Appendix A: Gantt Chart

RC Auto Repair

Today's Date: 4/29/2015 Wednesday (vertical red line)

Project Lead: Kyle Coats

Start Date: 1/15/2015 Thursday

First Day of Week (Mon=2): 2

WBS	Tasks	Task Lead	Start	End	Duration (Days)	% Complete	Working Days
1	**Determine**	[Muntabir]	1/15/15	2/25/15	42	100%	30
1.1	Brainstorm Designs		1/15/15	1/28/15	14	100%	10
1.2	Select Concept Design		1/29/15	2/4/15	7	100%	5
1.3	Purchase First set of Parts		2/5/15	2/11/15	7	100%	5
1.4	Begin formulating project proposal		2/12/15	2/25/15	14	100%	10
2	**Project**	[Kyle]	2/26/15	2/27/15	1	100%	2
3	**Construction of Car**	[Zach and Da	2/28/15	4/24/15	56	100%	40
3.1	Aquire last remaining parts		2/28/15	3/13/15	14	100%	10
3.2	Begin contruction in Fabrication Lab		3/14/15	3/27/15	14	100%	10
3.3	Trial and Error runs		3/28/15	4/10/15	14	100%	10
3.4	Adjustments and final completion of		4/11/15	4/24/15	14	100%	10
4	**Competition**	[Group]	4/25/15	4/30/15	6	100%	4
4.1	Compete in competition		4/25/15	4/26/15	2	100%	0
4.2	Create Final Report		4/27/15	4/30/15	4	100%	4

Appendix B: Team Contract

Team Name: RC Auto Repair Date: 01/26/2015

Members: Daniel Esteves, Zach Dennin, Tasin Choudhury, Kyle Coats

Meeting Time

& Place: During Classtime or Esbenshade lobby when needed

Purpose

Successful teams have common goals and a shared commitment to success as a team. They establish common understandings by which they manage relationships, joint achievements, member responsibilities, and project information to achieve their collective goals. In this exercise, you will **collectively** develop a "team contract" that defines how you will operate your team for success. Benefits from this activity include consensus understandings, effective and efficient teamwork, and enjoyable working relationships.

Importance of Team Processes

As a team, please rate the **importance** of the listed team processes to your team's productivity.

Use the following definitions for **importance** ratings:

Low: *Managing this process will not significantly affect the productivity of the team.*

Medium: *Managing this process may affect team productivity, but it is not crucial to productivity.*

High: *Managing this process is crucial for the team to be highly productive.*

Check the cells that best rate the <u>importance</u> of each process in contributing to your team's productivity in your project.

		Importance of Process		
Area	**Team Process Name**	**Low**	**Medium**	**High**
Team Relationships	Building an inclusive supportive climate			X
	Gaining buy-in and interdependence		x	
	Resolving conflicts to enhance teamwork			x
Joint Achievements	Establishing shared team goals			X
	Managing tasks to achieve team goals			X
	Producing competent consensus outputs			x
Member Contributions	Allocating responsibilities to members			x
	Achieving quality work from members			x
	Facilitating team member growth			x
Team Information	Achieving effective in-team communication			x
	Managing stakeholder communication		x	
	Building shared knowledge assets		x	

Roles and Responsibilities

Complex projects require shared leadership – different individuals leading different portions of the project. As a team, identify for each member the **leadership or backup responsibilities** for which this person is accountable to the team.

(a) Please describe in 50 to 100 words your **rationale** for selecting areas and individuals to lead areas.

Zach was chosen for the CAD Design due to his prior experience with CAD. Tassin was chosen for the design lead due to his leadership ability found by the strengths finder results. Kyle was given the role of communications because of his strong organization skills. Lastly, Daniel was given the role of fabrication because of his attention to detail and precision.

(b) Please **assign** each member to important roles and **identify** key responsibilities of each role..

Member name: Zach

Job titles or roles	**Principal responsibilities**

Cad Design	Responsible for assuring the quality of the 3D Printed piece;

Member name: Tasin

Job titles or roles	Principal responsibilities
Design	Optimized Car design and its aerodynamics

Member name: Kyle

Job titles or roles	Principal responsibilities
Communications	Responsible for the well-being in the group and the communication devices

Member name: Daniel

Job titles or roles	Principal responsibilities
Fabrication	Responsible for the Fabrication Part and Pricing.

Appendix C: Pugh Charts

Design Pugh Table

	Design 1	Design 2	Design 3	Design 4	Design 5
Cost	+	D	+	-	+
Distance	=	A	=	=	=
Speed	=	T	=	=	=
Load	-	U	-	+	-
Build Time	-	M	+	-	+
3D Print	=		=	+	+
+	1		2	2	3
-	2		1	2	1
=	3		3	2	2
2	2	2	2	2	2

Wheels Pugh Table

	Traxxaas Anaconda	**Integy 1/10**	**Pro-line 1/16**
Size	Datum	=	-
Tread		=	=
Cost		+	-
+		1	0
-		0	2
Total		1	-2

Motor Pugh Table

	Traxxas Titan 550	HPI Firebolt 540	Traxxas Brushless
Power	Datum	=	+
Turns		+	+
Cost		+	-
+		2	2
-		0	1
Total		2	1

Appendix D: Project Design Specifications

Cost: must be less than $100

Distance: must be able to travel 100m in a straight line

Speed: must be able to travel as quickly as possible

Load: must be able to carry up to 1000 gm

Build time: must be able to be fabricated within 1 month

Circuitry: Create a circuit involving a switch and resistor suitable for running the carts

3D Print: One component of the vehicle must be 3D printed

Resourceful: must be purchased through RC planet, B&G, HW, Hostetters

Appendix E: Project Statement

EGR100 Design Challenge 2015

You will be provided a PV module, charger, and battery. These items must be reusable after project completion or will be charged against allowable budget. You may not purchase or use an alternate to any of these three items.

- http://www.amazon.com/Instapark%C2%AE-Black-High-Efficiency-Mono-Crystalline-Solar/dp/B004FWW1M4/ref=pd_sbs_lg_1?ie=UTF8&refRID=1Q00AJQSXM3K572GSZF3
- http://www.rcplanet.com/Venom_Balance_Charger_LiPo_AC_DC_2_3_Cell_CE_p/vnr0681.htm
- http://www.rcplanet.com/Venom_2S_1P_2000mAh_20C_7_4v_LiPo_Traxxas_1_16_Sla_p/vnr15023.htm

$100 budget can be spent on PARTS (no car kits) at RC Planet, B&G HW, Hostetters, 3D printing. One component must be 3D printed. 3D printing charge of $5.00/ cu in of material and support + $1.00/hour of build time. Vehicle must be between 10 and 15 in long and 8 and 12 in width. Electronics supplies can be purchased from Electronics Supply room at cost (or DigiKey as needed).

All supplies used (even if not on final vehicle) count again budget at purchased price or market value. All equipment and expenditures must all be approved by instructor (using the Project Ordering Request Form). We will have three purchase dates for RC planet supplies, order requests must be submitted by the following dates (no exceptions):

Preliminary Order	12 Feb	Delivery 20 - 27 Feb
Primary Order	27 Feb	Delivery 9 - 12 March
Final Order	27 March	Delivery 7 - 10 April

Performance score based on distance (staying within a 2 lane-width on the outdoor track over 100 m distance), payload capacity, project expenses and time. Best of 2 attempts, each team must within 1 minute of scheduled time (random order; every 5 minutes).

$$T_{adjusted} = T_{raw} \cdot \left(\frac{1}{d/100}\right)^2 \cdot (c/100) \cdot \left(\frac{1}{(L+1)/2}\right)$$

Symbol	Parameter	Description	Value Limits
$T_{adjusted}$	Adjusted time	Performance Goal – minimize	0 - ∞
T_{raw}	Raw time (s)	Time on course	0 - ∞
d	Distance (m)	Distance covered on course	0 - 100
c	Cost ($)	Total $ spent/market value above base parts	0 - 100
L	Load (kg)	Load transported (100g increments)	0 - 1

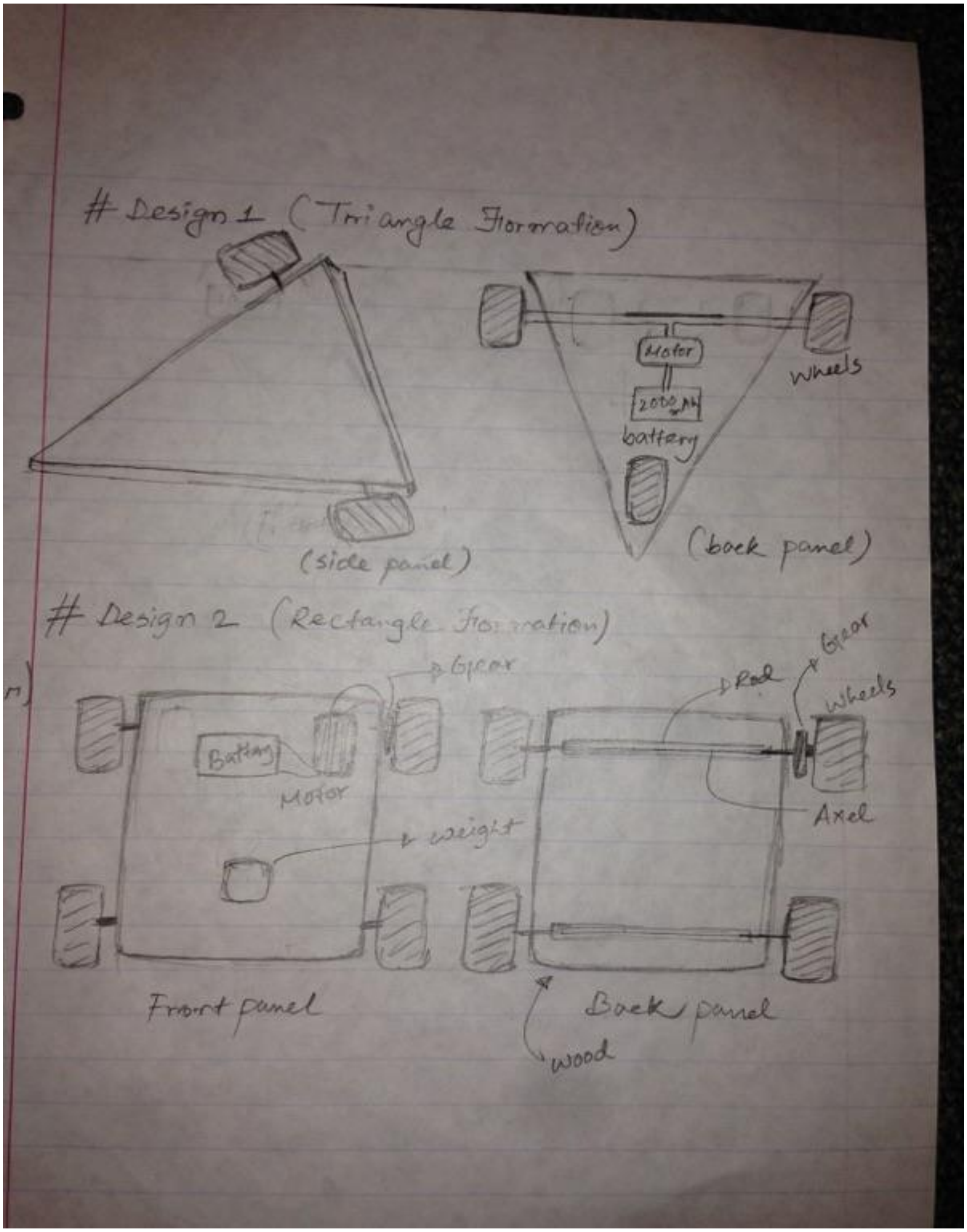
If your vehicle slows, you may pick it up with d and T_{raw} calculated at pick up point. Distance (d) and T_{raw} will be officially determined live by TA spotters (no appeals accepted).

We will have 2 charging sessions prior to competition day and allow charging 2 hours prior to event time on SCAD. At the start of class on your lab day (Wednesday or Thursday) prior to SCAD your battery must be flat (no charge). If it is not fully drained on that date it will be drained by the TAs before you will be allowed to start charging. PV modules and chargers will not be available to student teams outside of official charging times between 15 April and 21 April.

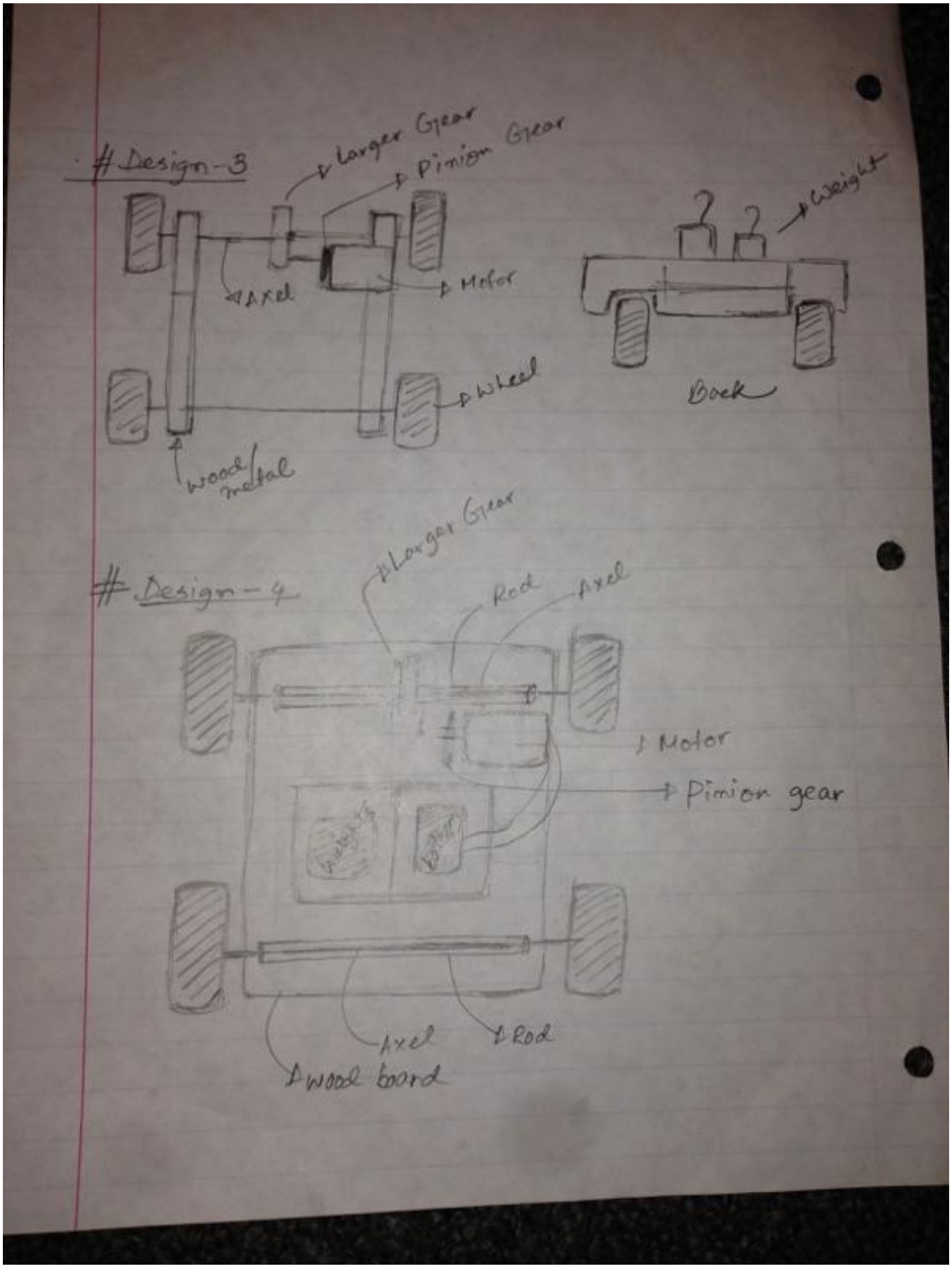
All shop activity must be approved using the attached Engineering Project Plan form.

Appendix F: Design Selection

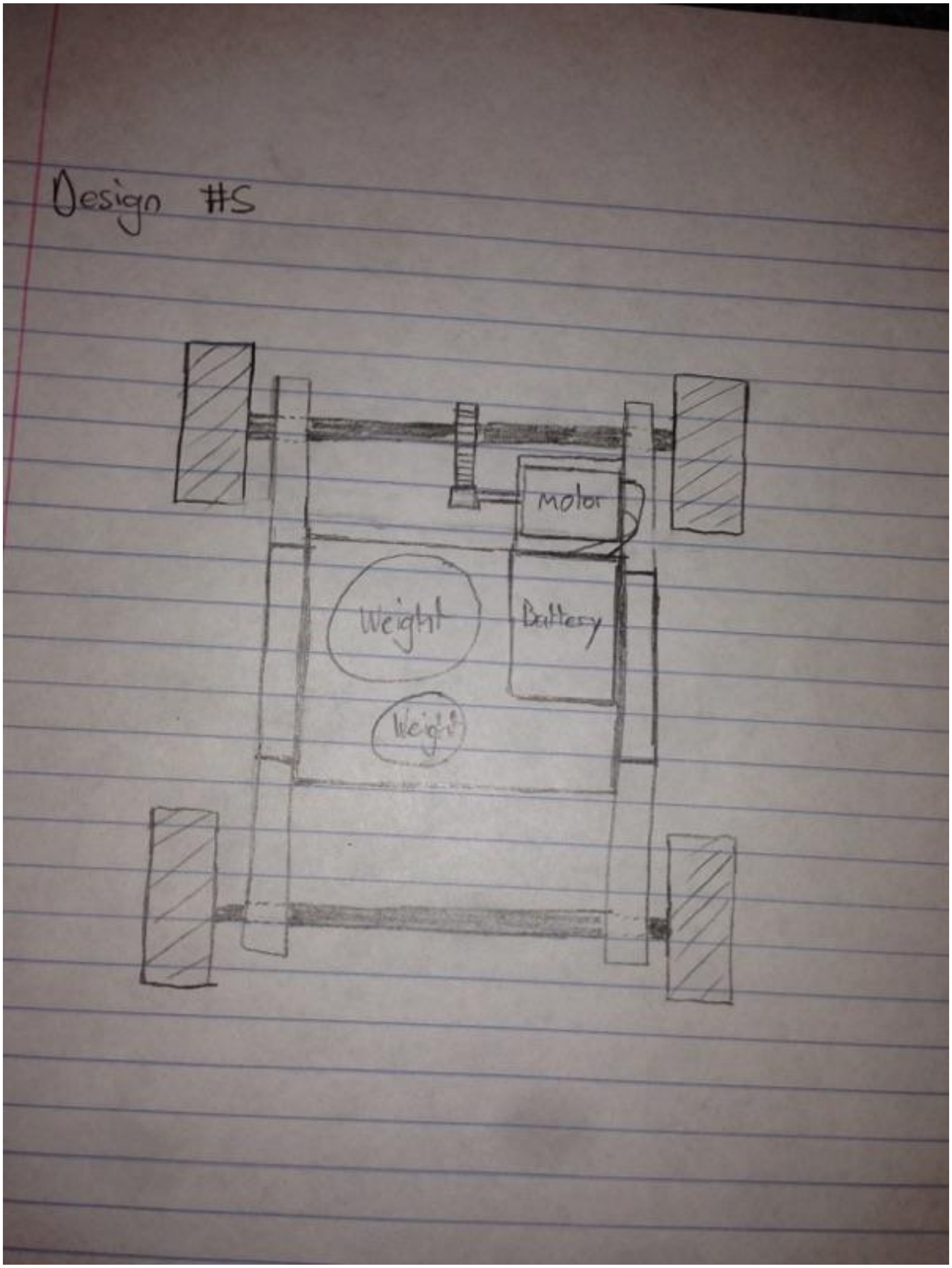
Design #1 – Triangle Formation / Design #2 – 1st Rectangle Formation



Design #3/4–2nd Rectangular Formation / 3rd Rectangular Formation



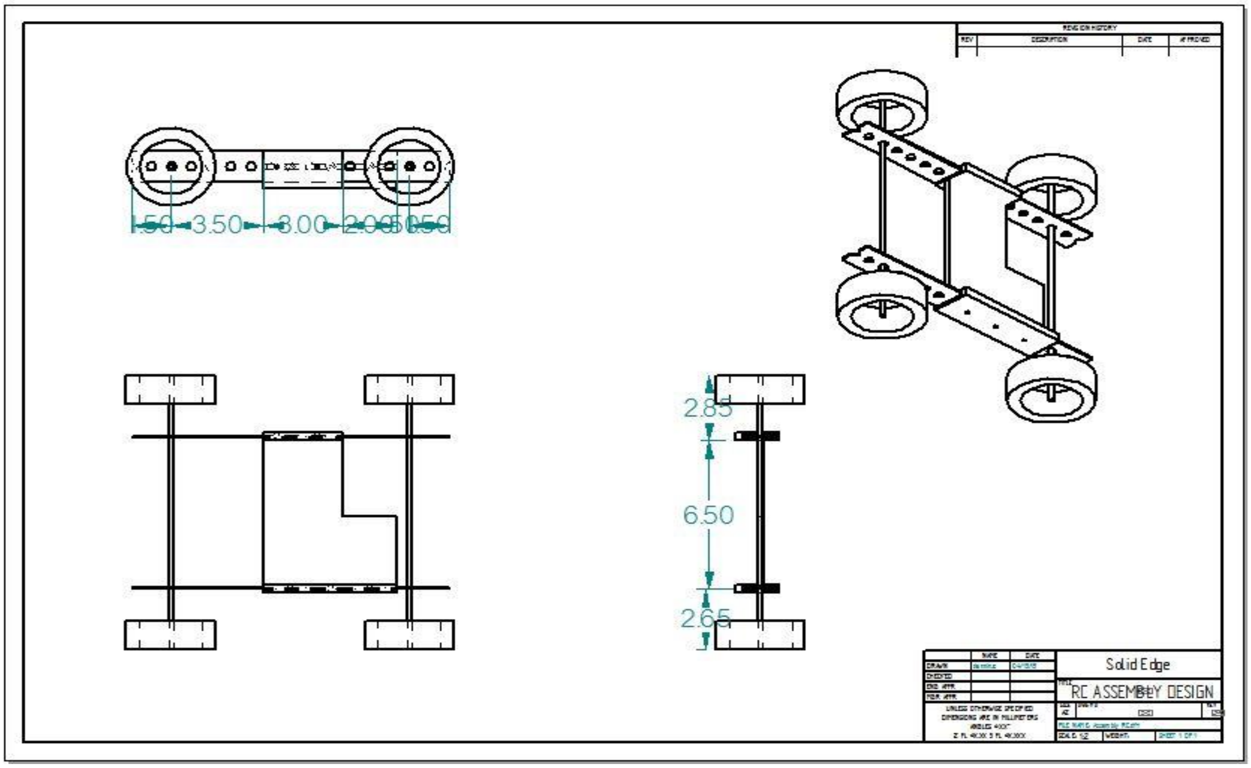
Design #5 – 4th Rectangular Design – Chosen by Design Pugh Table

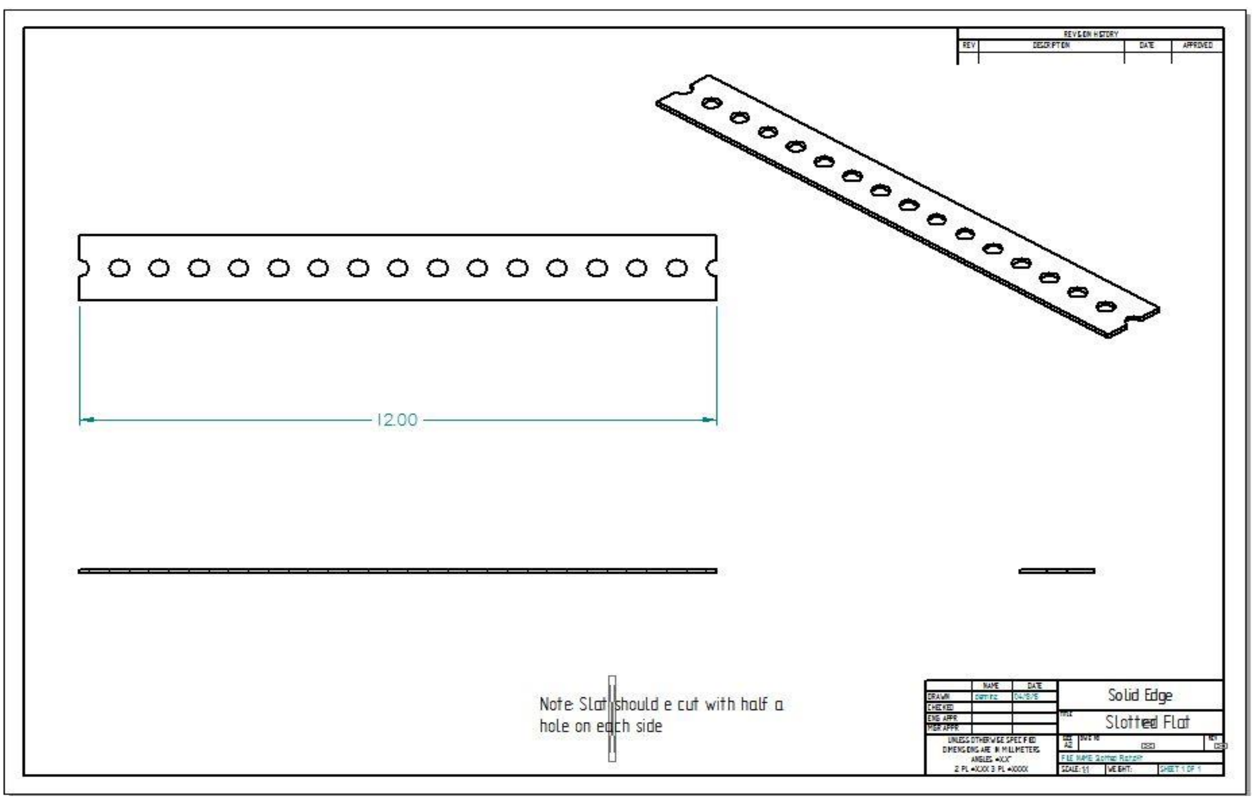


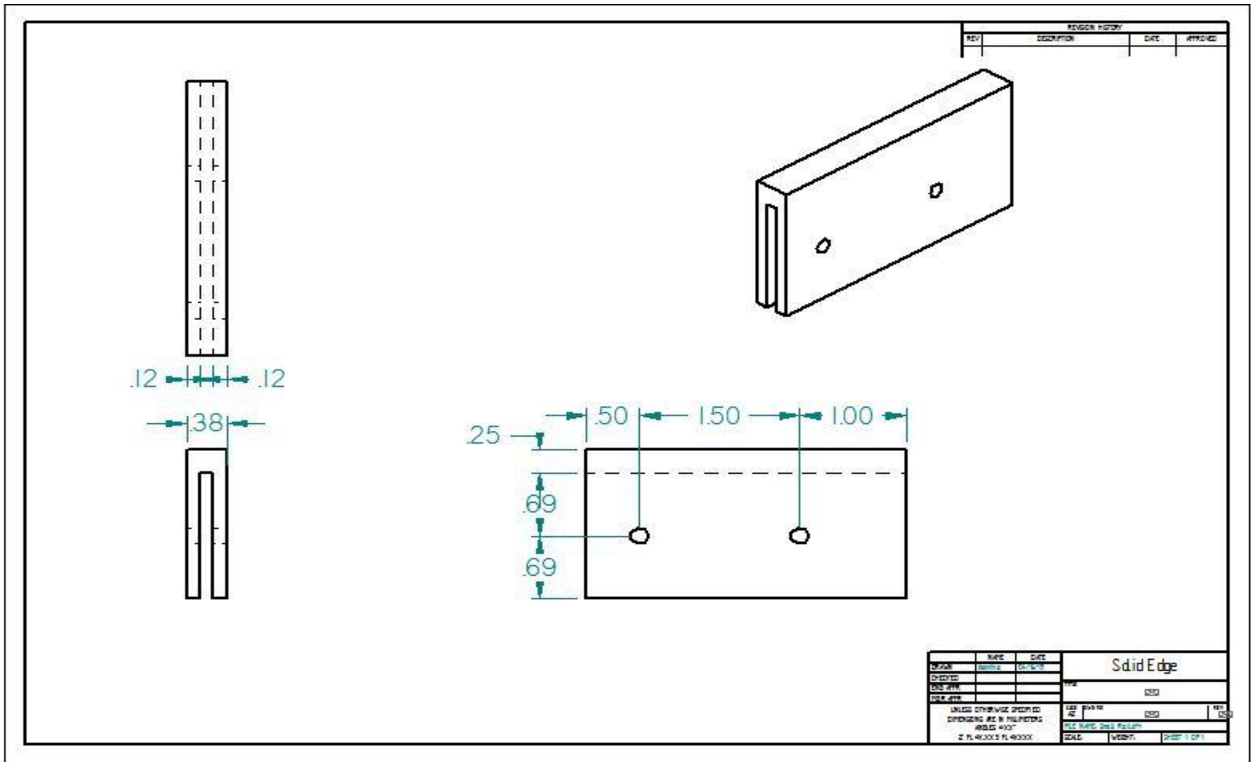
Appendix G: Budget

Description	Total Cost
Motor	$ 13.99
Wheels	$ 27.98
Heli-max Pinion	$ 0.89
Slotted Flats	$ 7.99
Threaded Rod	$ 1.29
Spur Gear	$ 2.79
Pinion Gear	$ 2.39
Resistor	$ 6.68
3D Part	$ 24.07
Plywood	$ 1.00
Switch	$ 0.69
Shop Supplies	$ 5.00
Clamp	$ 5.00
	$ 99.76

Appendix I: CAD Drawings (All Measurements in Inches)



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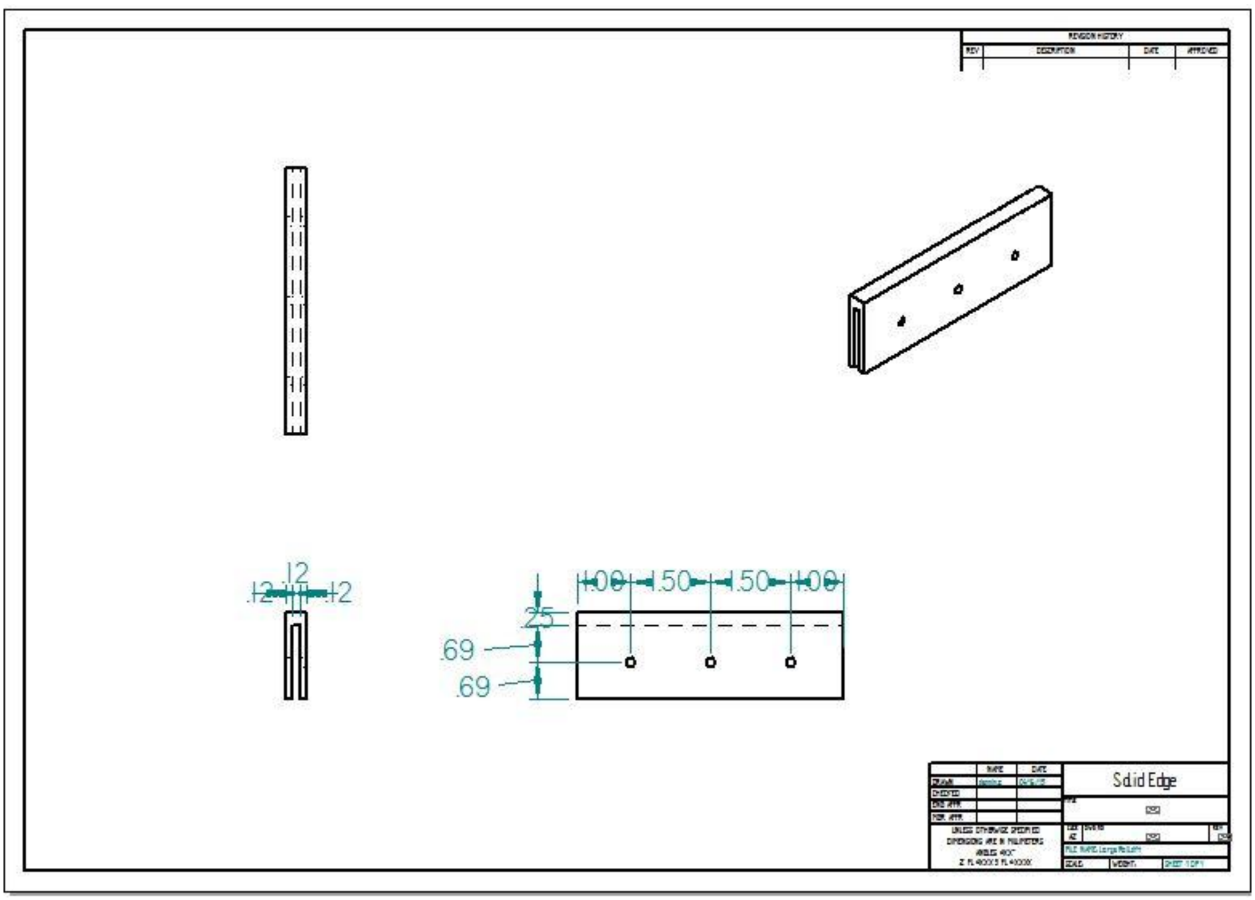
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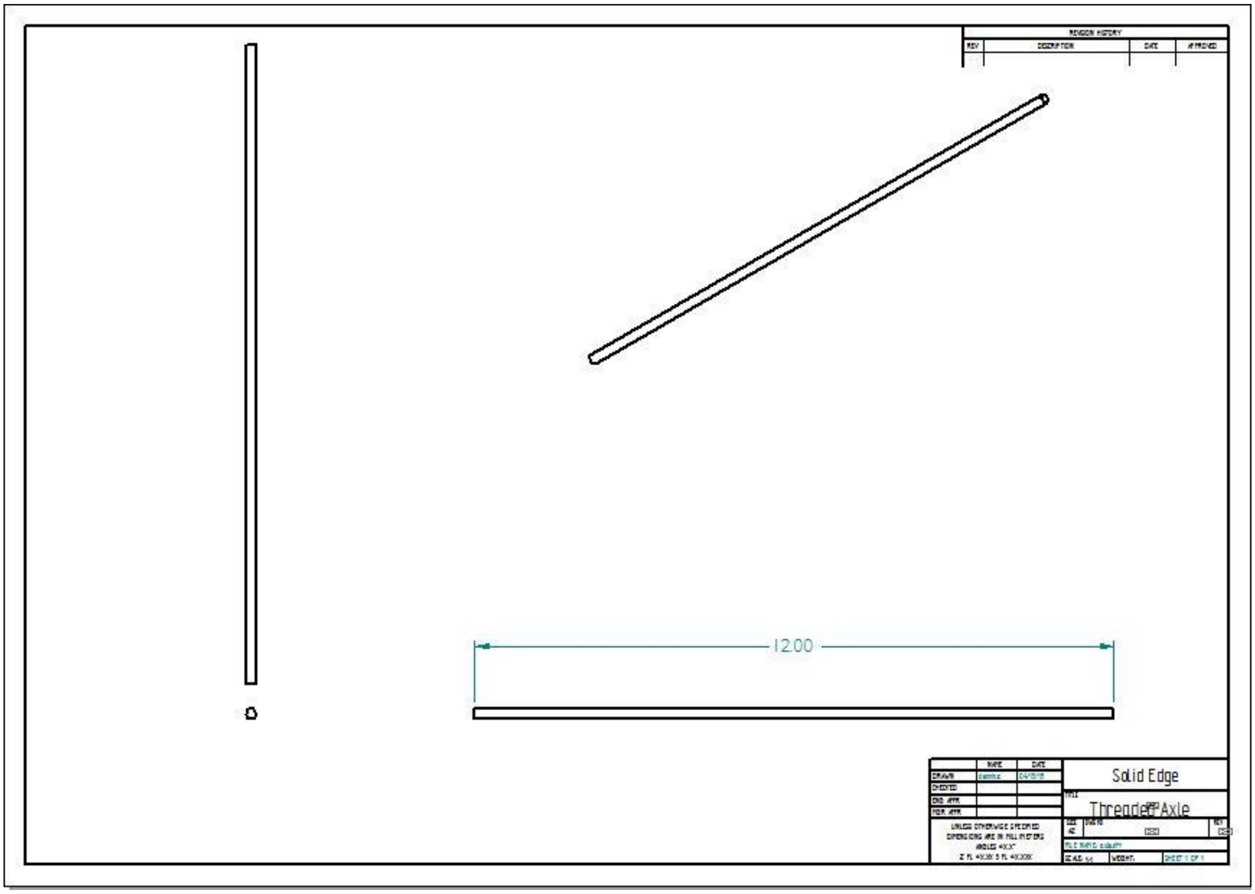
Solid Edge


REVISION HISTORY
REV
DESCRIPTION
DATE
APPROVED
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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
Solid Edge
TITLE
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SIZE
A2
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SHEET 1 OF 1