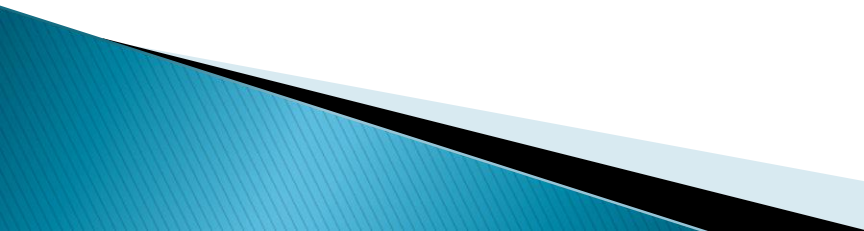# DESIGN CHALLENGE

## FIRE BRIGADE

# Introduction

▸ In any industry, engineers and designers work to improve the tools available to them.  For fire fighters, their primary concern is to extinguish the fire quickly, keeping both themselves and the people living nearby, safe.  Unfortunately, the water or fire retardant chemicals they use can cause significant property and environmental damage as well.

# Design brief

- **Problem:** A revolutionary new fire retardant material has been developed that will not damage property like water and is safe for the environment. However, its unique properties make it impossible to deliver it to a fire with the traditional tools available to fire fighters? How can we design a device that will pick up the fire retardant material (a water wiggly toy), and deposit it on the simulated fire, while keeping you safe from the fire?

- **Criteria:** Design a device that will pick up the fire retardant material (a water wiggly toy), and deposit it on the simulated fire, while keeping you safe from the fire.

# Constraints:

- You may not use your hands to pick up the fire retardant or deliver it to the fire; the device must be what comes in contact with the fire retardant. You *may* operate the device, however.
- You must operate the device from standing position.
- You must remain at least 3 feet away from the fire at all times for safety. You building materials are all fire proof.
- You may not break the fire retardant container.

# Materials Available

- Wooden dowels
- String
- Drinking Straws
- Cardboard from cereal boxes
- Twist ties
- Springs
- Take-out food trays
- Cups – any size
- Masking tape (8 inch limit)
- Pipe cleaners
- Clothespins
- Binder clips
- Plastic bags
- Plastic-ware (plastic forks, knives, or spoons)
- Scissors*
- Hole punch*
- Elmer's Glue*                    *To help with adhesion, not to be used as part of design

# SHARE YOUR SOLUTIONS

- What do you think is the best feature of your design?  Why?

- What are some things everyone's designs have in common?

- What would you do differently if you had more time?

- What were the different steps you had to do to get your project to work the way you wanted?