



**ROAD SAFETY
DEPARTMENT**

**Safer Temporary Traffic
Management Schemes**



Main Objectives

- **Ensure a high level of safety for all road users.**
- **Identify and address RISK.**
- **Effective traffic management to cause least disruption to traffic.**
- **Minimise queues and delays.**

Design of Traffic Management Schemes

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- **Co-ordination is to be held with effected entities:**
 - Police, Local Council, Public Transport
 - Commercial Community
 - Special entities eg. MIA, AFM, Fire Rescue, Emergency Services.
- **Traffic diversions/re-routing schemes are to be designed to ensure the least disruption to traffic and ensure safety for all road users at all times.**
- **Signage and traffic management equipment layout is to reflect each different phase of the project.**

Design Criteria: Road Widths

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Criteria	Vehicular Direction	Minimum Width
Two heavy vehicles passing each other	2-way	5.5m
One heavy vehicle and one passenger car passing each other	2-way	4.8m
Two passenger cars passing each other	2-way	4.1m
One heavy vehicle passing	1-way	3.0m

Design Criteria: Equipment

<https://assets.publishing.service.gov.uk/media/5a7d8038e5274a676d532707/safety-at-streetworks.pdf>

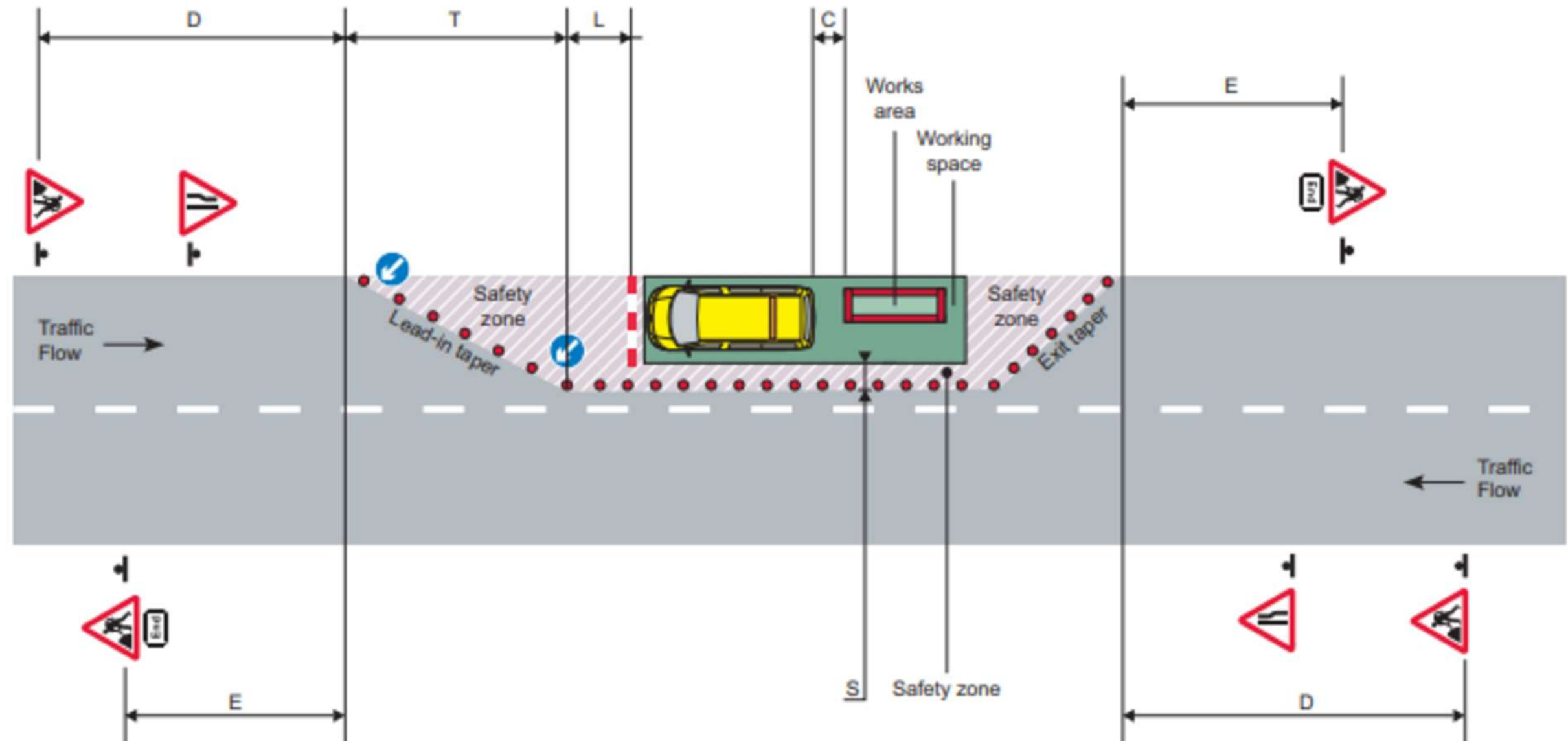
Traffic Management Setup Criteria	Type of Road		
	2-Way, <50 km/h	2-Way, <60km/h	2-Way, <80km/h
Sideways Safety Zone (S)	0.5m	0.5m	1.2m
Distance of first MEN AT WORK sign to start of taper(D)	20-45m	110-275m(Dual)45-110m(Single)	275-450m
Min visibility distance from first MEN AT WORK	60m	60m	75m
Distance from last cone to End of Works (E)	10-30m	30-45m	30-45m
Taper Length (T)	40m for 3m work width, 6 cones	75m for 3m work width, 10 cones, 9 lights (Dual)60m for 3m work width, 8 cones, 7 lights (Single)	75m for 3m work width, 10 cones, 9 lights
Longways Clearance (L)	0.5m	15m	30m
Size of Signs	600mm	750mm	750mm
Size of Cones	450mm	450mm	450mm

Design Criteria: Placing of Equipment



<https://assets.publishing.service.gov.uk/media/5a7d8038e5274a676d532707/safety-at-streetworks.pdf>

basic layout with a works vehicle



Traffic Cones and Barriers

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Concrete barriers must be touching each other and plastic barriers are to be interlocked.

Concrete/plastic barriers used where excavation exceeds 100mm in depth.

Plastic netting is to be used only where excavation does not exceed 100mm and used as hoarding only. Iron rods to have a cap at all times and are to be maintained. Bent rods are not acceptable.

Flashing lights installed on the barriers and netting along the work site.

Plastic barriers are to be filled with water or sand at all times. Bucket plastic barriers are to be filled with sand bags.

Traffic Cones and Barriers

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- All barriers are to be aligned and along entire work site.
- All barriers are to have reflectors.
- Traffic cones are to be used for minor works not exceeding 24hours duration and for excavation not exceeding 100mm depth.
- Traffic cones are to be maintained and be reflective. Size of cones to be as per previous table.

Lighting

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- To install floodlighting at critical locations eg. Junctions, pedestrian crossings, open trenches.
- Flashing lights to be along the entire work site alignment.
- Flashing lights to be in working order at all times.
- Flashing lights are to be installed at a minimum of 2m spacing.
- Temporary traffic lights to be installed as required.

Signage and Line Markings

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- Temporary signage is to be installed only at the immediate commencement of works.
- All temporary signage is to have a sticker at the back indicating the Road Works Permit Number, the logo of the assigned contractor and a contact number.
- Height of signs with clear space of 2.1m on footways and 2.3m along cycle routes and a minimum distance of 600mm from carriageway.

Signage and Line Markings

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- Size of signs to be as per previous table.
- Approach signage to be installed as per previous table.
- Temporary diversion signs installed as necessary.
- Temporary line markings are to complement scheme and signage.
- Information signs with project and contractor details.

Signage and Line Markings

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- Missing/damaged/dirty signs are not acceptable.
- Removal of temporary signage and line markings immediately upon completion of the project. Signage which is left on site after completion will be removed by Transport Malta at the expense of the assigned project contractor.

Signage and Line Markings

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- Temporary line markings to be yellow
- Temporary zebra crossing to be in white and yellow stripes. A temporary ramp to be provided between the kerb and the pavement finished level.
- Diversion signs to have a yellow background.

Traffic Cones

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It is recommended to use coloured traffic cones to inform road users of the risks to safety or to guide users accordingly:

- **ORANGE:** Used where a traffic hazard is present, at road works projects and at projects using heavy equipment and heavy vehicles.
- **YELLOW:** Used at work site with slight risk, to alert drivers to proceed with caution and yield to construction vehicles and at No parking/no waiting areas.

Traffic Cones

tm

- **GREEN:** Used at access points for construction vehicles at a work site, to alert driver and to mark diversion routes as guidance.
- **BLUE:** Used to signal danger from overhead utilities or structures such as overhead wires, bridges, signs, etc...
- **RED:** Used to mark areas of imminent danger with chance of serious injury or death, to block a workplace hazard and to mark emergency equipment such as fire hydrants.
- **PURPLE:** Used for sports, parties, celebrations.

Obstruction / Hazard

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- Construction debris is not to accumulate on site.
- Machinery and equipment are to be kept in good working order and be stored at assigned locations on site.
- Construction materials are to be temporarily stored at assigned locations on site.
- Emergency access points are to be clearly marked, accessible and visibility lines and swept paths are to be checked.

Obstruction / Hazard

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- Vehicular and pedestrian access points are to be checked to ensure safety for all road users.
- Construction vehicles are not to leave debris on their exit routes.
- Site is to be cleared on completion of works.

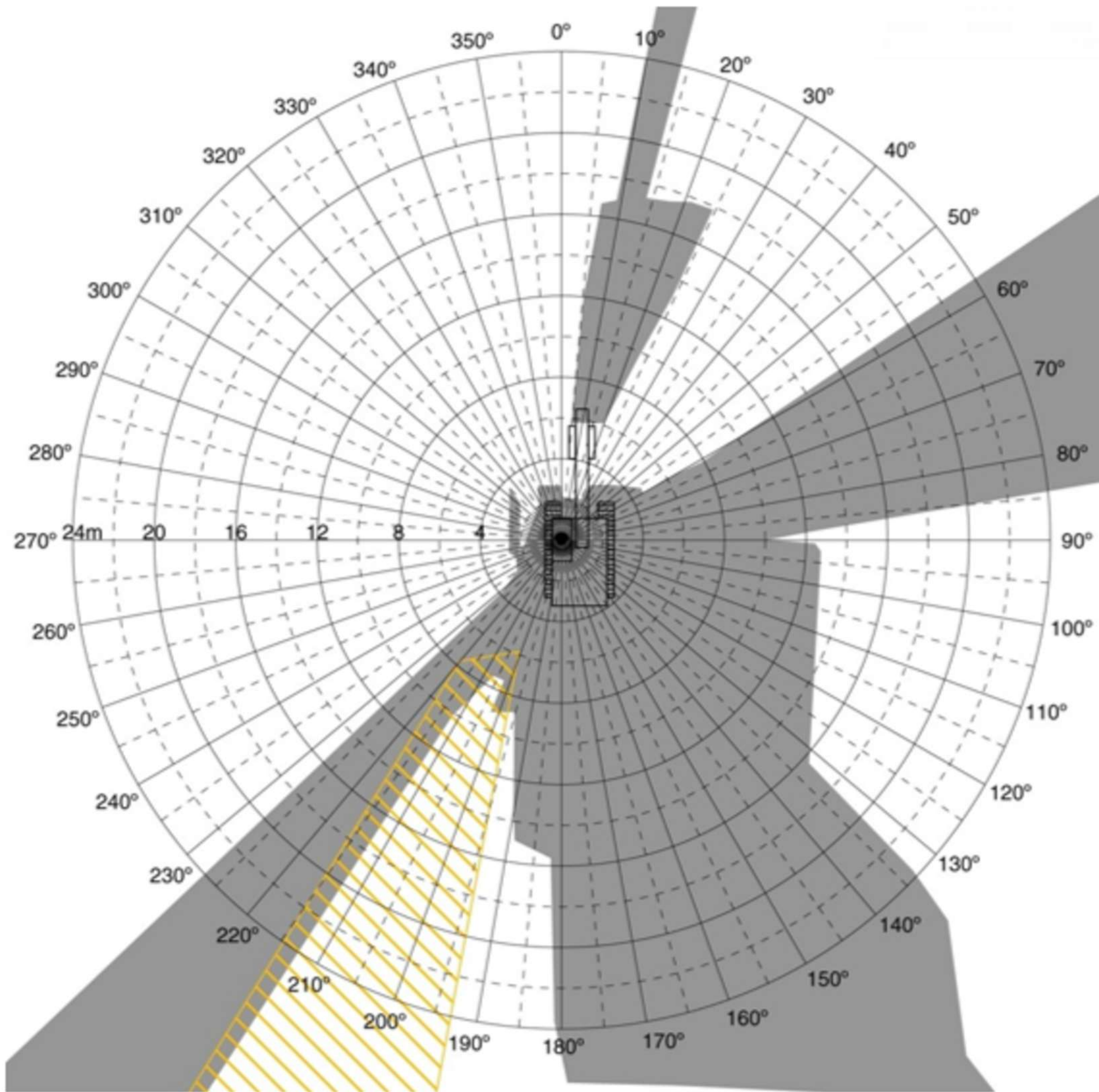
Maintenance of Schemes

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- Flashing lights to be in working order.
- Signage is to be regularly checked and is to be clean and not damaged.
- Barriers to be aligned and filled with water/sand.
- Site to be clear from debris and other obstructions/hazards.
- Signage and line markings to be checked and updated regularly to reflect any changes in the traffic arrangements.

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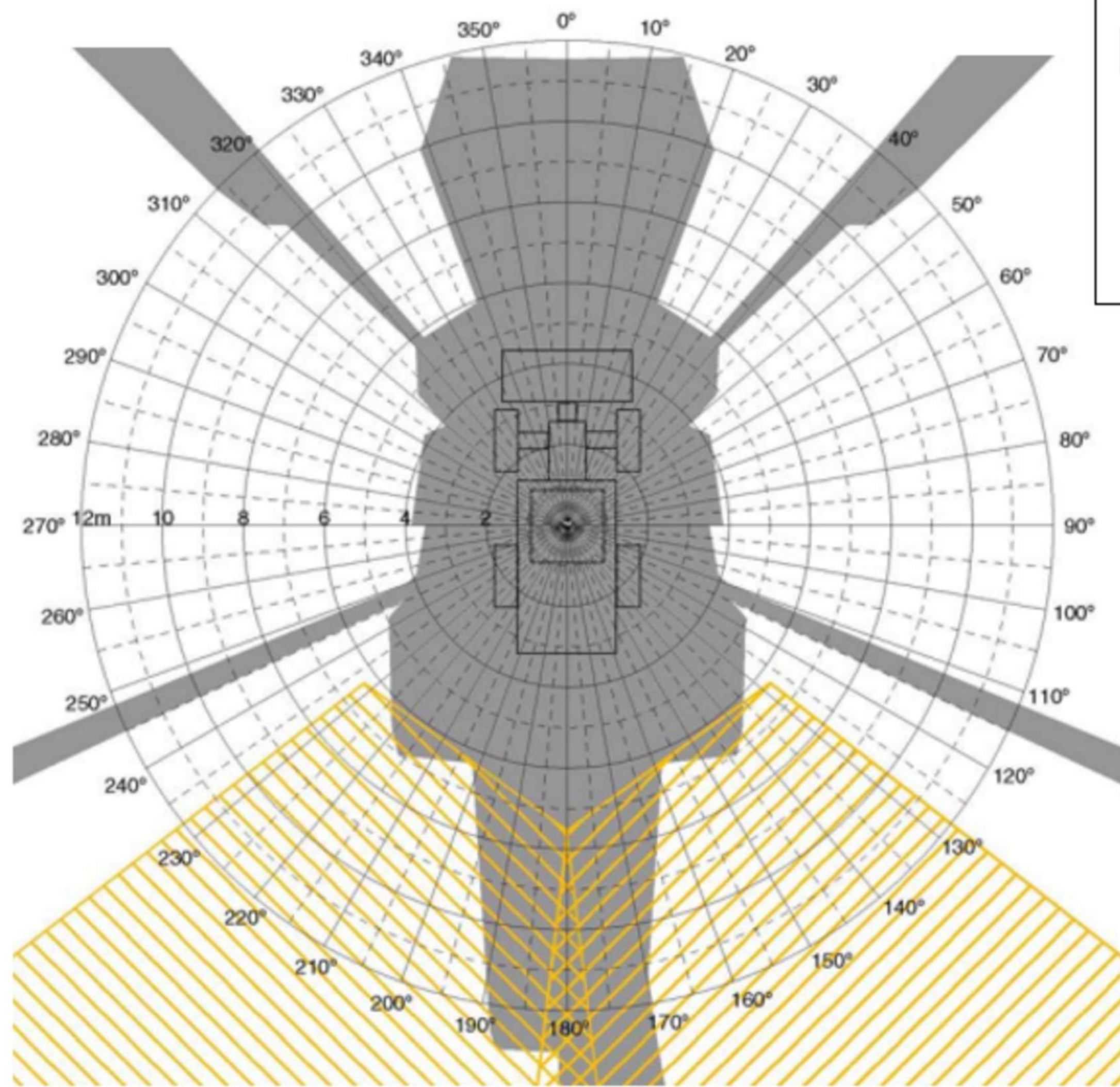
Blind Zones of Construction Equipment and Vehicles



EXCAVATOR BLIND ZONE

Source: NIOSH

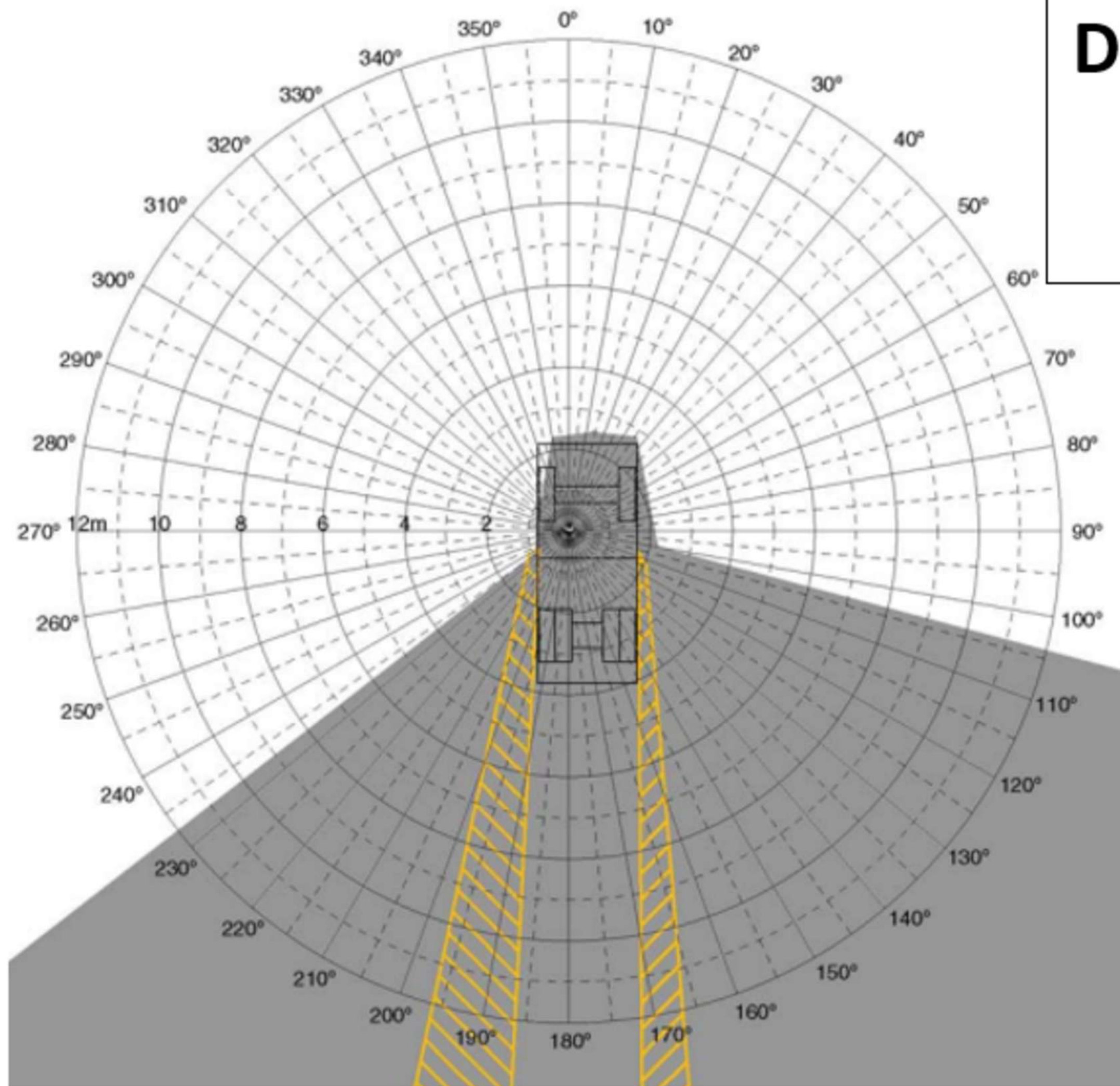




LOADER TRUCK BLIND ZONE

Source: NIOSH

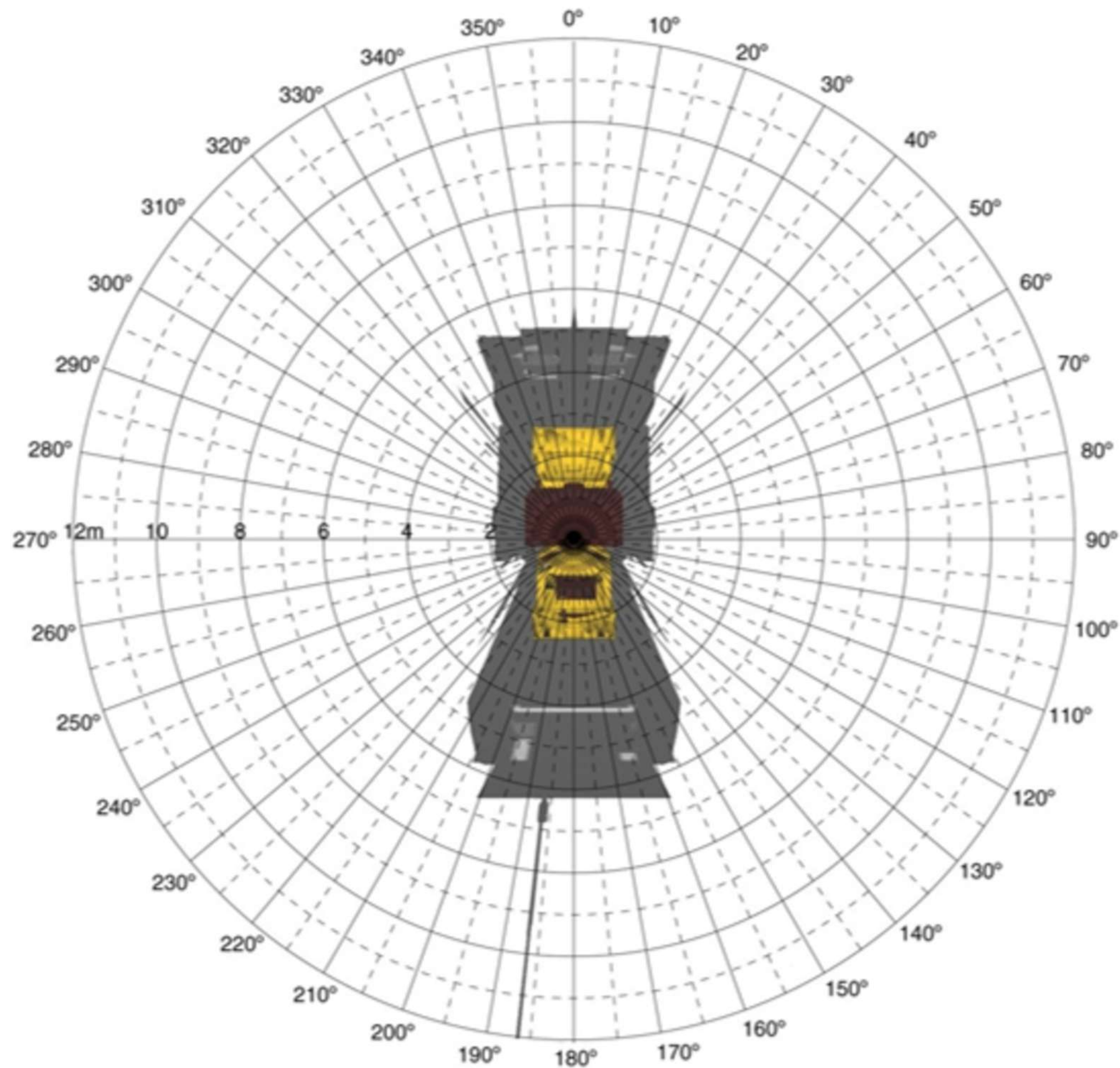




DUMPER TRUCK BLIND ZONE

Source: NIOSH

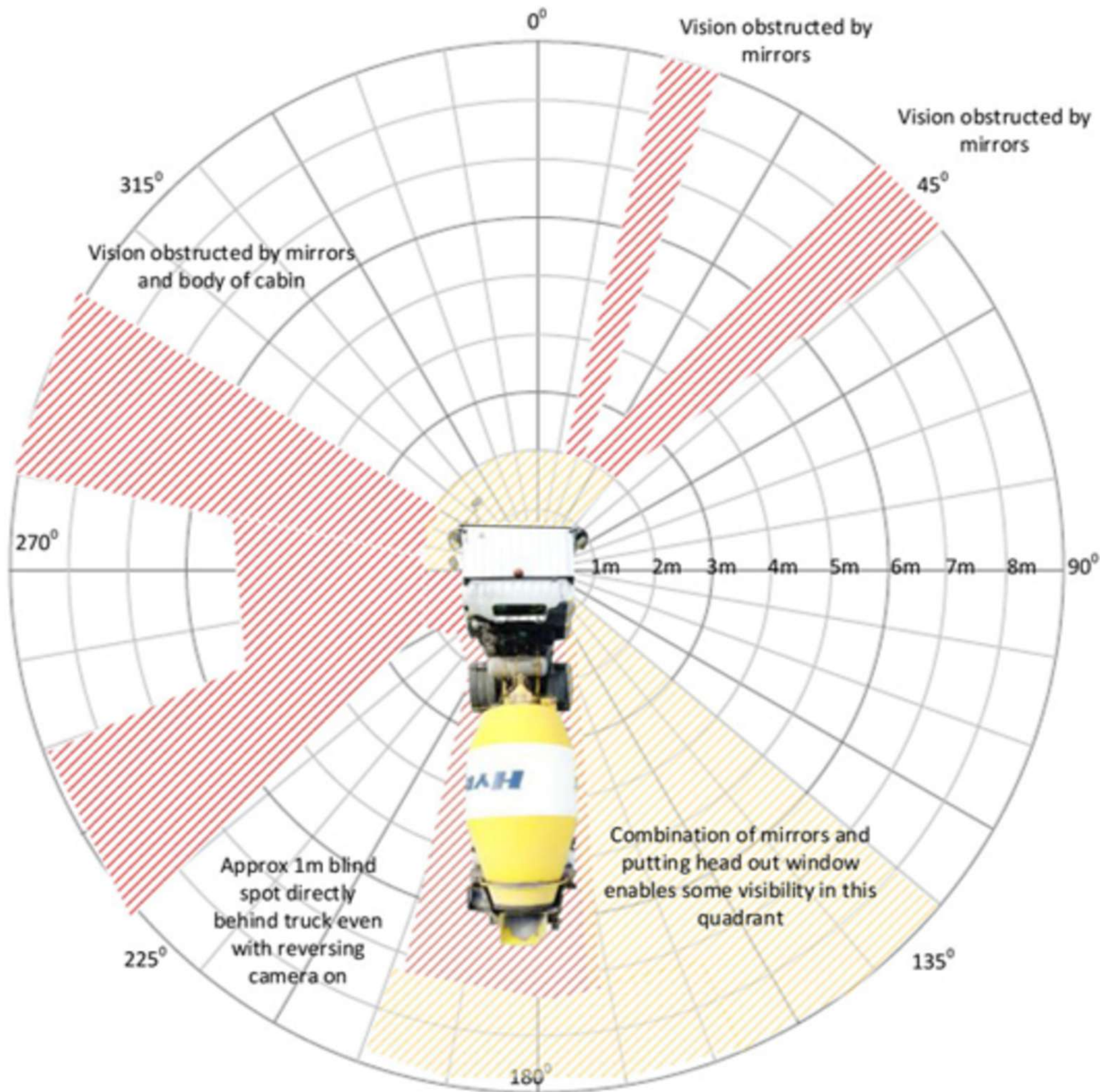




ROLLER TRUCK BLIND ZONE

Source: NIOSH





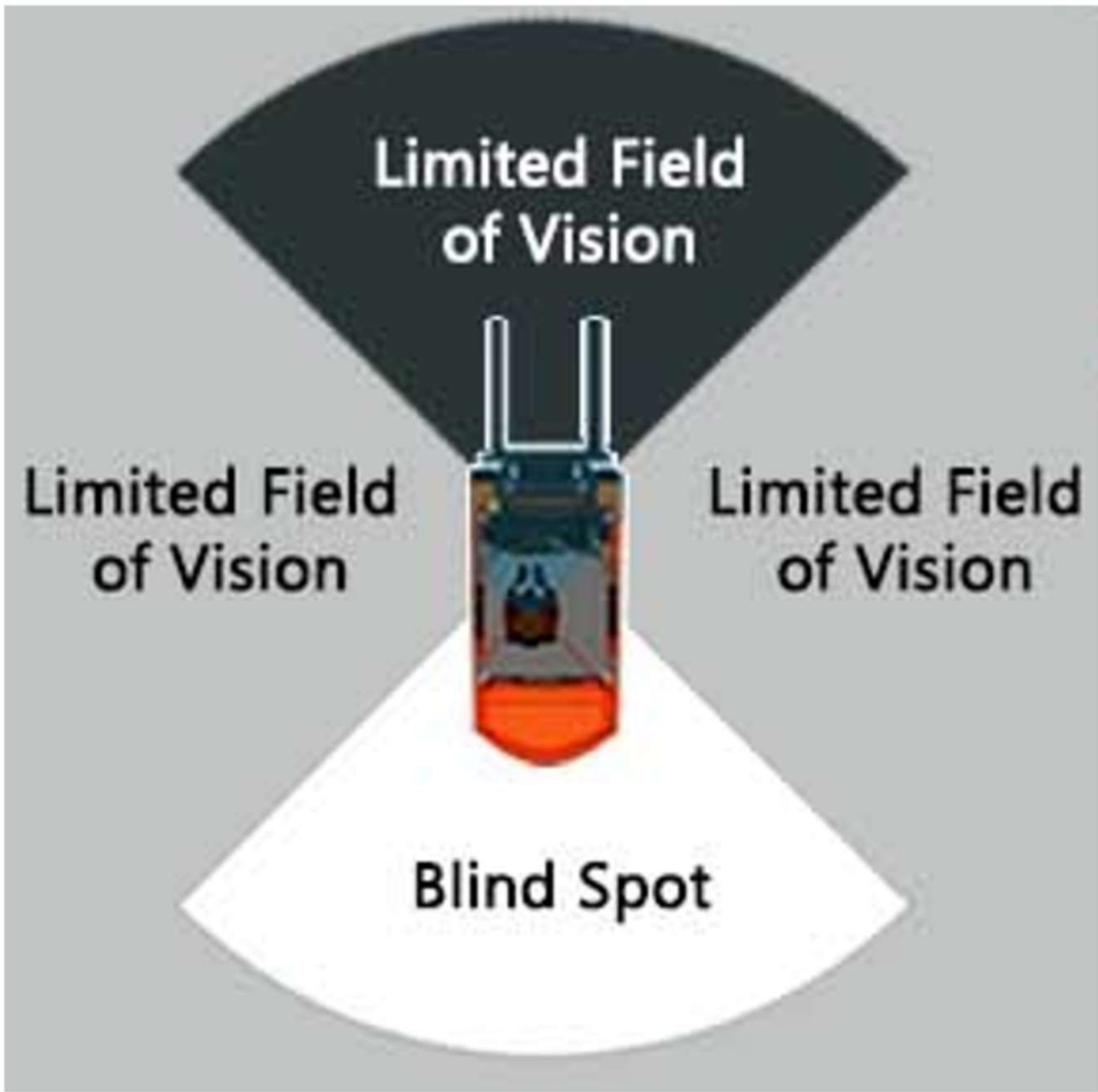
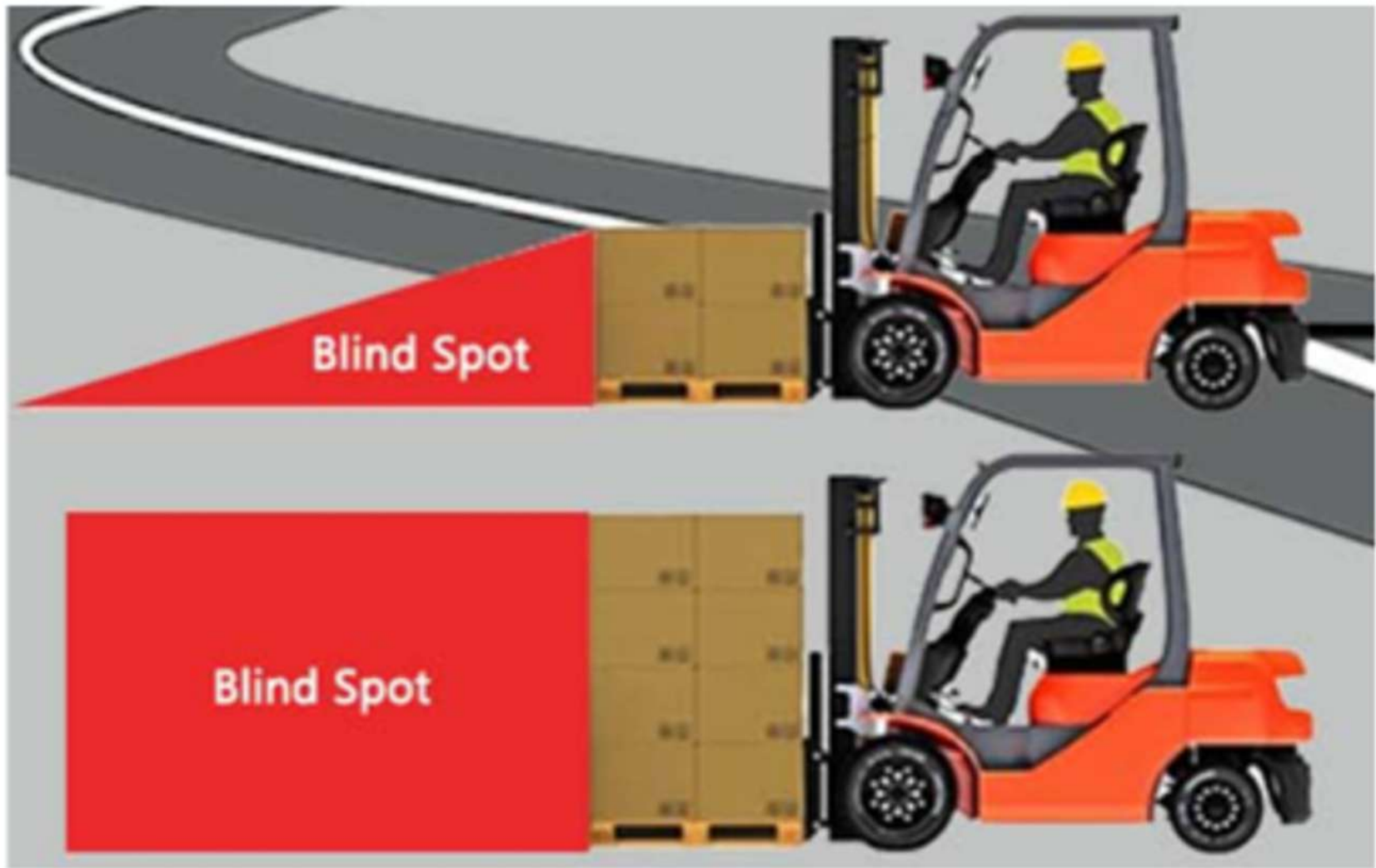
CEMENT MIXER BLIND ZONE

Source: [Sgesco Max](#)



FORKLIFTER BLIND ZONE

Source: [Zonesafe](#)





SPOTTER

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<https://www.ipaf.org/sites/default/files/2021-11/IPAF%20Toolbox%20Talk%20A25%20-%20Spotter%20Duties%20and%20Function%20%28TE-1087-0821-1-en%29.pdf>

- A spotter is required in situations where hazards may be identified that are difficult to be seen by the operator, including moving traffic or pedestrians
- A SPOTTER (also known as marshal or banksman) is someone who directs the movement of plant and vehicles on or around a site



SPOTTER

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Responsibility of the Spotter:

- Coordinate pedestrians and site traffic
- Direct the movement of machines
- Be involved in the route planning of the site
- Provide clear, agreed upon, and safe signals to the operator of the vehicles or machinery
- Understand the capabilities and the danger areas of the machinery and equipment being used on site (e.g., overhanging counterweight, boom location, stopping distances)
- Check the route to be used on site by the equipment and machinery.



SPOTTER

tm

Operational requirements of the Spotter:

- to be aware of the site and surroundings
- To always stand in a safe place
- To wear high visibility clothing
- To be visible at all times to the operators of the vehicles and machinery
- When it is not possible for the operator to see the spotter, to use personal radios or other means of communication
- To provide clear communication to all personnel near the vehicles and equipment
- The spotter must never position himself between the machinery/vehicles and a fixed object or another machine
- To follow the agreed route plan when moving the vehicles and machinery.



SPOTTER



<https://mobilverly.weebly.com/blog/hand-signal-driving>
<https://weeklysafety.com/blog/spotters>

Spotter Signals

Back, turn right

Back, turn left

Back up

Slow down

Stop

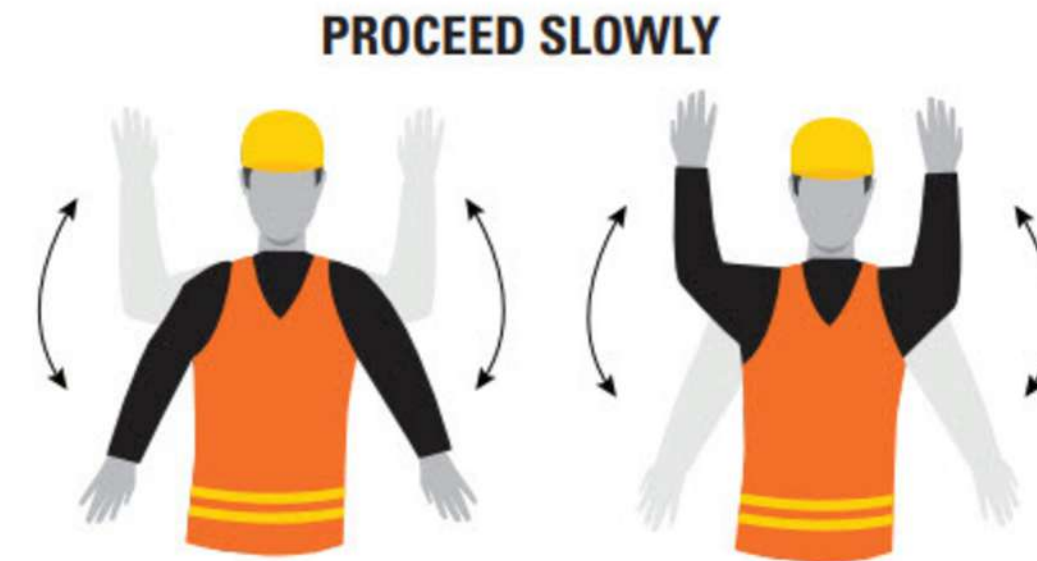
Move forward

Distance left to back



EMERGENCY STOP

Start with hands clasped over head. Extend downward repeatedly until vehicles stops.



PROCEED SLOWLY

Face palms in direction of desired travel. Bend both arms repeatedly toward head and chest, and then extend.

Traffic Controller

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https://www.ccohs.ca/oshanswers/safety_haz/road_work/traffic_control_person.html

A TRAFFIC CONTROL person may also be known as a **FLAGGER**. The main role is to:

- Stop, slow, and safely direct traffic through work or construction sites.
- Protect workers in the construction zone by regulating traffic flow.
- Give traffic control directions and signals clearly and precisely so that motorists understand their meaning.
- Keep the flow of traffic moving with as few delays as possible.

Only use traffic control persons when other methods of traffic control are not adequate. E.g. barriers, lane control devices, traffic signals, sign trucks and other methods as appropriate.

Traffic Controller

When controlling traffic you should:

- Always stay alert. The situation can change very quickly.
- Be visible. Stand where you can see traffic and be seen by traffic.
- Think ahead and plan your escape route. Know where you will move to if a motorist drives too close.
- Stand “alone.” Do not stand in a group of people, near a vehicle, or other distractions. Drivers must be able to see you clearly.
- Stand the correct distance from the work area. This position will vary with the visibility, speed, and volume of traffic. In general, this spot is halfway between the beginning of the taper or detour zone, and the traffic control warning sign. Do not stand too close to the taper or in the travel lane.



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Traffic Controller

tm

- Keep visual contact with the other traffic control person if you are not using radios.
- Work as a team with other traffic control persons. Always check with the other traffic control person to see if it is safe to allow traffic to move. When two or more traffic control persons are required to work as a team at the worksite, responsibility for the coordination of changes in traffic flow should be assigned to one person.
- Hold the stop/slow sign away from the body and in the driver's line of sight.
- Raise your free hand with the palm facing the driver to stop traffic.
- Allow time for the vehicle to stop safely by turning the sign when the vehicle is at an appropriate distance away for the speed it is travelling.
- Move to a safe position after stopping the first vehicle where the incoming next vehicle can see you.

Traffic Controller

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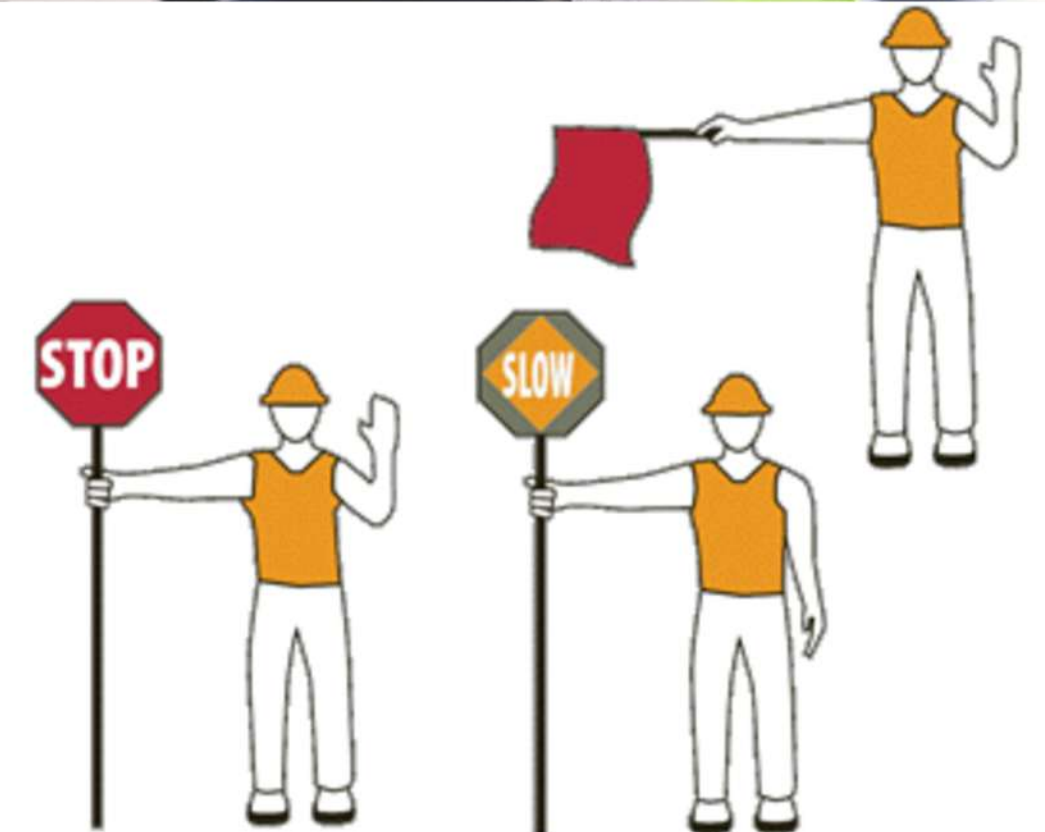
- Be aware of everything going on around you, behind you, in the lane beside you, etc.
- When you are ready to release traffic, return to your position outside the travel lane, confirm with the other traffic control person it is safe to let traffic move, turn the sign to “slow,” and with your free arm, signal to drivers to proceed.
- To slow traffic, extend the slow sign away from your body (but do not wave it), and use your free hand to indicate slow down by moving your hand and forearm in an up and down motion with your palm down.
- Be alert for emergency vehicles (police, fire, ambulance). These vehicles have priority through the traffic control zone.
- Guide cyclists and pedestrians safely through the zone.
- Cover or remove traffic control warning signs when there are no traffic control persons present.

Traffic Controller

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Important reminders:

- Do not look away from oncoming traffic.
- Do not assume a vehicle will stop until it has actually come to a full and complete stop.
- Do not do any other activity, other than control traffic.
- Do not use other devices (other than your communication radio) which may distract you or impair your sight, hearing or take attention from the job. These devices include personal music players, cell phones, etc. Only use a cell phone for on-site emergency communication, if permitted.



Traffic Controller

- Do not participate in arguments with motorists. Be polite, do not retaliate, stay back, and stay safe. If necessary, record the incident and report it to your supervisor.
- Do not try to enforce situations that appear to be breaking road traffic acts (e.g., speeding, dangerous driving, driving while impaired, etc.). Make a note of the licence plate on the vehicle and discuss the situation with your supervisor. Call the police or emergency services for assistance.
- Do not use radio communication when blasting activities are occurring.



Traffic Controller USE OF SIGNS AND FLAGS/ WANDS

<https://hsseworld.com/photo-of-the-day-flagman-and-traffic-control/>



The two primary functions of flagmen are to move vehicles safely, and as quickly as possible, through, or around temporary traffic zones, and to protect workers and on-site equipment

To Stop Traffic

Using Paddles

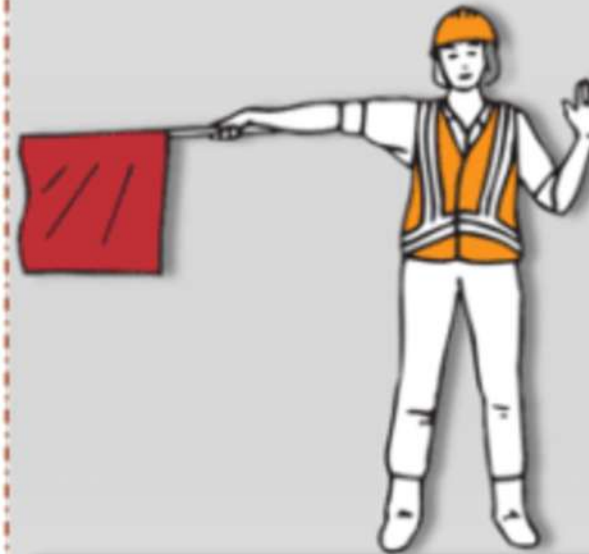
Make sure the paddle sign is held straight up—not leaning to the right or to the left. Do not wave your **STOP/SLOW** paddle.



Face traffic and extend the **STOP** sign paddle in a stationary position with the arm extended horizontally away from the body. The free arm should be raised with the palm toward approaching traffic.

Using Hand Signals

Make sure that the flag is fully extended, and not rolled up or crumpled.



stand in a safe position either on the shoulder of the road or in a closed or barricaded lane. Face traffic and hold the flag out, about shoulder level so that it hangs into the edge of the traffic lane.

To Release Traffic

Using Paddles

When it is safe to let traffic proceed, you should move on the right of traffic and stand directly facing the traffic flow



The flagger shall face traffic with the **SLOW** sign paddle held in a stationary position with the arm extended horizontally away from the body. Motion with the free hand indicating that traffic should proceed.

Using Hand Signals

When it is safe to let traffic proceed, you should move back over to the right side of the lane of traffic



Stand Parallel to the traffic. Facing the passenger's door on a car. Once on the shoulder of the road, put the flag down to your side, out of sight. Then motion Traffic to proceed with your free arms. Use **SLOW** deliberate movements of your arm

To Slow Traffic

Using Paddles

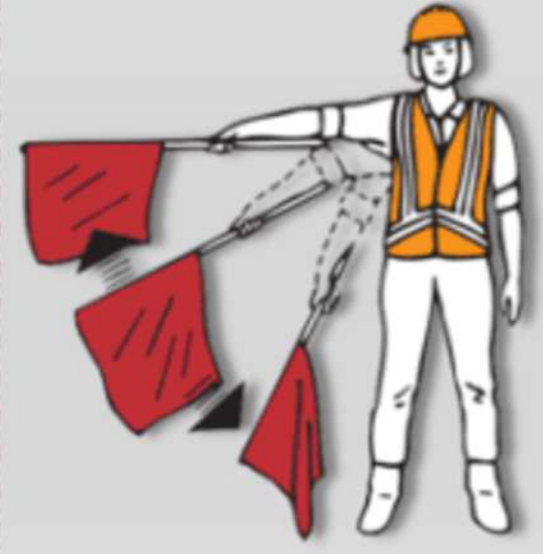
Be sure that the **"SLOW"** portion of the paddle is facing traffic.



Face traffic with the **SLOW** sign paddle held in a stationary position with the arm extended horizontally away from the body. Motion up and down with the free hand, palm down, indicating hat the vehicle should slow down.

Using Hand Signals

Do not madly wave or swing the flag. Make sure your movements are slow and sure.



Stand on the shoulder or a barricaded lane facing traffic. Hold the flag in a horizontal position, about shoulder level, just as you did to stop traffic. Then, slowly wave the flag in a sweeping motion, without raising your arm above the shoulder.

Traffic Controller

<https://flaggerforce.com/blog/flagger-positions-stand/>

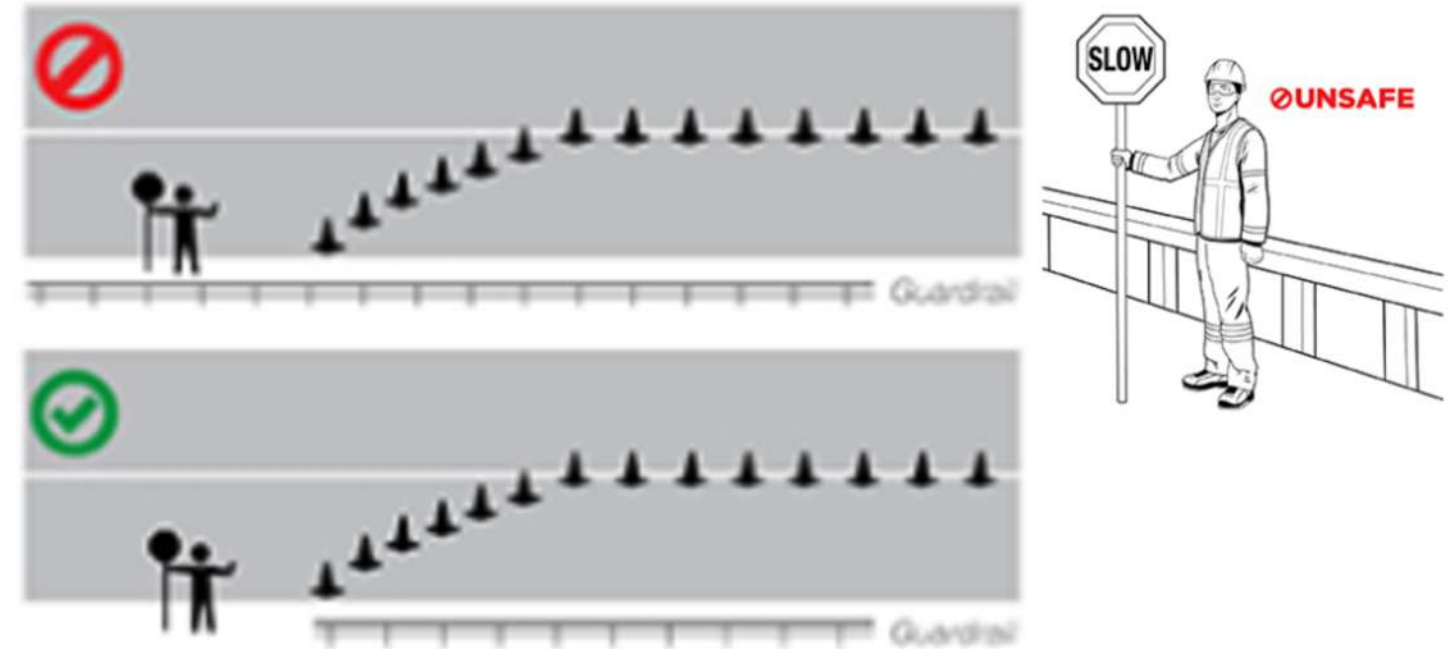
ALWAYS HAVE AN ESCAPE ROUTE

STANDING IN A VISIBLE LOCATION

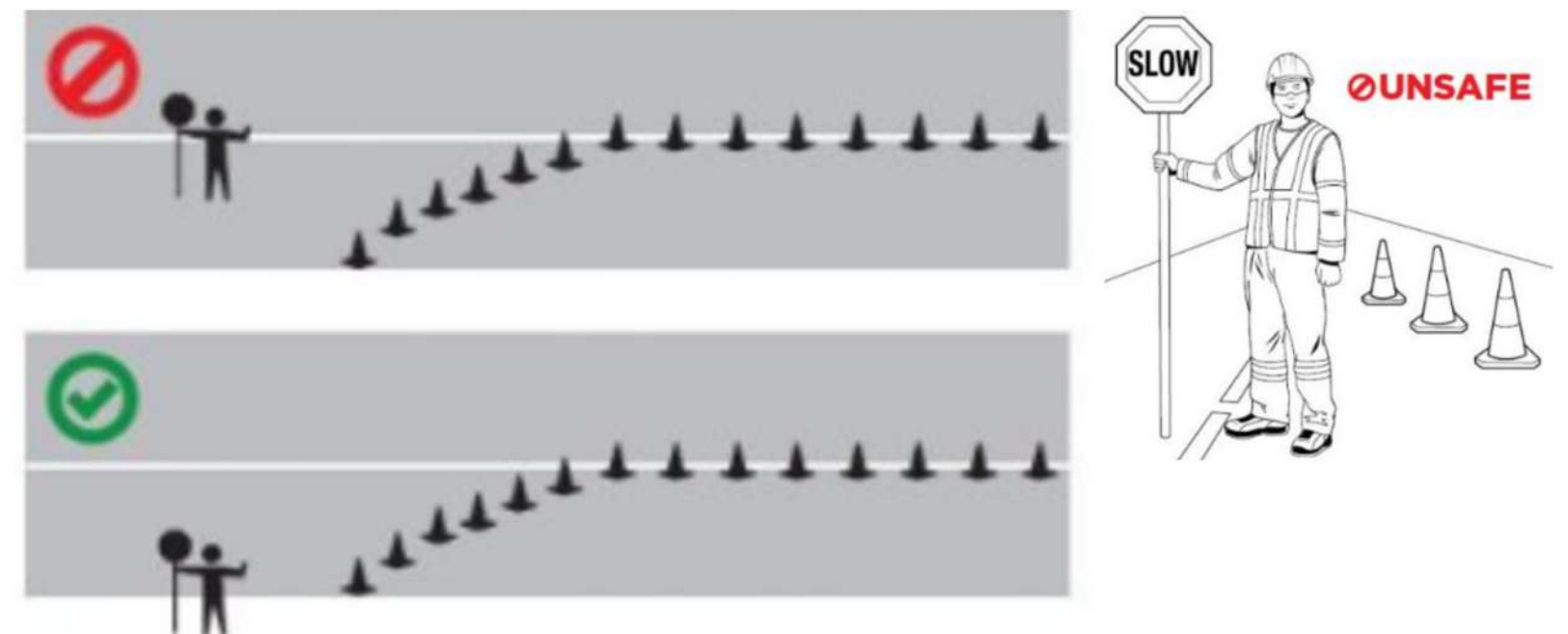
- Flaggers should stand in front of the first cone in a taper.

- Flagging stations should always be highly visible and avoid visual obstructions such as trees, excessive shade, etc.

- When setting up on a curved roadway, the cone taper should be extended to present the best visible line of site for the flagging station.



DO NOT STAND IN THE MIDDLE OF THE LANE



Traffic Controller

<https://www.csueastbay.edu/riskmanagement/files/docs/ehs/traffic-pedestrian-safety/trafficcontrolmanual-csueb-2009.pdf>

METHOD OF ONE-LANE, TWO-WAY TRAFFIC CONTROL

One-way traffic control can be handled by a single flagger at each end of the work zone. A pilot or official car is used with flaggers for lengthy work zones.

Single Flagger

- When a single flagger is used, the flagger should be stationed on the shoulder opposite the construction zone, or in a position where good visibility and traffic control can be maintained at all times.
- When a one-lane, two-way temporary traffic control zone is short enough to allow a flagger to see from one end of the zone to the other.
- When traffic is normally light to avoid the possibility of opposing traffic arriving at the traffic control zone at the same time.

Two Flaggers

- One of the flaggers should be designated as the lead flagger.
- Flaggers should be able to communicate with each other orally, electronically, or with manual signals that cannot be mistaken for flagging signals.

Typical Traffic Management Equipment



Road works ahead



Road narrows on left-hand side ahead



Road narrows on right-hand side ahead



Traffic cone



Road danger lamp



Typical temporary mandatory sign with yellow base plate



Keep right



Keep left



Give way to oncoming vehicles



Priority over vehicles from opposite direction



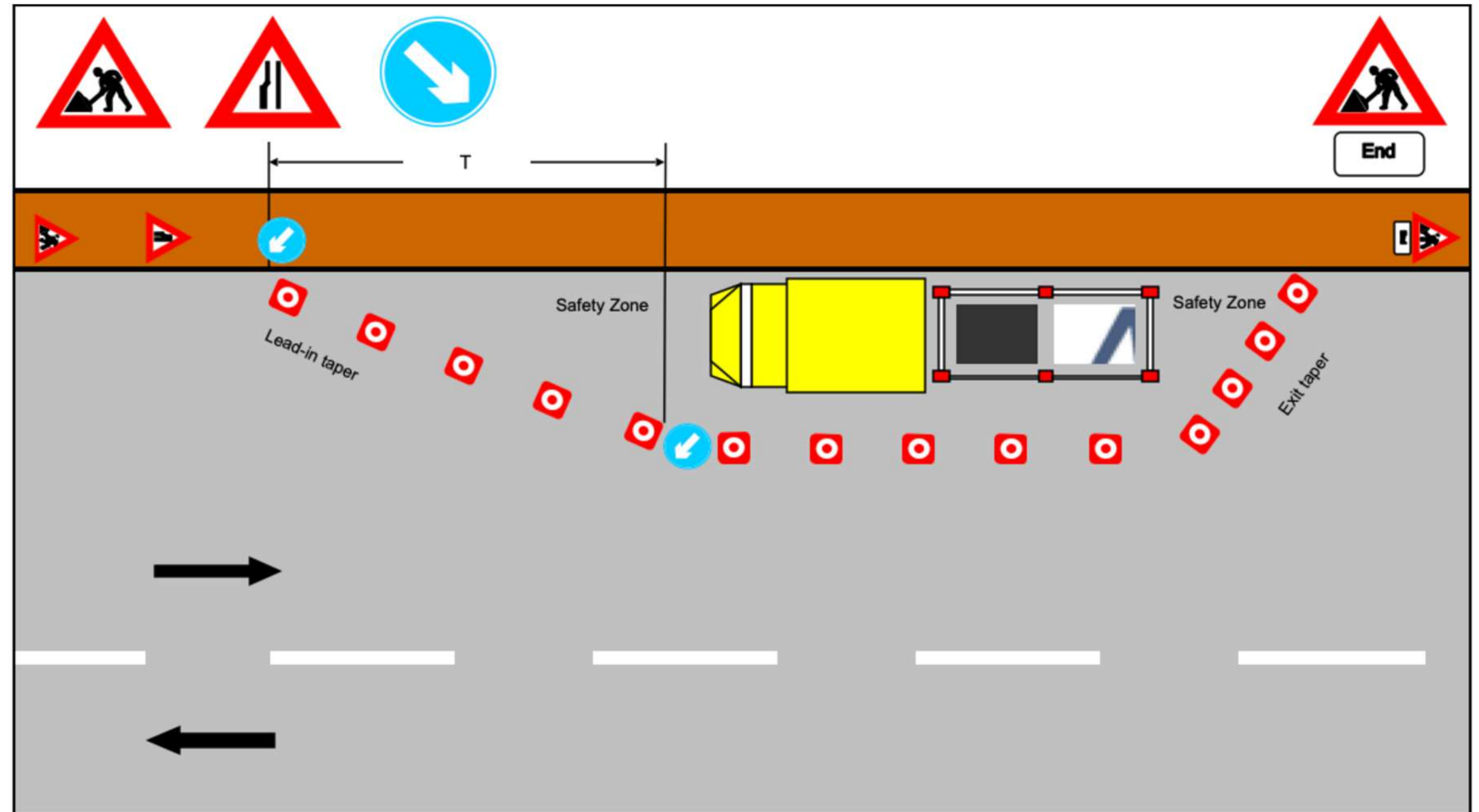
Contra flow



Left-hand lane of a dual two-lane carriageway road closed

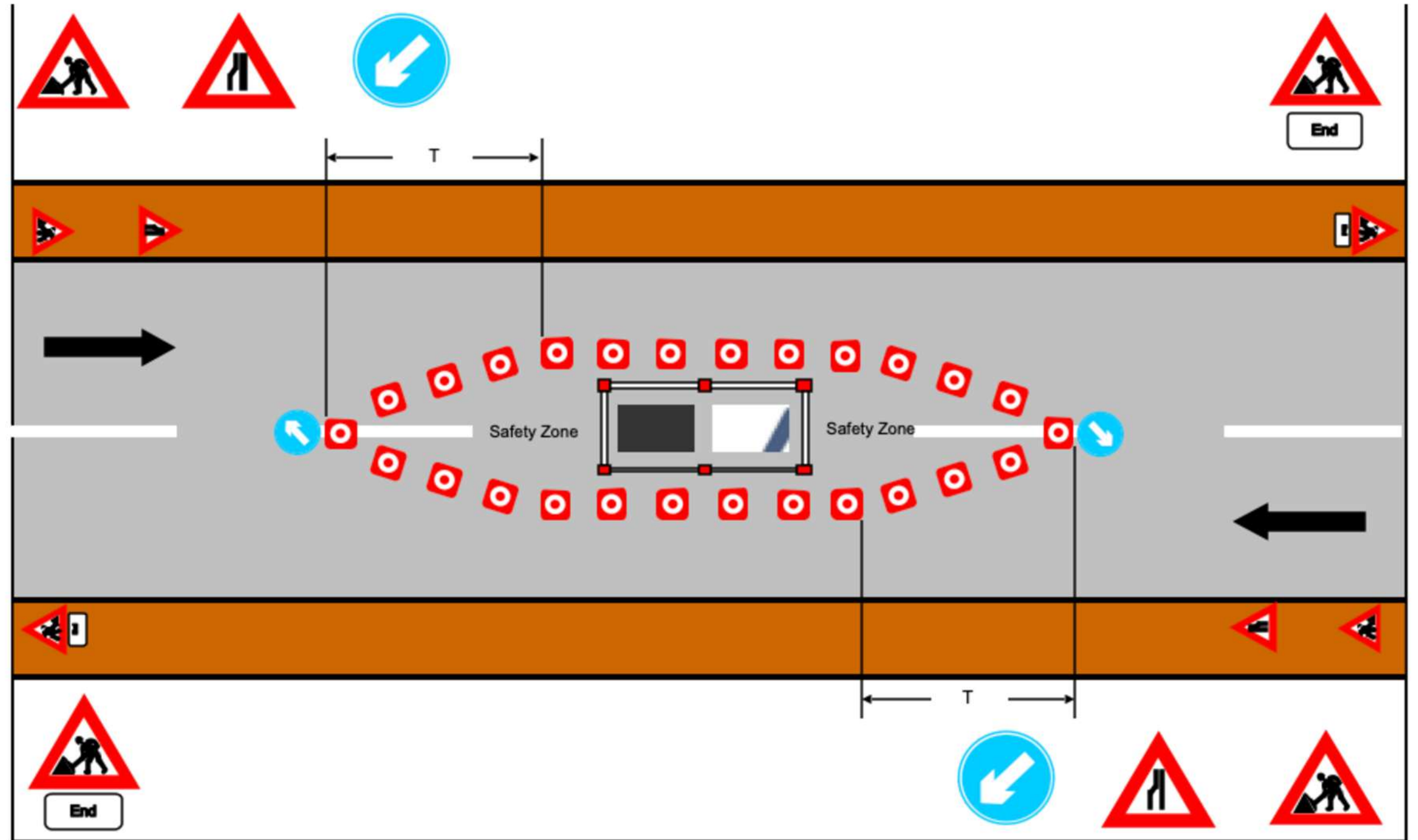
Site Layout

basic site layout
with works
vehicle



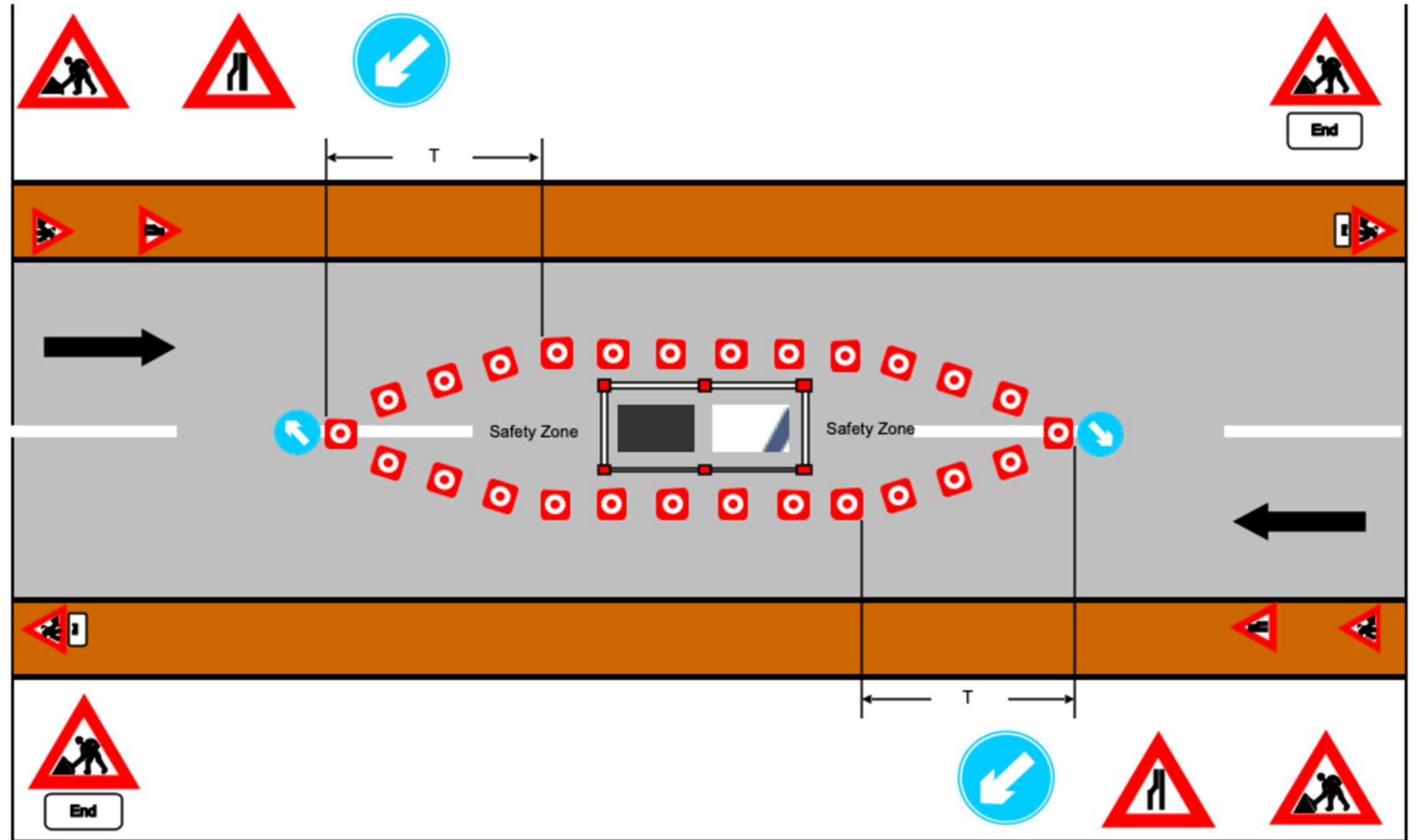
Site Layout

works in centre of
two-lane single
carriageway



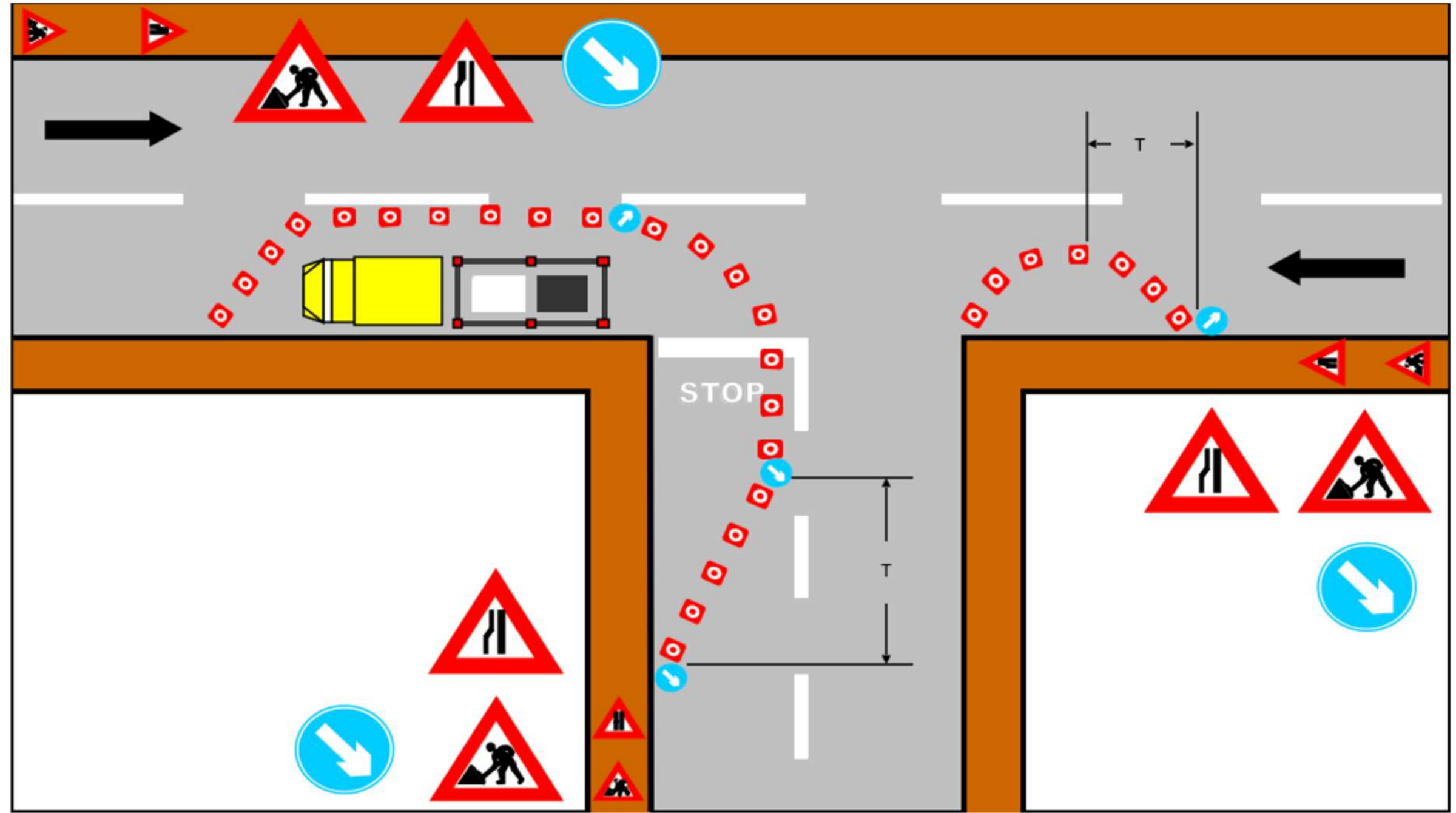
Site Layout

works in centre of
two-lane single
carriageway



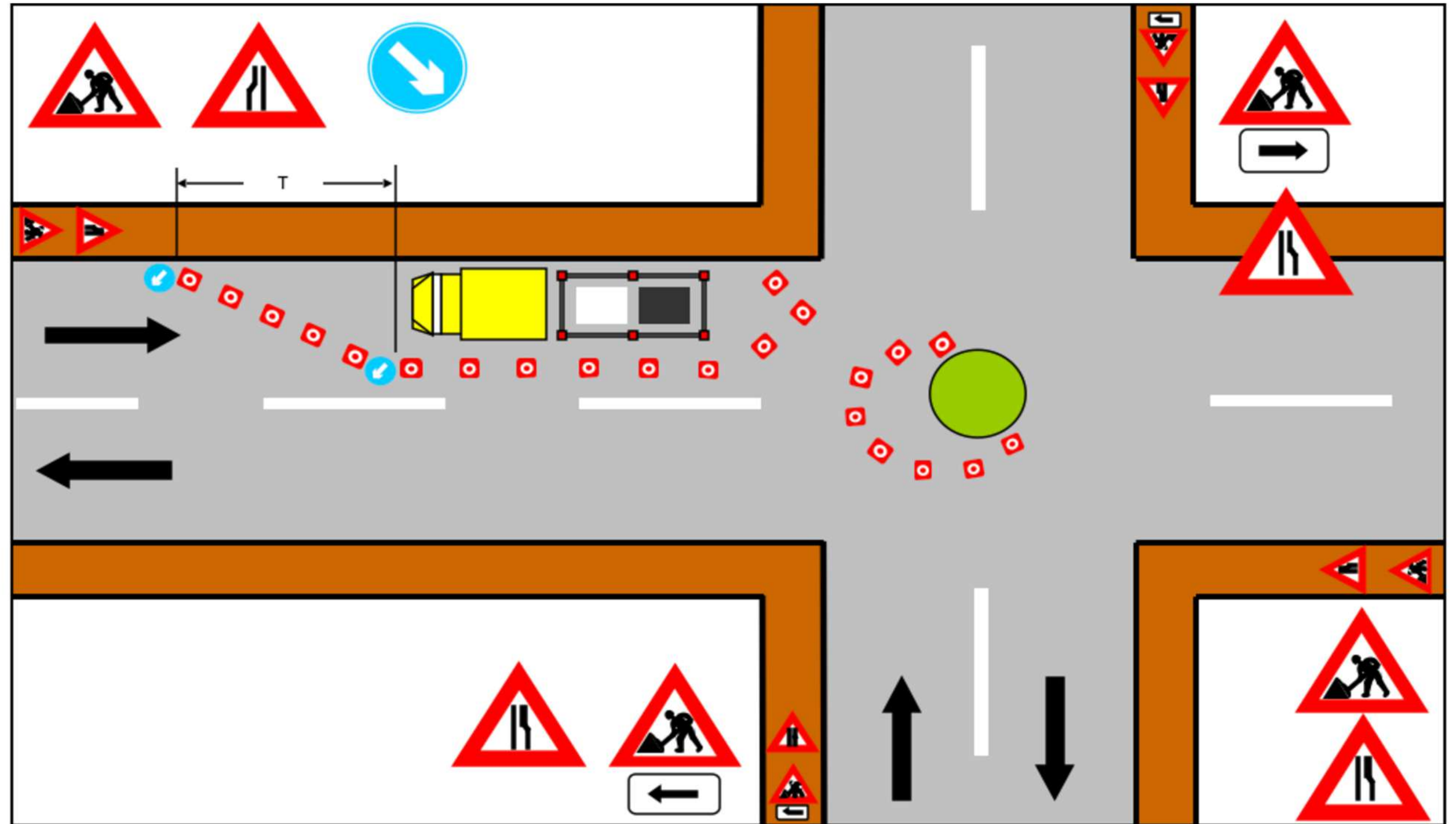
Site Layout

works at road junctions



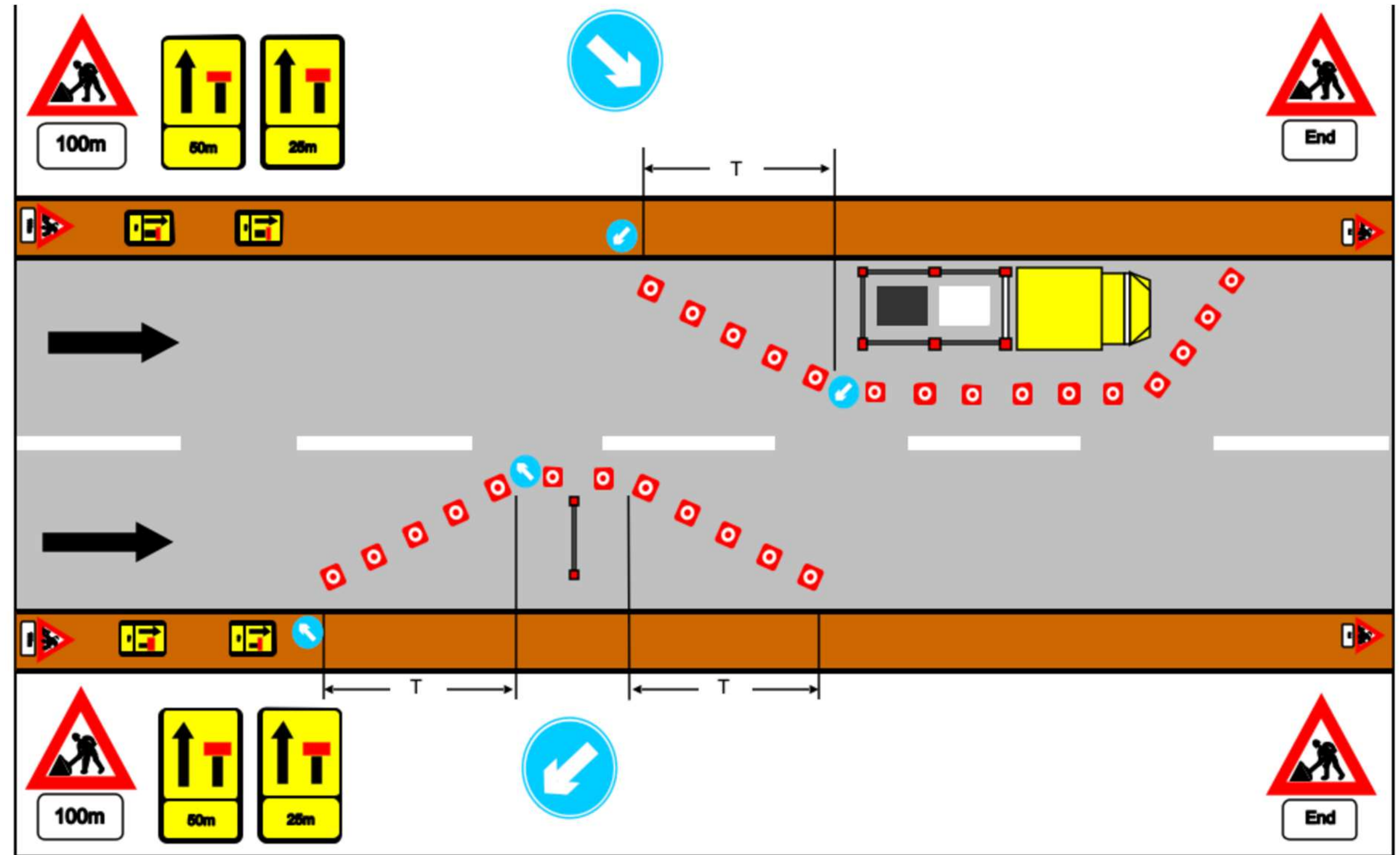
Site Layout

works at roundabouts



Site Layout

works on 60km/h
dual carriageway
road - left hand
closed to traffic



DETAILS FOUND AT:

<https://assets.publishing.service.gov.uk/media/5a7d8038e5274a676d532707/safety-at-streetworks.pdf>



www.transport.gov.mt