We the team

CISGB

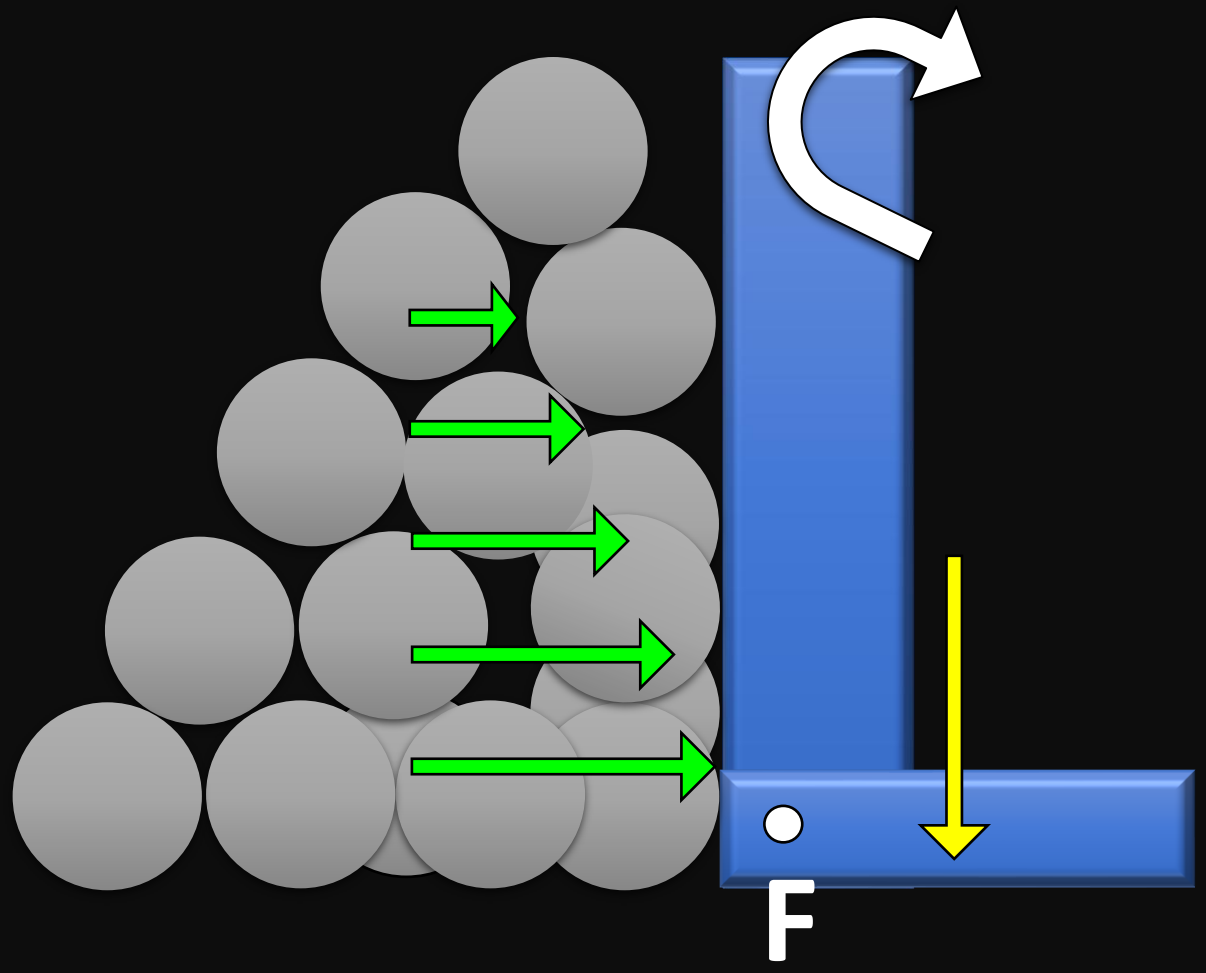
producing a solution to most critical problems in Hilly Areas -Landslides

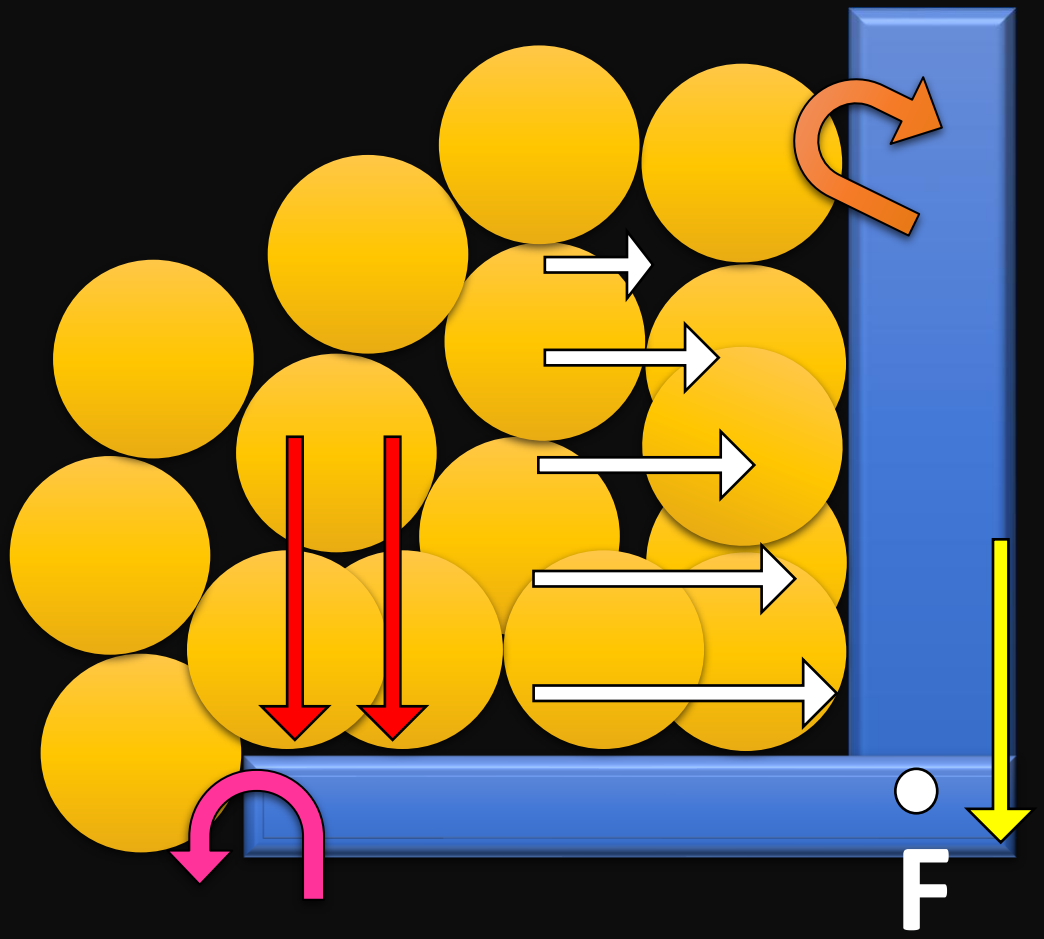
Why landslides Occur??

SIMPLY,

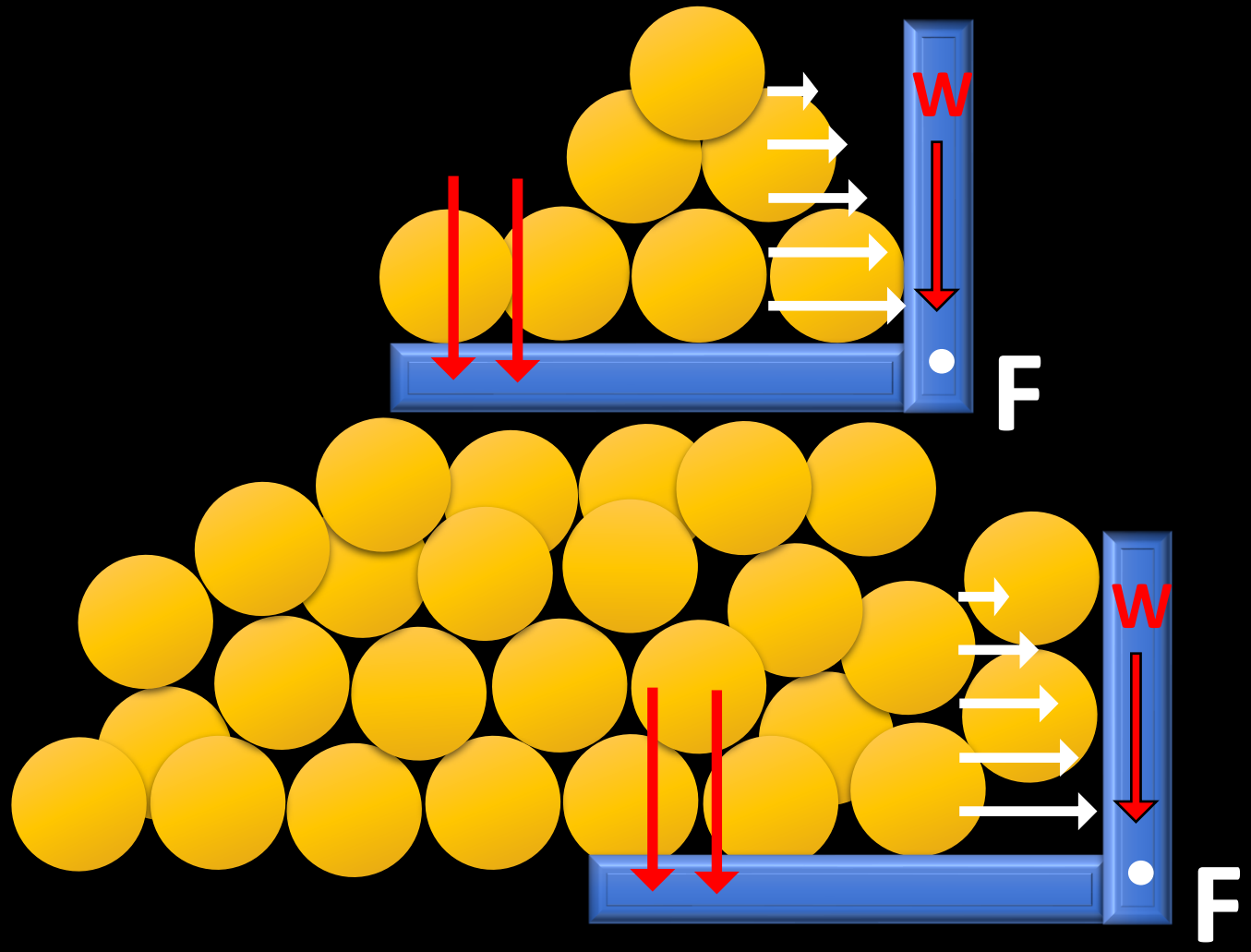
When a part of the soil mass slips away due to various reason it causes landslides.

A Forces Demonstration





How we can Reduce the Force?



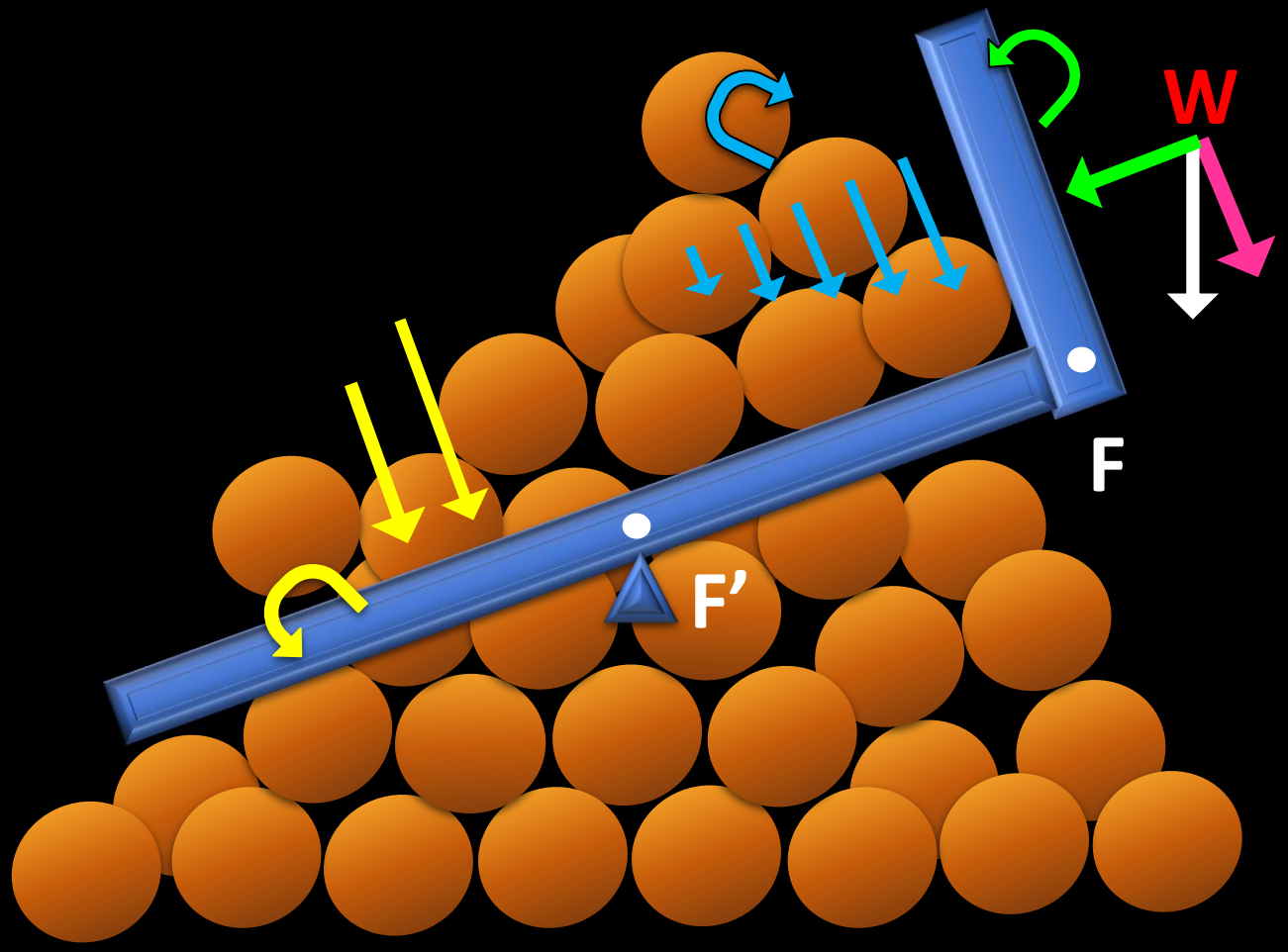
How We can reduce the Toppling Effect?

Its Simple answer by diving it into smaller subparts. So The pressure gets distributed.

But there is a problem,
Since We have risen the System Above Its own weight will act oppositely and would cause the whole System to skid down.

Then What could be the Solution??

Now what's the Difference between the previous one and this ?



There is a huge difference.

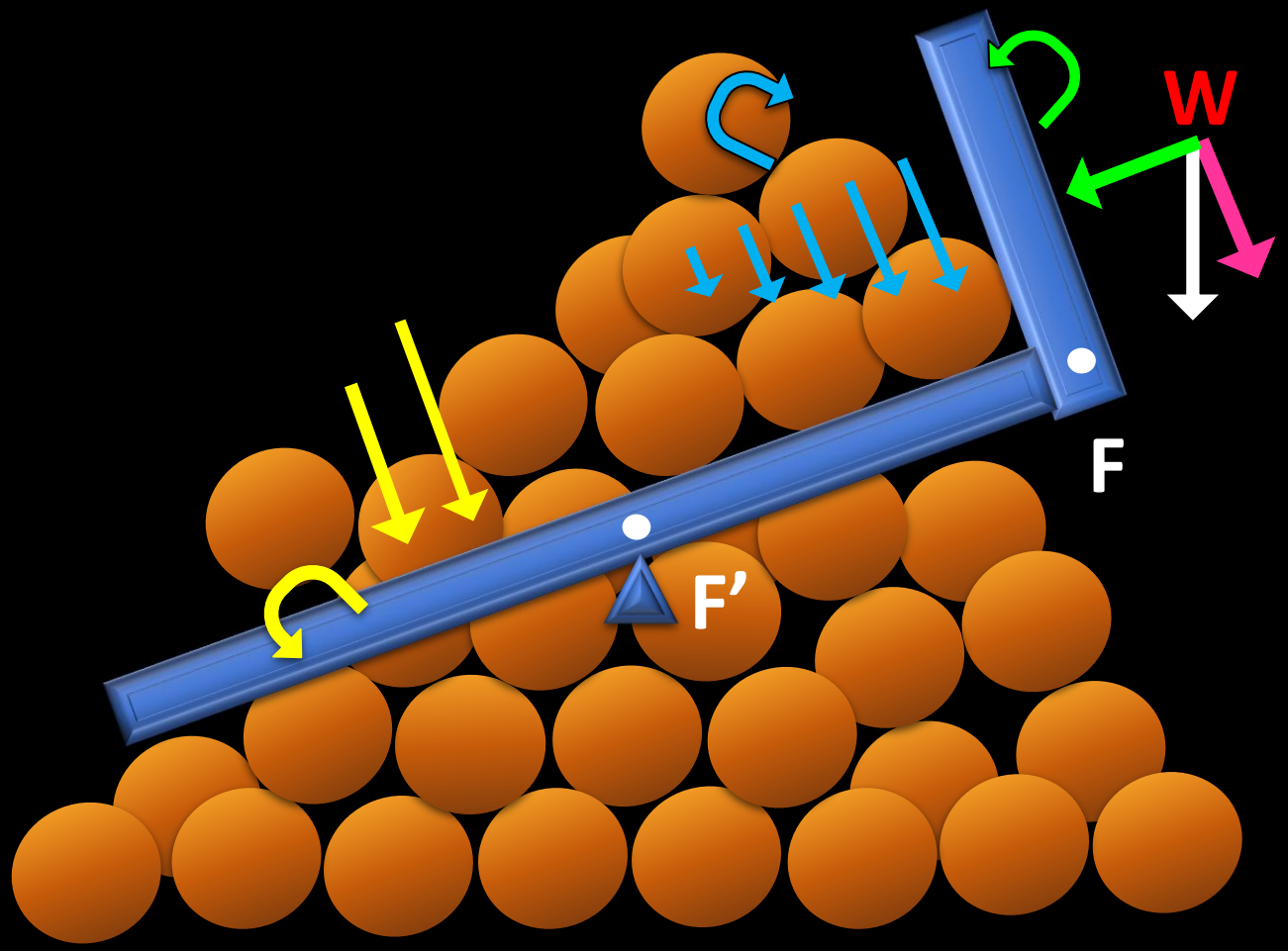
Its weight that was acting downward got divided into components and now only a part of the weight of the system causes the system to skid away in direction of slope.

So now is it a Perfect solution to the weight?
I feel the answer is NO.
What is the Problem that still exist??

The answer is till now the weight of the soil and the system that was preventing to topple is now actively acting in a direction parallel to the direction of the slope and thus the power of preventing the soil from skidding away drastically decreases

SOLUTION ??

Now what's the Difference between the previous one and this ?



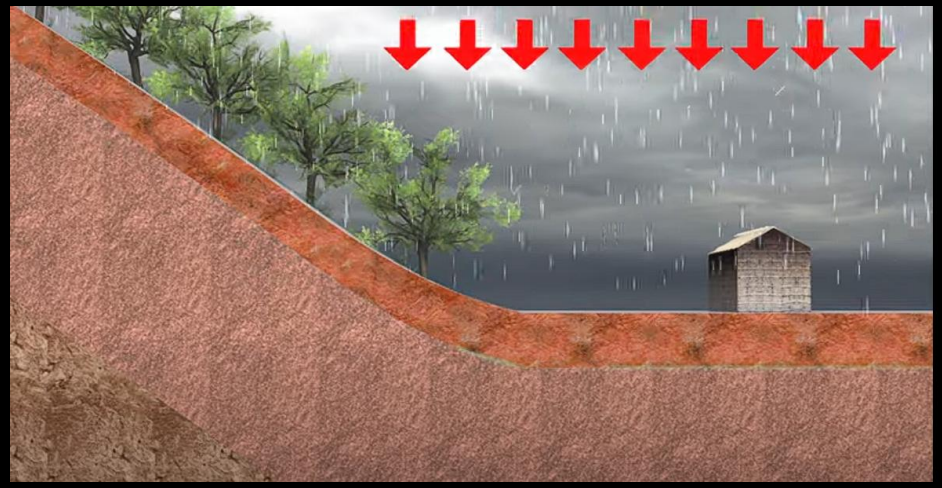
So, What this second Fixed point would do??

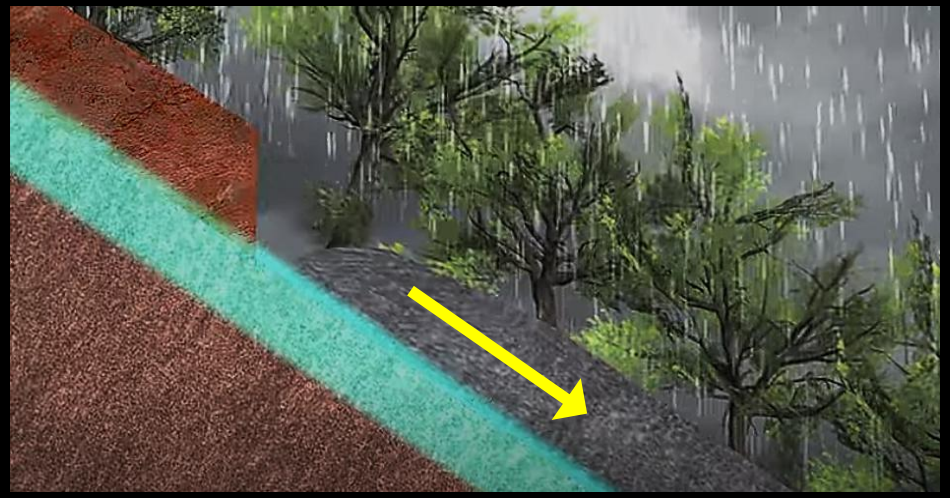
The weight of the soil after the fulcrum F' will create a moment in the opposite direction. And thus, would help prevention of the upper part of the soil from skidding down.

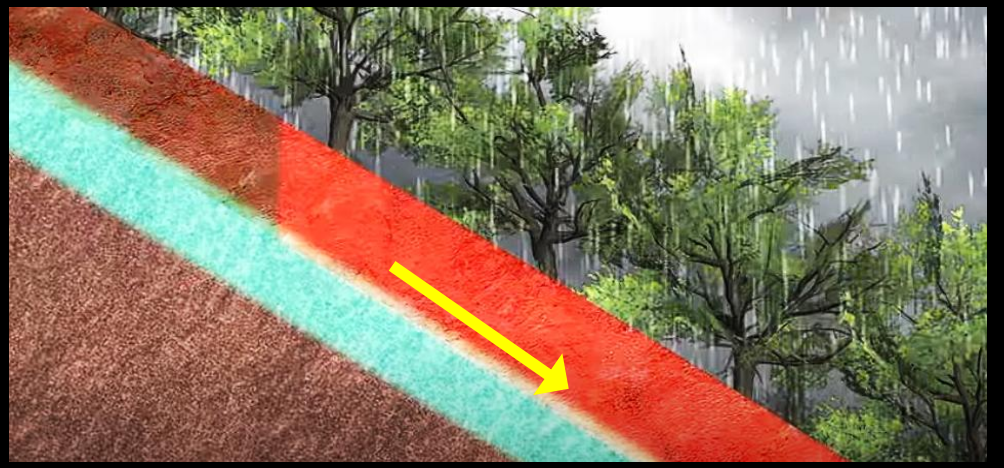
Hence now we have successfully made a flexible system that helps decreasing the landslides.

But is this the only cause of Landslides? – sadly No!!

Reason 1: Continuous huge amount of Rainfall





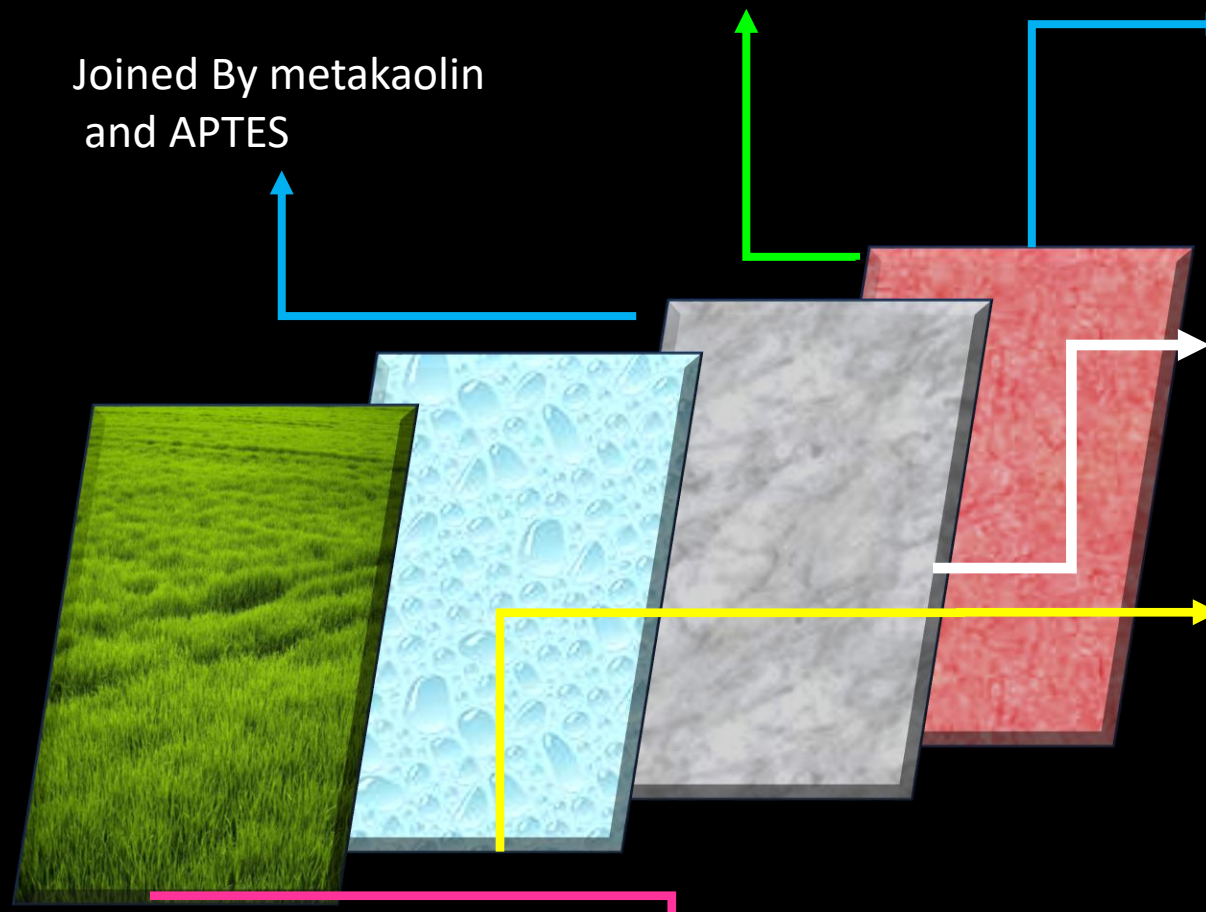


What is happening here?

So, during heavy rainfall a pore water pressure originates 2 to 3m inside the Upper level of slope.
Also, the barren slopes devoid of vegetation causes the water to seep down more easily and causes the upper part to move down and causes landslides.

We need to stop water seepage and reduce pressure exerted by heavy rainfall

Solution to Biggest problem - Rainfall A layered Mat



Joined By EPON 862, DETA, ZrW_2O_8

Neoprene with Microcellular Foaming and CNT
(for Sock absorption)

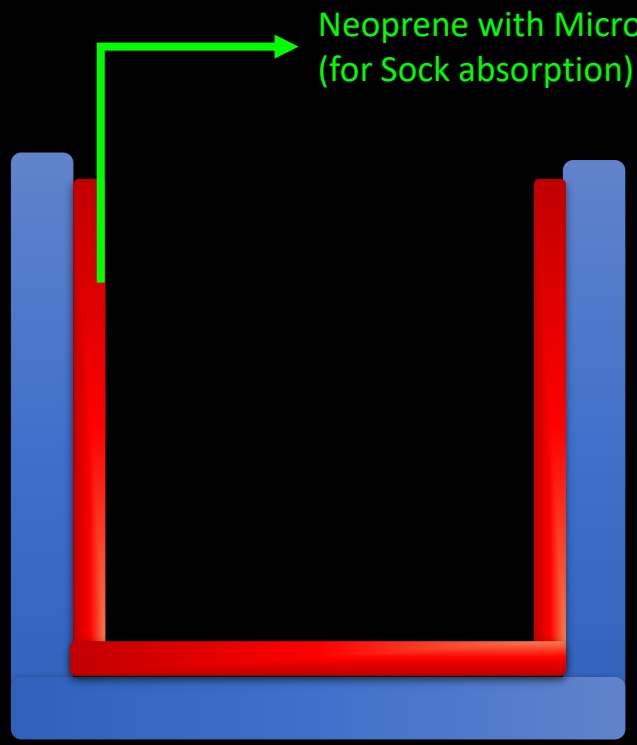
Joined By metakaolin and APTES

70% $CaCO_3$ and 30% PVA
(Impermeable to water)

Made up of PDMS-silica
Coated with TiO_2 + PFOTS
(Lotus leaf mimic Repels Water)

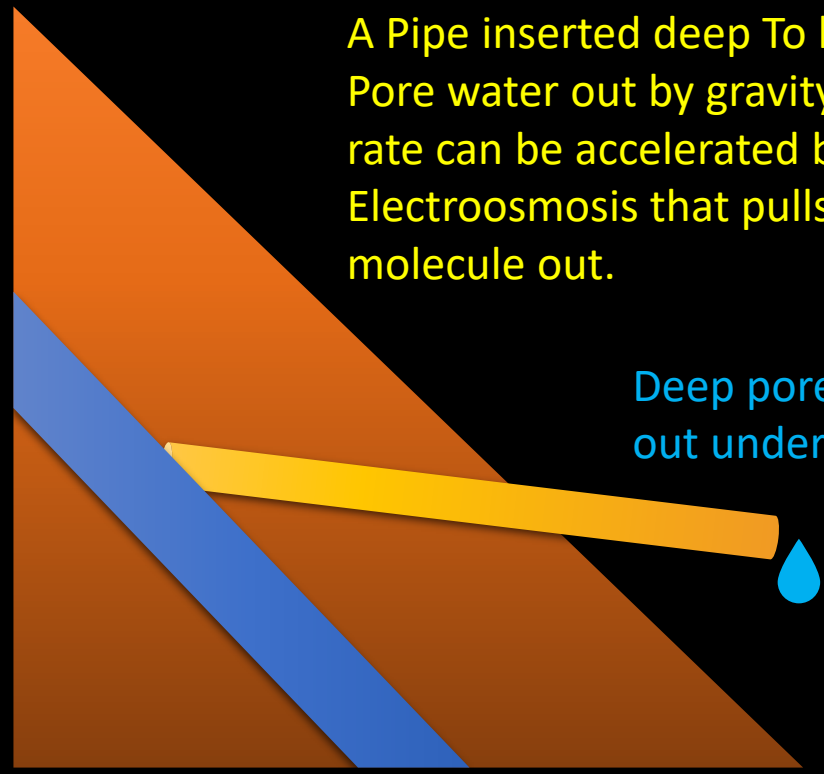
A top crust is having 7cm deep pockets
To allow small root plantation
(Plantation reduces water Pressure.)

For protection against small Seismic Waves. Reason -2



Metal blocks Coated with thick Synthesized Neoprene For Seismic waves absorption.

For protection against Deep pore water Pressure Reason - 3



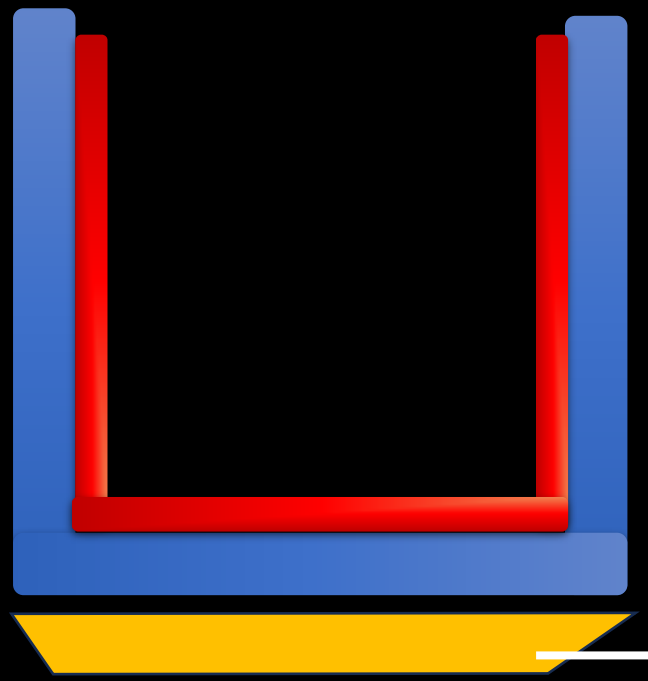
A Pipe inserted deep To bring Pore water out by gravity. The rate can be accelerated by Electroosmosis that pulls water molecule out.

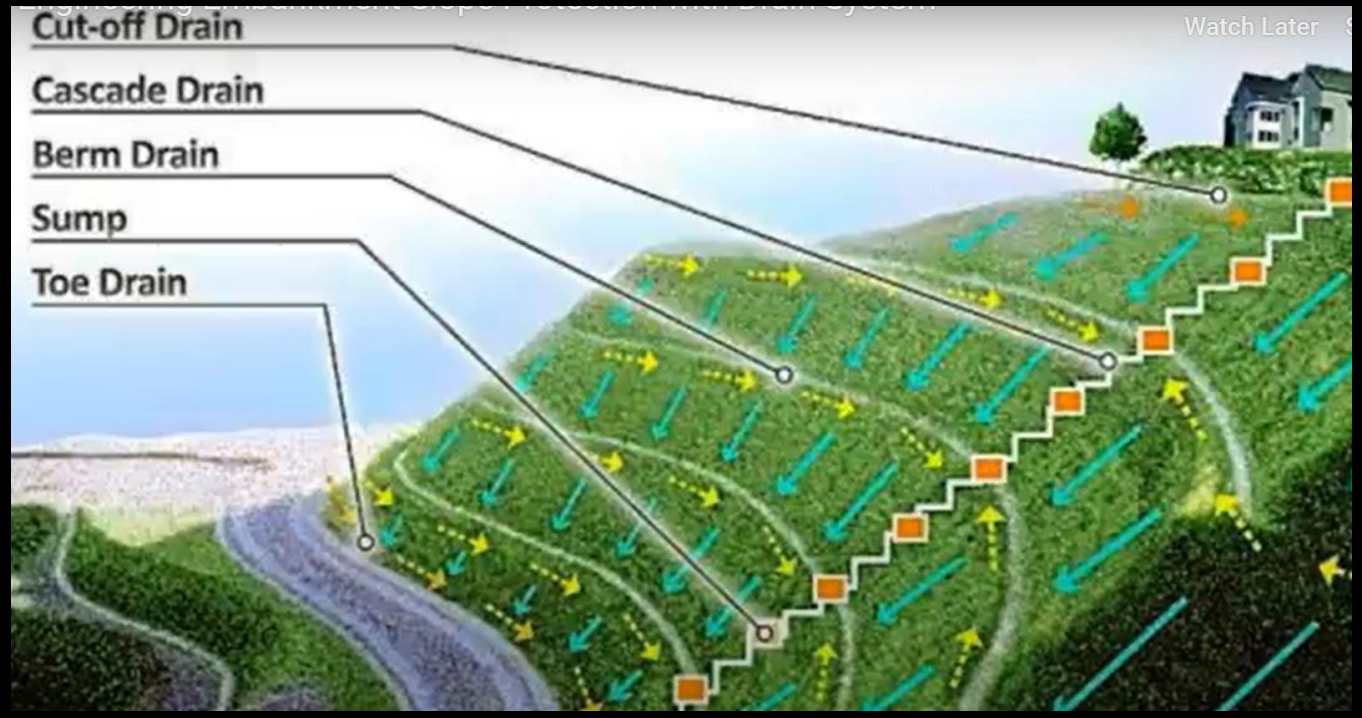
Deep pore water comes out under gravity.

Thus, water pressure reduces

By Reducing Toe Pressure – Reason 4 & Alert Signal

By this pipelines We will catch water at each level
thus reducing the water pressure at toe of the Slope





Each metal Block will have small 1m pipe With Mechanical Auto cleaning Shaft that rotates on water weight. To clean the pipe.

HDPE pipelines

By Introducing sensors like soil moisture, Piezometers, and Inclinometers. And by using satellite Images we can also give early risk signals