

Hexa-Grooves

for a safer future

Mrs. Larson, Aaron L, Anderson L, Chloe C, Jeannie Y,
Pranav B, Saachi M, Tarannom D.



Who We Are

- ❑ Seven students from Kennedy Middle School in Cupertino CA
- ❑ Teacher from Kennedy
- ❑ Mentor provided by MTI
- ❑ Combination of 7th and 8th graders
- ❑ Mixture of genders
- ❑ Intention to improve our city



**Pranav
Balaji**
8th grade

**Anderson
Le**
8th grade

**Tarannom
Dolatkah**
8th grade

**Sharon
Larson**
Teacher

**Carlina
Rose**
Mentor

**Jeannie
Yoo**
9th grade

**Saachi
Mahaddalkar**
9th grade

**Aaron
Liu**
8th grade

**Chloe
Chen**
8th grade

Garrett Morgan Competition



Middle School competition that focuses on innovative solutions to real-world sustainable transportation problems.

Focuses on STEAM

Focus on sustainable transportation to encourage youth to explore careers in transportation.

Sponsored by the Mineta Transportation Institute with the support of the US Departments of Transportation (DOT) , California Department of Transportation (Caltrans) and other industry partners.

Theme



Each year the competition has a theme:

- 2024 theme was VisionZero2030. This prompt focused on the commitment to stop traffic related deaths and injuries by 2030.
- 2025 theme is Get Going, Go Green

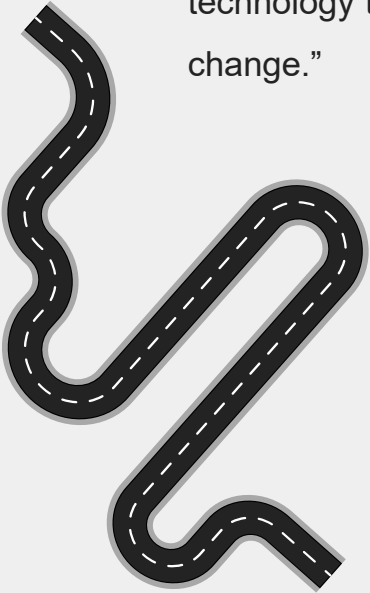
The contest provides prompts that fit with the theme for the students to solve problems relating to the theme and the prompt.

Additional resources are provided to help guide the students on the prompt.



Our Prompt

“Imagine you're in charge of designing roads in your town. How can we improve the role of urban planning and infrastructure design to create safer roads? Provide 1-2 specific examples of how changes in road design can enhance safety. Consider materials & technology that would also contribute to reduce the impact of transportation on climate change.”



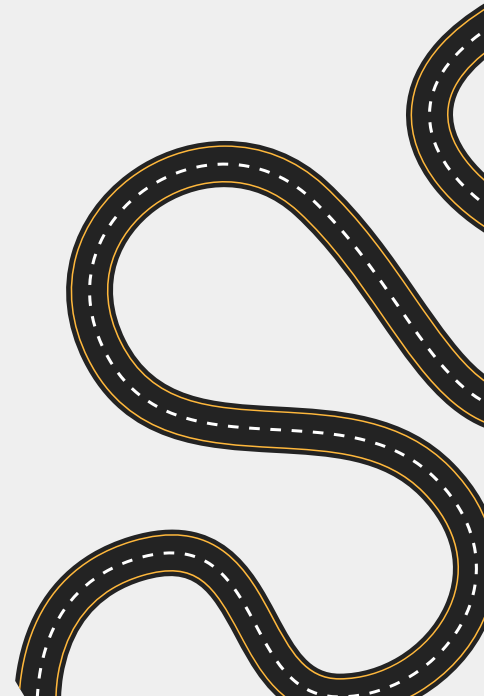
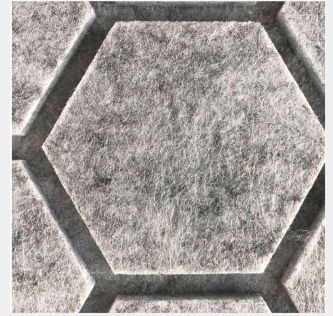
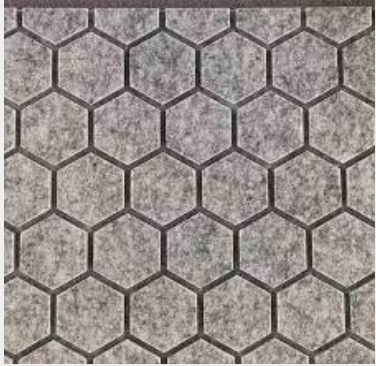
Causes of Accidents



- Speeding
- Crashes at intersections
- Poor weather
- Low visibility
- Distracted driving
- Drunk driving

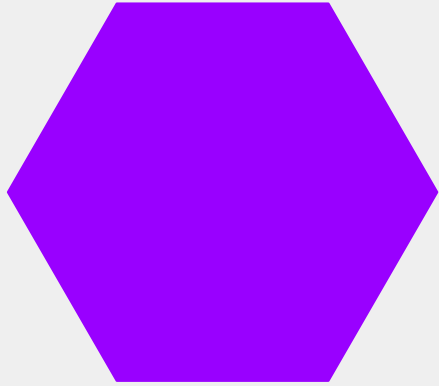


Our Solution: Hexa —Grooves



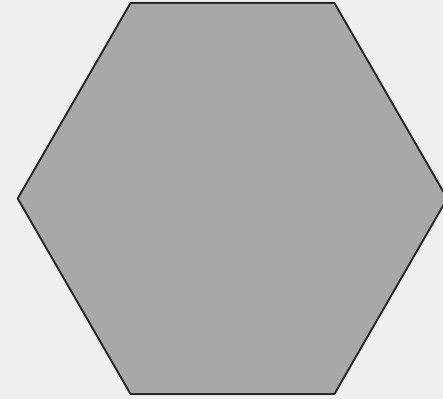
Hexa-bumps to Slow Speed

Hexa-grooves vs. Hexa -bumps:



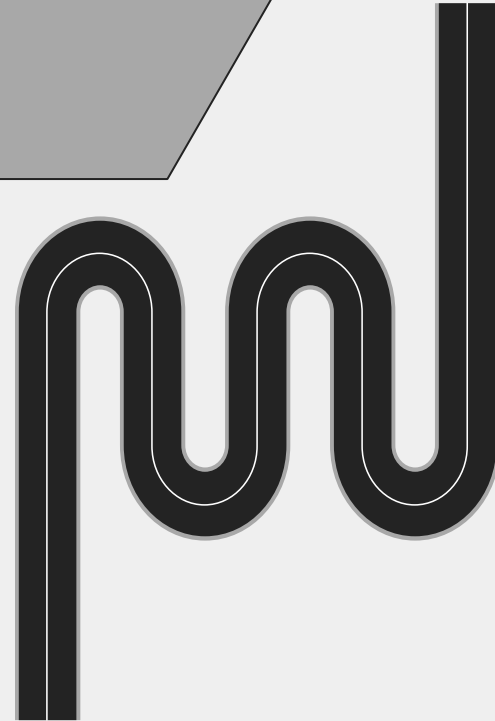
(Purple) Hexa -Bumps

- Only at intersections
- Varying heights



(Neutral) Hexa -Groove

- All over the roads
- Same height



In the Real World



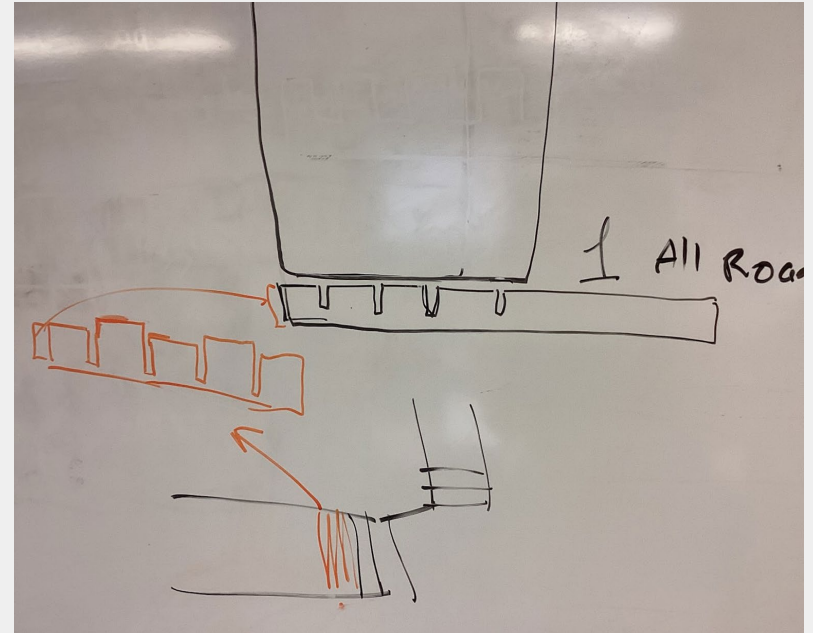
(Uneven) purple hexa-grooves

(Even) neutral hexa-grooves

Dimensions:

Each hexagon would be $2\frac{1}{2}$ inches in length, and $\frac{1}{2}$ to $\frac{1}{4}$ inches in height and equally $\frac{1}{4}$ inches apart from each other.

Troubleshooting & Refining our Solutions:



- At first we thought that the cars would be unstable.
- We used diagrams and models to help us understand the problems we were facing

Conclusion



Teacher Tips



★ Take advantage of useful resources

- Use the MTI guidebook to begin. Don't be afraid to use all of it or just a little. Feel out your team
- Chose a prompt to focus upon. Let the kids drive this.
- Use the mentors
- Use the articles provided
- Have them read articles about the topics. Come to the meetings ready to discuss these articles.

★ Assemble a team. Keep it small.

★ Trust in your team and encourage them to challenge themselves

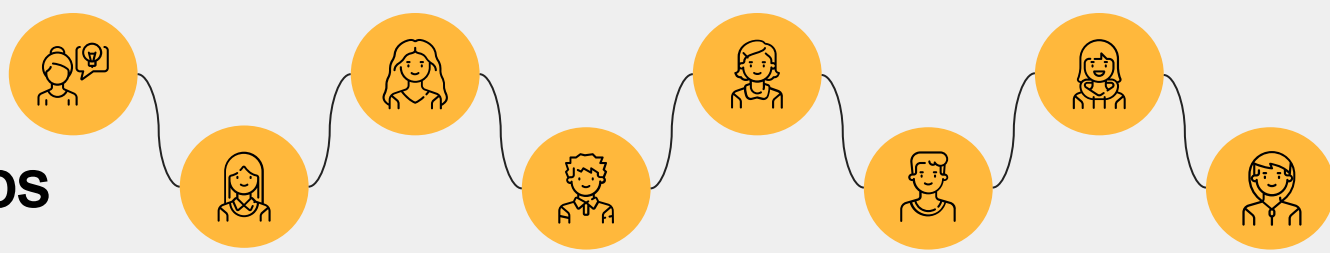
- Discover what your kids do not know about the topic. Educate them.
- Let the students discuss and brainstorm. Add where needed.

★ Keep progress organized

- Start a note catcher for all of your thoughts
- Keep track of the timeline and guide to meet deadlines



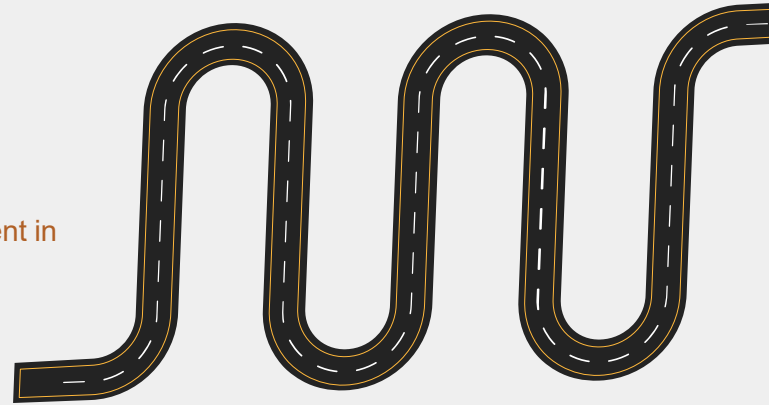
Student Team tips



- ★ **Worked as a close team, building bonds with learning**
 - Found regular meeting time
 - Developed timeline for completion
 - Broke up work amongst students

- ★ **Built a common goal to make something we would all be proud and confident in**
 - Began with MTI provided student guide
 - Discussed EVERY idea no matter how unique or new it was
 - Developed a brainstorming sheet for ideas and action items
 - Made models to represent your possible solution

- ★ **Developed a solution we were passionate about and believed would improve our community**
 - Discussed what causes the most traffic deaths & injuries
 - Chose a prompt to focus upon that had the potential to improve an aspect that our city could improve in
 - Educated ourselves on traffic laws & standards



Question & Answers

