

Smart Ergonomic Chair 2014

Presented by:

Constantinos Papaconstantinou
Carlos Cordula
Rohit Katarya Rohit Katarya



S M A R T E R G O N O M I C C H A I R



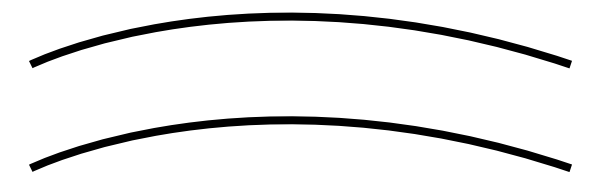
Smart Ergonomic Office Chair, January 2014



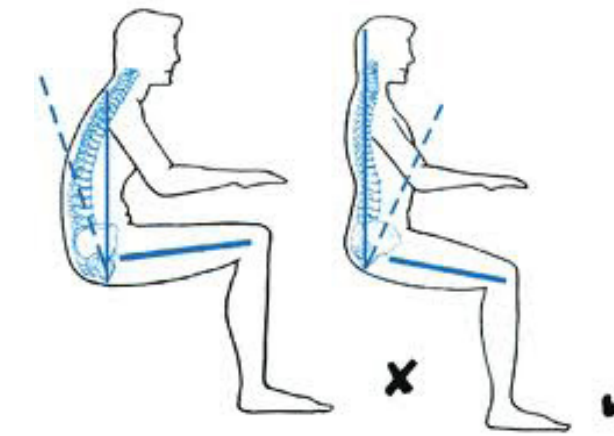
The aim of this project will be to help individuals maintain a proper posture in a working environment, while reducing back pain, and properly supporting the specific individuals back. This chair incorporates electronic sensors, as well as flexible mechanical components to help achieve, "Good Posture Percentage," and develop a, "Utopian Support System." The chair will acknowledge the users engagement, respond to the user's posture, and adjust to the user accordingly. If the individual's posture is not correct the chair will suggest a correct posture.

Business needs: The design will be an office chair. These types of chairs are required in almost every office space, and due to this the demand is very high. Proper posture and body alignment is a subject that many individuals are aware of, and developing a chair that can support the back properly will get that target markets attention.

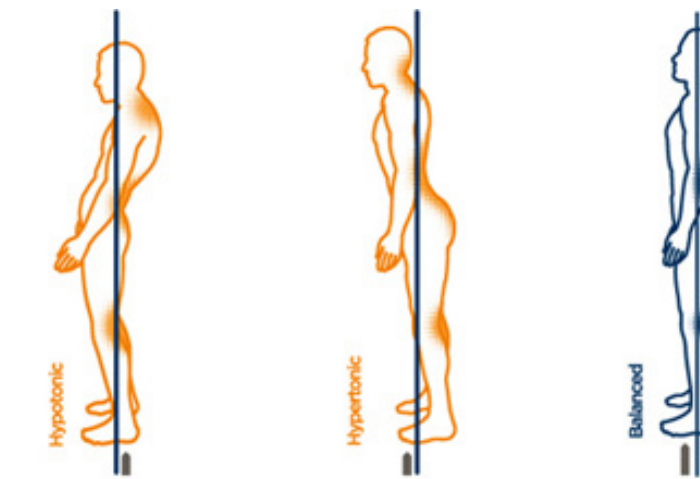
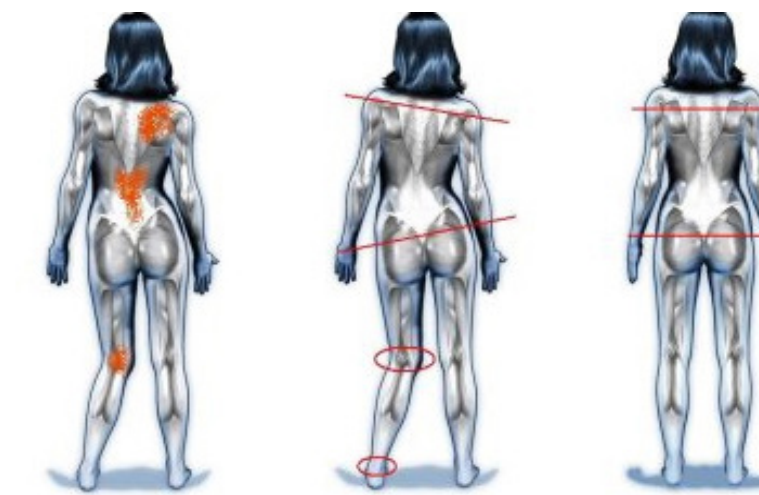
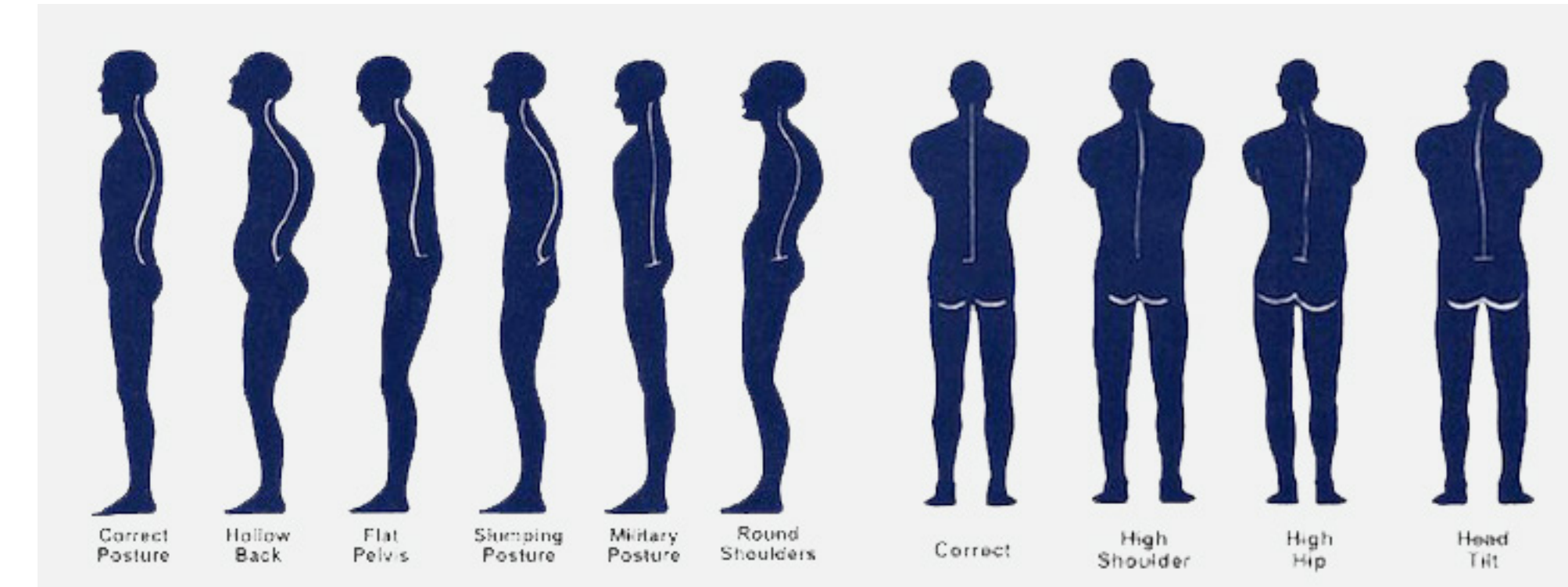
Project Description: The chair will accommodate the individuals comfort needs in an office space environment. It will be an office chair, a chair that will be used for long periods of time during one day. Ideally the chair will be useful for individuals working at a desk for long periods of time that are interested in maintaining good posture, and a healthy career.



Back curve of a specific individual.



Ergonomic Need:



SMART ERGONOMIC CHAIR



SMART ERGONOMIC CHAIR



Our solution derives from a specific insect. The characteristics of a caterpillar are quite similar to those of a human spine. In this case our solution derives from the need to adjust and perfect the

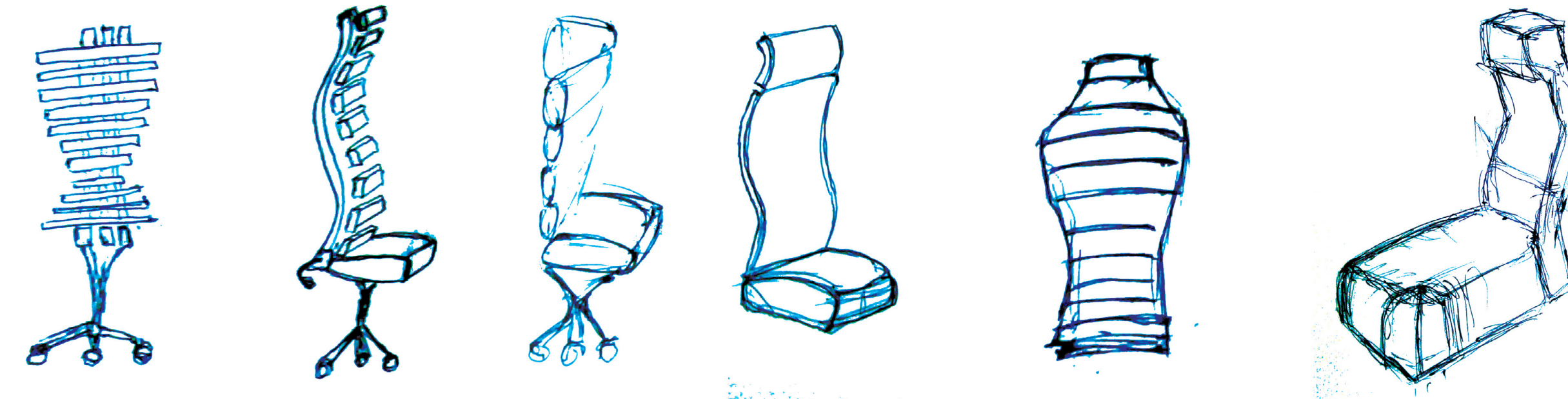
Natures Solution:



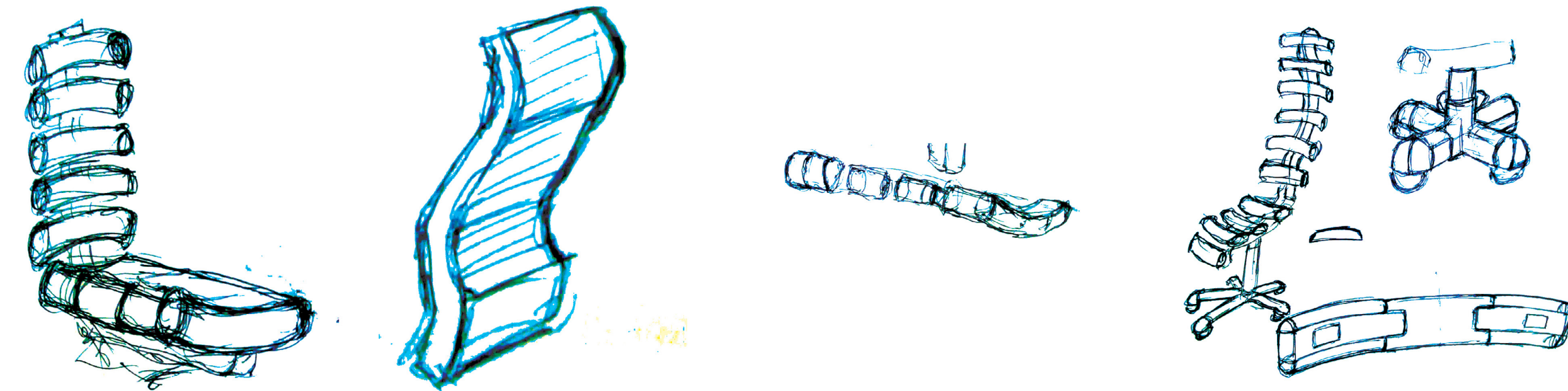
posture of human being while in the sitting position. In this case we studied the body functions of a caterpillar, and its ability to curve. Interestingly enough the caterpillar's body is made of parts that allow it to stand and bend in multiple directions.



S M A R T E R G O N O M I C C H A I R



Sketches:

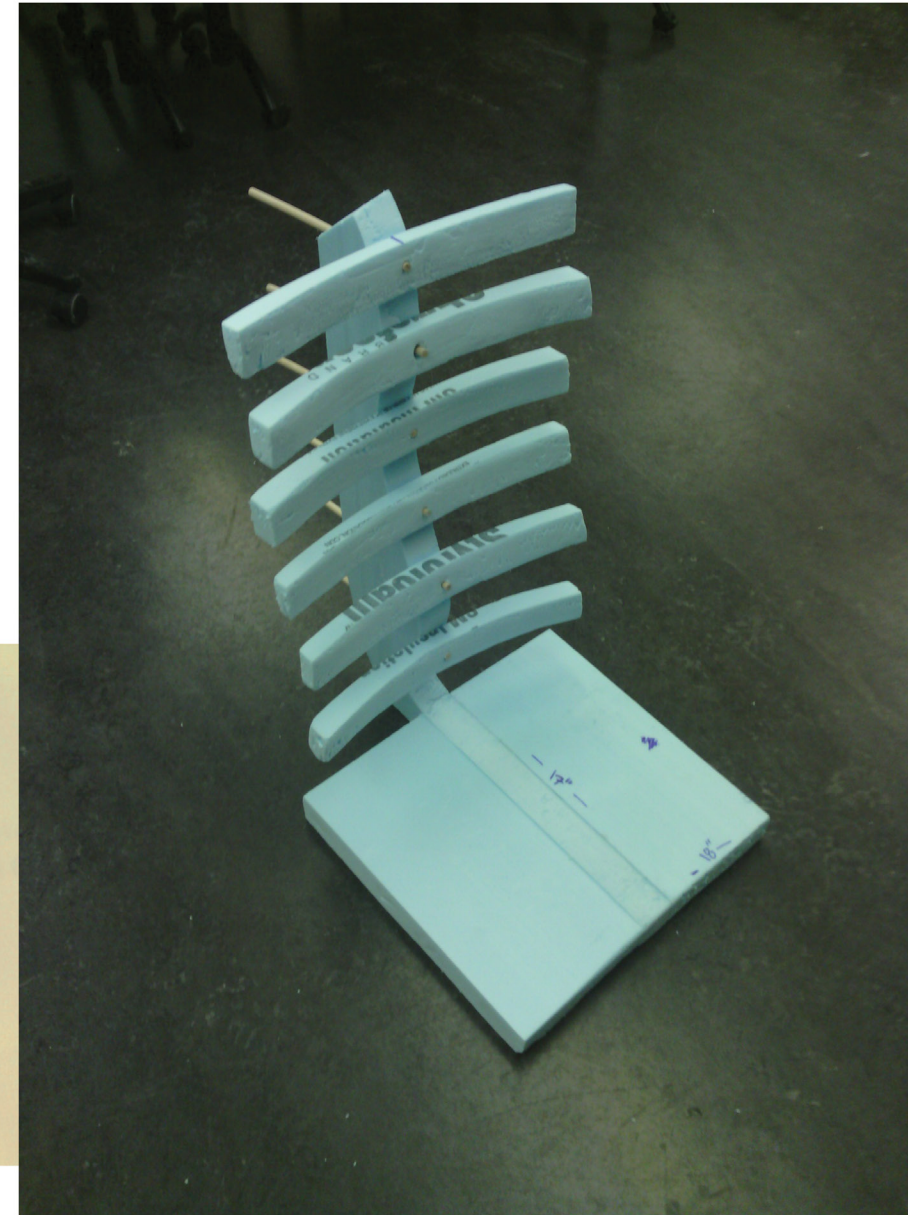
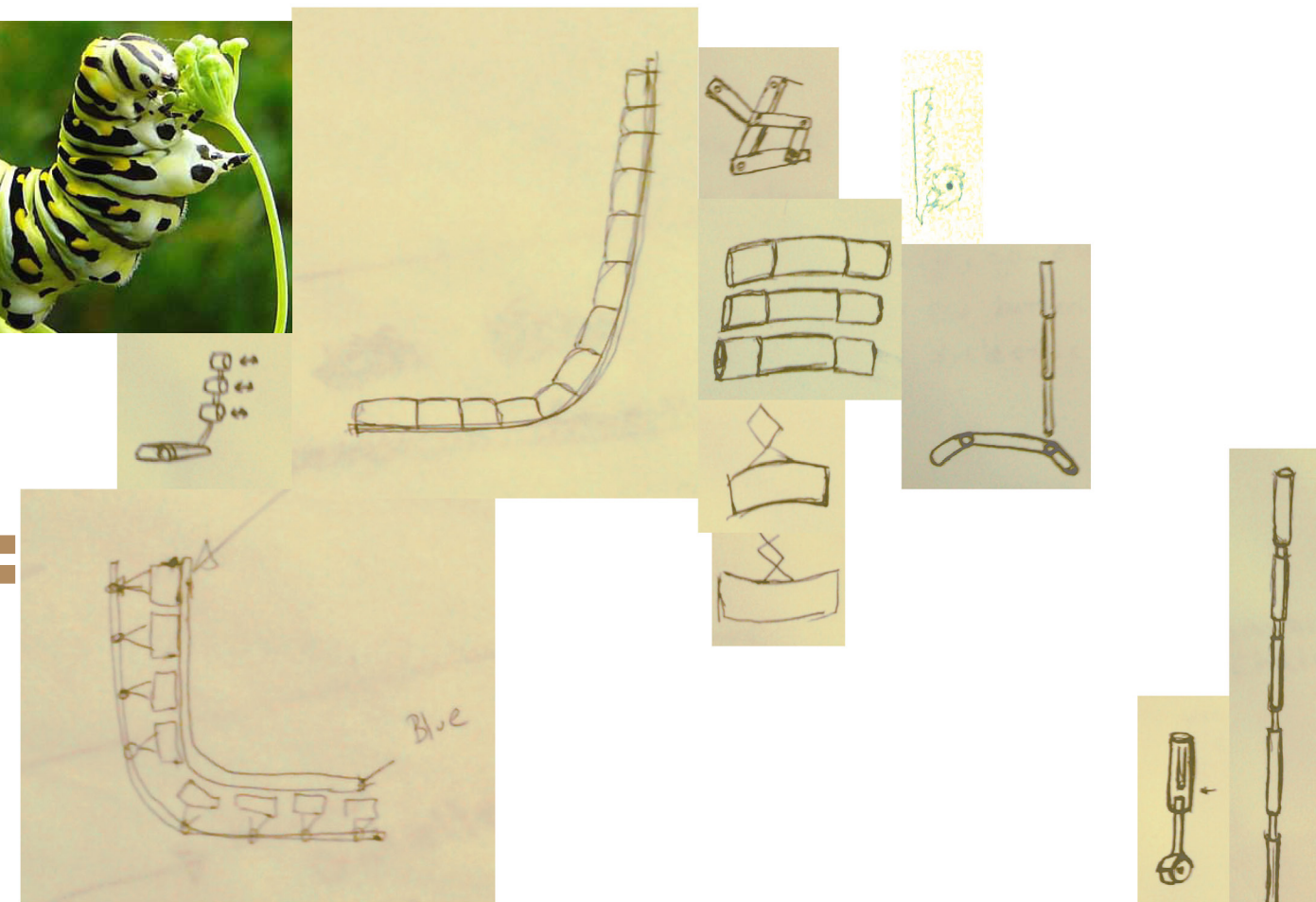


S M A R T E R G O N O M I C C H A I R

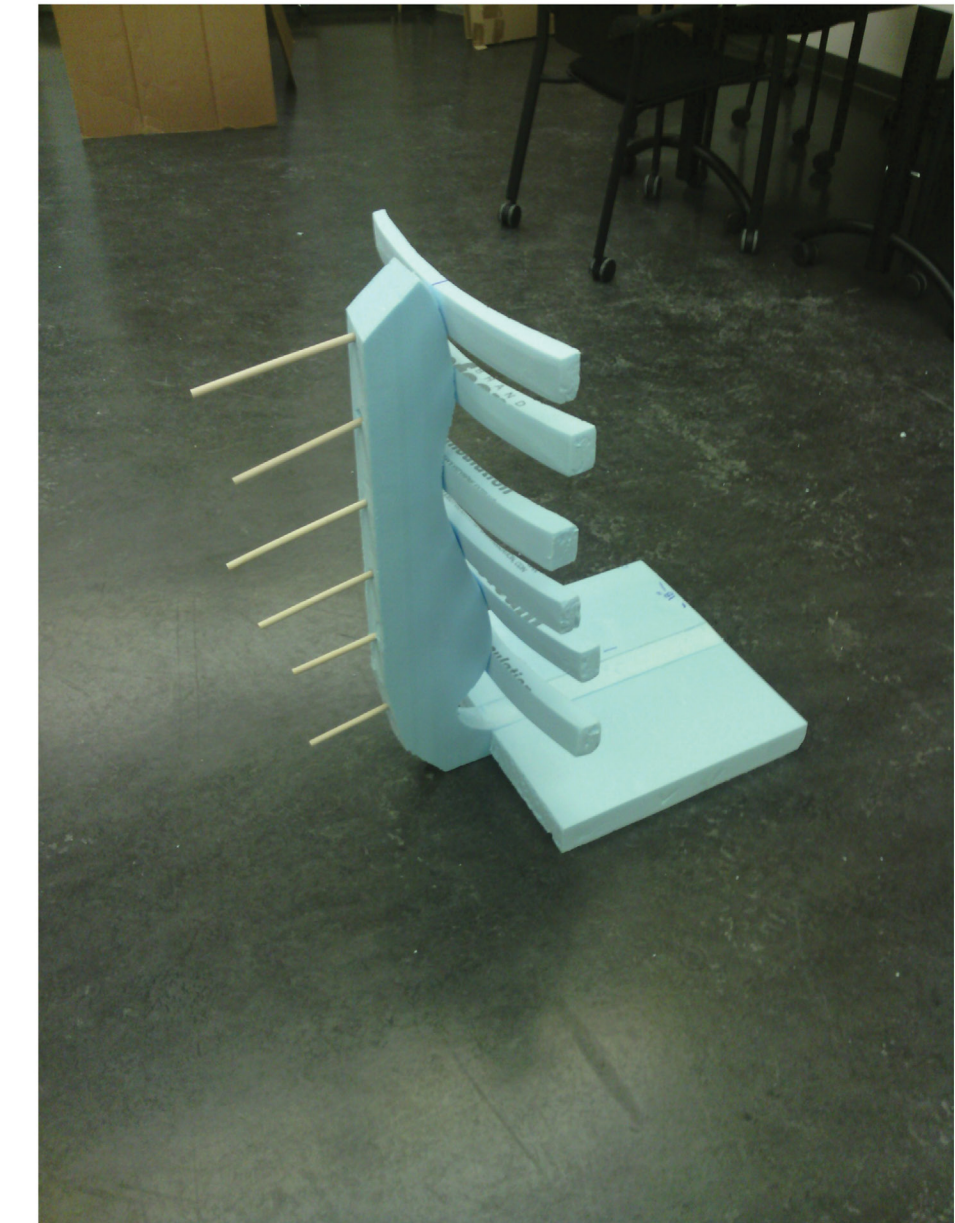
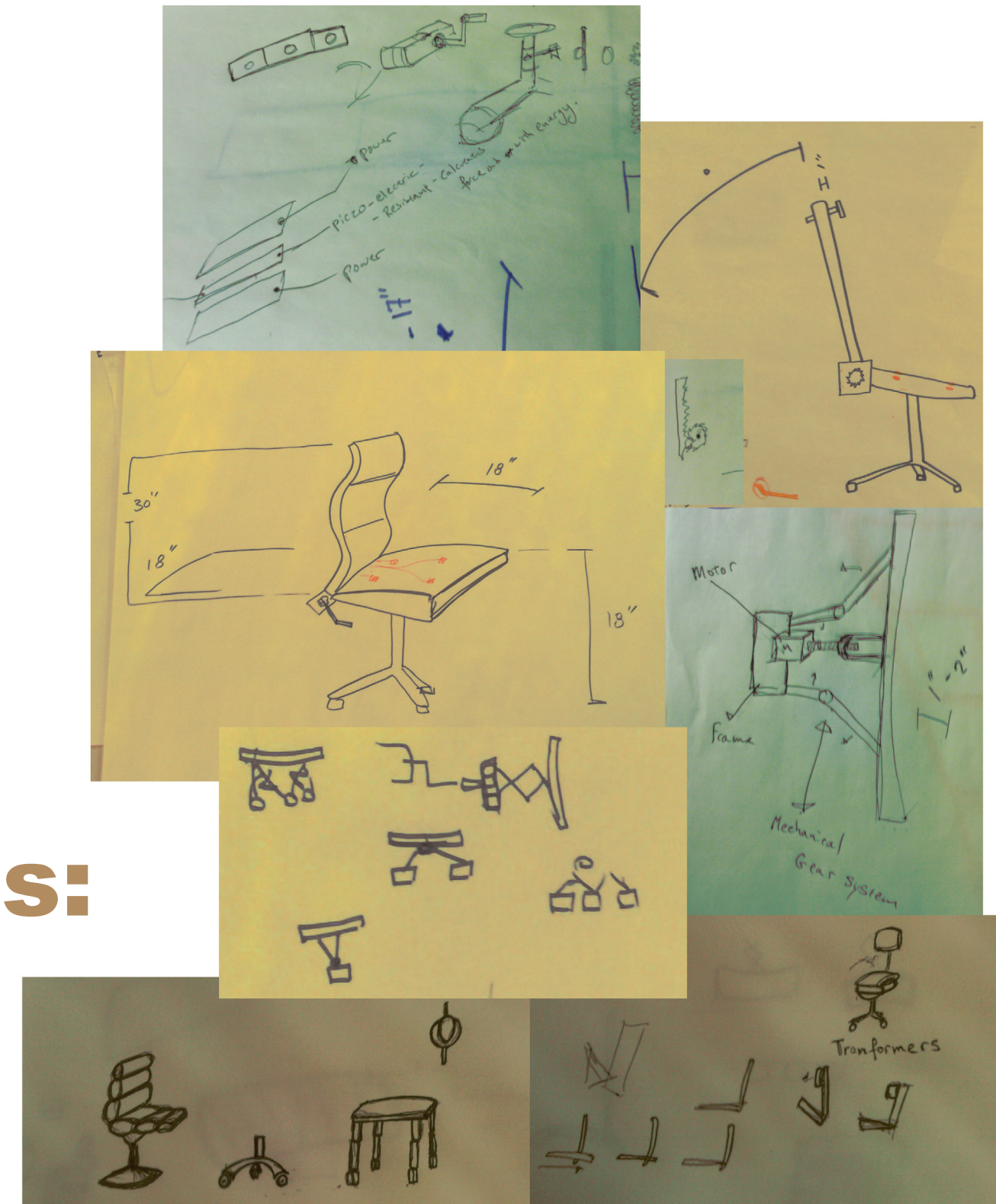




Development:



Standards:

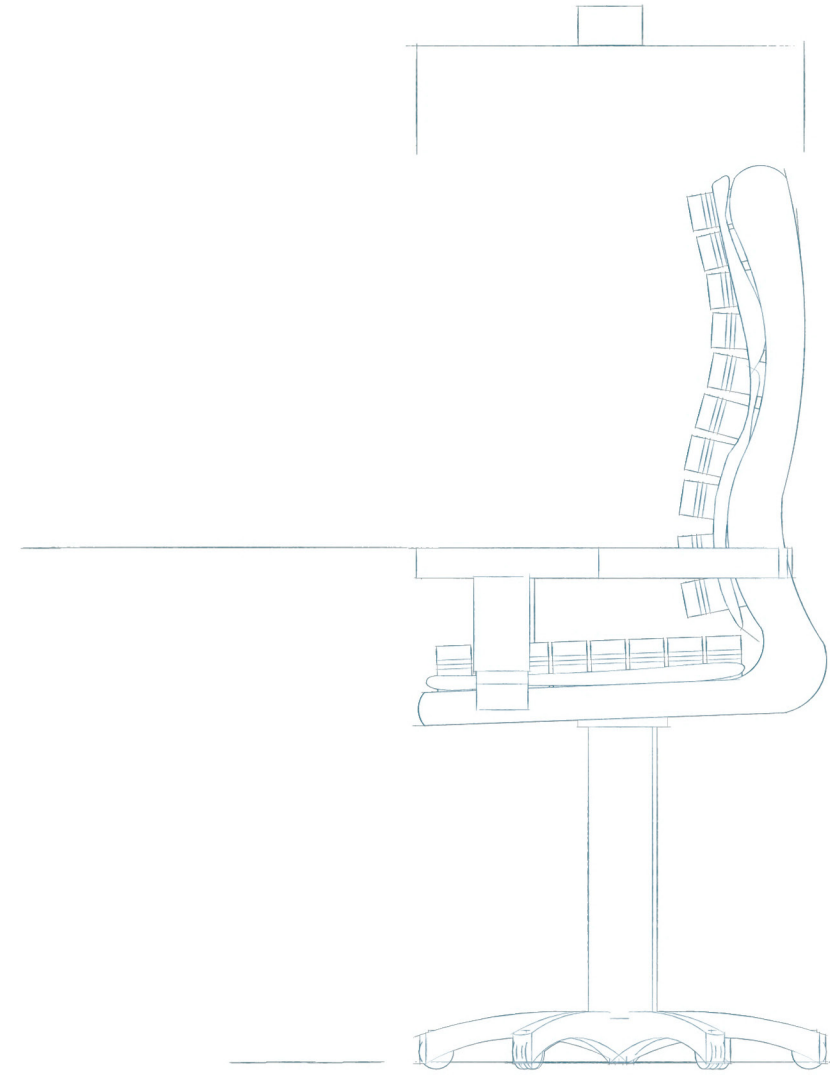
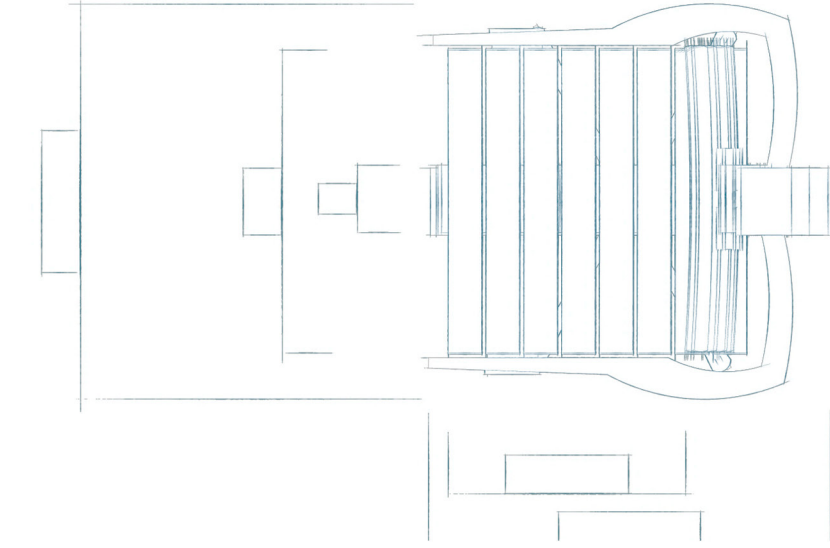
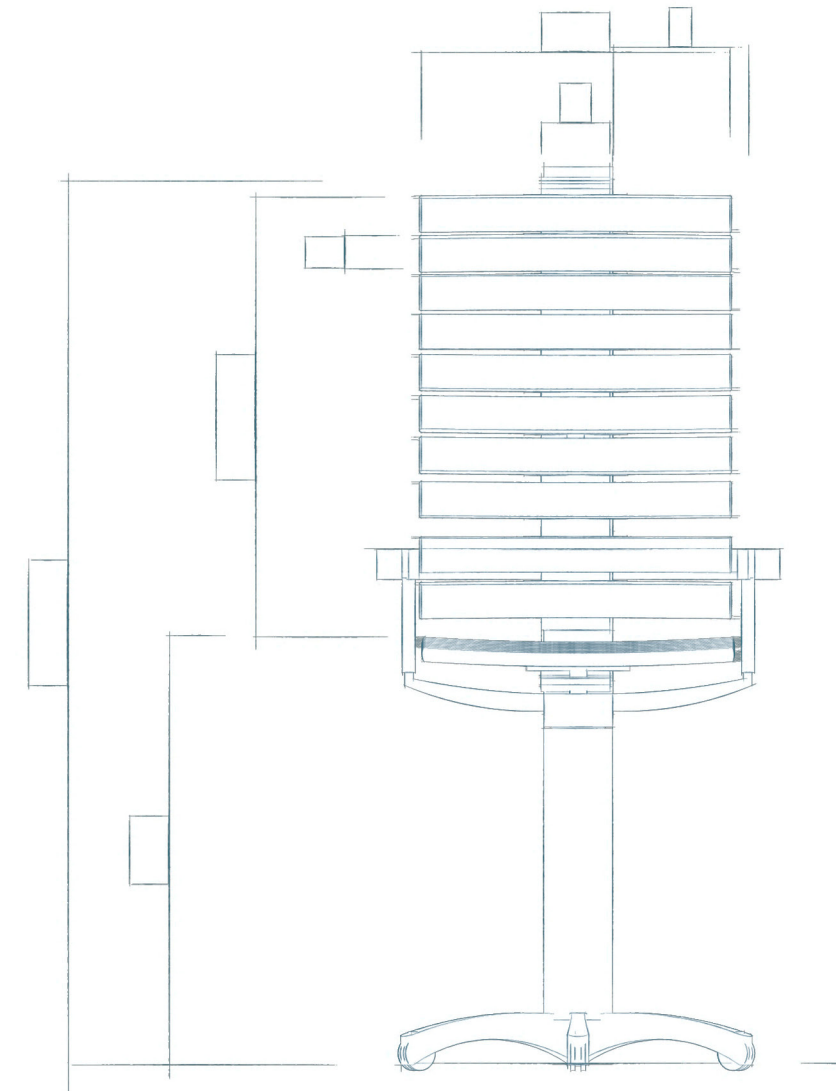
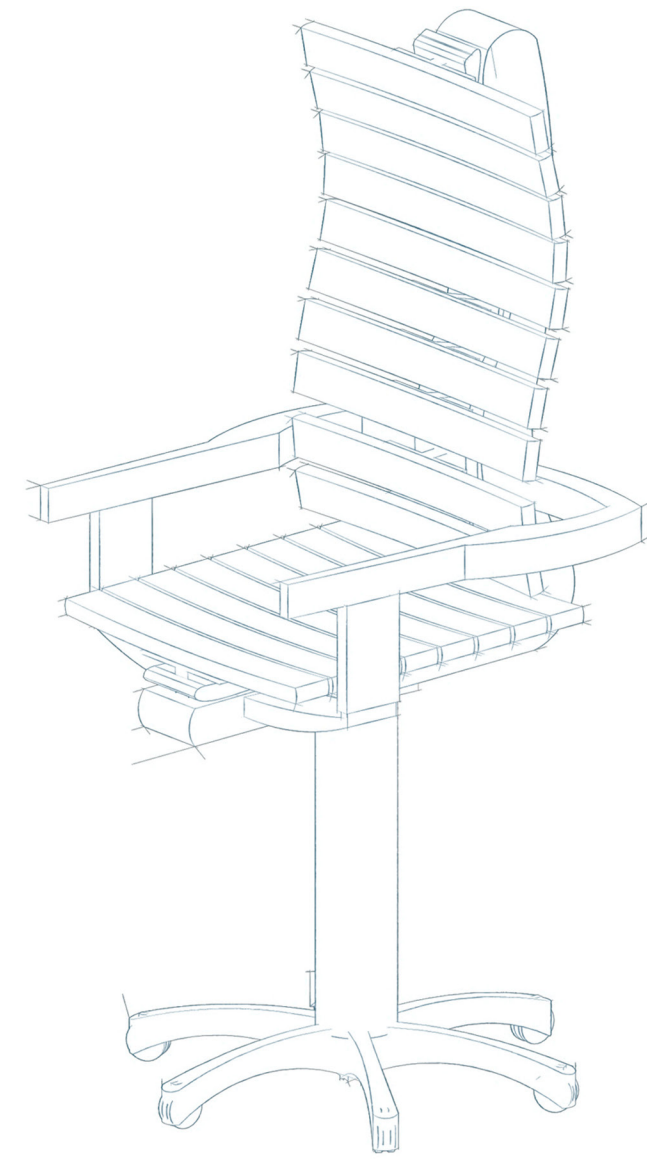


SMART ERGONOMIC CHAIR

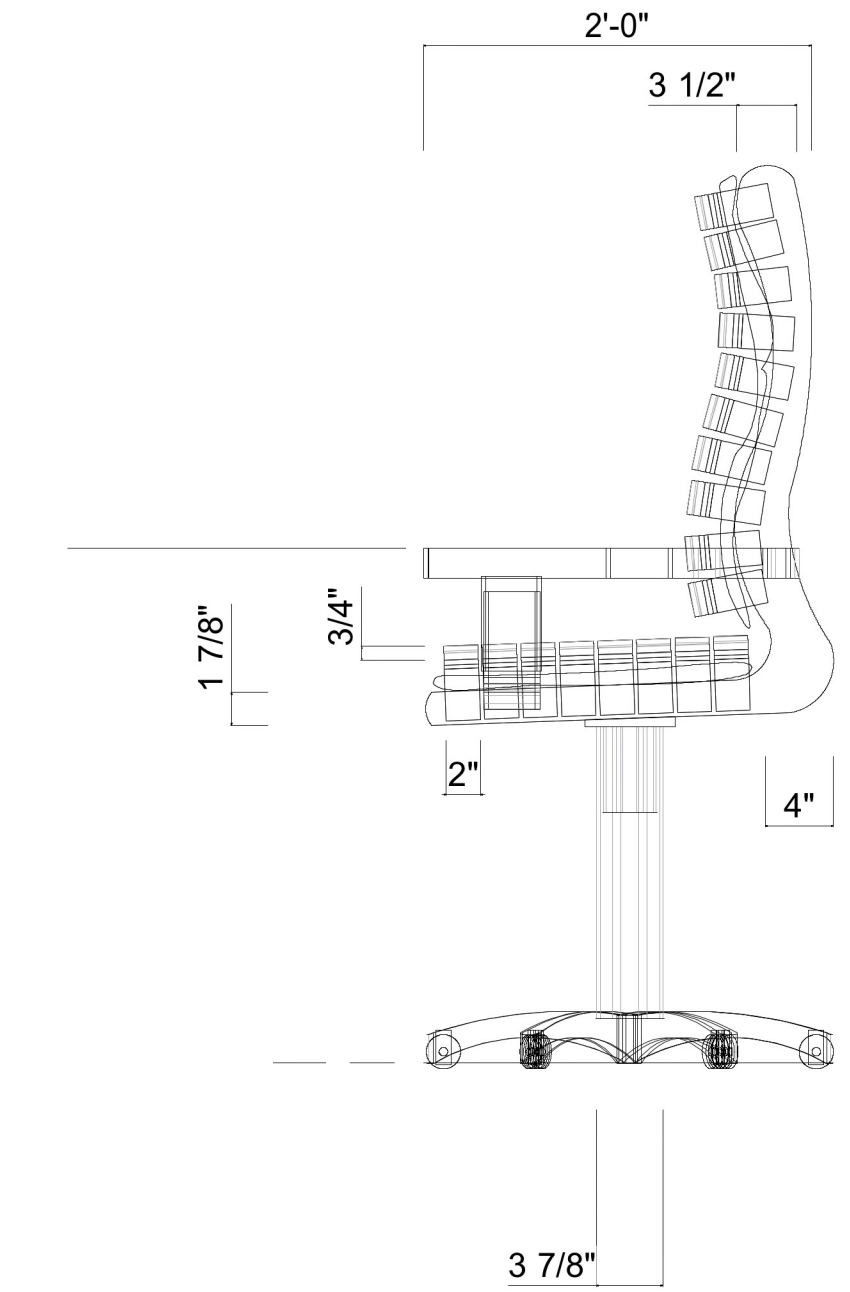
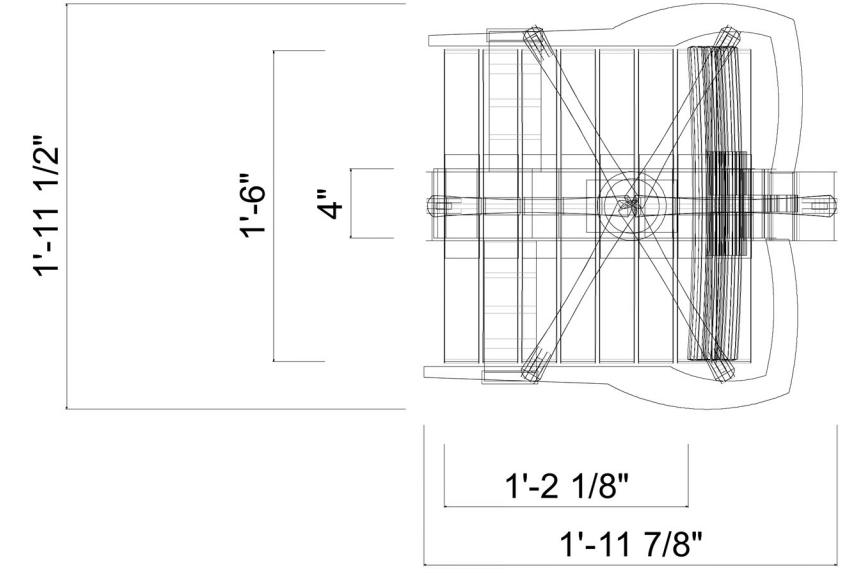
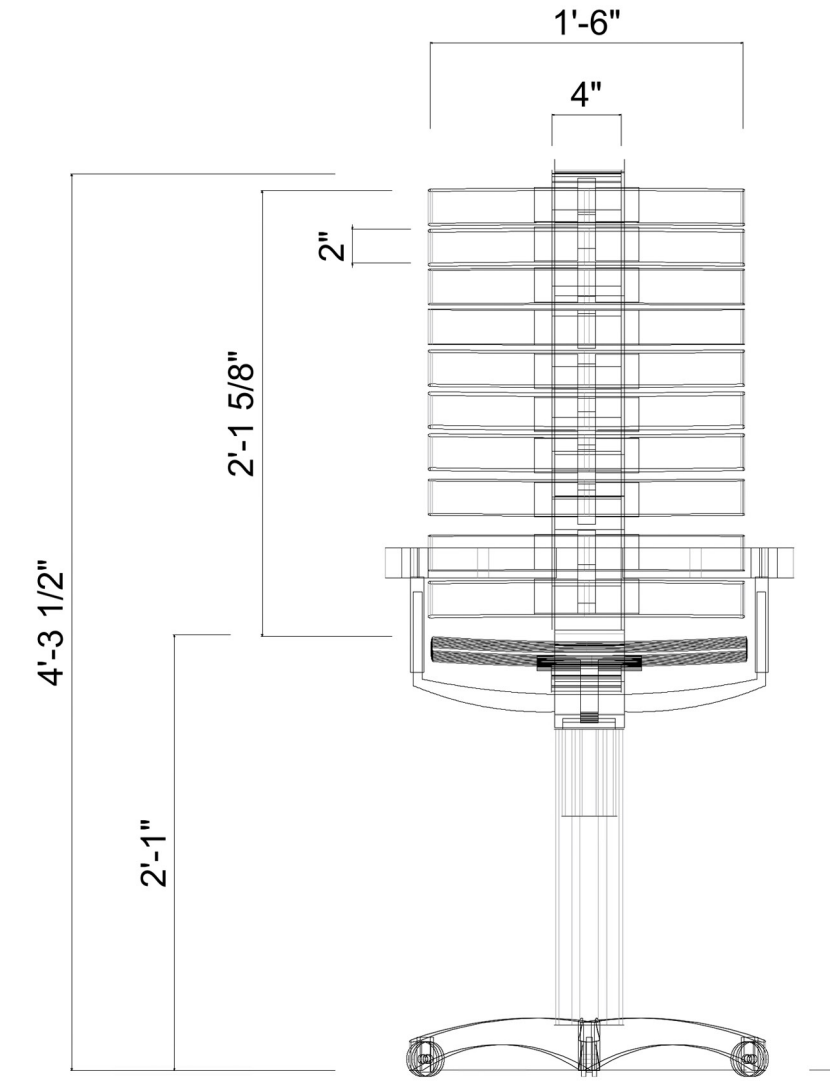
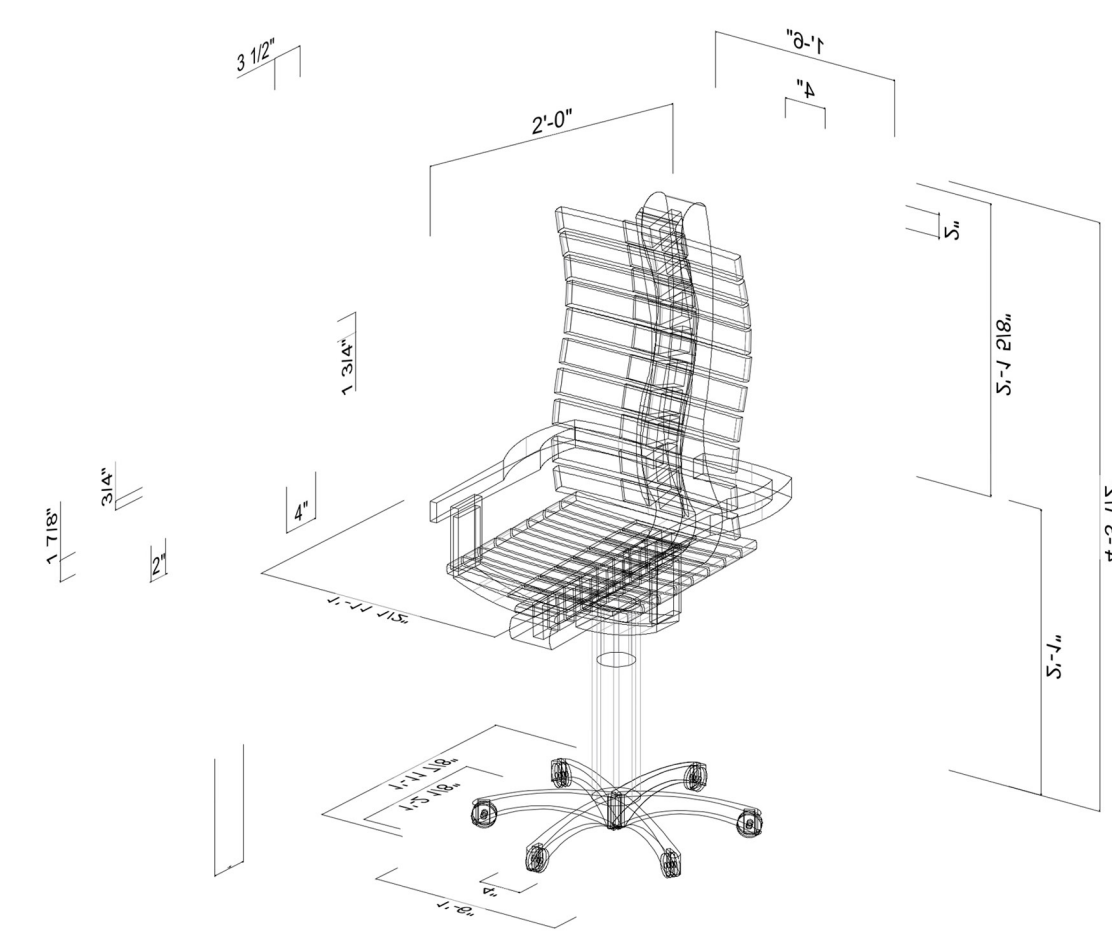


SMART ERGONOMIC CHAIR



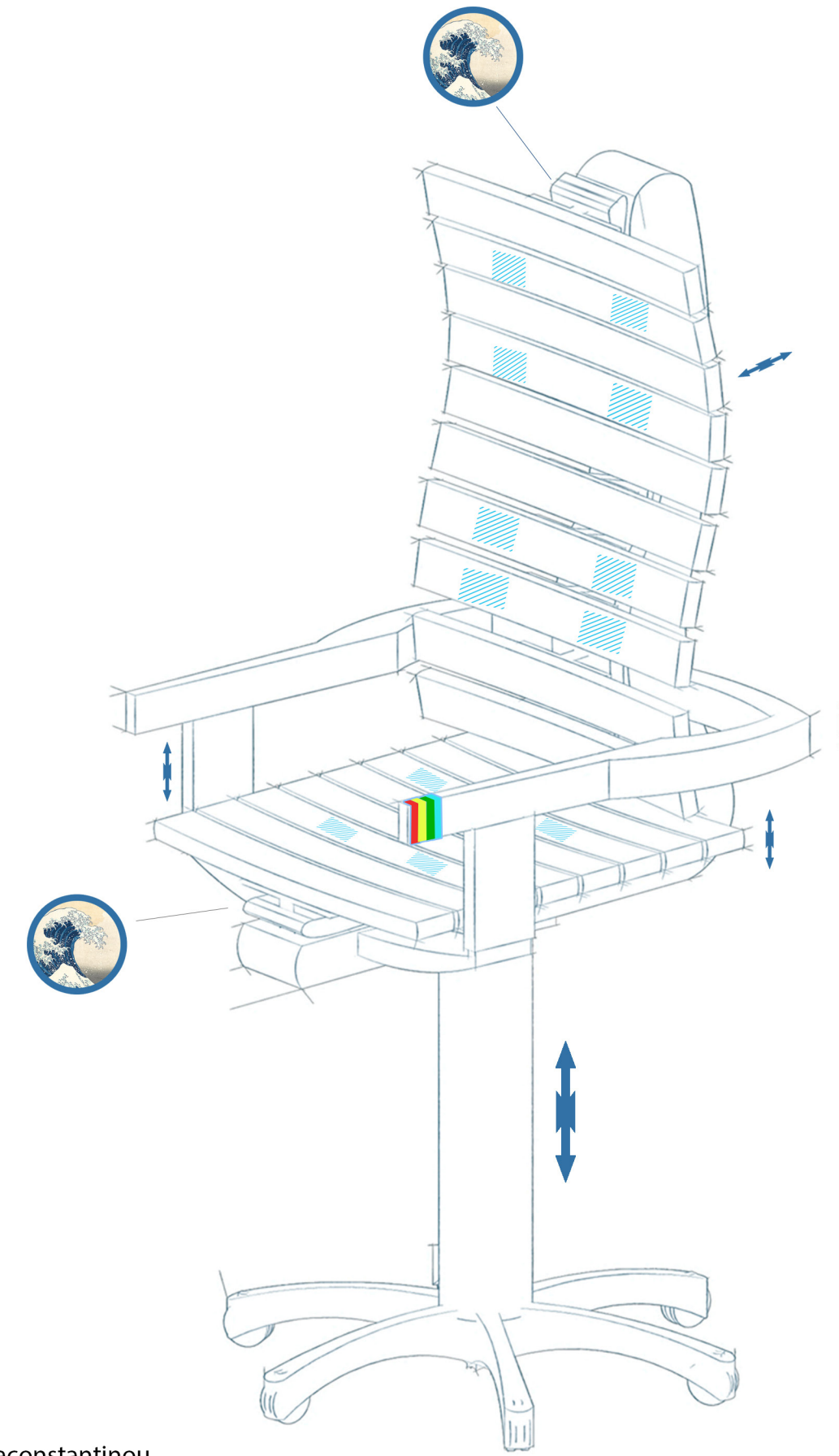


Designed by: Constantinos Papaconstantinou
 Title: Industrial Designer Marketer
 At District 3 Inovation Centre
 5471281
 2/5/2014
 Scale: 1 / 10.84



Designed by: Constantinos Papaconstantinou
 Title: Industrial Designer Marketer
 At District 3 Inovation Centre
 5471281
 2/5/2014
 Scale: 1 / 10.84

Ergonomic Chair's Functionality



Adjustable Componets.

LED Light system will acknowledge the users posture.
 RED: Wrong Position
 Blue: Chair is ON
 Green: Right Position
 Yellow: 30 minutes have past the user should stand and stretch.

Pressure sensitive Switches
 Piezo electric fibers
 Piezo Resistant Fibers
 Conductive thread

Wave technology integration:

The seat and back spine of the chair will be developed with a layer of water.

The layer of water will play a similar role to the water found inside a water bed.. This will allow the chair to properly calibrate along the spine of the individual.

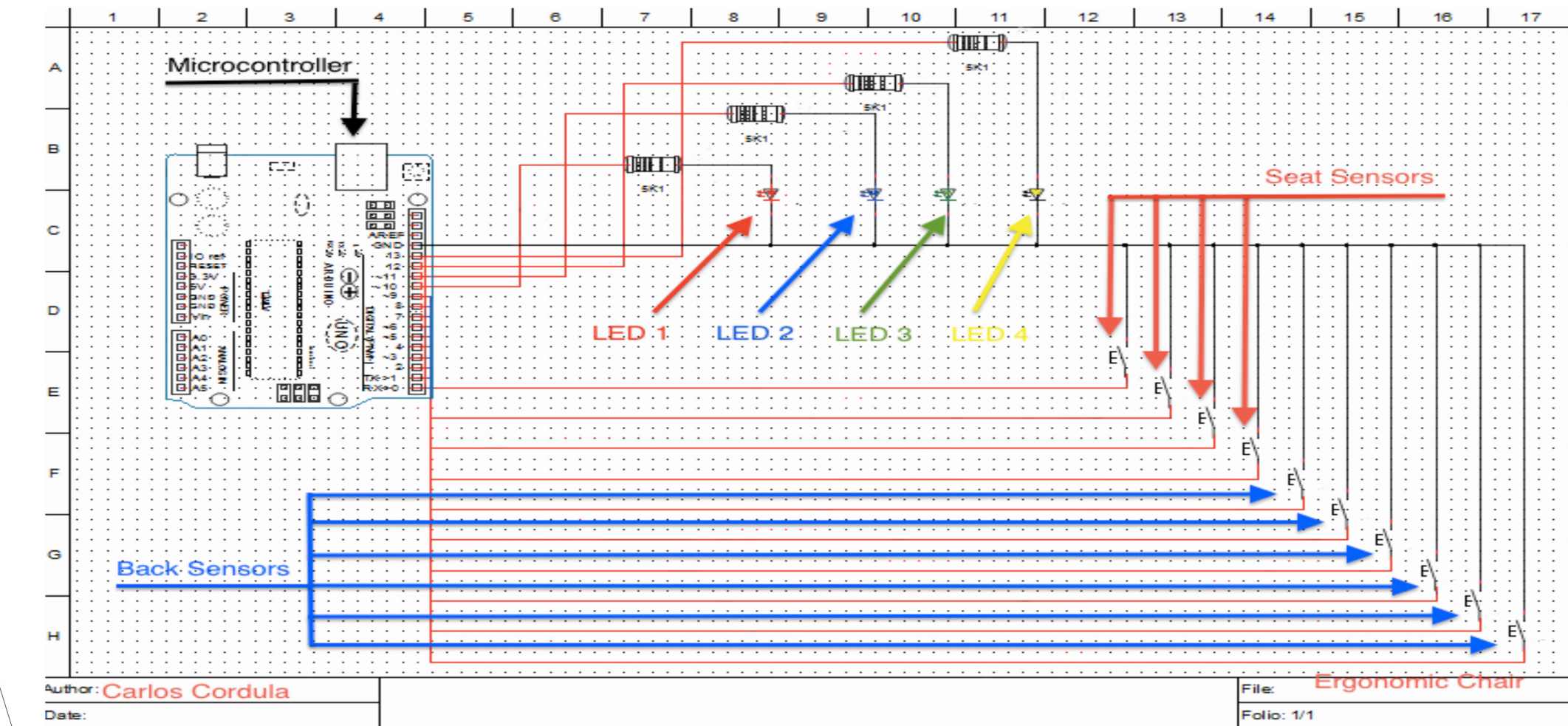
The oceans wave can move city's and in this case I see no problem with a wave shaping the position of an individuals back.



Developed by: Carlos Cordula
 Title: Electrical Engineer
 Designed by: Constantinos Papaconstantinou
 Title: Industrial Designer / Marketer
 At District 3 Inovation Centre
 2/5/2014

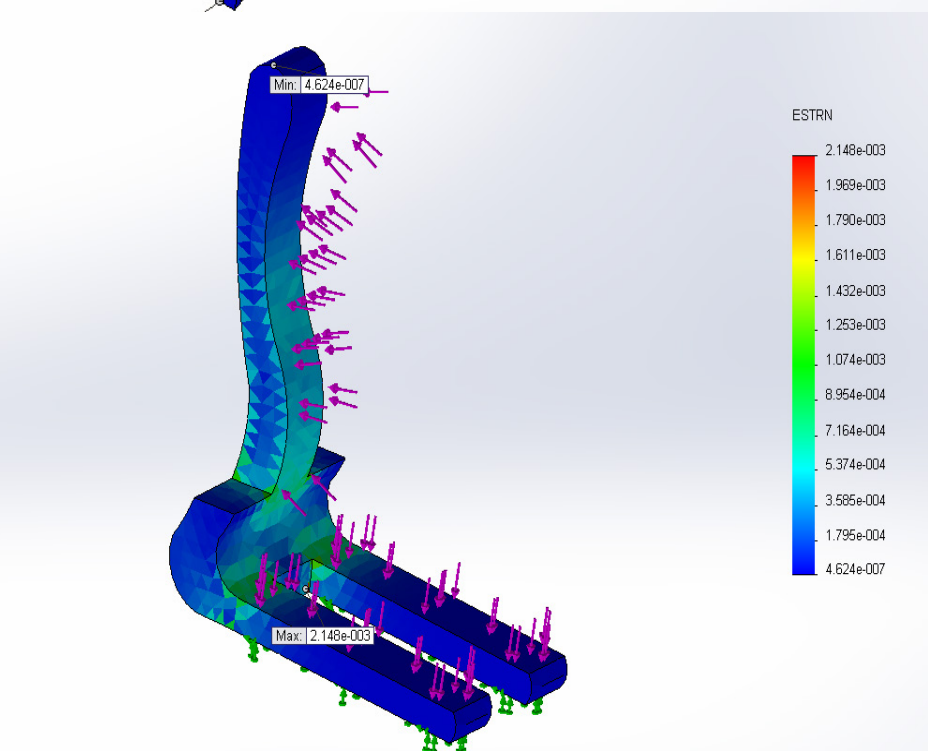
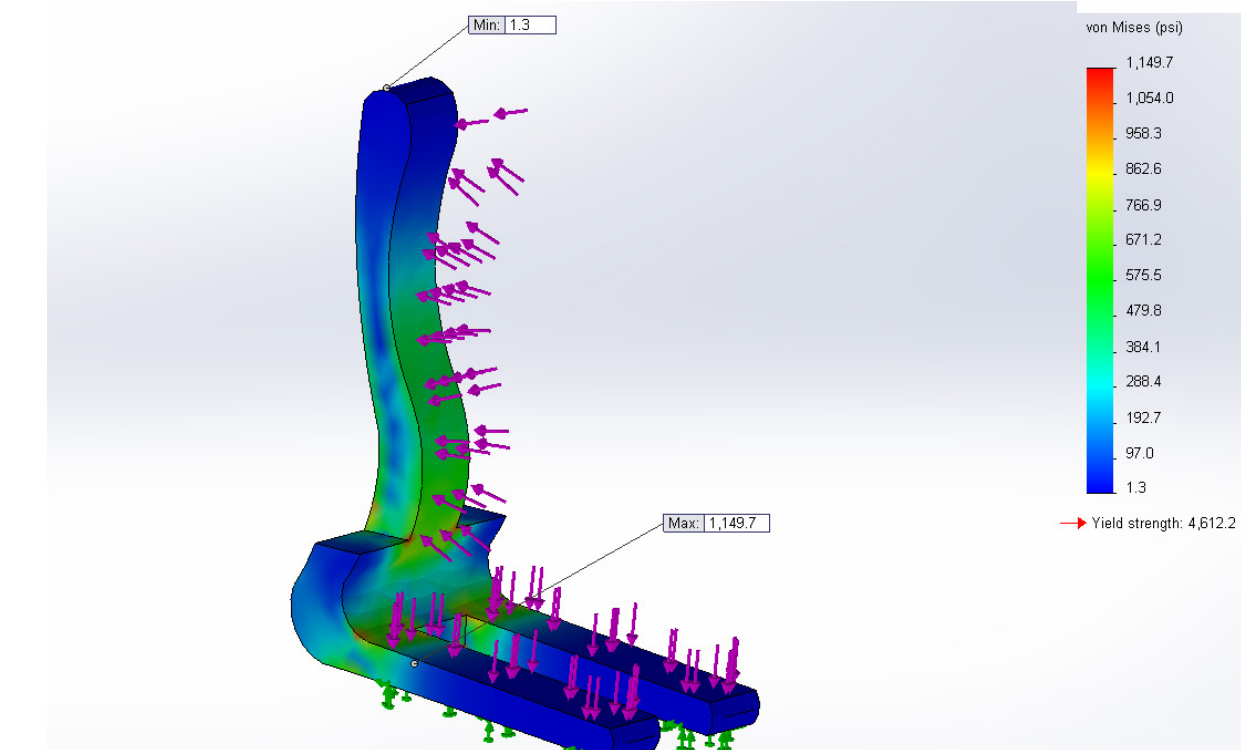
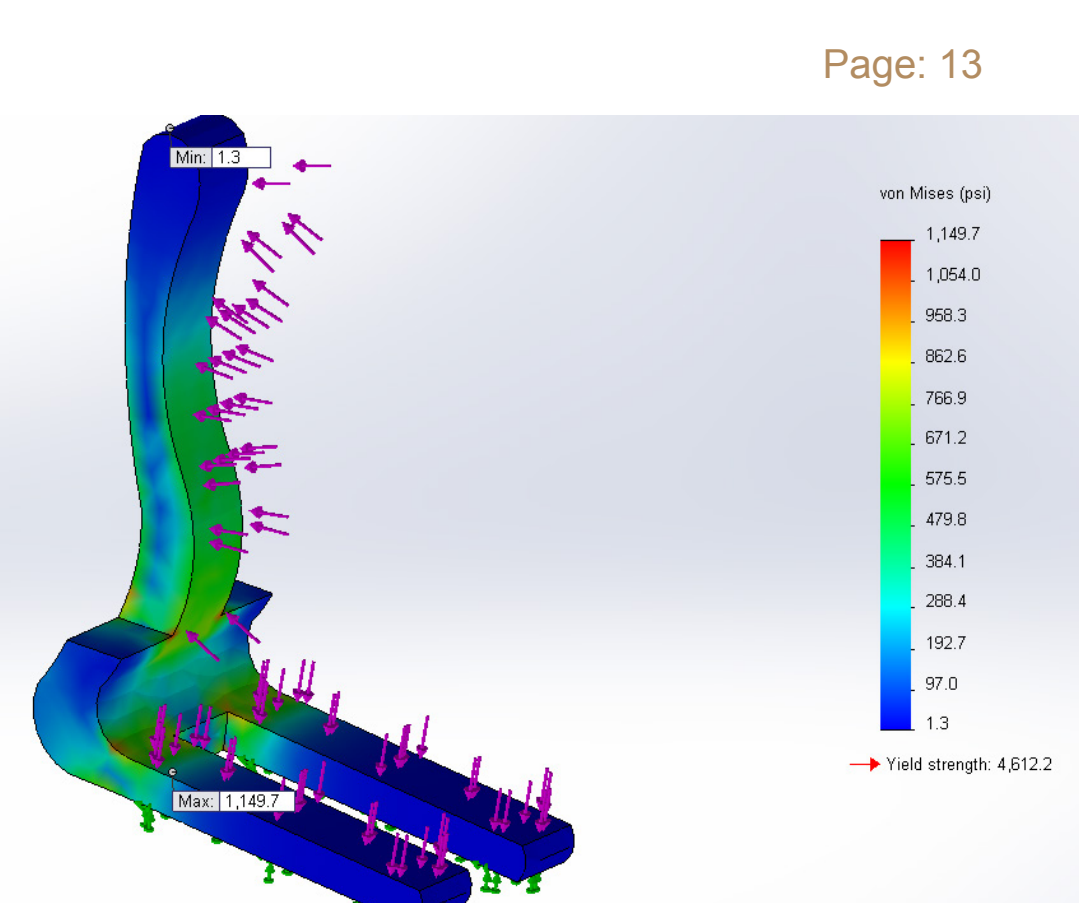
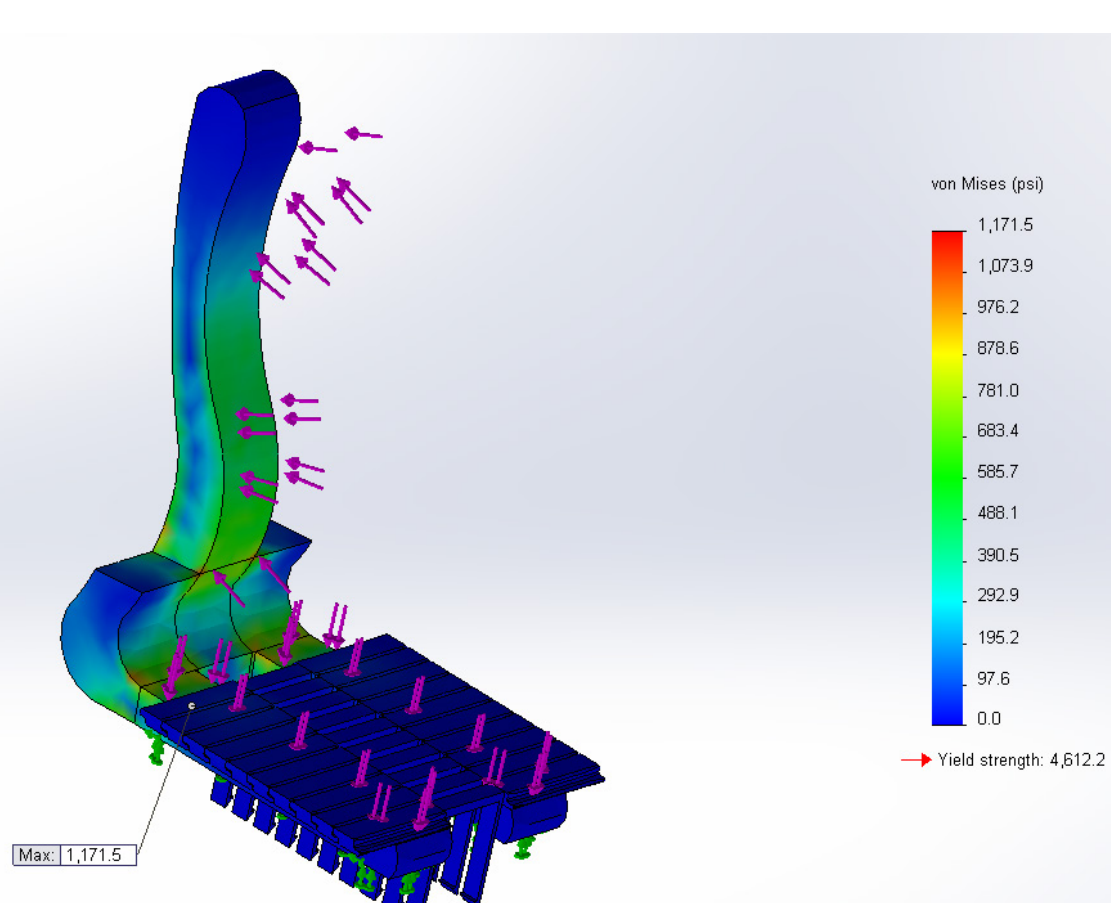
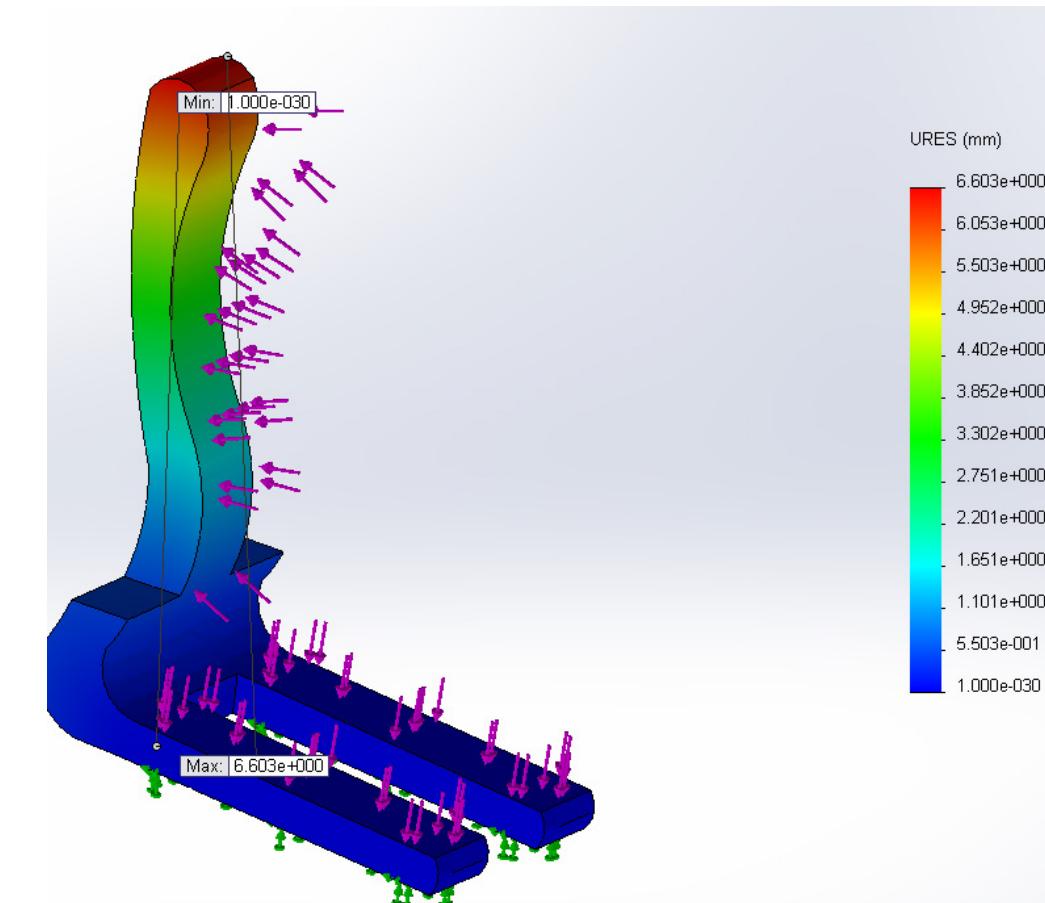
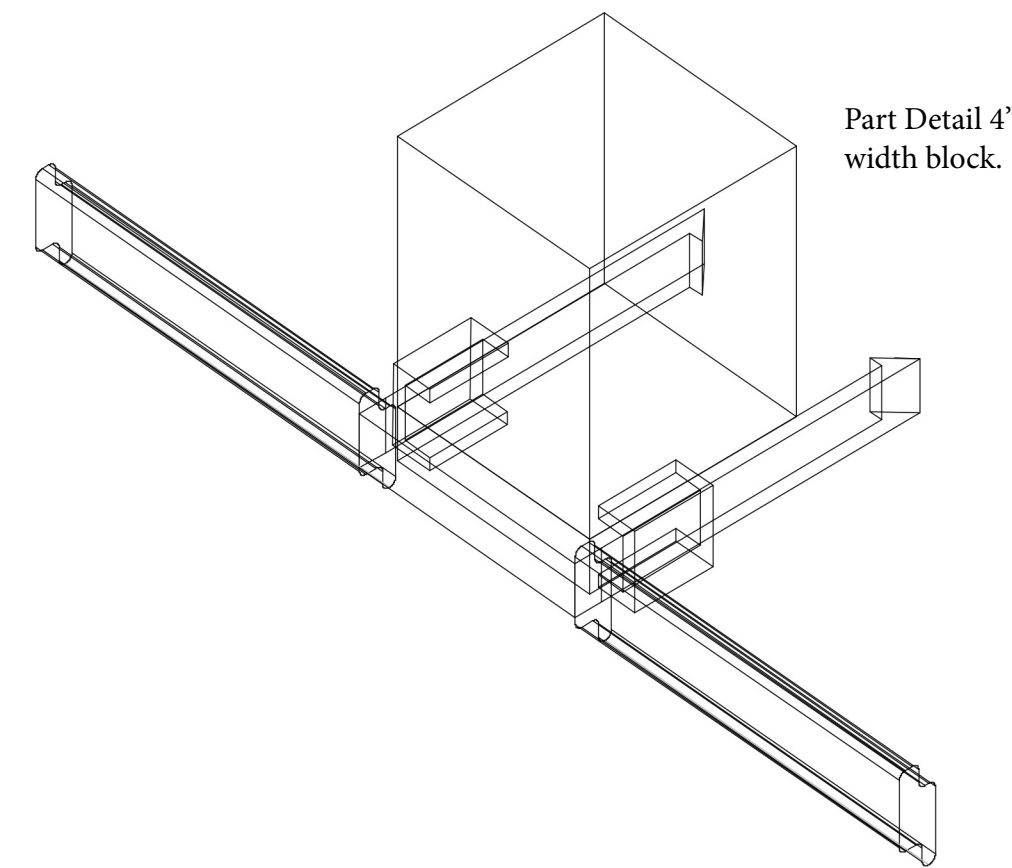
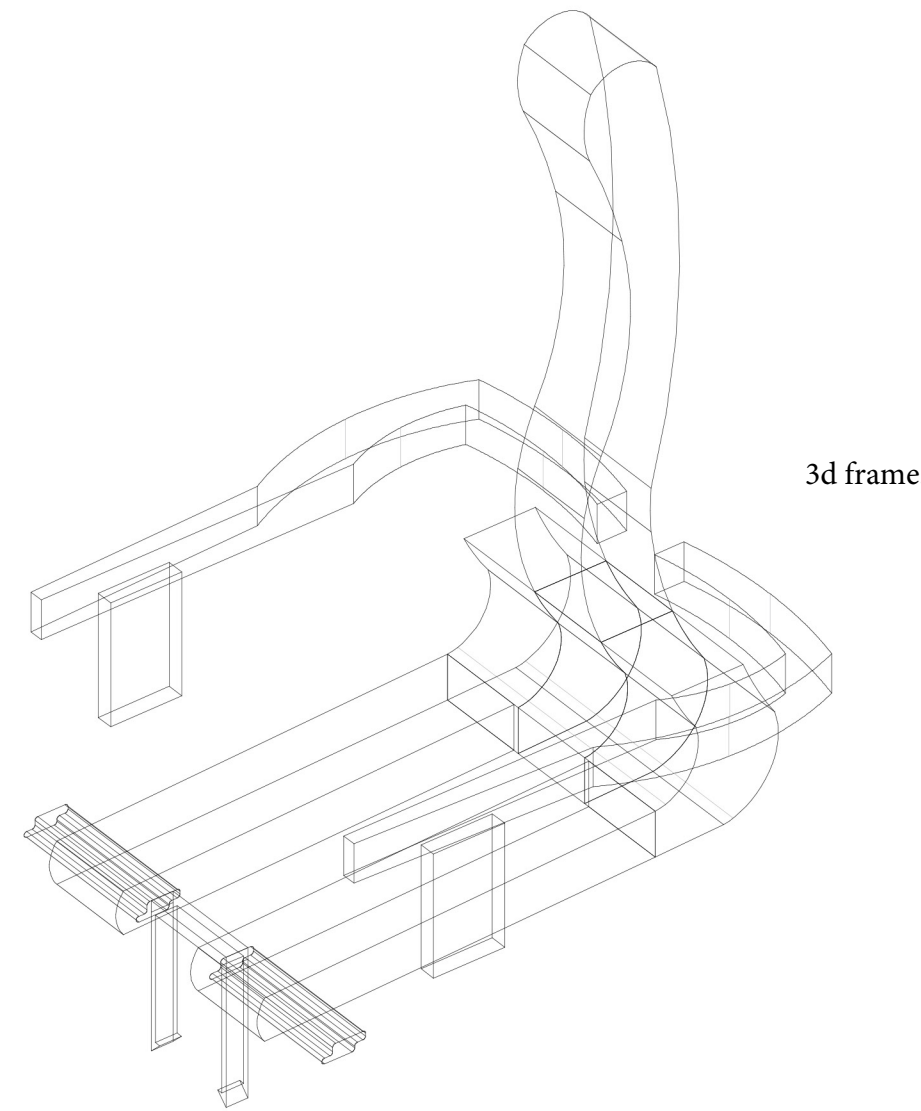
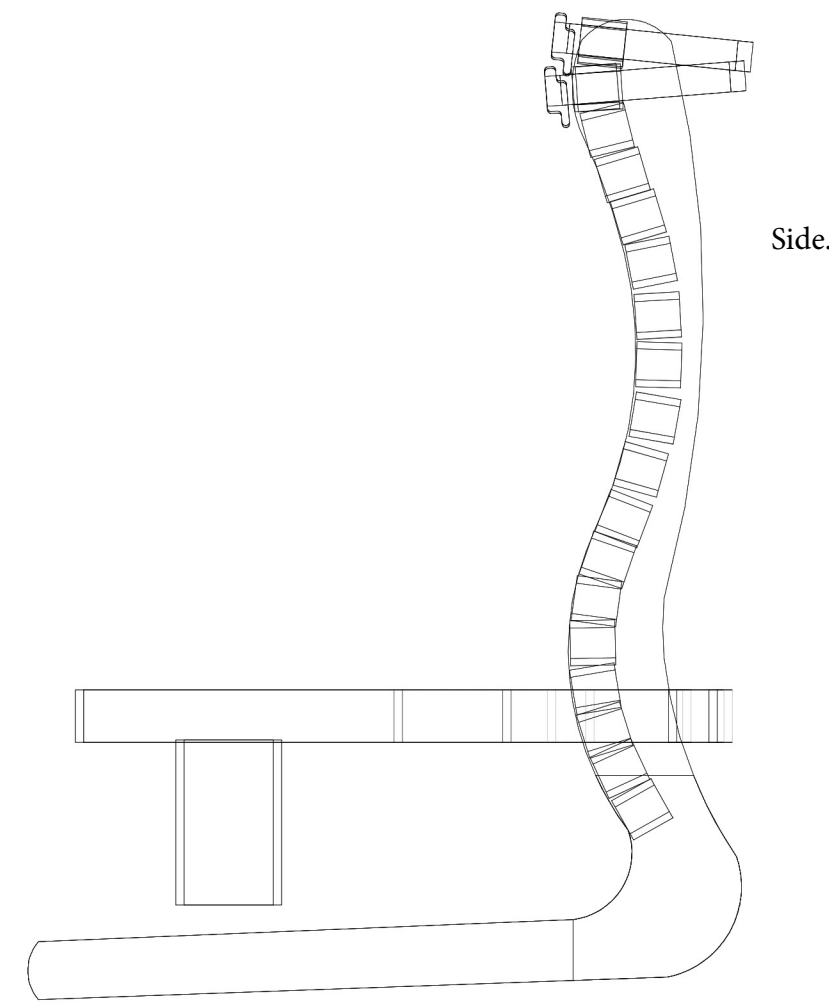


Ergonomic Chair – Circuit Design



LED 1 – Chair is ON.
LED 2 – Wrong position.
LED 3 – Right position.
LED 4 – User should stand for a while (30 minutes after the chair is ON).

Developed by: Carlos Cordula
 Title: Electrical Engineer
 Designed by: Constantinos Papaconstantinou
 Title: Industrial Designer / Marketer
 At District 3 Inovation Centre
 2/5/2014



Durability tests:
 Normal Plywood,
 ABS,
 Steel,
 Plastics,
 Birch
 more.



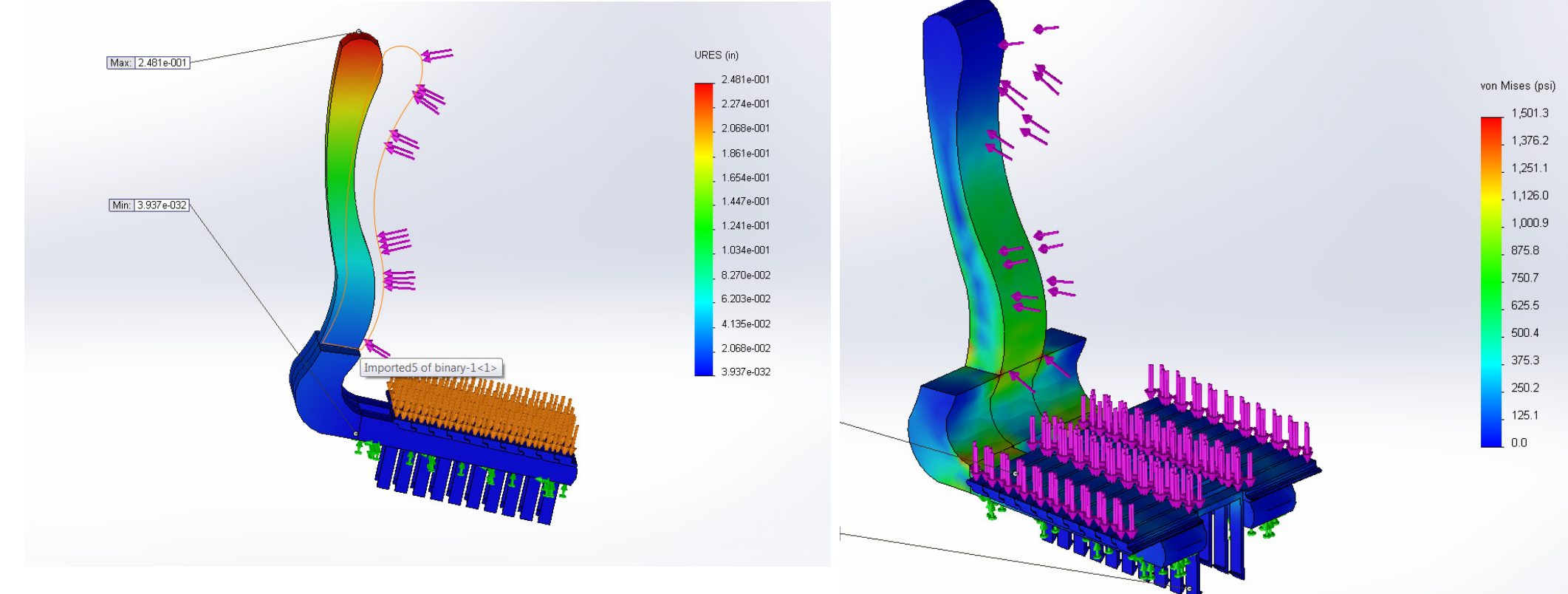
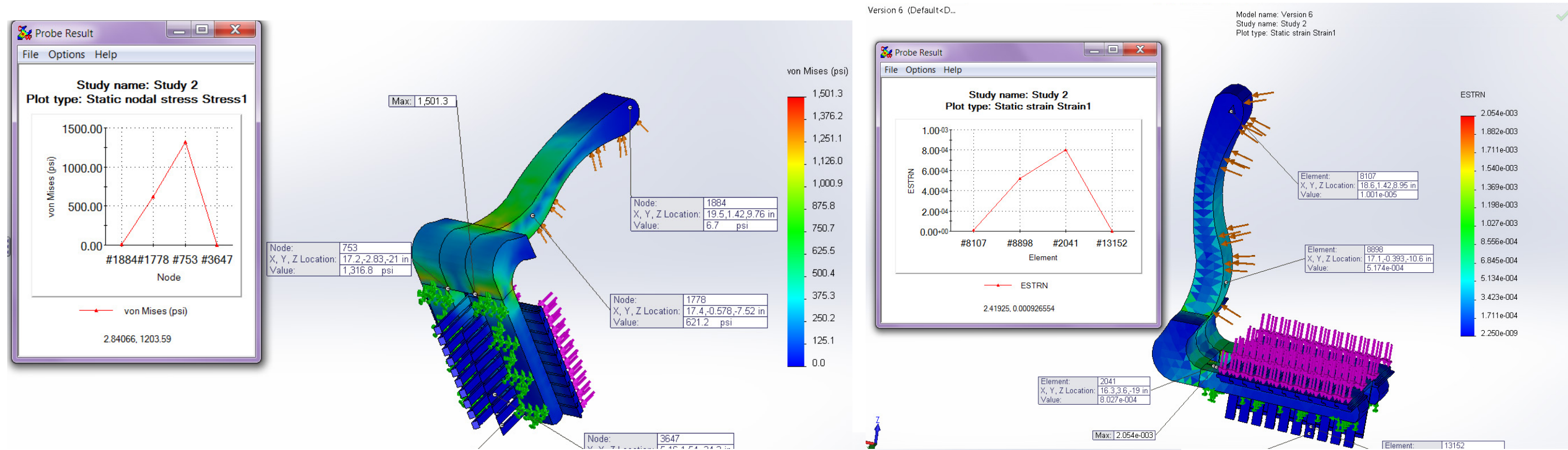
SMART ERGONOMIC CHAIR

DISTRICT 3
 INNOVATION CENTER
 CONCORDIA UNIVERSITY

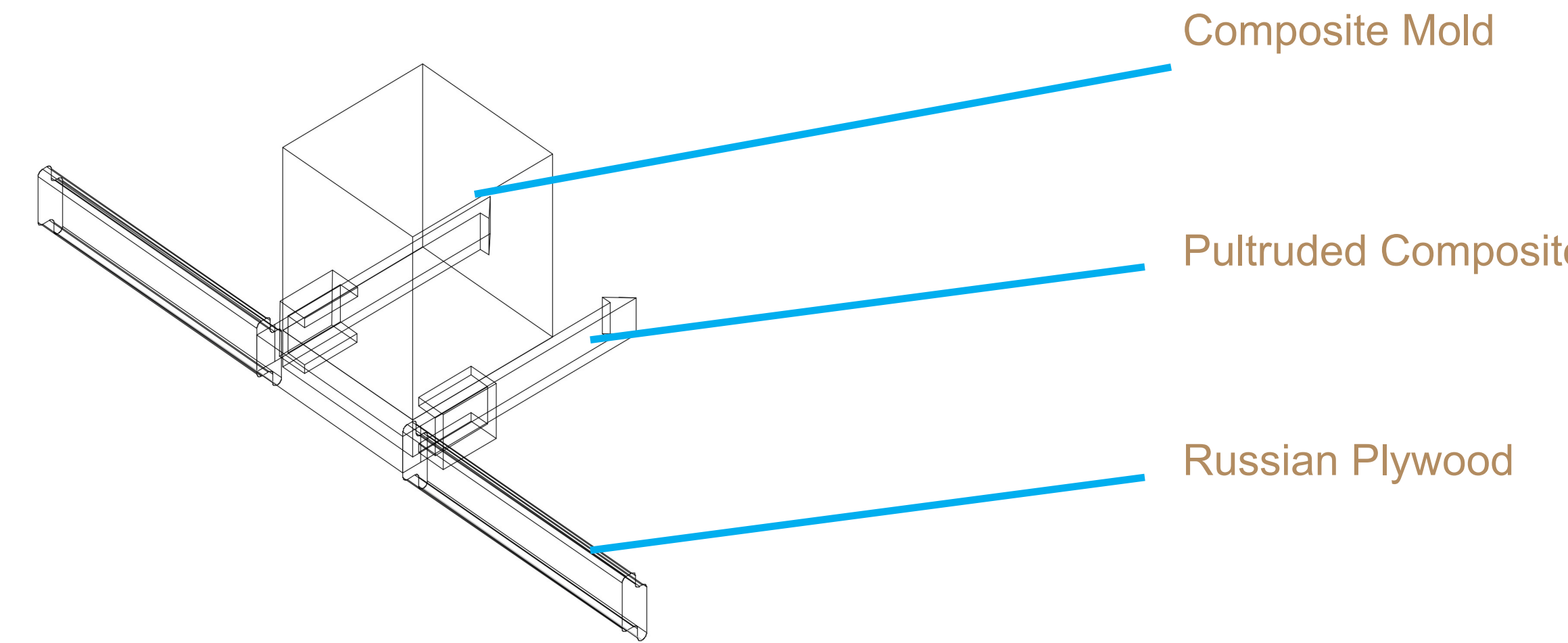


SMART ERGONOMIC CHAIR

DISTRICT 3
 INNOVATION CENTER
 CONCORDIA UNIVERSITY



Durability tests:
Normal Plywood,
ABS,
Steel,
Plastics,
Birch
more.



PART DEVELOPMENT.
Individual sections for an
individual support system.

Parts 3D Printing

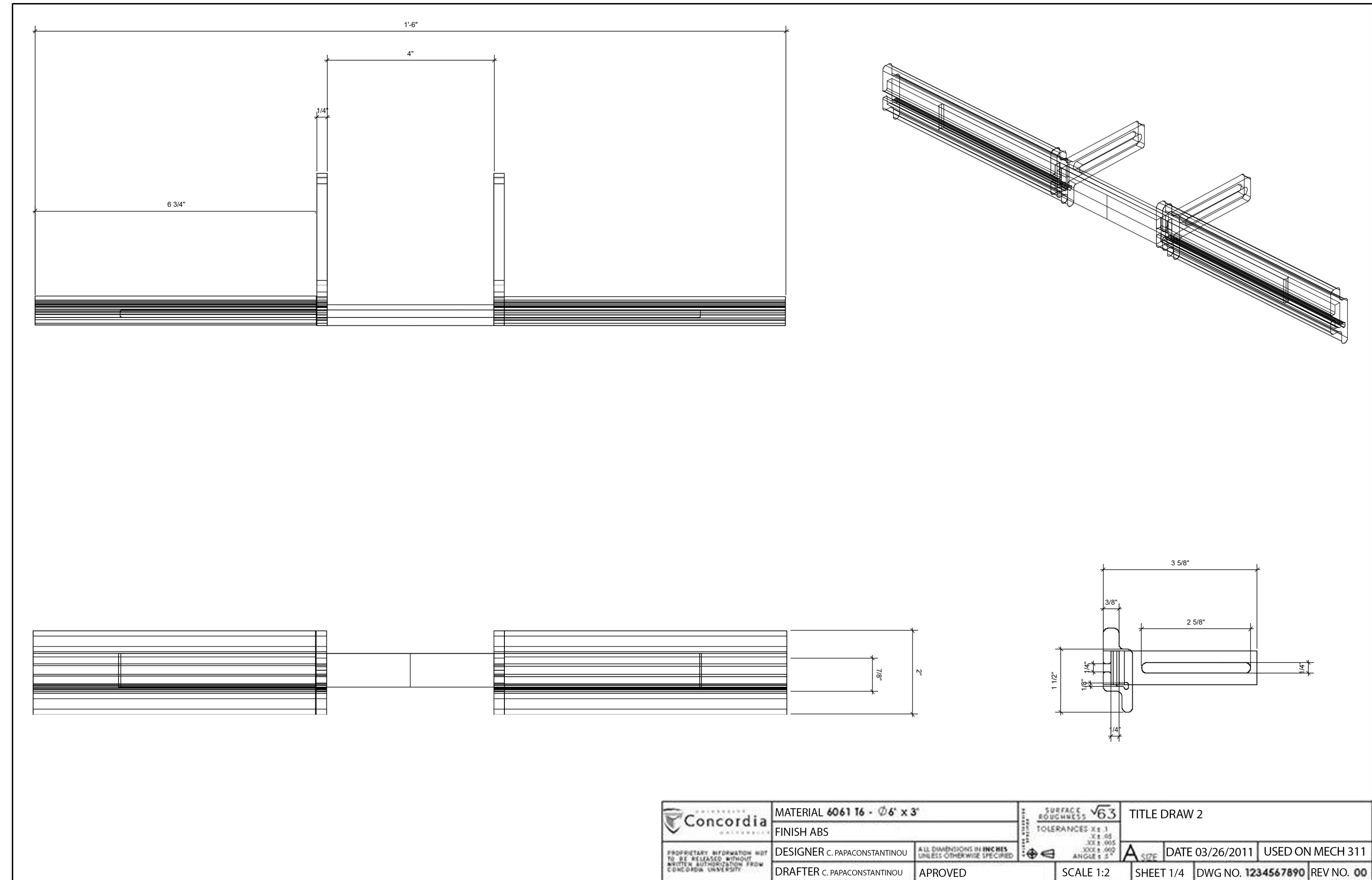
ABS Prototype

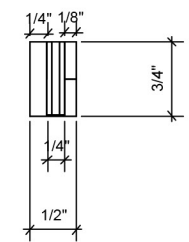
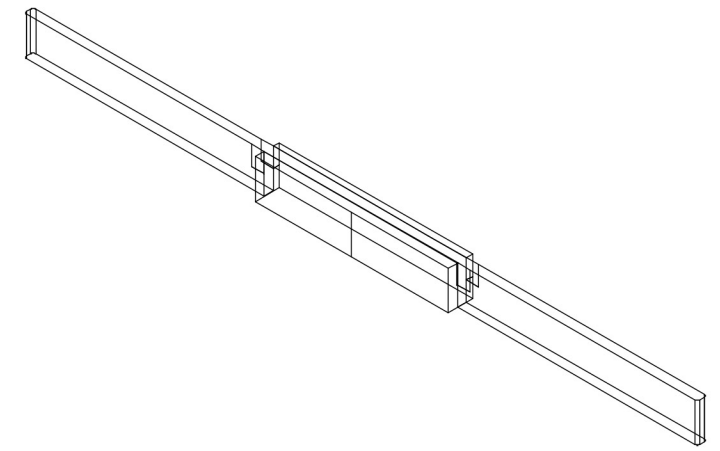
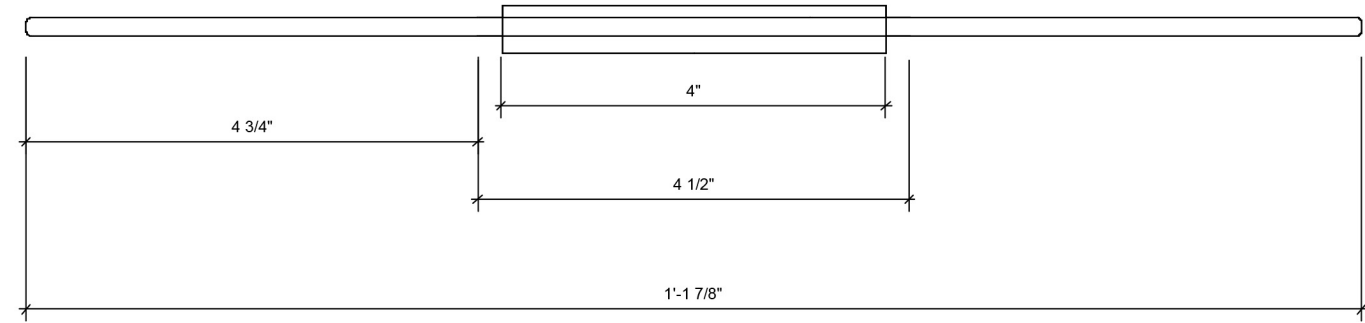
Parts designed to intergrated electronics.

March 2014

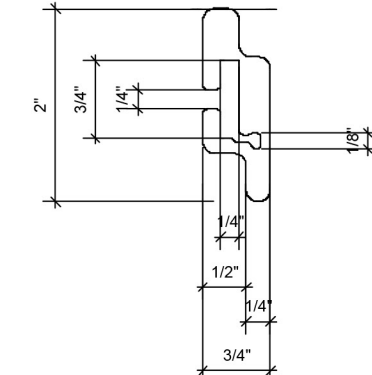
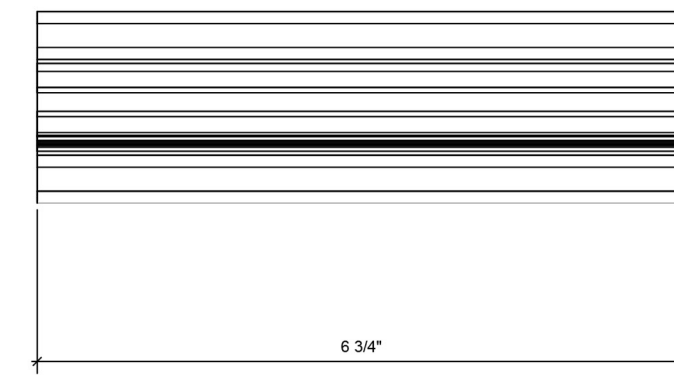
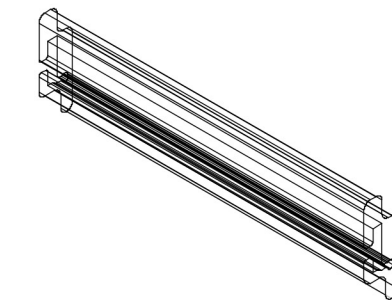


SMART ERGONOMIC CHAIR

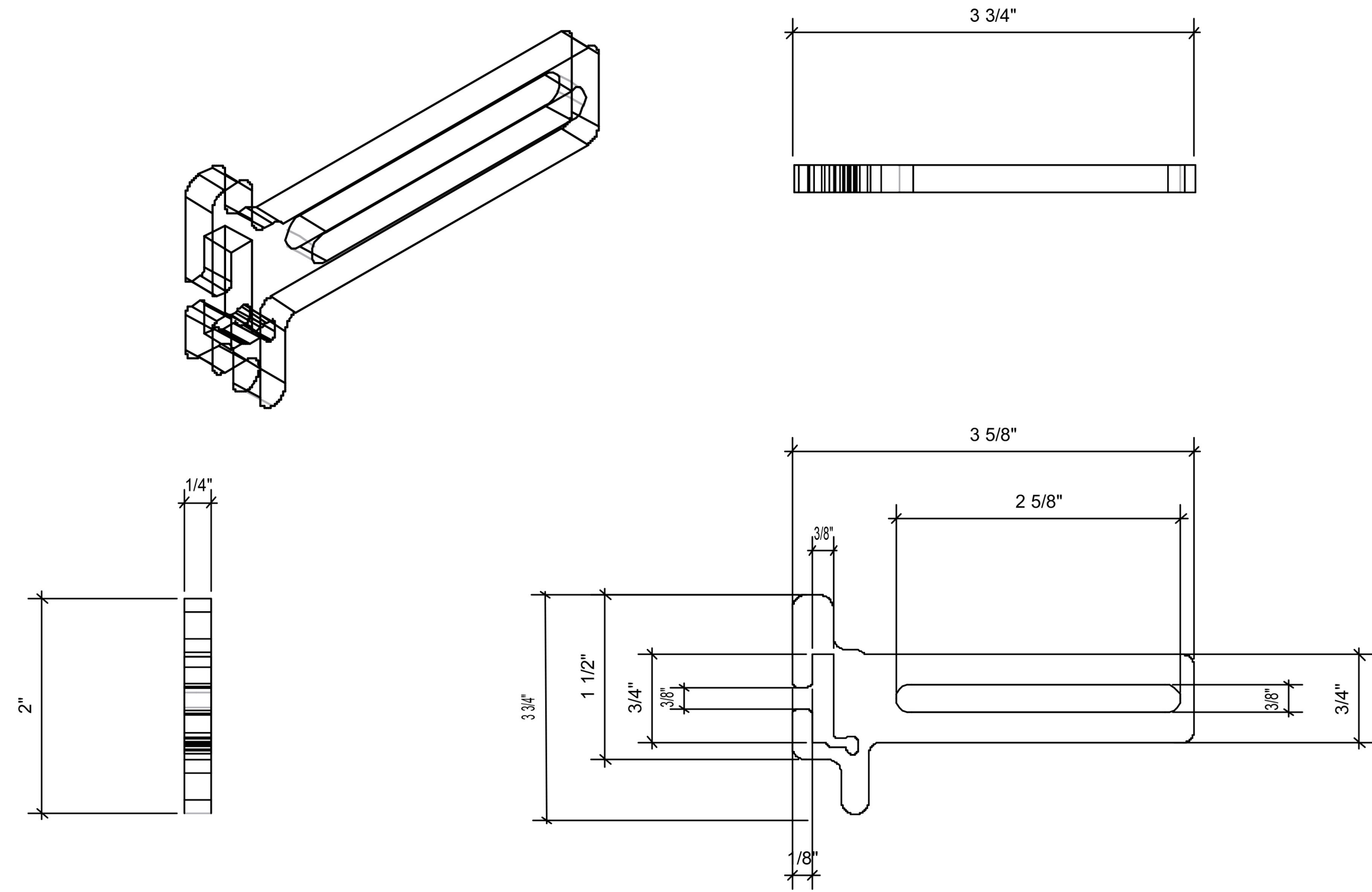




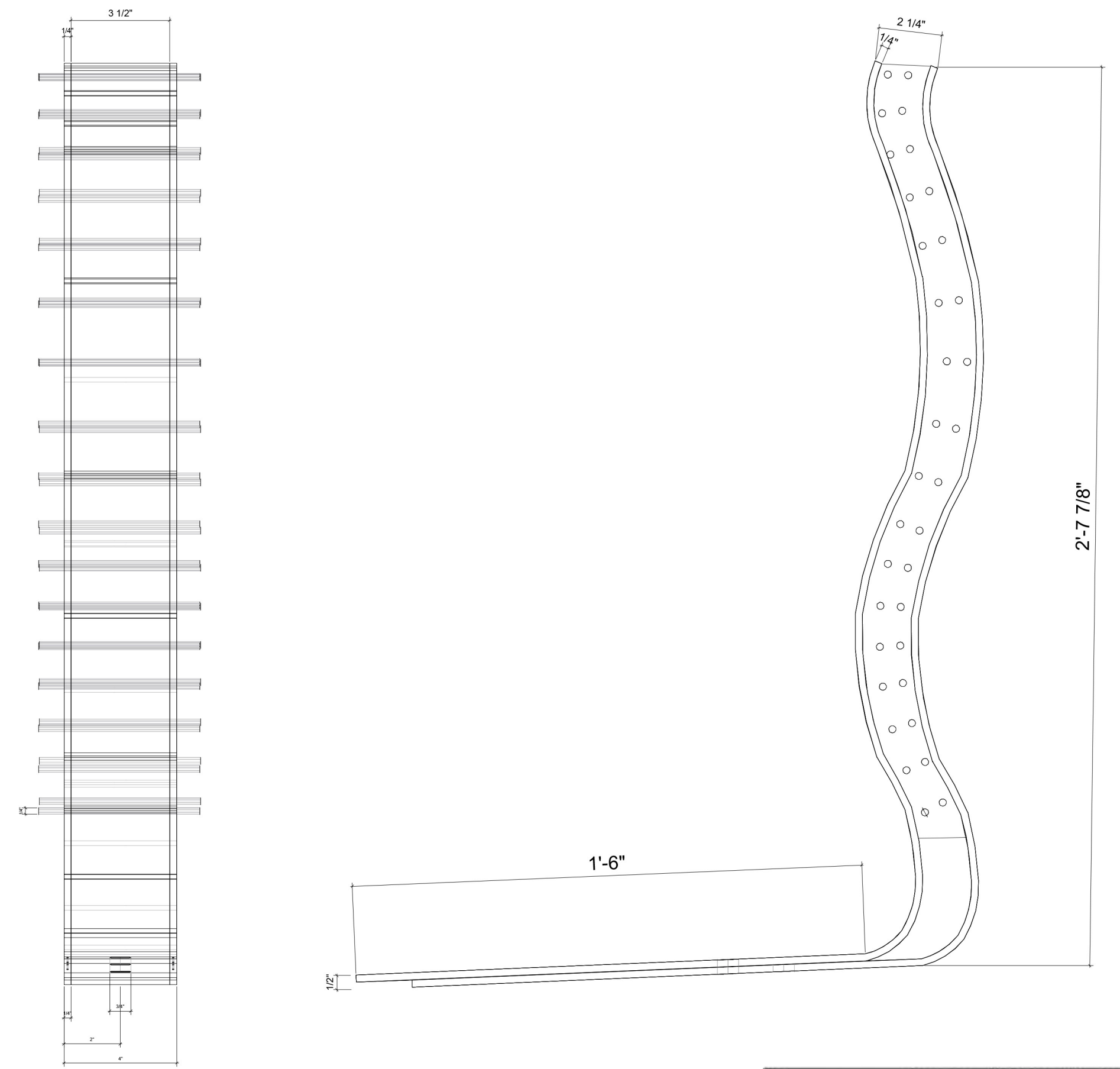
	MATERIAL 6061 T6 - Ø6" x 3"	SURFACE FINISH $\sqrt{6.3}$ TOLERANCES X .1 .X ± .05 .XX ± .005 .XXX ± .002 ANGLES 5°	TITLE ERGONOMIC CHAIR BACK COMPONENT			
	FINISH ABS		DESIGNER C. PAPAConstantinou	ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED	A SIZE	DATE 03/26/2011
<small>PROPRIETARY INFORMATION NOT TO BE RELEASED WITHOUT WRITTEN AUTHORIZATION FROM CONCORDIA UNIVERSITY</small>	DRAFTER C. PAPAConstantinou	APPROVED	SCALE 1:2	SHEET 2/4	DWG NO. 1234567890	REV NO. 00



	MATERIAL 6061 T6 - Ø6" x 3"	SURFACE FINISH $\sqrt{6.3}$ TOLERANCES X .1 .X ± .05 .XX ± .005 .XXX ± .002 ANGLES 5°	TITLE ERGONOMIC CHAIR BACK COMPONENT			
	FINISH ABS		DESIGNER C. PAPAConstantinou	ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED	A SIZE	DATE 03/26/2011
<small>PROPRIETARY INFORMATION NOT TO BE RELEASED WITHOUT WRITTEN AUTHORIZATION FROM CONCORDIA UNIVERSITY</small>	DRAFTER C. PAPAConstantinou	APPROVED	SCALE 1:2	SHEET 3/4	DWG NO. 1234567890	REV NO. 00



	MATERIAL 6061 T6 - Ø6" x 3"	SURFACE ROUGHNESS $\sqrt{6.3}$ TOLERANCES X ± 1 .X ± .05 .XX ± .005 .XXX ± .002 ANGLES ± .5°	TITLE ERGONOMIC CHAIR BACK COMPONENT			
	FINISH ABS		DESIGNER C. PAPAConstantinou	DATE 03/26/2011	USED ON MECH 311	
<small>PROPRIETARY INFORMATION NOT TO BE RELEASED WITHOUT WRITTEN AUTHORIZATION FROM CONCORDIA UNIVERSITY</small>	<small>ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED</small>		SCALE 1:1	SHEET 4/4	DWG NO. 1234567890	REV NO. 00
DRAFTER C. PAPAConstantinou	APPROVED					



	MATERIAL 6061 T6 - Ø6" x 3"	SURFACE ROUGHNESS $\sqrt{6.3}$ TOLERANCES X ± 1 .X ± .05 .XX ± .005 .XXX ± .002 ANGLES ± .5°	TITLE ERGONOMIC CHAIR BACK COMPONENT			
	FINISH ABS		DESIGNER C. PAPAConstantinou	DATE 03/26/2011	USED ON MECH 311	
<small>PROPRIETARY INFORMATION NOT TO BE RELEASED WITHOUT WRITTEN AUTHORIZATION FROM CONCORDIA UNIVERSITY</small>	<small>ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED</small>		SCALE 1:6	SHEET 3/3	DWG NO. 1234567890	REV NO. 00
DRAFTER C. PAPAConstantinou	APPROVED					