



Knowing the Typical Pathologies of Bridges - the Brazilian Experience

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Summary

In 1997, the government of Brazil implemented a program of privatizations and concessions of highways.

Each concession is responsible for the maintenance of the existing bridges in the stretches of granted highways.

This work presents a synthesis of the inspections carried through in about 1.200 (one thousand and, two hundred) bridges with the intention of registering their evidenced anomalies graphically and photographically.

The registration of the anomalies in bridges has another basic purpose: - to guide the projects of new bridges, becoming them more durable and significantly reducing the so scarce costs of maintenance in our country

Keywords: Bridges, pathology, inspection

1. Introduction

1.1 Brazilian Outlook and Highways Dealers

- About 1.7000.000 km of highways
 - Federal: 70.000 km;
 - State: 207.000 km;
 - Municipal: 1.400.000 km;
- Only 150.000 km paved (9 %) > Obs.: [Argentina: 26 % and México: 21 %];
- Brazil→17 km paved highway / 1000 km² of territory;
- EUA→373 km paved highway / 1000 km² of territory;

2. Knowing the typical Pathologies in Brazilian Bridges

All structures should have the follow performance requirements conditions:

- ▶Structural Performance (stability, structural safety);
- ▶Functional Performance (comfort to customer, functionality);
- ▶Durability Performance (all the structures must be durable, during their service life period)

We would understand the pathologies of concrete structures as waiting performance requirements loss.

- 2.1. Fissures / Crushes / Cracks
- 2.2. Deformation / Deflection
- 2.3. Rupture in structural elements
- 2.4. Vehicle Impacts
- 2.5. Superficial Drainage Defects
- 2.6 Pavement
- 2.7 Joint Expansions
- 2.8 Insufficient width sidewalk
- 2.9 Problematic deck drain system
- 2.10 Pot Bearing
- 2.11 Pathologies in bridge's infrastructure
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Fig 1–Detail of foundation of a bridge (pile footing and piles exposed)

- 2.12 Inexistence of cellular deck drain

3. Discussion and Conclusions

The importance of the bridges pathologies application:

- Projects Improvement
- Procedures Implementations to increase new projects durability

4. References

- [1] ET-C21-002., “Controle das Condições Estruturais, Funcionais e de Durabilidade das Obras de Arte Especiais”, *Artesp*, São Paulo -1999