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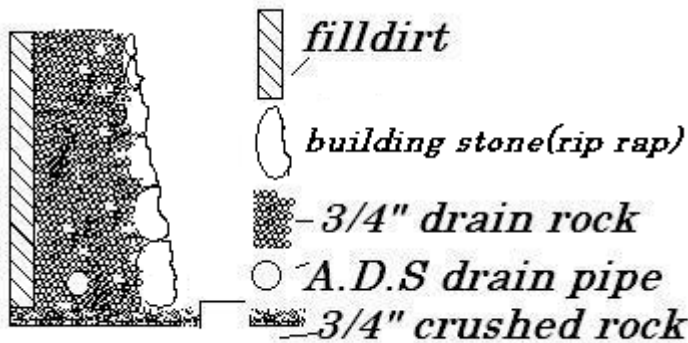
“How-To” for a Natural Stone “Rip Rap” Wall

Retaining walls are built to prevent soil from being lost due to erosion or displacement down a slope. Once built, it can also be used as a beautifying feature. **This “how-to” will be on Natural stone retaining walls.**

1. **Identify the site and choose the type of materials.** Different types of material can be used to make a retaining wall; this includes natural stone, wood, bricks & mock stone bricks. Follow the steps below to prep the site and construct the retaining wall of your choice.
2. **List the building materials and how much you will need.** Example (we will use a 5”-12” Building Stone in our example) :
 - a. **Base material** (3/4” crushed rock): The base should be 20% wider than the length of the wall and width of the wall (generally figured by rock size).... Example: a 12” rock has a width of 12”. We are building our wall 40 feet long. So, we figure $40' \times 1' = 40$ sq ft. We want our base to be 20% larger so take $40 \times 20\% = 8$... $40 + 8 = 48$. 48 sq.ft. is the area we want to figure for the base of our wall. Now we need to figure how much 3/4” crushed stone we will need for this area. We are going to put our crushed stone down 2” deep. So we take 48 and divide it by 162; $48/162 = .30$ yards. We are going to need approx. 0.30 yards of crushed rock for our base.
 - b. **Wall - How much rock will we need?** We need to know the length and height of our wall. Once we have that, we will take the Length and multiply by the height to get face feet. Some rock will do 1 face foot per ton - some will do more and some will do less. In our example, our wall is 40’ long and we are going to go 3’ high. So, we multiply $3' \times 40'$. This = 120 face feet (sqft). Coverage amounts for stone vary with the types/sizes of stone. Visit our yard to determine which stone you want to use and get an estimate for coverage amount.
 - c. **Drainage rock** (for behind the wall): 3/4” washed rock is the best for this. To figure the amount needed here you will need the height and length of the wall (we already figured this in section (b)). Our wall is 120 face feet. We should install 1 foot of gravel behind the wall for drainage, (you will want to consider this when deciding on where to locate your wall) so, we need to divide our face feet (120) by the coverage of rock for 1 foot or 12” (which is 27). $120 / 27 = 4.44$ yards of rock needed for behind the wall.
 - d. **Drainage pipe:** ADS (or advanced drainage systems) works best. We want a perforated pipe with a sock (to prevent soil clogging the pipe) this will be installed when putting down your first layer of block. You will need a long enough section to travel the length of the wall and to a suitable drainage area (usually come in lengths up to 100’). Which in this case will be at least 40’..... the rest will depend on where you plan on running the water to drain out?
 - e. **Next is fill dirt for behind the wall (in addition to the washed rock):** If you build your wall with just 1’ of space between the area you are retaining then you will not need any fill dirt; and if you do, you will only need very little to finish the job. Sometimes there will also be enough fill dirt left from the dig out. So every job will be different.

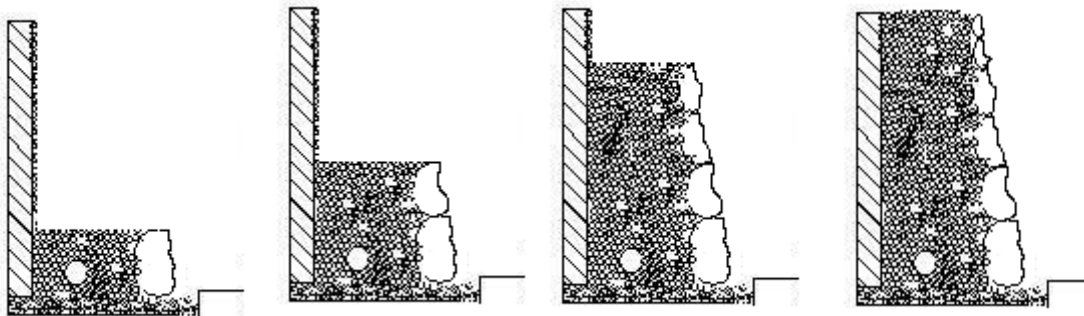
Clear the site of debris, grass or any other material.

3. Measure the length of the wall with a measuring tape (we already did this... our wall is 40 feet long). **Note that the height of the retaining wall should be equal to or less than half its base.** (what this means: you do not want the wall to be taller than it is wide, this will cause the wall to be unstable)
4. **Use a hosepipe or a piece of string to mark the wall boundary.** (so you keep a straight line when building the wall)
5. **Get a shovel to dig the marked area to a depth of about 1 foot.** When you have just about reached your desired depth, simply scrape the loose soil. *Continued digging will leave a loose foundation – we don't want this.*
6. **Spread a uniform layer of gravel** to prevent the “water-logging” problem (our ¾” crushed stone figured in (a)).
7. **Build a layer of rock** (it works best if your base rocks are bigger.... bigger the better). Make sure they are close fitted. *Note the diagram... bigger rocks on bottom.*



Add further stability to the soil by planting a suitable [plant](#) at the base of the retaining wall.

Phase 1. - Phase 2.- Phase 3.- Completion ☺ -



Tips & Warnings

- Check local laws in cities that require citizen's permission for building a retaining wall.
- Most areas have laws regarding the height of your wall. If you go over a certain height, then the wall may need to be engineered.
- Specific materials used to make retaining walls may not be available in some markets. Verify what's available and what's at your site before buying.
- Steep slopes can be better tamed by building multiple retaining walls. (aka terraces) each terrace can be about 3 feet high.
- Retaining walls measuring more than half the base are unstable. (as stated in #3)
- Check out Mr. Yard for available materials