a Lobby/ Reception area, restrooms, a kitchen area, and offices.

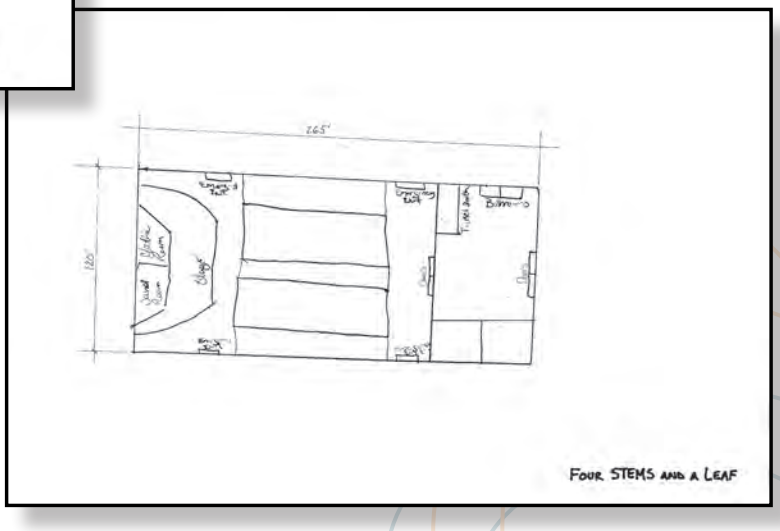
Students worked on a building layout with advice and guidance from the mentors. In addition to sizing the rooms to meet the requirements for each function, the students needed to think about the relationships among the various spaces. The students and mentors also discussed the shape of the overall building plan in relation to how people will enter and travel throughout the building.



The Pacers



Brick Squad



Four Stems and a Leaf

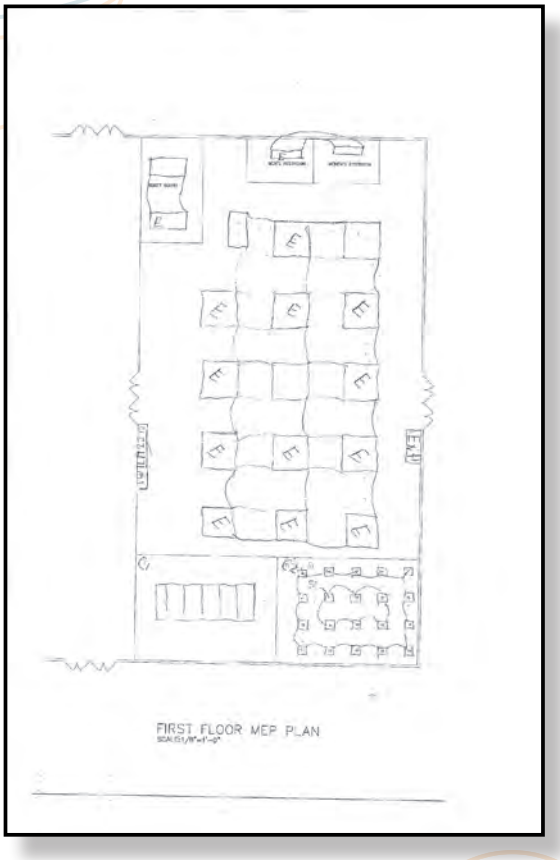
Session 6

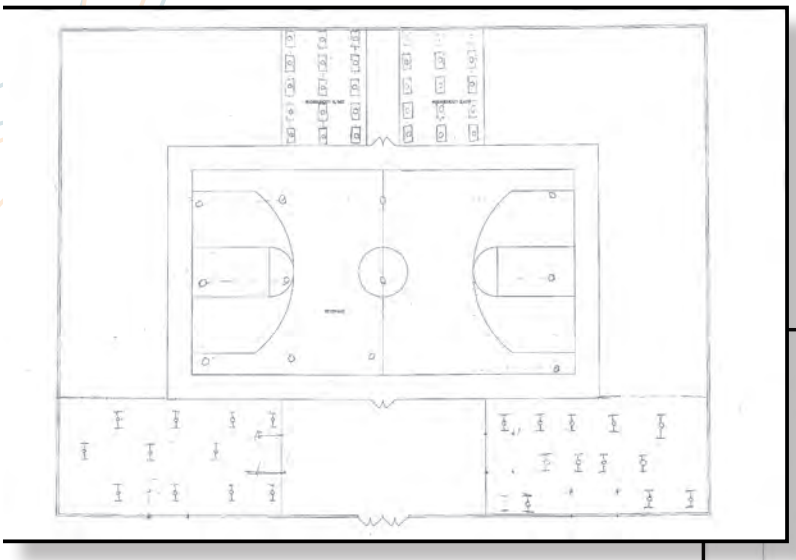
Design HVAC & Electrical Systems

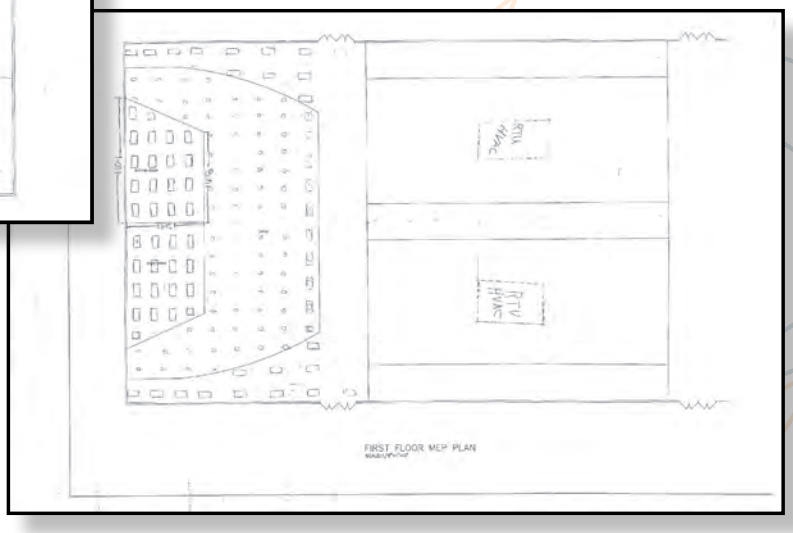
The ACE students participated in a design session where they were challenged to think about the lighting and HVAC systems for one of their buildings.

The mentors explained the importance of properly locating the roof-mounted HVAC equipment and coordinating it with the structural engineer. Students and Mentors also discussed the location of electric service rooms and water service areas, and the importance of access doors to allow equipment to be moved in and out of the building. The discussion moved to why different building spaces have unique lighting requirements. For instance, the lighting in a gymnasium is much different than the locker room or even the Lobby area lighting.

The students spent much of their hands-on time sketching different lighting layouts and measuring light fixture spacing onto the building plans they had developed in the previous sessions. There were good ideas about how to use windows and natural light for the gymnasium space and how high the lights should be mounted to avoid interfering with the sports being played.





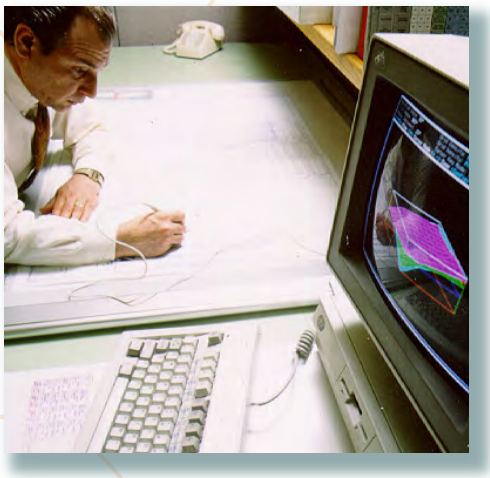


Sessions 7 & 8

Career Opportunities & Understanding Construction Documents

Mentors introduced the students to various career opportunities within the construction industry. The students were provided contact lists for various local unions, and were encouraged to contact these companies for further information. Pertinent information for the individual labor unions was included such as application periods, length of training programs, classroom hours required, and the number of work hours expected. Bureau of Labor statistics were also provided to show future employment needs for various skilled trades.

Mentors worked with students to help them read construction documents and understand how 2-dimensional plans apply to a 3-dimensional world. Teams worked to further develop their plans in 3-D and present to the group.

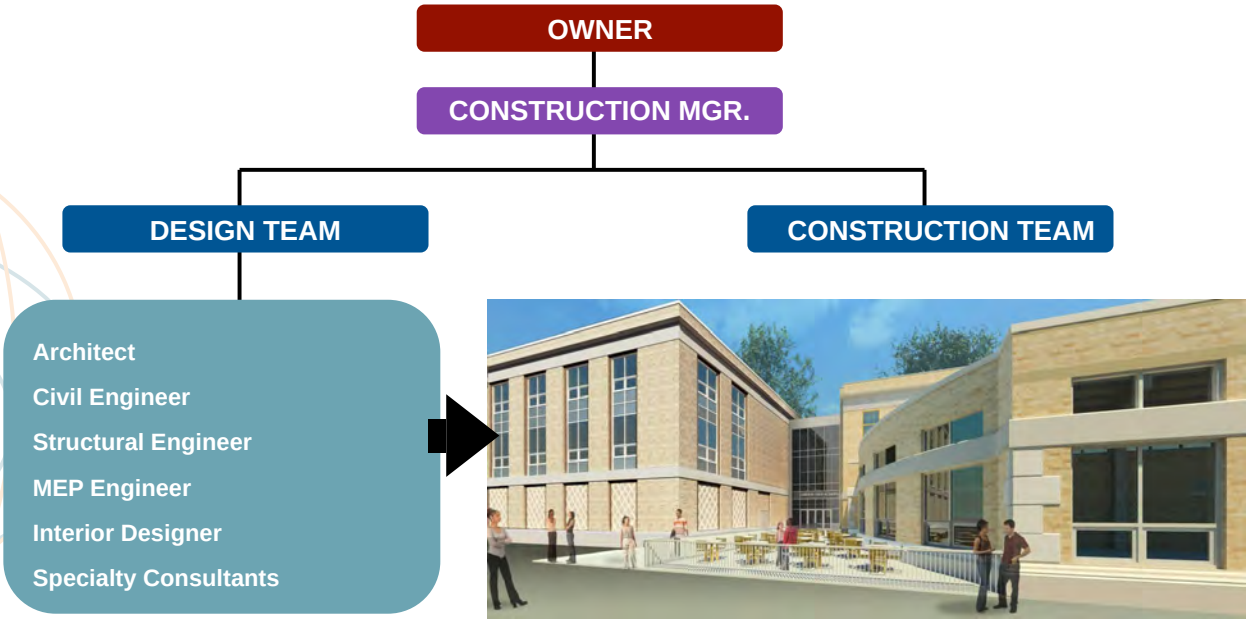


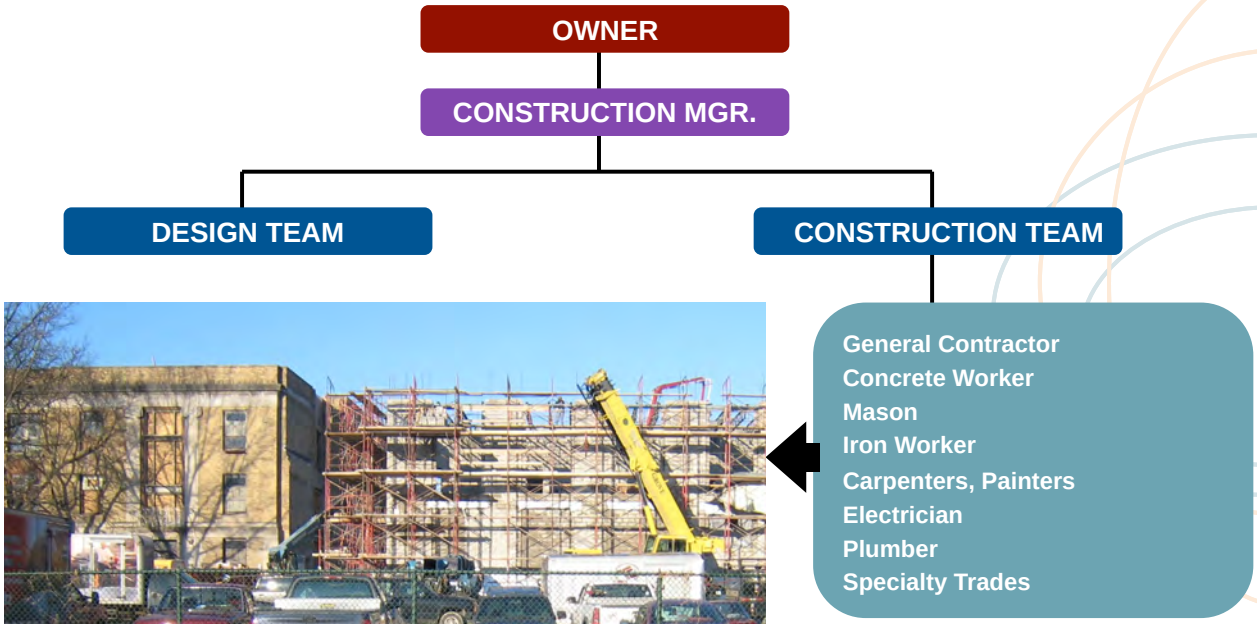
Session 9

Develop Designs

The mentors reviewed the students' progress to date and stressed the importance of every team member's input. Each team's project design was depicted on a display board that showed the various stages of their concepts. The teams presented their projects to the group, particularly noting their individual contributions to the project and explaining the reasons for incorporating those design elements.

The students proceeded from the design phase to the construction phase by reviewing site logistics on a typical construction site with mentors. The students then incorporated that information into their own sites by indicating the placement of perimeter fencing, construction gates, temporary walks, and trailer staging areas.





Sessions 10 & 11

Design Review & Model Building

Students were introduced to the design process by mentors with experience in architectural building design. Discussion stressed the importance of a building's intended use or function as the main influence in its form. Some examples of enduring and stimulating design were shown (Sydney Opera House, the Guggenheim Museum in Bilbao, etc.).

The ACE students spent most of this hands-on session using 3D computer modeling to bring their designs to life. Using Google Sketchup on laptop computers, the plans they had constructed in two dimensions were extruded into shapes with height, mass, columns, texture and even shadows.

The following session was a "work day" where the students continued to work on their modeling plans through Google Sketch-Up. By the end of this session, the students' concepts were beginning to look similar to the examples shown by the mentors where the computer model is as almost as clear as a photo.

What is design?

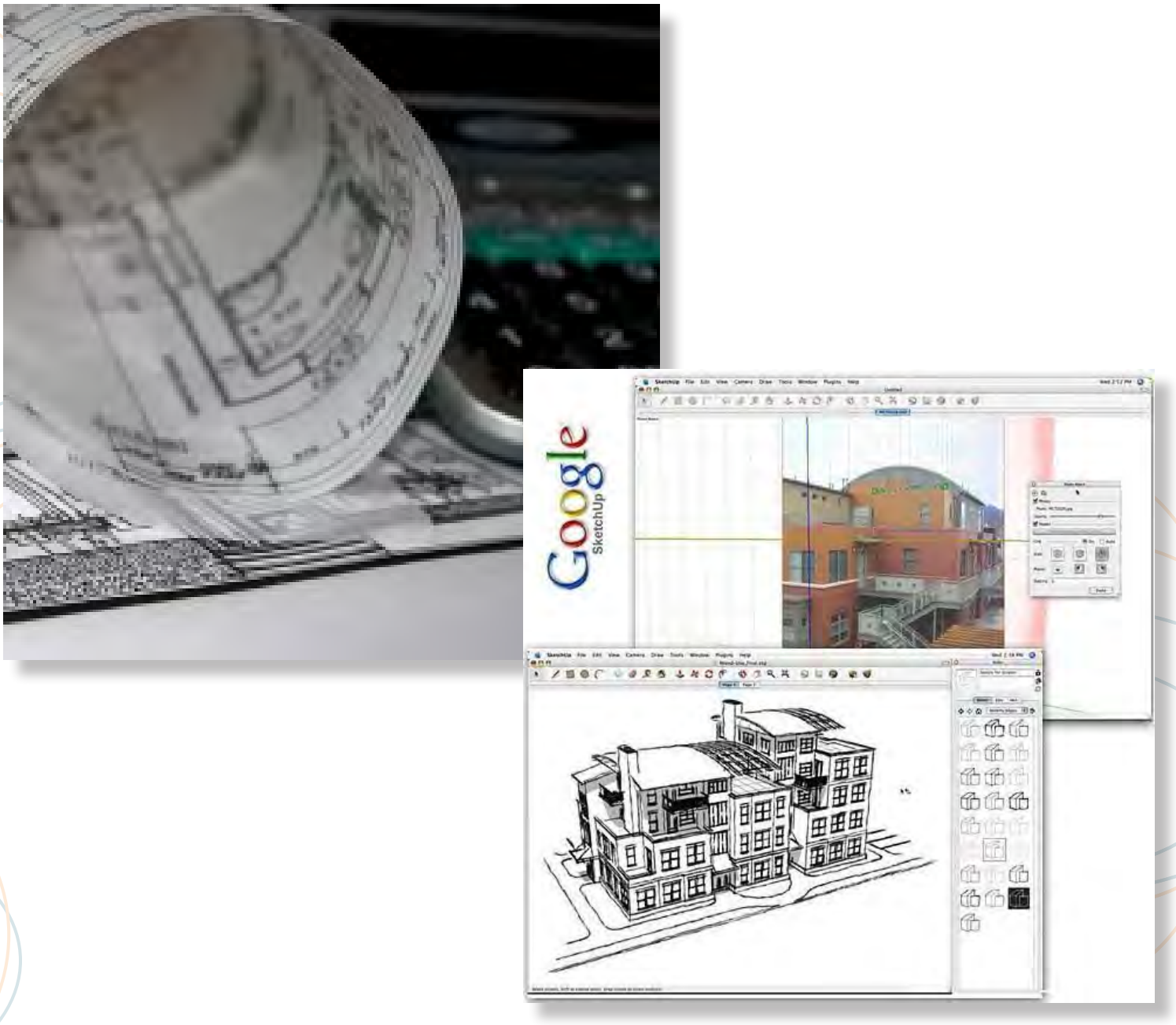
- Architecture
- Interior Design
- City / Urban Design
- Historic Preservation Design
- Environmental Design
- Graphic Design
- Lighting Design
- Landscape Design
- Product Design
- Furniture Design
- Many more…

Sessions 12 & 13

Cost Estimating & Model Building

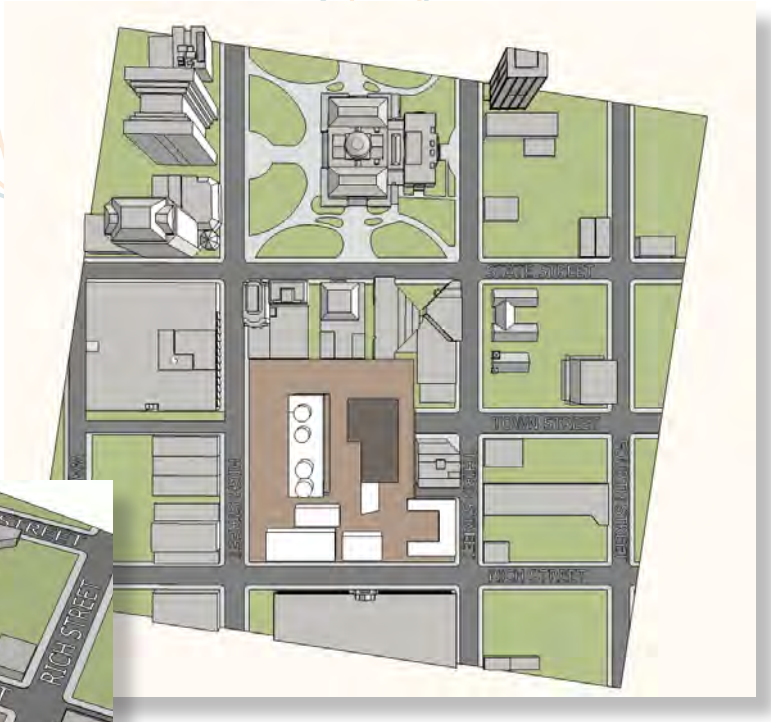
Mentors explained the bidding process and the value of accurate cost estimating. Students were then broken down into teams, given calculators and pencils, and asked to provide cost estimates for a 100' long x 10' tall retaining wall according to plans. Students calculated quantities for concrete, rebar, drainage pipe, excavation, formwork and backfill, and assigned a cost to each. The subtotals were then added to reach a total cost estimate for the retaining wall.

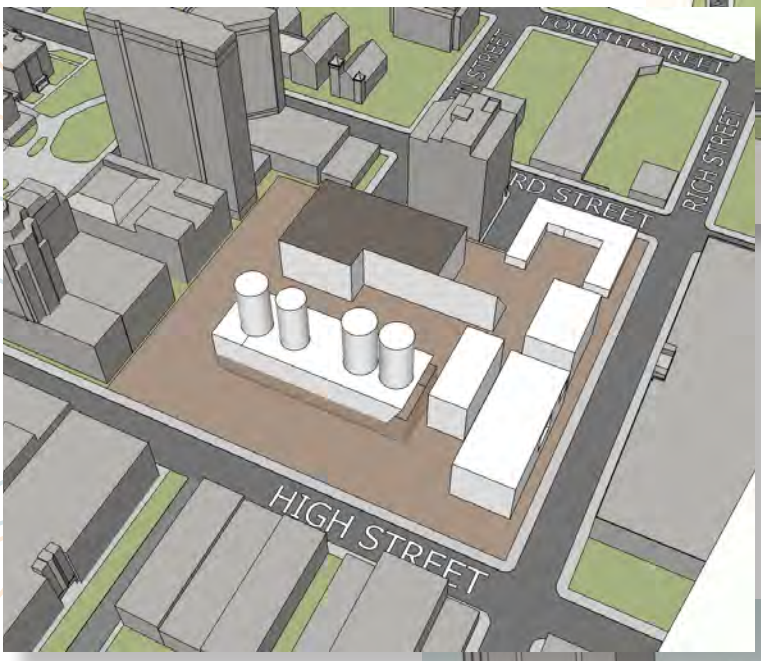
The following session was the final "work day", and the students completed their modeling plans in Google Sketch-Up. "Snapshots" of the projects were to be professionally displayed at the final presentation day.

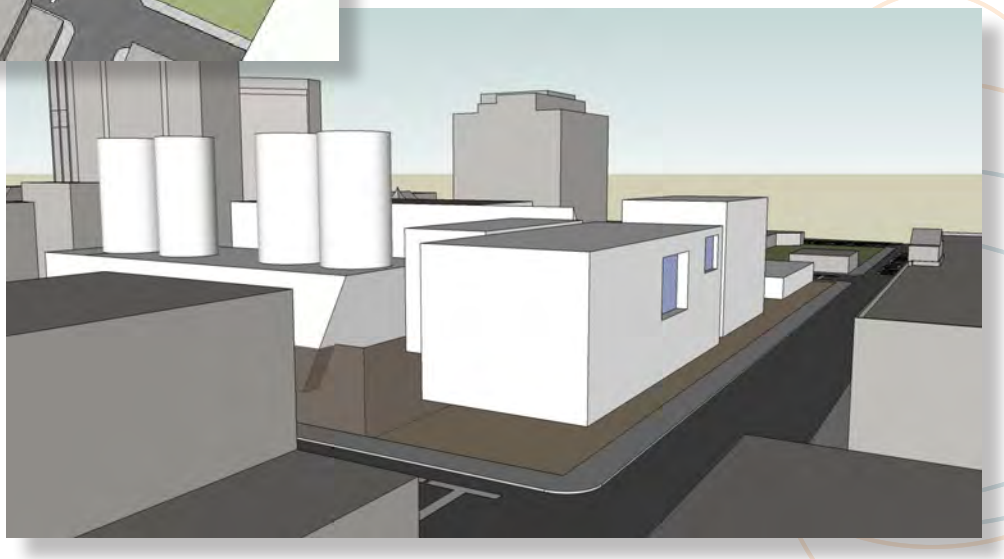


Brick Squad

Four Stems and a Leaf

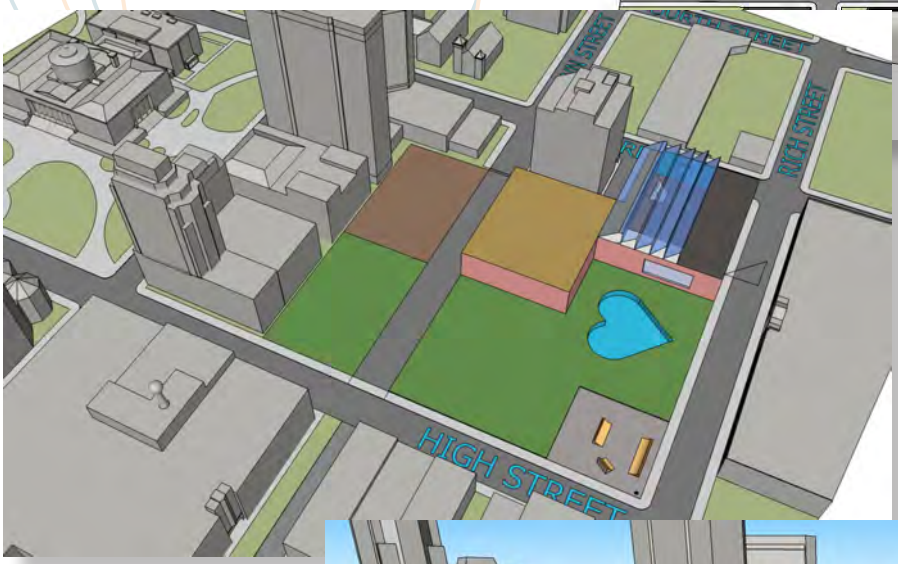






The Pacers


STATE STREET
TOWN STREET
WALL STREET
HIGH STREET
THIRD STREET
FOURTH STREET
RICH STREET


RICH STREET
HIGH STREET

Section Three
Showing Appreciation

"I was in the ACE Mentor Program last year and I loved it."
-Bryan Shackelford


Period 7 Storage


ARTIST OF THE MONTH


1st GRADE ART

Thank You to the ACE Board!

Your time and effort is greatly appreciated!

Board of Directors

Kevin Williams
Gilbane Building Company

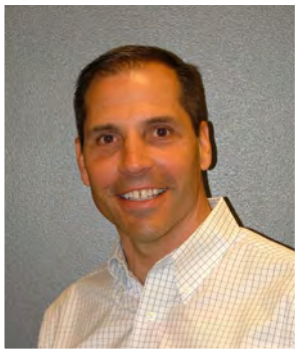
VP & District Manager/
Board Chairmain

Brian Moran
Turner Construction Company

Project Executive/
Board Vice Chairman

Steve Withee
Frost Brown Todd, LLC

Member/
Board Secretary



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Limbach Company

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Board Members

Mark Cunningham
Gilbane Building Company

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Brian Ogle
Battelle Memorial Institute

Director of Facilities

Doug Coffey
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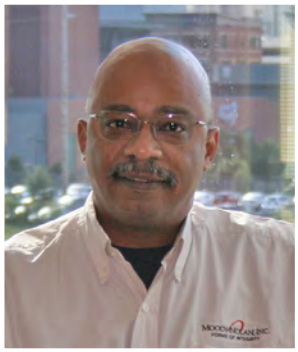


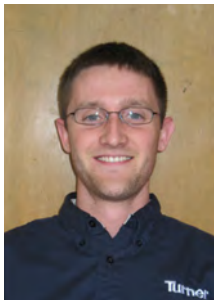
Larry Pointer
Moody Nolan

Associate


THE
PACERS

Thank You ACE Mentors!

Your time and effort is greatly appreciated!



Taylor Ames
Turner Construction Company

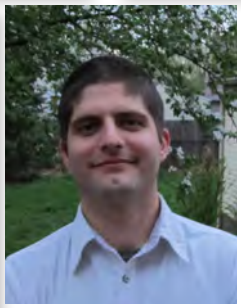
Pat Conroy
Battelle Memorial Institue

Niru Dabholkar
Barber & Hoffman

Alice Dean
Gilbane Building Company

Giancarlo DelVita
BHDP

Shawn Goodwin
EMH&T



David Lippencott
BHDP

Don Muschlitz
Gilbane Building Company

Katherine Ogle
BHDP

Jim Porter
HAWA

Bryon Ringley
Stantec

Ginette Rougeau
Gilbane Building Company

Mike Schulte
Berardi + Partners

Rich Schneider
Limbach Company

David Stanton
Turner

Joe Sullivan
Stantec

Thanks to our Liason!

We couldn't do it without you

Mr. Watkins
Linden McKinley STEM Academy

ACE Mentors & Sponsors

Thank you for the support!

Gilbane

EMH&T
Engineers, Surveyors, Planners, Scientists

Battelle
The Business of Innovation

Frost Brown Todd LLC
ATTORNEYS

LIMBACH
Since 1901 Consistently Exceeding Expectations
HARPER LIMBACH
WESTERN AIR LIMBACH

Turner
Building the Future

BARBER & HOFFMAN
CONSULTING ENGINEERS

HAWA
INCORPORATED

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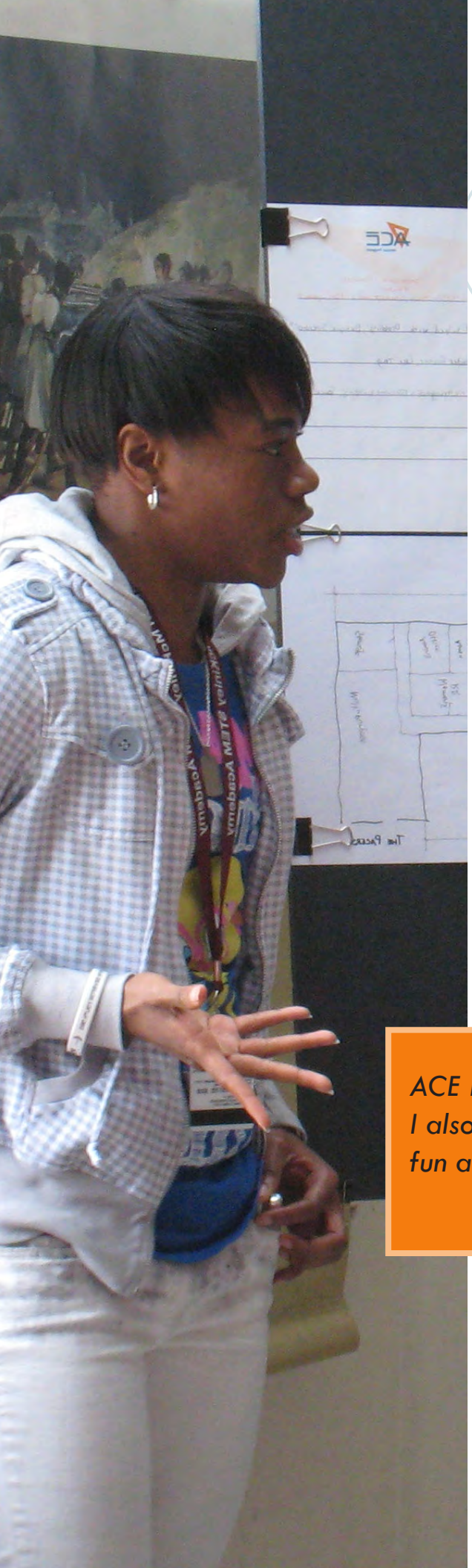
MOODY•NOLAN, INC.
architecture | civil engineering | interior architecture

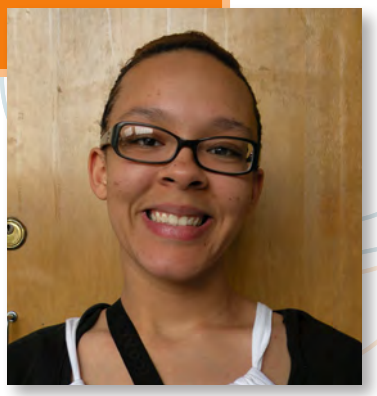
BHDP

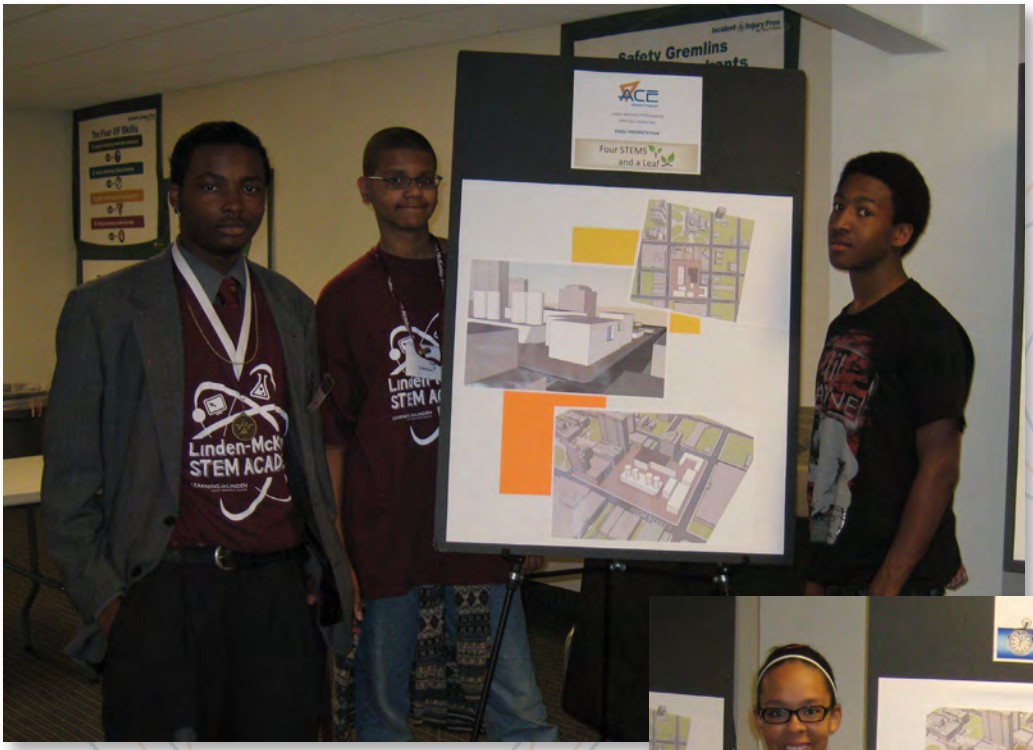


Section Four
Celebrating Success

ACE brought out new things that I didn't know. I also met new people and got to participate in fun activities."

-Breanna Spelhaug




Safety Gremlins
Four STEMS and a Leaf


THE PACERS


BRICK SQUAD
Linden-McKinley STEM ACADEMY

Field Trip

Final Presentations

The 2010-2011 ACE Mentor Program culminated in a Field Trip to Limbach Company's office, where the students were joined by ACE Board Members and Mentors. Lunch was catered, and the program began with an introduction by Board Chairman Kevin Williams, followed by presentations by two guest speakers.

As the first guest speaker, Larry Pointer of Moody Nolan Architects described his experiences pursuing a career in architecture as a young man. Growing up in a time when there were no African-American architects, Mr. Pointer was not unfamiliar with adversity. He expressed the importance of perseverance, hard work and integrity, and credited those qualities to his success.

Dean Minnie McGee of The Ohio State University was the second speaker that day. As the Dean of Minority Studies, Ms. McGee also gave an account of her childhood experiences, and conveyed the importance of mentors in her development. She encouraged the students to continue their education after high school and to consider enrolling at OSU. Dean McGee also offered her services to the students by encouraging them to contact her for any assistance with their educational and professional development.

After the speakers concluded, the student teams presented their final modeling plans for the Columbus Commons project. Using "snapshots" of their Google SketchUp models, each team explained why they incorporated the various design elements into their projects, and how those choices corresponded to specifications of the RFP that was originally issued in November of 2010.


Safety Gremlins
Occur in 4 Quadrants
The IIF Performance Zone


CLASS OF
2012


Linden-McKinley

Field Trip

Shop Exercises

For the second phase of the Field Trip, students were directed to Limbach's fabrication shop, where they were given a brief safety talk and instructed to don safety glasses and gloves for their protection. Three distinct work stations were setup in the shop for hands-on exercises: 1) Sheet Metal, 2) Soldering and 3) Spot Welding. Each student was instructed on how to perform the various tasks required at each of these stations, and upon completion of the last exercise, they successfully fabricated a finished piece of formed ductwork.

Section Five
Memories

Memories

FUN TIMES AT ACE


THE PACERS


succeed in college and life, mastering these skills before graduation.
Research
Public Speaking
Interviewing
CAPITAL SPORTS PARK
Temporary Work


Period 7 Storage
Period 8 Storage

Memories

Fun Times at ACE