ASK THE EXPERT

FAQ

STORMWATER MANAGEMENT

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1. QUESTION

What types of Stormwater Management systems do you recommend and how do they differ?

ANSWER

The Arch chamber system and the modular tank underground systems are the two most recommended stormwater management systems. The arch system consists of open bottom chambers with little empty space, whereas the modular tank system consists of stackable blocks with significant void space.

2. QUESTION

What are the pros and cons of the arch chamber and modular tank systems?

ANSWER

Modular tanks have a higher void ratio which means they can store large volumes of stormwater in the smallest footprint but they have a higher requirement for assembly. Arch chambers are less expensive to purchase, but they require more room and backfill, which can increase project costs and result in a higher carbon footprint.

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3. QUESTION

What are the benefits of the arch chamber and the modular tank underground systems?

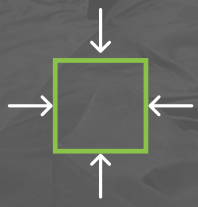
ANSWER

There are many benefits to both the arch chamber and the modular tank system of both systems, which include:

- **Flood Reduction:** An underground stormwater system can help to reduce the risk of flooding by capturing and storing stormwater runoff during heavy rain events. By slowly releasing the water over time, the system can help to prevent flooding in downstream areas.

- **Improved water quality:** An underground stormwater system can help to improve water quality by filtering out pollutants and other contaminants from stormwater runoff. The system can be designed to include debris rows and isolator rows for ease of maintenance and higher sediment retention.

- **Space Saving:** Both systems are designed to be installed below ground, so they can be installed under parking lots, parks and other areas, which allows for more efficient use of space. This can be especially beneficial in urban areas where land is at a premium. In contrast, traditional stormwater management methods such as retention ponds or swales usually take up significant amounts of land area.



- **Enhanced property value:** An underground stormwater system can be an attractive feature that enhances the value of a property. The system can be designed to include landscaping features, such as bioswales with grasses and flowers for pollinator habitats. The system can also be equipped for rainwater harvesting to provide irrigation on site.

- **Easy maintenance:** An underground stormwater system requires less maintenance than traditional stormwater management systems. Once the system is installed, it requires very little maintenance beyond occasional inspections to ensure that it is functioning properly.

- **Sustainability:** An underground stormwater system promotes sustainability by reducing the amount of stormwater runoff that enters streams, rivers, and other bodies of water. By capturing and storing the water, the system can help to promote groundwater recharge and reduce the risk of water shortages during periods of drought.

4. QUESTION

How do underground arch chambers and modular tank systems stack up against traditional stormwater management approaches like above-ground retention ponds and swales?

ANSWER

In terms of cost, overall effectiveness, and maintenance, underground systems outperform traditional stormwater management technologies. I'll explain:

- **Cost:** Installing underground stormwater systems can be more expensive than standard stormwater management systems. They may, however, be more cost effective in the long run. Traditional stormwater management systems require large amounts of land and can be costly to maintain over time, but underground drainage systems can be constructed beneath parking lots, playgrounds, and other locations, allowing for more efficient use of space. Although the initial installation cost of an underground stormwater chamber is higher, it is frequently offset by lower maintenance expenses for long-term savings.

- **Effectiveness:** Underground stormwater systems are extremely successful in stormwater runoff management. These systems are intended to capture and store stormwater, where it can gradually infiltrate into below soils. This reduces the quantity of stormwater runoff that enters streams, rivers, and other bodies of water, potentially reducing flooding and erosion.

- **Maintenance:** Underground stormwater systems require less maintenance than traditional stormwater management systems. Traditional systems, such as retention ponds and swales, require maintenance to ensure effective operation. This can include mowing, dredging, and other tasks. Underground stormwater systems, on the other hand, are essentially self-sufficient. Once built, the system requires very little maintenance aside from periodic sediment removal.

5. QUESTION

How do you address potential underground stormwater system maintenance and repair needs? And how does this differ from conventional systems?

ANSWER

Underground stormwater systems require less maintenance and repair than conventional stormwater management systems such as retention ponds and swales. Here are some methods for dealing with maintenance:

Conduct regular inspections: Regular inspections of the underground stormwater system can help to determine the appropriate removal frequency.

Clean out sediment and debris: Over time, sediment and debris can accumulate in the underground stormwater system, which can reduce its effectiveness. Cleaning out sediment and debris on a regular basis can help to ensure that the system continues to function properly and the storage volume is optimized.

6. QUESTION

What are some important considerations in selecting which underground stormwater management system to use?

ANSWER

When choosing a system, load rating, buoyancy, lateral load and potential dead loads are important factors. These parameters ensure the stormwater system has been designed to match the site requirements for long term performance.

Amy Woods is a Technical Product Manager for Titan Environmental Containment | USA with 20 years of industry experience working with engineers, contractors and project owners on stormwater projects in Canada and the USA. She leads Titan's Stormwater Management team providing in-depth expertise for:

- Technical talks on stormwater management systems
- Site specific consultation on system selection
- Design support
- Installation support

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