

**DO IT  
YOURSELF!**

# BRILLIANT BLACK BUILDERS



**BROUGHT TO YOU BY THE STUDENTS OF:**



**&**



**pearadox**  
— Robotics Team 5414 —

**WRITTEN BY: BRADLEY PITTMAN AND TINO NYABADZA**

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## INTRODUCTION

We are Brilliant Black Builders, a 5414 Pearadox initiative that aims to show students of color that they are intelligent, capable, and important individuals. It was created to establish a comfortable space for people of color to network with professionals and share their experiences. When it comes to STEM and Robotics, people of color are an underrepresented minority that often face discrimination, disrespect, and neglect. These intimidating conditions make it difficult to participate. Brilliant Black Builders aims to create a way for students of color to network with students and Black STEM professionals alike in an environment where they are surrounded with similarly experienced people. Here they will gain valuable knowledge and acquaintances that will improve their experience in STEM.

We began with running conferences at our FRC competitions, inviting black STEM professionals to speak and share their experience with the student attendees. In its three years of existence, we have made countless memories meeting others and spreading a message. While Pearadox's current Brilliant Black Builders always have fun running these events, we are aware that there is potential for the growth of our initiative. By providing you this guide, we are asking you to help spread our influence by hosting a Black excellence event of your own!



## NEED FOR CHANGE

It is a known fact that discrimination has affected people of color involved in STEM, but what many have little understanding of is how. Discouragement upon entering the field has caused even more difficulty for aspiring black engineers. With Asian and White males being the dominant majority in this field, even parents discourage their black children from participating. As of now, black people only represent a small 18 percent of the total STEM workforce. With limited access to the proper resources to prosper in this industry, it becomes harder for black students to participate. Role models and shared experiences are what guide students towards taking a step in the right direction. We host Brilliant Black Builders to help pave the road of success for black students.

Having Black role models and mentors involved in FRC also encourages black students to participate in the STEM and robotics programs in their schools. Brilliant Black Builders was built to spread a message of encouragement and inclusion to students of color that are reluctant to participate.



# TEAM CULTURE

Not only do exercises like the Brilliant Black Builders positively affect FIRST, but it brings a more harmonious, diverse culture to your own team– making sure Pearadox sports a supportive environment to those who may not feel comfortable is one of our biggest goals. BBB meetings are held weekly at the Pearadox facility. Those meetings often serve as a vibe check to the students that attend. From these meetings, we learn about black students' experience on the team. We also gain new ideas for how BBB can contribute to a student's experience on our team.



This a picture of our very own black alumni, Jared!  
Before graduating in 2022, Jared was featured on  
ABC13 for BBB!

# BRILLIANT BLACK BUILDERS

## SITE PLANNING

One of the biggest struggles we have experienced in running the BBB is not having a big enough and free space to hold the event at competitions. We've hosted BBBs in lunch rooms, classrooms, and even an outside recreational space at George R. Brown Houston Worlds. The best locations are usually in the competition site, because it makes it much easier for students to attend. The most people at a time we have had is about 75 at Houston Worlds, but on average we see around 40 people. To allow for this many attendees, the configuration we like to use at our events are big tables with chairs around them, because it maintains a comfortable environment where everyone is less intimidated and can have an equal chance of participating.

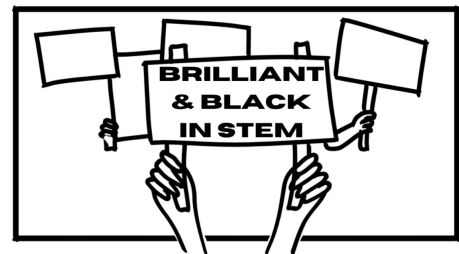
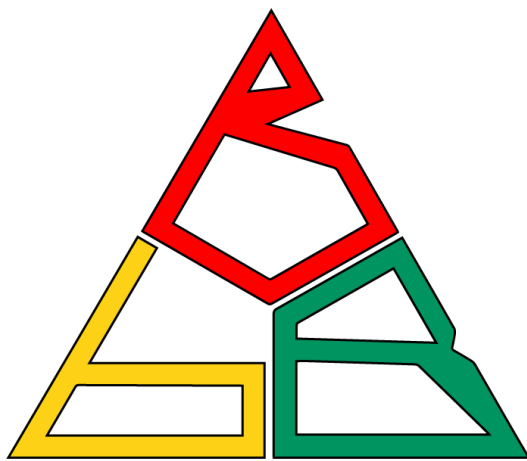


Having small groups instead of one mass turns a presentation into a conversation. We've found that if we fit around 7 students and 1 volunteer at a table it would only take 5 or 6 tables to run a comfortable event. If you cannot find a location within your competition site, we recommend working with companies nearby your competition site who may have spaces like this to host a BBB conference later in the night. This should be a last resort however, because it would be harder to have students travel. While looking for a good site, try to look for one that you can easily direct students and volunteers to. Posting directional arrows or signs will help inform and direct people to where the event will be.

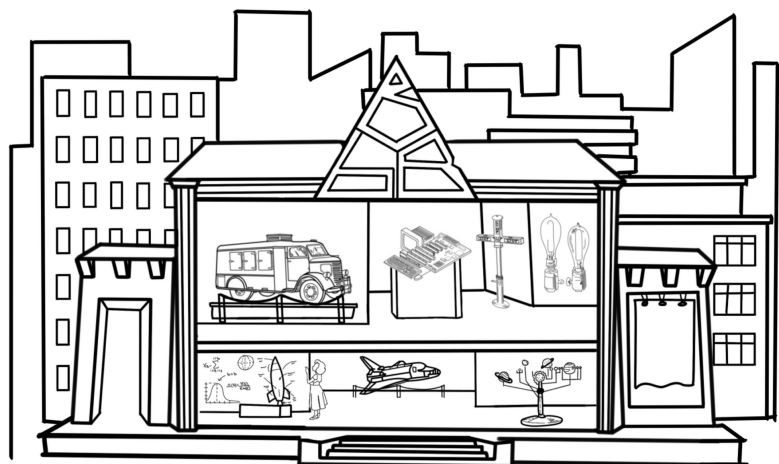
Deciding on a good time for the event is important to do far in advance, because you will need to post it on volunteer invitations. We find the best date to be on Friday, which is the first day of districts or the second day of district championships, regionals, and worlds. Picking the time of day for the event is also hard, because you will have to find a time frame where students and volunteers can attend—make sure to think of the drive team, impact presenters, and scouting times. Something that will help enable people to attend would be stretching the time frame of the event over a longer period of time, like 2-3 hours, towards the end of the day so volunteers can attend after work. Our average event times are around 5 or 6 in the evening because it's while the pits are closing but before teams leave the venue.

# SHIRTS

These are examples of the yearly BBB shirt designs we create and make for our team members and volunteers. As mentioned in the cost breakdown and cutting costs page (page 15), we also give these shirts for free to the first several individuals who attend/register for the event as a way to boost attendance. If you reach out to us and inform us that you are holding a BBB event, then we will provide some of these shirts as a part of our starter kits! The following pictures are designs on the shirts.



**BRILLIANT & BLACK BUILDERS**



**KATHERINE JOHNSON, GLADYS WEST, DOROTHY VAUGHN, MAE C. JEMISON, GARETT MORGAN, GRANVILLE T. WOODS, CHARLES R. DREW, LEWIS LATIMER, MARK EDWARD DEAN, FREDERICK MCKINLEY JONES, THOMAS ELKINS, ANDREW JACKSON BEARD, MARIE M. DALY, JOHN STANDARD, LONNIE JOHNSON, LISA GELOBTER, VANESSA WYCHE, DR. PERCY JULIAN, FREDERICK DOUGLAS PATTERSON, GEORGE EDWARD ALCORN JR., JANET BASHEN, PATRICIA BATH, OTIS BOYKIN, JOHN ALBERT BURR, THOMAS CARRINGTON, OSBOURN DORSEY, MEREDITH GOURDINE, THOMAS MARTIN, ELIJAH MCCOY, ALEXANDER MILES, WILLIAM MOODY, GEORGE W. MURRAY, JOHN OUTLAW, WILLIAM PURVIS, VALERIE THOMAS, JOHN BAILEY, BRAELIN KINSEL, ZION WILLIAMS, JARED BYERS, DANIA RUTHERFORD, KOLTON TRUITT**

If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!



# FLYERS

These are examples of flyers we print before competition and hand out/post at competition sites. On average we print about 100 copies, but it really depends on how many your students are handing out in the pits before the event.

Note: We include QR codes on our flyer for attendees to pre-register, which is another way they can win a free BBB shirt.



If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!

# BANNER

This is the design we used to print our retractable banner (from BuildASign.com), and we use it to help direct volunteers and attendees to the event. The banner we ordered is 72" by 36" and \$107.

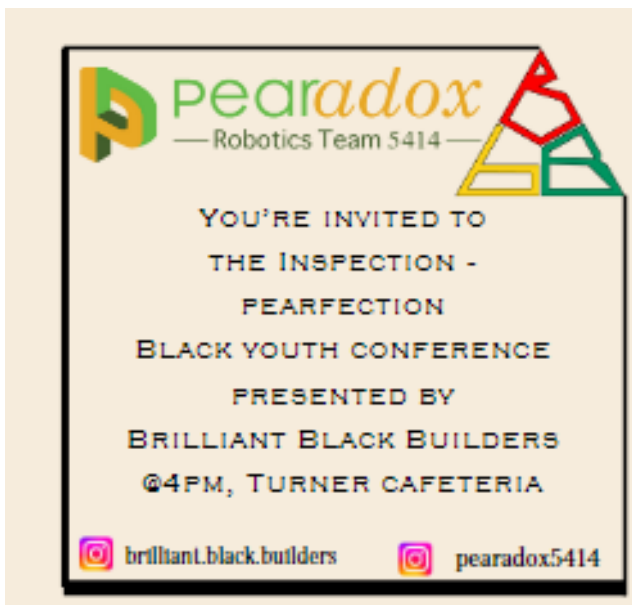


If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!

# PROGRAMS & THANK YOU CARDS

We print programs for our events including guest lists, conversation starter questions, our magazine QR code, a notes section, and a contact page. We also try to give thank you cards to all the guests who attend, which seconds as a business card with our contact information on it.

## GREETING CARD



## PROGRAM COVER



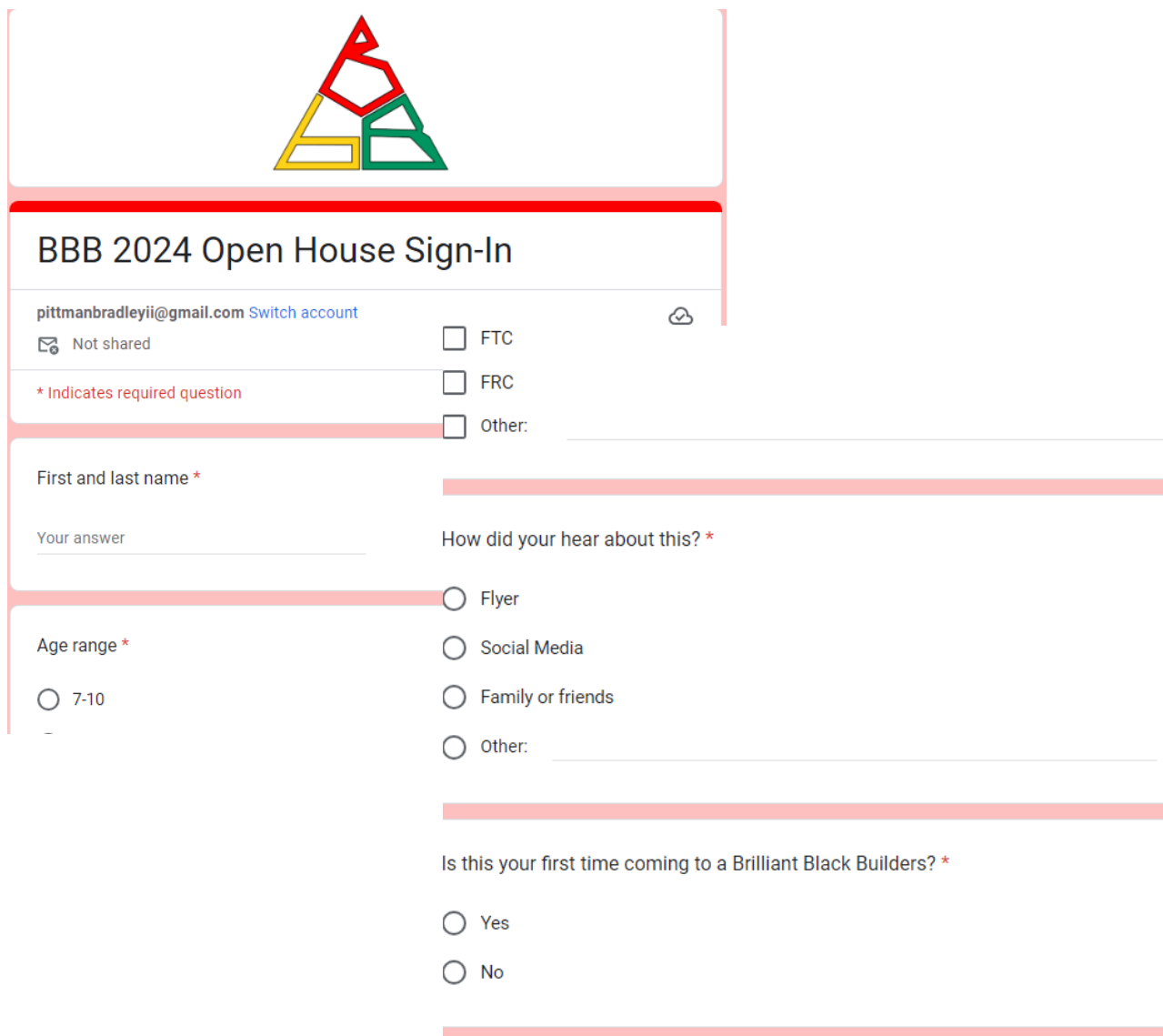
## THANK YOU CARD



If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!

# PRE-REGISTER & DAY-OF SIGN IN

As on page 11, we include QR codes on our flyers to allow students to pre-register for the event and possibly win a prize. Not only does it help to remind students to attend, but it also helps us collect data about our attendees. This is what our sign in survey looks like.



The image shows a screenshot of a Google Forms survey titled "BBB 2024 Open House Sign-In". At the top, there is a logo consisting of three interlocking triangles in red, yellow, and green. Below the logo, the form includes a header with the title, a user profile section for "pittmanbradleyii@gmail.com", and a list of checkboxes for "FTC", "FRC", and "Other:". A red asterisk indicates a required question. The main body of the form contains several questions: "First and last name \*", "How did your hear about this? \*" (with radio button options for "Flyer", "Social Media", "Family or friends", and "Other:"), and "Is this your first time coming to a Brilliant Black Builders? \*" (with radio button options for "Yes" and "No").

If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!

# AFTER-EVENT SURVEY

Alongside our opening surveys, we like to close the event with a survey to collect feedback on how we could improve. This is what our after-event survey looks like.

## Brilliant Black Builders Conference Feedback

We'd like to know what you liked and disliked about today's presentation.  
If you'd like to support Brilliant Black Builders please consider contact one of the following:

BBB Instagram: [brilliant.black.builders](#)

Team Instagram: [pearadox5414](#)

Websites: <https://pearadox5414.weebly.com/bbb.html>

How did you feel about today's presentation? \*

I loved it!

I thought it was okay

I didn't like it

Short answer text

Would you attend another conference? \*

Yes

Maybe

No

Would you would like to support BBB in the future? \*

Yes

No

If so, what would you be interested in helping us with?

I'm interested in hosting an event of my own.

I'm work for (or know of) a black owned business that you could contact.

I have (or know of) black STEM professionals that you could contact for future events.

Do you have any questions?

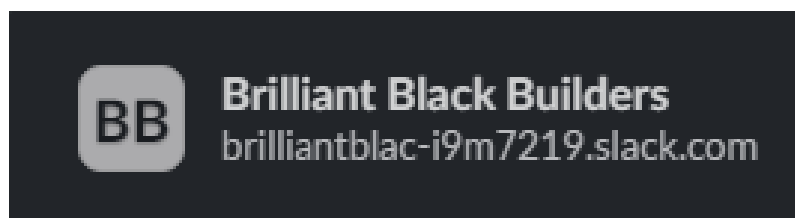
Short answer text

If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!

# BRILLIANT BLACK BUILDERS SLACK

## WORKPLACE

We created a Slack solely for the Brilliant Black Builders community. Our goal is to start and maintain a wide network of black students, with the purpose of spreading the BBB initiative, giving advice on topics from college to thriving as a Black individual in STEM, and providing methods and discussion on how to better represent this community in your own teams. We encourage you to invite interested black students and FRC mentors at your BBB event! On Slack, we can keep the conversation going. Building a strong community on the Slack also makes it much easier to advertise for the event at your competition! To be invited, they need to submit their email at: [www.pearadox5414.weebly.com](http://www.pearadox5414.weebly.com) community. Our goal is to start and maintain a wide network of black engineers, with the purpose of spreading BBB's initiative, giving advice on topics from college to thriving as a Black person in STEM, and providing methods and discussion on how to better represent this community in your own teams.



If you are interested in using this resource, feel free to contact team 5414 Pearadox—we are happy to share!

# COST BREAKDOWN

**STANDING BANNER: \$107**

**TABLET FOR SURVEY: \$150**

**GIVE-AWAYS: \$80**

**MAXIMUM COST: \$337**

## CUTTING COSTS

- We understand this amount is a lot to put down for your first time running the event, so don't sweat it! Through lots of experience we have been able to determine what the most necessary materials are and much cheaper replacements to help cut costs, down to only \$40!

- We use our standing banner as a way to advertise and direct attendees to the event, and if your event is at a hard to find location, placing the banner and a team member at an easy checkpoint would help people not get lost. To substitute, simple printed flyers would work fine. Cut to - \$0
- We use a cheap tablet to conduct feedback surveys/sign-ins at our events, and it helps a lot with data collection. However there's nothing wrong with using printed surveys and sign ins! Cut to - \$0
- Give-aways are another way we get more attendance at the event—an example would be giving that year's BBB shirt for free to the first 20 people who attend. Although they're not necessary, it does help people get excited about attending. You could also reach out to us about the event and as a part of our starter kits for teams holding their own BBB events, we would provide some shirts! Cut to - \$0

# INVITING GUESTS

One of the things that makes Brilliant Black Builders so special are the amazing black STEM guests/volunteers who attend. The whole purpose of the event is to get black FIRST students in connection and contact with black mentors, and the best way to do that is to create genuine conversations and relationships! Instead of having presentations and scripts, our guests choose the table with a conversation starter they feel comfortable with talking about and lead a discussion with attendees who join that topic table as well. This generates a much lower-pressure environment that involves inclusion from all parties.

To start, the easiest guests to invite are your own team mentors! We included a sample guest list on the next page (from a 2019 program, page 17), where the three Pearadox mentors that come to our events are listed. Inviting any enthusiastic FRC mentor to be a guest is also a great idea! A majority of the time, we reach out to co-workers, family, friends, or all of the above. This would also be a great opportunity for your team to grow a relationship with a sponsor and invite some of their black employees. This is often the reason why we focus BBB around local competitions—it's much easier to find guests. (On average we have 3-7 guests attend).

Think back to the site planning section (page 4). We mentioned that it's important to keep your guests in mind when picking an event time! Especially for Fridays, try to pick a time at least after 5 p.m. (it's easier for students to attend then too!).



# GUESTS

## KARA BOYER

**COMPANY: PINNACLE ART**

**POSITION: MECHANICAL INTEGRITY ENGINEERING SPECIALIST**

**COLLEGE: LAMAR UNIVERSITY**

**COLLEGE MAJOR: MECHANICAL ENGINEERING**

**FAVORITE THING ABOUT MY JOB: I GET TO HAVE AN IMPACT ON THE WHOLE OIL AND GAS INDUSTRY AND HELP COMPANIES BECOME MORE RELIABLE.**

## LAURA HOOD

**COMPANY: RETIRED FROM NASA**

**POSITION: PREFORMED SYSTEM TESTS AND INTEGRATION FOR THE ORION END TO END COMMUNICATION SYSTEM**

**COLLEGE: UNIVERSITY OF HOUSTON**

**COLLEGE MAJOR: BSEE, MASTERS IN ELECTRICAL ENGINEERING**

**FAVORITE THING ABOUT MY JOB: FINDING ISSUES DURING TESTS AND GETTING THEM RESOLVED TO ALLOW FOR SUCCESSFUL FLIGHT.**

## BECCA NOTHOF

**COMPANY: SHELL DEER PARK REFINING**

**POSITION: CIVIL ENGINEER**

**COLLEGE: UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN**

**COLLEGE MAJOR: CIVIL ENGINEERING (CONSTRUCTION MANAGEMENT)**

**FAVORITE THING ABOUT MY JOB: THE AUTONOMY. ONE DAY I COULD BE MODELING STORM SCENARIOS TO DETERMINE FLOODING RISK, THE NEXT I COULD BE FIELD INSPECTING PIPE RACKS, AND ANOTHER DAY I MIGHT BE DESIGNING REPAIRS! MY JOB PROVIDES ME WITH THE FREEDOM TO DO MANY DIFFERENT THINGS IN A MANNER THAT WORKS BEST FOR ME AND MY SKILL SET.**

# PEARADOX SUPPORT

Our team is really grateful to other teams who want to continue this initiative, and we want to help as much as possible! If your team attends the same competition as Pearadox (5414) we would love to collaborate for a BBB or help provide resources your team can't. We will also be happy to help your team advertise for the event on our social media/at a competition we are attending. If you need clarification on anything we described, have questions about BBB, or need help running the event, feel free to email us at [pearlandfrc@gmail.com](mailto:pearlandfrc@gmail.com).



PEAR*adox*

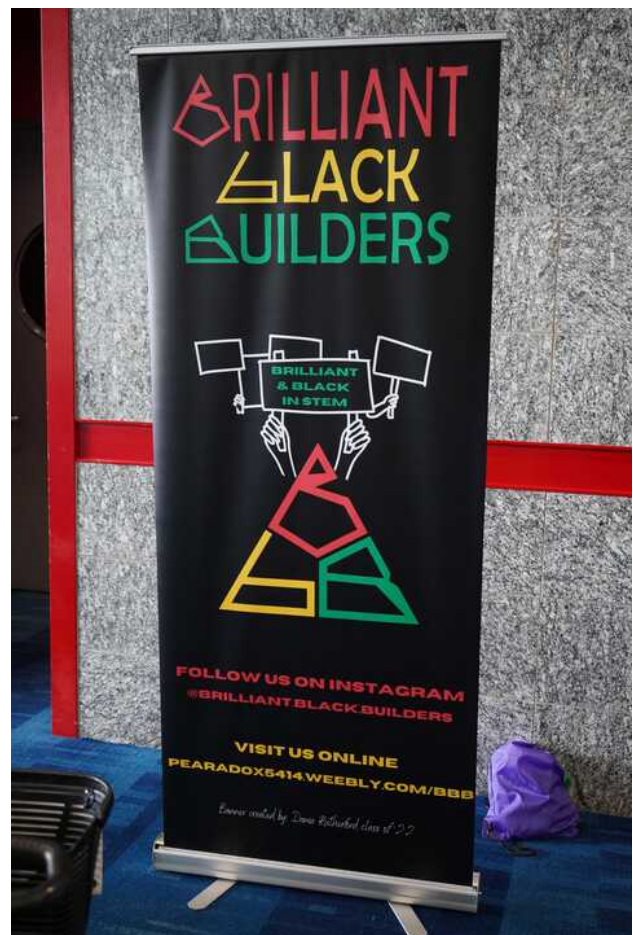
— Robotics Team 5414 —

# AT COMPETITION

## ADVERTISING & GATHERING YOUR AUDIENCE

So, you understand the importance of the Brilliant Black Builders, you've planned and prepped your heart away, and now it's competition – the only thing missing is the attendees! Advertising the event is one of the most important parts. Through all of our experimentation, we find that you truly get out what you put in. Some of the best times to talk to people of color from other teams is actually during pit setup/load-in on the day before competition starts. We also post our flyers on this day or the next day if we can't during load in. Members of our team

take turns visiting every pit and talking about the BBB while inviting them to the event. We found this is the most engaging way to invite black students. One of our strategies is displaying a banner (see attachment on the right) while the event is running to catch students' attention. If you are on the Brilliant Black Builders Slack (see page 14) you can send a message that you are hosting BBB.



# MATERIALS CHECKLIST

Here's a good checklist we created for you to look at while packing for competition and before the event.

- Advertisement posters/banners
- Flyers (advertisement and directional)
- Conversation starter posters
- Dry erase markers (for conv. posters)
- Give-away items (ex/ shirts)
- Event programs
- Thank you cards
- Tablet (for survey/sign in sheet)
- Paper sign in sheets and surveys
- STEM Savvy magazines (from 5414)
- Refreshments (if any)

## BLANK CHECK LIST BELOW

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NOTES

## DURING THE EVENT

During the event the FRC attendees will be in small groups with 1 or 2 guests "running" each group. It is a good idea to have a team mentor/student circulating the tables frequently to be aware of issues such as disengaged attendees (encourage circulating to a different group/topic) or guests who need help. Sometimes it is necessary to redirect conversation if the topic becomes unproductive—often times the best solution is encouraging the groups to cycle around to different groups and topics.

A big reason we hold the event over wide span of time is to be able to include as many attendees as possible even through the rush of competition. To utilize this we usually have our students continue to advertise during at least the first half of the event.

Something we stress to our students is the need to get good media of our BBBs, because the pictures are often what persuades guests and students we invite to attend (and it's how we were able to give lots of visuals in the DIY BBB). If your team hosts BBB as well, we encourage you to do the same! We would really appreciate being able to see how Brilliant Black Builders can spread, so if you have pictures we'd love to see them!



# AFTER COMPETITION

## FEEDBACK

Something important to remember about running any event is you need to get feedback from your audience. You want to get the perspective of the audience because an event you run yourself is hard to assess. We have two main methods of gathering data/feedback from attendees.

When students come to join the event, we have them fill out our "day-of sign in" form (page 12) which gathers information such as their team number, state/country, and grade. Additionally, they can pre-register for the event through the QR code on our flyer for a chance to win a free BBB shirt and to skip the sign in when they attend the event. These first forms allow us to collect statistics and data.

The second form we encourage our attendees to fill out is our "after-event survey" (page 13) where we ask lots of feedback related questions, such as how they heard of the event, if they enjoyed it, and if they would want to attend again. We generally have both guests and students fill these out. This second form allows us to collect feedback and responses.

## CONTACTING PEARADOX

Pearadox and Brilliant Black Builders wishes the best of luck to your team in running a BBB event! If you do end up running the event, please contact Pearadox so we can share data/feedback, collaborate, and exchange new ideas!

# TL;DR (TOO LONG; DIDN'T READ)

## I. BRILLIANT BLACK BUILDERS

- **Introduction**– Brilliant Black Builders consists of students on FRC team #5414 with the mission of showing people of color that they have a community that shares their experience in STEM. We run Brilliant Black Builders events at FRC competitions inviting black engineers to talk to black students in a conversational, non-intimidating environment.
- **Need for Change**– FRC needs more black role models to help students of color feel confident and comfortable. Testimony from our teams and others proves there is a problem that needs to be addressed, which is why BBB is necessary.
- **Team Culture**– The Brilliant Black Builders positively affects FIRST, but also brings a more harmonious, diverse culture to your own team–making sure teams supportive environments to those who may not feel comfortable is one of our biggest goals.

## II. PREPARATIONS

- **Site Planning**– Finding a big enough, free space with separate tables is tricky. The best sites are at competition with room/table space for more or less 50+ people. Timing is important, and you need to think about what day of competition (we stay away from playoff days) and the time of day (towards evening is easier for guests and students).
- **Resources**– Necessities for the event. Ex/ Shirts, Flyers, Banners.
- **Cost Breakdown & Cutting Costs**– a quick outline of the major costs of running the event, and ways to save money while retaining purpose.
- **Inviting Guests**– Your guests are who drive the event; we often have 1 guest per table (~6/7 students) and they lead discussions with the students (not a presentation environment). It's easiest to ask black mentors to be guests at the event, but we also like to invite co-workers, parents, or other interested black professionals in STEM.
- **Pearadox Support**– If your team is interested in running BBB, Pearadox would love to help in the event or provide our resources. Contact us at pearlandfrc@gmail.com!

## III. AT COMPETITION

- **Advertising & Gathering your Audience**– It's important to develop your advertising strategy over time depending on the quantity and capability of your students. The method we find works the best is face to face interactions, such as visiting teams in their pits and talking to students at lunch.
- **Materials Checklist**– This is a good checklist to check off things while packing before competition, and just before setting up the event at competition.
- **During the Event**– Try to encourage groups to circulate the tables/guests so they get to reach all the topics they're interested in. We also have our students getting media during the event and we'd love to see any media your teams gets.

## IV. AFTER COMPETITION

- **Feedback**– We have two methods for collecting data and feedback from our guests and attendees–a sign in to collect numbers, and a survey to collect feedback.
- **Contacting Pearadox**– Please contact us (Pearadox) so we can share ideas and learn about how to grow BBB together!

# THANKS FOR JOINING US!

**LET'S STAY IN TOUCH!**

**INSTAGRAM: @BRILLIANT.BLACK.BUILDERS**

**EMAIL: PEARADOXFRC@GMAIL.COM**

**WEBSITE:**

**[HTTPS://PEARADOX5414.WEEBLY.COM/BBB.H  
TML](https://pearadox5414.weebly.com/BBB.HTML)**

**SHARE YOUR EXPERIENCE!**

**#DIYBBB**

**BROUGHT TO YOU BY THE STUDENTS OF**



**ANY WAYS WE COULD IMPROVE THE  
EXPERIENCE?**

**LET US KNOW HOW WE CAN MAKE THE  
EVENT BETTER FOR EVERYONE!**