Design Development Record
Part B

Jason Yuan

DNB311 ID Studio 7: Capstone

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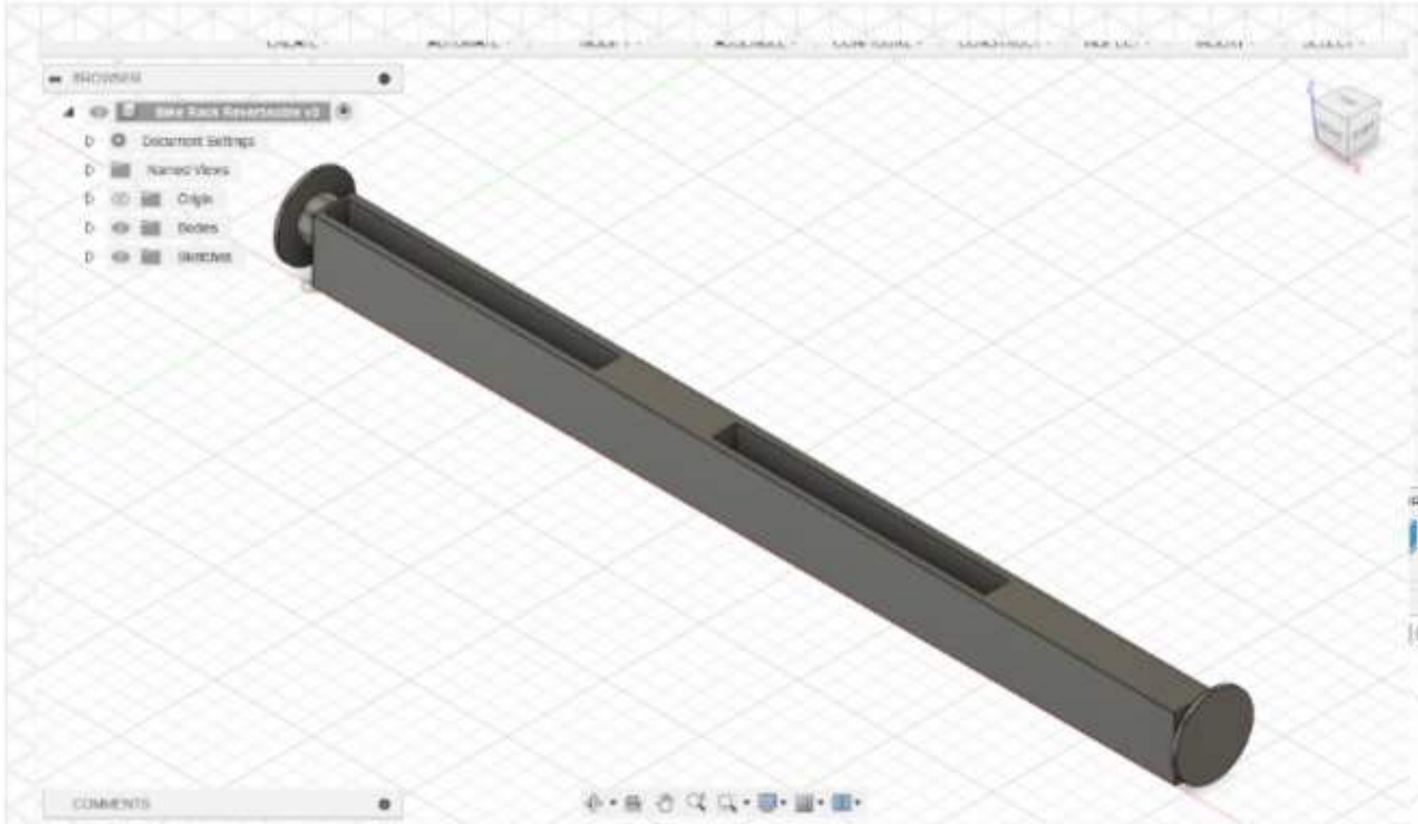
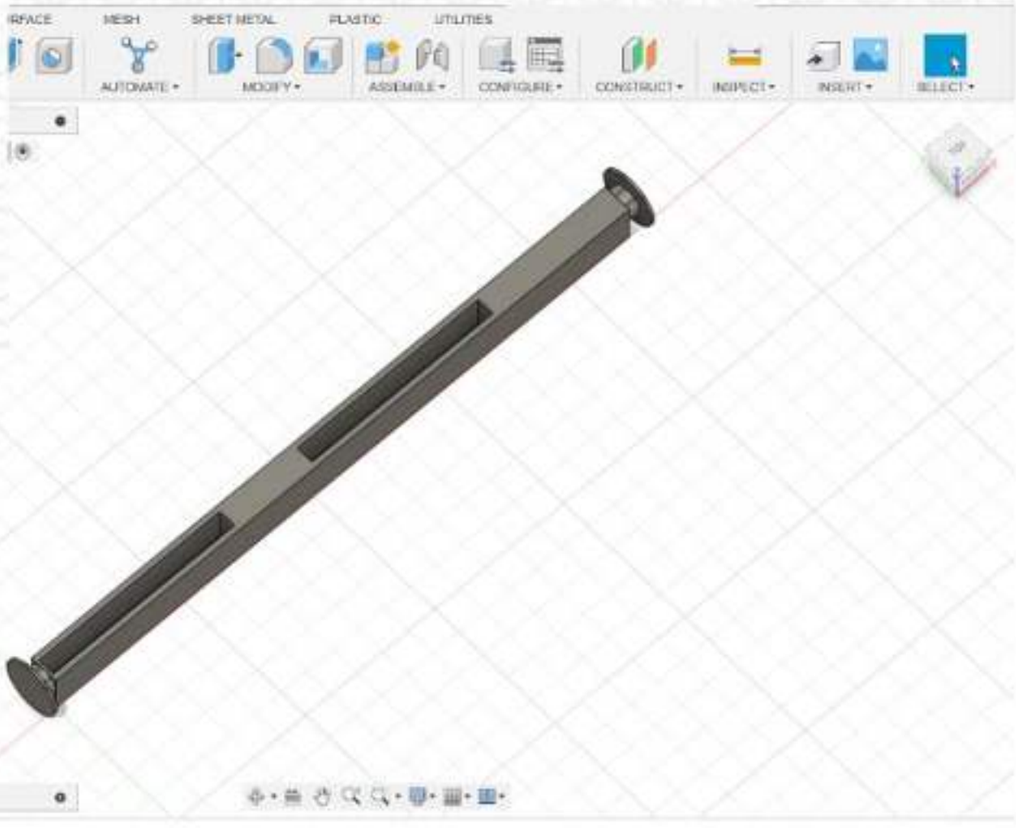
CAD Process - Bike Rack





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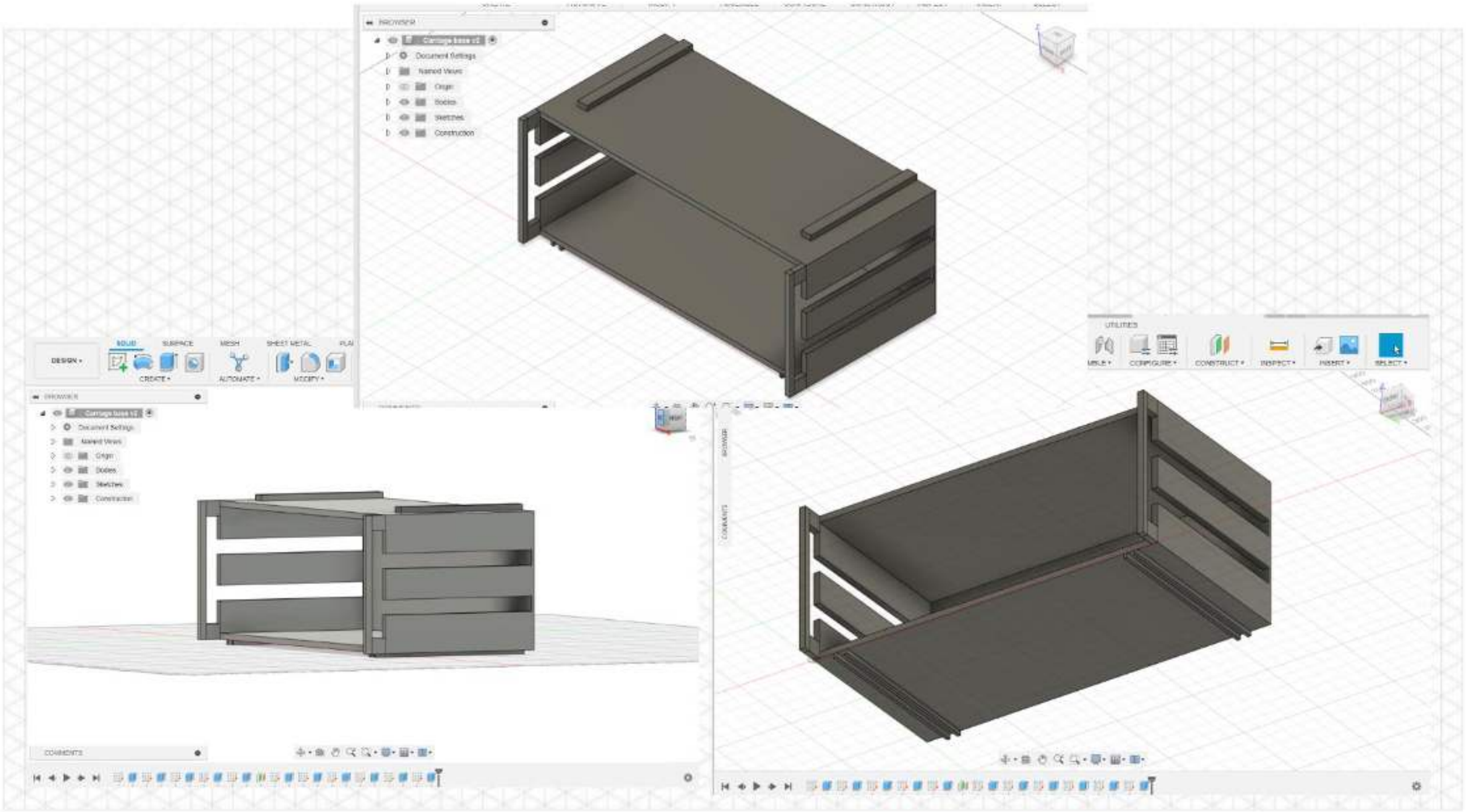
CAD Process - Carriage (Base Model)



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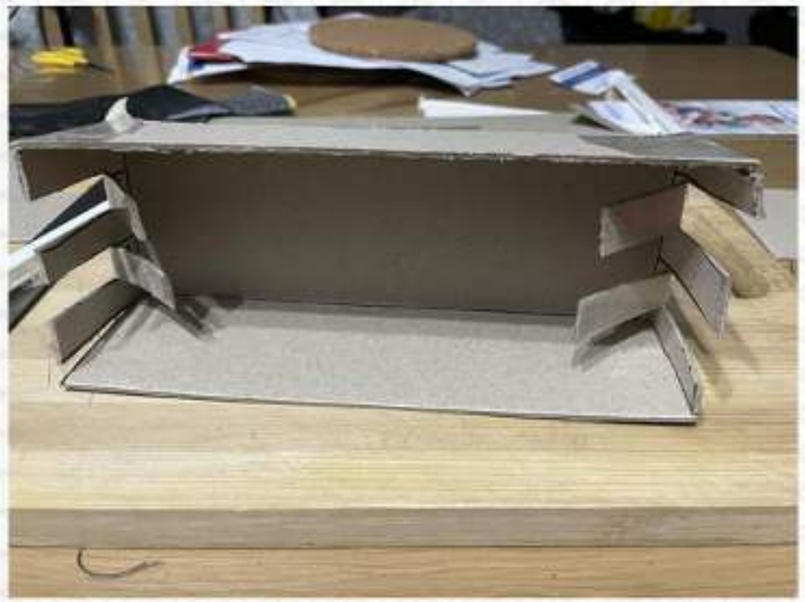

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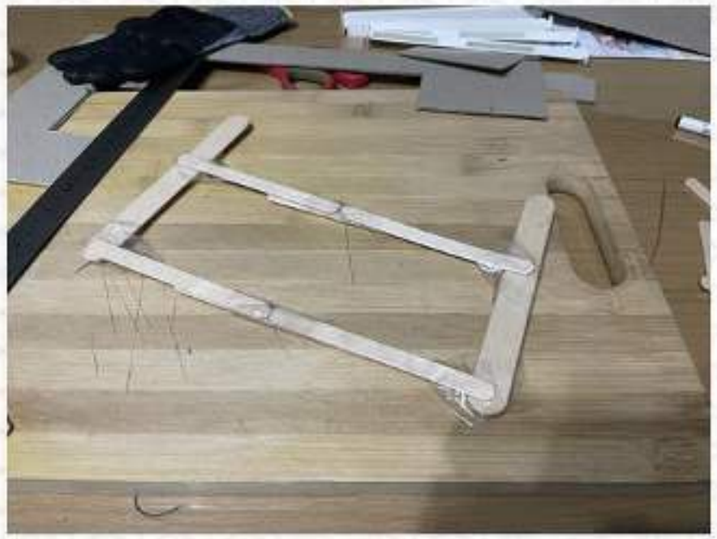

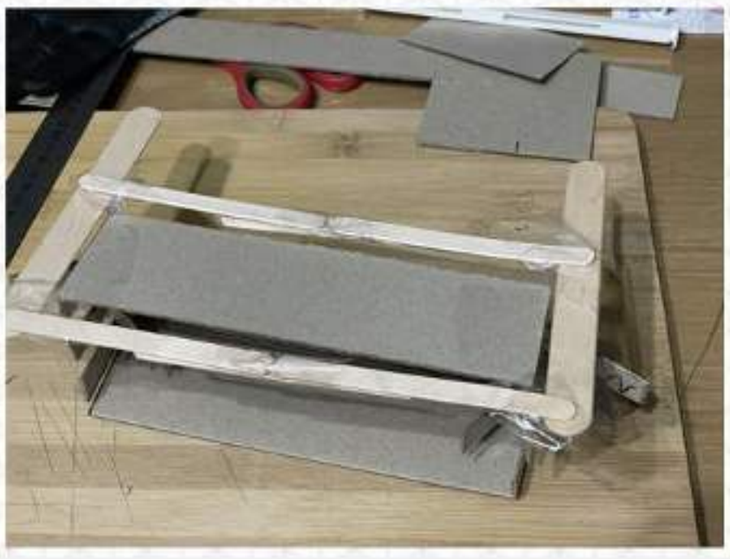

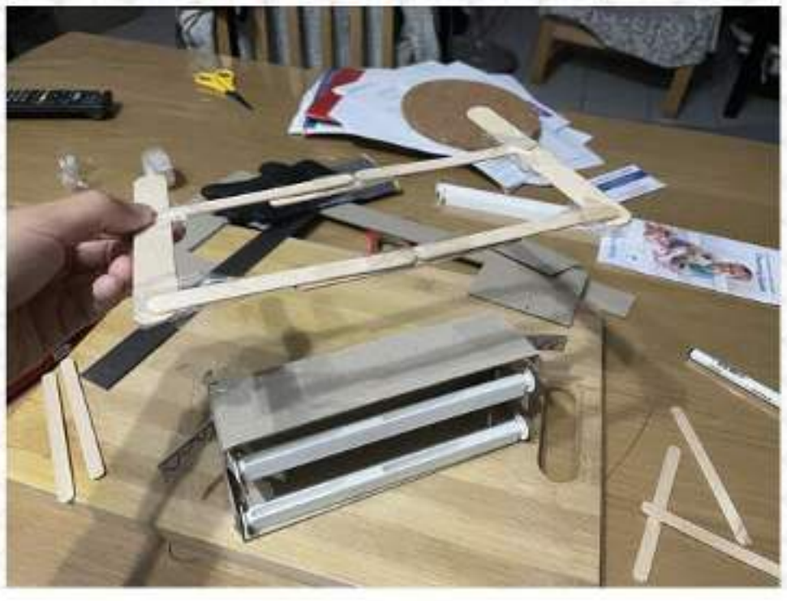

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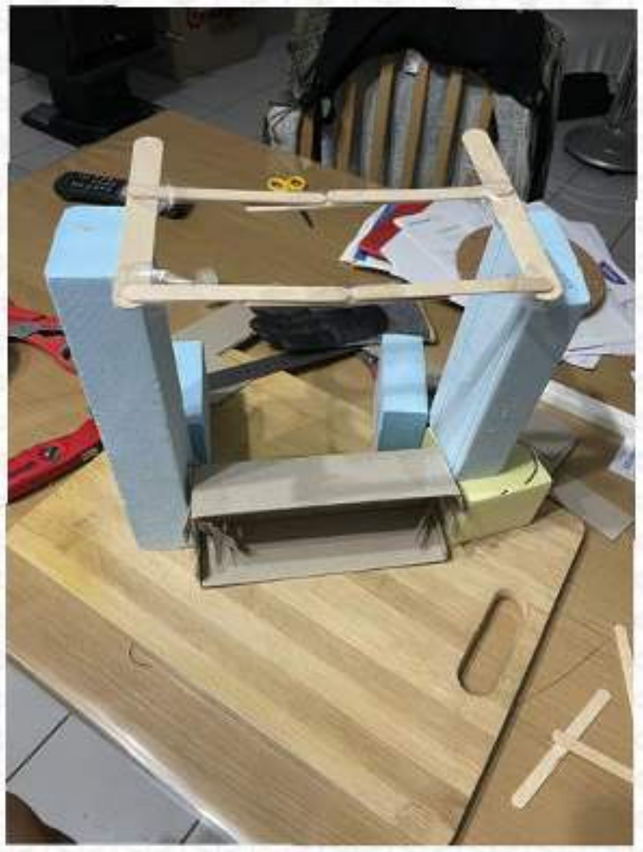

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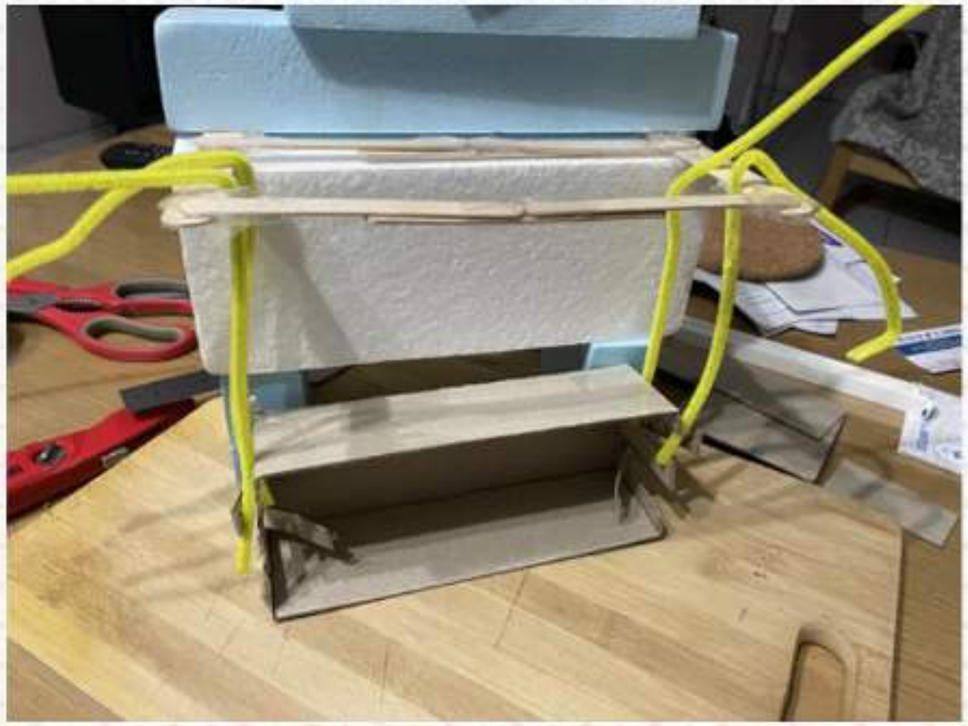
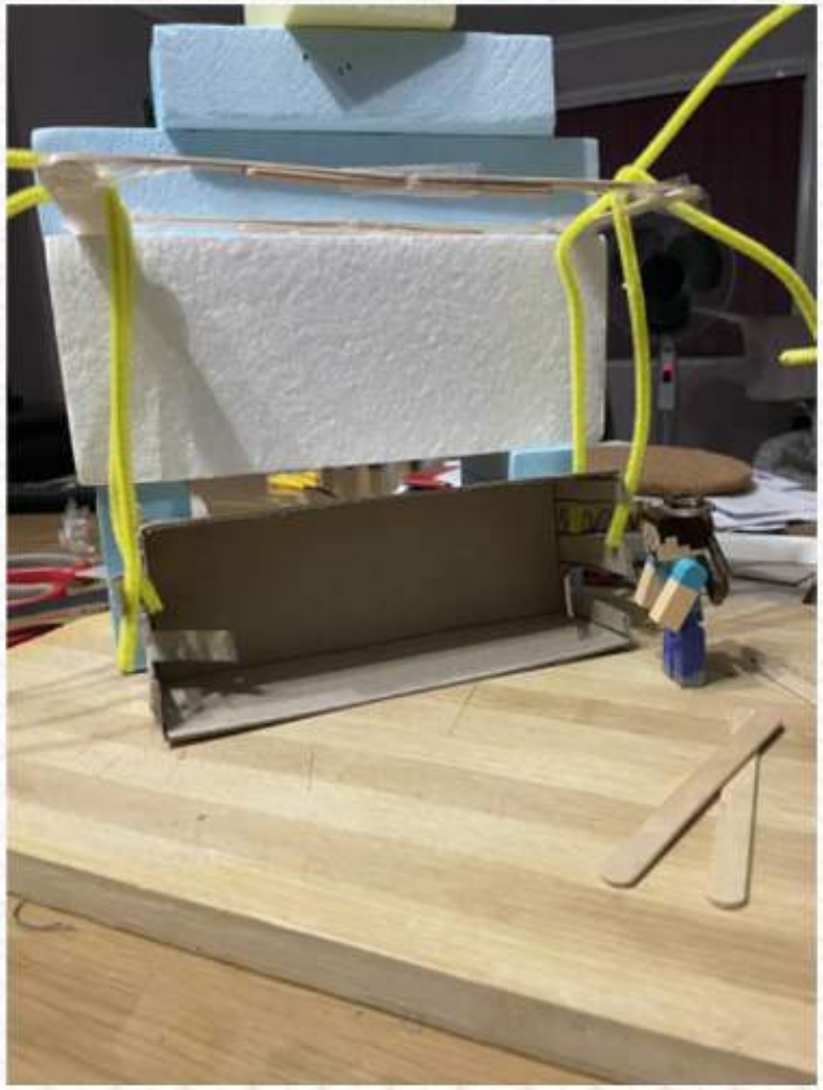
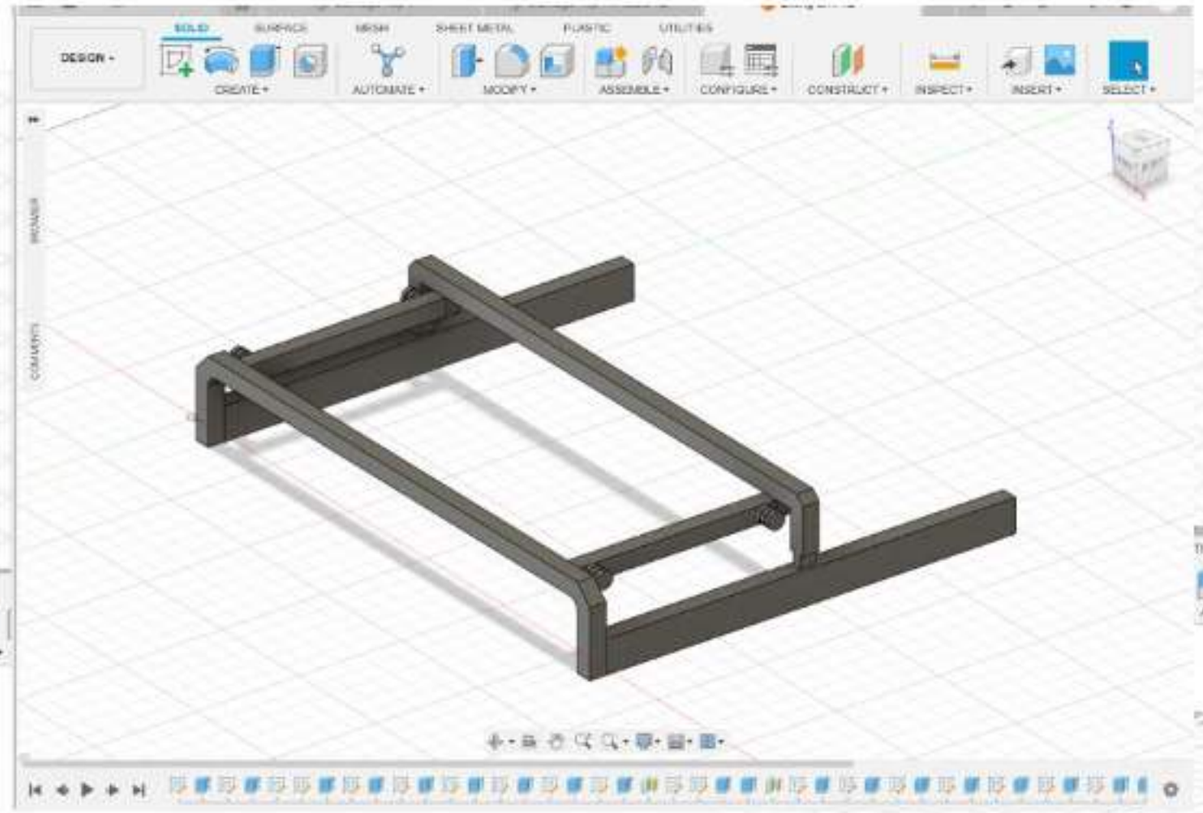
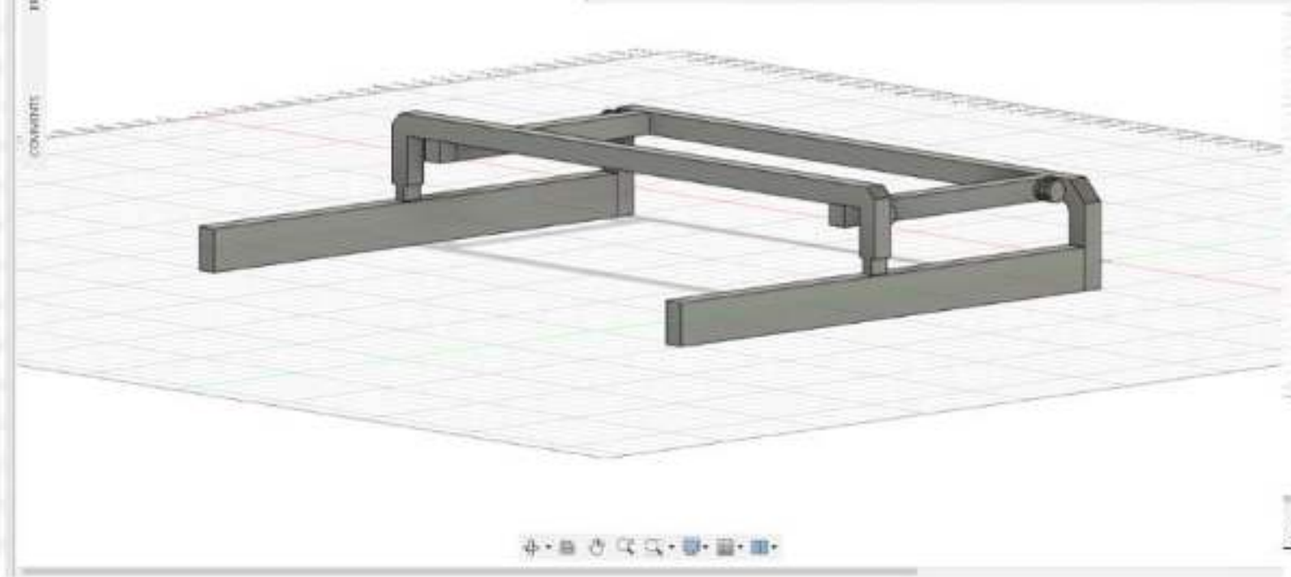


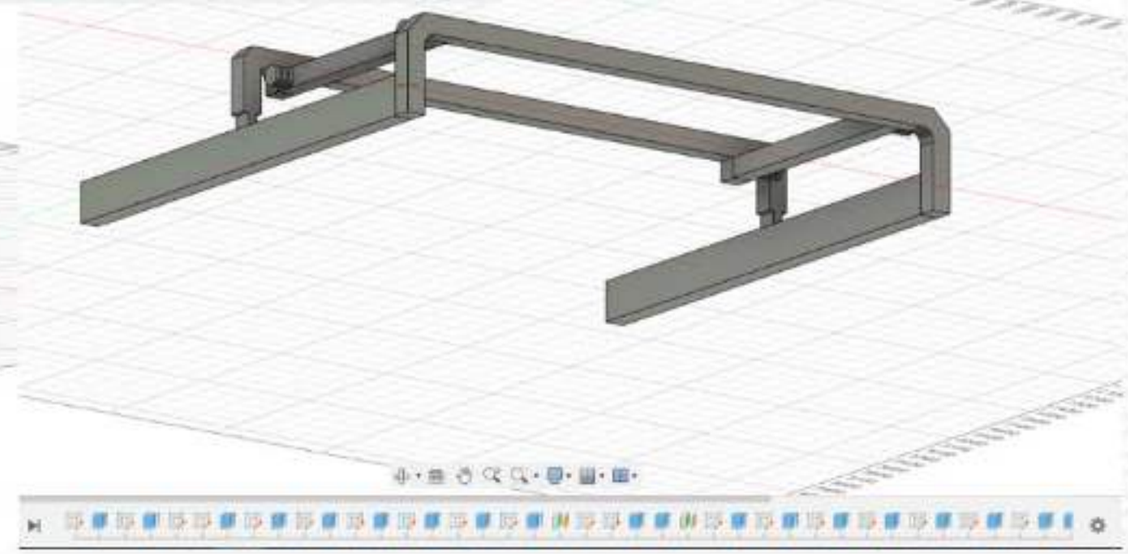


Prototyping

CAD Process - Lifting Arm







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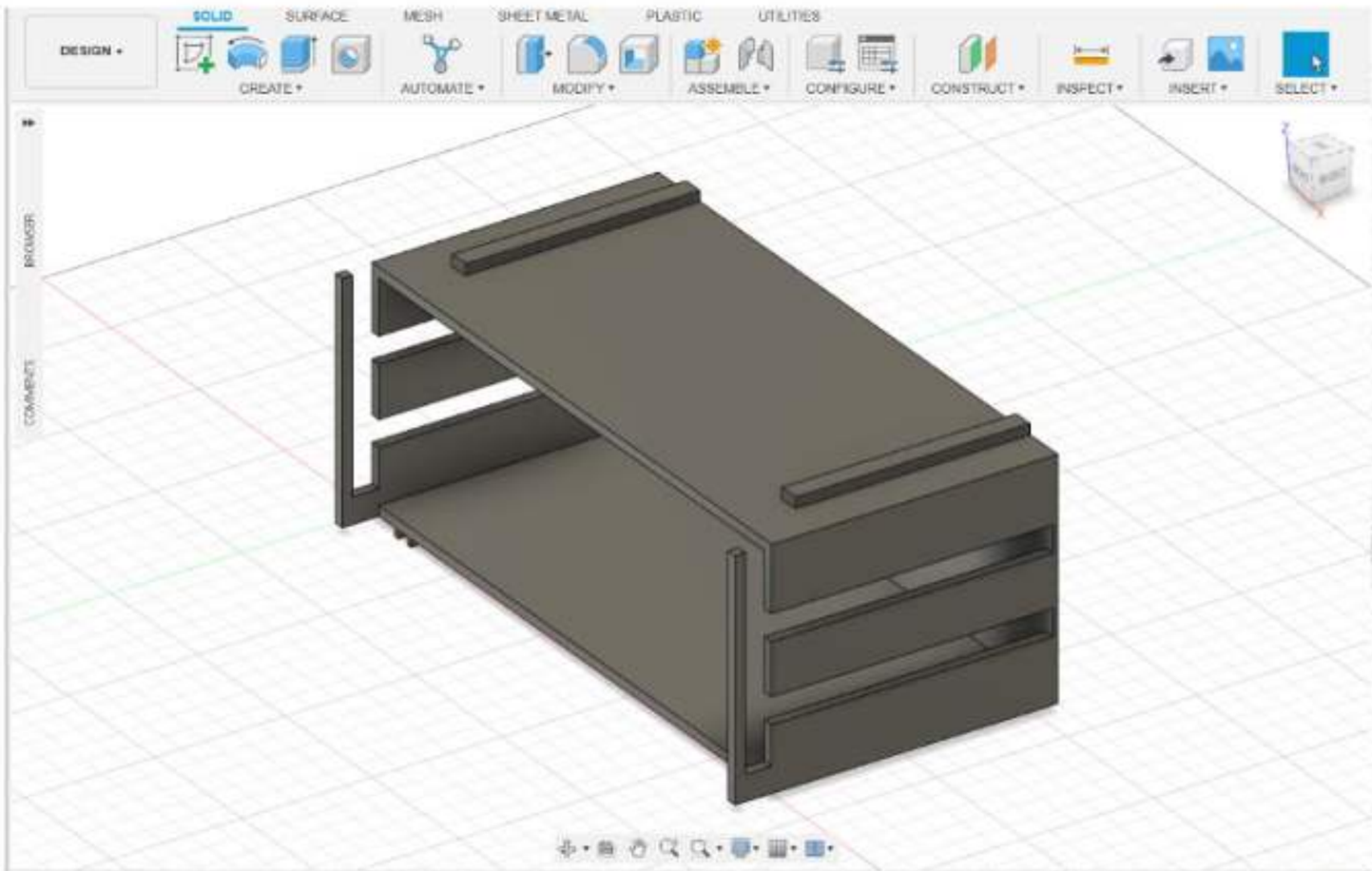
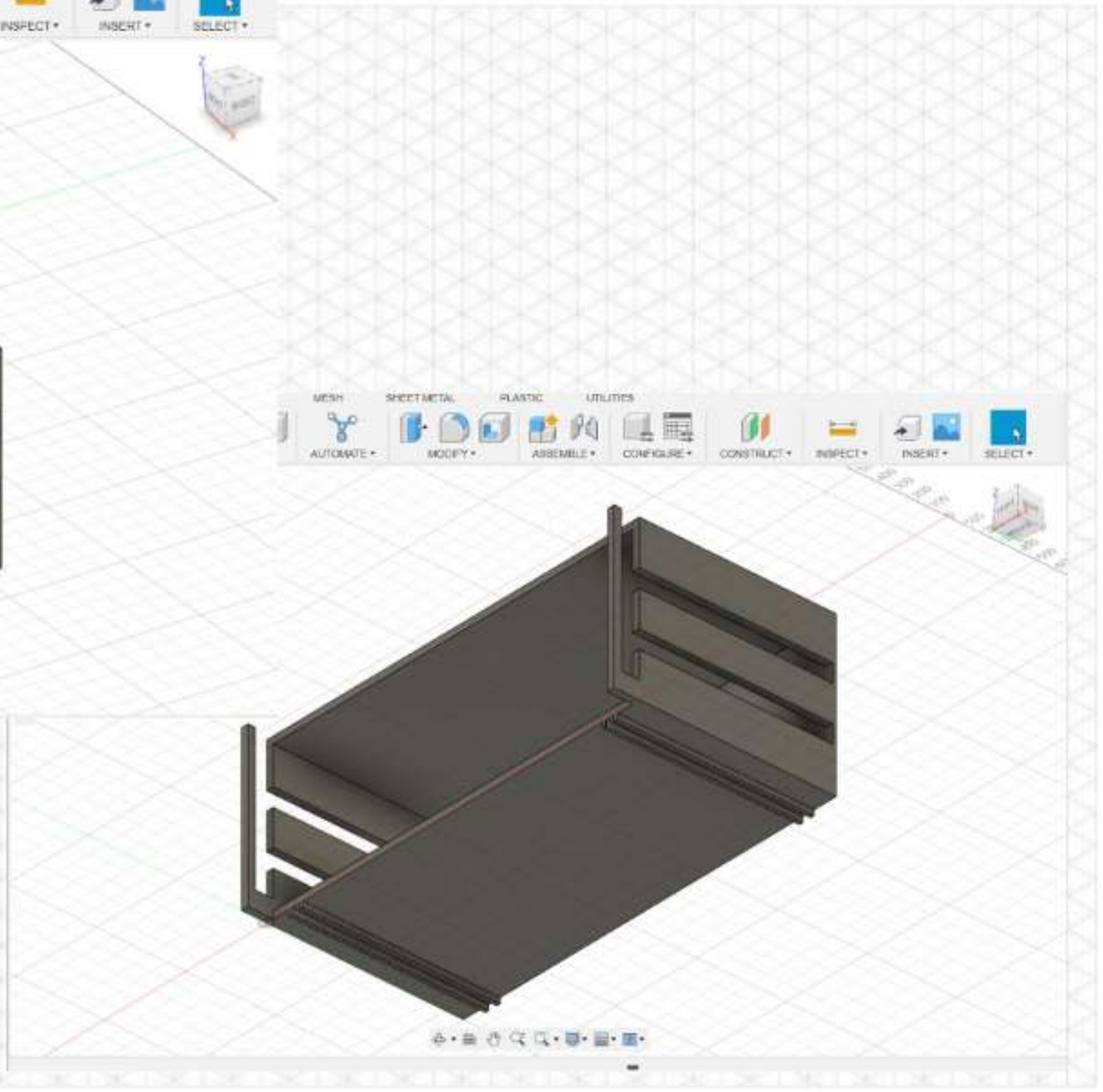
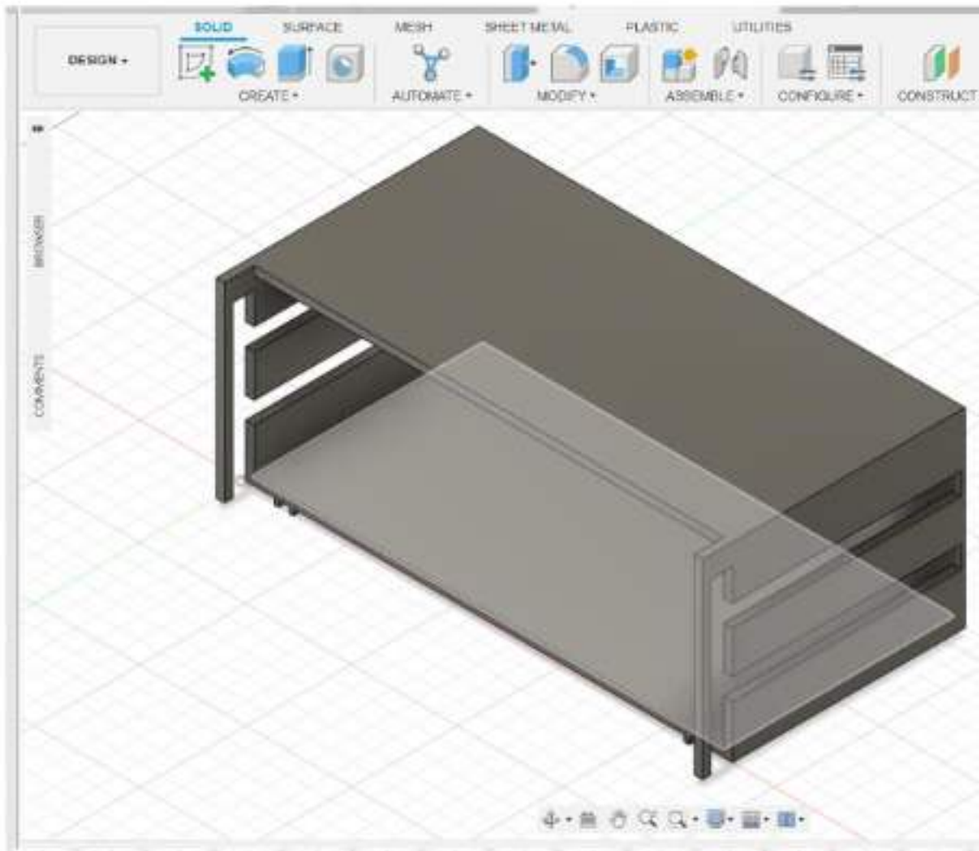
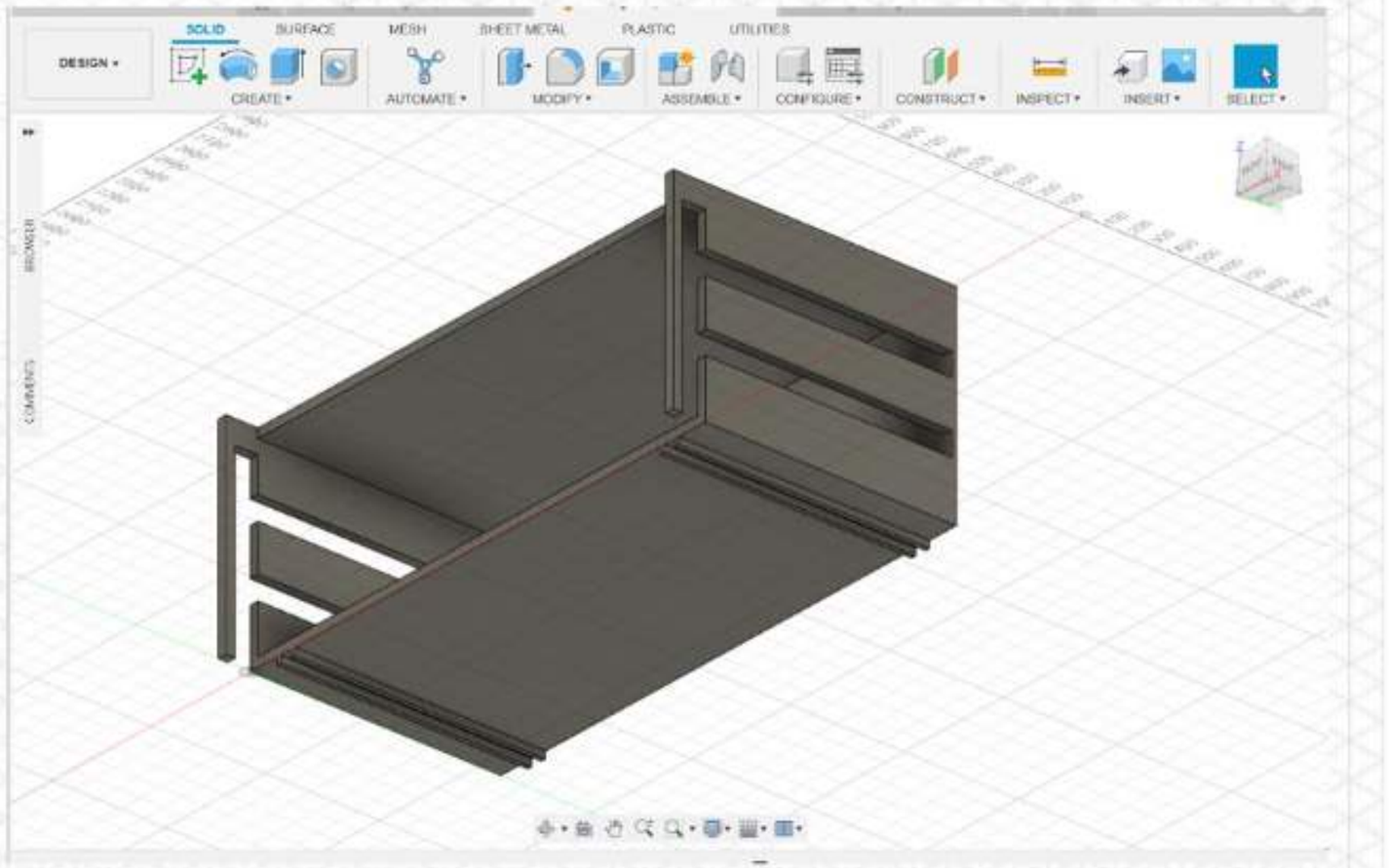
CAD Process - Carriage (Bottom)



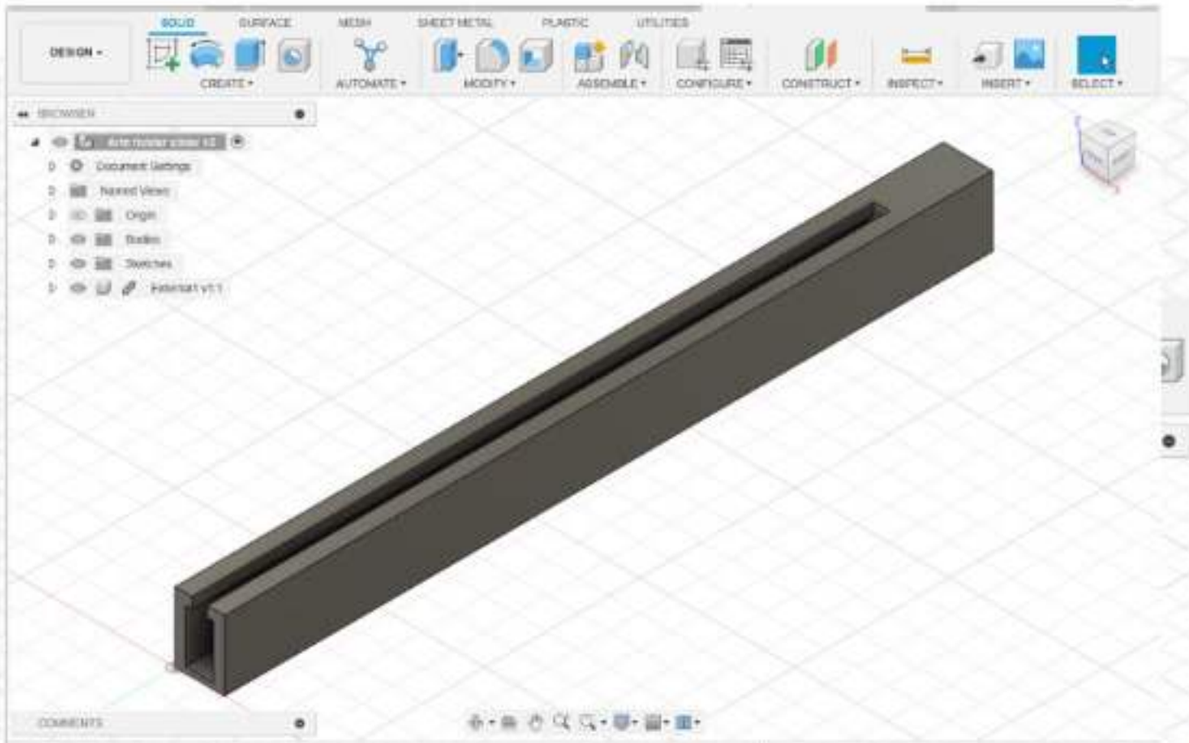


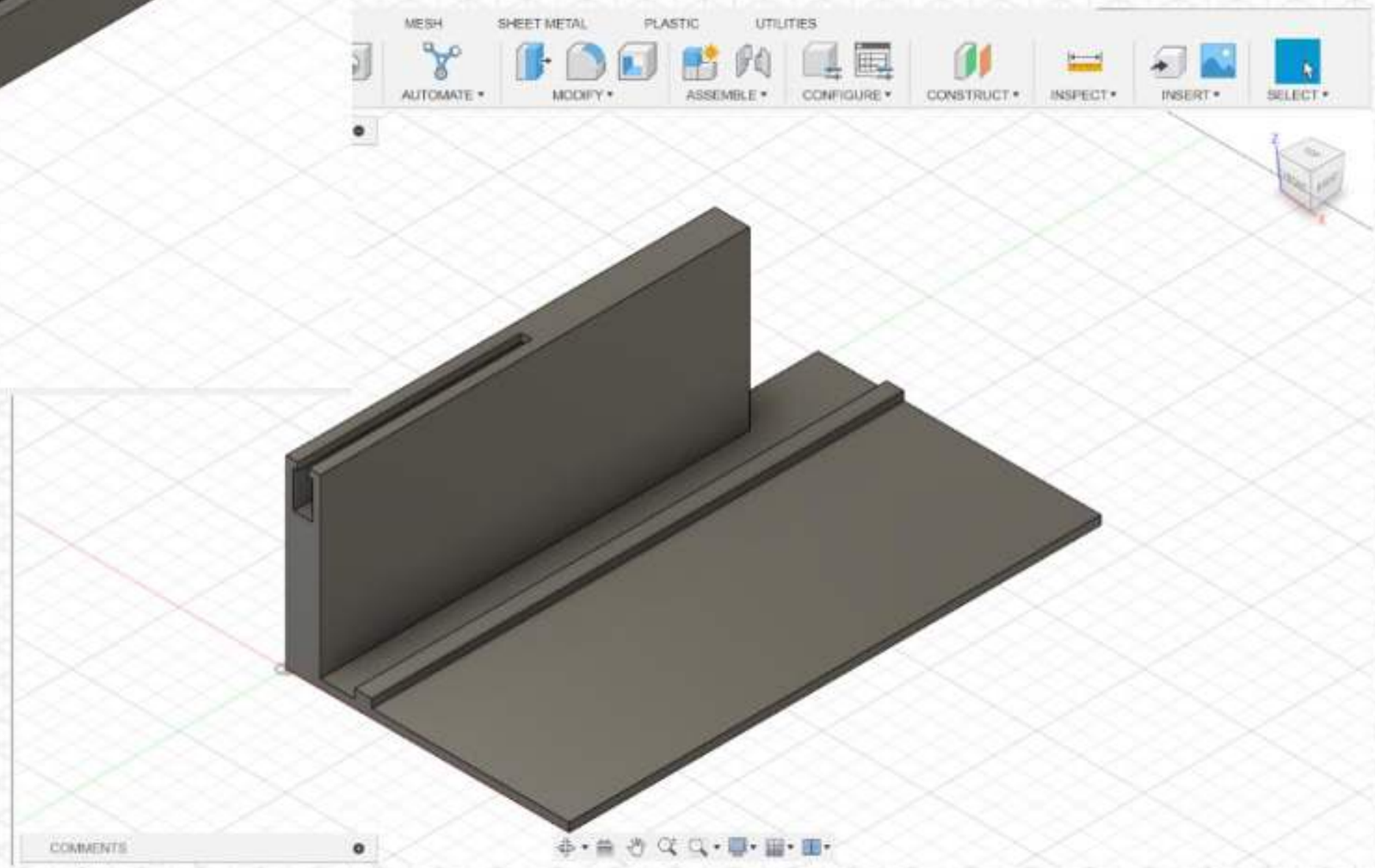
CAD Process - Carriage (Top)



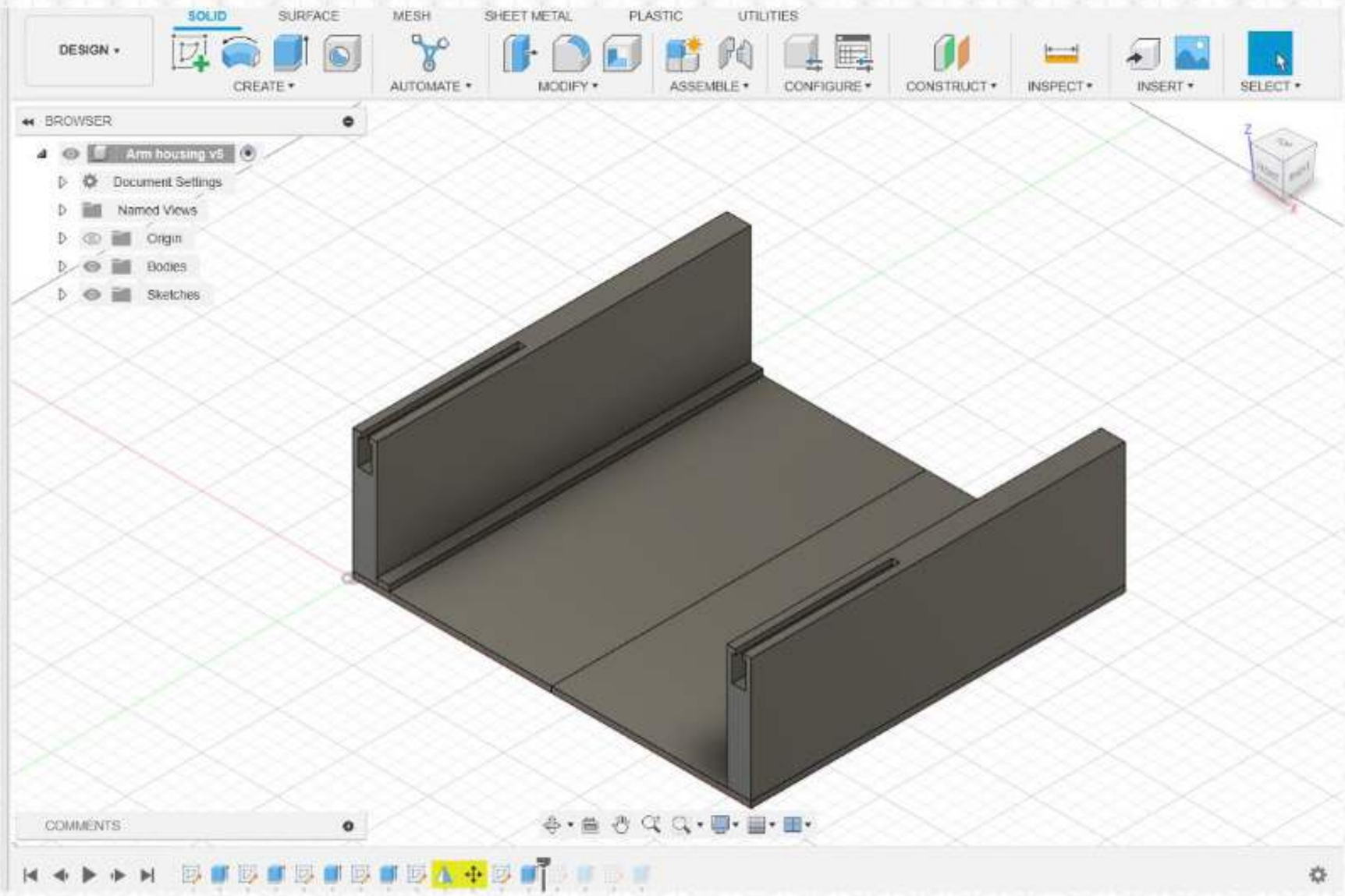


CAD Process - Lifting Arm Housing

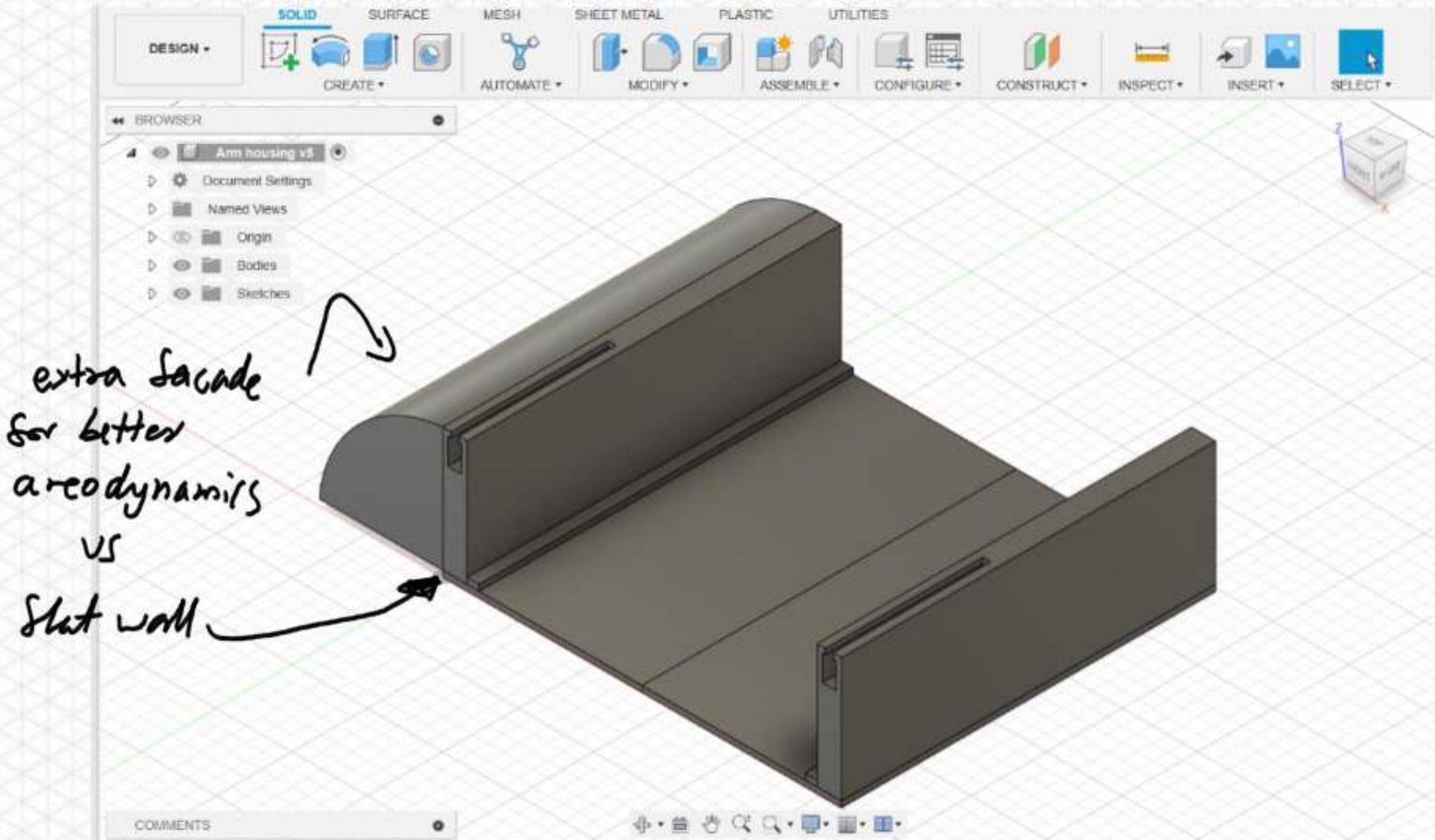




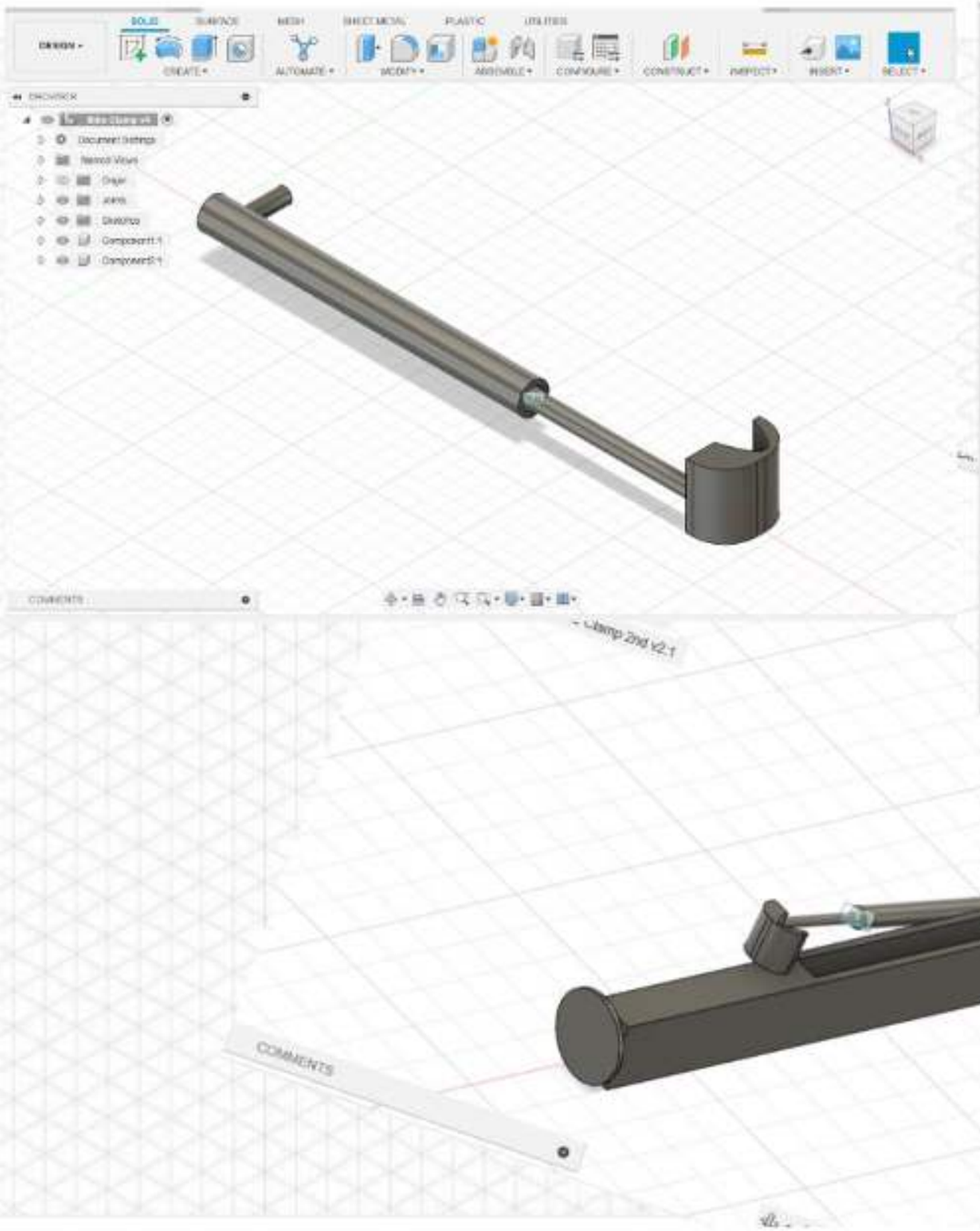
CAD Process - Lifting Arm Housing (complete)

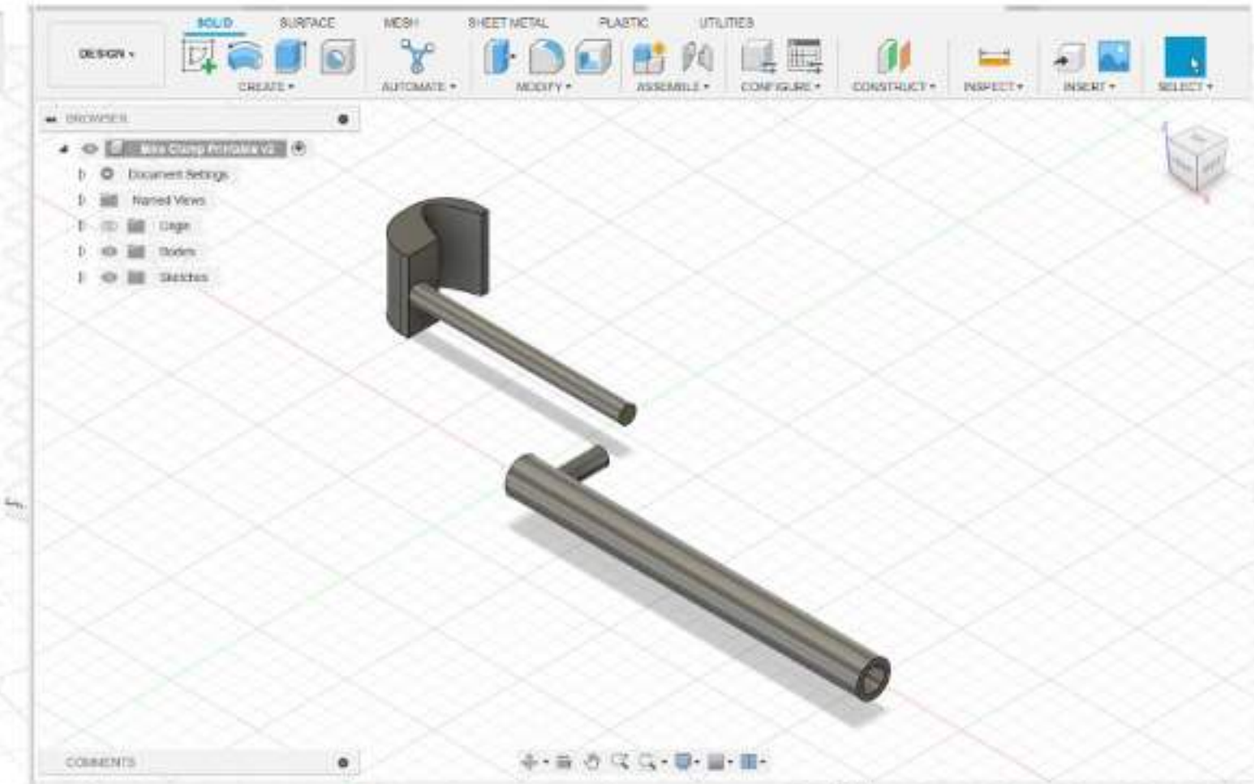


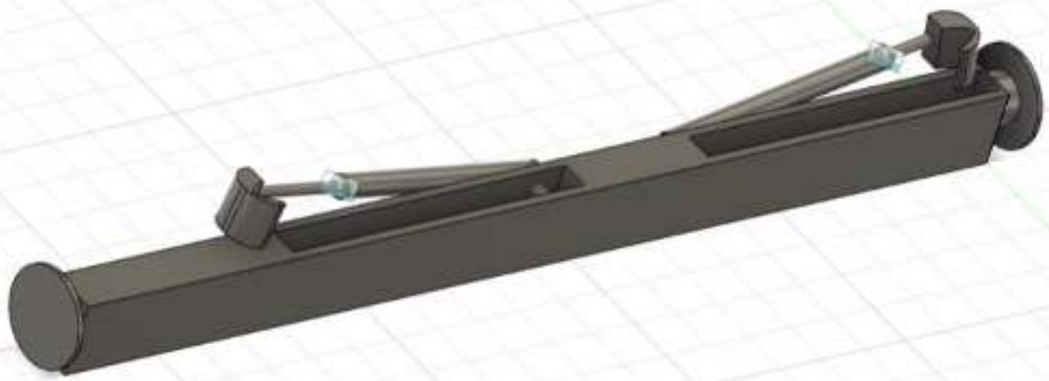
CAD Process - Lifting Arm Housing



CAD Process - Bike Wheel Clamp

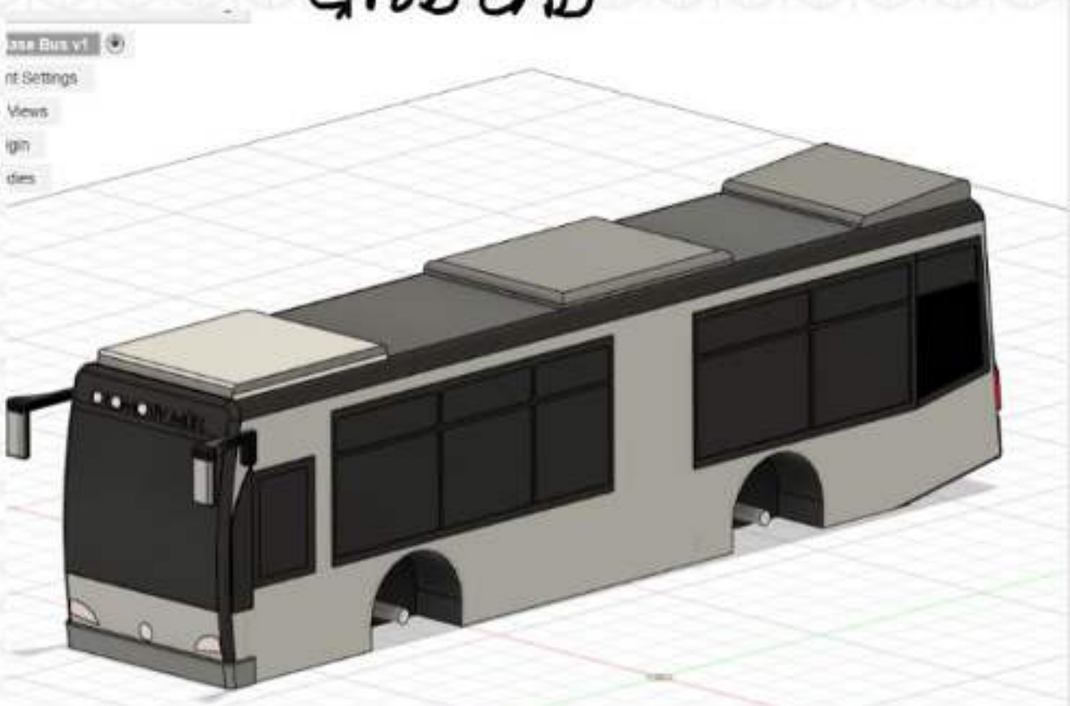


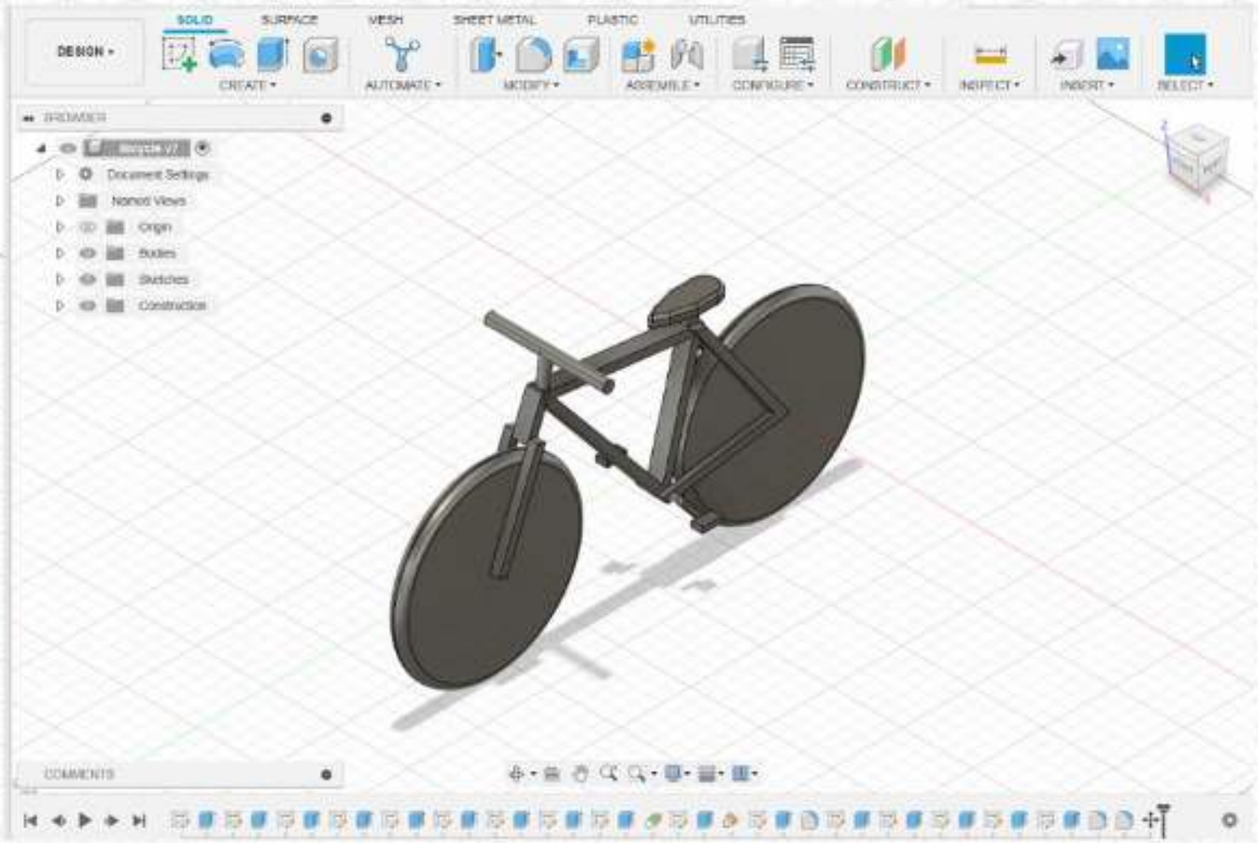




CAD Process - Bus & Bike Model

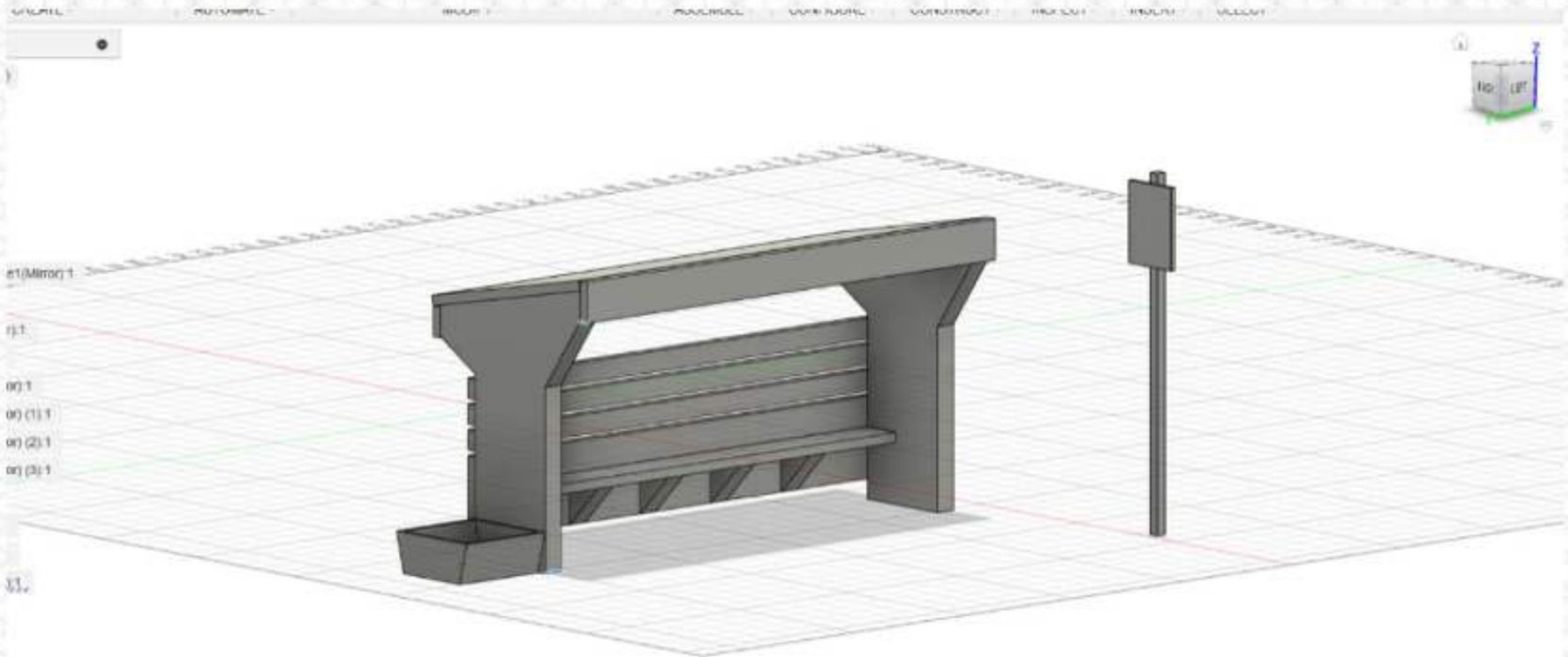
Bus imported from GrabCAD





CAD Process - Bus Stop Model

Imported from GrabCAD - for context, scale & animation



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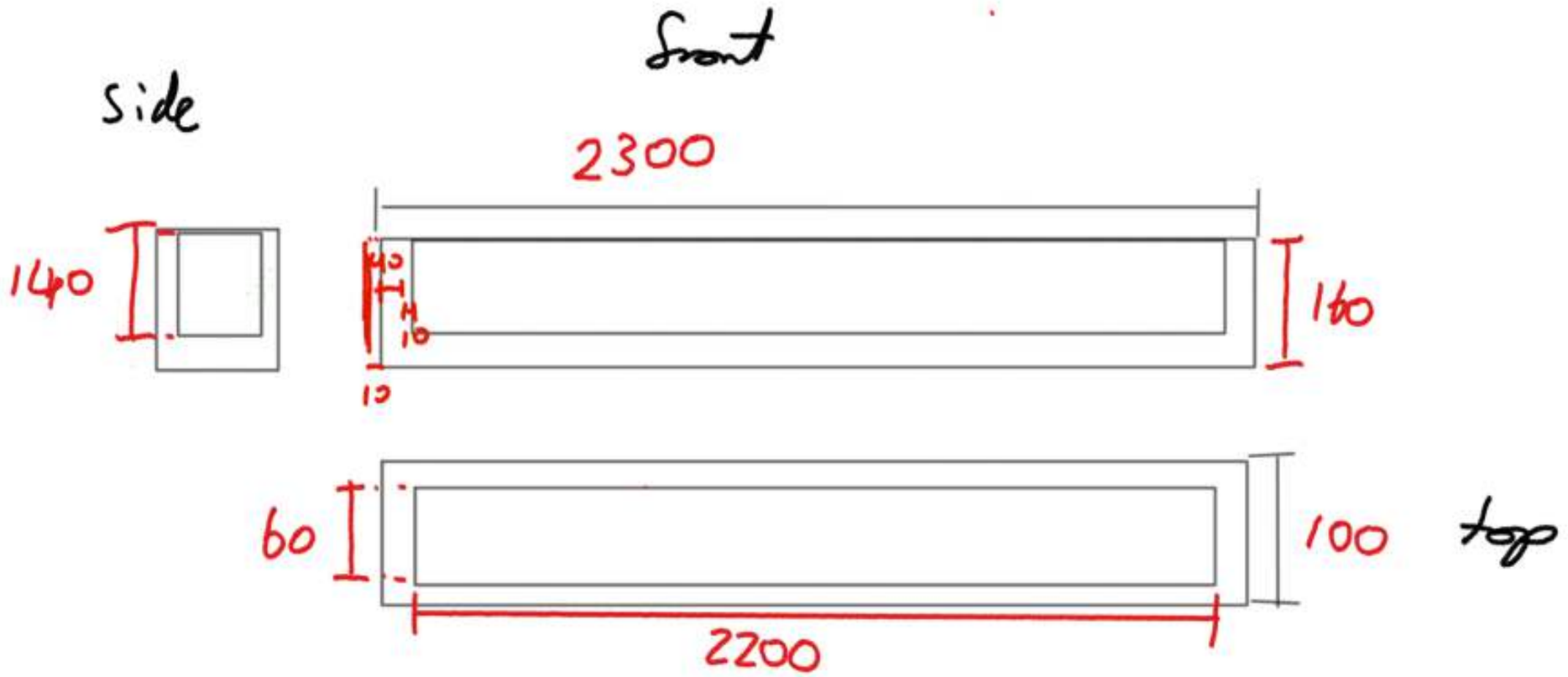
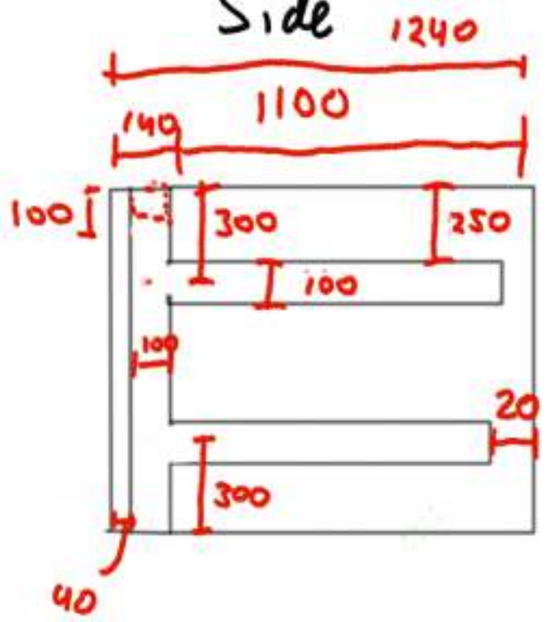
Dimensions - Refined



Dimensions - Refined

Side



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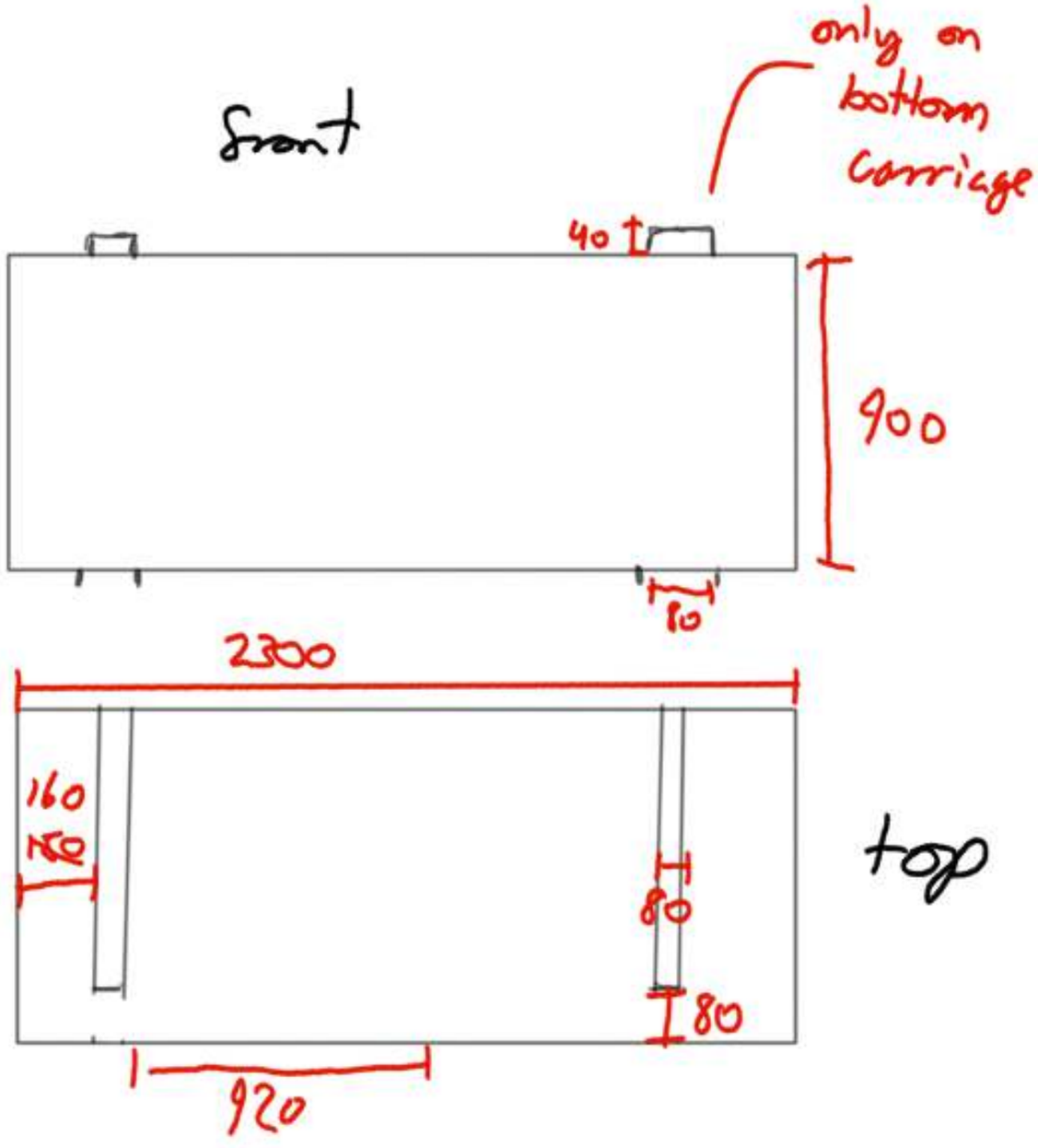
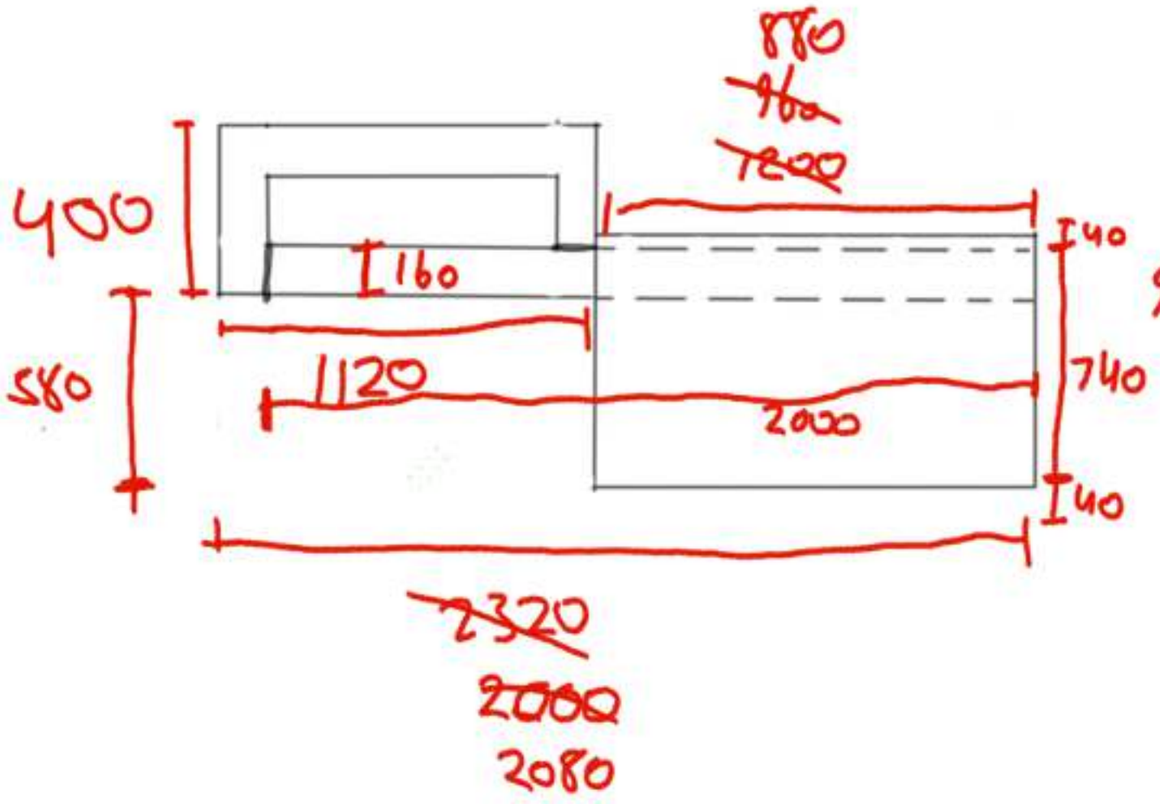
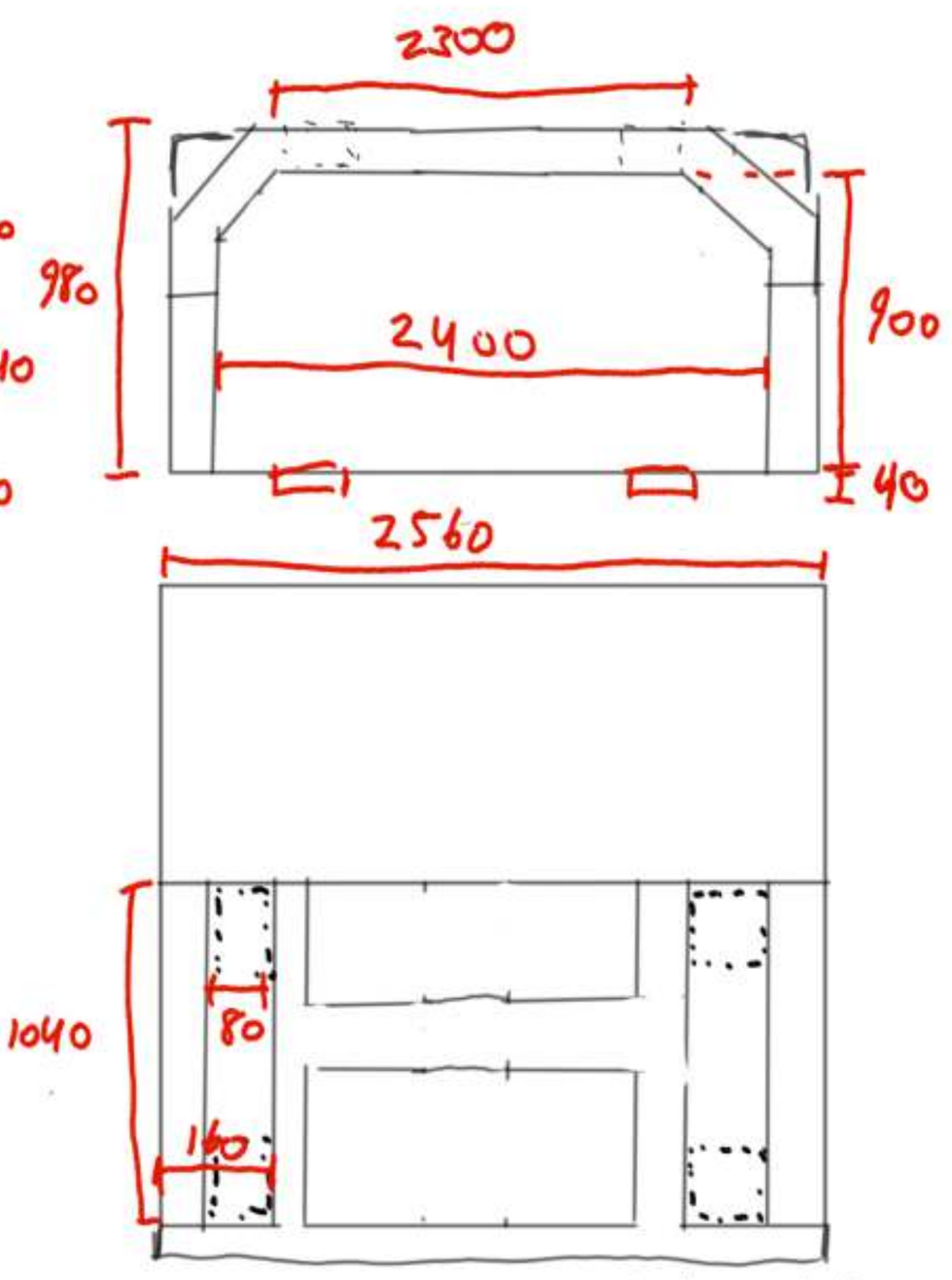


top

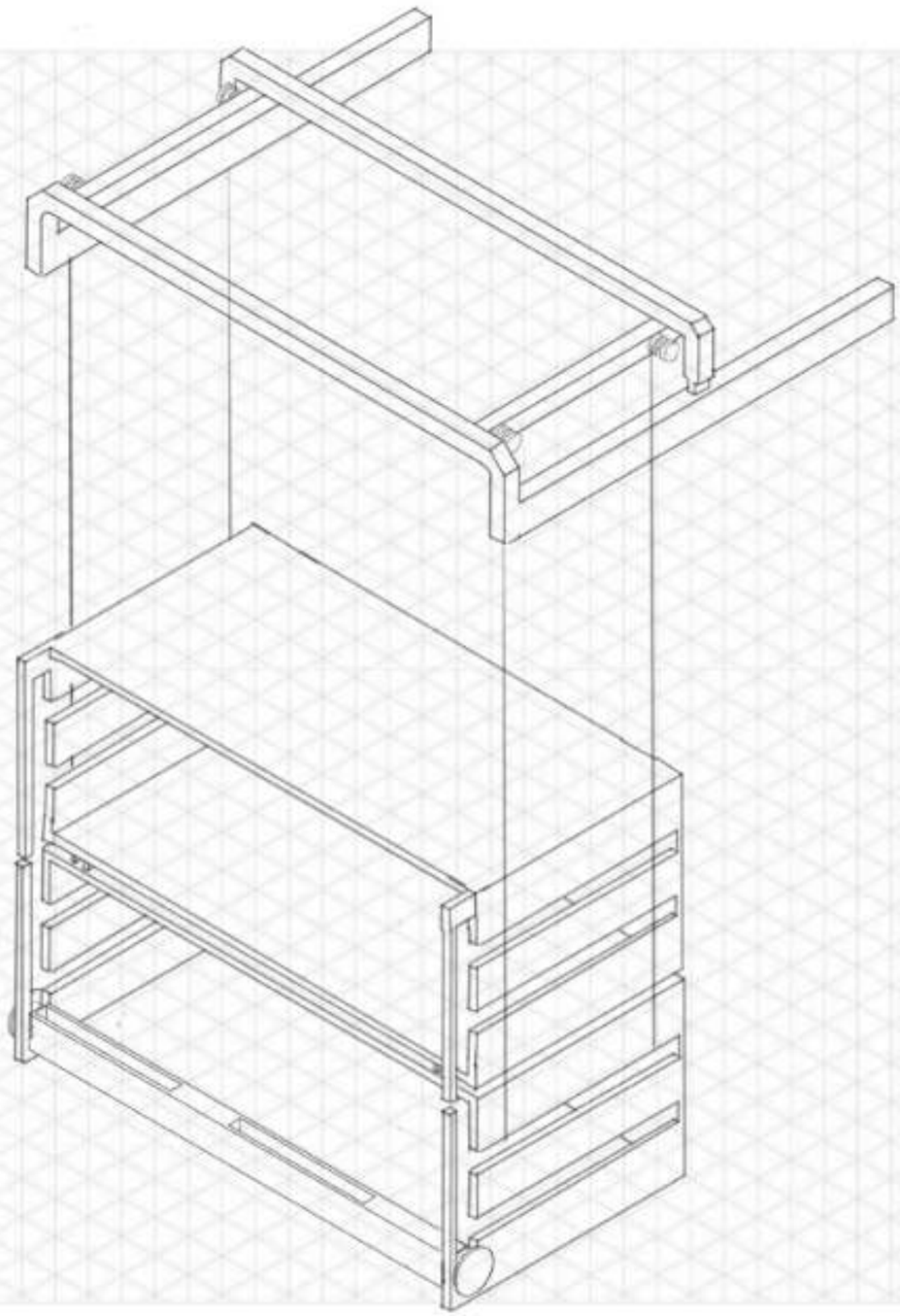
Dimensions - Refined

Beam nominal thickness 80mm

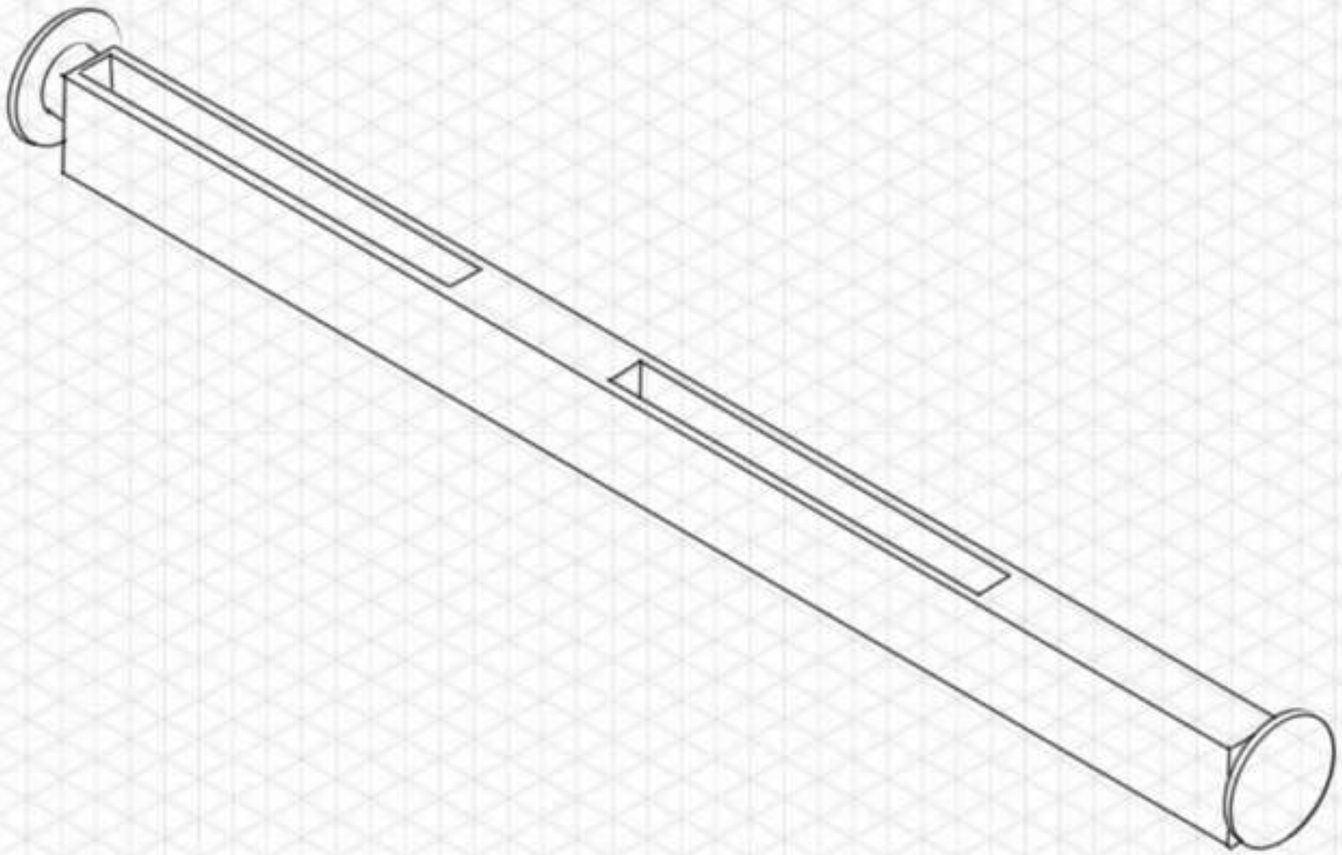




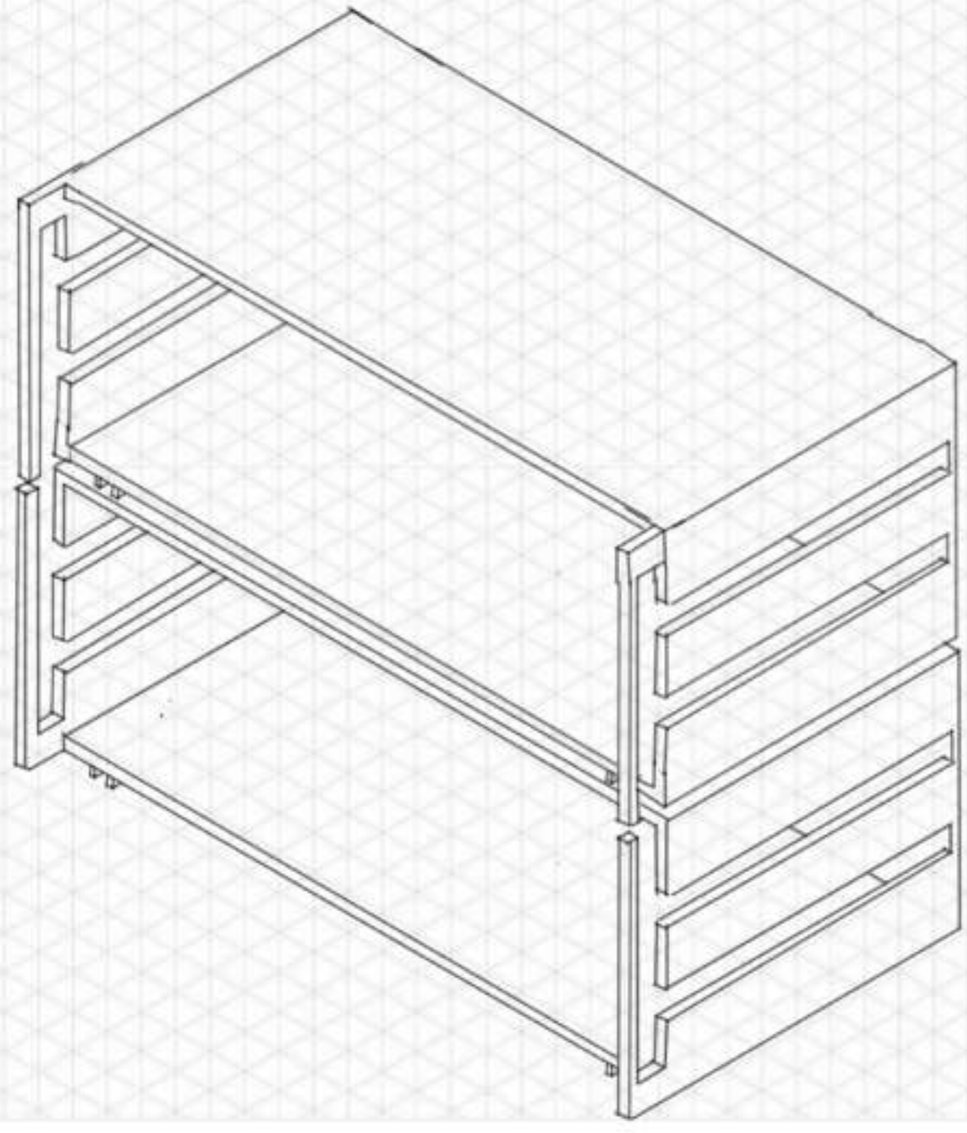
Sketch Renderings



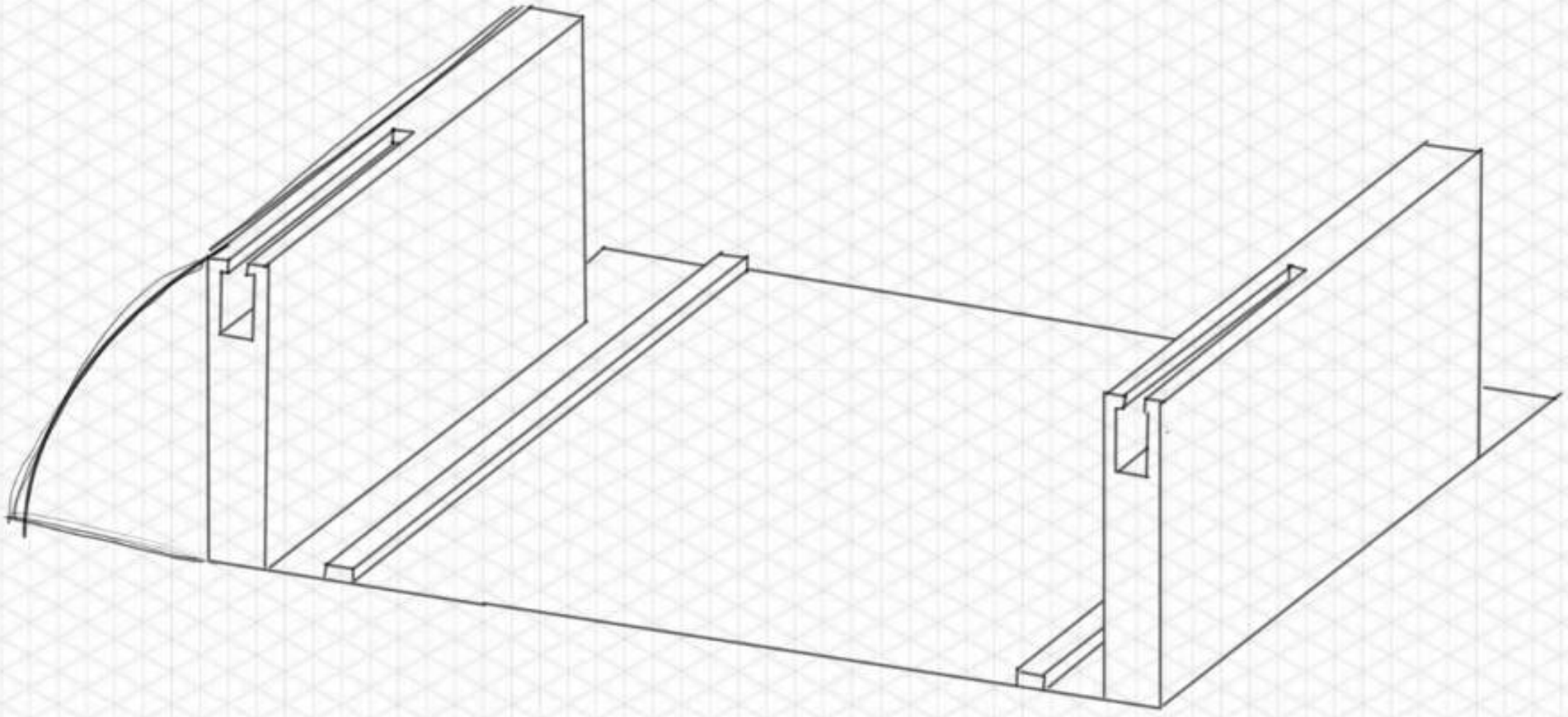
Sketch Renderings



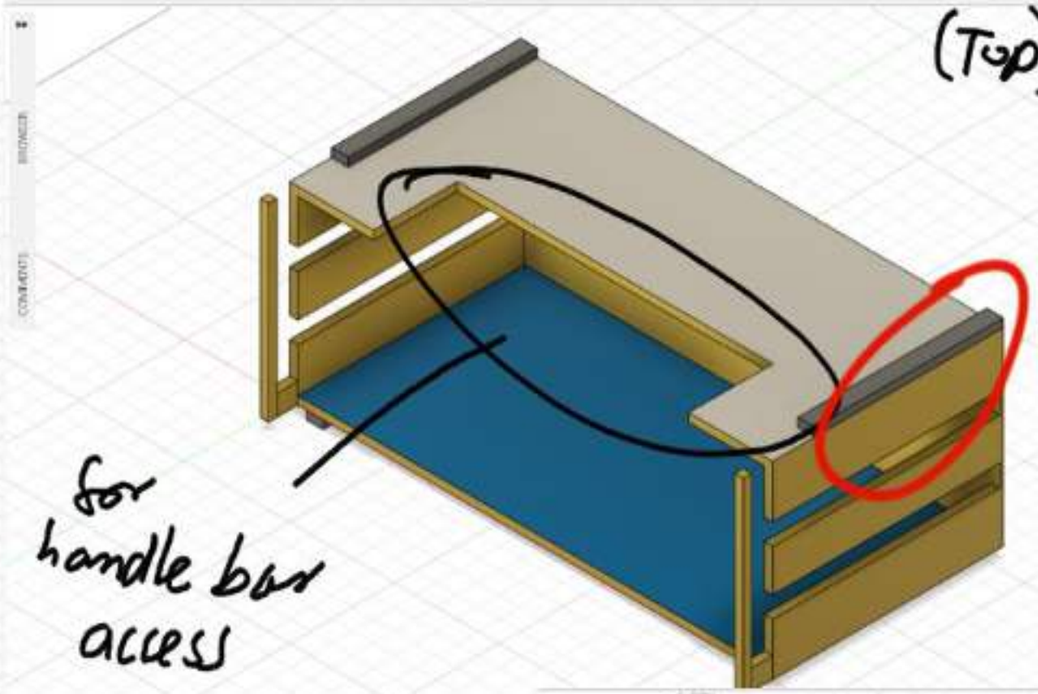
Sketch Renderings



Sketch Renderings

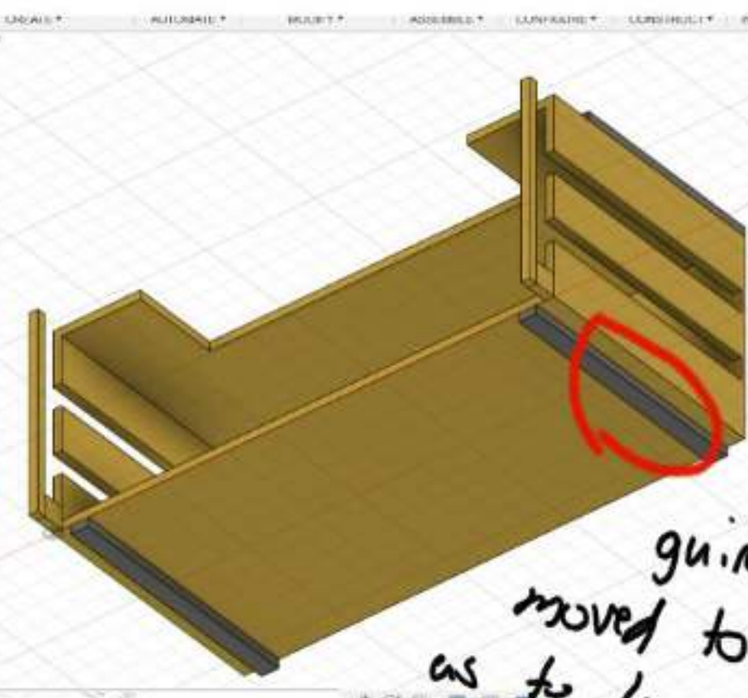


CAD Process - Carriage Modifications

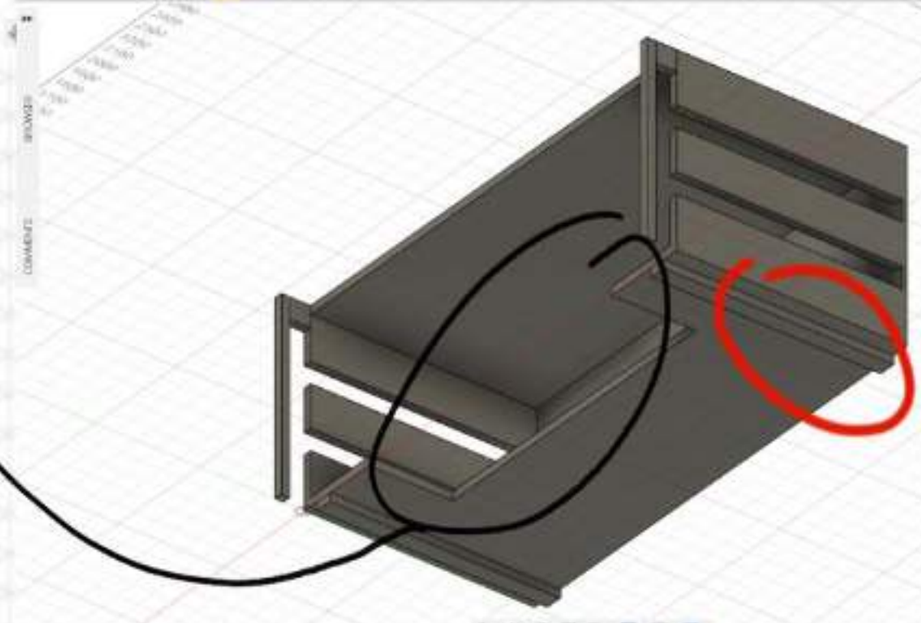


(Top) carriage

for handle bar access

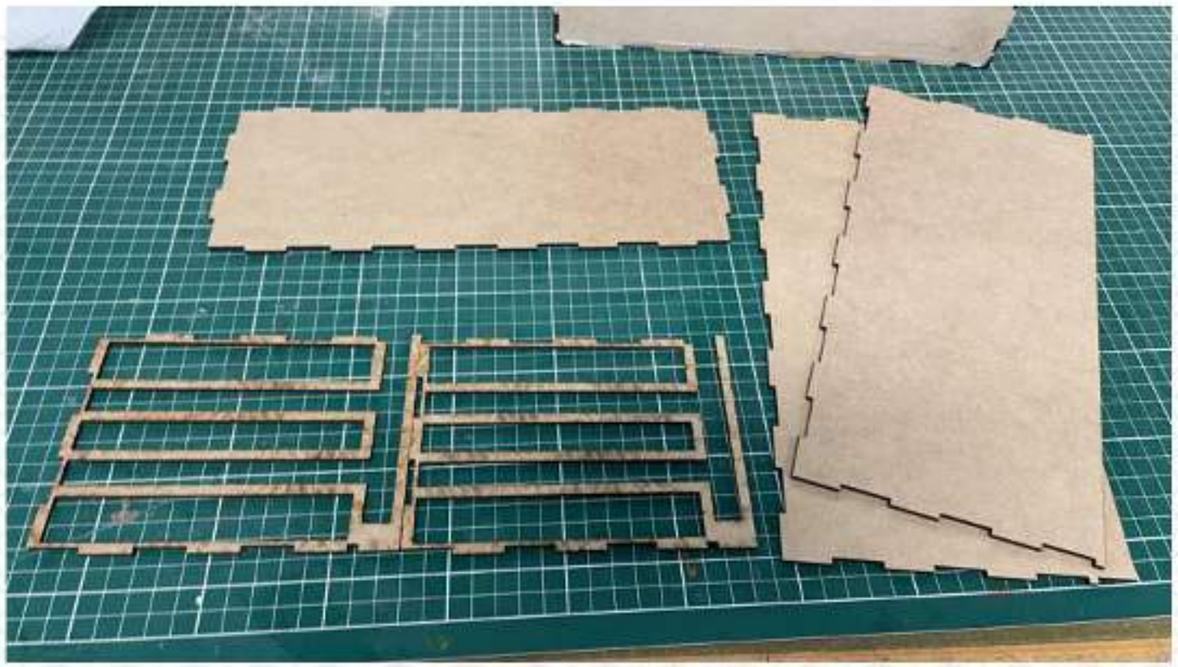


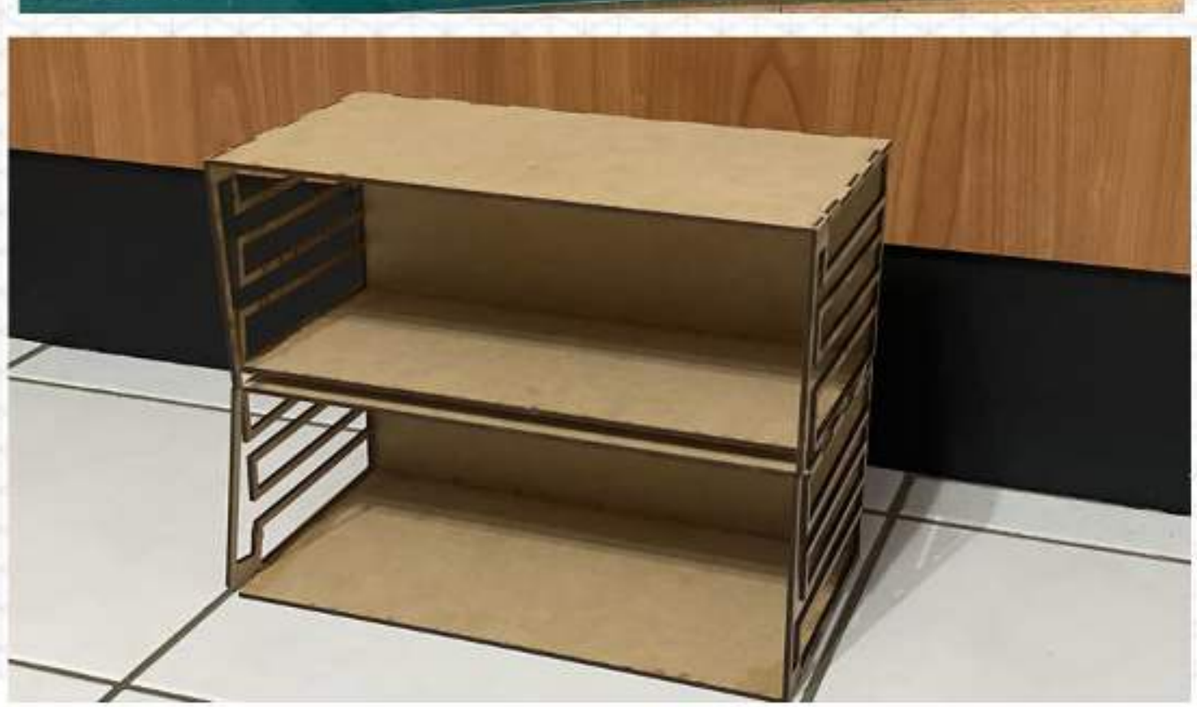
guide rails moved to edge as to be supported by main steel frame rather than fibreglass panels closer to middle, would've been unstructually sound.

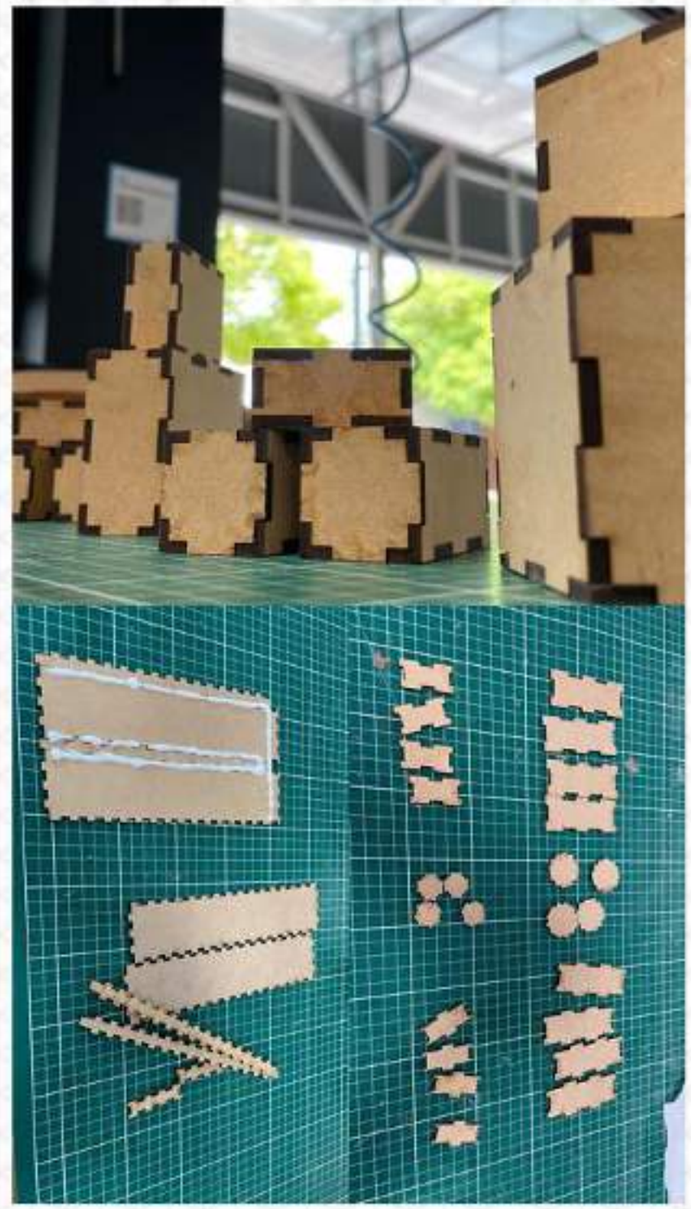


(Bottom) Carriage

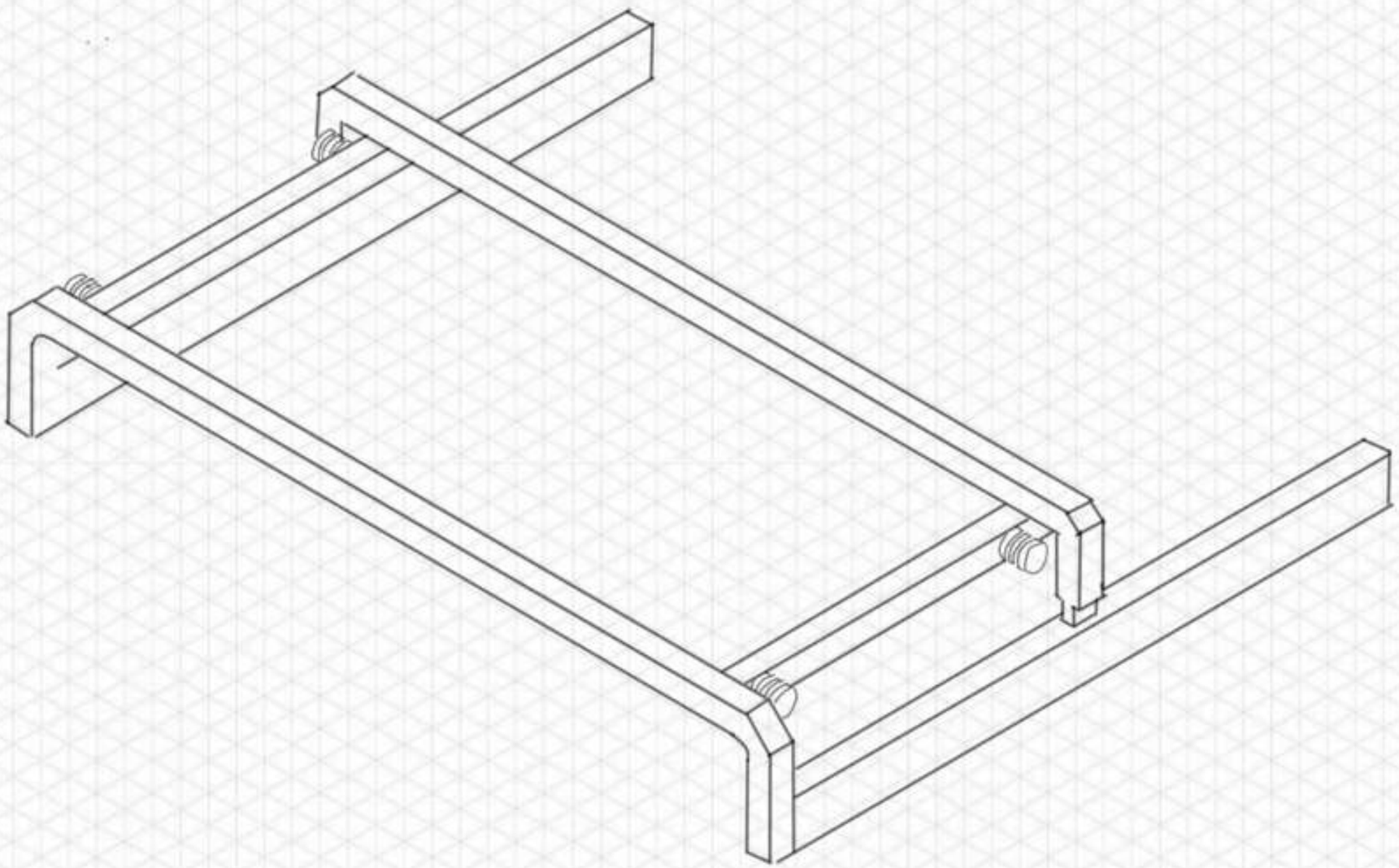
Model Making



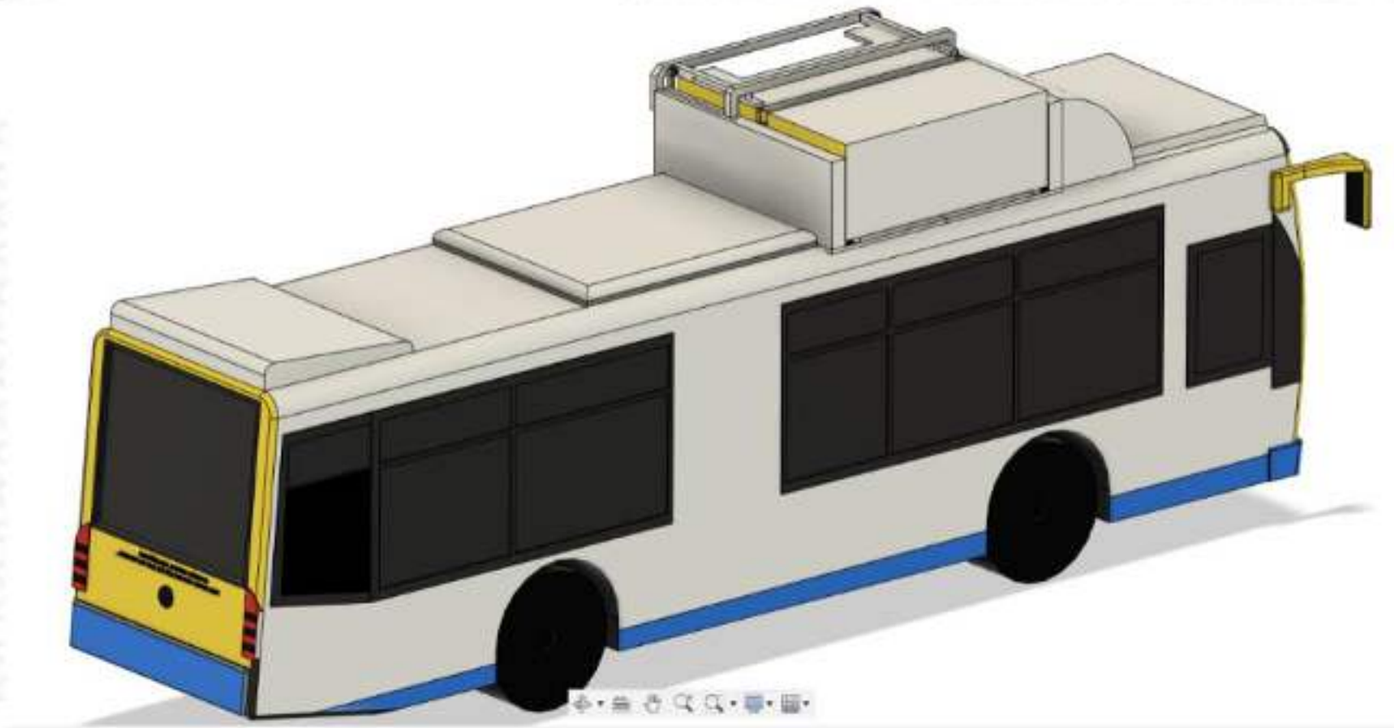




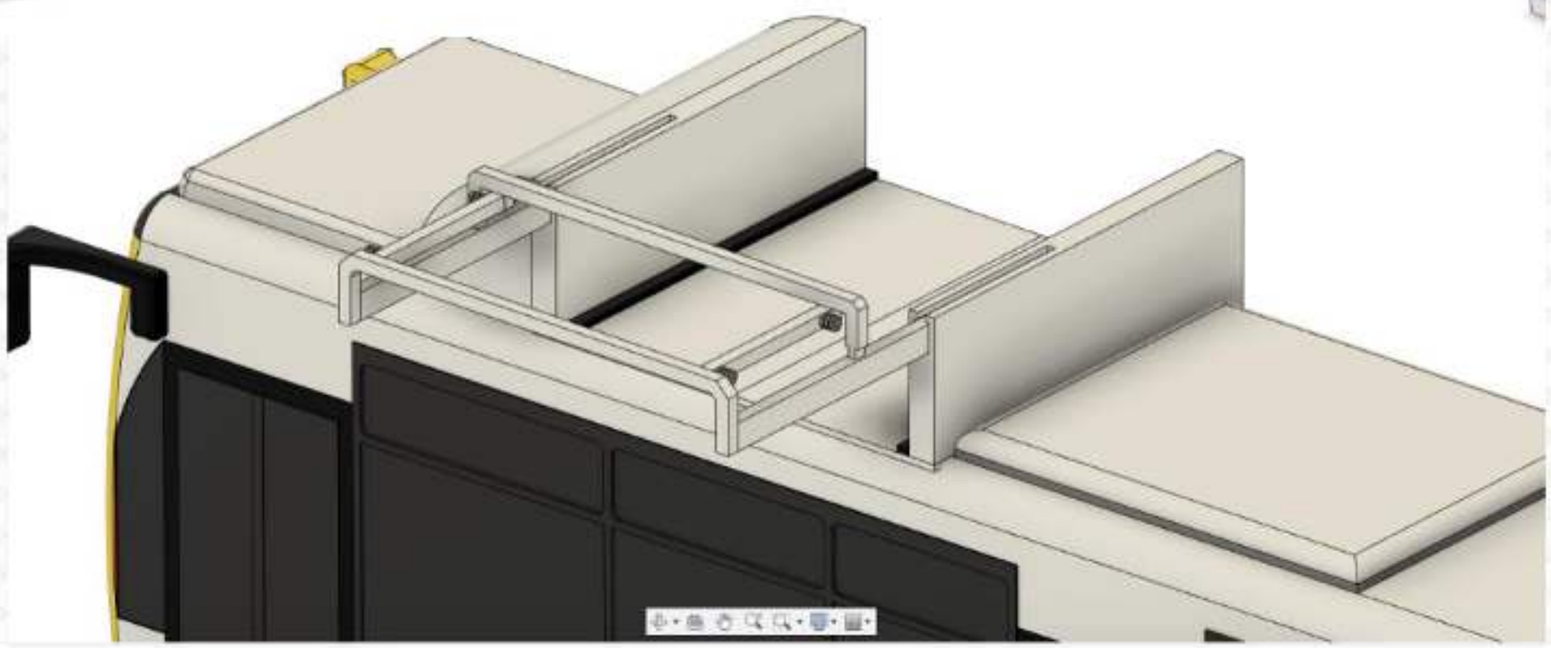
Sketch Renderings



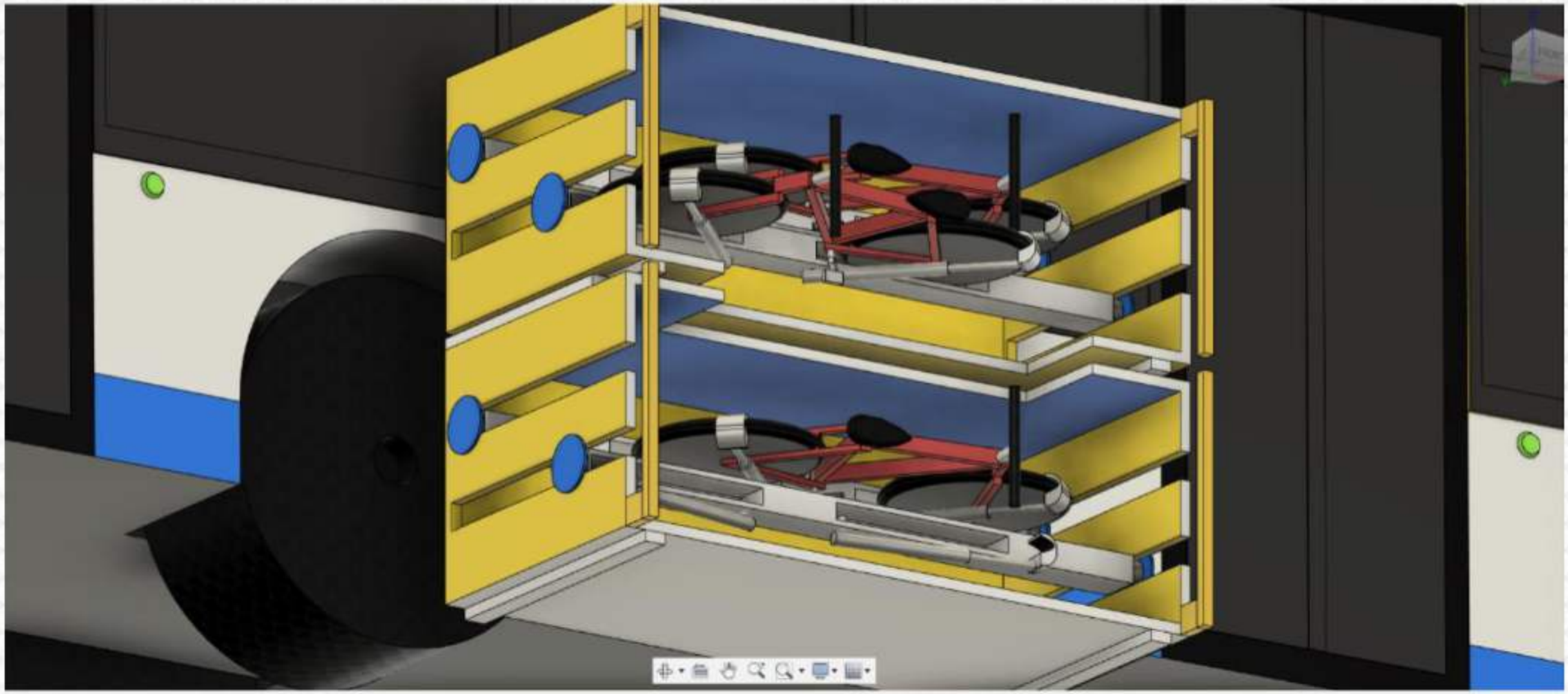
CAD Model - Assembled & Colour



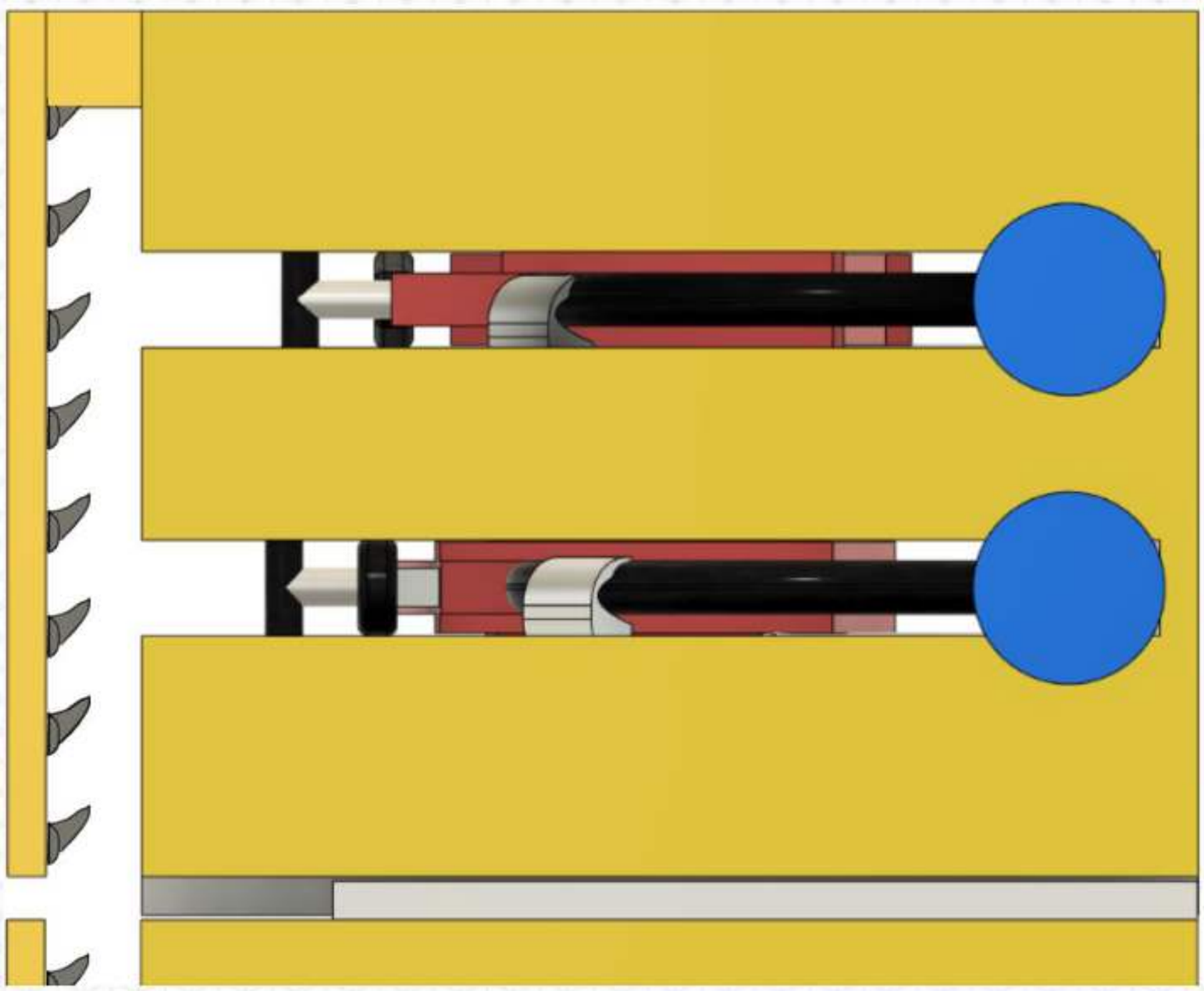
CAD Model - Assembled & Colour



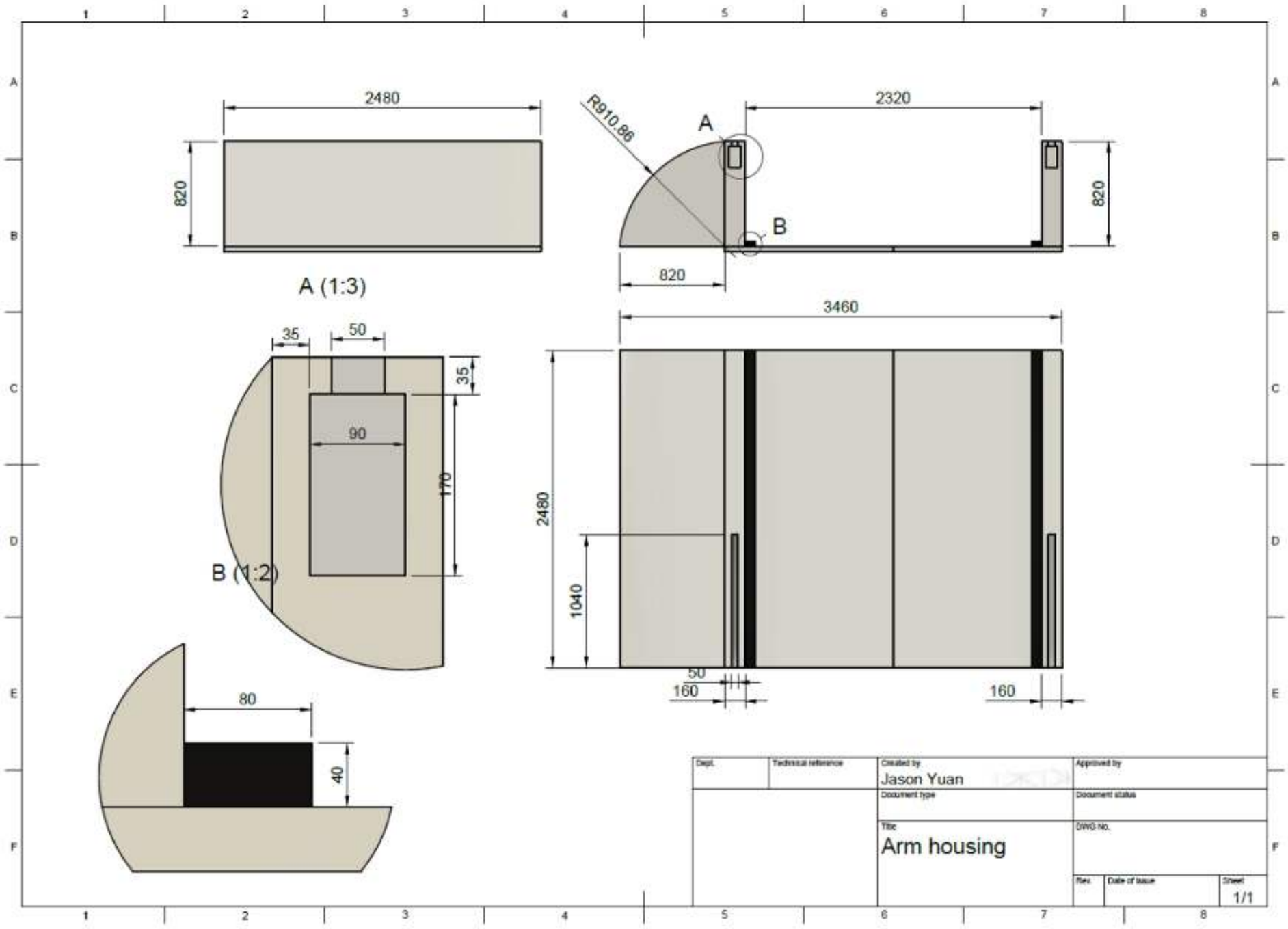
CAD Model - Assembled & Colour



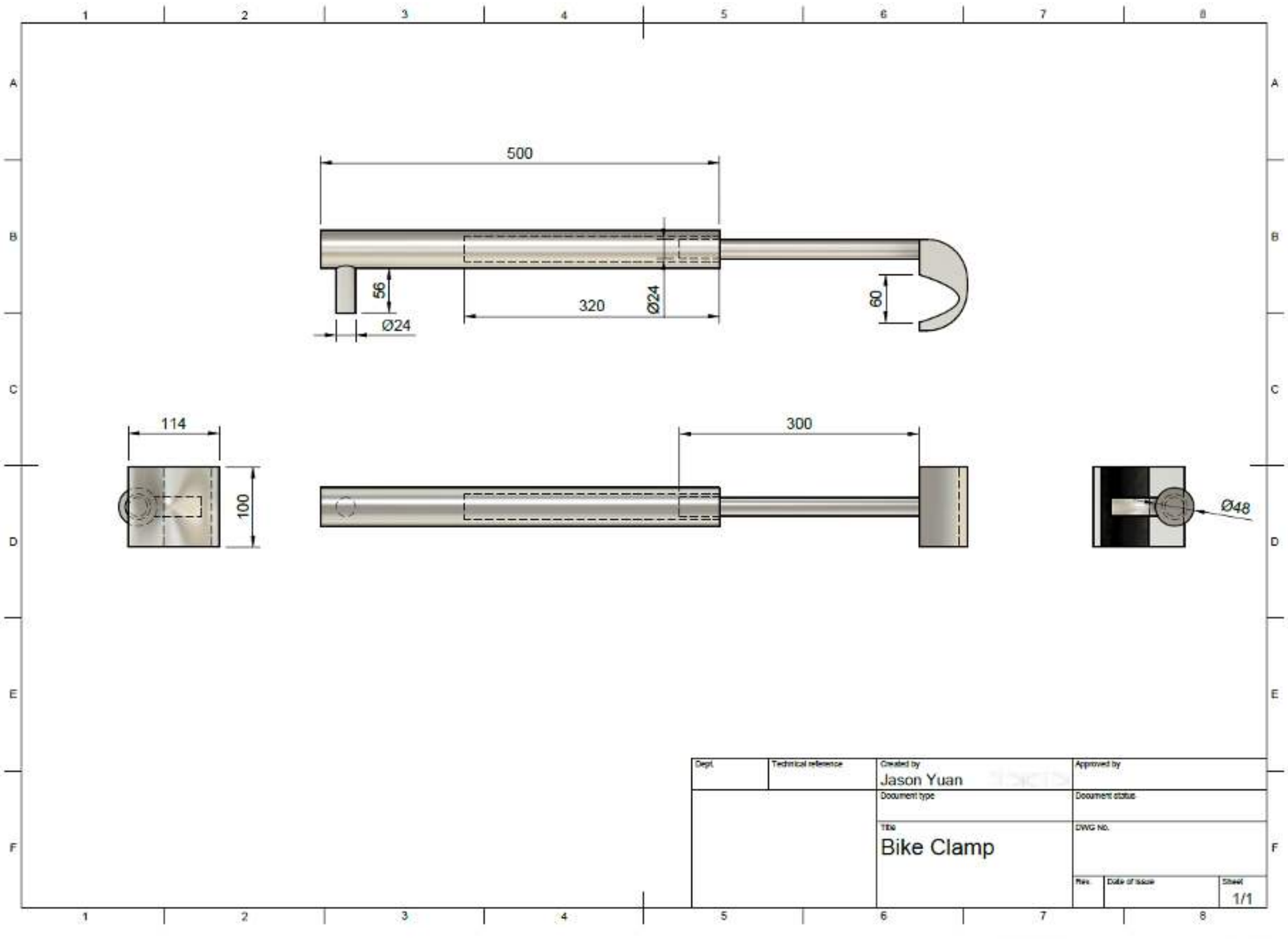
Sketch Renderings - Gas Compression Lift Assist



Technical Drawings



Technical Drawings



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		Document type	Document status
		Title: Bike Clamp	DWG NO.
			Rev. / Date of issue / Sheet: 1/1

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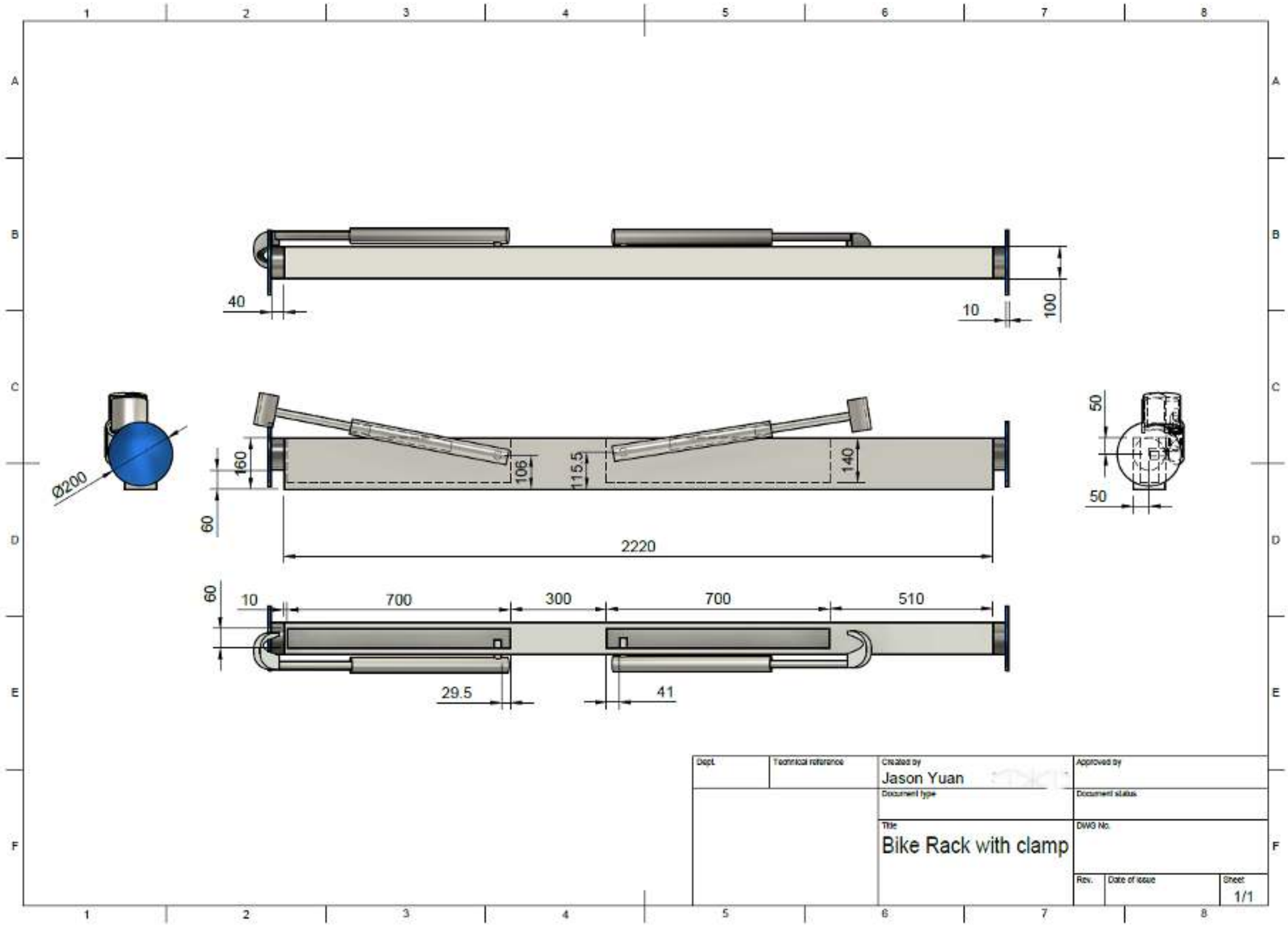
Technical Drawings



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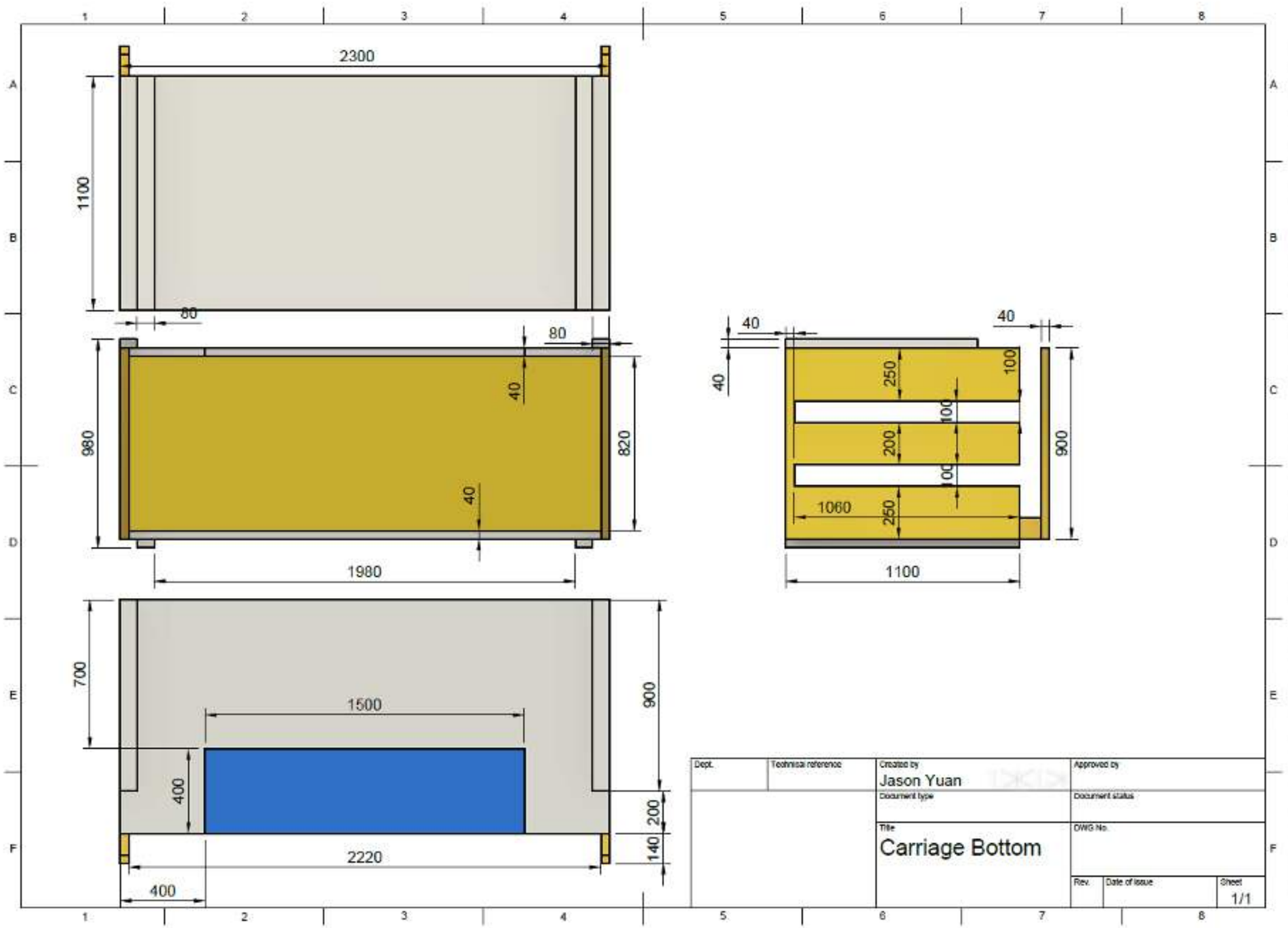

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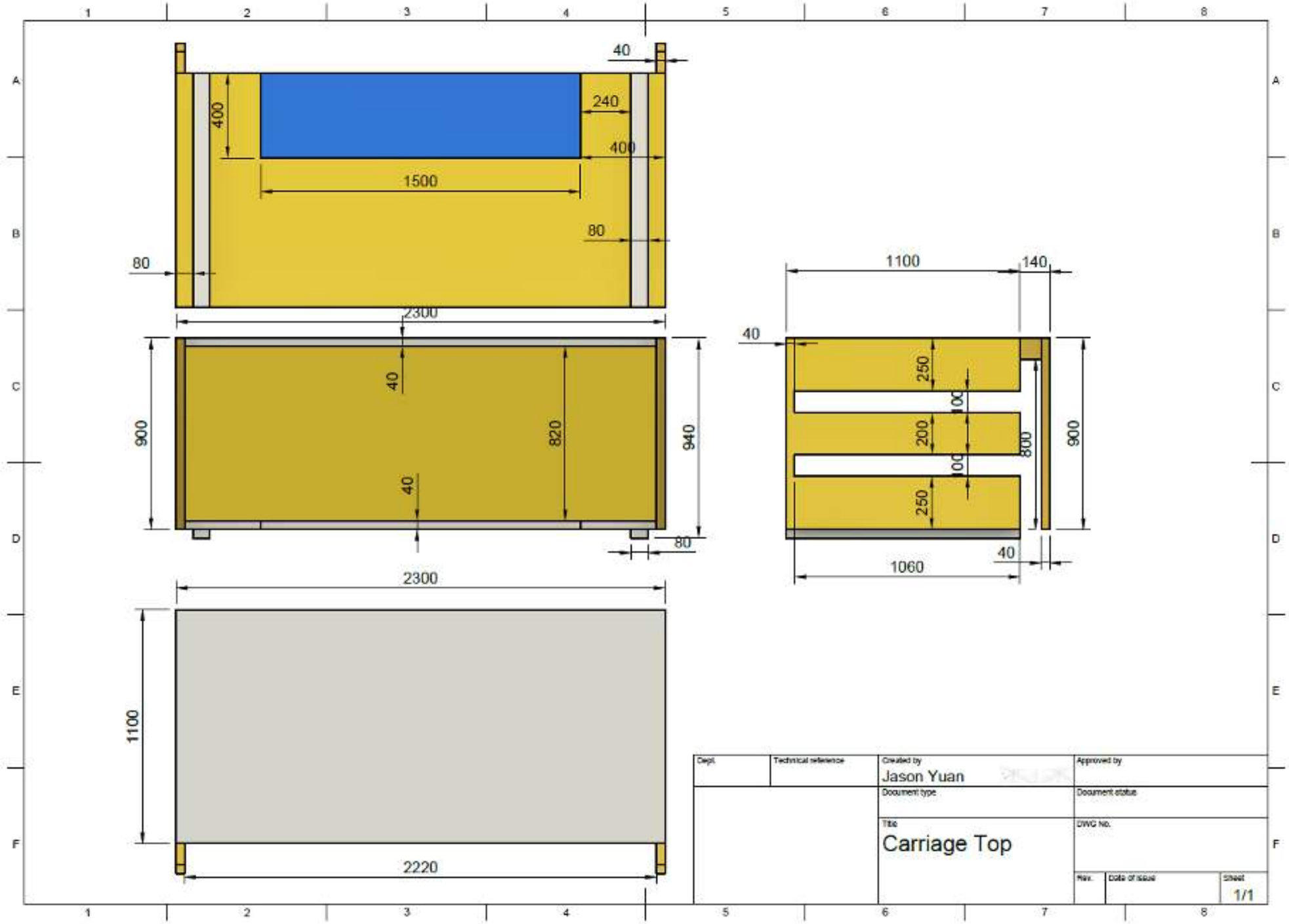

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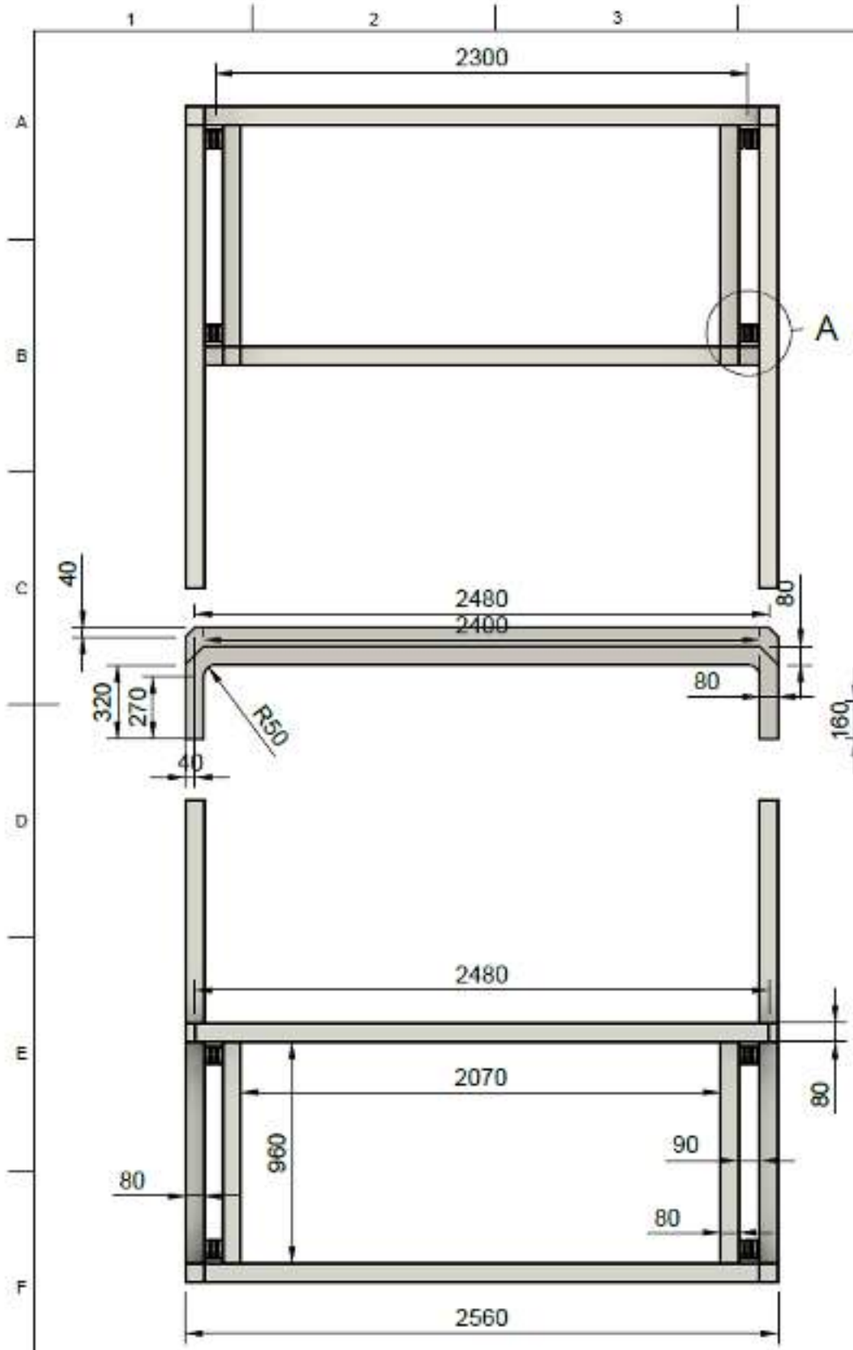

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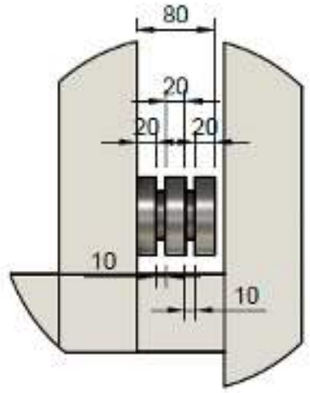

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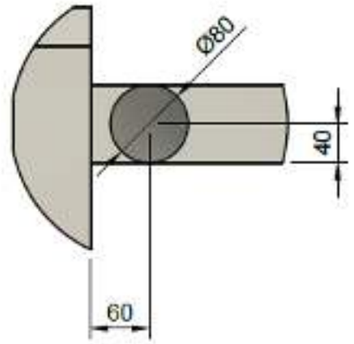

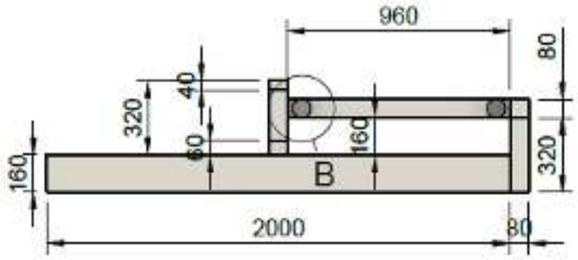

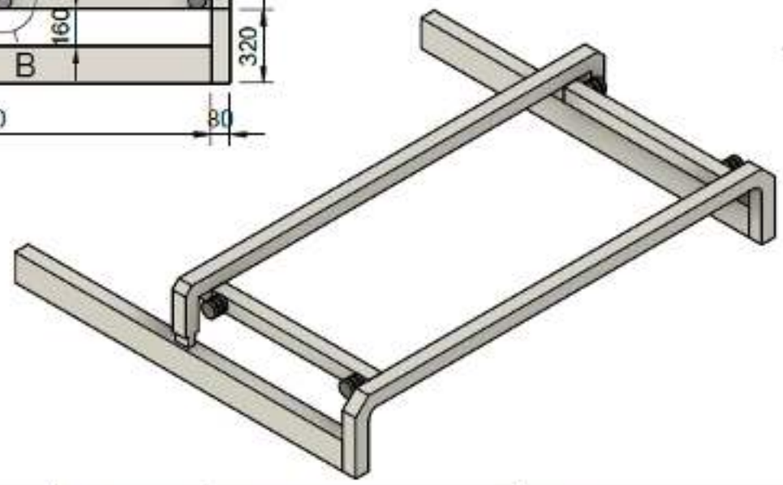

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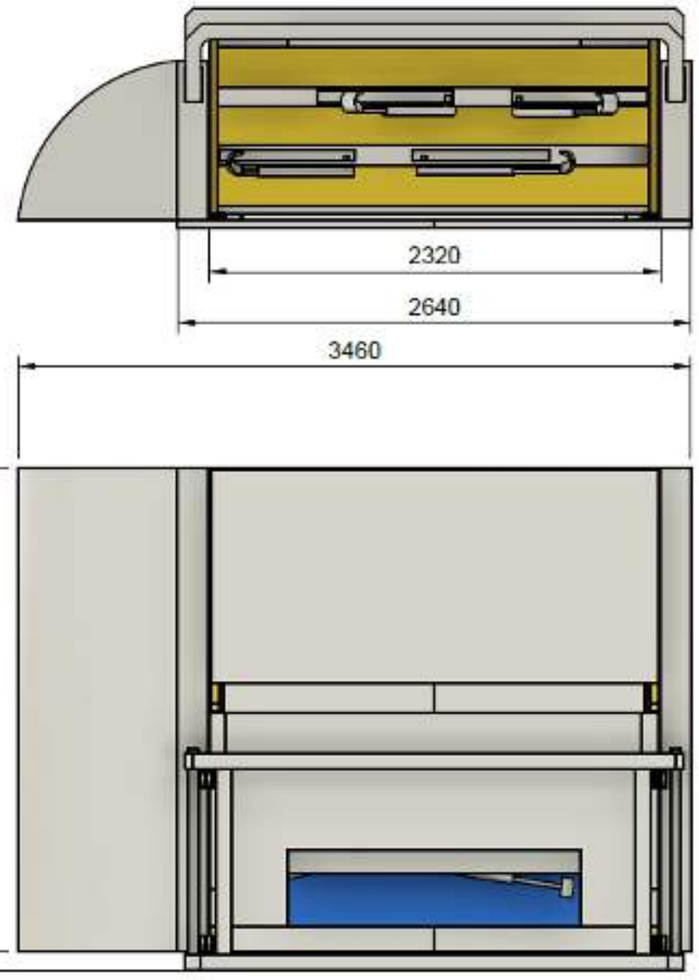
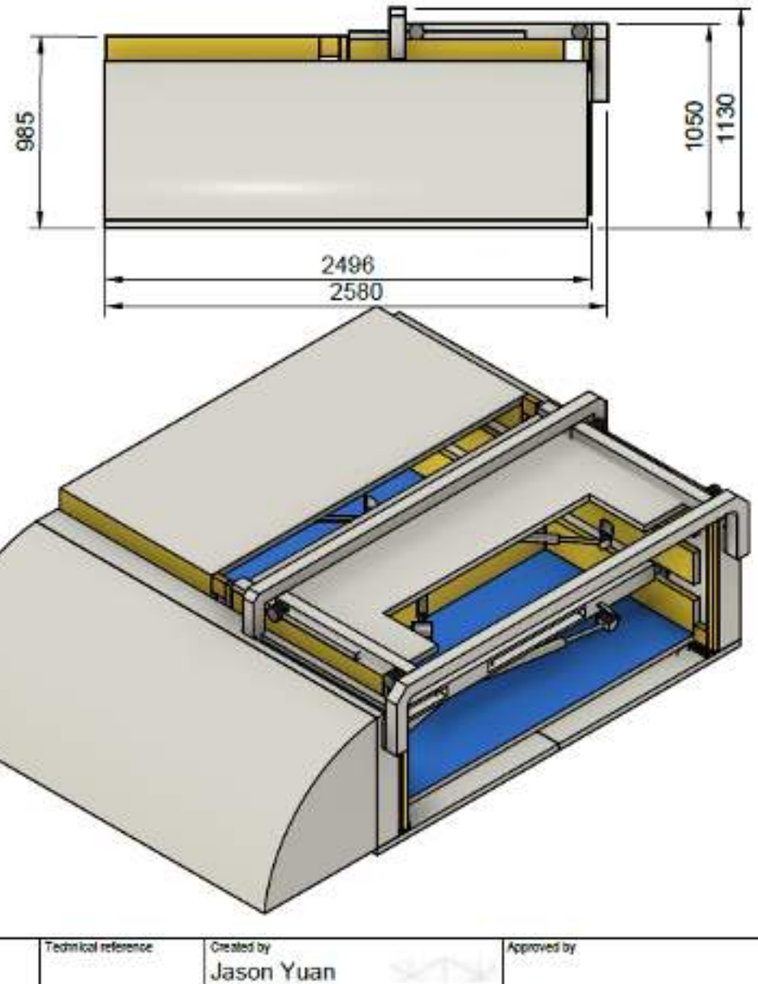
			Rev. / Date of issue / Sheet: 1/1

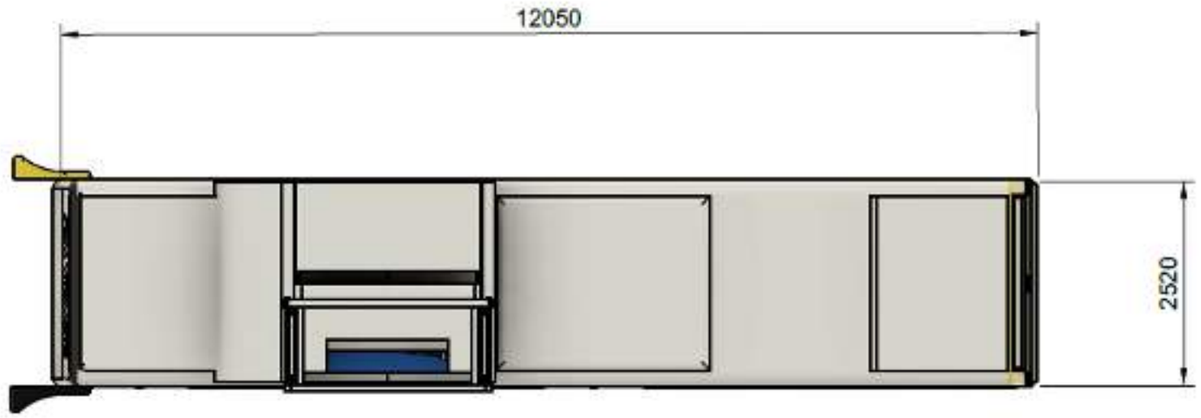
Technical Drawings

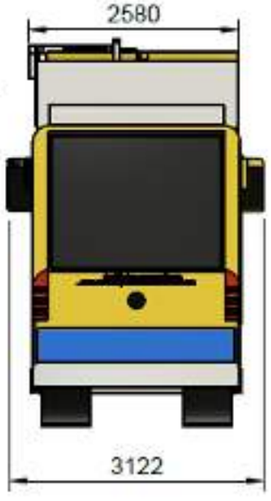


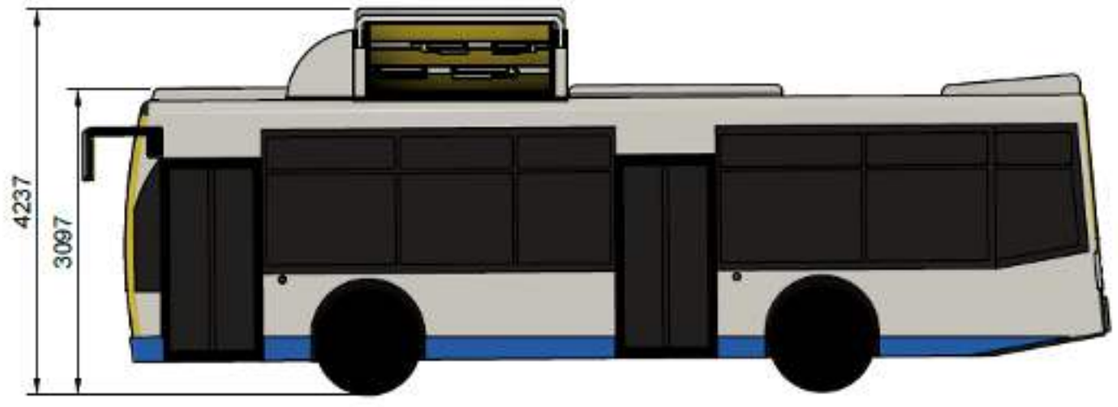


Dept.	Technical reference	Created by: Jason Yuan	Approved by
		Document type	Document status
		Title: Full Assembly with Bus	DWG No.
			Rev. / Date of issue / Sheet: 1/1

Technical Drawings







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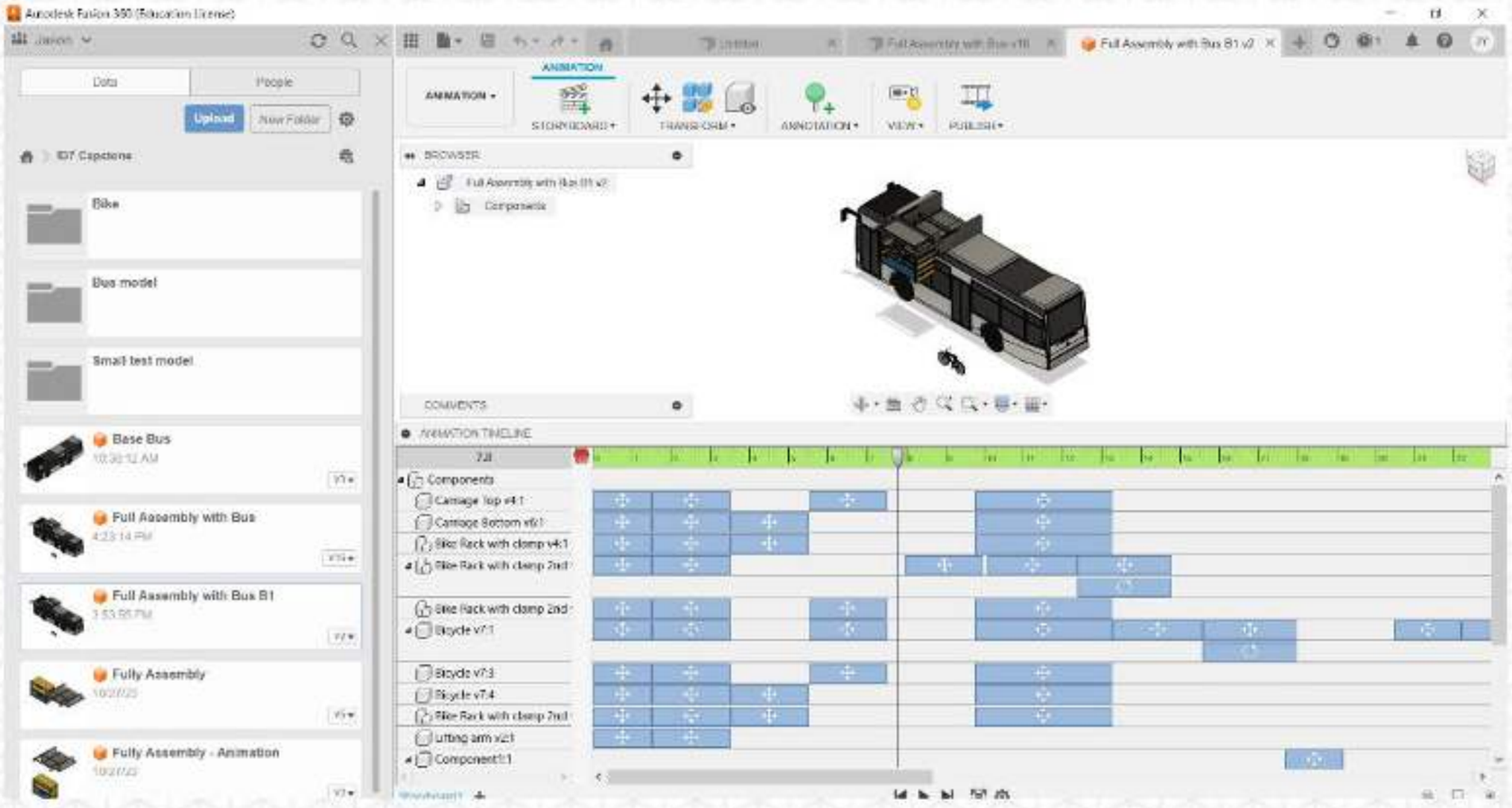
Jason Yuan QUT DNB311

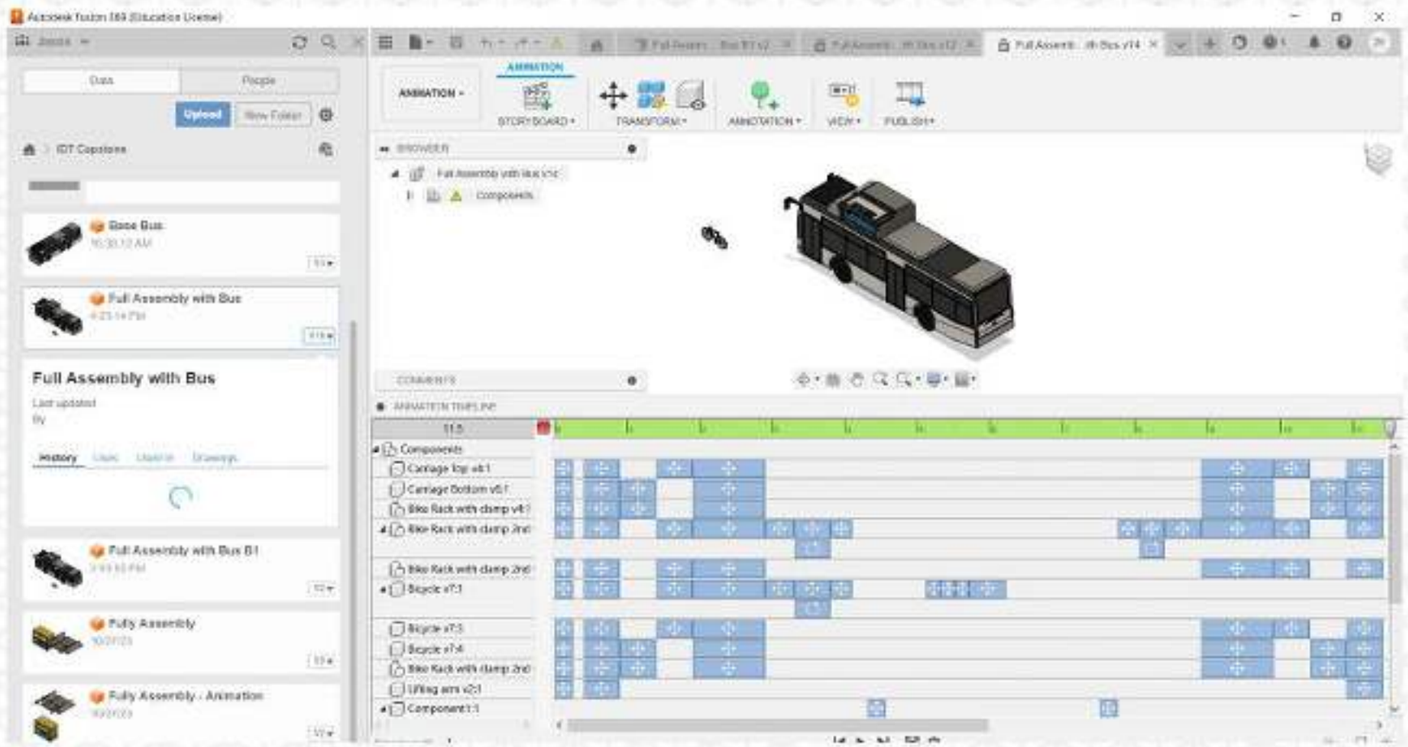
date: 27/10 pg. 114

Animation - Process

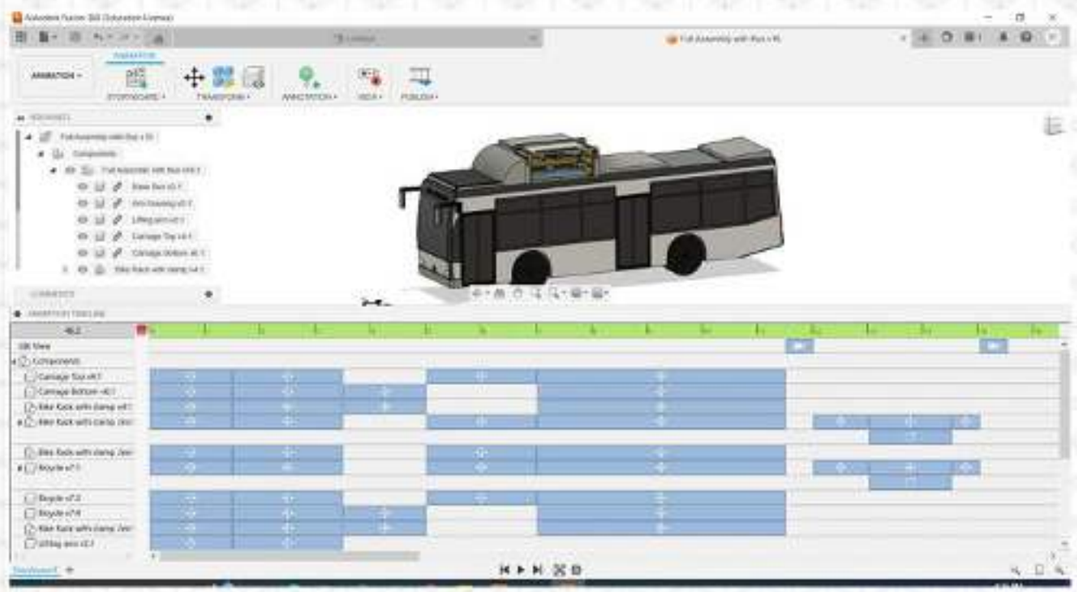


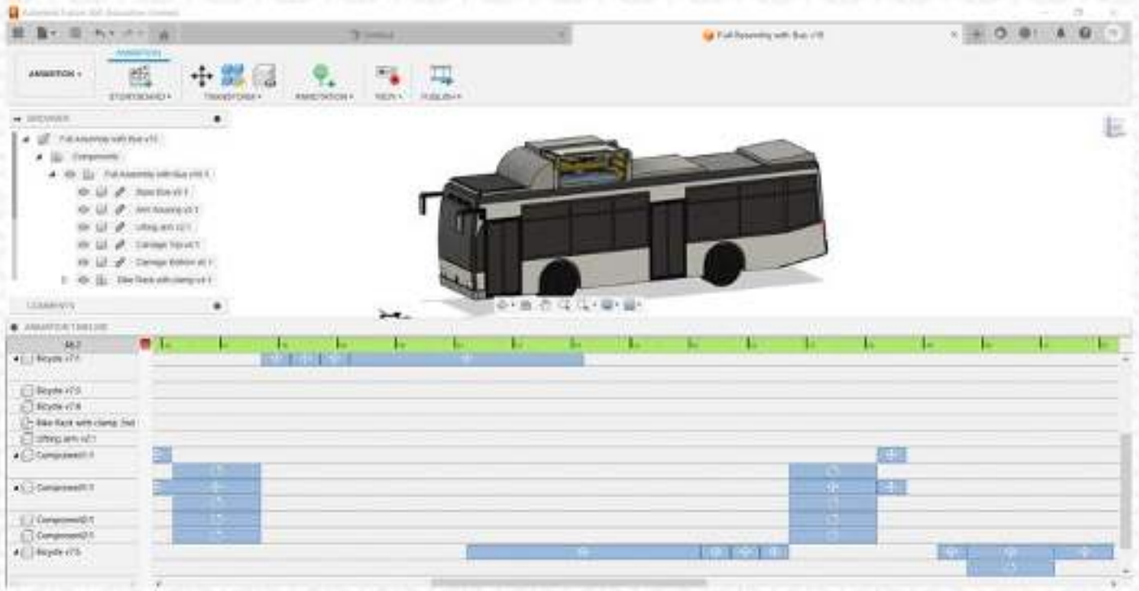
Animation - Process

Sequences far too short/quick

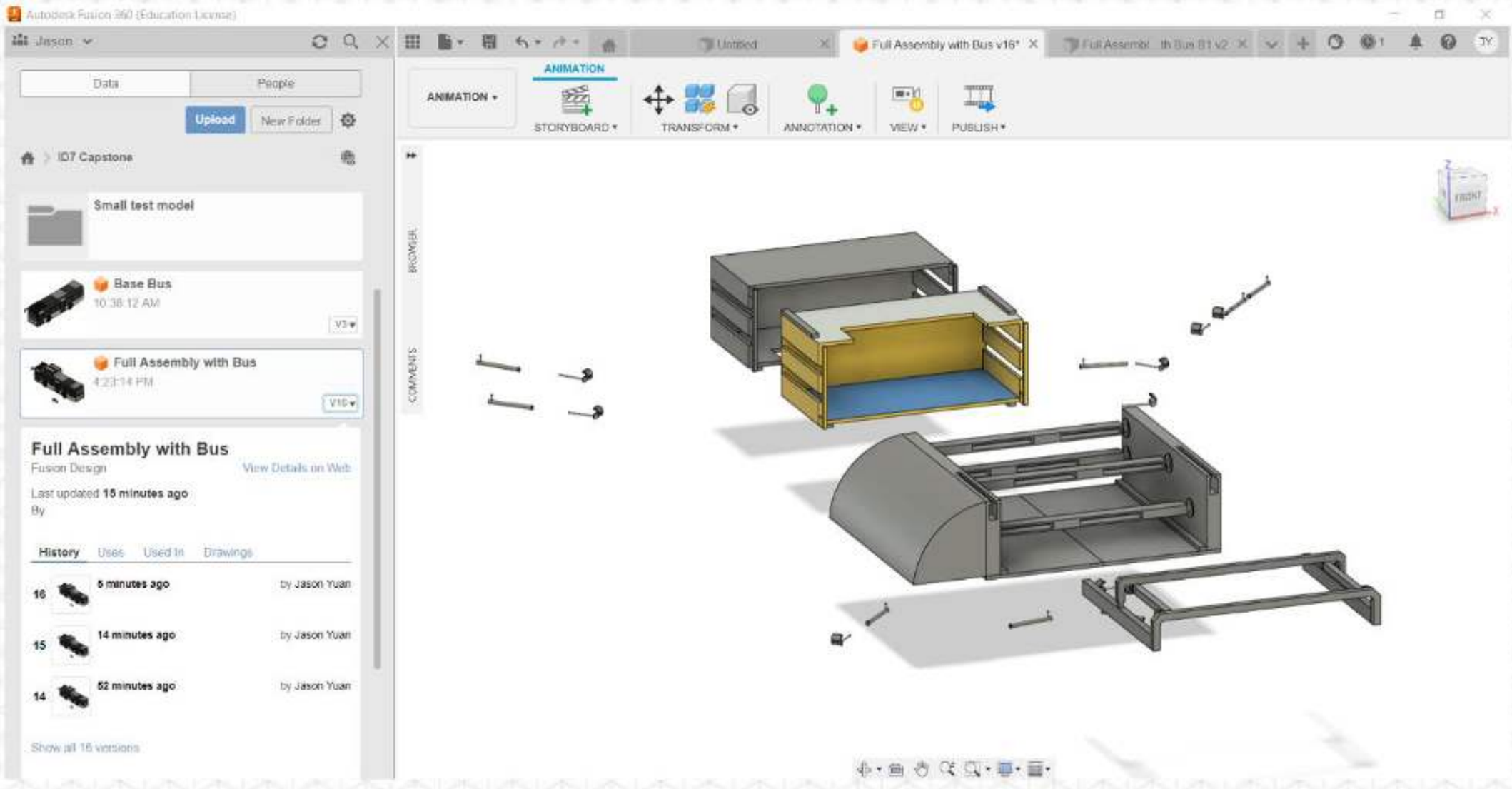


Animation - Final

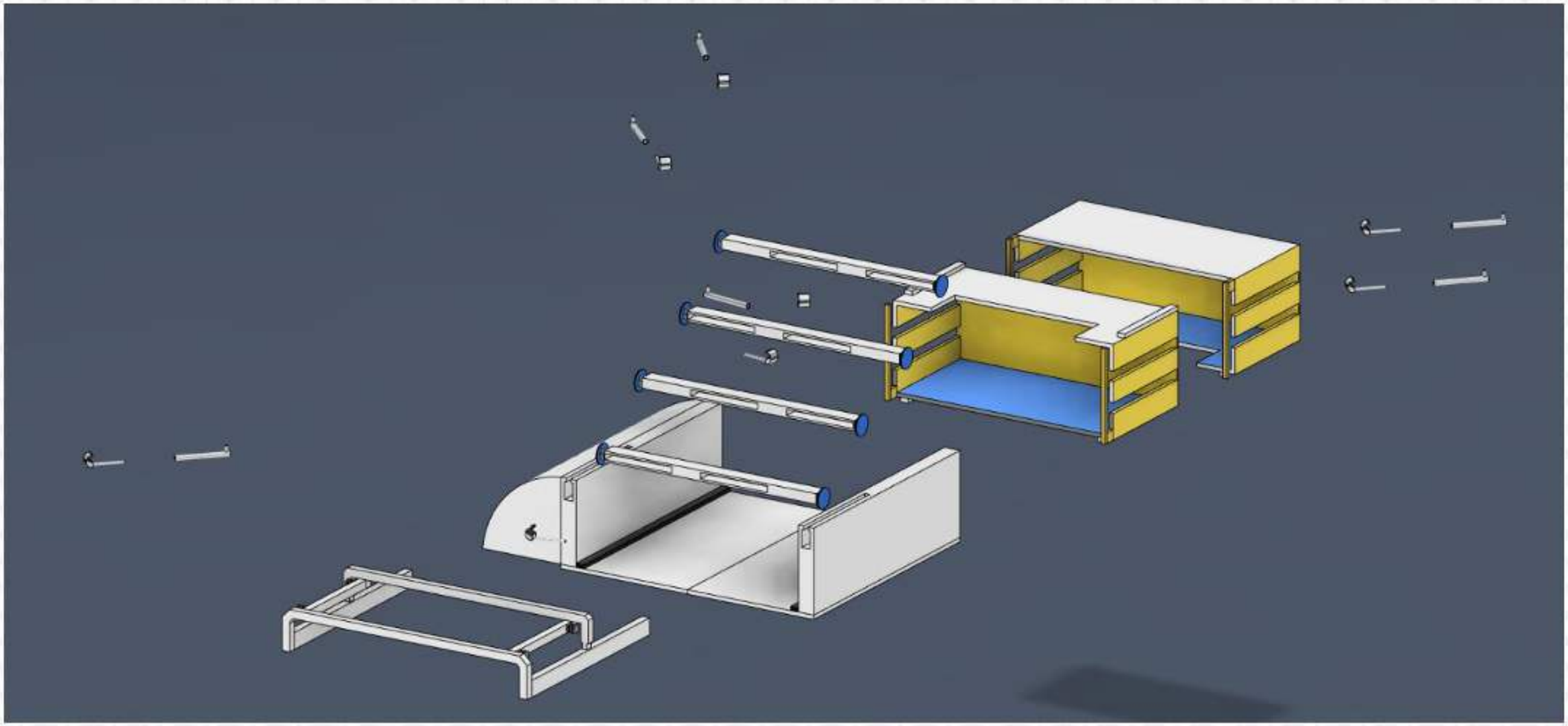




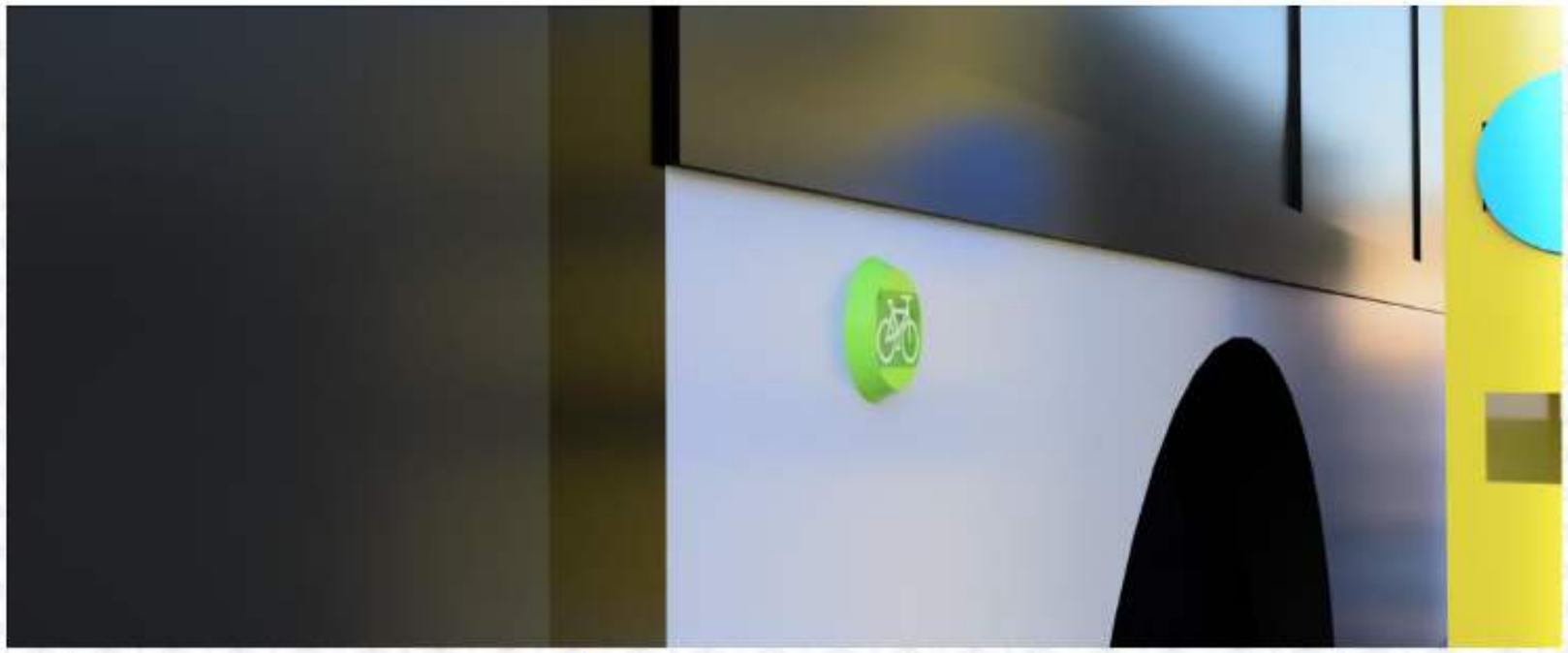
Animation - Exploded View



CAD -Exploded View



Renders

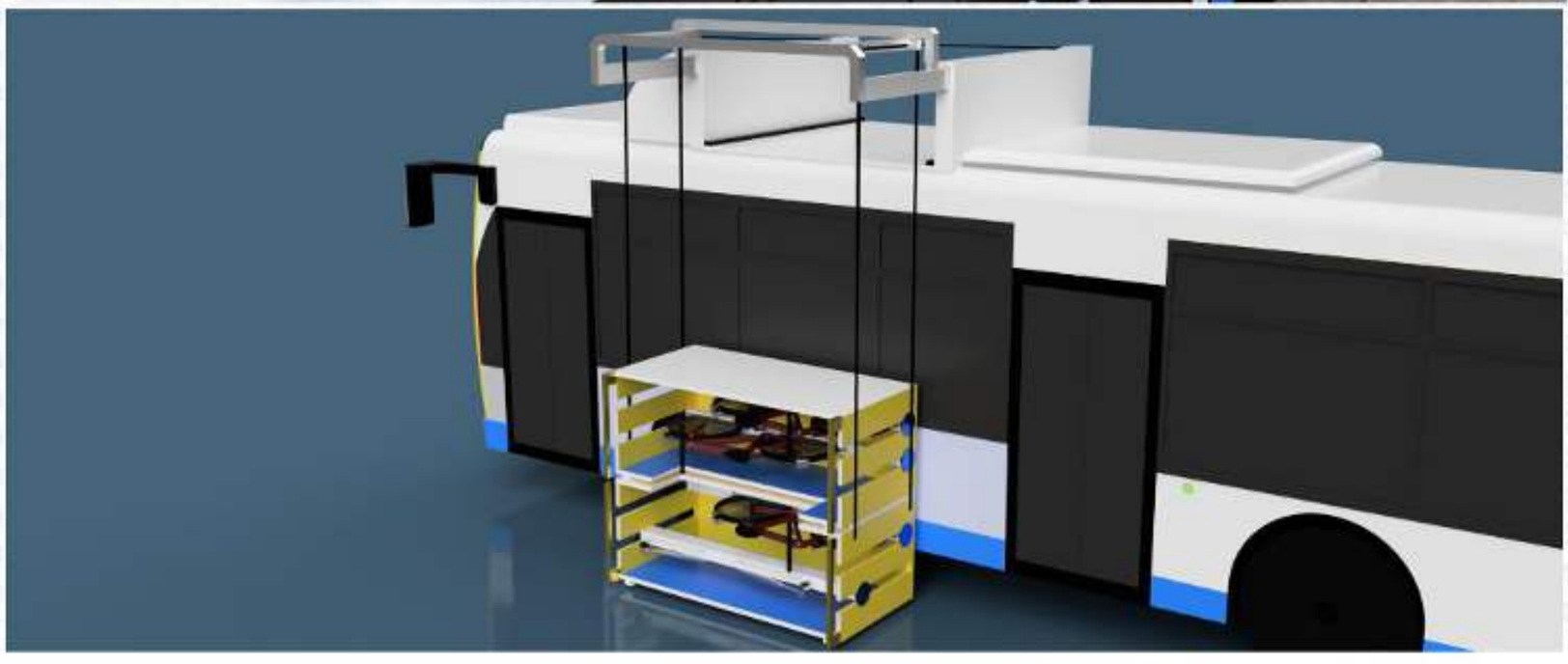


Renders

Renders

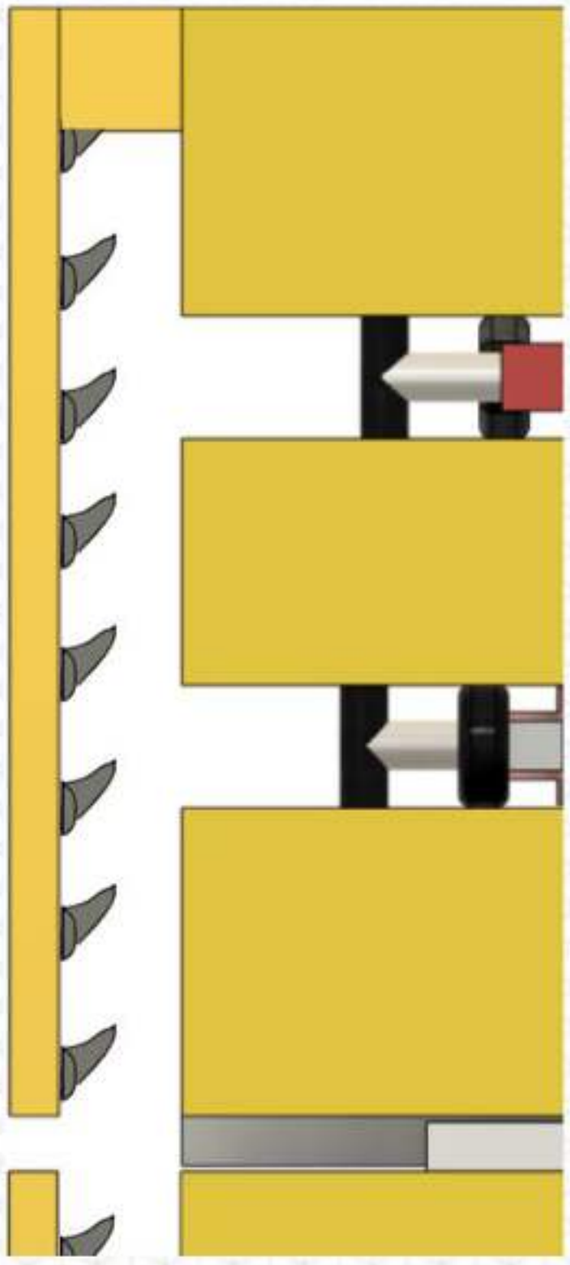
Renders

Renders

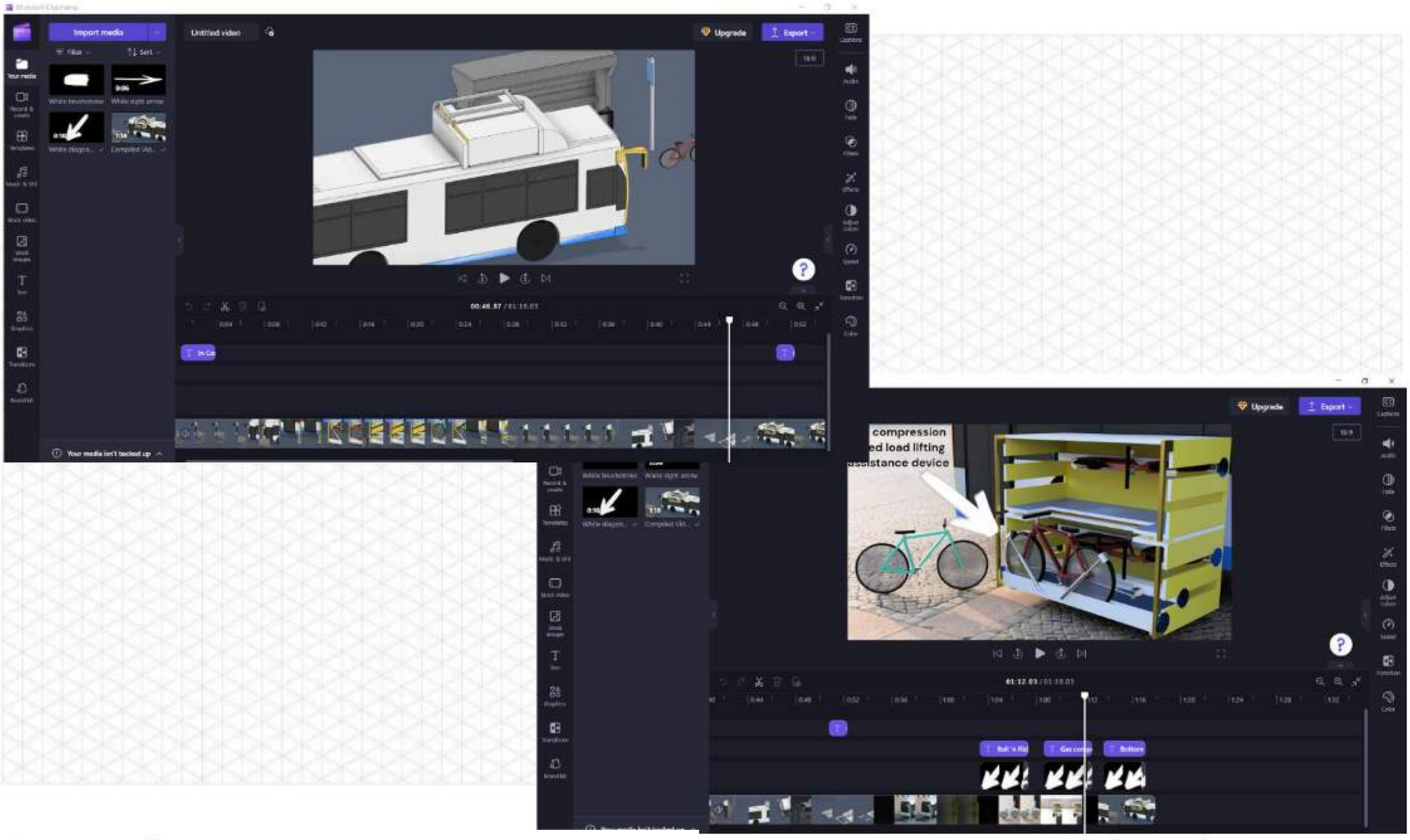


Renders

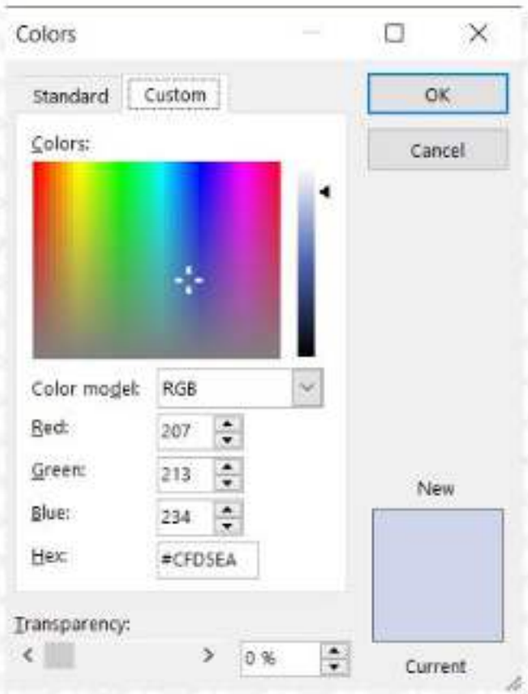
Sketch Rendering



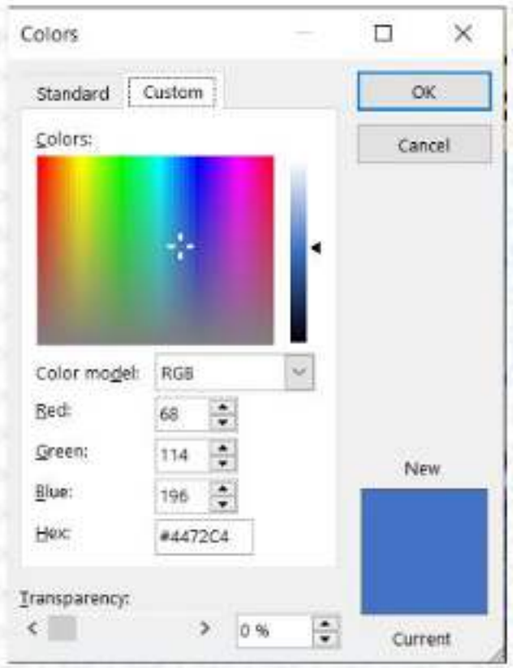
Video Editing



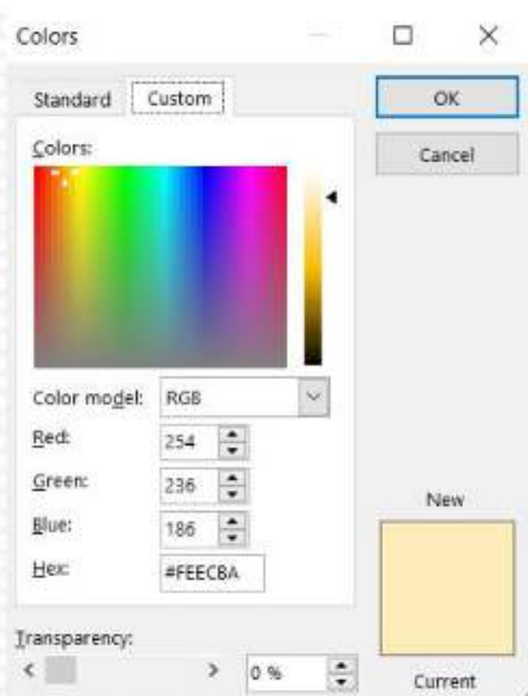
Presentation + DDR Colour Theme & Graphics



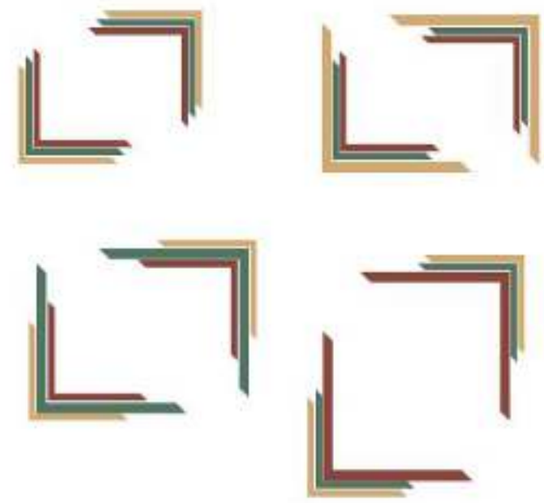
Accent background



Accent colour



Background colour



Corner pieces

Helvitica font

Active Mobility Storage on Public

Logo Design

ROLL 'N RIDE

Presentation Slides

ROLL 'N RIDE

DNB311: ID7 Capstone

Jason Yuan

Active Mobility Storage on Public Transportation

- **Active Mobility**
  - Walking
  - Bicycle
  - Scooter
- **Public Transport**
  - Bus
  - Train
  - Ferry

Research and Findings

Interviews

- Public Transport & active mobility professor
- Public transit network planner @ BBC
- Active mobility coordinator @ BBC

Surveys

Academic Literature

- Convenience to match cars
- Trip chaining & non-commuting trips
- Force multiplier
- Lack of active mobility transportation system
- Induced demand

Ideation and Design Directions

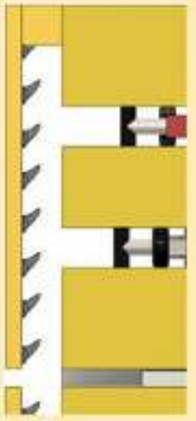
- **Enhanced storage solution at transit stations**
  - Still must walk to complete the journey after PT
  - Random theft can still occur
- **Method to bring bikes on PT to complete the journey**
  - Allows for bikes to be used prior and post PT usage
  - Increases catchment radius of PT stops/stations – more usage

Presentation Slides

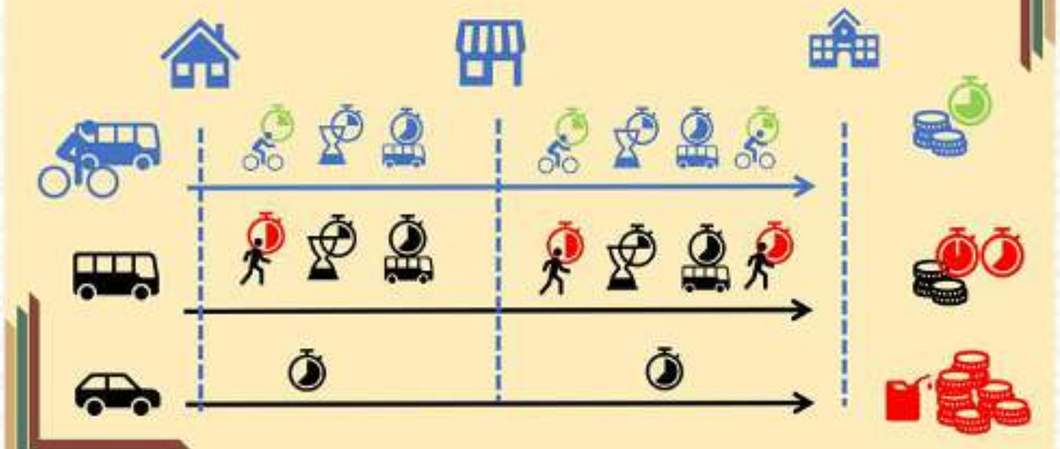
ROLL 'N RIDE

Features and Design Elements

- Interior & exterior driver notification button
- Lidar object collision detection sensors
- Safety warning lights and white noise
- Gas compression-based rack lifting assistance device
- Rooftop storage – no reduction in passenger capacity nor affect bus size limitations

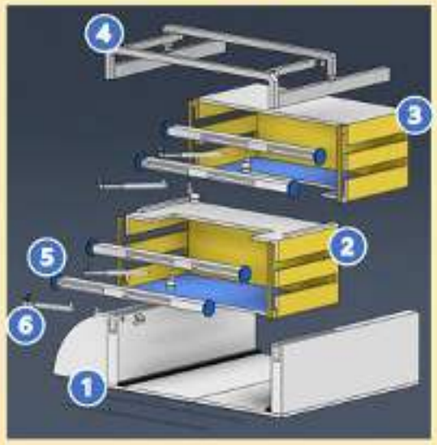


Journey Mapping



Presentation Slides

Technical Specifications



Component	Material	Process
1. Housing Unit	Steel framing with fiberglass paneling	Extrusion
2. Bottom Carriage		
3. Top Carriage	Steel framing with fiberglass paneling	
4. Lifting Arm	Reinforced Steel	Extrusion
5. Bike Racks	Anodised aluminium	Injection Moulding
6. Wheel Clamps	Aluminium with rubber padding	Injection Moulding

Total system weight: 700kg
Lifting capacity: 500kg

Technical Specifications

- Storage on rooftop are within vehicle dimension limits
  - Less than 4.5m required height clearance
  - Does not increase overall length/width of bus
  - Does not reduce passenger capacity

Overall Context

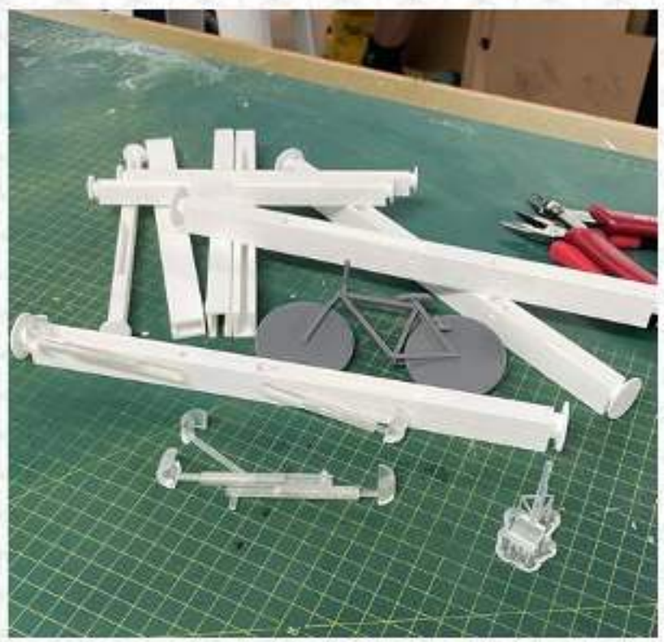
A component as part of a wider active mobility transportation system

Acts as a force multiplier for car alternative transportation methods

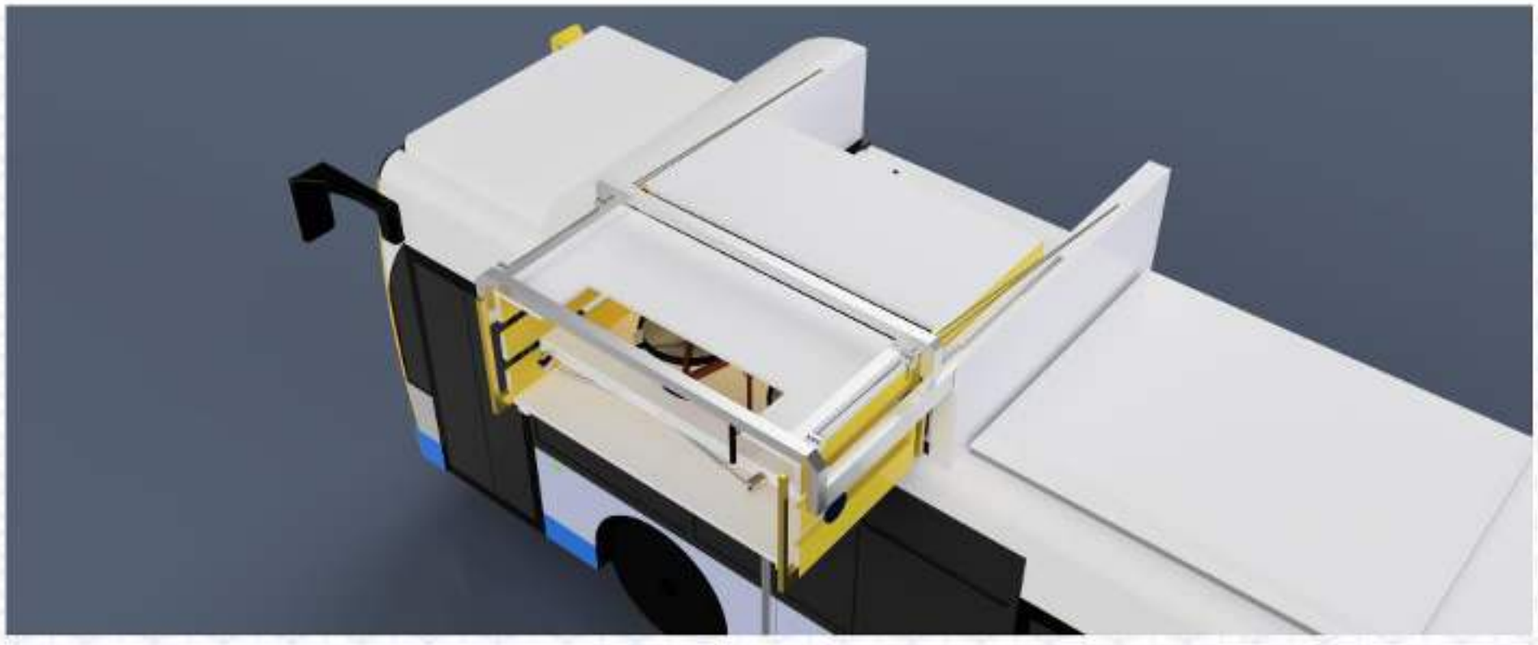
Increases the catchment radius of bus stops – more ridership

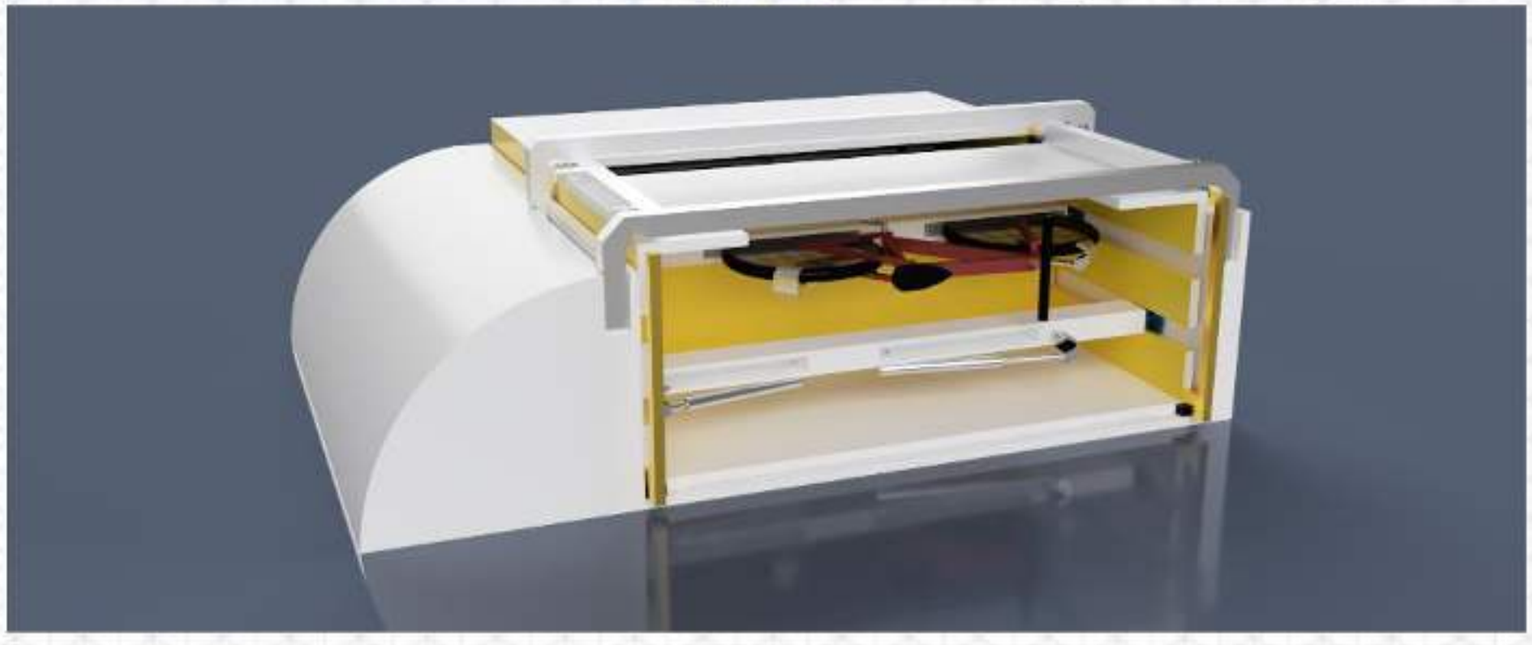
Model Making

Model Making



Final Renders





Final Renders

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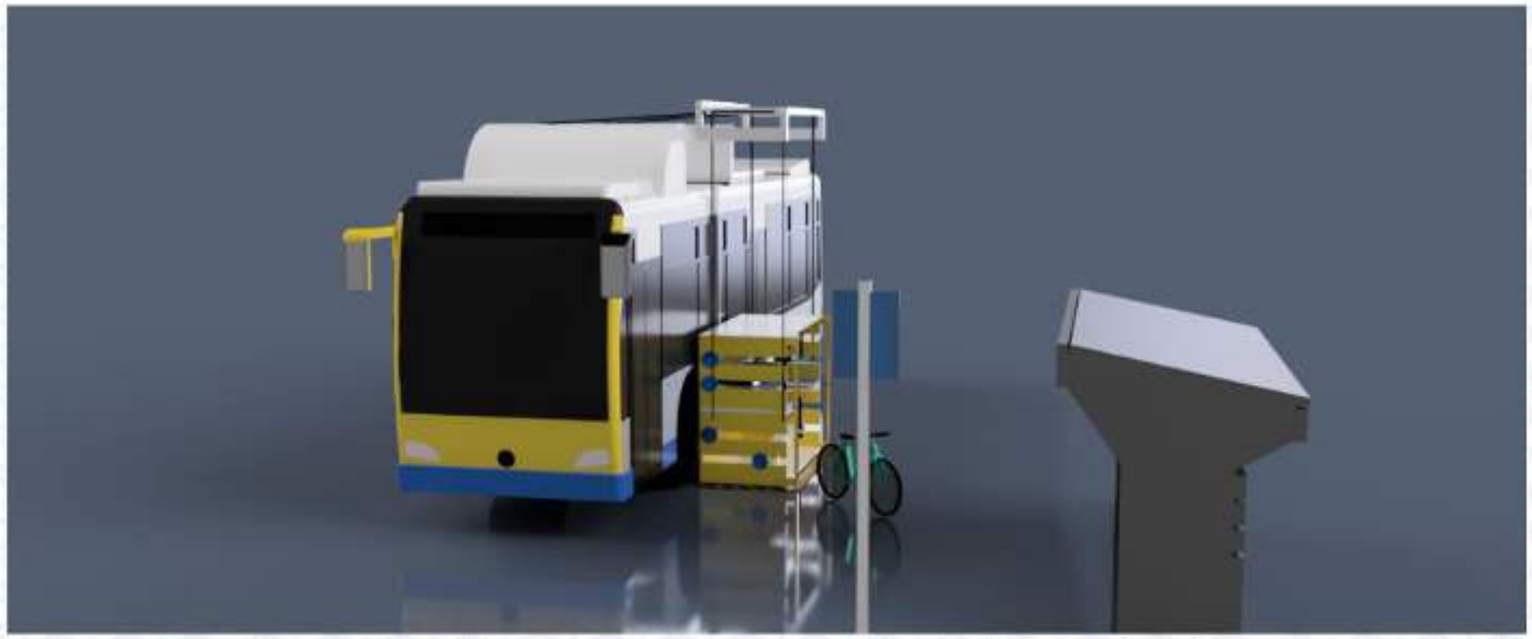

Final Renders

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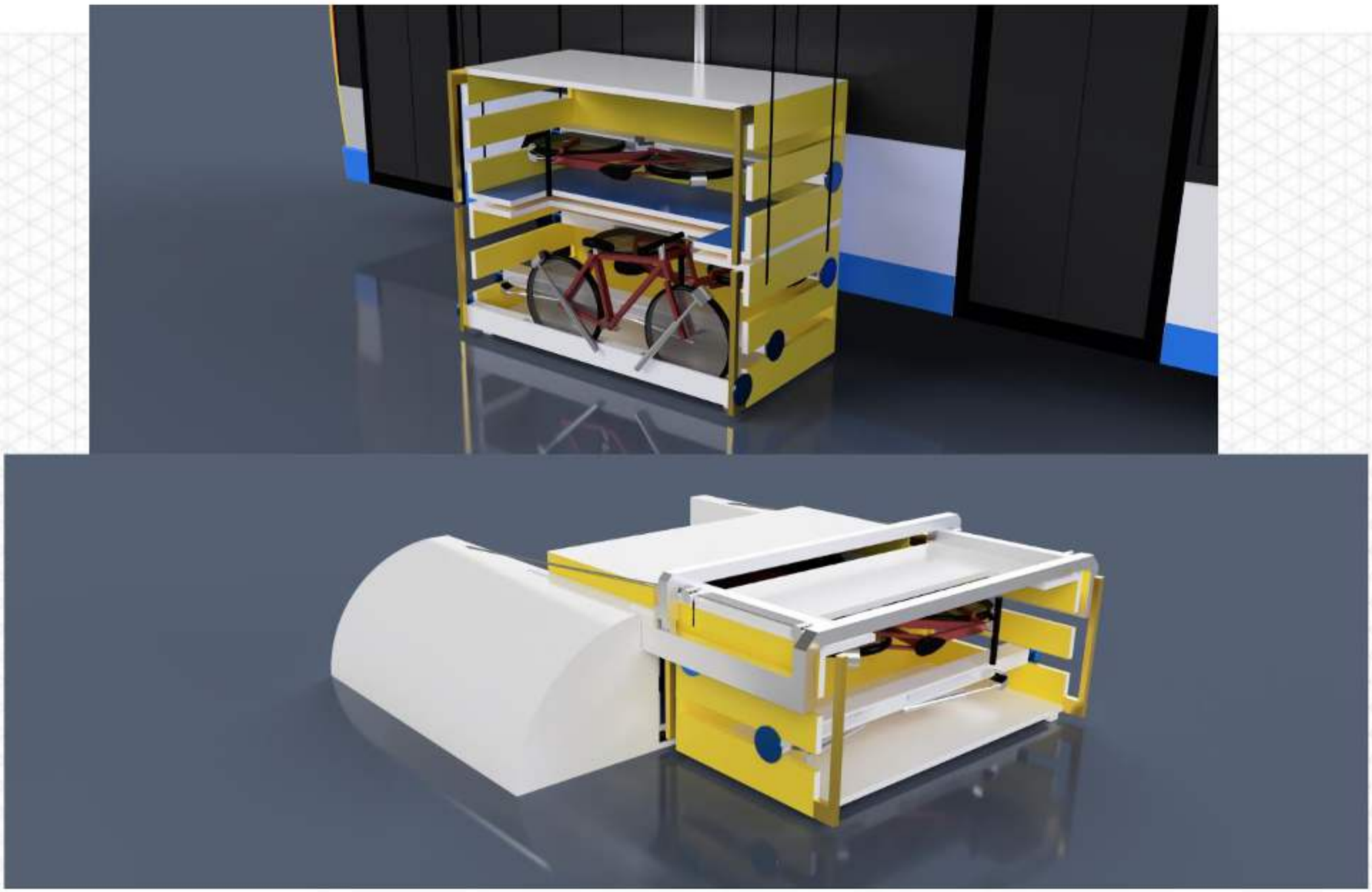
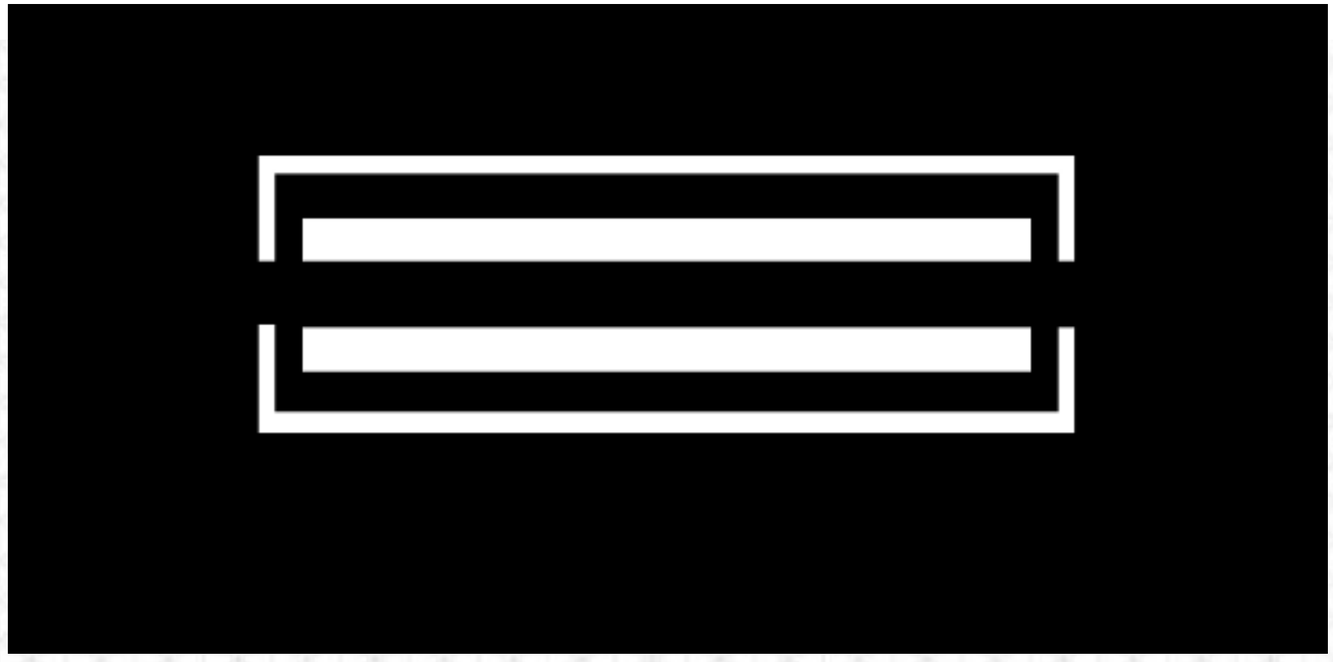


Final Renders

Logo Design

Roll 'n Ride



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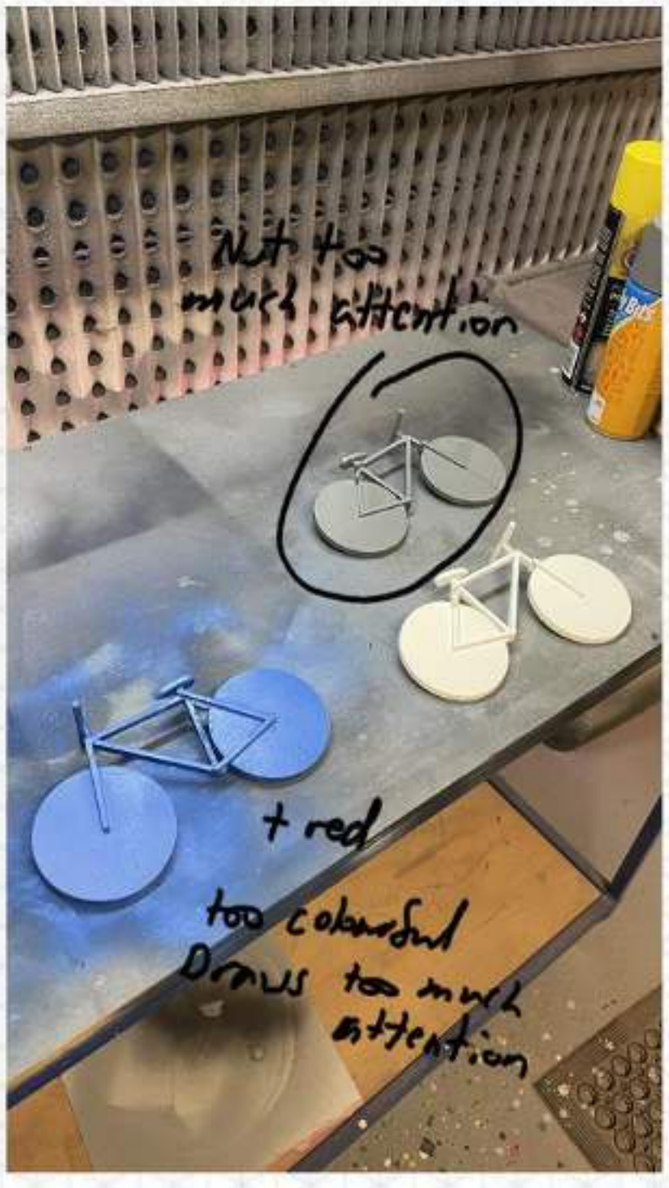

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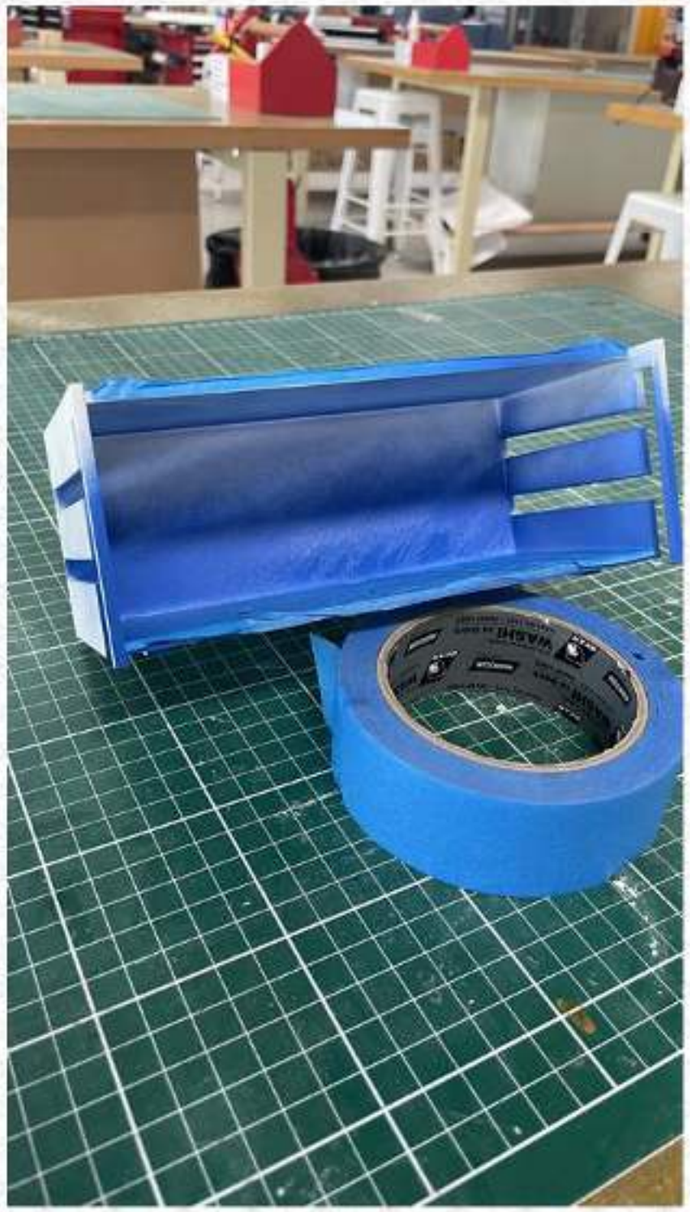

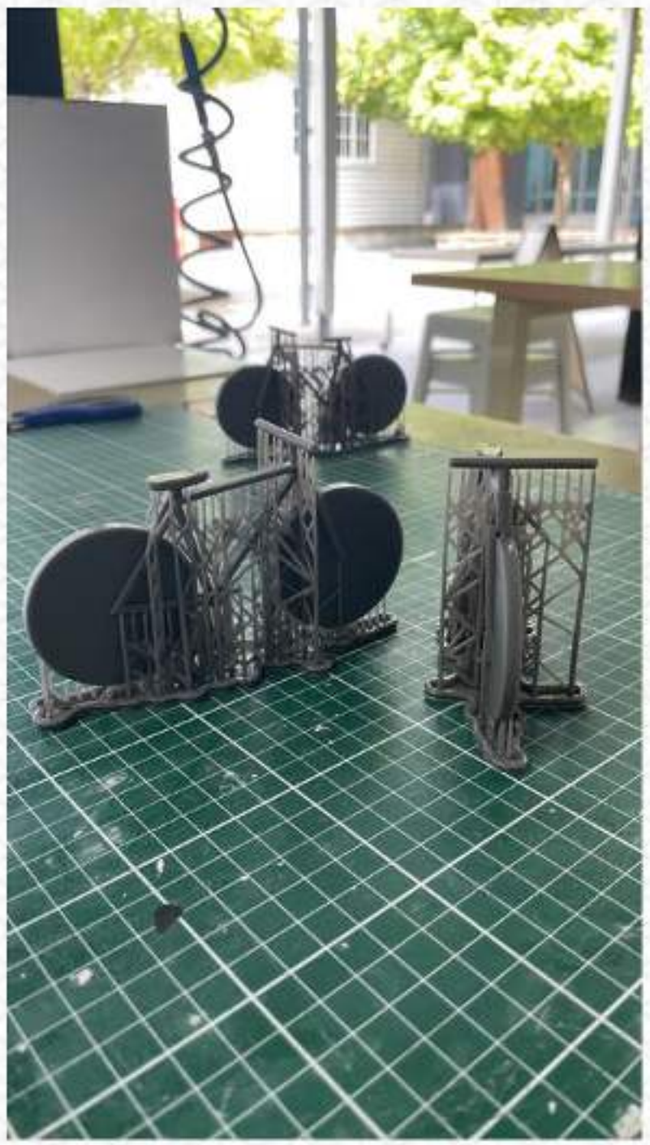

Final Model Making

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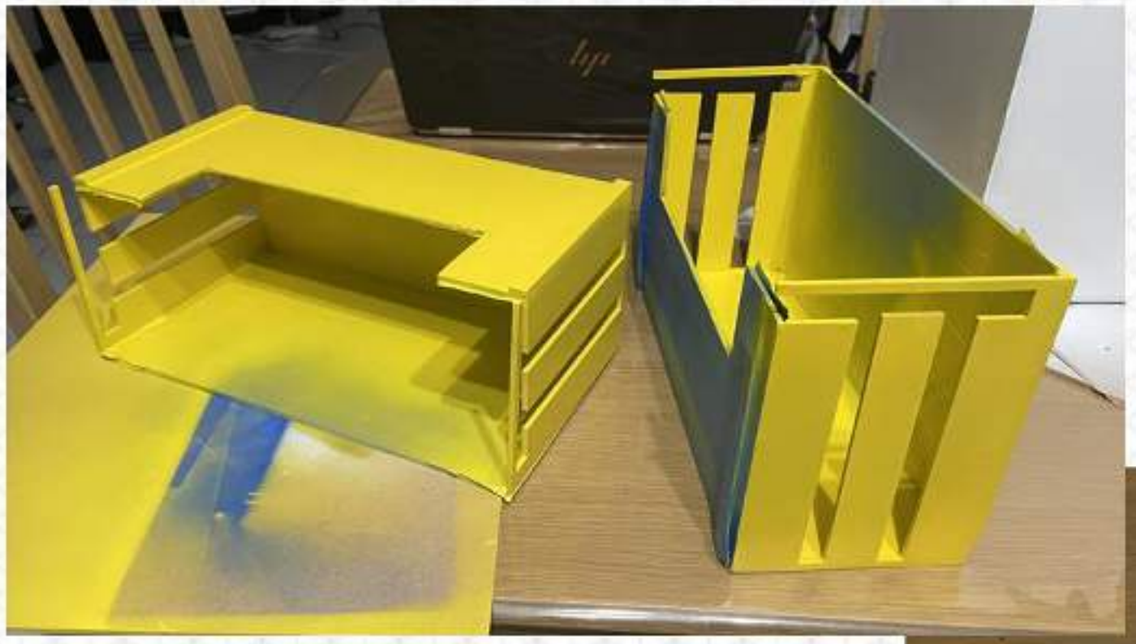

Final Model Making

Final Model Making

Final Model Making