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Silva Cell 2

Installation Guidelines

Silva Cell 2 components

Deck

1X post

3X post

2X post

Base

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Base (bottom piece)

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Posts

1X

2X

3X (1x + 2X)

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1X assembled

16.7”
(424 mm)

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2X assembled

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3X assembled

43.0”
(1092 mm)

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Deck (top piece)

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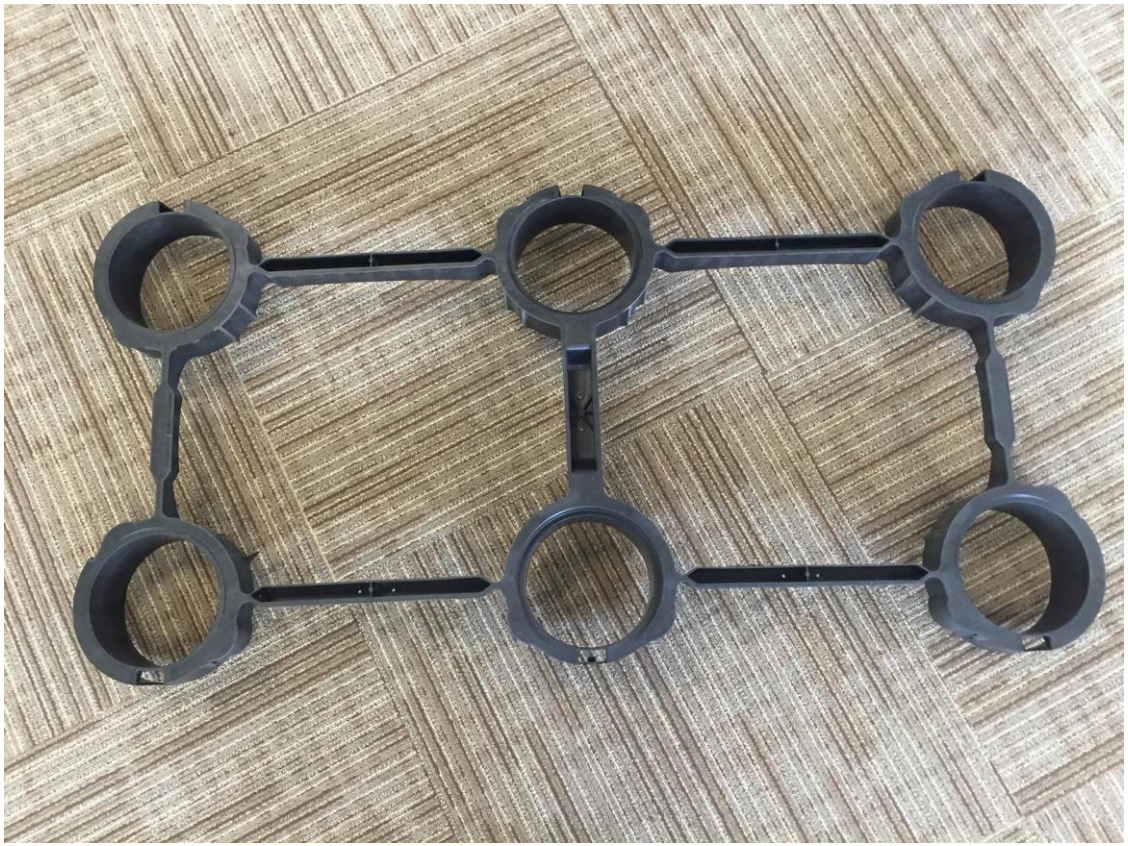
Strongback (bracing system)



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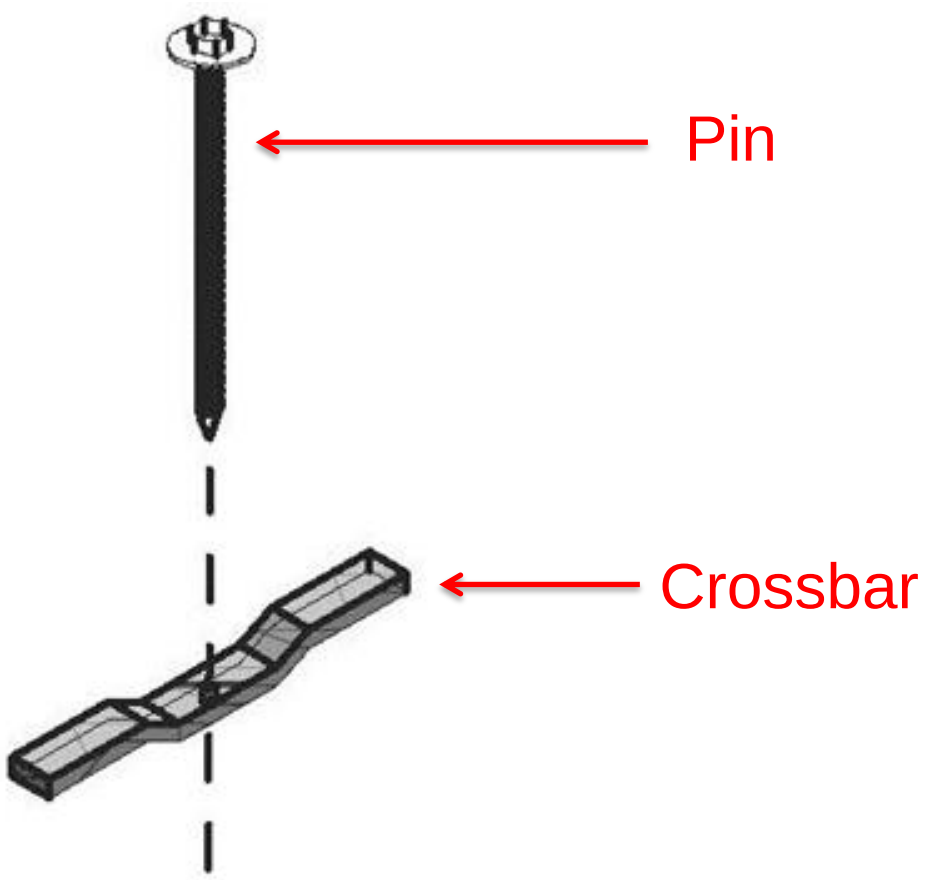
Anchoring pin and crossbar



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Root Barrier

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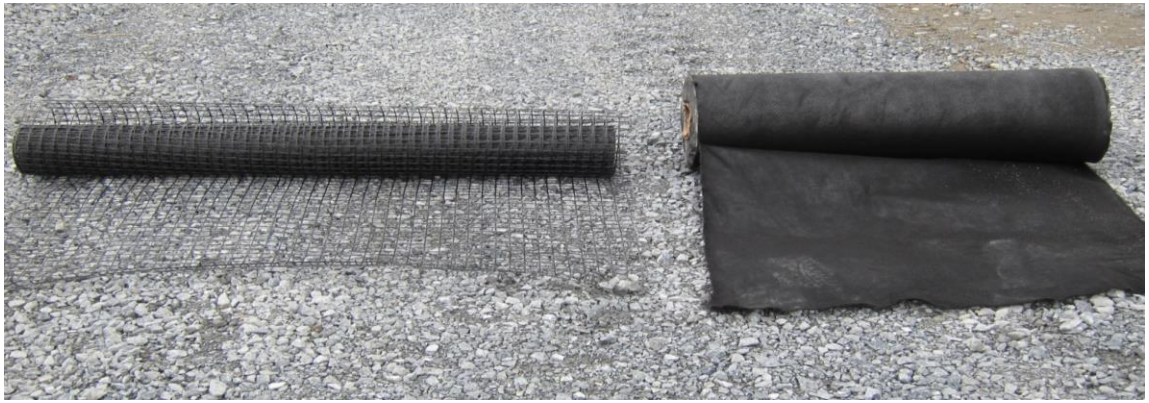
Geogrid, geotextile, and cable ties



Geogrid

Geotextile fabric

Plastic cable ties

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Materials needed to install Silva Cell 2

Supplied by DeepRoot

- Silva Cell bases
- Silva Cell decks
- Silva Cell posts
- Silva Cell anchoring pins
- Strongbacks
- Root Barrier

Other materials needed

- Geogrid*
- Geotextile*
- Plastic cable ties*
- Compactable fill for outside Silva Cells
- Aggregate base
  - Below Silva Cells
  - Above Silva Cells
- Planting soils
  - For inside Silva Cells
  - For inside tree pit/around root ball

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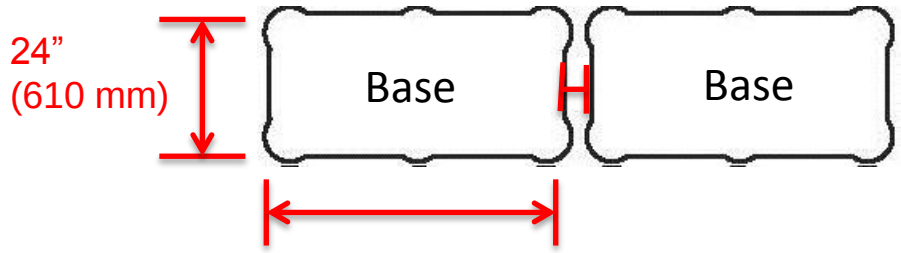
*Available for purchase through Deeproot

Suggested Equipment

- Plate compactor
- Jumping jack compactor
- Excavating equipment
  - Sufficient reach
  - 360° swing radius

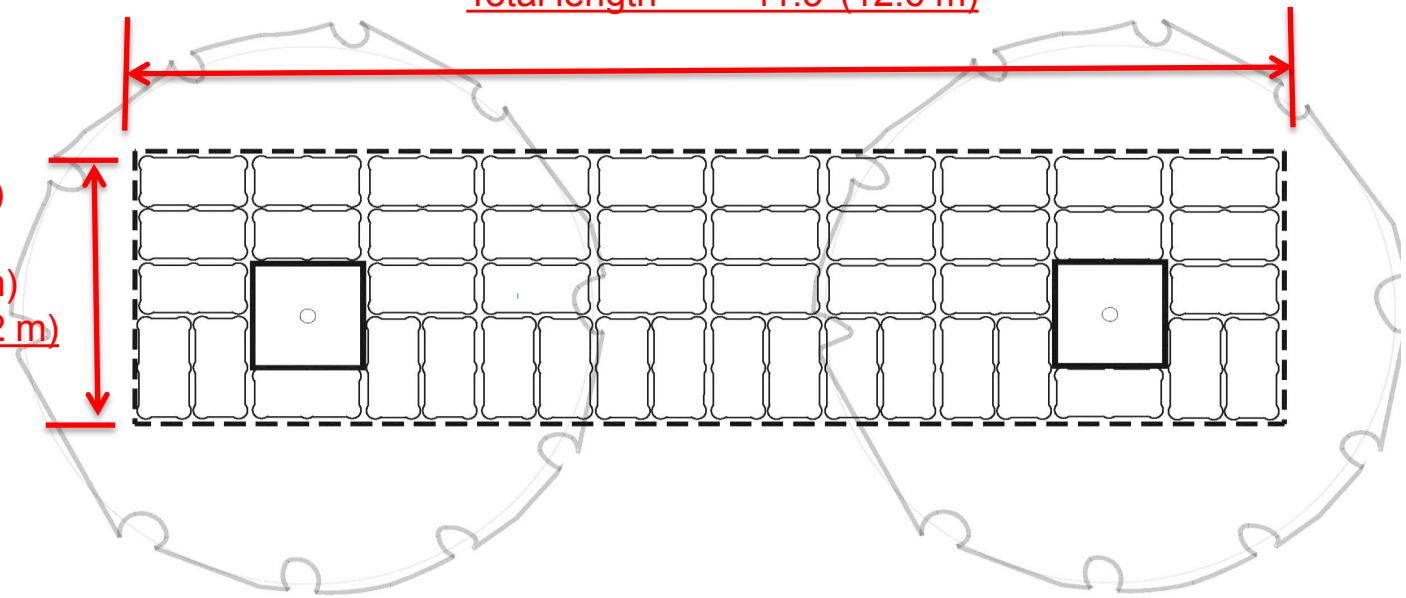
Determine the dimensions of the Silva Cell area

Leave 1” - 4” (25 mm – 100 mm) space between bases



10 bases x 4’ = 40’ (0.3 m)
9 spaces x 2” = 1.5’ (0.45 m)
Total length = 41.5’ (12.6 m)

3 bases x 2’ = 6’ (1.8 m)
1 base x 4’ = 4’ (1.2)
3 spaces x 2” = .5’ (0.1 m)
Total length = 10.5’ (3.2 m)



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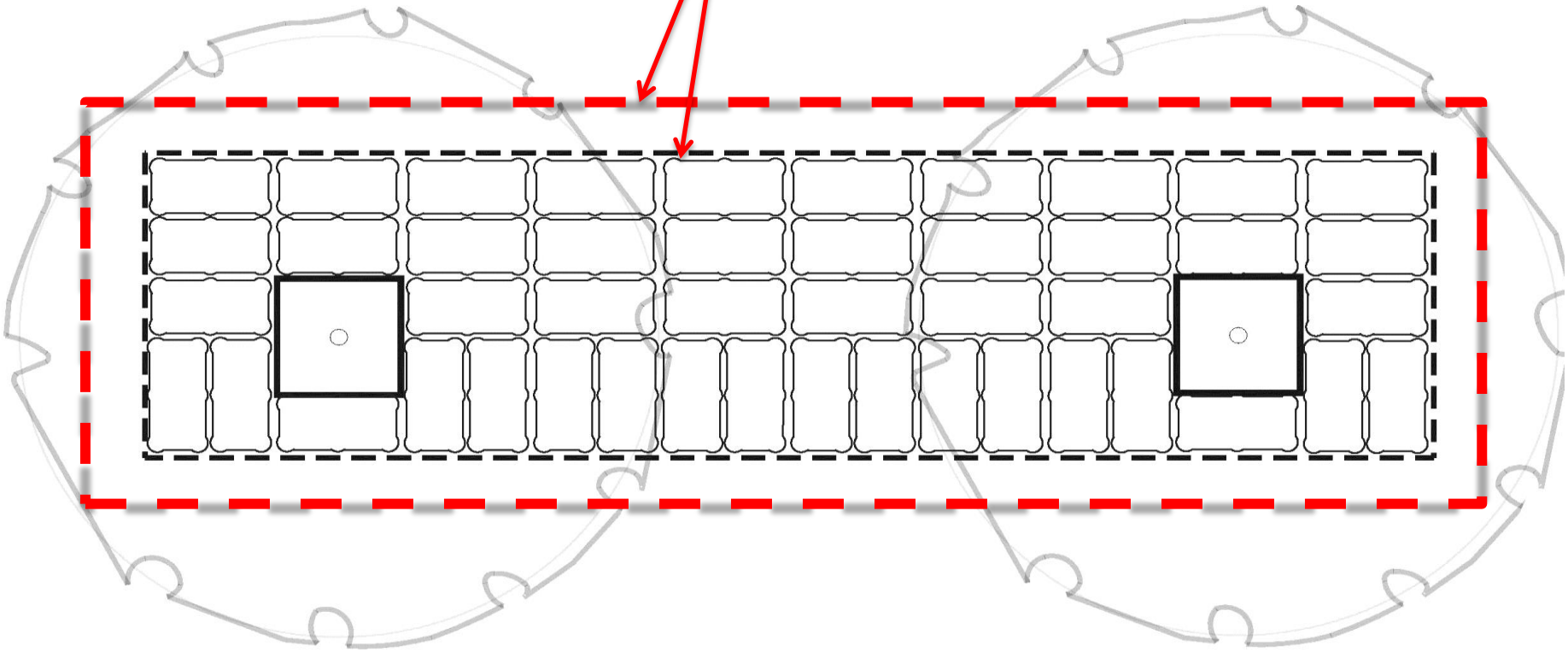
A note on over-excavation

Over excavate a minimum of 12” (300 mm) on all sides to allow for working room and proper compaction



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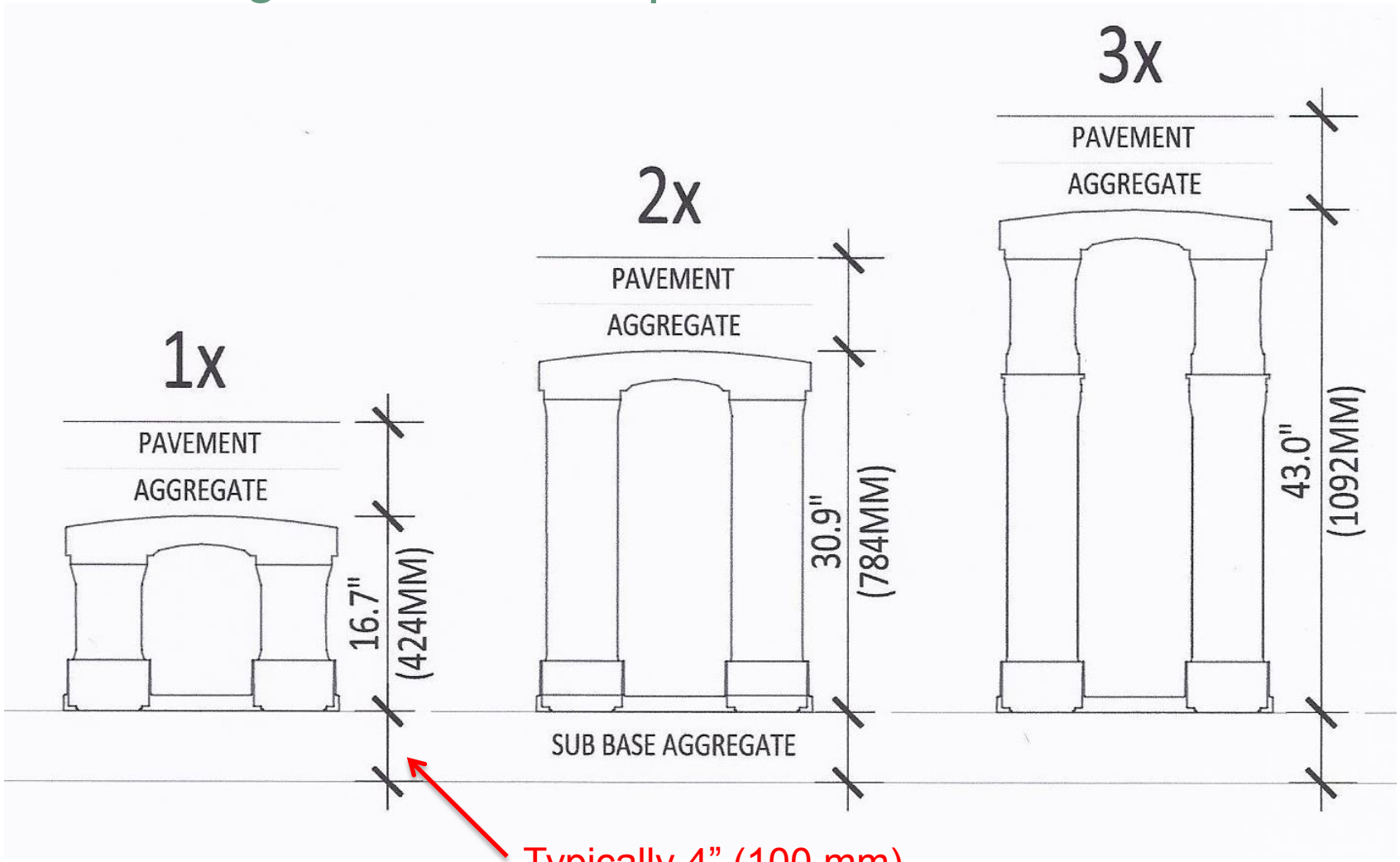
Calculating excavation depths



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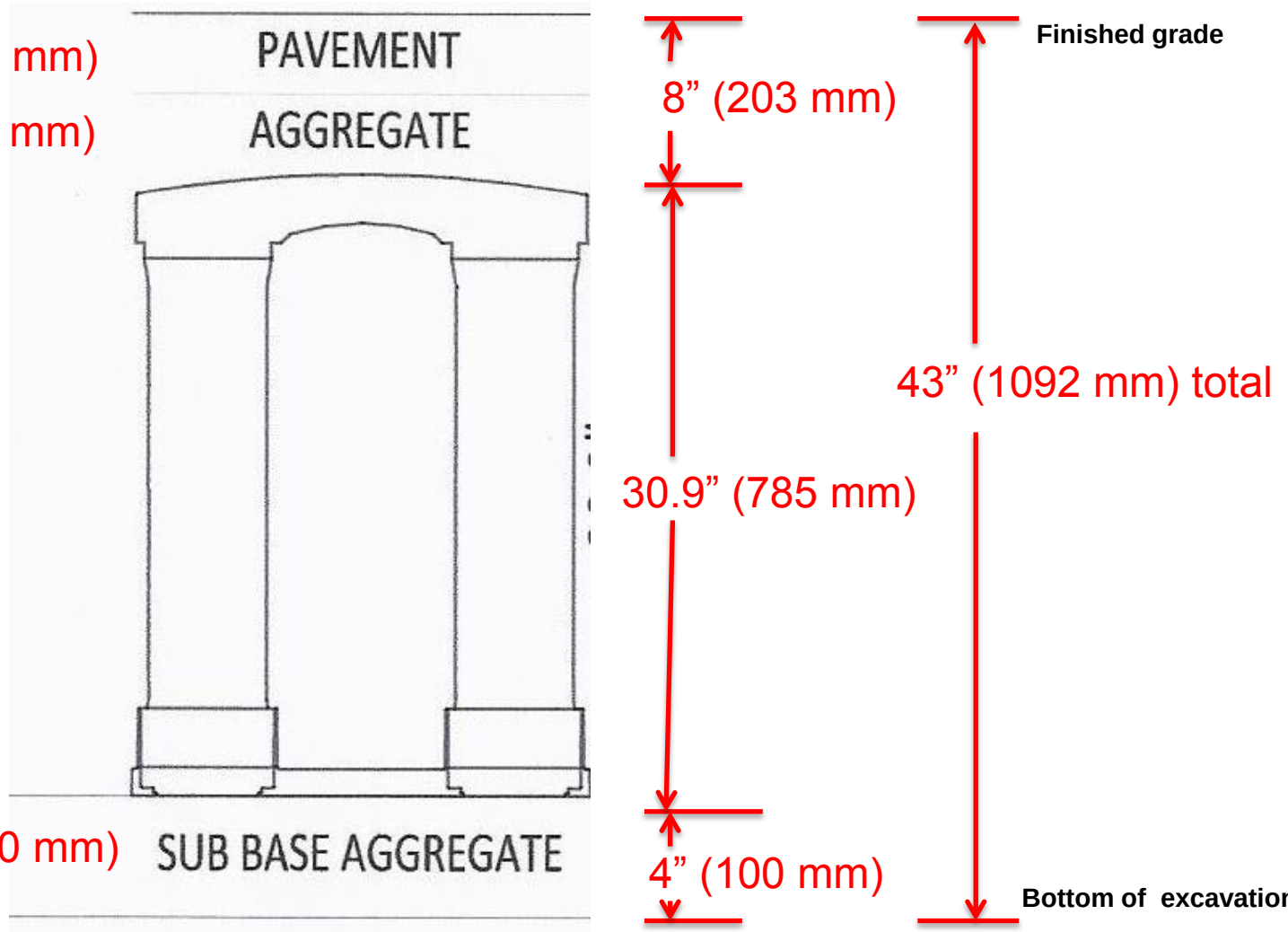
Example: 2X + standard concrete pavement section



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Excavate the Silva Cell Area

Make sure excavation is deep enough to accommodate sub base aggregate + Silva Cells and pavement section.

Compact bottom of excavation (sub grade) before placing fabric and sub base aggregate

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Install the geotextile fabric

Place a layer of geotextile fabric over the compacted subgrade before placing the sub base aggregate.

The geotextile fabric is an important component of the overall Silva Cell system and it is essential for establishing a uniformly stable sub base.

Fine the sub base

Fine grade the sub base aggregate to a uniform elevation or slope.

Properly preparing the sub base is a critical step in the installation. If the Silva Cell frames do not sit level the legs will become misaligned making it difficult or impossible to attach the decks.

Place and compact the sub base aggregate layer

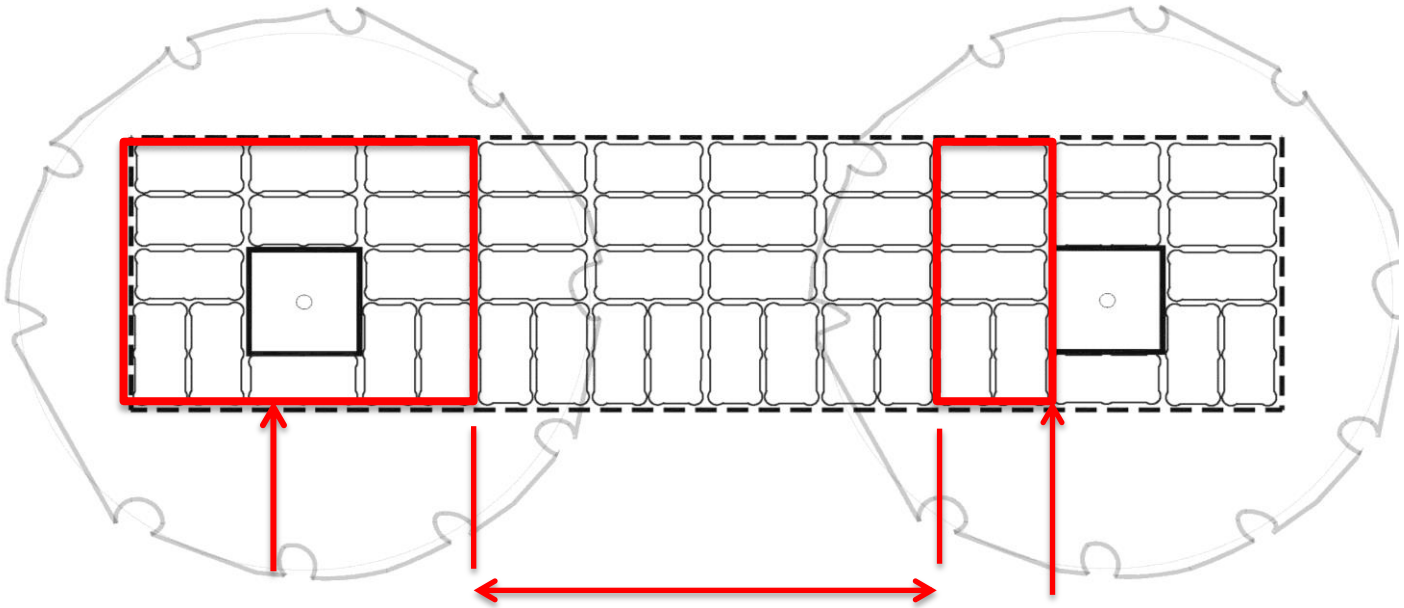
Place the required thickness of sub base aggregate over the geotextile fabric.

Compact the sub base aggregate to 95% standard proctor density or as specified.

Quality control

It is the responsibility of the contractor through the Owner, Owner’s Representative, Engineer, or Geotechnical Consultant to verify that the sub base is constructed to the specified requirements prior to placing any Silva Cells.

Lay out the bases



1. Place bases around the perimeter of the tree opening. Leave a 1”– 4” (25 mm-100 mm) gap between bases.

2. Place bases beyond tree opening and space accordingly

3. Place bases at the perimeter of the next tree opening.

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Lay out the bases

Mark out the inner dimensions of the tree opening

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Lay out the bases

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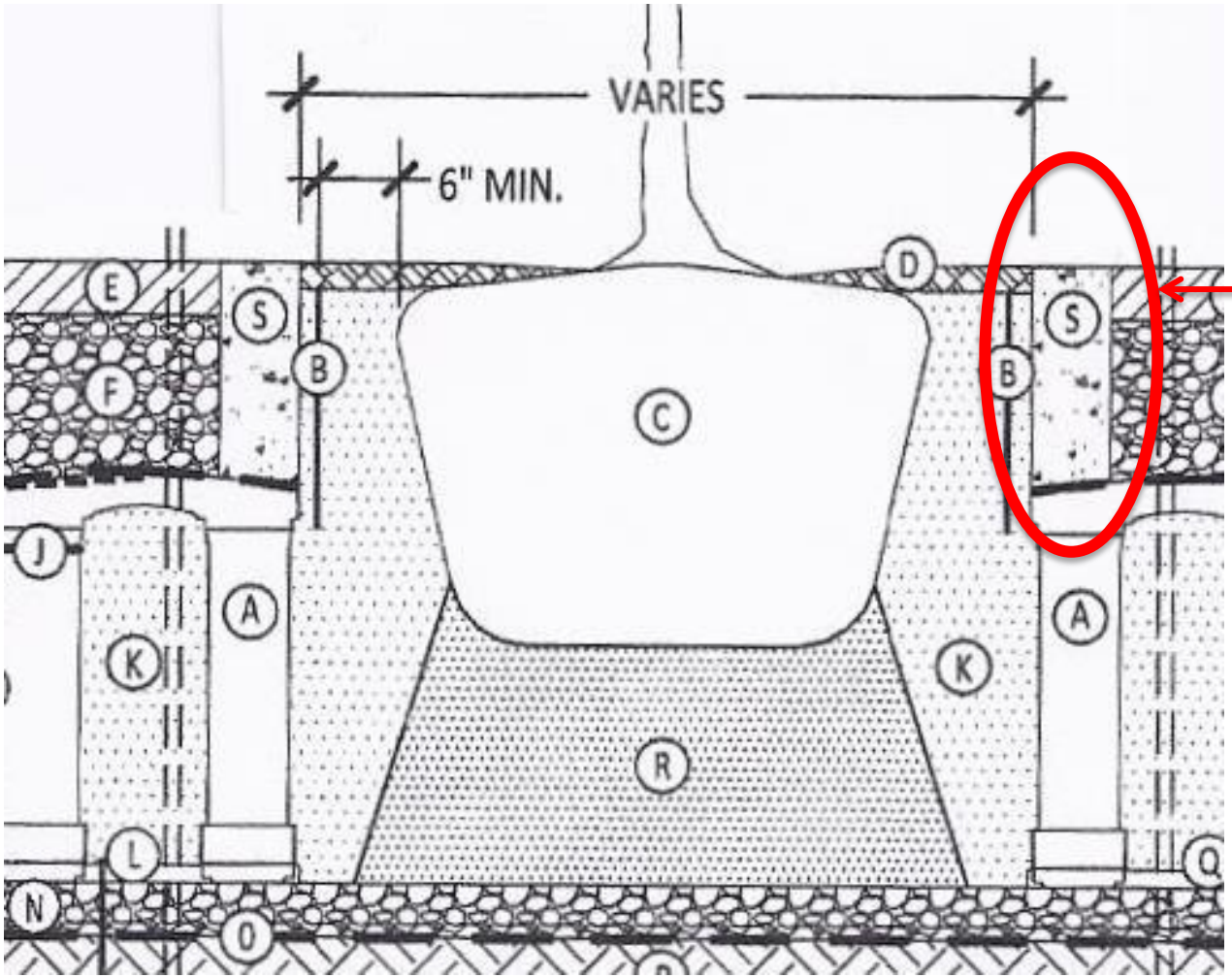
A note on curbs



Make sure curb or thickened pavement edge at tree opening is fully supported by Silva Cells

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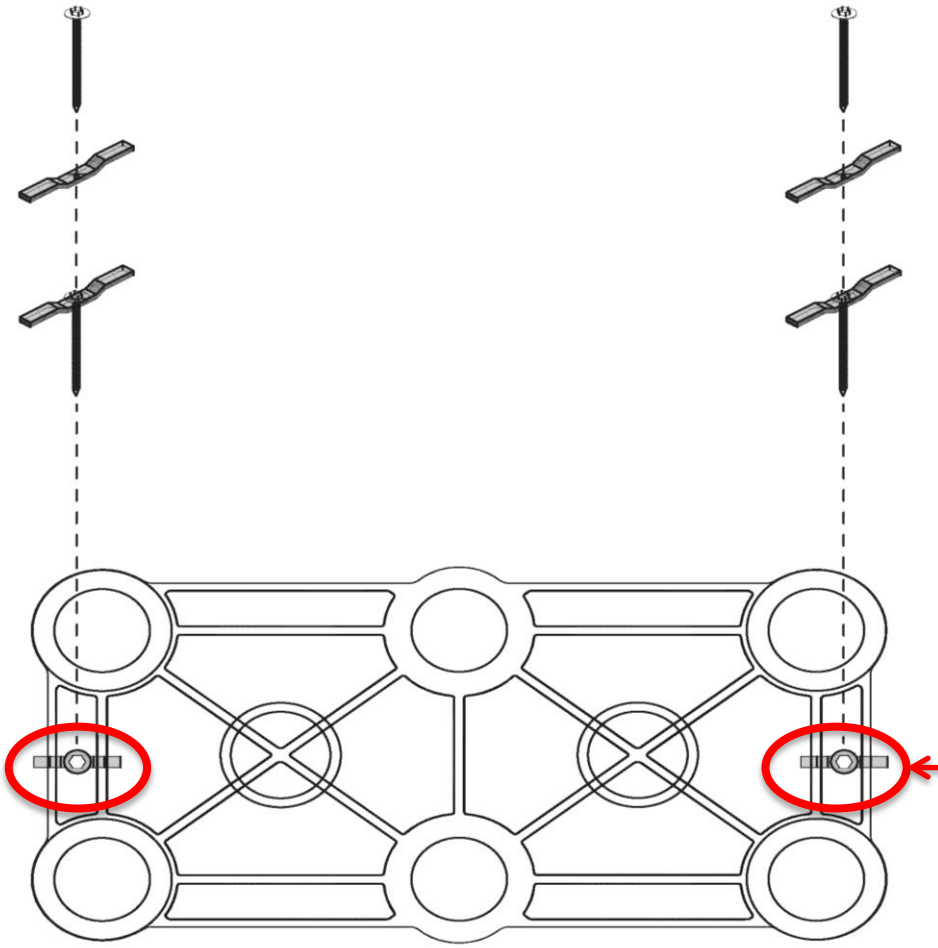
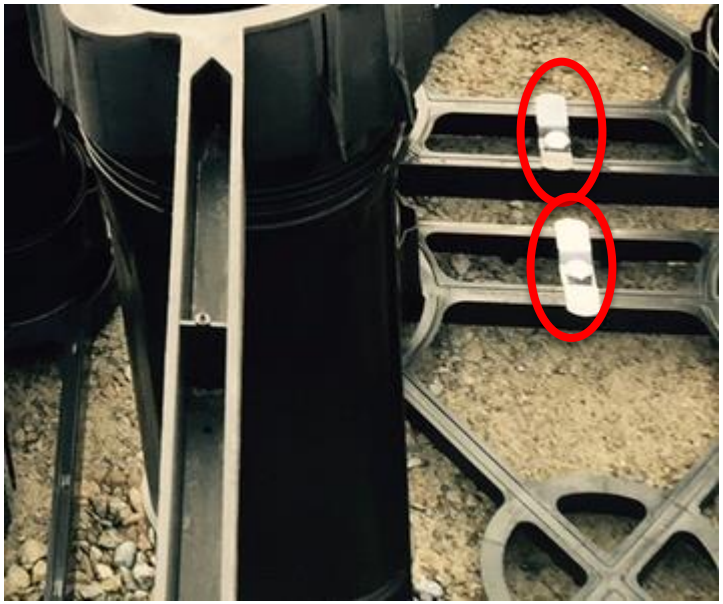
Pin the bases





Anchor bases in place with 2 crossbar/pin assemblies per base.

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Attach the posts to the base

Insert post into base and twist to lock into place

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Attach the posts to the base

Locking mechanism snaps into place.

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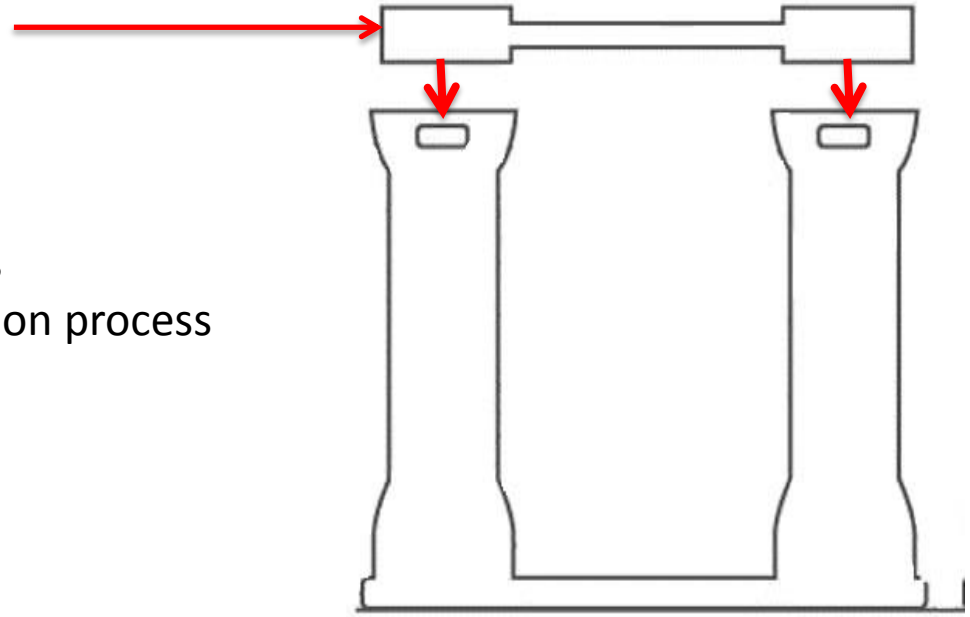
Attach the strongbacks



Strongbacks keep the posts
alinged during the installation process

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Attach the strongback Post Lids

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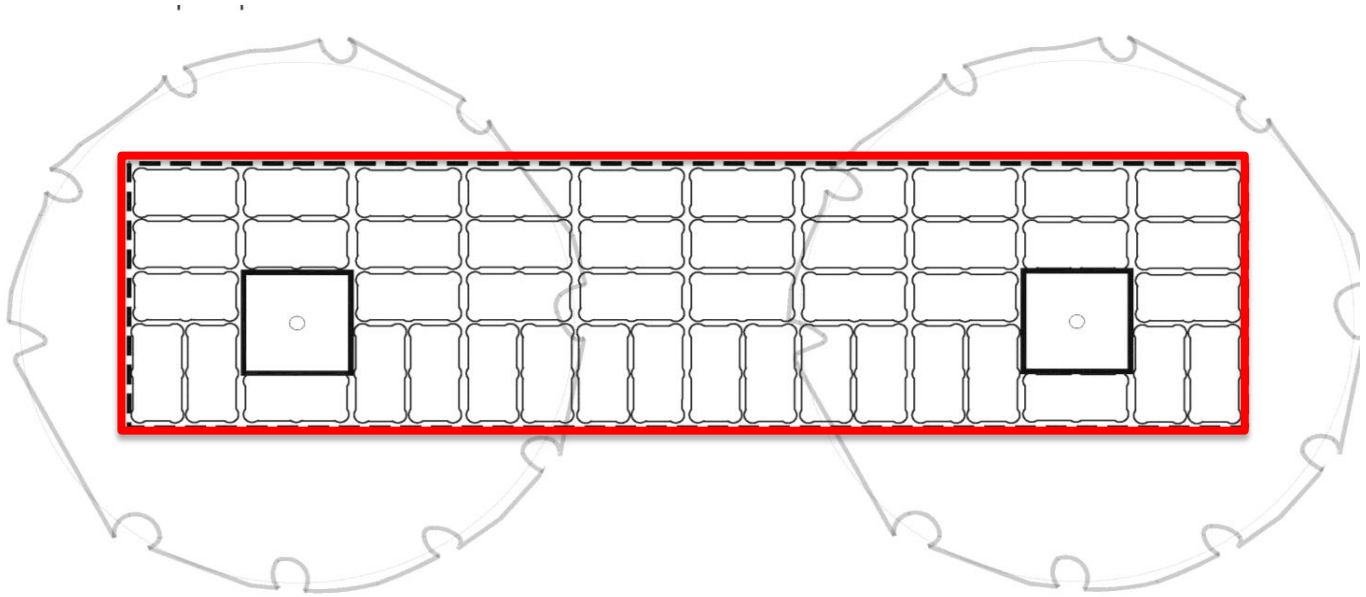
Install geogrid around the perimeter



The geogrid keeps the soil contained within the Silva Cell system as you fill it.

Wrap the geogrid around the outside perimeter like a fence.

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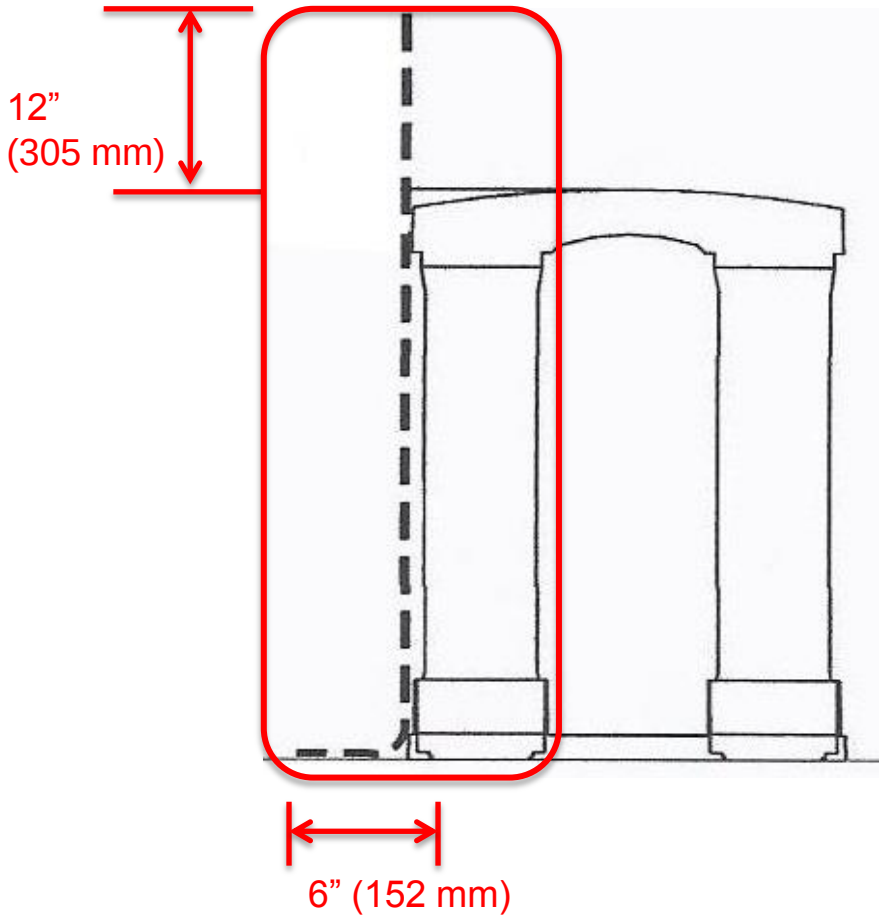
Size the geogrid



Allow for a 6” (150 mm) overlap at the bottom and a 12” (300 mm) overlap at the top.

1X = 36” (914 mm)

2X = 48” (1219 mm)

3X = 72” (1828 mm)

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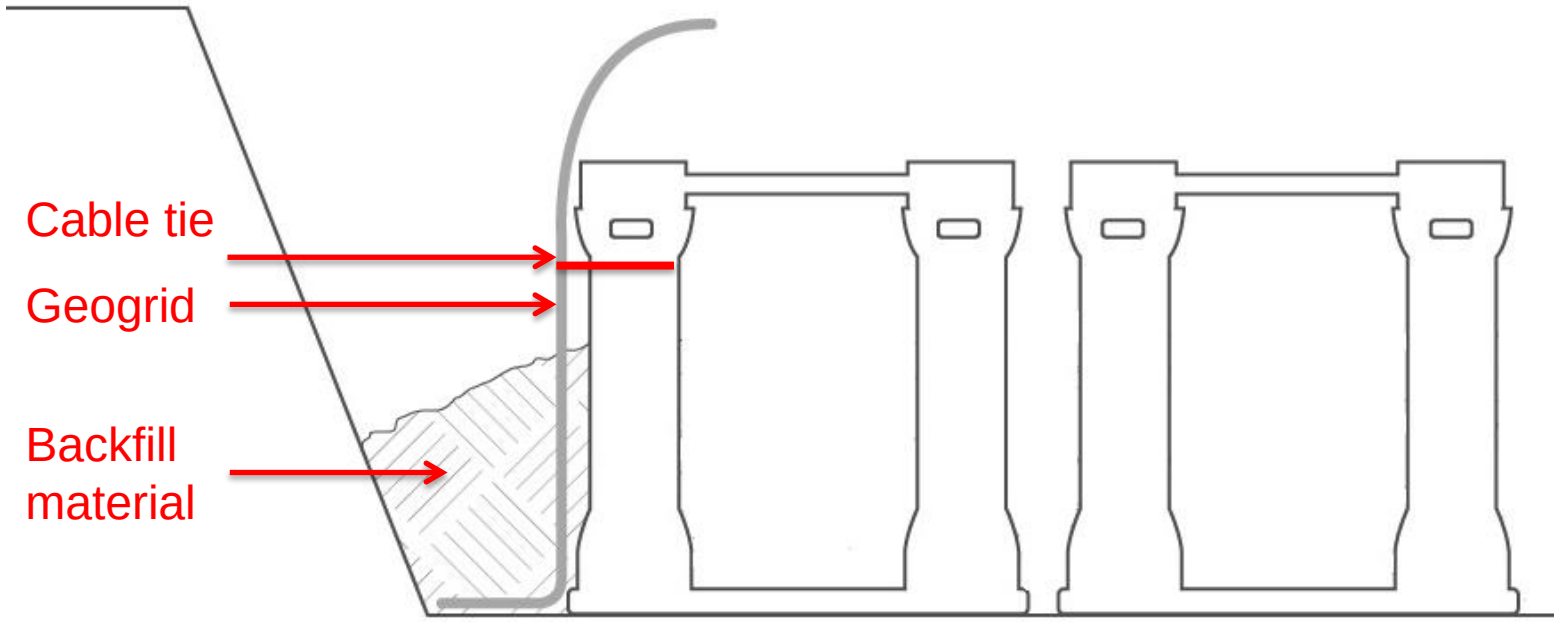
Attaching the geogrid

Attach geogrid to posts with one cable tie to keep geogrid in place during backfilling.

Install the first lift of backfill

Anchor down the toe of the geogrid by placing backfill material to approximately the mid point of the leg, but do not compact yet.



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Install the backfill

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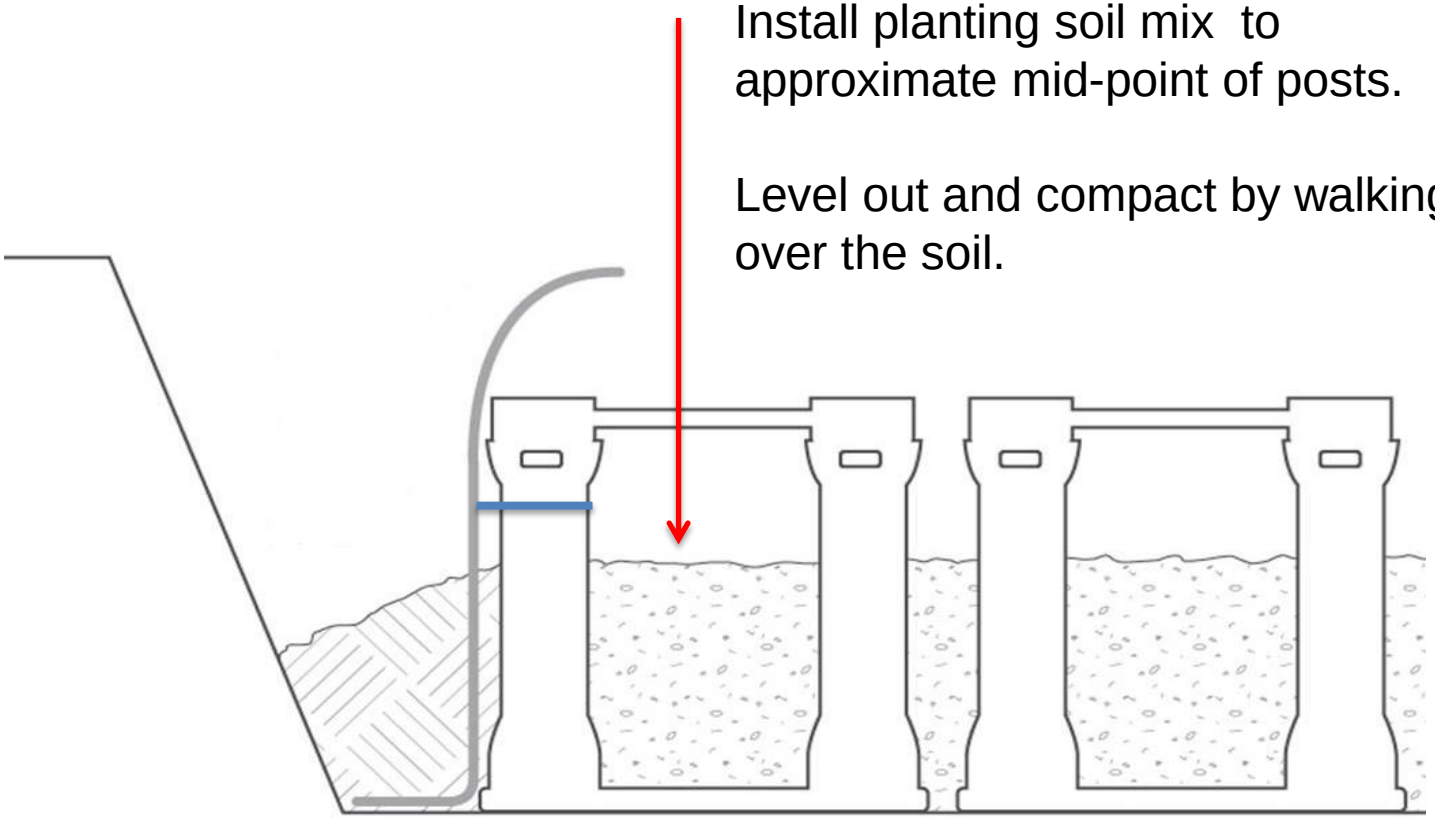
Install the first lift of planting soil



Install planting soil mix to approximate mid-point of posts.

Level out and compact by walking over the soil.

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Avoid coming into contact with Silva Cells

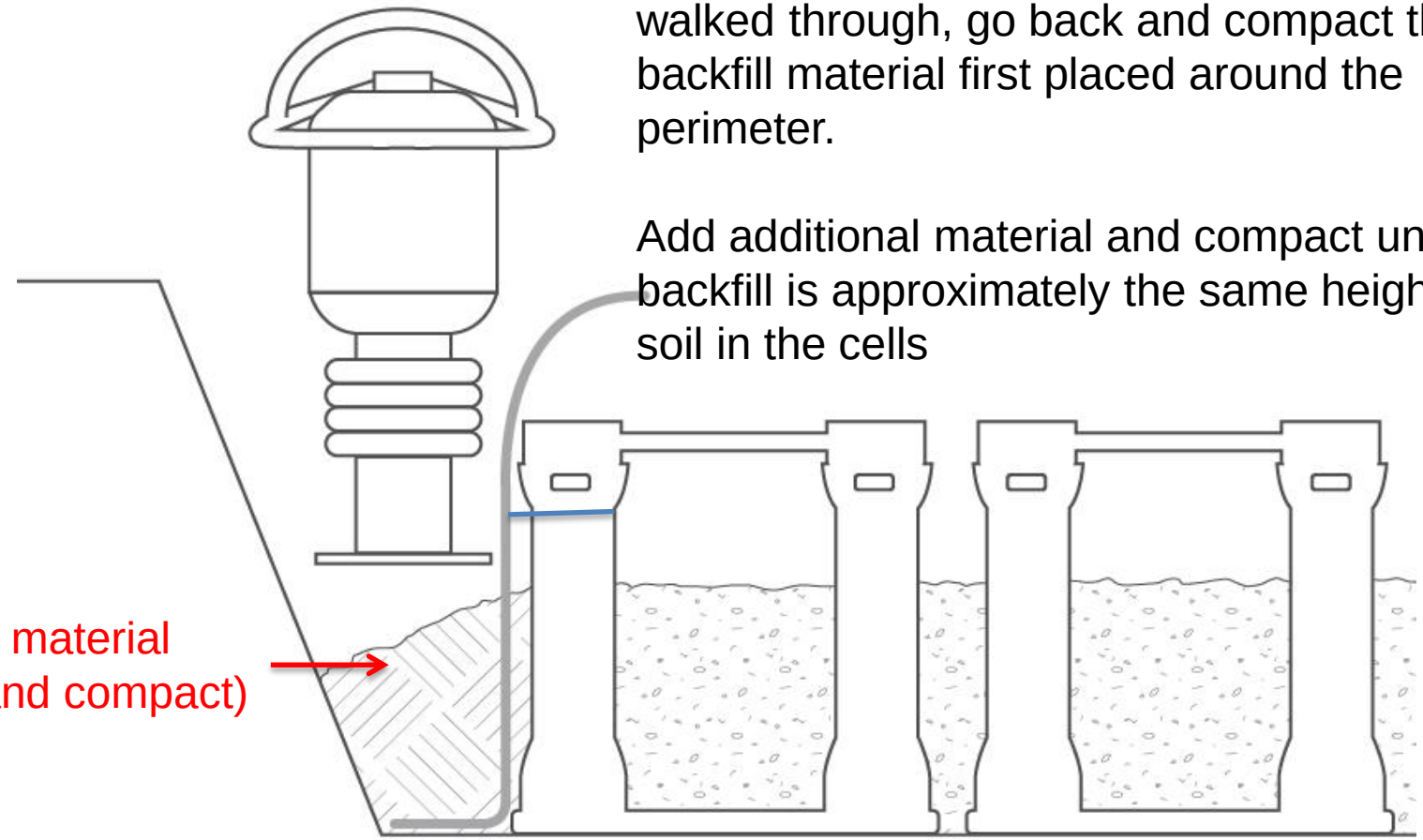
Be careful not to cause damage when loading soil into the Silva Cell system.

Make sure that the bucket of the equipment being used does not come into contact with Silva Cells.

Compact the first lift of backfill material

After the first lift of soil has been installed and walked through, go back and compact the backfill material first placed around the perimeter.

Add additional material and compact until the backfill is approximately the same height as the soil in the cells



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Avoid coming into contact with Silva Cells

Keep compaction equipment from coming into direct contact with the posts to avoid potential damage.

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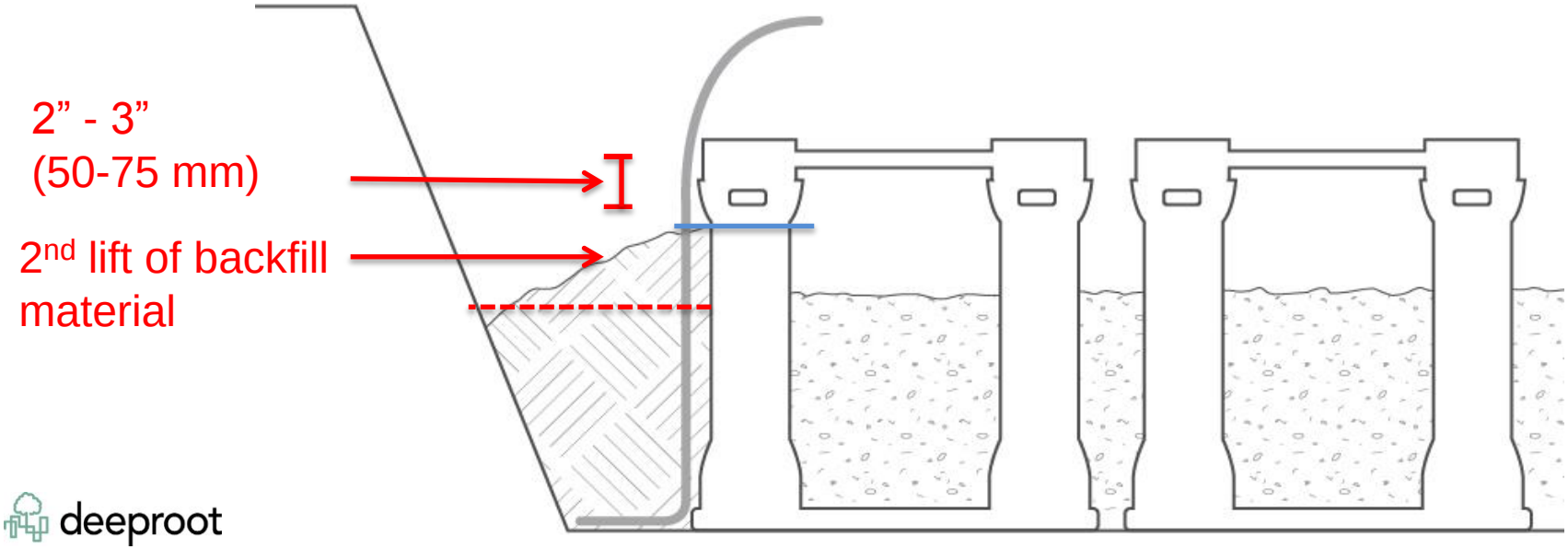
Start by installing loose backfill around perimeter

After backfill material has been placed and compacted to the height of the soil inside the Cells, the process of adding backfill material around perimeter and soil in the Cells repeats itself -- this time leaving the backfill material 2-3 inches (50-75 mm) down from the top of the posts.

Don't compact.



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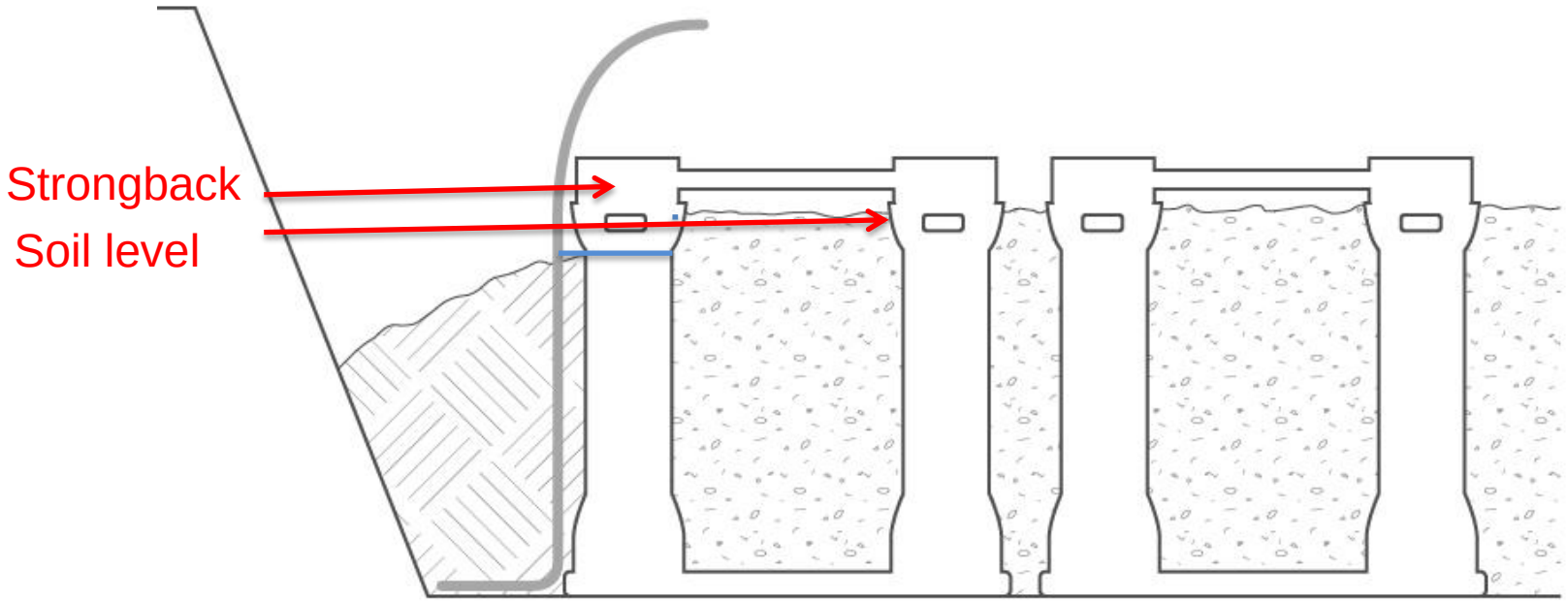
Place second lift of soil mix

Place second lift of soil mix and walk in until the soil inside is level with the bottom of the strongbacks.



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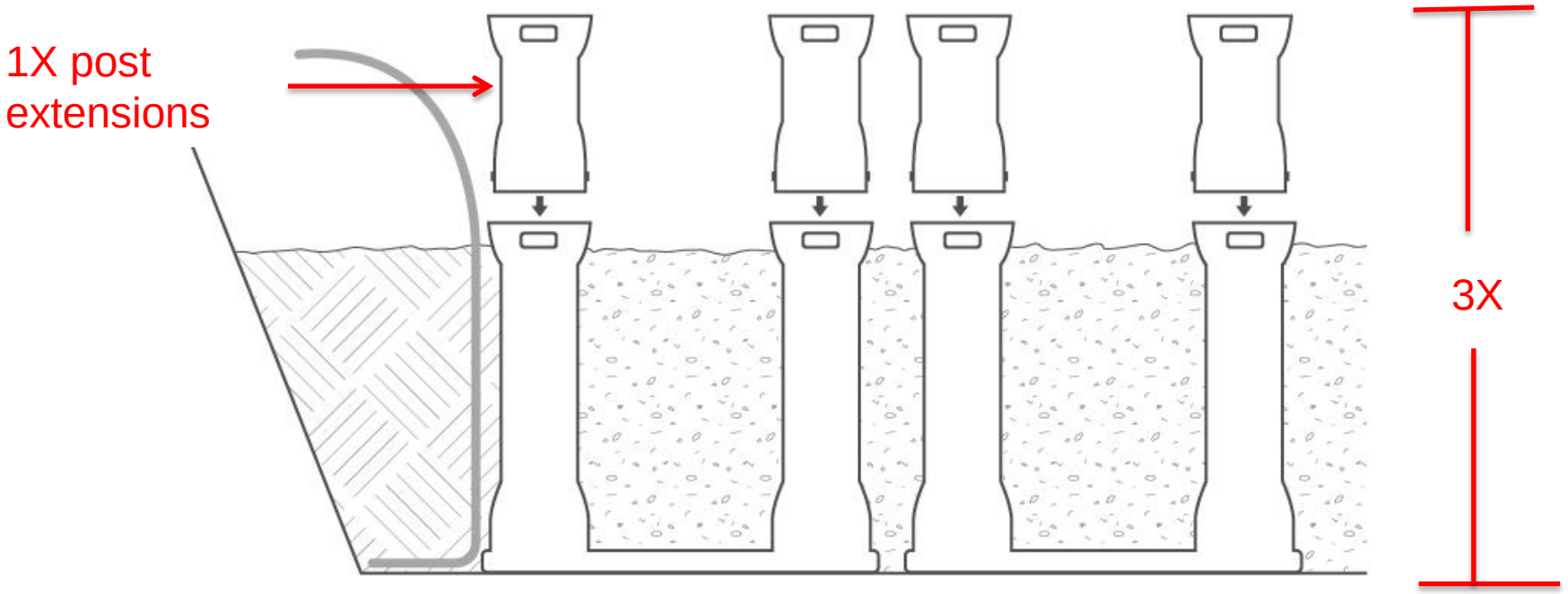
Add the post extensions (3X systems only)

For a 3X system, carefully remove the strongbacks and add 1X post extensions.

Then repeat the process of placing backfill material around the perimeter and filling the Cells with soil one additional time.



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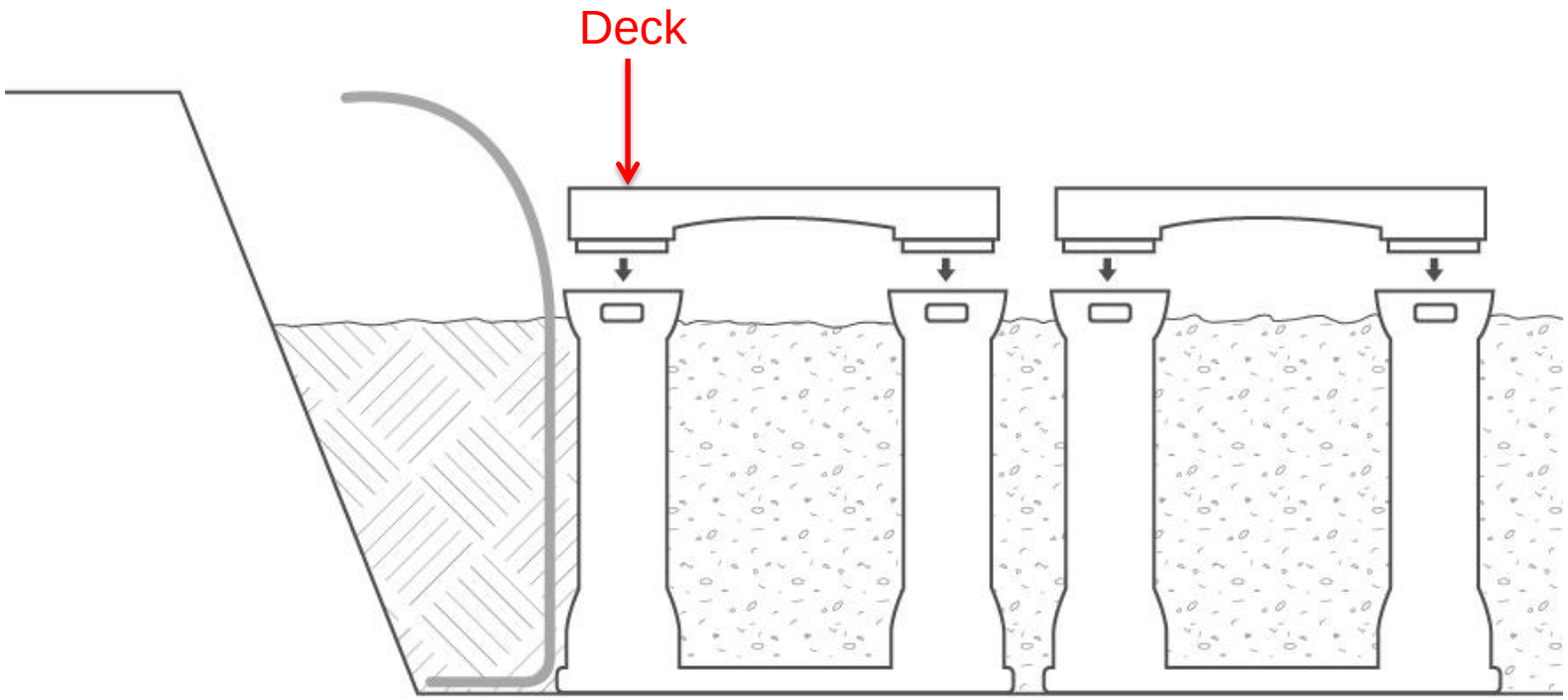
Remove the strongbacks and attach the decks

When finished installing and walking in the soil, carefully remove the strongbacks, level out the soil, and attach the decks



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Attach the decks

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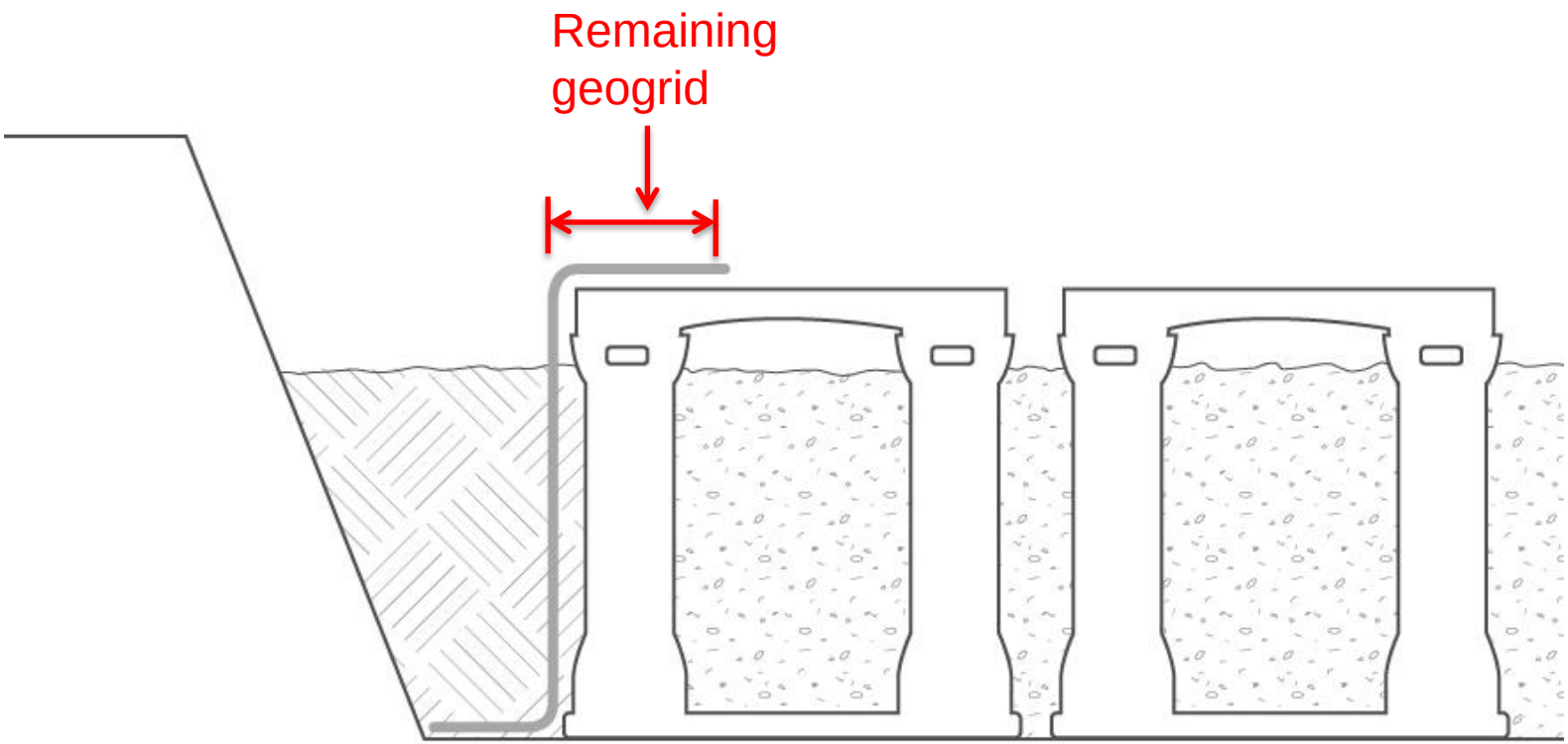
Fold over the excess geogrid

After installation of the decks fold the excess geogrid at the top over onto the decks and hold down with cable ties as needed.



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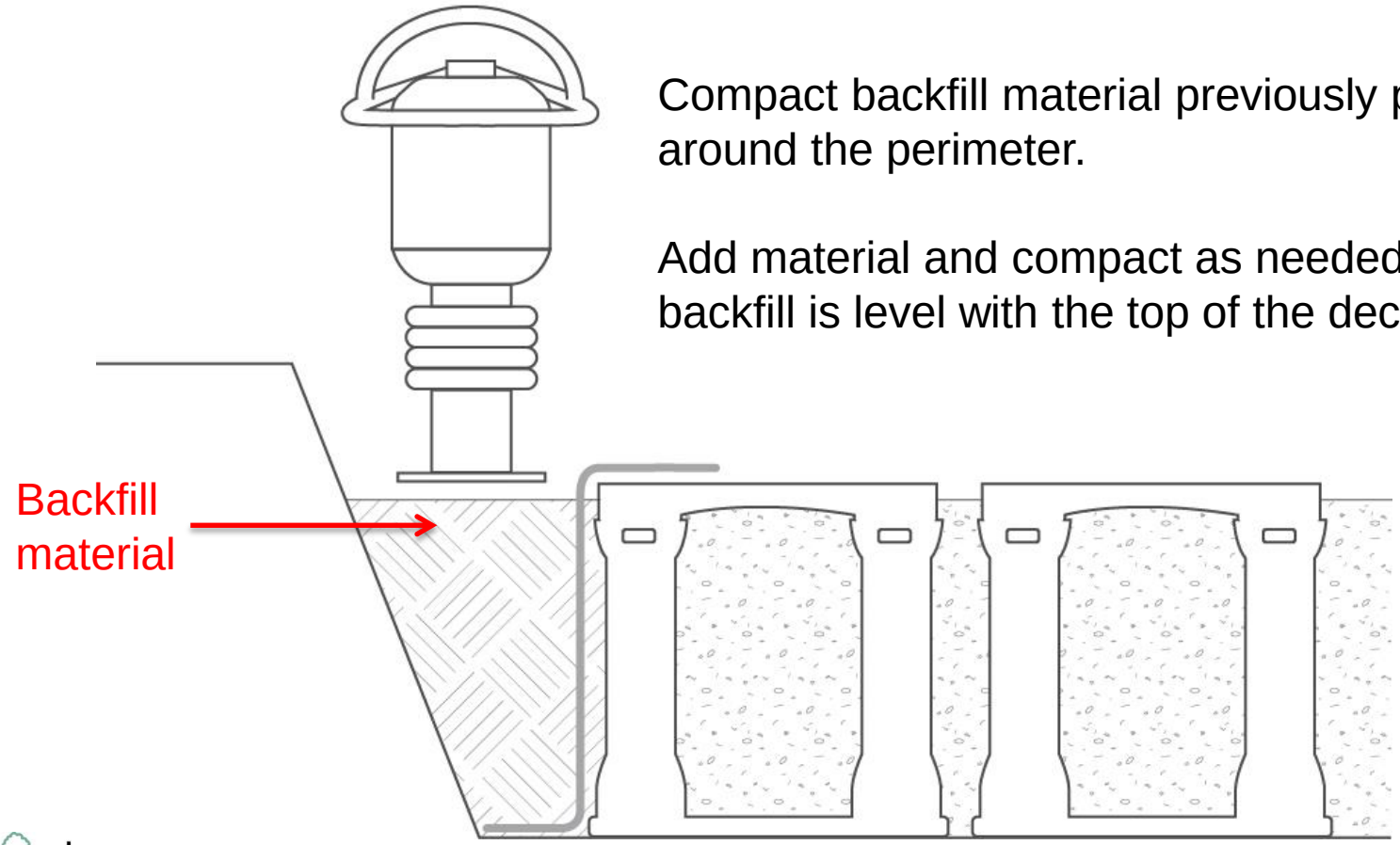
Compact around the perimeter



Compact backfill material previously placed around the perimeter.

Add material and compact as needed until backfill is level with the top of the decks.

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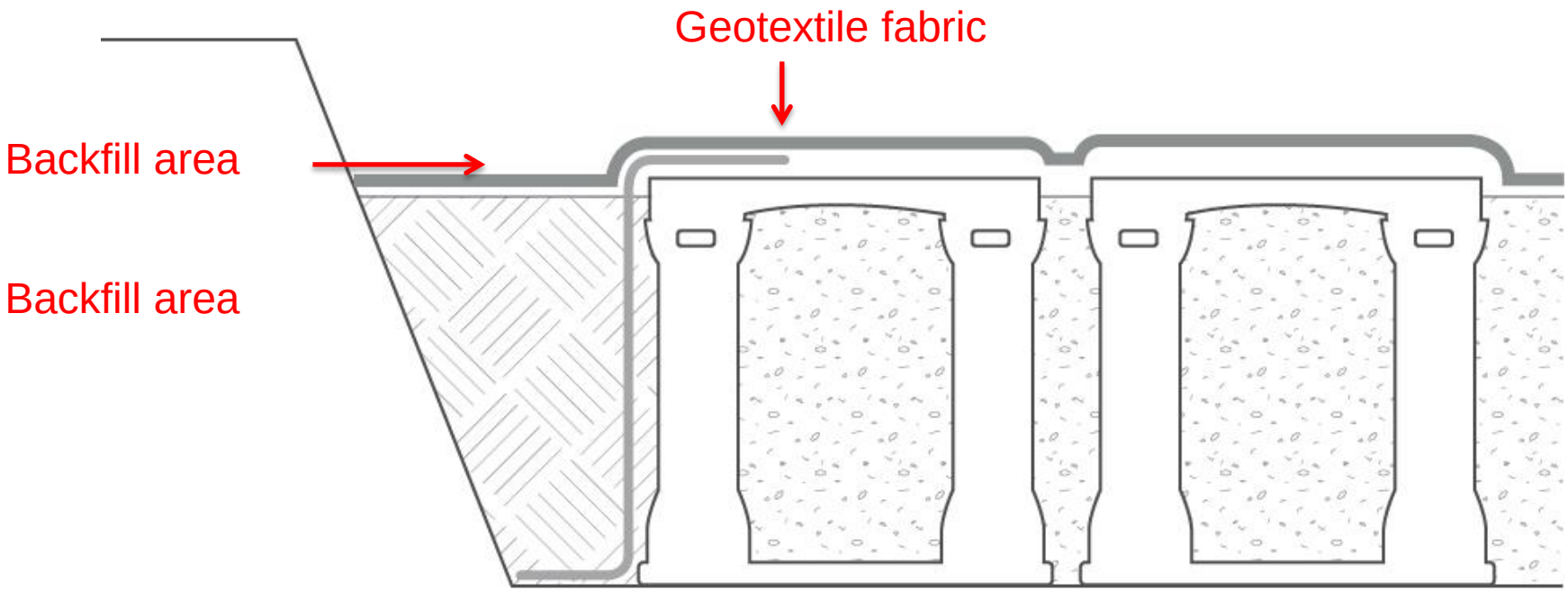
Install geotextile fabric over the Silva Cells

Cover Silva Cells with geotextile fabric.

Extend geotextile fabric to also cover the backfill area.



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Install geotextile fabric over the Silva Cells

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Install the aggregate base course

Do not operate machinery over the Silva Cell System. The Silva Cell system does not attain its load bearing capacity until the final pavement surface is in place

Place the aggregate from outside of the perimeter of the system.

Start at one end and work continuously toward the other end. This keeps the geotextile fabric loose and allows it to be pulled down into the openings in the decks.

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Compact the aggregate base

Compact the base course aggregate as specified with equipment weighing 1,000 lbs (453 kg) or less.

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Install the concrete curbing

Install the permanent pavement

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Install root barrier around the rootball

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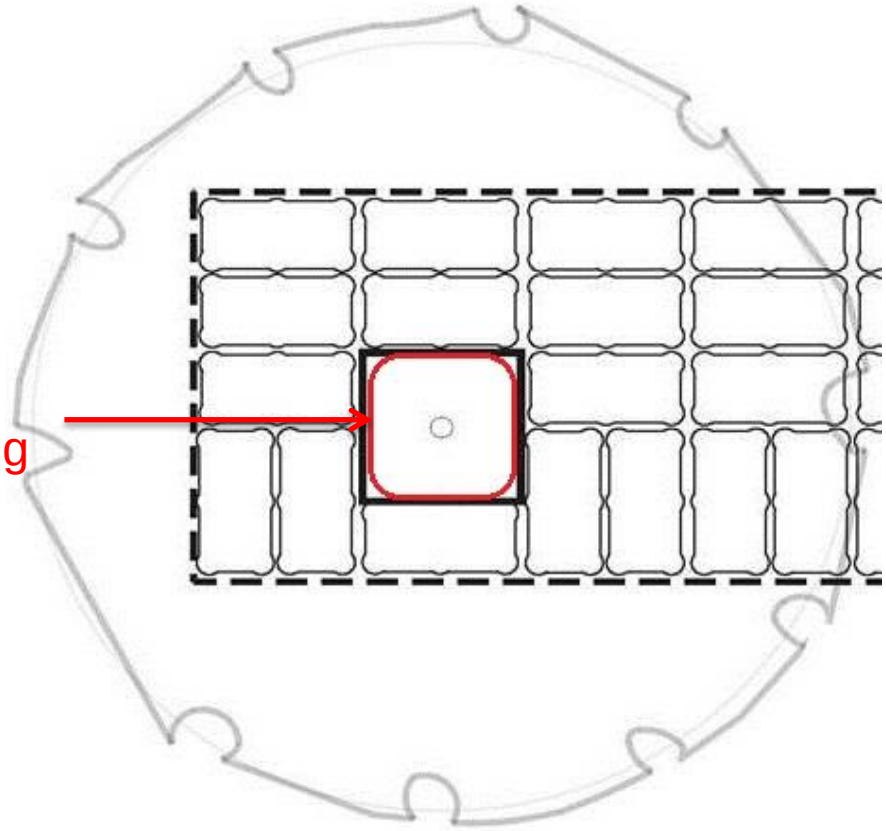
Line the inside of the tree opening with root barrier

Make as big a circle inside the tree opening as possible.

Root barrier around
inside of tree opening



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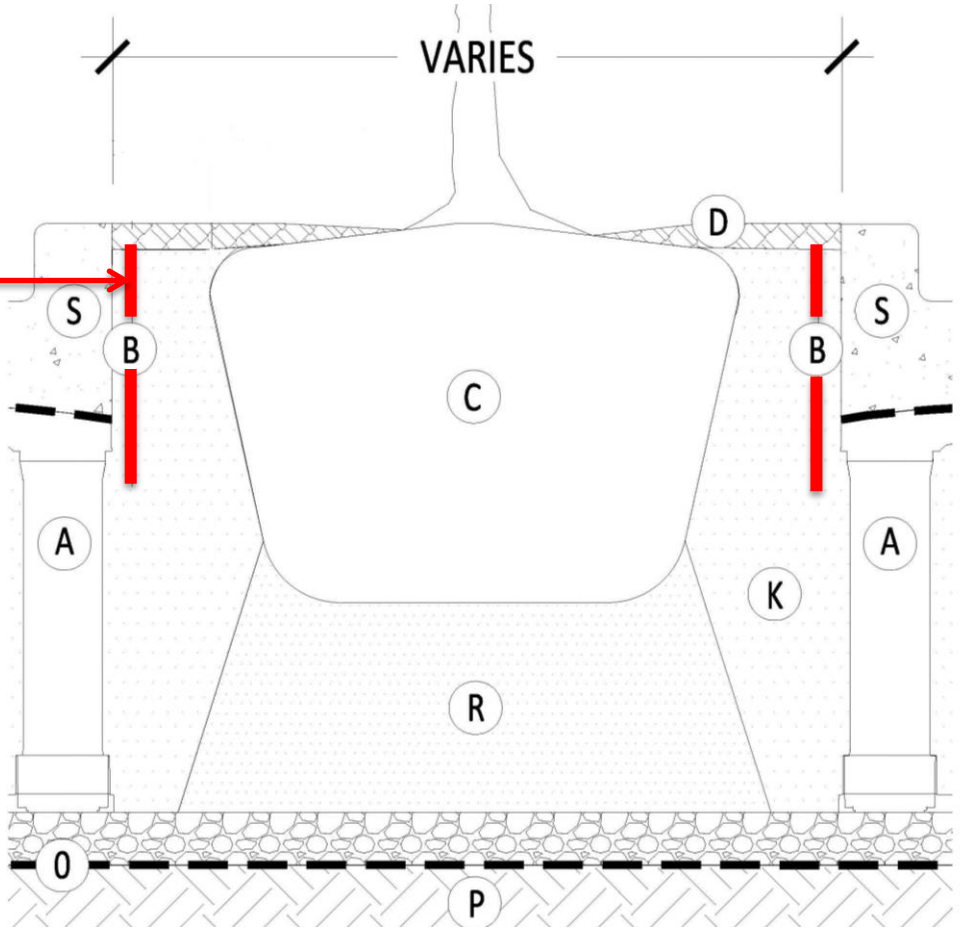
Root barrier installation

Install root barrier so that the top is roughly 2” (50 mm) down from top of finished pavement.



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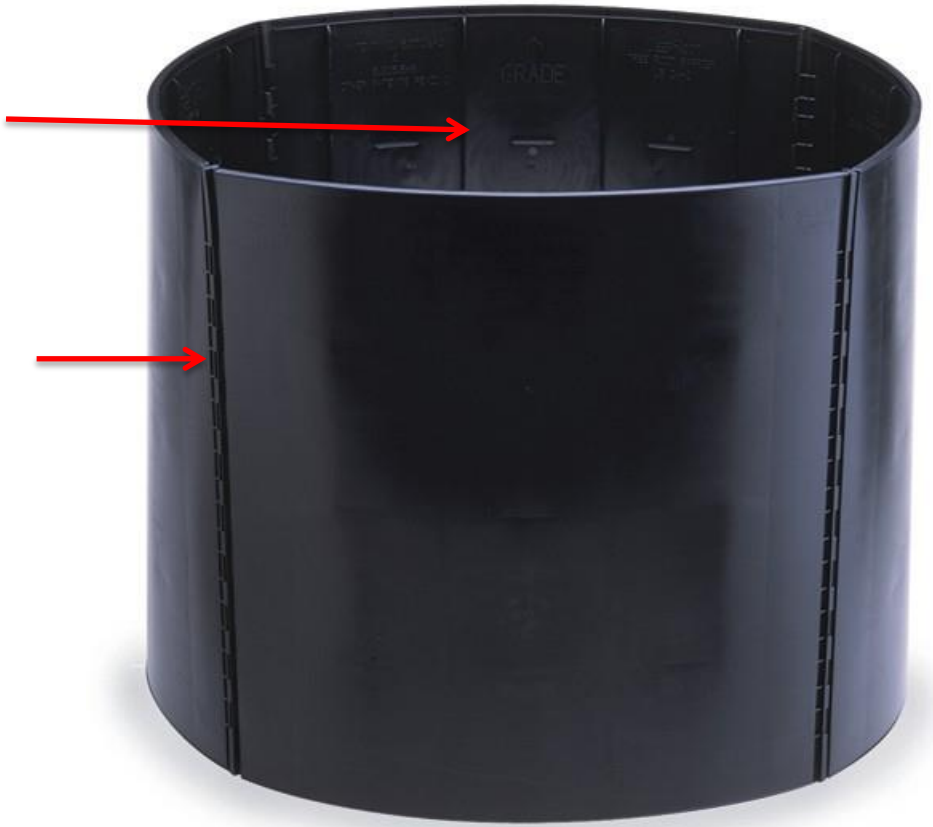
Root barrier installation

Tabs on the root barrier panels face inward toward the tree.

The root barrier panels easily slide together to interlock with each other.



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Thank you

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Questions?

United States / Canada

Pat Greeley
pat@deeproot.com
(612) 840-9004

United Kingdom

Steve Chatwin-Grindey
steve@deeproot.com
(+44) 020 3848 4230