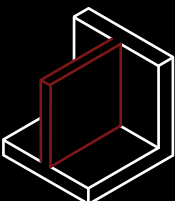
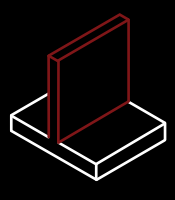

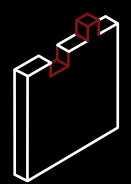

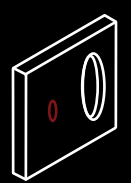
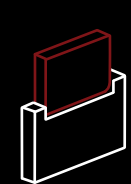
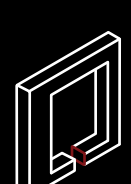

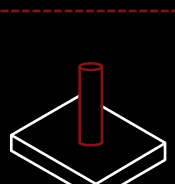


3D PRINTING DESIGN MANUAL

	Laser Sintering	Multi Jet Fusion	Stereo-lithography	Digital Light Processing*	Fused Filament Fabrication	Material Jetting
 <p>Supported Walls Minimum thickness of wall section connected to rest of part on two sides.</p>	.028 in.	.02 in.	.02 in.	.008 in. (rigid) .04 (flexible)	.03 in.	.04 in.
 <p>Unsupported Walls Minimum thickness of wall section that is connected to part on the base only, or to one other wall.</p>	Supports not required	Supports not required	.04 in.	.012 in. (rigid) .098 (flexible)	.03 in.	.04 in.
 <p>Supports & Overhangs Minimum angle (measured from print platform) at which a wall can be printed before additional support is necessary.</p>	Supports not required	Supports not required	Base Support Otherwise 45°	25° (rigid) 45° (flexible)	45°	Supports always required
 <p>Embossing & Engraving Minimum dimensions of embossed or engraved features upon the object surface.</p>	Width: .04 in. Height/Depth: .04 in.	Width: .04 in. Height/Depth: .04 in.	Width: .016 in. Height/Depth: .016 in.	Width: .008 in. (rigid) .035 (flexible) Height/Depth: .004 in. (rigid) .02 (flexible)	Width: .024 in. Height/Depth: .079 in.	Width: .02 in. Height/Depth: .02 in.
 <p>Horizontal Spans Maximum distance between supporting structures that a surface can traverse without additional support.</p>	Supports not required	Supports not required	.08 in.	.12 in. (rigid) .04 (flexible)	.4 in.	Supports always required
 <p>Holes & Openings Minimum diameter opening for successful build.</p>	.02 in.	.02 in.	.02 in.	.008 in. (rigid) .035 (flexible)	.04 in.	.02 in.
 <p>Connecting & Moving Parts Recommended minimum clearance for moving parts or connected assemblies printed in place.</p>	Moving: .012 in. Connecting: .006 in.	Moving: .012 in. Connecting: .006 in.	.03 in.	.01 in. (rigid) .03 (flexible)	.008 in.	.008 in.
 <p>Escape Holes Minimum diameter of an opening that can allow material and powder to be removed.</p>	.04 in.	.04 in.	.04 in.	.04 in.	.04 in.	.04 in.
 <p>Minimum Features The smallest size feature on a part for successful build.</p>	.03 in.	.03 in.	.008 in.	.004 in. (rigid) .04 (flexible)	.08 in.	.02 in.
 <p>Pin Diameter Minimum recommended diameter of small spire features.</p>	.02 in.	.03 in.	.03 in.	.004 in. (rigid) .04 (flexible)	.04 in.	.02 in.

For questions, or to get a quote, call us at 608.437.1400 or email solutions@midwestproto.com

*Variable depending on material used.

**All tolerances listed are "best case" scenarios.