16.810 Engineering Design and Rapid Prototyping IAP 2004
Massachusetts Institute of Technology
"International Bicycles Corp."

Requirements Sheet

Team Number ____

Product Type: ***City Bike***

1. Market Description

This bicycle is to be designed for the mass consumer market. The expected sales volume is 100,000 per year. Affordability, excellent performance/cost ratio and light weight are most important to be successful in this market.

2. Requirements

Manufacturing Cost (C):	$C \leq 4.2$ \$ /part
Performance (δ_1, δ_2, f_1):	Displacement $\delta_1 \leq 0.071$ mm Displacement $\delta_2 \leq 0.011$ mm First natural frequency $f_1 \geq 245$ Hz
Mass (m):	$m \leq 0.18$ lbs
Surface Quality (Q):	$Q \geq 3$
Load Case (F):	F1 = 50 lbs / F2 = 75 lbs / F3 = 75 lbs

The part has to conform to the interface requirements and geometrical boundary conditions shown on page 2 of this document. This requirement cannot be waived.

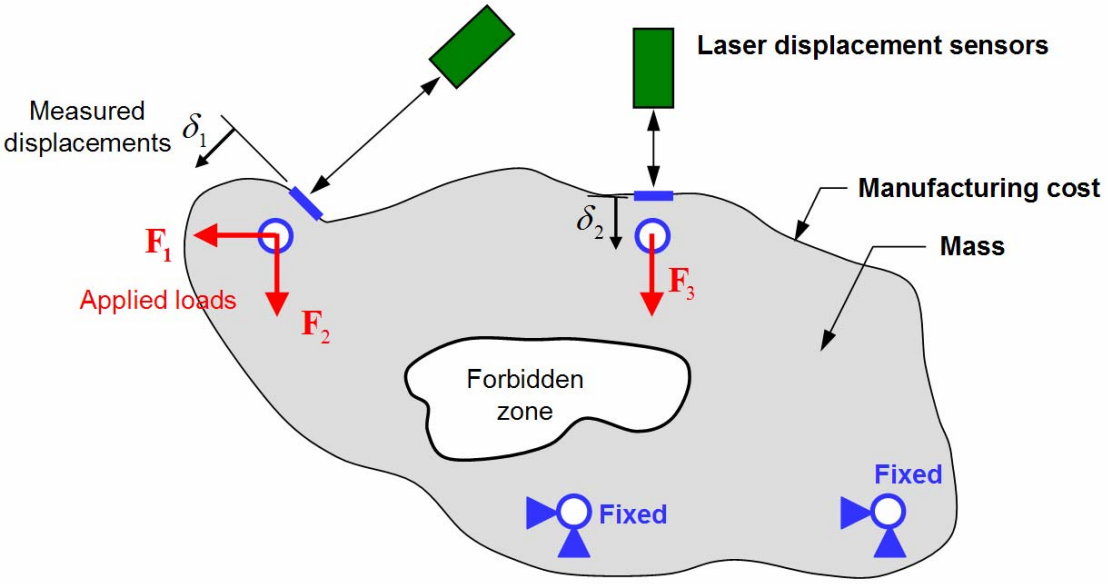
3. Priorities

Low manufacturing cost is the first priority for this product. Next, the customer cares about light-weighting (low mass) and thirdly, structural performance should be as high as possible. These priorities are shown in the Ishii-matrix below:

Attribute	**Constrain**	**Optimize**	**Accept**
Cost	■		
Performance			■
Mass		■	

Modifications to these requirements have to be negotiated with Management.

Configuration



No forbidden zone for your team

Dimensions