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INTERNATIONAL MEETING ON ROAD SAFETY AND MARKINGS

Meeting Internazionale sulla Sicurezza e la Segnaletica Stradale

CAN ROAD MARKINGS MAKE A DIFFERENCE?

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CIRIAF Centro Interuniversitario di Ricerca sull'Inquinamento da Agenti Fisici - "Mauro Felli"

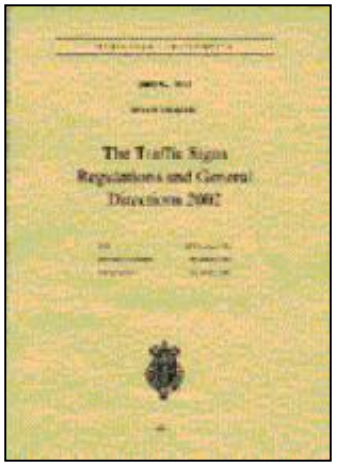
Comune di Perugia

Perugia, Sala della Vaccara - Friday, May 11th, 2012

CAN ROAD MARKINGS MAKE A DIFFERENCE?

What are road markings?

Prescribed lines and symbols to provide guidance and information to users of the highway



Used to provide information about the road layout, hazards, parking controls, pedestrian crossings

Used in a variety of colours depending on country and/or use or position of the markings

Road Markings Specification

IS EN 1436 European Standard for Road Markings

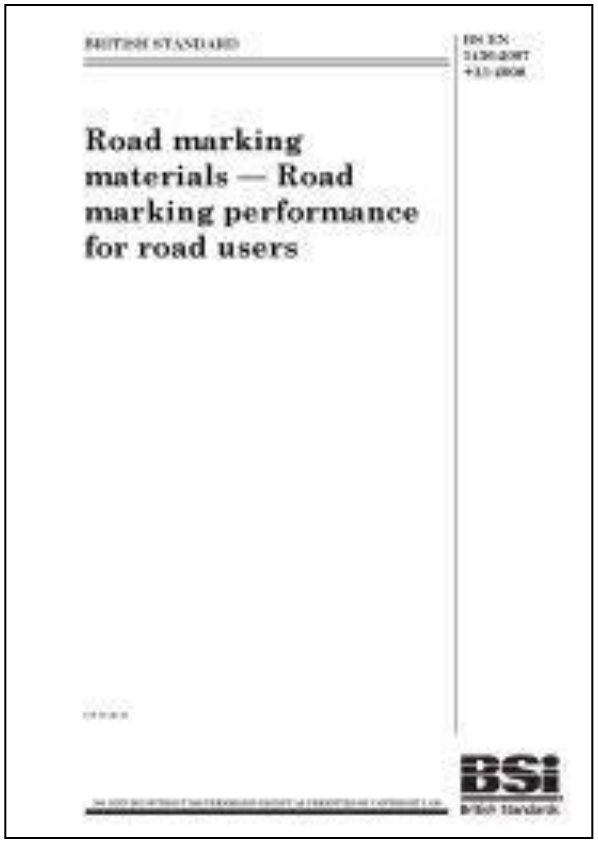
Specifies performance for the road user of white and yellow road markings based on:

- Luminance (colour)
- Day time visibility
- Night time visibility
- Skid resistance combined with durability

Introduces importance of wet-night visibility

IS EN allows client to specify expected performance of road markings

Contractor's responsibility to provide appropriate marking



Why use road markings?

To separate conflicting traffic movements

To clearly define a path through hazards

Word markings provide lane destination information or hazard information

Don't forget the pedestrian

What makes a good road marking?

Drivers must see and understand the reasons for the markings

Applied markings must be suitable for the location and give a clear message

Should be well laid to prescribed specifications

Longitudinal lines should have a flowing alignment with no sudden change of direction

Road markings should be considered in detail in the design process

They should be clearly visible during both daylight and night time conditions

They should perform well on a wet road surface

Advantages

Easy and cheap to install
Can often be seen when verge signs are hidden
Can provide a continuous message

Disadvantages

Can be covered by snow
Reduced effectiveness in wet weather
Increased maintenance liability with increased traffic flows

What type of road marking material?

Thermoplastic

95% of UK road markings

Readiness for use on application (Minimum drying time)

Retro-reflectivity in range 80 to 120 mcd

Durability of 2 to 5 years

Relatively low cost – but potential high return

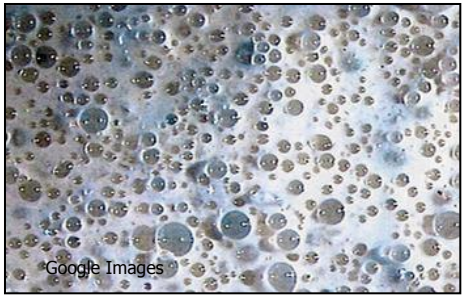
Paint

Approximately 70 – 75% of world road markings

Quick and easy to apply but application restricted to May until October

Less durable than thermoplastic markings, commonly 2 – 3 years

Good retention of glass beads with retro-reflectivity range between 140 – 250 mcd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Two Component Resins (Cold Plastic)

Several two component resins used

Methyl Methacrylate (MMA) predominant in Europe

Drawback of slow application and cure time

Benefit of high retro reflectivity in dry and wet conditions

Up to 10 years durability


Google Images

Preformed Road Markings

Two types
Preformed thermoplastic
Preformed resin coated rubber tape

Frequently used in UK to replace markings after road works

Good wet night retro reflectivity properties

Benefits
Durability

High retro reflectivity between 300 and 1000 mcd

Long life up to 10 years

Drawbacks
Slow application

Ambient temperature conditions

Cost – In region of 5 to 10 times thermoplastic

Detailed Design

A50 Sawley Interchange, Leicestershire

Grade separated junction in East Midlands

New traffic signal control on exit slip roads

Situation prior to new works

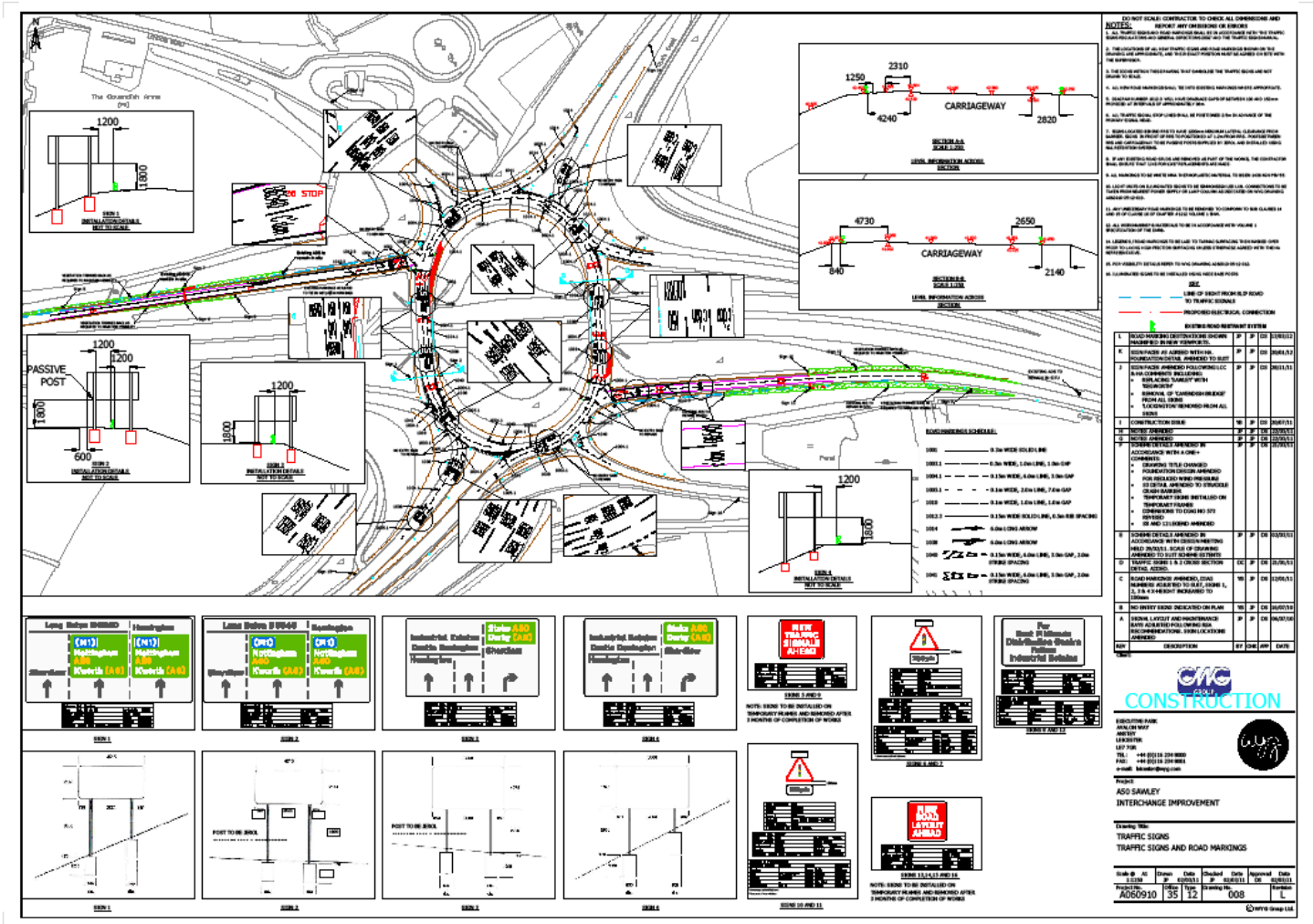
Existing markings worn extruded thermoplastic

Poor lane discipline

In 5 years prior to treatment 2 serious accidents and 20 slight accidents

Cost to community of approximately €1.1m

Detailed Design - A50 Sawley Interchange



Detailed Design - A50 Sawley Interchange

UK Example – A57 Snake Pass, Derbyshire

Major road in the North Midlands across the Pennine Hills

Rises to a maximum height of 544m above sea level

17kms of road with many sharp bends and covered by trees on some sections

A57 Snake Pass, Derbyshire

Situation prior to remedial works
Existing markings worn extruded thermoplastic with a maximum retro-reflection 100millicandellas (mcd) in dry conditions

In 3 years prior to treatment 65 accidents (All categories) and cost to community in the region of €5.4m

Solution
High quality road markings specially designed for good performance particularly in poor weather conditions with dry retro-reflective readings of over 200mcd and over 55mcd in wet conditions

Situation after remedial works
In 2.5 years since completion 36 accidents (All categories) and a reduction in the cost to the community of approximately €2.3million (57%)

Source: Derbyshire County Council

Other UK Examples

A556 Cheshire (UK) 2003

Before Treatment – 16 Accidents (2 Serious) 3 years

Cost of approximately €1.75m to local economy

After Treatment – 6 accidents (0 Serious) 1 year

Implementation cost €20,000

FYRR of 550%

Source: Cheshire County Council

Cheshire (UK) 2003 - 2006

50% of Principal 'A' Roads in county re-laid with specific wet night road markings

Result is 14.3% drop in all accidents

Saving of approximately €10.5m to local economy

Source: Cheshire County Council

Durham County Council 2003 – 2006

Improvement work to junction markings

50% reduction in accidents

FYRR of 1,868% (Average)

Source: Durham County Council 2007

CAN ROAD MARKINGS MAKE A DIFFERENCE?

- Road markings laid to specification and fit for purpose are a significant aid to road safety
- Laid correctly they provide important information for drivers to warn them of the road layout, guide them through hazards or to mark areas where parking is allowed or restricted
- They provide drivers with advance information on the road layout and allow them to adjust their speed and direction
- Statistical evidence supports this view as shown in the example I have quoted and other before and after studies available for similar schemes in the UK

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