
# RUBBERSIDEWALKS™
# Installation Manual

# Overview


1) Break out existing concrete (use jackhammers near trees) and clean out loose soil

2) Conduct tree root inspection (if applicable)

3) If new site excavate native soil to 4” depth (more depth required for vehicular traffic or heavy loads)

4) Place optional layer of geotextile (dependent on soils engineer recommendation)

5) Confirm paver base/base course material has good drainage

6) Place base material and compact to 90-95% (Refer to FHA Chapter 4, Designing Sidewalks Guidelines;. Refer to ICPI tech specifications for applicable sub base applications)

7) Place and secure top layer of 6-8 oz. non-woven pervious geotextile

8) Using dowels, connect and place sets of RUBBERSIDEWALKS™; remove forms, string lines, etc.

9) Lay restraints along outside edges of pavers

10) Spike restraints into ground

11) Secure restraints to pavers

12) Replace sod or finish adjacent landscape; the sidewalk is ready to walk on

# Rubbersidewalks™ pre-installation

- Each site is different. Consider the following site elements:
  - Accessibility
  - Traffic control
  - Security
  - Utilities
  - Adjacent trees and tree root growth
  - Soil type and conditions
  - Climate conditions
  - Refer to guidelines per: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/index.cfm (cut and paste)

# Shipped Rubbersidewalks™ product includes:


- Rubbersidewalks™ (5 square feet each, 24" x 30" x 1.875", 54 pounds)
- Eco-Border Recycled Plastic Self-Gripping Connecting Dowels (100 ct./ bag)  Black or Gray
- Permaloc Brick Block Aluminum Paver Restraints (8-foot segments, 40 ct./ box)
- Permaloc Brick Block Restraint Spiral Spikes (250 ct./box)
- Step-by-Step Installation Manual and PowerPoint (electronic; hard copy upon request)

## Customer / contractor provides:



- Paver base/base course  aggregate with good drainage (minimum fines, masonry sand only if needed to increase drainage). Refer to Sieve Analysis
- Non-woven pervious (punched) geotextile fabric, minimum 6–8 ounce, for top layer and possibly below base course depending on soil stability
- Optional geo-cells or geo grids,  if needed for soil stability

# Guidelines to installing Rubbersidewalks™

- **Rubbersidewalks™** is an interconnected open-grid modular paving system
- **Rubbersidewalks™** should be installed/supervised by an experienced interlocking paver professional (ICPI certified preferred)
- Use specified base materials.  Refer to Sieve Analysis
- Follow guidelines per: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/index.cfm (cut and paste)
- Follow base and sub base guidelines per: www.icpi.org/techspec/1025/state (cut and paste, enter state)
- Attaining sufficient compaction of 90%-95% is essential
- If removing hardscape, on one end leave 4 inches more in place than site length
- Be cautious near trees to avoid damage to trunk and roots

# Step one: break out

- Break out existing concrete. Excavation depth depends on site use – pedestrian or vehicle. Typical pedestrian base depth required is 4”
- Concrete removal should not remove or tear tree roots
- Excavation that may remove roots shall not occur until after roots have been pruned on the tree side
- Clear an additional 1.5” on outside edges for foot of paver restraint
- Whatever length of the site,  you may wish to leave 4 inches more in place on one end.  This allows a final cut to accommodate variables and transition

# Step two: tree roots

- Assess need for tree root pruning. **WORK WITH CONSULTING ARBORIST**

- Roots can be left intact greater than 1.875 inches below finished grade. A string line can be pulled across the opening to measure depth of roots. If the sidewalk is so close that the trunk flare encroaches on the sidewalk area, the sidewalk can be meandered away from the trunk flare. Panels can be cut to meet design (See Special Section)

- Directional root prune when necessary. Prune roots as far away from tree trunk as possible. Improper or excessive root pruning may result in tree instability and risk of failure, or tree health decline, including death

- **Rubbersidewalks™** require less than 45% excavation than for concrete and 20% less excavation than for concrete and compacted base

# Step three: site preparation

- If new site, excavate and rough grade native soil to 4” depth* and compact with vibra plate compactor

- When removing existing concrete, typically a depth of 4” will remain; clean away loose soil*. Tree roots are not affected unless in top 1.875” of space

- Always use caution when working around trees and tree roots. Damage to roots and bark results in decay and often irreversible damage to tree

**Heavy loads require greater than 4” depth, and possibly geo-cell or geo-grid support. Consult with your representative or TERRECON, Inc. on case by case basis.*

# Setting string lines and compaction

- String lines should be set to finish grade elevation following concrete removal (or excavation)

- Determine how much settling of base material depth will occur during compaction. (This is the most critical step in a sound installation. **Rubbersidewalks**™ will not "make up" for irregularities, and will reflect in the panel in a void, bend, or rocking)

- Confirm that equipment will achieve 90%-95% compaction. Pervious aggregate allows high compaction while pore space is still retained

# Use the correct base materials

- Paver base/base course  aggregate with good drainage (minimum fines, masonry sand only if needed to increase drainage). Refer to Sieve Analysis.  Test porosity by hosing down or pouring bucket of water on surface to confirm drainage and no pooling. (Blend with up to 20% angular/masonry sand if needed.)

- Non-woven pervious (punched) geotextile fabric, minimum 6–8 ounce, for top layer, and possibly below base course depending on soil stability

- Unlike interlocking concrete pavers, sand should not be used in the base (unless as additive) or seams of **Rubbersidewalks™**

- Recycled concrete and asphalt are unsuitable for base and will bind up

## Step four: base (bottom & leveling layer)

- Apply a 2.125” layer of paver base/base course that has been tested for drainage and compaction. (Refer to Sieve Analysis)
- Add aggregate in two or more lifts, wet down with water, and compact (90%-95%) for proper results
- Grade and compact 1.875” below string line (pavers are 1.875” in depth)
- FAILURE TO USE CORRECT BASE MATERIALS AND COMPACT BASE MATERIALS ACCORDING TO INSTRUCTIONS MAY RESULT IN UNSTABLE INSTALLATION, PANEL OFFSET, PRODUCT DEFORMATION, OR SINKING NEXT TO HARDSCAPE

# Step five: laying geotextile

Photos do not illustrate specified non woven permeable geotextile

- Geotextile is 12.5' wide. Using scissors or cutting tool, cut width according to the width of installation plus 6 inches.
- Cut length flush on end sections where butted against existing concrete.
- Place geotextile on top of sub-base extending edges by three inches on each side.
- Temporarily stake/spike geotextile to soil on either side of bed, cinching fabric tautly. Be careful to not stake into tree roots.

# Step five: lay and connect pavers



- Using self-gripping dowels, put two pavers together to create one horizontal pair (4' wide or 5' wide depending on site). Make pairs first, then attach to next set of pairs, etc.
- Insert dowels into remaining face of each pair (4 dowels).
- Put second pair together, then slide onto first pair. Mallet or hammer to tighten seam. Tighten seams as you go. (Occasionally dowel holes need to be worked, or cleared out.) Continue along site.

- Seam width: 1/2" is too large, 1/16"-1/8" is ideal.

Note: Due to the inconsistent nature of recycled tire rubber, variables of up to ¼"+ are possible, or yield a part slightly off-square. This may require 'jogging' of pavers, or swapping out one for another to make a better fit.

# Step five: laying pavers (cont'd)

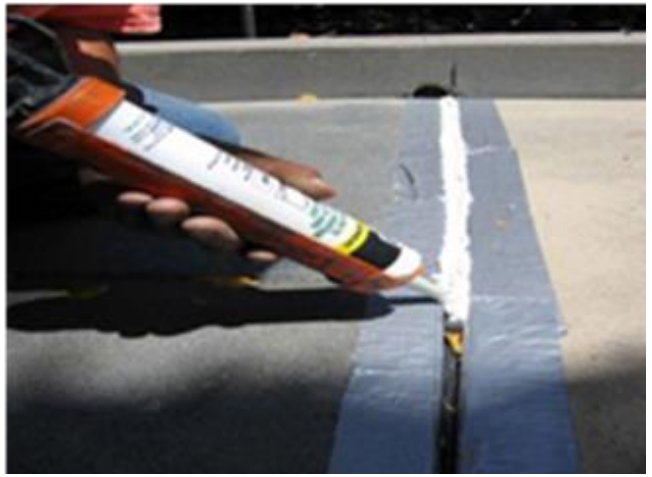
- When working on installations more than 5' wide, place the installation over a sheet of geotextile, and as rows of pavers are assembled side by side, slide the row into place


# Step six: tie-in to existing concrete

- If sections are butted against existing concrete on one end, do open-side last. If sections are butted against existing concrete on both sides, do concrete-end sections first, then work an inner pair into place.
- Dowel-end sections into existing concrete.
- Joined pavers can be lifted and dowel-fit into next paver but some cold joints will be required.
- Pavers facing hardscape, for instance a curb, should be doweled in, using one dowel per paver.
- Remove remaining wooden form, and remove temporary stakes.

# Step six: tie-in to existing concrete, finishing

- Existing concrete is rarely at a perfect right angle, which may result in gaps. Also, pavers may have slight variations. Gaps can be filled with silica, or with concrete/mortar filler and sealant.



# Step six: tie in to fresh pour concrete

- Insert dowels into pavers, and into adjoining hardscape at an equal height, so that fresh poured concrete captures extended dowels
- Remove remaining wooden form, and remove temporary stakes.

## Step seven: checking pavers and base

- Walk on each paver checking for base stability, compaction, and proper spacing
- Make sure pavers are at same height as existing concrete
- Make sure no drop out exists beneath any paver
- Pay special attention to pavers and base next to hardscape
- Make corrections by resetting, filling, and compacting base material as needed

## Step eight: laying & securing paver restraints

- Lay rails of Permaloc Brick Block paver restraints flush along outer edges of placed pavers with flange facing outward. (Do not use substitute paver restraints.)

- Drive spiral spike through hole in flange and into ground every 24" Make sure spike catches both layers of fabric. Do not drive spike into tree roots.

- On outer edge, at approximate midpoint of each paver, drill a 11/32" hole, 1½" deep, through restraint and paver (one hole per paver.) Tap in a self-gripping dowel, leaving 1½" of the dowel sticking out & exposed. Exposed dowels will be covered by replaced soil, and make maintenance easier.

## Step nine: replacing adjacent landscape

- When installation is complete, backfill the adjacent ground with grass, sod, grass seed, gravel or stone.  Make sure restraint ‘feet’ are covered.

# Special conditions: cutting

- Rubbersidewalks™ pavers can be cut in the field using a ripping black (Skill Saw, worm drive) while spraying with soapy water.


- Keep a bottle of Simple Green soap handy, to lubricate the blade and keep down heat and smoke.

- Cutting is made easier by placing a wood plank on top and bottom of paver. It is often easier to cut the paver in passes, after a top cut, flip the paver over and make an aligned bottom cut.

# Special conditions: cutting (cont'd)

- Rubbersidewalks™ can be cut for light poles and parking meters, making room for irrigation lines, creating radii, and jogs for tree wells. A notch ban be routered in the bottom of the paver to fit over tree roots.

# Special conditions: cutting (tree roots)

- Removing portions of **Rubbersidewalks**™ is a procedure often recommended by arborists to avoid root pruning and to accommodate large roots. **Rubbersidewalks**™ create a safe tree well.

# Special conditions: cutting (cont'd)

- Sprinkler heads placed close to the edge of the bed may require leaving a space between restraints (cut restraint as needed.) This will not affect stability of the installation.

- If pipes are laid in such a way that the spikes will hit rail foot, turn flange inward, under paver(s). Paver must remain flush to the base.

- Some radii can be best achieved by cutting and inserting pie wedge sections (secure wedge with caulking if needed)

# Base specifications and preparation

- Permeable base material specifications (Sieve Analysis)
- Base prep for storm water management
- Base preparation for heavy loads
- Base preparation for slope and soil stability

# Permeable base material specifications (Sieve Analysis)

| SIEVE ANALYSIS FOR BASE MATERIAL | | | | | | |
|---|---|---|---|---|---|---|
| SIEVE SIZE | | Weight Retained | % Weight Retained | | % Passing Required | % Passing Sample |
| Standard | Metric | | | | | |
| 2" | 50mm | | | | | |
| 1 1/2" | 37.5 mm | | | | | |
| 1" | 25 mm | | | | 100% | 100% |
| 3/4" | 19 mm | 0.1 | | 0 | 90-100% | 100% |
| 1/2" | 12.5 mm | 7.9 | | 23 | | 77% |
| 3/8" | 9.5 mm | 13 | | 39 | 40-100% | 61% |
| #4 | 4.75 mm | 21 | | 62 | 25-40% | 38% |
| #8 | 2.36 mm | 153 | 32 | 68 | 18-33% | 26% |
| #16 | 1.18 mm | 301 | 62 | 38 | | 14% |
| #30 | 600 um | 400 | 83 | 17 | 05-15% | 6% |
| #50 | 300 um | 447 | 93 | 4 | 0-7% | 3% |
| #100 | 150 um | 462 | 96 | 2 | | 2% |
| #200 | 75 um | 475 | 98 | 2 | 0-3% | 1% |
| Pan | | 483 | | | | |
| S.E. | 85 | | | | | |

# Before placing base, consider: storm water management

- Most installations must consider storm water management
- **Rubbersidewalks**™ are an open grid, modular pavement system. The optimum performance of storm water capture and drainage is contingent on proper preparation and drainage of the base
- Follow Soils' Engineer evaluation regarding need for French drains, sheet drains or other method for drainage
- Follow base and sub base guidelines per: www.icpi.org/techspec/1025/state (cut and paste)

# Before placing base, consider: heavy loads

- Follow base and sub base guidelines per: www.icpi.org/techspec/1025/state (cut and paste)

- Heavy loads will require greater than 4” depth, and possibly geo-cell or geo-grid support. Consult with your representative or TERRECON, Inc.

- Place layer of geotextile on bottom of the trench, which keeps native earth from flowing into the crushed rock layer and stabilizes base

- Geotextile is 12.5' wide. Cut width according to the width of installation plus 10 inches. Extend fabric up and out on both sides. (Base material will secure fabric)

# Before placing base, consider: slope and soil stability

- **Rubbersidewalks**™ is an interlocking modular pavement system which is affixed to the base with spikes. Slopes are subject to shifting, erosion, water and gravel collection and other actions which may disrupt and dislocate **Rubbersidewalks**™ pavers

- Several companies offer geotextile fabrics and geogrid products which are appropriate for these applications. Geotextiles range in cost from ~$0.11 /sq. ft. and geogrids cost ~$2.50 /sq. ft., depending upon thickness and use.

- Please consult with representative or TERRECON, Inc. on a case by case basis

# Storing Rubbersidewalks™

- **Rubbersidewalks™** must be stored on a flat surface
- If storing **Rubbersidewalks™** for over two weeks, loosen steel strapping
- **Rubbersidewalks™** may be stored outside
- If planning on storing **Rubbersidewalks™** for an extended time, notify TERRECON prior to shipping for special packaging
- Do not leave unbound material or accessories on job site unattended