

***Road Lighting Conference
NZ March 2014***

AS/NZ Standards

-

***“Accommodating the move to
LED”***

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ROADLIGHTING | 2014 | Auckland, New Zealand

AS/NZ Standards – Accommodating the move to LED

What documents need reviewing?

Part 6 – Luminaires

Part 1.1 Lighting Performance for Category V Roads

Part 3.1 Lighting Performance for Category P Roads

What about

Part 4 Lighting Requirements at Pedestrian Crossings

Part 5 Tunnels

AS/NZ Standards – LG 002 Road Lighting Committee

Who are we and where do we live?



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The about to be published 2014 revision of AS/NZS 1158.6 has been updated to include requirements – as necessary for the use of LEDs as a light source.

It is probably not appropriate to list any of the new text in this presentation prior to the release of the document.

It has however been through a few stages.

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A review of the work load required for AS/NZS 1158.6 upgrade for LEDs happened in August 2012.

The decisions were:-

- a) Provide for an update with SSL technology ASAP
- this current project
- b) Provide for a further revision of the document that aligns the AS/NZS document with internationally accepted standards.
- c) Project (b) (above) has been approved by SA

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In addition - a review of the existing documents that specify lighting performance is “on the table”

That is:-

Part 3.1 Performance requirements for Cat P roads
and

Part 1.1 Performance requirements for Cat V roads

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Part 1.1

There does not appear to be any major issues of serious significance – however

Cat V designs with LED are showing that often a limiting LTP is surround ratio.

That perhaps average luminance values can be reduced as typically brightness near the luminaire will be reduced compared to typical performance of HID luminaires??

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Part 3.1

There does appear to be one issue of significance:-

Restriction of Glare

and of lesser importance - perhaps average illuminance values can be reduced as typically the illuminance adjacent to the luminaire will be reduced compared to typical performance of HID luminaires??

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Part 3.1 Glare

The area of light emitting portion of the luminaire is typically smaller - particularly at the viewing angles in the region 80 degrees + - 5 degrees.

Are the current limits appropriate? – I think not.

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Part 3.1 Other quality LTP's

The average values of Eh can be lower than existing values and still provide adequate lighting.

For P3, P4 and P5 the limiting LTP is generally Eh min and so perhaps there is no significant value in lowering Eave for these subcategories.

As the values for Eh max – which are generally directly under the luminaire the current value of UE is pretty much a “claytons” LTP. A lowering of this limited would seem entirely practicable.

Is there adequate back light immediately beyond the edges of the road reserve – the tunnel effect should be avoided.

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What happens next?

Standards members are not a band of lighting experts who just sit around a table and pontificate on theoretical numbers to put in **lighting** performance tables.

The process is more about standardising the norm. The standard currently represents what has deemed to represent best practice using conventional HID light sources – now we need to revisit schemes using LED light sources. Over the next few months this will be done.

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Part 6 Luminaires?

What additions/changes will we see in the luminaire standard –

The document will not have many significant changes from that published for public review.

When we look to “standardise the norm” and the norm is constantly changing there is a little difficulty.

There will be statements like:-

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Part 6 Luminaires?

The development of SSL as a light source for road lighting has been rapid and is continuing.

Some important issues concerning SSL-based luminaires, such as luminaire lifetime and luminaire maintenance factors, have not been addressed in the revision because of a lack of international consensus about their treatment.

It is expected that the Standard will undergo further revision as soon as consensus about the treatment of these issues is reached and other factors influencing service life become clear.

Approved methods of luminaire photometry will be provided.

Recommendations for CCT (its tolerance) and Ra will be provided.

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Part 6 Luminaires

Informative appendix on Emerging Technologies

Lumen depreciation from dirt and grime on the exterior of the luminaire is one of the sub headings in this section.

Then the text in the appendix document will say something like :-

It is not possible at this time to make general statements about the way in which the build-up of external dirt affects lumen depreciation; this problem, and the surrounding issues, should be considered for each specific application. Until further experience is gained, the lumen depreciation factors given in AS/NZS 1158.1.2, should be considered

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Part 6 Luminaires

Informative appendix on Emerging Technologies

And there is further information under subheadings

Lighting control systems for roads and public spaces.

Overview of control systems.

Adaptive lighting.

Justification for use of control systems.

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Part 6 Luminaires

NEMA base Light Controlled Relays

The latest versions are now available with up to 7 contact pins and these accommodate necessary connections for the Central Management Control. This device combines the functions of a conventional NEMA cell – and allows for central control communication with the device.

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Part 6 Luminaires

What happens next?

As we look to review the standard in the next phase - a much more performance base document will emerge.

Once the second revision is completed (2015?) it is anticipated that any future amendments will only be minor and can be accommodated within the “amendment” process rather than require a complete “document review” as is currently happening.

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What about Part 4 Pedestrian Crossings and Part 5 Tunnels

The current view is that no changes are needed to these documents because of the introduction of LEDs.

The existing lighting performance measures are considered to be OK irrespective of the light source.

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**And for the record (Independent of
the work being done to embrace LEDs)
Part 2?**

The NZ members are working to include within the luminance based design methodology for category V lighting performance – the research work on road surface reflection (Bill Frith / Mike Jackett) that has been presented here today.

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Part 2

The like outcomes are:-

- 1 A new NZ R-Table
- 2 A revision of some of the LTPs ?
- 3 Adoption in NZ of the V5 category ?

Watch this space

Thanks for your attention