Full paper 0787

ROAD MARKING SOLUTIONS ADVANTAGEOUS FOR DRIVERS, FOR THE ENVIRONMENT, AND FOR THE TAXPAYERS

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Purpose, Materials, Methods

Road markings = paint (colour) + glass beads (paint protection, retroreflection)

Differences between road marking materials:

- Visibility
- Durability
- Environmental impact
- Cost assessment

Standard markings

- Type I (flat lines)
- No visibility under moisture
- Standard glass beads = low retroreflection

Premium markings

- Type II (structured)
- Good visibility under moisture
- Premium glass beads = high retroreflection

Research approaches:

- Field testing to determine visibility and durability
- Laboratory analyses of environmental impact
- Calculation of costs

Environmental and Financial Scenarios
(periodic renewals to maintain functional parameters for 20 years)

Initial application (cold plastic + standard or premium glass beads)	Standard markings	Premium markings
Materials for renewal (coating + glass beads)	Solventborne paint + standard glass beads	Waterborne high-performance paint + premium glass beads
Functional service life	Short (1 year)	Long (2 years)
Number of renewals per 20 years	18	7
Paints consumption [kg]	13.3	6.7
Glass beads usage [kg]	7.6	3.2
Titanium dioxide [kg]	1.1	1.2
Organic binders [kg]	1.9	1.5
One-time cost [EUR/m²]	2.40	5.27
Total materials cost per 20 years [EUR/m²]	43.20	36.86

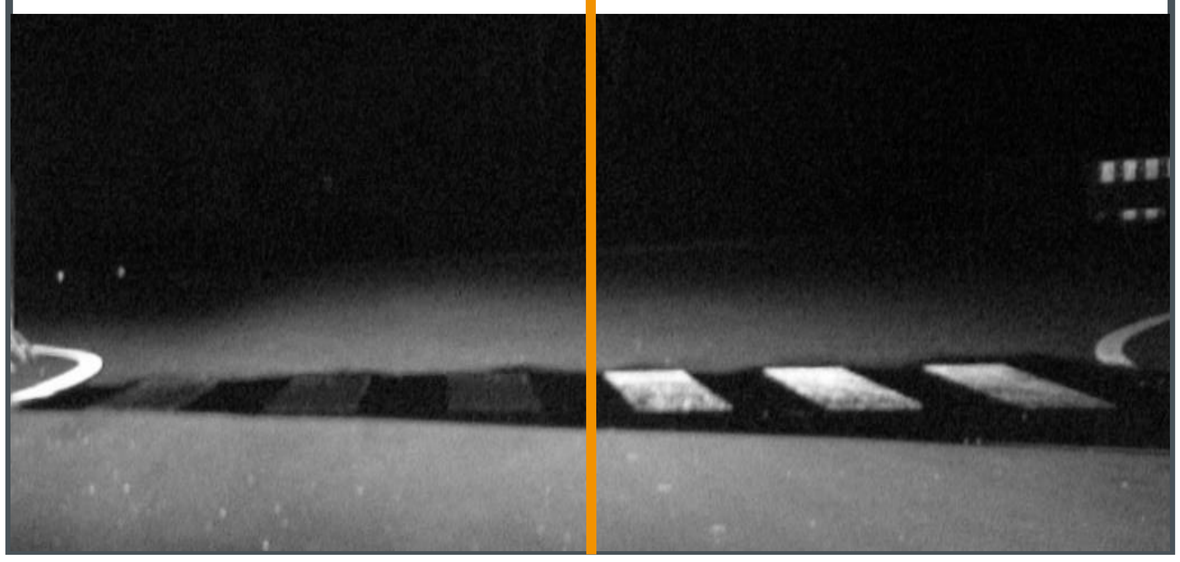
Visibility Assessment

Flat lines road markings (Type I, standard):	Structured road markings (Type II, premium):

Night time, dry conditions:
no visible or measureable difference

Night time, wet conditions:

Type I: not visible (inadequate contrast)	Type II: visible



Conclusions

Advantages of using Type II road markings (structured lines with capability of draining moisture, premium materials)

- Improved visibility at night time
  - Easier driving
  - Increased road safety
  - Higher reliability of driver assistance systems
- Lower environmental impact
- Lower long-term maintenance expenses