

MAKING TRUCKS MORE VISIBLE



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Presenters

Chris Loose
Why

ATA contractor



James Williams
What to do

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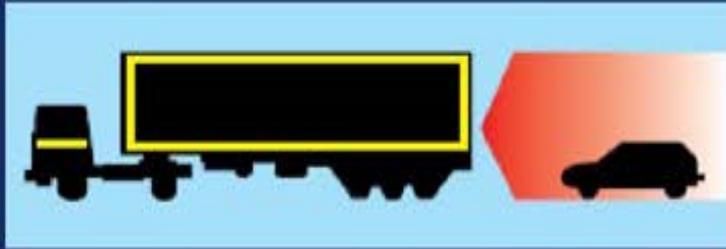
MAKING TRUCKS MORE VISIBLE: WHY

Chris Loose

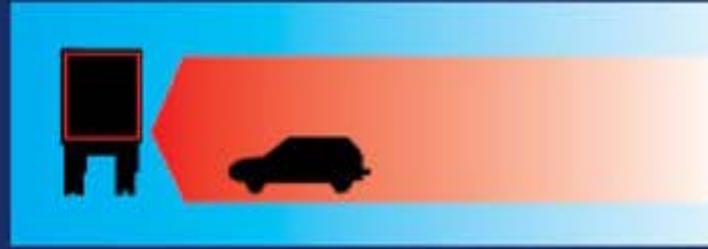


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Why add conspicuity marking?



 **41%** Rear outline visibility markings can reduce rear end collisions by up to 41%



 **37%** Side outline visibility markings can reduce side collisions by up to 37%



Updated:

son - Public
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Safer Freight Vehicles (up to 2.55m OAW Trucks)

CMs is 1 of 7 new or updated ADR for SFV

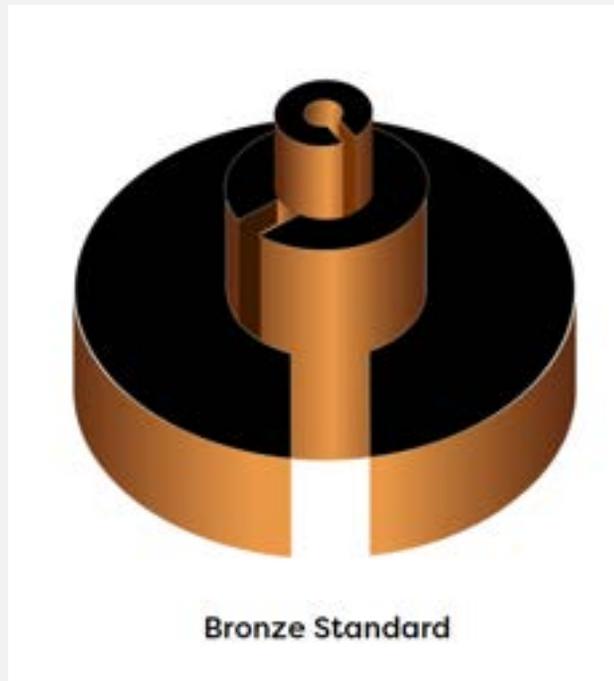
- ADR 14/03 – Mirrors
- ADR 35/07 – HV Braking
- ADR 97/00 – Advanced Emergency Braking
- ADR 99/00 – Lane Departure Warning Systems
- ADR 13/00 – Lighting / Conspicuity Marking
- ADR 105/00 – Blind Spot Information Systems, from 1/2/27
- ADR 106/00 – Side Underrun Protection

Buses are next (2+years away), then possibly trailers.



CLOCS-A (clocs-a.org.au) requirement

CM is a CLOCS-A Bronze level requirement.



The Minimum Mandatory Standard for all heavy vehicles complying with CLOCS-A technical requirements. Measures and technologies that are relatively low cost and easy to implement.

Accreditation requires compliance with at least one of the standards nominated as “either/OR” plus all remaining standards.

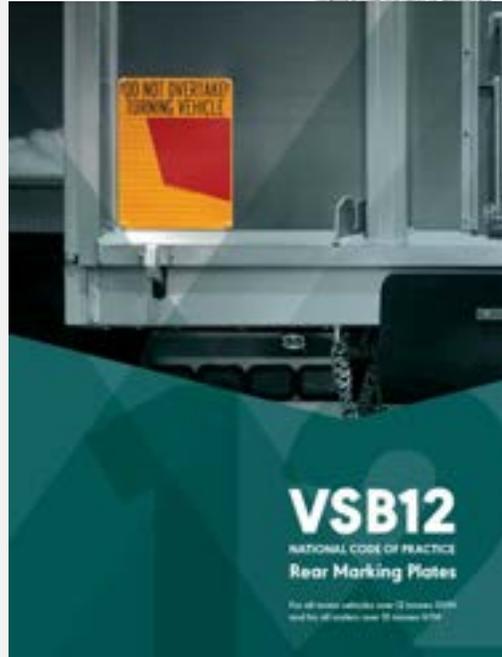
Further

- VSB12 Rear Marking Plates
www.nhvr.gov.au/vsb12
Compliant CMs ilo RMPs

Other reference info

- NHVR VSG 11 – Sept 2024
Fitting of Additional Reflectors and Conspicuity Markings
- NHVR VSG 29 – July 2020
Rear Marking Plates and Do Not Overtake Turning Vehicle signs

www.nhvr.gov.au/safety-accreditation-compliance/vehicle-standards-and-modifications/vehicle-standards-guides



So far.....

CMs are

- A passive safety system.

Places no further onus on the driver..

- Low cost and light weight.
- Appropriate in low light areas!
- Required for CLOCS-A and SFVs.



MAKING TRUCKS MORE VISIBLE: OPERATIONAL ISSUES / REQUIREMENTS

James Williams



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Tape Maintenance / In-Service Compliance

CM have a finite life. Maintenance is required

- They fade.
The amber/red CM will fade -> approach white -> brighter!!
- They get damaged.
That section no long functions as a CM and is excluded from the strip contour coverage calculation.

Tape Maintenance - 60 second test parameters

- Water/wash solution pressure 8 ± 0.2 MPa;
- Water/wash solution temperature $60 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$;
- Water/wash solution flow rate 7 ± 1 l/min;
- The tip of the cleaning wand to be positioned at distance of 600 ± 20 mm away from the retro-reflective surface;
- Cleaning wand to be held at no greater angle than 45 degrees from perpendicular to the retro-reflective surface;
- 40-degree angle nozzle creating wide fan pattern.

In service compliance

NHVIM Section 6.3. Check conspicuity markings

Reasons for rejection

- a. Any vehicle with a GVM over 12 tonnes not fitted with conspicuity markings or rear marker plates (See 6.2), except:
 - a bus fitted with hand grips or similar equipment for standing passengers to hold
 - a vehicle fitted with rear marker plates
- b. Conspicuity markings are not:
 - white to the front;
 - white or yellow to the side; or
 - red or yellow to the rear
- c. Reflective tape is not:
 - A continuous strip outlining the vehicle;
 - A single strip running along each side and across the rear of the vehicle; or
 - A single strip running along each side and across the rear of the vehicle with each upper corner of the vehicle identified by two lines at 90 degrees to each other and at least 250mm in length

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Conspicuity Markings

How to apply demonstration.

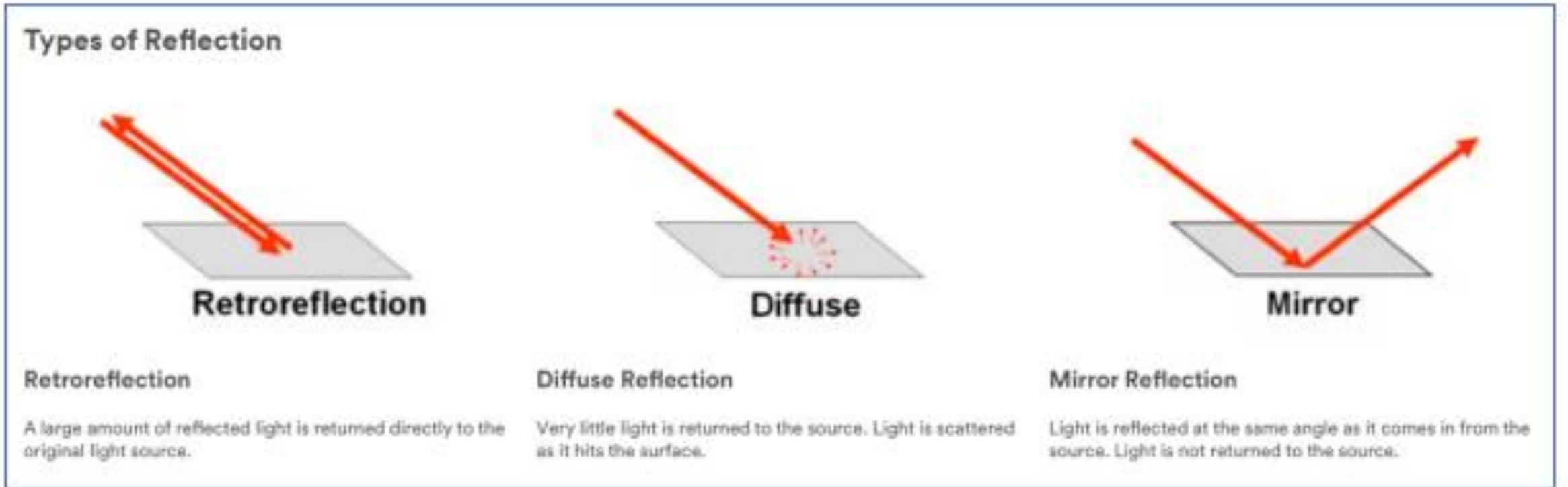


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Retro-reflectivity explained

Types of reflection



Retro-reflectivity standards

Rear Marking Plates

AS/NZS1906.1 Class 400, AS/NZS1906.2 Class 1A or UNECE R70

TABLE 2.3

MINIMUM COEFFICIENT OF LUMINOUS INTENSITY PER UNIT AREA FOR CLASS 400 SHEETING

Entrance angle β_1 ($\beta_2 = 0^\circ$) degrees	Observation angle α degrees	Minimum R_A values $\text{cd.lx}^{-1}.\text{m}^{-2}$										
		Non-fluorescent colours								Fluorescent colours		
		White	Yellow	Red	Dark Green	Blue	Brown	Green (NZ)	Orange	Yellow	Yellow-Green	Orange
4	0.2	360	270	65	29	30	18	50	145	220	290	105
	0.5	150	110	27	12	13	7.5	21	60	90	120	45
	1.0	35	23	5.0	3.0	2.0	1.0	4.0	12	22	28	11
30	0.2	170	135	30	14	14	8.5	25	68	100	135	50
	0.5	72	54	13	6.0	6.0	3.5	10	28	40	55	22
	1.0	17	11	3.0	2.0	1.0	*	*	6.0	8.5	13	5.0

* Values at these angles are less than $1.0 \text{ cd.lx}^{-1}.\text{m}^{-2}$.

NOTE: Table 2.3 is reproduced with modification, with permission, from ASTM D4956-16a *Standard Specification for Retroreflective Sheeting for Traffic Control*, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

Retro-reflectivity standards

Conspicuity Markings, ADR 13/00 / UN R104

Minimum values for the Coefficient of Retro-reflection R' [cd.m-2.lx-1]

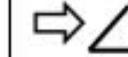
	Light incidence to the vertical					
	Angle (degrees)	5°	20°	30°	40°	60°
Colour	White	450	-	200	95	16
	Yellow	300	-	130	75	10
	Red	120	60	30	10	-

Table 3: Minimum values for the coefficient of retro-reflection

Source UN R104

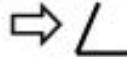
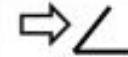
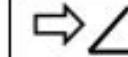
	Light incidence to the vertical					
	Angle (degrees)	5°	20°	30°	40°	60°
Colour	White	Base	-	44%	21%	3.6%
	Yellow	Base	-	43%	25%	3.3%
	Red	Base	50%	25%	8.3%	-

Table 4: Comparison of retro-reflection from vertical to inclined

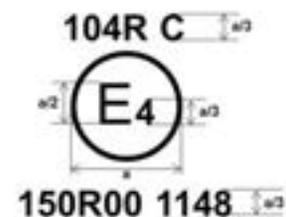


Figure 2: Example of UN R104 compliant E-mark displayed on tapes

Conspicuity Markings

How to measure retro-reflectivity demonstration.



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Conspicuity Markings - placement

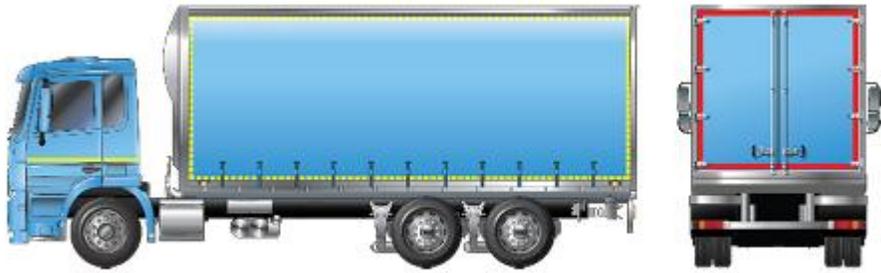


Figure 3: Full contour marking for a curtain sided van

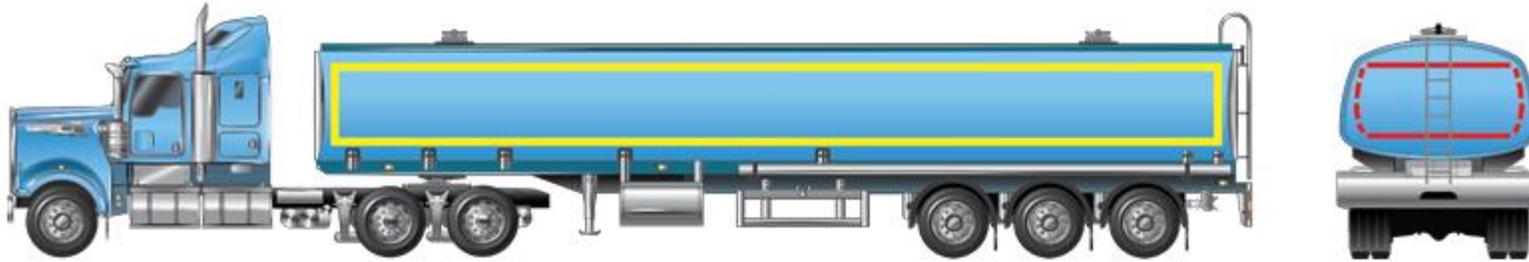


Figure 4: Full contour marking for tanker trailer



Figure 5: Partial contour marking

Conspicuity Markings - placement



Figure 6: Line marking

Note: Where the shape, structure, design, or operational requirements make it impossible to install the mandatory full or partial contour marking, a line marking is acceptable.

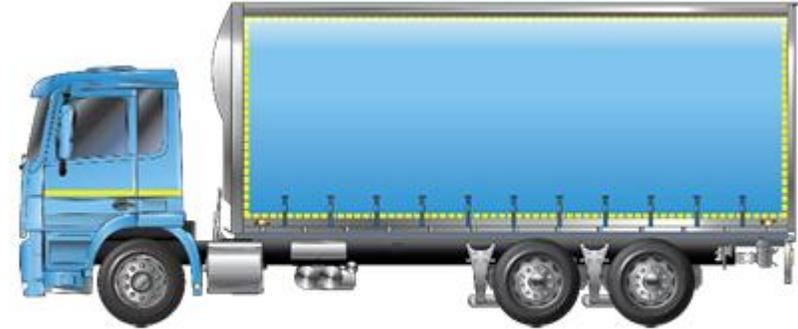
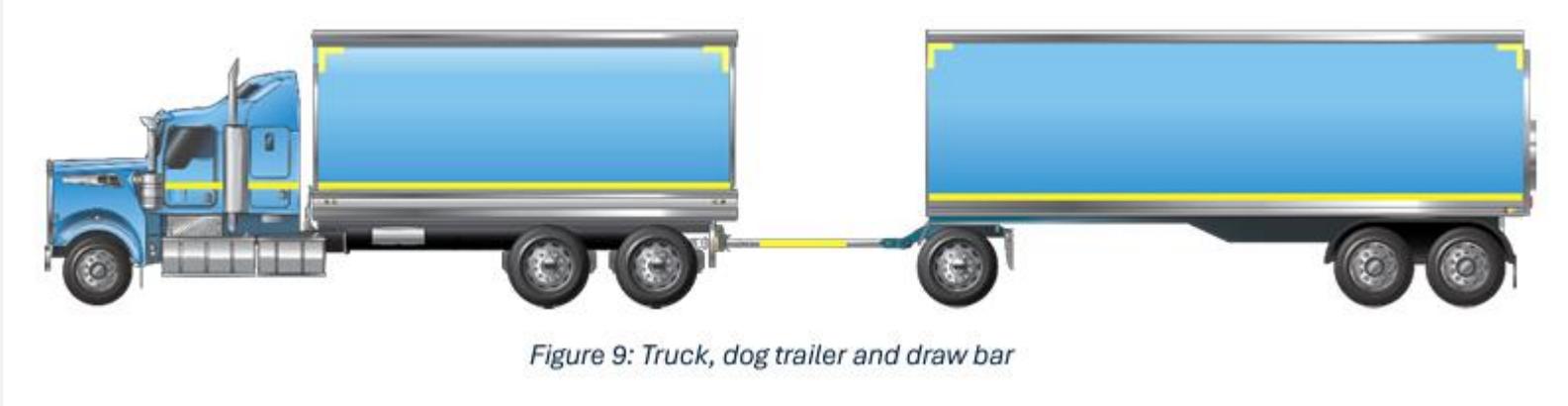


Figure 8: Example of segmented tape options for curtain sided units



Figure 7: Full/partial contour marking is optional, but line/stripe marking is required

Conspicuity Markings - placement



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Conspicuity Markings - ID compliance for SFV

- Second Stage Manufacture (SSM).
- AVE can plate the vehicle via VSB6 plate.
- Dealer declaration.
- TIC Manufacturers Plate.
- UN R104 type approval.
- A declaration from an appropriate person.



CM is required for CLOCS-A and Safer Freight Vehicles.

We welcome your feedback on the TAP to
engineering@truck.net.au

Chris



James



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Session Questions and Answers

Q1 – Can you use more of the Retro Reflect Tape than is required by the TAP/UN R104?

A1 – No. Adding excessive amount of CM tape is beyond that required by the R104, creates excessive light pollution and distractions. Other materials, typically of a lower cost, can be used for marketing purposes as long as they don't impact on the CM tape coverage or positioning.

Q2 – Can you use a spray bottle with a water/soap mix to apply the TAPE?

A2 – No. The tape uses a pressure sensitive adhesive. If repositioning is required, lift tape at an angle of no more than 45degrees before pushing down.

For further details, refer to www.reflectives.averydennison.com or

[Conspicuity Tape and Markings | Avery Dennison](#)

For details on R104 Tape refer to equivalent to V-6700B Conspicuity Tape.



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Session Questions and Answers

Q2 – Can you use a spray bottle with a water/soap mix to apply the TAPE? Continued

The link to the product data bulletin

is <https://reflectives.averydennison.com/content/dam/averydennison/reflective-responsive/documents/english/pdb/retroreflective-sheeting/v-6700b-pdb-ww-english.pdf>.

The link to the instructional bulletin

is https://reflectives.averydennison.com/content/dam/averydennison/reflective-responsive/documents/english/ib/conspicuity-markings/IB8.12_Application-Care-V6790-V6700B_03002017.pdf

The link to the application technique is <https://reflectives.averydennison.com/en/home/customer-tools/tech-support-videos/applying-v6700b-tape.html>

Q3 – How do you remove the CM TAP for repairs and maintenance?

A3 – The tape uses a permanent adhesive and is not designed to be removed however in the situation where removal is necessary, a heat gun can help to loosen the adhesive bond..