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Technical Topic

Grading and Stormwater Management

Each home has a unique grading plan designed to control storm water and keep it from entering the home. There are many techniques used to accomplish this. Proper maintenance of the lawn and grading is crucial for maintaining a properly functioning storm water management system. This bulletin outlines what to expect from the grading/storm water management on the property and how to keep things functioning properly.

Grading Techniques Used to Control Storm Water

1. Infiltration Techniques

These techniques allow stormwater to seep into the ground, reducing surface runoff and recharging groundwater.

- **Infiltration Trenches:** Shallow ditches filled with gravel or other permeable materials that capture and allow stormwater to infiltrate into the ground.
- **French Drains:** A trench filled with gravel and a perforated pipe that collects and directs stormwater away from an area, allowing it to infiltrate gradually into the soil.
- **Permeable Pavements:** Surfaces (like porous concrete, gravel, or permeable pavers) that allow water to pass through and infiltrate the ground beneath, reducing runoff.
- **Infiltration Basins:** Shallow depressions that capture stormwater and allow it to slowly infiltrate the ground.
- **Rain Gardens:** Shallow, planted depressions designed to capture stormwater runoff, filter it, and allow it to infiltrate the soil. Please refer to technical Topic-Rain Gardens for more information

2. Detention and Retention Systems

These systems temporarily store stormwater to reduce the volume and speed of runoff, allowing it to be released slowly into the environment.

- **Detention Ponds:** These are designed to temporarily store stormwater and release it slowly, often through an outlet structure. They are typically dry during normal conditions and only fill with water during storms. They most typically dissipate 48-72 hours after a storm.
- **Retention Ponds:** Unlike detention ponds, retention ponds hold water permanently. They provide long-term storage for stormwater and may also be designed to treat stormwater quality.

Grading and Stormwater Management Continued

- **Wet Ponds or Wetlands:** These ponds have permanent water and can help with both detention and water quality treatment, as they promote natural filtration through plant roots and soil.

3. Channelizing Techniques

These techniques manage and direct stormwater runoff into designated pathways to control its flow and prevent erosion.

- **Stormwater Channels/Swales:** Constructed channels that direct stormwater flow to designated areas, such as detention ponds or rivers, while controlling the velocity of the flow to reduce erosion. Swales may hold water for up to 48 hours after a storm.
- **Culverts and Storm Drains:** Pipes or tunnels used to direct stormwater under roads or other infrastructure, helping to prevent surface flooding.

4. Erosion Control Measures

Erosion control measures protect areas prone to erosion due to stormwater runoff and prevent sediment from entering waterways. Please refer to the Technical Topic-Erosion for more information.

- **Silt Fences:** Temporary barriers used to catch sediment in construction sites or disturbed soil areas during rainfall.
- **Sediment Basins:** These are designed to capture sediment from stormwater runoff, especially in construction zones, and prevent pollutants from being carried into nearby water bodies.
- **Erosion Control Blankets:** Protective layers, often made from biodegradable materials, placed on slopes to prevent soil erosion caused by runoff.

5. Impervious Surface Reduction

Reducing impervious surfaces (like asphalt, concrete, etc.) can help reduce the amount of stormwater runoff.

- **Permeable Pavement:** Using permeable materials for driveways, parking lots, and walkways allows water to seep through the surface and into the ground, reducing runoff.

Grading and Stormwater Management Continued

Grading And Stormwater Maintenance

1. Regular Inspections

- **Inspect Grading and Slope Regularly:** Check that the grading maintains the proper slope away from structures and drainage areas. Look for any signs of settling or erosion that may alter the slope and cause water to flow toward buildings.
- **Inspect Drainage Systems:** Periodically inspect stormwater management systems, including swales, French drains, and detention ponds, to ensure they are free of debris and functioning as intended. This helps prevent water backup and flooding.

2. Clearing and Cleaning Drainage Structures

- **Clean Gutters and Downspouts:** Regularly clean gutters and downspouts to ensure water can flow freely. Clogged gutters can cause water to overflow and pool around the foundation of your house.
- **Clear Drain Inlets and Outlets:** Make sure that the inlets and outlets of stormwater drains, swales, and culverts are free of leaves, twigs, or other debris that can block water flow. This is particularly important after heavy storms or seasonal changes.
- **Clean French Drains and Trenches:** Remove dirt, debris, and leaves from French drains and infiltration trenches to ensure they continue to direct water away from structures and allow infiltration.
- **Maintenance of Sediment Basins:** In areas where sediment basins or traps are used, remove accumulated sediment to ensure the basin continues to function properly. Excess sediment can reduce storage capacity and interfere with water flow.

Grading and Stormwater Management Continued

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3. Erosion Control and Vegetation Maintenance

- **Check for Erosion:** Inspect areas of the yard where erosion may occur (e.g., along slopes, near drainage areas, or on pathways). Regrade and stabilize eroded spots to prevent further erosion and damage.
- **Replant Vegetation in Rain Gardens:** Ensure that plants in rain gardens, bioswales, and other vegetated areas remain healthy and properly spaced.

Grading and Stormwater Management Continued

- Replant vegetation as needed to prevent soil from washing away and to maintain water filtration.
- **Maintain Grass and Vegetated Swales:** Regularly mow grass in swales or other vegetated areas to maintain proper function. Overgrown plants can impede water flow, while too little vegetation can result in erosion.

4. Repair and Regrading

- **Fix Settling or Depressions:** If areas of the yard or grading plan show signs of settling, fill them with soil and regrade them to ensure the correct slope is maintained.

Technical Services Team

The grading and storm water management is an essential part of keeping your home dry. Proper maintenance of the systems discussed will keep things working properly for years to come. For more information on the subject, please refer to our technical topics on erosion, rain gardens and lawn care.