

## Problem Set 4: Uniform Circular Motion

### *Design Engineering Challenge: “The Big Dig” 2.007 Contest Platter **Strategies**: Ball Liberation*

For the Spring 2004 contest table (“The Big Dig”, see <http://pergatory.mit.edu/2.007> ) the platter holds heavy (shot put) and light (street-hockey) balls. In problem Set 3, we investigated a machine concept where the machine has magically acquired the shot-put and is racing off with it. In fact, you were asked to consider carrying vs. rolling the shot-put. But what strategies can you think of to free the shot-put from the platter? What about the street hockey balls? Here we will investigate two strategies, indirect and direct.

1. How can you liberate the shot-put(s) (and what are the physics) without actually touching them (and enable your vehicle to acquire them)?
2. How can you liberate the shot-put(s) by touching them (and what are the physics) (and enable your vehicle to acquire them)?
3. How can you liberate the street hockey balls (and what are the physics) without actually touching them (and enable your vehicle to acquire them)?
4. How can you liberate the street hockey balls by touching them (and what are the physics) (and enable your vehicle to acquire them)?
5. What do you think is the best **strategy**?

