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Skagit County

Ask a Master Gardener

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Plans for Building Raised Beds Using Corrugated, Galvanized Steel Panels

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A raised bed complete with successful plantings.
Photo by Nancy Crowell / Skagit County WSU Extension Master Gardener

If you are interested in making raised garden beds using corrugated, galvanized steel panels, the following information is intended to provide you with hints for step-by-step planning and construction of these durable beds.
Two versions of raised garden beds using steel panels are offered here:
1.) a built-in-place unit using treated four by four-inch posts as primary structural support
2.) a free-standing unit using all treated two by four-inch boards as structural support.
Please note that the free-standing unit is only recommended when you have a very level site.

Corrugated Galvanized Steel Panels
Standard steel panels are available at most hardware or home improvement box stores. Panels are 26.5 inches wide and available in either eight foot or 12-foot lengths. The panels are usually 30-

gauge steel, with thicker gauges available. As long as you have vertical side wall supports at least every four feet, 30-gauge steel is strong enough to last many years.

Determine raised bed height -
Full height beds will be 26.5 inches tall and form a generous height for your raised bed. If you prefer a shorter bed, you can simply cut the steel panels to your desired height, usually 16 – 18 inches.

Determining bed length and width -
I use 8-foot panels because they're easier to transport and handle. Depending on your site you may want to create a series of raised beds: four by four foot, four by eight foot or even four by 16-foot beds.
I recommend making your raised beds at a four-foot width. It's easy to reach across from either side to tend plants, but the decision on width is just a matter of your site conditions and your personal preference. Most dimensional lumber is available in even foot lengths - four foot, six foot, eight foot or ten foot thus even foot measurements are easier and cheaper to design and build.

Building a Built-in-Place Raised Bed

End and Mid-span Supports: Use treated four by four-inch posts for all end and mid-span vertical supports. Four by fours should be placed in the ground (without concrete) to a depth of at least 18 inches. The recommended depth follows the age-old rule for building retaining walls: for every foot of vertical height there is a foot of depth for the support post.
A post-hole digger is perfect for digging the holes. If the bed is on a bit of a slope you might want to increase the depth a bit. One caution when using treated posts: all wood rots, even treated wood. Whenever wood is in contact with soil, a gradual deterioration process begins. The goal is to minimize wood/soil contact.
Once you have dug the hole to the appropriate depth, I recommend backfilling it with gravel (5/8 minus is ideal). Place at least two inches of gravel in the hole first, then compact the gravel around each post using the blunt end of a two by four. The gravel will drain away water and allow air to circulate to the wood, ensuring many years of use.
Vertical support posts should be placed at least every four feet. Therefore, an eight-foot bed would have three posts, two end posts and a center support post. You can measure and then eyeball the alignment of the three posts of an eight-foot wall. If necessary, you can run a level across the three posts then mark each post to create a level top to the wall. A skill saw can quickly cut the four by four tops to create a level pad for later installation of a seat rail.

Attaching the panels to the four by fours
Attach the corrugated galvanized steel panels to the treated four by four-inch posts using 2.5-inch galvanized lag screws, affixed with a quarter inch galvanized flat washer. The washer provides additional surface area to keep the 30-gauge steel panels securely attached to the posts. Attach each post using a minimum of four lag screws per panel, spaced equally along the panel. Hint: use a small nail to fasten the top end of a panel to the first post, then attach then other top end of the panel to the other end post with a lag screw. Then go back and put in a lag screw in the second fastening position. When the panel is properly positioned, go back and remove the nail, put in a lag screw in place of the nail then complete installation of all remaining lag screws.

The seat rail: Two by six-inch treated boards work well for the seat rail. Place one end flush with the inside edge of the four by four-inch post which gives the two by six inch roughly a two-inch overhang over the post. Attach the seat rail using three-inch deck screws, two screws per post. You can either mitre the corners or simply place the long length of the seat rail to the outer side of each post, then place the shorter length of seat postbetween the two longer lengths. You'll need to nail or screw a one-foot length of treated two inch by four inch on the inside face of the end posts to which you can screw in the smaller length of seat rail.

Optional trim - Use either five /4 x 4 treated boards or one by four-inch cedar for trim. I use the 5/4 material because its color is more consistent with the other treated seat rails. Attach the vertical corner pieces, flush to each other and screwed right into the 4x4 posts, using three-inch deck screws.

Building a Free-Standing Raised Bed

Please refer to the diagram of a four by eight-foot raised bed for the free-standing unit. Built entirely from two by four-inch treated lumber, these units should only be used if you have a very level building site.

Build a four by eight-foot rectangular form for the bottom rail using two by four-inch treated lumber. Secure using three-inch deck screws; two screws per board. Then cut 14 individual equal length two by four-inch pieces of treated wood for side wall members. Full height members would be 26.5 inches tall. Cut shorter equal pieces for smaller height walls. Four pieces make up each side wall and three pieces make each end wall.

Using three-inch deck screws, secure each side wall member on the inside face of the bottom rail two inch by four inch, per the diagram. Note that there are four individual side wall members and three end wall members. Each of the two side wall members and the two end wall members are joined in an L shape, and screwed together, again using three-inch deck screws.

Build a four by 8 foot rectangular top rail, identical to the bottom rail. Place the top rail over the side wall members and secure in place using three-inch deck screws. Your raised bed structure is now complete, ready for installation of corrugated, galvanized steel panels.

Install steel panels - The full length eight-foot steel panels that form the side walls should be installed first. Use two-inch lag screws with quarter inch flat washers to install the panels, with four screws/washers for each vertical support.

Once the two side walls are complete, you can then cut the panels for the end walls. The end walls will be a few inches shy of four foot to fit properly. Complete the installation of the end walls with lag screws and washers just as with the side walls. Your free-standing raised bed is now ready for seat rail installation.

Seat Rail Installation - Use two by six-inch treated wood for seat rails. Install using same procedure as described with the built-in-place raised bed. Your free-standing raised bed is now complete.

A few final hints for both built-in-place and free-standing raised beds:

Protect your raised beds - We talked earlier about wood beginning to deteriorate when exposed to soil. Therefore, you'll protect your investment when you keep wood and soil separated. On the built-in-place beds, all exposed four inch by four inch should be wrapped or stapled with plastic sheeting or weed cloth to minimize soil/wood contact. Free-standing beds

will have exposed vertical corners where wood is visible. Again, protecting this wood with plastic sheeting or weed cloth will minimize long term damage.

Protect your vegetables - Placing weed cloth to cover the entire bottom surface of your new raised bed will prevent weed growth that can harm your plants.

Discourage critters - If you have moles, squirrels or other critters in your yard, protect your vegetables by placing a one-half inch galvanized steel mesh hardware cloth over the entire bottom surface of your raised bed. Again, you're protecting your investment for years with this simple protective measure.

Materials List:

In-ground Raised Bed

Materials needed for one 4′ x 8′ section:

- 3 ea. steel panels, 30-gauge, corrugated, galvanized (26″ x 96″)
- 3 ea. treated 4″ x 4″ @ 8′ long
- 1 ea. treated 2″ x 4″ @ 8′ long
- 2 ea. treated 2″ x 6″ @ 10′ long
- 1 ea. treated 2″ x 6″ @ 8′ long
- 1 box (50 count) 1/4″ x 2 1/2″ lag screws, galvanized
- 1 small box (25 count) 3″ deck screws
- 1 box (50 count) 1/4″ washers, galvanized
- 35 square feet weed cloth
- 1 small roll 1/2″ mesh galvanized hardware cloth

Free-standing Raised Bed

Materials needed for one 4′ x 8′ section:

- 3 ea. steel panels, 30-gauge, corrugated, galvanized (26″ x 96″)
- 7 ea. Treated 2″ x 4″ @ 10′ long
- 4 ea. Treated 2″ x 4″ @ 8′ long
- 2 ea. Treated 2″ x 6″ @ 10′ long
- 1 ea. Treated 2″ x 6″ @ 8′ long
- 1 Box (50 count) 1/4″ x 1 1/2″ lag screws, galvanized
- 1 Small box (25 count) 3″ deck screws
- 1 Box (50 count) 1/4″ washers, galvanized
- 35 square-feet weed cloth
- 1 Small roll 1/2″ mesh galvanized hardware cloth
