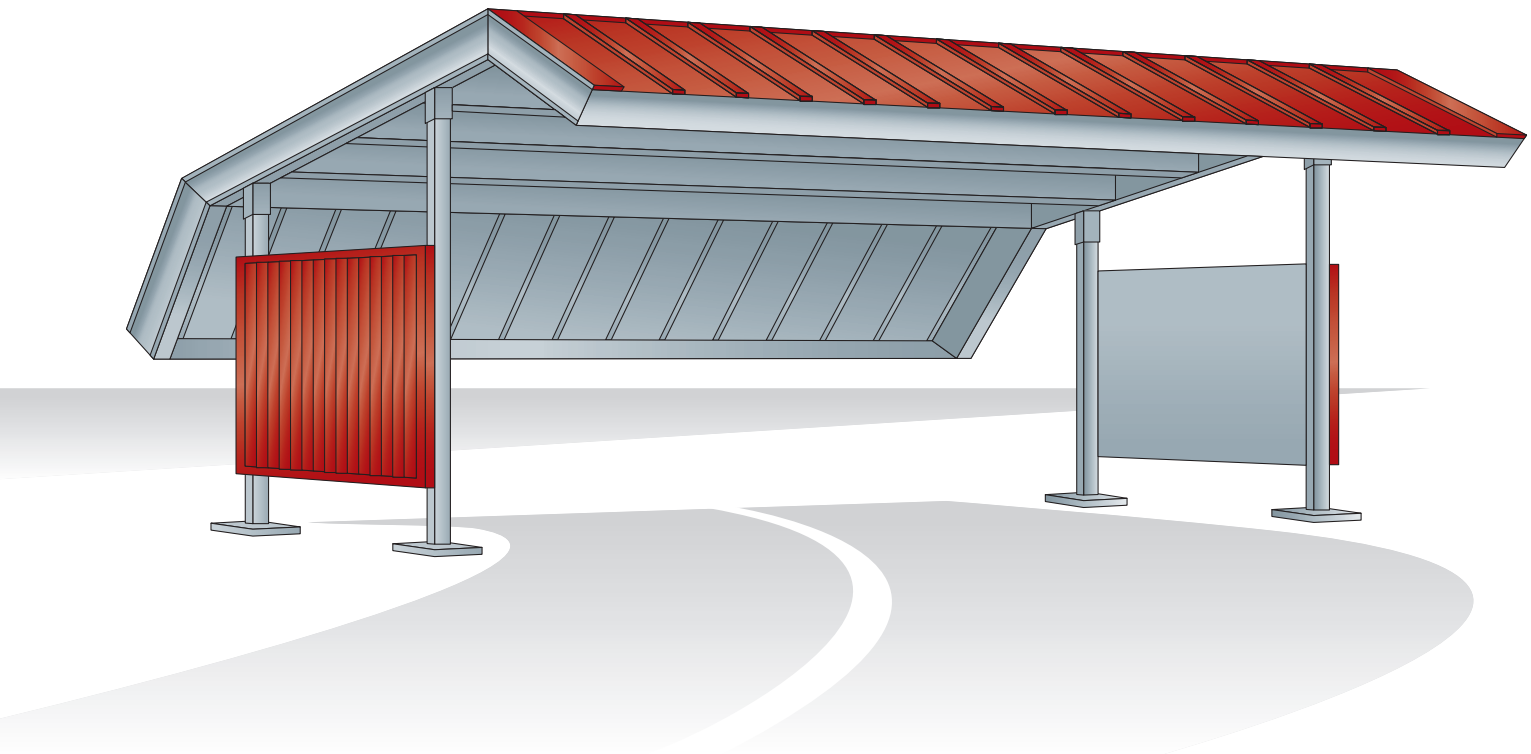
Carport Structures Corp.

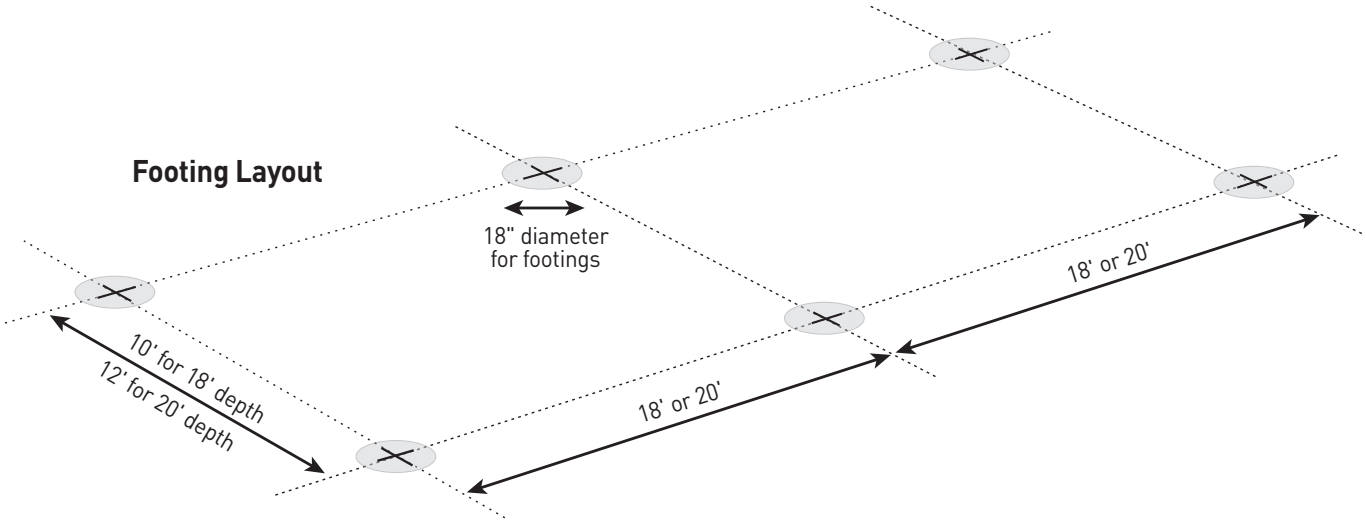
MULTI-FAB PRE-ENGINEERED CARPORTS

Installation Instructions for the Double Mansard Carport



Layout

1. Map underground utilities. Do not place footings directly over underground utilities.
2. Determine location of roof edges. Mark with temporary means (i.e. soap stone, paint stick or stakes). Roof edge can not infringe on building setbacks or easements without approval from local building/planning department. Roof drainage must be contained on carport owner's property.
3. Measure inward 4'-0" from front edge to locate column centerline. Install string to establish front column line. Be sure to extend string beyond the ends of the carport.
4. Measure inward 12'-0" from the front column line to establish the rear column line and install string as describe in step 2.
5. Mark location of one front footing. Measure along front column line and mark location of second footing. This dimension will be either 18'-0" or 20'-0". See plan drawings to confirm dimension.
6. Using a carpenter's square or other means, establish an end column line perpendicular to the front and rear column lines. Place the end column line at least 1'-0" from curbs or edges of slabs to allow for drilling of footing. Mark location of third footing on the rear column line.
7. Measure along the rear column line and mark the location of the fourth footing.
8. Determine if bay layout is square. Measure diagonal dimension from footing one to footing four. Measure diagonal dimension from footing two to footing three. Measurements should be within _". If dimensions vary by more than _", check measurements from step 2 through 6 and adjust as necessary. **Do not** proceed to next step until dimensions are within tolerance.
9. Using a carpenter's square, extend the marks at least 18" in all four directions from the footing center point. This will provide reference marks after the footing has been drilled.
10. Measure along front column line to establish additional footings to complete the group of carports. Mark footings as describe in step 9.
11. Measure along rear column line to establish additional footings to complete the group of carports. Mark footings as describe in step 9.



Excavation and Footing Installation

12. Using best available means excavate 18" diameter footings to a depth of 42".

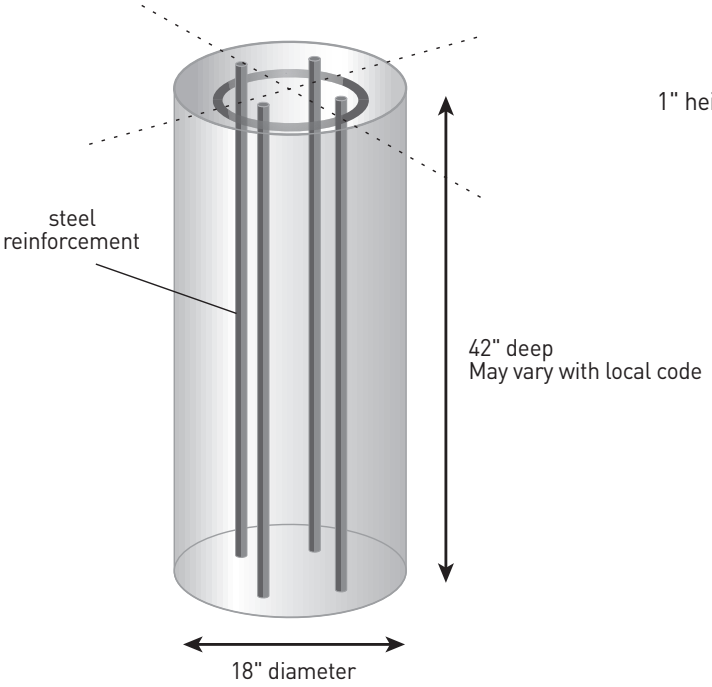
13. Install reinforcing steel in open excavation. Top of reinforcing should be placed even with finish grade. Place concrete.

14. Provide one 10" x 10" piece of plywood for each footing. Center the plywood on the reference marks made during layout.

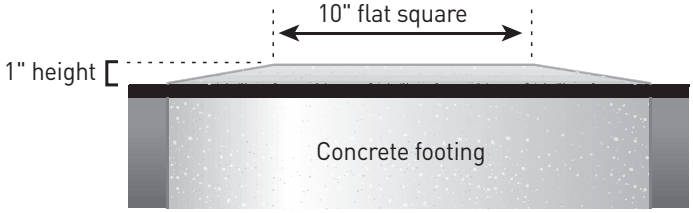
15. Level plywood and trowel concrete into a crowned profile around plywood. Top surface of plywood should be roughly _" to 1"above grade. Broom finish for non-skid surface is recommended on exposed concrete.

16. Check plywood for level. Adjust as necessary. Allow concrete to cure a minimum of 12 hours before removing plywood.

Excavation and Footing Installation



Crowned Footing Profile



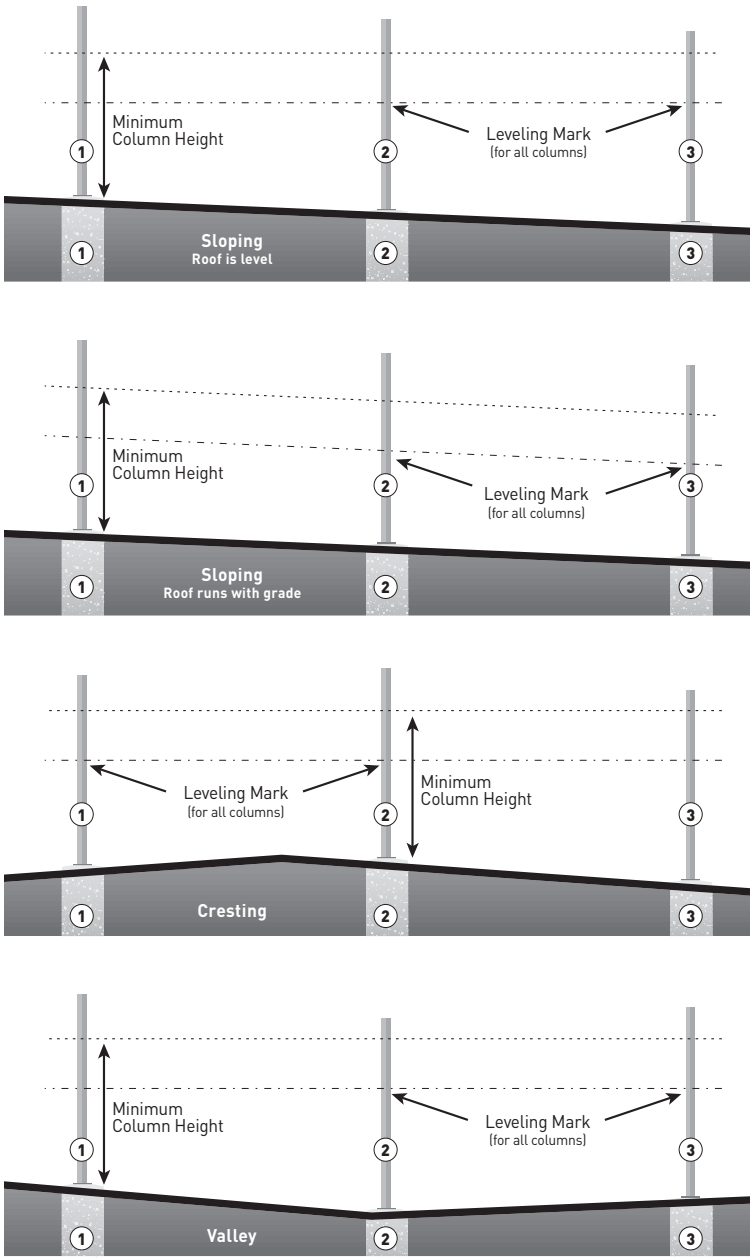
Column Installation

17. Establish a column numbering system and mark columns and footing with matching numbers (i.e. column 1 and footing 1, column 2 and footing 2, etc.).

18. Using a Laser level or transit, determine if grade is level or sloping along the length of the carport. A "level" condition is considered to be not more than 1 foot of grade change for a group of carports. It may be necessary to run roof lines with the grade, or step the roof lines for steep grade conditions.

19. For "level" conditions, stand each column on its footing and place a level mark on the column. Lay column down after marking.

Grade Determination for Columns



Column Installation con't.

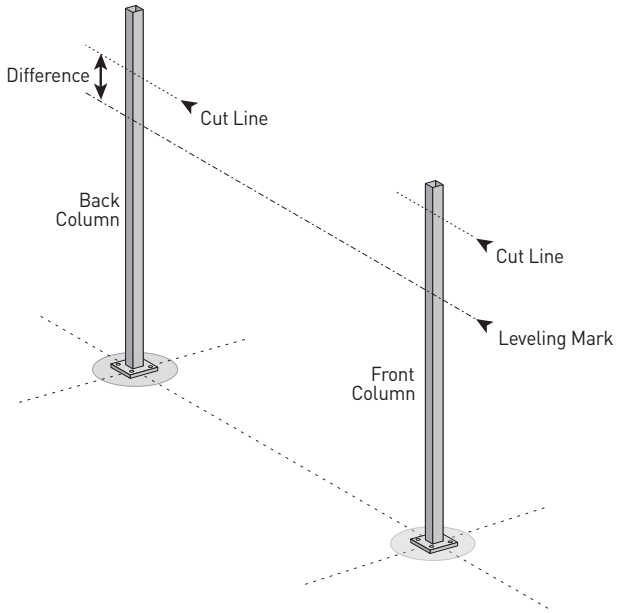
20. Locate the front column which has the least dimension from the level mark to the base plate and mark the column as the master. From the top of base plate measure and mark the cut line for the column. See the drawings for minimum cut lengths. Measure the "front offset" dimension from the cut line down to the original level mark.

21. Transfer the "front offset" dimension to the remaining front columns and mark the cut line.

22. Using the rear column that coincides with the master front column, measure and mark the cut line for the column. See the drawings for minimum cut lengths. Measure the "rear offset" dimension from the cut line down to the original level mark.

23. Transfer the "rear offset" dimension to the remaining rear columns and mark the cut line.

24. Cut column with best available means (i.e. Chop saw, Oxygen-Acetylene torch).



Cut Line Determination

18' Deep Carports - Typical *(Typical and may vary with grade)*

	Front Column	Back Column	Difference
Flat Top	7'1"	7'4"	add 3"
Single Mansard	7'8"	6'	subtract 20"
Single Mansard Reverse	7'9"	6'11"	subtract 10"
Double Mansard	7'8"	6'	subtract 20"
Double Mansard SB	7'8"	6'	subtract 20"
Even Gable	7'11"	7'11"	no adjustment 0"
Double Gable	undetermined		

20' Deep Carports - Typical *(Typical and may vary with grade)*

	Front Column	Back Column	Difference
Flat Top	7'1"	7'3"	add 4"
Single Mansard	7'8"	5'8"	subtract 24"
Single Mansard Reverse	7'9"	6'9"	subtract 12"
Double Mansard	7'8"	5'8"	subtract 24"
Double Mansard SB	7'8"	5'8"	subtract 24"
Even Gable	7'11"	7'11"	no adjustment 0"
Double Gable	undetermined		

Column – Beam Assembly

25. Insert columns into sleeves on roof beams. Match drill holes in columns and install 5/8" bolts. Tighten bolts to a snug tight condition.

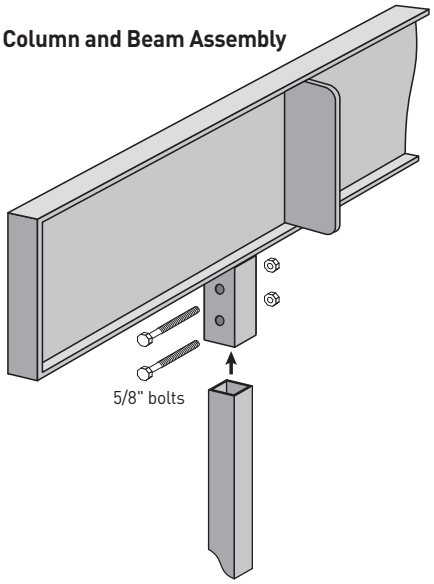
26. Stand column and beam assembly and position center of base plate on the reference marks made during layout.

27. Stabilize assembly with temporary bracing, guy wires or ropes if sufficient manpower is not available to hold the assembly in the vertical position.

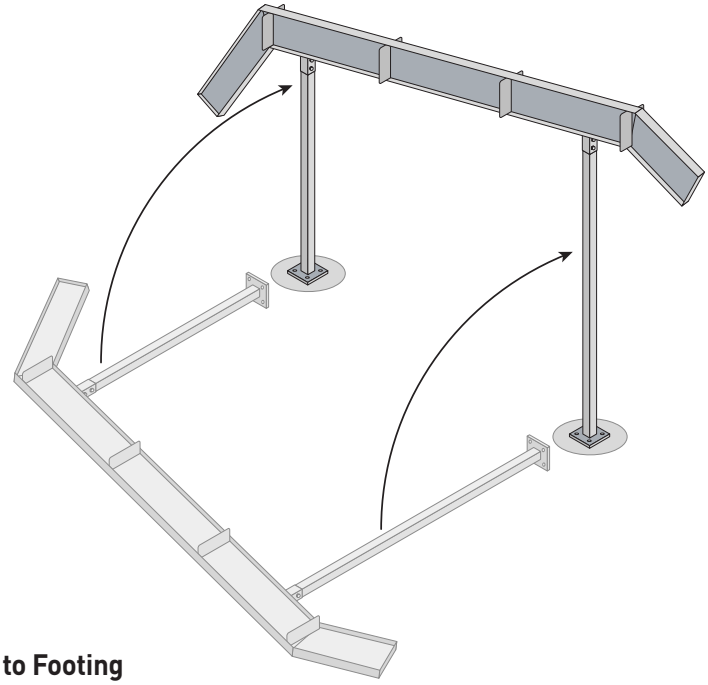
28. Drill and install wedge bolts.

29. Remove temporary bracing.

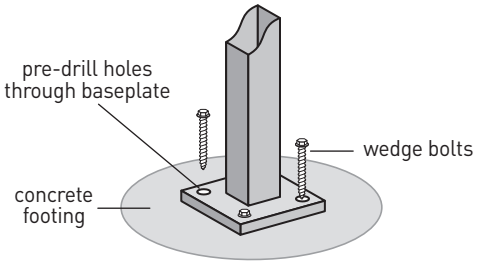
Column and Beam Assembly



Position Column & Beam Assembly on Footings



Secure Columns to Footing with Wedge Bolts



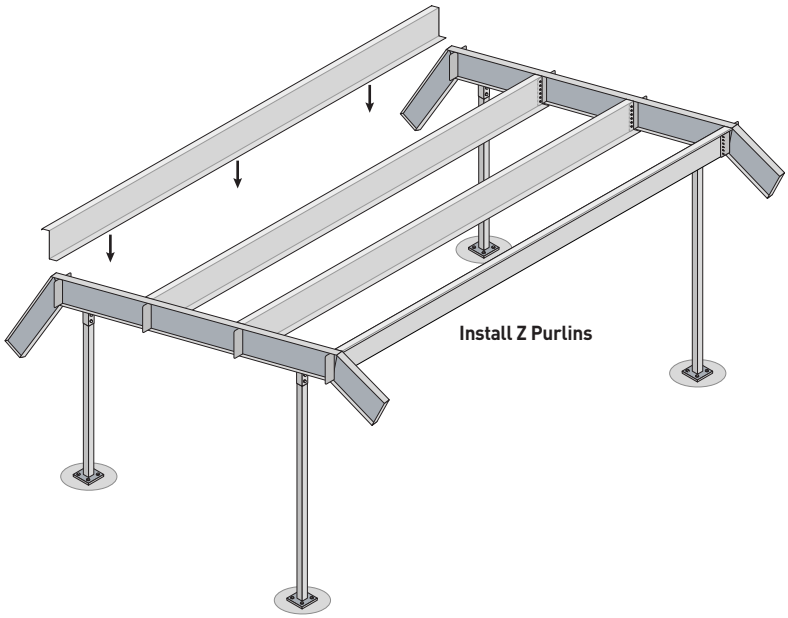
Paint – Purlins – Channels – Deck

30. Paint Beam and Column assembly.

31. Install 10Z16GA purlins and fasten to shear tabs with #12 self drilling screws in accordance with design drawings.

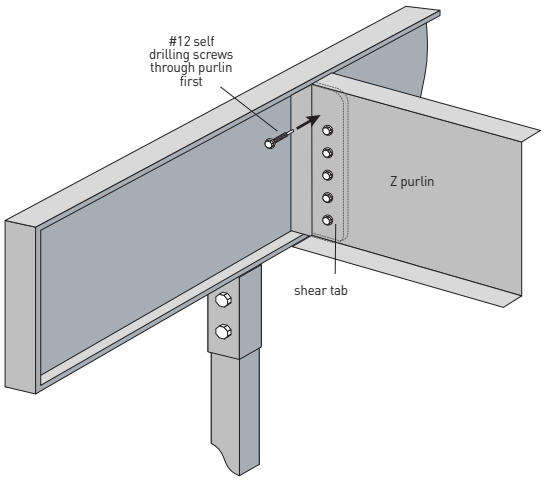
32. Install 10C16GA channels and fasten to shear tabs with #12 self drilling screws in accordance with design drawings. Prime and paint channel fascia.

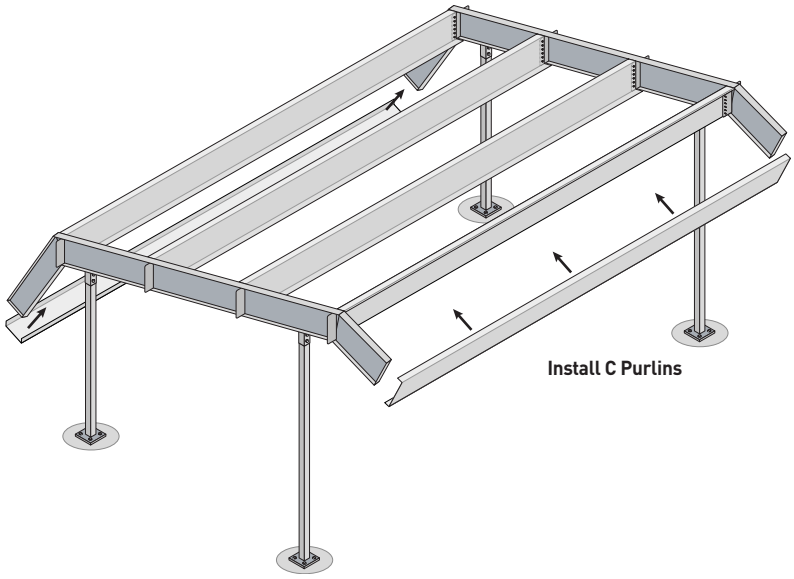
33. Install deck and fasten to each support at 9" centers with #8 self drilling fasteners.



Install Z Purlins

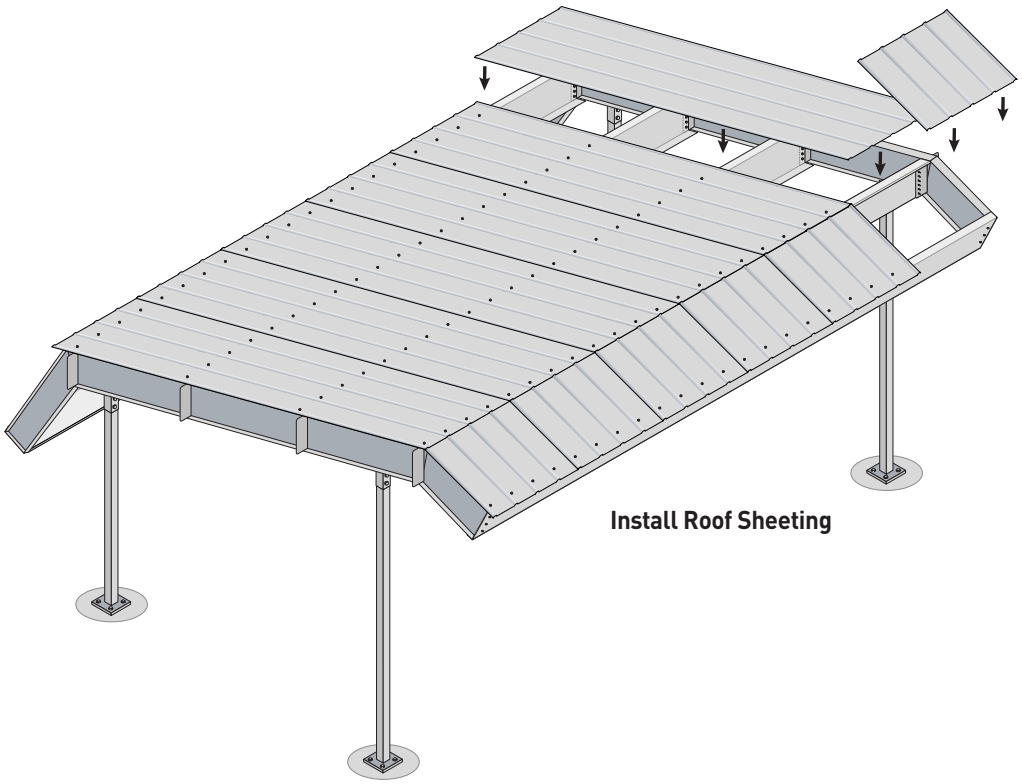
Attach Z purlin to shear tabs



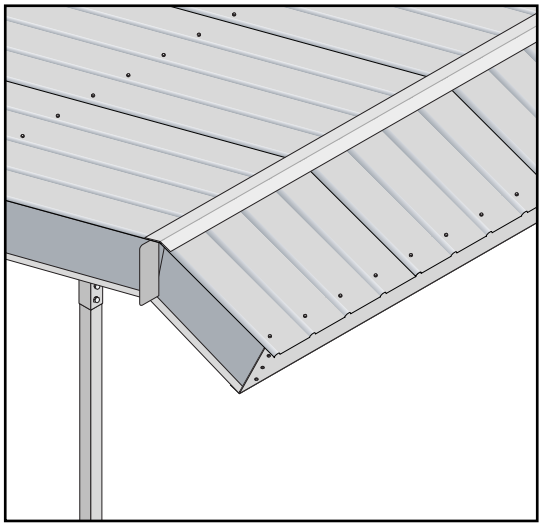


Install C Purlins

Roof Sheeting Installation



Install Roof Sheeting



Install Ridge Cap

End Panels

Install optional end panels