

CHAPTER 15: HAND AND OTHER SIGNALS

15.1 GENERAL

- 1 This section covers a number of traffic signals that involve manual indications or other signals that are not operated electrically, and include the following:
 - (a) control hand signals for use by traffic officers SS1;
 - (b) flag signals SS2;
 - (c) flashing yellow warning signals SS3; and
 - (d) flare signals SS4.

15.2 CONTROL HAND SIGNALS FOR USE BY TRAFFIC OFFICERS SS1

15.2.1 General

- 1 CONTROL HAND SIGNALS FOR USE BY TRAFFIC OFFICERS SS1 may be used to control the movement of traffic and/or pedestrians and as such are regulatory signals. Such signals will normally be used when some other form of traffic control is out of operation or when traffic volumes are such that special control needs to be exercised to reduce congestion and establish order, or when there is a need to stop traffic for a specific reason.
- 2 According to the National Road Traffic Regulations, ***"a control hand signal SS1 shall conform to the requirements of one of the standard hand signals as shown in Figure 15.1 and shall be:***
 - (a) ***a hand signal to stop traffic approaching from the front, indicating to the driver of a vehicle approaching a traffic officer from the front, who is displaying the signal, that he or she shall stop until the signal referred to in d) below is displayed;***
 - (b) ***a hand signal to stop traffic approaching from the rear, indicating to the driver of a vehicle approaching a traffic officer from the rear who is displaying the signal, that he or she shall stop until the signal referred to in d) below is displayed;***
 - (c) ***a hand signal to stop traffic approaching from the front and the rear, indicating to the driver of a vehicle approaching a traffic officer from the front or rear who is displaying the signal, that he or she shall stop until the signal referred to in d) below is displayed; or***
 - (d) ***a hand signal to show traffic to proceed from the front, left or right, indicating to the driver of a vehicle that he or she may proceed if a traffic officer displays the signal"***.
- 3 In addition to the above hand signals, the traffic officer may use other hand signals to supplement those described above. It is common practice, for instance, for a traffic officer to select the vehicle that he or she wishes to stop some distance back in a traffic stream and to clearly identify it by pointing prior to giving the appropriate hand signal. In a similar way, a traffic officer may indicate by pointing to one of several stopped streams of traffic that the vehicles in the indicated stream may proceed.

- 4 Having given a stop signal to road users the traffic officer may lower the hand used for such signal and uses it to execute other hand signals. The road users stopped by such original signal shall not proceed until directed to do so by the traffic officer.
- 5 When dealing with complex traffic movements it may be necessary for a traffic officer to give signals that combine more than one of the elements of those described above. For example, when directing turning traffic, it may be necessary for the traffic officer to cut off traffic flow from the left by holding his extended arm at 90 degrees to his body instead of parallel to his body.
- 6 A traffic officer using hand signals should be positioned within the junction in a position most visible from all approaches and as close as possible to the centre of the junction, subject to paths of the vehicles that are permitted to enter the junction at any given time.

15.2.2 Point control of junctions

- 1 Traffic officers or authorised pointsmen are often used for the control of traffic at junctions during peak periods. A traffic officer or pointsman may also intervene with the operations of traffic signals.
- 2 It is possible to achieve very efficient traffic operations with point control at isolated junctions. In a network of traffic signals, this is more difficult, if not impossible to achieve.
- 3 The basic objective of point control of an isolated junction is to keep the junction as busy as possible and to eliminate all lost time. Only queues of vehicles should be allowed to discharge from one or more approaches, after which priority should revert as soon as possible to other waiting queues.
- 4 Where possible, a discharging queue should not be stopped since any overflow of vehicles would increase delay. If sufficient time is not provided for such a queue to discharge, the queue will grow indefinitely, causing excessive delay to traffic.
- 5 However, giving too long a period of right of way to one or more approaches, would result in lost efficiency every time departure flow rate drops below the maximum possible departure flow rate. The delay experienced by stopped vehicles increases while approaches from which vehicles depart are operating at low levels of efficiency.
- 6 The objective of an efficient point control strategy, therefore, is to switch right of way as soon as the queue of vehicles has departed from an approach (but only if there are vehicles waiting in other queues). This, however, is subject to limits since right of way cannot continuously be provided to one stream of traffic while other vehicles are experiencing long delays. Right of way should not be given to one stream for longer than approximately 1 minute.

15.3 FLAG SIGNALS SS2

- 1 FLAG SIGNALS SS2 may also be used to control the movement of traffic, and as such are regulatory signals. Such signals will generally be used at roadworks and for the control of traffic during sporting and other events. It is particularly appropriate for small and mobile works where flags may also be combined with road signs and/or construction vehicles.
- 2 According to the National Road Traffic Regulations, **"a flag signal SS2 shall conform to the requirements of the flag signals shown in Figure 15.2 and shall be:**
 - (a) **a flag signal to stop, indicating to the driver of a vehicle that he or she shall stop until the flag signal referred to in b) below is displayed; and**
 - (b) **a flag signal to proceed indicating to the driver that he or she shall proceed when the flag signal is displayed"**.
- 3 A WARNING FLAG SIGNAL may also be used to warn a road user to proceed slowly, and be alert of a hazard in or adjacent to the roadway ahead.
- 4 A good, active flagman can be as effective as any other means of drawing attention to a hazard in the roadway. The reason for this is that the flag movement makes a very effective visual target in the field of view of the driver. A good flagman will also make sure that a driver is aware of the signal.
- 5 Innovative techniques may also be employed with a warning flag signal to good effect. A flagman may, for instance, stand at a particularly important road sign and point to it with a second flag.
- 6 Flagmen should be chosen for their general alertness, good eyesight, hearing, and an adequate ability to communicate in a pleasant manner with the driving public. It must be realised, however, that the task of flagging is a boring one. Flagmen should therefore be organised into rosters and should be alternated at regular intervals.
- 7 The careful training of flagmen is essential before making them responsible for the flow of traffic. The efficiency of flag control is often dependent on their training.
- 8 Flagmen should wear conspicuous and distinctive clothing such as fluorescent-coloured helmets, bright coloured overalls together with a safety vest or jacket utilising retro-reflective and/or fluorescent panels in red, yellow, and/or white.
- 9 Flagmen should be located well in advance of the hazard to which attention is being drawn. This distance should at least provide sufficient time for vehicles to slow down before reaching the hazardous location, but not at such a distance that drivers will tend to increase speed. The flagman should stand in a very visible position.
- 10 The flagman should either stand on the shoulder adjacent to the lane of traffic they are controlling or in a barricaded lane. Under no circumstances should they stand in the traffic lane. The flagman should stand alone, and nobody should be allowed to gather around the flagman.
- 11 In many circumstances, the function of the flagman is to draw attention to other temporary road traffic signs. He or she will therefore commonly be located at the beginning of an advance sign sequence where traffic is moving at high approach speeds. Flagmen may also be used within a roadwork site to draw attention to a specific localised hazard.
- 12 FLAG warning signals SS2 should be square with a minimum side length of 450 mm. A side length of 600 mm is preferred for high-speed approaches (70 km/h or higher) or high traffic volumes. FLAGS should be made of a bright red or red-orange material attached to a staff approximately 1 m in length. The free edge, and if necessary the diagonal of the flag may be stiffened to maximise the visible area. However, such stiffening should not remove all capability of the flag to be waved. Retro-reflective and/or fluorescent materials are recommended. Flags shall be kept clean at all times.
- 13 Additional details on the use of flag signals and flagmen are given in Chapter 13 of Volume 2 of the Road Traffic Signs Manual.

15.4 FLASHING YELLOW WARNING SIGNALS SS3

- 1 The FLASHING YELLOW WARNING SIGNAL SS3 may be used to warn a road user of the presence of a particular hazard or traffic control device. Signal SS3 may be combined with REGULATORY or WARNING signs as illustrated in Figure 15.3, and it forms part of an emergency flashing light warning sign W346 or TW346.
- 2 The signal light shall conform in all respects to the requirements for a traffic light signal and, in South Africa, conform to the South African standard specification SANS 1459: *Traffic lights*. The exceptions are as follows:
 - (a) The light signal shall be used to display a FLASHING YELLOW DISC LIGHT SIGNAL only, and shall not be used to display a steady light signal.
 - (b) No other light signal shall be displayed at, or alongside, the flashing yellow warning signal.
 - (c) Duplicate light signals, up to a maximum of four, may be provided at one sign and these may flash alternately.
 - (d) Signal posts shall be as for road signs.
- 3 Whilst the signal should be conspicuous, it shall not obscure the sign or distract attention from it. The brightness of the signal should not cause "discomfort glare" or "disability glare", particularly at night. If necessary, provision should be made to reduce the luminous intensity of light signals automatically during the hours of darkness.

- 4 The signal may be operated 24 hours every day, or intermittently, as required. Intermittent operation may be achieved by means of a time switch, or by an external input, for example, upon the actuation of a pedestrian push button at a pedestrian crossing.
- 5 It is recommended that flashing yellow warning signals should only be used in conjunction with road signs. The installation and operation of a flashing yellow warning signal is warranted where hazardous conditions exist on the road and/or it is necessary to draw attention to a road sign and reinforce its effect. If the signal can be warranted, an appropriate road sign must similarly be warranted. The road sign will indicate to drivers the specific nature of the hazard which the flashing signal cannot do. Installations shall be permanent except at roadworks where flashing yellow warning signals may be used with any of the prescribed temporary warning signs.
- 6 Single flashing yellow warning signals can only be used with warning signs where it is necessary to draw attention to the warning sign and reinforce its effect.
- 7 Two or four flashing yellow warning signals may be used with any road sign, but the arrangement and brightness of the signal should not detract attention from the sign or cause disability glare. The signals should flash alternately (singly on in pairs) and not randomly.
- 8 Flashing signals shall operate at a frequency of between one and two flashes per second and the luminous intensity shall be zero for 30% - 50% of the period and not less than the specified minimum for 30% - 50% of the period.

15.5 FLARE SIGNALS SS4

- 1 The FLARE warning signal SS4 may be used to warn the road user of a temporary hazard in the roadway ahead and to indicate that they should reduce speed immediately.
- 2 Road safety flare signals SS4 are temporary devices with a high visual impact which may be used as an "immediate action" device by traffic officers attending the scene of a collision or other incident which affects the use of all or a portion of a roadway. Such flare signals should emit a red or red/orange light and moderate smoke. Flare signals permit traffic officers to deal speedily with any life threatening aspects of the incident before giving more detailed attention to traffic control.
- 3 It is recommended that two flares be used at any location. These should be placed well in advance of the incident site. As a guideline the first flare should be located a distance $2 \times D$ metres in advance, where "D" is the speed limit in km/h. The second flare should be located at a similar distance in advance of the first flare.
- 4 Before setting out flare signals the following checks should be carried out:
 - (a) Does the incident involve any hazardous/ inflammable materials?
 - (b) If it does, can these drain in the direction of the flares?
 - (c) Is the roadside vegetation, in combination with the wind a fire risk?
 - (d) Can the flare signal be made safe from falling over or rolling in the prevailing wind?FLARE signals shall not be held in the hand, or waved in the air.

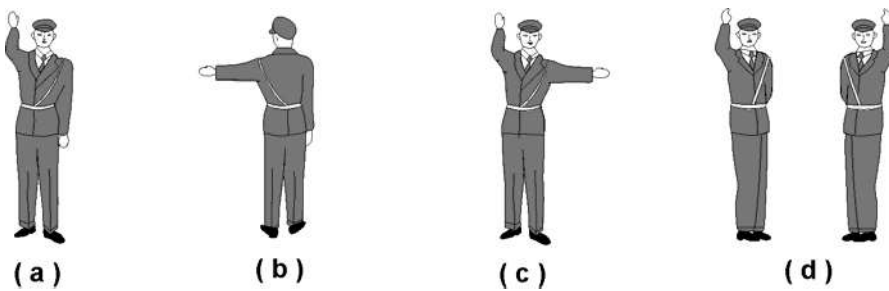


Figure 15.1: Control hand signals for use by traffic officers SS1

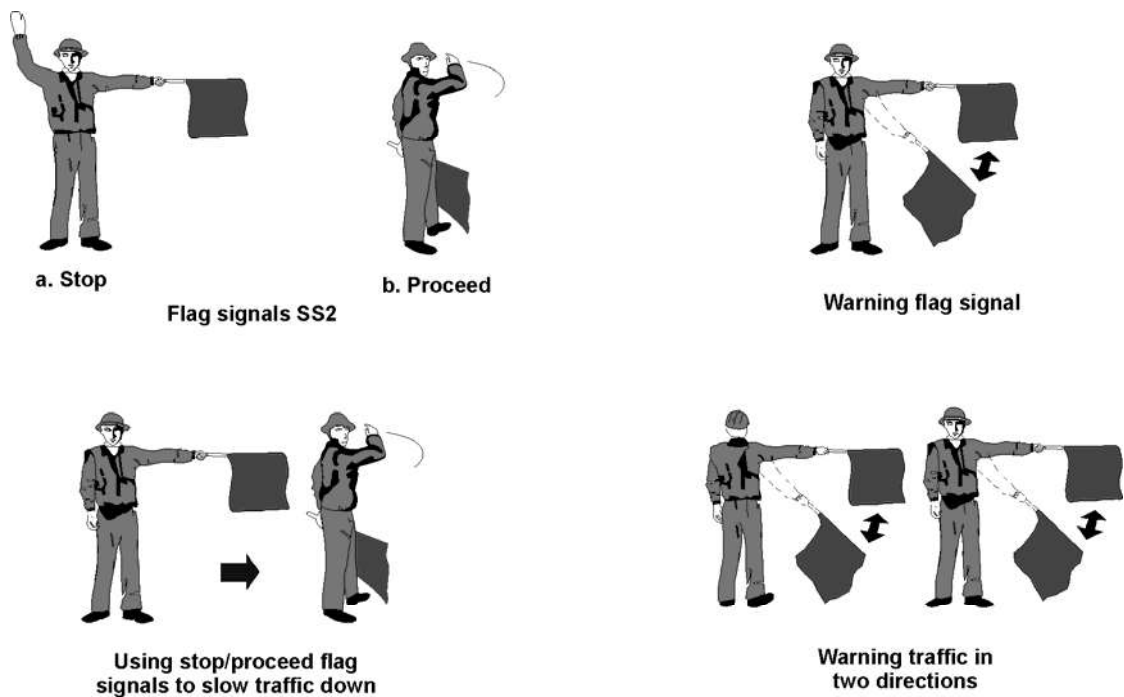
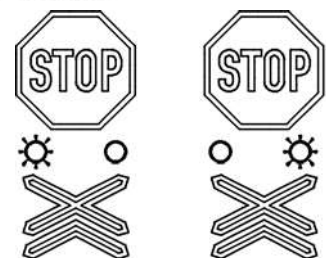
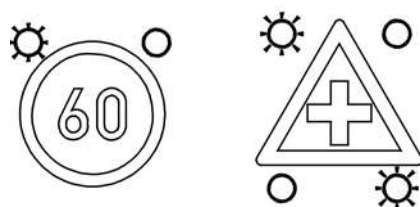


Figure 15.2: Flag signals SS2



Train coming



No train

Figure 15.3: Flashing yellow warning signals SS3

Figure 15.4: Flashing red disc light signals at railway crossings

SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL

VOLUME 3: TRAFFIC SIGNAL DESIGN

DIGITISED VERSION – May 2012

PART 2

TRAFFIC SIGNAL EQUIPMENT

