Systemic Safety Alert
Road/Roadside Work Safety

Employees/workers required to work on road/roadside include those engaged in road construction and maintenance, utilities management (e.g. electricity, communications, water and gas), service maintenance (e.g. drains, replacing street bulbs/lamps, and tree cutting) and traffic management (e.g. tunnels, bridges, and expressway operation establishments). Being struck by moving vehicles is one of the major threats to those employees/workers.

Major systemic safety problems

Proprietors/employers/occupiers are required to adopt effective preventive measures and make necessary arrangements to ensure the safety and health at work of employees/workers engaged in road/roadside works. Major systemic safety problems include: -

- failure to devise and implement a safe system of work by conducting task-specific risk assessments and formulating safe working procedures and measures to safeguard the employees/workers at work;
- poor temporary traffic management control such as unclear and insufficient traffic signs, insufficient buffer space, and detour/temporary route causing drivers' confusion;
- insufficient clearance provided between the work zone and live traffic;
- inadequate arrangements to warn drivers or control their movement close to employees/workers at work;
- insufficient lighting, signing and guarding in place to protect the employees/workers engaged in roadway or roadside work;
- the procedure of installing and removing traffic cones, signs and traffic control measures not well planned; and
- inadequate training and supervision provided to the employees/workers involved, particularly lookout men at ingress/egress of construction sites.

Accident prevention measures

RSOs should advise their clients/employers/contractors to adopt a safe system of work including, but not limited to, the following preventive measures: -

i. Task-specific risk assessments should be conducted by a competent person, taking into account the specific nature of work (e.g. handling of vehicle breakdown, handling of traffic incident/accident, diversion of traffic, cordoning off of incident/accident scene, lane closure, stopping of vehicle, vehicle recovery and various type of roadworks), work location (e.g. toll booth, toll plaza, trunk road, carriageway, footway, junction of expressway, tunnel and bridge) and all major risk factors namely, estimated approach speed of vehicles, weather condition, visibility, layout of the road, road condition, flow of traffic and traffic volume;

ii. Safe working procedures and measures should be formulated and implemented to safeguard the employees/workers, having due regard to the result of the risk assessments, and in line with relevant codes of practice / guidelines. The safe working procedures and measures should enable safe conduct of the road works as a whole, including the setting up and removal of lighting, signaling and guarding for the works, which not only should take care of the safety of the workers involved but that of other road users as well;

iii. The control measures to tackle the hazard of being struck by moving vehicles should include, but not limited to, the following:

- as far as practicable, provide direct access to toll booths, such as tunnels or bridges without requiring workers/employees to cross active traffic lanes;
- install suitable metal railing along the pathway within a toll area to safeguard the workers/employees while they are walking along the pathway;
- display suitable and adequate warning signs in respect of road-crossing

safety within a toll area;

- demarcate and isolate the work areas on carriageways by suitable and adequate warning lights, traffic cones, traffic signs and barriers in accordance with the established safety procedures/relevant codes of practice;
- ensure that the setting-up and removal procedures and requirements of warning lights, traffic signs, traffic cones and barriers are in accordance with the established safety procedures/ relevant codes of practice;
- consider using work zone protection barriers designed to appropriate standard for absorbing the energy of colliding vehicle(s) in order to minimize damage and injuries to workers/employees concerned;
- as far as practicable, give advance warning to alert road users about any emergency situations, such as road accidents ahead through the display/broadcasting/radio systems of the highways/ tunnels;
- as far as practicable, use suitable flashing arrow signs with barricade signs to indicate the beginning of temporary traffic diversion;
- ensure that shadow vehicles equipped with suitable truck-mounted attenuator, high mount strobe light bar, flashing arrow signs and rear marking are used when conducting road works on roads with a speed limit of 70 kilometres per hour or above (including expressways);
- where appropriate, impose temporary speed limits on traffic routes through erecting speed limit signs;
- place plant, equipment and tools as far away as practicable from moving vehicles;
- maintain adequate buffer distance from the barriers to the work areas;
- arrange the operation to be performed with the workers/employees concerned facing the oncoming traffic as far as possible;
- arrange the workers/employees who guide vehicles to carry out their duties at safe positions as far as possible and provide them with suitable personal protective equipment as necessary, such as high visibility reflective clothing and traffic control baton, and ensure their proper use of the equipment; and
- without prejudice to the safety of other road users, consider upkeeping

the lighting, signing and guarding requirements for carrying out road works and adopting new innovations to enhance road works safety, by making reference to the latest relevant technologies and overseas standards/ practices and taking into account their technical capability, implementation procedures and constraints.

iv. An effective coordination/communication system among the employers/contractors, different levels of management/supervisory personnel and workers/employees should be established and maintained to ensure full appreciation of potential traffic hazards and clear understanding of the associated hazard control program and delineation of safety responsibilities;

v. The workers/employees and management/supervisory personnel should be provided with the necessary safety information, instruction and training to ensure that all workers/employees involved are familiar with the safe working procedures and safety measures in the traffic hazard control system; and

vi. An effective monitoring and control system should be established and maintained to ensure that the safe working procedures and safety measures for potential traffic hazards are strictly followed. The works vehicle(s), the shadow vehicle, the truck mounted attenuator, the flashing arrow signs and the telecommunication equipment, etc. should be maintained and checked periodically to ensure that they function properly.

RSAs should take into account these systemic safety problems and accident prevention measures in executing safety audit functions.

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