Experience Logs

Forming Small and Large Bends in PVC Pipe

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CoVertigo

Motivation

Our senior design team needed to bend ¾" and 1" PVC pipe into small bends and large arches for a load-bearing frame prototype

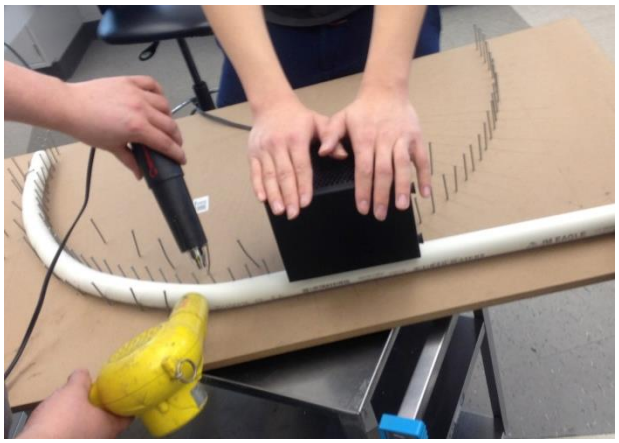
Safety

You can burn yourself quite badly with a heat gun; whoever handles one should be totally focused on where they point it.

You need oven mitts to handle the hot plastic.

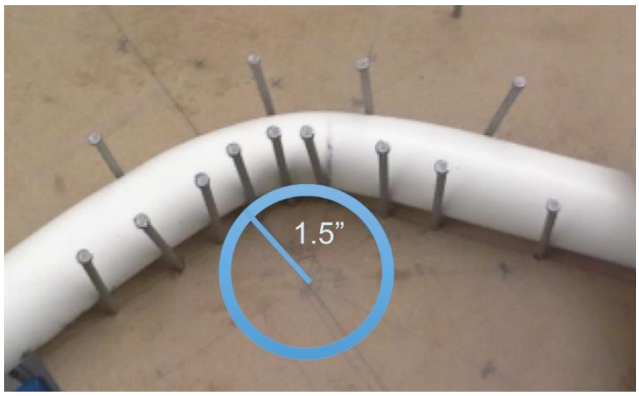
Safety Equipment:

- Oven Mitts
- Safety Glasses



Tools and Resources

- 2 Heat Guns
- 1 Mini Space Heater
- 100 Nails (#8, 1.5" long)
- ½" MDF wood sheet (2'x2')
- Hammer
- Oven Mitts
- 3 People
- Small, open space



Steps

1. Draw the arch representing the inside or outside edge of the bent pipe on the MDF wood sheet. Draw points for nail placement every .5-1.0" on the arch.
2. Hammer the nails into the points as vertically as possible.
3. Place pipe next to the first nails of the arch, hammer in 2-3 nails on the other side of the pipe to stop its movement.
4. Uniformly heat the first segment to be bent with the space heater for 10min (@ 70C), then switch to the heat gun until the pipe bends around the nails.
5. Progress down the pipe, heating each segment with the space heater and then the heat guns. Drive in nails next to the pipe every few inches to keep it from unbending.
6. Let pipe cool, then remove the nails to release the pipe.

Tips

- Bend radius < 1.5" is hard to do w/ 3/4" pipe
- An uncurved part on the jig at each end of the arch helps with keeping the pipe from moving.
- Pipe will yellow if overheated
- To avoid overheating, give a constant, light push on the free end of the pipe such that the bend will form as soon as the pipe is hot enough to change shape.