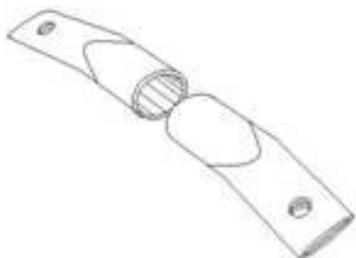


## Metal Frames

Few forms of construction I've ever seen can be assembled as cheaply and easily as bolt-together steel frames. They are extremely strong for their weight they last indefinitely when covered with weather proof materials. When covered with a durable membrane, anything up to 800 square feet qualifies as a tent, thereby flying under the radar of most building codes.

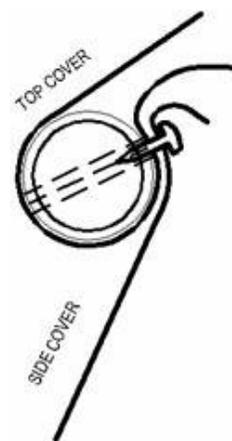
Beyond all this, they are portable (not the cement ones obviously). The simpler forms can be disassembled, and reassembled in another location within a single day. Some – but not all – coverings can also be removed and reapplied within this same time period. For steel tubing, I have generally used steel electrical conduit, both ½” and ¾”. For larger structures, I've used top-rail, such as is used on chain link fences.

Properly designed, these structures can be of almost any shape and size imaginable. I built a 23' diameter low-profile dome out of ¾” conduit in Colorado to keep snow off of a group of homeless friends. The landowner was compassionate enough to allow them a place to put it, but after about a week, city officials made them tear it down. My personal favorite among these designs is a 16'8” dome made of ¾” metal electrical conduit. There are only two different lengths involved, and the long one and short one are derived from a standard 10' length by a single cut. It was designed in the 70s, and among many other things was used to support forms for troweled-on cement domes in Baja California. Once the cement was cured, the frame was unbolted from the inside for reuse. It was exciting to locate a couple of these on flashearth.com some thirty-five years later. The Mexicans living in them would probably hate me for this, but one of these can be found at 31deg, 22min, 9.6sec N, and 115deg, 39min, 9.4sec W. (Please do not disturb the occupants). It will probably continue to serve until the rocks melt.



The struts for these domes are as simple as it gets: You simply flatten the ends and drill holes centered one half inch in from each end. It also helps to bend the ends slightly to adapt to the anticipated curvature of the structure.

Bolting the struts together in the right pattern is all there is left to the assembly of these frames.



Membrane coverings (tarps, plastic, etc.) can be attached by using sheet metal screws to attach them to selected struts. Properly arranged, pieces can be overlapped so that they will shed water.

For the connection pattern for the 16'8” dome see the construction details in item 01080 Dome, 16'8” diameter.

In the instructions for each of the other structures you will see a drawing indicating the identity and placement of all the struts. This will be accompanied by a table of “chord factors” from which each strut can be calculated.

In the case of a spherical shape, you multiply the radius times the chord factor to determine the length of the strut. In order to apply this same rule to the parabolic shapes, we define the radius as the desired height (since otherwise there would be no limit to how wide a paraboloid might be).