

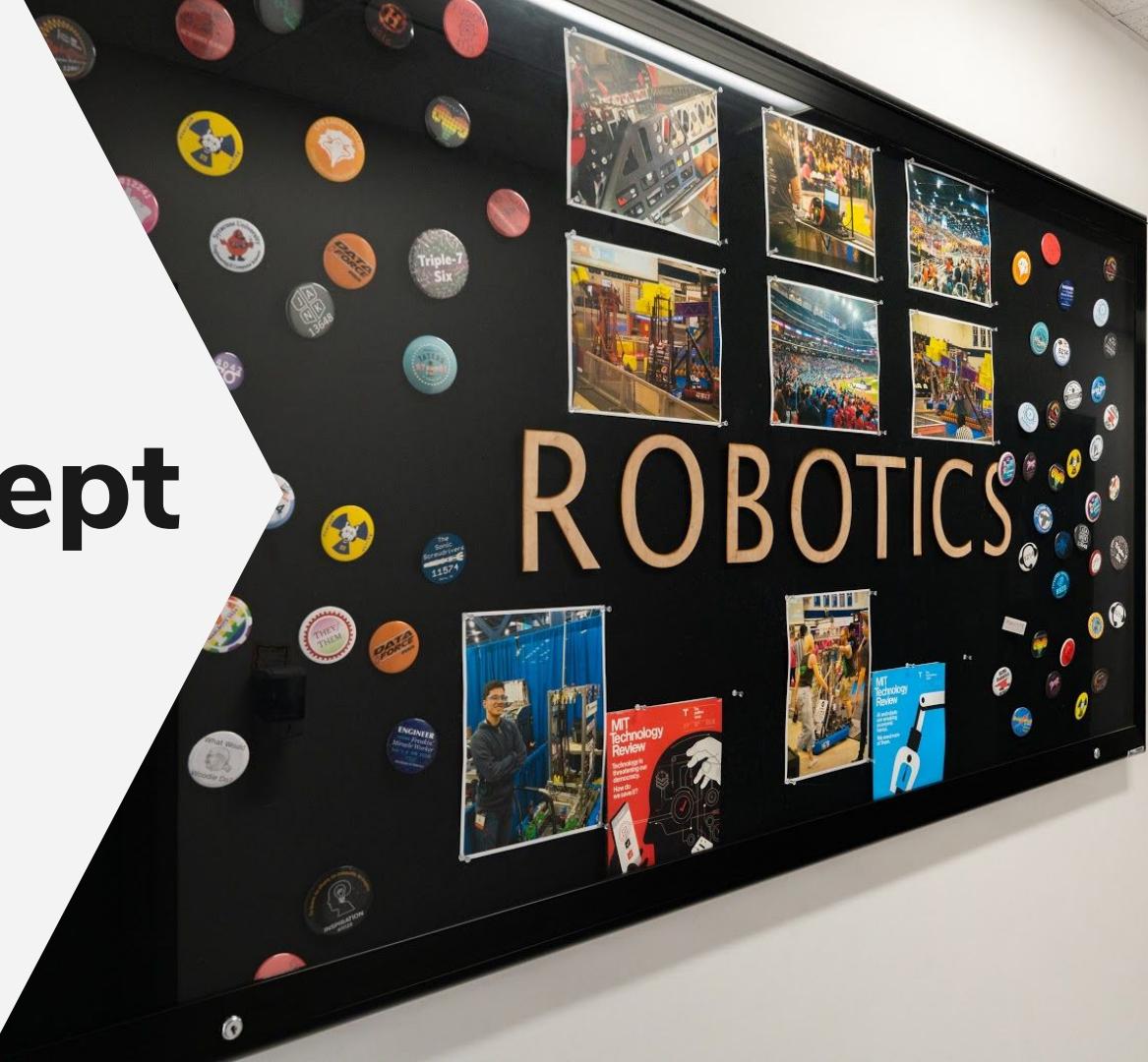


Penrose Tiles & Robotics Board Redesign

7419

Concept

ROBOTICS



In January Henry and Areej talked about wanting to update the display cabinet.

Speech and debate has an impressive wall of trophies and awards, but robotics is just some random laser cut wood, pictures, and pins. It's boring.

But we can make cool stuff.

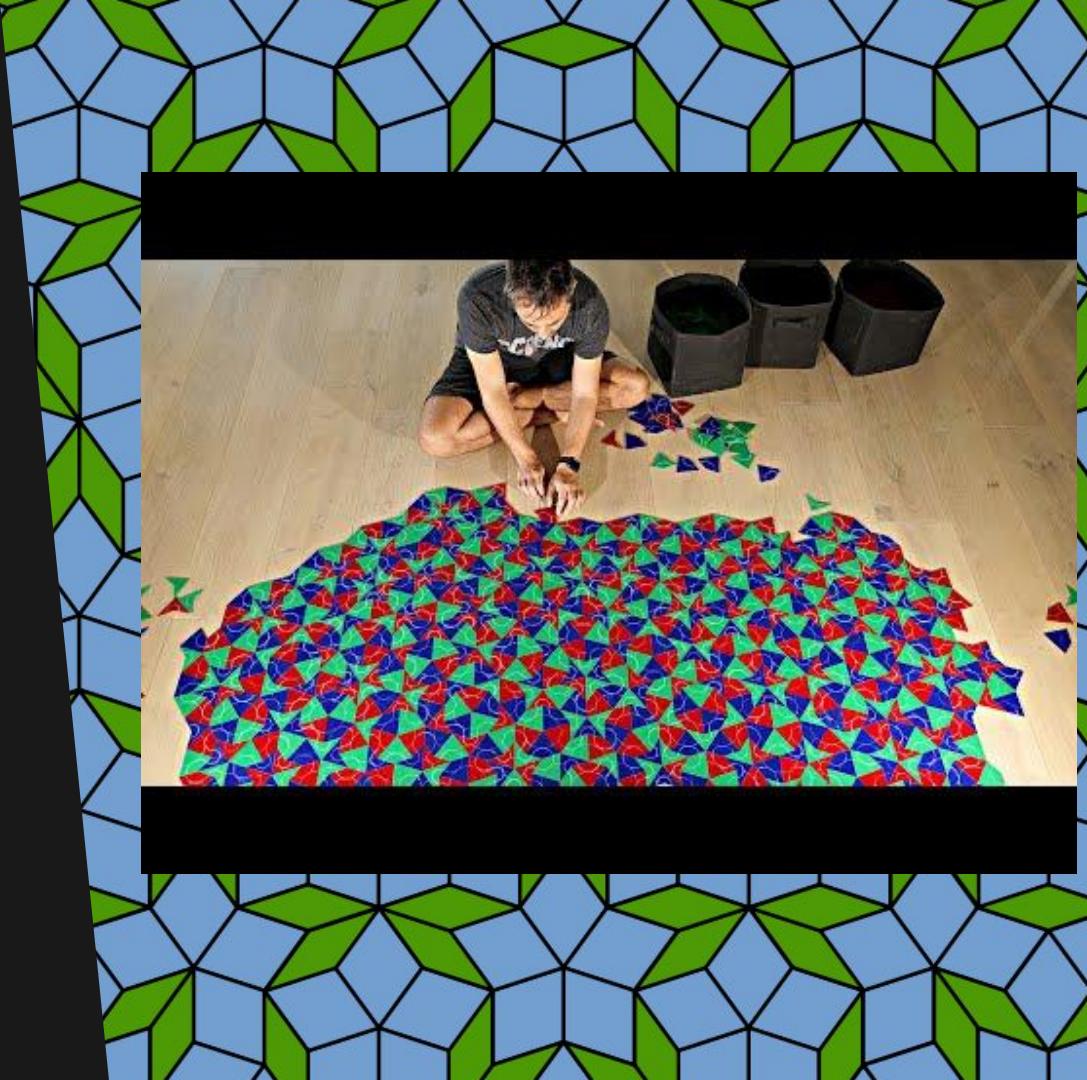
They wanted to impress parents on tours and inspire freshmen to join robotics.

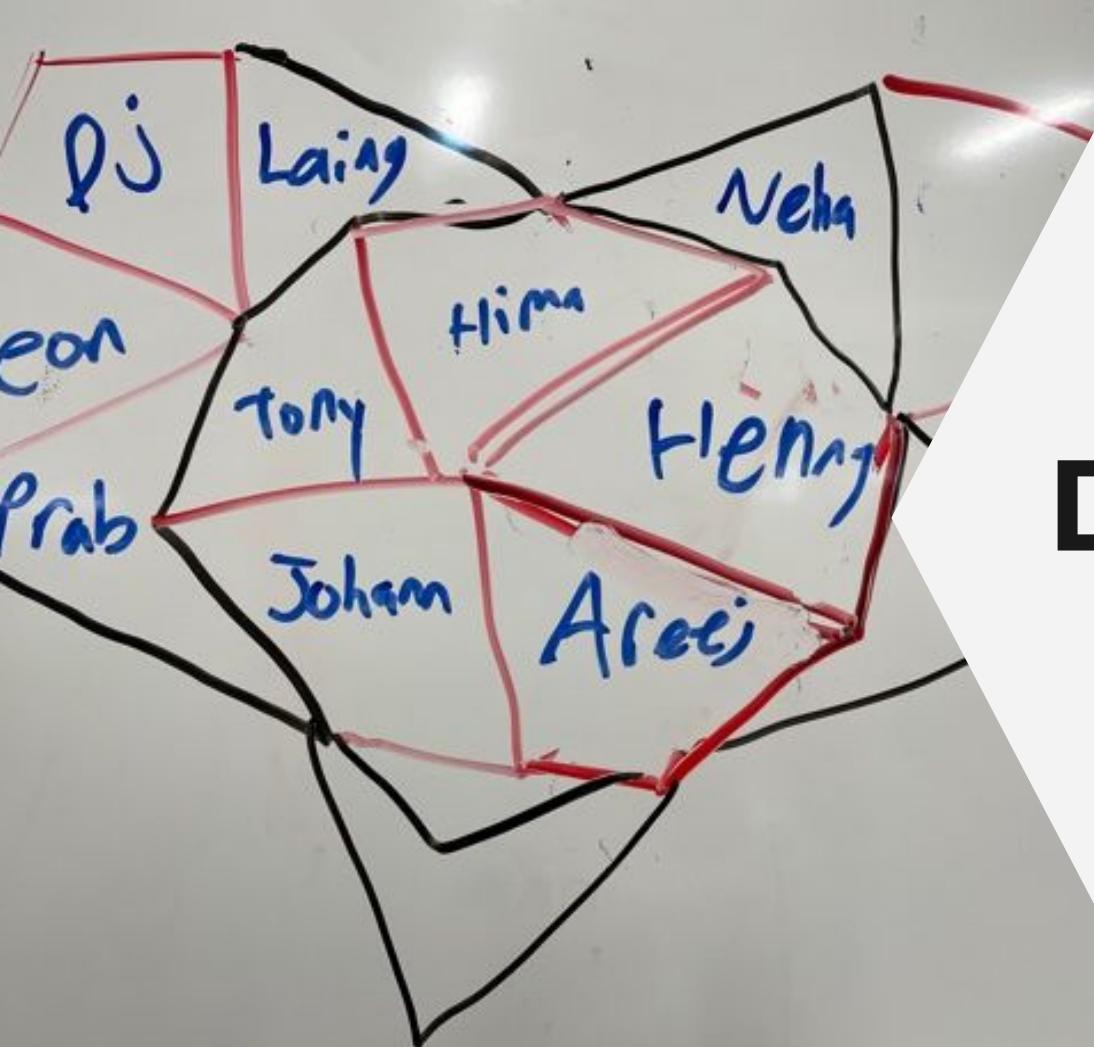
They came up with the idea of having a board of all the captains and coaches in QLS FRC history, and Areej brought up this design called the

"Penrose Tiles"

It's an infinite pattern that never repeats and consists of just 2 different pieces. Here's a video explaining the concept.

Their aim for the titles was to grow and slowly add onto the board each year. They also wanted to include the rest of the robotics team, but giving them all penrose tiles would need a new board almost every year.



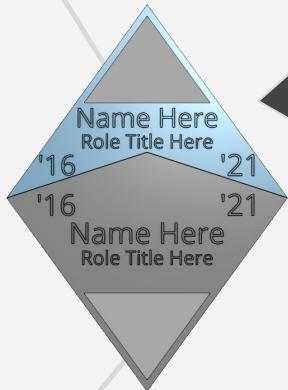


Design

The pattern was already decided, now they needed to figure out what they wanted to include and how to include it.

They ended up with year start, year end, name and then a quote or role name that represented the person. The aim for the quotes was for it to be **fun** and **lighthearted**, while still being **professional** and be able to be shown to prospective students and parents. This gave students the ability to make inside jokes that the admin wouldn't get mad about.

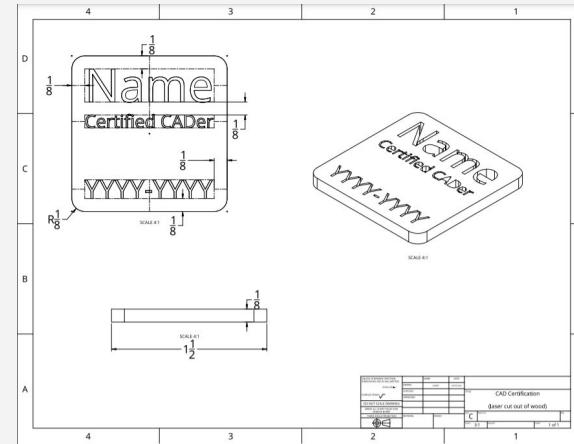
A **pivotal** choice was to create a token that would allow captains to take a piece of the tile with them to remind them of robotics; a part of robotics that they could keep on their keychain or put on a necklace. If they come back to visit, they could slot their token into their respective tile for a **seamless** fit.



They decided to make tokens, each with a symbol that **represented** the person's discipline within robotics.

To include the rest of the team, they decided to make a team roster section.

Each of the team members would be given the chance to create their own roster tile from a **technical drawing**.



Fabrication





Creating long lasting, **high quality** tiles and tokens was their first priority. Another major consideration was the ease and cost of producing these for the coming years. This led to the decision of laser cutting widely available **clear acrylic pieces** and using spray paint and model paint to achieve a consistent color throughout the years with rich characters. This combined with a 4 layers of clear coat would give the tiles the **quality** and **durability** that they wanted, while still keeping costs low and being easy to manufacture.



The colors were chosen to match the school colors (**blue** and **gold**) and so they could **draw attention** while on the board. But, to pay homage to the team's original colors, we painted the etched letters in our iconic black and white.



Tokens



For the tokens, the original plan was to fabricate them out of **aluminum** stock, but after several attempts, only one of the tokens was up to the desired quality, while the others were **scrapped**. We just didn't have the right tools for the job.

So back to the drawing board.

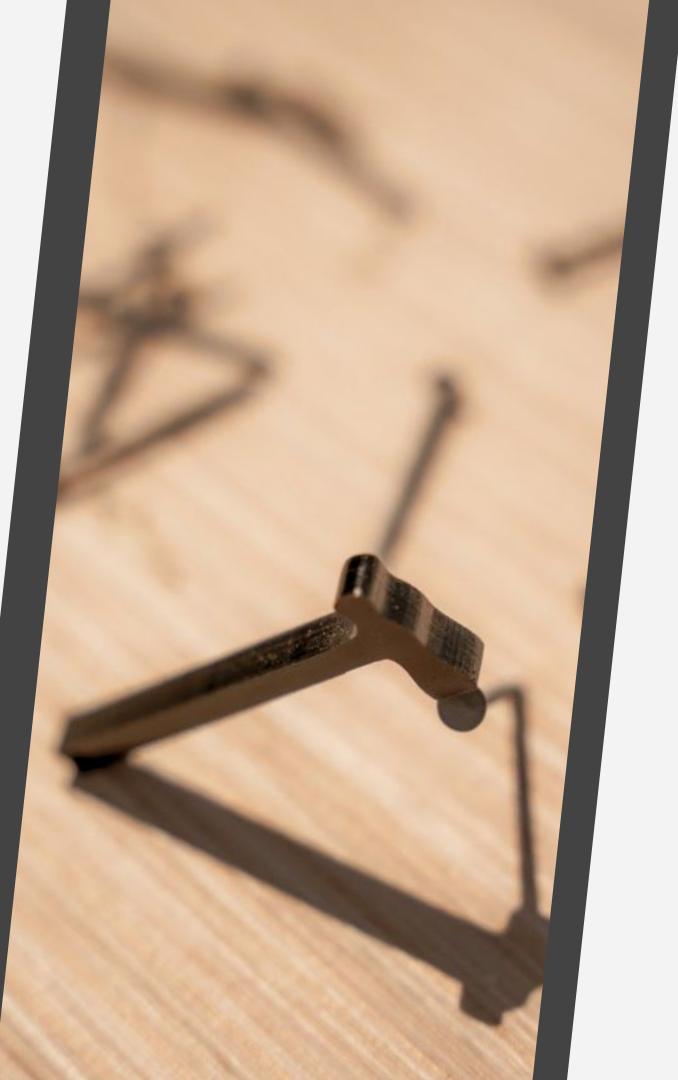
They still wanted tokens that the leadership team could take with them, but making them out of aluminum was impractical. After considering the options they decided to make the tokens out of **high quality ½ inch thick glossy black acrylic**. It was a good compromise between feasibility and functionality.





**End
Product**





In the end, after working for hours designing, discussing, fabricating, etc, they finally had an end product they were proud of.

They had updated the display case, but more importantly had created a tradition that could hopefully be carried on for years to come.

Photo Gallery







