

RAILING FRAME COMPONENTS MATERIAL SPECIFICATIONS

NOTE: We strongly recommend stainless steel for exterior applications.

CAD drawings of various engineered tubular steel and pipe railings together with appropriate material specifications for each can be downloaded from one of the Material Styles with Downloadable Drawings links on our website: www.ultra-tec.com.

The material specifications below are intended as general guidelines for use in designing a railing for which drawings are not available on the website; however, the customer is responsible for engineering the railing to meet building code requirements.

MINIMUM WALL THICKNESS		
Material	End Posts	Top and Bottom Rails and Intermediate Posts
Carbon Steel Structural Tubing		
2" x 1" Rectangular	.120"	.120"
3" x 1" Rectangular	*See Note	
2" x 2" Square	.250"	
Stainless Steel Structural Tubing		
2" x 1" Rectangular	.120"	.120"
3" x 1" Rectanglar	*See Note	
2" x 2" Square	.250"	
Round Steel Pipe		
1-1/4" Diameter	Minimum Schedule 80	Minimum Schedule 40
1-1/2" Diameter		
2" Diameter		
Round Stainless Steel Pipe		
1-1/4" Diameter	Minimum Schedule 80	Minimum Schedule 40
1-1/2" Diameter		
2" Diameter		

**Note: Minimum wall thickness shown is for double end post construction using two rectangular posts separated by stainless steel spacers.*

RAILING FRAME COMPONENTS MATERIAL SPECIFICATIONS

CABLE AND RAILING BRACES

1/4" x 1" Flat Bar, Carbon Steel	1/4" x 1" Carbon Steel Cold Finish Flat Bar
1/4" x 1" Flat Bar, Stainless Steel	1/4" x 1" 304 Cold Finish Flat Bar, #4 Finish or 1/4" x 1" 304 Cold Finish Flat Bar, Mill Finish

STAINLESS STEEL SPACERS FOR HORIZONTAL RAILING DOUBLE END POST CONSTRUCTION

For use with Invisiware® Receivers and Welded Receivers

Specify *Seamless* Stainless Steel Tubing:

For Cable Diameter	Outside Dia.	Wall Thickness	Cut to Length of:
1/8" 3/16"	5/8"	.083"	.970"
1/4"	3/4"	.095"	
5/16" 3/8"	7/8"	.083"	

For use with Invisiware® Fixed tabs

Specify *Seamless* Stainless Steel Tubing:

For Cable Diameter	Outside Dia.	Wall Thickness	Cut to Length of:
1/8" 3/16"	5/8"	.083"	.970"
1/4"	3/4"	.083"	

Factory can supply many railing components, including end and intermediate posts, cable and rail braces, top and bottom rails for vertical railings, corner section tubes and elbows, stainless steel spacers, beveled washers, and mounting plates. Please call for pricing and availability.

RAILING FRAME COMPONENTS MATERIAL SPECIFICATIONS

continued

CORNER SECTION TUBING

For use in 90° corners using tubed corner sections.

See Tubed Corner Sections, pages 24-27.

Note that the inside of the tubing cannot be sealed to prevent moisture inside the tubes. Therefore, we recommend stainless steel tubing for all **exterior** tubed corner section applications, to prevent rust inside the tubing.

Cable Dia.	Tubing Dia.	Wall Thickness	Inside Dia.	A Drilled and Reamed Hole Dia.
1/8"	3/8"	.064"	.209"	.377"
3/16"		.065"	.245"	
1/4"		.042"	.293"	
5/16"	7/16"	.035"	.367"	.440"
3/8"	1/2"	.042"	.416"	.502"