Retaining wall

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Retaining walls are vital structures that support soil, preventing erosion and maintaining steep terrain. They create usable land and stabilize slopes by resisting lateral pressure from gravity and water. Factors like soil friction and proper drainage play key roles in their effectiveness and stability.

Product Page

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Retaining walls play a key role, in supporting soil and preventing erosion by utilizing wire mesh gabion baskets filled with rocks. These structures are key, for stabilizing slopes. Enhancing the appearance of landscapes. To enhance their effectiveness a layer of material is strategically placed between the gabion wall and the soil it retains. This geotextile acts as a shield, managing water flow and reducing erosion risks by preventing soil particles from escaping through the rock fill gaps. By holding back soil masses retaining walls not beautify landscapes but also protect infrastructure prevent landslides and create usable spaces in challenging terrains.

Configuration

Gabion retaining walls can be designed in two configurations: smooth front and step front configurations. In both configurations, a batter angle is incorporated to enhance safety and prevent the boxes from sliding. Research and experimental findings have confirmed that the batter angle contributes to the stability of the retaining walls.

When using gabion walls with a smooth front face, it's recommended to place the wall at a 6 to 10-degree batter angle, suitable for wall heights up to 5 meters. On the other hand, walls with a step front face should be positioned at a 4 to 6-degree batter angle toward the retained slope. This necessitates grading and compacting the founding soils to accommodate the specified wall batter.

Dimensions

For Gabion Retaining wall dimensions, it's essential to ensure structural stability by proportioning the base width relative to the wall height. As a general rule, a ratio of at least 2:1 for height to base width is recommended to prevent failure. At Hitech Gabion, we prioritize the long-term success of your projects.

Our standard practice involves maintaining a base width of 2/3 of the wall height to secure the wall and mitigate any risk of failure. While Gabion gravity retaining walls can be constructed up to 9 meters in height, optimal results are achieved for wall heights of 5 meters or less. For heights exceeding 5 meters, we advise considering MSE slope protection walls.

Each individual box stacked on the base should not exceed 1 meter in height. The number of boxes required for each wall depends on the desired wall height. For example, a 3-meter wall would consist of 3 boxes, each 1 meter in height.

The width of the gabion boxes is determined by the selected base width. Additionally, a minimum setback of 0.5 meters is recommended for each box stacked after 1 meter. This setback is particularly important for the step front face configuration of retaining gravity walls.

Foundation

Gabion Retaining walls are commonly installed on a graded soil foundation, often accompanied by a layer of non-woven geotextile fabric. This additional layer serves multiple purposes, including enhancing bearing capacity, reducing settlement, and facilitating drainage. To further bolster the stability of the wall, a 400 mm deep base can be incorporated, providing a more robust foundation.

Foundation below Grade

Gabion retaining walls aren't just for above-ground use; they can also be a lifesaver below grade, protecting against erosion caused by water currents and waves. A good rule of thumb is to bury them about twice as deep as the expected erosion depth. This buried layer of Gabion acts as a sturdy barrier at the base of the wall, helping to prevent soil from being washed away.

Installing this underground layer requires minimal excavation and is typically placed directly on the ground. To ensure durability and longevity, a filter fabric is often used to prevent soil erosion. And if the base needs to be placed underwater, no worries! It can be prefabricated on a barge and carefully lowered into place.

For added protection in underwater environments, we also offer the option of applying a PVC finish coating to the gabion boxes or ren mattress upon request. It's all about keeping your retaining wall strong and resilient, no matter the conditions it faces.

Shape control:

Both welded mesh gabion walls and double twisted mesh gabion walls have their unique advantages and disadvantages, particularly concerning strength and durability in retaining wall applications.

Welded mesh gabion walls offer superior strength due to their construction. Each wire, typically 4 mm in diameter, is welded at every junction, providing a rigid structure capable of bearing significant stress. This rigidity helps prevent the wall from changing shape due to bending or external pressure.

On the other hand, double twisted mesh gabion walls offer flexibility, making them well-suited for rough terrains or areas prone to movement. The double twisted mesh design allows the wall to bend without fracturing, providing resilience in situations such as scour occurrences.

In summary, welded mesh gabion walls excel in providing strength and stability, making them suitable for applications where structural integrity is paramount. Meanwhile, double twisted mesh gabion walls offer

flexibility and resilience, making them ideal for challenging terrains or environments where movement is a concern.

Filter Fabric and Back fill

There are various options for backfilling gabion walls, but it's absolutely crucial to do it properly. If the backfill soil isn't packed down correctly, the wall could sink, shift sideways, or end up weaker than expected. Proper compaction of the backfill is essential, following specific guidelines to ensure it's dense and stable.

In any gabion application, the filter fabric plays a critical role in preventing soil erosion through the voids in the rocks filled inside the gabion boxes. Choosing the right filter fabric is essential, as the wrong selection can result in the loss of retained soil and a change in the elevation behind the wall. The choice of filter fabric depends on the type of backfill soil used for the retaining wall.