PROBLEM:

STORMWATER TREATMENT COMPONENTS THAT RELY ON INFILTRATION CAN CLOG WITH SEDIMENT, LEAVES AND DEBRIS.

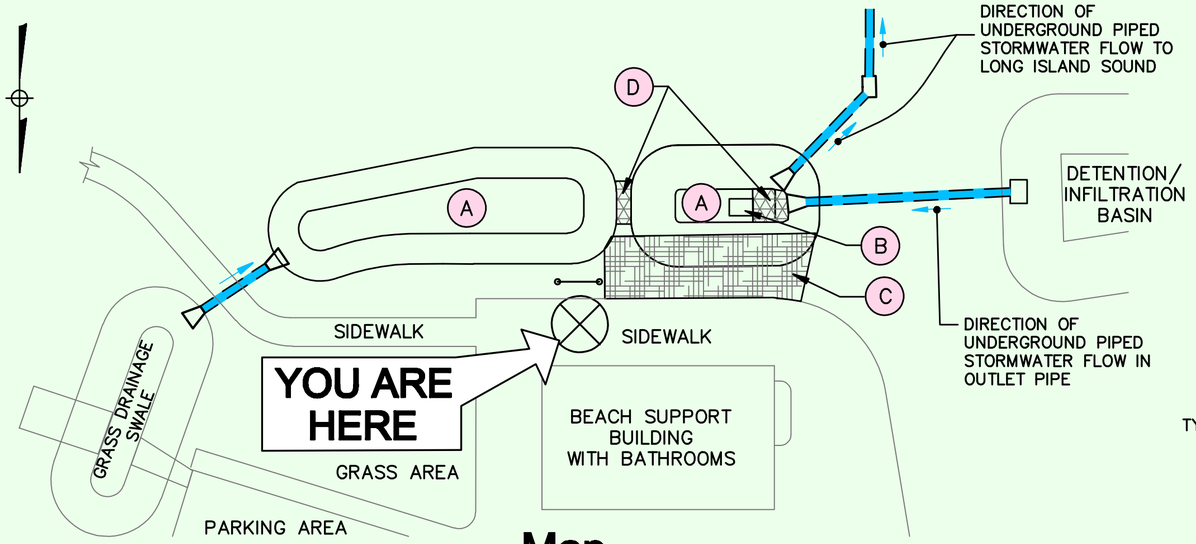
HOLE-IN-THE-WALL PARKING LOT

LONG ISLAND SOUND STORMWATER QUALITY IMPROVEMENTS

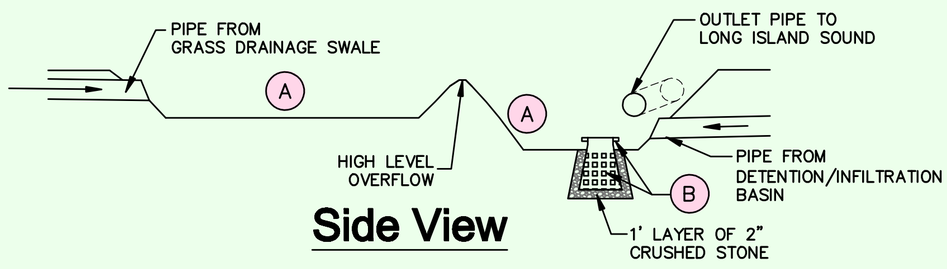
DETENTION / INFILTRATION BASIN, DRYWELL, LANDLOK®, PYRAMAT®

SOLUTION:

A TRASH RACK WAS DEVELOPED TO PREVENT FLOATING DEBRIS FROM CLOGGING A DRYWELL. THEREFORE INFILTRATION AND TREATMENT OF STORMWATER CAN FUNCTION PROPERLY.



Map
(Plan)



Side View

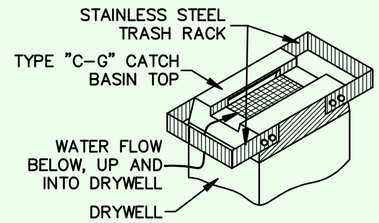
Interesting Facts

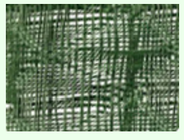
Water flows from the grass drainage swale into the first basin where it is detained and infiltrated. Pollutants are removed from the stormwater through bio-uptake of the grass, filtration by the underlying sand and settling action from the ponding. Stormwater then overflows into a drywell that has a capacity of 900 gallons and infiltrates the stormwater. The pond rises when the rate of infiltration is less than the rate of stormwater entering the drywell. As this basin fills, the overflow of stormwater is discharged into the Long Island Sound.

Soils for this demonstration and the entire parking lot are known to be glacial-gravel type soils which are excellent soil conditions for the infiltration of stormwater.

Stormwater Treatment Components

Item	Description
(A) DETENTION/ INFILTRATION BASIN	**DETENTION/INFILTRATION BASINS** are low-lying, typically grass-lined, stretches of land used for the storage of stormwater. Basins are designed to manage stormwater volume, filter contaminants and increase rainwater infiltration to reduce flooding and downstream erosion. For this demonstration man-made basins were designed and constructed using topsoil and grass.
(B) DRYWELL WITH TRASH RACK	**A DRYWELL** is a bottomless concrete chamber with openings on its sides. A drywell is designed to collect and store rainwater to reduce stormwater runoff. Rainwater enters from pipes at knockouts in the side or as in this demonstration from the top. Stone is incorporated at the outer sides and at the bottom of the drywell to dissipate water into the adjacent ground. For this demonstration a type "C-G" catch basin top with a trash rack was used for the top of the drywell and the storage capacity is 900 gallons. The trash rack consists of stainless steel fins that create a simple way to keep floating debris out of the drywell. As the water level rises, water can enter the drywell but floating debris cannot.
(C) LANDLOK® TURF REINFORCEMENT MAT	**LANDLOK® TURF REINFORCEMENT MAT (TRM)** consists of 100% polypropylene fiber woven material. This material is used for erosion protection and turf reinforcement where stormwater velocities exceed the stability of the soils and vegetation. Applications include detention basin banks, channels or swales, and steep slopes. Advantages: • High strength for loading and longevity • Material flexibility allows for fast seeding emergence and minimal soil loss • Helps prevent soil loss and root damage during storm events • UV resistant • Preferred alternative to concrete and riprap stone
(D) PYRAMAT® HIGH PERFORMANCE TURF REINFORCEMENT MAT	**PYRAMAT® HIGH PERFORMANCE TURF REINFORCEMENT MAT (HPTRM)** consists of 100% polypropylene fiber woven material. This material is similar to standard TRM's like Landlok® except has a higher tensile strength capable of reinforcement on aggressive slopes. This material is used for erosion protection and turf reinforcement where stormwater flows exceed the stability of the soils and vegetation. Applications include detention basin high level overflows, channels or swales and at extreme steep slopes.





Acknowledgements

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Educational Corner

Terms to study:
- Detention/Infiltration Basin
- Catch basin top
- Drywell
- Trash rack
- Bio-uptake
- Turf Reinforcement Mat (TRM)

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