



Spartan Superway
Full Scale Drivetrain Team
September 19th, 2018

Joshua Morales
Jaspreet Singh
Akash Sandhu

Title: Drivetrain Team

Industry sponsor:

Address: 128 E St. John street, San Jose, CA

Contact (manager name, email, Phone#, address):

Faculty Advisor: 408-XXX-XXXX

burford.furman@sjsu.edu

Student Team Members (name, phone#, email,)

1. Joshua R Morales (Lead)	(831) 320-6833	joshua.morales@sjsu.edu
2. Akash Sandhu	(209) 581-1014	akashpreet12@gmail.com
3. Jaspreet Singh	(510) 493-5212	jbassans@gmail.com

Project Objectives:

The first objective of the team is make improvements to the current propulsion system on the bogie. The second team objective is to incorporate an emergency brake system on the bogie if power to the bogie is compromised in an unfortunate event. Lastly, the team will work to improve the articulation of the bogie on the track.

Scope:

The improvements in the propulsion system of the bogie will include improvements in the tension mechanisms, and possibly an upgrade from the BLDC 108 (current motor in use). The team also will aim to attach a mechanism to bring the bogie to a stop in the event of an emergency or failures. For the articulation of the bogie, the team will first endeavor to add articulation to the back wheels; then the team will attempt to improve the current articulation of the front wheels.

All of these provisions to the drivetrain in case the High Density Motor Team is not able to create a motor. In the case where the High Density Motor team does create the Motor, they will be responsible for mounting the motor to the bogie. This proposal also does not cover the design of the route selection system.

Deliverables:

- Improvements in Propulsion will aim to achieve the following:
 - Move a payload of 70 kg, not including weight of bogie.
 - Accelerate up to 13.41 m/s (operating speed) within 5 s
 - Decelerate to 0 m/s from operating speed also in 5 s using dynamic braking

- Emergency braking
 - Ability to deploy automatically after power loss
 - Stop vehicle in 18 meters from operating speed
- Articulation of the bogie
 - Ability to turn both axles of the bogie.
 - Ability of the front axle to turn 15 degrees. (each direction)
 - Ability of the back axle to turn 15 degrees. (each direction)

Required Facilities and Funding:

For this project, the team will be mainly making parts out of aluminum and steel sheet metal. Most parts like a drive shaft and axles can be machined with the lathe available at the shop. However, a water jet cutter will be more applicable to complex parts. For the water jet services, the team plans to use the central shop located at SJSU. Most of the material required can be reused from summer, including some metal for axles and possibly a drive shaft. But sheet metal will have to be bought from a local metal shop. Possible funding can come from donations of material by local metal shops. There will be a need for more funding for an additional motor to accompany the existing motor in the back, which possibly can be funded by either of the two related clubs on campus.

Approval signatures

Advisor: _____

Name(Print)	Signature	Date
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Students:

1.	<u>Joshua R Morales</u>	<u>9/19/2018</u>
	Name(Print)	Signature
2.	<u>Akashpreet Sandhu</u>	<u>9/19/2018</u>
	Name(Print)	Signature
3.	<u>Jaspreet Singh</u>	<u>9/19/2018</u>
	Name(Print)	Signature