

OVERLAYING PEAT

A SECOND LOOK AT

USING A GEOTEXTILE FABRIC

by **ANDY LINDQUIST, Brookview Golf Club**

In 1984 an extensive overlay project using a geotextile fabric (a very tightly knit plastic fiber that resembles burlap) was installed under fairways 1,2,9,14,15 and 18 at Brookview Golf course. In 1985 I wrote an article for the **HOLE NOTES** detailing the construction sequence and ended with the assessment that: "Does it work?...yes, but time will be the final judge. Now, three plus years later I thought I would review the project, its results and other things I've learned from using this type of construction fabric.

The area of concern contained various amounts of peat ranging from a few feet to 30+ feet in depth. The "standard" method of reconstruction was to remove all peat down to a solid subsurface and then fill with a suitable material. For small volumes of work this works out just dandy. However, when 20 acres are involved (about 300,000 cubic yards of peat are to be removed) the cost of trucking the material off site goes right out the door and overlay with fabric is considered.

Peat is a very low density material that can hold large quantities of water. Anything denser (almost any suitable soil) will sink into or compress it. The speed of this movement is dependent upon the quality of peat that you're working with. The more fibrous (brown) it is, the more it will compress and the more decomposed (black) it is, the more it will "squish" to the sides and the less useful it is (i.e. the brown fibrous peat can be mixed with the overlay material to develop a better physical overlay whereas the black peat won't mix well and will create a very physically clogged overlay). Also by mixing the brown peat with the overlay, you won't need to haul in as much overlay. Since the denser overlay material will sink and mix into the peat you want to use a fabric to maintain the physical separation of the "good" overlay material from the "bad" peat. The fabric and overlay will not move as a uniform mass and you will get variable compression dependent upon the peat density (which means you will have to "surcharge" the area with the overlay material...let it sit for two or three weeks and then relevel and final grade).

Steps that we have used in installation of the fabric are as follows:

1. **HAUL ROADS:** You will want to create haul roads on top of the peat to get the overlay material on site. Using the fabric gravel on top of the spread out

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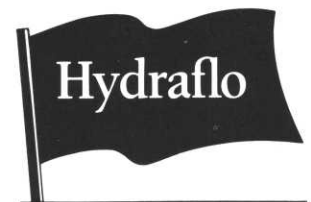


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2. **CAP ENTIRE PROJECT:** It is very important to first apply a layer of fabric and overlay material over the entire project so you can get a uniform compression (surcharge).

Point in case: We remodeled our Par 3 Course in '88 in areas of very deep peat depths and very soft peat (black muck). We didn't "cap" the project first (tried to save a step) and proceeded in one of our areas to dump 32 ft. of fill to get a surface grade change to 4 ft. Oh, ya, we also raised an adjacent pond bottom up 10 ft higher than where it had been! The fill cut through the peat like a punch and that surcharge pressure popped up at the closest point of relief. Things do move if you don't cap first.

3. **SURCHARGE TIME:** The added weight (surcharge) will compress the peat to about 30 to 50% of its original volume (dependent upon the peat quality..brown peat compresses a lot more than black peat). Most of the erratic compression occurs within the first three weeks and will settle down to a slow and uniform "sinking" after that time. Once the initial rapid movement is over with you can come back and concentrate on the

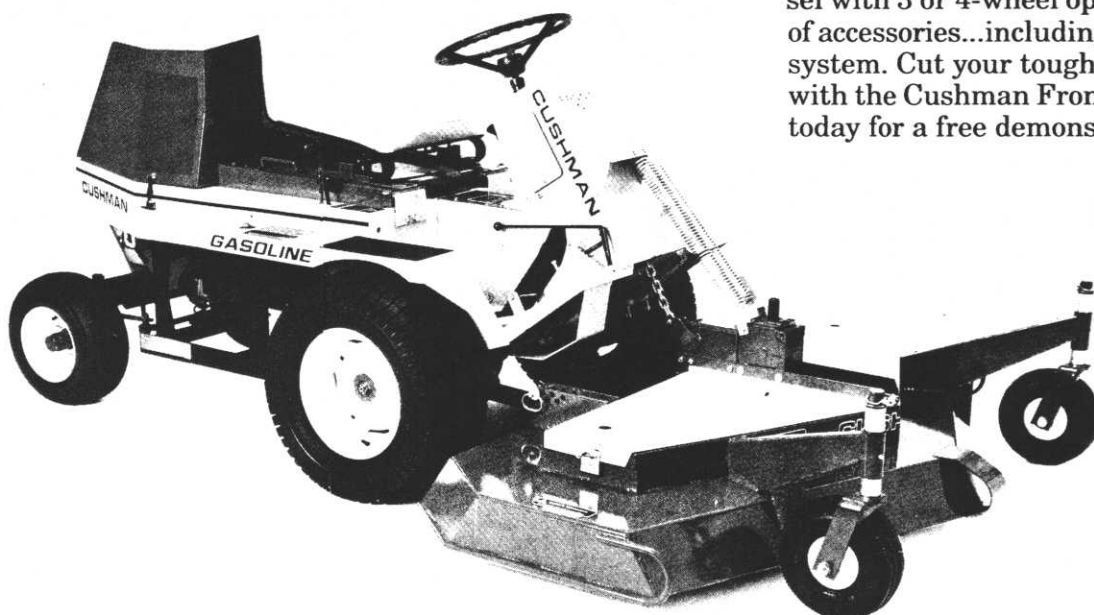
areas that you will be placing deeper overlay material on and figure in those areas you will get an additional 10% compression (i.e. 6 ft. of additional overlay placed on an area that was capped will give you a final grade change of 5 1/2 ft...the other 1/2 ft. will be compressed into the peat). Again, this will vary with peat quality and overlay density.

4. **Don't destroy the integrity of the overlay fabric.** Cutting through for irrigation or tree installation will create point at which the underlying peat (which is pressurized due to surcharging) will bubble up and create nasty little humps.

Now, long term results: Peat will "mogel" up and down with frost movement and moisture content. The overlaying eliminates the severity of the humps but you still do get some gentle "waves" over an entire area (but not much more than 3" over an 100 foot distance). It is important to note that if you planned your drainage of the previous area to be at a 2% slope the 3" movement will create "pockets" to catch water... the solution is to establish a minimum of a 4% slope in all areas to ensure drainage.

Does the overlay work? Yes, with proper installation and a very close look at what type of peat you have, it will work.

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