



MATTHEW ALLAN CARR

PORTFOLIO

828.773.0413

www.TheCarr.House

MatthewCarr@TheCarr.House

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VICE BOX

PUSH

9 PIECE LOW-BACK CAFE CHAIR

TRIPOD LAMP

INTERNSHIP



Vice Box

Spring 2022
Furniture II
Professor Richard Prisco

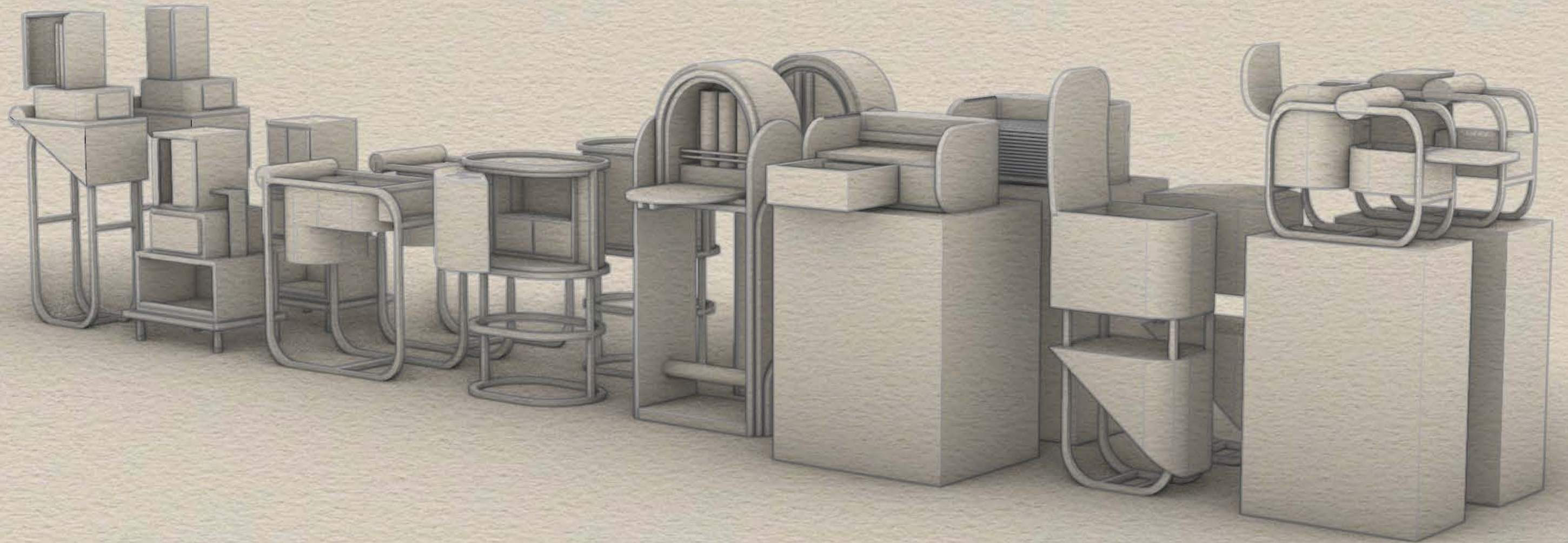
Design Brief

The Vice Box relies on quality materials combined thoughtfully with reference and research into Streamline Art Deco and English Club furniture periods to achieve the goals of being a functional vice holding cabinet with distinct historic influence. Art Deco shapes and forms combined with the fine leather and abundant wood of the English Club style show these influences. Monumental figures with strong horizontal lines coupled with classic materials all were observed and carried into the ideation for the Vice Box. This cabinet features a top at standard bar height, a bottle stage, glass storage, card and dice storage, and cedar tobacco drawers.

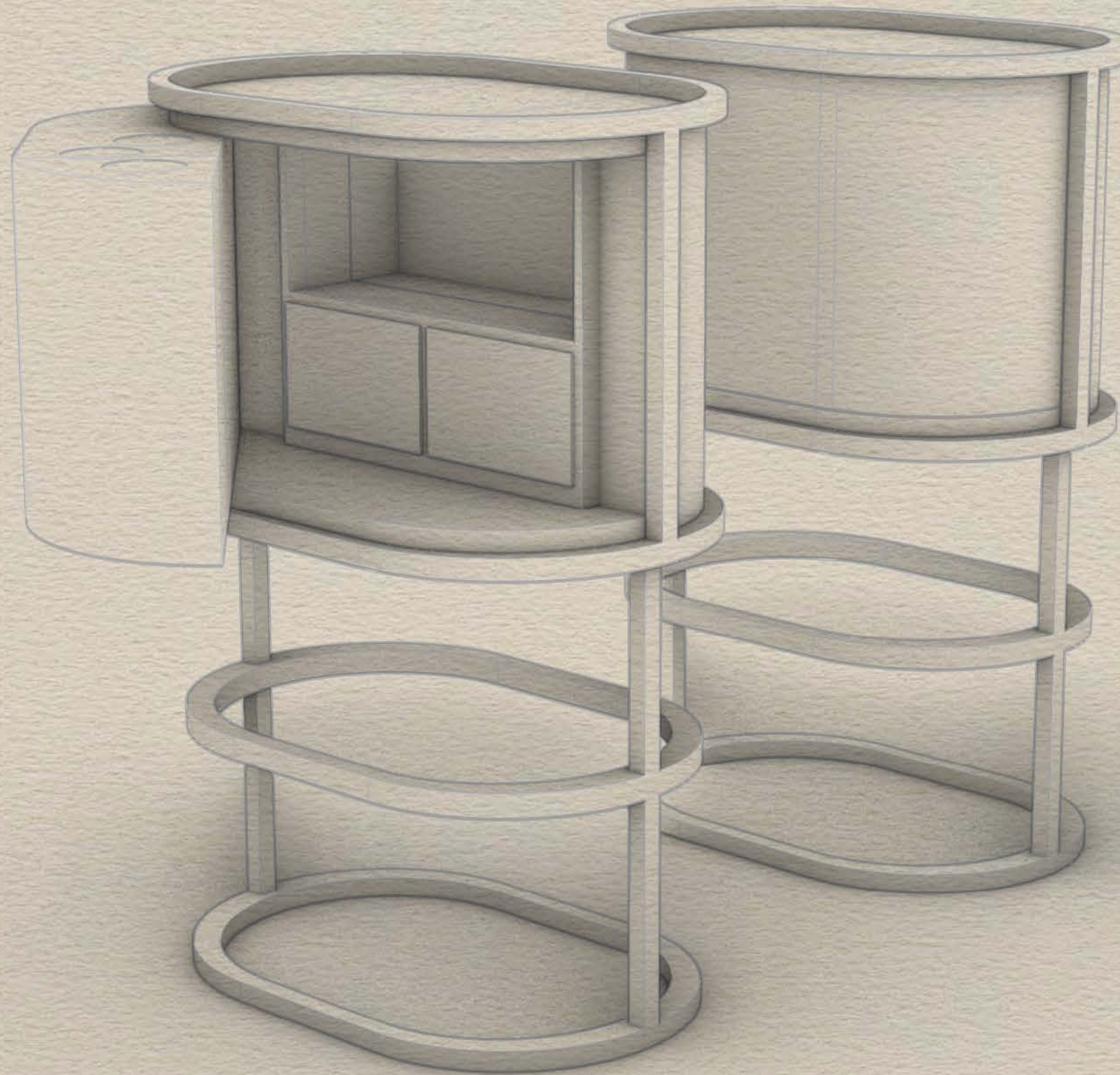
The Vice Box fills the opportunity to be a simple cabinet with a specific purpose and specific historic design references. Measurements, shapes, and materials have the Vice Box fit to be declared similar to furniture from both Art Deco and English Club eras while serving to hold the intended contents. The Vice Box has been designed to best place residentially with owners of a very specific lifestyle. It is intended to accommodate and facilitate high end smoking, drinking, and gaming.

While skinned with leather and curved with Kerfkore, the majority of this unit is crafted out of Alder generously donated to Appalachian State University by Northwest Hardwoods. This alder was glued into panels for the CNC, cut to fit mortises on the mill, and grooved with a cove cut bit to act as handles before finally being treated in two separate ways. CNC cutting of much of the joinery and rounded shapes allowed for more precise construction that could be easily repeated in manufacturing. The alder used on the upper case was all finished with much sanding and a wipe on mixture of polyurethane and thinner. The base of the unit was treated with a three part equal mixture of shellac, graphite, and thinner before being buffed and sealed with the same mixture as the top cabinet.

Initial Concepts



Selected Concept



2nd Ideation



Final Render



1/4 Scale Model

This quarter scale model was crafted out white wood, textured black craft paper, 3D printing filament, archival craft adhesive, and chrome auto body spray paint

Critique of this model led to:

- use of two doors instead of one
 - movement and resizing of open storage space above the drawers
 - the beginning of contemplation of the use of a fourth leg.
-



Full Scale Model

This full scale model was crafted out of plywood, MDF, kerfkore, archival craft glue, and textured pleather.

Critique of this model led to better understanding of:

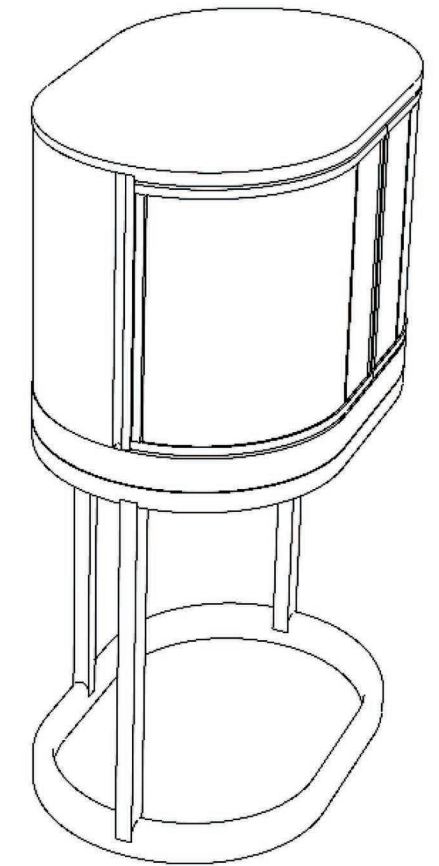
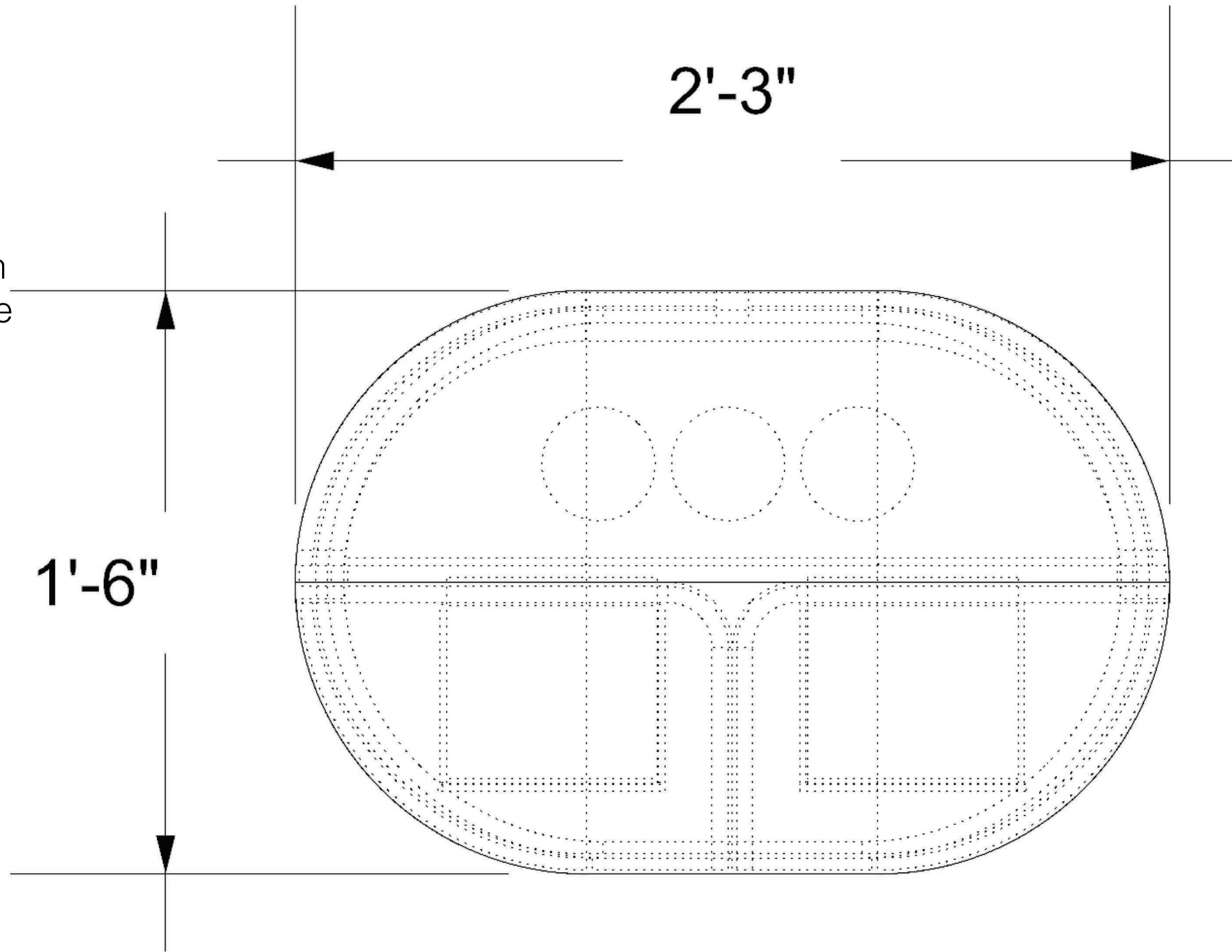
- real world dimensions
- the CNC process for this case goods' wooden parts
- storage ergonomics and placement
- leather placement and application process for this piece.



Engineering

Top view with hidden lines and perspective line render.

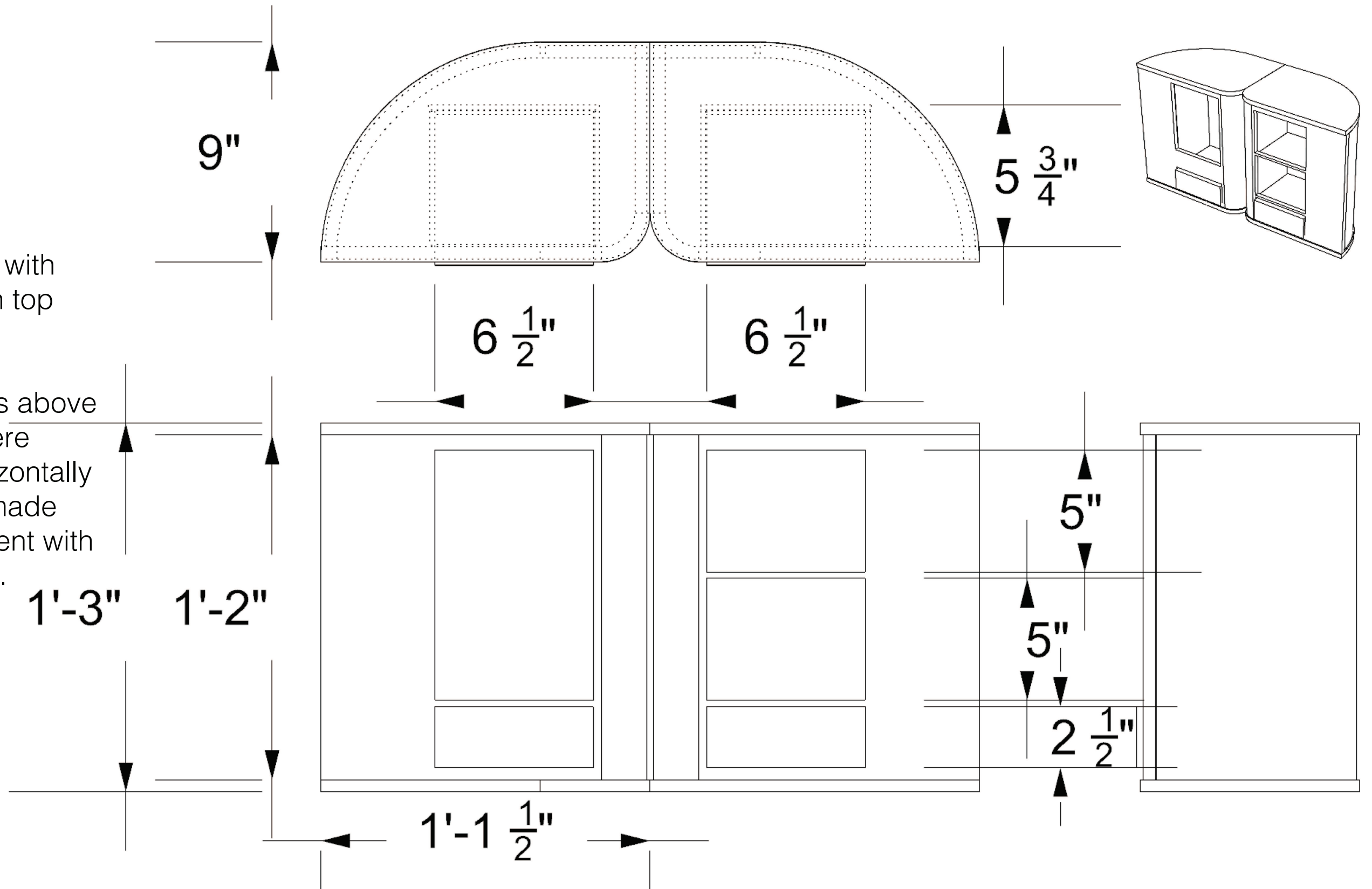
Critical and general dimensions using standard drafting conventions.



Engineering

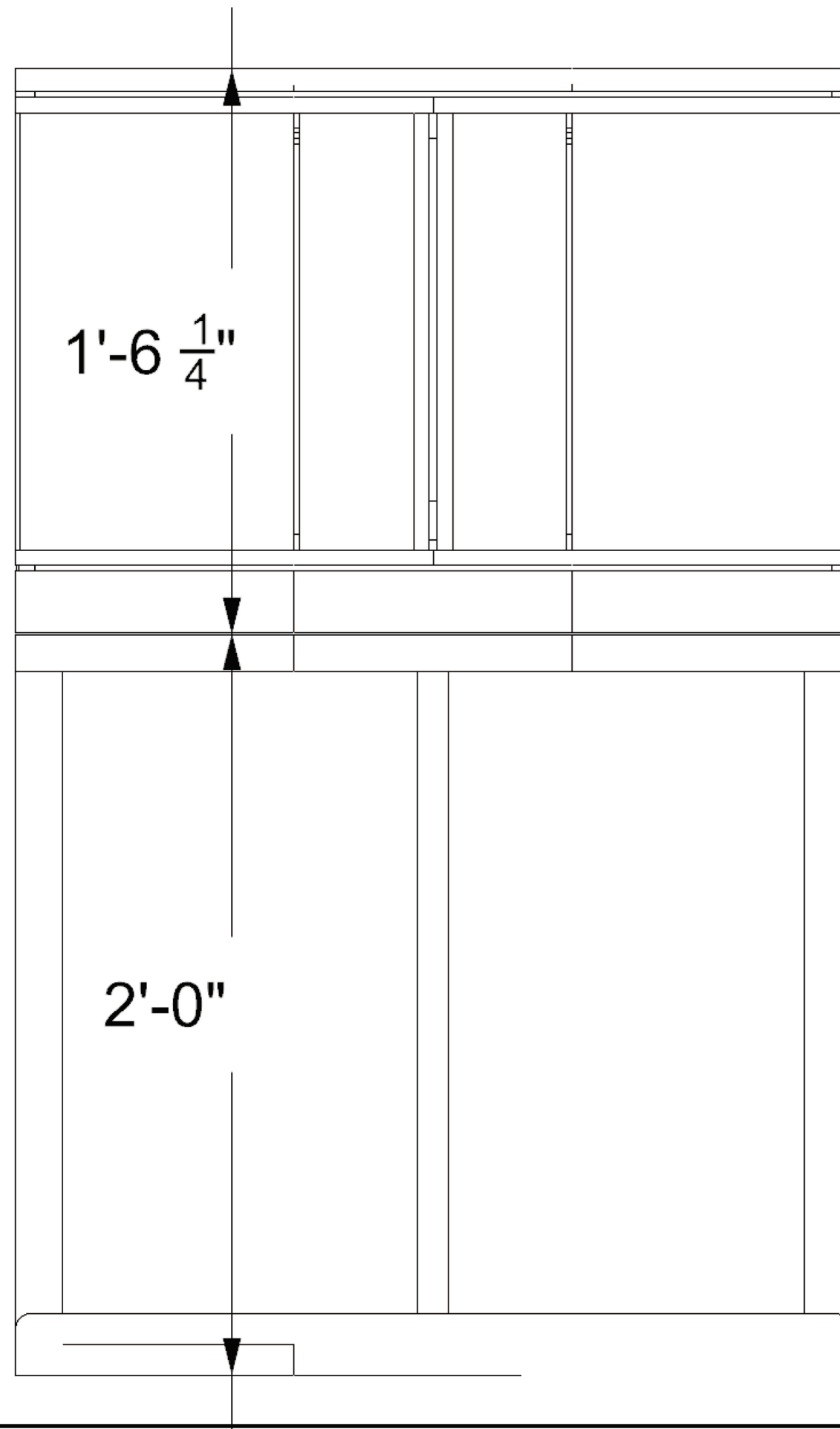
Views of doors with hidden lines on top view.

The open areas above the drawers were expanded horizontally from this and made one compartment with railing per side.

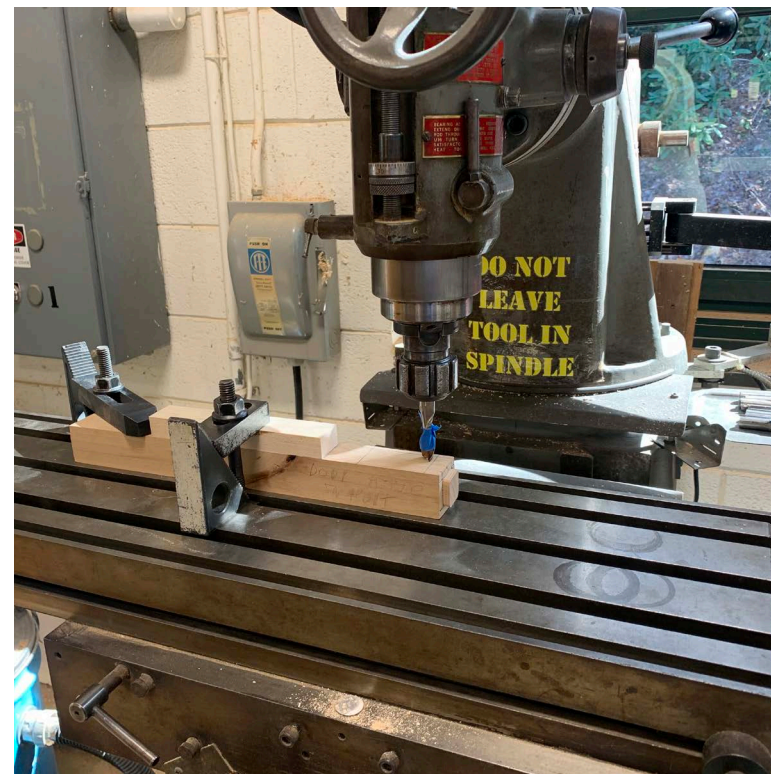
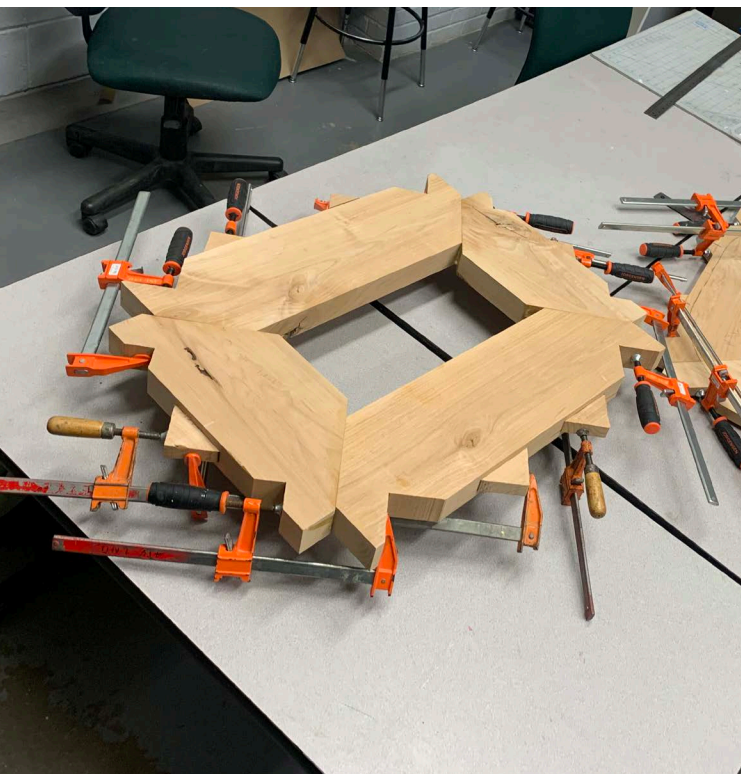
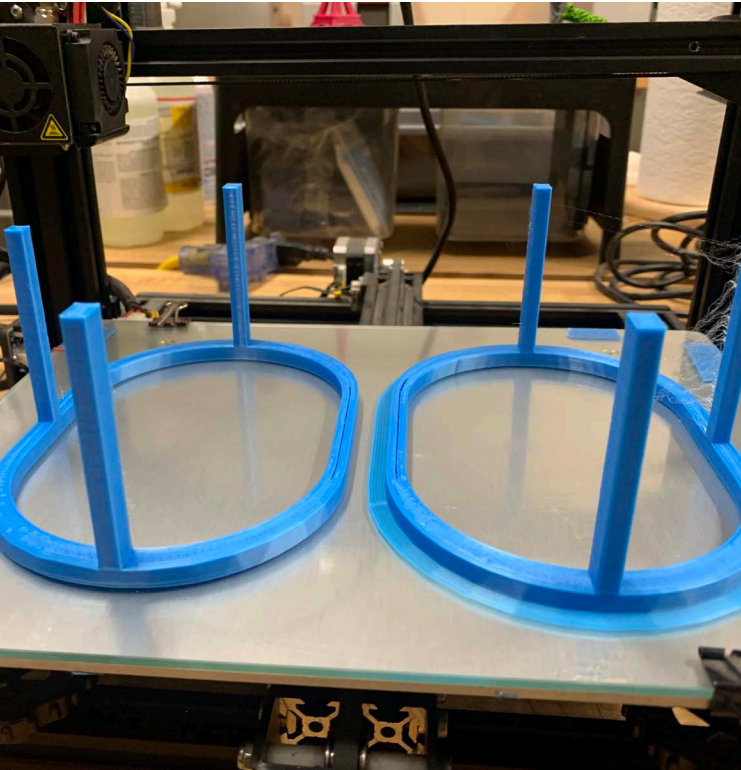


Engineering

Height of separate
base and top cabinet.



Building Processes



Vice Box

Final Prototype







Acknowledgment

The Vice Box was recognized as the student occasional storage **best of category** in the Fall 2022 ISFD Innovation+Design Competition.





PUSH

Fall 2021
Furniture I
Professor Richard Prisco

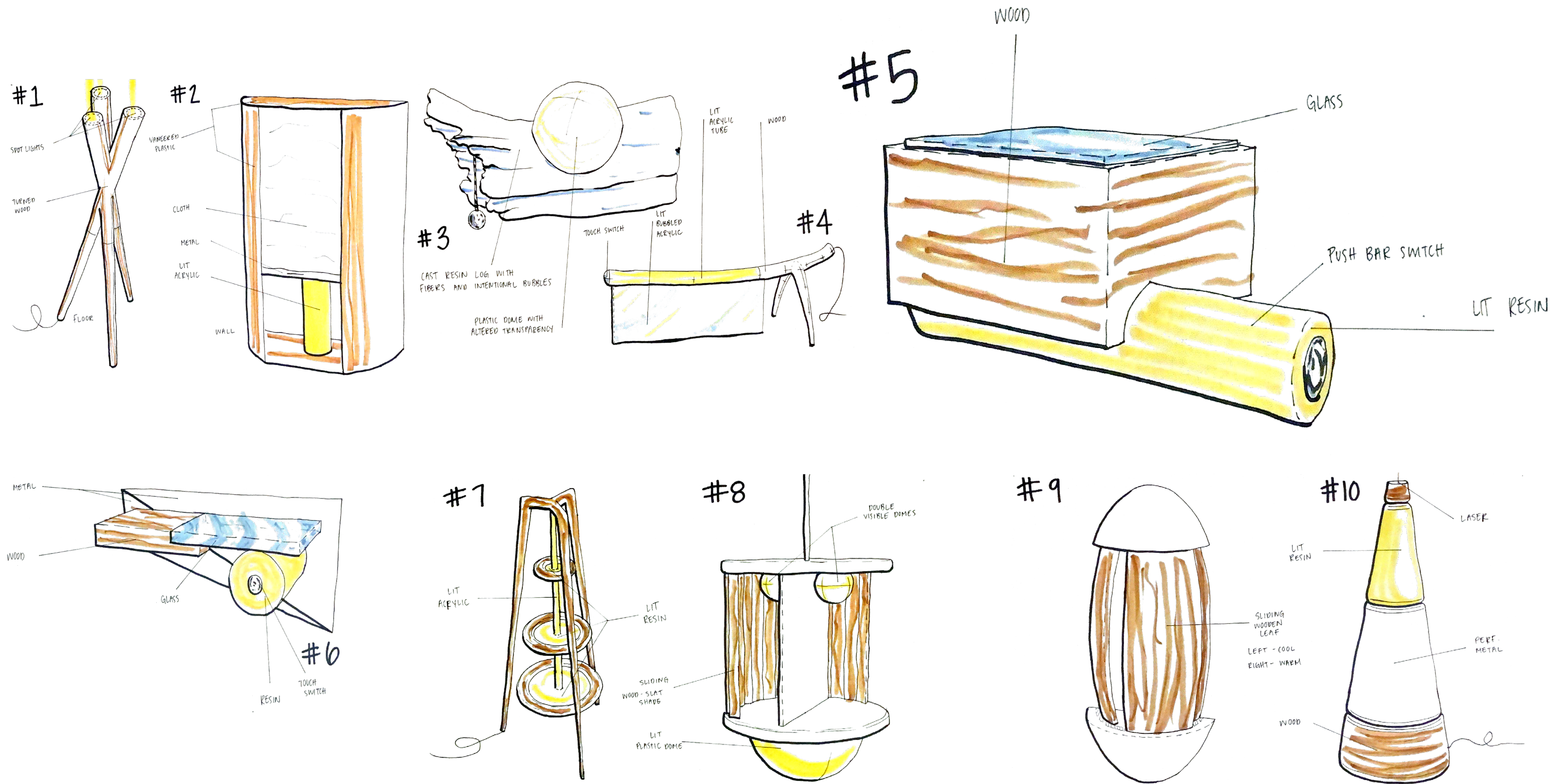
Design Brief

PUSH uses quality materials coupled with attention to detail and craftsmanship to broadly convey depictions of the design elements of point, line, and plane while also functioning as a lighting object. Point, line, and plane exemplified in others work led to many decisions on materials and compositions to be used in PUSH's display of these elements. Specifically, works by Dan Flavin and Larry Bell featured in "Minimalism" by James Meyer were heavily influential in this projects design direction. Clear planes, light diffusing rods, and poured bubbles were all observed and carried into the ideation for PUSH with the intent of these materials directly reflecting their visually similar elements.

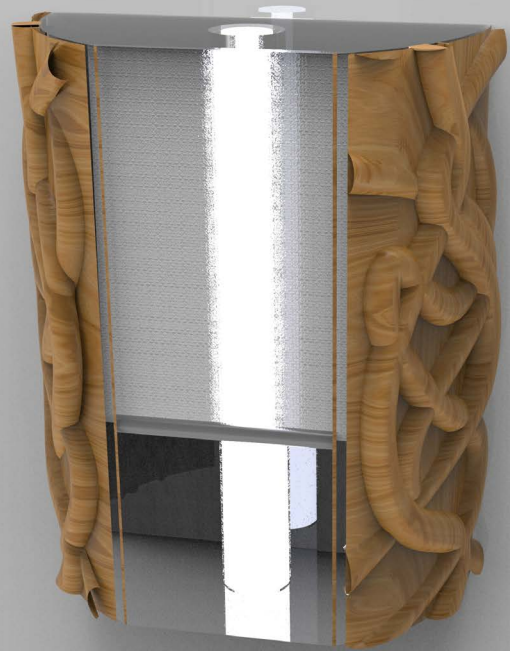
The production of this light began with ten initial concepts born of the research mentioned prior. The selected concept required a pushing motion to turn the lamp on and off leaving PUSH with it's name. The initial renders, in Rhino and KeyShot, coupled with insight and critique surrounding the volume and functional models, all helped to increase clarity about size and ratios between separate elements, placement of these elements, and material choices.

PUSH is constructed using acrylic rod, acrylic sheeting, poured resin, black walnut veneer, water based spray polyurethane, EVA foam, machinable felt, solvent bonding liquid, a toggle switch, wires, an E12 sized bulb socket, a 1600 lumen corn cob LED bulb, and screws. Processes included cutting, solvent welding, tapping, and milling acrylic as well as pouring and machining resin, applying and treating veneer, and installing lighting components.

Initial Sketches



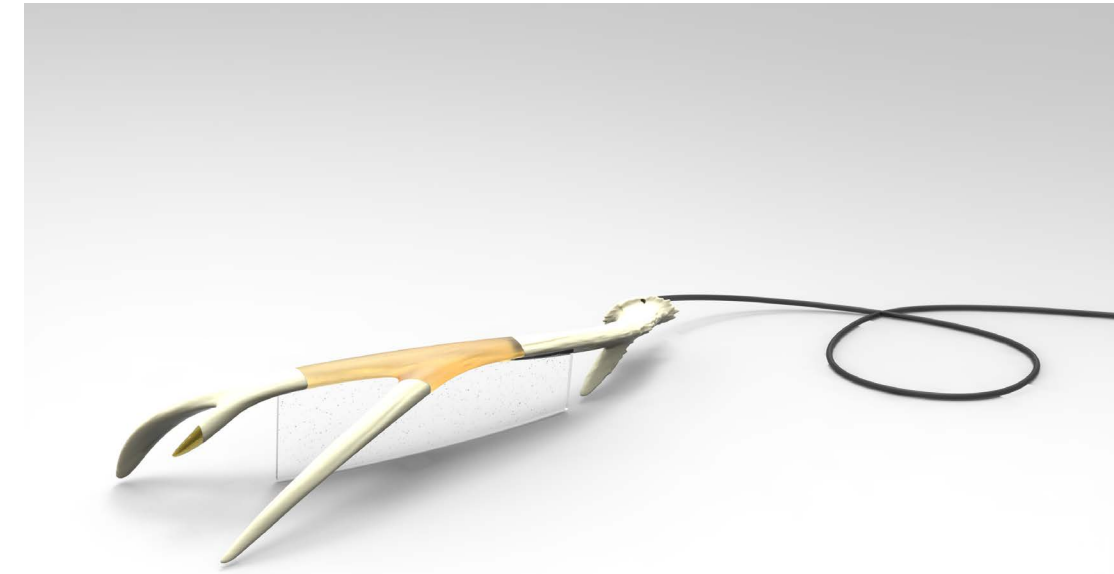
Five Refined Concepts



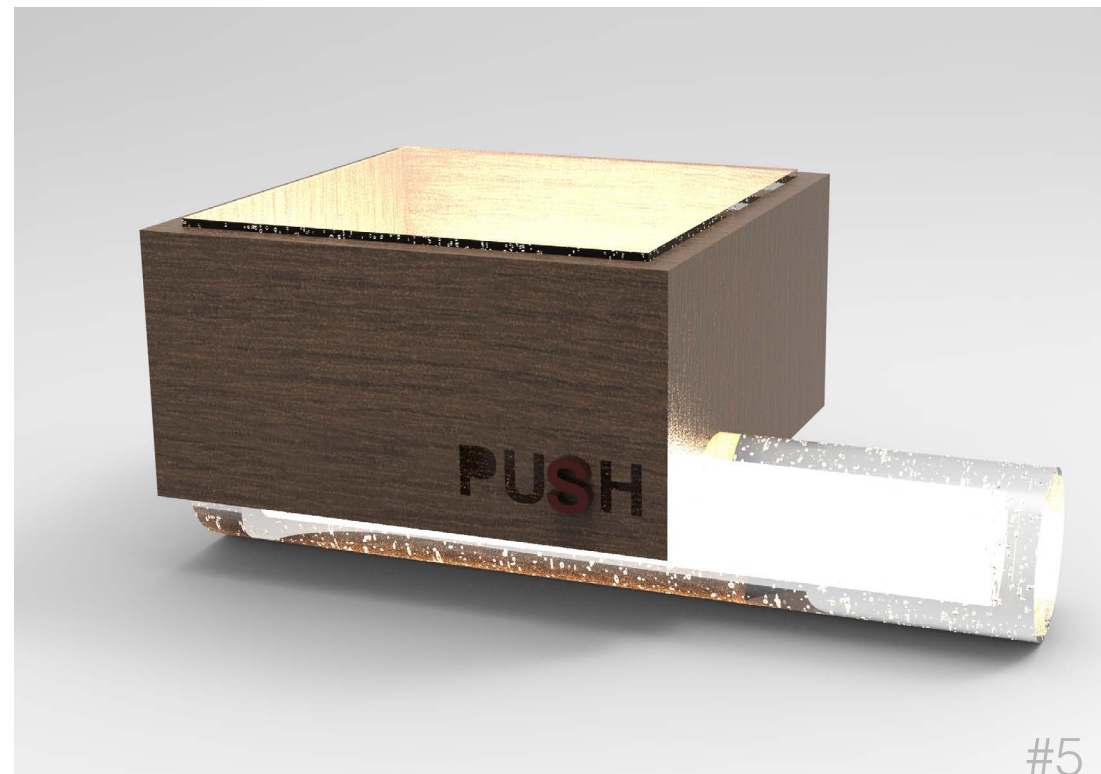
#2



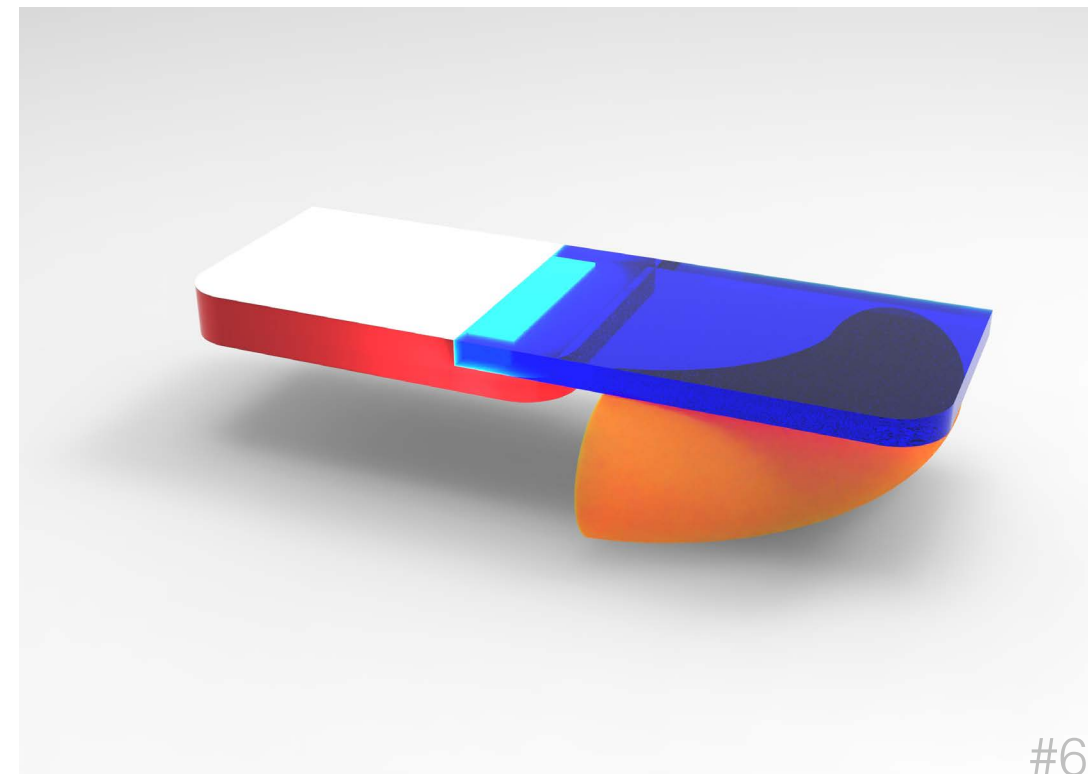
#3



#4

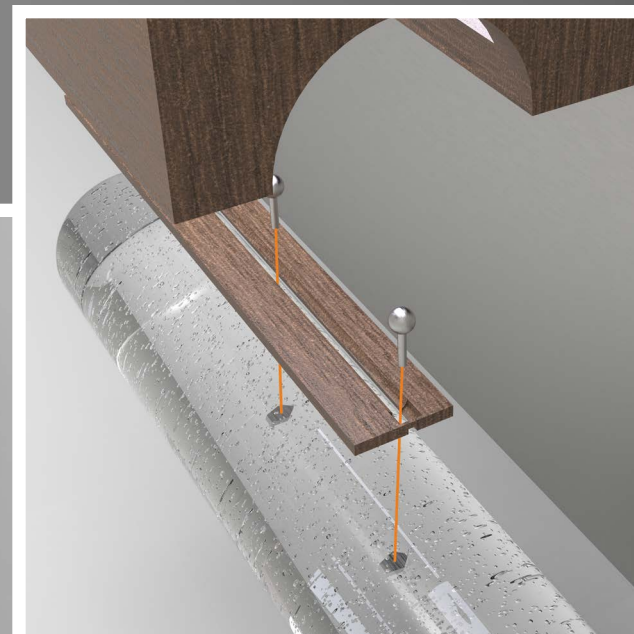
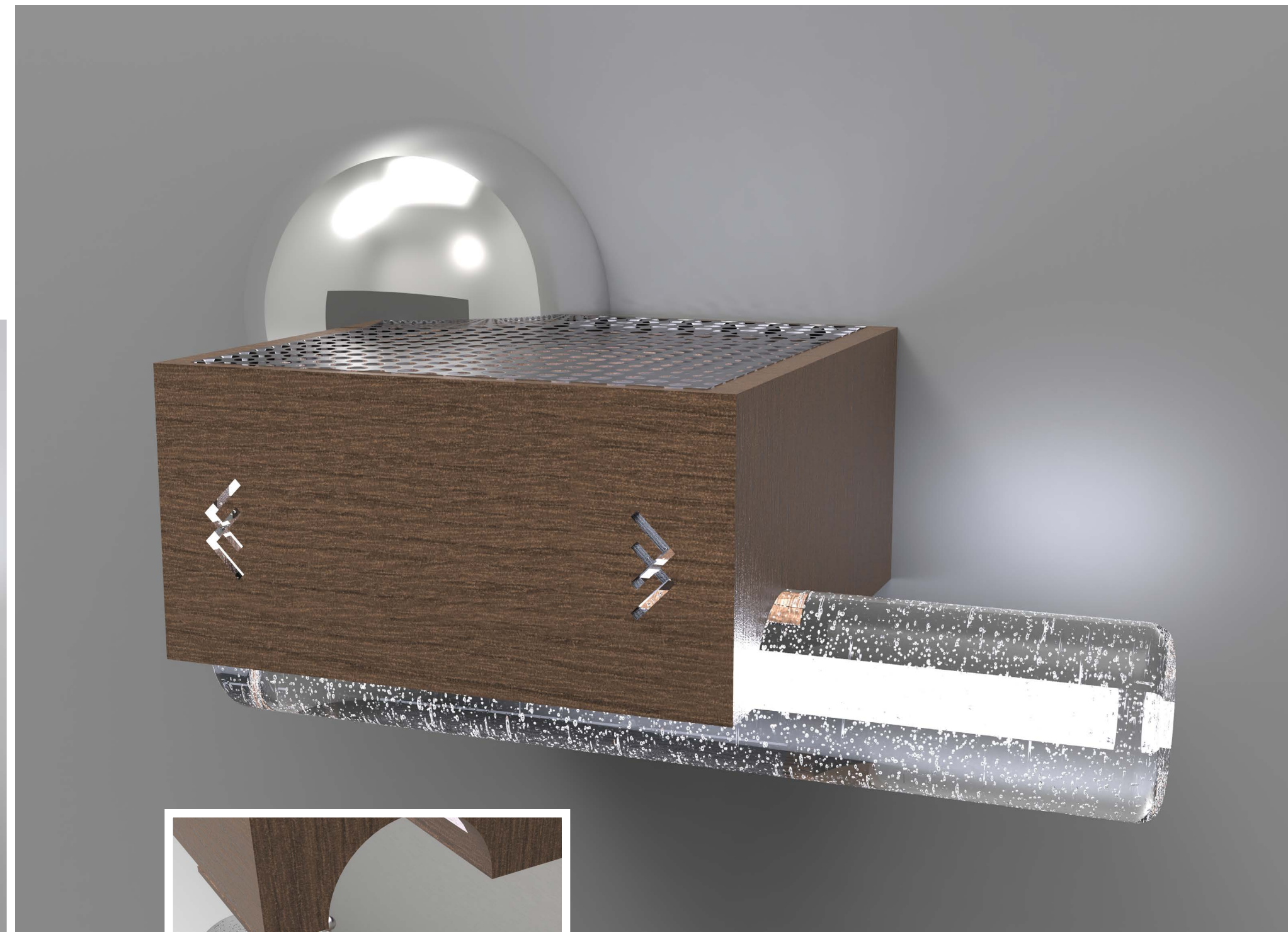


#5



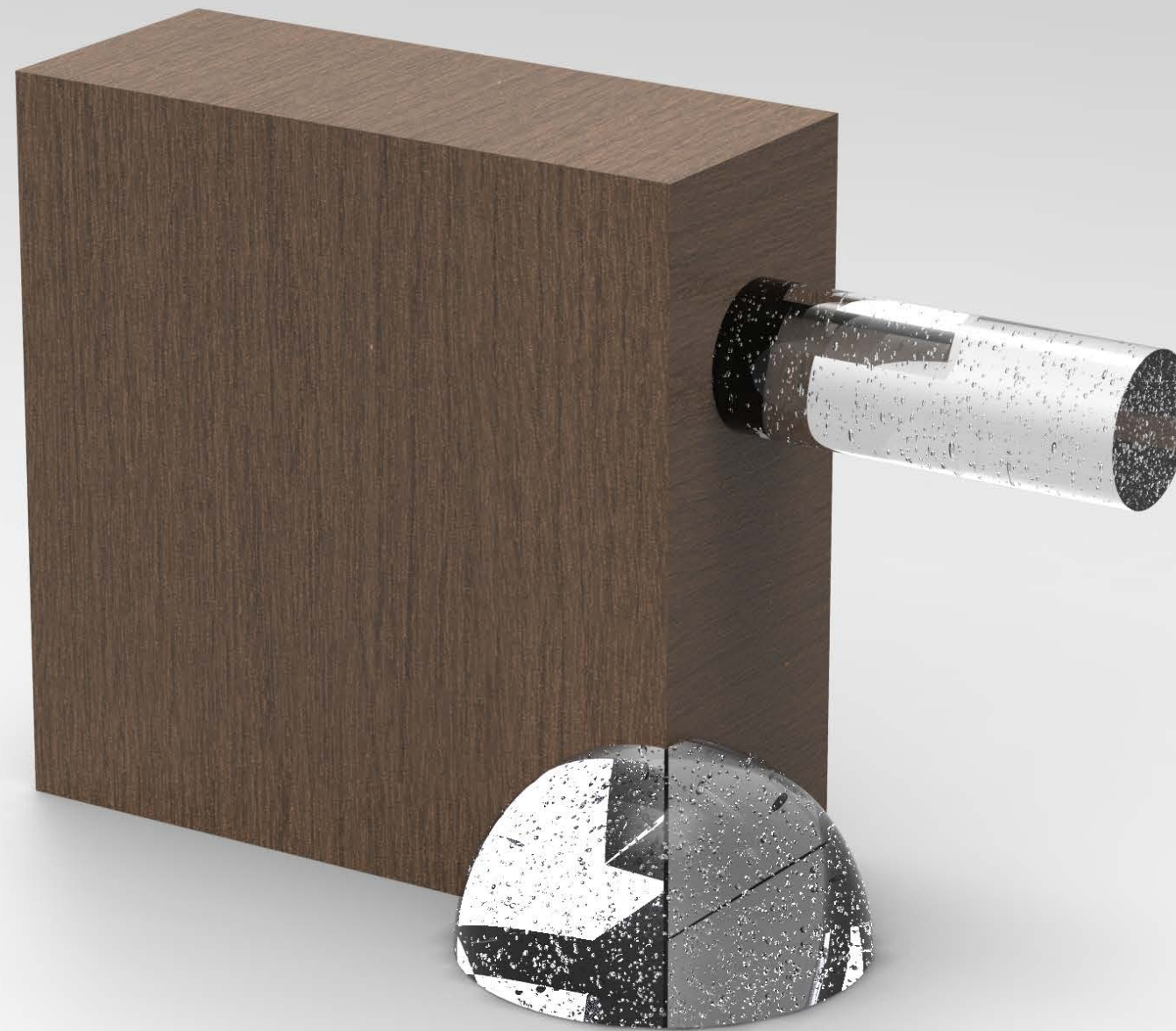
#6

First Refinement of selected concept



- 6" STAINLESS STEEL DOME • 7" SQUARE PERFORATED ALUMINUM SHEET • 7 1/2" X 7 1/2" X 4" WALNUT "BOX"
- 7" X 1" X 1/4" GROOVED WALNUT PLANK
- 2 1/4" BUBBLED ACRYLIC TUBE • TWO 15MM METAL BALL HEAD SCREWS WITH 6MM DIAMETER HEADS
- TWO NUTS • EPOXY RESIN • WOOD GLUE
- 4 BRACKETS AND SCREWS • TOGGLE OR PRESSURE SWITCH • LIGHT MOUNT • BULB • WALL BOX

Final Rendered Iteration



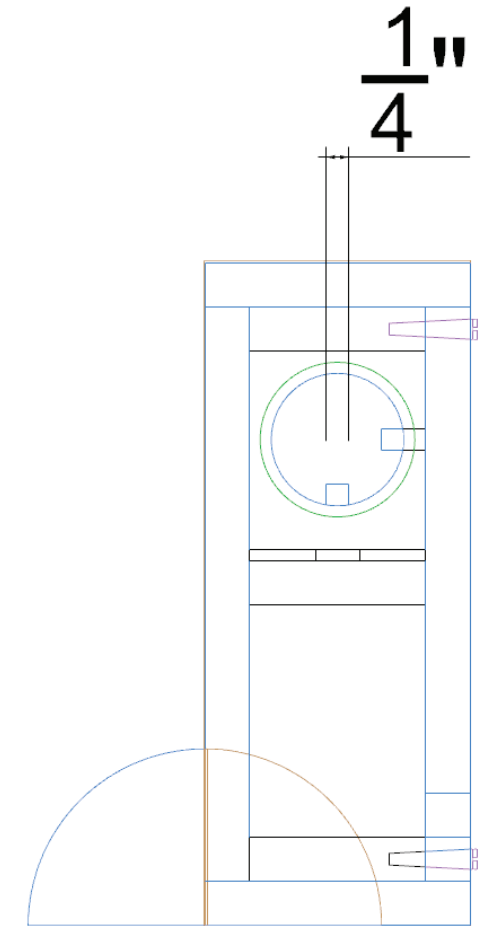
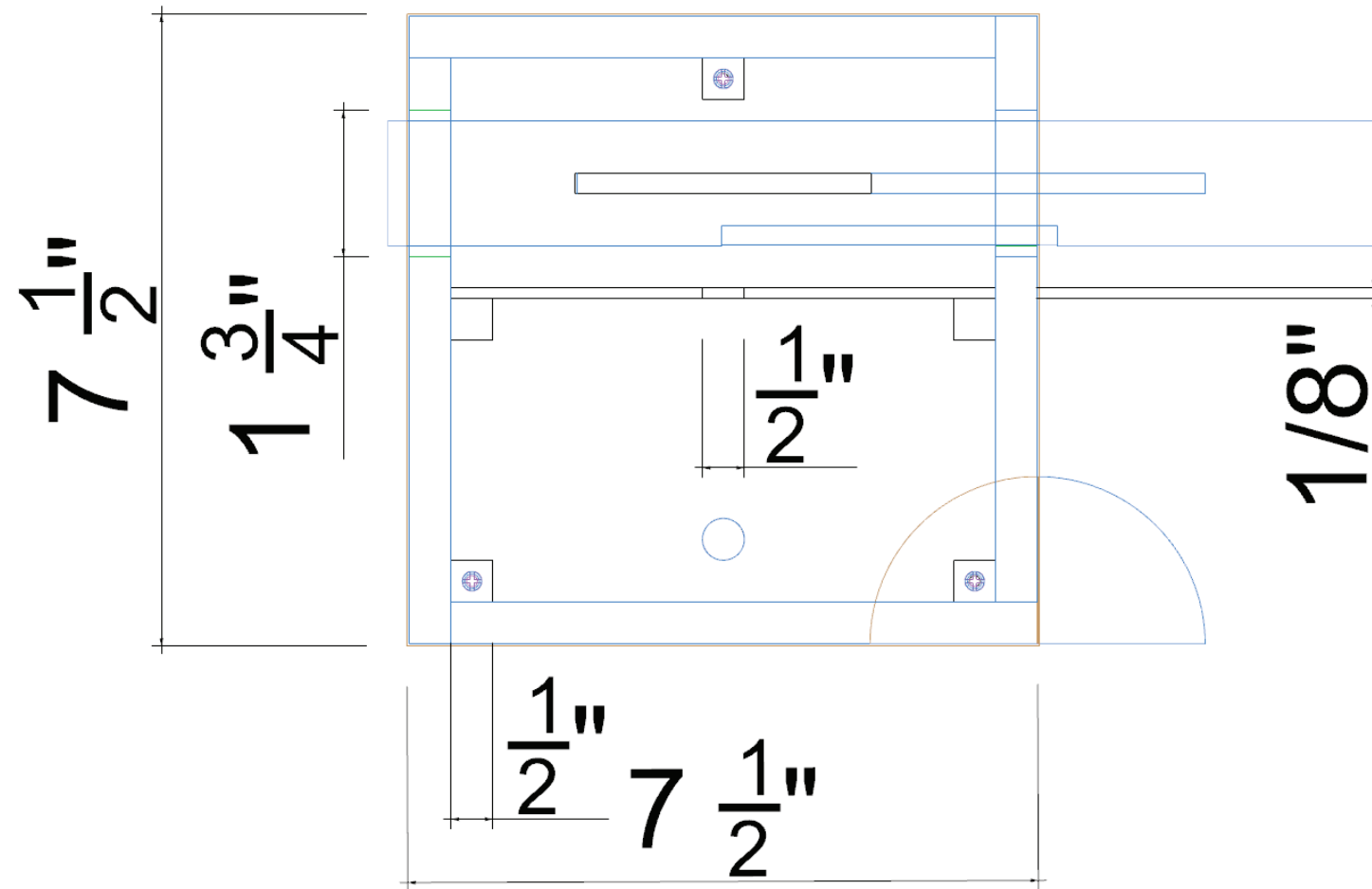
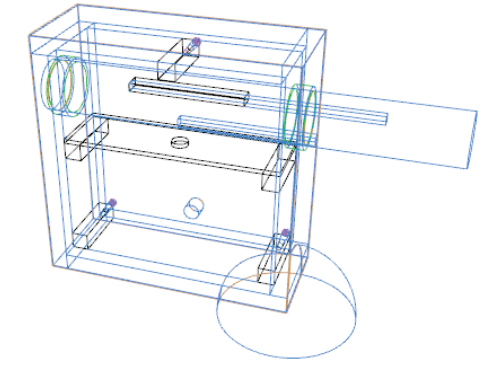
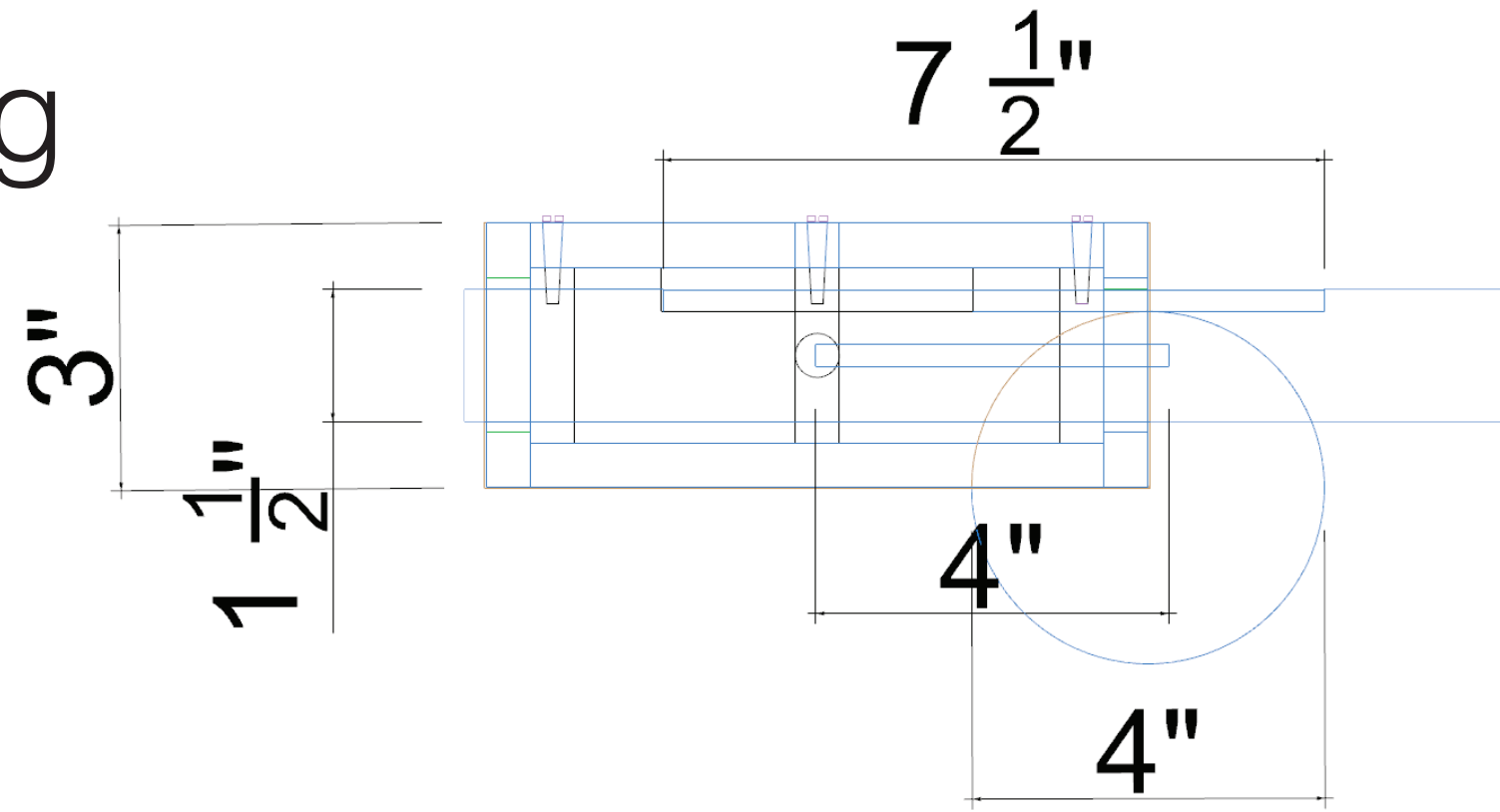
Transition to upright piece
Acrylic bar pushes left and right triggering internal switch

Simplification of attachment, form, and material use
One single light inside box

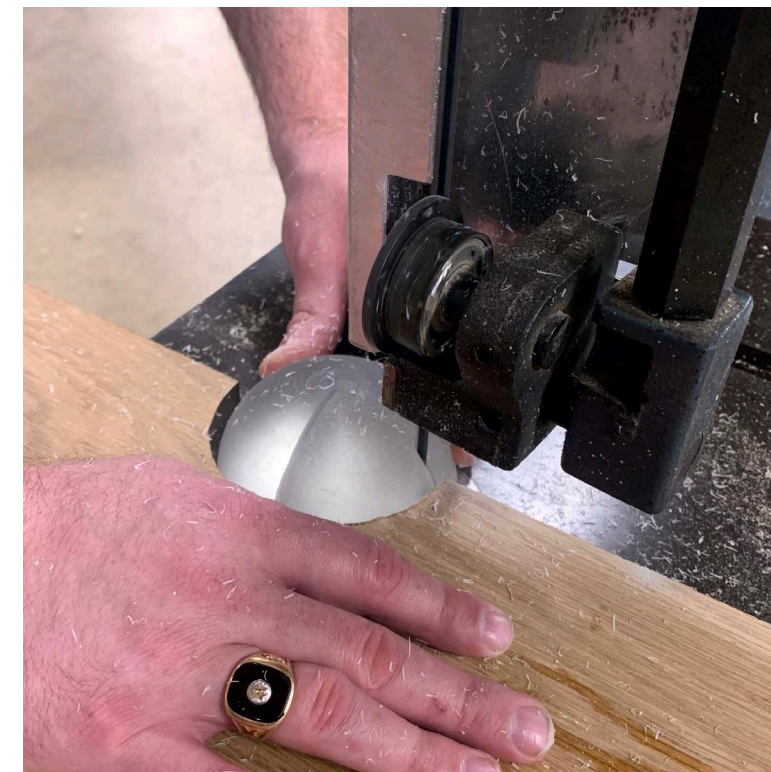
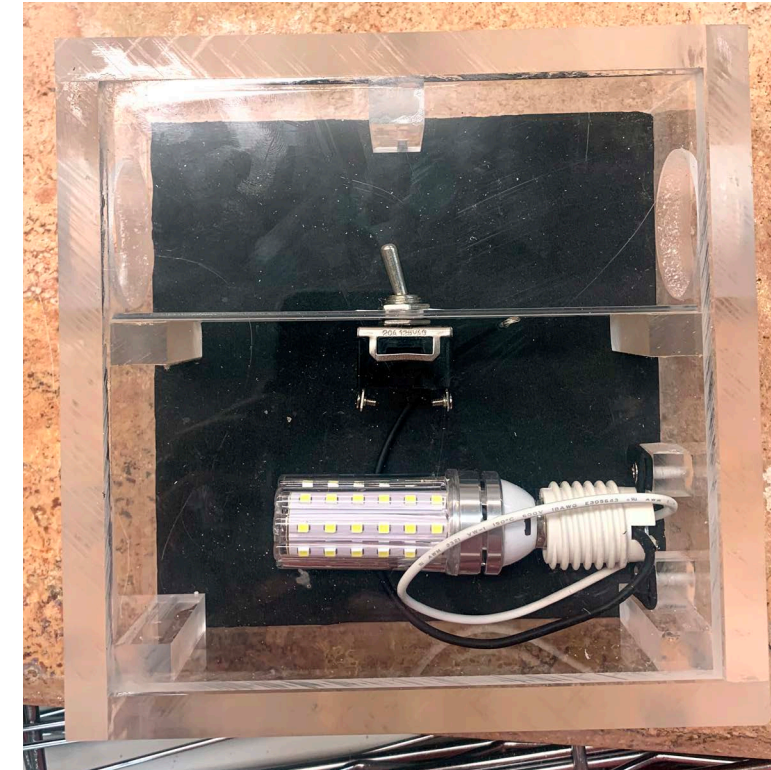
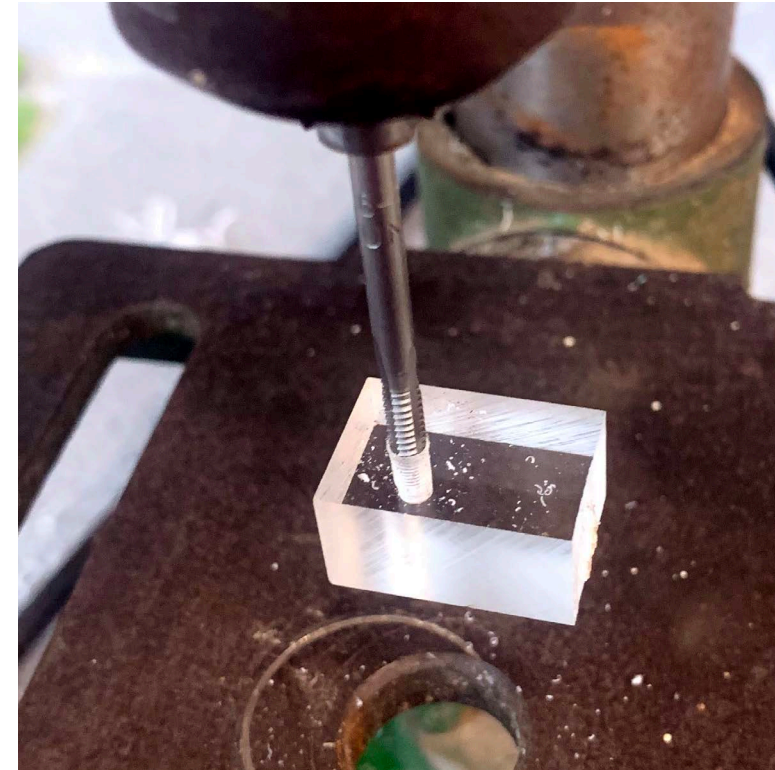
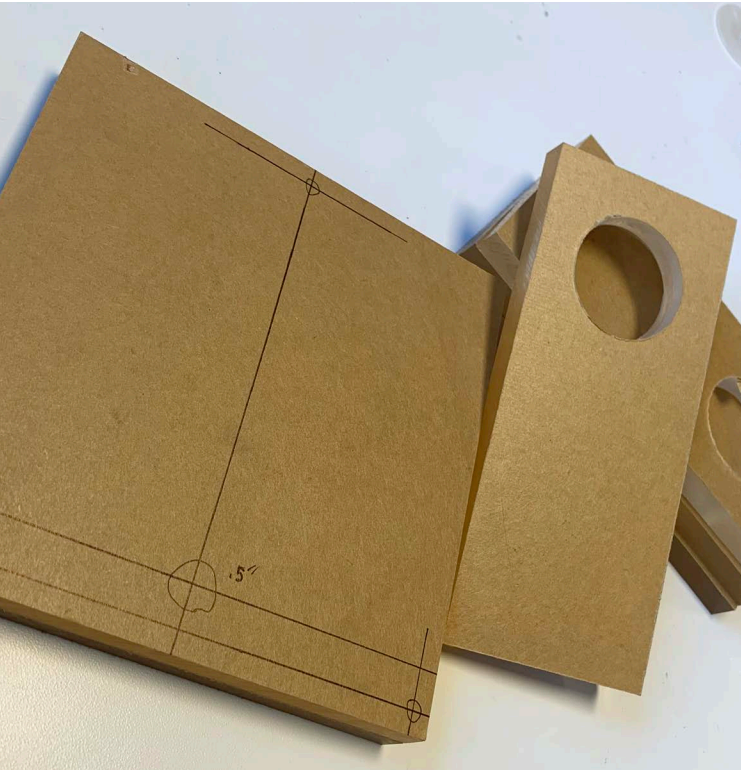
Resin hemisphere and acrylic rod act as only points of light escape

Engineering

Critical and general dimensions using standard drafting conventions.



Building Processes



PUSH

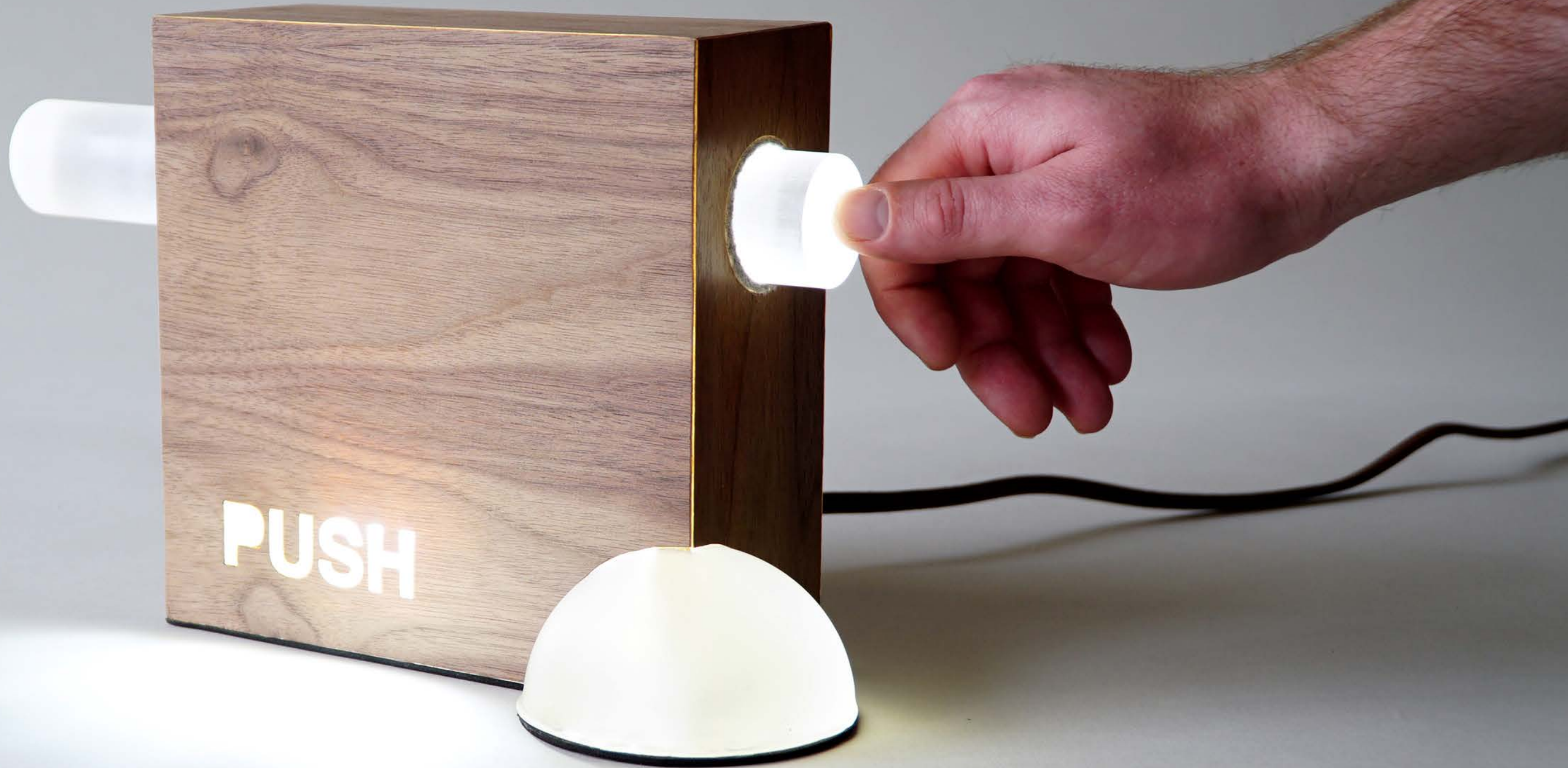
Final Prototype



PUSH



PUSH



PUSH



PUSH

Acknowledgment

PUSH was recognized as a student lighting entry **finalist in the Fall 2022 ISFD Innovation+Design Competition.**





9 Piece Low-Back Cafe Chair

Fall 2022

Furniture III

Professor Cameron Van Dyke and

Professor Richard Prisco

Design Brief

The 9 Piece Low-Back Cafe Chair utilizes reference and research into commercial and industrial visual languages and the concept of extreme manufacturability to influence the design and production of a seating object of somewhat traditional dimensions. Straight clean lined forms made of acrylic and stainless steel show these influences. This chair is truly constructed of nine primary pieces, two acrylic, and seven stainless steel.

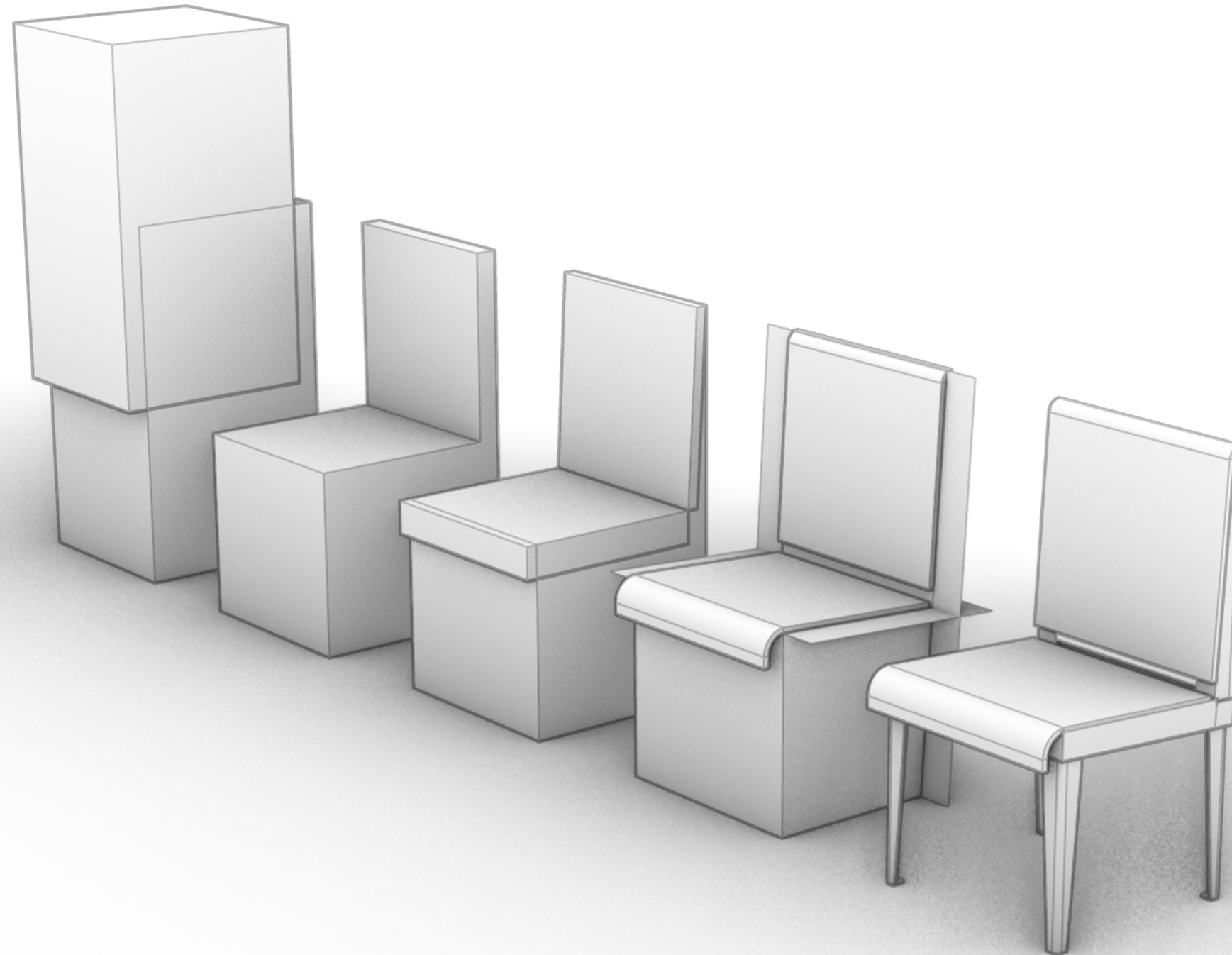
Research into examples of similar chairs as well as industrial settings led to decisions on materials and forms to be used. Rigid and smooth utilitarian figures often featuring perforations, interlocking systems, and layering all were observed and carried into the ideation. This chair's design is informed well by previous examples of clean and exact manufacturing.

The 9 Piece Low-Back Cafe Chair fills the opportunity to be a simple seat with a focus on proven measurements, durability, manufacturability, and ability for mass reproduction. This chair is designed to place residentially or commercially. The 9 Piece Low-Back Cafe Chair's materials leave it suited for continued, low maintenance, use in most environments.

This chair began with a very simple initial concept focused on dialing into usual and comfortable chair measurements. A second, refined, concept heavily resembles the first with changes to stance and back height to further stylize. A field of refinements was then steadily created as changes in drop, tapers, apron attachment, application of radius', acrylic attachment, etc. were all addressed.

The final refined rendering and resulting physical prototype reflects all of these changes encouraged by digital and physical model studies throughout development. This final version of the The 9 Piece Low-Back Cafe Chair reduced the excess of the previous models and cleaned some connections by removing all back cross bars and instead relying on the acrylic connections. The final prototype is assembled with pop rivets, simple bolts, and clear durable plastic washers.

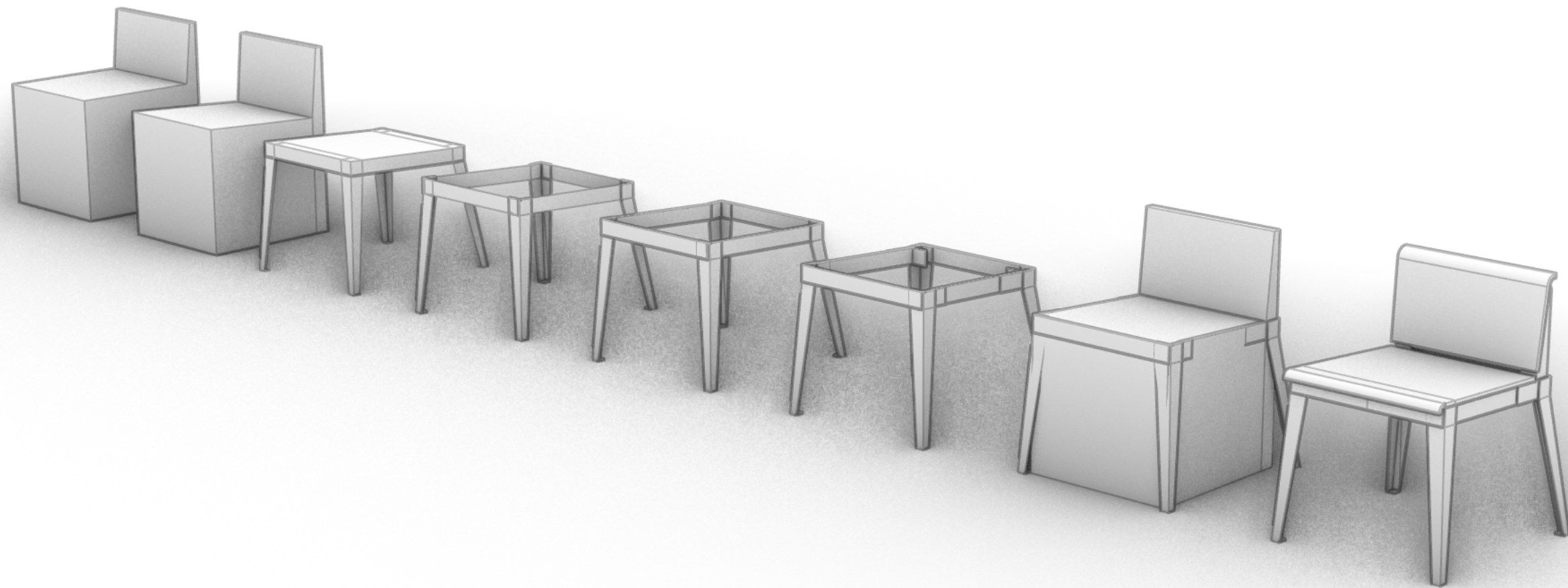
Initial Concept



Initial Concept



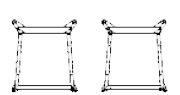
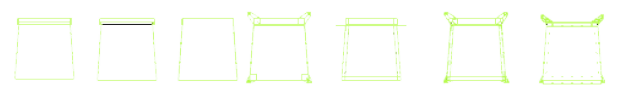
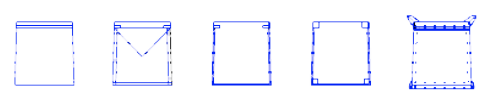
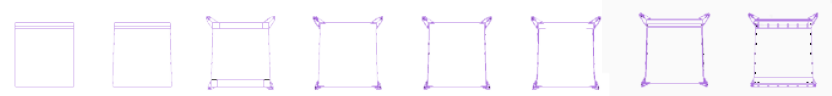
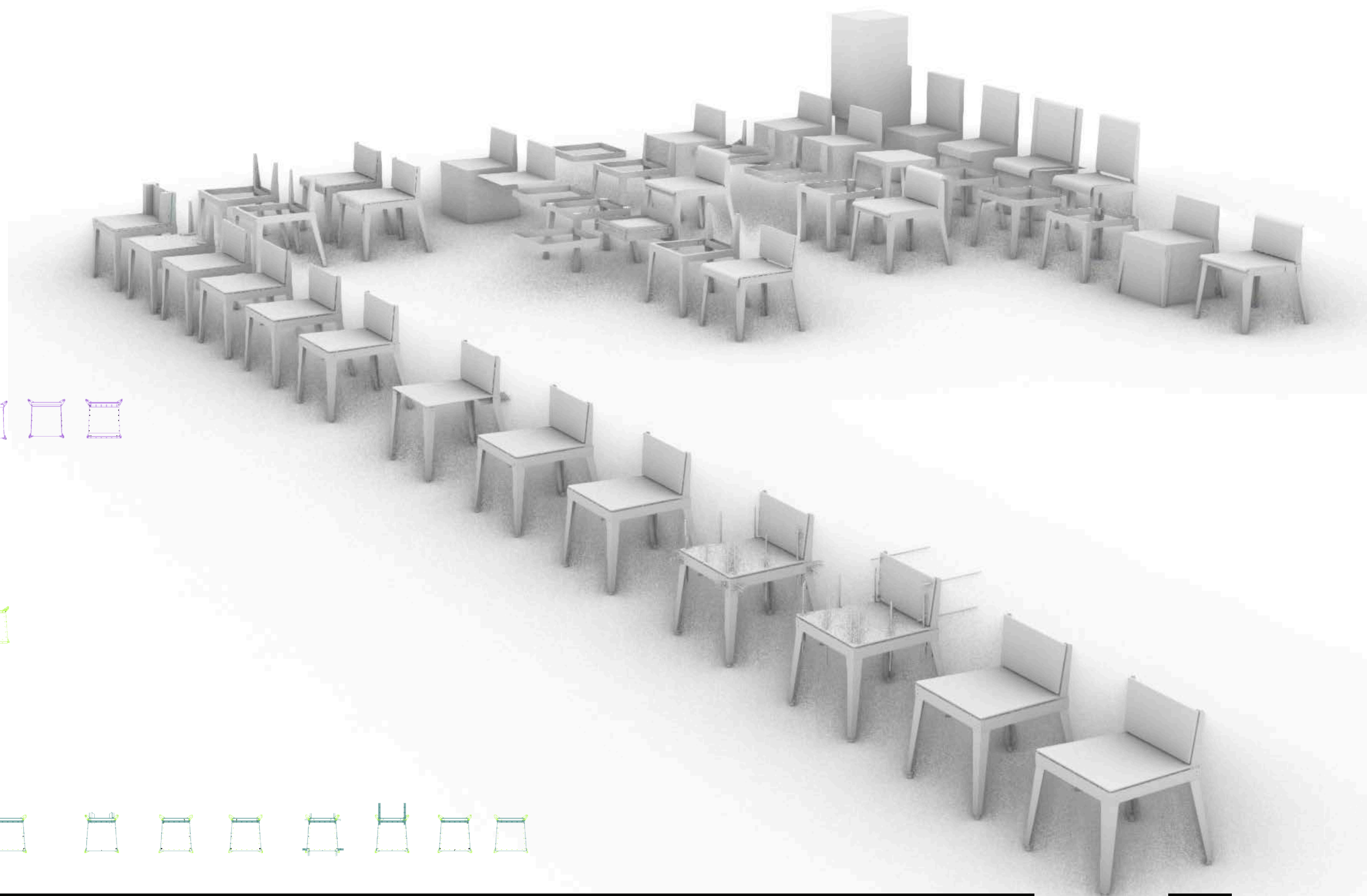
Refined Concept



Refined Concept



A Field of Refinement



Final Refinement



Final Refinement



Scale Model

This full scale model was created out of 1/8" thick PVC and aluminum pop rivets.

Creating this model allowed experience in how the final production is to be laser cut, bent, and riveted together.



Refined Scale Model



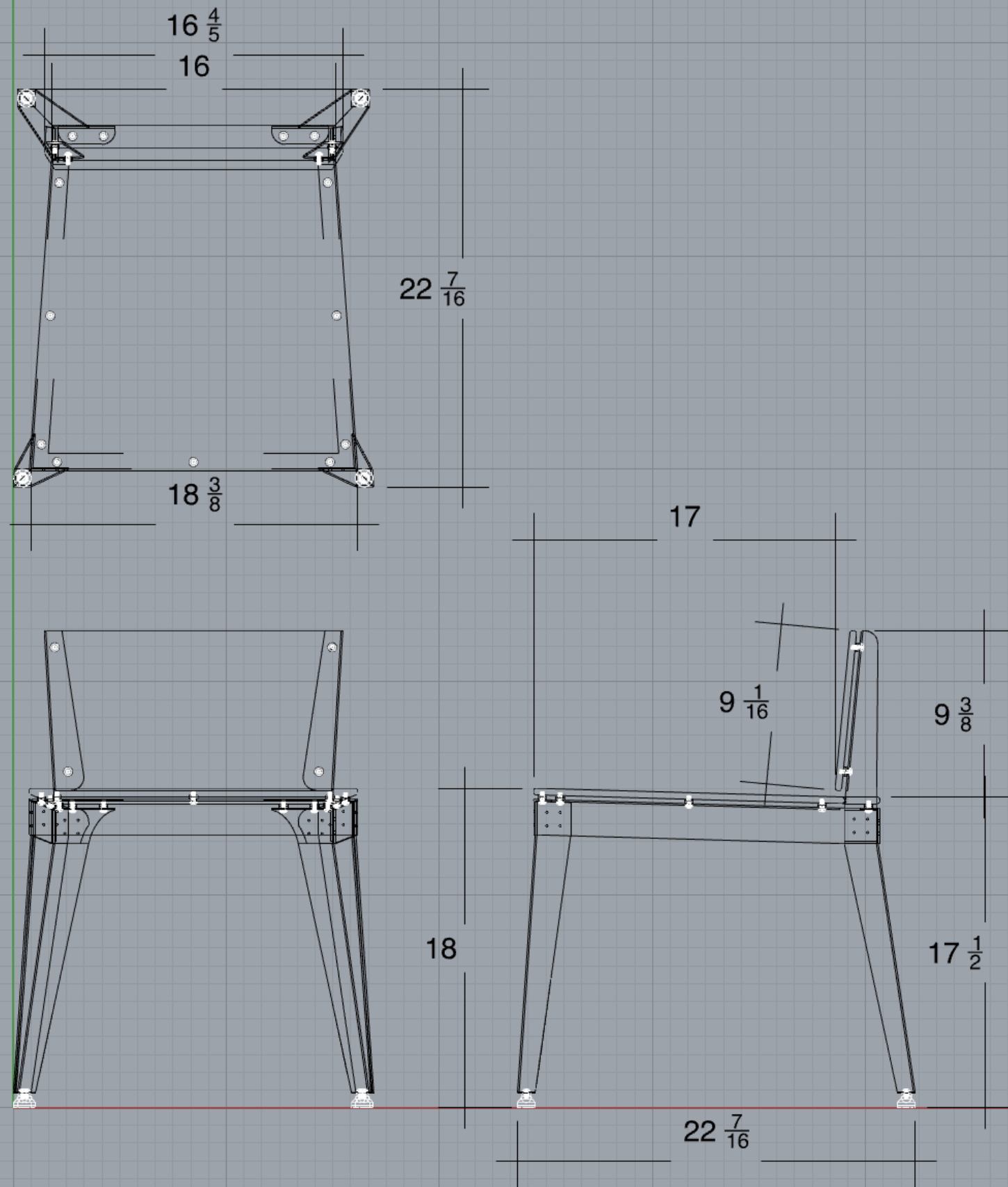
This full scale model was created out of 1/8" thick corrugated cardboard.

Creating this model allowed hands-on examinations of previous refinements in order to encourage further improvements.

The critique of this model led to the elimination of all back cross bars, leaving the final piece count at 9.

Engineering

Orthographic with
Measurements



Engineering

Stainless Steel Pieces

3/32" Thick

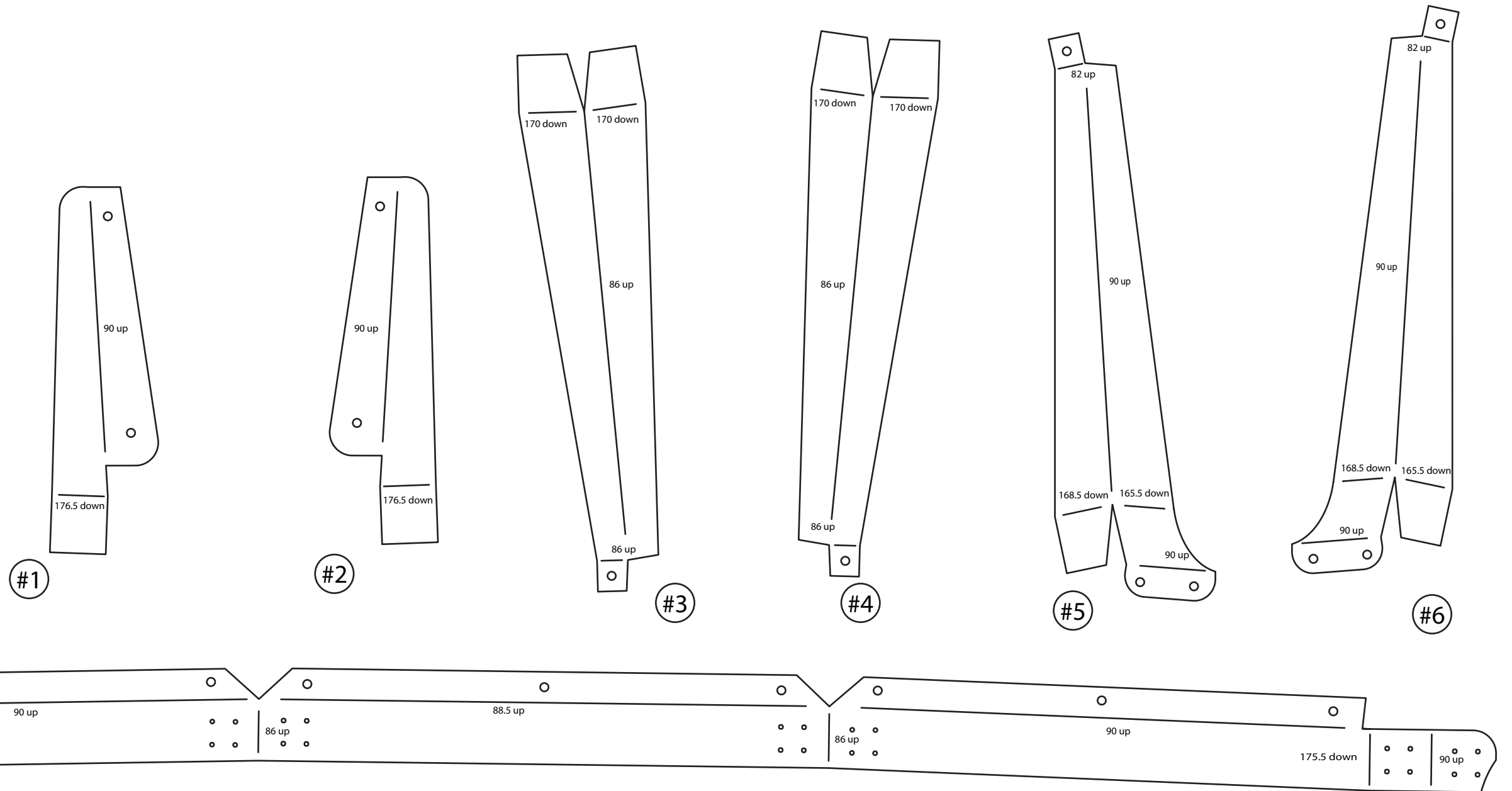
Laser cut and bent to specified angles

- When sitting in chair
#1 Right Back Support
#2 Left Back Support
#3 Left Front Leg
#4 Right Front Leg
#5 Right Back Leg
#6 Left Back Leg
#7 Apron

1"

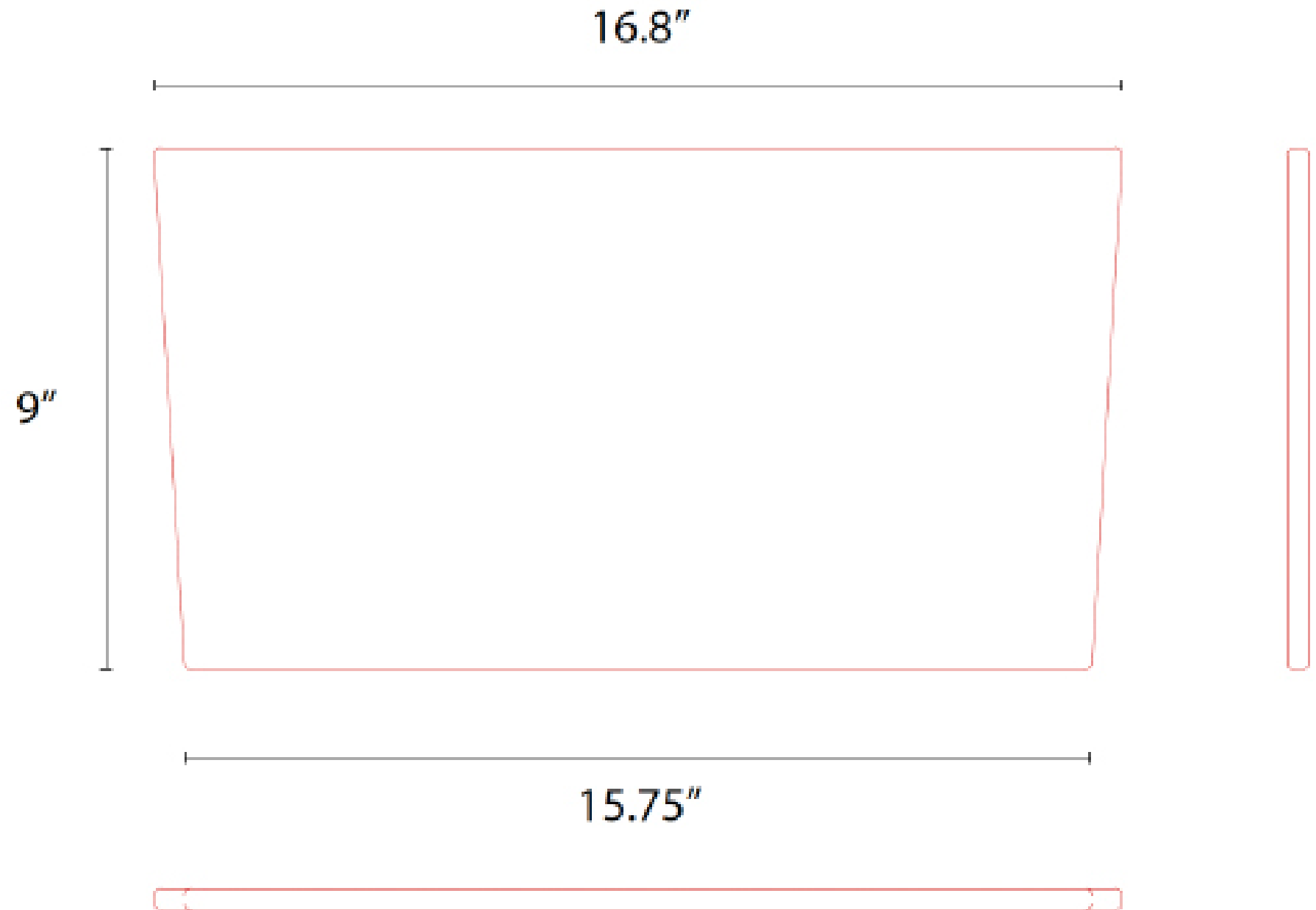
6"

1'



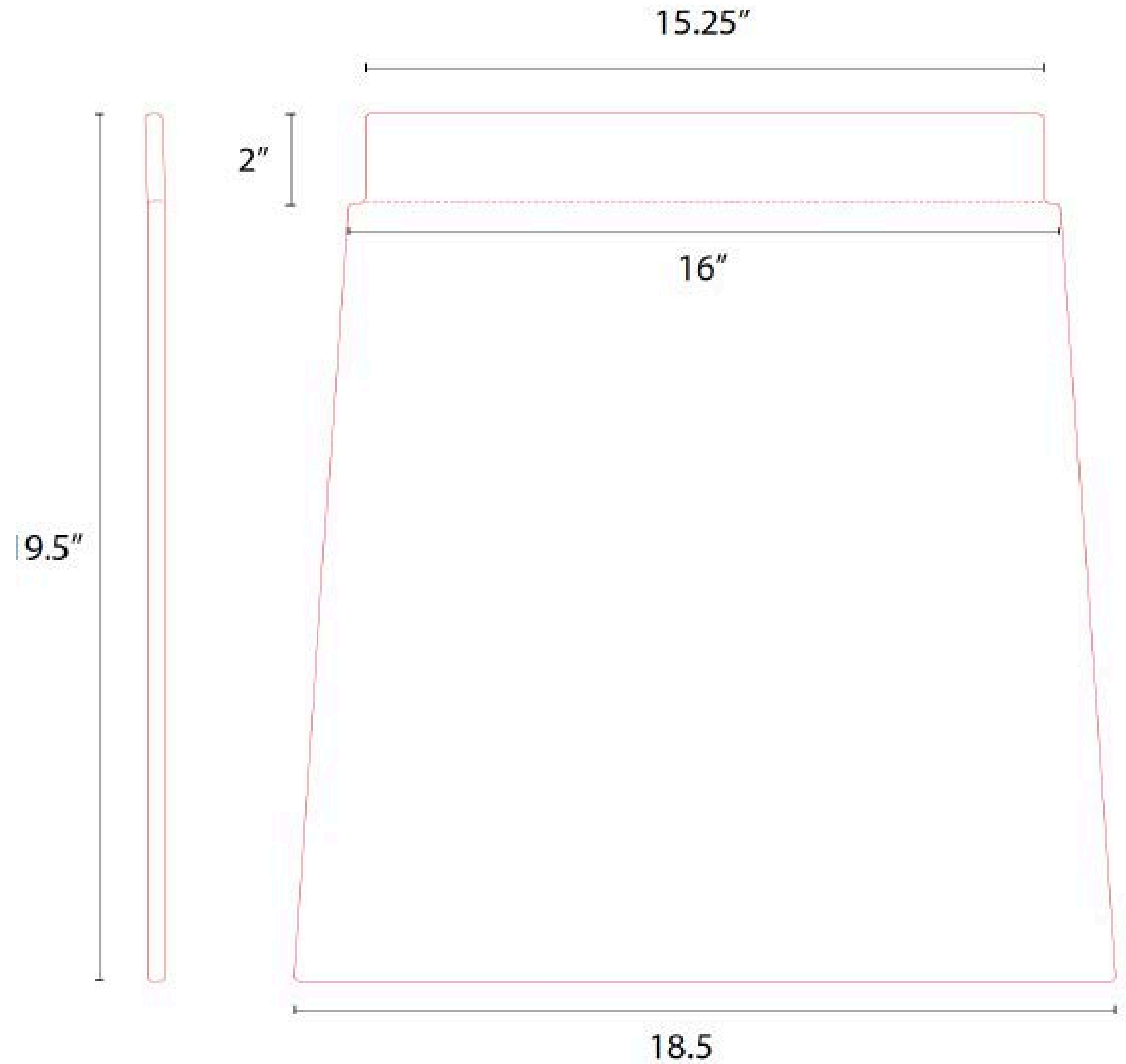
Engineering

#8 - Acrylic Chair Back
3/8" Thick
Cut and edges rounded
then tapped.

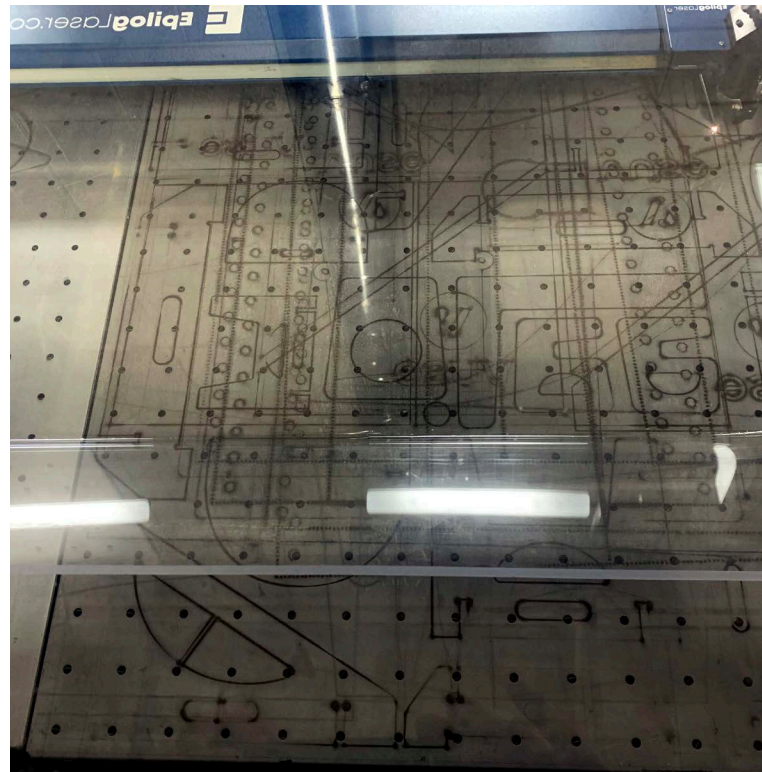


Engineering

#9 - Acrylic Chair Seat
3/8" Thick
Cut and edges rounded
then tapped.



Building Processes



9 Piece Low-Back Cafe Chair

Final Prototype













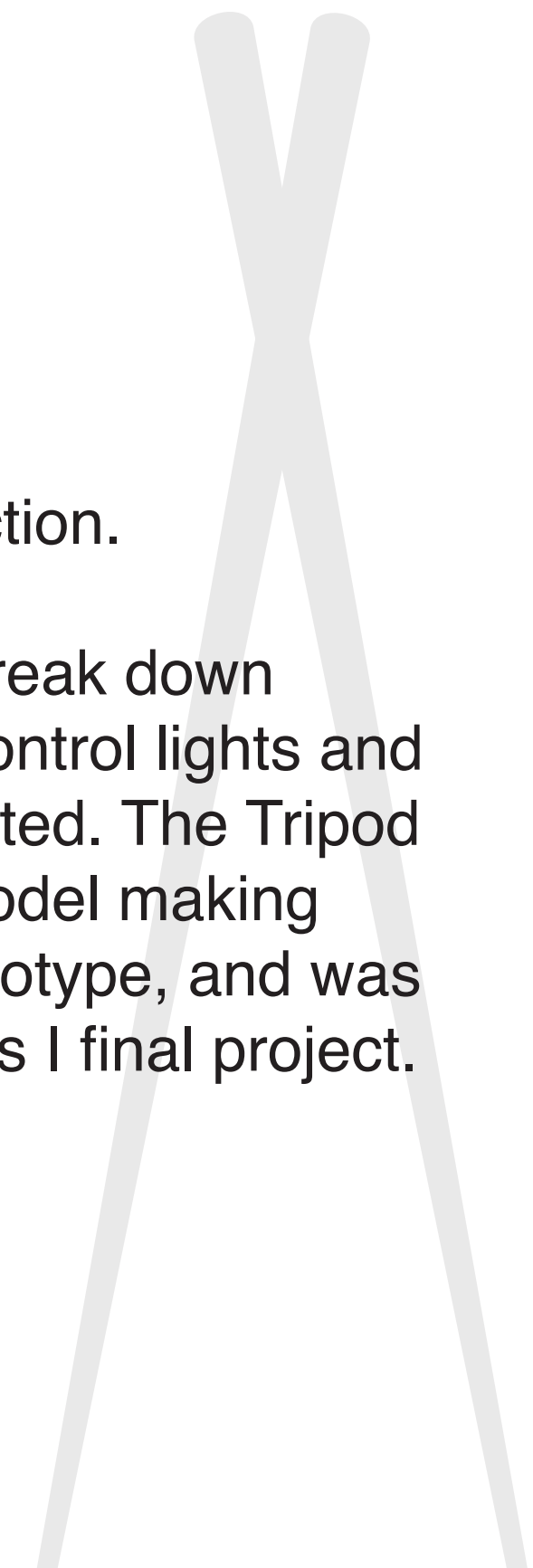
Tripod Lamp

Spring 2021
Materials and Processes I
Professor Phil Armstrong

Design Brief

A lighting object produced to explore joinery and conventions of interaction.

This five foot lamp, made of ambrosia maple, boasts the ability to break down completely, with no tools, for flat packing. It features wireless remote control lights and a dowel system allowing for the height of the light housings to be adjusted. The Tripod Lamp was initially conceived out of a rapid prototyping exercise in a model making course, developed further through CAD and the resulting full scale prototype, and was finally produced as functioning furniture for my Materials and Processes I final project.



Initial Conception

This small conceptual model is a result of a rapid prototyping practice in a model making course. Students were given a limited materials library and 10 minutes to create a representation of a lighting object of their design.

This model is made with 1/16" dowels, card stock, foam core, toothpicks, and hot glue.



Scale Model

This full scale model was created out of big box pine 2"x4"s.

Creating this model allowed experience in how the final production would be cut, shaped, and fit together.



Engineering

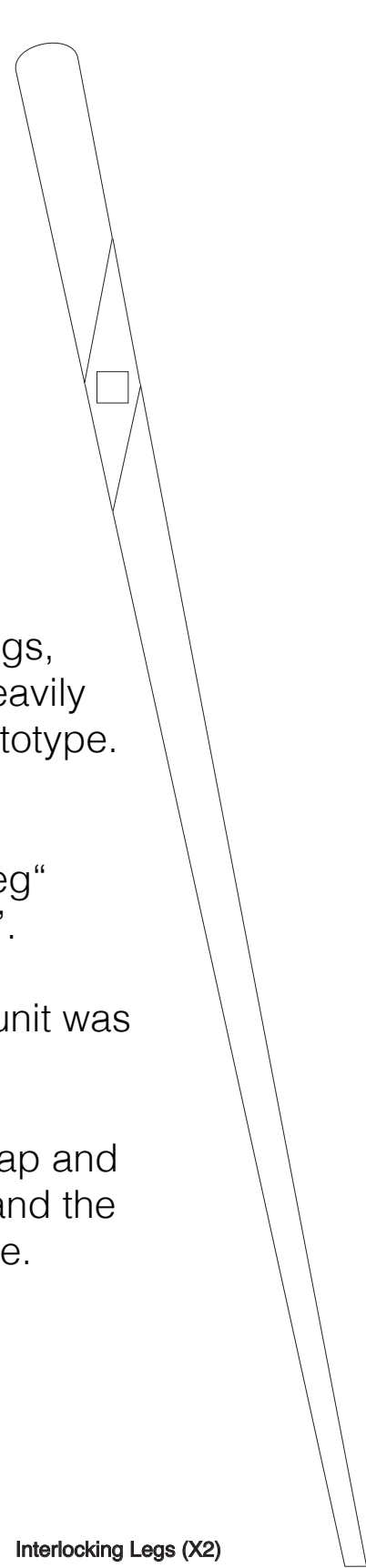
1"
6"
1'

These are the final drawings, both altered and referenced heavily during the build of the final prototype.

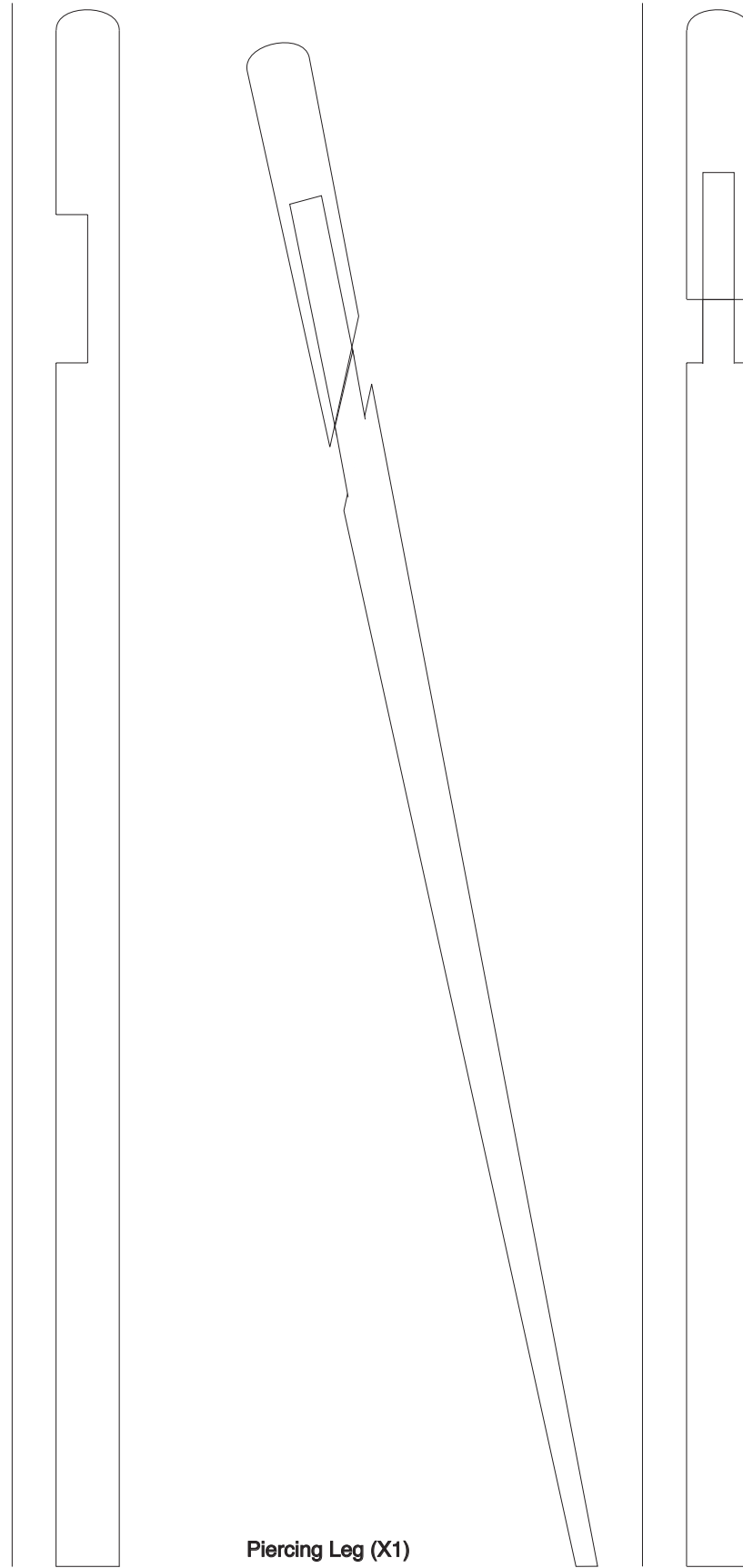
A dowel was used rather than continuation of the "Piercing Leg" through the "Interlocking Legs".

Only one size of light housing unit was created.

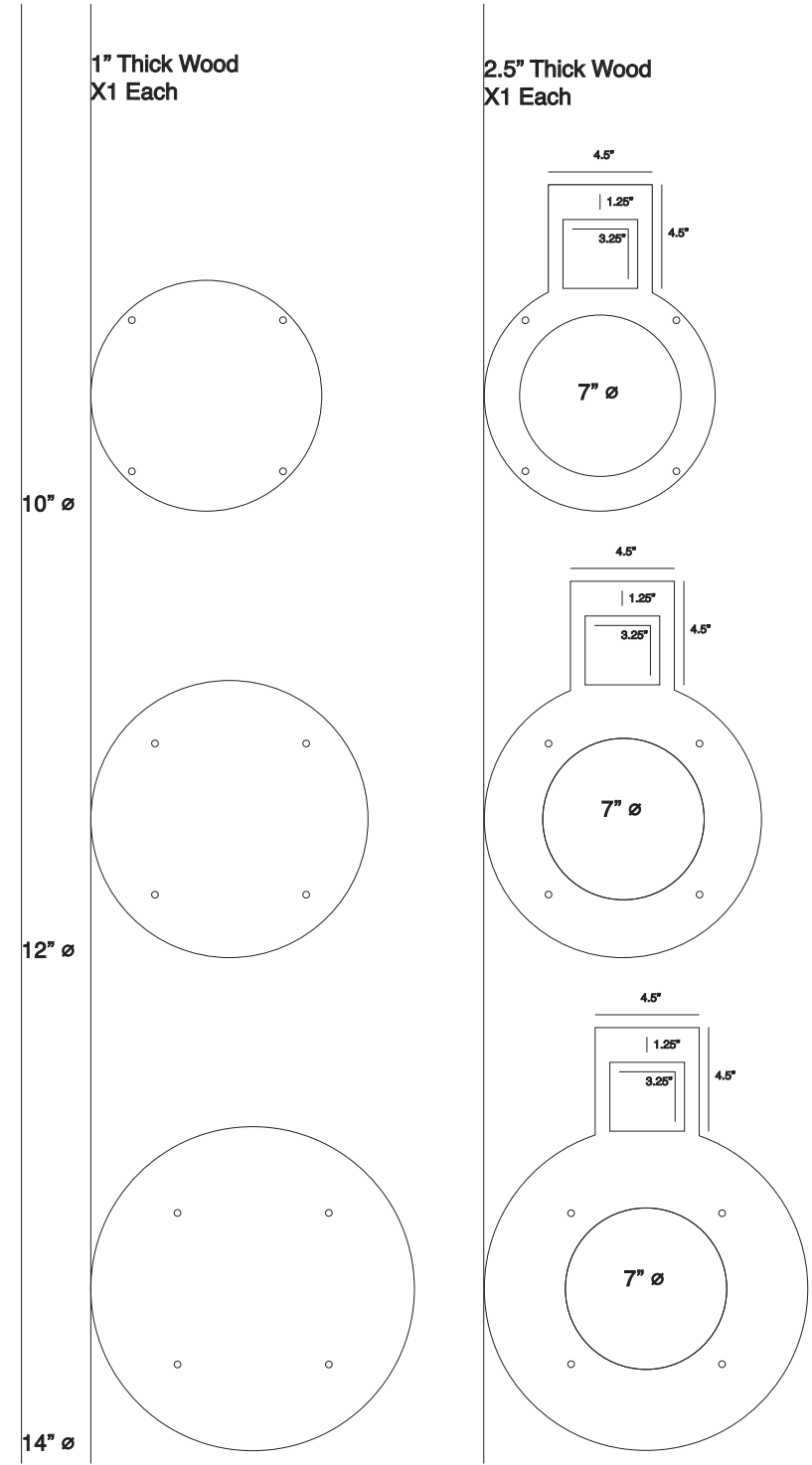
The thickness of the housing cap and surrounding changed slightly and the cap changed to match in shape.



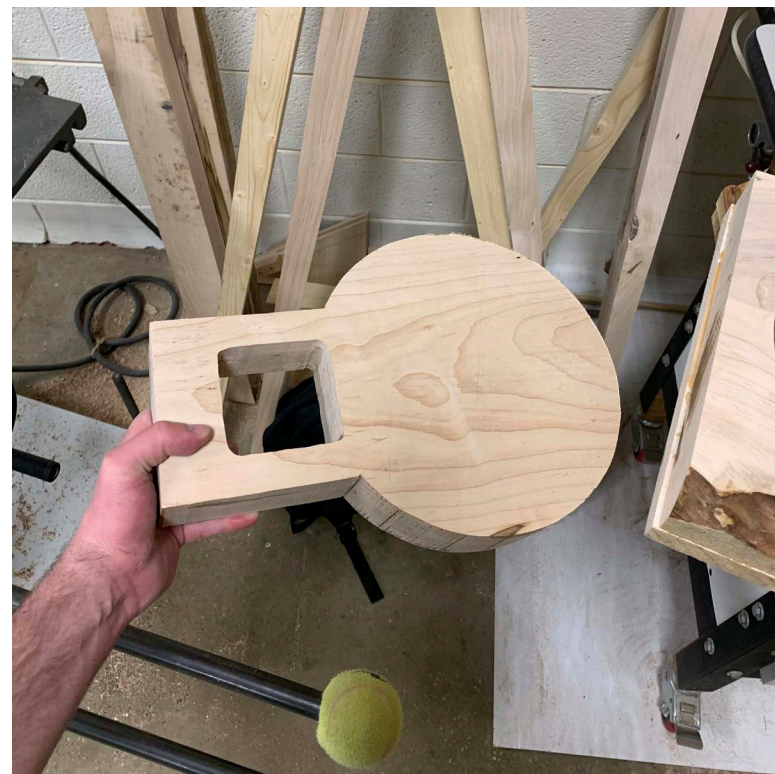
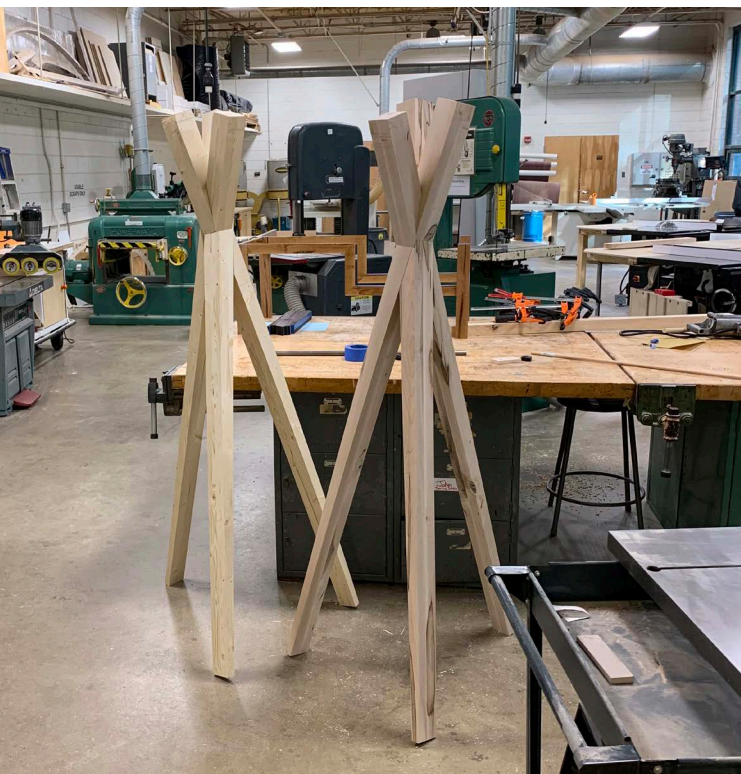
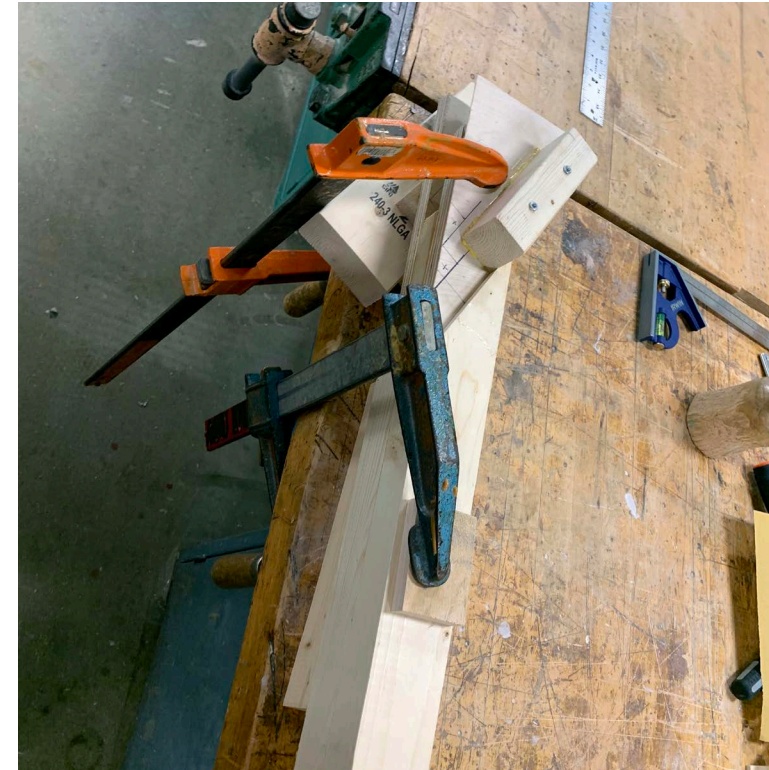
Interlocking Legs (X2)



Piercing Leg (X1)



Building Processes



Tripod Lamp

Final Prototype





johnston casuals
FURNITURE

Internship

Summer 2022

Internship Brief

Johnston Casuals Furniture has been utilizing wood, metal, upholstery, and glass to make American handcrafted contemporary furniture for over 40 years. Johnston Casuals Furniture has, in their catalogue, over 2,000 different items with many different options for most of them. Located in Wilkesboro, North Carolina, Johnston Casuals utilizes the nearby High Point furniture market to show samples of these options to generate sales necessitating the next production cycles. During my internship at Johnston Casuals it was my goal to learn as much about the mass production of metal furniture as possible. Johnston Casuals does all of its furniture production in house and works with many designers, nearby and elsewhere, to bring new content to market. Working in these facilities led to more than a general understanding of every aspect of the company's production phase.

Before working at Johnston Casuals Furniture I had no knowledge of welding, had never done more than simple machining of metals, and had never deconstructed metal forms. I enjoyed learning the functions and processes of the many machines used in the J.C. facility to create metal furniture. I am now a more than adequate MIG welder who understands many cutting, drilling, bending, and reproduction machines and methods and how they're applied to metal furniture making. I have my time at J.C. to thank for that.

The excellent production staff were extremely welcoming and always more than willing to stop what they were doing to help me understand any part of the furniture production process. This allowed me huge opportunities for growth of knowledge. Many even encouraged my taking a turn at what they were doing, gifting me growth of experience.

At Appalachian State I've taken courses that prepared me for some of the processes and tools I utilized at Johnston Casuals Furniture. I've been formally taught basics of metal working machinery and even how to use CNC and laser cutting machines. I have also been taught how to design and draw furniture to scale for orthographic blueprints. My work in this shop greatly expanded my knowledge of these procedures and tools. I learned from my mentor at the company, Chris, how to read the wide variety of blueprints sent in by the various designers. He also taught me how to build up from them to a functional prototype and finally to a jig and cut-list to be used for commercial production.

Learning to Weld

I spent my first few days of this internship simply learning, through trial, error, and gentle guidance, how to weld.

I was turned loose on the scrap pile and quickly learned to make small pieces of metal into big pieces of metal.



Tools



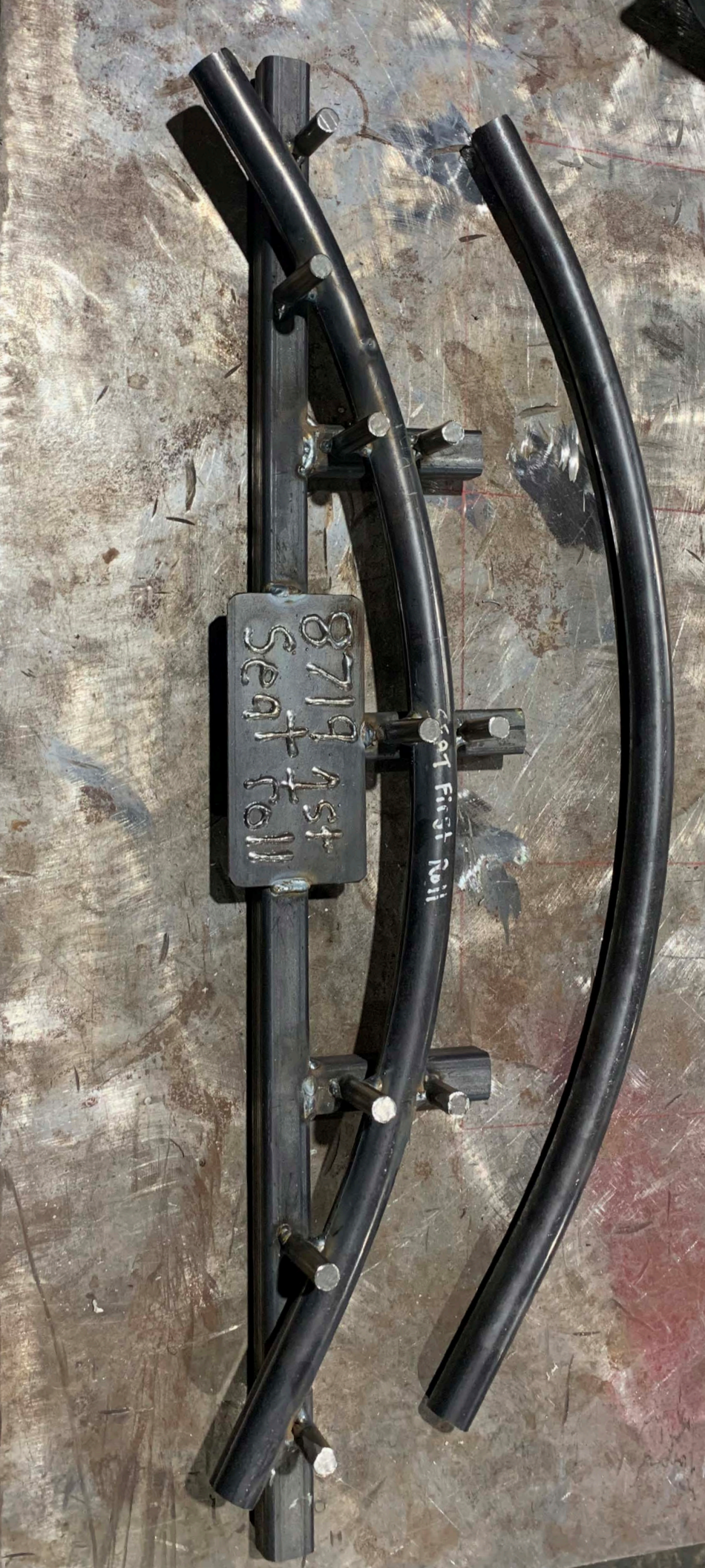
After learning to weld I made a couple metal workers essentials. A hammer and a pry bar. Both came in handy throughout the rest of the internship.

Table Base

My first piece of furniture made at Johnston Casuals Furniture; a 3 legged table base made of scraps and finished through powder coating.



Bending Jig



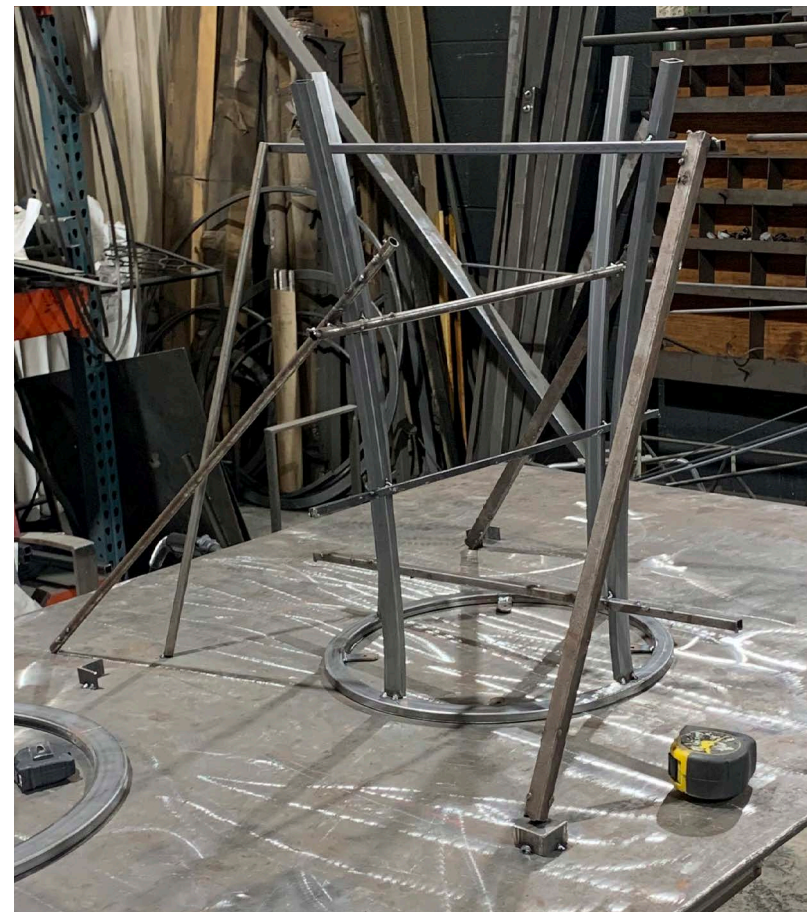
This jig was created to ensure a specific piece of a specific bar stool in the J.C. catalogue is always bent to the right degree. This jig is and will remain part of the commercial mass production of this stool.

Dining Chair

My first piece of furniture made at
This is my design and production of a full
scale dining chair to be completed with
upholstered seat. Fabricated from shop
found scrap and completed through
powder coating. This is the first full scale
functional chair I have produced. It sits,
finished, at my office desk.



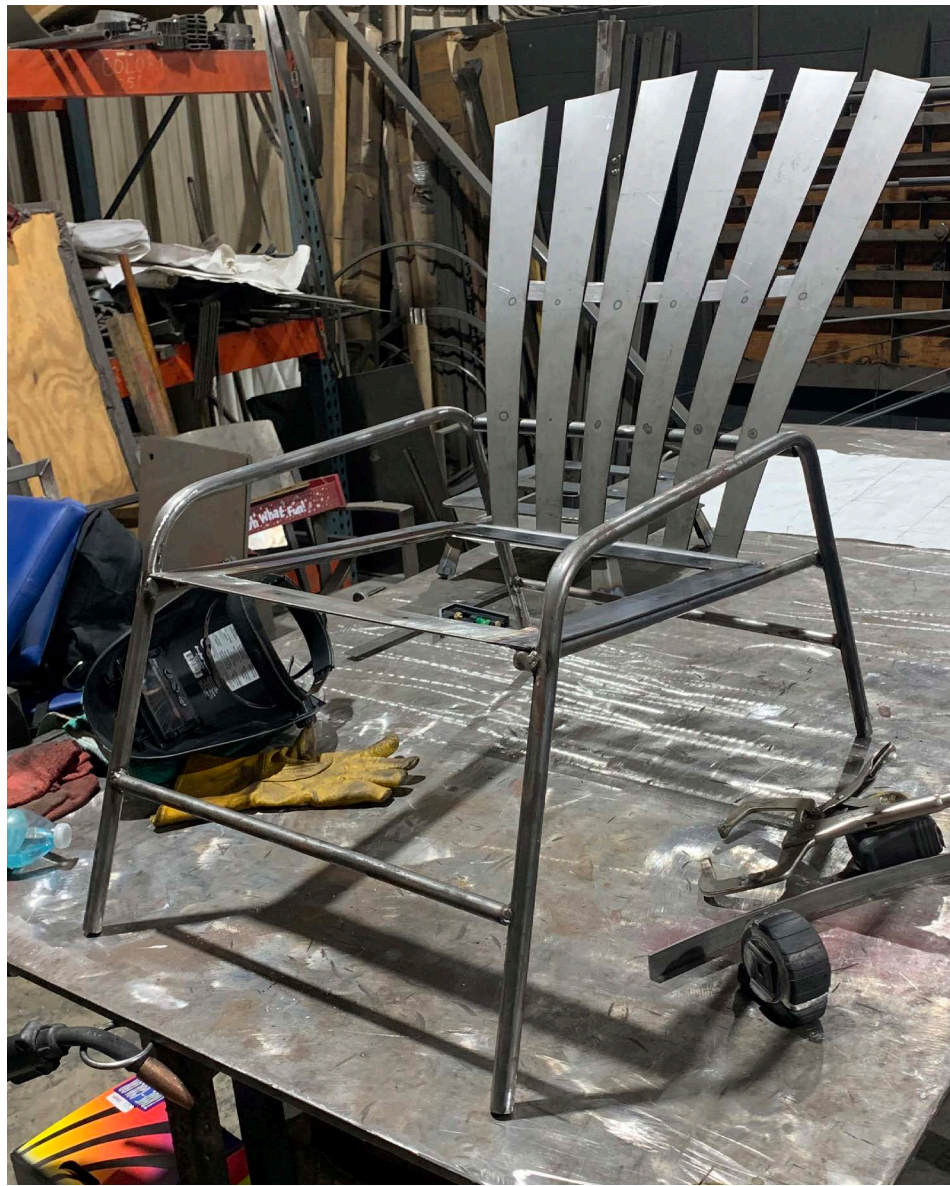
Bar Stool



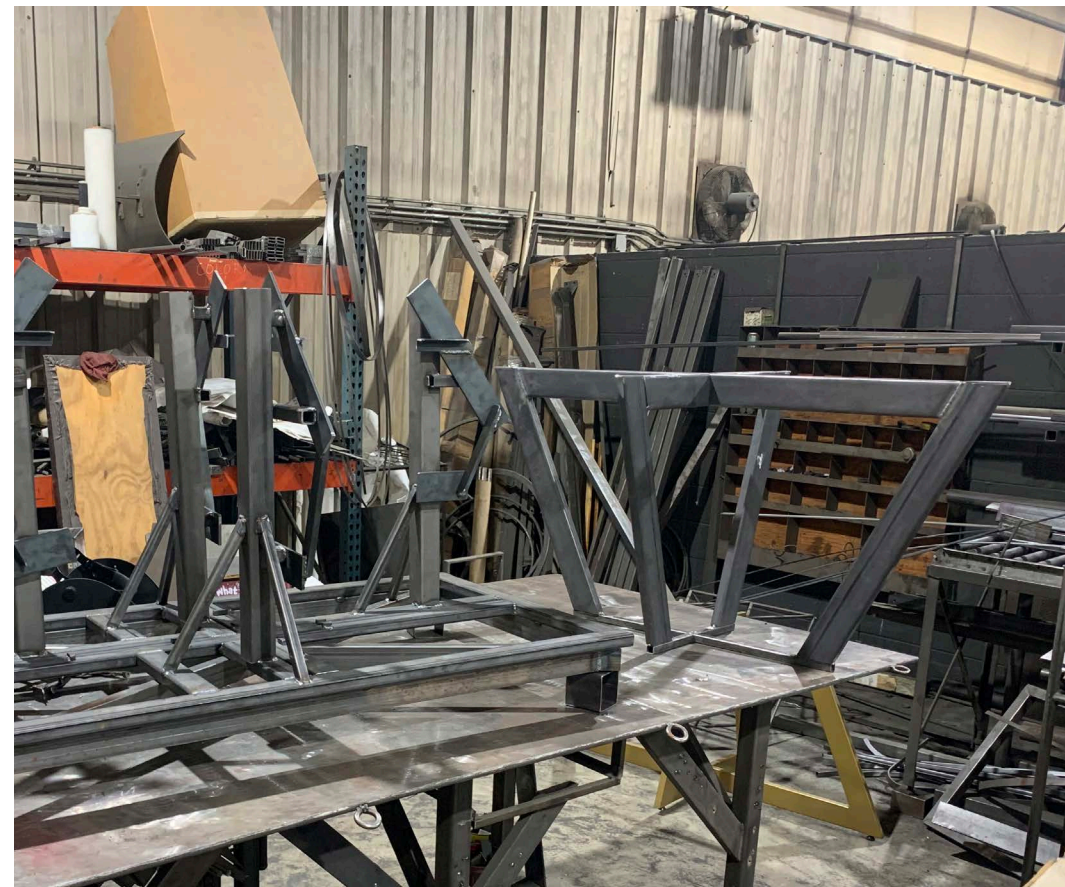
This is my design and production of a full scale bar stool to be completed with upholstered seat. Fabricated from shop found scrap and completed through powder coating. Also shown is the “scaffolding” used as I ensured the chair came out square.

Loungirondack

This is my design and production of a full scale lounge chair to be completed with upholstered seat. Fabricated from shop found scrap and completed through powder coating.



The Cruz Table



I was tasked with referencing the sample of the Cruz Table sent to market alongside its drawings to generate a functioning and tweaked prototype. I then used this prototype to generate a jig for the mass production of this table. I then used this jig to create three units to complete a sale.



Matthew Allan Carr

MatthewCarr@TheCarr.House

www.TheCarr.House

828.773.0413

