

Rain Garden Walkthrough

~~Site Analysis Phase~~

~~Design Phase~~

~~Materials Phase~~

Construction Phase

Plants & Maintenance



Before you Build...

Have you:

- Called 811?
- Scheduled first inspection with RainSmart Rep?
- Made sure Homeowner's Agreement is signed?
- Saved ALL receipts?

Timing:

- Warm-season grasses need to go in before winter
- Frozen ground not good
- Should not excavate during rain, or immediately after rain
- Otherwise, any time of year will work

Constructing a Rain Garden

12 Step Program...

1. Protect Clean Areas, Plan for Minimal Lawn Impact
2. Set Reference Stake
3. Remove Sod
4. Remove Topsoil
5. Remove Underlying Clay to Subgrade
6. Use Clay to Create Berm & Overflow
7. Tamp Berm & Overflow
8. Receive RainSmart Inspection
9. Add Soil Amendments
10. Mix Soil and Rake Flat
11. Plant, Mulch, & Water
12. Clean-up



RAIN GARDEN CONSTRUCTION

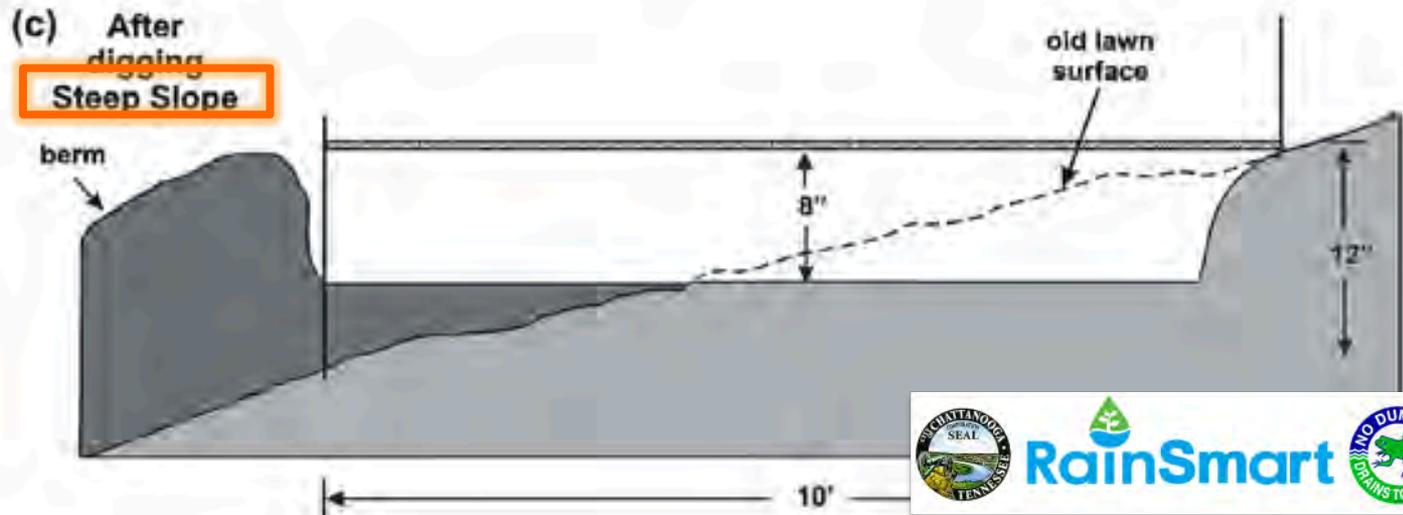
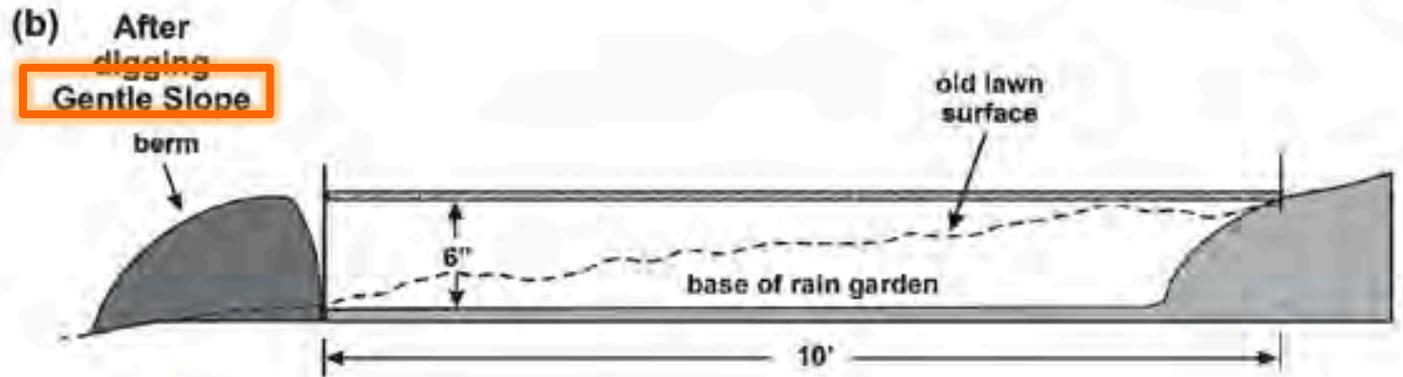
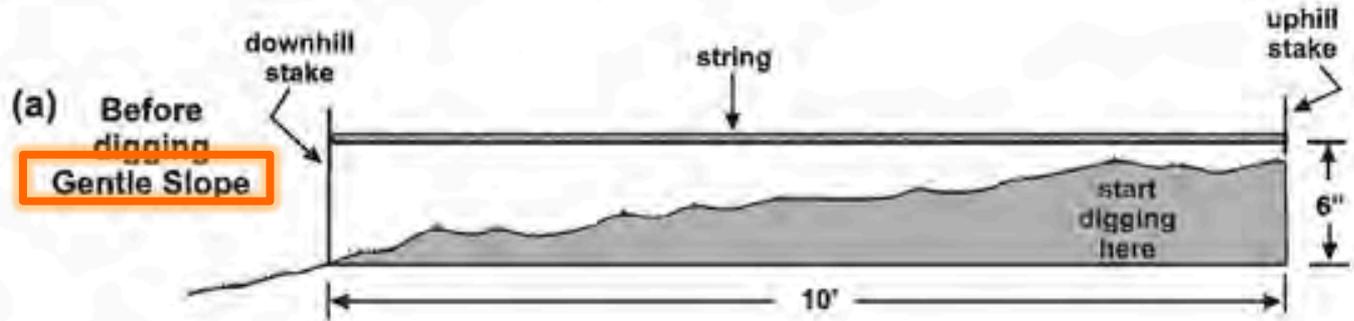


Reference Stake – above, not below



CONSTRUCTION PHASE

WHY is it easier to build on a flat area? Look at the dark gray color...



Rise / Run = Slope

$$6'' / (10 \times 12) = 0.05$$

Or, 5% slope

$$12'' / (10 \times 12) = 0.1$$

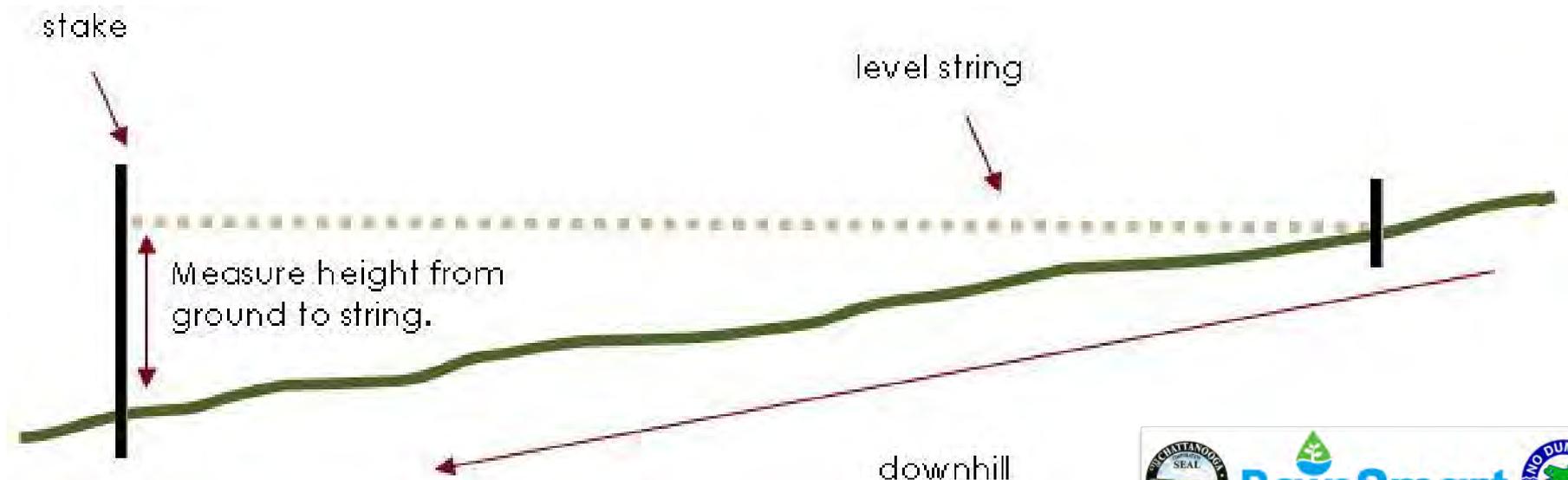
Or, 10% slope



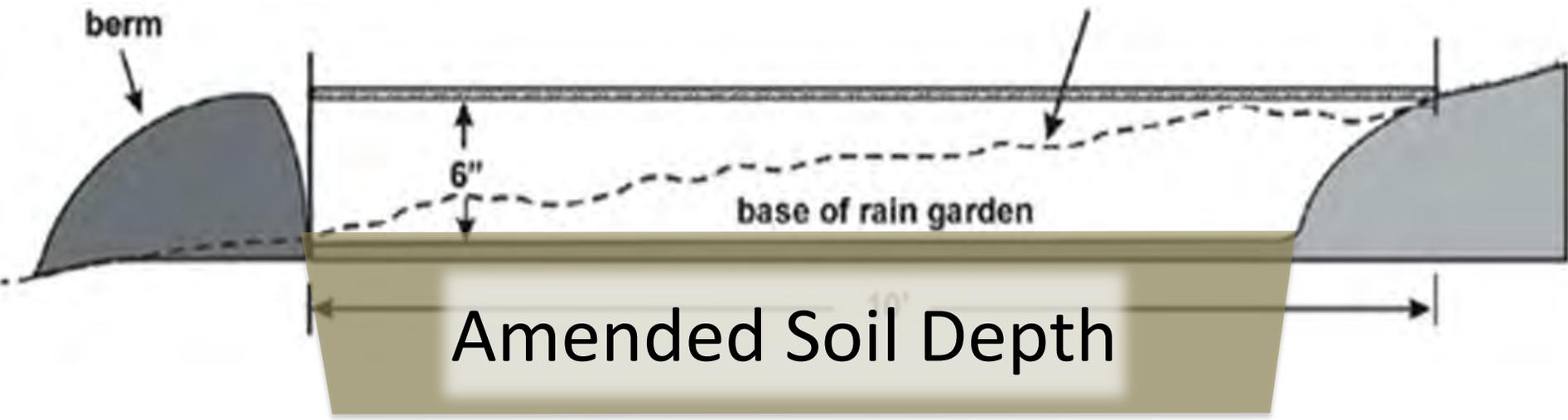
Determine Depth

Rain Garden Depth Varies According to Existing Slope:

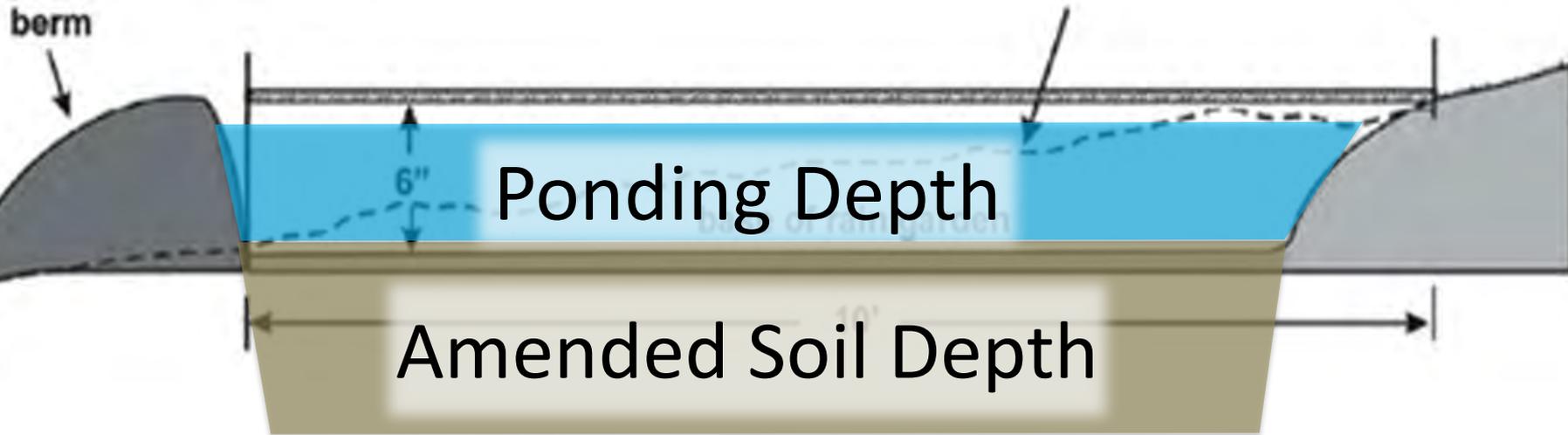
- Less than 4%, it is easiest to build a 4 – 5 inch deep rain garden
- Between 5 and 7%, it is easiest to build a 6 – 7 inch deep rain garden
- Between 8 and 12%, it is easiest to build a 8 inch deep rain garden



Ponding Depth vs. Amended Soil Depth



Ponding Depth vs. Amended Soil Depth



Generally, RainSmart applicants will want to use:

- **A 6" ponding depth, variable to 4-8"**
- **10 to 14 inches of amended soil**

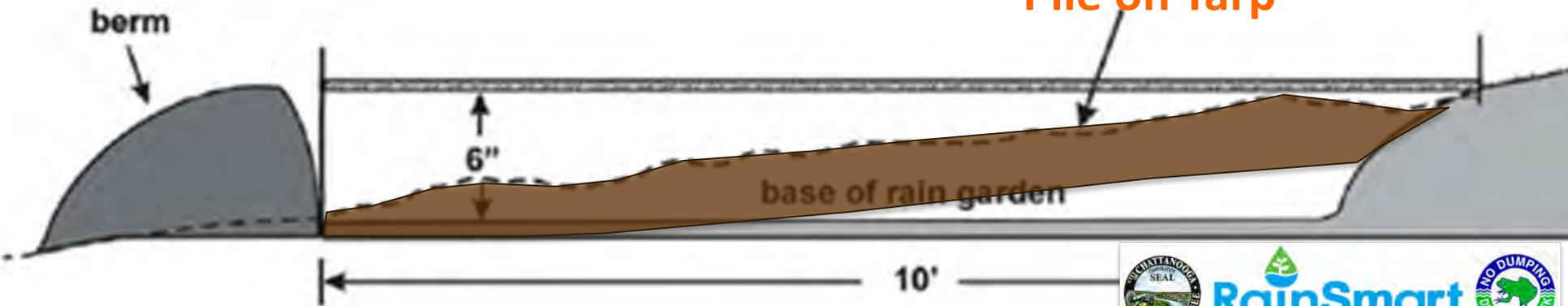
...Resulting in around 1.5' of excavation.

Remove Sod



Remove Topsoil

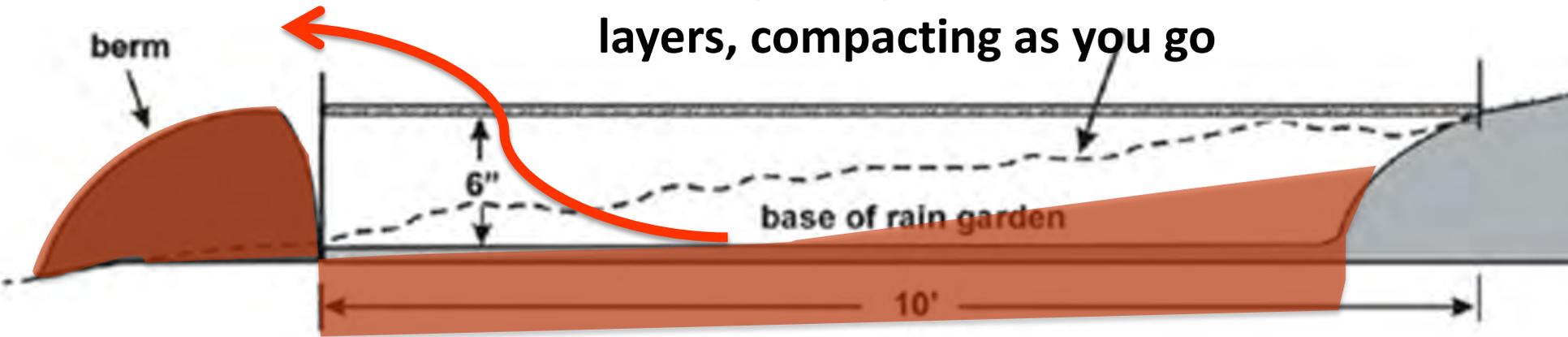
Remove Topsoil and
Pile on Tarp



Remove Clay, Create Berm & Overflow

- Remove underlying clay soil
- Begin piling soil on berm. As you pile it, every two to three inches, compact the clay using a tamping rod or other method.

Remove clay and pile on berm area in layers, compacting as you go



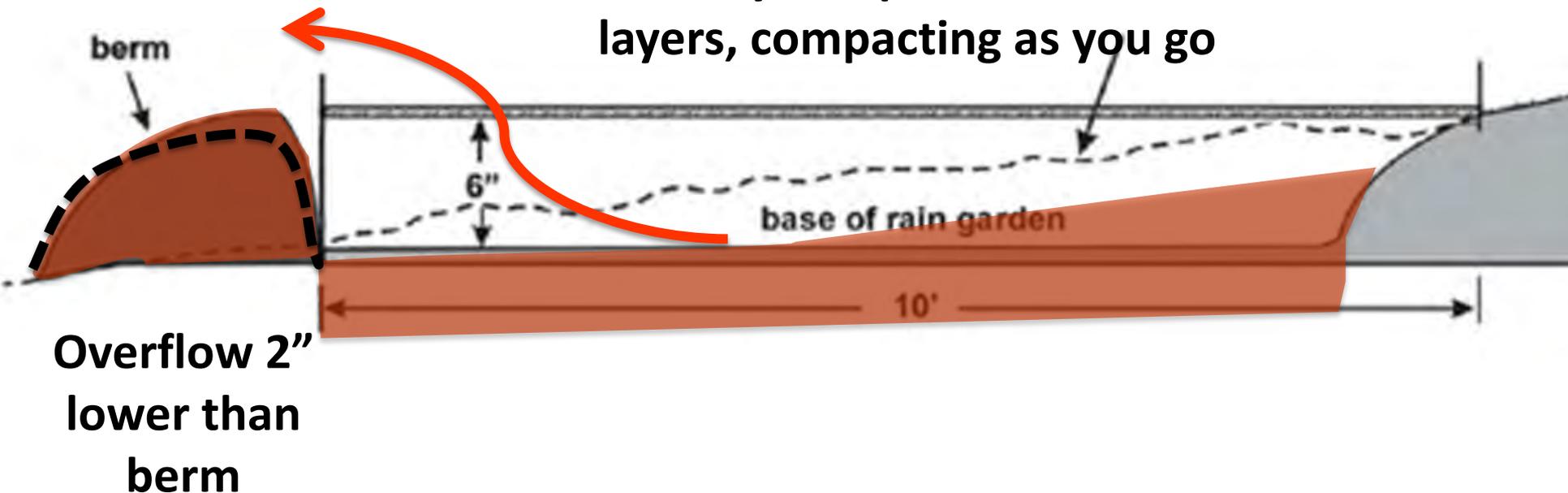
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CONSTRUCTION PHASE



 RainSmart



Check Elevation of RG Elements

- Once you have excavated to the subgrade depth, and as you begin to construct your berm, and overflow, you will need to start checking your depth.
- If your **ponding depth is 6"**, and you're backfilling with **10" of amended soil**, what total depth is your subgrade?
- 16 inches?
- But wait! You need to account for your overflow – So leaving 2" for an overflow, you should dig down to a total of 18" deep.

Pull string from Reference to check subgrade depth



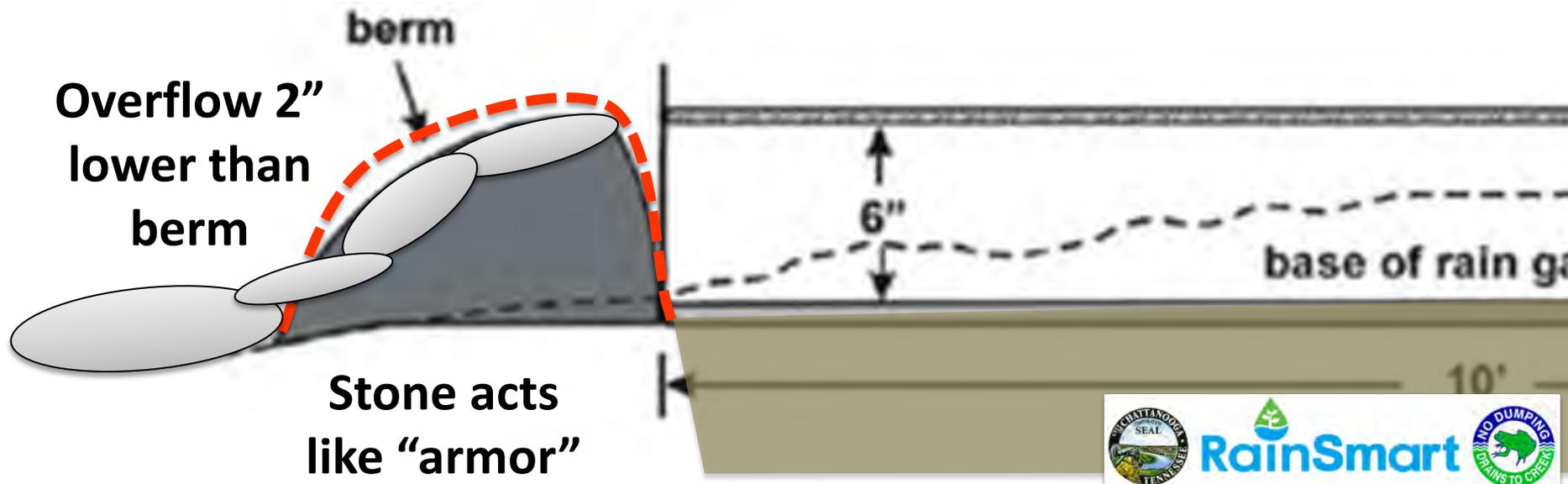


Questions?



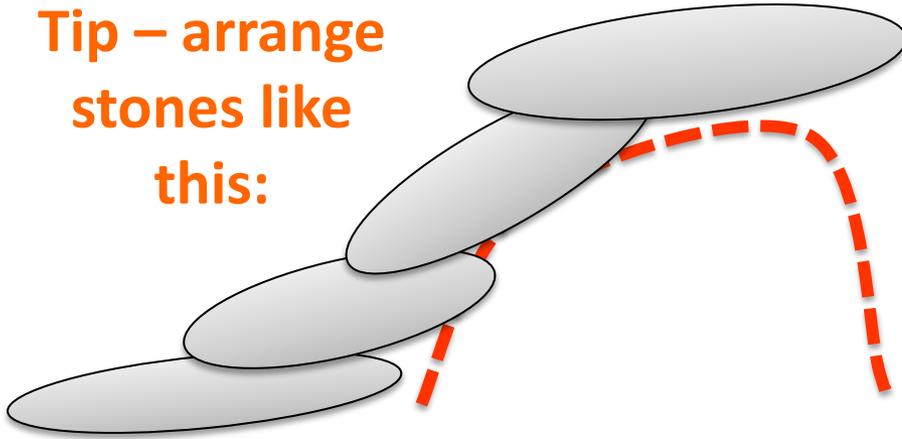
Armor Overflow

- The overflow area should be around 1 to 2 inches lower than the berm height
- Take into account the thickness of stones you will use to armor the berm. You can also use other materials – get creative!

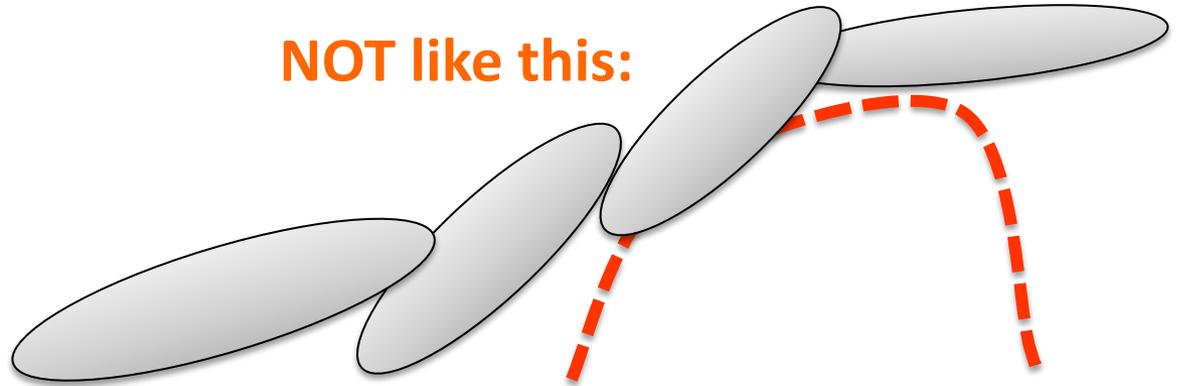


CONSTRUCTION PHASE

Tip – arrange
stones like
this:



NOT like this:



RainSmart Representative Conducts Inspection



Then, Add Amended Soil & Rake Flat

Before
Adding
Soils...



Bottom of Rain
Garden –
“Subgrade” –
Should be flat,
uncompacted,
and slightly
scarified

Make sure
bottom of
basin is not
compacted

CONSTRUCTION PHASE

Add Amended Soil & Rake Flat



Add Amended Soil & Rake Flat

Incorporate
compost into first
2-3 inches of soil



Rake flat, cover exposed
berm with topsoil

Note of Caution

Add and mix amended soils *without compacting* (Minimize foot and equipment traffic in basin, **do not work soil when wet**)



Be extremely careful not to compact the underlying clay or any clay going into the amended soils, as this ruins porosity and is very difficult or practically impossible to correct!

Do NOT walk or drive on clay soils when they are wet! Remember, YOU are heavy enough to compact soil!

CONSTRUCTION PHASE

Add Plants, Mulch, and Water



Clean-up

Hose or brush soil or mud from sidewalks, etc.



Remove any debris/trash



Dispose of extra soil according to prior plan with homeowner



Seed and straw any remaining unstabilized soil



Tools

- Shovel – Flat and Rounded Tip
- Mattock
- Post-hole diggers or long thin shovel (for percolation test pit)
- Garden Rake
- Pitchfork or Shovel for Mulch
- Wheelbarrow and Truck
- Spray Paint
- Hose and Bucket
- Stakes and Hammer
- Marking Flags
- [String and Level](#)
- Measuring Tape or Stick
- Graphing Paper, Calculator



Optional Equipment

All of this equipment is optional, as residential rain gardens should theoretically be possible to construct with simply manual labor (which is also cheaper). However, depending on the size of the RG, you may want to use some of the following equipment:*

- Mini-backhoe (the smaller the better)
- Front-end Loader Bucket
- Roto-tiller
- Cultivator



***Note:** *Frequently, the use of this equipment can decrease the percolation rate of the soil, resulting in a failed rain garden that does not infiltrate water. Extreme care should be used, especially on clay soils. The soil should NEVER be worked while it is wet. If in doubt, it is better to build a smaller rain garden, constructed with “elbow grease,” than let an operator, unfamiliar with the concept, unwittingly degrade the soil’s infiltrate capacity.*



Lunch Break!



Thanks!



City of Chattanooga

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