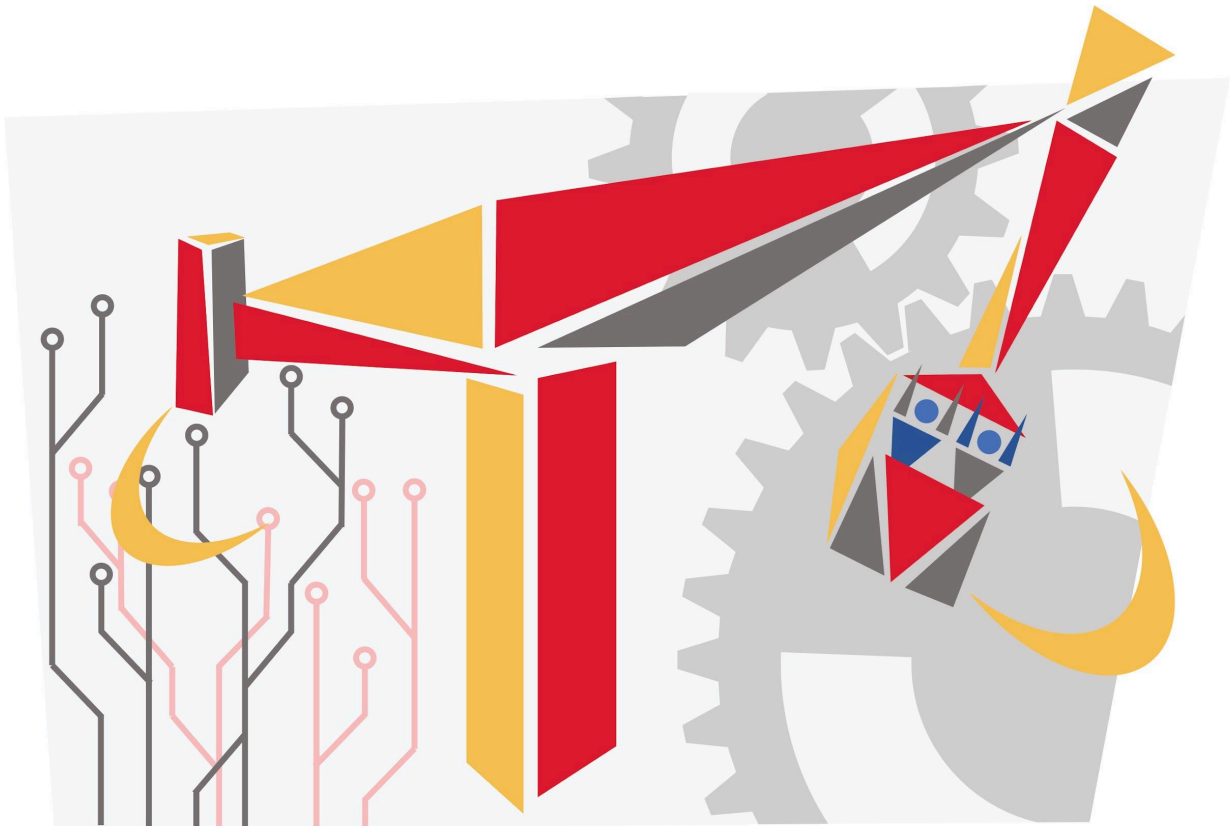


# Ride Engineering Competition



**2025 Prompt**  
**Thrill Acceptance Testing:**  
**Flat Ride Engineering Challenge**

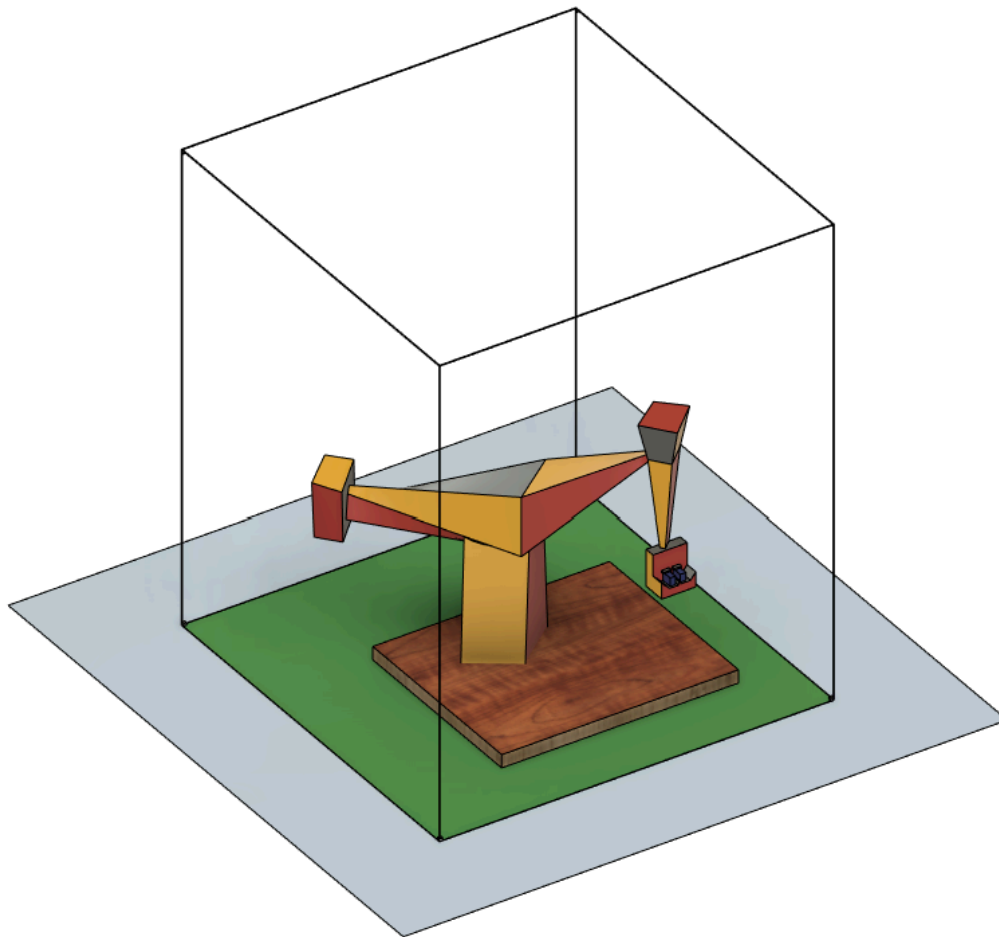
## Intro

Our park needs some new rides, and we need to make sure that we are getting exactly what's been sold! Our Riders are hungry for a thrilling forceful ride that meets the highest standards of safety and reliability. Can you deliver?

## Overview

In this year's challenge, Teams will design, engineer, and manufacture an amusement ride inside a size box. Riders need to experience height, rotation, and acceleration in the ride experience. Each team will run their Ride for **6** hours.

***Note on rider scale: This is not a model ride. The riders of this attraction are candies as described in the Rule book. These riders are not stand-ins for human riders. These candy riders are the real riders of this real attraction. The accelerations and forces used to engineer the ride shall be based on the actual accelerations and forces experienced by the candy riders.***



## **Design**

Roller Coasters, and rides that passively follow a track for the majority of the ride experience are not allowed in this year's competition.

Returning teams must not use the same exact ride concept used in previous year's competition by members of the academic institutions they represent.

Ride designs may emulate existing rides, be an original design, or anywhere in between.

*Note: The REC does not hold any Ride Design Intellectual Property and does not provide any Intellectual Property protection to ride designs introduced in the Ride Engineering Competition.*

Ride systems may make use of any Commercial-Off-The-Shelf (COTS) parts or custom manufactured parts.

COTS parts or kits that are designed for the intention of emulating a Thrill Ride may not be used in the specific thrill ride function they were designed for.

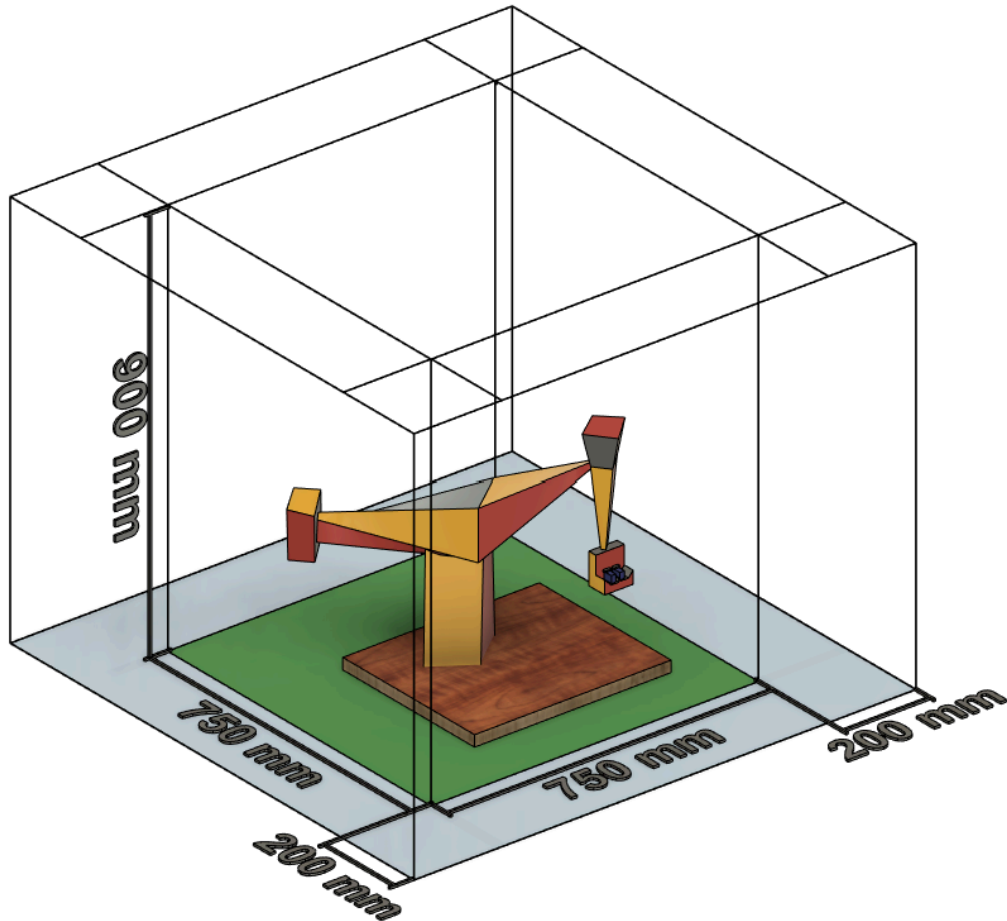
*E.g. a K'nex brand Track ties and rails, may not be used as track ties and rails, respectively, within the Ride Design. These parts may still be used in the design in any other configuration or use case. For any needed clarification on this rule, please contact the REC.*

All Rides must include an Emergency Stop function. The function shall be Red in color and be clearly labeled "Emergency Stop" or "E-Stop". Activating the function shall initiate a Ride Off Function Consistent with ASTM F2291 Section 11.3.8.

## Size Box

Rides will reside primarily within a 750 x 750 x 900 mm box.

Portions of the Ride may extend up to 200mm outside the size box. The base of the construction must be entirely contained within the 750 x 750 mm square base. Teams shall assume that there is no surface outside of the base.



Operation Interfaces and controls may be located outside the Size Box, however any components that do not require physical operator access during the Ride's operation must be located within the Size Box.

*E.g. A series of Push Buttons may be placed outside the Size Box, but a power supply or control board must be placed inside the Size Box. If the board has a reset button that is only used when the ride is not operating, it must be inside the Size Box.*

Connection Cables to power utilities may extend outside the Size Box.

## **Rider Experience**

### **Height**

Riders shall be lifted 300mm above their initial loading height at least once during every ride cycle

### **Orientation**

Riders shall change orientation by at least 45 degrees in any direction during the ride cycle. Riders can end a ride cycle in a different orientation than at the start of the ride cycle.

### **Acceleration**

Riders shall experience at least 2G (19.62 m/s<sup>2</sup>) of absolute acceleration force in any direction at least once during every ride cycle. This includes acceleration from gravity. This is a real acceleration that can be measured by an accelerometer.

## **Operation Day**

Teams will have at least 30 minutes total to unseal their Ride and prepare it for operation. Any work on the Ride after the Start of the Operation Day will be considered downtime.

Rides will operate during a period of 6 hours.

Rides will operate primarily in Continuous Automatic Operation, where no operator intervention is required between operation Cycles.

An operation Cycle consists of the ride program, followed by a pause of approximately 0.5 seconds per rider to emulate loading and unloading.

There will be a minimum of 8 riders allowed on the ride during a single cycle. There is no maximum riders per cycle limit.

Rides will have a throughput between 32 and 64 Riders per Minute when in continuous automatic operation. Throughput = (# of Riders per Cycle) / (Cycle Time).

Riders will stay on the ride for one hour as the ride operates in Continuous Automatic Operation. Every hour, on the hour, Teams shall safely stop the Ride. The riders must be then removed from the ride and new riders shall be placed on the ride.

***Note on rider scale: This is not a model ride. The riders of this attraction are candies as described in the Rule book. These riders are not stand-ins for human riders. These candy riders are the real riders of this real attraction. The accelerations and forces used to engineer the ride shall be based on the actual accelerations and forces experienced by the candy riders.***

## **Facilities input**

Each Team will have access to:

A 30" x 72" (760 x 1820 mm) table for their ride and any Tools or equipment they need to service their ride. Virtual Teams may use any surface with a similar area.

1 Standard 120VAC Outlet for the Ride.

1 Standard 120VAC Outlet for additional Tools or Equipment.

Teams may add a Surge Protected Power Strip for their Tools or Equipment.

Teams may not draw more than 15 Amps total.

## **Travel**

This year's competition will be held in person. Teams are responsible for transporting their ride.

The REC Planning Committee has determined that the value to competitors, Judges, and the competition as a whole gained by having rides and participants in the same physical space is worth the travel logistics burden on teams.

Teams should consider the transportation of their ride in their design to ensure that their ride can be made functional on April 12th. This could include modular deconstruction into a padded parcel or checked luggage. On the day of competition, teams will have less than an hour in the event venue before operation begins and should be prepared to have their ride operational within that time.

Rides will be sealed in a bag per the Bag & Tag section of the Rule book when they arrive at the Event. Competition officials will conduct an inspection before instructing teams to unseal their ride.

For specific questions about transportation or if a team is completely unable to bring representatives or their ride to the event, please contact the planning committee and we will assist you on a case by case basis.

**Good Luck Ride Engineers!**