

**Highways Department**  
**HyD Guidelines No. HQ/GN/36**

**Supplementary Notes on**  
**Code of Practice for the Lighting, Signing and Guarding of Road Works**  
**(Fifth Issue)**

**Introduction**

1. The Code of Practice for the Lighting, Signing and Guarding of Road Works (Fifth Issue) (the COP) was gazetted under the Road Traffic Ordinance (Cap 374) on 16 June 2017 and took effect from 1 January 2018. The COP has refined the detailed arrangements for temporary traffic arrangements to enhance the safety protection to road works personnel in general. According to paragraph 3.6 of the COP, the person responsible may propose practical alternative arrangements to the authorities for agreement.
2. These supplementary notes provide general references for persons responsible for road works and relevant parties to consider when they process applications and implement temporary traffic arrangements for road works according to paragraphs 7.4, 7.5, 5.24, and 5.11 of the COP. For the avoidance of doubt, these supplementary notes neither constitute any amendments to the COP nor intend to lift any requirements stipulated in the COP.
3. These supplementary notes may not be applicable to all special situations. Temporary traffic arrangement for situations not covered in these supplementary notes should be considered by the authorities on a case-by-case basis according to paragraphs 7.4, 7.5, 5.24 and 5.11 of the COP.

**Lateral Safety Clearance**

*Supplementary Notes to paragraph 7.4 of the COP*

4. Paragraph 7.4 of the COP stipulates the available options for situations where closure of part or whole of the adjacent lane to provide lateral clearance is restrained by site conditions. One option is to close the road for the road works and divert traffic to other routes such that the risk of oncoming vehicles running into the works area can be minimised. Where it is impractical to close the road or diverting the traffic to other route, the speed of the oncoming and passing traffic should be reduced to protect the road works personnel when the required minimum lateral safety clearance

cannot be provided.

5. In situations described in paragraph 4 above, lateral safety clearance less than 0.5m should only be allowed on roads with speed limit of 50km/h or below. For roads with speed limit exceeding 50km/h, where the width of lateral safety clearance less than 0.5m is provided, the speed limit of the roads concerned should temporarily be reduced to 50 km/h.
6. Further to paragraph 5 above, the following measures should be considered to reduce the approach speed of vehicles:
  - (i) Setting up guide island  
For dual two carriageway, guide island should be set up as illustrated in Figure A. Length of approach taper of guide island should follow Table 5.4 and paragraph 5.11 of the COP;
  - (ii) Reducing width of traffic lane  
The width of trafficked lane adjacent to both the works area and the longitudinal safety clearance zone should be reduced to 3.0m which can effectively slow down the oncoming traffic. If the speed of the oncoming traffic is anticipated to be high, extension of the longitudinal safety clearance zone should be considered in order to allow longer distance for the traffic to slow down. If there are bends within road section, swept path analysis should be conducted to determine the minimum width of traffic lane for long vehicles to pass through; or
  - (iii) Setting up portable traffic light signals or “Stop/Go” signs  
For single carriageway with two-way traffic, traffic control equipment, e.g. portable traffic light signals or “Stop/Go” signs, should be used to operate alternate one way working so that the traffic speed can be lowered. The traffic control equipment should be set by adjusting the phasing to stop or slow down the vehicles in front of the lane closure when the vehicles approach the lane closure.
7. Traffic cones or barriers should be properly placed to delineate the boundary between the adjoining traffic lane and the works area. If the lateral safety clearance is insufficient to place traffic cones or barriers, the traffic cones or barriers may be placed partially within the works area.
8. If lateral safety clearance is reduced to less than 0.5m with implementation of the above measure(s) in paragraphs 5 and 6 above, for activities involving workers working close to the edge of trafficked lane (e.g. painting road marking and resurfacing work at junctions), maximum spacing of

traffic cones should be reduced to 1m. A road works safety assistant should better be deployed to remind workers and plant operators on site of the required lateral safety clearance alongside the trafficked lane and to ensure that demarcation/delineation of works area and traffic lane follow the approved temporary traffic arrangements. The road works safety assistant should have attended the training course “Safety at Road Works” organized by Occupational Safety and Health Council or other similar courses.

9. If possible, paved verges or marginal strip at the side(s) of the carriageway should be considered as temporary access for traffic diversion.
10. In excavation works of depth less than 50mm, if the carriageway is not wide enough for maintaining 3.0m wide trafficked lane and the minimum lateral safety clearance adjacent to the works area, the person responsible may consider temporary closure of the carriageway and open part of the works area for traffic intermittently. When the works area is temporarily opened to traffic, works should be suspended and workers should stay far away from traffic and in any case not less than the minimum lateral safety clearance requirement. Temporary traffic signs should be placed for reminding drivers / motorcyclists to drive very slowly through the works area.

## **Longitudinal Safety Clearance**

### *Supplementary Notes to Paragraph 7.5 of the COP*

11. Paragraph 7.5 in the COP stipulates that where site constraints restrain the implementation of the longitudinal safety clearance zone and the guarding arrangement, the agreement of directorate officer in government department or equivalent in other organization responsible for the road works has to be sought for not adopting the specified guarding arrangement.
12. For non-government bodies, the person equivalent to directorate officer in government department who agrees the proposal of not implementing longitudinal safety clearance zone and the specified guarding arrangement according to paragraph 7.5 of the COP should be at a position not lower than that of the member of Joint Utilities Policy Group (JUPG). If the non-government bodies concerned are not in the JUPG, they should appoint an engineer who is a corporate member of the Hong Kong Institution of Engineers or equivalent with not less than 10 years post-qualification experience to agree the proposal of not implementing longitudinal safety

clearance zone and the specified guarding arrangement.

13. Details and particulars of the directorate officer in government department or equivalent in other organization should be submitted together with the temporary traffic arrangement proposal for the authorities' consideration when longitudinal safety clearance and the guarding arrangement cannot be implemented.
14. Longitudinal safety clearance zone is defined as an unoccupied space between the end of the approach taper and the works area in paragraph 7.5 of the COP. Longitudinal safety clearance zone should be considered in the direction of traffic along the temporary traffic arrangement only, but not in other traffic directions in a junction, interchange, run-in / out or slip road.
15. For road works at road junction or run-in/out, the typical arrangement layout is shown in Figure 5.9 of the COP. The longitudinal safety clearance zone should be maintained between the end of approach taper and the junction, so that the risk of vehicle crashing the approach taper and then running into the works area can be minimised. To protect the works area from the turning vehicles running into the works area at corner of the junction, barrier with minimum weight of 250kg/m should be erected in front of the works area at the corner of junction. Refer to Figure B for details.
16. According to paragraph 5.22 and Figure 5.13 of the COP, guarding arrangement using shadow vehicle with truck mounted attenuator (TMA) shall be placed in front of a longitudinal safety clearance zone before the works area. As there is no works area or longitudinal safety clearance zone at advanced taper (i.e. approach taper of guide island), it is not necessary to provide TMA at end of advanced taper pursuant to the requirements stipulated in the COP. Therefore, for guide island where no actual activities will be carried out, provision of longitudinal safety clearance and shadow vehicle with TMA behind the end of approach taper of guide island should not be required.

## **Guarding Arrangement for Road Works**

### *Supplementary Notes to Paragraph 5.24 of the COP*

17. Paragraph 5.24 of the COP stipulates that when temporary safety barriers are not being used, the person responsible shall properly record the detailed considerations and reasons in the submission for temporary traffic

arrangement to the TMLG or to relevant authorities for consideration. In general, the submission should include:

- Site plan and section of carriageway showing inadequate space for placing temporary safety barriers; and/or
- Programme showing that duration of setting up, removing temporary safety barriers and the duration of actual work to be undertaken within each lane closure.

18. The guidance on the use of the temporary safety barriers with stipulated containment level is summarized in Figure C of these supplementary notes. For excavation of small or narrow extent, workers normally cannot stay within the excavation area and time of workers stationing close to the excavation is normally short. For excavation depth greater than 150mm, if the works with (i) excavation area not exceeding 1m<sup>2</sup> or (ii) excavation width not exceeding 500mm, using temporary safety barriers with stipulated containment level should not be necessary.
19. Roadside barriers mean untensioned corrugated beam barrier fences, concrete profile barrier fences, high containment concrete barrier and vehicular parapets with reference to Transport Planning and Design Manual (TPDM) Volume 2 Chapter 3.9 Paragraph 3.9.3.1. Railing on footway should not be considered as roadside barriers.
20. With reference to the guidelines on the use of temporary safety barriers published in the US<sup>1</sup> and the UK<sup>2</sup>, duration of works is an important factor to be considered in determining whether temporary safety barriers should be used. The principle of the assessment in the guidelines mentioned above is to ensure the benefits of installing the barriers outweigh the risks of off-track vehicle running into the works area without the barriers. Because of heavy weight and larger size of temporary safety barriers with stipulated containment level, the duration for their installation and removal is longer than that for water filled barrier without containment level. Workers for setting up and removal of temporary safety barriers with containment level would expose to higher risk of collision by vehicles. The US guideline indicates that positive protection devices such as temporary safety barriers become more cost effective when used in longer term project with duration more than 3 days. Therefore, for lane closure of duration (i.e. from setting up Lighting, Signing and Guarding (LSG) to removal of LSG) not exceeding 3

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<sup>1</sup> "Guidelines on the Use of Positive Protection in Temporary Traffic Control Zones" by The American Traffic Safety Services Association

<sup>2</sup> "Interim Advice Note 142/11 – Temporary Barrier Decision Tool (TBDT)" by Highways England

consecutive days, the use of temporary safety barriers with stipulated containment level is not necessary in general, except in special circumstances where the authorities consider necessary otherwise.

21. Despite the consideration in paragraph 20 above, for the lane closure for road works on carriageways with speed limit of 70km/h or above (i) with excavation depth greater than 150mm (with area exceeding 1m<sup>2</sup> or width exceeding 500mm), (ii) involving temporary removal of existing roadside barriers or (iii) with the need to provide protection to temporary or permanent bridge supports, temporary safety barriers with stipulated containment level is required, regardless of the duration of the lane closure.
22. If duration of lane closure is more than 3 consecutive days and the speed limit of a road is 70km/h or above, use of temporary safety barriers with stipulated containment level is generally required for all types of road works.
23. For lane closure exceeding 3 days on roads with speed limit of 50km/h or below, temporary safety barriers with stipulated containment level is generally required for road works (i) with excavation depth greater than 150mm and area exceeding 1m<sup>2</sup> or width exceeding 500mm, (ii) involving temporary removal of existing roadside barriers, (iii) with the need to provide protection to temporary or permanent bridge supports or (iv) within section of road with sharp “bend” warning sign. The temporary safety barriers need not be extended to the approach tapers except for lane closure on trunks roads and primary distributors or in special circumstances where the authorities consider otherwise, such as likelihood of speeding.
24. If temporary safety barriers cannot be used for the circumstances in paragraphs 21, 22 and 23 above due to site constraints, measures may be implemented to reduce the speed of the oncoming vehicles adjacent to the works area (e.g. imposing lower speed limit temporarily, setting up guide island, reducing width of traffic lane or setting up portable traffic light signals or “Stop/Go” signs) such that the temporary safety barrier requirements may be adjusted correspondingly.
25. According to paragraph 5.24 of the COP, if temporary safety barriers are provided at the approach taper, it can be used as alternative to the TMA mounted on shadow vehicle for guarding as specified in paragraph 5.22 of the COP. The purpose of using temporary safety barriers is to minimize the risk of causing damage and injuries to road works personnel, motorists,

passengers and other road users in case the road works are being hit by vehicle. The TMA mounted on shadow vehicle placed in front of the longitudinal safety clearance zone is originally intended to serve the same purpose as the temporary safety barriers provided at the approach taper. Therefore, if the TMA mounted on shadow vehicle for guarding as specified in paragraph 5.22 of the COP is provided, it can be used as an alternative to the temporary safety barriers at the approach taper.

26. Regarding buffer separation allowed for the deflection of temporary safety barriers, reference should be made to the standard of acceptance test for the respective containment level in BS EN 1317-2:2010 on the basis of road speed limit and vehicle impact angle.
27. If speed limit of road is lower than the specified impact speed of the relevant acceptance test in BS EN 1317-2:2010, the speed limit of the road should be used to calculate the deflection of barriers. When vehicles travel alongside of the works area, impact angle of off-track vehicle striking on temporary safety barrier should in most cases be small. It is considered that smaller impact angle, e.g.  $5^{\circ}$ , is used for calculating buffer separation for deflection of barrier in Hong Kong situation. According to the manufacturer's literature of one of the approved temporary safety barriers with containment level, the buffer separation is ranged from 0.05m for traffic speed of 50km/h to 0.13m for traffic speed of 80km/h. The person responsible should submit to the relevant authorities the calculation of deflection of barrier provided by the manufacturer based on the above criteria.
28. For the case where deflection zone cannot be maintained due to site constraints, measures should be implemented to reduce the speed of the oncoming vehicles e.g. imposing speed limit reduction temporarily, setting up guide island reducing width of traffic lane, setting up portable traffic light signals or "Stop/Go" signs should be implemented in order to reduce the width of deflection zone.
29. If it is not possible to interlock temporary safety barriers with containment level at sharp bend, corner or site access of works site or lane closure, the person responsible shall properly record the detailed consideration and reasons for not using the interlocking temporary safety barriers with containment level in accordance with paragraph 5.24 of the COP.

## **Length of Approach Tapers**

### *Supplementary Notes to Paragraph 5.11 of the COP*

30. Site constraints where the length of approach taper can be reduced include lane closure close to or at lane diverging or merging, or a busy junction. The actual length of approach taper should be as long as practical to meet the requirements in Table 5.4 of the COP, subject to site condition.

## **Enquiries**

31. Enquiries on the application of the COP and these supplementary notes under special site conditions should be directed to the Chief Highway Engineers of the respective regions (Hong Kong, Kowloon, New Territories West or New Territories East) of HyD. In case of doubt on technical matter, Chief Highway Engineers of the respective Regions shall seek advice from Chief Highway Engineer/ Research and Development.

## **Further Update**

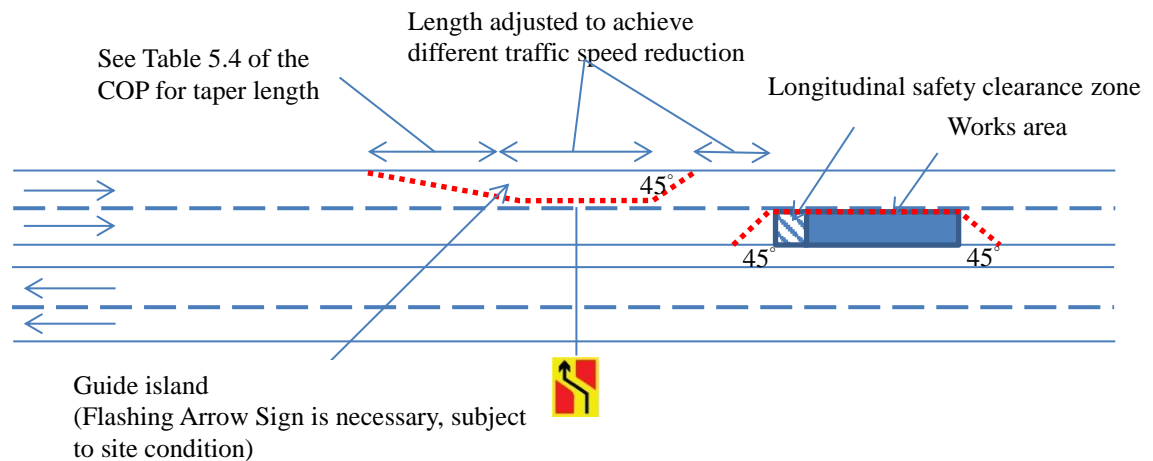
32. Subject to the use of the supplementary notes, HyD may further update the notes.

**Highways Department**  
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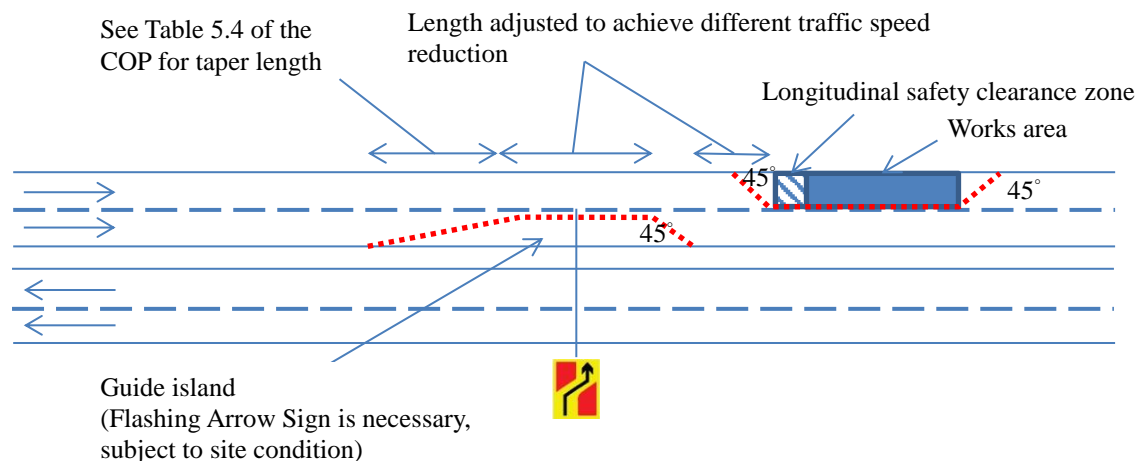


**Figure A : Setting up guide island for closure of one lane on dual two lane carriageway roads**

**Works area on fast lane**



**Works area on slow lane**

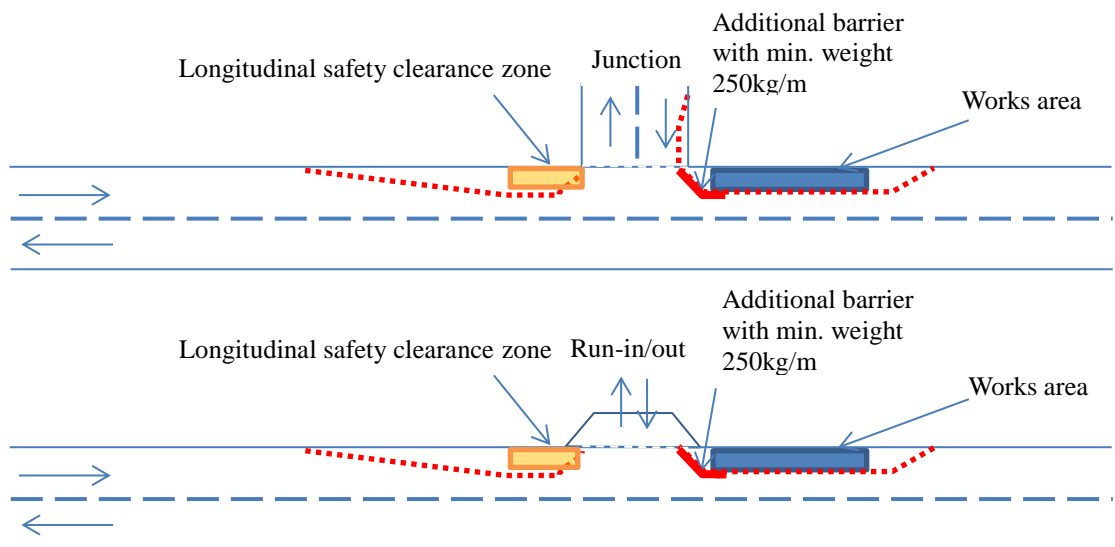
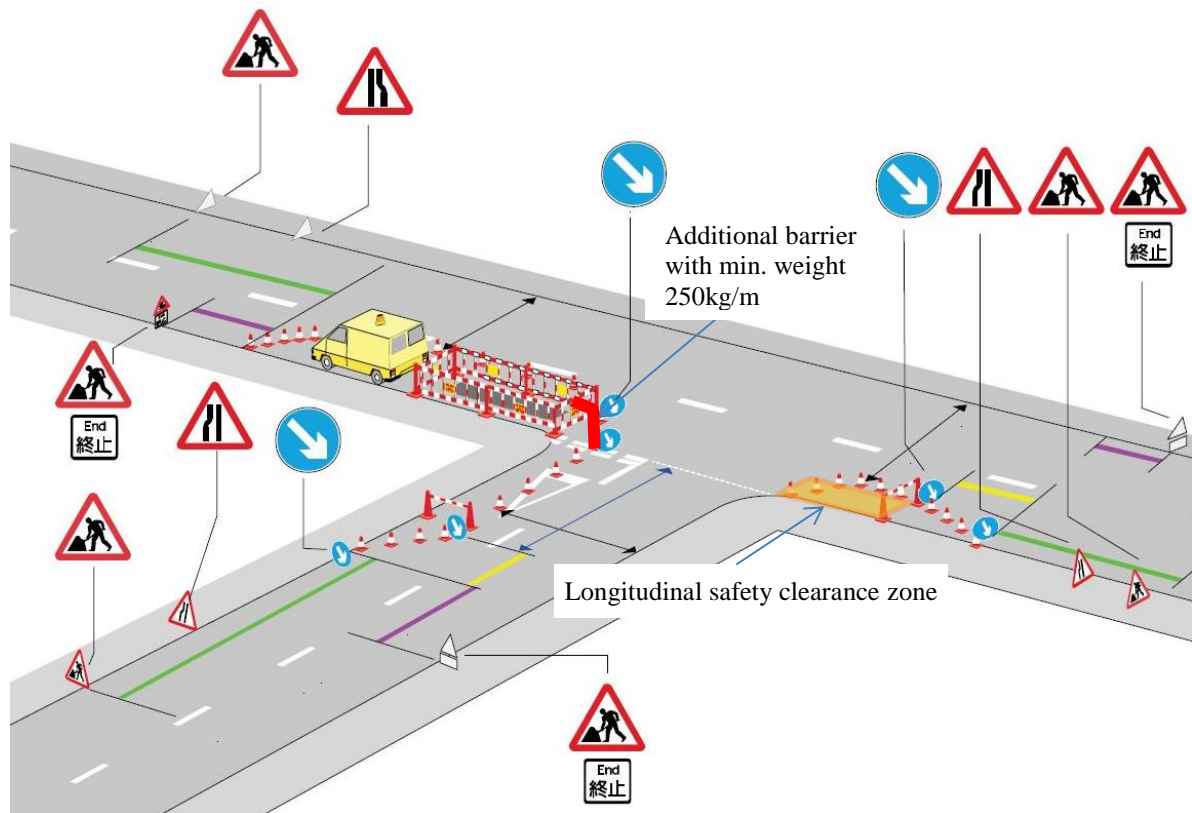


**Notes:**

Refer to Fig 5.0 and 5.10 of the COP for details of lighting, signing and guarding which are not shown for clarity.

Swept path analysis is required for passage of long vehicles in sharp bends.

## Figure B : Provision of longitudinal safety clearance zone at road junctions and run-ins/outs



Notes:

Refer to Fig 5.0 and 5.9 of the COP for details of lighting, signing and guarding which are not shown for clarity.

**Figure C : Site Conditions Where Consider to Use Temporary Safety**

**Barrier with Stipulated Containment Level**

