

**THE
DIGGERIDOOS**
AT VIRGINIA TECH



Not-a-Boring Competition Team

- at -

Virginia Polytechnic Institute and State University

SPONSORSHIP PACKET

NaBC 2024

Inventing the future of tunneling technology

Table of Contents

EXECUTIVE SUMMARY	3
Mission Statement	
Vision Statement	
Team History	
Competitive Advantage	
Organization and Management	
THE BORING COMPANY AND COMPETITION	4
The Boring Company	
The Competition	
Concept	
KEYS TO SUCCESS	5
The Need	
Budget	
Key Performance Indicators	
SPONSORSHIP	6
Sponsorship Tier Chart	
CLOSING REMARKS	7
Closing Remarks	
CONTACTS AND INFORMATION	8
Contacts	
Quick Info	

Executive Summary

THE TEAM MILESTONE

The Diggeridoos at Virginia Tech, are developing the revolutionary technology to accelerate the speed of land travel, alleviate traffic congestion, and minimize costs associated with high speed subterranean travel.

MISSION STATEMENT

“Rethink travel infrastructure through the development of an efficient and cost effective micro tunneling machine.”

TEAM HISTORY

The Diggeridoos at Virginia Tech was founded in September of 2020 following the announcement of The Boring Company’s Not-a-Boring Competition. Shortly after that a team was formed and the design of a small scale tunnel boring machine (TBM) was started. The team developed a conceptual design which progressed to a preliminary design and then a detailed final design. Out of nearly 400 applicants, the team’s concept was chosen as 1 of 12 teams to compete in the 2021 competition. Our team is developing new ways of tunnel boring which will be implemented into this year’s machine. Since the founding of the The Diggeridoos at Virginia Tech, we have grown into a 35 member strong engineering design team.

COMPETITIVE ADVANTAGE

The Virginia Tech College of Engineering is widely regarded as one of the most prestigious engineering programs in the world. Particularly, the University’s Mining and Minerals Engineering School is often regarded as one of the best. The team is built on an open vetting process in which anyone who is interested is able to join. Members hit the ground running and are given responsibility as soon as they join the team. Most who join possess a passion for engineering and innovation. Through this method of open recruitment we are able to have a wide range of skill sets and talent and do not limit the team’s capabilities based on who joins. It also allows for our passionate and talented engineering students to have the opportunity to express their talents and interests in a unique manner compared to other engineering design teams.

PREVIOUS ACCOMPLISHMENTS

The Diggeridoos have already shown that we are capable of delivering an efficient design and functioning machine. The team’s concept was chosen as 1 of 12 teams to compete in the 2021 competition out of nearly 400 applicants! Additionally, our machine was awarded the 'Fastest Launch' design in the world by The Boring Company. In 2023, our team was one of top 5 teams to compete onsite in Bastrop, Texas. In short, we deliver high quality work where the results speak for itself.

ORGANIZATION AND MANAGEMENT

The Diggeridoos at Virginia Tech is currently comprised of 20 members, ranging in majors from engineering to business. The team is led by Pranav Veenam and Chris Johnston as the Project Leads. They are accompanied by Chief Engineer, Austin Koontz, Chief Operations Officer, Joaquin Baquerizo, and Business Lead AJ Leshem. The engineering side of the team consists of 3 sub-system leads: Joseph O’Such - Hardware, David Zhang - Electronics, and Markus Homann - Software. In order to ensure smooth travel to competition, we have a logistics team lead by Andrew Colangelo.

The Boring Company and Competition

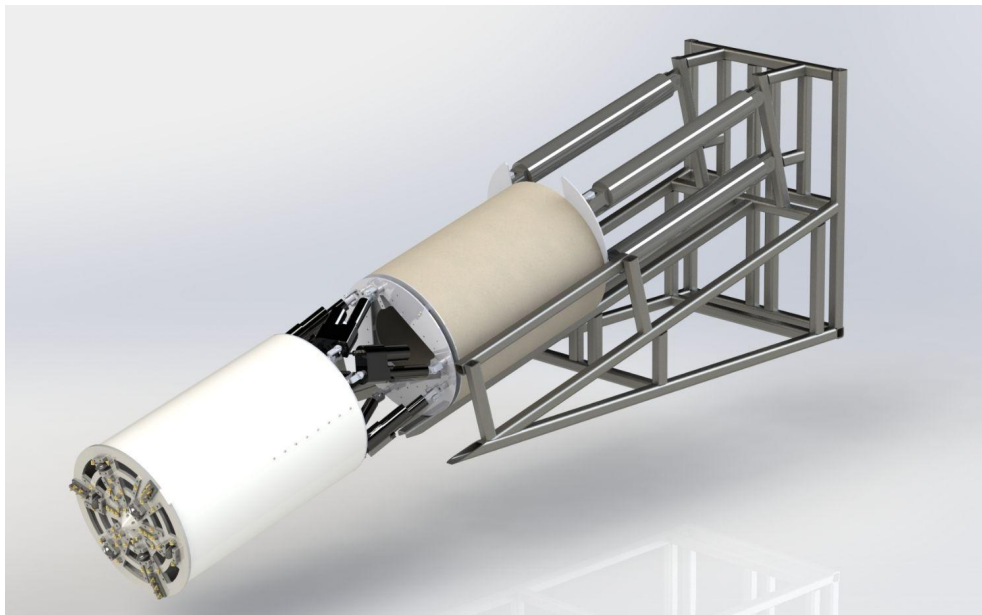
THE BORING COMPANY

The Boring Company seeks to revolutionize the tunnelling industry by reducing the cost of constructing a tunnel. The current cost of a tunnelling can range from \$6 million to over \$20 million per mile. At The Boring Company they aim to bring that cost below \$1 million per mile. This private company has showcased its technology by building a test tunnel under the Las Vegas Convention Center. The Boring Company is continually improving their technology to not only reduce the cost of tunneling but increase the overall speed of construction. As stated by Elon Musk, the goal of this company and their mission is to put an end to the “soul-destroying” traffic problem.

THE COMPETITION

In 2013 Elon Musk released a white paper about the concept of hyperloop. From this his one company, SpaceX, started the famous Hyperloop competition. This annual competition was hosted four times in Hawthorne, CA. The last Hyperloop competition was held in the summer of 2019. In the summer of 2020 Elon Musk hinted at a tunneling competition that could happen. His other company The Boring Company then started the Not-a-Boring Competition in response. This new competition was announced on July 7th of 2020. Following this announcement applications to participate were open. There were three main objectives that would be judged for the competition. Firstly, the tunnel had to be completed as fast as possible. Secondly, it was judged on how fast a drivable road surface could be made. Lastly, it will be judged on the accuracy of the machine’s guidance system. Additional constraints were given, such as the tunnel had to be a minimum of 0.5 meters in diameter and traverse 30 meters. In the end the entire goal of The Boring Company and this competition is to “beat the snail.” On average a snail is 10 to 100 times faster than most tunnel boring machines. Shortly after their second competition, held in Bastrop, TX, The Boring Company announced a third competition for March 2024 with similar specifications, which is the one we are pursuing funding for

OUR CONCEPT



Keys to Success

THE NEED

This is the second competition of its kind. With the help of like-minded partners, the The Diggeridoos at Virginia Tech intends on winning this global competition; earning both Virginia Tech and the team's partners' recognition at a cutting-edge, globally renowned, and highly publicized engineering competition. The team's position on this highly sought-after competition stage provides a unique opportunity for organizations that are able to supply us with the resources necessary to compete and win. The team is looking for multiple partners to reach this goal.

BUDGET

Hardware Components	\$24,500
Electrical Components	\$8,000
Tunnel Segments	\$15,000
Cross Country Shipping	\$5,500
Travel and Miscellaneous Expenses	\$19,850
Total Funding:	\$72,850

KEY PERFORMANCE INDICATORS

The two leading indicators in gauging the success of The Diggeridoos at Virginia Tech are: the realization of our competitive TBM design and the performance during the Not-a-Boring Competition hosted by The Boring Company.

The team's work throughout the academic year culminates in the construction of the TBM. The TBM design, processes, and performance are presented to The Boring Company judges, who will compare our TBM against the designs of other competing teams. The highly-valued nature of the Not-a-Boring Competition inspires the team to ensure that our TBM is utilizing the most groundbreaking technology in a well-organized manner. An attention to detail and quality-centric mindset is what will enable us to complete and distinguish our design from the other entrants.

Performance during the Not-a-Boring Competition is another indicator of the team's success. The immediate aim of The Diggeridoos at Virginia Tech is to place well in this competition, which supports our long-term goal of establishing a program for the development of tunneling technology. Ultimately it comes down to key factors such as the TBM's reliability, safety, excavation speed, and accuracy:

- Reliability: TBM does not breakdown while in use.
- Safety: Has built in lock-out tag-out procedures that will shut down the machine when a safety hazard presents itself.
- Excavation Speed: The tunnel is completed in the fastest amount of time, aiming for under four hours.
- Accuracy: The TBM arrives at the predicted location upon completion of the tunnel.

Sponsorship

Benefits	Bronze \$500 TO \$1,999	Silver \$2,000 TO \$4,999	Gold \$5,000 TO \$9,999	Partner \$10,000+
Access to our Resume Portfolio and Talent Base	✓	✓	✓	✓
Logo on Tunnel Segment for Competition Run	✓	✓	✓	✓
Logo on Banner for Competition and on Machine	✓	✓	✓	✓
Small Logo on Website Sponsor Page, T-Shirt, Merch, and Machine	✓	✓	✓	✓
Medium Logo on Sponsor Banner		✓	✓	✓
Medium Logo on Website Sponsor Page, T-Shirt, Merch, and Machine		✓	✓	✓
Recognition on Team's Social Medias (Instagram, Facebook and LinkedIn)			✓	✓
Large Logo on Sponsor Banner			✓	✓
Large Logo on Website Sponsor Page, T-Shirt, Merch, and Machine			✓	✓
Formally Thanked at All Awards Ceremonies and Public Events				✓
Exclusive Facilities Tour (Own transportation required)				✓
Invitation to Dig Day at NaBC 2024 (own transportation required)				✓

Closing Remarks

CLOSING REMARKS

Our team is developing the most innovative and revolutionary advancements in travel since the dawn of the automobile. The work of this team extends far beyond the core curriculum and exposes students to new concepts by developing original areas of study and different capacities to implement their knowledge on a competition that few have the opportunity to be a part of.

Sponsorship of this team is an investment in the future of transportation as well as the future of innovators. Partnering with The Diggeridoos at Virginia Tech will present a unique offer to be a part of an innovative, creative, and competitive team that is at the forefront of developing the technology that will lead the world towards a safer, more connected tomorrow.

VIRGINIA TECH STAFF & FACULTY PARTNERS

DR. MATT NOWINSKI (DEPARTMENT OF MECHANICAL ENGINEERING)

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Contacts and Additional Information

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Sponsorships may be tax deductible. To mail checks to our mailing address listed below. Checks should be made out to ***Virginia Tech Foundation - Diggeridoos***

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SOCIAL MEDIA

Connect with us: @DiggeridoosVT

More information about our team and the competition can be found at:
The Boring Company's Not-a-Boring Competition: www.boringcompany.com/competition
The Diggeridoos: diggeridoos.com