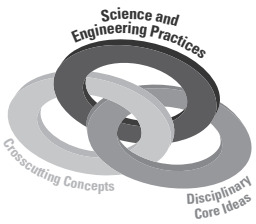
Mechanical Waves



Unit Overview

Phenomenon: Waves are eroding the coastline near the Las Olas Hermosas Restaurant more than the surrounding beaches.

Storyline: Las Olas Hermosas restaurant sits atop a steep cliff which is being eroded by massive winter waves. Learn about the properties of waves, wave energy, and how waves travel through different media to help write a proposal to solve Las Olas's erosion problem.

Types of Waves

Make waves with a variety of materials and collaboratively develop a scientific definition of waves, which will serve as the beginning of your model of waves. Then, apply your definition to a variety of phenomena, and use it to determine whether or not those phenomena are waves.

Properties of Waves

Measure the amplitude, wavelength, frequency, and wave speed of a variety of waves. Graph your measurements, and use the graphs to determine the relationships between different properties of waves.

Wave Energy

Build and optimize simple wave power generators. Then, analyze data about the energy carried by waves around the Las Olas Hermosas restaurant, and determine how the energy in the wave is related to the amplitude and frequency of the waves approaching the shore.

Waves in Different Media

Use a variety of models to investigate the way that waves behave when they reach the boundary between two different media.

Engineering Challenge: Preventing Coastal Erosion

Help the residents of Sand City by researching, designing, testing, and optimizing a structure to prevent erosion of the coast and save the local highway from suffering major damage.

Performance Assessment: Saving the Las Olas Hermosas Restaurant

Write a proposal for an engineering solution to prevent the erosion of the cliffs near Las Olas Hermosas restaurant. Use your understanding of wave properties to explain why your proposed design will be effective.

ANCHORING PHENOMENON

Anchoring Phenomenon: The waves are eroding the cliff below Las Olas Hermosas restaurant more than the surrounding beaches.

1. Complete the first two columns of this chart.
   - List what you think you already know about this unit's phenomenon.
   - Then write at least three questions you have about this phenomenon.

   Return to this chart at the end of the unit. Add the key information you learned about this phenomenon. Give evidence!

Know	Want to Know	Learned