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# 2022 FIRST Robotics Competition

## Pre-Kickoff - List of Materials

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### READ THIS FIRST!

The following shopping list will allow a team to build a half field of wooden game specific components. As in prior years, we will be releasing multiple designs for each field component. These designs will vary from simple representations of one feature to complex designs that include most of the features. The Pre-Kickoff - List of Materials will support the manufacture of the designs that offer the highest degree of representation. Additional designs will be released at kickoff that are less expensive and easier to manufacture, each will include its own shopping list.

Historically, if a team has not built all the components that we release, it may be financially beneficial to wait until drawings are released to decide on which designs to build and how much material to buy.

Additionally, one of the more complex sub-assemblies will be available for purchase from AndyMark after Kickoff. If a team opts to buy this option, they should refrain from purchasing the highlighted items. AndyMark will be releasing other options that integrate into the complex and simple designs.

### HALF FIELD LIST OF MATERIALS

**Plywood and Hardboard Sheets – quality of plywood is up to the user. Please keep in mind that plywood of lower qualities may contain voids and may warp more than high quality plywood. All dimensions listed below are “nominal”. For example ½” plywood is typically 15/32”.**

**Lumber - quality of lumber is up to the user. Please keep in mind that lumber of lower qualities may warp more than high quality lumber. All dimensions below are the “mill cut” dimensions, finished dimensions are smaller. For example, 2” x 4” lumber is really 1½” x 3½”.**

**Hardware and Misc. – Wood screw quantities are approximate and should account for having some spares left over.**

#### General Elements:

- 2” wide 3M 8830 Scotchlite Reflective Material – 80”
- Optional: Safety Edging or Baby Proof, U-Shape

#### Major Field Assembly 1

- 4’ x 8’ x 3/4” Thick Plywood – 6 Sheets
- 2” x 4” x 8’ Long Lumber – 14 Pieces
- 4” x 4” x 8’ Long Lumber – 6 Pieces
- 4’ x 8’ x 1/2” Thick Plywood – 1 Sheet
- 4’ x 8’ x 1/8” Thick Clear Polycarbonate – 2 Sheets
- 1 1/2” x 1 1/2” x 1/16” x 8’ Long Aluminum Angle – 1 Piece

#### Hardware:

- #8 Wood Screw x 1.25” Long – approximately 1/2 lb.

- #8 Wood Screw x 2" Long – approximately 2 lbs.
- #8 Wood Screw x 2.5" Long – approximately 1-1/2 lbs.
- 1/4"-20 x 3/4" Bolt, Fully Threaded – 12
- 1/4"-20 x 1" Bolt, Fully Threaded – 84
- 1/4"-20 x 2" Bolt, Fully or Partially Threaded – 16
- 1/4"-20 x 3.5" Bolt, Fully or Partially Threaded - 8
- 1/4"-20 x 5.5" Bolt, Fully or Partially Threaded – 8
- 1/4" Washer – 124
  - Some number of washers are used in the model available by AndyMark
- 1/4" Nylock – 128
  - Some number of Nylocks are used in the model available by AndyMark

Other:

- 50-lb Cable Tie – 28
- 1" wide Loop Fastener – 100"
- 1" wide Hook Fastener – 100"
- 0.266" Diameter (Drill size H or #71) Drill Bit
- 5/16" Diameter x 4" (minimum) Depth Drill Bit (for drilling through 4"x4" lumber)
- 3/8" Diameter Drill Bit

**Major Field Assembly 2**

- 4' x 8' x 1/4" Thick Plywood – 1 Sheet
- 4' x 8' x 1/2" Thick Plywood – 1-1/2 Sheets
- 2" x 4" x 8' Long Lumber – 14 Pieces
- 1-1/4" x 8' Long Black Iron Pipe – 2 Pieces
- 1-1/8" x 1-1/8" x 37" Long Outside Corner Moulding. It should be 1/8"- 3/16" thick – 14 pieces (about 44 feet)

Hardware

- #8 Wood Screw x 1.5" Long – approximately 1 lb.
- #8 Wood Screw x 2.5" Long – approximately 1/4 lb.
- 1/4-20 x 2.5" Long Hex Head Bolts – 56 pieces\*
- 1/4-20 Wing Nuts – 56 Pieces\*
- 1/4" Flat Washer – 56 Pieces\*

\*Please note that 1/4-20 hardware is only used if you want to easily disassemble for storage. Use 1.5 in. wood screws as a substitute. The 1 lb. box should still be enough to complete the whole assembly.

**Major Field Assembly 3**

- 4' x 8' x 1/2" Thick Plywood – 1/2 Sheets
- 4' x 8' x 3/4" Thick Plywood – 4 Sheets
- 4" x 4" x 8' Long Lumber – 4 Pieces
- 2" x 4" x 8' Long Lumber – 6 Pieces
- 1-1/4" x 8' Long Black Iron Pipe – 4 Pieces

### Hardware

- #8 Wood Screw x 1.25" Long – approximately 1 lb.
- #8 Wood Screw x 2.5" Long – approximately 1 lb.

### Other

- 1-11/16" Spade Bit, Forstner Bit or Hole Saw