



Heavy Vehicle Visibility

Industry Technical
Council Advisory Procedure



Printed by 3M Traffic Safety Systems in the interest of improving
truck safety, through greater visibility



Disclaimers

This Code of Practice:

- is intended as a guide only;
- is based on the European Regulation UN/ECE 104 “Uniform provisions concerning the approval or retro-reflective markings for heavy and long vehicles and their trailers”;
- Does not replace, vary or modify existing laws and regulations.

Compliance with this Code of Practice is voluntary.

The ATA cannot know, evaluate or advise regarding all ways in which a practice or procedure may be undertaken or its consequence. No guarantee of accuracy is given. Anyone who uses this Code of Practice must satisfy themselves as to the appropriateness in their circumstances of their use and all safety aspects.

To the extent permitted by law, the ATA is not liable in negligence or otherwise for, liability or loss arising from, and any costs incurred in connection with, damage, loss, injury or death, concerning this Code of Practice or their use.



Endorsement

Endorsement:

This voluntary Code of Practice has been prepared by the Australian Trucking Association and endorsed by members of the Industry Technical Council. In addition, this Code has been reviewed and endorsed by the Department of Transport and Regional Services. The Department recognises the contribution of such codes of practice to road safety and international best practice.



Vehicle visibility and safety

Collisions between heavy trucks and trailers and smaller, lighter vehicles often result in death or severe injury to the occupants of the smaller vehicle.

In many cases, these accidents are the result of the heavy vehicle not being seen by the approaching motorist in time for the accident to be avoided, particularly in poor weather conditions, or hours of darkness.

Extensive research in both Europe and the United States of America has shown a dramatic reduction in the frequency and intensity of such vehicle accidents with the use of retro-reflective strips and other markings that outline the contour of the vehicle.

A report by the National Highway Traffic Safety Administration in the USA dated March 2001, reported a reduction in side and rear impacts into marked trailers ranging between 29% and 41% in dark conditions. Furthermore, the report stated a reduction in fatality and injury accidents of 44% in dark conditions.

In an effort to reduce these types of accidents in Australia, the Australian Trucking Association, together with industry representatives, have developed this Vehicle Visibility Code of Practice, describing the methods by which increased vehicle visibility can be achieved.

This Code of Practice specifies the use of retro-reflective strip or contour markings to delineate the length and size of the vehicle, as well as recommending how the use of reflective graphics and corporate logos can complement safety.

The requirements for this Code of Practice are based on European Regulation UN/ECE 104 – “Uniform Provisions Concerning The Approval of Retro-Reflective Markings for Heavy and Long Vehicles and their Trailers” which define the performance, placement and material specification of the markings.

This Code of Practice is to be used in addition to (and is not intended to replace) existing regulations and ADR lighting and marking requirements.



Strip markings

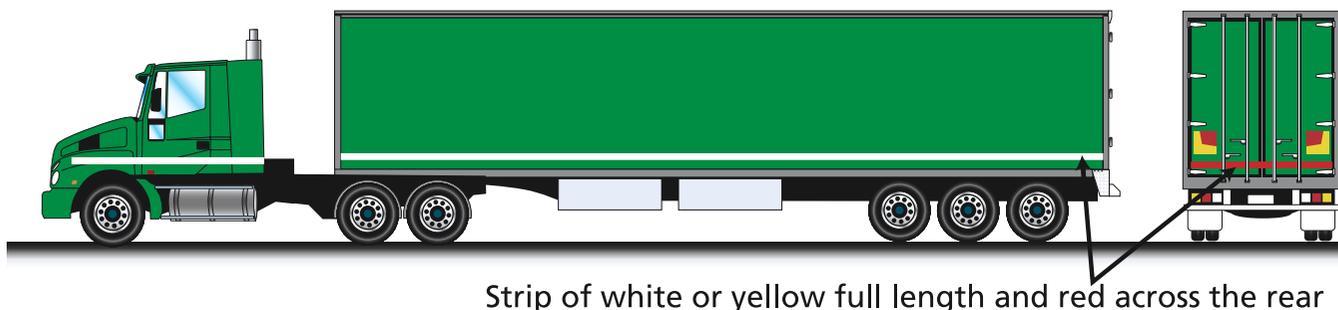
The minimum marking layout for all rigid trucks, semi-trailers, trailer combinations and buses, shall be a single strip of white or yellow retro-reflective material along each side of the prime mover and body or trailer side, and a strip of red retro-reflective material across the rear.

The retro-reflective material used for these strips shall comply with "Part 1" of the material specification of this code. This basic layout shall only apply to those vehicles that do not utilise retro-reflective graphics, numbers or logos on any visible portion of the vehicle.

The total minimum length of the retro-reflective markings shall be 80% of the combined length (including the prime mover), and the width of the vehicle.

Where non-continuous strips are used, the distance between single elements shall be as small as possible and should not exceed 50% of the length of the shortest element. Such segments shall be evenly distributed.

The strips shall be installed as close to parallel to the ground as possible, at a minimum height of 250mm and a maximum height of 1.5m. Where vehicle designs do not allow compliance with the 1.5m maximum, a height of 2.1m is acceptable.



Contour markings

Where "Type 1" or "Type 2" retro-reflective graphics, numbers or logos are used on rigid trucks, semi-trailers, trailer combinations and buses, a retro-reflective border or "Contour Marking" shall be used to fully enclose the area in which such graphics are used.

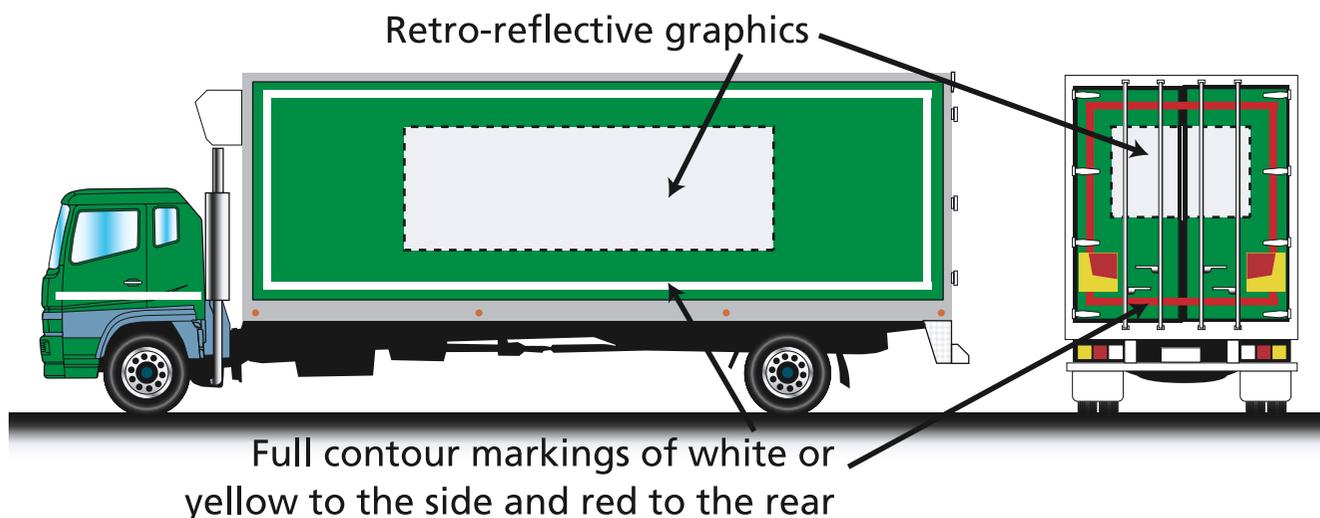
The retro-reflective material used for contour markings shall comply with "Part 1" of the material specification of this code.

The contour markings shall identify as close as possible the entire shape of the vehicle. The total minimum length of the contour markings shall be 80% of the combination of the height, length and the width of the vehicle.

Where non-continuous strips are used, the distance between single elements shall be as small as possible and should not exceed 50% of the length of the shortest element. Such segments shall be evenly distributed.

The retro-reflective contour markings shall be installed on vehicles, as close to parallel to the ground as possible for length and width and 90 degrees to the ground or as close to 90 degrees as possible for the height.

The lower horizontal strip of the contour markings shall be installed as close to parallel to the ground as possible, at a minimum height of 250mm and a maximum height of 1.5m. Where vehicle designs do not allow compliance with the 1.5m maximum, a height of 2.1m is acceptable.



Alternative treatment for soft sided vehicles

Due to the difficulty in obtaining a satisfactory bond between retro-reflective markings and existing flexible soft sided vehicles, an alternative treatment of fitting retro-reflective fabric, meeting "Part 4" of the material specification of this code, to the lower belt ends may be used.

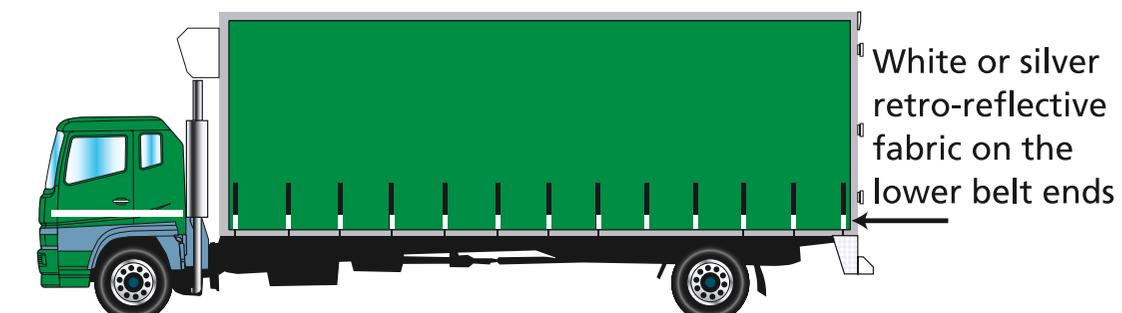
This alternative treatment shall only apply to those existing vehicles that do not utilise retro-reflective graphics, numbers or logos on any visible portion of the vehicle curtains.

This alternative treatment is only effective on vehicles with the maximum number of belts, similar to that shown below.

The minimum length of the fabric shall be 100mm and minimum width shall be 50mm.

The fabric may be sewn directly to, or fitted as a sleeve over the lower belt end in such a way as to expose the retro-reflective material to the outside.

To comply with this code, it is expected that all new vehicles will be fitted with strip or contour markings as detailed elsewhere in this document.



This alternative treatment is only effective on vehicles with the maximum number of belts similar to the above

Retro-reflective graphics

Where "Type 1" or "Type 2" retro-reflective graphics are used, "Contour Markings" shall also be used.

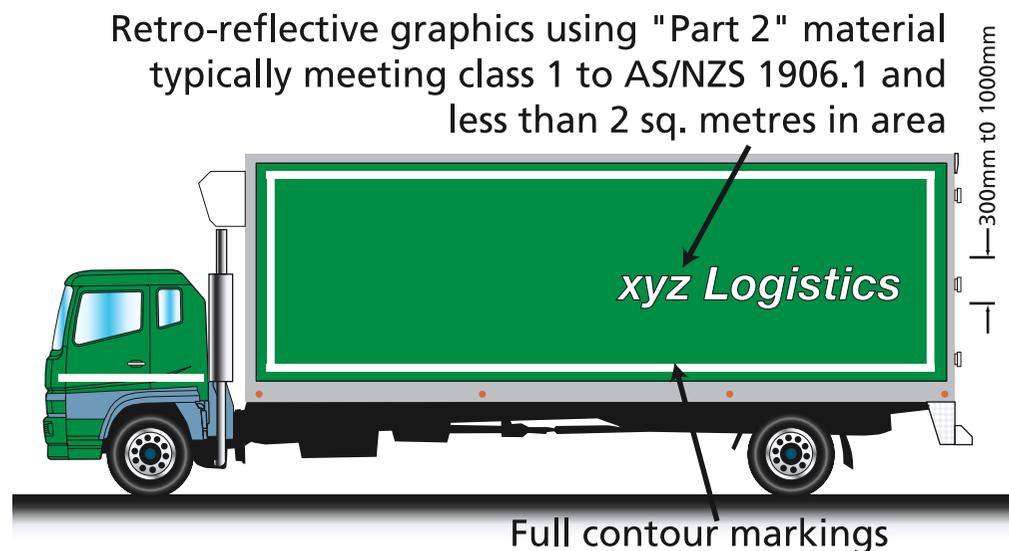
Type 1 Graphics

The retro-reflective performance of the materials used for "Type 1" graphics shall comply with "Part 2" of the material specification of this code.

The total retro-reflective area for "Type 1" graphics must not exceed 2.0m² in area and the height of any letters/characters shall be no less than 300mm and no larger than 1000mm.

Retro-reflective "Type 1" graphics shall only be placed within the contour marking on the side and/or rear of a vehicle and shall not impair the effectiveness of the contour marking and the mandatory lighting or light-signalling devices.

"Type 1" graphics may be of any colour and shall be designed such that confusion of approaching motorises is not possible. For example, reproduction of roads, vehicles, traffic signals or traffic signs must not be used.



Retro-reflective graphics

Type 2 Graphics

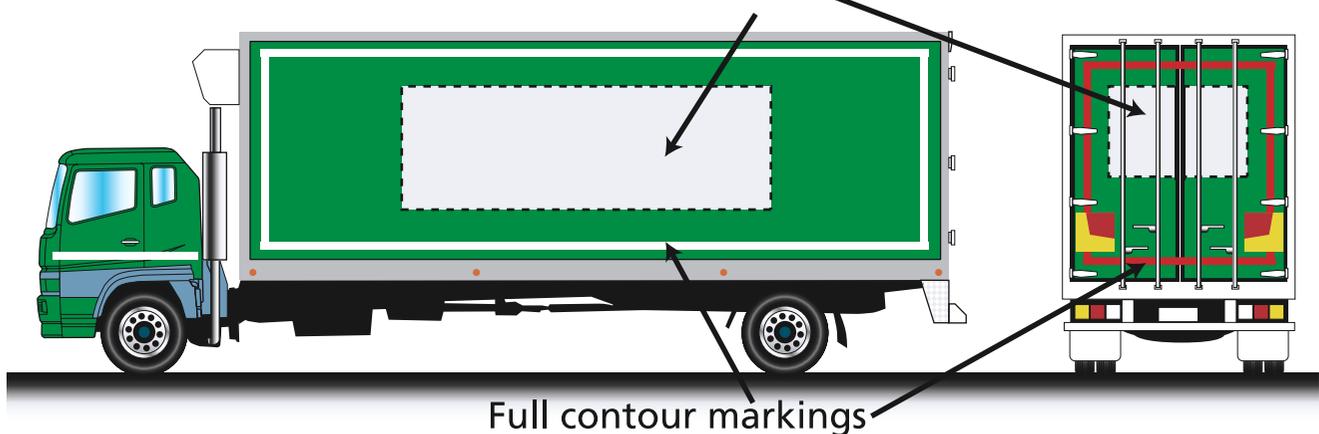
The retro-reflective performance of the materials used for "Type 2" graphics shall comply with "Part 3" of the material specification of this code.

Retro-reflective "Type 2" graphics shall only be placed within the contour marking on the side and/or rear of a vehicle and shall not impair the effectiveness of the contour marking and the mandatory lighting and light-signalling devices.

"Type 2" graphics may be of any colour and size and shall be designed such that confusion of motorists is not possible. For example, reproduction of roads, vehicles, traffic signals or traffic signs must not be used.



Retro-reflective graphics using "Part 3" material typically meeting class 2 to AS/NZS 1906.1 and greater than 2 sq. metres in area



Material specifications

All retro-reflective materials used within this code shall comply with the following specifications. Suppliers of these materials shall certify compliance to these specifications if requested.

Part 1

The retro-reflective material used for “Strip” or “Contour” type markings shall be 50mm +10/-0mm wide, White or Yellow (for side markings), Red (for rear markings) and shall conform to all requirements of “Class C” material as specified in UN/ECE104. The material shall incorporate the European (E) marking on “Class C” material, in accordance with Clause 5 of UN/ECE104.

Part 2

The retro-reflective performance of the materials used for “Type 1” graphics shall not exceed 2/3rds of the values required for Contour markings. Typically these would be materials meeting Class 1 photometrics, as defined in AS/NZS1906:1—“Reflective Materials and Devices for Road Traffic Purposes—Retro-reflective Materials.”



Part 3

The retro-reflective performance of the materials used for “Type 2” graphics shall not exceed 1/3rd of the values required for Contour Markings. Typically these would be materials meeting Class 2 photometrics, as defined in AS/NZS1906:1—“Reflective Materials and Devices for Road Traffic Purposes—Retro-reflective Materials.”

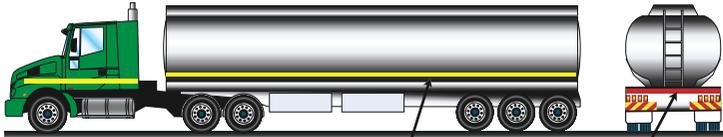
Part 4

The retro-reflective fabrics used for sewing to the lower belt ends of curtain sided vehicles as described in the “Alternative Treatment for Existing Soft Sided Vehicles”, shall be a white or silver retro-reflective material meeting all requirements of Class R to AS/NZS1906:4—“Reflective Materials and Devices for Traffic Control Purposes—High Visibility Materials for Safety Garments”. Materials that provide superior abrasion resistance and the ability to withstand wash temperatures of up to 60 degrees C shall be preferred.

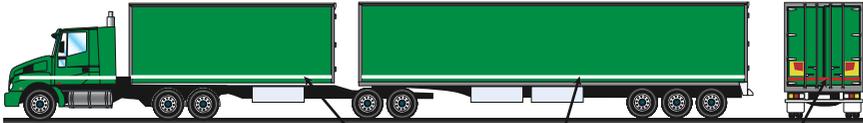
Appendices

Appendix 1

Examples of Retro-reflective Markings with Strips



Strip markings of white or yellow on the sides and red across the rear



Strip markings of white or yellow on the sides and red across the rear

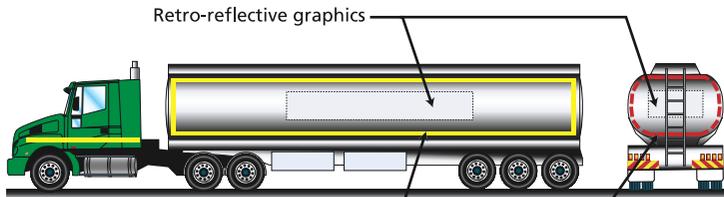


Strip markings of white or yellow on the sides

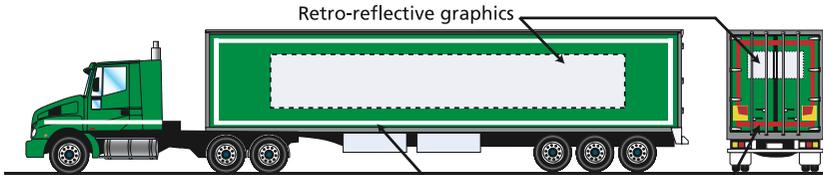


Appendix 2

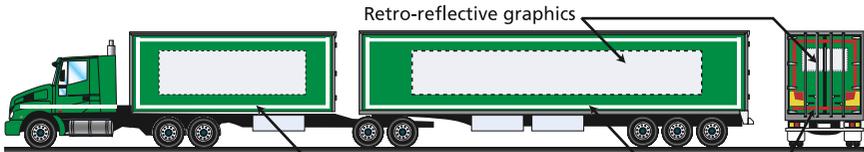
Examples of Retro-reflective Contour Markings (including graphics and other distinctive markings)



Full contour markings of white or yellow to the side and red to the rear



Full contour markings of white or yellow to the side and red to the rear



Full contour markings of white or yellow to the side and red to the rear



Acknowledgments:

The Australian Trucking Association gratefully acknowledges the assistance of the Occupant and Roaduser Safety Group of the Industry Technical Council and the Industry Technical Council Members in the preparation of this Code of Practice:

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