

RECYCLED ROADS: PLASTIC PAVEMENTS BASED ON G5 BINDER IN CALIFORNIA, UNITED STATES

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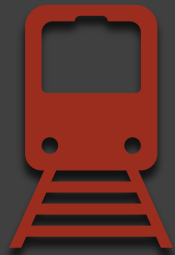
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INTRODUCTION



PROBLEM

Deterioration, inefficiency and lack of durability in road infrastructure



CHALLENGE

Restoration and improvements in urban infrastructure

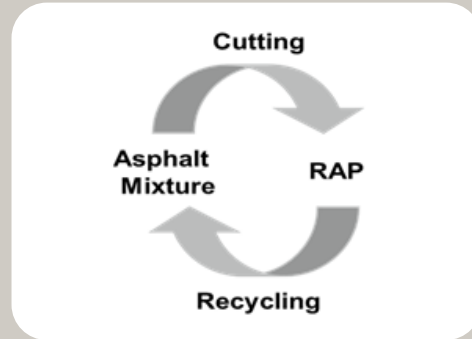


SOLUTION

Use of plastic pavements based on G5 binder to construct recycled roads



MAP OF THE PRESENTATION



ROADS CONDITIONS

- Current conditions of the roads

RECYCLED PAVEMENTS

- Evolution from traditional pavements to recycled pavements

TECHNISOIL G5 (100% RAP)

- Definition and basic aspects
- Behavior and main properties

IMPLEMENTATION AND PERFORMANCE

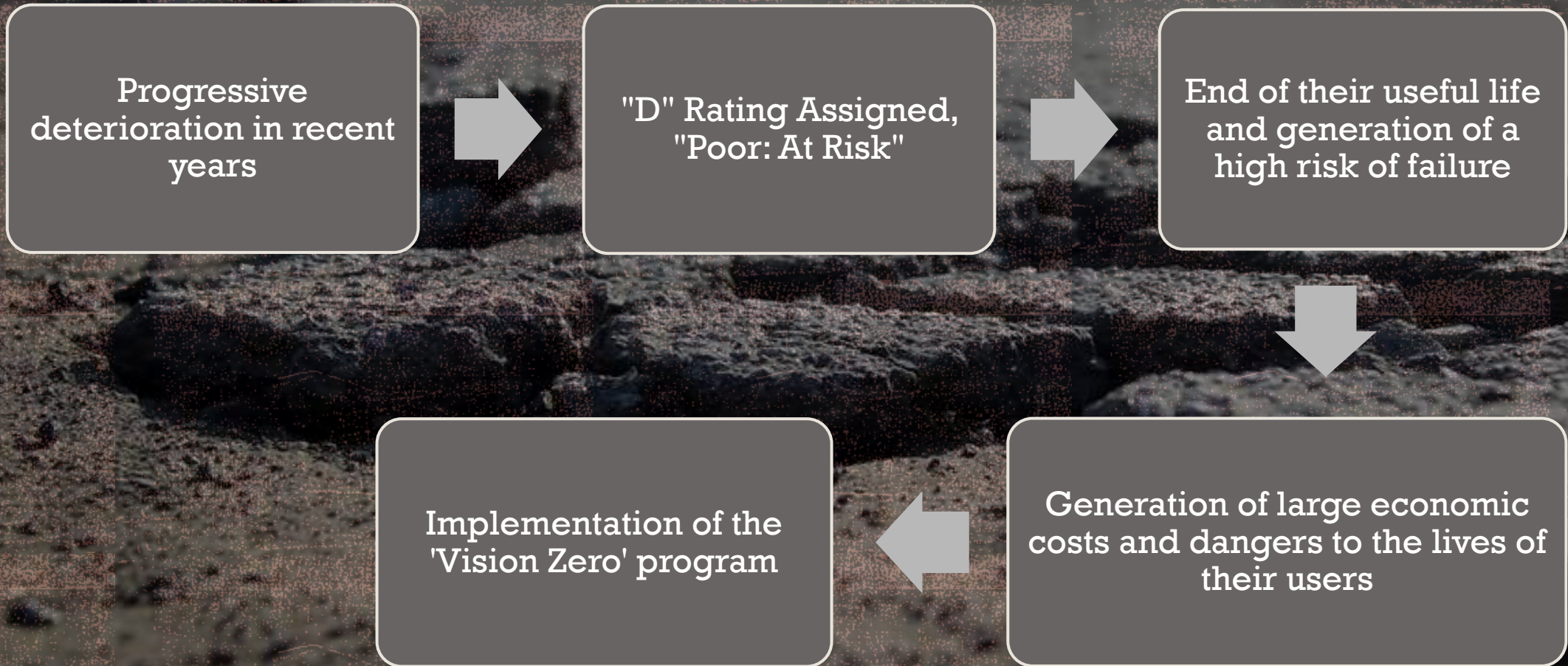
- Impact on the environment through its implementation
- Favorable aspects of its use





ROADS CONDITIONS

ROADS CONDITIONS





RECYCLED PAVEMENTS



RECYCLED PAVEMENTS

Solution addressed to solve the problem of deterioration, inefficiency and lack of durability of road infrastructure

Control and maintenance of pavements from their execution

Total reconstruction of roads with new materials



RECYCLED PAVEMENTS

As of 2014, the use of pavements made with new materials and other recycled materials has been implemented.

Recycled
Asphaltic
Pavements
(RAP)



Binder
TechniSoil
G5



RECYCLED
PAVEMENTS





TECHNISOIL G5 (100% RAP)

TECHNISOIL G5 (100% RAP)

TechniSoil G5:

- Bio-based asphalt mix binder
 - RAP/ground/base components
- Network of polymers which are insoluble in water

100% stabilized RAP:

- Old ground asphalt with a percentage of TechniSoil G5
 - Centrifugation and evaporation of plastic bottles



TESTS OF 100% STABILIZED RAP



Dynamic modulus: measures the overall quality of the mix.



Permanent deformation: indicates volume decrease, density increase and shear deformation under certain conditions.



Fatigue cracking: shows the ability of the mix to withstand repeated loads without cracking.



Thermal cracking: shows the behavior of the pavement against low temperatures.





IMPLEMENTATION AND PERFORMANCE

A circular inset on the left side of the slide shows a yellow recycling symbol (three chasing arrows) on a dark asphalt surface. The symbol is made of a material that appears to be recycled asphalt, with some small purple and red particles visible within the yellow material. The asphalt background is dark and textured.

IMPLEMENTATION

- 90% reduction of greenhouse gas emissions
- Zero impact on water, air and soil
- Zero consumption of new materials and resources due to the reuse of existing asphalt
- Total energy reduction



PERFORMANCE

The recycled pavements:

- Last 2 to 3 times longer than traditional asphalt.
- Have 5 times the tensile strength of ordinary asphalt with higher flexural properties.
- Have zero fluidity.
- Resist compression in a similar way to concrete.
- Eliminate the formation of potholes.
- Provide extremely high resistance to flex cracking.
- Offer at least 50% life cycle savings to taxpayers.

CONCLUSION

The use of this type of recycled asphalt is highly beneficial for the development of road infrastructure.

Greater contribution in environmental terms

Greater efficiency than traditional asphalts

Civil engineers are those who have the knowledge and skills to make innovative changes possible, favoring future generations and contributing to the development of a better world



REFERENCES

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A close-up, top-down view of a gravel road. The road is composed of dark, irregularly shaped stones and pebbles. A bright yellow dashed line runs vertically down the center of the road, marking a lane. The text "THANKS FOR LISTENING TO US!" is overlaid in the center of the image in a bold, white, sans-serif font.

**THANKS FOR
LISTENING TO US!**