For discussion
25 May 2007

Legislative Council Panel on Transport

Measures to Enhance Safety of Reversing Goods Vehicles

Purpose

This paper informs Members of the progress of the measures taken to enhance safety of reversing goods vehicles.

Accidents Involving Reversing Goods Vehicles

2. In the past five years, the average number of traffic accidents involving reversing goods vehicles was 183 per year, accounting for about 1.2% of the total number of accidents. No obvious upward or downward trend is observed. However, a few fatal accidents involving reversing goods vehicles which happened in late September last year and thereafter have aroused public concern. We have been taking a number of measures to enhance the safety of reversing goods vehicles. The progress is set out in the following paragraphs.

Publicity and Education

3. A crucial factor to enhance safety is improving the behaviour of both drivers and pedestrians. Since late 2006, we have stepped up our publicity and education efforts as follows –

(a) A radio Announcement of Public Interest reminding goods vehicle drivers about safe reversing has been broadcast on a regular basis;

(b) A leaflet to remind drivers, vehicle owners, shop and factory owners as well as pedestrians on actions that they can take to enhance safety in respect of reversing vehicles has been distributed

through the goods vehicle trades, district offices, car parks and Transport Department (TD)'s licensing offices and vehicle examination centres;

(c) TD and the Police have conveyed safety messages to the goods vehicle trades through meetings, talks and seminars;

(d) TD, in conjunction with other institutions, has organized specific training and refresher courses as well as safety workshops for drivers of public service vehicles and goods vehicles;

(e) The Police regional road safety teams have organized talks at elderly centres, kindergartens and schools in order to reach the senior citizens and children who are the high-risk groups in traffic accidents; and

(f) The Road Safety Council has launched the "Smart Driving with Courtesy" campaign since last year. Messages on courtesy to pedestrians have been included.

4. We will continue with these publicity and education efforts in order to impress upon drivers and pedestrians that they have an important role to play in road safety.

Review of Road Environment

5. Since January 2007, TD has in consultation with the District Councils identified a total of 132 priority road sections across the territory for detailed investigations on measures that can be implemented to enhance safety of reversing vehicles. Specific measures on the priority road sections have subsequently been considered on a case-by-case basis, taking into account the physical environment, practical needs of the local residents and commercial activities, and impact on local traffic. With the support of the District Councils, improvement measures at 81 locations have so far been agreed for implementation and works on these locations are either completed, in progress or arranged to be commenced soon. The main improvement measures include –

- restricting vehicular access (for all vehicles or by vehicle types; at all times or during certain periods);
- designating no-stopping restrictions;
- installing crash barriers, steel bollards or amenity railings;
- providing loading/unloading bays;
- widening carriageways/pavement or changing road layout; and
- erecting suitable traffic and warning signs.

6. A table summarising the overall situation and progress of the implementation work in the 18 districts is in **Annex A**. TD will continue to consult relevant parties and implement improvement measures in the remaining 51 locations.

Installation of Reversing Aids to Enhance Safety

Commonly Used Reversing Devices

7. We maintain an open mind to suggestions on installing reversing aids and other measures to enhance safe reversing. With effect from 1 April 2000, we have made it mandatory for all goods vehicles to be fitted with an automatic device capable of giving an audible warning to nearby pedestrians when reversing[1]. Installation of reversing sensor[2], reversing video device (RVD) or additional rear view mirror[3] is permitted under the current legislation. With these additional devices, the drivers' view of the area around the rear of

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[1] It should be noted that audible warning device is to warn the pedestrian of a reversing vehicle. It cannot assist the driver to reverse the vehicle more safely.

[2] The sensor relies on ultrasonic, radar or infrared technologies to detect the presence of an object in the vicinity of the sensor. A visual and/or audible alarm will then be sent to the driver in the driving compartment. The object sensor can only detect objects within a limited horizontal/vertical detection range of usually less than 1.8 metres. While it may be useful to assist a driver when he is parking the vehicle in a car park where it has to detect either a stationary vehicle or a wall at the rear end, it is much less effective in detecting moving objects, such as in the case of a pedestrian walking on the carriageway. Besides, it is not suitable for use on goods vehicles with highly-mounted vehicle body because there can be many blind spots.

[3] This is a convex cross-view mirror installed at the rear end of the vehicle giving the view behind the vehicle that is normally not visible to the driver. The image is reflected to the driver through the normal external rear view mirror next to the driver. Installation of an additional cross-view mirror at the rear end of the vehicle may improve the driver's view of the area around the rear of his vehicle, especially for goods vehicle with goods compartment that obstructs the rear view. However, the image produced may have some distortions and is very much affected by the external environment e.g. in rain or at places with poor illumination. Besides, the effective range between the normal external rear view mirror and the additional cross-view mirror is practically limited to about 5 metres. Hence, it is not suitable for most goods vehicles exceeding 3.5 tonnes and is more commonly used by van-type light goods vehicles.

their vehicles may be improved. However, not all these devices are suitable for all types of goods vehicles. The effectiveness and reliability of the devices would depend on the vehicle type, vehicle body form and maintenance condition.

Study on Installation of Reversing Devices on Goods Vehicles

8. There have been suggestions that we should mandate the installation of RVD on goods vehicles. To follow up on this, TD has commissioned a study to identify suitable reversing devices for goods vehicles which are available in the local market and to establish performance requirements for these devices. The initial findings of the study are set out below.

9. The study has found that RVD is generally speaking more effective than a warning sensor as a reversing aid as the latter's detection range is usually less than 1.8m. As far as RVD is concerned, having considered the range of devices available in the market, structures of different goods vehicles and overseas experience, the study recommends that the scope of vision covered by the produced image by RVD should meet the following requirements (**see Annex B**) –

- Minimum width = vehicle overall width + 0.5 metre on each side;
- Minimum distance = 3.2 metre from vehicle rearmost; and
- Minimum height = 0.3 metre above ground.

10. In setting the requirements in paragraph 9 above, the following considerations have been taken into account:

(a) *Position of the camera and the image produced* – It has been found that the higher the position of the camera, the better the coverage of the image produced. There may be some blind spots if the camera is installed at a height below 1.5 metres, which may render the device ineffective in assisting the driver to reverse safely;

(b) *Operating environment in Hong Kong* – The general road environment (i.e. reversing is done mainly in narrow streets and cul-de-sacs and pedestrians tend to walk close to moving vehicles) and the actual operational practice (i.e. reversing speed is generally slow) have been taken into account; and

(c) *Overseas practice* – We have not been able to find examples in overseas countries whereby the installation of RVD is mandatory. The US Federal Government is consulting the public on its proposal of mandatory installation of RVD but no decision has been made yet[4]. The European Union countries and Australia have issued some guidelines for installing RVD on some vehicle types. The proposed standards in paragraph 9 are comparable with the proposals/guidelines[5] of overseas countries.

11. We have identified a number of RVD/Closed Circuit Television models in the market with viewing angle wider than 120 degrees that could achieve the proposed performance requirements. The cost of such devices is about $3,000 for each set.

12. The study also reveals that some technical problems have yet to be resolved and that RVD has its limitations –

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[4] We are aware of the report submitted by the US Department of Transportation National Highway Traffic Safety Administration to the U.S. Congress in November 2006. The report has pointed out that camera-based systems are generally more effective than sensor-based parking aids but camera-based systems also have their own limitations. Therefore, the U.S. authorities have to further examine and evaluate the effectiveness of camera-based systems and develop performance specifications for any technology that could be developed to address the risk in consultation with the industry.

[5] The performance requirements on the image produced by the RVD installed on vehicles adopted by the European Union (EU) countries and Australia, and those proposed by the US Government, are set out below –

EU countries (goods vehicles)
Minimum width : 2 metres
Minimum distance : 2 metres from vehicle rearmost at ground level
Australia (multi-purpose vehicles and private cars)
Minimum width : width of overall width + 0.1 metre on each side
Minimum distance : 5 metres from vehicle rearmost
Minimum height : 0.6 metres above ground
US Federal Government (medium goods vehicles)
Minimum width : 3 metres
Minimum distance : 3 metres from vehicle rearmost
Minimum height : 305 mm above ground

(a) Of the some 26 goods vehicle types more commonly found in Hong Kong, about 15 (58%) of them should be able to meet the proposed performance requirements without major difficulties, since camera mounting locations at a height of over 1.5 metres above ground can be identified for such goods vehicle types. However, for the remaining types, the mountable locations are at a height below 1.5m above ground due to their construction and body forms. These vehicles are tippers, pick-ups, tractor cranes, tractors, container trailers and those goods vehicles with platform or demountable bodies, etc. Most of these vehicles will have to install additional fittings and/or more than one camera in order to meet the performance requirements, resulting in higher capital and maintenance costs;

(b) It is found that RVD may not be able to pick up reliable images at all times since it will be affected by the external environment such as weather conditions or the illumination level (e.g. inside car parks or in rural areas at night time); and

(c) Drivers' attitude and behaviour are of paramount importance in the safe reversing of vehicles. RVD could only be regarded as an auxiliary device to assist reversing. The speed of the reversing vehicle, the level of driver's attention, the reaction of the driver, etc. will affect the effectiveness of the device and hence the safety of reversing vehicles.

Next Steps

13. TD is engaging the trade in discussions on enhancing the safety of reversing goods vehicles. The trade representatives agree that this relies largely on the drivers' attitude and behaviour and they would continue to remind their members on actions to take for safe reversing. The use of reversing aids including RVD and other measures to help enhance safety is also being explored.

14. In the light of the findings of the study, TD will proceed to consult the trade on the detailed performance requirements of RVD and the practicalities of applying them to the various types of goods vehicles as described in paragraph 12(a). Subject to the result of our discussion with the trade, we would see how we can further proceed with making the use of RVD by all goods vehicles mandatory by means of legislation. In parallel, we will continue to encourage the goods vehicle trade to install reversing aids including additional rear view mirror, reversing sensor and RVD on a voluntary basis. To assist vehicle owners to select more appropriate reversing aids for their vehicles, TD will prepare and issue guidelines in this respect.

Advice Sought

15. Members are invited to note the latest progress on measures taken to enhance safety of reversing goods vehicles.

Environment, Transport and Works Bureau
May 2007

Annex A

Review of road environment and measures to enhance safety of reversing goods vehicles
Progress Report (as at end of April 2007)

District Council	No. of priority locations identified	No. of locations with measures agreed by DC and relevant departments	No. of locations with works completed	No. of locations with works in progress/about to commence
Hong Kong Island				
1. Central & Western [1]	49	13	4	9
2. Eastern	5	5	2	3
3. Wan Chai	6	6	0	6
4. Southern District	3	1	0	1
Kowloon				
5. Yau Tsim Mong	12	10	1	9
6. Kowloon City	6	6	2	4
7. Wong Tai Sin	2	0	0	0
8. Kwun Tong	3	0	0	0
9. Sham Shui Po	9	8	0	8
New Territories east				
10. Sha Tin	2	1	0	1
11. Tai Po	4	3	1	2
12. Sai Kung	4	4	0	4
13. North	2	2	0	2
14. Islands	3	0	0	0
New Territories west				
15. Tsuen Wan	4	4	0	4
16. Kwai Tsing	6	6	0	6
17. Tuen Mun	7	7	0	7
18. Yuen Long	5	5	0	5
Total	**132**	**81**	**10**	**71**

[1] In Central & Western district, apart from the 49 locations, there are 18 other identified locations which are of less urgency. They are either low-traffic-flow private roads with adequate traffic management, or roads being blocked by on-street hawkers.

Annex B

Proposed performance requirements of the Reversing Video Device (RVD) -

- Minimum width = vehicle overall width + 0.5 metre on each side;
- Minimum distance = 3.2 metre from vehicle rearmost; and
- Minimum height = 0.3 metre above ground