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MICRO INFILTRATION TRENCH (MIT)

Guidelines

Effective October 6, 2012

The Micro Infiltration Trench methods described in the following section are based on the Dry Well design found in Chapter 5 of the Maryland Storm Water Design Manual and the ESD Process & Computations Supplement dated July 2010. Where deemed appropriate, the design specifications have been modified by the Montgomery County Department of Permitting Services (DPS).

A. Facility Description

A Micro Infiltration Trench is an excavated pit filled with gravel or stone that provides temporary storage of runoff within the void space in the stone media. Runoff is directed to the storage area via surface flow and is allowed to infiltrate into the surrounding soil.

B. System Design Considerations

1. Applicability

Micro Infiltration Trenches may be used on any development where groundwater recharge is desired and there are appropriate soil conditions to allow it. This practice should not be located in areas that may result in damage to mature trees, or where existing slopes exceed 15 percent. Micro Infiltration Trenches shall not be located in areas where fill depths exceed one foot. If a proprietary chamber system is used within the storage area to increase the void ratio, the facility must be designed to support vehicular loading or be located a minimum of 5 feet from vehicular areas. A minimum of 50% of the storage volume must be located within undisturbed soils.

2. Soils

Provide soils information to support the use of Micro Infiltration Trenches. Acceptable methods include soil typing, drawdown testing and infiltration testing. For existing single family lots that are not going through the subdivision process, soil typing or drawdown testing is acceptable. For all other project types, sufficient infiltration testing must be performed on the subject property to demonstrate the Dry Wells will likely function acceptably. If the measured infiltration rate is less than 0.52 in/hr, the design must demonstrate that the facility will dewater in 48 hours or less. In no case may a rate of greater than 0.52 in/hr be used to compute facility depth. See "Soil Testing Guidelines for Stormwater Management Practices".

3. Setbacks

Micro Infiltration Trenches should be located down gradient and setback at least 20 feet from building foundations. If the structure is slab on grade the setback may be reduced to 10 feet. Refer to the Micro Infiltration Trench standard details for other setback requirements.

C. Specifications and Details

4. Sizing

A Micro Infiltration Trench shall be sized to capture and store 100% of the calculated target treatment volume for the area draining to it. The maximum allowable drainage area to a Micro Infiltration Trench is 1,000 square feet. The maximum allowable storage depth within a Micro Infiltration Trench practice is 5 feet.

The maximum allowable storage depth within a Micro Infiltration Trench is a function of the desired drawdown time, average infiltration rate for the soil type in which the facility is proposed, and the void ratio of the storage area within the dry well. The desired drawdown time is 48 hours. Storage depth includes the stone and the sand layer.

For design purposes we will use 0.5 inches per hour as the standard rate for acceptable soils. At 100% void ratio, this means the entire water column in the storage area must infiltrate into the soil within 48 hours with an assumed infiltration rate of 0.5 inches per hour. Therefore, maximum facility storage depth at 100% void ratio is:

$$0.5 \text{ inches per hour} \times 48 \text{ hours} = 24 \text{ inches or } 2 \text{ feet}$$

For a stone filled facility, use a void ratio of 40%. Therefore:

$$2 \text{ feet} / 0.4 = 5 \text{ feet maximum storage depth}$$

For proprietary chamber systems with larger void ratios, the maximum allowable storage depth will be less. For example, the maximum allowable storage depth for a structure providing a 95% storage void ratio would be:

$$2 \text{ feet} / 0.95 = 2.10 \text{ feet maximum storage depth}$$

These maximum storage depths may not be exceeded.

5. Inflow Design Criteria

Runoff shall enter the Micro Infiltration Trench via sheet flow. The top of the Micro Infiltration Trench must be a level as practical. Micro Infiltration Trenches may not be constructed perpendicular to finished grade.

6. Overflow Design Criteria

Discharge from the Micro Infiltration Trench must be directed to a safe location.

7. Stone

Micro Infiltration Trenches shall be filled with clean 1.5-3.0 inch diameter stone meeting ASTM D448, Size No. 1. Filter fabric is placed on the sides of the facility, and under the top 12 inches of stone. The top stone may be clean, decorative stone.

8. Sand Bed

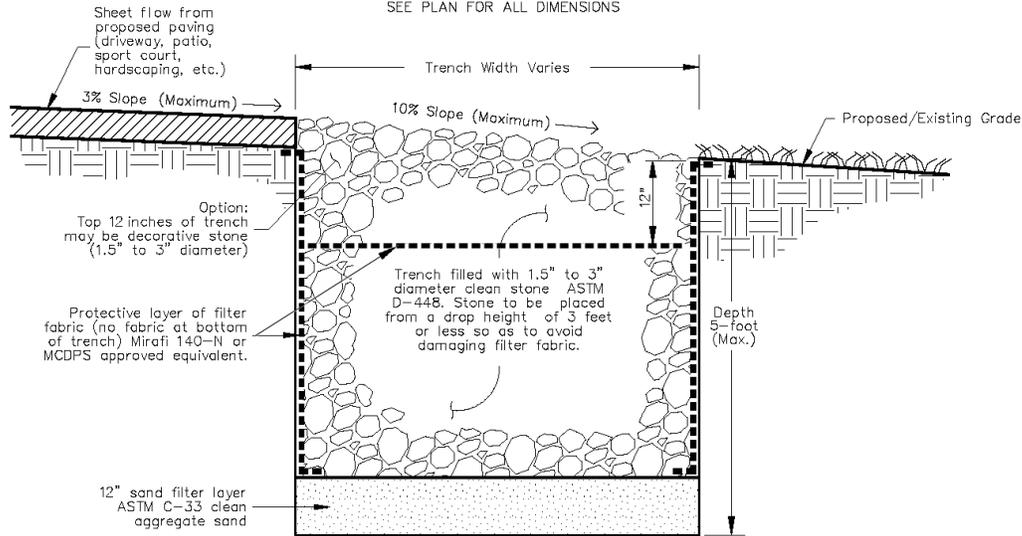
A 12-inch layer of fine aggregate sand shall be provided at the bottom of the excavation. Clean ASTM C33 or AASHTO M6 Fine Aggregate Concrete Sand is required per Montgomery County sand specifications.

9. Observation Well

No observation well is required for Micro Infiltration Trenches.

SECTION VIEW A-1

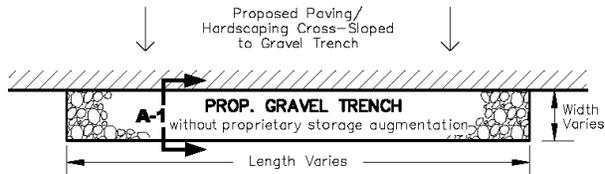
NOT TO SCALE
SEE PLAN FOR ALL DIMENSIONS



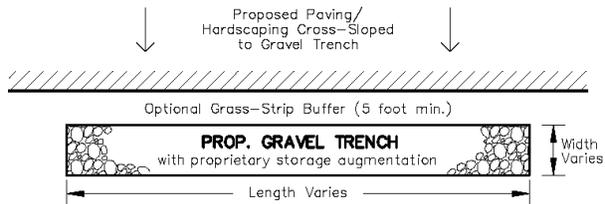
PLAN VIEW

NOT TO SCALE
SEE PLAN FOR ALL DIMENSIONS

LAYOUT OPTION 1



LAYOUT OPTION 2



NOTES:

- Manufactured sand is not acceptable in drywells.
- Trenches must be located:
 - 5 ft min. from property lines
 - 10 ft min. from slab on-grade buildings
 - 20 ft min. from building foundation
 - 20 ft min. from another drywell
 - 30 ft min. from septic trench or tank
 - 50 ft min. from alternate well location
 - 100 ft min. from primary well location
 - so as to minimize any basement seepage
- All dimensions are to be specified by design engineer.
- Trench locations may be field-adjusted based upon site conditions, with inspector's approval.
- Trenches must be located in undisturbed soil (not in fill).
- Trenches may not be combined or eliminated without MCDPS approval.



**MONTGOMERY COUNTY
DEPARTMENT OF
PERMITTING SERVICES
WATER RESOURCES SECTION**

**MICRO
INFILTRATION
TRENCH**

DATE:
August 2012

SCALE:
NONE