



Team 27: 2019 SAE Mini Baja

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Objective

To engineer a strong, reliable all-terrain vehicle (ATV) that will win the SAE Midwest Baja competition.

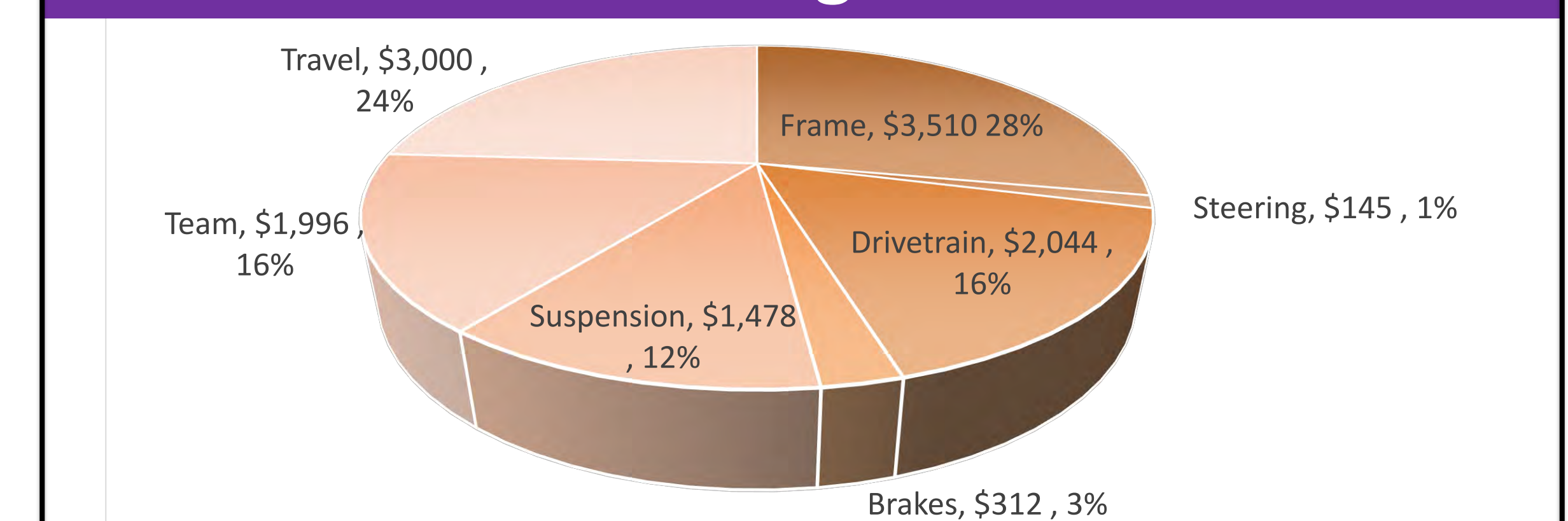
Prototype



Competition Scoring

Category	Event	Points	Category Total
Static	Design Evaluation	150	300
	Cost Report	15	
	Prototype Cost	85	
	Sales Presentation	50	
Dynamic	Acceleration	75	700
	Hill Climb/Traction	75	
	Land Maneuverability	75	
	Suspension/Rock Crawl	75	
	Endurance	400	
Total		1000	

Budget



Specifications

Top Speed	30 mph	Right Height	11 in
Acceleration (0-30 mph)	8 secs	Wheel Base	60 in
Suspension Travel	10-12 in	Track Width	62 in
Braking Time (35 mph to 0)	2.5 secs	Turning Radius	13 ft
Dry Weight	400 lbm	Steering Ratio	7 : 1

Manufacturing

Frame	-Pipe cutting, bending, coping and welding -In-house assembly - Custom Carbon Fiber Paneling constructed in house
Drivetrain	-Purchasing Engine and CVT -Custom made gearbox -Reuse of CV axles
Suspension	-In-house manufacturing for front A-arms and rear trailing arms -Reuse of air shocks
Brakes	-In-house manufacturing for rotors and wheel hubs -Purchasing brake lines and master cylinders
Steering	-Reuse of steering wheel and rack -In-house manufacturing of steering shaft and tie rods

Testing

Weld Strength	Suspension
- 'Y' and 'T' joints welded and subjected to a strength test by SAE competition judges - Must pass the test in order for the frame to be considered safe	- Baja will be dropped from 5 feet or more off the ground - Simulating severe landings the vehicle could experience during competition
Maneuverability	Acceleration and Braking
- Vehicle will be driven through a cone course without knocking over any cones	- Times until maximum speed is reached - Engaging of brakes at full speed to measure max stopping distance



Sponsors: Mr. Jack Rettig, Exxon Mobil, Solid Works, MSC Software, Methanex, Samuel & Son, IPS, Plant Machine Works, Altair,

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