









# Typical Bolt & Screw Placement

Outside arches

Inside arches

Trim & angle end ramp to suit terrain

Trim end ramps to suit and attach end ramp isolation strap with nails

-  4½" bolts
-  5½" bolts
-  7" bolts
-  3½" screws
-  3" screws
-  2½" screws

- Set up the arches symmetrically.
  - Start at one end setting up the arches by putting a 4½" bolt through the crossings only
  - One end ramp and all joists point in the same direction. The other end ramp is fastened to the lap joint, which already holds a joist, with a longer bolt.
  - If you find a lap joint bolt too sticky, just ream out the hole with a twist drill bit. Especially with longer spans, it's unlikely the holes in the arch peaks will line up perfectly until the arches are set in the footings at both ends. Reaming an oval doesn't hurt. The bolts are just clamps to keep the wood lined up and carry no real load.
  - Oiling or soaping screws can help.
  - Bolt head and large washer goes on the inside.
  - Nut and smaller washer goes on the outside of the bridge so you can add railing posts later.
  - Don't overtighten the nuts, just enough to have the washers bite the wood a bit. The bolts just clamp the wood to keep it in line. Keep in mind that wood will swell & shrink with weather. Overtightening would just damage the wood needlessly.
- For more suggestions and photos, check out: <http://pacifi.ca/step4d.html>

set up arches as a mirror image of each other

