



# **Embankment Climbing** **Wall & Fall Zone Retainer** **Installation Instructions**

NOTES: Please check for any damage caused by the shipping company and take appropriate steps to file a claim, if needed.

\*Please call **Digsafe** and check for any underground utilities before digging anywhere.

## **Materials needed**

All climbing wall and retainer pieces; rebar for the retainers, 10" spikes for the retainers, fasteners for the climbing wall, 1/2" Red Heads for the climbing wall (all included). Not included: 3 pound sledgehammer, open-ended wrench, 4'-6' level, 12" speed square, measuring tape, shovel, adjustable open-ended wrench or 3/4" socket wrench to fit the 1/2" Red Heads, 7/16" carbide tipped hammer drill bit, strapping for temporary bracing and stakes together with screws for the bracing, concrete for the footings, drainage stone if required, 4 inch perforated drainage pipe with sleeve, fall zone material, mini excavator or other means to excavate the 12 inch deep fall zone hole, and to backfill behind the wall, plate compactor, wheelbarrow (?).

## **Notes**

Please study the attached drawings. As an overview, the back of the wall slopes back at about a 70° angle, and the wing walls meet the back wall at a 45° angle.

Keep in mind that the climbing wall is designed to be built into a hill of at least the same height as the climbing wall you ordered. That is, if you ordered a 6 foot high climbing wall, the hill should be at least 6 feet high. Because it is embedded into the hill, the hill actually surrounds and comes down the sides of the climbing wall following the slope of the wing walls on each side which are designed to be at about a 25° slope.

If you are building this hill from scratch, then you could install the climbing wall right now, and then build the hill around it. If you are digging into an existing hill, please do that, and leave yourself enough clearance behind the wall (about 5 feet) to install the deadmen and the safety railing. The base for the wall must be absolutely level.

Also keep in mind that a fall zone is required in front of the wall, and that fall zone should be 12 inches deep. The base of the climbing wall is designed to be at the bottom of this 12 inch deep hole, so that once the 12 inch deep hole is filled with fall zone material, the top of the climbing wall will be 6 feet above the fall zone material.

If you are also installing the fall zone retainer kit, the retainers are designed to sit on an earth shelf that is 12 inches above the bottom of the fall zone, so you don't want to excavate the hole for the fall zone past the ends of the wing walls.

## **Instructions**

1. Remove items from pallet or packaging, and check to make sure there is no damage and that you have everything you need. We do our best to label everything with letters and/or numbers.
2. Once you know where your wall is going to be inserted into the hill, and once you have prepared the base for the climbing wall and fall zone area and are assured that it is completely level, find the template for the foundation, and lay it out to make sure that you have the required clearance behind the wall.

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3. Follow the foundation plan to pour either a solid footing or footing blocks as shown on the plan. It is imperative that the entire top(s) of this foundation is perfectly level. This is more challenging if you are doing separate blocks, but if you don't ensure that the foundation is completely level, you will have all kinds of problems going forward!
4. Move the center wall onto the center foundation, keeping in mind where the wing walls are going to be located. Tilt it back to about a 70° angle, make sure it's squared up with the foundation, temporarily brace it, and then hold it in place permanently using a couple of redheads through the base plate into the foundation.
5. Move the left or right wing wall into place. You may wish to get some bracing ready to help you with this part, as matching the wing wall to the center wall is challenging and requires micro adjustments to make sure everything lines up before you screw everything together. You might also use the combination of the carpenter's square and speed square to make sure that the wing wall is 45° off of the center wall.
6. Once everything is lined up, use the structural screws to screw the sections together, and before anything moves out of place, confirm the 45° angle, and then use the redheads through the baseplate into the wing wall foundation.
7. Repeat with the other wing wall.
8. Find and attach the deadmen where indicated on the back of all three wall sections. Use the level to make sure they are level in both directions. Obviously, these are big cantilevers that won't tolerate vertical stress, so take care working around them when you start backfilling and compacting.
9. Next, start backfilling behind the wall. To prevent settling behind the wall, make sure that the earth is compacted every three or four inches as you build up behind the wall. **Obviously, depending on the weight of your plate compactor, you could blow out the back of the wall if you tried, so don't try!**
10. Once you backfill to a height up to and around the deadman, stop and install the posts and railings. There are cutouts in the top plates of the wall sections to which the posts are attached, and braces at the bottom of the posts to attach to the vertical cleats behind the walls.
11. Continue backfilling and compacting up to a level that leaves enough room for topsoil.
12. If you are installing the fall zone retainer kit, it comes in three or four sections depending on the size of your climbing wall. It is designed to start at the ends of the wing walls, and then make a shallow arc out away from the climbing wall. Because the earth coming around the ends of the climbing wall needs to be retained for a short way, there is a second layer of retainers that is attached to the top of the base layer, starting at the ends of the wing walls.
13. If you kept the area where the fall zone retainers are going to be as undisturbed as possible, then the retainers will lie and be fastened into solid ground, which is ideal. The more solid ground under the retainers, the easier the installation will be.
14. In any case, make sure that the shelf of ground under the retainers is level.
15. Consult the detail for the shape of the fall zone, and lay out the retainers in this approximate shape, overlapping the articulated ends, and placing/driving a rebar through each joint, BUT NOT into the ground.
16. Once those are located precisely where you want them, drive the rebar through the holes near the wing walls all the way into the ground so that the top of the rebar is flush with the top of the retainer.
17. Now it's a matter of adjusting the remaining retainers so that the center of the middle retainer (the one that is directly in front of, and furthest away from the center wall) is lined up with the middle of the wall.
18. Once everything looks perfect, drive in all the rebars until their tops are flush with the retainers.
19. You are now ready to install the second layer of retainers on top at both ends. Lay these out so the faces line up with the first row of retainers, and use the 10 inch spikes through the predrilled holes to fasten this layer down to the first one.
20. Check the heads of all rebar to make sure there are no sharp burrs. If you find any, either file them smooth or use a large set to drive them further into the wood.
21. Now you can use the shovel to excavate the rest of the fall zone hole back to the retainers, but be careful not to undermine the retainers.

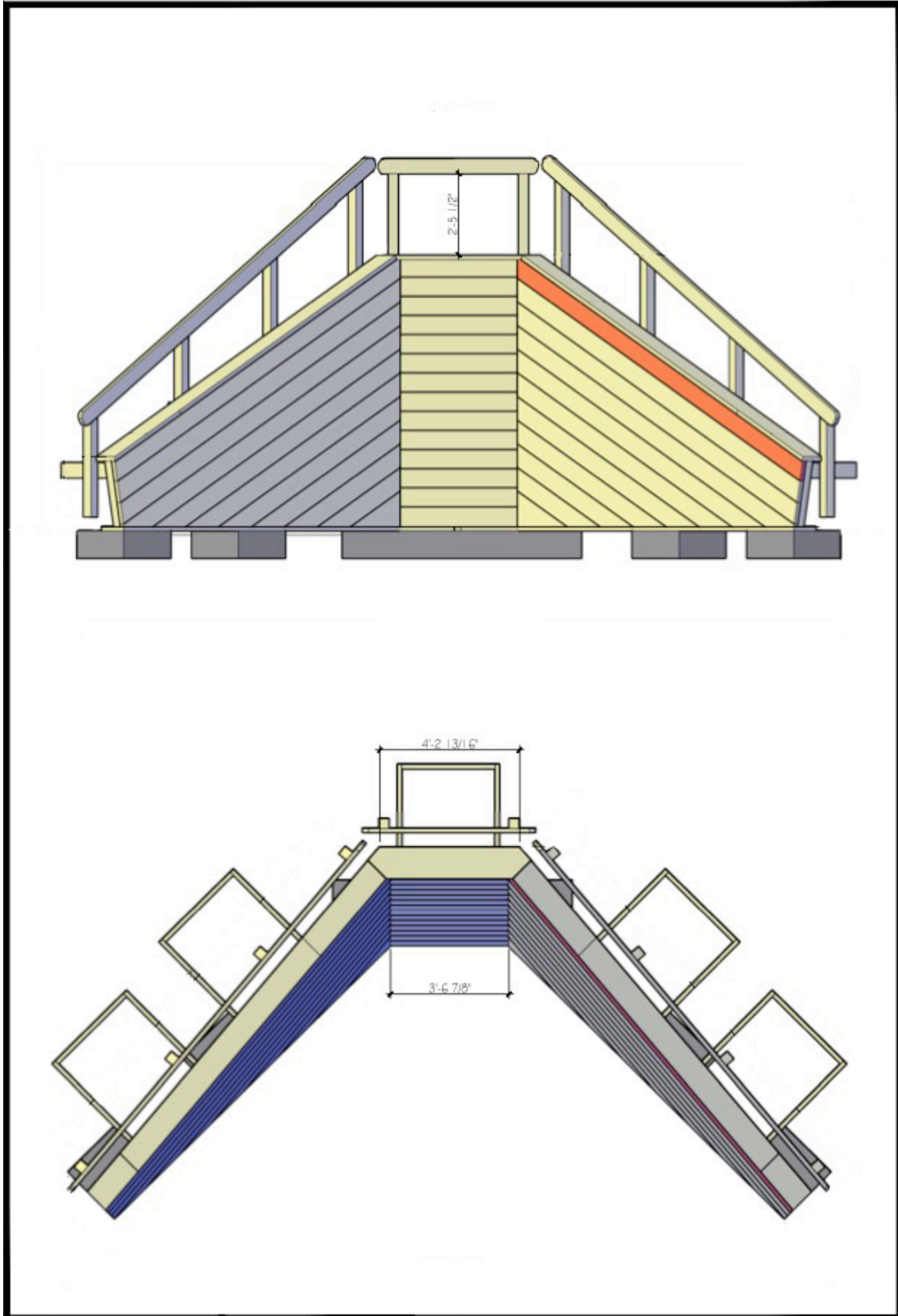
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22. Because this is a hole in the ground, you will also need to install drainage, so determine where the trench for the perforated pipe is going to be located, and staying at least 6 inches away from the outside of the retainers, dig the trench. Then carefully excavate the trench under the retainer using the shovel.
23. Layout the perforated pipe in the hole and trench.
24. You are now ready to backfill the trench and fill in the fall zone with right your chosen fall zone material.
25. All wood is treated with kid-friendly preservative, but as is the case with all wood facing the elements, it needs to be cared for, so check on this periodically for rough spots, splinters, etc, and sand them out, and then treat it with kid-friendly wood preservative (we have it available if you can't find it) once or twice a year to keep the wood from deteriorating. You can use a garden sprayer to do this.
  
26. Enjoy your climbing wall!

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