

JOEL OCHS



PORTFOLIO of SELECTED WORK

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## **JOEL OCHS,** M. Arch, Associate AIA, LEED Green Associate

Joel has a multifaceted career in the architecture & construction industry spanning over the last 10 years. His diverse background includes: design, technology, business, management, and hands-on aspects in the industry. His career has allowed him to evolve into a proven professional working with world class institutions & companies in which he has worn many hats as a: architectural designer, project engineer, estimator, construction project manager, field superintendent, real estate owners representative, and a OSHA certified health and safety officer.

Joel is interested in creative solutions for his customers where he can use various aspects of his background in a collaborative environment. He is especially interested in an infrastructural design/build practice. A disciplined practice that uses “off-the-shelf” items in an innovative (sometimes “off-the-wall”) ways. He believes we can do this while still respecting and learning from tried and true methods.

Joel is involved in sustainable architecture and solar building initiatives. Presently, he is a LEED Green Associate and currently pursuing he LEED AP. Furthermore, Joel was recently a team member on the Southern California Institute of Architecture and California Institute of Technology (SCI-Arc/CalTech) “CHIP:2011” Solar Decathlon 2011 team. He used a variety of his professional experience to help lead a team of 40 students ship a net solar house from Los Angeles, CA to Washington, DC. Joel also acted as a designer, builder and the team’s Chief Health and Safety Officer.

Joel is an active member in the AIA’s Emerging Professionals for the AIA Pasadena & Foothill, CA chapter. The AIA Emerging Professionals are proactive in helping associate members obtain their architect registration.

Joel is also a member of Toastmasters International. Toastmasters is an organization that helps speaking and leadership skills among professionals.

# DESIGN - BUILD

## Experience

### ROLE & PROJECT RESPONSIBILITIES:

Team Designer; Construction; Master Specification Writer;  
OSHA Health & Safety Officer

### CHIP:2011 - SOLAR DECATHLON 2011

- Part of a multi-institutional team of 40+ students and instructors that designed a net zero solar powered home.
- Collaborated in the designing and building of an innovative and efficient exterior insulation system.
- Acted as the team's master specification writer for the final construction and as-build project document sets.
- Assisted team to frame, construct, disassemble, and reassemble for the Solar Decathlon competition in Washington, D.C.
- Acted as the team's OSHA certified Health and Safety Officer writing a detailed safety and module logistics plan.
- Partnered with the Lead Electrical Engineer install all 120v wiring, electrical devices, and services.

# CHIP: 2011

## SOLAR DECATHLON 2011



**Role & Project Responsibilities:**  
Team Designer; Construction;  
Master Specification Writer;  
OSHA Health & Safety Officer

Student Team: SCI-Arc & Caltech

Project Managers: Reed Finlay &  
Elizabeth Neigert

Faculty Advisors: Wes Jones &  
Dwayne Oyler

Fabrication: SCI-Arc, Los Angeles, CA

Competition Site: Potomac Park,  
Washington, D.C.

Website: [www.chip2011.com](http://www.chip2011.com)

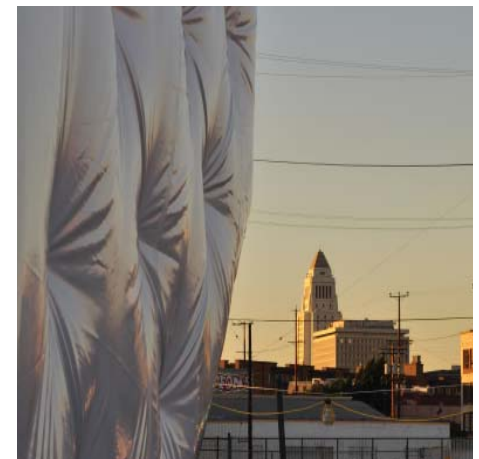
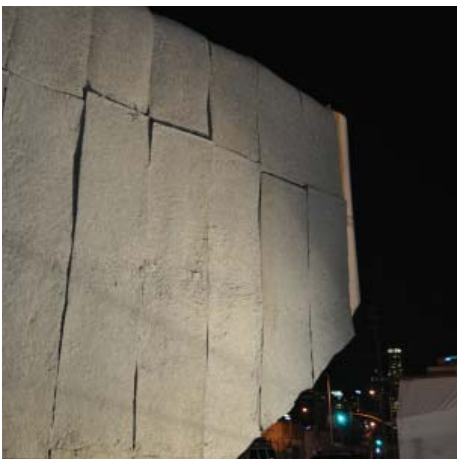
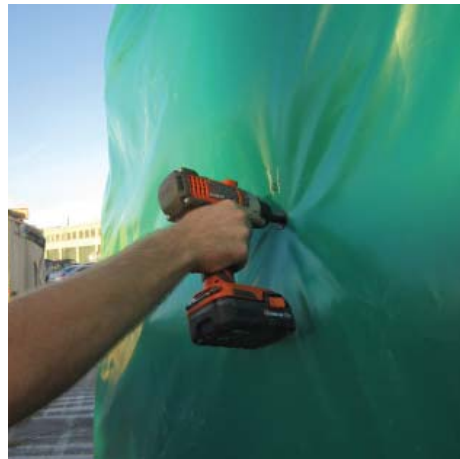


### Solar Decathlon & Our Team

The Solar Decathlon is a bi-annual international competition of 20 collegiate teams designing and building a solar powered home. Our team consisted of 44 students and faculty from SCI-Arc and Caltech. The team's house was called Compact Hyper-Insulated Prototype, otherwise known as CHIP. The specific requirements for the Solar Decathlon 2011 were: 1) affordability striving toward a construction cost of \$250K; and 2) a minimal footprint of 600-1200 square feet. The competition was broken down into ten events: Architecture, Market Appeal, Engineering, Communications, Affordability, Comfort Zone, Hot Water, Appliances, Home Entertainment, Energy Balance.

The SCI-Arc/ Caltech team placed: 1st Energy Balance, 2nd in Engineering, 2nd in Home Entertainment, 3rd in Affordability, and 6th overall in the competition.

Top to Bottom:  
CHIP:2011 Solar Decathlon competition  
images: Northeast view; & Southwest view.



Top from Left to Right :  
Filling cellulose insulation bags; staging cellulose bags; attaching cellulose bags to mock-up.

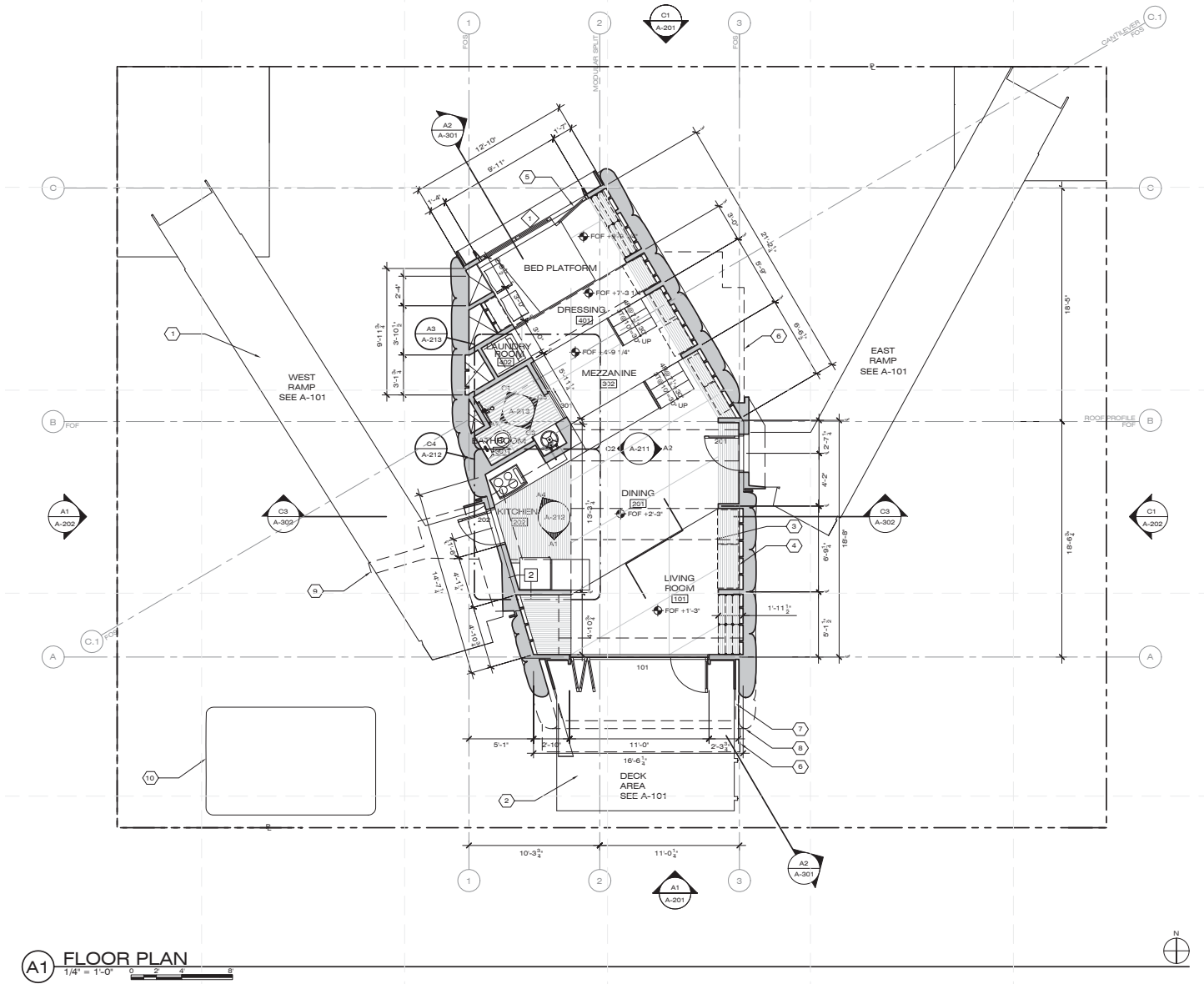
Middle from Left to Right::  
Finished insulated mock-up; mechanically fastening vinyl membrane, installed LDPE bull nose.

Bottom from Left to Right:  
Installed cotton batts, fitted continuous waterproof vinyl membrane; finished mechanically membrane.

## Exterior Insulation

CHIP wore its insulation on the outside similar to a down jacket. The continuous insulation on the outside provided a superior thermal barrier eliminating most thermal bridging that is often caused by structural framing. Wearing its insulation on the outside has its advantage of being continuously thick as needed to acquire a total R-40 thermal value.

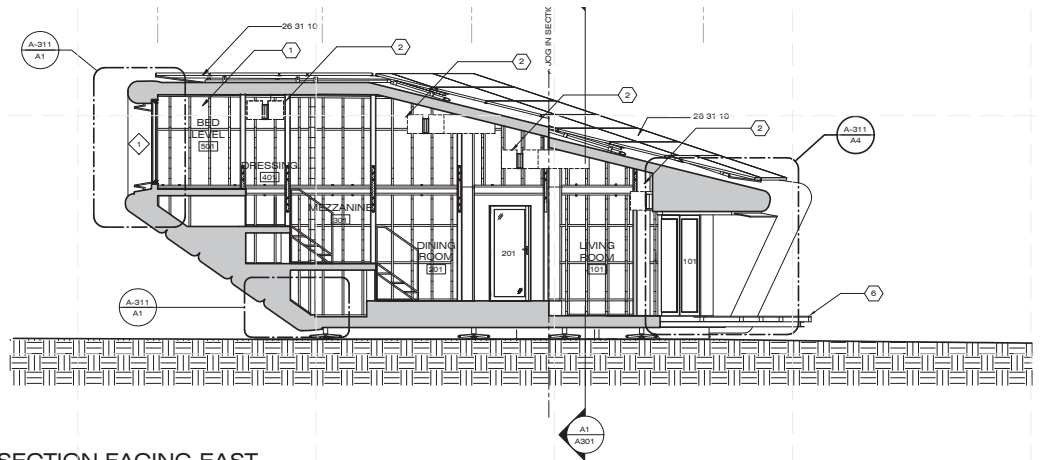
Two insulation strategies were initially tested: cellulose versus denim batts. Cellulose was an excellent insulator, however was loose and needed to be contained in bags, thus proved too complicated for the quick one week assemblage in Washington, DC. Hence, we moved forward with three layers of denim insulation draped on the sides instead.



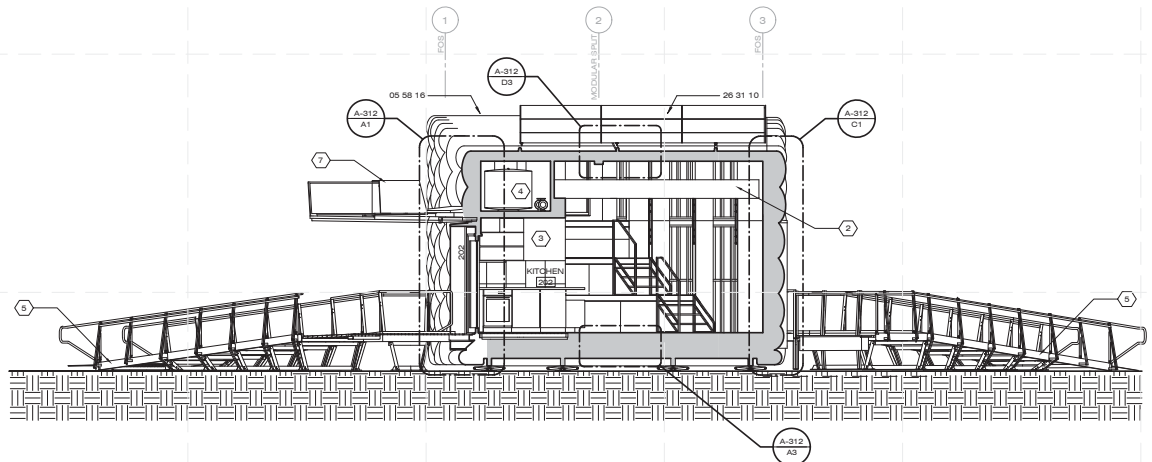
Above:  
Main Floor Plan of CHIP:2011.

Low Density Poly Ethylene (LDPE) was curved providing a bull-nose condition around the top and bottom apertures filing out the insulation appearance while making the corners durable and impact resistant.

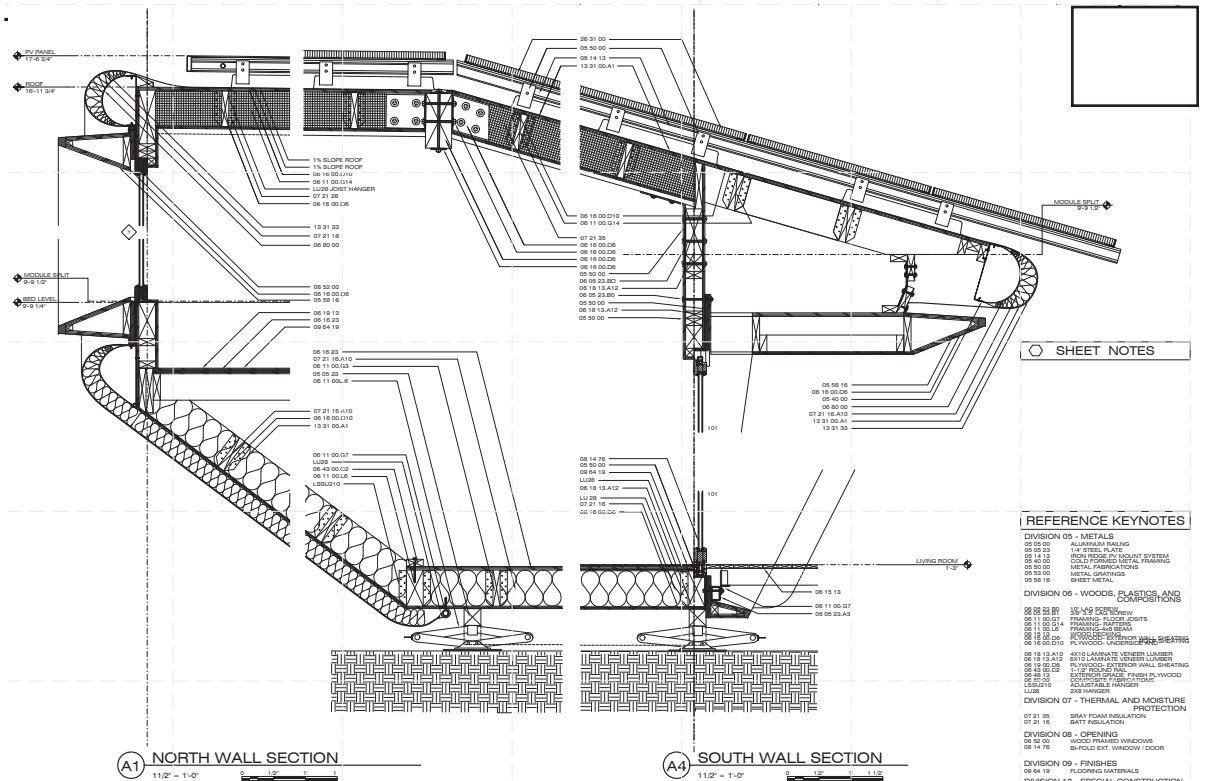
The exterior was topped off with an continuous architectural grade 40 ounce vinyl membrane that fits on the house similar to a waterproof shelled jacket to protect the house and its insulation. The membrane was later mechanically fastened with waterproof washers on both sides of the membrane ensuring that the system was both structurally sound and weather tight.



**C1** BLDG. SECTION FACING EAST  
1/4" = 1'-0"



**A1** BLDG. SECTION FACING NORTH  
1/4" = 1'-0"



**SHEET NOTES**

**REFERENCE KEYNOTES**

- DIVISION 05 - METALS
  - 05 05 00 ALUMINUM FINISH
  - 05 05 01 1/2\"/>
- DIVISION 06 - WOODS, PLASTICS, AND COMPOSITES
  - 06 08 00 15'-19\"/>
- DIVISION 07 - THERMAL AND MOISTURE PROTECTION
  - 07 01 00 RAY-FORM INSULATION
  - 07 01 01 BATT INSULATION
- DIVISION 08 - OPENING
  - 08 01 00 WOOD FINISH WINDOWS
  - 08 14 75 BI-FOLD EXT. WINDOW / DOOR
- DIVISION 09 - FINISHES
  - 09 04 10 FLOORING MATERIALS
- DIVISION 10 - SPECIAL CONSTRUCTION
  - 10 21 00-1 CONTRASTIVE COATING
  - 10 21 00-2 GLASS POLYESTER MEMBRANE
- DIVISION 26 - ELECTRICAL
  - 26 01 00 PV PANELS
- DIVISION 32 - EXTERIOR IMPROVEMENTS
  - 32 05 10 13 GEO-TEXTILE GROUND COVER

Top to Bottom:  
Longitudinal Building  
Section; Cross Building  
Section; Detailed Wall  
Sections.





## Modularity

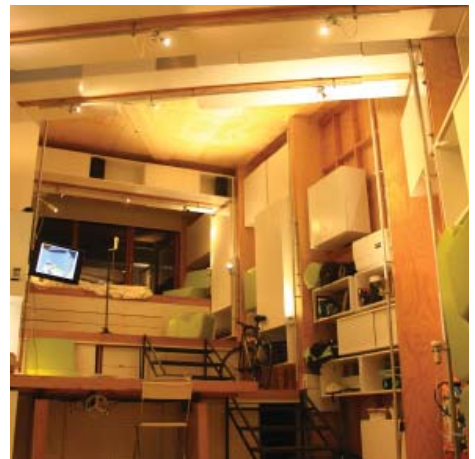
The house was broken down into four modules so it could be constructed and quickly disassembled in Los Angeles, then quickly reassembled via crane in Washington, DC for the competition. The modules were no larger than 11 feet wide and were designed to fit on 2 flat bed and 2 low boy flat bed trailers to make its successful 2800 mile voyage to Washington, DC and back.

## CHIP's Shape

The house's roof was sloped southward to allow maximum angle of solar production, while being flat at the top to abide by the competition's 18 ft height restriction. The house was designed to bring cool air in at the bottom glass doors and naturally vent out hot air at the top window. Hence, the house provided ample cool air circulation for Southern California's warm climate.

Left to Right :

Sequence of the building modules being craned apart in Los Angeles.



## Interior Design

Since the house was insulated on the outside, we decided to expose and express the structural wood framing in the inside, contoured to its efficient shape. The floor tiers were divided into programmatic zones that are spatially stimulating and gave multiple vantage points throughout.

Left to Right :

Sequence of the CHIP's interior images looking northerly upward that transition through construction to completion.

# ARCHITECTURAL DESIGN

## Experience

### ROLE & PROJECT RESPONSIBILITIES:

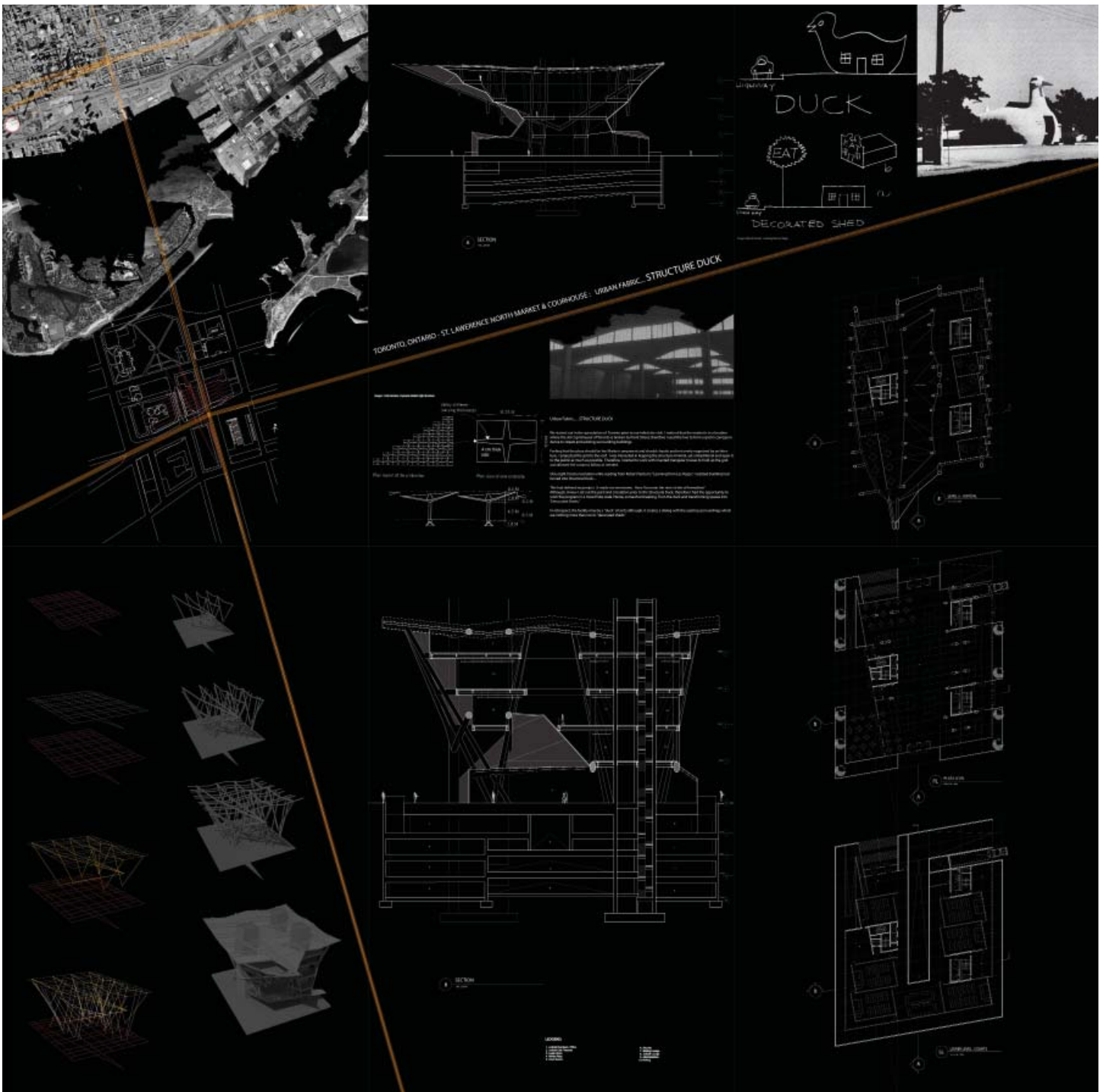
Architectural Designer, Lead Team Designer

#### NEW SAINT LAWRENCE NORTH MARKET

- Researched and diagrammed Toronto's urban context. Used diagrams to help transform the design of the building.
- Designed a 60k sf building with farmers market / court house hybrid and underground parking.
- Conceptualized the design hybrid market/courthouse, creating a dialogue with both the old St. Lawrence Hall and Market.

#### ENERGY MUSEUM of LOS ANGELES

- Researched site to find ways to implement a building without damaging the park setting.
- Led a team on a complex design, researching the technical aspects of construction for a conceptual museum proposal.
- Led a larger team transforming complex conceptual design into a design documentation drawing set.
- Collaborated with structural engineers to make and innovative steel structure for a complex design.



# NEW SAINT LAWRENCE NORTH MARKET

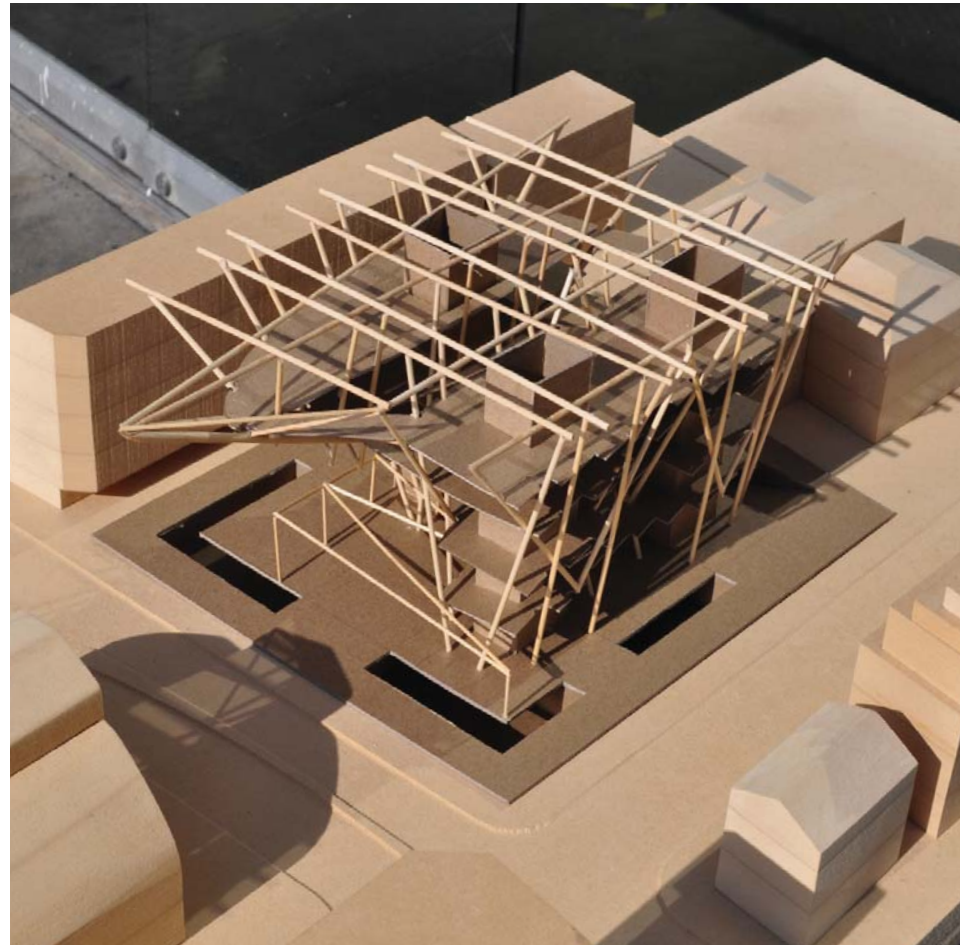
Roles & Project Responsibilities: Architectural Designer

Instructor: Juan Azuley  
 Site Location: St. Lawrence Market, Toronto, ON

Above:  
 Saint Lawrence North Market final competition display (original display 62"x 62").



New Saint Lawrence North Market study model: Images from various vantage points displaying a dialogue with its surroundings.

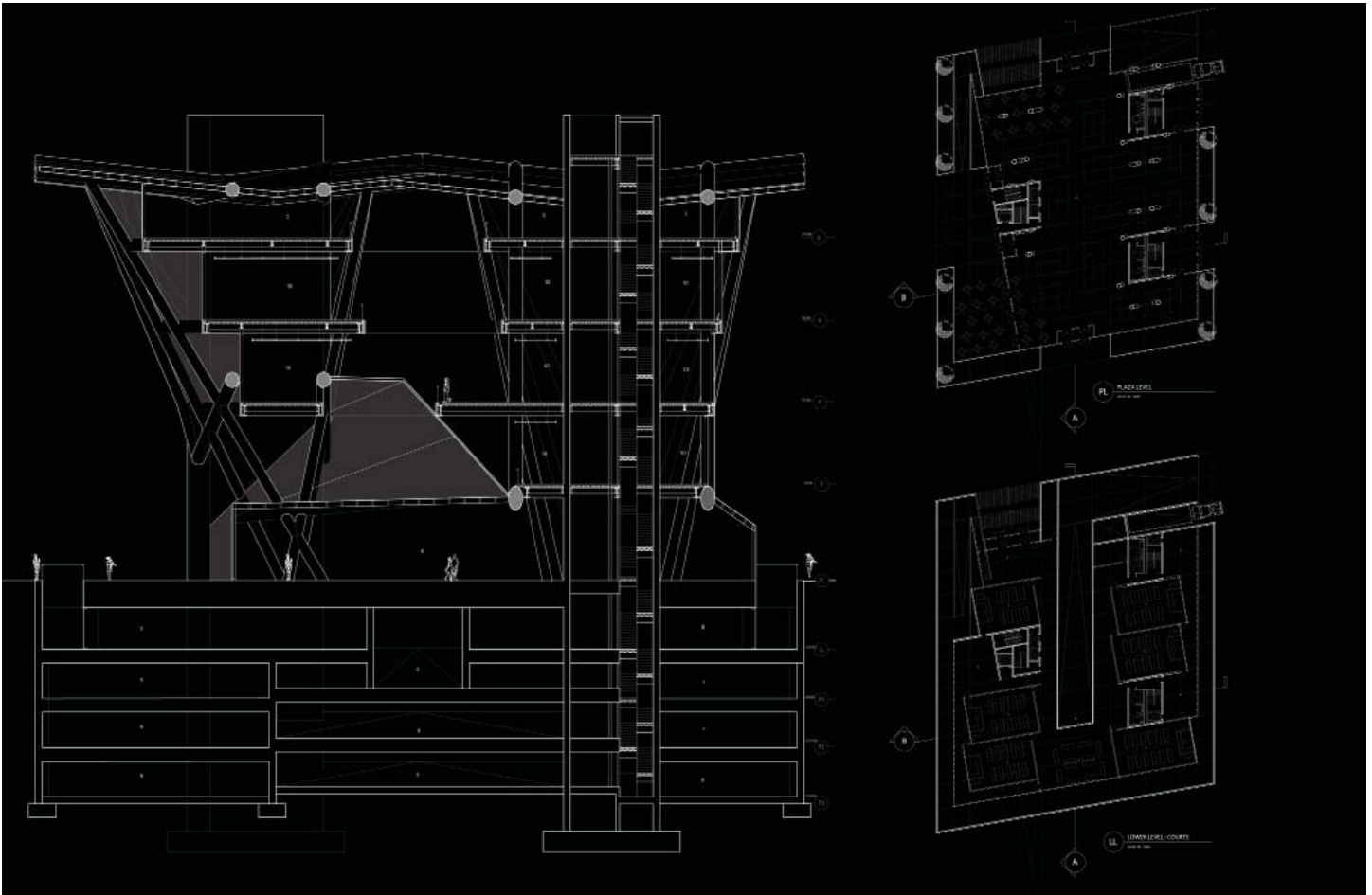


## Competition Design Criteria

This studio project tackled a professional design competition criteria that consisted of removing the of the current St. Lawrence North Market and replacing it with a more fitting 1500-2000 square meter market that included underground parking structure and municipal courts with administration to help assist with project's financial viability.

## Organizational Strategy Diagram

The studio started out with speculative diagramming of the site and the surrounding area. Lines were diagrammed to correspond with the adjacent streets, buildings, and the space between the existing historic St. Lawrence Hall and Market.



## Program Design

The organizational strategy diagram was used to create a dialog between the historic hall and the market. A public plaza with arcade between the two structures were established to act as a farmers' market on the weekends. The courtrooms were placed under the plaza to minimize program bulk and keep the rest of the entire building open and free. Administration was placed above the plaza and flanked the arcade with circulation paths.

## Structural Design

The new structure integrated the organizational diagram with the program design while keeping the integrity of the existing market aesthetics. The organizational strategy diagram was projected at the roof and followed the program and the three egress/mechanical cores that were needed to serve the facility adequately.

Clockwise:  
New Saint Lawrence North Market: Cross Section; Plaza Level "Market" Floor Plan; Lower Level "Courts" Floor Plan.

# ENERGY MUSEUM of LOS ANGELES

Role & Project Responsibilities: Lead Team Designer

Design Partner: Mishal Hashmi

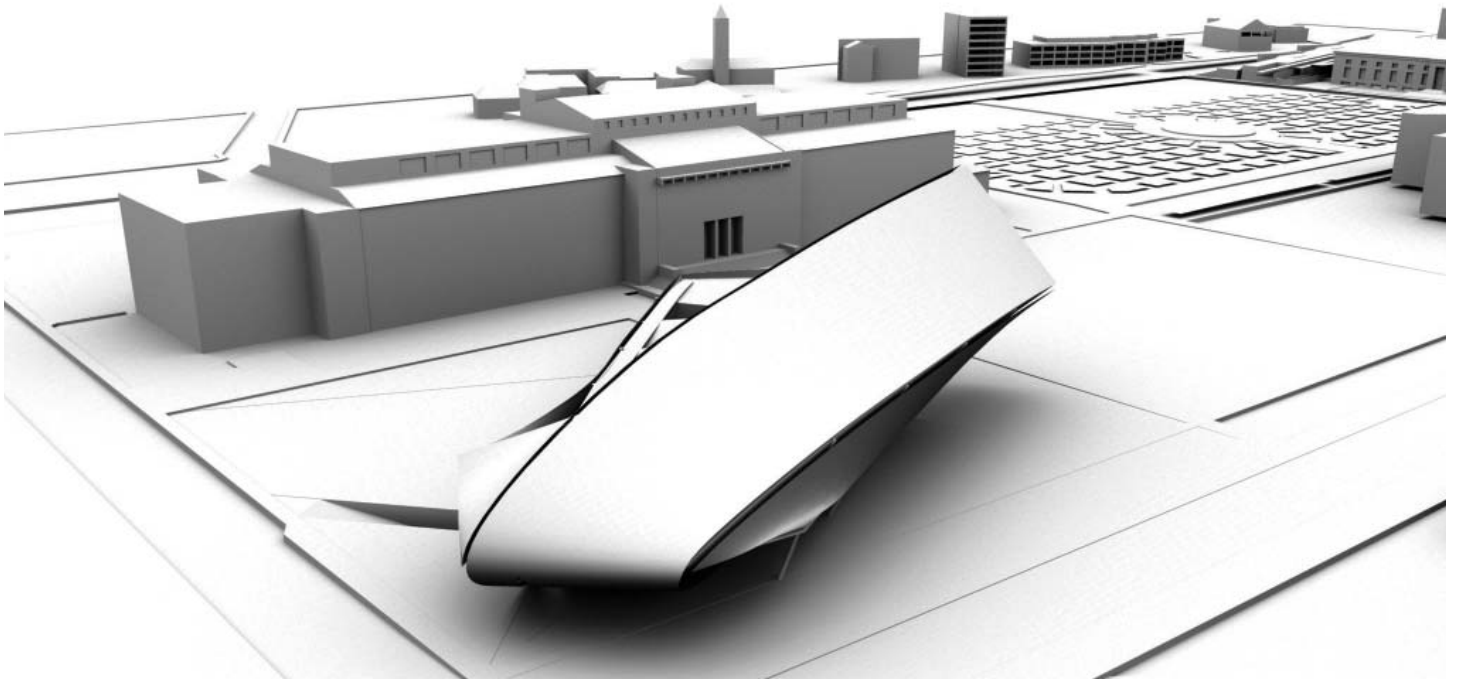
Instructor: Wes Jones

Project: Future Energy Museum

Site Location: Exposition Park, Los Angeles, CA

Selected as a: 2GB Design Documentation Project

Team Members: Mishal Hashmi, Rachel Bitan, Ilya Bourim, & Tim Turner

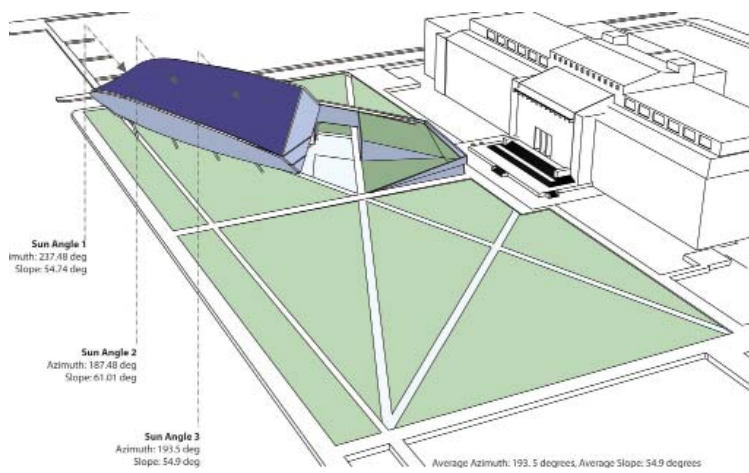
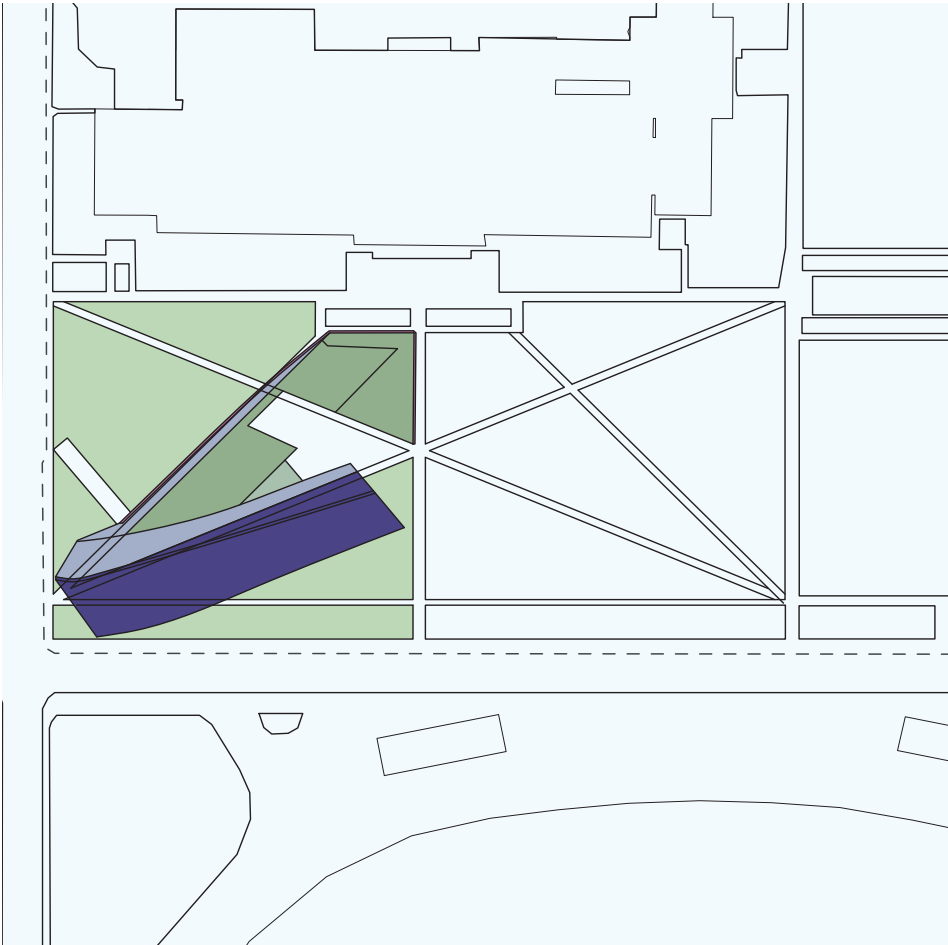


Top:  
Energy Museum: digital render of the southwest aerial view.

Above:  
Energy Museum: final study model images.

## Design Criteria

Studio teams were assigned to design a new Energy Technology Museum for the Exposition Park museum campus in Los Angeles. The program criteria was: 40,000 SF of exhibition; 10,000 SF of administration; 4,000 SF theater; 2,000 SF gift shop with a cumulative of 65,000 SF.

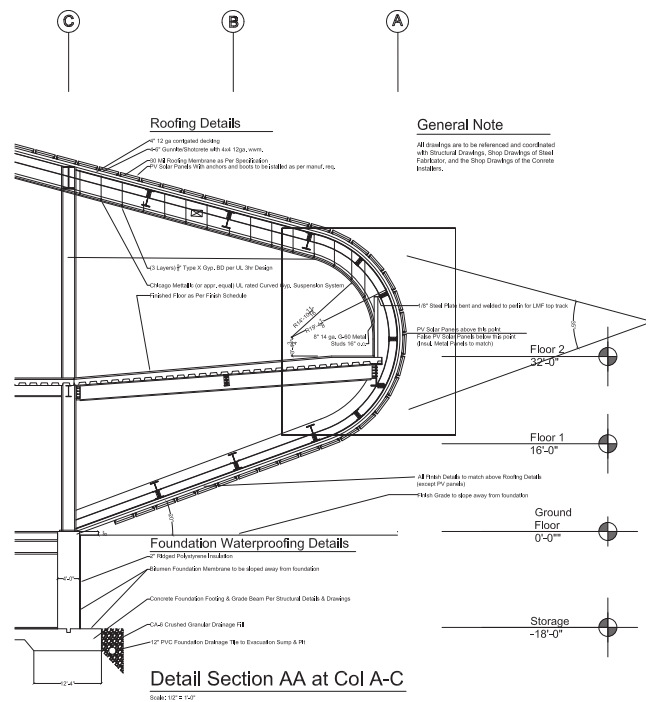
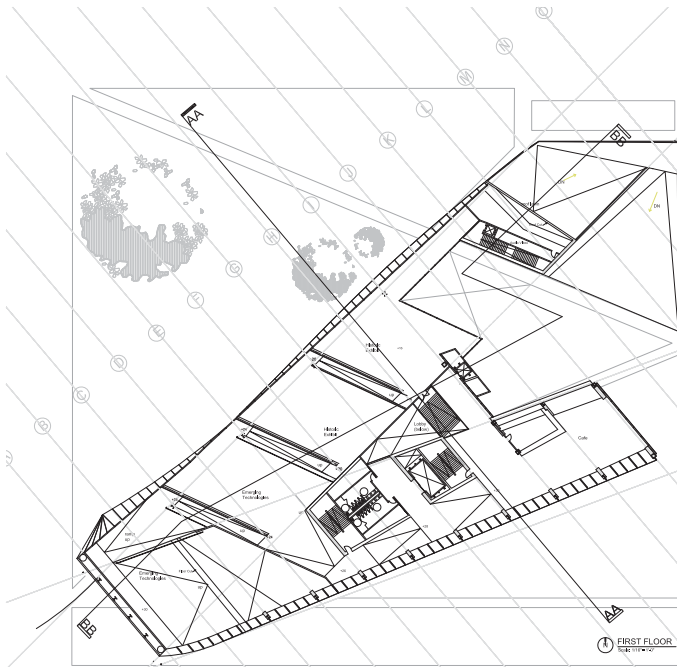
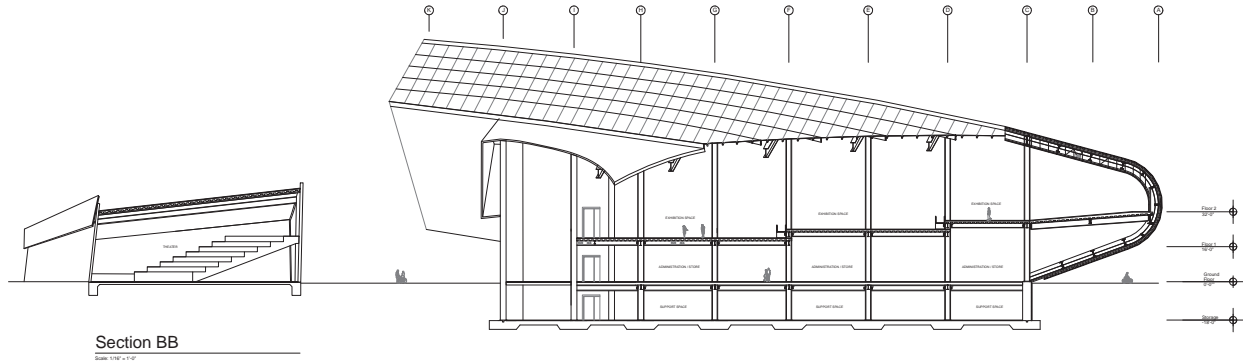


## Existing Site Conditions

The site was an open green space that the public could use for recreational purposes between the Los Angeles Natural History Museum and the Coliseum. There were informal worn paths in the grass that crossed the site.

Top:  
Energy Museum: site plan in Exposition Park.

Above:  
Energy Museum: site aerial diagram showing the dialogue of its surrounding.

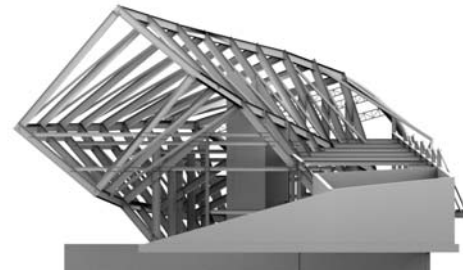
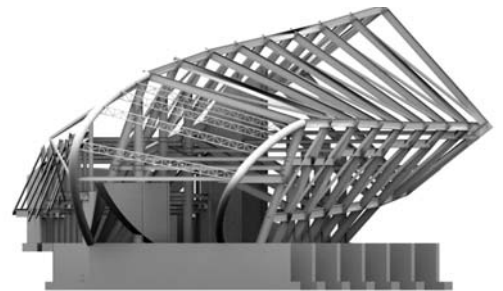
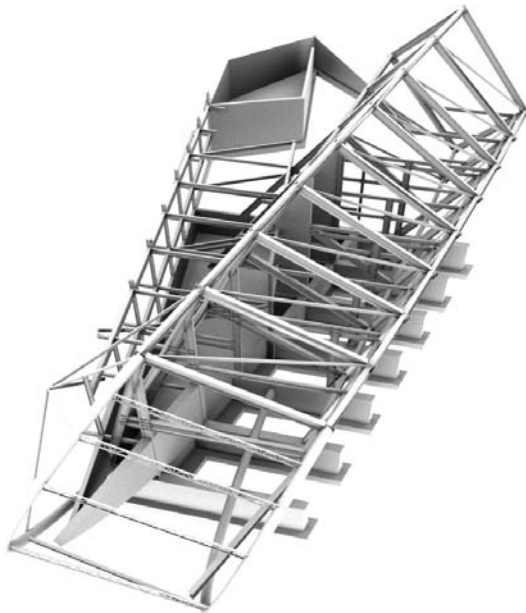
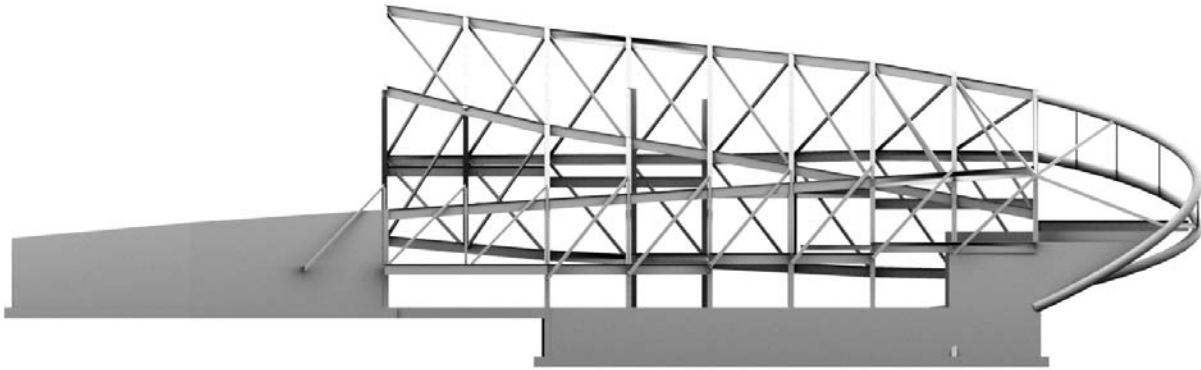


Clockwise from Top:  
 Energy Museum: Longitudinal Building Section;  
 Detail Building Wall Section; Southwest Structural Elevation; Main Floor Plan.

## Program Design

The building was laid out to embrace the crossed grass paths and leave as much open space as possible. The Energy Museum's entrance was designed to face the current Natural History Museum's entrance, thus creating a dialogue between the two museums. The exhibition halls were the driver of the program. They tiered upward via ramps and switched back toward the entrance to pier out over the park's rose garden and fountain.





## Innovative Shape

This innovative shape allowed the building to grow out from the site, providing a new green space on the roof of the lower tiers to replenish some of the buildings footprint. The roof on the elevated cantilevered switch backed portion torques to provide a continuous surface which PV panels can be mounted and power the museum.

Clockwise from Top:  
Energy Museum: Structural Elevation; Southwest Structural Aerial View; Southwest Structural Elevation; Northeast Structural Elevation; Northwest

# LANDSCAPE DESIGN & RENDERING

## Experience

### ROLE & PROJECT RESPONSIBILITIES:

Team Designer

#### FRANKLIN D. ROOSEVELT HOME & LIBRARY

- Assisted a landscape architecture firm design and render new bridges and trails for the National Park Service.
- Learned the Federal Governments AutoCAD Standards & Practices.
- Researched Bridge types for different landscapes and environments.
- Assembled detailed price budgets.



## FRANKLIN D. ROOSEVELT "HYDE PARK" HOME & LIBRARY

Roles Project Responsibilities: Team Designer

Architecture Firm: Kyle Zick Landscape Architecture

Location: Hyde Park, NY

Client: National Park Service

### New Trails and Bridges

US National Parks Service invited Kyle Zick Landscape Architecture to design new trails that would intertwine with existing paths for the President Franklin D. Roosevelt Home and Library.

Site renders of the aerial view images were enhanced in Photoshop and AutoCAD to show how the paths would intertwine with a surrounding hotel and drive-in movie theater. The new trails would cross a stream and wetland area. Renders were made using photographs enhanced with Photoshop, Illustrator, and AutoCAD to show how the new bridges would blend into the landscape.



Clockwise from Top:  
Franklin D. Roosevelt "Hyde Park": Wetland crossing render; stream bridge rendering; & aerial site plan rendering

# CONSTRUCTION MANAGEMENT

## Experience

### ROLE & PROJECT RESPONSIBILITIES:

Project Manager, Project Engineer, and Estimator

### ARCHER SENIOR LIVING

#### Pre-construction Procurement:

- Worked with customer's needs & budget requirements.
- Collaborated & implemented subcontractors schedules.
- Wrote & negotiated subcontract scopes.

#### Construction:

- Managed construction administration, schedule, and project finances.

#### Finalized Closeout Procedures

- Collaborated with owners and architects performing as-built drawings, building start up and maintenance procedures.

### St. LEO RECTORY- VETERANS' HOME

#### Pre-construction Procurement:

- Assisted owner and architect with budgets and scope.

#### Rehab Construction:

- Analyzed building condition with owner and architect after demolition.
- Collaborated with owner, architect, and subcontractor to implement a revised scope for new construction.

#### New Construction as a Project Manager

- Managed subcontractors, schedule, and project Finances.

### TOTAL LIST OF PROJECTS

- St. Leo Rectory Veteran's Home, Chicago, IL
- Archer Senior Living, Chicago, IL
- The New Freedom Temple, Chicago, IL
- Chicago Housing Authority: 4 Senior Housing Renovation, Chicago, IL
- Chicago Housing Authority: Washington & Langley Homes, Chicago, IL
- University of Maryland Baltimore: New Dental School - Baltimore, MD
- Johns Hopkins Hospital: New Power Station & Parking Facility, Baltimore, MD
- Harvard University: 17 Athens Street, Cambridge, MA
- Harvard University: 4-6 Athens Terrace, Cambridge, MA
- Harvard University: 19 Ware Street, Cambridge, MA



# ARCHER SENIOR LIVING

Roles Project Responsibilities: Project Manager

General Contractor: Burling Builders, Inc

Architecture Firm: Piekars Associates

Client: CCDC

Site Location: Chicago, IL

Project Value: \$6.6 Million

## New Construction

Archer Senior Living was a new ground up construction of a 55 unit building apartment building in the Chicago, IL, The building was reinforced masonry with a 30 ft reinforced concrete plank floor system. The first floor of the facade was made of custom stone. The building's roof system was a 60ft spanned hipped trusses. Each truss was extremely large, therefore, that they shipped it in 3 pieces and assembled at the site. The building had a tight budget and a condensed fourteen month schedule .

Above:  
Archer Senior Living: Image of Front Facade.

Above Right:  
St. Leo Rectory - Veterans' Home: Image of the exterior new elevator addition.



# St. LEO RECTORY- VETERANS' HOME

Roles Project Responsibilities: Project Manager

General Contractor: Burling Builders, Inc

Architecture Firm: Interactive Architects

Client: Catholic Charities of the Archdiocese of Chicago

Site Location: Chicago, IL

Project Value: \$3.0 Million

## Rehab and Additions

Saint Leo Rectory Veterans' Homes was a rehab and addition project converting and old Catholic rectory into 14 apartments for retired veterans with disabilities. The project consisted of: making the entire building ADA accessible, gutting and rehabbing all the floors; adding of a new entrance and elevator tower, and doubling the square footage of the top level including a roof patio & garden. All the mechanical, electrical, and plumbing systems were changed, and in addition, a new fire sprinkler suppression system was installed.



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