



1. General Instructions for Enclosure sizes 24" x 24" through 36" x 60"

*This applies to Handholes/Pull Boxes from 24" up to 48" (1.2 meter) in depth.

1.1 Prepare the excavation by digging a hole 8" to 10" deeper than the overall height of the Handholes/Pull Boxes. Increase the hole depth 6" for each riser added (if used) to the handhole. The length and width of the hole should be determined by adding 12" to 16" to the overall length and width of the Handholes/Pull Boxes.

1.2 Place 10" to 12" of crushed rock evenly across the bottom of the excavated hole. Work the box into the gravel 1" to 2" at the time of leveling. The material should be leveled so the top of the Handhold/Pull Box is flush to the grade.

NOTE: Use a classified rock size of 3/4" and smaller to ensure proper drainage.

NOTE: If using optional riser(s), install the riser(s) on the enclosure prior to back filling the Handhole.

1.3 Replace the lid prior to back filling.

1.4 Back filling may be accomplished using the excavated materials.

1.5 Place the backfill into the hole in 12" increments and compact. Manual compaction is desirable to ensure filling space between ribs. This step assures locking the vault in the ground preventing upheaval in high water table areas.

2. Vault "Grass Area" installation

*Grass Area describes non-traffic areas separated from roadways by a curb or other permanent barrier where foot traffic is expected.

2.1 Continue back filling in 12" increments with compaction until backfill is at grade.

3. Vault "Sidewalk or Footway" installation

*Sidewalk or Footway installation provides for safe usage under incidental motor traffic.

3.1 Back fill in 12" increments as described above.

3.2 Leave an 8" deep by 12" wide trough around the handhole.

3.3 Fill the trough with concrete to provide a 12" wide collar surrounding the handhole. Vibrate the concrete to release entrapped air to prevent voids.

4. Vault "Hidden" Installation

*This method, for burial below grade, is useful in shoulder or off road installations for cable access and prevention of vandalism and safety from vehicular traffic.

4.1 Follow instructions 1.1 through 1.5 except that the excavation will start 36" deeper than flush with grade installations.

4.2 During the back filling operation, continue in 12" increments with manual compaction to grade level. Proper compaction is essential in the 36" above the Handhold/Pull Box.

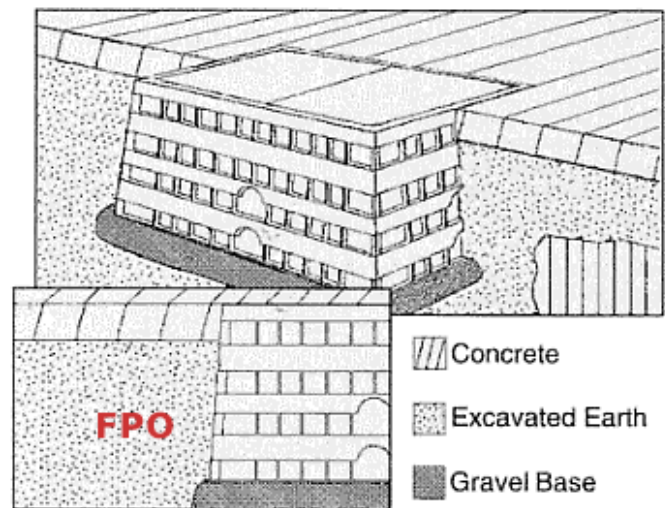
5. Installation in Grass, Dirt, or Gravel (All PENCELL Units)

- 5.1 Prepare the excavation approximately 6" deeper than the overall height of the enclosure. The length and width of the excavation should be determined by adding 4" to 6" to the overall length and width of the Handhold/Pull Box.
- 5.2 Place approx. 3-6" of compacted material such as sand or gravel in the bottom of the hole. Gravel is the recommended material because of its drainage characteristics. The compacted material should be leveled so the top of the handhole or pull box is flush to the grade.
- 5.3 Place selected backfill into the excavations at 12" increments and compact either by manual compacting or flooding the excavation to achieve the desired relative compaction. Install with cover in place.

6. Installation in Concrete and Pavement (PENCELL units with steel or polymer concrete lids)

*Plastic lids are NOT recommended in sidewalk applications.

- 6.1 Follow steps 5.1 and 5.2 above, except install with lid in place. Place shims between lid and walls on all sides and ends to prevent deflection (bowing of the sides tightly against the lid). 6.2 Place selected backfill into the excavation at 12" increments and compact either by manual compaction or by flooding the excavation. The backfill should be discontinued approximately 8" below the finished grade. The final 8" of the excavation should be finished with concrete. This should be accomplished by providing a form around the enclosure that would produce a 6" wide collar (see attached sketch). Leave the shims in place between lid and wall until concrete is set.



7 Installation of 6" Riser

*Excavation will need to be 6" deeper than standard installation

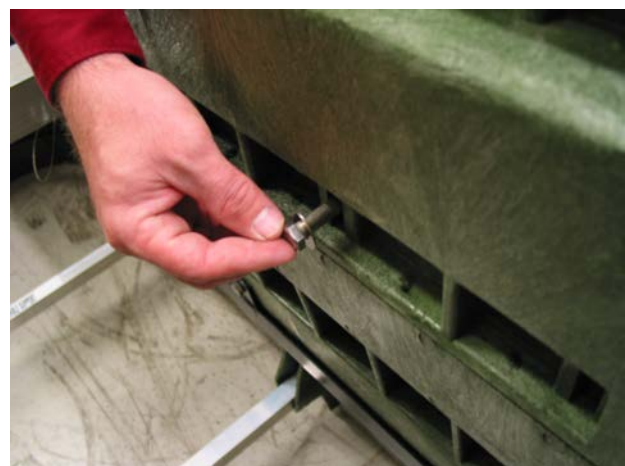
7.1 Remove the bolts securing the lid to the Enclosure and remove both sides of the lid.



7.2 Place the Riser on top of the Enclosure. Using the pre-existing holes in the Riser as a guide, drill clearance holes through the Enclosure to accept the mounting bolts included with the Riser.



7.3 Insert bolts with flat washer through the mounting holes. Add remaining flat washer, split ring lock washer, and nut, and tighten until secure.



8 Bury the enclosure as described previously.

Notes:

*Enclosures larger than 24" x 24" should be installed the same as above, except 8"-10" of room in length, depth and width should be allowed.

*PENCELL high density polyethylene (HDPE) structural foam vaults with external horizontal and vertical ribbing will not absorb moisture and are impervious to chemicals found in the underground environment. Installations indicated, are from road shoulder back to greenway. Highway installations contra-indicated, proper concrete chambers should be used adhering to department of transportation load rating. Engineering design department will select the appropriate handhole, vault or manhole consistent with this guideline.

The above instruction was adapted from original found at <http://www.pencell.com/installation.shtml>

8. Installation of Enclosure Braces/Struts

If the base is received unassembled you **MUST FOLLOW** the directions below and install the Braces **BEFORE** burying the PENCELL Enclosure in the ground.

This photo shows a bottom view of assembled PENCELL Enclosure.



8.1 Insert the square aluminum brace by tipping the brace into a brace pocket inside the enclosure near the bottom (left photo below). Once positioned in the pocket, step on it to snap it into place (right photo below).



photo
below).

8.2 Do the same for both ends of both braces.

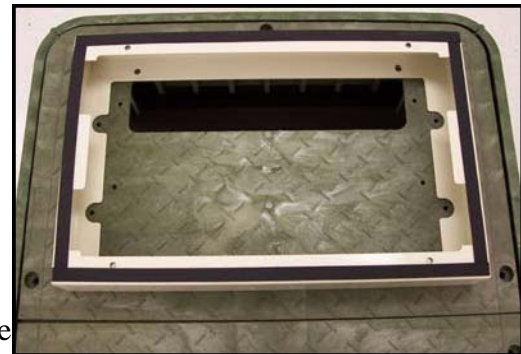


8.3 Be sure to place the Lid Support Channel across the PENCELL enclosure (before back-filling).



8.4 The lids need to be bolted securely in place before backfilling (SEE GENERAL INSTRUCTIONS).

NOTE: If desired the FSC (FieldSmart) base may be attached to the PENCELL lid before burying/backfilling (see next section).



9. Fastening the Cabinet Base Using J-Bolts

9.1 Determine the mounting holes to use by temporarily placing the FSC Base on the PENCELL lid with the foam tape facing up. The FSC base should surround the cable opening(s) in the lid while lining up with (4) four mounting holes.

9.2 Place a J-bolt through the selected mounting hole from the bottom of the lid. The J-bolt should hook over a rib, typically nearest the hole. Select the rib which allows the bolt to pass squarely through the hole.

NOTE: Different length J-bolts are supplied in the kit.
Select J-bolts lengths that coincide with the height of the rib next to the mounting hole.

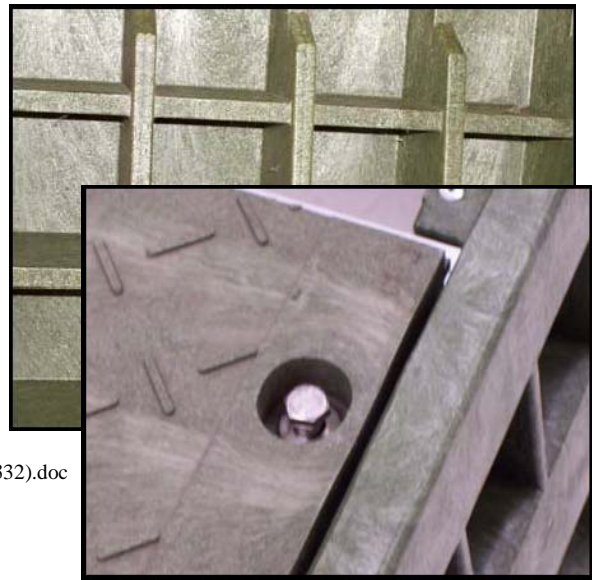
9.3 Place the Washer Plate, flat and lock washer and nut over the J-bolt. Do this for all (4) four mounting holes. Align the FSC base to the lid and firmly wrench tighten the nuts.

NOTE: Insert the rubber plugs (included in the kit) into any unused holes surrounding the FSC base.

10. Installing the PENCELL Lid on the buried enclosure

10.1 First install the PENCELL lid with the attached FSC base. Orientate the lid on the side of the PENCELL enclosure that best suits the installation.

10.2 Insert the flat washer and bolt into each of the (3) three holes to attach the lid. Avoid cross-threading the bolts by starting several threads by hand. Do the same with both lids before wrench tightening.





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10.3 Use a socket wrench to tighten the bolts in each lid.

