

JARRELL D. JOHNSON

FROM ENGINEER TO ARCHITECT

ARCHITECTURE PORTFOLIO

JARRELL D. JOHNSON

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ARCHITECTURE PORTFOLIO

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JARRELL D. JOHNSON

ENGINEERING & ARCHITECTURE DESIGN PROJECTS

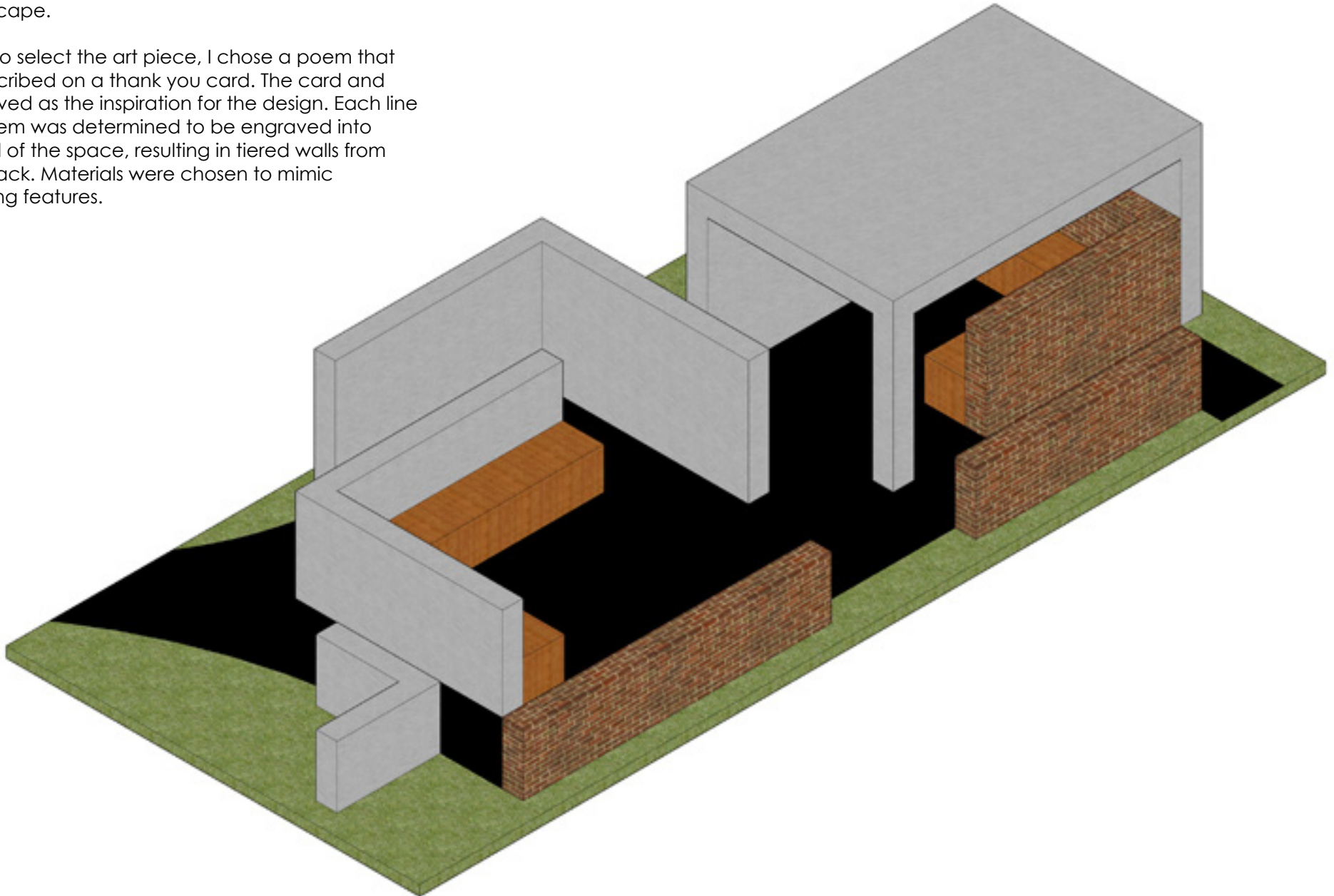
ARCHITECTURE PORTFOLIO

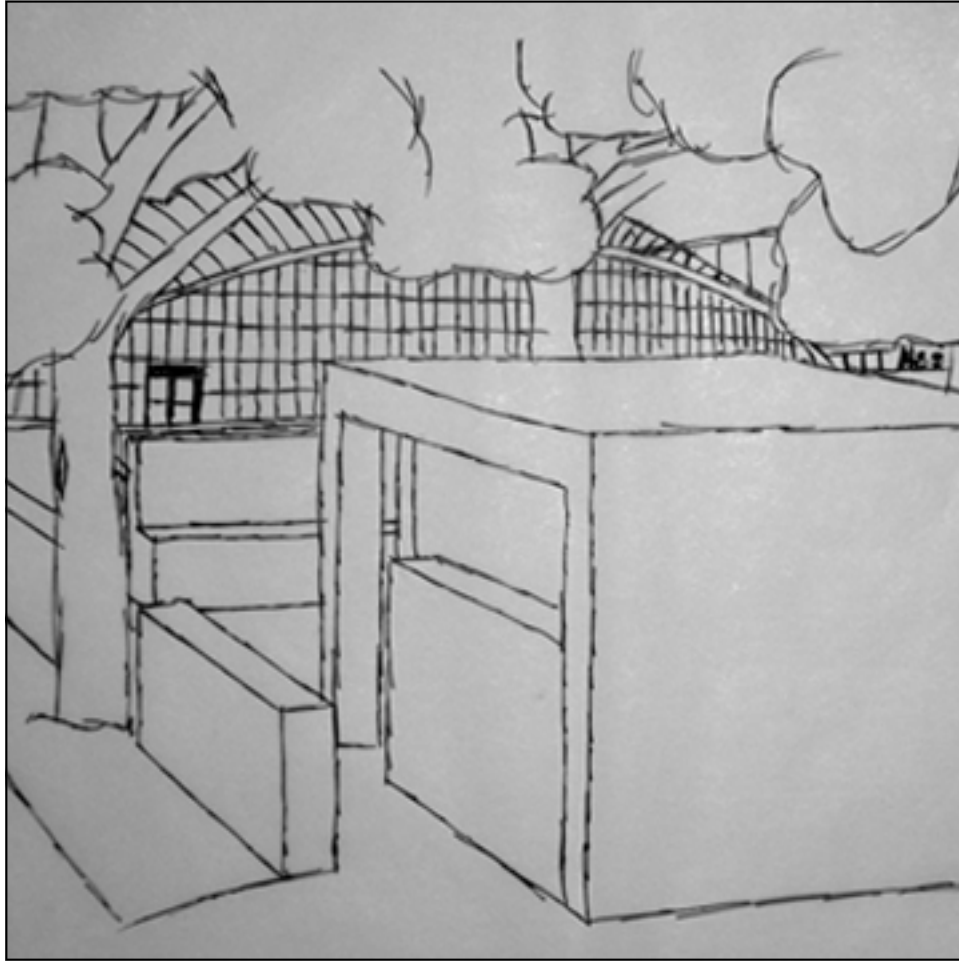
A PUBLIC DISPLAY FOR ART

Goal: To provide an interactive space that displays an art piece of our choice in the designated site.

Site: Kresge Oval, Massachusetts Institute of Technology campus. The specific location was determined by drawing a number and locating the region on a plot of the landscape.

Process: To select the art piece, I chose a poem that was transcribed on a thank you card. The card and poem served as the inspiration for the design. Each line of the poem was determined to be engraved into each wall of the space, resulting in tiered walls from front to back. Materials were chosen to mimic surrounding features.





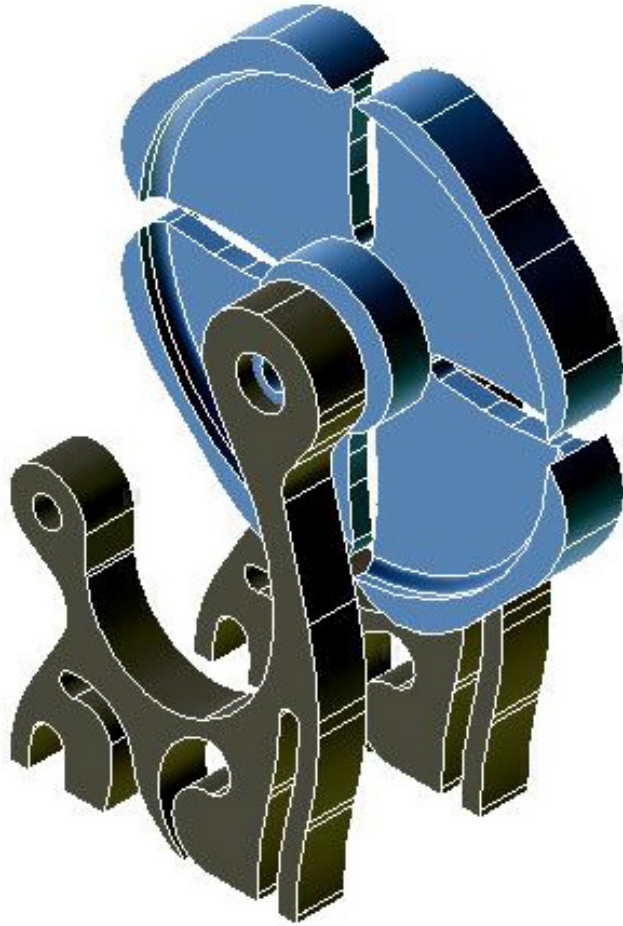
Rough sketch drawings that display the interactive space within the designated site. One drawing shows the back view of the space **(ABOVE)** and the other shows the front view of the space **(RIGHT)**.

TASK: To make rough sketches of the design and integrate it into the environment. Using Photoshop and Illustrator, construct realistic photographs of the space and environment (on following page)



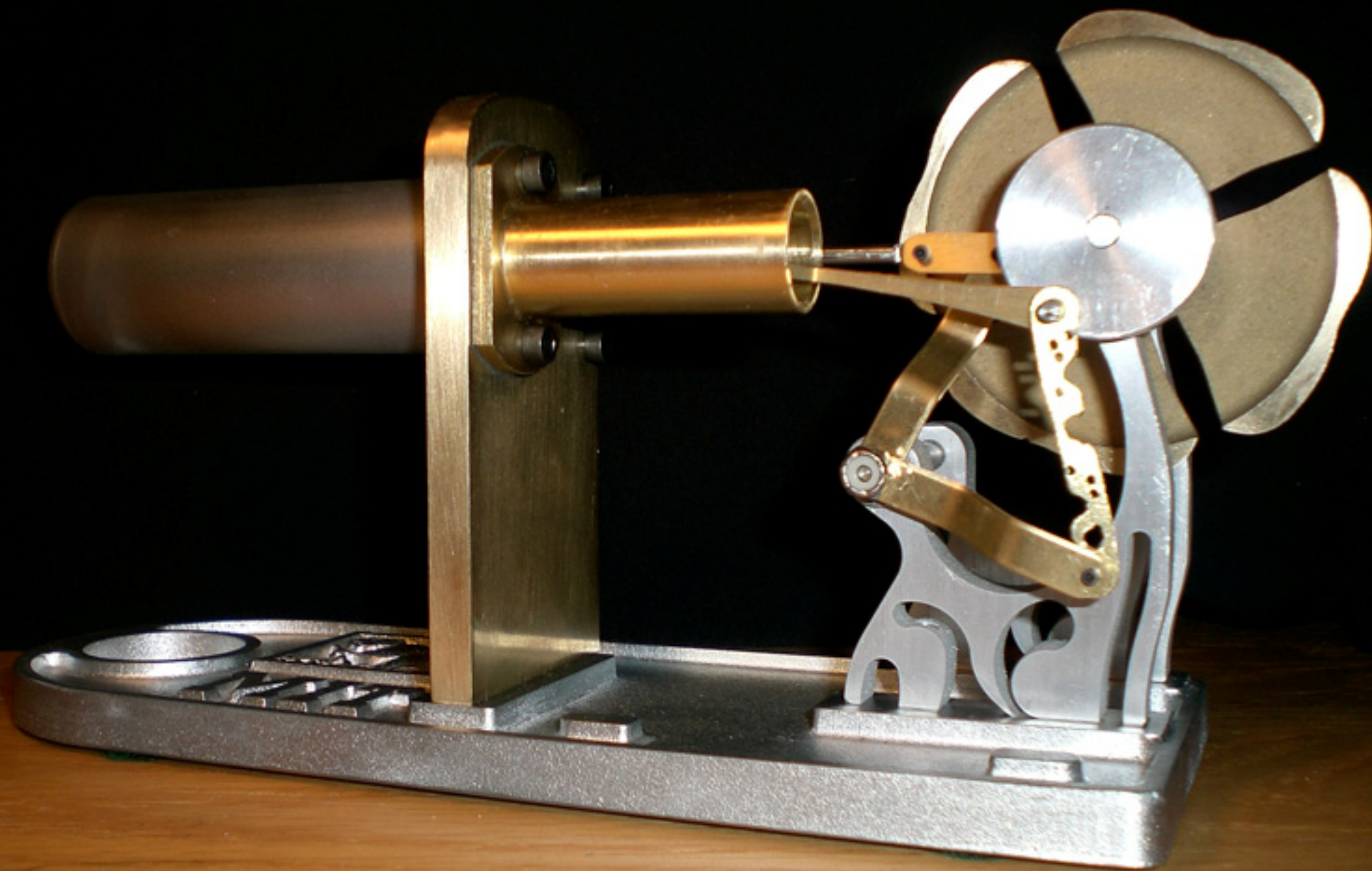


MINIATURE STERLING ENGINE



Goal: To construct a miniature sterling engine as an introduction to engineering and learn the operations of G-Code, SolidWorks, AutoCAD, and MasterCAM to water-cut and mill customized pieces for the engine.

Process: Construct the miniature sterling engine to prove the theories of thermal engineering. Design a custom flywheel and bearing plate to supplement the engine with the secondary goal of reducing weight of the flywheel and plates. Machine the parts and re-construct the engine.

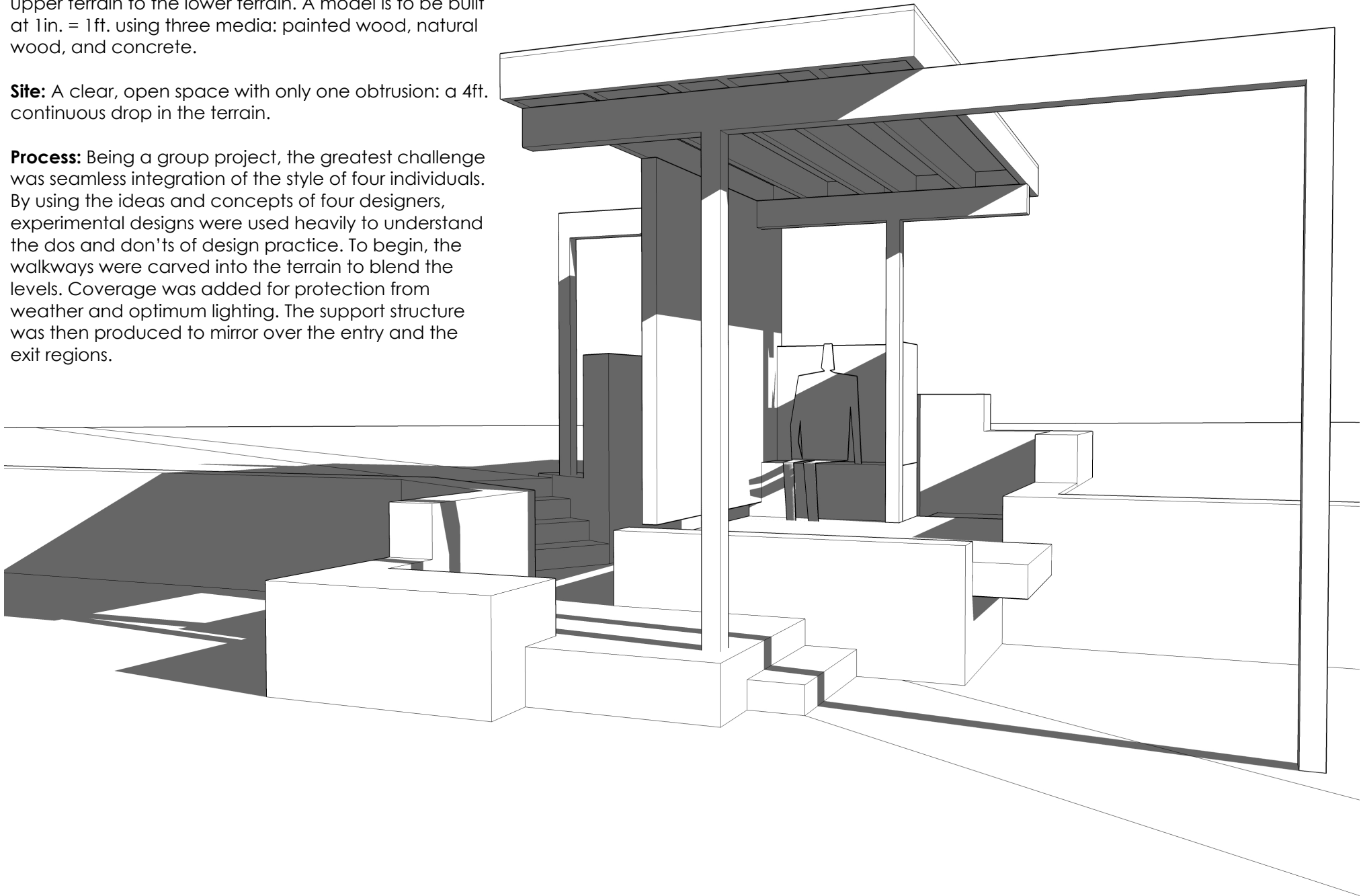


A SPACE FOR READING

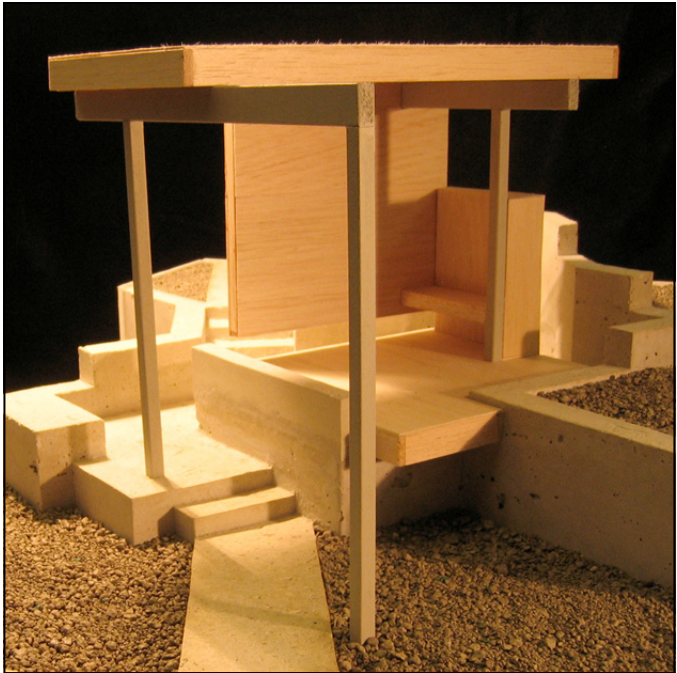
Goal: To provide a reading space for any visitor that is uninterrupted by an integrated passage from the upper terrain to the lower terrain. A model is to be built at 1 in. = 1 ft. using three media: painted wood, natural wood, and concrete.

Site: A clear, open space with only one obstruction: a 4ft. continuous drop in the terrain.

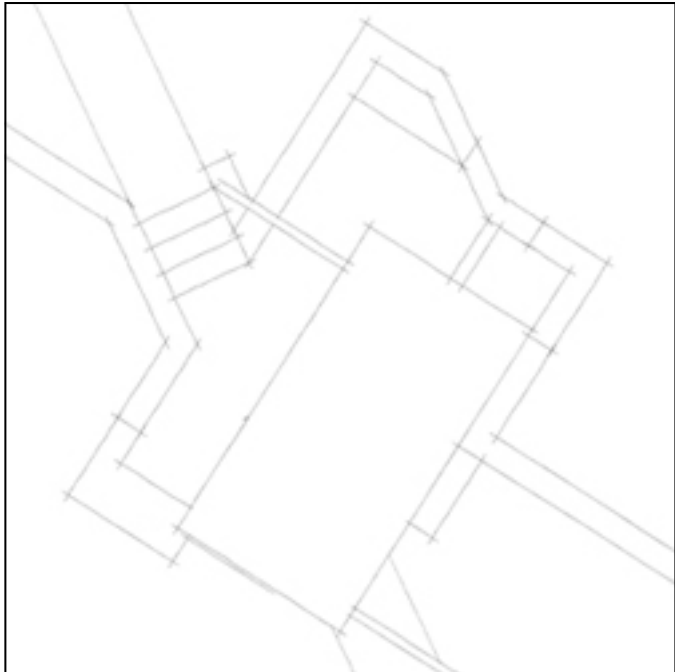
Process: Being a group project, the greatest challenge was seamless integration of the style of four individuals. By using the ideas and concepts of four designers, experimental designs were used heavily to understand the dos and don'ts of design practice. To begin, the walkways were carved into the terrain to blend the levels. Coverage was added for protection from weather and optimum lighting. The support structure was then produced to mirror over the entry and the exit regions.



A SPACE FOR READING



A SPACE FOR READING



PROJECT TEAMMATES:

RENE CHEN
RANDAL POPE
EUNMEE YANG

ASH STREET GUEST HOUSE



Goal: To provide a guest house with space allocated for sleeping and working under the constraint of a 200ft² building footprint and a height restriction of 16ft. The building must be placed in the provided courtyard of another residence. Emphasis placed on AutoCAD and Adobe Illustrator and Photoshop for imagery.

Site: Ash Street Residence, Harvard Square, Cambridge, Massachusetts

Process: Isolate living quarters from working quarters with the intention of providing fully functional square spaces in order to maximize the space. While developing the space, integrate the building with the environment surrounding the Ash Street Residence.

ASH STREET GUEST HOUSE



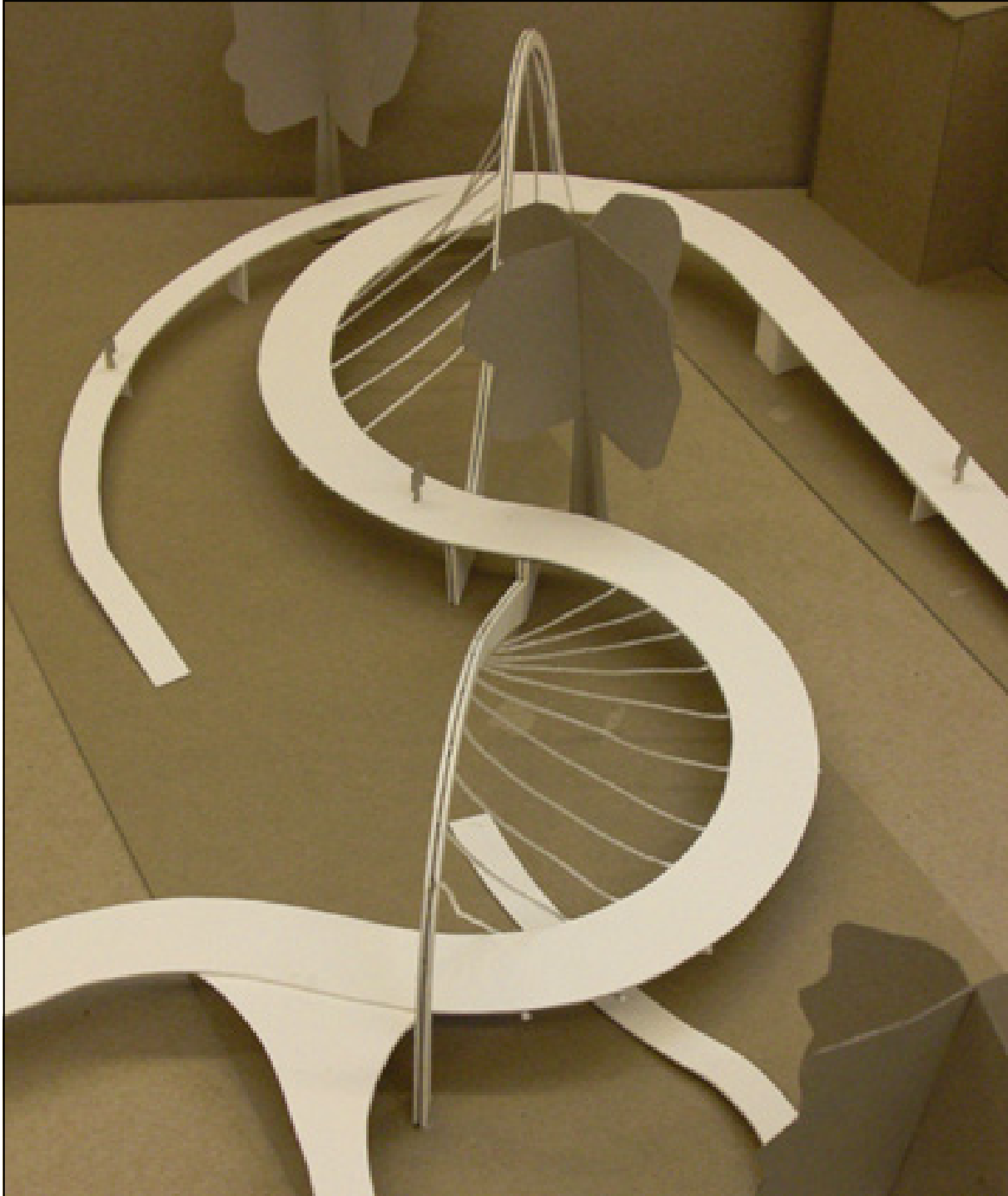
ELEVATION



SECTION



THE PEDESTRIAN BRIDGE

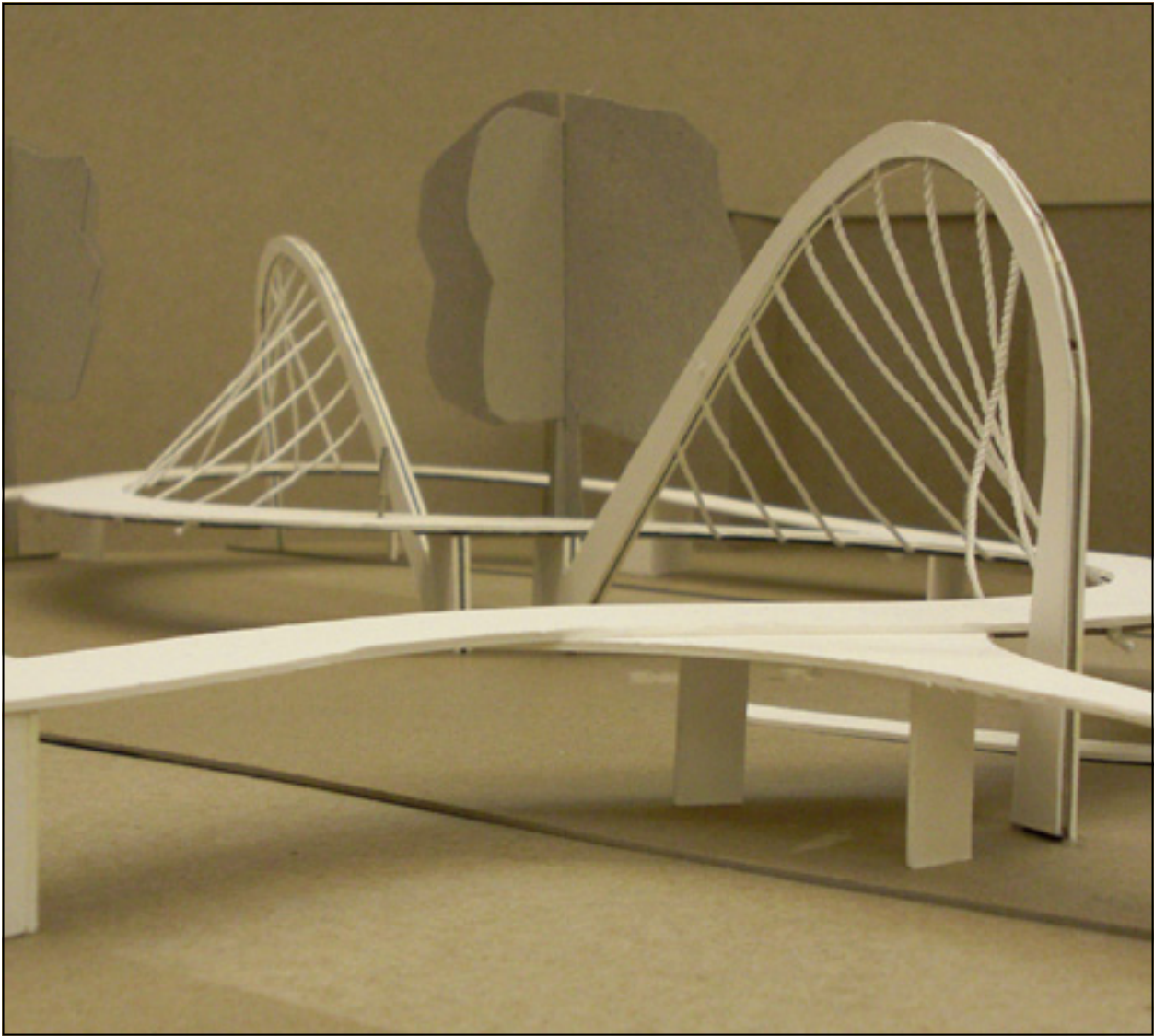
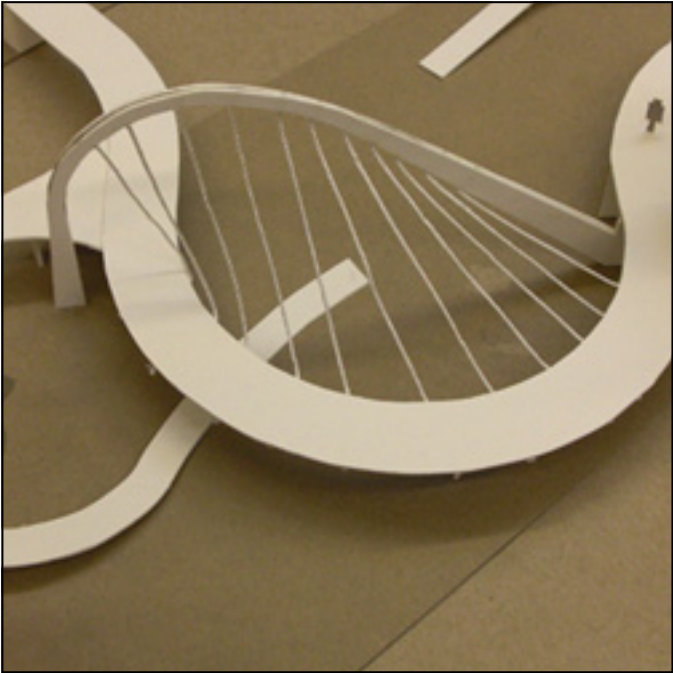


Goal: To develop a bridge for pedestrians that crosses two-lane streets separated by a grass median. Restrictions include handicap accessible, walking platform height, and requiring access to the grass median. Teams were also established between architect and engineer to process a structural analysis of the bridge. Emphasis placed on modeling.

Site: Memorial Drive, Cambridge, Massachusetts

Process: Determine a flow chart of the bridge and sculpt the bridge out of the proposed layout. The use of arches stem from the most structurally sound support in addition to overall appeal of the flowing nature of the environment. The unique use of arches provided a challenge to our team, which was overcome by a double arch system located under the platform.

THE PEDESTRIAN BRIDGE

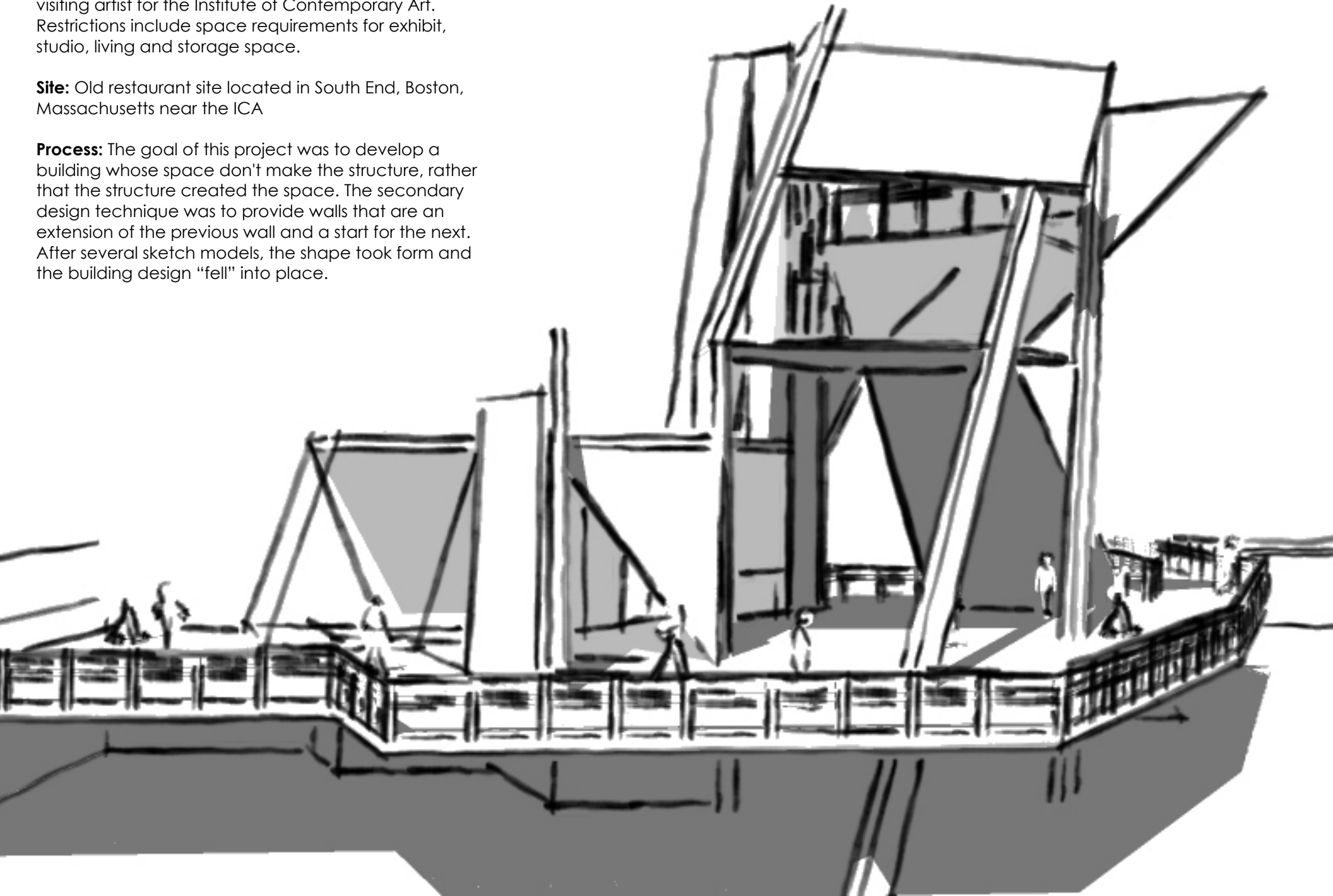


ICA VISITING ARTIST RESIDENCE

Goal: To develop a multifunctional space for a resident visiting artist for the Institute of Contemporary Art. Restrictions include space requirements for exhibit, studio, living and storage space.

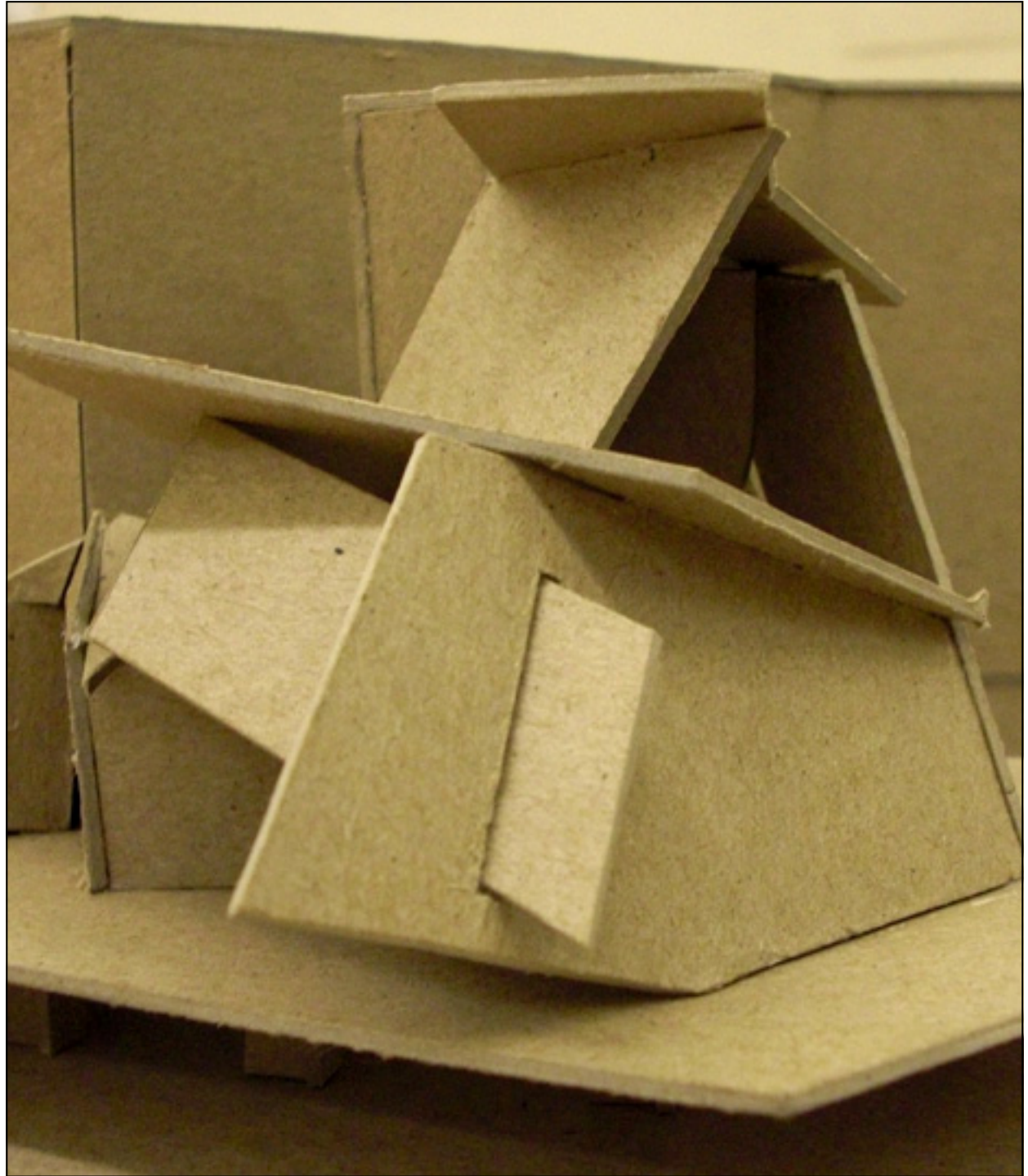
Site: Old restaurant site located in South End, Boston, Massachusetts near the ICA

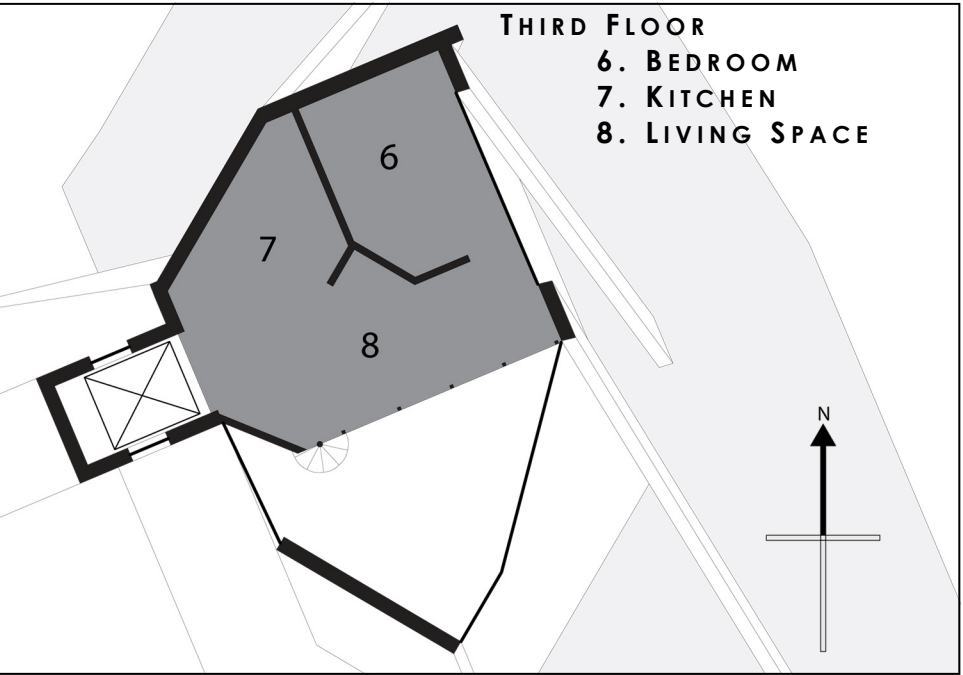
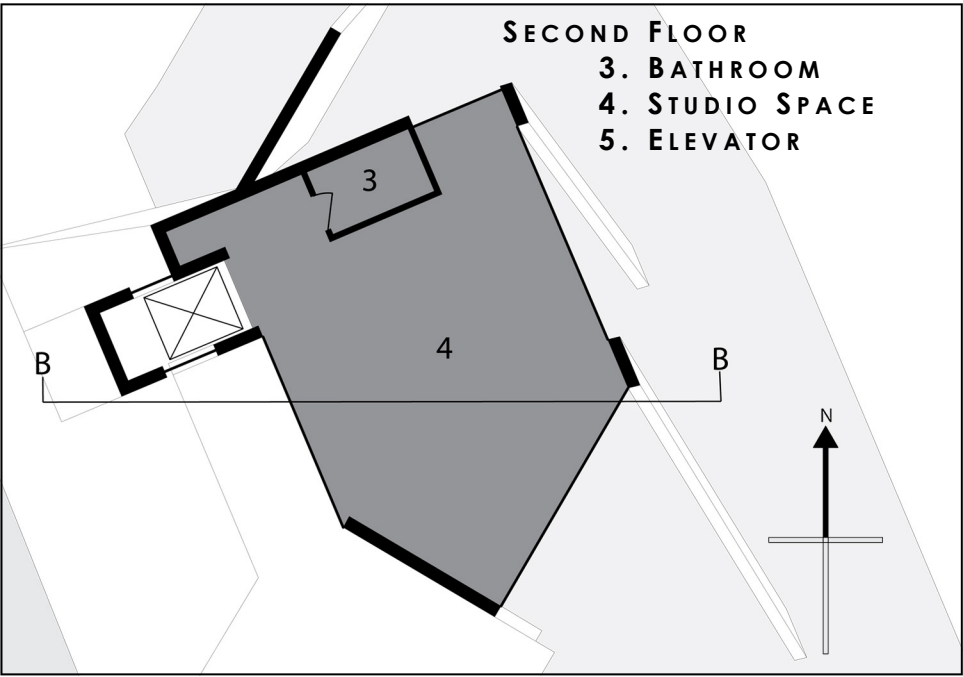
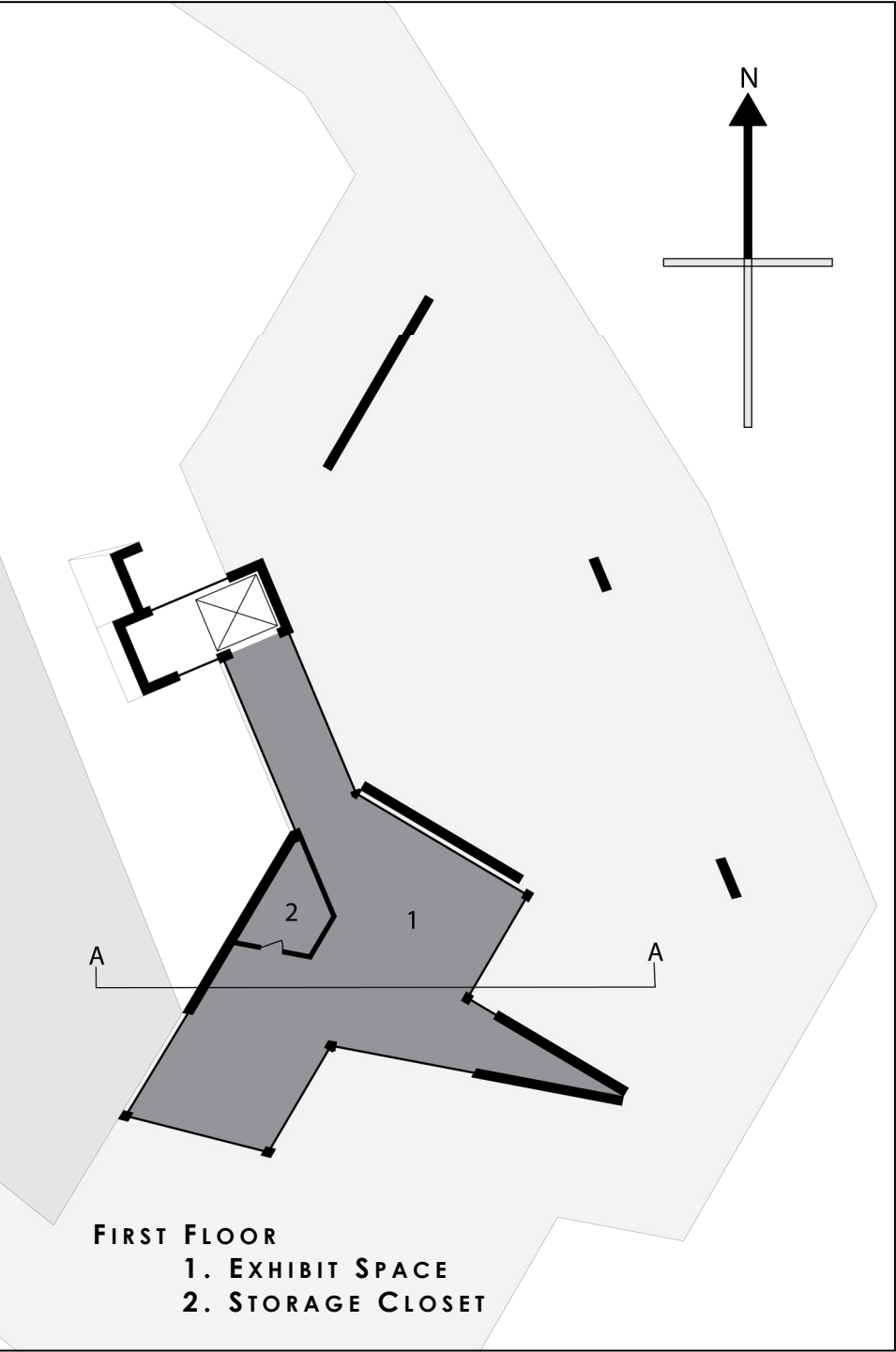
Process: The goal of this project was to develop a building whose space don't make the structure, rather that the structure created the space. The secondary design technique was to provide walls that are an extension of the previous wall and a start for the next. After several sketch models, the shape took form and the building design "fell" into place.

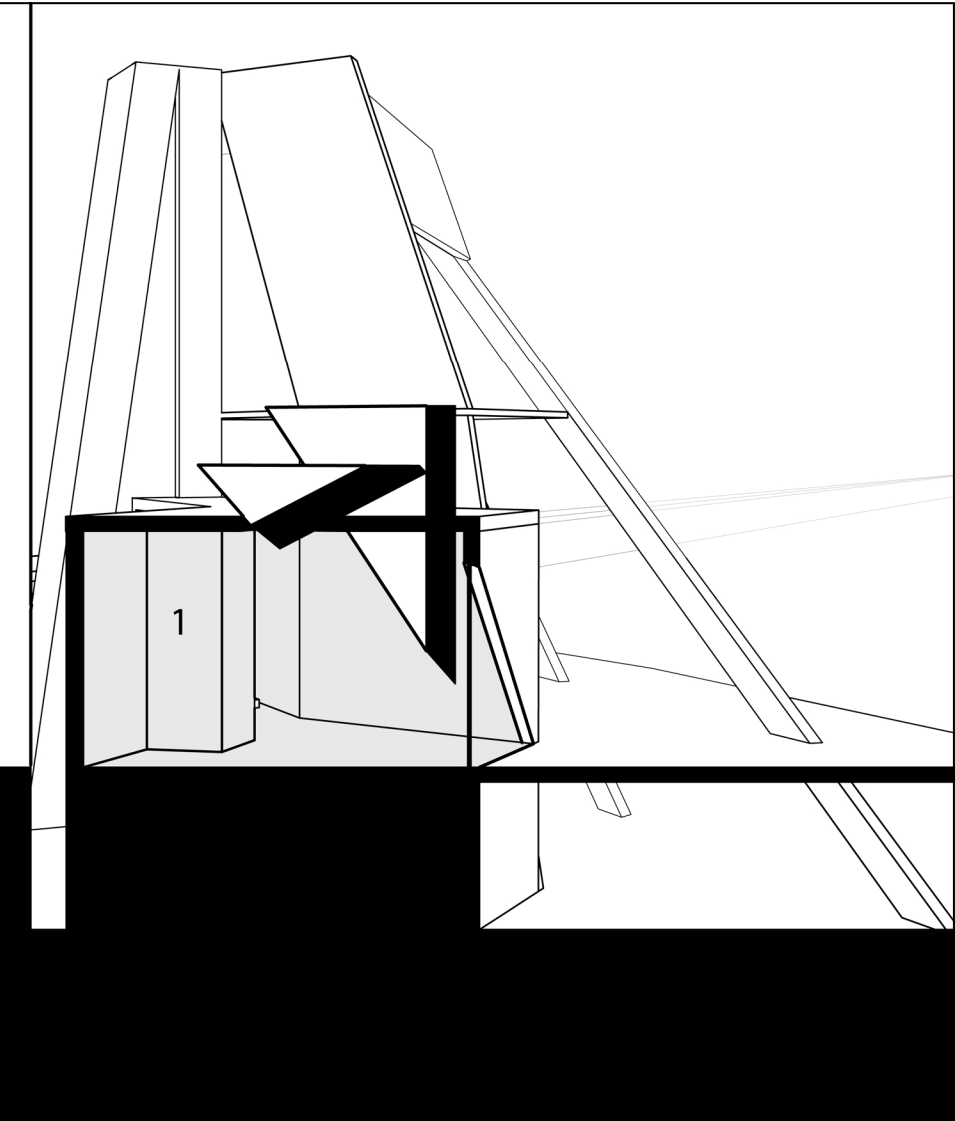




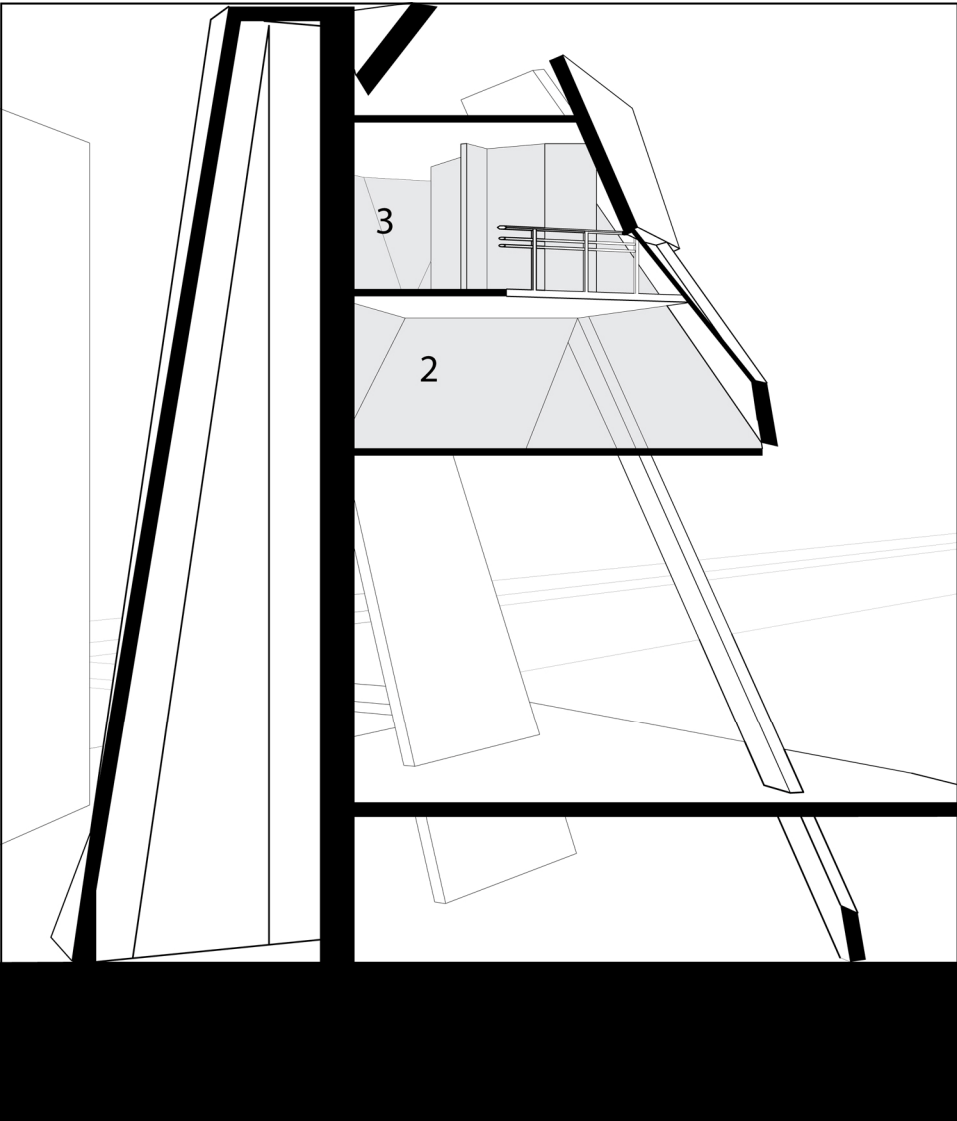
The original sketch model **(RIGHT)** tested the theory that walls can give the character of a building and develop the space within. The second sketch model **(ABOVE)** was produced on a larger scale and with more defined design goals.





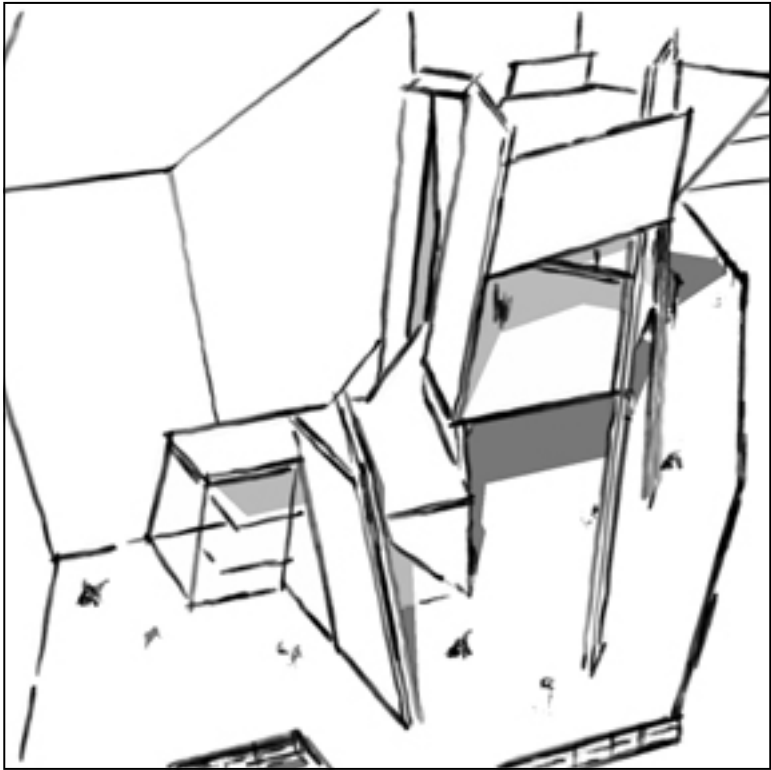
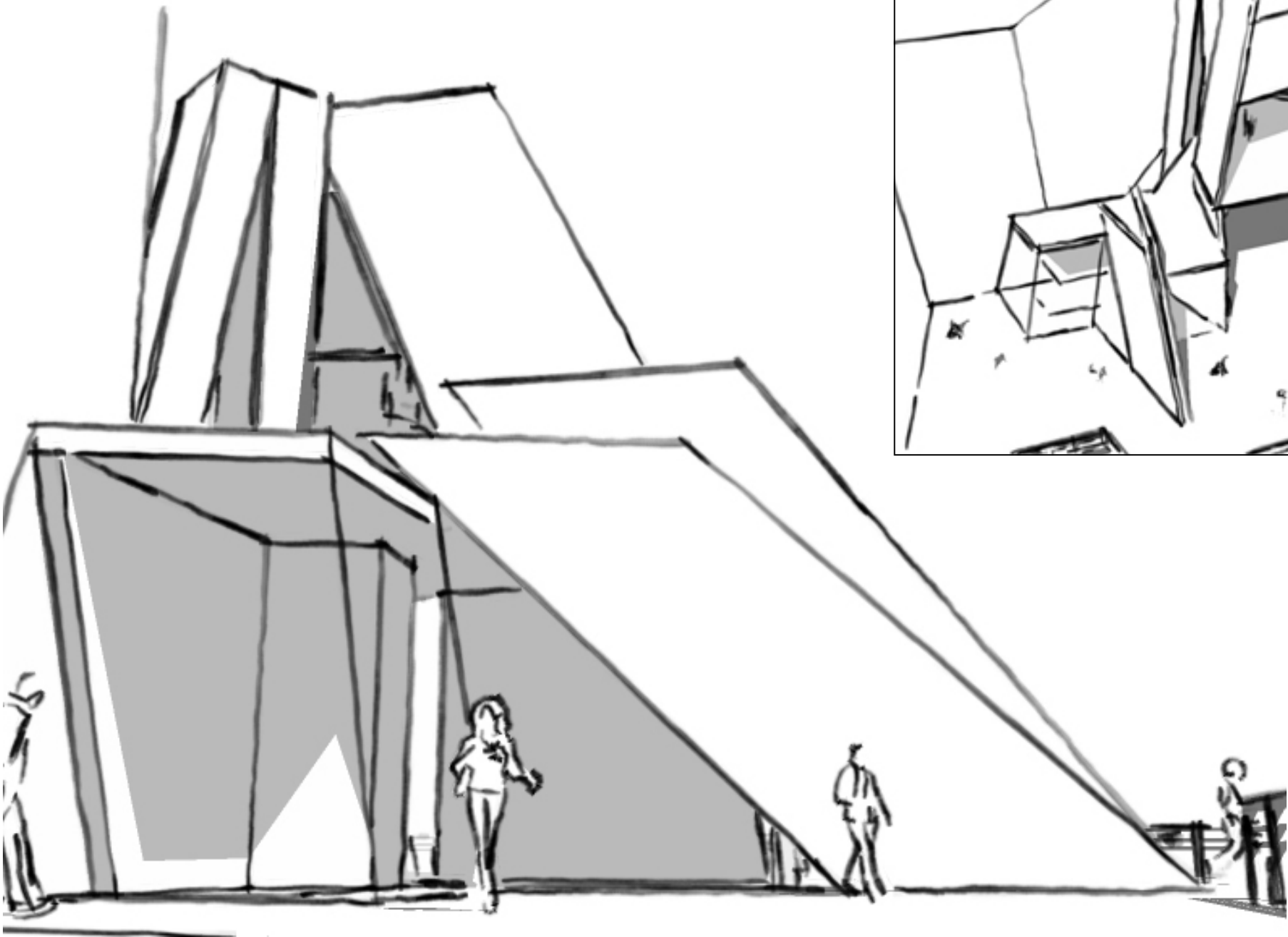


SECTION A-A
1. FIRST FLOOR



SECTION B-B
2. SECOND FLOOR
3. THIRD FLOOR







To give an impression of how the building will fit into the current environment, a photomontage was developed for the viewer to see a depiction of the proposed building's interaction with the site. Tools used were Google SketchUp and Adobe Photoshop.

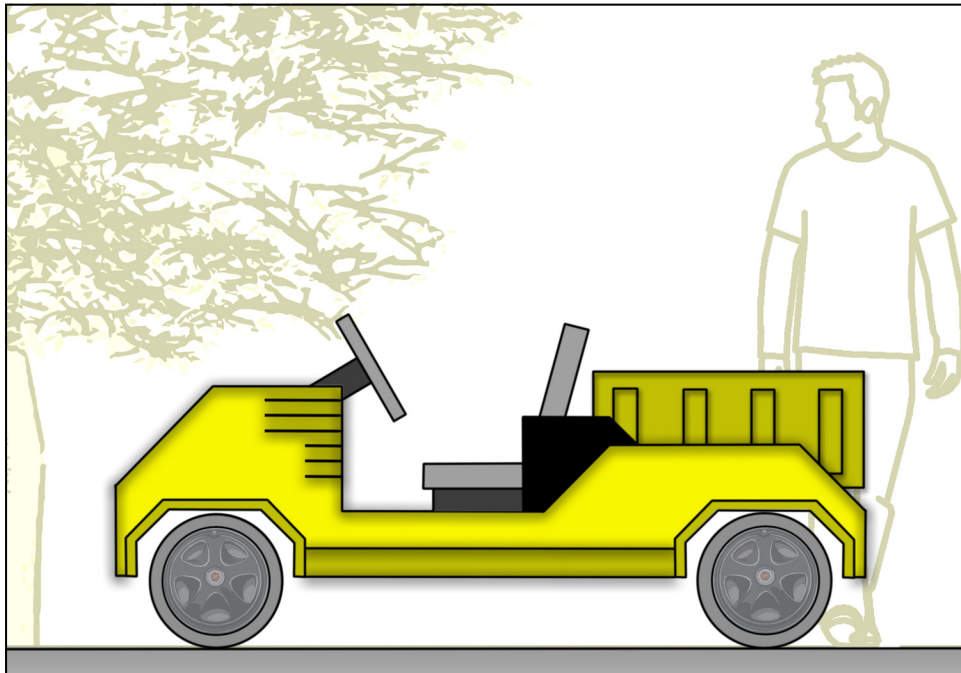
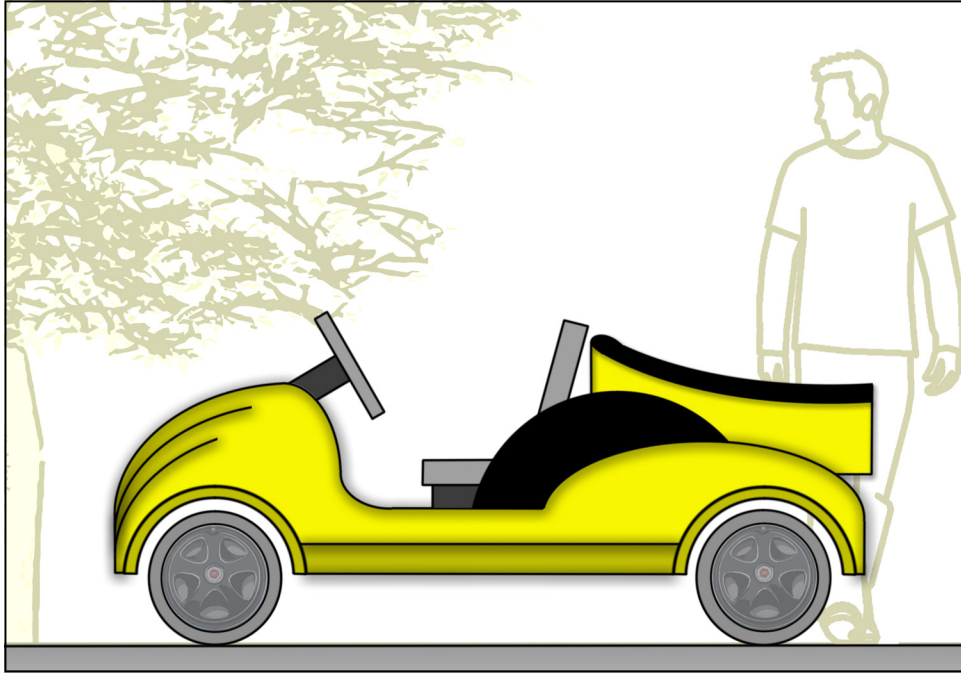
THE DUMP TRUCK



Goal: To work with a team of seven students for a senior design project that is required to fit the theme of "home environment" with a more specific category of "active play." The product chosen was a dump truck, similar to power cars, that implemented child operation and a "my size" car.

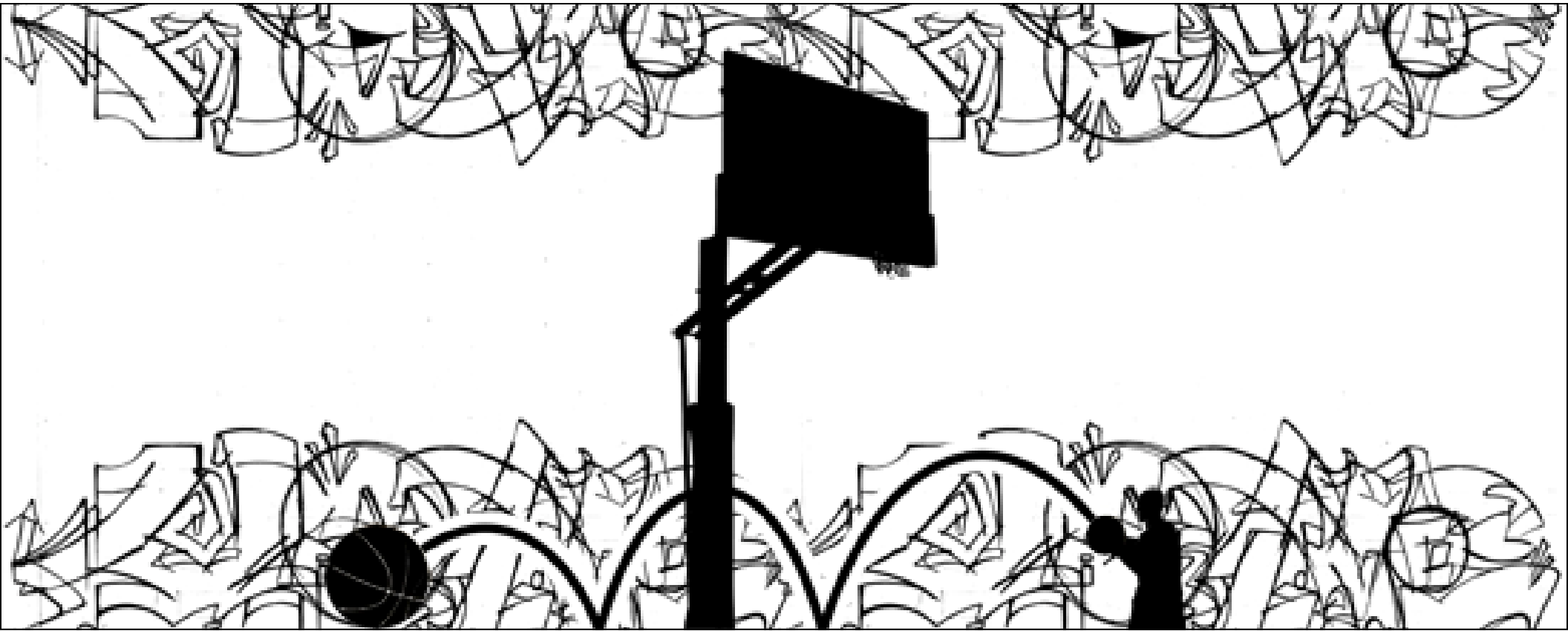
Process: The team worked heavily to design a prototype and build a alpha and a beta model within a two week time constraint. My specific duties were to determine the likability of such a product with 3rd-5th graders and what truck style was most appealing.

THE DUMP TRUCK



LEFT: To develop the design of the dump truck, prototypes were drafted using Adobe Photoshop and Illustrator and 3rd-5th graders at local schools were surveyed on questions of what “look” they liked most. Two prototypes (top left) were selected as the top choices and used to determine the final design.

ABOVE: To test the driving capabilities and functionality of the car a rapid prototype was built and a 9yr old child tested the apparatus in the parking lot next to the laboratory.



Goal: To work with a team of sixteen students for a final senior design project that is required to fit the theme of "home environment" with a more specific category of "active play." The product chosen was a basketball return device that can be used with any standard basketball hoop purchased at a local hardware or sports store.

Process: My specific duties were design based. The primary responsibility was to determine the marketability of the product and to develop the product logo. Several versions were produced to determine likability, followed by targeted production to be placed both on the product and on advertisement materials.

POINT GUARD



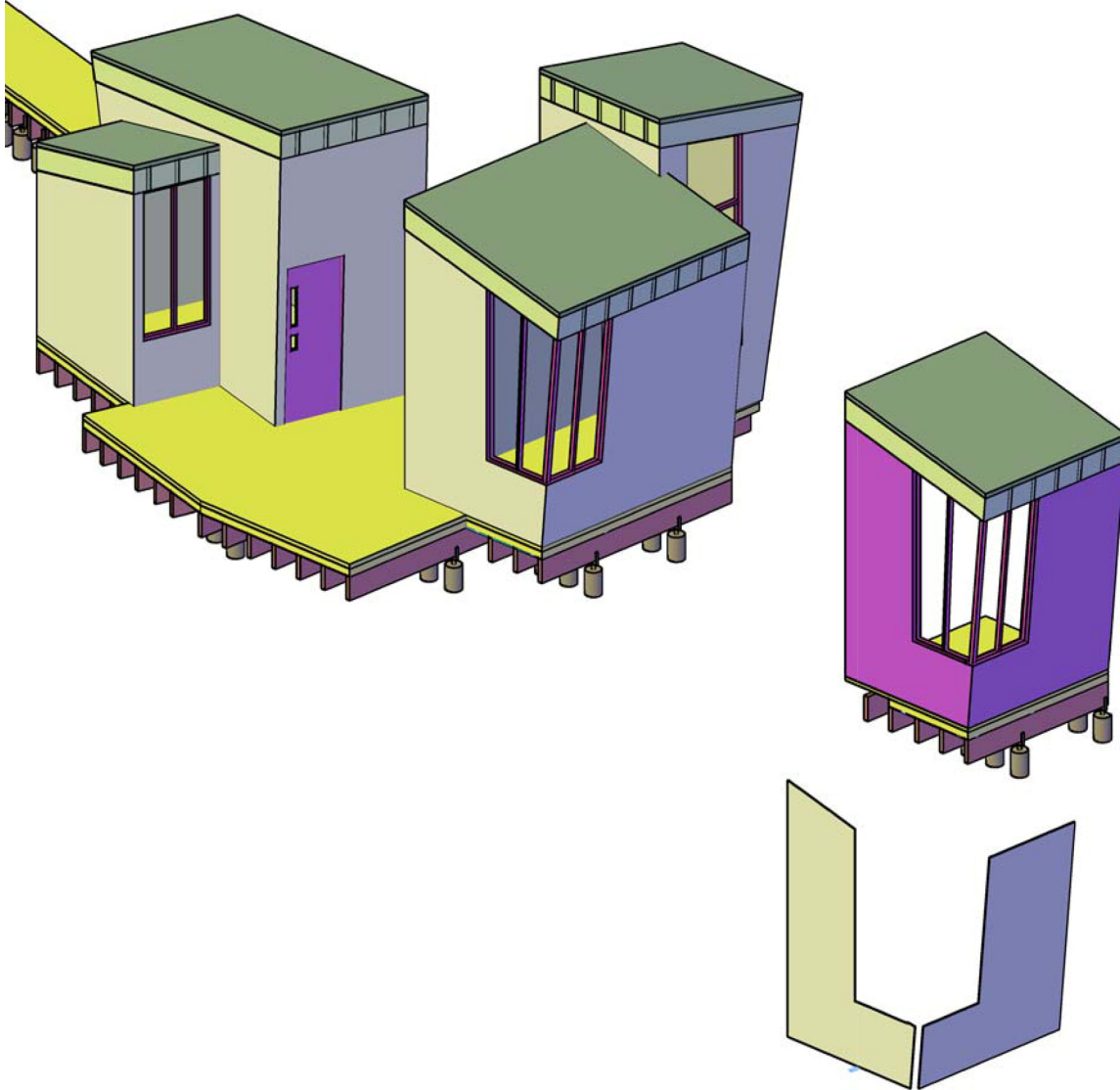
POINT GUARD

RIGHT: The result of the final product including the logo design for the product, the wood finished top and bottom panels, and the painted steel casting. The logo was applied by laser cutting adhesive material based on an AutoCAD drawing export from Adobe Illustrator.

BELOW: The original design of the logo for the Point Guard product design showing the connectivity between the "I" and "A" via a child shooting a basketball. The logo was produced using Adobe Illustrator.



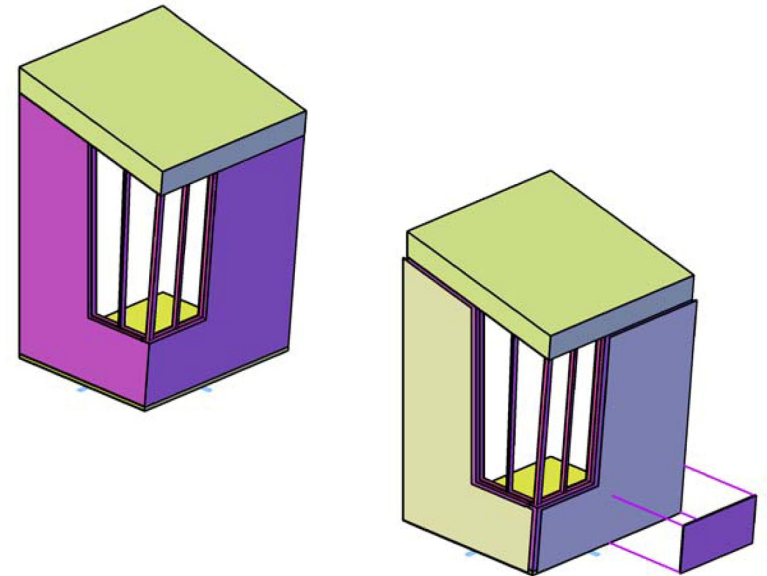
CONCORD RIVER CABIN



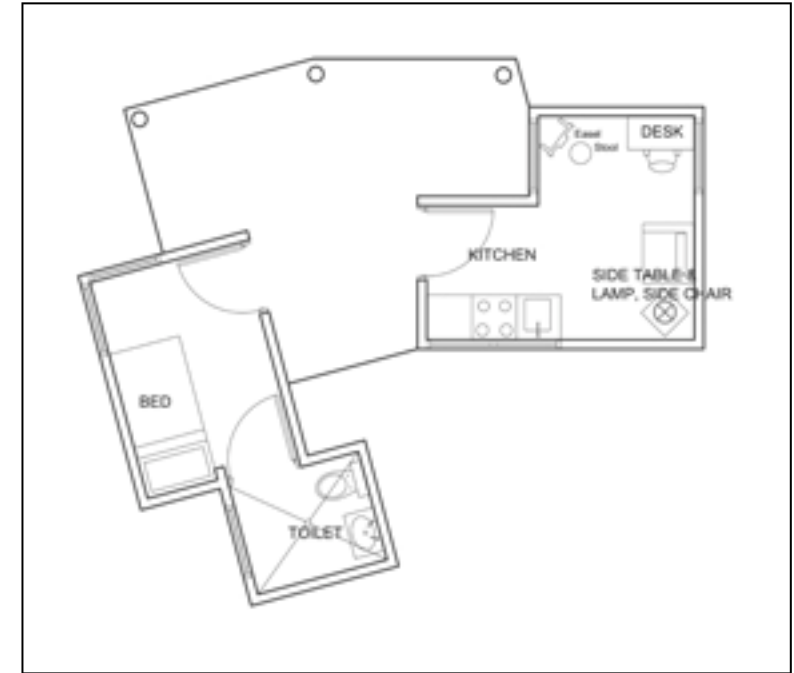
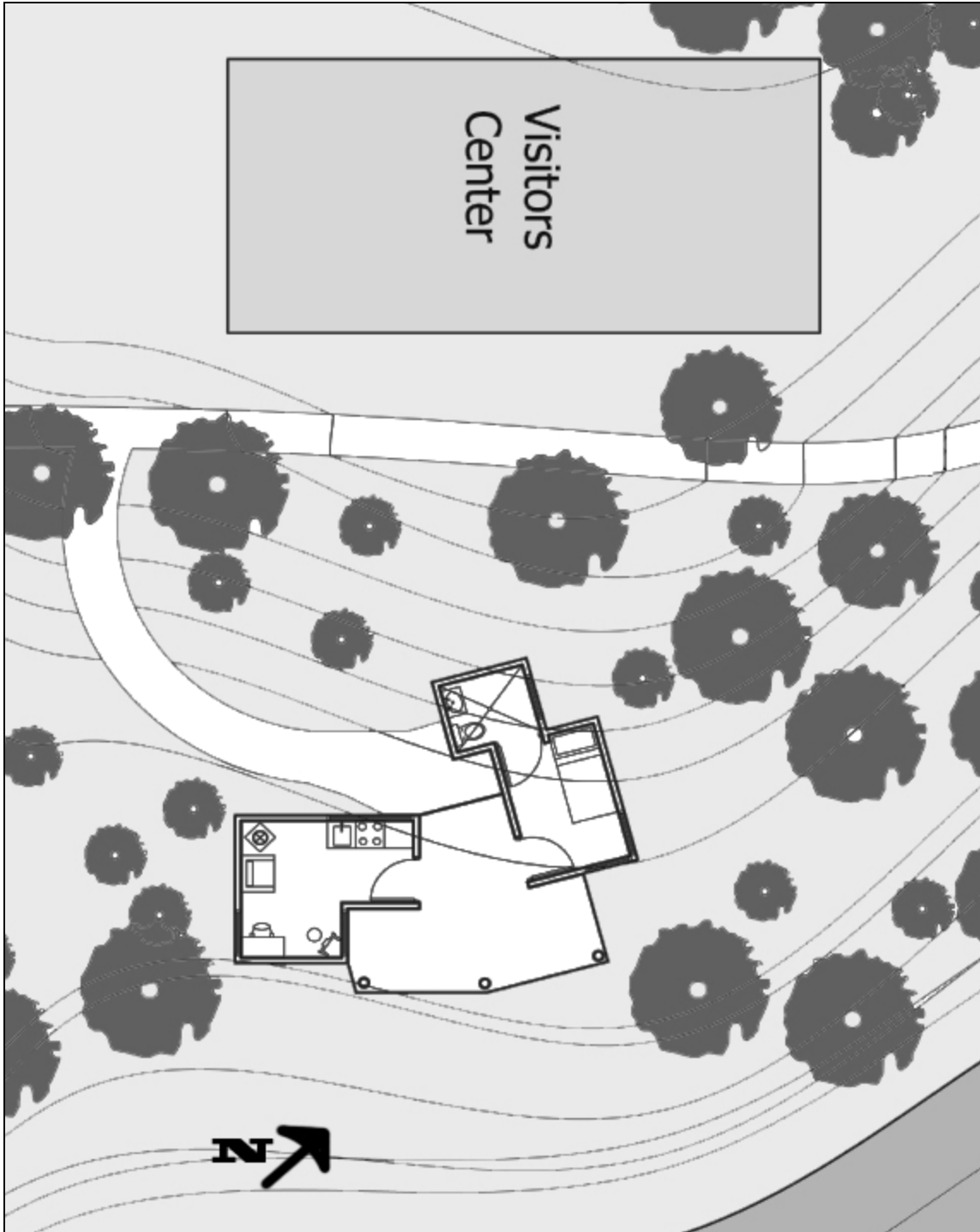
Goal: To develop a cabin located just off the Concord River to serve as a summer getaway for a writer and/or artist for no more than a two week period. Restrictions were placed on the placement and size of the cabin.

Site: Concord River Basin, Concord, Connecticut

Process: The cabin was developed by determining the necessary spaces for a two week getaway. Spaces were allocated to maximize size while also allowing spaces to provide a unique feeling between themselves. Care was taken to detour from the standard straight-line boxes, while still utilizing the square as the space with the maximum area.



CONCORD RIVER CABIN

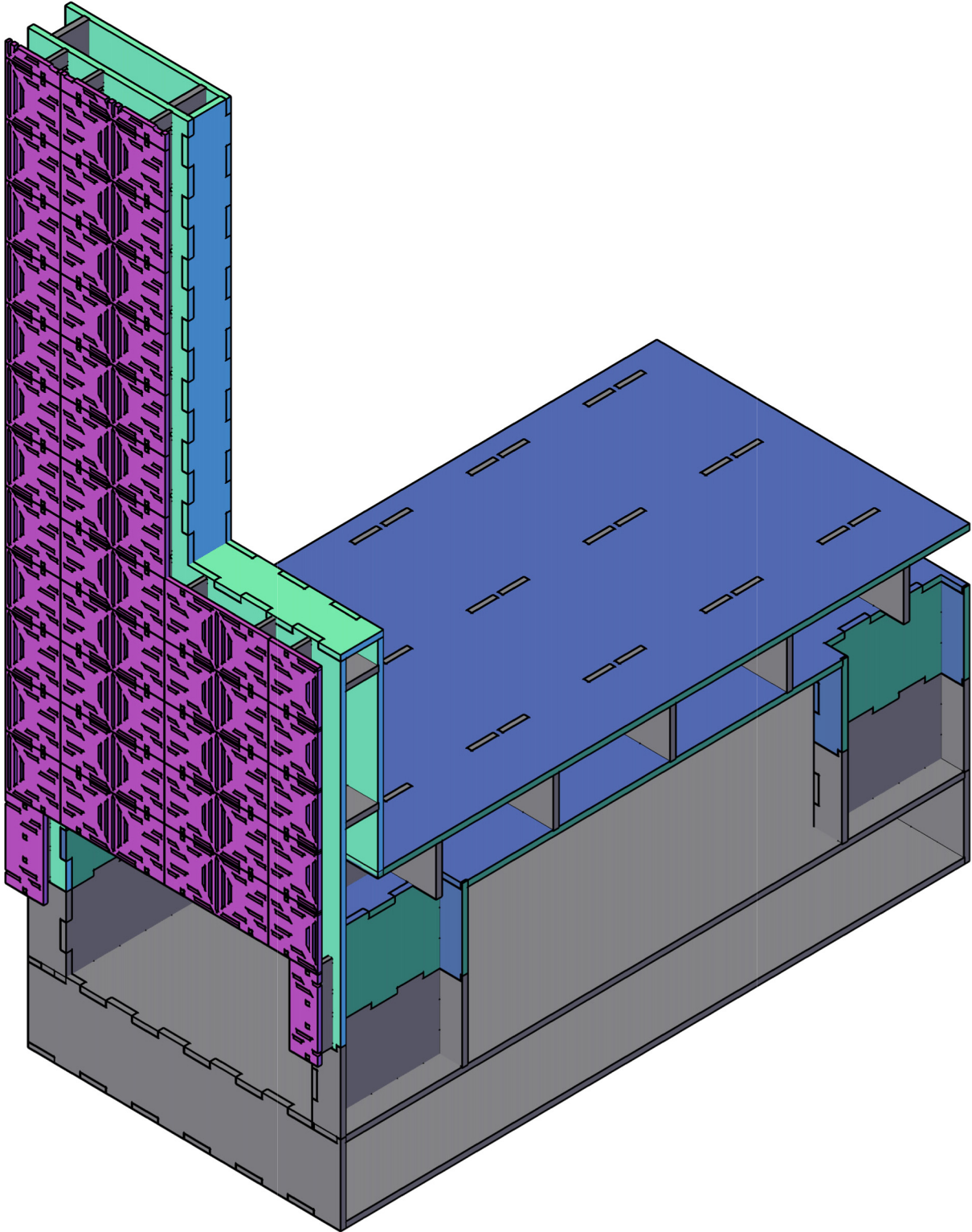


LEFT: A site plan was developed to show the cabin and its design within the site provided along the Concord River.

ABOVE: The floor plan shows the regions within the two isolated spaces that showcase the separation between the work and living quarters within the small cabin.

Emphasis with these pieces was placed on the ability to migrate between Adobe Photoshop and AutoCAD

CONCORD RIVER CABIN

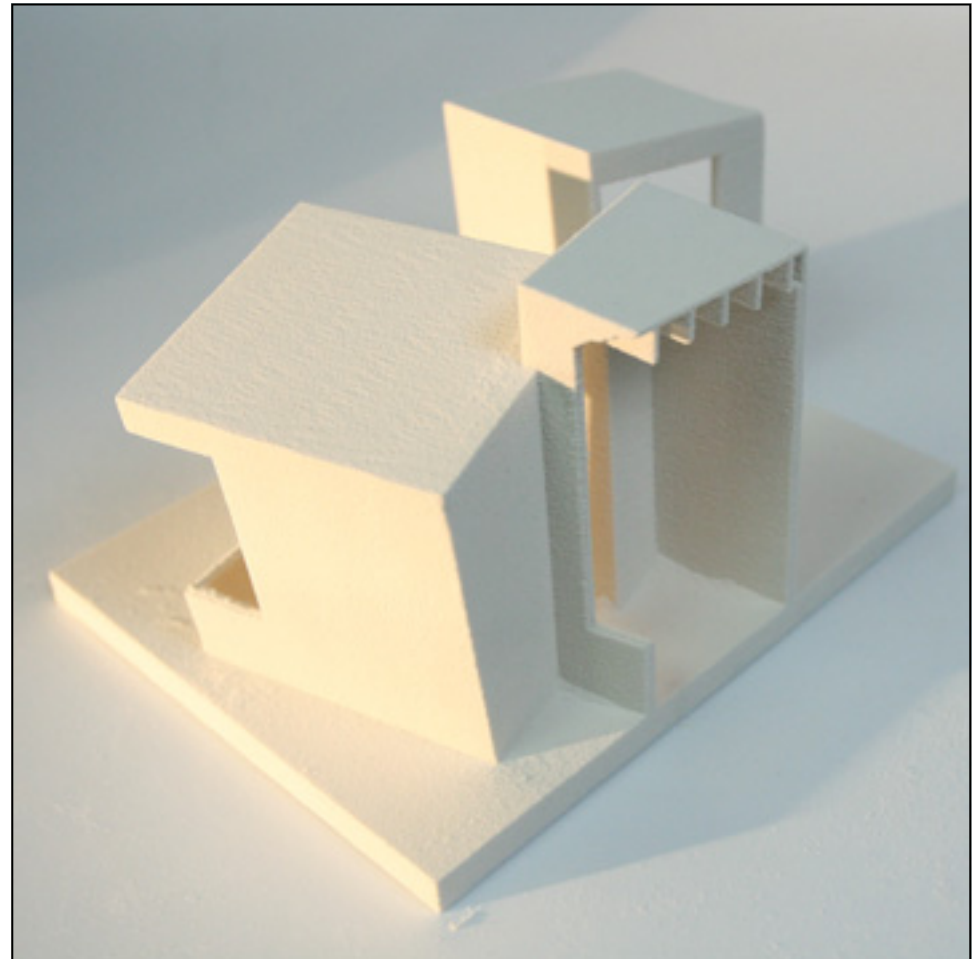


CONCORD RIVER CABIN

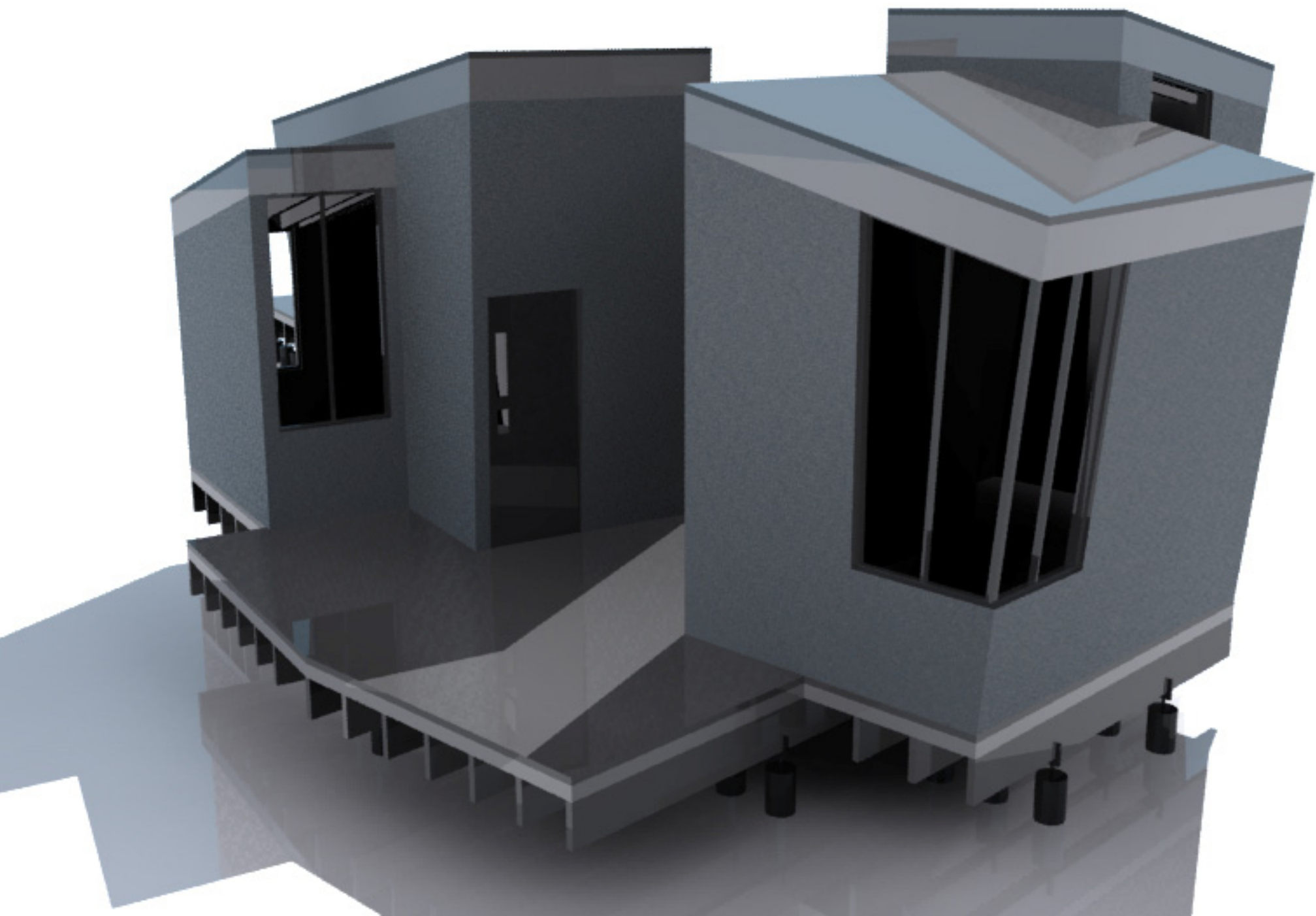


LEFT: The rain screen produced for the building exterior was modeled using 1/8in. masonite. The model was made by scaling the faces of the rain screen in AutoCAD and utilizing a laser cutter to make the cuts.

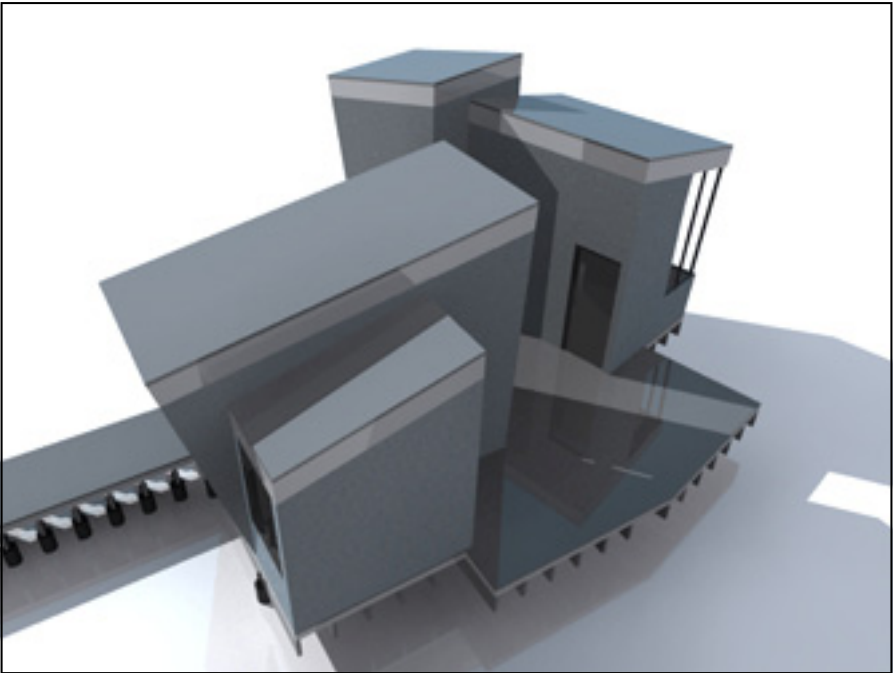
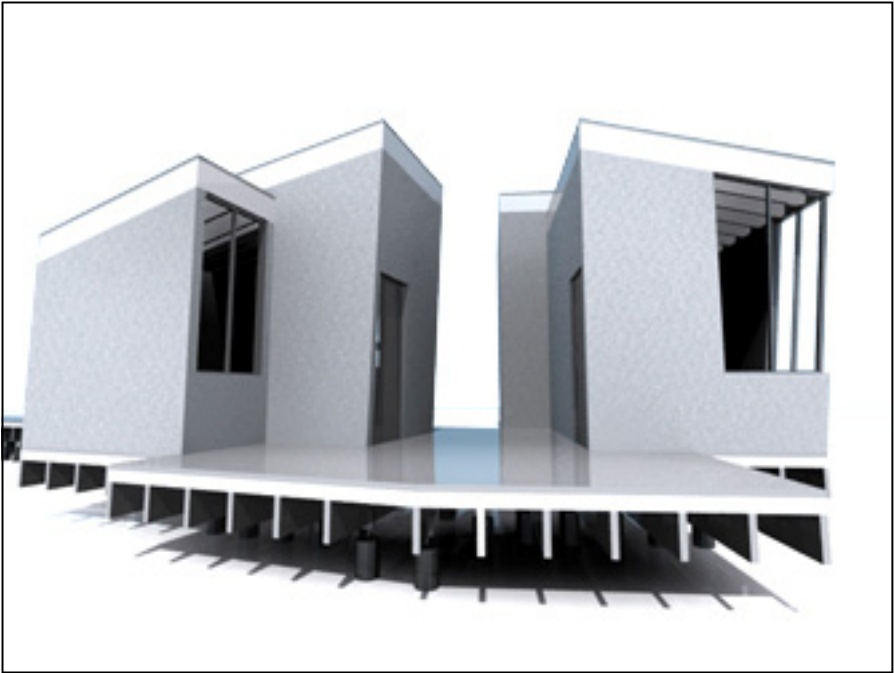
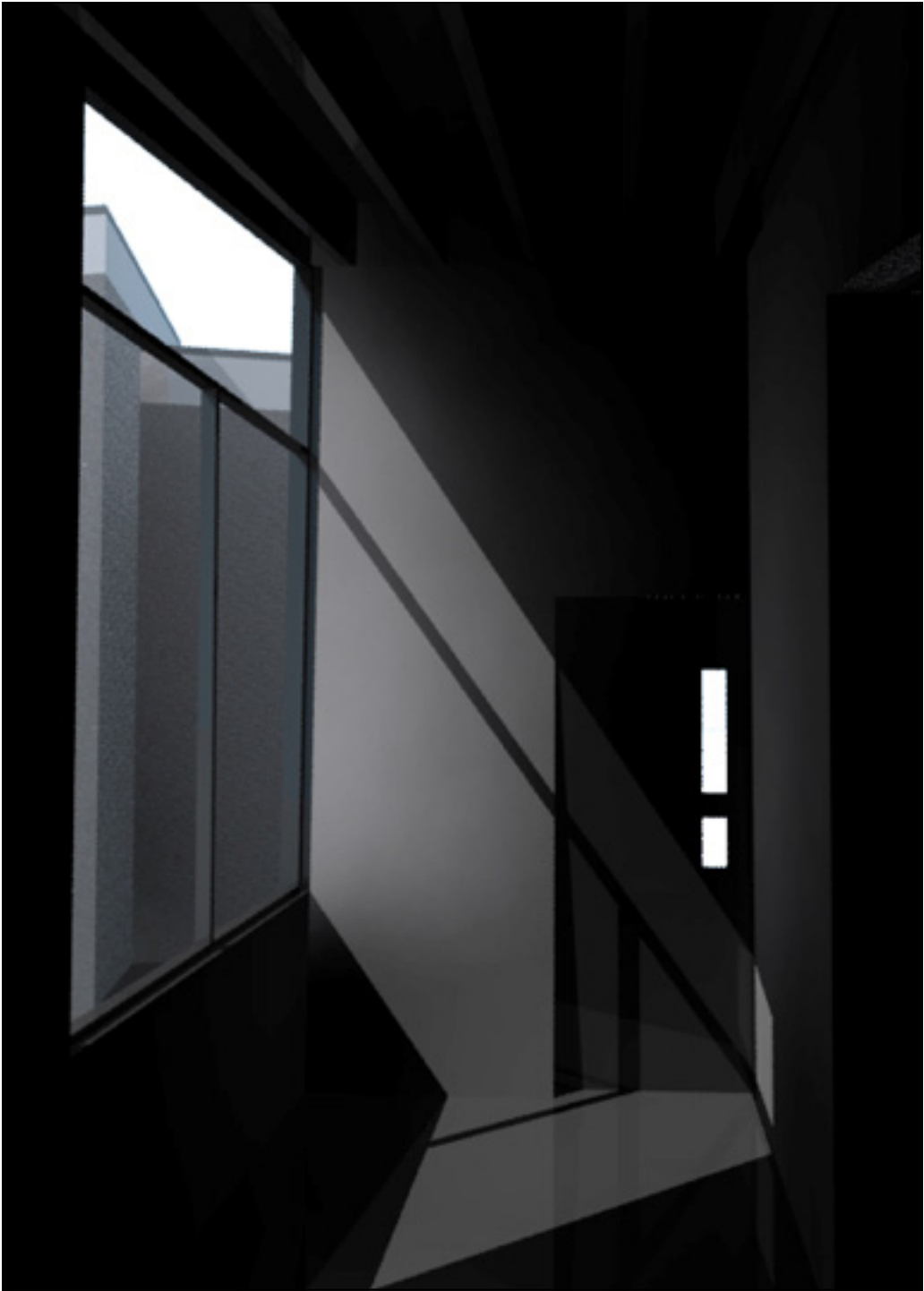
RIGHT: A 3D print section of the building was produced to show a 3D representation of a section of the building. Emphasis was placed on the slanted wall structure and integrated spaces within the cabin.



CONCORD RIVER CABIN



CONCORD RIVER CABIN



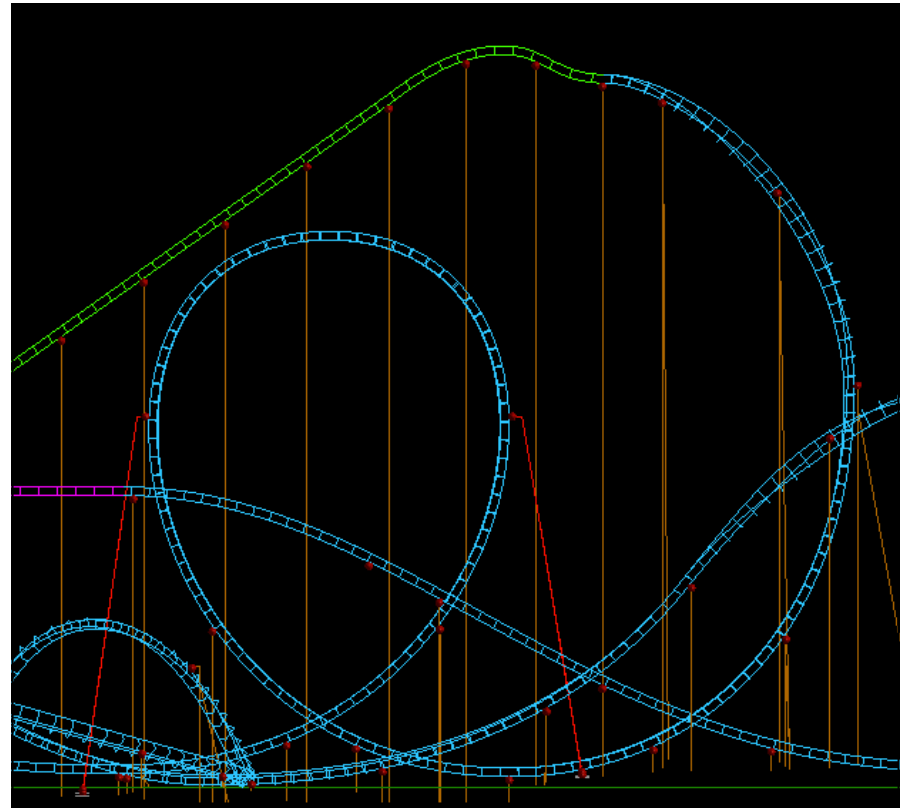
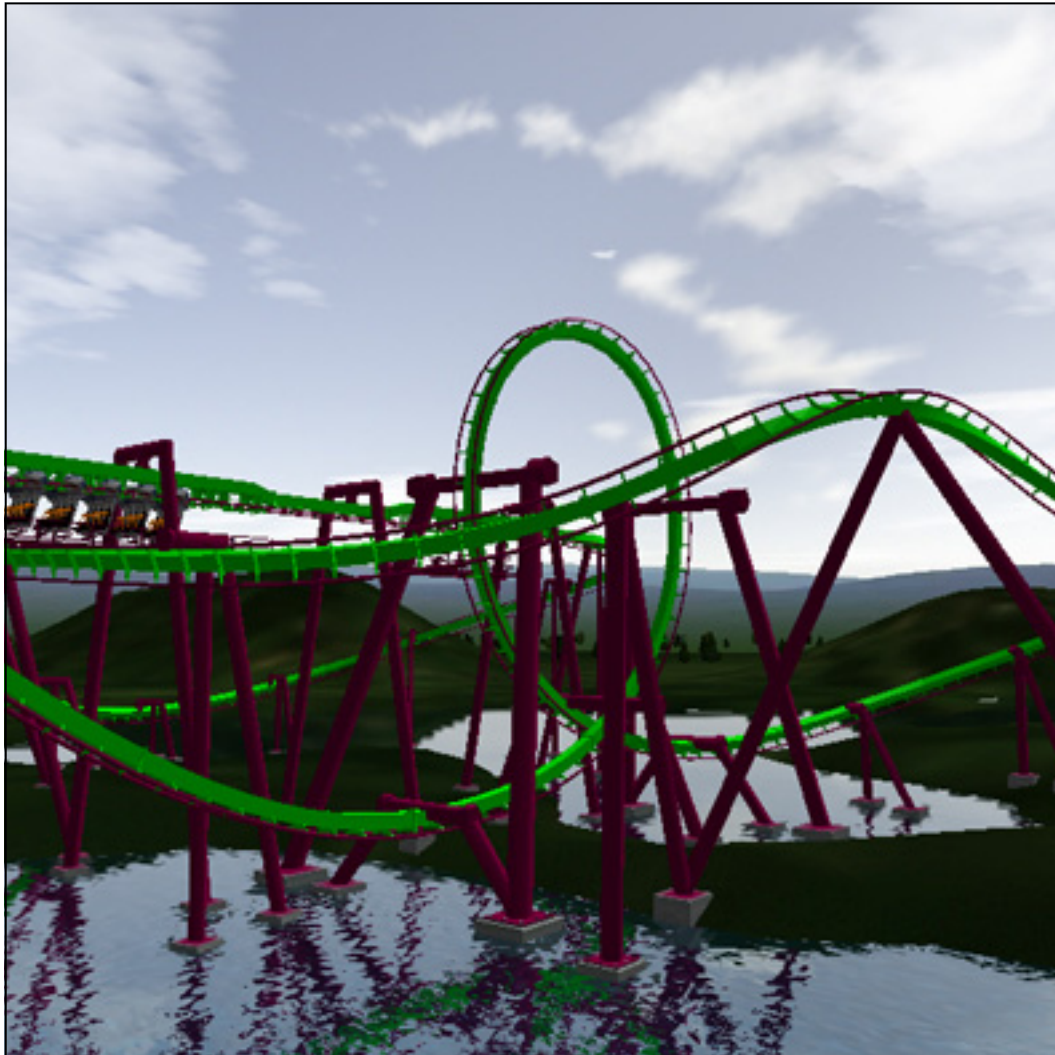
JARRELL D. JOHNSON

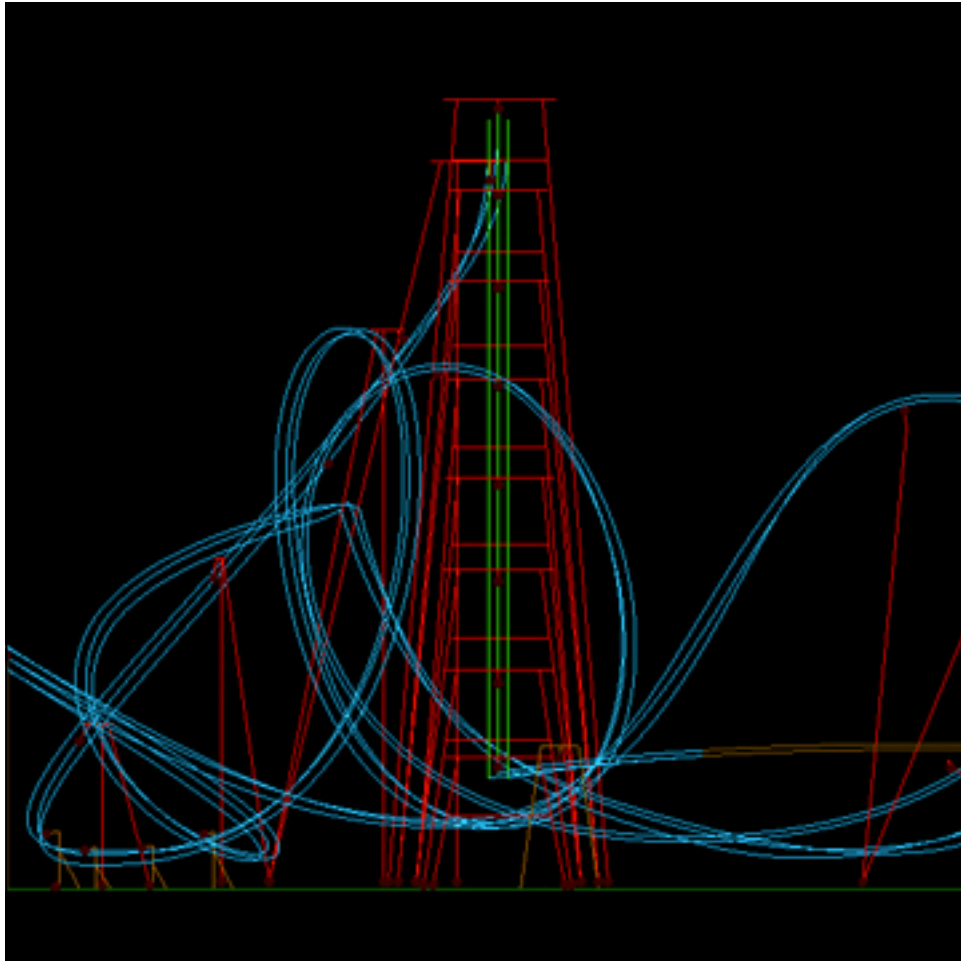
MISCELLANEOUS PROJECTS

ARCHITECTURE PORTFOLIO

ROLLERCOASTER DESIGNS

All rollercoaster designs are developed using 3D editing software entitled NoLimits. The software runs as a 3D version of Adobe Illustrator, making use of vertices and segments that are controlled by each point. Together, the segments produce the track. Upon completion, the document can then be rendered to produce a virtual simulation of the rollercoaster design produced. All pictures depicted are custom designs produce using the software.





LEFT: This design is entitled "Deviant." The ride strays away from the traditional Bolliger & Mabillard designs that exist current day. The design includes non-traditional inversions, including a heart-line loop.



RIGHT: This design is entitled "Invertigo." It serves as a terrain-hugging rollercoaster that is designed to reduce height of the overall ride while still providing speeds by making use of drops in terrain height.

ROLLERCOASTER DESIGNS

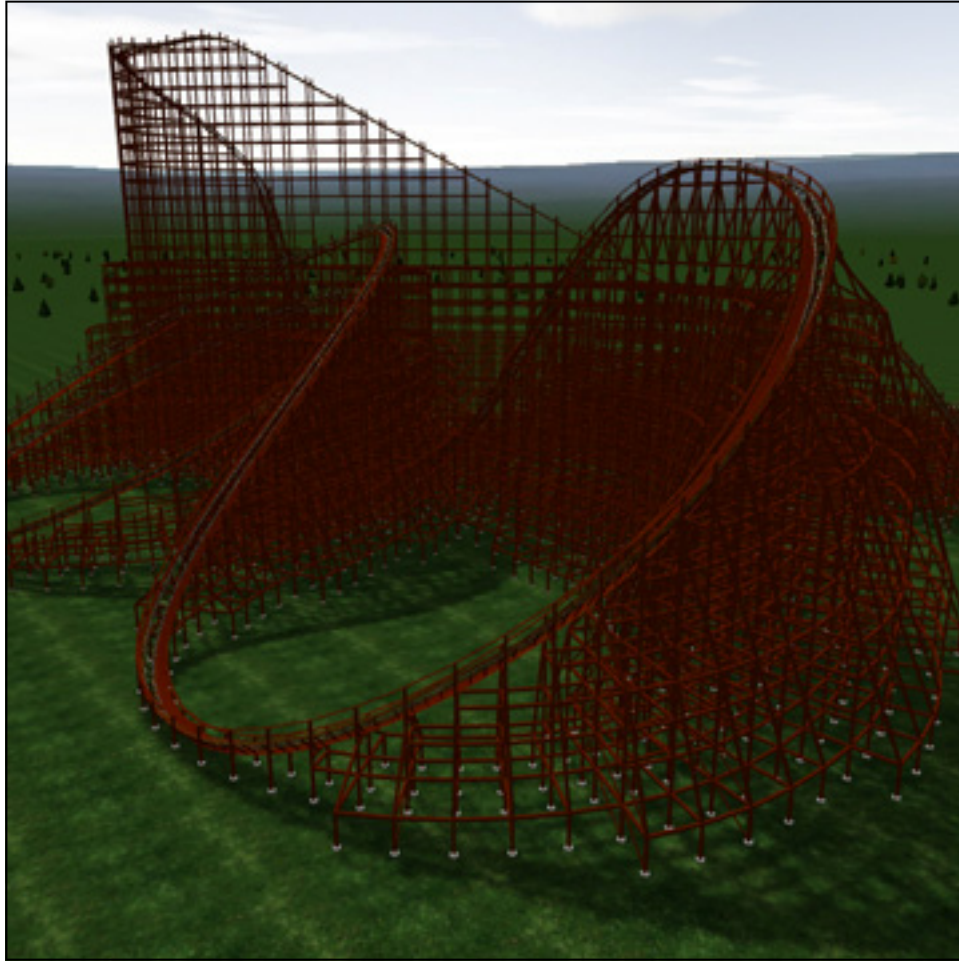
RIGHT: This design is entitled "Helios." The ride models the traditional Bolliger & Mabillard style of megacoasters (300ft. tall roller coasters). The design includes no inversions or sharp twists for a smooth experience.



LEFT: This design is entitled "Fossil." The design style, resembles to standard "out-and-back" design of a wooden rollercoaster with non-standard directional transitions throughout the ride design.

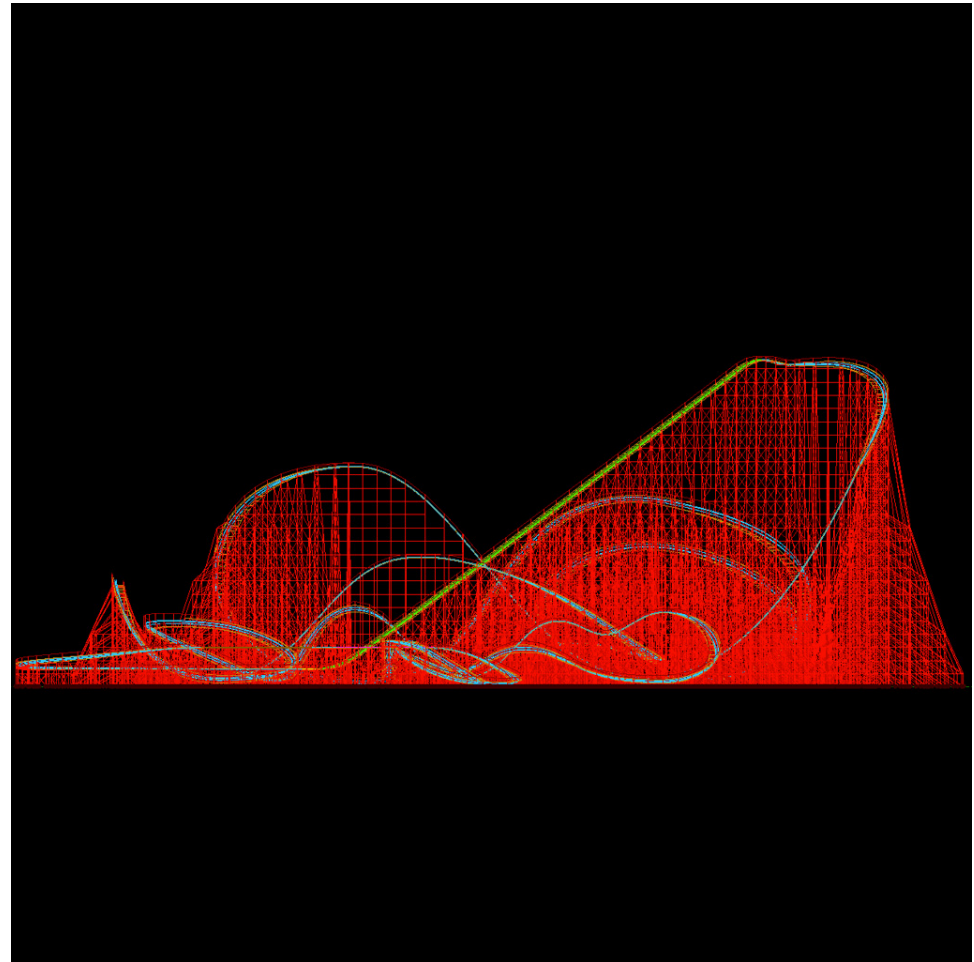


ROLLERCOASTER DESIGNS



LEFT: This design is entitled "Colossus." The ride pushes the limits of wooden rollercoasters with a height of 304ft and twists and turns that go beyond the boundary of light gravitational forces.

RIGHT: "Colossus" depicted within the editing software. The flow of the track can be seen from the pale, light blue lines above the red supporting structure. Application of physics laws are most notable here.





You are probably wondering what in the world is going on in this picture. When tested on how you can make someone walk on water, this was the solution we determined: it's not too far fetched to say that you can walk on water by being strapped to five 8ft diameter balloons. Each balloon was filled with helium and tied to a post that was strapped to a suit built for the apparatus. The entire test took place in the Alumni Pool located at the Stata Center, MIT Campus.



T-SHIRT DESIGN FOR THE NATIONAL SOCIETY OF BLACK ENGINEERS—MIT CHAPTER





Welcome to Chocolate City @ MIT

Welcome to the Chocolate City @ MIT website! I hope that you find your way around the website easily! When you first hear the words Chocolate City, many probably believe that we are group who loves Chocolate! We first want to let you know that we are more than that. Chocolate City @ MIT is a living group currently living on the top 3 floors of New House 1 dormitory. It was established in 1975, with the mission of creating a support network for all of the brothers within. Our current major goals are to develop each of the individual brothers intellectually, professionally, as well as socially.

We achieve these goals by doing many major events. We develop the brothers professionally and intellectually by doing the 4-year planning seminar, Faculty Reception, as well as holding study sessions within the house. The 4-year planning seminar helps freshman and sophomores at MIT plan out their 4 years in college with each of their respective majors. Chocolate City's Faculty Reception is an opportunity for the Brothers of Chocolate City as well as anybody else who wishes to attend to be able to interact with the faculty and staff at MIT. Study sessions are held before most of the freshman exams to ensure that they are well prepared for their exam so that they get off on the right foot.

Chocolate City also strives to build the social networks of every brother in the house. At the beginning of every semester, we host a huge party on the campus of MIT. Our previous parties have had 650+ attendees! They have always been a huge success and also help fund the other events that Chocolate City has throughout the school year, such as our semi-annual retreat where we have the opportunity to reevaluate the direction the house is going in as well as strengthen the brotherhood. Chocolate City is also open to having social networking events with other organizations within the Boston community. These events have served as amazing opportunities for the brothers to increase their network with the rest of the Boston community. If you are interested in having a social with the Brothers of Chocolate City, please be sure to contact our Social Chairs listed on the officer page.

Chocolate City has long served the Boston collegiate community and hopes to continue doing so. Please be on the lookout for some of our upcoming events which include Comedy Collage (2/20/2010) as well as the 35th Anniversary (October 2010). We hope that you will take the time to look through this webpage and please don't be afraid to contact any of us via email if you are to have any questions.

Sincerely,

Dominic McDonald, Chocolate City Class of 2010
Senior Co-Chairman

Howard Liles, Chocolate City Class of 2010
Junior Co-Chairman

Recent Events

Fall 2009 Faculty Reception



Current Brothers

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed ultrices luctus porta. Phasellus pellentesque, elit quis aliquam laoreet, odio leo lobortis libero, ac fermentum urna turpis ac erat. Morbi ullamcorper mauris in nisl congue varius. Curabitur pulvinar porttitor quam, id aliquam lorem sagittis et. Sed ligula erat, venenatis nec sagittis non, sagittis ut erat. In ut diam eu orci suscipit viverra. Donec sed nunc nec sem placerat ultrices ut at dui. Vivamus at nulla nibh. Quisque elementum magna nec mi posuere in molestie libero tristique.

Senior Class of 2010



Corey Harris Howard Liles Dominic McDonald Stephen Morton Clinton Scroggins

Junior Class of 2011



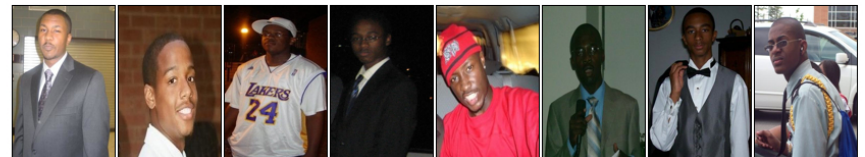
Cameron Allen Ruben Alonzo Andrew Bailey Kamil Gedeon Benjamin Mensah Dylan Rockwell

Sophomore Class of 2012



Akara Ambak Everson Auguste Christopher Davidson Nathaniel Forbes Alexander Mason Tyrone Thames Michael Thompson Jacob Wamala

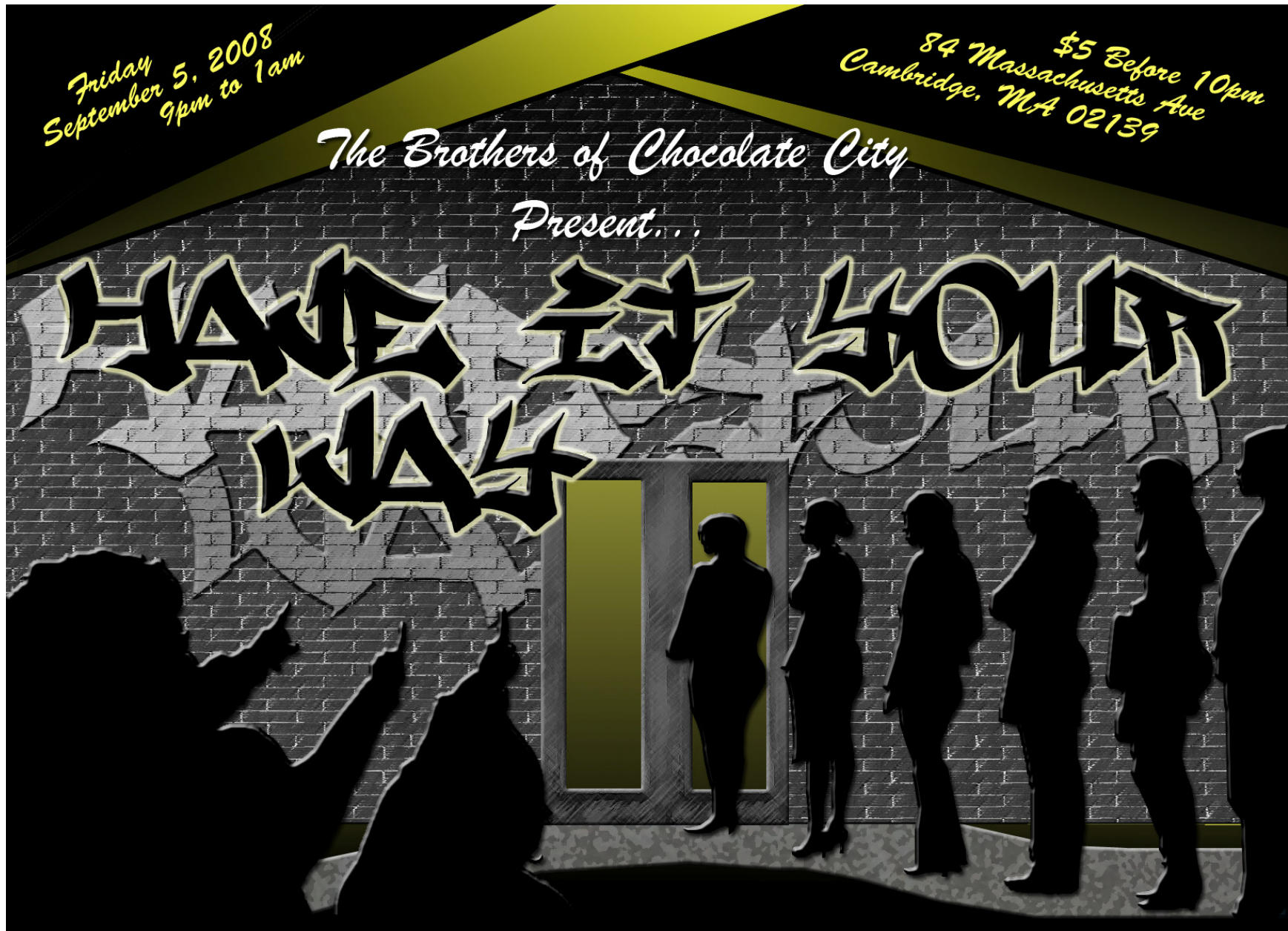
Freshmen Class of 2013



Ibrahim Abdussabur Eric Boyer Terence Dalbert Phillip Daniel Patrick Gichuri Edner Paul Rene Peters Tyshaun Wynter

The largest current project, the Chocolate City website, is currently being revamped to include a abundance of information for any visitor. The website is being re-written in PHP and MySQL with an administrative interface so that minimal knowledge is required to maintain the website (besides knowing how to click a button).

The website is located at ccity.mit.edu



The original Chocolate City website designed in 2005 for use at the 30th Reunion and for event publicity for the organization.

The website is no longer available for display.



Chocolate City

[Home](#)[Mission](#)[Calendar](#)[Pictures](#)[Bros](#)[Officers](#)[Contact](#)

Welcome to the Chocolate City @ MIT

The Brothers of Chocolate City Present...

Saturday, February 23, 2006

Kresge Auditorium
44 Massachusetts Avenue
Cambridge, MA 02139

Comedy Collage

Starts Open @ 6:30pm/Showtime: 8:30pm

Featuring...
Mike Vecchione, Victor Varnado,
Calise Hawkins, and Mike Yard

The Brothers of Chocolate City present...

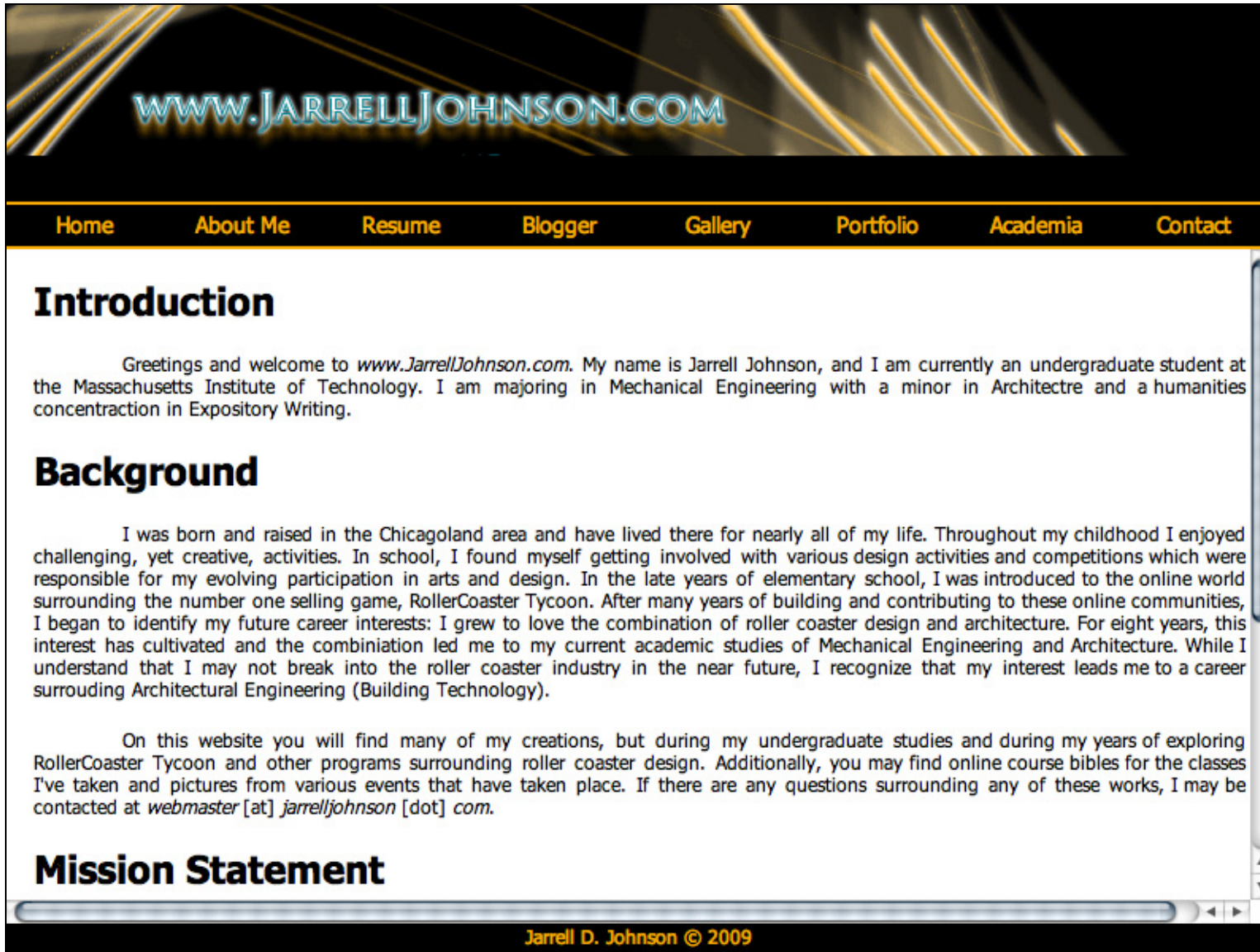
Comedy Collage

A night of laughter and entertainment, this is an event you don't want to miss! Comedians will include Mike Vecchione, Victor Varnado, Calise Hawkins, and Mike Yard. Feel free to check them out on youtube, their fresh material will you have you holding your sides all night.

Chocolate City

est. 1975





A personal project with the intention of displaying personal information, a blog, my portfolio, and a gallery of photographs taken over the years. The project was started November 2009 and is expected to be completed March 2010. The website will be the portal for family and friends to get an update on my experiences without having to call.

The website is located at www.jarrelljohnson.com

MIT Kresge Auditorium

48 Massachusetts Ave.
Cambridge, MA 02139

Friday,
February 29th, 2008

Show Starts @ 7:30pm
Admission: FREE!!!

Featuring:
Louis Fouché
Nia Dance Troupe
Mocha Moves
and more...

PULSE

Reliving the Moment

The primary website for the NSBE-MIT Chapter. The website includes interactive forms, documents for the chapter, and a calendar of events.

The website is at web.mit.edu/nsbe/www



National Society of Black Engineers Massachusetts Institute of Technology

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Quick Links

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Sponsor's Spotlight

We thank our sponsors for their dedication to the MIT Chapter.

Morgan Stanley

Join NSBE

Not a Member!?
Want to become one!?

Visit **NOL** now!
It's as easy as 1-2-3!

News Flash:

Did you miss a GBM? If so, download the [slides](#).

Fill out the Sponsorship Application if you are looking to obtain sponsorship from the Chapter for the 36th Annual National Convention to be held in Toronto, Canada. The application can be accessed from the Members page of the website. Don't forget, you need certificates to access the application.

Looking for an internship or full time position this summer?
Job Resource by [AfterCollege](#) - customized for NSBE-MIT!

Announcements:

*The Brothers of
Chocolate City Present...*

4TH OF JULY BBQ

*&
After Party*

Friday July 4th 2008

Time: 3pm - 1am

Damage: FREE

New House

471 Memorial Drive

Cambridge MA 02139