

KaTO

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SYSKA HENNESSY
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MISSION:

KaTO seeks to create architecture as a catalyst to advance education and healthcare in underprivileged cultures.

KaTO is an architecture studio which engages students and professionals of architecture, engineering, and building construction to design and construct social projects in developing countries. We serve both a domestic as well as a foreign cause, by educating future professionals in America and providing access to education and healthcare internationally.

KaTO is a 501(c)(3) non-profit organization (EIN: 46-5156262)

Below: Colegio San Mateo school design, Lima, Peru



LEADERSHIP

Kyle Murphy

FOUNDER AND EXECUTIVE DIRECTOR

Prior to founding KaTO, Kyle worked with HKS as a sports designer for NFL, MLB, CFL, and collegiate stadia and arenas world-wide. After departing from corporate architecture, he founded KaTO as a response to the tremendous opportunity for architects and engineers to confront the international need for education.

Marcy Wheeler

DESIGNER AND COO

Marcy has been a designer with UVA-based Initiative ReCOVER, and received the Jefferson Public Citizens Grant to design and construct a primary school in rural Uganda. Marcy is also part of the Perkins + Will team in Atlanta, and has been a designer for cultural and residential projects in Turkey, as well as for projects as part of the firm's Social Responsibility Initiative.

Eric Saylor

DESIGNER

Eric is an educator, architect, and photographer, and has worked as a designer for HKS Architects and Price Studios on a range of project typologies and scales. He currently is a visiting faculty member for VCU interior design students, serves on the Board of Directors for AIA-Richmond, and is a licensed architect in Virginia.

Florence Graham

DESIGNER AND TRAVEL DIRECTOR

Florence is an architectural designer working on new construction, high density residential projects in the DC Metro area as part of KTG Architects. She graduated from Virginia Tech and won the international Solar Decathlon competition in Madrid, Spain with Virginia Tech's LumenHaus team, a project which was recognized with an honor award from the American Institute of Architects.

Theresa Kelly

DESIGNER

Tess is an architectural designer with Kishimoto, Gordon, and Dalaya in Washington, DC. Her work since graduating from the Virginia Tech School of Architecture includes a variety of residential and interior design projects, with a focus in affordable housing. Tess is a passionate traveler who's enthusiasm for experiencing other cultures has taken her throughout Eastern Europe, and to the Middle East, Africa, and Central America.

Gordon MacGregor

DESIGNER

A graduate of Virginia Tech's School of Architecture + Design and the Washington-Alexandria Architecture Center, Gordon has been a designer with Build With Prospect, Inc. a design/build worker cooperative located in Brooklyn, NY focusing on sustainable/low energy design and construction methods through the Passive House Standard, and recently with Kulinski Group Architects in Old Town Alexandria, which specializes in residential and commercial projects.

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VICE PRESIDENT, PRODUCTION, ABC STUDIOS

Kyle Murphy

EXECUTIVE DIRECTOR

PROJECTS



San Mateo School, Lima, Peru
In Design



Pavones School, Buenos Aires, Costa Rica
Under Construction



San Francisco School, Monterrey, Mexico
In Design



San Francisco Community Center, Monterrey, Mexico
Under Construction

INTRODUCTION

KaTO was founded to target international social needs through architecture. Socially minded designers from academia and professional practice have joined KaTO to design and build projects in Latin America, and KaTO is actively planning additional projects in new locations.

2017 PROJECTS

Mexico

KaTO was recently awarded a master planning project for the San Francisco Low-Income Housing Development, planned for construction near Monterrey, Nuevo Leon, Mexico. Through a partnership with construction and development company Grupo Garza Ponce (GP), KaTO will provide comprehensive design for the social program which will serve over 50,000 residents. Construction of phase 1 of the 10,000 planned housing units is underway, and design of the social program will continue during 2017. The social program includes: primary and secondary schools, a community center, and other public buildings.

Dominican Republic

KaTO has partnered with FNE International to provide a new design for the FUCPE school in La Romana, Dominican Republic. The design will serve as a vision for the growth of the school and its ability to serve the greater region of La Romana.

Peru

KaTO has begun planning for two new schools, one in San Juan de Lurigancho, and another in the Arequipa region of Peru. Both projects will serve impoverished communities and provide many local children with new infrastructure for education. The project designs will seek to catalyze other projects initiatives in these areas to serve additional communities in the future.

GROWTH

KaTO has grown into an internationally active organization, which is now positioned to provide solutions to social needs at an unprecedented scale. To successfully complete these projects, KaTO is engaging larger teams of students and professionals from a range of design and construction disciplines.

KaTO has received generous contributions from corporate sponsors, foundations, and individual donors, and seeks to expand on this support base to continue funding new projects.

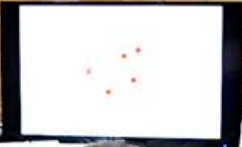
Partnerships

In addition to providing educational infrastructure, KaTO has been fostering partnerships with other social organizations to identify projects for healthcare, water sanitation, agriculture, and economic development. Medical relief organizations, specifically, are seeking additional infrastructure to support expanded primary care in rural and impoverished regions. KaTO has begun relationships with educational authorities in other Latin American countries to identify communities needing schools.



① FLOWCHART, GARDING, OPEN SOURCE
② WORK WITH SAME, CUP OF COFFEE, RECEPTION
③ MANAGEMENT, CASH, REVENUE, REVENUE, REVENUE
④ REVENUE, CASH, REVENUE, REVENUE, REVENUE
⑤ CASH, REVENUE, REVENUE, REVENUE, REVENUE
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I.

SELECTED PROJECTS

SAN MATEO

PROJECT INFORMATION

Status: Initial planning stages

Location: San Juan de Lurigancho, Peru

Budget: To be determined

Timeline: 6-8 months design, 4-6 months construction estimated

Project Leader: Kyle Murphy

Structural Engineer: Walter P Moore Engineers and Consultants

Architect of Record: LYMA Arquitectos

ABSTRACT

Colegio San Mateo is a primary and secondary school located in the northeast end of Lima. The existing infrastructure is inadequate for the size of the school and has poor ventilation. KaTO has been asked to provide a masterplan for demolition and a new school beginning fall of 2016.

The design seeks to re-envision what a school can be at the most fundamental level. Instead of a conventional stack of classrooms, the school can function as an “organism” of public and private spaces to create a higher level of engagement with the students and faculty.

The proposal begins with three design parameters which typically limit the way we build: lack of accessibility to upper level floors due to elevator costs, absence of mechanical cooling, and the need for security. The design re-approaches how these three factors can be celebrated within the building, instead of fitting into a completed building as an afterthought.

The central thesis of the proposal is the concept of “ascension” through the school. Students will rise to a new level in the school as they grow from grade to grade, and public spaces such as cafeteria, offices, and gathering spaces are concentrated at the ground level.

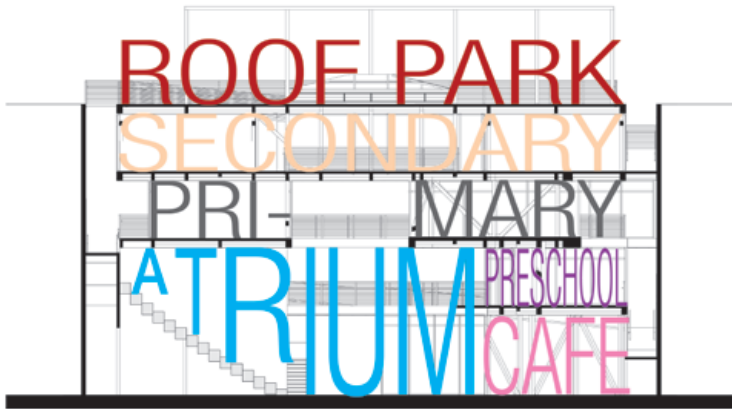
Below: Existing infrastructure conditions to be demolished





COLEGIO
SAN MATEO





PAVONES

PROJECT INFORMATION

Status: Design in progress

Location: Buenos Aires region, Costa Rica

Budget: To be determined

Timeline: 7 months design to date, estimated 4-6 months construction

Client: Ministry of Public Education of Costa Rica

Project Team:

Design: Sabrina Johnson (KCAD), Abigail Scheel (University of Arizona), Sarah Hepler (University of Idaho), Elizabeth Burr (KCAD), Xavier Encerrado (Texas Tech)

Project Leader: Kyle Murphy

Structural Engineer: Walter P Moore Engineers and Consultants

MEP Engineer: Syska Hennessy Group

Architect of Record: Salagnac Arquitectos

ABSTRACT

The community of Pavones is located in Buenos Aires, in the southern Pacific region of Costa Rica. Pavones is a rural farming community, surrounded by vast regions of pineapple plantations.

The existing classroom building was constructed by the community without skilled labor, and is inadequate for the children it serves. KaTO has been asked to provide a new masterplan, including: classrooms, bathrooms, an eating area, and other public spaces. The Ministry of Education plans for more children from surrounding communities to attend the new school once completed.

The proposed building seeks to provide an educational epicenter for the community while preserving the public space. With the site bounded by the main street to the east, private property to the north and south, and existing buildings to the west, the building program would overwhelm the site if developed on a single level.

By raising the classrooms to a second level, the public space remains flexible underneath for student outdoor activities and community gatherings. A clear distinction between public and private is treated by maintaining the library and dining area on the first level, which open onto the public space.

The street edge is fronted by a continuous bar of classrooms oriented along the north south axis, sitting atop the hill above the street. Morning and afternoon sun is addressed by louvers on the east and an overhang on the west, and sliding windows on both facades enable continuous cross ventilation and daylighting.

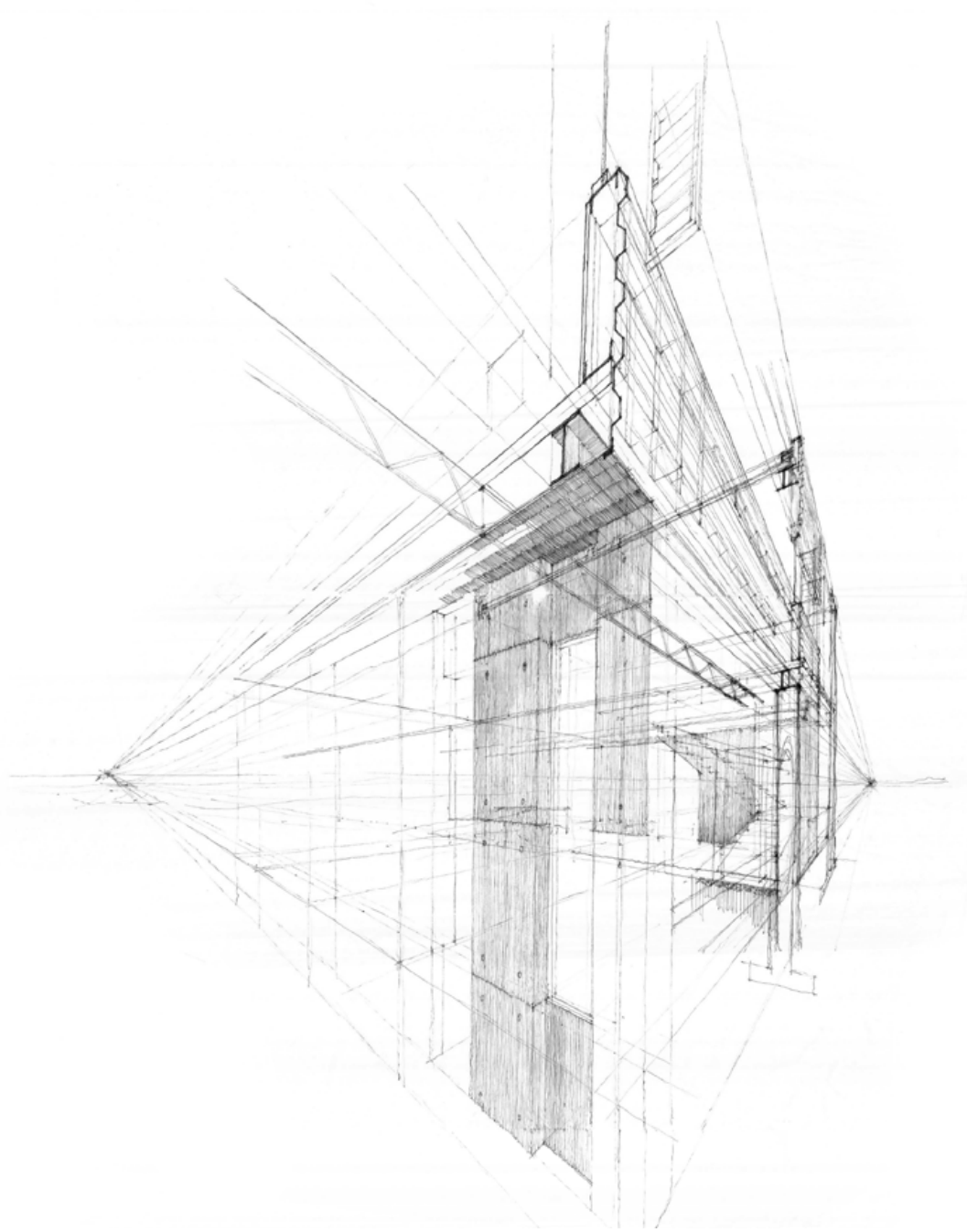
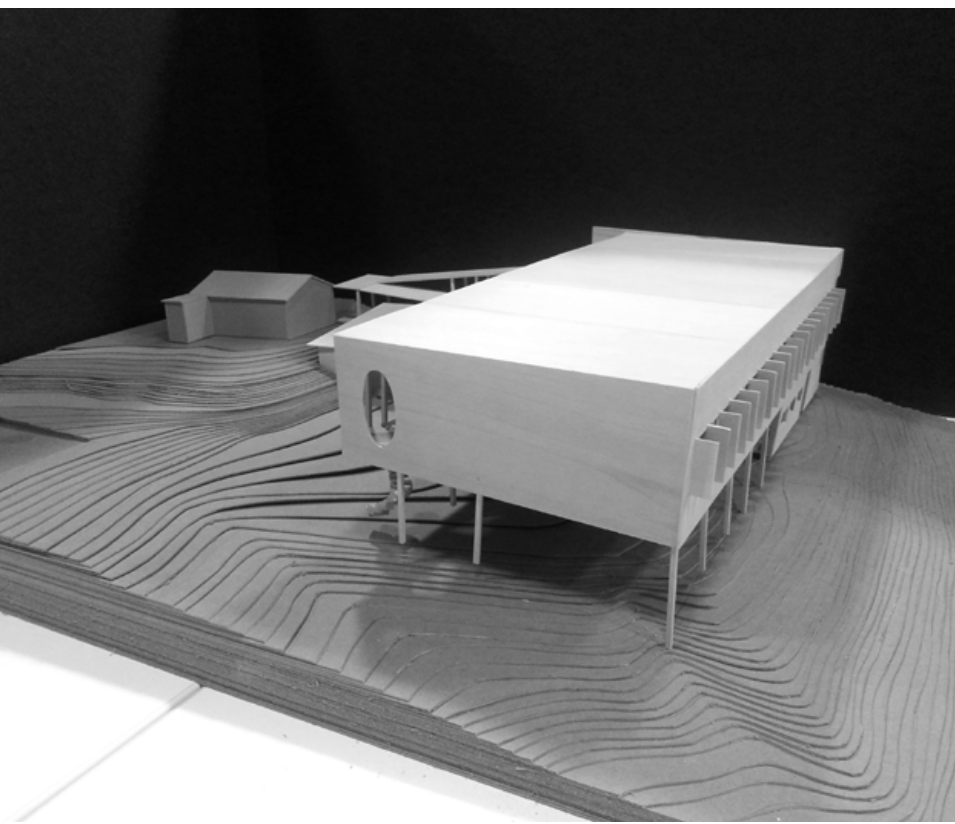
Below: Existing infrastructure conditions





Right: Pavones Street View
Below: Pavones Classroom
Bottom-right: Pavones Section





SAN FRANCISCO

PROJECT INFORMATION

Status: Initial planning stages

Location: Monterrey, Mexico

Budget: \$200,000 - Community Center (Already funded) Schools - TBD

Timeline: 6-8 months design, 4-6 months construction estimated

Client: Grupo Garza Ponce (GP)

Project Team:

Phase 1 Design: Kurt Green (Ball State University), Maito Okamoto (Col. School of Mines), Ricky Fairhurst (University of Maryland), Lana Millard (Colorado State University), Mary Catherine Lollis (University of Georgia), Emma Winick (Washington University in St. Louis), Eric Behrendt (University of Cincinnati), Reid Ferguson (University of Florida)

Phase 2 Design: Maria Garza (Universidad de Monterrey - UDEM), Zaira Mennah Govela (UDEM), Adriana Farias (UDEM)

Advisors: Florence Graham, Eric Saylor, Tom Yost, Andres Garza Villarreal, Sylvia Negrete Martinez, Karla Salas Melendez, Ana Canseco Rodriguez, Milton Cano Garcia, Brian Blicher, Brian Lifvergren, Diego Castilla Garza, Jesús Barney Gutierrez

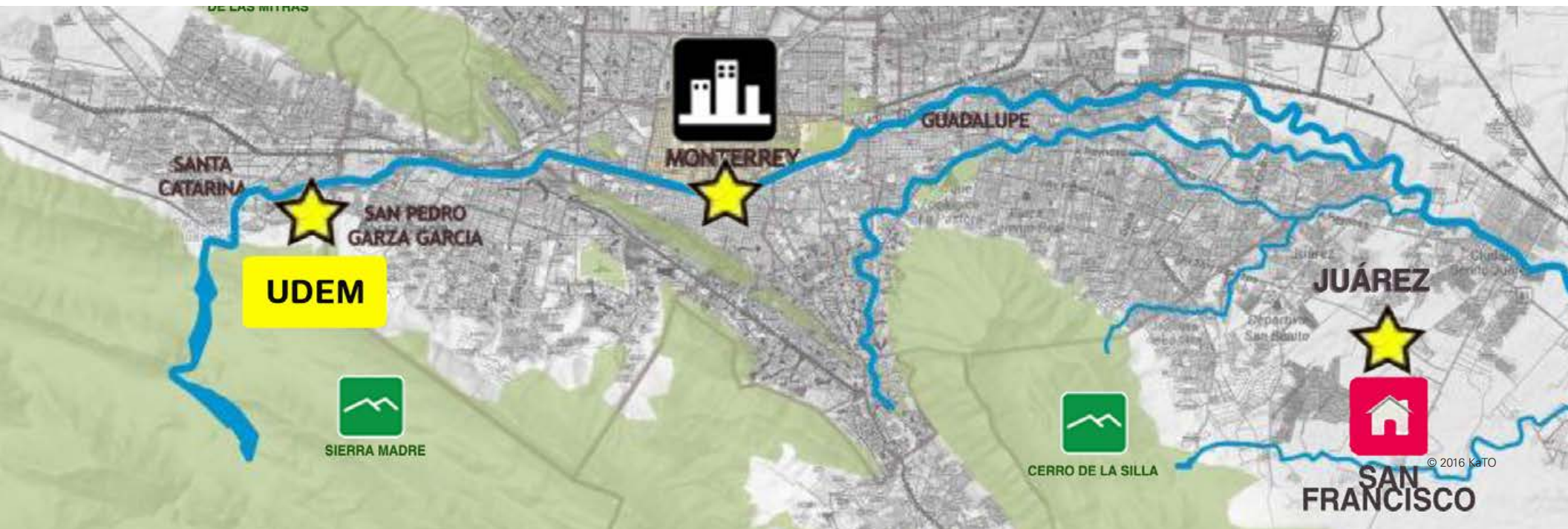
Project Leader: Kyle Murphy

Structural Engineer: Walter P Moore Engineers and Consultants

MEP Engineer: Syska Hennessy Group

ABSTRACT

The San Francisco Low-Income Housing Development is planned for construction near Monterrey, Nuevo Leon, Mexico. Through a partnership with construction and development company Grupo Garza Ponce (GP), KaTO will provide comprehensive design for the social program which will serve over 50,000 residents. Construction of phase 1 of the 10,000 planned housing units is underway, and design of the social program will begin in 2016. The social program includes: primary and secondary schools, a community center, and other public buildings.



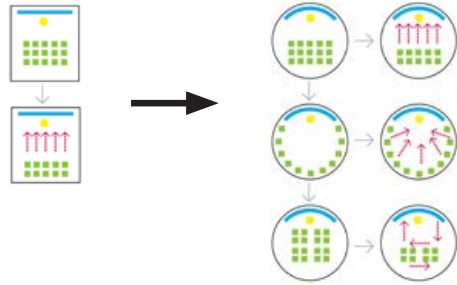




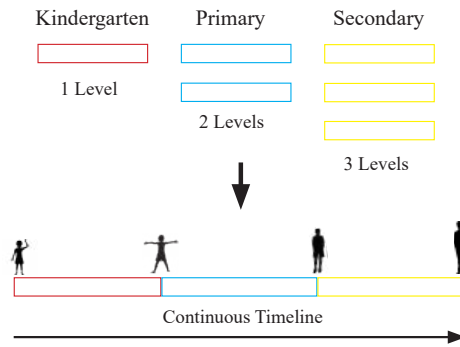
Right and below: community center proposal



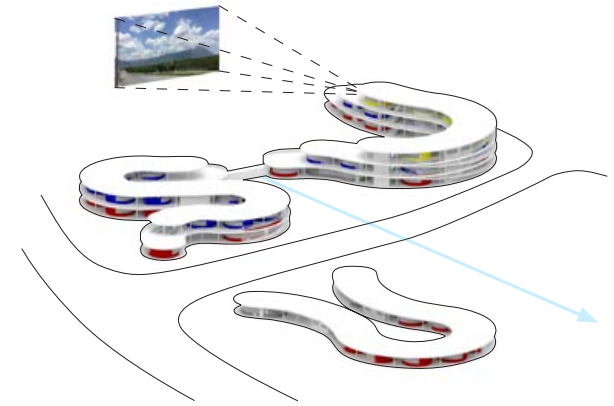
I.



II.



III.



II.

STUDIO PROGRAM

STUDIO OVERVIEW

KaTO facilitates relationships between university students, the design and construction industry, and the international need. Students join KaTO to design a real project and develop relationships with corporate partners in architecture, contracting, engineering, and other disciplines to bring the projects to fruition.

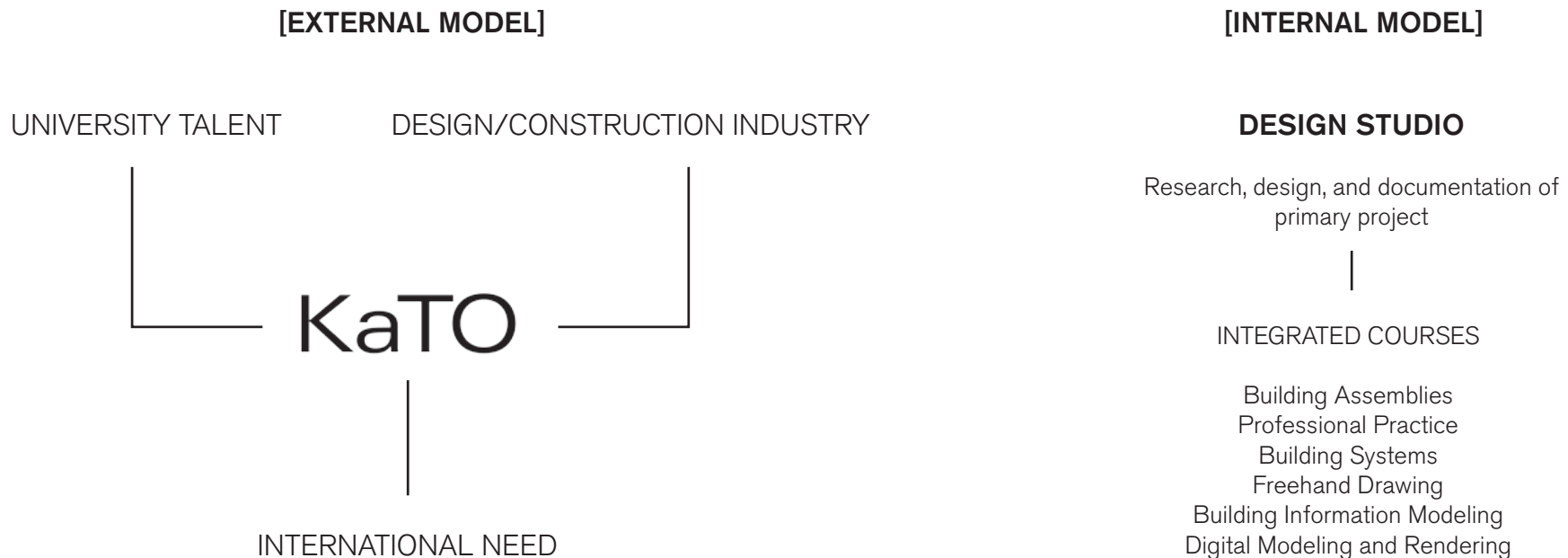
I. Studio Culture

KaTO seeks to create projects which are much more than functional solutions to a given need. Our purpose is to design environments which are uplifting and inspiring for the children and the communities they serve. Therefore, the art of building, sensations, memories and other intangible aspects of making space are central to design discussions.

II. Disciplinary roles

The projects are most successful when each student does not limit his/her role on the team based on familiar backgrounds and experiences. The purpose of the studio is to provide a multi-disciplinary learning environment for students to understand the role of each discipline within the greater context of a construction project.

However, the talents and expertise of each student are given priority when specific aspects of the project need to be completed. Every effort is made to balance the students' current skills with opportunities for learning.



INTERNAL MODEL

DESIGN STUDIO OBJECTIVES:

- I. Create culturally sensitive works of architecture to respond to international needs
- II. Produce comprehensive research to support architectural interventions and advance architectural typologies
- III. Develop student digital and manual skills
- IV. Immerse students in professional practice through completion of working drawings, as well as management of responsibilities of architects, consultants, contractors, clients, and suppliers.

A. Research

The design team will produce comprehensive documentation of research, which will compliment design presentation materials and culminate in a printed book. The research will be comprised of analysis of political, historical, economic, cultural, and religious topics at a multitude of scales. Students will also explore logistical constraints and opportunities as a catalyst and a framework for design development. It is necessary for students to understand the “who, what, where, when, and how” of available materials, transportation methods, and construction processes, so that design is driven by the appropriate parameters. Research will also include building analysis of relevant precedent studies, as well as a range of social interest architecture and design solutions internationally.

The implementation of environmental building systems within such typologies presents a high level of complexity and will remain a central question throughout the studio. Design will respond to climate analysis through the research and development of passive cooling, solar shading, façade treatment, site orientation, landscape strategies, programmatic organization, etc. Furthermore, students will be challenged by logistical constraints, specifically the cost and the limited availability of advanced mechanical and enveloping systems.

B. Design

Questions for design exploration:

1. How can architecture serve as a catalyst for education at the scale of the student, the community, and the greater region?
2. How can the school typology not only serve as an educational environment, but as a community epicenter for other activity?
3. How can the built environment uplift and inspire those who are underprivileged to value education and break the cycle of poverty?

C. Documentation

The primary deliverables for the studio include:

1. Presentation book:

Research, precedent studies, proposals, and presentations

2. Working drawings:

Early construction documents for the project including: architectural, structural, electrical, mechanical, plumbing, civil, and other drawings as necessary.

PRECEDENT STUDIES

The design team will document a series of precedents to develop a firm understanding of construction in developing countries where resources are limited.

A. Scope

Size of project
Architectural program

B. Existing Conditions

Site location in relationship to electric grid, if applicable
Sanitation levels
Security issues
State of water infrastructure (turbidity, pathogens, access, etc.)
Proximity to seismic zones

C. Materials

Major building materials
Source of materials
Methods of transportation to site

D. Methods

Who was responsible for primary construction (visiting workers vs. locals, paid vs. volunteer)
Level of construction education/experience (citizens vs. tradespeople)

E. Climate

Geographic location
Flood history
Seasonal temperatures

F. Enveloping

Open or closed envelope
Type of cladding system
Wall composition
Relationship of envelope to structure

G. Heating/cooling/lighting

Site orientation and relationship to sun paths and wind forces
Passive cooling techniques
Shading systems, effects on solar heat gain during summer and winter months

H. Landscaping

Landscape strategies and relationship to sun paths and wind forces
Selection of native plant species

I. Structural

Primary building structure
Treatment of shear and moment forces
Methods of joinery between members

J. Acoustics

Methods of mitigating sound transmission between spaces
Material/finish treatment of walls, ceilings, floors

COURSES

1. PROFESSIONAL PRACTICE

Abstract

Students are immersed in the business of design and construction at a multitude of scales, specifically, the financial, ethical, and contractual relationships between architects, clients, contractors, consultants, governing authorities, and the public. The trajectory from internship to licensure, specialty, and leadership forms the contextual framework for understanding professional liability and ethical responsibility at each relative career stage.

A series of lessons, guest lectures, and office visits provides a multi-faceted insight into the field of architecture and engineering.

Course Objectives:

- + Develop an understanding of project delivery methods, parties necessary to facilitate construction, and contractual obligations and authorities of respective parties.
- + Define objectives and relationships of project phases, including: bidding, code review, programming, conceptual design, schematic design, design development, construction documents, and construction administration.
- + Analyze internal office structures with regard to management, design and production, specifically the roles and responsibilities of the executive, sector leader, office director, designer, project manager, project architect, job captain, and construction administrator.
- + Understand the process of determining design fees, management of funds, contingency, and insurance.

Deliverables:

Each session will include an assignment which will be due the following class

Helene Combs Dreiling, FAIA +
2014 President, American Institute of Architects
Executive Director, Virginia Center for Architecture

Manoj Dalaya, AIA +
Principal, KGD Architecture

Ryan Seckinger, PE +
Principal, Walter P Moore Engineers and Consultants

Brian Earle, AIA +
Project Manager, Perkins Eastman

Eric Saylor, AIA +
Senior Designer, Price Studios

Michael Terrigno, PE +
Principal, Syska Hennessy Group

Donald Hostvedt, AIA +
Project Manager, Odell and Associates

2. BUILDING ASSEMBLIES

Abstract

Students are given in-depth instruction into the tectonic processes of construction, including concrete, masonry, wood, metals, and glass. Lessons are structured to correspond with the building process from foundations to finishes.

The course compliments the design studio by providing insight into many of the processes which will be used for the primary project.

Course Objectives:

- + Develop a fundamental understanding of the construction process for buildings of various typologies.
- + Understand relevant building requirements for type I - V construction and occupancies.
- + Develop comfort with creating and interpreting construction documents, specifically details where order of construction may not be apparent.

Deliverables:

Each session will include an assignment due the following class

Required Text

Fundamentals of Building Construction, Fourth Edition or later
Edward Allen and Joseph Iano

- Week 1 -** Foundation design, wood construction, and heavy timber
- Week 2 -** Travel week
- Week 3 -** Wood light frame construction, Interior and exterior finishes for wood light frame construction
- Week 4 -** Brick, stone, and concrete masonry
- Week 5 -** Masonry loadbearing, steel frame and light gauge steel construction
- Week 6 -** Sitecast and precast concrete systems, roofing
- Week 7 -** Cladding systems, metal and glass construction, and interior finishes
- Week 8 -** Interior walls and partitions, finish ceilings and floors, windows and doors

3. FREEHAND DRAWING

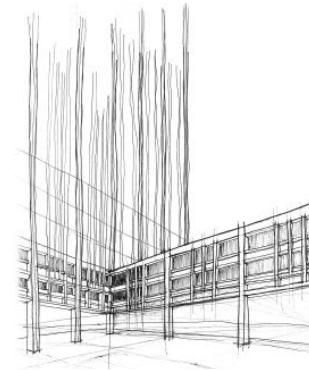
Abstract

The workshop provides training on effectively translating three dimensional spaces from the visual field onto paper. Students learn processes and techniques to intuitively construct perspectives without reliance on measurement, properly frame interior and exterior space, portray genuine depth in drawing, and manipulate space on paper. Developing a greater comfort in drawing supports studio work in both process and presentation, improves the speed and quality of documentation, and sharpens communication skills in the field.

Lessons on one, two, three, and multi-point perspective, dividing space in perspective, establishing orientation of body and eye, contrast of value, hierarchy of point, line, and plane, and composition are emphasized throughout the workshop.

Deliverables:

Students will maintain a sketchbook during the course, which will be used for drawing exercises both in the studio and at various sites in the city.



Student Progress
Beginning of Summer



Midsummer



End of Summer

4. BUILDING INFORMATION MODELING - REVIT

Abstract

Students are given instruction with AutoDesk Revit, to aid the process of design and increase efficiency during design and documentation. Instruction is provided for modeling, creating working drawing sheets, working within central and local models, detailing, and other important topics for entering the field of architecture and design.

Week 1: Introduction to Revit software, basic modeling procedures

Week 2: Travel week

Week 3: Modeling procedures and sample project

Week 4: Creating working drawing views and sheets

Week 5: Workflows between Revit and other software

Week 6: Central and local model workflows

Week 7: Technical detailing

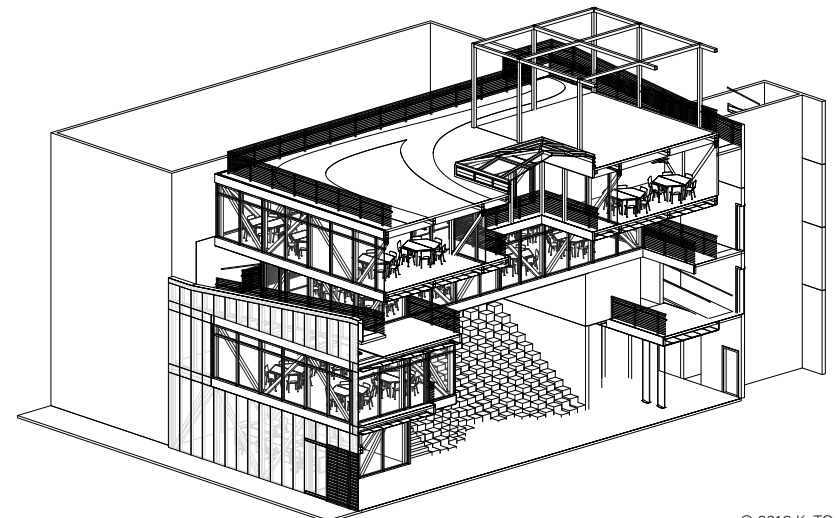
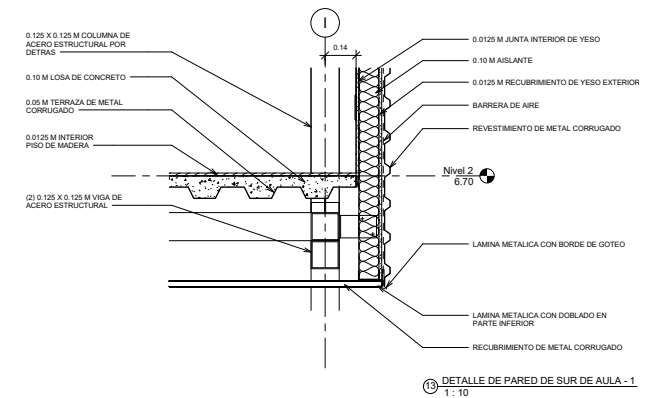
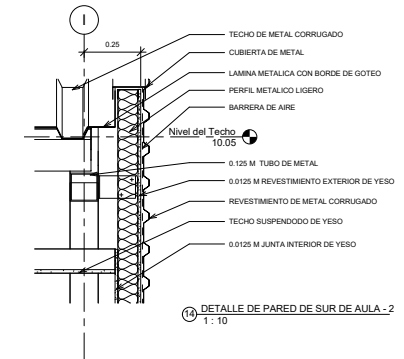
Week 8: Advanced modeling topics

Deliverables:

Each session will include an assignment due the following class

Required software:

AutoDesk Revit 2016 (student version free at autodesk.com)



5. DIGITAL MODELING AND RENDERING

Abstract

The course concentrates on developing digital models in various platforms, such as Rhinoceros and Sketchup, creating lighting, applying materials, and other aspects of the initial rendering process.

In post-production, lessons in Photoshop are given for translating the initial render output into a final presentation image through filters, overlays, entourage, and other techniques.

Week 1: Introduction to modeling and rendering

Week 2: Travel week

Week 3: Modeling procedures

Week 4: Introduction to parametric modeling (Grasshopper)

Week 5: Materials and lighting

Week 6: Post production and presentation graphics

Week 7: Modeling and rendering project

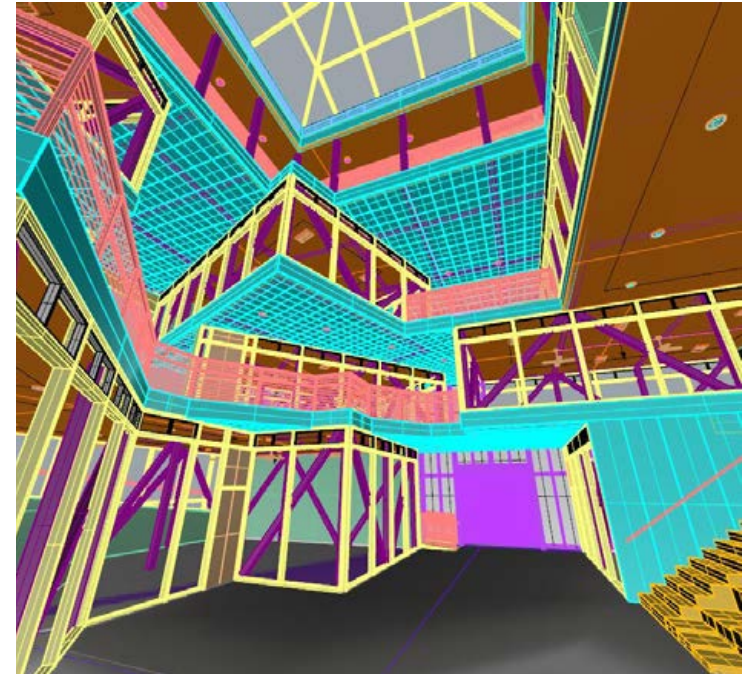
Week 8: Modeling and rendering project

Deliverables:

Modeling and rendering assignments will be integrated into the studio

Required Software:

Rhinoceros 5.0, Google Sketchup, V-Ray 2.0, Adobe Photoshop (all trial versions available free online)



6. BUILDING SYSTEMS

Abstract

A series of presentations given by Syska Hennessy Group provides an introduction to building systems engineering, relationships of various building systems integrated into a building, and how engineers from mechanical, electrical, plumbing, and other disciplines work within the design team.

Course Objectives:

- + Develop an introductory understanding of the role of various building systems
- + Understand the environmental concerns related to the design of building systems
- + Understand the design considerations for other disciplines with respect to building systems engineering

Deliverables:

Each session will include an assignment due the following class

Recommended Text:

Mechanical and Electrical Equipment for Buildings, 10th Edition or later
Walter T. Grondzik, Alison G. Kwok, Benjamin Stein, John S. Reynolds

- Week 1 -** Mechanical Systems
- Week 2 -** Travel week
- Week 3 -** Electrical Systems
- Week 4 -** Plumbing Systems
- Week 5 -** Acoustics
- Week 6 -** Lighting
- Week 7 -** Fire Protection
- Week 8 -** Vertical Transportation



SYSKA HENNESSY
GROUP

RICHMOND, VIRGINIA

The KaTO studio is located central to Washington, DC, Virginia Beach, and Raleigh, North Carolina. The city of Richmond offers a balance of urban and small town experience.



Bottom Left: Monument Avenue
Bottom Right: James River Rapids
Right: Brown's Island Festival





Left:
Virginia State Capitol
Bottom-Left:
Canal Walk



Top-Right:
Belle Isle
Center-Right:
Schockoe Bottom
Right:
First Friday's Art Walk

KaTO

Katoarch.org