



GUYANA GEOLOGY AND MINES COMMISSION

SPECIAL PROJECTS UNIT

PRESENTATION FOR MINING WEEK 2015

MINING ROADS

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INTRODUCTION

SPU

ROADS



BUILDINGS



OTHER
STRUCTURES

BRIDGES

AIRSTRIPS

IMPORTANCE OF ROADS



**Machineries &
Equipment**

Road

Gold

VEINS and **ARTERIES** of the **MINING INDUSTRY**

FACTORS TO CONSIDER WHEN DESIGNING A PAVEMENT (ROADWAY)

TRAFFIC

- Traffic Loads
- Design Period
- ESALs

SUB-GRADE

- The quality of the Sub-Grade influences the thickness of the pavement design

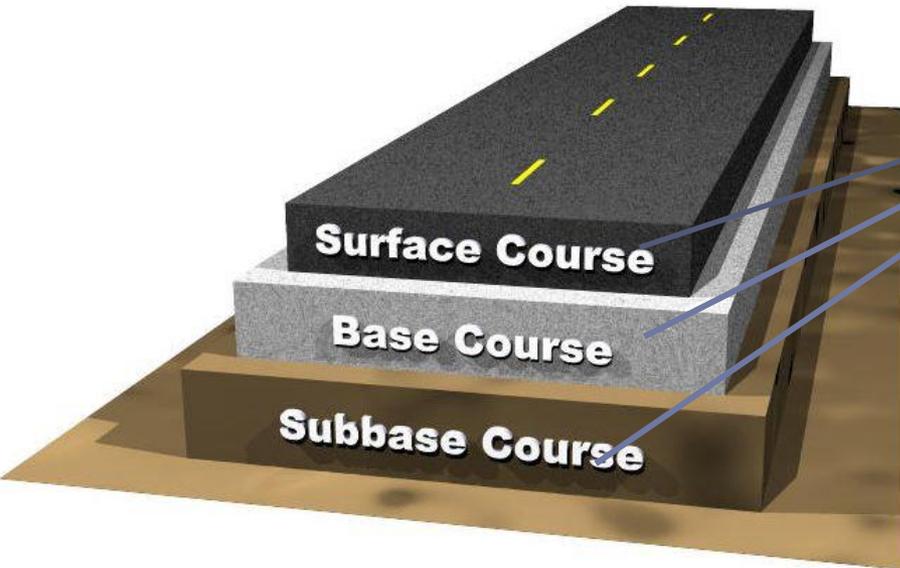
CLIMATIC CONDITION

- Wet condition significantly lower the bearing capacity of the soil and its ability of withstand traffic

MATERIALS AVAILABLE

- The materials available are important to determine the most adequate pavement both technically and economically

TYPICAL PAVEMENT CROSS SECTION



LATERITE ?

**REDUCES
CONSTRUCTION
COST
\$\$\$\$**

Strength

Abundance

Location

CHALLENGES FACED

Traffic Overload

- Destroys the different layers of the pavement due to fatigue
- Causes water to enter the pavement and reduce the bearing capacity

Use of Saturated Road

- Damages the roadway due to low bearing capacity of the pavement when saturated
- Destroys critical weak sections of the roadway and make impassable

Quality Control

- Basic mechanical properties of materials are often assumed due to the unavailability of a materials lab and in-field testing equipment.
- Site inspector presence throughout the construction phase is required

Unscrupulous use of roadway

- Reports were made of truckers deliberately destroying the roadway to avoid smaller vehicles from traversing which will ultimately reduce the competitiveness in the transportation business

Availability of suitable construction materials

- Locating Laterite with high gravel content is sometimes challenging which usually result in high transportation cost or use of a thicker layer of lower quality laterite

Poor sub-grade material

- Poor subgrade basically significantly shorten lifespan of the road and lower load carrying capacity.

PROPOSED SOLUTIONES

Traffic Overload

- Implementation of a weight limit for each class of vehicles

Use of Saturated Road

- Traffic Control during rainy season

Quality Control

- Establishment of a Soils Lab and purchase of the necessary equipment.
- Onsite inspector throughout the construction phase of the project

Unscrupulous use of roadway

- Routine monitoring of roadway.
- Take action against offenders

Availability of suitable construction materials

- Use of a geo synthetic material to increase bearing capacity i.e. Geo web or geo grid

Poor sub-grade material

- Use of a geo synthetic material to increase bearing capacity i.e. Geo web or geo grid.

DURING RAINY SEASONS



Significant economic Losses



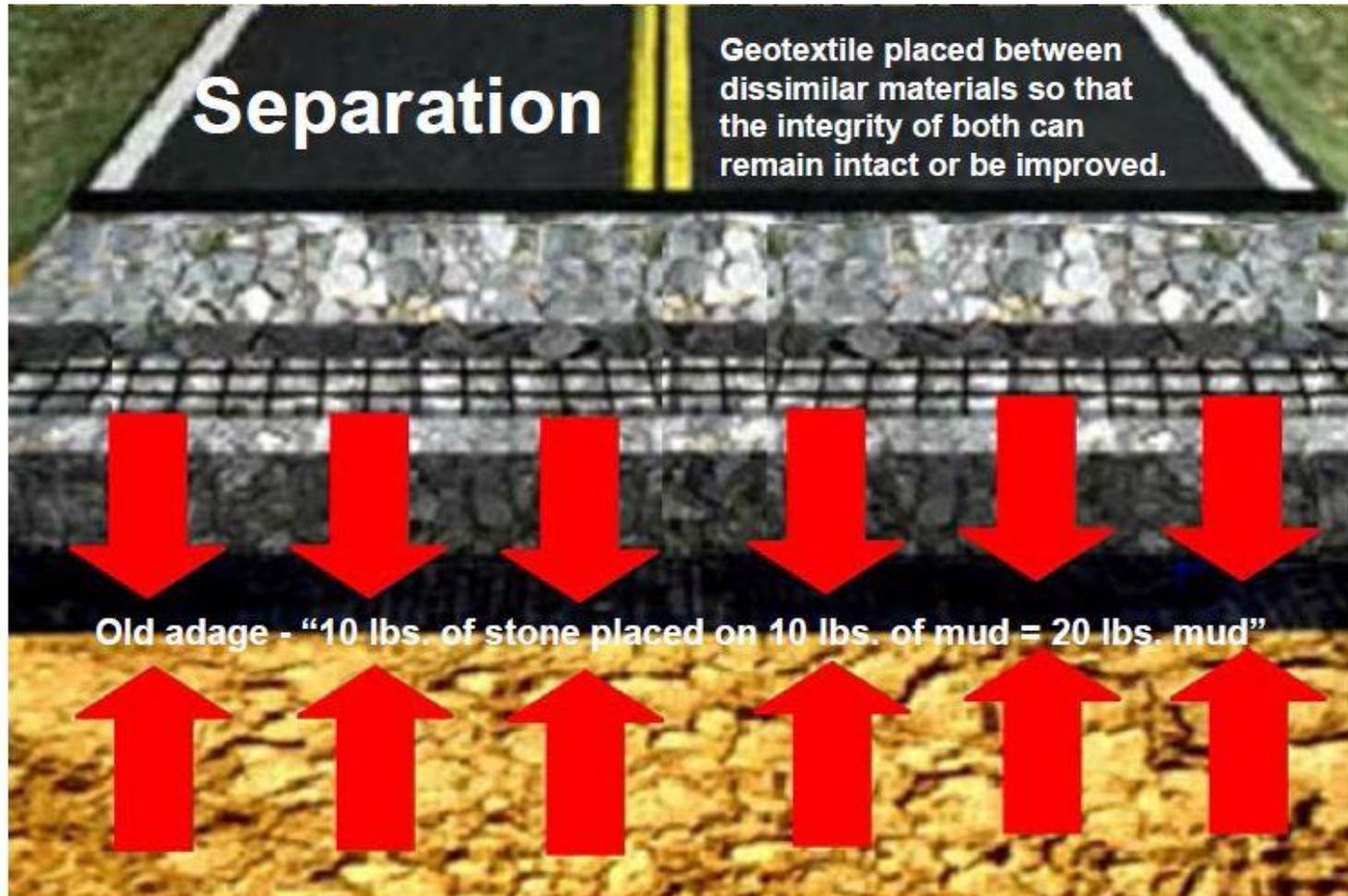
Affects all road users

GEO SYNTHETICS

Roadway Stabilization & Reinforcement



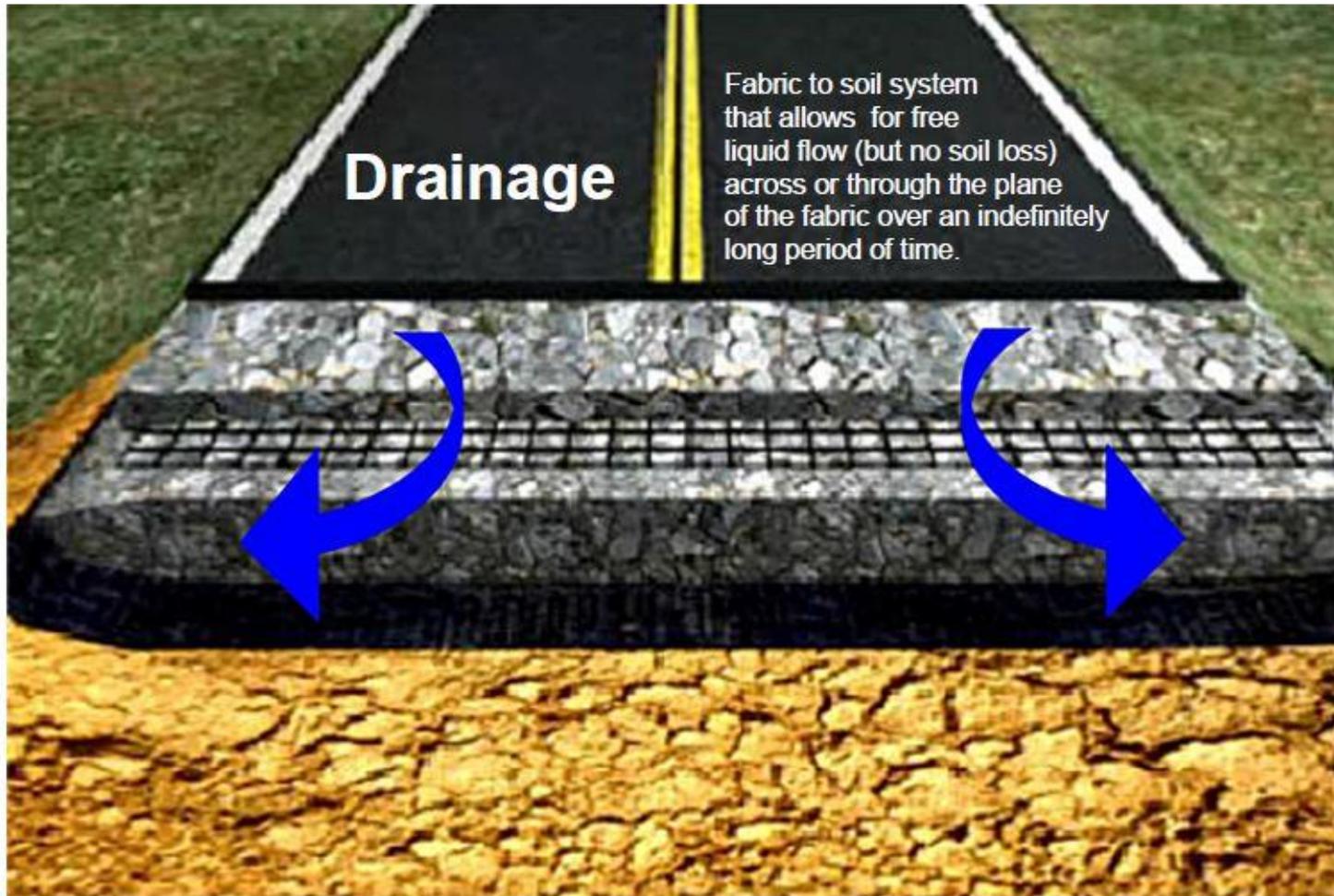
GEO SYNTHETICS



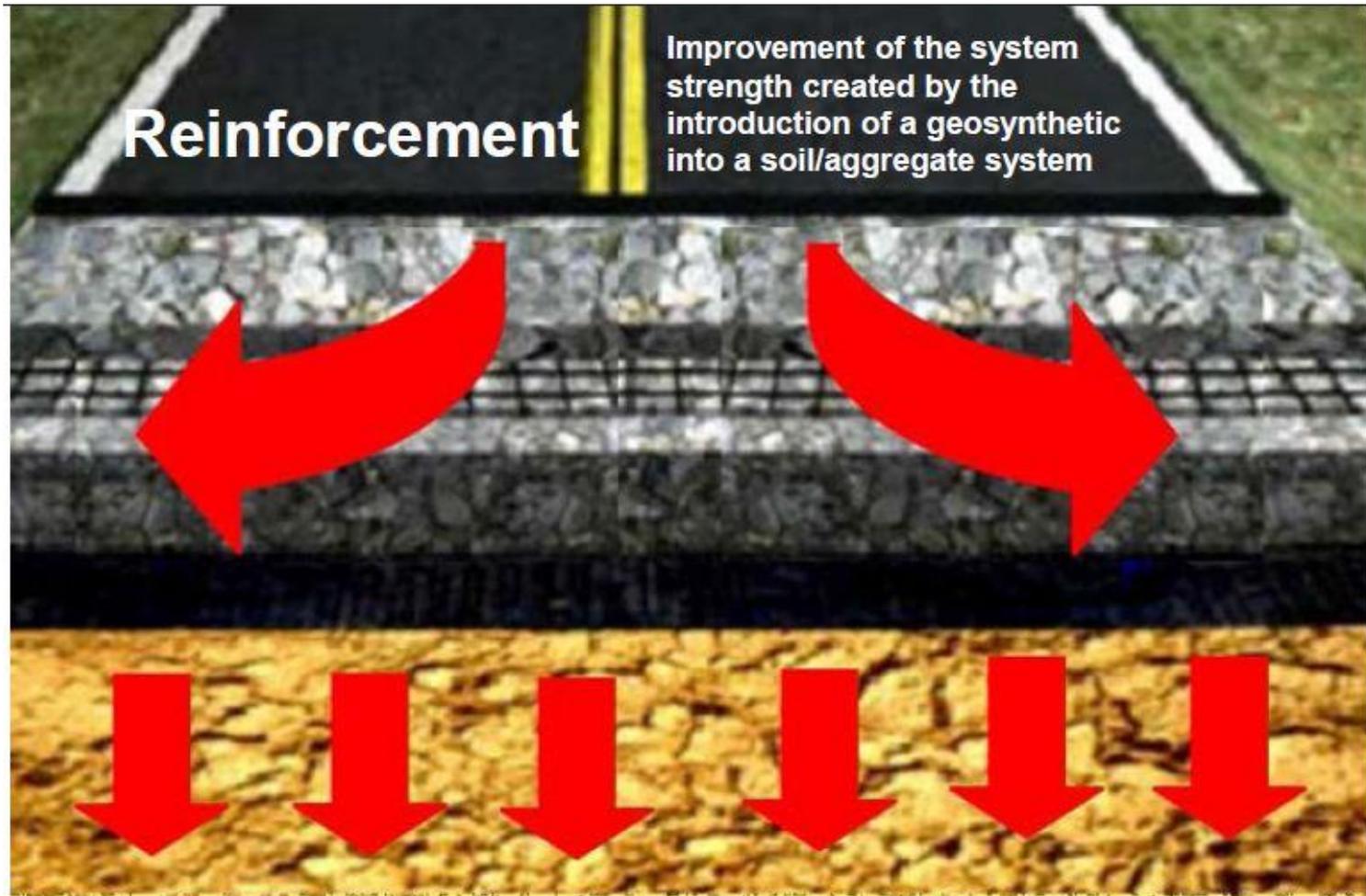
GEO SYNTHETICS



GEO SYNTHETICS



GEO SYNTHETICS

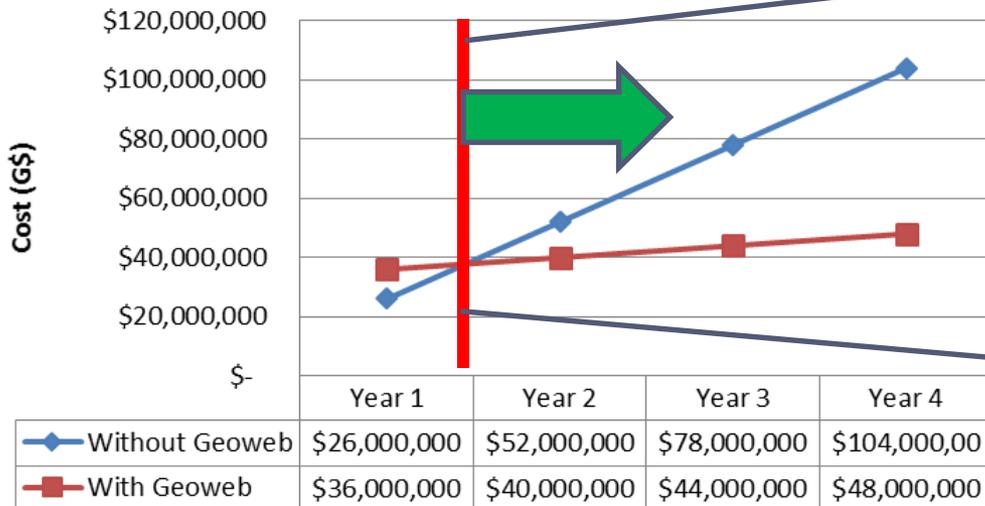


GEO SYNTHETICS COST BENEFIT ANALYSIS FOR 1 KM OF BAD ROAD

Approx. Cost for Construction & Maintenance of 1km of BAD ROAD over a 4 year period

	Without Geoweb	With Geoweb		
	Total	Geoweb	Other Cost	Total
Const. Cost- year 1	\$ 26,000,000	\$ 10,000,000	\$ 26,000,000	\$ 36,000,000
Mainten. - year 2	\$ 26,000,000			\$ 4,000,000
Mainten. - year 3	\$ 26,000,000			\$ 4,000,000
Mainten. - year 4	\$ 26,000,000			\$ 4,000,000
TOTAL AFTER 4 YEARS	\$ 104,000,000			\$ 48,000,000
SAVINGS	\$			56,000,000

Cost comparason per km (\$/km)



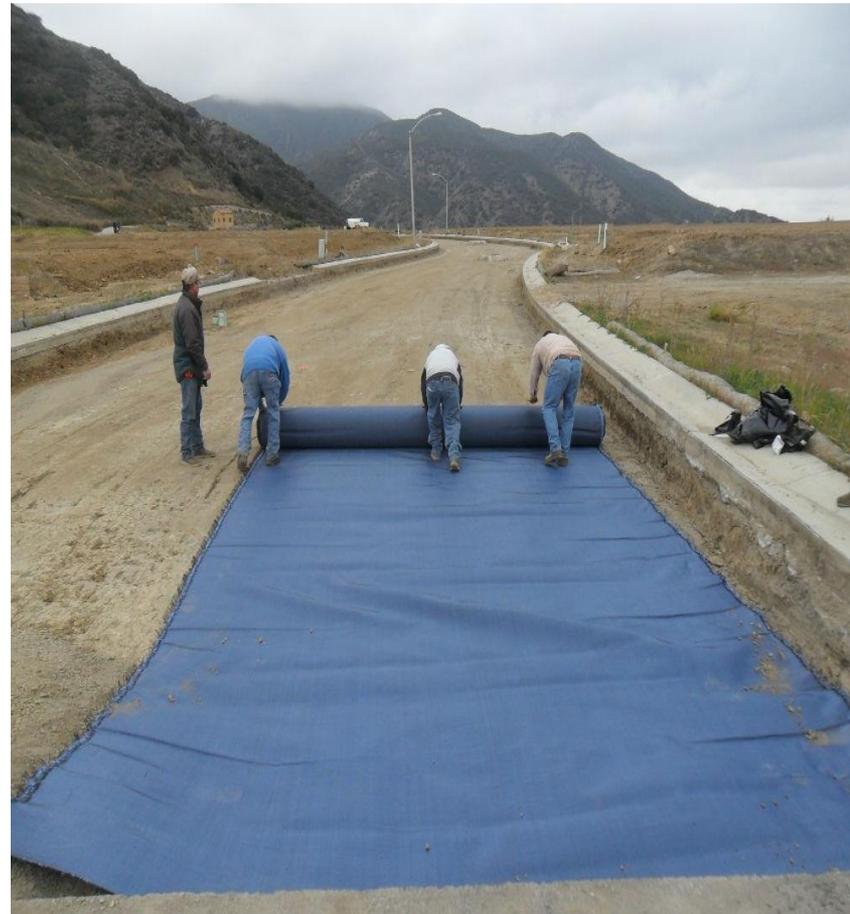
ECONOMIC BENEFITS

SERVICEABILITY BENEFITS

POTENTIAL NEW PROJECTS

Incorporate geo synthetics on known bad spots on the Puruni Road

Incorporate geo synthetics on known bad spots on Brian Sucre Junction to Mahdia Road





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YOU!

