FREEDOM BY DESIGN
THE CITY COLLEGE OF NEW YORK

FALL 2023 - FALL 2024

IN COLLLABORATION WITH NEW YORK PRESBYTERIAN HOSPITAL

FBD Team Members 2023

Director: Juan Giraldo
Construction Manager: Mouhamoudou Dieng
Construction Editor: Evelyn Krutoy
Historian: Gildalis Torres
Treasurer (not pictured): Miriam Perel

Mentors

Design: Steve Preston
Construction: Christian Volkmann

Supporter

Martin Zauner

Clients Serviced

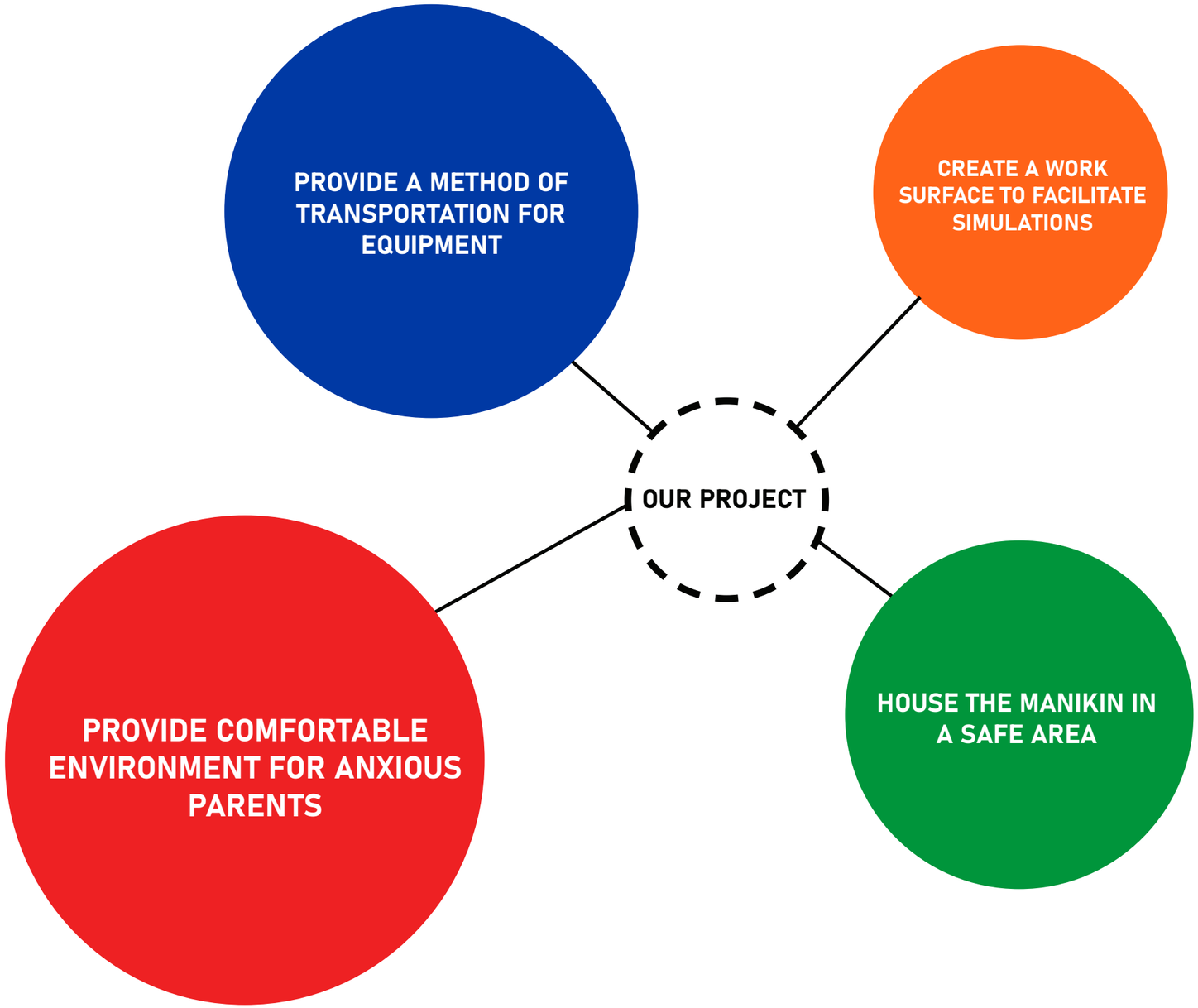
Weill Cornell Medicine

NewYork-Presbyterian

Design Objectives

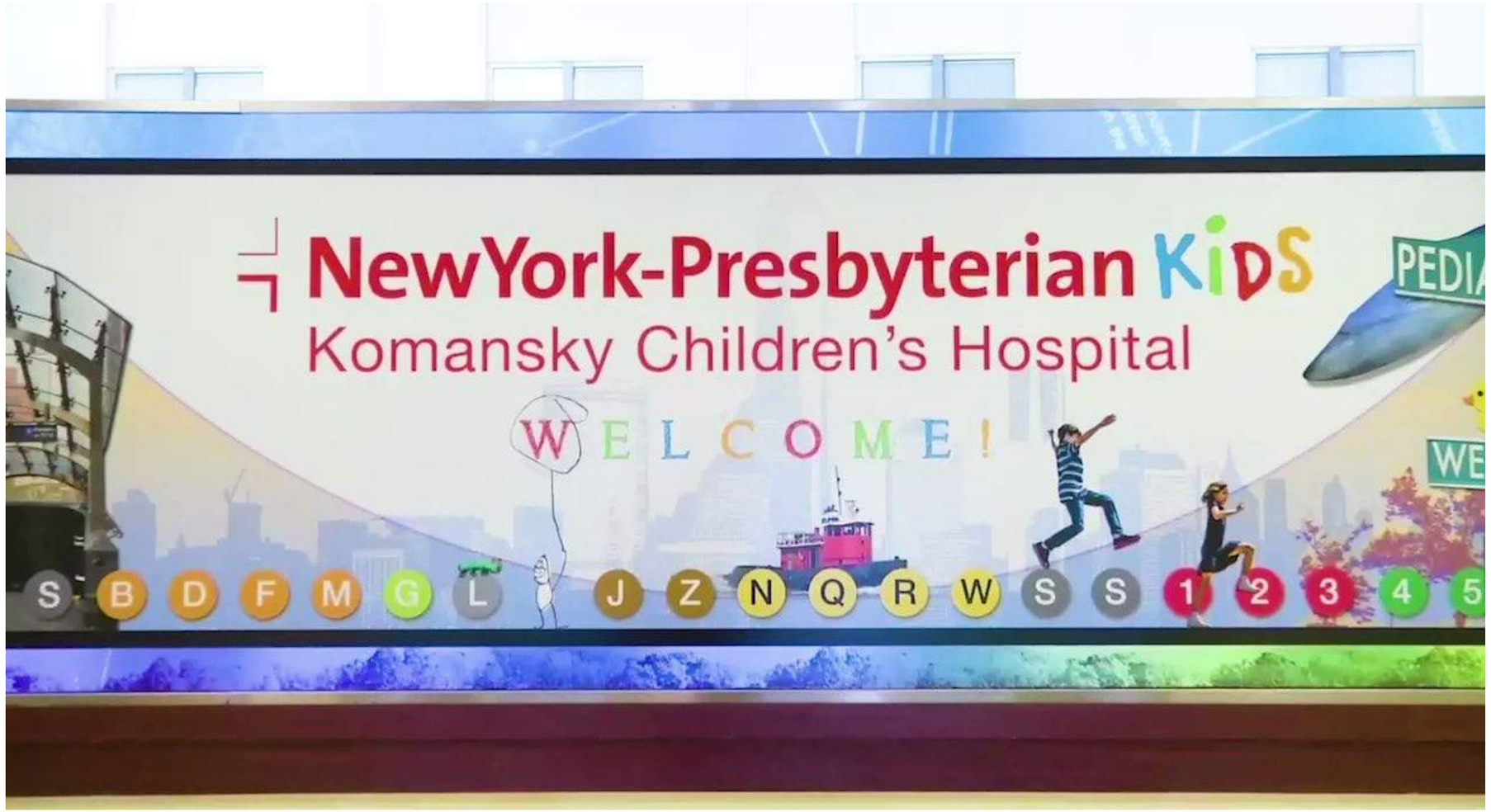
In 2023, the FBD team worked with New York Presbyterian's Pediatric Simulation Center. The Center aims to facilitate teaching programs to parents with children that are about to leave the Neonatal Intensive Care Unit, but still may need medical attention at home in the case of an emergency.

Previously, the doctors of the program would carry their equipent as well as a 36" long pediatric medical manikin in bags around the hospital and perform the simulation in any empty room. FBD aimed to change that by utilizing a multi-functional design. By designing storage as well as a workspace, the simulations could be performed anywhere.



Design Objectives | Initial Visit

Our initial visit to the hospital allowed us to see and understand the dynamics of the space. The interior and exterior aesthics included art and designed that referencing the NYC Subway lines. We found this to be inspirational for attitude and approach to the cart design.



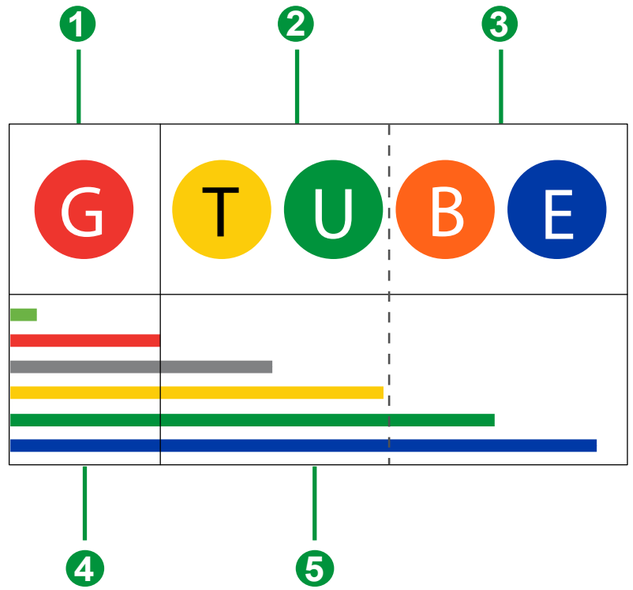
Subway Themed Sign at the Hospital

Schematic Design | Approach | Sizing and Studies

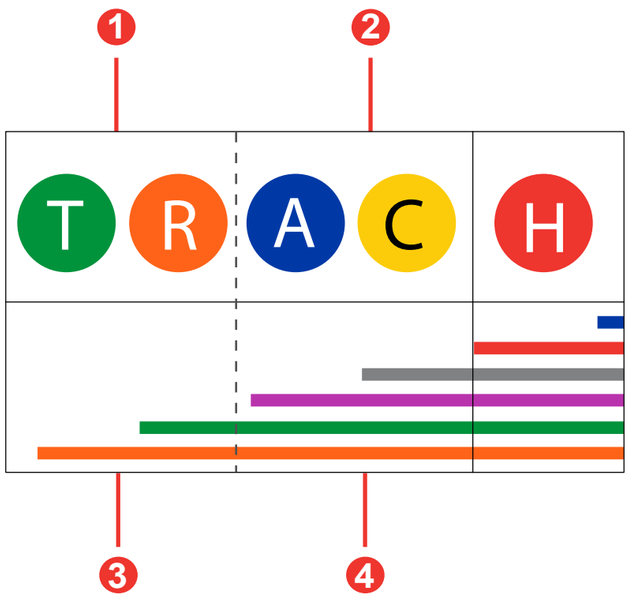
In coordinating with the leading doctor of the Pediatric Simulation Lab, they had provided us with the image of an 8.5x11" sheet for scale with their equipment organized in containers, and a list of necessary equipment. We kept with the 4 Station workflow for the G-Tube procedure and the 5 Station workflow of the Trach procedure that the doctor had been utilizing in procedures in order to maintain efficiency

The sizing parameters of the equipment and the manikin were the main drivers for the cart design. Initially, we aimed to specifically accomodate the Trach and G-Tube procedures; marking them visually with an NYC Subway design graphic, mimicking the interior of the hospital. In the image on the right, our schematic process for placing equipment exemplifies this.

We then studied the possibility of a vertical cart option that would prioritize space-saving and a horizontal option that would be simpler in construction and transportation.



Front Facing Sizing Schematic



Back Facing Sizing Schematic

Schematic Design | Approach | Sizing

Toddler Manikin - Approx 36”

Equipment for Trach Procedure

1

2

3

4

5

1. Different g-tubes as examples (whatever child has + button if converts in future)
- -Classic gastrostomy tube
- -PEG
- -Mic-key button
- -Mickey extension tubing
- -5Ml syringe with 2ml of water to demo balloon
- -empty 5ml lauer lock to demo med port
- -empty 50ml feeding syringe to demo feeding port

2. Cleaning supplies
- -kidney shaped basin
- -soap
- -bottle sterile water
- -cotton swabs
- -dry cloths
- -split gauze
- -tape

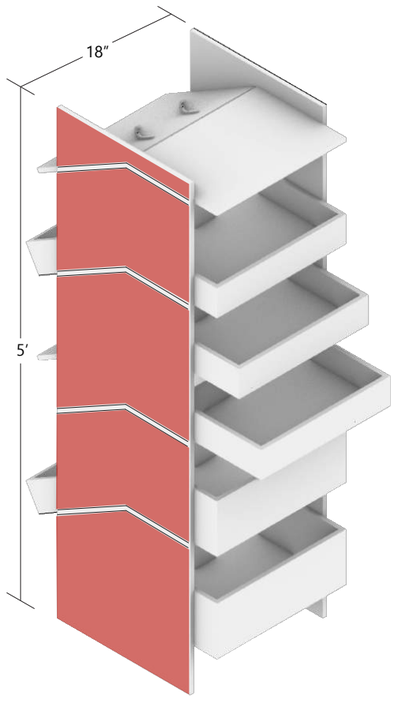
3. Extension tubing/meds/venting
- -cup labelled WATER
- -Small cup labeled medication
- -at least 2 empty 5 ml syringe – one for medicine (label), one for water
- -Feeding syringe

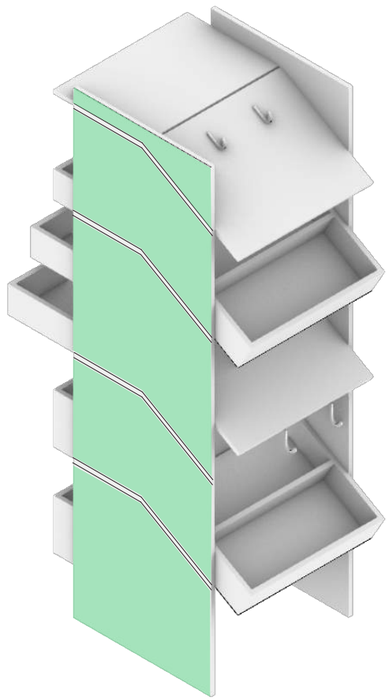
4. Feeding
- -pump
- -bags
- -tape

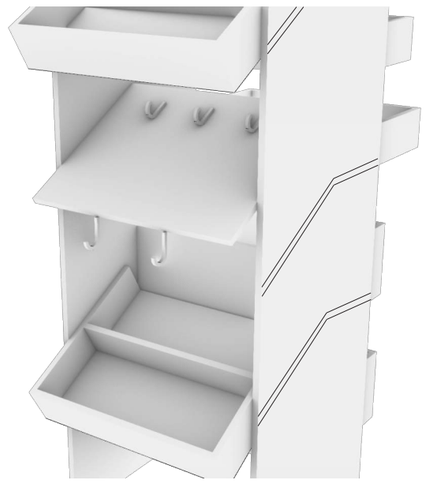
5. Full mickey set
- -Extra mickey button
- -Lubricant
- -4x4 gauze
- -5 ml syringe

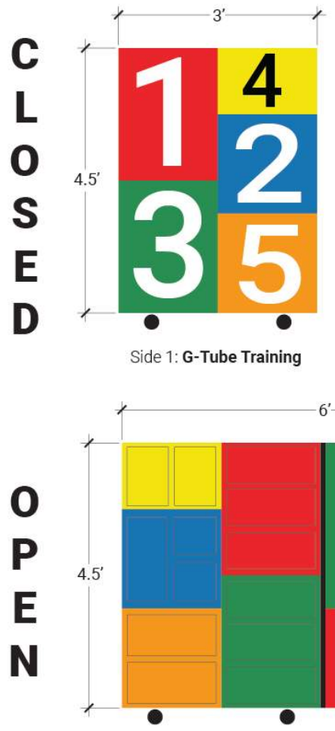
Equipment for G-Tube Procedure

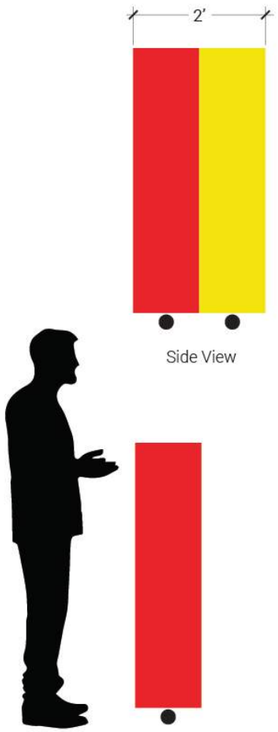
Schematic Design | Approach | Sizing | Vertical Options



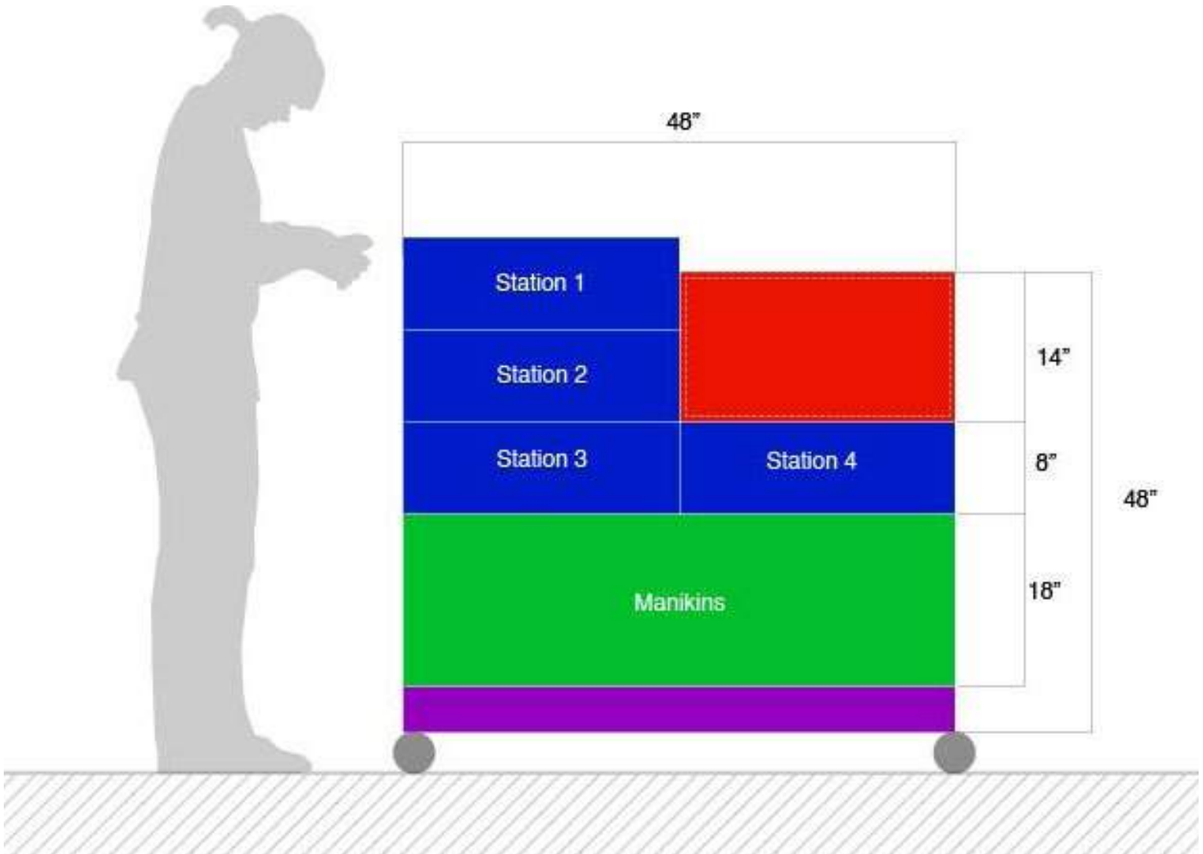


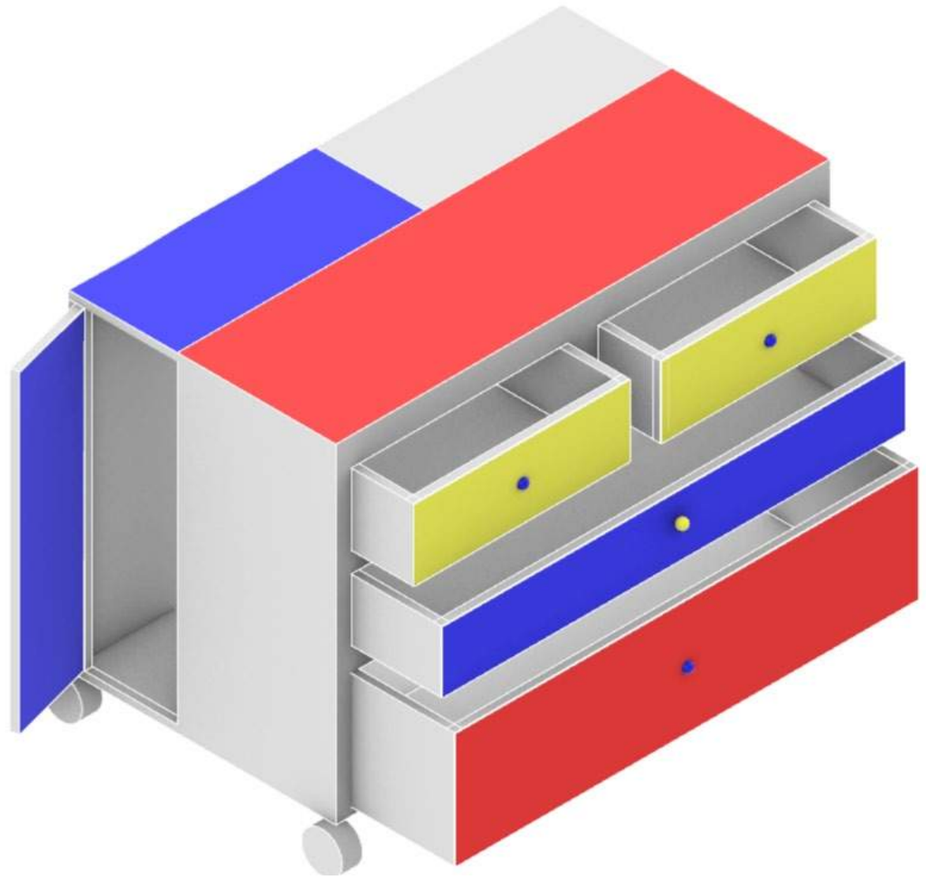






Schematic Design | Approach | Sizing | Horizontal Options

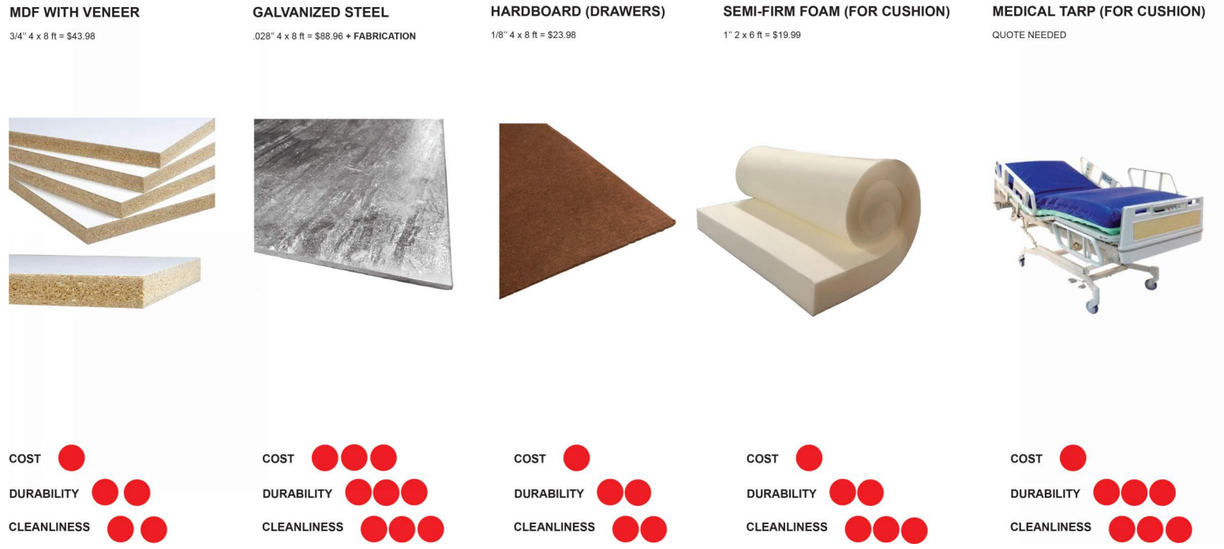




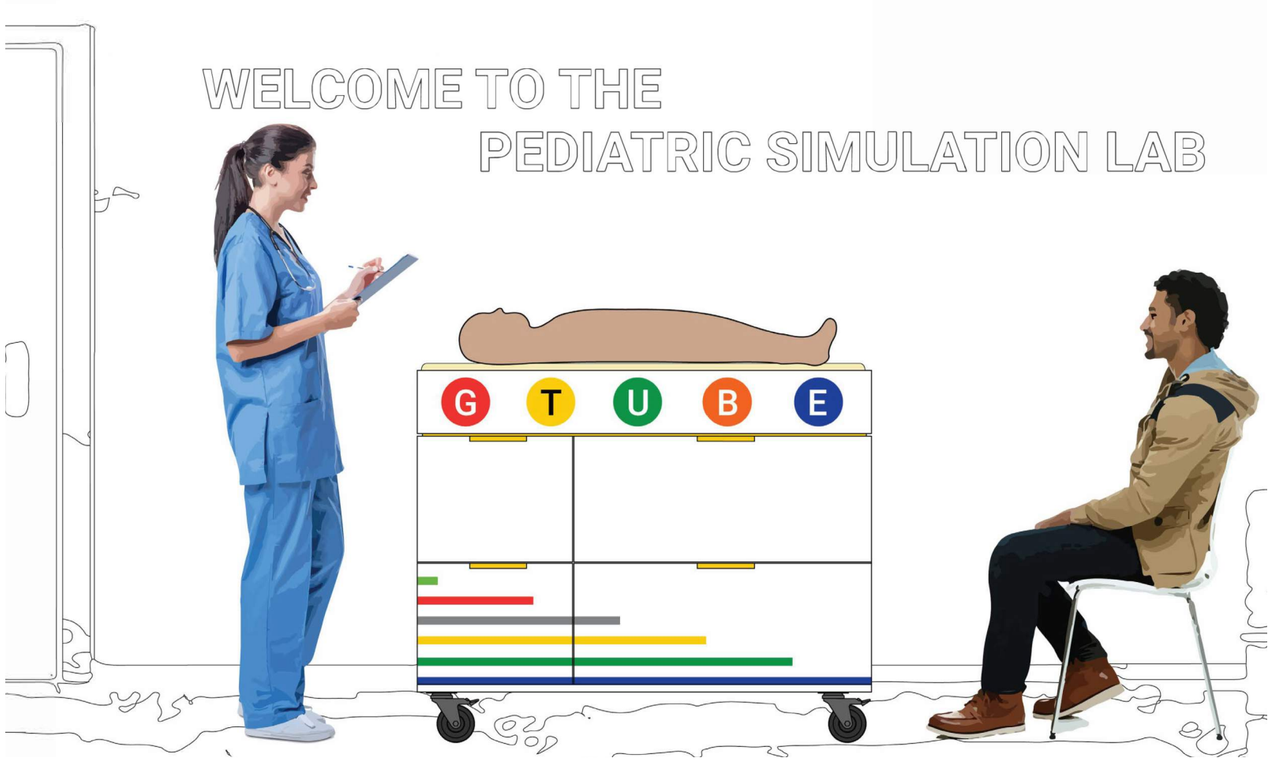
Schematic Design | Approach | Studies | Materiality

In coordinating with the client team, we found that the horizontal option for the cart was the most feasible and efficient option.

Our next task was to begin studying materials, their efficiency, strength, cost, and cleanliness. We considered steel, plastics, and other lightweight materials, but found the fabrication process had too much room for error for our skillset. In the end, we felt that plywood would be the best material to use for the cart.

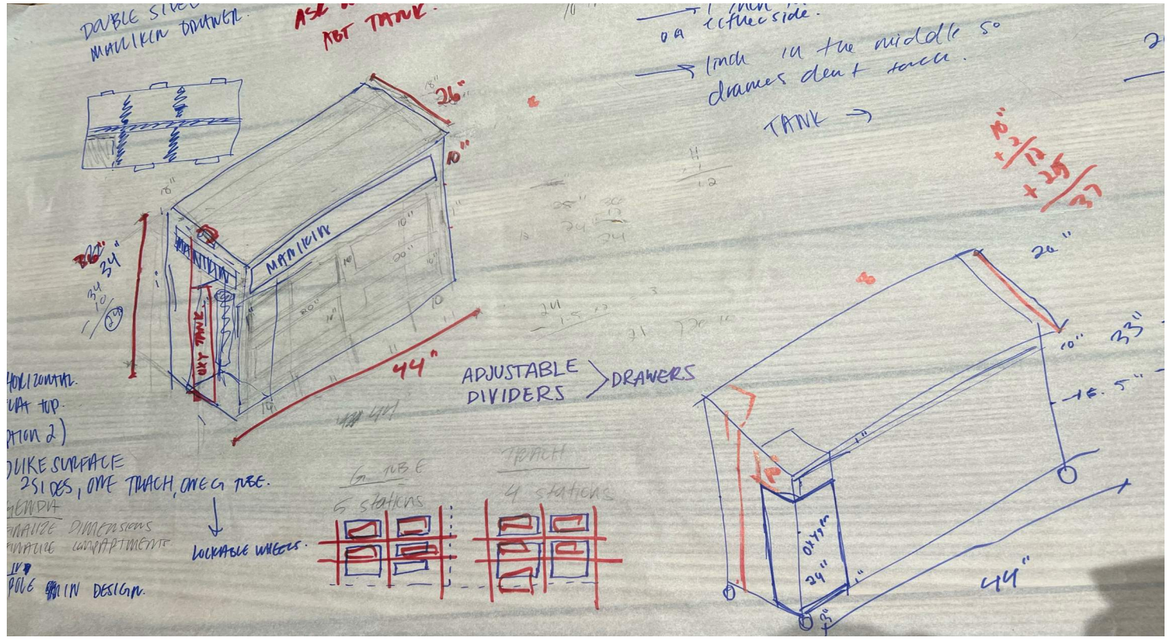


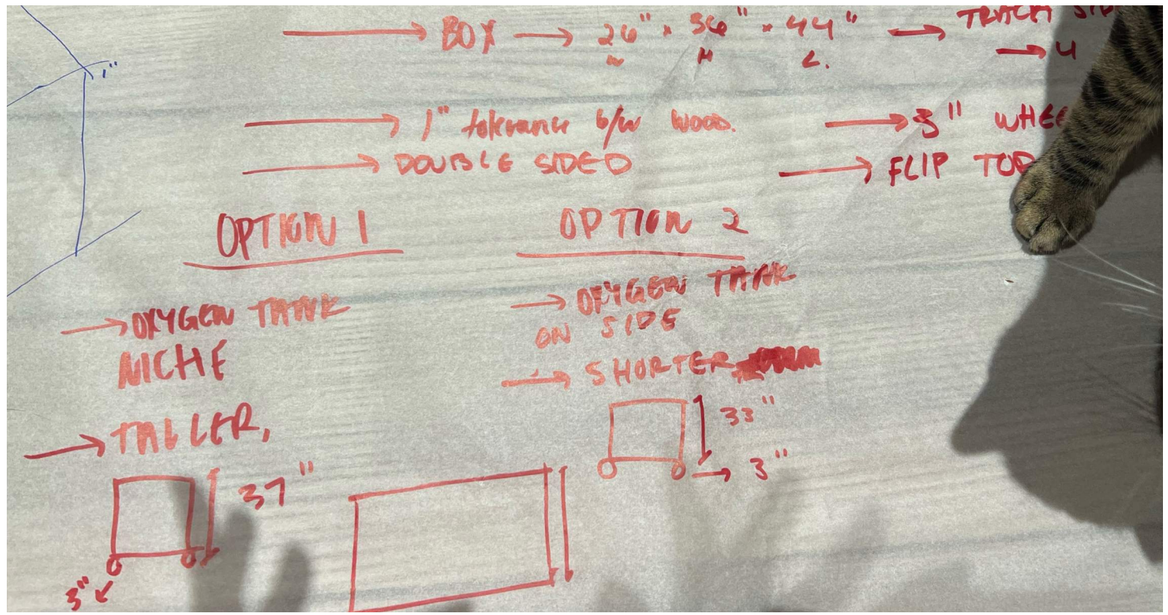
Material Analysis



Collage

Schematic Design | Approach | Studies | Progress Photos





Sketches From August 9th 2023 Meeting

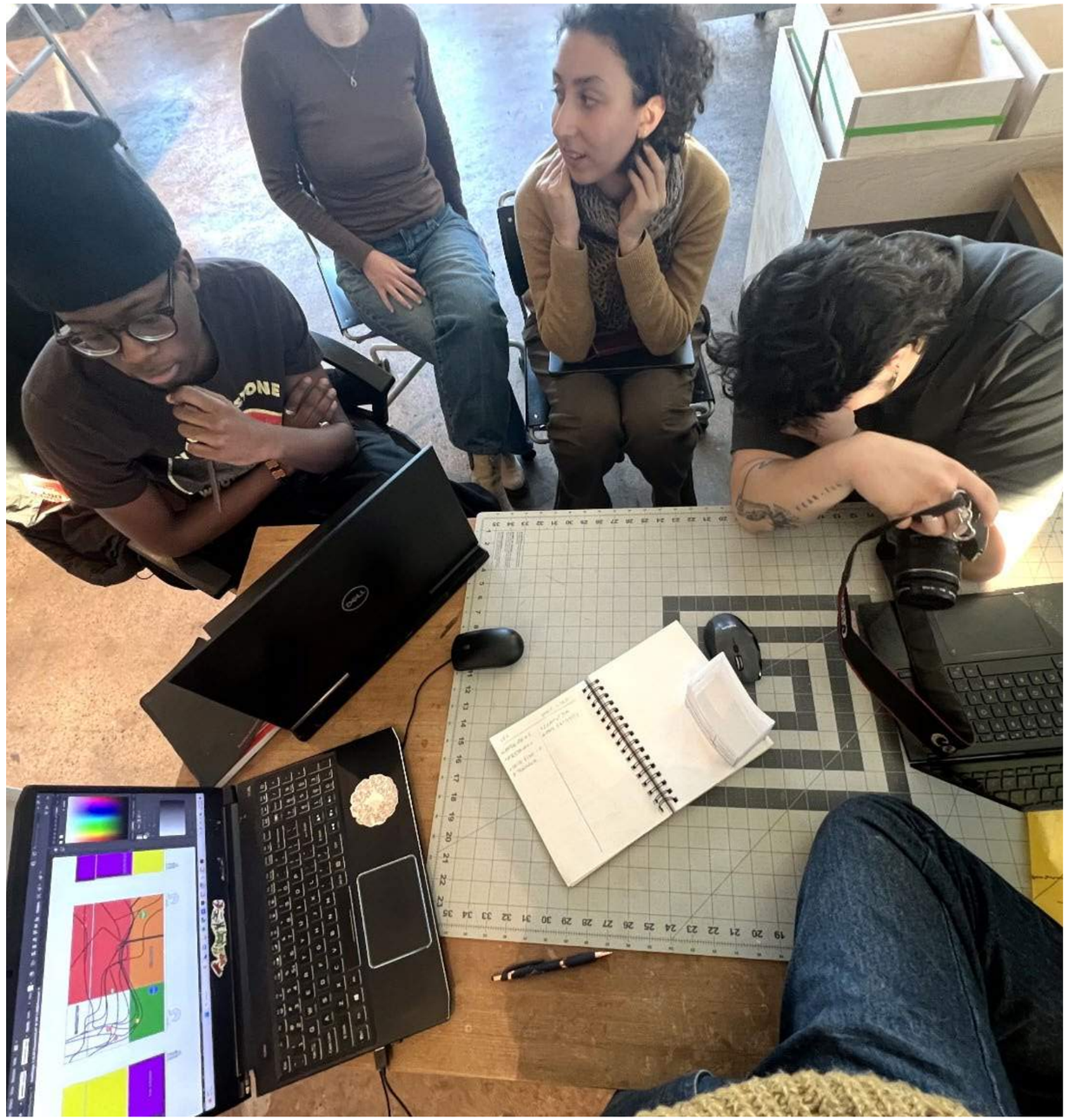


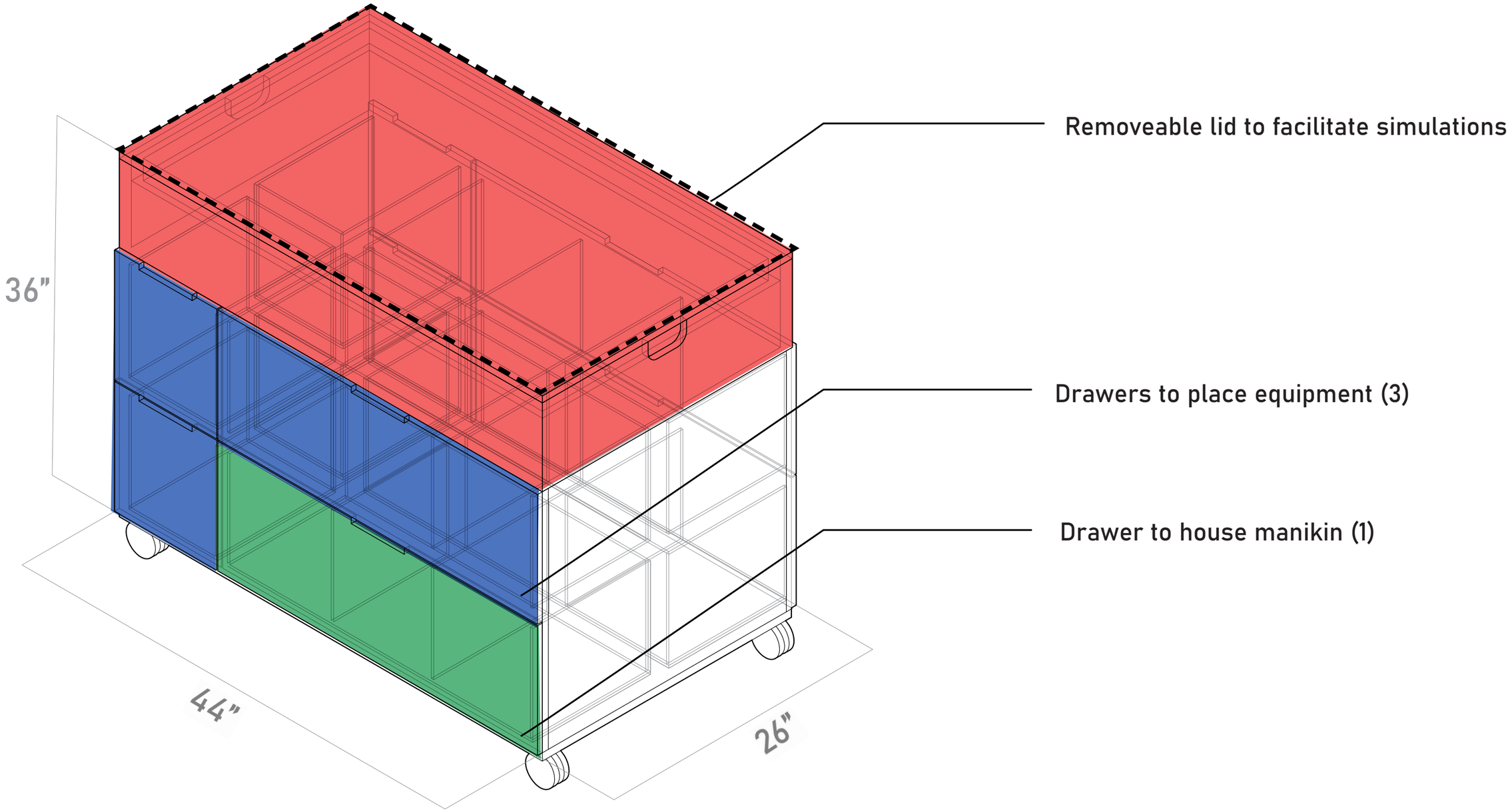
Photo From September 11th 2024 Meeting

Schematic Design | Meeting with New York Presbyterian

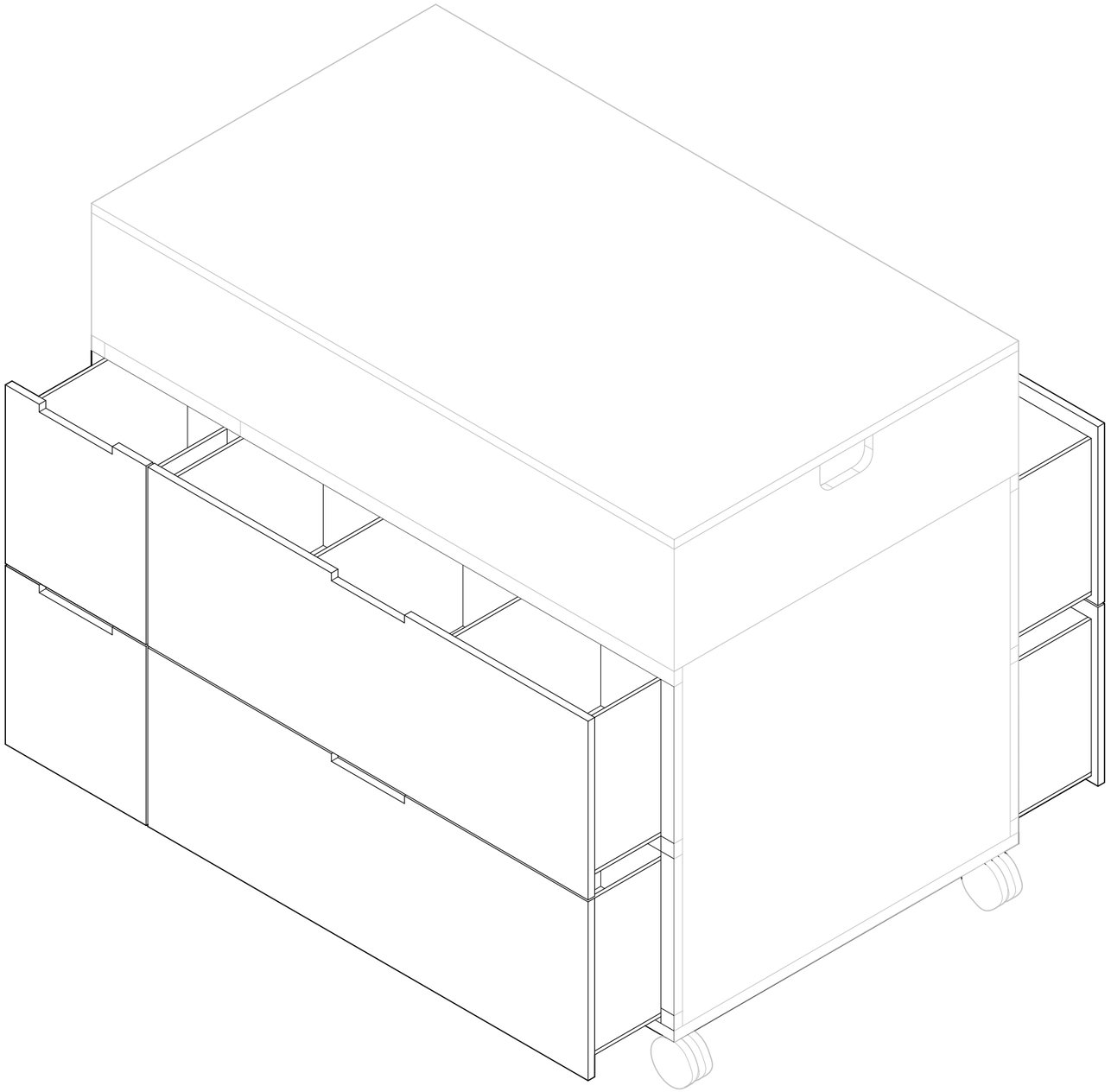
In presenting our studies and schematic design option to the program leaders, we understood that the cart design shoud be more flexible for the possibility of new procedures being integrated to the simulation program. This marked the end of schematic design, where we moved on to design development and construction documentation.

Photo From October 24th 2024 Meeting with Clients

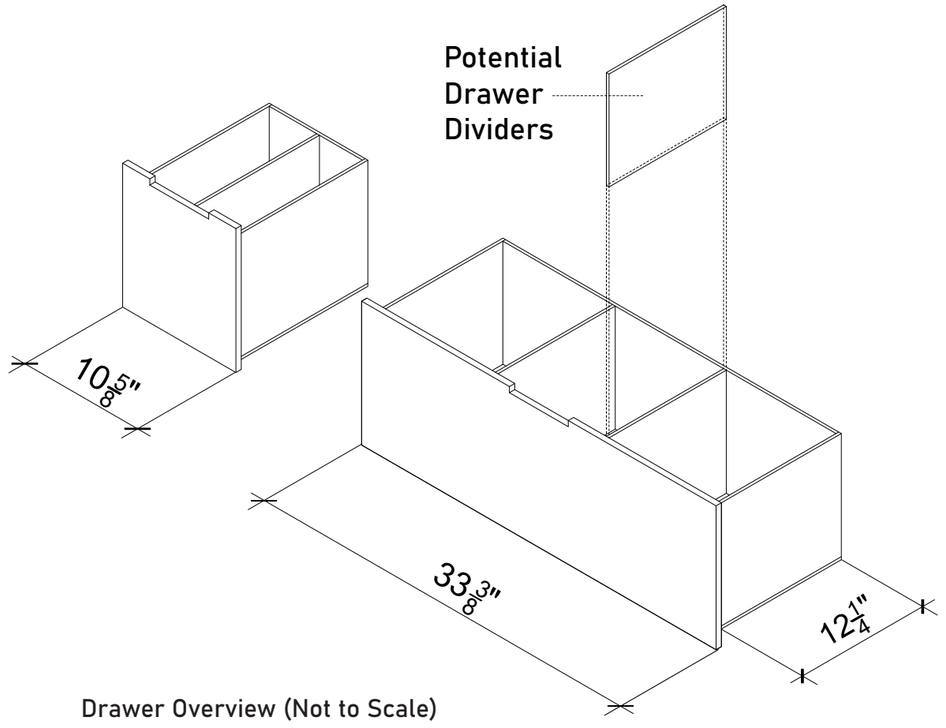
Design Development and Construction Documentation | Cart Overview



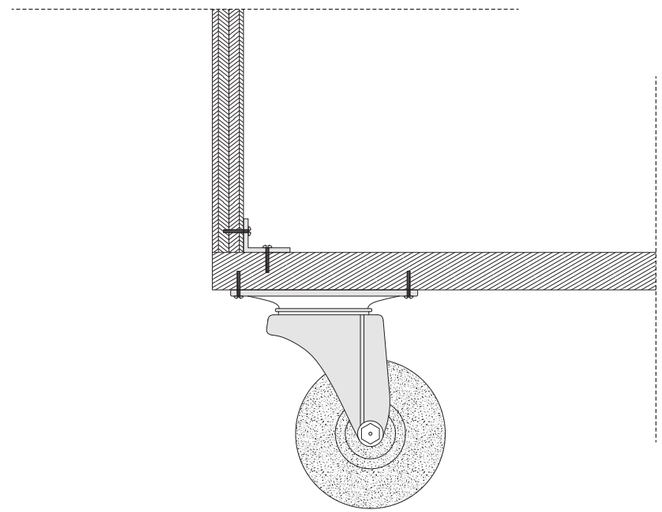
Design Development and Construction Documentation



Cart Axonomtric



Drawer Overview (Not to Scale)



Wheel Connection Detail (Not to Scale)

Design Development and Construction Documentation | Fundraising

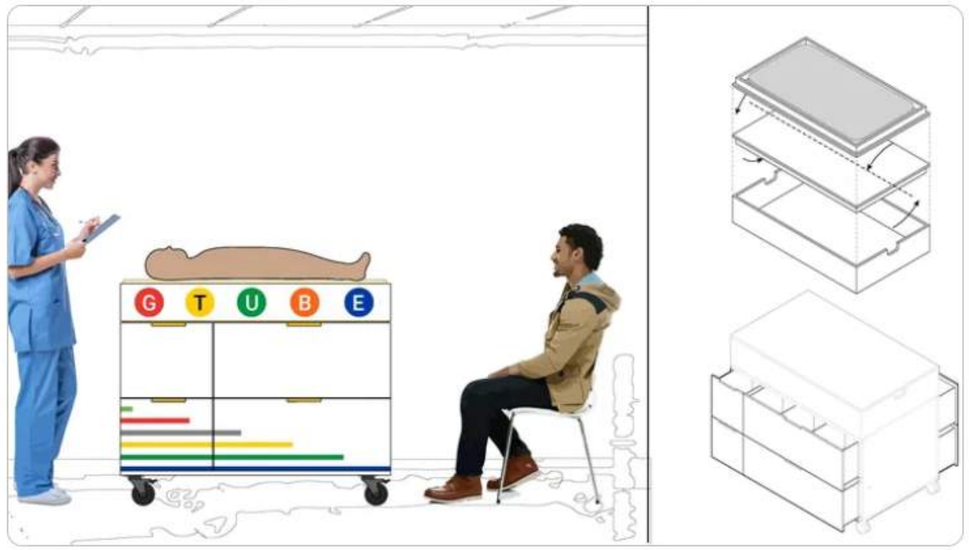
The table pictured to the right shows our initial budget that we presented to the clients during the end of the Schematic Design phase. After receiving some money thanks to the AIAS and our University, we worked to fundraise the remaining amount through a bake sale and GoFundMe. In total we were able to raise about $1,800!

MATERIAL	AMOUNT	PRICE	COST
MDF WITH VENEER	5	$44	$220
HARDBOARD (DRAWERS)	1	$14	$14
SPRAY PAINT	10 CANS	$7	$71
EDGE BANDING	1 ROLL	$30	$30
WOOD GLUE	3	$10	$30
CABINETRY HANDLES	10	$8	$80
CASTERS (WHEELS)	4	$28	$112
DRAWER TRACKS	8	$10	$80
MEDICAL TARP	3 YARDS	15 / YARD	$45
FOAM CUSHION	1	$20	$20
SUBWAY GRAPHIC TEMPLATE	1	$25	$25
HARDWARE			$75
TOOLS/RENTALS			$100
CART DELIVERY COST			$100
DOCUMENTATION/MARKETING			$150
MEETING SUPPLIES			$250
CONTINGENCY			$300
TOTAL			**$1,702**

Budget Presented to Clients

Design Development and Construction Documentation | Fundraising

Pediatric Simulation Station



Juan Jimenez Giraldo is organizing this fundraiser.

Donation protected

Welcome to Freedom By Design (FBD), a dedicated initiative by the American Institute of Architecture Students (AIAS). FBD focuses on breaking down barriers – physical, educational, environmental, socio-economic, and cultural – through innovative design solutions created by students. Our mission is clear: empower students to enhance community lives through the transformative lens of design and construction.
In past years, FBD successfully partnered with organizations like Streetlabs and Harlem Grown, building strong connections between community leaders and our members. This

$1,600 raised of $2,000 goal

36 donations

Share

Donate now

This fundraiser is located near you

Finn Moran
$55 · 7 mos

Anonymous
$50 · 7 mos

Matteo Agudelo
$50 · 7 mos

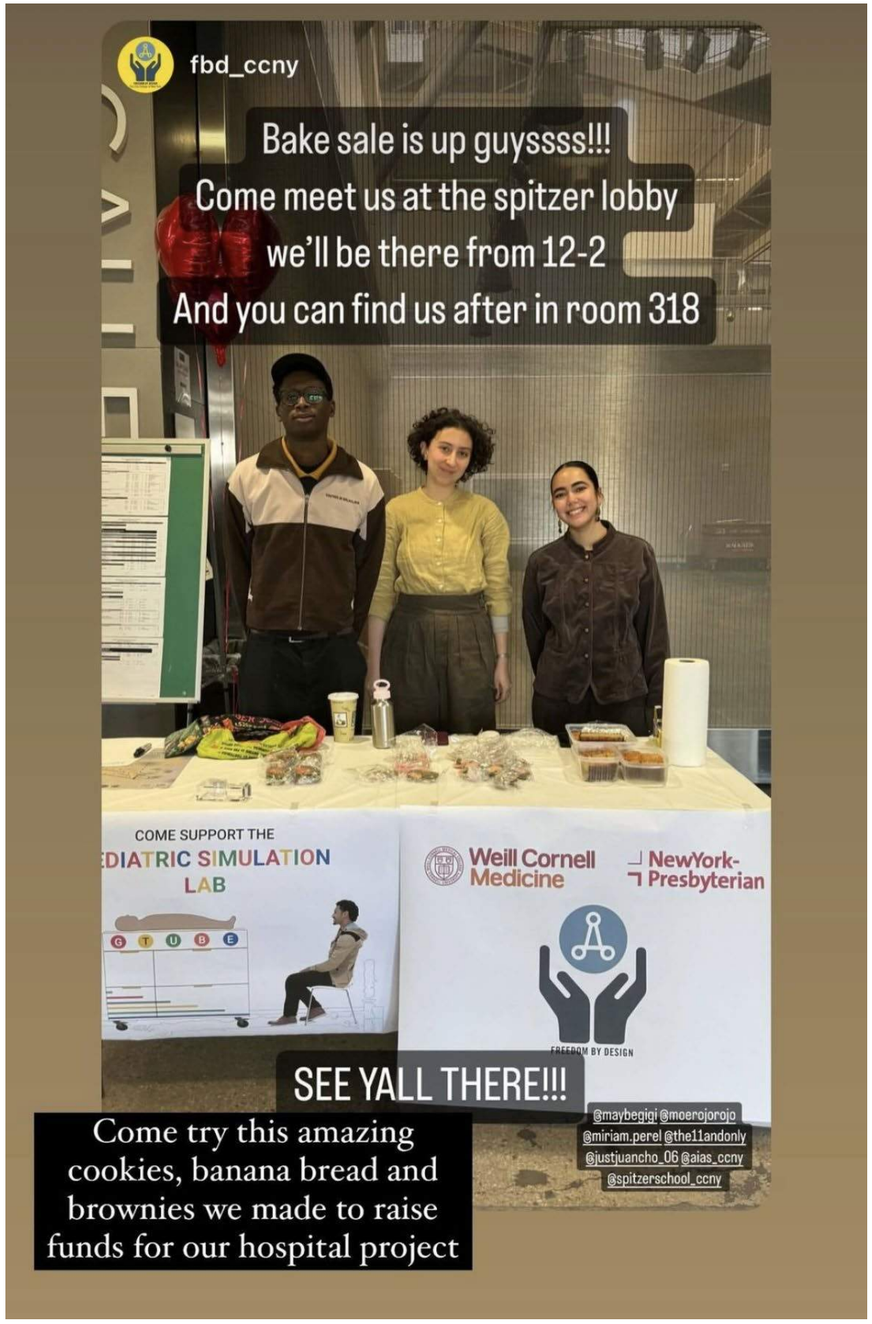
Arlene Preston
$100 · 7 mos

Onika Gregory
$10 · 7 mos

See all

See top

GoFundMe Status as of August 2024



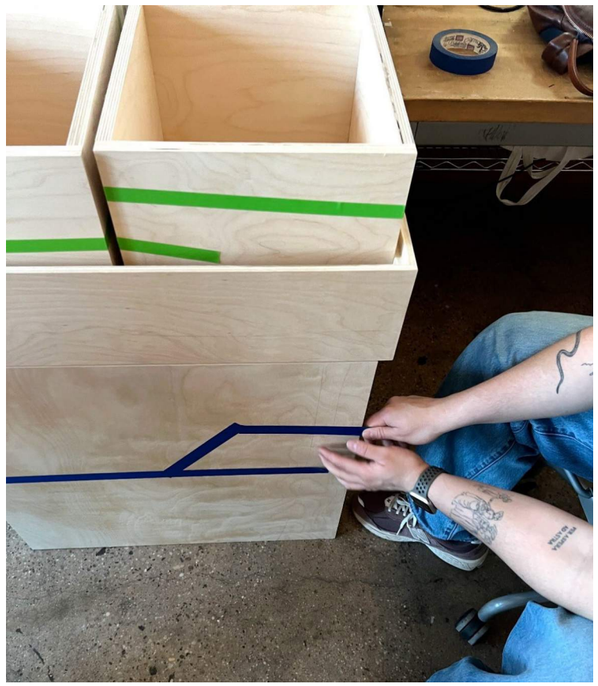
Bake Sale Promotional Post

Construction Process | Mentoring and Becoming Cabinet Makers

In the end, we found that building the cart out of plywood was the most practical method. However, in doing so, we essentially needed to become cabinet makers! Thanks to one of our mentors, Martin Zauner, he took the lead in making sure that the alignment of the cart's skeleton was correct. From then on, it was up to us to mount the drawers and finish the piece.

Cart with Mounted Drawers

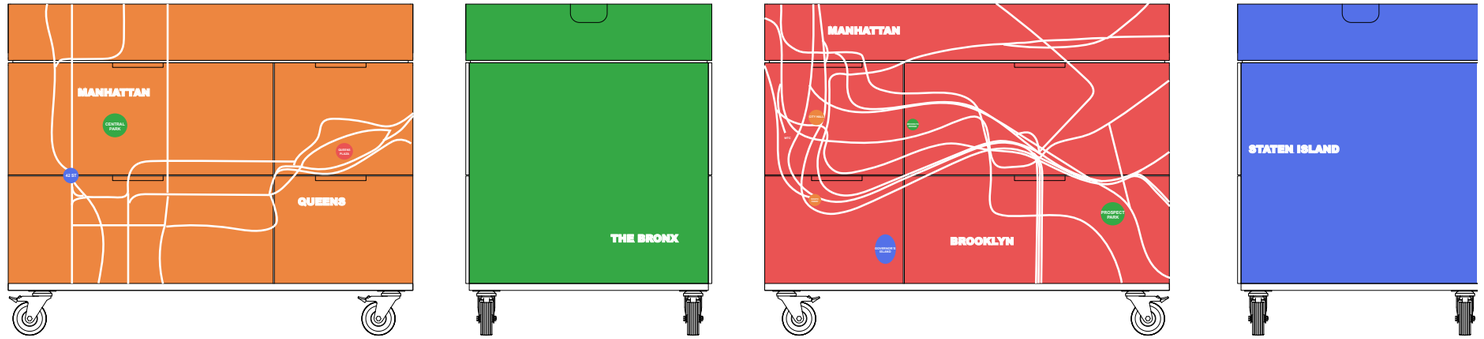
Group Worksession



Group Worksession - Laying Out Design

Construction Process | Subway Design Iterations

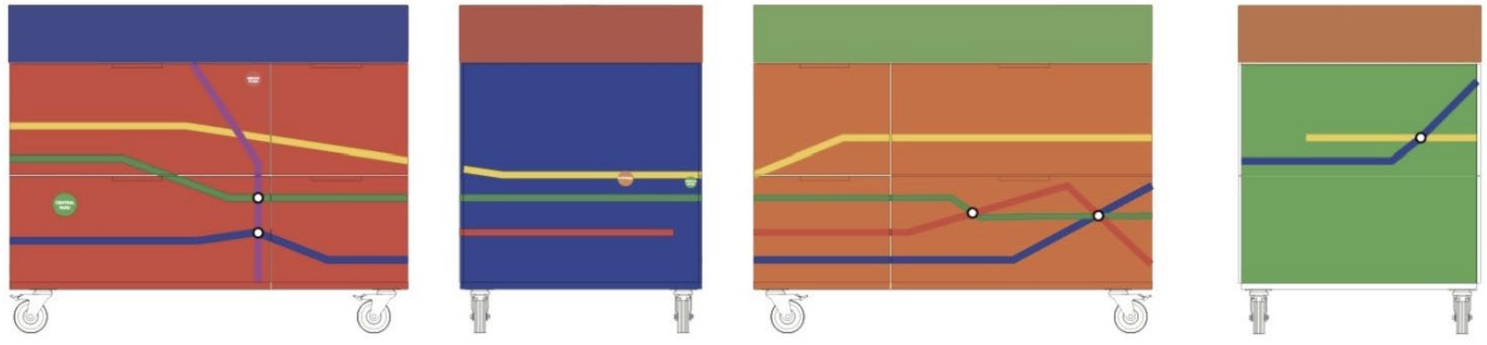
Our MTA Subway design calls to the aesthetics of the children's hospital. The design aims to provide a sense of familiarity to the environment, where the cart could serve as a method to ease anxiety as opposed to cause it by appearing as a nerve-wracking medical device.



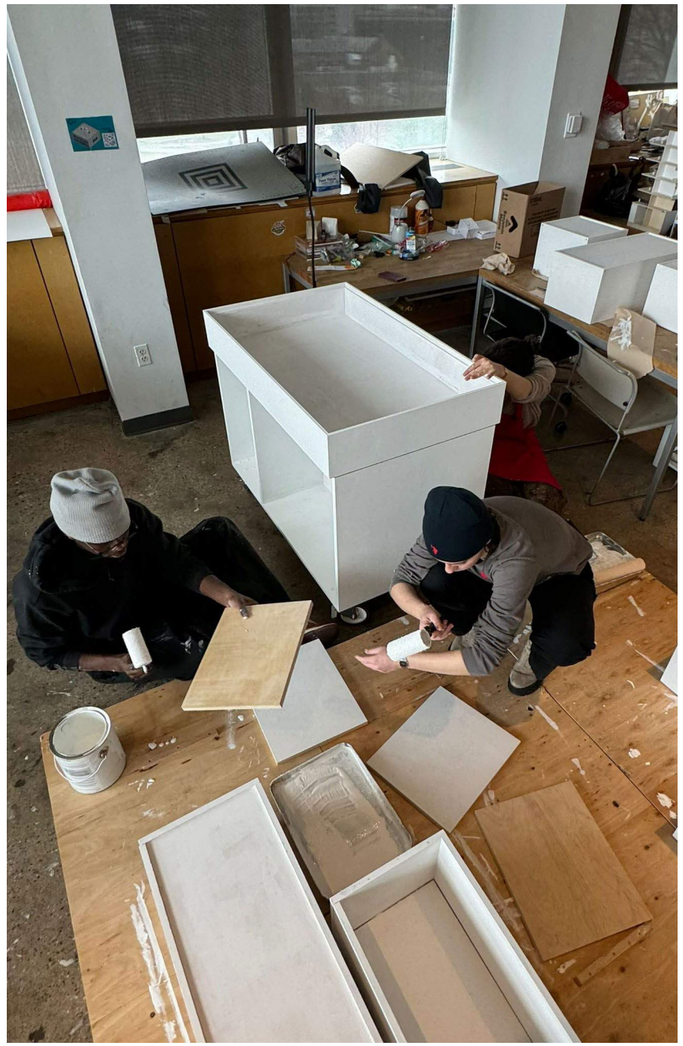
The design iterations demonstrate our thinking of applying the NYC Subway system in a literal way as it appears on the current map, referencing older maps, and simply referencing the map through a series of lines, connections, and colors.

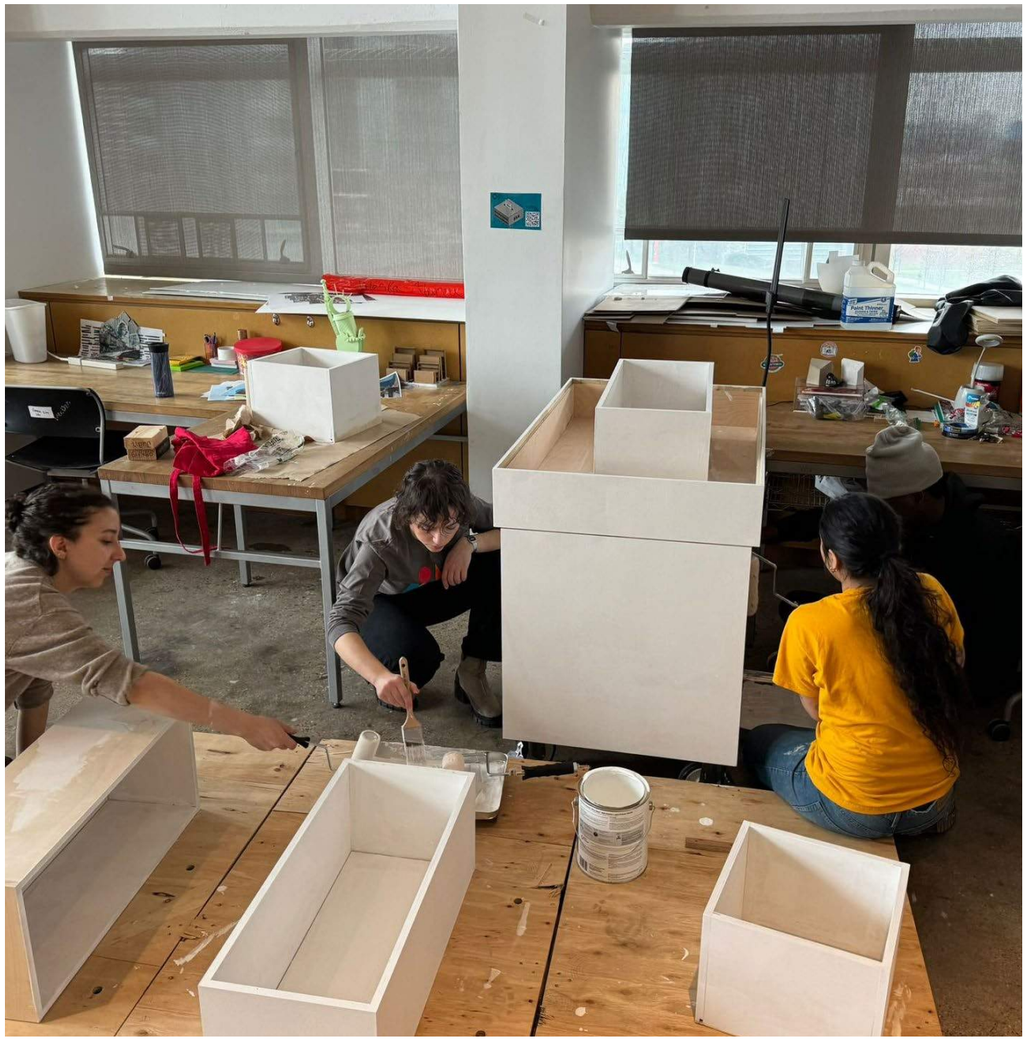
Chosen Design

A subtle reference to the NYC Subway Map



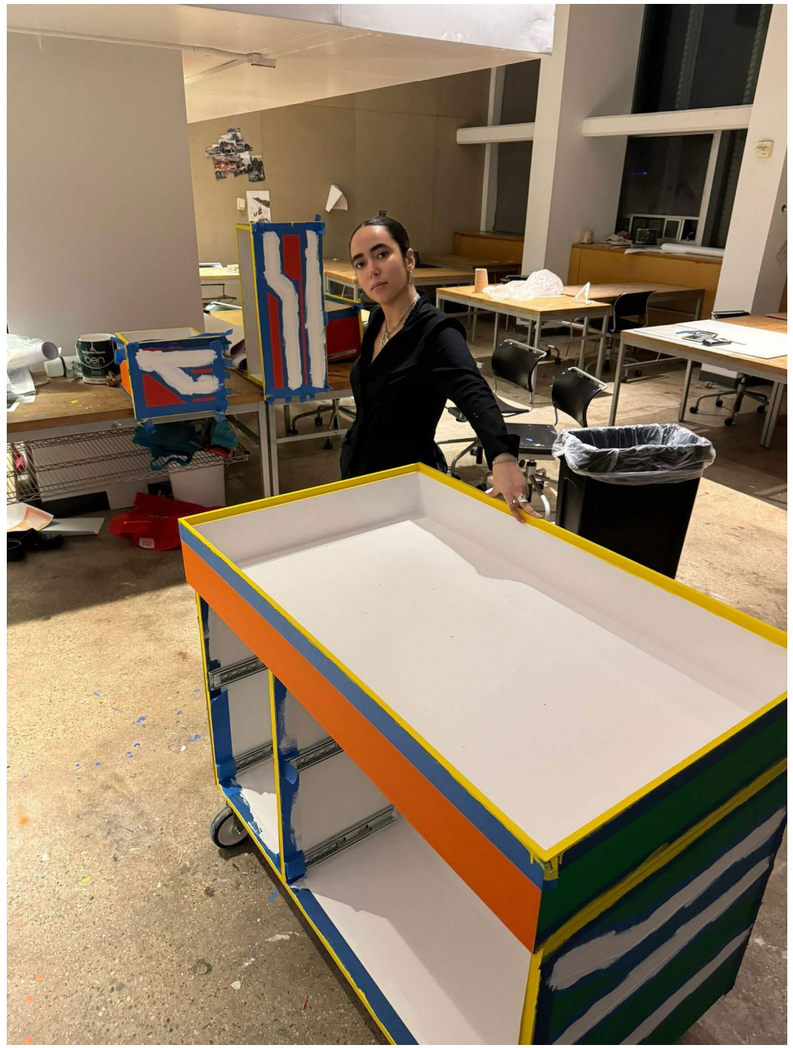
Construction Process | Progress Photos



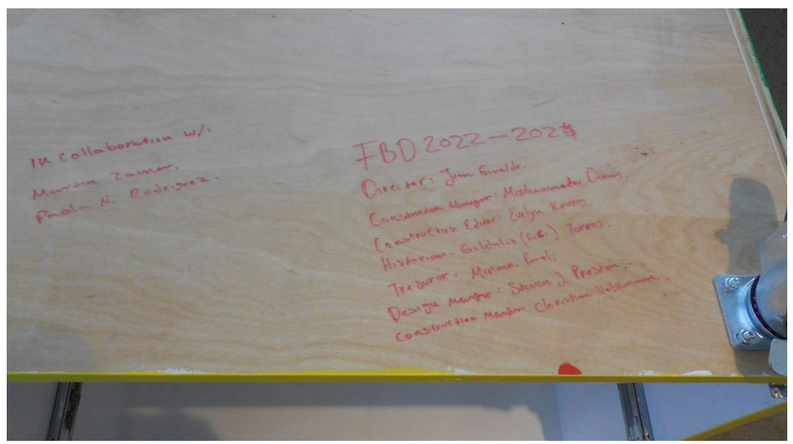


Priming the Cart and Drawers

Construction Process | Progress Photos



Painting the Cart with Subway Design July 4th 2024

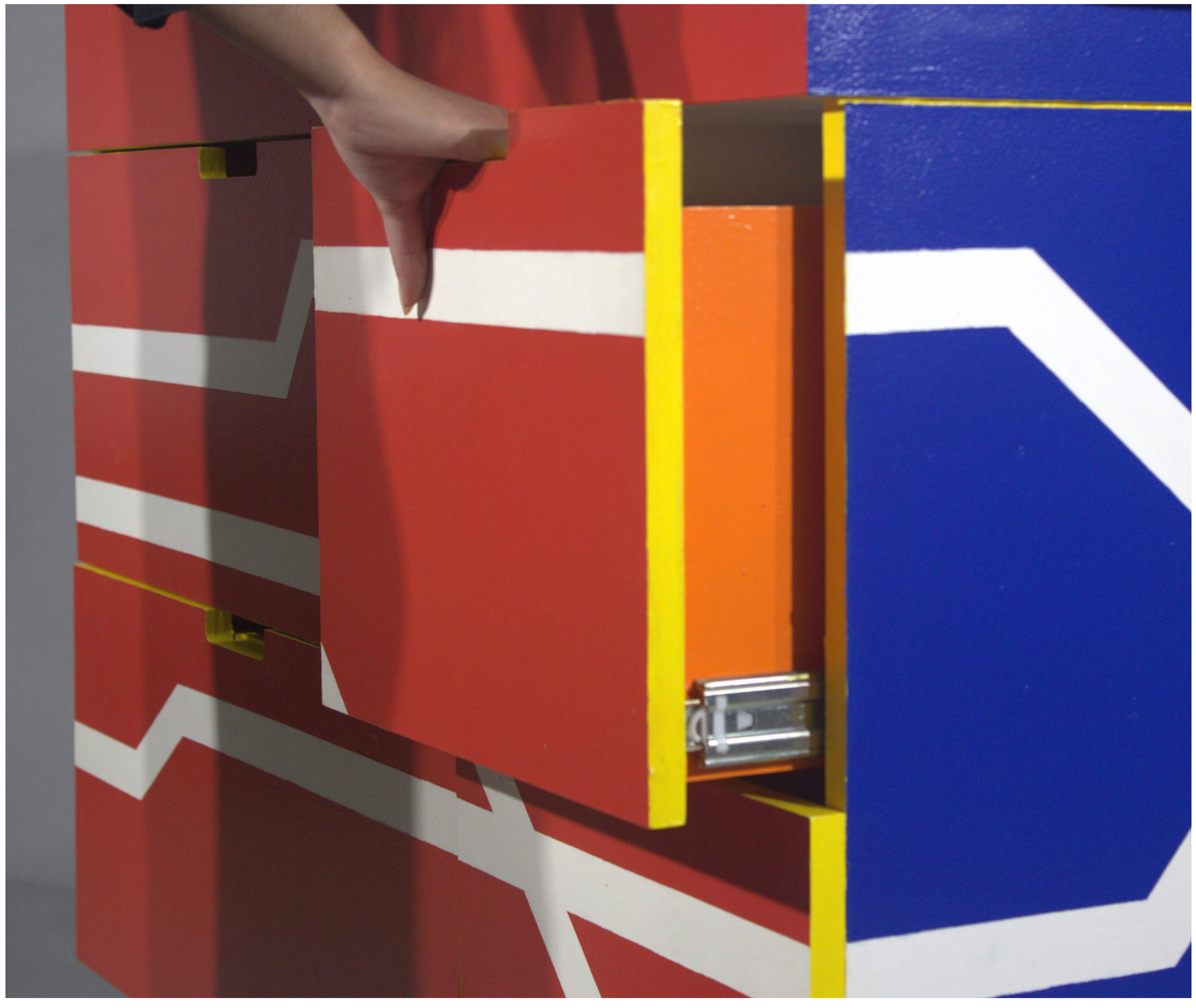


Team Signatures Before Painting Over

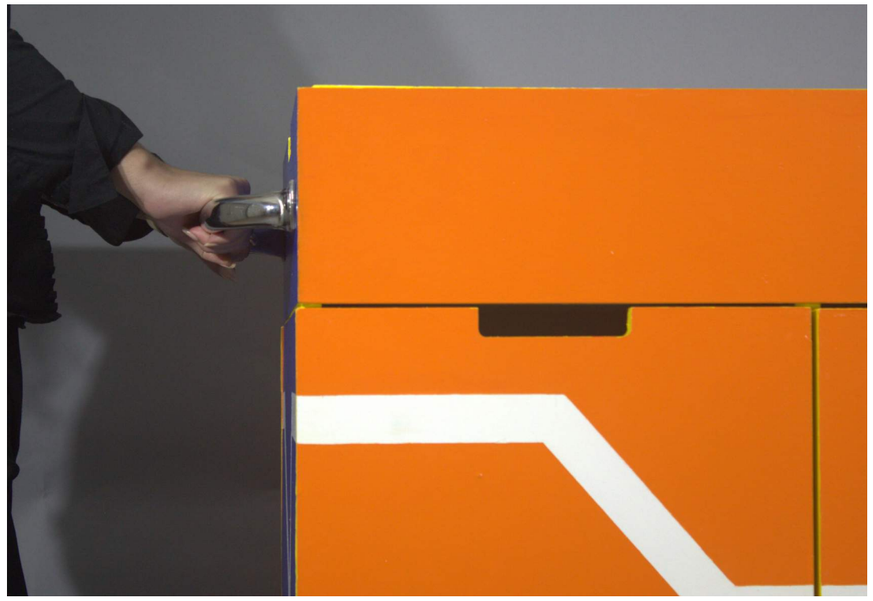
Final Design Photos

Final Design Photos

Final Design Photos



Final Design Photos



Final Design Photos | Handoff

Final Handoff Event July 23rd 2024

Final Design Photos | Handoff

Final Handoff Event July 23rd 2024

THANK YOU!

WE WOULD LIKE TO EXTEND A THANK YOU TO THE AIAS FOR GIVING US THIS OPPORTUNITY, AS WELL AS OUR MENTORS, **STEVE PRESTON AND MARTIN ZAUNER, NEW YORK PRESBYTERIAN HOSPITAL** FOR THEIR HELP, **THE SPITZER SCHOOL OF ARCHITECTURE** FOR THEIR CONSISTENT SUPPORT, AND TO **ALL THOSE WHO DONATED** TO OUR PROJECT!