

THE RURAL ROAD GRAVEL ASSESSMENT PROGRAMME (RRGAP) SOME INITIAL FINDINGS

*November 2004,
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WHAT IS RRGAP ?

**A scientifically valid programme
of data collection and analysis**

AIMED AT

**Defining limits to the appropriate use
of unsealed gravel surfacing for rural
roads in Vietnam**



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RRGAP STRUCTURE

- Module 1: Programme

- Module 2: Training

- Module 3: Data Collection

- Module 4: Data Analysis



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MODULE 3

Collect scientifically valid information on a representative selection of unsealed roads from a range of Vietnam environments

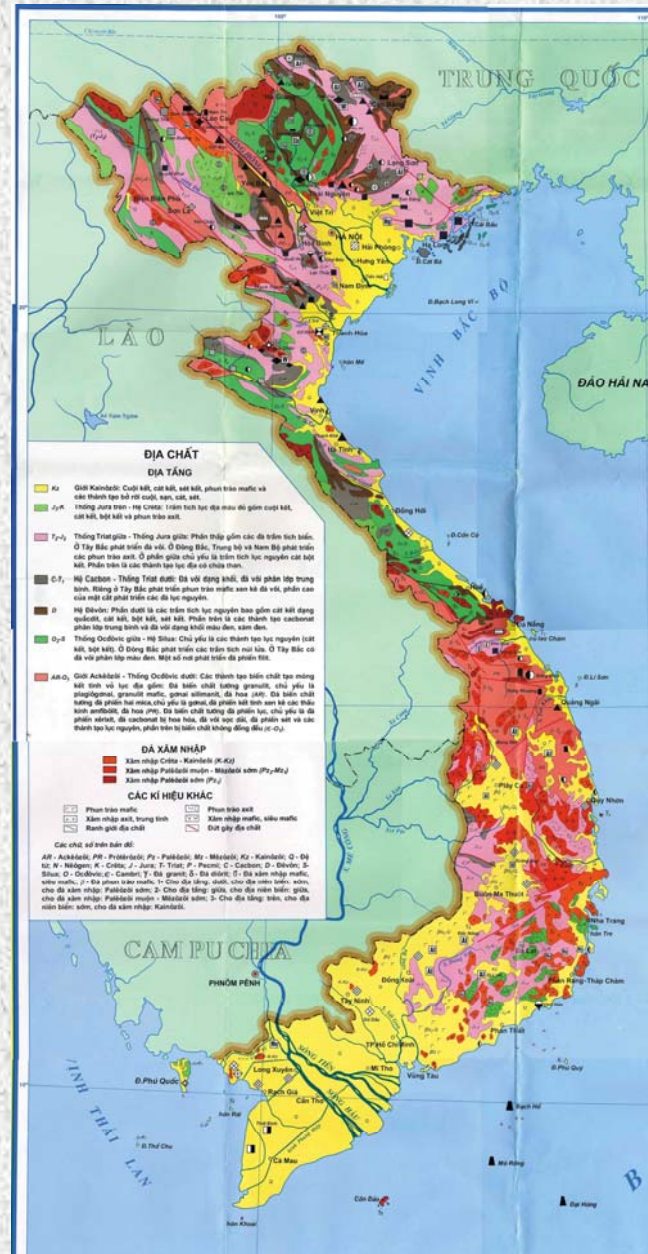
- **Road environment**
- **Material condition**
- **Surface condition**



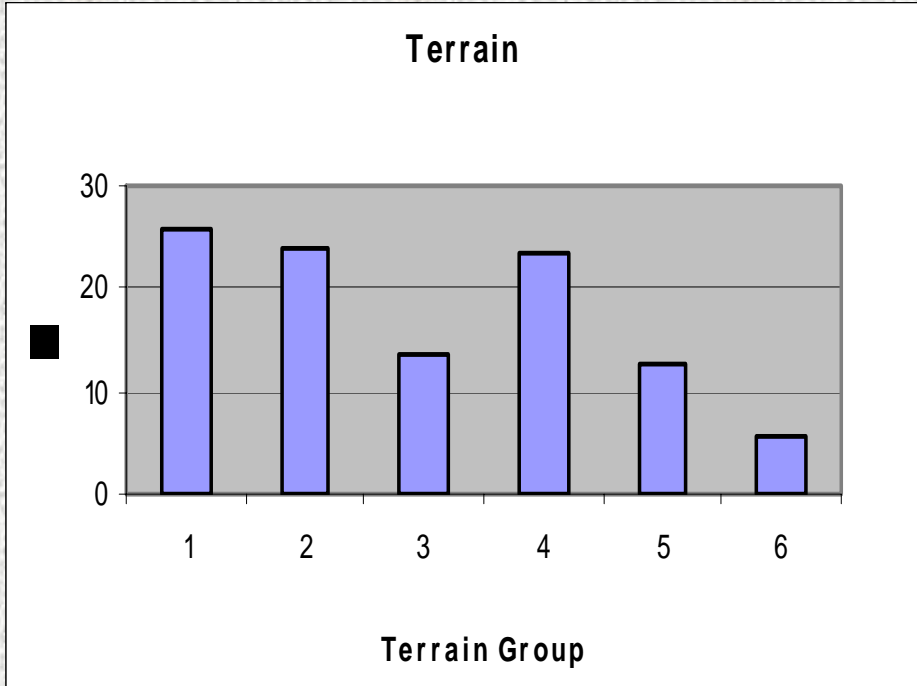
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Geology/Materials Representative Selection of 16 Provinces



ROAD INFORMATION

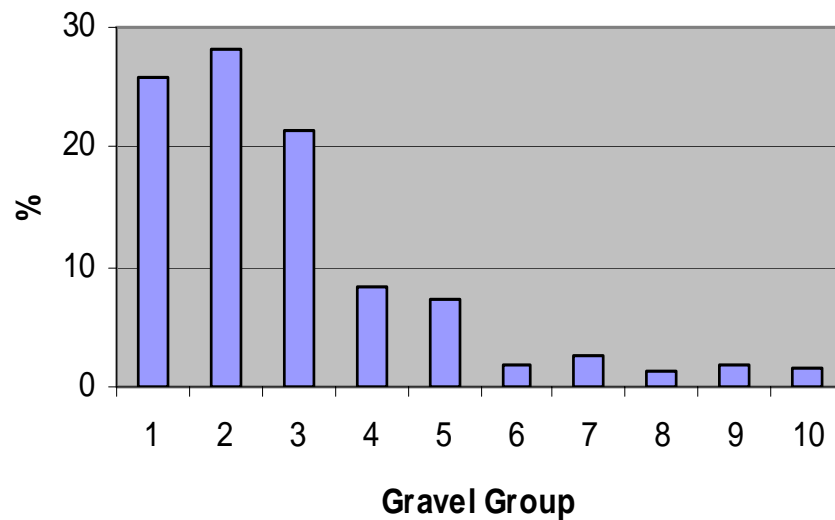


1	Coastal delta
2	Flat inland
3	Rolling hills
4	Hilly
5	Intermountain plain
6	Mountains

270 Roads; 750 Sections

ROAD INFORMATION

Gravel Types



1	Laterite gravel
2	Hill gravel
3	Graded crushed rock
4	Non-graded crushed rock
5	Alluvial gravel
6	Gravel + clay
7	Weathered rock
8	Hand packed stone
9	Quarry waste
#	Other

Materials sampled



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Rainfall: Representative selection



Early Trends

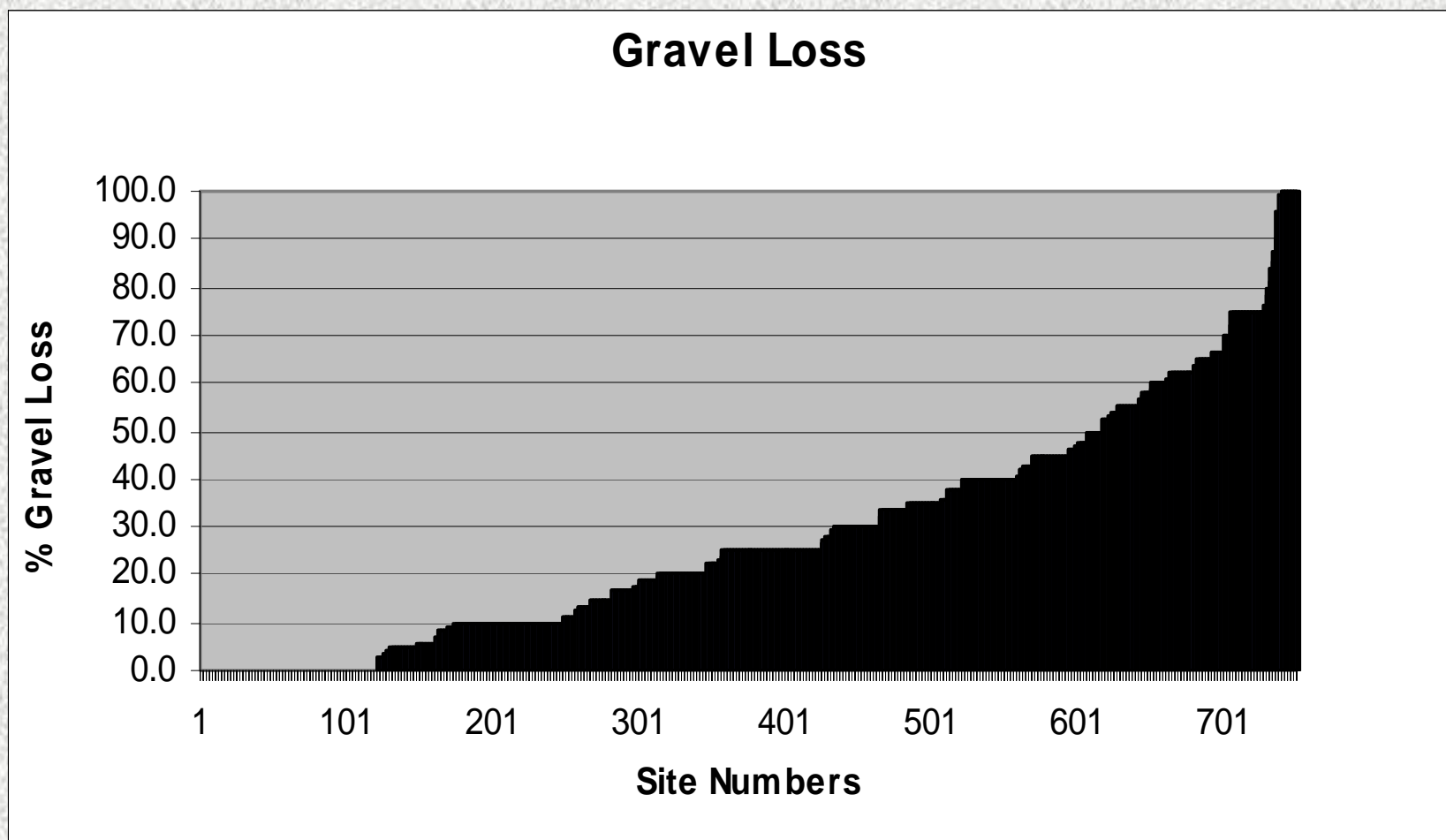
The following slides are based on an initial and preliminary look at raw data – some adjustments to the detail may be expected.



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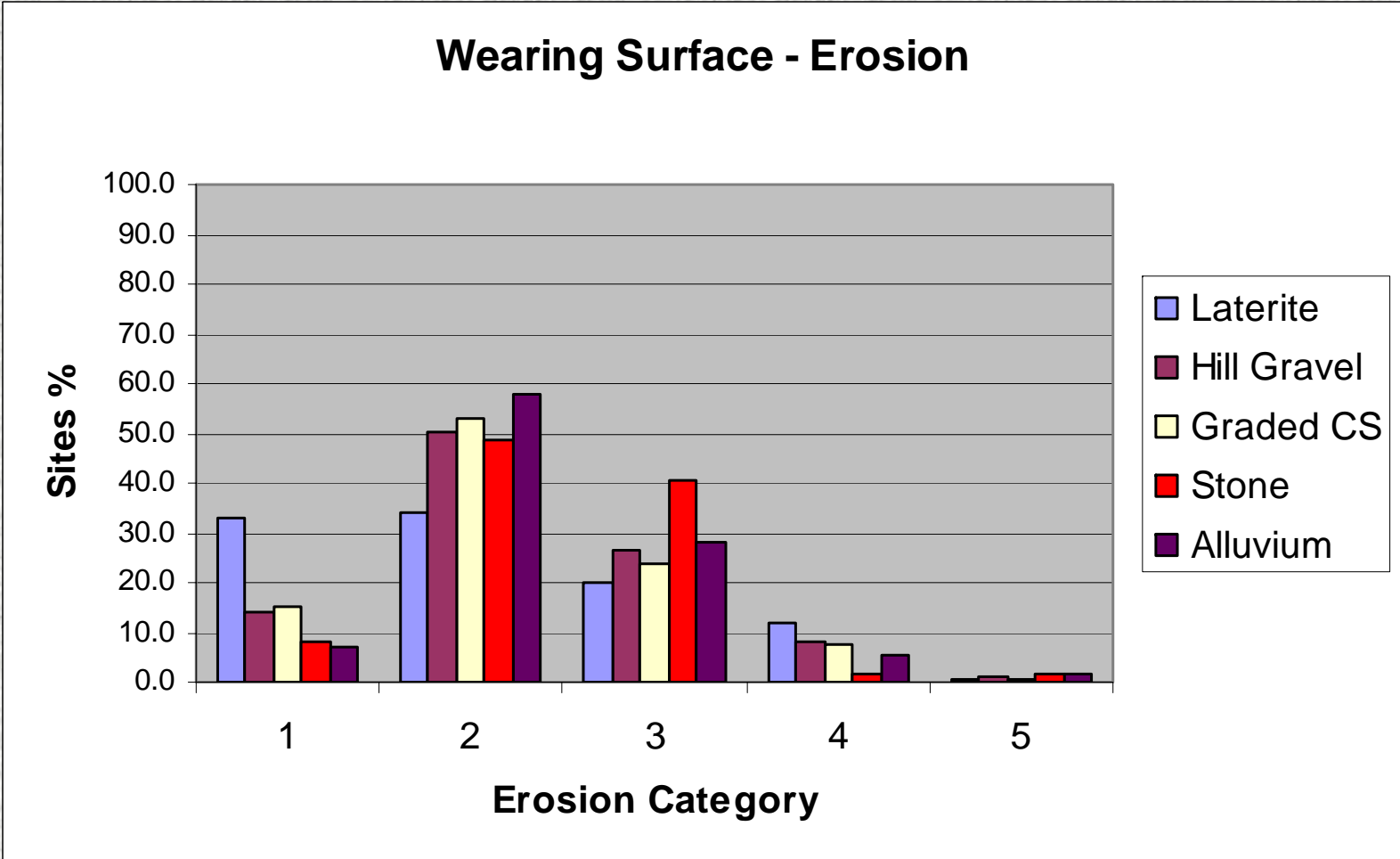
Early Trends



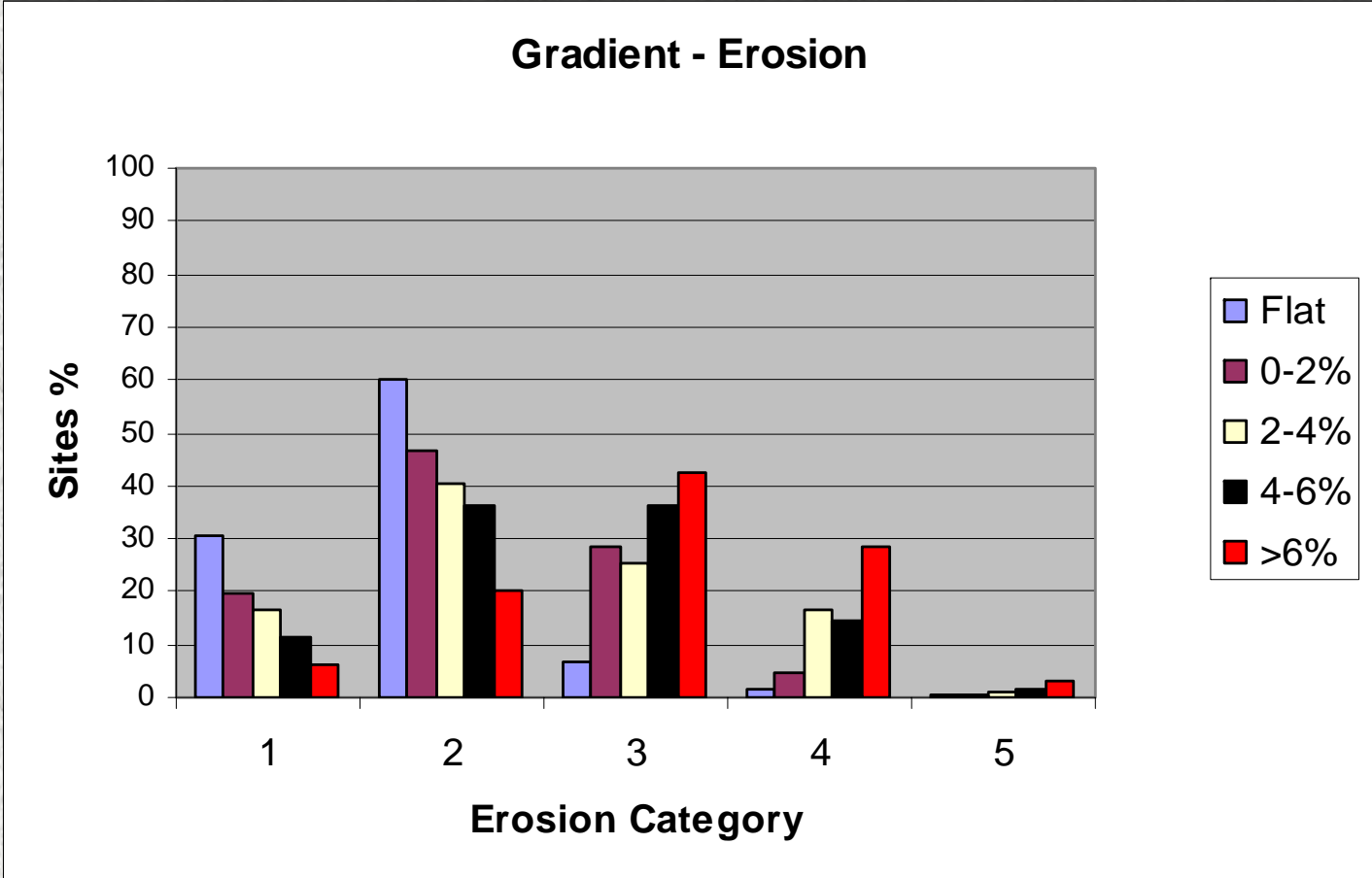
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Early Trends



Early Trends





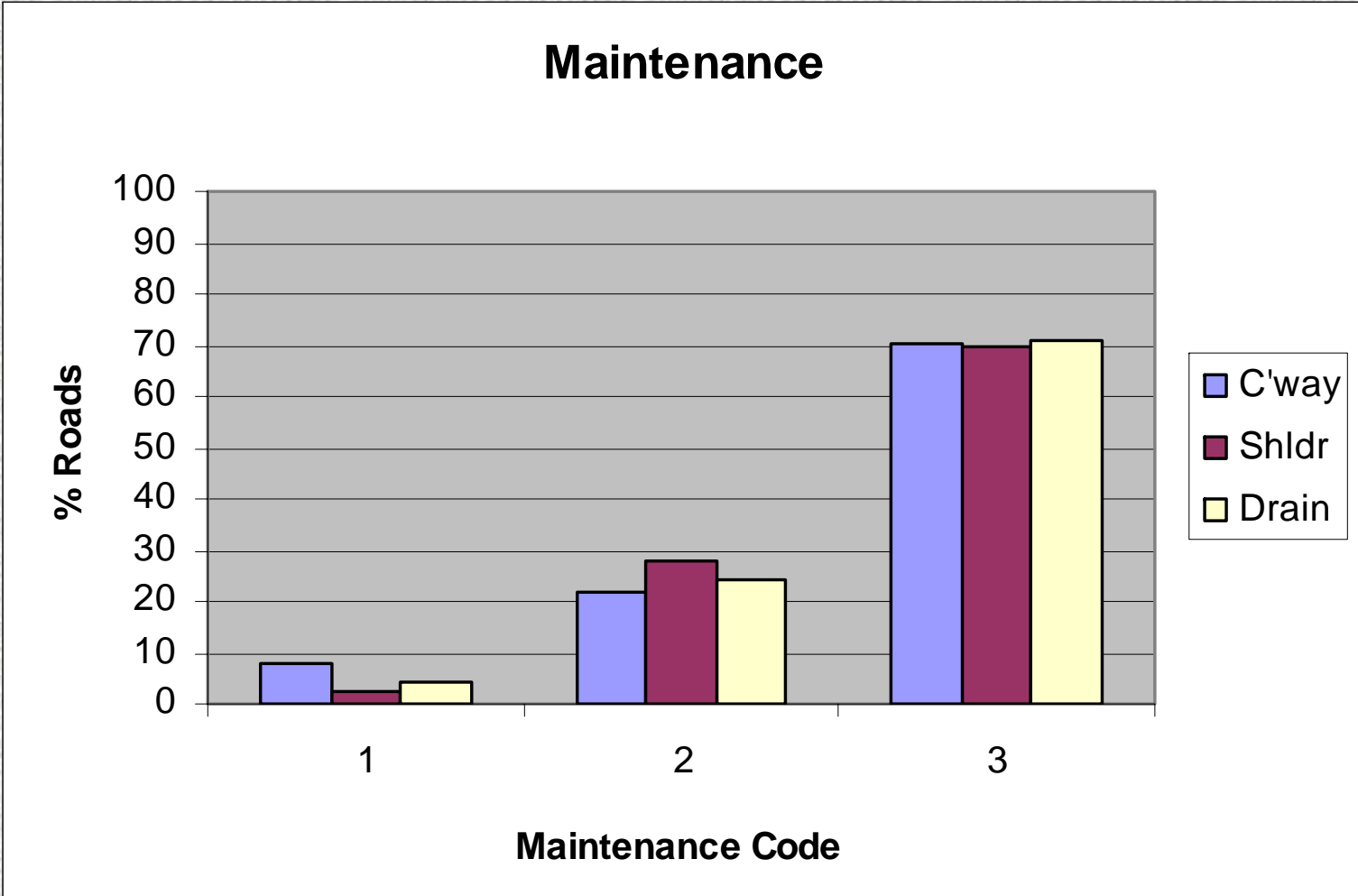
Level 3 erosion



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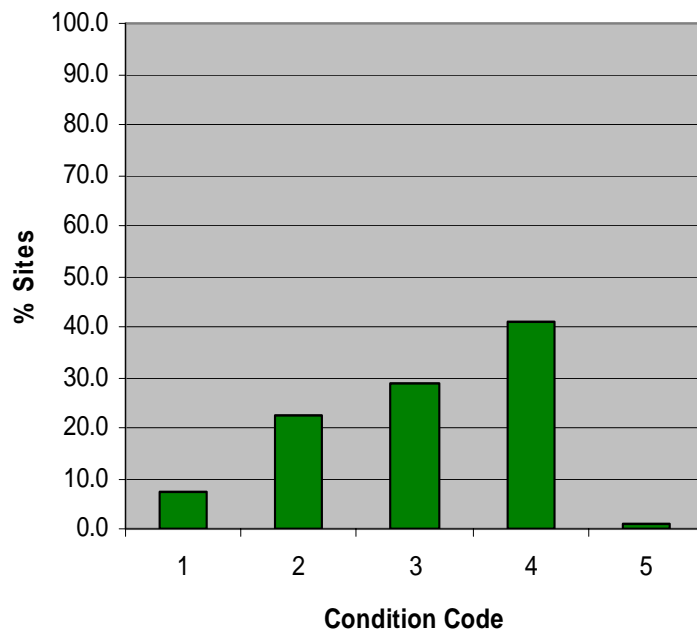


Early Trends

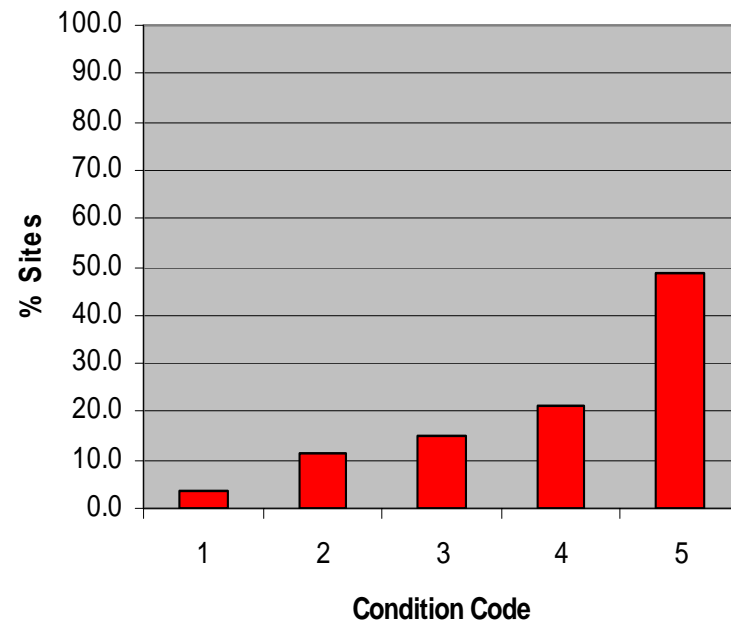


Early Trends

Drain Condition



Drain Effectiveness



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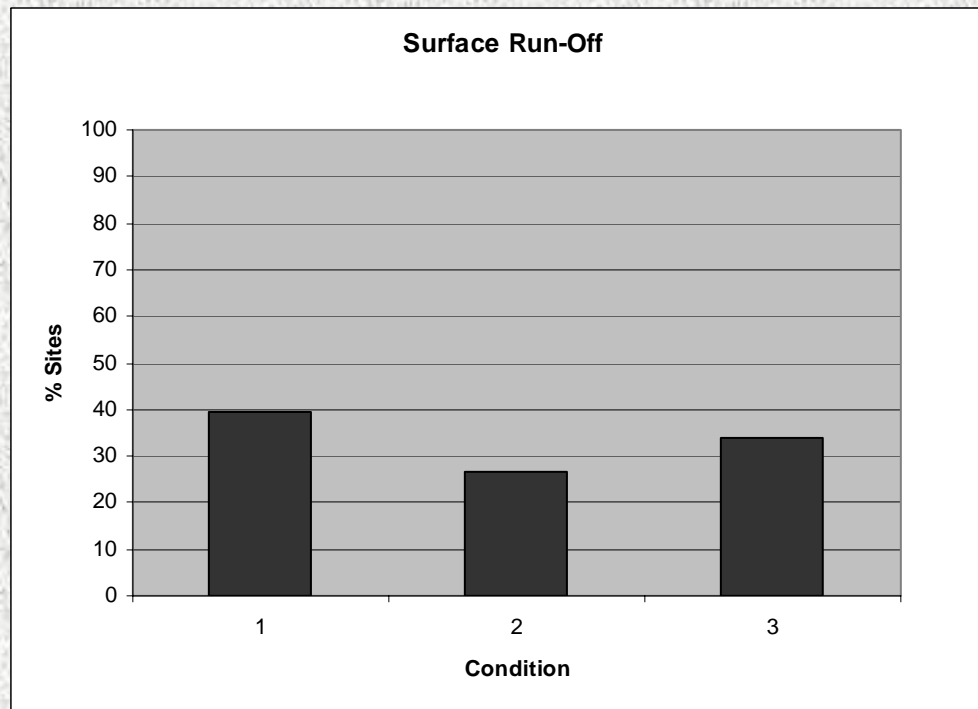
Ineffective drainage



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Early Trends



1: Not Impeded

2: Impeded by road shape

3: Impeded by shoulder

End Result: >80% of required side drainage is not happening.



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Issues

Road Design: -Driven by Road Environment **NOT** by Off-the-Shelf Standard Specifications

- Available Materials
- Terrain
- Climate/Hydrology
- Traffic levels
- Construction Regime
- Maintenance Regime
- Whole Life Costs



Wide variety of
road
environments





Inappropriate design and construction on steep grade

Issues

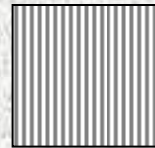
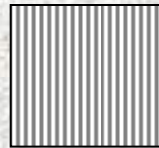
Staged Construction

BRC



Chip+Sand seals

Stone Macadam



De facto current situation, eg

High rainfall provinces Hue & Da Nang

Is a gravel wearing course a dead-end ?

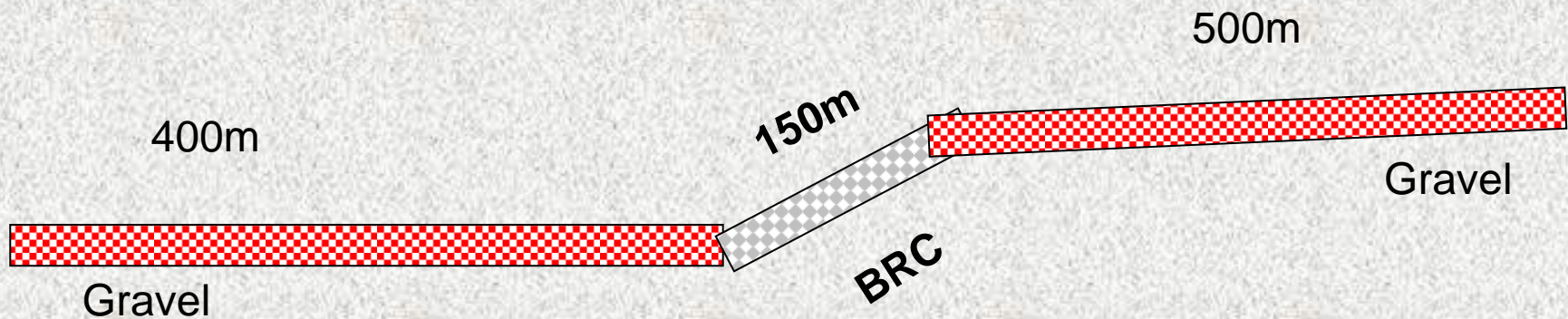


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Issues

Composite Construction



Research Recommendations

Locally funded overlay types, performance

Appropriate standards/specifications

Construction methods – quality control

Unsealed roads – Socio-economic issues

Longer term: monitoring sections



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