



Training and
Support

2018-2019 *FIRST*® Tech Challenge

Low Cost Field Perimeter Build Guide

ROVER RUCKUS



Presented By **Qualcomm**

www.firstinspires.org

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Revision History		
Revision	Date	Description
1	7/11/2018	Initial Release

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Shopping and Parts Guide

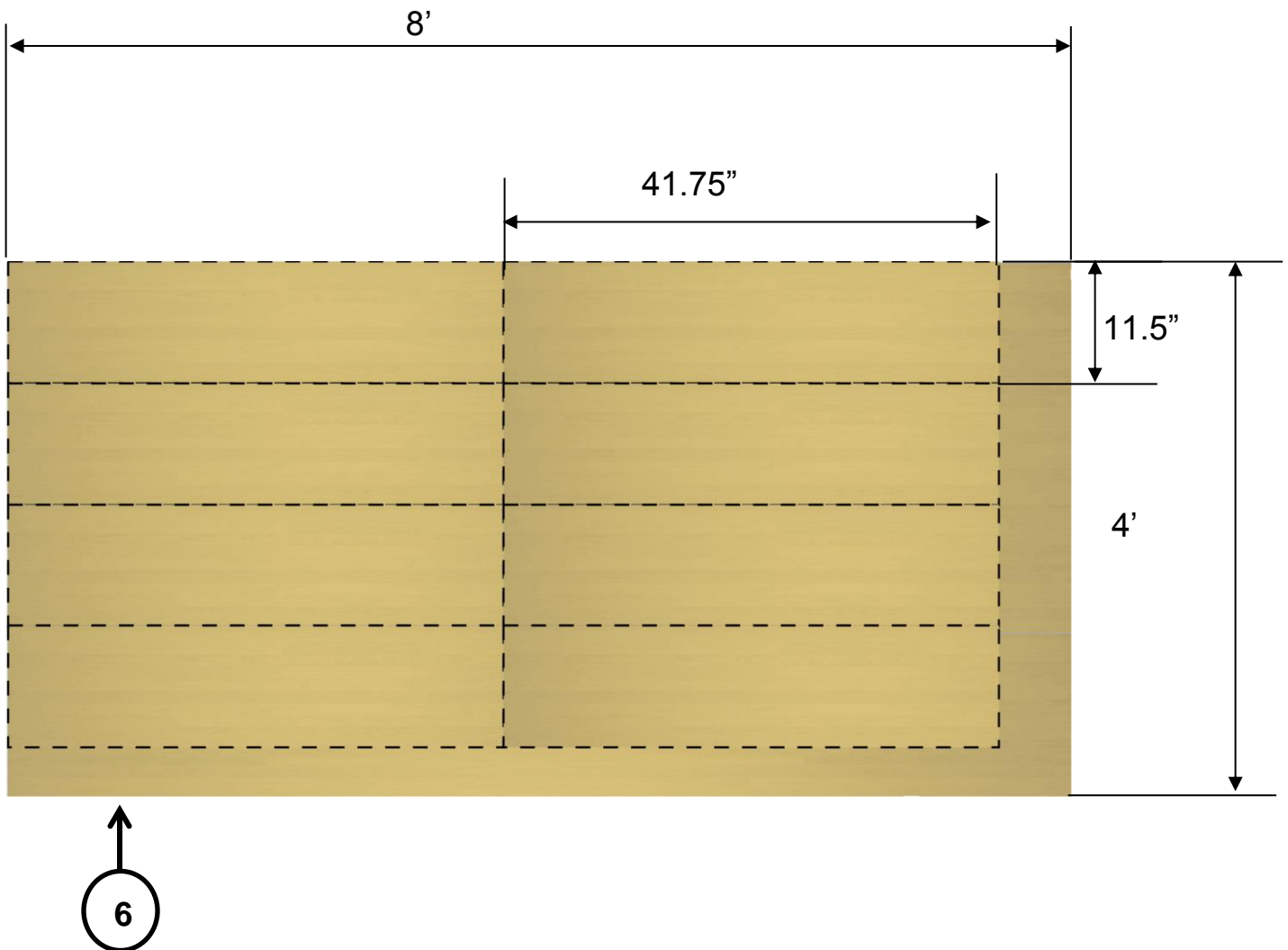
Item	Description	Assembly Quantity Required	Item Packaged	Home Depot Store Sku*	Quantity to Buy	Est. Unit Price	Total Price
1	PVC Tee-Joint	32	Single Tee-Joints	187917	32	\$0.59	\$18.88
2	PVC 90° Elbow Joint	8	Single Elbow Joints	187976	8	\$0.59	\$4.72
3	43.5" Long PVC Pipe	24	10" Lengths of pipe	193712	12	\$2.71	\$32.52
4	9.3" Long PVC Pipe	16					
5	1.75" Long PVC Pipe	16					
6	41.75" x 11.5" x .125 Hardboard Panels	12	4' x 8' x .125 sheets	832777	2	\$8.54	\$17.08
7	#8 x ¾" wood screws	120	100 Per/Package	251364	2	\$4.65	\$9.30
8	PVC Cement	As Needed	Single Can	187100	1 Can	\$5.40	\$5.40
Estimated Cost Before Taxes							\$87.90

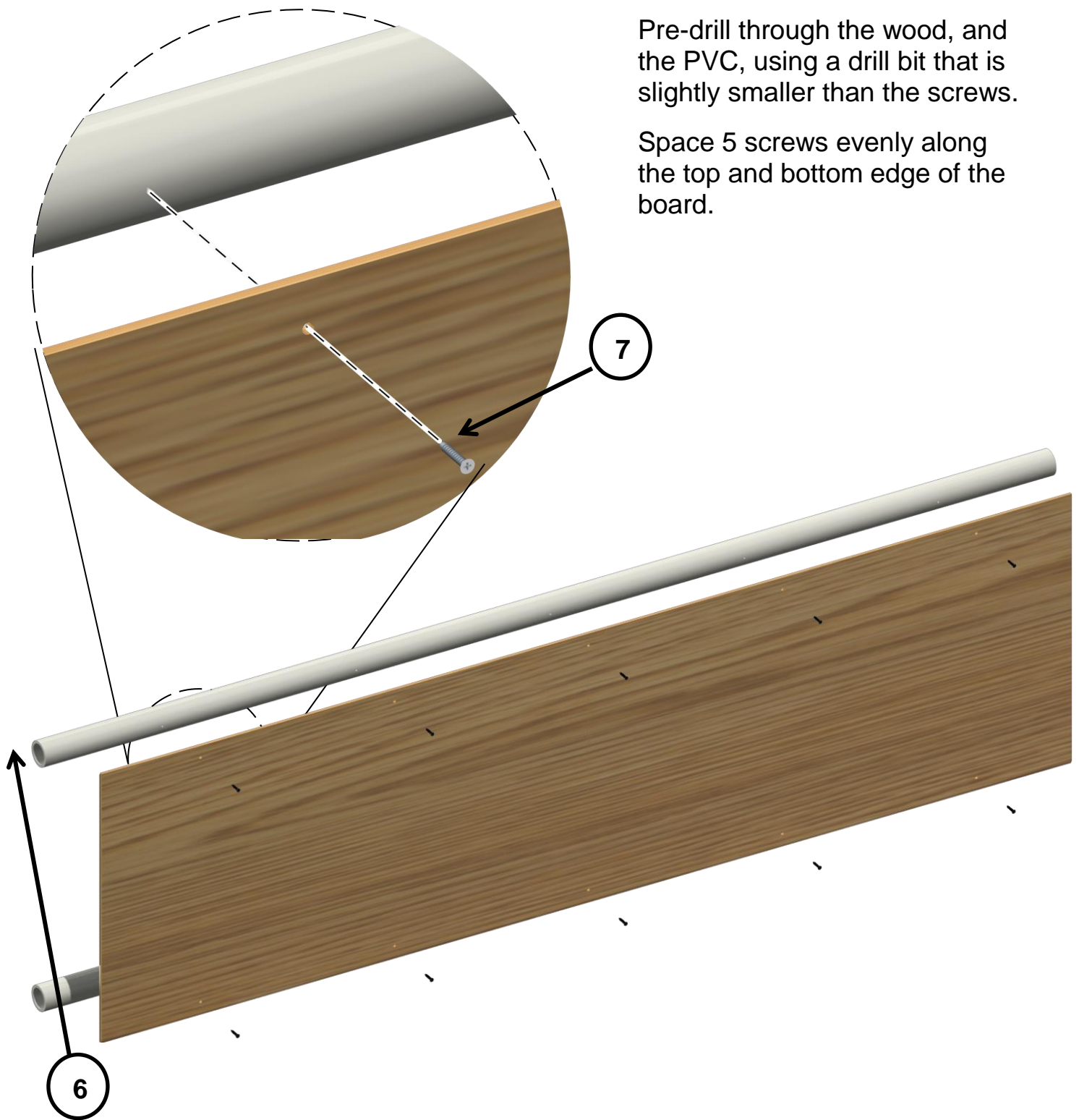
*Home Depot is given as a convenient reference. These materials are widely available at most hardware stores, and prices will vary. (Costs updated 7/9/2018)



Cut Sheet Template

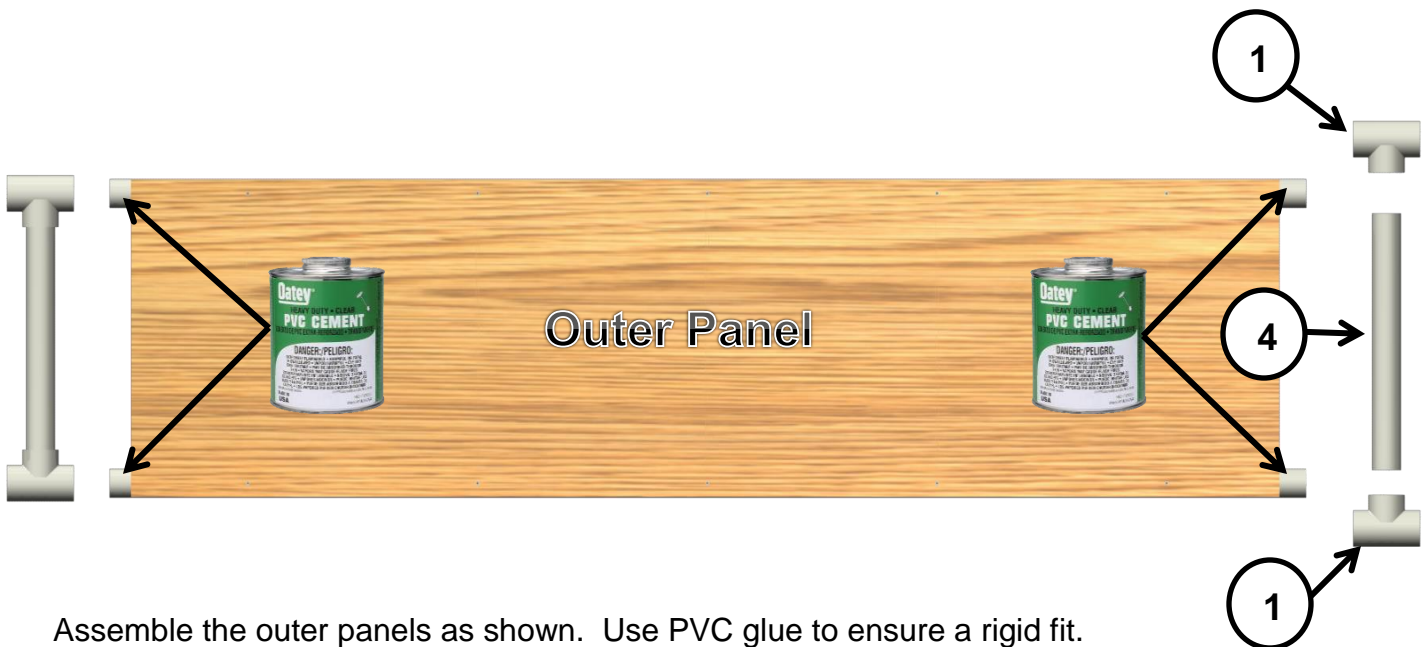
Use the template below to cut side panels from a 4' x 8' x .125" sheet of hard board. Each sheet should yield 8 panels.





Field Side Wall Sub-Assembly

Each wall assembly consists of 2 outer panels and 1 center panel

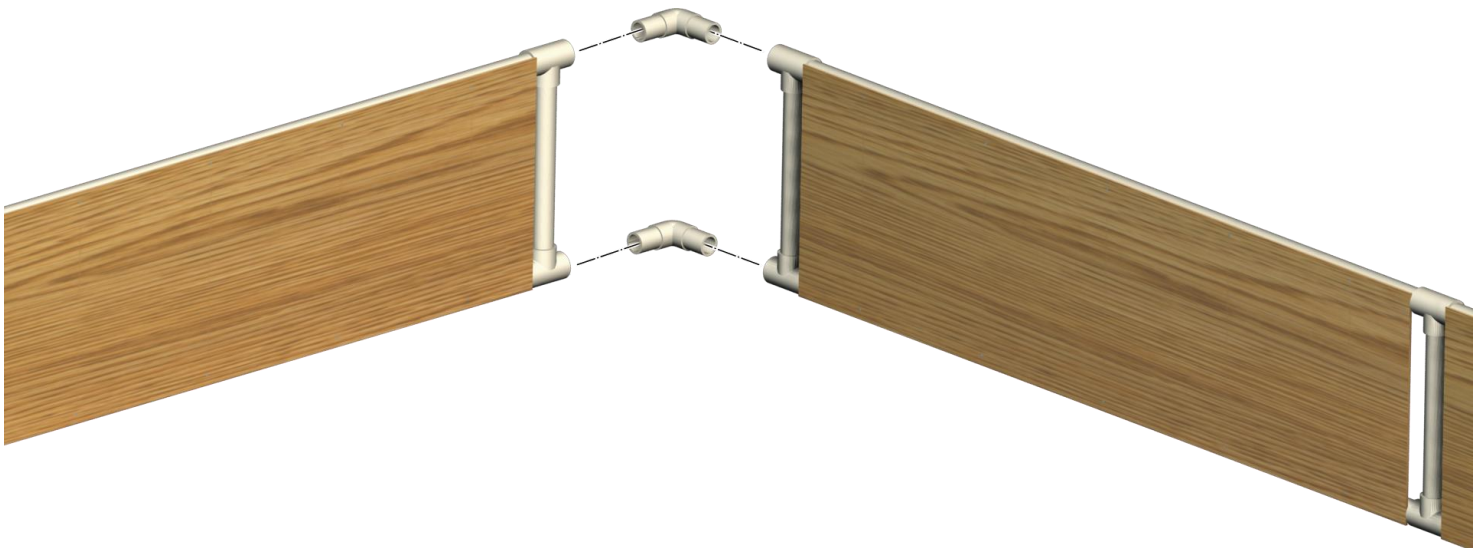
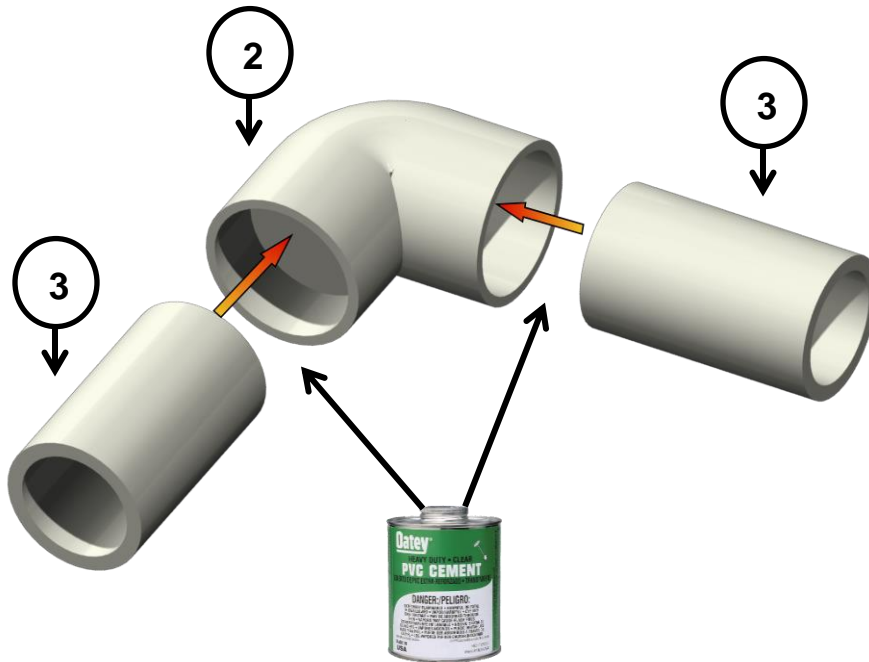


Assemble the outer panels as shown. Use PVC glue to ensure a rigid fit.

Leave the center panel un-glued to allow for easy assembly and dis-assembly of your field.

Prepare the Joint Corners

Assemble 8 corner pieces as shown. Use PVC cement to secure the pieces together.



Assemble the field walls at the corners as shown.

PVC Cleaning and Cementing Tips

Cleaning:

When you purchase PVC pipe, it is likely that it will be dirty and covered with manufacturer's markings. For best presentation at official competitions, it is best to clean the PVC as much as possible.

Here are a few suggestions on ways clean your PVC. If you have other techniques, please feel free to share them with us.



The Kitchen Sink Approach:

Wipe off any loose dust with a damp rag. Then dab a little household powdered cleanser onto a green nylon scouring pad, dampen and simply rub off the markings. Rinse with a damp rag. This method also removes most other marks and dirt without scratching the surface of the PVC.

Caution: Wear rubber gloves and safety glasses. Be sure to follow the directions on the cleanser.

For more difficult imprints:

- Soak a small chunk of fine steel wool (grade #0000 or #00) in acetone.
- Because the acetone dries quickly, work in short sections of 1 or 2 feet.
- Wipe smears quickly with a shop rag before the acetone dries.

Caution: Wear rubber gloves and safety glasses. Be sure to follow the directions on the acetone container. *Work in a well-ventilated area.*

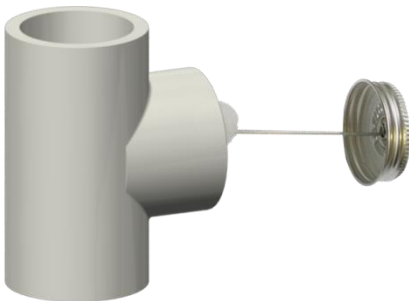


A non-chemical alternative to cleaning the PVC:



Lightly sand blemishes and imprints with a low-cost 3M sanding pad. Use medium-grade for tougher inks, fine-grade for lighter inks. You'll find them at most hardware stores.

The sanding pads conform to the pipe's contour and will quickly remove markings with just a *light* pressure. Use a damp cloth to clean away dust left behind from the sanding.



Cementing:

Swab a *light* amount of glue to inside of the fitting, insert the pipe into the fitting. PVC cement dries fast, so you'll have to be quick. Hold the fitting and pipe together for a few seconds, then wipe off any excess glue *immediately* with a rag.

Caution: Wear rubber gloves and safety glasses. Be sure to follow the directions on the cement container. *Work in a well-ventilated area.*



Appendix A – Resources

Game Forum Q&A

<http://ftcforum.usfirst.org/forum.php>

Anyone may view questions and answers within the *FIRST*® Tech Challenge Game Q&A forum without a password. To submit a new question, you must have a unique Q&A System User Name and Password for your team.

Volunteers that apply for a specific volunteer role will receive an email from FTCTrainingSupport@firstinspires.org with their username and password to the forum. You will receive access to the forum thread specific to your role.

FIRST Tech Challenge Game Manuals

Part 1 and 2 - <https://www.firstinspires.org/resource-library/ftc/game-and-season-info>

FIRST Headquarters Pre-Event Support

Phone: 603-666-3906

Mon – Fri

8:30am – 5:00pm

Email: Firsttechchallenge@firstinspires.org

FIRST Websites

FIRST homepage – www.firstinspires.org

[FIRST Tech Challenge Page](#) – For everything *FIRST* Tech Challenge.

[FIRST Tech Challenge Volunteer Resources](#) – To access public Volunteer Manuals.

[FIRST Tech Challenge Event Schedule](#) – Find *FIRST* Tech Challenge events in your area.

FIRST Tech Challenge Social Media

[FIRST Tech Challenge Twitter Feed](#) - If you are on Twitter, follow the *FIRST* Tech Challenge Twitter feed for news updates.

[FIRST Tech Challenge Facebook page](#) - If you are on Facebook, follow the *FIRST* Tech Challenge page for news updates.

[FIRST Tech Challenge YouTube Channel](#) – Contains training videos, Game animations, news clips, and more.

[FIRST Tech Challenge Blog](#) – Weekly articles for the *FIRST* Tech Challenge community, including Outstanding Volunteer Recognition!

[FIRST Tech Challenge Team Email Blasts](#) – contain the most recent *FIRST* Tech Challenge news for Teams.

Feedback

We strive to create support materials that are the best they can be. If you have feedback about this manual, please email firsttechchallenge@firstinspires.org. Thank you!