

## TEAM ELEMENT - LIST OF MATERIALS

### READ THIS FIRST!

Every year, *FIRST*<sup>®</sup> releases wooden versions of the field components, known as Team Elements, for teams to build and use when designing their robot and preparing for the season. This year, to help teams get a head start, we are releasing a List of Materials for the designs a bit earlier than usual. Hopefully, this will allow teams to secure funding and purchase materials prior to kickoff. Below, you will find two separate lists, one for a half field of components, the other for a minimal field.

**Half Field List** – as its name indicates, this will include all the components required to build a half field. This field will closely resemble the official competition fields in both quantities and features of the components.

**Reduced Field List** – this list will eliminate duplicate items and simplify some designs, if possible. However, it still contains enough components to practice all aspects of the game.

*Please note: while we can make educated guesses on what teams “need” to build, we cannot guarantee that your team will choose to build everything we have included in these two lists. Every team has different needs, resources and abilities. Historically, if a team has not built all the components that we release, it may be financially beneficial to wait until the drawings are released and decide then how much material to buy. The front sheet of each drawing will also have a list of material for that specific design. Additionally, multiple versions of some components will be available at that time. Some versions will be more convenient for certain teams than others. Again, these lists are our best attempt at helping teams get a head start.*

### HALF FIELD LIST OF MATERIALS

**Plywood** – 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”.

- 4' x 8' x 1/2" Thick – 14 Sheets
- 4' x 8' x 3/4" Thick – 4 Sheets

**Hardboard** – All thickness dimensions listed are “nominal”.

- 4' x 8' x 1/8" Thick – 1 Sheet
- 2' x 4' x 1/4" Thick – 1 Piece

**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 1-1/2" x 3-1/2".

- 2" x 2" x 8' – 8 pieces
- 2" x 4" x 8' – 41 pieces

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

- 1/4-20 x 1-3/4" Flat Head Bolt – 48
- 1-1/4" long, #6 Drywall Screws – Approximately 500
- 2-1/2" long, #6 Drywall Screws – Approximately 700
- 3/8-16 Tee Nut (McMaster 90975A031 or similar) – 33
- 3/8-16 x 3/4" Hex Head Bolt – 33
- 3/8-16 Hex Nut, Standard – 33

- 2" Hook Fastener, Adhesive Backed – Approximately 65 feet
- 2" 3M 8830 Scotchlite Reflective Material, Adhesive Backed – 14 feet
- 1-3/4" x 36" Brush Door Sweep (Frost King C35PH) – 1
- Rubber Bumper with Unthreaded Hole (McMaster 9540K953) - 2

## REDUCED FIELD LIST OF MATERIALS

**Plywood – 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”.**

- 4' x 8' x 1/2" Thick – 6 Sheets
- 4' x 8' x 3/4" Thick – 3 Sheets

**Hardboard – All thickness dimensions listed are “nominal”.**

- 4' x 8' x 1/8" Thick – 1 Sheet
- 2' x 4' x 1/4" Thick – 1 Piece

**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 1-1/2” x 3-1/2”.**

- 2" x 2" x 8' – 3 pieces
- 2" x 4" x 8' – 32 pieces

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

- 1/4-20 x 1-3/4" Flat Head Bolt – 24
- 1-1/4" long, #6 Drywall Screws – Approximately 300
- 2-1/2" long, #6 Drywall Screws – Approximately 400
- 3/8-16 Tee Nut (McMaster 90975A031 or similar) – 12
- 3/8-16 x 3/4" Hex Head Bolt – 12
- 3/8-16 Hex Nut, Standard – 12
- 2" Hook Fastener, Adhesive Backed – Approximately 30 feet
- 2" 3M 8830 Scotchlite Reflective Material, Adhesive Backed – 6 feet
- 1-3/4" x 36" Brush Door Sweep (Frost King C35PH) – 1
- Rubber Bumper with Unthreaded Hole (McMaster 9540K953) - 1