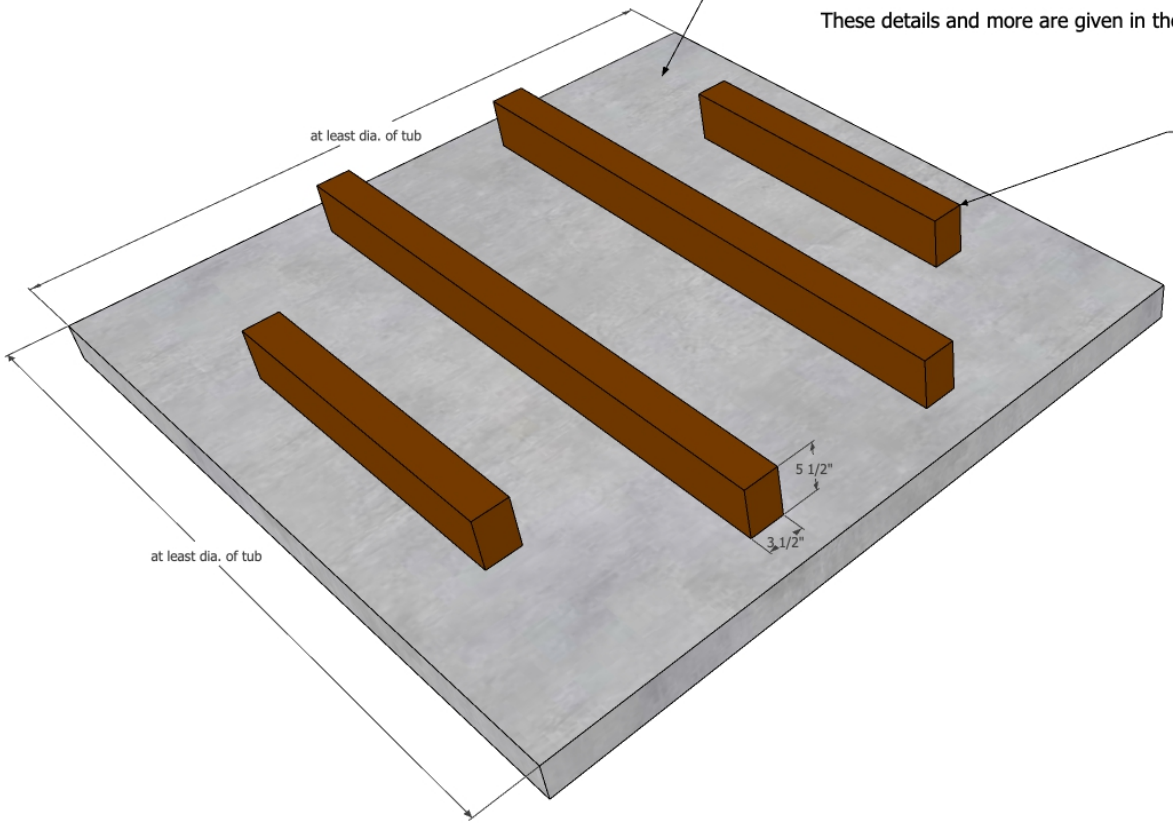
Hot Tub Design Overview

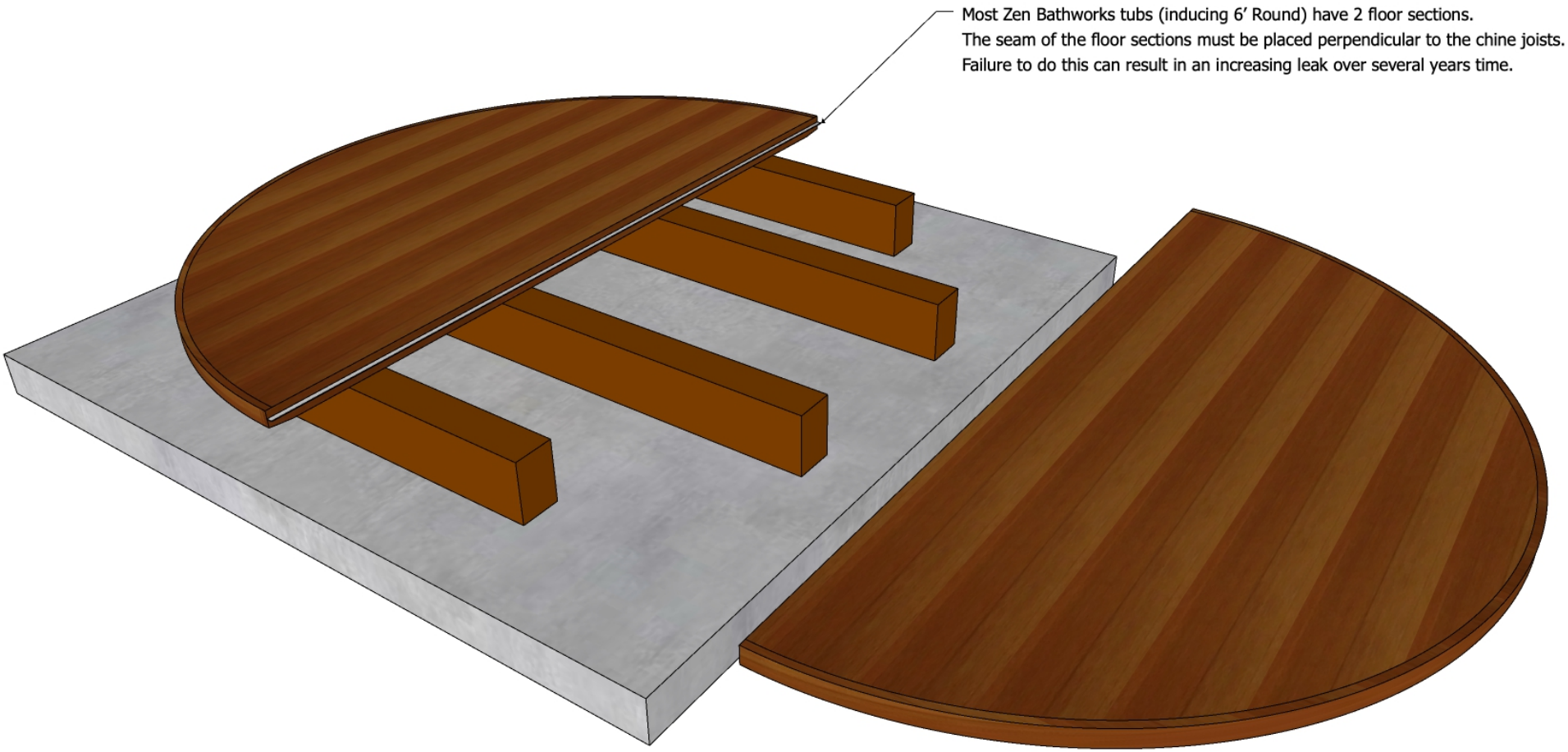
Tub Foundation & Chine Joists:

There are several different foundation types you may choose.
Regardless of foundation type selected, it must be level and capable of supporting full weight of tub (1500 - 8000 lbs., depending on size selected).
It also must provide an area that provides good drainage.
Good drainage is vital so that water from splashing, overflow, cleaning and draining operations can be carried away from the site
Common foundation choices are concrete pad, gravel pad, adjustable concrete pier blocks, or wooden deck.
These details and more are given in the tub assembly instructions sent with the tub and available on the Zen Bathworks website.



Chine joists are essential and they are not included.
As stated in the assembly manual, Zen Bathworks recommends 4" x 6" pressure treated lumber which is commonly available. Actual dimensions are shown.
The 5-1/2" height is vital to ensure the bottoms of the staves (tub wall pieces) do not bear any weight and to provide clearance for the drain plumbing, even if settling or compression occurs over time.
and lengths of joists depend on tub size selected.

Floor & Joist Exploded View:

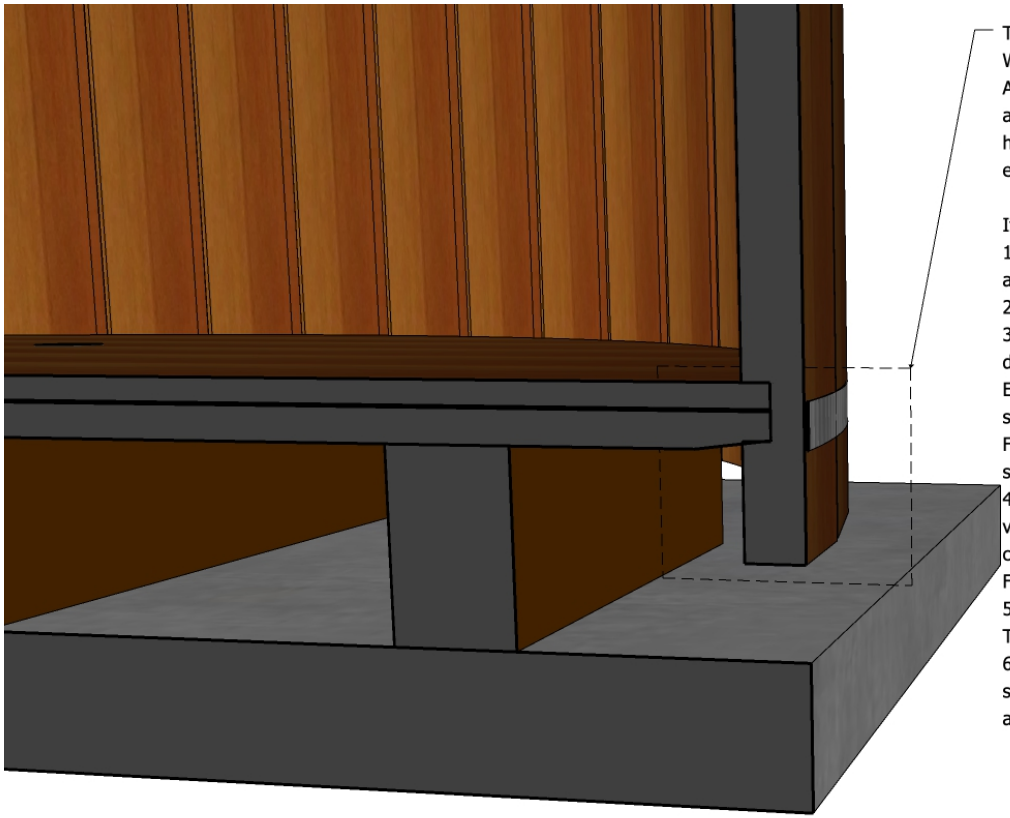


Tub Cross-Section View:

No lateral (sideways) forces against the staves.
Do not over tighten the upper most staves.
The staves must remain straight vertical.

Each wall piece is known as a "stave".
No staves are to bear any weight whatsoever.
With a 5-1/2" tall chine joist, the gap
between the ground surface and the bottom of the staves should be about 2-7/8".
This will provide plenty of clearance for the drain plumbing, prevent debris buildup
from touching the bottom of the hot tub and for air circulation beneath the tub.

Stave/Floor Seam Closeup View:



The edge of the floor is wedge shaped. The staves have grooves in them called dados.
When the staves are assembled they are mallet driven tight onto the edge of the floor.
As they become wedged tight onto the floor they also together form a smaller and smaller circle
and all of the edges of the staves press tight against each other. The metal retention bands then
hold all of the staves tight together and inwards and as the tub absorbs water all of these wooden surfaces become
even tighter against each other forming a water-tight seal.

If any of the following essential circumstances are not provided for and maintained, the tub will leak:
1. Floor flat, level, and well supported with chine joists perpendicular to seam. Seam joined together
across the full diameter of the tub without any binding.
2. No weight whatsoever on the bottoms of the staves.
3. Staves tightly wedged onto the floor and tight together. Requires them to have been spaced properly,
driven onto the floor with a mallet properly, and the bands tightened properly.
Even if you ordered an assembled tub, these must be re-checked upon arrival because the wood can dry,
shrink, or settle more into place under the band pressure during transport, causing looseness.
For this reason instructions are sent with assembled tubs reminding you to make sure the staves are
still fully driven onto the floor of the hot tub and the bands are retightened prior to putting in any water.
4. No lateral pressure on the staves (e.g. from a deck built up tight to the staves). The staves must remain straight
vertical without any inward lateral force. Even if it's not tight or pressure-inducing at the time of building, slight
compression and settling at the base of the tub can result in a large lateral force at the top of the staves.
For this reason, leave about a 1" gap around the outside of the tub between it and any fixed structures such as decks
5. Unmodified stave bottoms. Do not cut away or make modifications.
The 3-1/8" overhang is necessary for each stave to have the strength to wedge onto the floor and make a tight seal.
6. Tub kept free from debris and moisture build up around the outsides. Good drainage is vital as hot tubs have
spillover, splash, cleaning, etc. causing water in the area. Debris like soil and leaves hold moisture and oxygen
against the wood and if this continues it causes wood decay and rot.

Assembled View: