NAL

SAE Baja '24 Frame

33% Hardware Check

Antonio Sagaral, Cooper Williams, Gabriel Rabanal

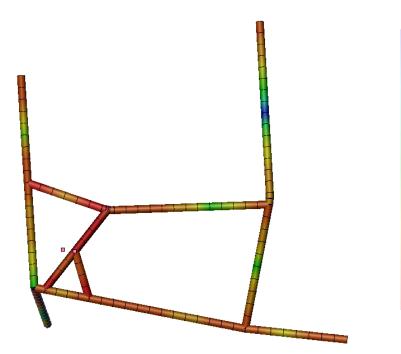


Design Efforts

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System	Current State
Roll Cage	Designed, 50% built
Frame Tabs	Designed, in manufacturing
Seat	Design in progress
Side Paneling	Design in progress

Engineering Calculation Updates



2.180e+01
1.977e+01
1.773e+01
1.569e+01
1.366e+01
1.162e+01
9.586e+00
7.550e+00
5.513e+00
3.477e+00
1.441e+00

Added structural member to support trailing link mount

- Support member keeps SIMs from buckling under severe load
- Adds stiffness to the rear suspension platform, improving performance

Gabe | SAE Baja '24 | F23toSp24_09 | November 6th, 2023

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Purchasing Plan

SAE Baja Frame BOM											
Part	Description	Manufacturer/Vender	Qty	Units	Make/Buy	Part Status	Lead Time	Unit Cost	Cost	Obtained	
Primary Members	4130 1.25x.065" tubing	IMS	45	ft	Buy	Tacked	C	0.00	0.00	Y	
Secondary Members	4130 1x.035"tubing	BFS	45	ft	Buy	Cut, Awaiting Bending	C	8.00	569.00	Y	
Ероху	Carbon resin epoxy	Novakinetics	1	gallon	Buy	In House	C	0.00	0.00	N	
Harness	Standardized	RaceQuip	1	unit	Buy	In House	C	0.00	0.00	Y	
SubmarineStraps	Standardized	RaceQuip	2	unit	Buy	In House	C	0.00	0.00	у	
Fire Extinguisher	5BC Standard	TBD	1	unit	Buy	In House	C	0.00	0.00	Y	
Extinguisher Mount Bracket	Drake FIREX-MNT-DAG	Drake	1	unit	Buy	In House	C	0.00	0.00	Y	
Fuel Tank Mounting Washers	McMaster Carr 94733A723	McMaster	8	count	Buy	In House***	C	0.00	0.00	Y	
Mounting Hardware	Misc.nuts, bolts, washers needed	TMS Titanium	1	unit	Buy	To Be Ordered	1 Week	0.00	0.00	N	

 $\frac{7}{9} = 77.8\%$ of components purchased or on-hand



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Manufacturing Plan

	SAE Baja Frame BOM												
Part	Description	Manufacturer/Vender	Qty	Units	Make/Buy	Part Status	Lead Time	Unit Cost	Cost	Obtained			
Tabs	4130 0.1"sheet	VROOM Engineering	13	in^2	Make	Being Manufactured	3 days	0.00	0.00	D N			
Side Panneling	Carbon Weave	Novakinetics	9) ft^2	Make	Design	2 Weeks	0.00	0.00	D N			
Seat	Carbon Weave	Novakinetics	1	. ft^2	Make	Starting Manufacturing	1 Week	0.00	0.00	D N			
Skid Plate	.06"HDPE	твр	1	. ft^2	Make	To Be Manufactured	2 Week	5.00	30.00	D N			
Firewall	.02" sheet metal	TBD	1	ft^2	Make	To Be Manufactured	1 Week	7.75	5 73.63	3 N			

Aside from the frame itself , $\frac{0}{5} = 0\%$ of the parts have been manufactured*

*Tabs have been sent to VROOM *Seat and paneling manufacturing will begin shortly

Cooper | SAE Baja '24 | F23toSp24_09 | February 6th, 2023

Project Demo









Antonio | SAE Baja '24 | F23toSp24_09 | February 6th, 2023

Gantt Chart Updates

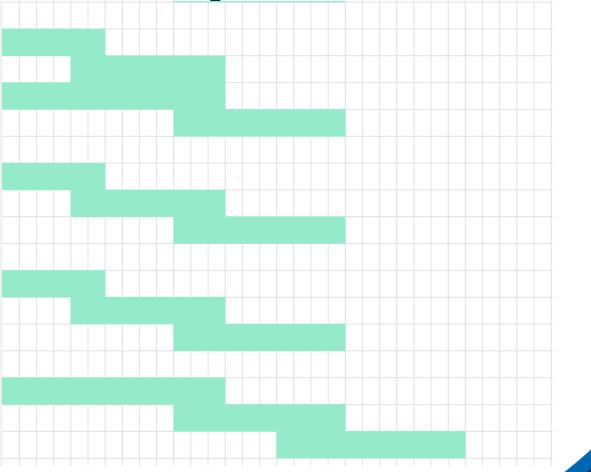
Milestone marker: 1					Fe	bru	ary															Mai	rch		
Milestone description	Assigned to	Progress	Start	Days	7 W		9 10 F S	12 M	4 15 V Т		18 1 S N	9 20 / T	22 T	23 : F	25 2 S N	6 27 /1 T		1 F	2 S	3 S	4 M			8 F	
Paneling																									
Design Finalized		0%	2/7/2024	22																					
Design Sent		0%	2/7/2024	28																					
Design fitted to car		0%	2/7/2024	35																					
Seat																									
Seat Designed		100%	2/7/2024	15																					
Seat manufactured		0%	2/7/2024	28																					
Seat fitted in its final place		0%	2/7/2024	35																					
Suspension Tabs																									
Tabs design finalized		90%	2/7/2024	8																					
tabs submitted for manufacturing		100%	2/10/2024	7																					
Jig Made and ready to go		75%	2/7/2024	15																					
Tabs welded on frame		0%	2/17/2024	12																					



10 11 12

Gantt Chart Updates

Engine Mounts				
Engine Mounts designed	Gabe	100%	2/7/2024	8
Engine mounts manufactured		50%	2/11/2024	11
Jig for engine mounts?		0%	2/7/2024	15
Mounts welded in the frame		0%	2/17/2024	12
Front Gearbox				
Mounts designed		95%	2/7/2024	8
mounts manufactured		0%	2/11/2024	11
mounts welded in the frame		0%	2/17/2024	12
Rear Gearbox				
Mounts designed		95%	2/7/2024	8
mounts manufactured		0%	2/11/2024	11
Mounts welded in the frame		0%	2/17/2024	12
Gas Tank				
mounts manufactured		50%	2/7/2024	15
mounts in frame		0%	2/17/2024	12
tank in frame		0%	2/23/2024	13





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Challenges and Outlook

<u>Challenges</u>

Secondary Bends

 Deformation to cross sectional area of tubing

<u>Outlook</u>

Pushing Forward

- Jigs for tabs design done
- Seat finalizing
- Paneling
- Tacking Tabs
- Firewall

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