

French drain installation for improved facility safety

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Introduction

Over the summer, I was employed at the Virginia-Maryland College of Veterinary Medicine at the Animals for care and education (ACE) department. My responsibilities included grooming, feeding and treating the herd of 25-30 teaching horses. One rainy day, my supervisor was moving a horse between fields. Both her and the horse almost slipped and fell. My coworkers mentioned that it would be difficult to drive between fields for a few days after it rains, sometimes getting stuck between gates. This was a safety concern, so I decided to find ways to solve this issue. I found that since water build up was the main problem, some kind of drain installed at the front of the gate seemed like the ideal solution. Specifically, a French drain for its simplicity and ease of installation. A French drain is a style of drain system where a small trench is dug out, filled with gravel and a filtered drain is placed on top. Then covered with soil to complete installation. Only a small area would be required, and this could be a solution for others having the same issue and little experience with installing drains

Materials and Cost

1. Shovel.....	\$9.98
2. Leather Gloves.....	\$5.89
3. Measuring Tape.....	\$5.99
4. 5 gal Bucket.....	\$3.88
5. Tamping bar.....	\$36.88
6. 4in x 10 ft PVC Rigid Drainage pipe.....	\$61.05
7. Gravel.....	\$20.86
8. Fine gravel.....	\$15.99
9. Drain sleeve, 100ft x 4 in W X 4 in diameter.....	\$28.46
Total Cost=	\$182.99

*** note: items 1-5 and 7-8 were available on site without purchase during the project, numbers reflect general cost****

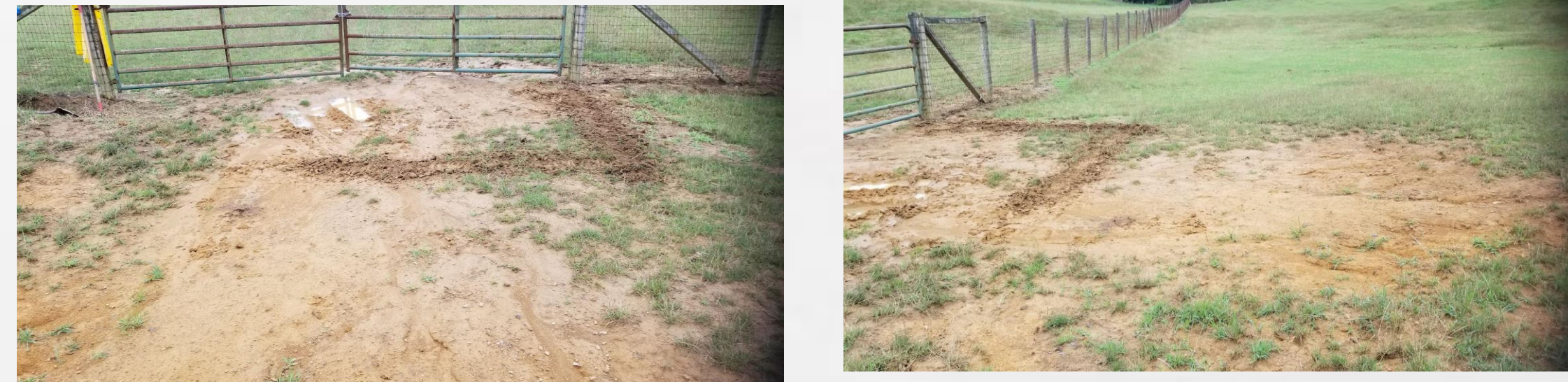
Instructions for installation

1. Plan location: area Infront of water retention ponds
2. Dig trench: 20ftx 8ft for this drain
3. Install filter fabric on chosen drain pipe
4. pour in first layer of heavy gravel
5. Set pipe above first layer of gravel and cover with heavy gravel
6. Pour fine gravel above the drain
7. Fill remaining space with topsoil

Before installation



This is an image before the site was plotted, notice the puddle behind the gate.



These two images show the initial plotting and planning of the drain site

During installation



2 weeks after installation



These two images show the installation site after 2 weeks of varied weather. The drain is concealed and the water drains away from the gate

5 weeks after installation



These two images show the drain 5 weeks after installation

Results

Following the installation, the benefits of the drain were quickly realized. I decided that I should place the drain right before the area where water usually puddles. This way, as the water flows down the hill, it will hit the drain first and be redirected to the side of the gate. After a few days of rain, there was considerably less water built up in front of the gates. The drain was able to redirect the water away from the gate and we were able to drive the truck sooner through the gate. We were also able to move horses between fields with ease.

A challenge with the installation was having just one person working on it. In the future, a team of 2-3 people would make the process easier and take less time. Another challenge was working around the horses. This was resolved by moving one section of the herd into other fields while the installation was being completed. An unintended consequence of the installation was that the hill behind the drain was made smoother which improved the ability to drive past the gates. If I were to do this again, I would make the trench steeper. That way the water flows better down and out the drain

References and acknowledgements

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How to install a French drain. The Home Depot. (n.d.). Retrieved April 6, 2023, from <https://www.homedepot.com/c/ah/how-to-install-a-french-drain/9ba683603be9fa5395fab9012cc2665>



2 horses from the teaching herd, Apple(white) sara(brown)