Artsa-i



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his article is about the driver's ability to see the road and see other road users. Having a good view is a basic safety requirement. Our design rules do not deliver a safe view around most trucks. This is because of the different approaches to road safety that exist in Europe and North America. Australia has come up with rules that allow both approaches. It is time to require better road view for truck drivers either by mirror or camera technologies. Some drivers like flat mirrors and some prefer spherical (curved) mirrors. The trade-off is between the field of vision and the ability of the driver to judge distances. Spherical mirrors distort the scene but provide a wider field of vision. The rearward vision requirements are in Australian Design Rule ADR 14/02, Rear Vision Mirrors. There are two paths through this rule, which are the 'European path' and the 'American path'. Most ADRs have been 'harmonised' with the United Nations Regulations (also called the ECE Regulations). ADR 14/02 has been harmonised with UN ECE Regulation 46. I will refer to this as the 'European path'. To achieve the fields of view specified in this 'European path', some mirrors need to be spherical (curved). Because there is a long history of Australian trucks having flat mirrors, an alternative path was provided in ADR 14/02 that could be met using flat mirrors. This path is

European and American views of the road

specified in Appendix C of the rule. It is the 'American path'. I want to convince you that the 'American path' (Appendix C) in ADR 14/02 is inadequate. The reason is that the vision of the road, particularly in a city environment, that the 'American path' allows, is poor. Anticipating that flatmirror-loving-drivers will arc-up at this suggestion, I argue that the 'American path' should be amended to require Class IV, V and VI mirrors as well as the large main mirror. These additional visibility requirements could also be met using cameras. There are six types of mirrors identified in UN ECE R46 ('the European path'). Table 1 summarises the requirements.

Class of mirror Requirement for a Truck (Category NB Name of the mirror or NC) INTERNAL REAR VISION Class I Optional LARGE MAIN MIRROR Class II Compulsory on both sides. The reflectance must be at least 40 per cent. The minimum area is approximately width=17cm x height=20cm. The Main exterior mirror (Class II for a truck) can have a flat surface or a spherical surface. The radius of curvature must be no less than 1200mm. SMALL MAIN EXTERIOR Class III Not permitted. WIDE ANGLE EXTERIOR Class IV Compulsory. To achieve this, the mirror will be convex. CLOSE-PROXIMITY Class V Compulsory on the passenger side, EXTERIOR optional on the driver side. The fieldof-vision requirement is in Figure. FRONT Class VI Compulsory. The field-of-vision requirement is shown in Figure. ADDITIONAL Mirrors may have an additional asymmetrical part assuming the main part of the mirror meets the requirements of the rule. The rule is silent about additional mirrors.

Mirror requirements in the 'European path' (UN ECE R46 path) in ADR 14/02.

The field of vision requirements are shown in diagrams. The 'American path' (Appendix C) mirror requirements are summarised in Table 2 - There Are No Field of Vision Requirements. The forward vision requirements are





visibility to 10o above the hori Police in Victoria have applied limits, although they are not b the Australian Design Rules.	is not and ADR 93/00) and izontal. vision rule (ADR 14/0 these because they do not ased on to be adequately vis the truck. This is part
Name of the mirror	Requirement for a Truck (Category NB or N
INTERNAL REAR VISION.	Optional
LARGE MAIN MIRROR – DRIVER SIDE.	Compulsory. The mirror must be flat. The mirror may project 230 mm beyo overall width of the (combination) vel it can collapse to no more that 150mr overall width line. The reflectance of the surface must b 35 per cent. The minimum area of the reflection sur There is no field-of-vision requirement meet the European requirements usin
LARGE MAIN MIRROR – PASSENGER SIDE.	Compulsory. The mirror may be flat of average radius of curvature must be a Each mirror may project 230 mm bey overall width of the (combination) ve can be collapsed to no more that 150 overall width line. There is no field-of-vision requirement
ADDITIONAL MIRRORS	Additional mirrors are allowed if they outside the limits that are mentioned

specified in ADR 42/04 General Safety or

in ADR 93/00, Forward Field of Vision. The basic requirement is so weak as

to be meaningless. The requirement is

traffic on either side of the vehicle and

in all directions in front of the vehicle

to enable the vehicle to be driven with

safety". The 'European path' to forward

vision is in the optional rule ADR 93/00

and is based upon ECE Regulation 125.

It requires that a 1200mm high cylinder

of diameter of 300mm that is placed

2m in front of the vehicle be visible

to the driver. Few trucks comply with

this via direct vision, but all could if a

There is a Victorian vehicle standards

Vision that tried to quantify the forward

information bulletin VSI 29 Field of

left illustration shows the VicRoads

interpretation. Long bonneted trucks

cannot comply with this because the

the driver. Trucks with long sun visors

roadway cannot be seen 11m in front of

field of vision requirements. The

camera system is used.

that there must be "an adequate view of





The forward vision rules (ADR 42/04 nd ADR 93/00) and the rearward sion rule (ADR 14/02) are inadequate ecause they do not require the road be adequately visible around ne truck. This is particularly true

Mirror requirements in the Appendix C path ('American path').

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Field of vision of Class V

Driver's ocular points

Driver's ocular points

uck (Category NB or NC)

roject 230 mm beyond the point of ne (combination) vehicle provided no more that 150mm beyond the

the surface must be at least

of the reflection surface is 150 cm. of-vision requirement. It is difficult to an requirements using a flat mirror.

mirror may be flat or curved. The curvature must be at least 1200mm. project 230 mm beyond the point of ne (combination) vehicle provided it to no more that 150mm beyond the

of-vision requirement.

s are allowed if they do not protrude that are mentioned above.

for long-bonneted trucks. Camera technology now exists that can provide the driver with a wrap-around view of the space in front of, and to the sides of the truck cabin. This should be mandated. Currently, other road users are vulnerable when they are in these spaces.

ADR 42 General Safety specifies that an image on a visual display screen must not be visible to the driver unless the image is a driver's aid. The rule allows an external image to the front, side or rear of the vehicle to be displayed, assuming it aids the driver to see objects relevant to vehicle safety. The image might be for example, an infra-red (thermal) image.

There is an urgent need to improve the driver's view of the road close to some trucks, both in front and to the rear. The 'American path' to road vision is inadequate. Camera technology could be used to improve the view. Changes to the rules are needed!

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