



NEW ONLINE SUBMISSIONS

CONCRETE

THINKING FOR A SUSTAINABLE WORLD

A 2008-09 INTERNATIONAL STUDENT DESIGN COMPETITION

INTRODUCTION

The Association of Collegiate Schools of Architecture (ACSA) is pleased to announce the fourth annual CONCRETE THINKING FOR A SUSTAINABLE WORLD, International Student Design Competition. Administered by ACSA and sponsored by the Portland Cement Association (PCA) & the National Ready Mixed Concrete Association, the program is intended to challenge students, working individually or in teams, to investigate an innovative application of portland cement-based materials to achieve sustainable design objectives.

OPPORTUNITY

This fourth annual Concrete Thinking For A Sustainable World competition offers two separate entry categories, each without site restrictions, for maximum flexibility.

CATEGORY I

TRANSIT HUB Design an environmentally responsible Public Transportation Center focusing on architectural innovations to preserve tomorrow's resources.

CATEGORY II

BUILDING ELEMENT Design a single element of a building that provides a sustainable solution to real-world environmental challenges.



07-08 CONCRETE THINKING FOR A SUSTAINABLE WORLD Competition Winner
 1st PLACE - Recycling Center
 Student Antonio Vigil, University of New Mexico
 Faculty Sponsor Geoffrey Adams
 Project Title Mixed-use Recycling Center + Mercantile

SPONSORS

Founded in 1916, the Portland Cement Association (PCA) represents cement companies in the United States and Canada. It conducts market development, engineering, research, education, and public affairs programs.

CONCRETE THINKING FOR A SUSTAINABLE WORLD

The cement industry is actively engaged and committed to sustainable development—a philosophy that focuses on meeting construction needs today without depleting future resources.

The cement industry is embarking on an industry-wide program to educate peers, customers, and the general public on the benefits of concrete for sustainable development.



Founded in 1930, the National Ready Mixed Concrete Association (NRMCA) is the leading industry advocate. NRMCA's mission is to provide exceptional value for their members by responsibly representing and serving the entire ready mixed concrete industry through leadership, promotion, education and partnering to ensure ready mixed concrete is the building material of choice.



ADMINISTRATION

The Association of Collegiate Schools of Architecture (ACSA) is a nonprofit organization founded in 1912 to enhance the quality of architectural education.

School membership in ACSA has grown from 10 charter schools to over 250 schools in several membership categories. Through these schools, over 5,000 architecture faculties are represented in ACSA's membership. In addition, over 500 supporting members composed of architectural firms, product associations, and individuals add to the breadth of ACSA membership.

ACSA, unique in its representative role for professional schools of architecture, provides a major forum for ideas on the leading edge of architectural thought. Issues that will affect the architectural profession in the future are being examined today in ACSA member schools.





07-08 CONCRETE THINKING FOR A SUSTAINABLE WORLD Competition Winner
Honorable Mention - Recycling Center
Students Mary Stuckert & Maria Galarza, Texas Tech University
Faculty Sponsor Bennett Robert Neiman
Project Title Solid Direction: Concrete Thinker

CONCRETE

In its simplest form, concrete is a mixture of paste and aggregates. The paste, composed of portland cement and water, coats the surface of the fine and coarse aggregates. Through a chemical reaction called hydration, the paste hardens and gains strength to form the rock-like mass known as concrete.

Within this process lies the key to a remarkable trait of concrete: it's plastic and malleable when newly mixed, strong and durable when hardened. These qualities explain why one material—concrete—can build high-rise skyscrapers and houses, bridges and basements, sidewalks and superhighways. You can find more information on concrete and portland cement by visiting the Portland Cement Association's Web site at www.Cement.org and on sustainable solutions using cement at www.ConcreteThinker.com

SUSTAINABLE DESIGN

The United Nations World Commission on Environment and Development stated, "sustainable development attempts to meet the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainably designed buildings aim to lessen their impact on our environment through energy and resource efficiency. The building industry—encompassing the design, construction and manufacturing industries—is working to promote buildings that are healthy, environmentally responsible, and cost-effective places to live and work. The goal is to minimize natural resource use while enhancing social and economic benefits.

INNOVATION

The purpose of this competition is to explore and create ideas and applications utilizing portland cement-based solutions for sustainable designs.

DESIGN FOCUS

The focus of this competition is to craft an investigation, identify a design improvement and create a solution containing concrete or any portland cement-based application as a key building material.



CATEGORY I – TRANSIT HUB

PUBLIC TRANSPORTATION CENTER

Public transportation is undergoing rapid change due to evolving economic uncertainty and the insecurity of earth's natural resources. Society is rediscovering public transportation's usability, environmental kindness, and cost effectiveness. A majority of transit passengers are traveling within a local area or region between their homes and places of employment, shopping, or schools. A transportation center often serves as the city's gateway for visitors and reflects the cities heritage, people, and values.

The competition program encourages students to merge two modes of public transportation while considering the facility's potential symbolic aesthetics and connection to the city with its surrounding community. Students working alone or in teams are to design a Transit Hub to accommodate the needs of their city. This could be a ground-up design or a redesign of an existing facility. This transportation center will need to support two means of mass transit and should be designed to be able to expand in the future. Passengers will change or transfer between the modes of transit; convenience in getting around and through is important, since many travelers need to quickly and efficiently move from transportation and back. The center will also be a hub of interaction and a significant emblem of the nature and character of the culture it serves. The center may include convenience services such as a coffee shop, newspaper or magazine stand or other small retail.

SUSTAINABLE INITIATIVES

Sustainable design innovations and ideas should be used throughout the Transportation Center including the building and exterior. Sustainably designed buildings and sites aim to lessen their impact on our environment through energy and resource efficiency. Sustainable design concepts must include at least three of the following solutions provided by concrete technology: durability, recyclability, reduced site disturbance, storm water management, heat island mitigation, optimized energy performance, indoor air quality, material use reductions, and recycled content use. Information regarding these solutions can be found at www.ConcreteThinker.com. Solutions providing multiple benefits from a single application will receive extra credit. For example, insulated concrete wall systems have numerous benefits such as structure, fire resistance, noise abatement, superior energy performance through high R-value, negligible air infiltration, and thermal mass for solar heat storage, improved air quality (no paints required) and reduced maintenance. Site and landscaping can make use of permeable concrete paving systems to mitigate the negative effects of storm water runoff. Entries should clearly indicate which sustainable strategies are being employed and give indication of an understanding of the benefit of the same.

The jury will select winners in each category based on the extent students have developed inventive ways to integrate portland cement-based solutions into their design to achieve sustainable development objectives.

PROGRAM REQUIREMENTS

Design an environmentally responsible Public Transportation Center focusing on architectural innovations to preserve tomorrow's resources.

The functional and programmatic requirements for the Transit Hub spaces are outlined below. The area allocations are suggestions only and may be altered. Solutions should observe the total gross square footage, within a range of plus or minus ten percent.



CATEGORY I – TRANSIT HUB

LIGHT RAIL SERVICES

Light Rail will approach the station on 2 tracks, which are served by one center platform elevated to approximately 48", thus allowing passengers to enter and exit trains without steps. The platforms must be a minimum of 24' wide and 600' long.

| | |
|---|---------------------|
| Waiting & Queuing Areas (including Platforms) | 15,000 sq ft |
| Information Center/Desk | 150 sq ft |
| Light Rail Offices | 200 sq ft |
| Light Rail Total | 15,350 sq ft |

BUS SERVICES

Coaches will service the station at a maximum of 6 at one time. Following are assumed coach information: Width 96", Length 40', Wheel base 279" (23' 3"), Turning radius 44', Seating for 44 passengers with room for 22 standees, and has a wheelchair lift.

| | |
|---|--------------------|
| Waiting & Queuing Areas (including Platforms) | 4,000 sq ft |
| Information Center/Desk | 150 sq ft |
| Bus Offices | 200 sq ft |
| Bus Total | 4,150 sq ft |

TRANSIT HUB SHARED SERVICES

dependent on the cities needs.

| | |
|---|--------------------|
| The following additional facilities may be added or removed | |
| Ticketing/Office Facilities: | |
| Ticket Queuing Area | 350 sq ft |
| Fare Collection | 300 sq ft |
| Offices (2 at 150 sq ft each) | 300 sq ft |
| Storage | 100 sq ft |
| Equipment Room | 100 sq ft |
| Ticketing Facilities Total | 1,150 sq ft |
| Employee Facilities: | |
| Employee's Lockers & Toilets | 1,400 sq ft |
| Employee Lounge | 500 sq ft |
| Employee Total | 1,900 sq ft |
| Concessions: | |
| Fast-food/Snack Bar | 1,000 sq ft |
| Vending Machines | 200 sq ft |
| Newsstand | 500 sq ft |
| Concessions Total | 1,700 sq ft |
| Toilets: | |
| Public Toilets (M/F 500 sq ft each) | 1,000 sq ft |

Total Net Square Feet **25,250 sq ft**

Total Gross Square Feet **30,000 sq ft**
 (Including 20% allowance for Mechanical, Structural & Circulation)



CATEGORY I – TRANSIT HUB

SITE

The site for this competition is at the discretion of students and/or faculty sponsors. Requirements however are for the site to be located in an urban context. The site needs to be adjacent to a major avenue for ease of public use and access for vehicles entering and exiting the facility. Submissions will be required to explain graphically or otherwise the site selection and strategy.

CODE INFORMATION

Refer to the International Building Code and the local zoning ordinance for information on parking requirements, height restrictions, set backs, easements, flood, egress and fire containment.

CONSTRUCTION TYPE

The design project must use concrete or any portland cement-based application as a key building material for the structure and sitework. A strategy should be considered that evaluates a method for reducing overall life cycle impacts (environmental, social, and economic) for the project in using innovative methods of structure, fabrication and construction. Sustainable design concepts must include at least three of the following solutions provided by concrete technology: durability, recyclability, reduced site disturbance, storm water management, heat island mitigation, optimized energy performance, indoor air quality, material use reductions, and recycled content use. Information regarding these solutions can be found at www.ConcreteThinker.com.

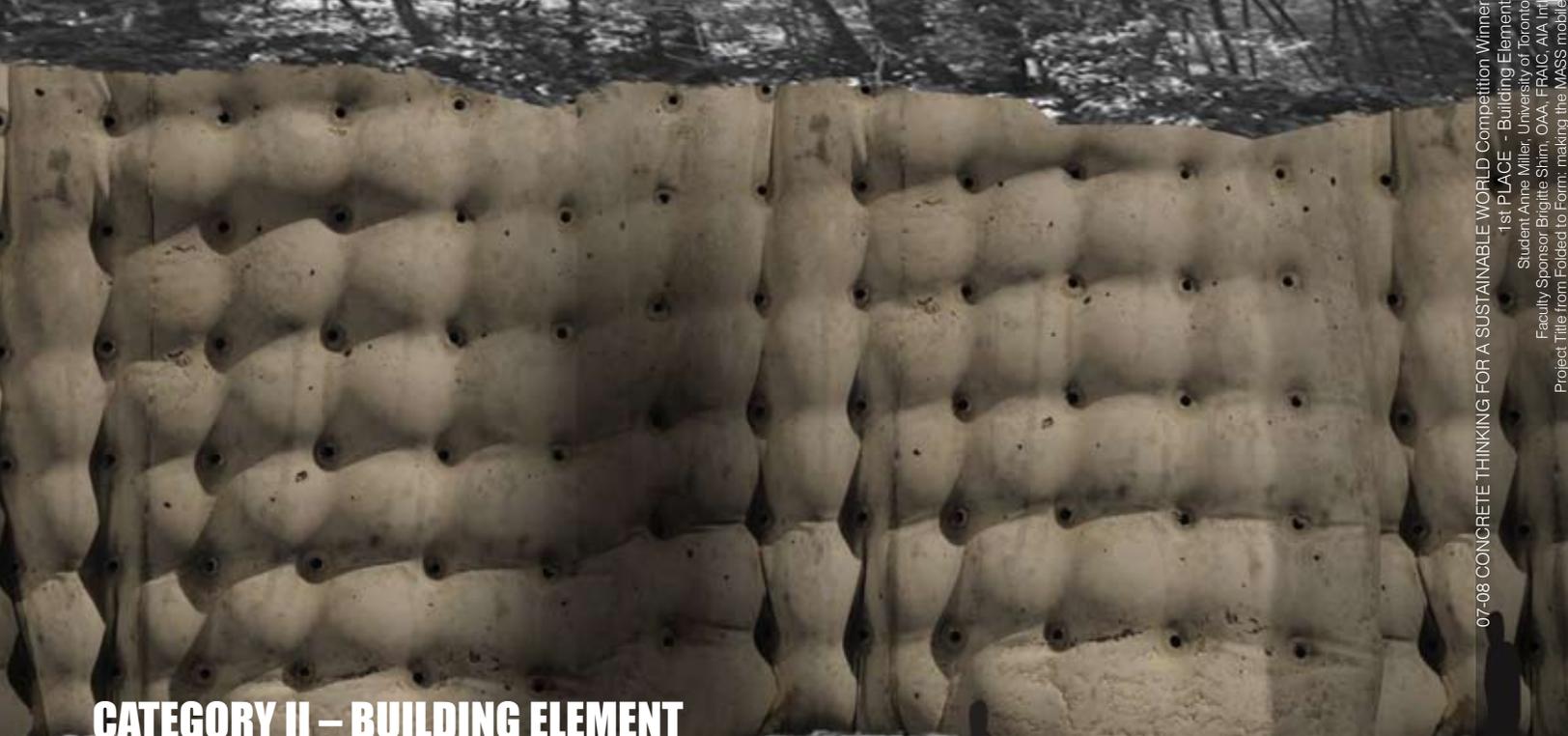
REQUIRED DRAWINGS

It is required that each presentation address, but not be limited to, the specific criteria outlined in the design challenge through the following required drawings:

CATEGORY I – TRANSIT HUB

- site plan showing the surrounding buildings and streets, topography and circulation patterns;
- floor plans;
- elevations and building sections sufficient to show site context and major program elements
- drawings that best show the relationship between portland cement-based materials and sustainable design objectives, such as floor plans, elevations and sections;
- illustrations of key elements of sustainable infrastructure and building systems
- detail drawing(s), either two or three-dimensional, illustrating the key elements of sustainable infrastructure and building systems;
- a three-dimensional representation in the form of axonometric, perspective, or model photographs.

All drawings should be drawn at a scale appropriate to the design solution and include a graphic scale and north arrow as appropriate.



CATEGORY II – BUILDING ELEMENT

BUILDING ELEMENT

The competition category challenges students to design a single element of a building that investigates an innovative use of portland cement-based materials to achieve sustainable solutions to real-world environmental challenges. Students are to take a design idea(s) from their studio work to illustrate enhanced building performance resulting from the use of portland cement-based material as a key element.

Category II – BUILDING ELEMENT allows for the design of a single element, component, or methodology of a project using portland cement-based products. Design concepts can focus on, but are not limited to, such sustainable design objectives as: durability; recyclability; reduced site disturbance; storm water management; heat island effect; optimized energy performance; indoor air quality; material use reductions; and recycled content use. Solutions providing multiple benefits from a single application will receive extra credit. For example, pervious pavement has numerous benefits such as enhanced storm water quality and quantity reduction, air to root zones of plantings, reduction in urban heat islands, and reduced maintenance.

The jury will select winners based on inventive ways students have integrated portland cement-based solutions into their design to achieve sustainable development objectives.

REQUIRED DRAWINGS

It is required that each presentation address, but not be limited to, the specific criteria outlined in the design challenge through the following required drawings:

CATEGORY II – BUILDING ELEMENT

- drawings that best show the relationship between portland cement-based materials and sustainable design objectives, such as floor plans, elevations, and sections;
- illustrations of key elements of sustainable infrastructure and building systems
- detail drawing(s), either two or three-dimensional, illustrating the key elements of sustainable infrastructure and building systems
- a three-dimensional representation in the form of an axonometric, perspective, or model photographs.

All drawings should be drawn at a scale appropriate to the design solution and include a graphic scale and north arrow as appropriate.



COMPETITION INFORMATION (BOTH CATEGORIES)

RESOURCES

www.ConcreteThinker.com is a comprehensive resource for information on using cement-based materials for sustainable design.

www.Cement.org (PCA Web site) contains numerous material oriented resources that may be helpful as students conduct their background research.

AWARDS

The design jury will convene in June 2009 to select winning projects and honorable mentions. Winning students, their faculty sponsors and schools will receive cash prizes and software totaling nearly \$50,000, with distribution as follows:

Category I – **TRANSIT HUB**

First Prize

Student/Team \$ 2,000

Faculty Sponsor \$ 1,000

Second Prize

Student/Team \$ 1,250

Faculty Sponsor \$ 750

Category II – **BUILDING ELEMENT**

First Prize

Student/Team \$ 2,000

Faculty Sponsor \$ 1,000

Second Prize

Student/Team \$ 1,250

Faculty Sponsor \$ 750

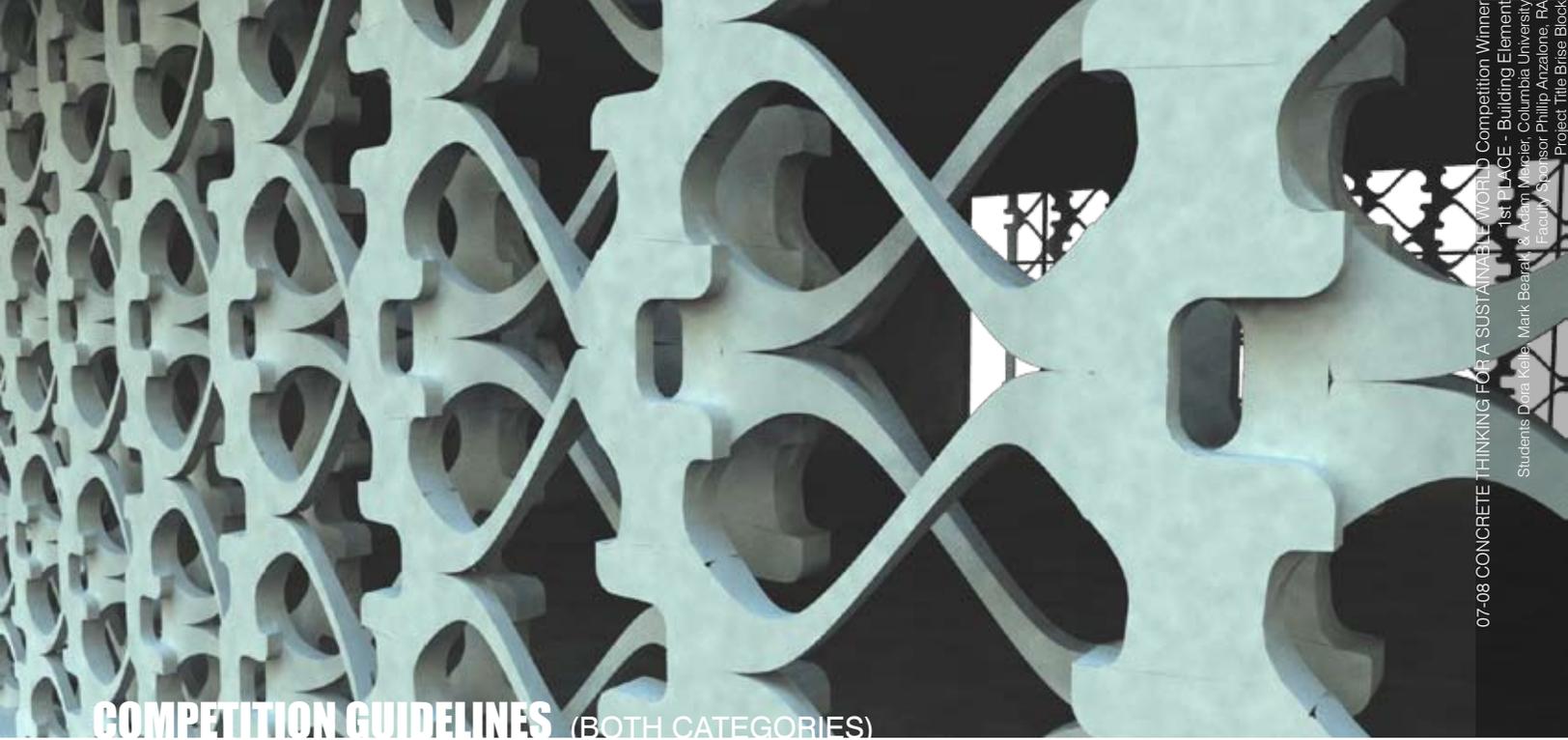
In addition, each winning school will receive a complete package of StructurePoint software, a retail value of nearly \$10,000.

StructurePoint combines concrete design software with an array of structural engineering resources to offer a convenient single point of access for design software, support, product specifications, educational tools, and technical information. The software productivity suite provides programs for the analysis and design of reinforced concrete buildings and structures. More information is available at www.StructurePoint.com

Winners and their faculty sponsors will be notified of the competition results directly. A list of winning projects will be sent to all participating faculty sponsors, as well as posted on the ACSA website at www.acsa-arch.org. Prize-winning submissions will be exhibited at the ACSA Annual Meeting and the AIA National Convention, and posted on the ACSA and Portland Cement Associations Websites.

REGISTRATION

Faculty who wish to enroll students must complete an online Registration Form (available at www.acsa-arch.org/competitions) by February 9, 2009. Complete a form for each individual student or team of students participating. Students or teams wishing to enter the competition on their own must have a faculty sponsor, who should complete the form. There is no entry or submission fee required to participate in the competition. Each registered student and faculty sponsor will receive a confirmation email that will include information on how to upload your final submission online.



07-08 CONCRETE THINKING FOR A SUSTAINABLE WORLD Competition Winner
1st PLACE - Building Element
Students: Dora Kelle, Mark Bearak & Adam Mercier, Columbia University
Faculty Sponsor: Phillip Anzalone, FA
Project Title: Brise Block

COMPETITION GUIDELINES (BOTH CATEGORIES)

IMPORTANT DATES

DECEMBER 5, 2008

FEBRUARY 9, 2009

JUNE 3, 2009

JUNE 2009

SUMMER/FALL 2009

REGISTRATION BEGINS (no registration fee)

REGISTRATION DEADLINE

SUBMISSION DEADLINE

WINNERS ANNOUNCED

COMPETITION SUMMARY PUBLICATION

ELIGIBILITY

The competition is open to all ACSA member schools (full, candidate, and domestic or international affiliates). All student entrants are required to work under the direction of a faculty sponsor. Entries will be accepted for individual as well as team solutions. Teams must be limited to a maximum of five students.

FACULTY RESPONSIBILITY

The administration of the competition at each institution is left to the discretion of the faculty sponsor(s) within the guidelines set forth in this document. Work on the competition should be structured over the course of one semester during the 2008-2009 academic year.

DESIGN ESSAY

A brief essay, 500 words maximum, (in English) is required as part of the submission describing the most important concepts of the design project. Keep in mind that the presentation should graphically convey the design solution and context as much as possible, and not rely on the design essay to convey a basic understanding of the project. The names of student participants, their schools, or faculty sponsors, must NOT appear in the design essay.

EVALUATION CRITERIA

Each faculty sponsor is expected to develop a system to evaluate the work of the students using the criteria set forth in this program. In addressing the specific issues of the design challenge, submissions must clearly demonstrate the design solution's response to the following requirements:

- the skill to integrate portland cement-based materials to achieve sustainable design objectives;
- an original design innovation;
- a response to central architectural concepts such as human activity needs, climatic considerations, structural integrity, site planning, creative insight, coherence of architectural vocabulary;
- integration of concrete's multiple benefits to address issues of sustainable design; land use, air and water quality, energy, resource use and reuse, durability, disaster resistance;
- clear and comprehensible design



COMPETITION GUIDELINES (BOTH CATEGORIES)

DIGITAL PRESENTATION FORMAT

Submissions must be designed on no more than two 20" x 30" digital boards. The names of student participants, their schools, or faculty sponsors, must NOT appear on the boards.

All boards are required to be uploaded through the ACSA website in Portable Document Format (PDF) or Image (JPEG) Files. Participants should keep in mind that, due to the large number of entries, preliminary review does not allow for the hanging end to end display of presentation boards. Accordingly, participants should not use text or graphics that cross over from board to board. The names of student participants, their schools, or faculty sponsors, must NOT appear on any of the submitted material.

ONLINE PROJECT SUBMISSION

Entries must be uploaded through the ACSA Competition website at www.acsa-arch.org/competitions by 5:00 pm, Eastern Time, on June 3, 2009. If the Submission is from a team of students all student team members will have the ability to upload the digital files. Once the final submit button is pressed no additional edits, uploads, or changes can be made. Once the final Submission is uploaded and submitted each student will receive a confirmation email notification.

A final Submission upload must contain the following:

- Completed online submission information including all Team Members and Faculty Sponsors;
- Each of the two 20"x30" boards uploaded individually as a high resolution Portable Document Format (PDF) or Image (JPEG) Files;
- A Design Essay.

Winning projects will be required to submit original files/images for use in competition publications and exhibit materials.

INFORMATION

Program updates, including information on jury members as they are confirmed, may be found on the ACSA website at www.acsa-arch.org. ACSA and PCA reserve the right to publish drawings, written descriptions, photographs of entries and the names of student entrants, without compensation.

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