

INSTALLATION GUIDE







Introduction

Tensar's new **Palisade™ 50 Wall System** was developed on the concept that light-weight blocks are key to improving efficiency from production to installation. **Each Palisade block weighs no more than 50 lbs**, making it the lightest structural block currently on the market. These blocks allow for quick installation since the thin profile is easy to carry and handle. This system also eliminates the need for core fill, making it one of the most cost-effective and high-performing systems on the market.

With its natural rock aesthetic, Palisade50 blocks can also be used in landscape wall applications. The combination of surfaces create the perfect look for your project.

With the Palisade50 System, quality and performance no longer need to be sacrificed for a light weight block. Palisade50 utilizes Tensar's GeoHoop[™] technology that mechanically connects Tensar's high-strength HDPE UX Geogrid reinforcement to the backfill for stability during construction and long-term performance. This positive, mechanical connection greatly minimizes the potential for wall failure, even under the most severe conditions such as earthquakes in seismic zones. Palisade Walls incorporate a positive, mechanical connection between the wall face and the Tensar GeoHoop technology, providing unsurpassed structural integrity.

Standard Installation Procedures

The following steps provide general guidelines for installing a Palisade50 Retaining Wall System. If you require more detailed information, please refer to the project's installation instructions and shop drawings within the contract bid documents.

Step 1: PRECONSTRUCTION PREPARATION

It's important to become familiar with the components of the Palisade50 System prior to the start of construction. Below is a list of these components as well as the tools needed to construct a Palisade50 Retaining Wall System.

Palisade50 System Components:

- Palisade50 Block Units
- Polymeric Connectors
- Tensar Uniaxial Geogrid
- Tensar GeoHoop

Suggested tools for installation:

- Dead blow hammer
- 2 to 4-ft level
- Utility saw and/or grinder
- Masonry string and chalk line
- Pitchfork (to aid in geogrid placement)
- Shovels
- Compaction equipment
- Rubber mallet
- Masonry Rub Brick

Palisade50 System Components



Palisade50 Block Units

Four different surfaces can be randomly placed to create a natural rock aesthetic. 8"h 16"w x 6"d nom. / 50 lbs max



Grind pad down to this Shim pad elevation up to this Leveling pad elevation

Step 2: PREPARE THE LEVELING PAD

Prepare the subgrade by excavating vertically to plan elevation and horizontally to design geogrid lengths. If stockpiling excavated material for reinforced fill, remove all surface vegetation and debris from the excavated material. Start the leveling pad at the lowest elevation of the wall. Level the prepared base with 6 in. of unreinforced concrete or well-compacted granular fill (gravel, road base, or 3/4 in. minus [13-20] mm] crushed stone). The leveling pad is typically 12 in. wider than the Palisade50 Unit. 6 in. in front and behind the block. The contractor should locate the leveling pad to account for wall curves and wall batter. For a granular leveling pad, compact the stone in accordance with the project plans and specifications.

Steps in the leveling pad are required to change elevation. It is important that the height of the step is equal to the height of the number of unit courses. Aggregate leveling pads are generally overbuilt and should be carefully trimmed down to meet the proper elevation. If a concrete leveling pad is used, it is important to have the step heights match the Palisade50 unit's height exactly. If not, grinding and/or shimming may be required. Use a thin set masonry mortar to make up for variations or follow the recommendations for shimming between block courses to account for minor variations.

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With the Palisade System, quality and performance no longer need to be sacrificed for a light weight block.

Step 3: INSTALL THE BASE COURSE

Once the leveling pad is in place, begin by making a wall line where the units will rest. Striking a chalk line works well for concrete leveling pads. A string line is recommended for aggregate leveling pads. Set the tounge of a block to the groove on the next block with sides touching and the textured face outward. The first course must be accurately placed to align with the string line, carefully spaced and leveled to facilitate construction and enhance the appearance of the wall. The tails of the unit should always be used to align the wall face. Occasionally a unit will have a slight difference in height. If this occurs, follow the recommended shimming procedures.



NOTE: A pallet of Palisade50 blocks contain a mix of four (4) different surfaces and need to be randomly placed. No specific pattern is needed.

Tensar's GeoHoop technology connects the Palisade50 block with the backfill effectively creating a stabilized, integrated block-backfill mass at the face.

Step 4: GEOHOOP AND CONNECTOR PLACEMENT

Prior to placing additional courses, insert two connectors into each preceding Palisade50 unit. Slide the ends of the GeoHoop through the rear slot of the blocks, spanning across 3 blocks.



NOTE: The center of the connector pin should be aligned to the pin indicator location on the top of the block.



Step 5: INSTALL ADDITIONAL COURSES AND GEOHOOPS

Once the connectors and the GeoHoops are in place, the Palisade50 Units must be swept clean prior to placing the next course in a running bond pattern. Failure to do this can result in problems with seating and leveling of subsequent courses.

Place the next course over the connectors on the previous course. Push the Palisade50 unit forward so that it makes contact with the connectors. The vertical joint alignment should be checked frequently as the connectors allow the units to slide from side to side. As you build up, maintain level on each course by continually checking for level front and back and side-to-side. If needed, shim when required.



The freestanding units should not be stacked more than three (3) horizontal units high and the installation crew should be careful not to move or dislodge the freestanding units with construction equipment or other installation tasks.

Shimming Palisade50 Units:

It is important that the courses of Palisade50 Blocks are level front-to-back and side-to-side. It may be necessary to grind the blocks or use shims between some of the courses to correct an out of level condition.

GeoHoop should be place at every other block course in staggering pattern.



If necessary, add additional GeoHoop to lock in the last block at the end of the wall.

NOTE: Depending on the wall geometry, it may not be feasible to add additional GeoHoops to lock in the last block at the end of the wall. In this case, the end block should be secured to the block below using concrete adhesive.





Step 6: GEOGRID AND BACKFILL PLACEMENT

Place open graded stone, typically 3/4", within and to the sides of the GeoHoop.

Install backfill beyond the GeoHoop to the end of reinforced fill as shown in the approved construction drawings. Use backfill material that meets project specifications.

Typically loose lifts of the reinforced fill shall not exceed 6" where hand operated compaction equipment is used or 10" where heavy compaction equipment is used.





NOTE: Only hand-operated compaction equipment shall be used within 3 ft of the tail of the Palisade50 units.

The thickness may vary depending on the approved project-specific soil types used. Compact fill to a minimum of 95% of max dry density or in accordance with ASTM-698 (Standard Proctor Test).

Place the geogrid with the transverse bar leaning against the rear of the block on the top of the GeoHoop.

Pull taut to remove geogrid slack and place a shovelfull of backfill on top of the geogrid to secure the geogrid in place.





NOTE: Geogrid can also be secured to the GeoHoop with zip ties to facilitate geogrid tensioning.

Place backfill on top of the geogrid and compact to a minimum or 95% of maximum dry density in accordance with ASTM-698 (Standard Proctor Test).

When placing backfill over the geogrid layer, the fill should be placed to minimize any slack in the geogrid. Place the backfill in a direction away from the face of the wall.

Place and compact backfill to the top of the next GeoHoop level and repeat Step 4-6 until final elevation is reached.

Step 7: PLACE CAP UNITS (WHEN REQUIRED)

Cap units may be placed such that a nominal 1 in. overhang is achieved or flush with the face of the wall. A concrete adhesive suitable for bonding concrete to concrete should be used to secure cap units to the course below. The adhesive should be suitable for use in an outdoor environment and stable under the temperature extremes expected for the local area. Apply the adhesive in accordance with the adhesive manufacturer's recommendations.

NOTE: Use cap with groove to cap the top of the wall where tongue is present. Use regular cap everywhere else.

Palisade50 Curves & Corners

CONVEX CURVES

It is necessary to cut one or both sides of the Palisade50 blocks to accommodate convex curves. As with concave walls, begin a convex wall from the center of the curve alternating left and right of the center unit. Conversely to concave curves, the radius of a convex curve gets smaller with each additional course.

It is suggested that a flex pipe be placed on the tail of the units in the curve to ensure a smooth curve. The radius becomes smaller as the wall becomes taller, therefore binding will occur.

NOTE: On tight curves, Tensar Geogrid may be cut lengthwise to match the width of the Palisade50 Units. The wall designer should consider eliminating the requirement for fill between overlapping layers in areas with a tight radius and/or staggering the layout of adjacent sections of geogrid.



CONCAVE CURVES

When possible, begin a concave wall from the center of the curve, alternating left and right of the center unit. Once out of the curve on each end, blocks will likely need to be cut to reestablish a vertical joint. At this point, wall construction will resume with chosen layout pattern.

It is suggested that a flex pipe be placed on the tail of the units in the curve to ensure a smooth curve. The radius becomes larger as the wall becomes taller, therefore gapping will occur. For this reason, it may be necessary to do significant amounts of block cutting and custom fitting on curves.

NOTE: On tight curves, Tensar® Geogrid may be cut lengthwise to the width of the Palisade50 Units.





Whatever your need, you can be assured that by building an Palisade Wall you are adding property value to your land – it's as simple as that.

90° OUTSIDE CORNERS

For outside 90° corners, cutting of Palisade50 blocks may be used for creating the corner unit.

A concrete adhesive suitable for bonding concrete to concrete should be used to secure adjacent Palisade50 blocks to create the corner units. The adhesive should be suitable for use in an outdoor environment and stable under the temperature extremes expected for the local area. Apply the adhesive in accordance with the adhesive manufacturer's recommendations.

Use a GeoHoop to connect the two corner units. Fill the GeoHoop with open graded stone. See details $A \sim B$.

DETAIL A



Overlap the GeoHoop ribs

Apply adhesive to cut surfaces and place a #3 rebar bent to a 90° angle into the connection slot



#3 rebar and grout open cores



DETAIL B

Cut 45° angles from left and right sides of adjacent blocks



Apply adhesive to cut surfaces and place a #3 rebar bent to a 90° angle into the connection slot



#3 rebar and grout open cores

EXPERIENCE YOU CAN RELY ON

For innovative solutions to your engineering challenges, rely on the experience, resources and expertise that have set the industry standard for decades. We can provide you with system specifications, design details, conceptual designs, preliminary cost estimates and much more.

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