**Task Description**

The firewall is a system of the vehicle responsible for sealing the drivers cell from hot liquids and gases that reside in the tractive elements. The seat is responsible for restraining the driver. In BR16, these systems are linked by their proximity – one is immediately on top of the other. The Firewall and Seat Design team is responsible for creating the engineering drawings that can be used to fabricate and install these two systems. The firewall should fit FH, FE, and FN rules. The seat should completely support and restrain our largest driver and fit Percy and his foot (i.e. be compatible with the rules). The seat should also be compatible with foam or rubber inserts to account for driver variation. The design should be done quickly so that team members can be assigned to other tasks.

**Responsible Parties**

Jordan will lead this design project. He is responsible for delegating and assigning tasks to Josh Chang. Together they will complete this package.

**Deliverables**

Three versions, preliminary, transitionary, and final engineering drawings will be produced. The chief engineer will review these drawings. Once the final design is approved, fabrication will begin. Along with delivery of the seat and firewall, team members will include design documentation.

**Budget**

(Provide as detailed budget information as possible)

|  |  |  |
| --- | --- | --- |
| 1 | Aluminum sheet: .51mm 6061-T6 | $80 |
| 2 | Rubber/non-conducting material: not really sure about the specs req’d | $100 |
| 3 | Foam/rubber inserts: 2-part polyurethane foam, makes ~6 inserts | $150 |
| 4 | Carbon sheet: likely found in the garage | $0 |
| 5 | Epoxy: found in the garage or leftover from nose | $0 |
| 6 | Foam for seat mold: Owens Corning Foamular 250 or equivalent; qty 5 2” x 2’ x 8’ sheets | $100 |
| 7 | Hardware: misc. costs | $50 |

**Resources (human and machine)**

(Provide a list of type of resource needed and time with resource)

* Rules request to FSAE-E to hopefully avoid having to build two firewalls (current conflict between FH and FE rules, and FH rules request did not resolve the conflict)

**Time to complete**

(Provide a description of time to complete major aspects of work package)

* Firewall design (~20 hours, 3 weeks)
* Seat design (~12 hours, 2 weeks)
* Fabrication of two-layer firewall (aluminum and rubber/non-conducting material) (~30 hours, 4 weeks)
* Seat mold construction (up to ~20 hours/3 weeks, faster with architecture school with foam cutter if possible)
* Vacuum bagging for carbon fiber seat fabrication (~10 hours, 1.5 weeks)
* Custom foam inserts for drivers (~10 hours+/1+ weeks depending on how many inserts we make)
* Overall: The seat and firewall will be designed in tandem by Jordan and Josh over the course of 4-5 weeks. The fabrication of the firewall will be a 4 week project. The seat construction will take about 4 weeks, with an additional week for the inserts.

*Update 11/20/15:*

* Firewall:
  + 3 weeks behind schedule on firewall design. One more week of design before 4 weeks of fabrication.
* Seat:
  + Design nearly completed. 4-5 weeks of seat construction for the mold and vacuum bagging plus 1 additional week for foam inserts.
* Overall:
  + Fabrication time estimates are for the firewall and seat one at a time, not in tandem. 8-10 weeks of fabrication time total.

**Measures of Success**

(Scales upon which the success of the design can be evaluated)

* Complete firewall(s) in compliance with FH, FE, and FN rules
* Seat in compliance with all rules
* Adjustability in seat for driver variation (number of custom foam inserts for drivers)
* Overall weight of seat/firewall package

**Required Inputs**

(Items or knowledge required from a previous step)