**PISTON CUP Frame Material Specification Sheet**

SCHOOL NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_TEAM NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 CAR NUMBER \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**NOTE**: **This sheet MUST be completed and submitted by the competition rules. Failure to do so will result in a penalty.**

**PURPOSE:** **The purpose of this sheet is to facilitate verification of the proper frame material and to provide a safety standard for competition events**.

**The material used for the Primary Roll Cage Members and bracing must meet one of the following requirements:**

1. Circular tubing with an outside diameter of 25mm and a wall thickness of 3mm with a carbon content of atleast 0.18% \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. A steel shape with bending stiffness and bending strength exceeding that of circular steel tubing with an outside diameter of 25 mm (0.984 in.) and a wall thickness of 3 mm (0.118 in.). The minimum thickness for the wall 1.57 mm (0.062 in.) and the carbon content must be at least 0.18%, regardless of material or section size.
3. Docol R8 tubing is permitted.

**The following calculations must be documented below in SI units, and to three significant figures.**

**Bending stiffness, kb, is given by:**



**Where:**

*E - Modulus of elasticity (205 GPa for all steels)*

*I - Second moment of area for the structural cross section*

**Bending strength, Sb, is given by:** 

**Where:**

*Sy - Yield strength (365 MPa for 1018 steel)
c - Distance from neutral axis to extreme fiber*

**NOTE: Documentation must include:**

1. **Typed calculations to be presented at Technical Inspection which proves sufficient bending stiffness and bending strength. All calculations must be in SI units, to three significant figures to the nominal tube sizes as specified by the invoice. Teams shall show figures for 1018 steel and the substitute material.**
2. **Invoices of the roll cage materials.**
3. **Material tests or certifications, which specify the carbon content and yield strength.**

Date of inspection \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**WE HAVE EXAMINED THE ABOVE INFORMATION AND TO THE BEST OF OUR KNOWLEDGE**

**DEEM IT TO BE ACCURATE.**

 TEAM CAPTAIN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

 (SIGNATURE) (DATE)

 FACULTY ADVISOR \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

 (SIGNATURE) (DATE)