

ECO DRAIN SYSTEM

Introduction:-

The EcoDrain Road project is centered around the concept of a pervious roads made possible by simple, regular chemistry concepts, infused with the physics of fluid properties. This project is inspired by the German concept of Stadtschwamm, in which the pavements and roads are made up of a special substance that allows rainwater to soak through it and diffuse into the soil below.

Problems with Regular roads:-

Charcoal/Tar road:-

- It does not allow water to diffuse through the surface, so it becomes runoff water.
- Develops cracks and potholes due to extreme temperatures.
- Produces lots of greenhouse gases

Plastic Road:-

- Still the problem of runoff water persists.
- Produces smoky, sulfurous smell during summer season
- Melting of plastic produces harmful and toxic gases.

Solutions of EcoDrain:-

- Allows water to seep into the soil to replenish the ground water table
- Does not create potholes due to use of $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$.
- The procedure of creation does not produce harmful gases.

Materials:-

Materials List			
Item	Quantity	Purpose	Substitutes
Plaster of Paris	1 cup	Base for porous cement	Cement (slower setting)
Fine Sand	1.5 cups	Adds structure, porosity	Aquarium sand
Baking Soda	1.5 tsp	Creates air pockets	None
Dish Soap	3 drops	Reduces surface tension	Liquid soap
Water	0.6 cups	Mixing liquid	Tap water
Kitchen Sponge	1 piece (cut to fit)	Water storage layer	Foam packing sheet
Aquarium Gravel	$\frac{1}{2}$ cup	Drainage base	Small pebbles
Plastic Container	1 (e.g., 10x7cm takeout container)	Mold + frame	Cardboard box + plastic line
Plastic Tubing	1 piece (5cm long)	Drain pipe	Cut straw
Hot Glue Gun	1	Waterproof sealing	Epoxy putty
Cooking Spray	As needed	Mold release	Vegetable oil

Procedure:-