Travel Sales Case

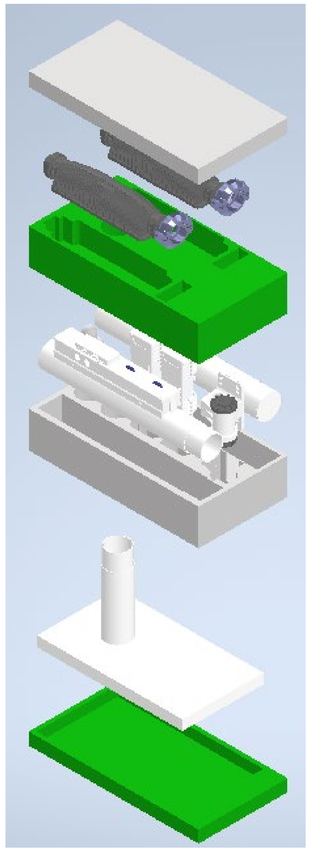
Nate Nesbitt – M3 Innovation

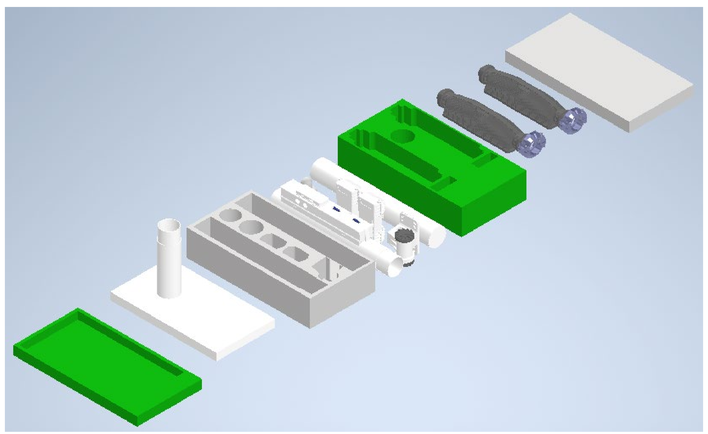
Introduction

- **Objective:** Design a way to securely transport sports light display that can be easily assembled.
- **Solution:** Custom made Road Case with layered foam custom fit to lighting display parts and poles.

Experiments

- **Objective:** Figure out how parts will fit using the smallest space possible.
- Using Autodesk Inventor, parts can be moved around to determine minimum size of case.





Case and Foam Design

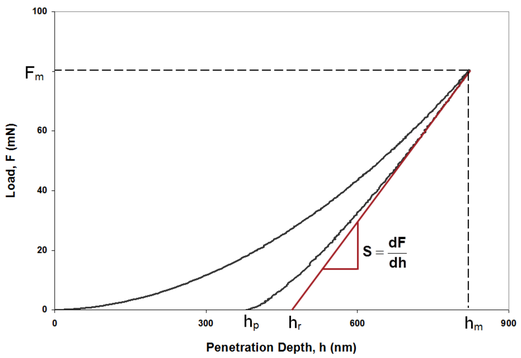
- The case is a Road Case custom made to fit foam dimensions.
- The Road Case is made with plywood.
- Features include wheels and handles on each side for easy maneuvering.
- The foam is a polyethylene material which will securely maintain heavy parts to prevent movement and breaks.
- The foam was made with 14 different layers, to be glued into 4 main layers.
- The 4 layers are colored gray or green, to tell the difference when assembled in the pictures.
- The bottom green layer will stay in the box.
- Middle two layers will move to access parts.
- Top gray layer will be secured to the lid.

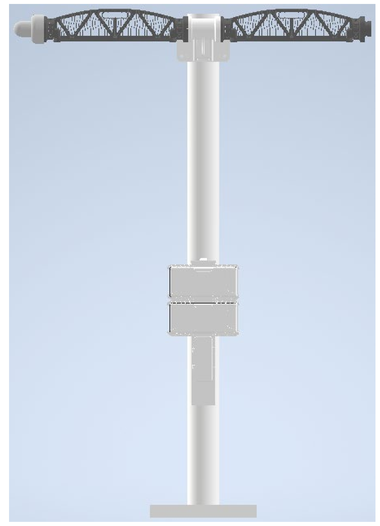
Calculations

- To make sure parts would be safe and secure, compression calculations were used to pick the proper foam.

- $S = \left(\frac{dP}{dh}\right) max = mPmax\left[\frac{(hm-ho)^{m-1}}{(hm-ho)^{m}}\right] = mPmax(hm-ho)^{-1}$

- S stands for foam stiffness, P for load weight, and h for depth.





Pole Design

- Designed to display the Mako M3 Sports Light.
- When assembled, total height is 7 feet and 10 inches.
- Made of 3 parts in order to fit in a case for easy travel.
- Bottom pole is welded to the base.

Dimensions

- Custom Road Case Interior Dimensions are 42x22x24 inches.
- Pole Base is 20x36x2.5 inches.
- Poles are 6 inches in diameter.
- Bottom pole is 15.5 inches.
- Middle pole is 36 inches.
- Top pole is 40 inches.
- 4-inch overlap inside each pole for easy mounting.