

Traffic management for construction or maintenance work

Code of Practice 2008

This Queensland code of practice was preserved as a code of practice under section 284 of the *Work Health and Safety Act 2011*.

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1. Introduction

This *Traffic Management for Construction or Maintenance Work Code of Practice* is an approved code of practice under section 274 of the *Work Health and Safety Act 2011* (the Act).

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the Act and the *Work Health and Safety Regulation 2011* (the Regulation).

A code of practice applies to anyone who has a duty of care in the circumstances described in the code. In most cases, following an approved code of practice would achieve compliance with the health and safety duties in the Act, in relation to the subject matter of the code. Like regulations, codes of practice deal with particular issues and do not cover all hazards or risks which may arise. The health and safety duties require duty holders to consider all risks associated with work, not only those for which regulations and codes of practice exist.

Codes of practice are admissible in court proceedings under the Act and Regulation. Courts may regard a code of practice as evidence of what is known about a hazard, risk or control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code relates.

Compliance with the Act and Regulation may be achieved by following another method, such as a technical or an industry standard, if it provides an equivalent or higher standard of work health and safety than the code.

An inspector may refer to an approved code of practice when issuing an improvement or prohibition notice.

How is the code organised

In providing guidance, the word 'should' is used in this Code to indicate a recommended course of action, while 'may' is used to indicate an optional course of action.

This Code also includes various references to provisions of the Act and Regulation which set out the legal requirements. These references are not exhaustive. The words 'must', 'requires' or 'mandatory' indicate that a legal requirement exists and must be complied with.

Who has duties?

A **person conducting a business or undertaking** has the primary duty under the Act to ensure, as far as reasonably practicable, that workers and other persons are not exposed to health and safety risks arising from the business or undertaking.

Officers, such as company directors, have a duty to exercise due diligence to ensure that the business or undertaking complies with the Act and Regulation. This includes taking reasonable steps to ensure that the business or undertaking has and uses appropriate resources and processes to provide and maintain a safe work environment.

Workers have a duty to take reasonable care for their own health and safety and that they do not adversely affect the health and safety of other persons. Workers must comply with any reasonable instruction and cooperate with any reasonable policy or procedure relating to health and safety at the workplace.

Consulting workers

Consultation involves sharing of information, giving workers a reasonable opportunity to express views and taking those views into account before making decisions on health and safety matters.

The Act requires that you consult, so far as is reasonably practicable, with workers who carry out work for you who are (or are likely to be) directly affected by a work health and safety matter.

If the workers are represented by a health and safety representative, the consultation must involve that representative.

You must consult your workers when proposing any changes to the work that may affect their health and safety.

Consulting, cooperating and coordinating activities with other duty holders

The Act requires that you consult, cooperate and coordinate activities with all other persons who have a work health or safety duty in relation to the same matter, so far as is reasonably practicable.

Sometimes you may share responsibility for a health and safety matter with other business operators who are involved in the same activities or who share the same workplace. In these situations, you should exchange information to find out who is doing what and work together in a cooperative and coordinated way so that all risks are eliminated or minimised as far as reasonably practicable.

Further guidance on consultation is available in the *Work Health and Safety Consultation, Coordination and Cooperation Code of Practice*.

1.1 Purpose

The purpose of this code is to assist persons to manage workplace health and safety risks posed by **traffic** to workers and other persons while construction or maintenance work is occurring on, or adjacent to, roads.

1.2 What is this code of practice about?

This code of practice:

- provides information about some of the hazards and risks associated with traffic management for construction or maintenance work
- provides information on traffic control measures
- clarifies the roles and responsibilities of traffic controllers and **associated persons**, and
- provides recommendations for training in the application of the *Manual of Uniform Traffic Control Devices Part 3* (MUTCD Part 3) for persons associated with construction or maintenance work on, or adjacent to, a road.

1.3 Scope of application

This code applies to traffic management for construction or maintenance work on, or adjacent to, a road.

The following examples are provided as a guide, and should not be considered as an exhaustive list.

Construction work includes:

- building a new road
- repairing a road
- resealing or resurfacing a road
- resheeting a gravel road
- laying drainage pipes
- repairing footpaths, and
- excavation and landscaping associated with the previous activities.

Maintenance work includes:

- mowing the median strip of a road
- trimming trees on a median strip or footpath
- undertaking work on underground or overhead services or utilities.

The code does not apply to activities performed by persons that do not relate to construction or maintenance work, such as:

- police officers performing rostered duty, overtime or special duties
- the driver of a tow truck retrieving a broken down vehicle

- a garbage truck driver picking up rubbish
- or a taxi carrying passengers.

1.4 Legislation

In order to understand relevant workplace health and safety requirements for work associated with construction or maintenance work on roads, a person must consider and understand the following legislation:

- *Work Health and Safety Act 2011* (the Act)
- *Work Health and Safety Regulation 2011* (the Regulation)
- *Electrical Safety Act 2002*
- *Electrical Safety Regulation 2002*
- *Transport Operations (Road Use Management) Act 1995*
 - s 72a Way to install official traffic sign
 - s 166(2) Official traffic sign approvals
- *Transport Operations (Road Use Management-Accreditation and Other Provisions) Regulation 2005*
- How to Manage Work Health and Safety Risks Code of Practice
- Hazardous Manual Tasks Code of Practice
- Plant Code of Practice
- Tunnelling Code of Practice
- Managing Noise and Preventing Hearing Loss Code of Practice Code of Practice
- Concrete Pumping Code of Practice
- Mobile Crane Code of Practice
- Tower Crane Code of Practice
- Tilt-up and Pre-Cast Construction Industry Code of Practice
- Formwork Code of Practice

2. Construction and maintenance work

2.1 Introduction

The *Work Health and Safety Regulation 2011* (the Regulation) defines construction work on, or adjacent to, a road, as **high risk construction work**. A project that involves construction work where the cost is more than \$250 000 is a construction project. A person conducting a business or undertaking (PCBU) that commissions a construction project is the **principal contractor** for the project. However, this person may choose to appoint another PCBU as principal contractor for the construction project and authorise that person to have management or control of the workplace and to discharge the duties of a principal contractor. The principal contractor has additional requirements under the Regulation to those of a PCBU conducting high risk construction work. The information contained in this section will assist principal contractors and PCBUs to identify these requirements.

2.2 Principal contractors for construction projects

The following list of requirements is not exhaustive, and reference should be made to the Act and the Regulation for all the duties of principal contractors. As a principal contractor is also a PCBU, the principal contractor must also comply with the duties of a PCBU.

Principal contractors performing construction work on roads or road-related areas must:

- prepare a written WHS management plan, in accordance with the Regulation before work on the project starts
- ensure that each person who is to carry out construction work in connection with the project is informed about the WHS management plan
- keep a copy of the WHS plan for the project in accordance with the Regulation
- take all reasonable steps to obtain a copy of the safe work method statement relating to high risk construction work before the high risk construction work starts.

The preparation of a traffic management plan or traffic guidance scheme, in accordance with the requirements and recommendations of the MUTCD Part 3, should form part of, or an attachment to, the WHS management plan.

2.3 PCBUs for construction work

A PCBU for high risk construction work must ensure a safe work method statement is prepared for the work. The safe work method statement is a written statement prepared by, or under the direction of, the PCBU, that in part:

- identifies work that is high risk construction work
- specifies hazards relating to high risk construction work and risks to health and safety associated with those hazards
- describes the measures to be implemented to control the risks
(*Example of a control measure to be used* - the relevant person will, when working on or near a road, comply with the MUTCD Part 3), and
- describes how the control measures will be implemented, monitored and reviewed.

A safe work method statement for high risk construction work may be a generic safe work method statement prepared for workplaces, where the activity is to be performed in the same way, in the same or similar circumstances. As traffic controllers are performing high risk construction work, a safe work method statement must also be prepared for that work. Reference should also be made to the Regulation that outlines the requirements for safe work method statements. A sample safe work method statement for work on, or adjacent to, a road, is contained in Appendix 2.

2.4 PCBUs for maintenance work

The PCBU is not required to complete safe work method statements for work other than construction work on roads or road-related areas, but is still required to manage the health and safety of their workers.

A PCBU has a duty to ensure the health and safety of workers, so far as is reasonably practicable. PCBUs also have the same duty of care to any other people who may be at risk from work carried out by the business.

The *How to Manage Work Health and Safety Risks Code of Practice* provides practical guidance for persons who have duties under the Act to manage risks to health and safety.

2.5 Workers and other persons

Workers and other persons at a workplace also have the following duties at work under the Act:

- to take reasonable care for their own health and safety and that of others who may be affected by their actions or omissions
- to comply and cooperate with any reasonable instructions given by the PCBU and any reasonable policy or procedure of the PCBU to comply with the Act or Regulation.

3. Risk management

3.1 Introduction

The most obvious hazard to persons undertaking construction work or maintenance activities on, or adjacent to, a road, is the risk of death or injury resulting from coming into contact with vehicular traffic or moving plant. Appropriate control measures for these risks are outlined in sections 4-7 of this code. In addition, there are other hazards and risks identified in section 8 of this code that may be relevant to the work.

Nonetheless, the risk management process outlined in the Regulation and the *How to Manage Work Health and Safety Risks Code of Practice* must be followed in order to identify all hazards and risks.

3.2 Risk management

Risk management involves the identification and analysis of all hazards likely to arise during work on roads, including the setting up, operating, changing and ultimate dismantling of a traffic guidance scheme, followed by the determination of appropriate measures to manage exposure to the risks. The process is appropriate at all levels of planning and operation, including when preparing:

- standardised plans and procedures for the conduct of minor routine and mobile work, and

- traffic guidance schemes for more extensive or complex work, where site-specific risks will assume importance.

In each case, the process should be carried out by first identifying all the hazards likely to arise, and evaluating them for the likelihood of occurrence and adverse consequences, using historical data, experience or other means. The proposed procedural statement or traffic guidance scheme should then be checked in detail to ensure that adequate means of controlling or reducing those risks found to be significant, are in place.

4. Traffic management

4.1 Introduction

In busy built-up areas, speeding motorists, cyclists, pedestrians and workers all interact with construction vehicles, heavy equipment, attenuator trucks and road pavers within the road construction site. In more remote areas, it is not uncommon for a road worker to be working alone, often not visible, protected only by traffic cones and speed signs.

There are numerous ways to control the risks associated with working on roads or road-related areas. Following are some examples of a number of traffic control measures that may be considered:

- road closures
- footpath closures
- detours
- signing
- traffic controllers.

When considering control measures such as road or footpath closures, advice and approvals should be obtained from relevant authorities, including the local council, where the work is to be conducted, or the Queensland Police Service.

4.2 *Manual of Uniform Traffic Control Devices Part 3 (MUTCD Part 3)*

The MUTCD Part 3 provides the technical background and guidance for the placement of temporary traffic control signs and devices used at road works. The MUTCD Part 3 also provides standard diagrams for traffic guidance schemes across a range of work activities and worksites. Selection processes are provided that use tables of key site information including:

- lane configuration
- traffic volume
- approach speed
- type of work.

These selection processes are used to guide a principal contractor or relevant person to select the most appropriate traffic guidance scheme for a particular situation. However, it should be noted that the traffic guidance schemes provided in the MUTCD Part 3 may not be appropriate for every situation, and it may be necessary to design a scheme that is suitable for the individual worksite in question.

4.3 Responsibilities

There is a primary duty to provide a safe workplace environment that minimises the risk of injury to workers within, or adjacent to, the work area. Principal contractors or PCBUs responsible for construction or maintenance work, in accordance with the MUTCD Part 3, need to be aware of their responsibilities for the potential for injury to road users, or damage to property, as a result of this work.

It is the responsibility of a principal contractor or PCBUs, in accordance with the MUTCD Part 3, to ensure that:

- all signs and traffic control devices for construction work or maintenance activities are erected, and

- the placement of speed restriction signing and protective barriers are erected.

Steps should be taken to warn the public of adverse conditions, and to guard, delineate, and, where necessary, illuminate work, which may pose a hazard to road users. Care should also be taken to avoid, wherever possible, long delays or detours which may cause unnecessary inconvenience to road users. Principal contractors and PCBUs carrying out construction or maintenance work on roads that require the use of a traffic guidance scheme should:

- be mindful of their responsibility to provide a safe workplace for personnel and plant under their control, and safe and convenient travelling conditions for road users
- ensure that all personnel at a worksite are aware of their responsibilities, and that traffic controllers are appropriately trained and informed of their duties, and
- be familiar with, and act in accordance with, the provisions of the MUTCD Part 3.

4.4 Planning

Careful consideration should be given to the signing of the worksite, no matter how brief the occupation of the site may be. This should include:

- protection of workers
- provision of adequate warning of changes in surface condition, and the presence of personnel or plant engaged in work on the road
- adequate instruction of road users and their safe guidance through, around or past the worksite, and
- safe access and egress to and from the worksite.

Five important basic principles, to be observed, are as follows:

- (i) Signs and devices shall be appropriate to the conditions at the worksite, and shall be used in accordance with the MUTCD Part 3, unless a risk assessment by a competent person indicates that an alternative arrangement is satisfactory.
- (ii) Signs and devices shall be erected and displayed before work commences at a worksite.
- (iii) Signs and devices shall be regularly checked and maintained in a satisfactory condition.
- (iv) Signs and devices shall be removed from a worksite as soon as practicable. However, appropriate signs should remain in place until all work (including loose stone removal and line marking following bituminous surfacing) has been completed.
- (v) Records shall be kept of all work's signing and delineation at roadway or part-roadway closures.

An example of a road signing checklist is outlined in Appendix 3.

4.5 Traffic plans

A variety of standard plans/diagrams are provided for selection in the MUTCD Part 3, designed to illustrate the application of traffic control devices as they apply to various worksite situations and circumstances.

These diagrams indicate the appropriate positions of the signs and devices required to guide traffic safely around, through or past the worksite. Worksite situations that are not specifically covered by a diagram should be designed according to the principles outlined in the MUTCD Part 3. Refer to Appendix 4 for a sample standard diagram (Traffic Guidance Scheme).

Plans should be prepared for:

- **Short-term and mobile work.** Planning in these cases should comprise the development of procedures and the provision of appropriate sets of signs and devices to cover all of the routine tasks the workers will encounter.
- **Work involving relatively simple part-roadway closures.** Planning in these cases should comprise a minimum requirement to sketch the protective devices and delineation required on a road construction or similar plan, and to prepare a list of devices required for the job.
- **Complex traffic arrangements.** Planning in these cases should comprise:
 - plans showing temporary traffic paths, their delineation and the position of traffic control or warning devices, or on multi-stage works, a separate set of plans for each stage
 - details of after hours traffic arrangements, on separate plans, if required, and

- all necessary instructions for the installation, operation, between-stage rearrangement and ultimate removal of devices at the conclusion of the job, planned well before the job starts, or before the start of the stage to which they apply, so that there is enough time to obtain any special devices or approvals needed.

All essential aspects of traffic plans are to be considered in the following order, and incorporated into the plan, if relevant.

4.5.1 Traffic demand

Determine the capacity required to accommodate traffic demand at an acceptable level of service and convenience to road users and to decide on the amount of road space which must remain open, and where applicable, the times of day when greater amounts of road space are needed to handle higher traffic volumes (e.g. urban peak periods).

4.5.2 Traffic routing

Select the appropriate means of routing traffic at the site, i.e. through, around or past the site, or a combination of these, and ensuring that all required traffic movements are provided for.

4.5.3 Traffic control

Determine the need for traffic control by:

- traffic controller
- traffic signals (portable or permanent)
- police
- other means.

4.5.4 Other road users

Determine the need to make provisions for road users, other than vehicular traffic, including:

- pedestrians, including people with disabilities, where appropriate
- bicycles
- school children
- local residents
- emergency vehicles.

4.5.5 Special vehicle requirements

Determine the need to provide for vehicles, such as:

- buses, including stops and terminals
- over-dimensional vehicles (e.g. vehicles which, together with their load, are wider or longer than standard)
- restricted vehicles (e.g. vehicles which, although within legal limits, are permitted to use only specified routes).

Depending on circumstances, movement of traffic may be achieved in one of the following ways:

- through the work area, by intermingling with workers or plant
- past the work area by means of a delineated path alongside, but clear of the work area, and
- around the work area by a detour, which may be via a side track, or an existing road.

5. Roles and responsibilities of traffic controllers and associated persons

5.1 Function of a traffic controller

The function of a traffic controller is to direct traffic in a way stated in the following:

- *Manual of Uniform Traffic Control Devices Part 3* (MUTCD Part 3)

- *Traffic Controller Accreditation Scheme – Approved Procedure (TCASAP)*
- *Transport Operations (Road Use Management – Accreditation and Other Provisions) Regulation 2005 (TORUM Regulation).*

A traffic controller shall direct traffic at and/or through a worksite, or other event in a manner specified in the approved operating procedure for the safety of all road users and road workers.

5.2 Responsibilities of a traffic controller

Accredited traffic controllers are required to operate at the highest standards and to comply with the statutory conditions of their appointment.

A traffic controller must:

- maintain a zero percent blood/alcohol concentration while performing traffic control functions
- not perform traffic control functions while adversely affected by a drug or other medication causing functional impairment
- not direct traffic through a worksite, unless the worksite has an approach speed of 60 km/hr or less, as specified in the MUTCD Part 3
- ensure that the *Traffic Controller Ahead/PREPARE TO STOP* sign is erected correctly, at the beginning of the shift, and direct traffic at and/or through a worksite, or other event as specified in the approved operating procedure for traffic
- only use equipment specified in the MUTCD Part 3 to direct or divert traffic through a worksite, and
- ensure that the *Traffic Controller Ahead/PREPARE TO STOP* sign is removed when work is suspended throughout a shift, or completed for the day.

Mobile phones should not be used in any circumstances while directing traffic control operations.

To remain a traffic controller, a person must:

- carry out the functions of a traffic controller as specified in this code of practice and the TCASAP
- comply with the conditions and responsibilities outlined in this code of practice and the TCASAP
- carry their Queensland Transport issued Traffic Controller Accreditation Scheme accreditation identity card at all times while working as a traffic controller
- present their accreditation identity card, upon request, to any:
 - Police Officer
 - Queensland Transport Inspector
 - Workplace Health and Safety Queensland Inspector
 - Department of Main Roads Auditor
 - Department of Main Roads Safety Officer/Coordinator
 - supervisor
 - person in control of the workplace where the traffic controller is working.
- comply with the dress code provisions outlined in the TCASAP
- be polite and courteous at all times when interacting with other road users as part of their duties, and
- renew their accreditation by the expiry date after having completed an approved traffic controller refresher training course delivered by an approved traffic controller training provider.

5.3 Responsibilities of PCBUs who employ traffic controllers

PCBUs who employ traffic controllers must use only accredited traffic controllers to perform traffic control duties.

PCBUs who employ traffic controllers must not ask a traffic controller to do anything that may cause the person to:

- breach the statutory conditions of their appointment/accreditation
- breach the conditions of appointment stated in the person's instrument of appointment
- breach the terms and conditions of the TCASAP
- breach the requirements of this code of practice, and
- operate in unsafe conditions.

PCBUs who employ traffic controllers should ensure that workers not only have the required accreditation to perform traffic control duties, but they also have sufficient experience to operate safely and efficiently in the traffic control area in which they are allocated.

5.4 Responsibilities of approved traffic controller training providers

Traffic controller training providers are approved by the Department of Transport and Main Roads to deliver traffic controller training.

Approved traffic controller training providers are responsible for:

- delivering the Department of Transport and Main Roads approved traffic controller training course
- assessing traffic control competencies of course attendants
- certifying that training requirements have been met
- maintaining a register of course attendees, and
- maintaining the original course assessments for auditing purposes.

The Department of Transport and Main Roads may conduct random and triggered desktop and onsite audits of approved traffic controller training providers, to ensure that contracted traffic controller training is delivered to an acceptable standard.

If, as a result of a Department of Transport and Main Roads audit or investigation, it is considered that the standard of training and/or delivery methods fail to meet accepted industry standards, the Department of Transport and Main Roads may initiate proceedings against the approved traffic controller training provider, to show cause why their contract to deliver traffic control training should not be terminated.

Where it is proven that the standard of training and/or delivery methods fail to meet accepted industry standards, the Department of Transport and Main Roads may terminate an approved traffic controller training provider's contract to deliver traffic controller training courses.

6. Training and accreditation

6.1 Introduction

Where legislative requirements dictate that a licence or accreditation is required to perform a specific activity, a person **must** comply with those requirements. All other people who are required to perform duties associated with road works should have suitable training to perform those duties.

6.2 General construction safety induction training

All PCBUs and workers doing construction work in Queensland **must** have successfully completed a general construction safety induction training course, recognised by Queensland law. All workers should be also be provided with site-specific induction for the workplace before they start construction work.

6.3 Level of MUTCD Part 3 training

Workers working on, or adjacent to, a road should be provided with training in the basic application of the MUTCD Part 3.

Persons required to design and/or implement a traffic management plan should be trained in the advanced application of the MUTCD Part 3, provided by approved training providers.

Persons required to audit traffic management plans and/or road worksites, should be trained in the advanced application of the MUTCD Part 3 and auditing processes provided by approved training providers.

7. Record keeping

7.1 Records

Supervisory personnel engaged in construction or maintenance work which requires the use of a traffic guidance scheme, should keep the following records:

- Daily records of the sign arrangement, or traffic guidance scheme should be kept in a diary or in work sheets. Special attention should be given to recording the installation, alteration and removal of all regulatory signs and devices, including speed restriction signs. For short-term construction or maintenance work, reference to the diagram number(s) in the MUTCD Part 3, which generally applies to the layout used, or to a documented procedure, will usually be sufficient. The records should include the hours of operation and surface condition of the road. Any significant changes or additions to, the signs and devices included in the relevant diagram(s) should also be noted.
- In the case of accidents, either witnessed or reported, involving the public or from which legal proceedings might arise, the actual type, size and location of signs and devices in use at the time of the accident should be recorded, and the sign arrangement photographed for subsequent reporting. Details of the actual width and condition of the travelled path and weather conditions should also be recorded.

7.2 Daily routine tasks

The following sets out recommended procedures and guidelines for the daily routine tasks and inspections required for the overall safety and smooth operation of a traffic guidance scheme.

7.3 General

Supervisory personnel should establish a daily routine, allocating specific tasks to workers and supervisors, so that:

- loss of production time is minimised
- plant operations are not disrupted
- signing at all times is adequate for the safety of workers and traffic, and
- the surface of the travelled path is maintained in a satisfactory condition.

A supervisor's role in this routine procedure is coordination, inspection and correction.

7.4 Before work starts

The following routine should be undertaken before work starts each day:

- inspect all traffic signs and devices and make a note of signs out of place or damaged during the night, for subsequent rectification
- inspect all water-ballasted safety barrier or containment fence modules and make a note of any out of position modules, low water levels and damaged modules, for subsequent rectification, and
- check for safety and effectiveness by an inspection drive through job after adjustments have been made to the traffic management provisions for the day, and make a record of the signs erected and their locations.

7.5 During work hours

The following routine should be followed while work is in progress:

- periodically drive through the worksite to check that all signs, markings and delineation devices, as seen by other road users, are satisfactory and in their correct position
- attend to any minor problems, as they occur
- move personnel clear of the work area during work breaks (e.g. tea breaks); park plant clear of traffic lanes, and remove from view or cover inappropriate signs such as *Traffic Controller Ahead/PREPARE TO STOP* or *Workers* (symbolic), if workers leave the site or cannot be seen
- instruct traffic controllers to remain on the job and relieve them as necessary, where there are traffic hazards, or where only one lane is open to traffic
- reposition barriers, signs and tapers as necessary (e.g. adjust the length of single lane traffic operation, as necessary, to keep it to a minimum), keep records of changes made, and the time these occurred, and
- coordinate maintenance of the travelled path with other job operations.

7.6 Closing down at the end of the day

The following action is required at the end of the day's work:

- carry out pre-closedown inspection, allowing time for urgent maintenance to the travelled path
- remove *Traffic Controller Ahead/PREPARE TO STOP, Workers* (symbolic) and other inappropriate signs
- affix and light lamps on advance signs, if appropriate
- drive through the worksite to confirm that signs and devices are in position and operating before leaving the site, and
- record any changes that have been made to the previously recorded sign arrangement or traffic guidance scheme.

7.7 After hours

During the hours when work is suspended:

- make arrangements for workers to check lamps after dark and to maintain the lamp system during weekends and holidays
- provide after hours contact so that arrangements can be made to replace damaged signs, delineators or barriers
- ensure that a record is kept of signs found damaged, missing or out of place (and their location) at night, weekend or holiday inspections, and
- carry out periodic after dark inspections on low headlight beam to ensure that all devices are visible and working properly.

8. General hazards and risks

8.1 Introduction

This section illustrates some of the general hazards and risks that may be encountered while performing construction or maintenance work on, or adjacent to, a road.

8.2 Working in low light or at night time

Workers required to work at night, or in low light, may be exposed to a number of risks including:

- being struck by moving vehicles
- slipping, tripping and falling.

Examples of controlling the hazards and risks when working at night or in low light include:

- having at least two workers working at any time
- providing additional lighting
- wearing fluorescent and/or retroreflective clothing including vests and gaiters.

8.3 Sun and heat

People who spend a lot of time in the sun risk developing:

- skin cancer
- other skin disorders
- eye injuries
- heat stress
- heat-related illnesses.

Every workplace should carry out its own assessment of sun exposure, identify tasks that place workers at risk, and control workers' sun exposure.

Heat stress occurs when heat is absorbed from the environment faster than the body can get rid of it. Several factors may contribute to heat stress, such as the:

- type of work activity
- surrounding air temperature/humidity level, and
- physical condition of the individual.

Some examples of controlling exposure to sun and heat are:

- wearing personal protection (e.g. sunscreen, sunglasses, and suitable clothing)
- taking precautions and setting time limits spent working in the sun during summer's highest risk time – between 9 am and 3 pm
- reorganising work schedules so that outdoor tasks are done early in the morning or late in the day
- rotating or job-share tasks that involve direct sun exposure
- implementing easy 'sun smart' policies, such as a directive that workers drive with their vehicle windows up between 9 am and 3 pm
- planning the work around the movement of the sun, (e.g. do outdoor work on the western and northern side of a building in the morning, and work on the eastern and southern sides in the afternoon)
- taking rest or meal breaks in shady areas
- drinking plenty of cool water
- adjusting the workload gradually when starting or returning to work in hot conditions; generally, the process takes about a week
- wearing specialised liquid or air-cooled clothing in extreme conditions
- screening workers for heat tolerance
- following a doctor's advice before working in hot conditions if you are on any medication such as:
 - sedatives
 - tranquilisers
 - antidepressants
 - amphetamines
 - antispasmodics
 - diuretics
 - medication affecting blood pressure, and
- having a plan in place for treating heat affected workers.

Information on sun safety and heat stress is available on www.worksafe.qld.gov.au.

8.4 Fatigue

Fatigue is mental or physical exhaustion that prevents a person functioning normally. However, fatigue is more than just feeling tired or drowsy.

Fatigue is caused by prolonged periods of physical and/or mental exertion without enough time to rest and recover. The level of fatigue varies and depends on factors such as:

- workload
- length of shift
- previous hours and days worked
- time of day or night worked.

The effects of fatigue include:

- a decrease in performance and productivity
- an increase in the potential for incidents and injuries to occur.

Examples of controlling risks associated with fatigue include:

- limiting shift work to core duties that must be completed at night
- redesigning work practices so routine administrative tasks are minimised for night shift workers
- scheduling later start times, so that the worker has a maximum nights sleep before starting work, but without affecting the night shift workers
- scheduling low risk work during periods of high fatigue
- scheduling complex tasks to be performed only during the day
- providing sufficient supervision, particularly during periods of high fatigue, and especially for hazardous work
- having contingency plans to remove fatigued workers from work activities, where there is a considerable risk to workplace health and safety
- having effective emergency responses in place
- implementing strict controls and procedures for workers performing hazardous work during high fatigue periods

- rotating jobs particularly for repetitive tasks, or work that involves heavy physical demands
- providing workers with information on the symptoms of fatigue, and
- encouraging all workers to identify the early signs of fatigue in workmates.

Information on fatigue is available on www.worksafe.qld.gov.au.

8.5 Slips, trips and falls

There are a number of factors that can contribute to the risk of slips, trips and falls, including:

- contaminants
- floor surfaces
- cleaning
- obstacles and other trip hazards
- environment
- people and activity
- footwear.

It is usually a combination of these factors that create the risk of a slip or trip. Slips usually occur when there is a loss of grip between the shoe and the ground surface. This commonly occurs when there is a contaminant between the shoe and the surface.

Trips occur when a person's foot hits a low obstacle in the person's path, causing a loss of balance. Often the obstacle is not easily visible or noticed.

Examples of controlling risks associated with slips, trips and falls include:

- removing slip and trip hazards at the design stage
- limiting access to high risk areas
- marking clearly any changes in ground surface
- implementing good housekeeping practices, such as clear access ways and prompt spills management
- wearing suitable footwear
- providing adequate control measures for people working on steep batters, and
- providing adequate lighting for the task.

Information on slips, trips and falls can be found in the Workplace Health and Safety Queensland *Guide to preventing slips, trips and falls* available on www.worksafe.qld.gov.au.

8.6 Noise

Excessive noise is unwanted sound which may damage a person's hearing. Excessive noise is made up of two parts – the period of time you are exposed to the noise and the loudness of the noise. Continuous noise exposure above 85 decibels during an eight-hour day is considered to be excessive noise.

A noise assessment should be carried out when workers and others may be exposed to excessive noise levels. The general aim of a noise assessment is to:

- identify all people likely to be exposed to excessive noise
- obtain information on noise sources and associated work practices
- check the effectiveness of measures taken to reduce noise exposure
- choose appropriate personal hearing protectors for persons exposed to risks from excessive noise, and
- define hearing protection areas at work.

Examples of controlling noise in the workplace are:

- obtaining specifications relating to noise level emissions from the suppliers of plant so appropriate levels of noise protection can be provided
- redesigning machinery power sources to give quiet speed regulation
- repairing loose and rotating parts, replacing worn bearings and gears, and regular maintenance
- reducing noise at the source, where appropriate, by adding:
 - noise barriers

- noise enclosures
- vibration isolation mountings
- laggings
- mufflers
- silencers
- organising schedules, so noisy work is done during a particular part of the shift, or when as few people as possible are present
- notifying people in advance when noisy work is to be carried out to limit their exposure to it, and
- providing hearing protection for workers.

Information on noise can be found in the *Managing Noise and Preventing Hearing Loss at Work Code of Practice* available on www.safeworkaustralia.gov.au.

8.7 Recycled water

Water is used on roads and road-related areas for various purposes, including dust control and filling plastic traffic barriers during construction work and maintenance activities.

Workplaces usually obtain water for various processes from the drinking water (potable water) supply mains. However, workplaces may also obtain water from a variety of non-potable water sources including:

- recycled water from sewage and waste water treatment plants
- stormwater storages, including from dams, creeks, and rainwater tanks
- greywater from showers and laundries
- industrial processes, and
- agricultural irrigation (e.g. run-off water).

The quality of non-potable water will vary, depending on its source and the level of treatment applied and may contain biological hazards, such as:

- bacteria
- viruses
- protozoa
- helminths (e.g. worms)
- chemical and metal residues.

Non-potable water, including recycled water, is considered to be a **substance** under the *Work Health and Safety Act 2011*. Under the Act, manufacturers, suppliers and users of non-potable water in a workplace have a duty to prevent death, injury or illness being caused by the substance (i.e. non-potable water).

Information on recycled water can be found in the *Guide to the workplace use of non-potable water including recycled waters* available on www.worksafe.qld.gov.au.

8.8 Inclement weather

Provided work is arranged to minimise hazards associated with wet weather, and safe systems of work are followed, work at construction workplaces can continue safely. The main factors which affect safe construction work in wet weather are:

- slippery, wet floor surfaces, steps and footholds
- excavations caving in
- electrical hazards - wet electrical cords, cables, sockets, power points and power equipment
- slippery tools, handles and other hand grip surfaces
- reduced manual dexterity in some tasks
- lightning strikes during thunderstorms, and
- contamination from flooded sewerage systems.

If the weather is excessively cold, workers may be affected by reduced feeling and function in the hands or feet, which could lead to inattentiveness and distraction, increasing the risk of unsafe practices.

Wet, windy or cold weather does not necessarily make construction work unsafe, provided safe systems of work can be implemented. These can include:

- monitoring weather forecasts, so alternative tasks can be planned a day or more ahead, and
- ensuring all electric cables are raised to a safe height above the ground.

When planning long-term jobs, consider programming work, which could be affected by rain, for drier months.

Special note should be made of the consequences that can result from lightning strikes during thunderstorms. These lightning strikes have the ability to cause death or serious injury to workers caught out in the open, especially to those workers interacting with metal objects. A prime example is the traffic controller holder a metal stop/go sign that can act as a lightning conductor.

Information on lightning protection can be found in AS/NZS 1768:2007.

8.9 Hazardous manual tasks

The *Hazardous Manual Tasks Code of Practice* provides practical guidance to PCBUs on how to manage the risk of musculoskeletal disorders arising from hazardous manual tasks in the workplace. It applies to all types of work and all workplaces where manual tasks are carried out.

Manual tasks include activities requiring a person to:

- grasp
- manipulate
- strike
- throw
- carry
- move (lift, lower, push, pull)
- hold or restrain an object, load or body part.

Examples of controlling risks associated with hazardous manual tasks include:

- bending at the knees when lifting objects
- obtaining the assistance of another worker
- modifying the handling task.

Information on hazardous manual tasks can be found in the *Hazardous Manual Tasks Code of Practice* available on www.safeworkaustralia.gov.au.

Appendices

Appendix 1: Dictionary

Associated persons means a PCBU or approved traffic controller training provider of a traffic controller.

Authorised officer means a person who holds an appointment as an authorised officer under Part 2 Section 20 of the *Transport Operations (Road Use Management) Act 1995*, i.e. police officer, officers and employees of the public service as appointed by the Chief Executive, other persons prescribed under a regulation.

Competent person means, for performing an inspection or other task for a control measure, a person who has acquired, through training, qualifications or experience, the knowledge and skills to do the task in a safe way including knowledge of:

- (a) relevant Australian Standards; and
- (b) relevant codes of practice; and
- (c) other relevant legislation.

Construction work is defined in the *Work Health and Safety Regulation 2011*.

Daytime means any time between sunrise and sunset on the same day, providing there is sufficient daylight to see a person or vehicle clearly at a distance of 150 metres.

During hours of darkness means the period between sunset on a day and sunrise on the next day, or when a person or vehicle in natural light cannot be seen clearly at a distance of 150 metres.

Duty holder means a person who has a duty under Part 2 of the *Work Health and Safety Act 2011*.

High risk construction work is defined in the *Work Health and Safety Regulation 2011*.

Must means a mandatory condition.

MUTCD Part 3 means the *Manual of Uniform Traffic Control Devices Part 3*. This is the document administered by the Department of Main Roads outlining principles of signing at road works, describing signs and devices used to effect traffic guidance, planning and designing traffic guidance schemes, including the installation, operation and removal of traffic guidance schemes.

Night time means during hours of darkness.

Principal contractor for construction work is defined in the *Work Health and Safety Regulation 2011*.

Road includes:

- (a) a bus way under the *Transport Infrastructure Act 1994*; and
- (b) an area that is:
 - (i) open to or used by the public and is developed for or has as one of its uses, the driving or riding of motor vehicles, whether on the payment of a fee or otherwise; or
 - (ii) dedicated to public use as a road; and
- (c) a road-related area; but
- (d) does not include an area declared under regulation not to be a road.

Road-related area means:

- (a) an area that divides a road; and
- (b) a footpath or nature strip adjacent to a road; and
- (c) an area that is not a road and that is open to the public and designated for use by cyclists or animals; and
- (d) an area that is not a road and that is open to or used by the public for driving, riding or parking vehicles.

Safe work method statement is defined in the *Work Health and Safety Regulation 2011*.

Should means an advisory, recommended, but not mandatory condition.

TCASAP means the *Traffic Controller Accreditation Scheme Approved Procedure*.

Traffic means all vehicles, persons or animals travelling on a road.

WHS management plan is defined in the *Work Health and Safety Regulation 2011*.

Work area means an area where construction work is being done.

Worksite means an area which includes the work area(s) and any additional length of road required for advance signing, tapers, side-tracks or other areas needed for associated purposes.

Appendix 2: Sample safe work method statement

Safe work method statement	ABN
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High risk construction work	Working on, or adjacent to, a road
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If your work procedure or activity identifies the need to work on, or adjacent to, a road, then it is high risk construction work, and you will need to develop a safe work method statement.

The following is a generic safe work method statement. It cannot be used as a safe work method statement onsite, unless the project specific section has been completed.

It must be reviewed prior to undertaking the activity, and all site-specific details must be documented.

Control measures	How to use control measures	Monitor and review	Responsible officer
1. Road work signs will be erected prior to work commencing.	A road works signing layout will be developed. All signs will be in accordance with the MUTCD Part 3.	Daily inspections to be carried out and documented in project records. Signing layout to be approved before work commences.	Sup PM
2. All workers will have general safety induction training and a site-specific induction before starting work.	General safety induction cards will be sighted and recorded for all workers. All workers, including sub-contractors, will be given a site-specific induction. Site-specific induction records will be kept for all inductions.	All training records to be checked. Safety audits to include check on training and induction records.	Sup Safety Coordinator
3. Traffic controllers to be used as required.	All traffic controllers will be certified by Queensland Transport. Traffic control will be conducted in accordance with the approved procedure.	All traffic controller tickets are to be checked and recorded.	Sup
4. Work zone and separation distances to be delineated.	Work zones will be delineated in accordance with the Traffic Management Plan. All workers will remain within the work zone, unless traffic has been stopped by traffic controllers.	Traffic Management Plan to be reviewed and approved before work commences. Supervisor to constantly check on workers and take appropriate action.	PM Sup

Control measures	How to use control measures	Monitor and review	Responsible officer
	Note: In the site-specific section, detail traffic control devices such as barriers.		
5. All workers will wear appropriate personal protective clothing and equipment.	All workers will wear high visibility clothing, safety footwear, wide brim hat and any other equipment identified in the risk assessment.	Supervisor to constantly check and take appropriate action for breaches.	PM/Sup
6. All control measures detailed above will be monitored and reviewed regularly during the work.		<p>Signs will be checked before work starts each day and at regular intervals during the day.</p> <p>These inspections are to be recorded.</p> <p>Daily pre-start meetings will be held to ensure all workers are informed of control measures.</p> <p>Any failure of a control measure will be reported to the supervisor immediately for action.</p>	<p>Sup</p> <p>Sup</p> <p>Sup</p> <p>All</p>

Tick relevant boxes to indicate all occupational licences and certificates employed for this activity on this project.

Cranes or hoists	<input type="checkbox"/>
Loadshifting equipment	
Backhoe	<input type="checkbox"/>
Excavator	<input type="checkbox"/>
Roller	<input type="checkbox"/>
Grader	<input type="checkbox"/>
Dozer	<input type="checkbox"/>
Forklift	<input type="checkbox"/>
Skid steer loader	<input type="checkbox"/>
Front end loader	<input type="checkbox"/>
Scraper	<input type="checkbox"/>
Riggers	
Advanced	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>
Basic	<input type="checkbox"/>
Dogger	<input type="checkbox"/>
Scaffolder	
Advanced	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>
Basic	<input type="checkbox"/>

Approved by **manager:** _____ / ____/____
(Safety and Risk Management) **Signature** **Date**

Project:		Project manager:	
Control measures	How to use control measures	Monitor and review	Resp. officer
Describe the work activity where working on, or adjacent to, a road is required.	Either use a control measure from the generic section above, or develop a project specific control measure.	If using a project specific control measure, the method of monitor and review must be documented, as well as the responsible officer.	

Project specific details

The following instructions are in addition to the standard safe work method statement instructions above and are specific to this project only. This section **must** be developed after a project specific risk assessment has been conducted, and must take into account all hazards associated with the activity.

For further assistance/information contact your local Safety Coordinator/Officer.

For generic safe work method statements, the only section that can be edited is the project specific details. If instructions in the generic section are not being followed, this should be outlined in the project specific details and an alternative method must be documented.

Approved by **Project manager:** _____ /_____/_____
Signature **Date**

Appendix 3: Example of a road signing checklist

Site signing record

Date:	Road:	Suburb:
Time installed: am/pm	Time removed: am/pm	Chainage:
Lane closed: Left / Centre / Right	Direction: In bound / Out bound	
Lane closure changes required: Yes / No	Lane changed to: Left / Centre / Right	Time: am/pm
Visibility: Good / Poor	Weather conditions: Fine / Dry / Wet / Cloudy / Fog / Night / Ice / Smoke	

Note: For night conditions traffic cones must have retroreflective bands fitted.

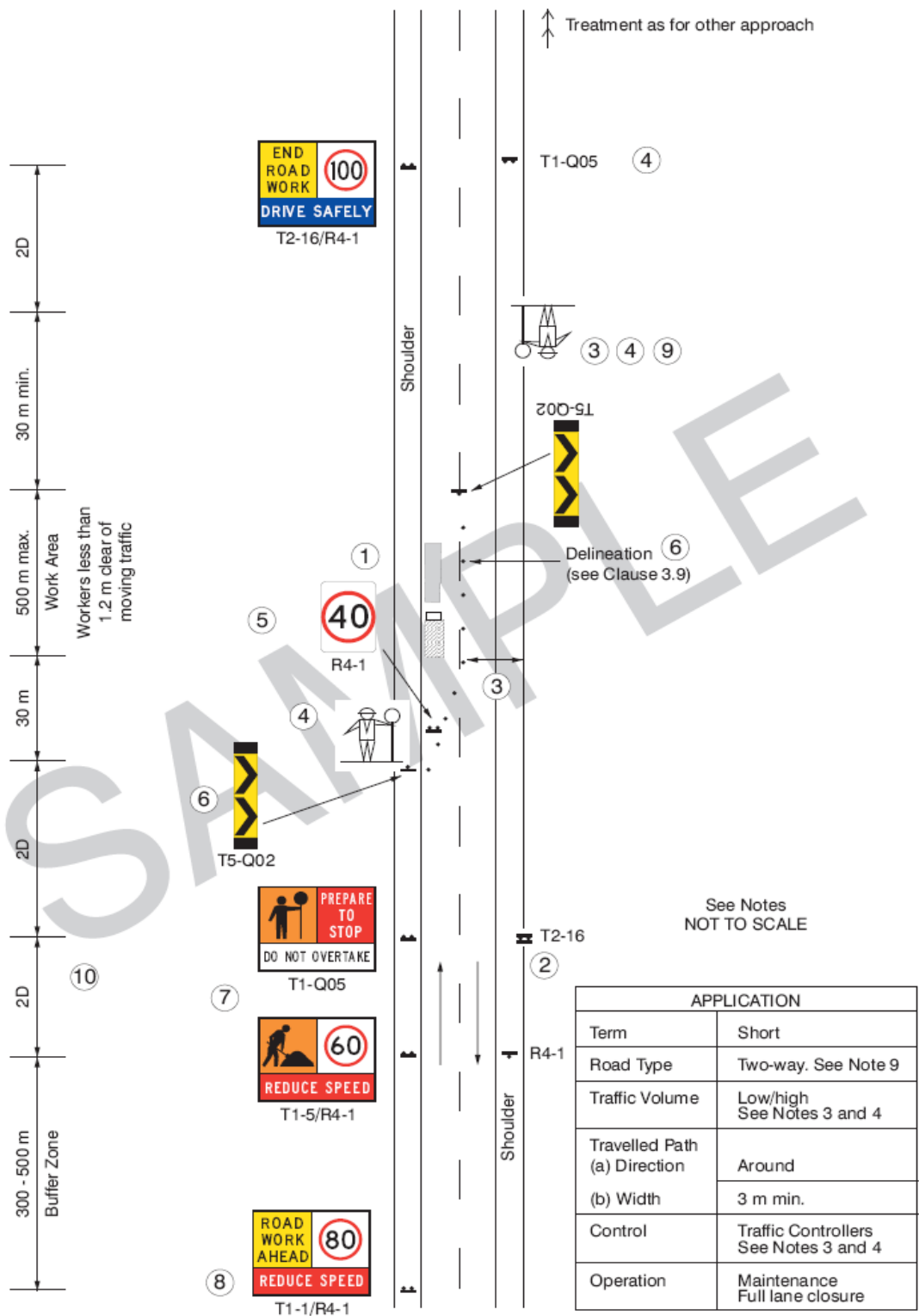
Signs and devices not listed below may be added to page 2

Position no	Sign description	Number installed	Distance from previous sign	Time checked			
				1	2	3	4
	ROADWORK 1 km AHEAD						
	ROADWORK AHEAD						
	NIGHT - Supplementary plate for night work						
	80 kph - Speed reduction sign						
	ROAD PLANT AHEAD						
	WORKERS AHEAD						
	60 kph - Speed reduction sign (1.2 m to 3.0 m)						
	REDUCE SPEED						
	40 kph - Speed reduction sign (less than 1.2 m)						
	TWO LANE STATUS						
	THREE LANE STATUS						
	FOUR LANE STATUS						
	LATERAL SHIFT MARKERS						
	TRAFFIC CONTROLLER AHEAD						
	STOP/SLOW BAT						
	PREPARE TO STOP						
	TRAFFIC SIGNALS AHEAD						
	STOP HERE ON RED SIGNAL						
	PORTABLE TRAFFIC SIGNALS						
	TRAFFIC CONES - 700 mm						
	TRAFFIC CONES - 450 mm						
	TRAFFIC CONES - 300 mm (linemarking only)						
	END ROADWORK						
	SPEED SIGN - restored to appropriate limit						
	TRACTOR/SLASHER AHEAD - (symbolic)						
	PROBABLE DELAY 15 MINUTES						
	SIGNALS UNDER REPAIR						
	POLICE CONTROL AHEAD						
	VARIABLE MESSAGE SIGN						
	ARROW BOARD						
	BARRIER BOARD						

Signature: _____
(Person in control of the worksite)

Date: ____/____/____

Appendix 4: Sample traffic guidance scheme



Appendix 5: Standards

AS1158.4 - Lighting for roads and public spaces – Lighting of pedestrian crossings
AS1348 - Glossary of terms - Road and traffic engineering
AS1743 - Road signs – Specifications
AS/NZS1768 - Lightning protection
AS/NZS1906 - Retroreflective materials and devices for road traffic control purposes
AS/NZS1906.1 - Retroreflective sheeting
AS/NZS 1906.2 - Retroreflective devices (non-pavement application)
AS/NZS 1906.3 - Raised pavement markers (retroreflective and non-retroreflective)
AS2601 - Demolition of Structures
AS/NZS3845 - Road safety barrier systems
AS4191 - Portable traffic signal systems
AS4192 - Illuminated flashing arrow signs
AS/NZS4602 - High visibility safety garments