

Competitors: **Please read the Instructions-Tips** (tab below) prior to the completion and submission of this sheet.

Car No.	125
School	Northern Arizona University

Dimensions	Units						
Overall Dimensions	mm	Length:	2660	Width:	1439	Height:	1310
Wheelbase & Track	mm	Wheelbase:	1600	Front Track:	1439	Rear Track:	1444
Center of Gravity Design Height	mm	CG Height:	308.0	Confirmed Via:	Solidworks Mass Properties Tool CG Location		
Mass without driver	kg	Front:	109.0	Rear:	151.0	Total:	260.0
Weight Distribution with 68kg driver		% Front:	48.0	% Left:	51.0		

Suspension Parameters	Units	Front			Rear		
Tire Size, Compound and Make		20.5 x 7-13	R	Hoosier	20.5 x 7-13	R	Hoosier
Wheels (diameter, width, material)	inch	Diamter (col D): Width (col E):	13.0	7.0	Diameter (col G): Width (col H):	13.0	7.0
Wheel material and construction		One piece aluminum (dry), steel (wet)			One piece aluminum (dry), steel (wet)		
Suspension Type		Double wishbone pushrod			Double wishbone pushrod		
Suspension design travel	mm	Jounce (col D): Rebound (col E):	41.3	13.8	Jounce (col G): Rebound (col H):	44.0	11.0
Wheel rate (chassis to wheel center)	N/mm	40.85			28.15		
Roll rate (chassis to wheel center)	Nm/deg	1386			53		
Sprung mass natural frequency	Hz	0.63			0.66		
Jounce Damping	% critical	Adjustable	at __ mm/sec:	N/A	Adjustable	at __ mm/sec:	N/A
Rebound Damping	% critical	Adjustable	at __ mm/sec:	N/A	Adjustable	at __ mm/sec:	N/A
Motion ratio	__ :1	1.08:1	Type:	Linear	1.25:1	Type:	Linear
Ride Camber (Rate of Camber Change)	deg/m	52.9			81.8		
Roll Camber	deg/deg	0.70			0.4		
Static Toe (- out, + in)	deg	-0.2			0.5		
Static camber	deg	-1.50			-1		
Static camber adjustment method		Shims			Shims		
Anti dive / Anti Squat	%	0			0		
Roll center height above ground, static	mm	72.0			89.0		
Roll center position at 1g lateral acc	mm	Height (col D): Lateral (col E):	55.0	-11.0	Height (col G): Lateral (col H):	79.0	-1.0
Front Caster, Trail, and Scrub Radius		Caster (deg):	7.0	Kin Trail (mm):	32.0	Scrub Rad (mm)	15.0
Front Kingpin Axis		Inclination (deg):	7.0	Offset (mm):	77.0		
Static Ackermann	%	0	Adjustable?	Yes			
Suspension Adjustment Methods		Tie rod brackets may be machined with different geometries and bolted to upright.					
Steer Ratio, C-Factor, Steer Arm Length		Steer Ratio (x:1)	3.8	c-factor (mm)	101.6	Steer Arm Length	60.9

Brake System / Hub & Axle	Units	Front		Rear			
Rotors		2x fixed, 4-bolt, steel, 220mm diameter, 3.5mm thick		1x fixed, 4-bolt, steel, 220mm diameter, 3.5mm thick			
Master Cylinder		0.5in bore Wilwood GS-Compact Remote		0.75in bore Wilwood GS-Compact Remote			
Calipers		2x Wilwood PS-1 2 piston, 1.12in dia piston, Al		2x Wilwood PS-1 2 piston, 1.12in dia piston, Al			
Brake Pad/Lining Material		Composite Metallic		Composite Metallic			
Force and Pressures @ 1g Deceleration		Front Pres. (bar):	77.3	Rear Pres. (bar):	34.5	Pedal Force (kN)	0.489
Upright Assembly		Machined 6061 aluminum, removable UCA bracket with shims, bolt-in tie rod and brake caliper bracket		Machined 6061 aluminum, removable UCA bracket with shims			
Hub Bearings		Dual tapered roller bearings, 1.25in bore diameter, 0.625in width, 2.382in outer diameter		Dual row DGBB, 1.300in bore diameter			
Axle type, size, and material		N/A		Sleeve-welded 2009 Chevrolet Aveo Auto CV Axles 1 inch Steel			

Ergonomics	Units		
Driver Size Adjustments		Removable seat padding, adjustable pedal box	
Seat (materials, padding/damping)		Carbon fiber/high density foam construction	
Steering Wheel (dia, construction)		Diameter (mm)	236.2
Construction		Carbon Fiber Composite	
Shift Actuator (type, location)		Push-pull cable, lever located on the right hand side of the driver below the steering wheel	
Clutch Actuator (type, location)		Hand lever connected to shifter, pull cable	
Instrumentation		Stock 2006 Honda CBR600F4i gauge cluster	
Optional: Driver Safety Systems?		N/A	

Electrical	Units	
Power Management / Control		Stock ECU and Harness will be used with a Power commander to pull fuel out of the higher RPM range.
Wiring / Loom / ECM mounting		10 and 18 gauge wires used. Entire harness wrapped in heat resistant loom. Rubber mounting for ECU.
Battery / Charging System		Lithium 12V 2.5 Ah 150A Motorcycle Battery, Charged from Factory Stator on the Engine.
Grounding		The engine block will be used as the primary ground and all electrical circuits will terminate on the block.
Driver Assist Systems		N/A
Logging / Telemetry		Racebox mini S recording GPS, IMU
Special Sensing Technology		N/A

Frame	Units	
Frame Construction		Steel spaceframe
Material		4130 Steel
Joining method and material		Tig Welded 4130 (ER70S-2)
Bare frame mass with brackets & paint	kg	Target: 30.0 Physical Test: 31.8
Torsional stiffness	N-m/deg	Target: 1850 Simulated: 1990 Physical Test: N/A
Torsional stiffness validation method		N/A
Impact Attenuator configuration		Standard Foam Impact Attenuator
Impact Attenuator dimensions	mm	Width: 356 Height: 305 Depth: 254
Impact Attenuator energy capacity	kJ	Energy: N/A Method: N/A

Powertrain	Units	
Manufacturer / Model		Honda CBR600 F4i
Cylinders & Fuel		Cylinders: 4 Fuel Type: 93 Octane
Displacement & Compression		Displacement (cc): 599 Compression (⌋:1): 12.0
Bore & Stroke	mm	Bore: 67.0 Stroke: 42.5
Engine Output		Peak Power (kW): 55 Peak Torque (Nm): 48
Design Speeds	rpm	Max Power: 12500 Max Torque: 10500 80% Torque: 6000
Induction (natural or forced, intercooled)		Natural
Throttle Body / Mechanism		Single Mechanical Throttle Body with throttle cable
Fuel Injection System (manf'r, and type)		Honda OEM, Port Injection
Fuel System Sensors (for fuel mapping)		Intake Airtemp, Manifold Absolute Pressure, Throttle Position Sensor
Fuel Pressure	bar	2.96
Injector location		69 mm before the intake valve and directed towards the combustion chamber with the flow of air.
Intake Plenum		Volume (cc): 2000 Runner length (mm): 165.2
Exhaust Header Configuration		4-2-1. Effective Runner Length (mm): 571.5 Variation (mm): 12.7
Exhaust Header Diameters		Primary (mm): 38.1 Collector (mm): 50.8
Ignition System		Coil on plug Capacitor Discharge Ignition System.
Ignition Timing		Stock ignition timing is 10 degrees BTDC and the Power Commander controller will go to 15 degrees BTDC.
Oiling System (wet/dry sump, mods)		Wet Sump
Engine Lubricants / Friction Treatment	bar	Honda GN4 10W-40 engine oil. Oil Pressure at idle 0.68-1.03 bar @6000 rpm 5.5 bar.
Coolant System and Radiator location		Vertically mounted 01 core single pass radiator , 250 cfm fan mounted to back side of the Radiator
Fuel Tank Location, Type		Alum fuel tank, JSD Autoparts, located between engine and firewall. Capacity (L): 6.2
Muffler		Yoshimura RS-3
Other significant engine modifications		None

Drivetrain	Units	
Drive Type		Chain driven, #520 size
Differential System		Spool Drive
Final Drive Ratio	⌋:1	4
Vehicle Speed @ max power (design) rpm	kph	1st gear: 61.2 2nd gear: 84.3 3rd gear: 101.1
Vehicle Speed @ max power (design) rpm	kph	4th gear: 116.7 5th gear: 129.3 6th gear: 139.5
Half shaft size and material		20 inches, Steel
Axle Joint type and grease used		Rzeppa Joints, CV Axle Grease

Aerodynamics (if applicable)	Units	
Type / Configuration		N/A
Forces (at 80 kph, ρ= 1.162 kg/m^3)		Downforce (N): N/A % Front: N/A Drag (N): N/A
Coefficients & Reference Area		Cl: N/A Ref. Area (m^2): N/A Cd: N/A
Noteable Features (active, etc)		N/A

Other Information	Units	
Body Work (material, process)		Multiple flat carbon fiber and aluminum body panels.
Optional Information		