

Illustration by Kelly Neils



Drainage options

What are your thoughts on what to use for backfill on drainage projects — sand, pea stone or masonry sand? Our general manager would like to use pea stone, but we have talked to a drainage company that uses masonry sand, and they claim that over the years pea stone holds up the water, because of soil and other particles, but that masonry sand holds up better in the long run. Also, do you all like leaving the trench open or laying sod back over the trench? Some people say that if you lay sod back over the top of the trench that you are defeating the purpose by clogging the pea stone with the soil of the sod.

— Thomas Alonzi, superintendent
Boyer Highlands Resort
Harbor Springs, Mich.
13-year GCSAA member

I agree that pea gravel is the way to go. We have done several large French drainage projects over the last few years with pea gravel, and they are holding up great. As for sodding the trenches, we usually sod areas where the likelihood of the trench washing out due to heavy rain is greatest. We have sodded entire trenches with good results also.

— Scott Pollard, assistant superintendent
CC of Landfall
Wilmington, N.C.
six-year GCSAA member

We used clean limestone but switched to pea gravel and this year have gone to USGA-spec sand. I changed over after reading "Practical Drainage for Golf, Sportsturf, and Horticulture" by (Keith) McIntyre and (Bent) Jakobsen. They found that sand prevented migration of soil particles beside the trenches because pore spaces were so much smaller than with pea gravel. They suggested if you sodded over the trenches to use a washed sod or sod grown on the same sand to prevent any interfaces from forming. Hope this helps.

— Michael Nowakowski, superintendent
Glendale G&CC
Winnipeg, Manitoba, Canada
three-year GCSAA member

There is not a stock answer that will apply to everyone. If you are looking for a long-term drain you must have your soil tested for particle sizing and have a soils consultant or engineer recommend your filter material. We have miles of pea stone drains on our course that have packed tight with the migrating clay. We will be switching to a coarse sand fill as per our engineer.

— David Cours, superintendent
Erie Shores G&CC
Lemington, Ontario, Canada
eight-year GCSAA member

I do not know if this is right, but I have done this at a previous course with good results: I placed 2 inches of pea gravel in the bottom of the trench, placed my 4-inch perforated pipe and placed another 4 inches of pea gravel on that. Then, I placed a fabric liner over the pea gravel and capped it with sand and washed sod. I was only at the course for two years, but we never had any problems with it.

— Curtis F. Nickerson,
director of golf course maintenance
Bonaventure Resort & CC
Fort Lauderdale, Fla.
nine-year GCSAA member

I was taught that you use the material that is designed to infiltrate your worst-case scenario regarding inches per hour of rainfall. For example, in the Pacific Northwest, heavy rains require a material that can move up to 10 inches of water per hour. We have always used pea gravel. Particle composition is more important than particle size, round particles being more effective than flat for maintaining pore space. One thing we did was reopen drain lines every year during the winter by re-slitting the sod over the drain lines. This was done during our slow season when play was light. When clay soils infiltrate a pea gravel drainage line, we would reopen the line, remove contaminated pea gravel and either wash or replace with new.

— Robert Wright, assistant superintendent
Spanish Trail G&CC
Las Vegas
10-year GCSAA member

This month's Super Tips column was adapted from messages posted on the discussion forum in the members-only portion of GCSAA's Web site at www.gcsaa.org.