Technical Specification

Transport and Main Roads Specifications
MRTS02 Provision for Traffic

September 2014
Contents

1 Introduction ................................................................................................................................. 3
  1.1 Principal's documents for control of traffic during construction of roadworks .......... 3
  1.2 Departures from Standards and Innovation ................................................................. 3
  1.3 Traffic Control Principles ............................................................................................... 4

2 Definition of Terms .................................................................................................................. 5

3 Referenced Documents ........................................................................................................... 6

4 Quality System Requirements ............................................................................................... 6
  4.1 Hold Points, Witness Points and Milestones ................................................................. 6
  4.2 Conformance Requirements ............................................................................................ 7

5 Traffic Management Planning ............................................................................................... 7
  5.1 Nominated Traffic Officer ............................................................................................... 7
  5.2 Traffic Management Plan ............................................................................................... 7
    5.2.1 Traffic Management Plan Submission and Approval .............................................. 8
    5.2.2 Scope of Traffic Management Plan ......................................................................... 8
    5.2.3 Implementation of Traffic Management Plan ......................................................... 9
  5.3 Traffic Guidance Scheme ............................................................................................... 9
    5.3.1 Scope of Traffic Guidance Scheme ........................................................................ 9
    5.3.2 Traffic Guidance Scheme Submission and Approval ............................................ 10
    5.3.3 Implementation of Traffic Guidance Schemes ...................................................... 10

6 Provision for Traffic ............................................................................................................... 11
  6.1 General Requirements ...................................................................................................... 11
  6.2 Administration of Traffic Management ......................................................................... 11
    6.2.1 Traffic Management Company Registration ....................................................... 11
    6.2.2 Traffic Controllers Accreditation .......................................................................... 11
    6.2.3 Out-of-Hours Representatives .............................................................................. 11
    6.2.4 Inspections and Records ....................................................................................... 11
    6.2.5 Traffic Crashes and Incidents .............................................................................. 12
    6.2.6 Superintendent’s Audit ......................................................................................... 12
    6.2.7 Complaints ............................................................................................................ 13
  6.3 Traffic Management Provisions ....................................................................................... 13
    6.3.1 General .................................................................................................................. 13
    6.3.2 Works Restriction .................................................................................................. 14
    6.3.3 Traffic Lanes Restrictions ..................................................................................... 14
    6.3.4 Over Dimension, Over Weight and Dangerous Goods Vehicles ....................... 15
    6.3.5 Access to Private Property .................................................................................. 15
    6.3.6 Pedestrian Movements ......................................................................................... 16
    6.3.7 Incident management ............................................................................................. 16
  6.4 Implementation of Controls ............................................................................................. 16
    6.4.1 Traffic Control Devices .......................................................................................... 16
    6.4.2 Traffic Route Alterations ....................................................................................... 17
    6.4.3 Dust Control .......................................................................................................... 20
    6.4.4 Night Work ........................................................................................................... 20
    6.4.5 Stored Plant and Materials ................................................................................... 20
    6.4.6 Preventing End of Queue Crashes ...................................................................... 20
    6.4.7 Delineation of Trafficked Corridors ..................................................................... 20
    6.4.8 Direction and Street Signs .................................................................................... 21
    6.4.9 Work Site Access .................................................................................................. 21
6.5  Temporary Road Safety Barriers .................................................................................................. 21
  6.5.1  General ................................................................................................................................ 21
  6.5.2  Provision ............................................................................................................................. 21
  6.5.3  Barrier Types ....................................................................................................................... 22
  6.5.4  End Treatments .................................................................................................................. 22
  6.5.5  Design of Barrier System ................................................................................................. 22
  6.5.6  Installation ........................................................................................................................ 23
  6.5.7  Maintenance ....................................................................................................................... 23

6.6  Anti-Gawking Screens ............................................................................................................. 23

6.7  Temporary Road Lighting ....................................................................................................... 23

7  Supplementary Requirements .................................................................................................. 24
1 Introduction

This technical specification:

- applies to the control of traffic during roadworks
- describes the project specific requirements for control of all traffic through the work site
- shall be read in conjunction with MRTS01 Introduction to Technical Specifications, MRTS50 Specific Quality System Requirements and other Technical Specifications as appropriate
- forms part of the Principal’s Specifications.

1.1 Principal’s documents for control of traffic during construction of roadworks

This Technical Specification forms part of the suite of documents to be applied for provision for traffic during road construction and maintenance activities. The suite of documents includes:

- Transport and Main Roads Specification MRS02 Provision for Traffic, including Annexures
- Transport and Main Roads Technical Specification MRTS02 Provision for Traffic, including Annexures (this document)
- Traffic Management for Construction or Maintenance Work – Code of Practice 2008 (Workplace Health and Safety Qld and Department of Justice and Attorney General)

Where any conflicts occur between the requirements in these documents, the order of precedence shall be as listed above except:

- in any circumstance specifically approved by the Superintendent
- where there are conflicting provisions in the TRUM Vol.7 and the MUTCD Part 3, the provision with the later publish date shall take precedence.

1.2 Departures from Standards and Innovation

The requirements and recommendations set out in this technical specification and the associated Principal’s documents for control of traffic during construction of roadworks (refer Clause 1.1), should not be inferred to preclude innovative or alternative traffic management solutions that provide improved value for money outcomes which meet the intent of this specification.

The primary principle in developing Traffic Guidance Schemes (TGS) is to ensure the safety of road workers and road users. Safety should at all times be maintained or improved. The secondary principle of the TGS is to balance the:

- efficient movement of traffic, and
- construction and traffic management costs.
Innovative treatments that provide improved value for money outcomes are therefore encouraged. Such treatments may include:

- planning for greater network impacts through reducing the level of service (LOS) for the road user typically enables works to be undertaken in a more time efficient manner. This may include changes to the work scheduling / programming to occur during periods of lower traffic demand
- innovative treatments for the deployment of devices
- alternative device layouts using new / improved devices.

Further guidance on innovations is provided in the Annexure to the Conditions of Tendering. Any alternative traffic management solutions should be documented using the form in the attached Annexure (Part B) – Proposed Alternative Traffic Management Solutions and submitted as an alternative tender, as set out in the Conditions of Tendering. All significant proposed deviations from this Specification shall be shown in the alternative tender.

It is also recognised that in some cases, conditions specific to the site and proposed traffic management layout may result in it not being possible to implement all the requirements as outlined in this Technical Specification and the associated TMR documents for control of traffic during construction of roadworks (refer Clause 1.1). In those cases where compliance is impractical, the Contractor should propose minor departures from the standards and/or alternative traffic management solutions in the TMP (Clause 5.2).

Where any innovation, alternative traffic management treatment or departure from standards is proposed, a risk assessment shall be undertaken in accordance with Clauses 2.2.3 and 2.2.5 of the MUTCD Part 3. The risk assessment shall be undertaken in accordance with AS/NZS 4360 and TRUM Note 7.8 – Risk Management and Exceptions Process for Traffic Control at Road Work Sites (search for “TRUM” at www.tmr.qld.gov.au).

1.3 Traffic Control Principles

The purpose of traffic control at roadworks is to clearly communicate to all road users, including pedestrians and cyclists, the path and speed at which they should travel through, past or around the roadworks site. The MUTCD Part 3 provides detailed guidance on the most appropriate forms of traffic control for roadworks sites and should be applied as the optimal treatment at most sites.

The credibility and effectiveness of these TGS will be reduced when the scheme and its relevance / relation to the roadworks site is not clear. This can lead to situations where drivers disregard traffic control devices, most notably speed limit signs. It is in both the Contractor’s and Principal’s interest that speed limit choices in the TGS are realistic, and enforceable.

As a result, there will be a focus on ensuring that the following requirements are met:

- Roadwork signage must be in accordance with the TGS, and installed and maintained to the required standards
- Reduced speed zones must be kept to minimum lengths. This requires ‘END ROADWORK’ and speed signs to be in place as close to the end of the works as practicable
- Reduced speed zones must be kept to minimum durations. This requires speed signs to be changed as soon as they are no longer appropriate.
- If a speed zone is in place for road worker safety, then there must be road workers present...
A reduced speed zone in place for road user safety (as a result of changes to the road environment) must be justified and the danger must be evident or made evident to the road user.

A reduced speed zone in place to protect works (for example, as outlined in the early trafficking requirements in MRTS11) must be justified and the reason must be evident or made evident to the road user.

Speed zones should be implemented just prior to the commencement of works requiring the speed zone and should be removed immediately following the completion of the works requiring the speed zone.

The Contractor retains ultimate responsibility for traffic control and management and is responsible for ensuring that the guidance system is adequately designed, installed correctly and regularly reviewed on site.

Additional financial penalties will apply for breaches of these situations as identified at clause 6.2.6.3.

### 2 Definition of Terms

The terms used in this Specification shall be as defined in Clause 2 of MRTS01 Introduction to Technical Specifications. Additional terms used in this Specification shall be as defined in Table 2.

**Table 2 – Definition of Acronyms and Terms**

<table>
<thead>
<tr>
<th>Acronym/Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-gawking screen</td>
<td>An opaque screen attached to TRSB to shield the construction work from the view of passing motorists</td>
</tr>
<tr>
<td>Dynamic deflection</td>
<td>The largest transverse deflection of a TRSB system recorded during an actual crash or during a full scale impact test</td>
</tr>
<tr>
<td>End Treatment</td>
<td>The collective term for devices and features at the leading and trailing ends of TRSB systems, which are selected on the basis of traffic speed and composition, the type of TRSB system and the particular site constraints</td>
</tr>
<tr>
<td>Nominated Traffic Officer</td>
<td>A person responsible in accordance with clause 5.1 for preparation and implementation of the TMP and TGS</td>
</tr>
<tr>
<td>RPEQ</td>
<td>Registered Professional Engineer Queensland</td>
</tr>
<tr>
<td>Traffic Controller</td>
<td>A person authorised in accordance with Clause 6.2.2 to control traffic at roadworks.</td>
</tr>
<tr>
<td>Traffic Guidance Scheme (TGS)</td>
<td>A Traffic Guidance Scheme prepared by the Contractor in accordance with the requirements of the Contract as a means of planning and communicating individual traffic changes. The Traffic Guidance Scheme shows all proposed traffic control devices and their layouts on a plan</td>
</tr>
<tr>
<td>Traffic Management Plan (TMP)</td>
<td>The Traffic Management Plan prepared by the Contractor in accordance with the requirements of the Contract. It outlines how the works are integrated into the operation of the road network</td>
</tr>
<tr>
<td>TRSB</td>
<td>Temporary Road Safety Barrier</td>
</tr>
</tbody>
</table>
3 Referenced Documents

Table 3 lists acronyms for documents referenced in this Technical Specification.

**Table 3 – Referenced Documents**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS/NZS 1158</td>
<td>Limitation of Actions Act 1974</td>
</tr>
<tr>
<td>Austroads AP-R403-12</td>
<td>Austroads Report - Implementation of National best practice for traffic control at road sites</td>
</tr>
<tr>
<td>MUTCD</td>
<td>Queensland Manual of Uniform Traffic Control Devices, Transport and Main Roads</td>
</tr>
<tr>
<td>TRUM</td>
<td>Traffic and Road Use Management Manual, Transport and Main Roads</td>
</tr>
<tr>
<td>MRS02</td>
<td>Transport and Main Roads Specification MRS02 Provision for Traffic</td>
</tr>
<tr>
<td>MRS14</td>
<td>Transport and Main Roads Specification MRS14 Road Furniture</td>
</tr>
<tr>
<td>MRS45</td>
<td>Transport and Main Roads Specification MRS45 Road Surface Delineation</td>
</tr>
<tr>
<td>MRTS01</td>
<td>Transport and Main Roads Technical Specification MRTS01 Introduction to Technical Specifications</td>
</tr>
<tr>
<td>MRTS11</td>
<td>Transport and Main Roads Technical Specification MRTS11 Sprayed Bituminous Surfacing (Excluding Emulsion)</td>
</tr>
<tr>
<td>MRTS14</td>
<td>Transport and Main Roads Technical Specification MRTS14 Road Furniture</td>
</tr>
<tr>
<td>MRTS50</td>
<td>Transport and Main Roads Technical Specification MRTS50 Specific Quality System Requirements</td>
</tr>
<tr>
<td>MRTS94</td>
<td>Transport and Main Roads Technical Specification MRTS94 Road Lighting</td>
</tr>
<tr>
<td></td>
<td>Road Safety Barrier Systems and End Treatments (Assessed as compliant with AS3845:1999) and Other Related Road Safety Devices</td>
</tr>
<tr>
<td></td>
<td>Traffic Controller Accreditation Scheme: Approved Procedure, Transport and Main Roads</td>
</tr>
<tr>
<td></td>
<td>Transport Infrastructure Project Delivery System, Transport and Main Roads</td>
</tr>
<tr>
<td></td>
<td>Traffic Operations (Road Use Management) Act 1995</td>
</tr>
<tr>
<td></td>
<td>Transport Operations (Road Use Management – Accreditation and Other Provisions) Regulation 2005</td>
</tr>
</tbody>
</table>

4 Quality System Requirements

4.1 Hold Points, Witness Points and Milestones

General requirements for Hold Points, Witness Points and Milestones are specified in Clause 5.2 of MRTS01.

The Hold Points applicable to this Specification are summarised in Table 4.1. There are no Milestones or Witness Points defined.
Table 4.1- Hold Points

<table>
<thead>
<tr>
<th>Clause</th>
<th>Hold Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1</td>
<td>Approval of Traffic Management Plan</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Approval of Traffic Guidance Schemes*</td>
</tr>
</tbody>
</table>

* Unless specified in Clause 2 in Annexure MRTS02.1, approval of TGS shall be a Hold Point for approval of proposed speed limits.

4.2 Conformance Requirements

The Contractor shall establish records to show the Contractor’s conformance to the requirements of this Specification and other relevant reference documents.

5 Traffic Management Planning

5.1 Nominated Traffic Officer

The Nominated Traffic Officer shall be accountable to the Contractor and responsible for the preparation and implementation of the TMP and all TGS and other requirements contained within the TMP. The Contractor shall submit to the Superintendent the name of its Nominated Traffic Officer.

The Nominated Traffic Officer shall have the requisite level of training / experience outlined in Table 5.1.

Table 5.1 - Nominated Traffic Officer Training Requirements

<table>
<thead>
<tr>
<th>Level of Complexity</th>
<th>Nominated Traffic Officer – Level of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGS are applied from standard plans (either from MUTCD Part 3 or contractor developed plans)</td>
<td>Successful completion of TMR approved Level 2 Traffic Management Training course delivered by a registered training provider</td>
</tr>
<tr>
<td>TGS are developed using the principles from the MUTCD Part 3 to develop site specific diagrams</td>
<td>Successful completion of TMR approved Level 3 Traffic Management Training course delivered by a registered training provider</td>
</tr>
<tr>
<td>Complex traffic management schemes which have significant impacts on delays or traffic rerouting</td>
<td>Successful completion of TMR approved Level 3 Traffic Management Training course delivered by a registered training organisation and Additional qualifications and / or experience as nominated in Clause 1 of Annexure MRTS02.1</td>
</tr>
<tr>
<td>Innovations, alternatives and departures from standards resulting in treatments other than specified in the MUTCD Part 3</td>
<td>An appropriately experienced RPEQ with successful completion of TMR approved Level 3 Traffic Management Training course delivered by a registered training organisation</td>
</tr>
</tbody>
</table>

Note: Statements of successful completion must be obtained through training delivered by a registered training organisation which meets the requirements of Traffic Management for Construction or Maintenance Work Code of Practice 2008.

5.2 Traffic Management Plan

The TMP outlines how the works are integrated into the operation of the road network. The outcome of the TMP is to describe how all road users will be accommodated throughout the duration of the works and the impacts on both road users and the construction process. Indicative staging of long term traffic management changes align to the proposed construction methodology and form the basis on which TGS(s) are subsequently developed.
5.2.1 Traffic Management Plan Submission and Approval

A TMP is required to be submitted by the Contractor to the Superintendent for a direction as to its suitability by the Principal at least 21 days before commencement of its implementation, or as nominated in Clause 2 in Annexure MRTS02.1.

Where the Work under the Contract consists of Separable Portions or other clearly identifiable sections, the TMP shall be separated into identifiable sections.

The TMP shall comply with any project specific requirements stated in Clause 2 of Annexure MRTS02.1

No traffic rearrangements shall be carried out until after the Superintendent has advised the Contractor that the submitted, and amended as directed, TMP is approved. Hold Point 1

5.2.2 Scope of Traffic Management Plan

The TMP shall:

a) Include all the following elements as detailed in Clause 2.2.2 of the MUTCD Part 3:

1. Traffic demand
2. Traffic routing
3. Traffic control (including proposed speed limits while workers are present and not present and their justification)
4. Provision for other road users
5. Special vehicle requirements
6. Site conditions

The result of this assessment will:

- describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists
- where required, describe how the construction work area shall be physically and visually isolated from road users
- provide details of how local access to communities and adjacent private properties and businesses will be maintained
- provide details of arrangements to be made for detouring traffic
- identify arrangements for managing the movement of oversize vehicles through the work site (height and width clearance constraints shall be provided by the Principal)
- provide details of all road closures and/or restrictions required to undertake the work under the Contract
- detail provisions to maintain the specified number of traffic lanes in each direction at the minimum nominated operating speed between the hours stated in Clause 6.3.3.

b) Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. The extent of
notification required will depend on the scope, impact and duration of the works and will be guided by the requirements of the Community Liaison Plan. This process shall take cognisance of any of the Principal’s requirements with respect to public notifications.

c) The advice should include:
   - the physical changes to the road
   - expected delays and traffic impacts
   - alternative route and transport mode options.

d) Include the following administrative items:
   - provide for participation of a senior member of the Contractor's site personnel on any traffic coordination committee convened by the Principal
   - include the names and contact details of the nominated out-of-hours representatives as specified in Clause 6.2.3
   - include the name of the Nominated Traffic Officer and evidence of the Nominated Traffic Officer’s experience in compliance with the requirements of Table 5.1
   - provide details of the Contractor’s organisational structure for traffic management issues including a list of the duties and responsibilities of each position nominated in that structure

e) Include a schedule of TGS giving a general description of the relevant traffic arrangements and the TGS submission date. TGS shall be prepared and submitted as specified in Clause 5.3.

5.2.3 Implementation of Traffic Management Plan

The Contractor shall:
   - implement the TMP in accordance with the schedule included in the Plan
   - provide details of the TMP, or any changes to that Plan, to any organisations or parties nominated by the Superintendent
   - monitor the continued effectiveness of the TMP during the Contract and revise and update the Plan where necessary.

5.3 Traffic Guidance Scheme

A TGS shows all traffic control devices and their layouts on a plan and must be consistent with the approved TMP.

Where any change to existing traffic arrangements is proposed or where construction conflicts with normal traffic movements, the Contractor shall prepare a TGS which clearly details the revised traffic arrangements at all locations affected by the change or conflict. A separate TGS is required for each stage of the works where changes are made to the traffic control devices.

5.3.1 Scope of Traffic Guidance Scheme

TGS shall be prepared in accordance with the MUTCD Part 3.

The TGS shall show traffic control device layouts (including TRSB, temporary pavement marking and temporary islands), be fully dimensioned and shall generally agree with the construction sequence and other requirements shown elsewhere in the Contract.
The TGS shall also state the period for which these are to be in place (time and date) and the person who is responsible for installing, maintaining and removing them. Work site access arrangements shall form part of the TGS.

The TGS shall also identify those traffic control devices which are only to be in place during periods of actual work on site. Signs such as symbolic workers signs and speed limits, introduced due to reduced clearances to workers, should be covered or removed during periods when workers are no longer on site (e.g. at night). The Principal requires that speed limits are applied strictly in accordance with the MUTCD Part 3 unless accompanied by a supporting risk assessment.

Where the TGS includes changes to regulatory signs or devices, the Contractor shall include roadwork signing records in accordance with Appendix B of the MUTCD Part 3 certified by the Nominated Traffic Officer with the TGS.

5.3.2 Traffic Guidance Scheme Submission and Approval

All TGS shall be prepared by suitably qualified and experienced persons. Approval of the TGS is required in the following circumstances: **Hold Point 2**

- TGS implemented for three days duration or longer (works need not be continuous over this period) shall be submitted for approval or rejection of proposed speed limits by the Principal. The Principal’s review will consider the appropriateness of the posted speed limits when workers are present and when they are not present.

  As outlined in Clause 1.3, the Principal wishes to improve compliance with posted speed limits at roadworks. Together with improved speed limit choices it is intended to improve opportunities for enforcement of roadwork speed limits. The Principal will determine if the site is to be considered for speed limit enforcement. If suitable, the site will be recommended to Police.

- where specified in Clause 2 of Annexure MRTS02.1

The Principal may provide comments on other matters in the TGS.

TGS that require approval shall be clearly marked “For Approval” and be submitted at least 14 days prior to the date of the proposed traffic rearrangement, or as nominated in Clause 2 of Annexure MRTS02.1. Failure to comply with this requirement may result in the Principal deferring the date for traffic rearrangement. Such deferment shall not be a cause for an extension of time under the Contract.

TGS that do not require approval as outlined above shall be clearly marked “For Information” and be submitted to the Superintendent at least 3 days prior to implementation.

5.3.3 Implementation of Traffic Guidance Schemes

For TGS(s) where speed restrictions have been submitted to Police for inclusion on the enforcement database, should the Contractor wish to depart from the speed signage arrangements presented in their TGS, an amended TGS shall be submitted to the Superintendent 7 days prior to implementation of any new arrangements.

On a daily basis, the Contractor shall ensure that all applicable traffic redirection and/or warning measures and safety requirements are implemented prior to proceeding with any relevant work under the Contract.
The Contractor shall monitor the effectiveness of the TGS and revise it in response to incidents and/or unexpected traffic disruptions.

Details of a TGS shall be provided on request to any other party nominated by the Superintendent.

6 Provision for Traffic

6.1 General Requirements

Traffic shall be controlled at all times, during construction, in accordance with the provisions of the MUTCD Part 3.

The requirements and recommendations set out in the MUTCD Part 3 and this Specification and its Annexure do not preclude innovative or alternative traffic management solutions, as outlined in Clause 1.2.

6.2 Administration of Traffic Management

6.2.1 Traffic Management Company Registration

When traffic control is required, only companies registered with the department’s traffic management registration scheme shall be used. A listing of registered traffic management companies can be obtained from the TMR website at http://www.tmr.qld.gov.au

6.2.2 Traffic Controllers Accreditation

A Traffic Controller shall hold an appointment as an accredited person under section 21 of the Transport Operations (Road Use Management) Act 1995 to perform the functions of a traffic controller as prescribed by the Transport Operations (Road Use Management – Accreditation and Other Provisions) Regulation 2005. The Traffic Controller shall carry their TMR issued Traffic Controller Accreditation Scheme accreditation identity card at all times while working as a traffic controller.


6.2.3 Out-of-Hours Representatives

The Contractor shall nominate a minimum of two representatives to address traffic management issues, one of whom shall be available at all times outside of the Contractor’s normal working hours. The Contractor shall notify the Superintendent of the name, address and telephone number of the nominated persons. Such persons, when requested by the Superintendent, shall coordinate and expedite immediate repairs to and maintenance of such part of the work under the Contract as may be considered necessary by the Superintendent and shall carry out such work to the satisfaction of the Superintendent.

If a nominated person leaves the employ of the Contractor during the period of the Contract, the Contractor shall immediately nominate another person and provide the full details of that person.

6.2.4 Inspections and Records

The Contractor shall inspect all traffic control devices and traffic control arrangements in accordance with Appendices A and B of the MUTCD Part 3.

As an alternative to the record keeping arrangements outlined in the MUTCD Part 3, photographic and/or video evidence of the TGS is permitted. Photographic and/or video evidence shall include date and time stamps and GPS location and be of sufficient resolution to accurately identify and locate
traffic control devices. GPS coordinates shall be in World Geodetic System 1984 (WGS84) format or Geocentric Datum of Australia 1994 (GDA94) format, with latitude and longitude in decimal degrees. Time and date stamping shall be in Australian Eastern Standard Time (Coordinated Universal Time + 10 hours).

Records shall be retained by the Contractor in accordance with the Limitations of Actions Act 1974, for actions associated with personal injury (plus as long as required for any claims to be resolved). Records shall be provided to the Superintendent at the end of each month or upon request.

The Contractor, and in particular the Nominated Traffic Officer, may be required to provide evidence in Court in the event that a speeding infringement notice is challenged, or in the event of a traffic incident within the site.

6.2.5 Traffic Crashes and Incidents

In the event of a traffic crash/incident within the site, the Contractor shall record the date and take time and date stamped photographs of the signs/devices present in the vicinity of the crash. In the event of a traffic crash/incident that requires notification to Police and relevant Emergency Services, the Contractor shall make the appropriate notifications. All crashes/incidents shall be recorded in the incident log. A copy of the incident log shall be forwarded to the Superintendent within 24 hours of the incident, or upon request.

The Contractor shall assist with the mitigation of the impacts of incidents as much as is reasonably practicable.

6.2.6 Superintendent’s Audit

6.2.6.1 Timing

The Superintendent will undertake regular performance/compliance audits of the Contractor’s traffic control measures and provide feedback monthly in line with Principal’s Contractor Performance Report in the Transport Infrastructure Project Delivery System (available at www.tmr.qld.gov.au).

6.2.6.2 Safety Performance of the TGS

If the Superintendent is of the view that, despite a TGS being in conformance with the MUTCD Part 3 and this Specification and the implemented scheme being in conformance with the TGS, the scheme is unsafe in some way, the Contractor shall undertake the necessary modifications to the TGS to address the identified issues.

6.2.6.3 Non-conformances associated with Audit

The Principal requires that traffic is managed strictly applied in accordance with the approved TGS. Penalties will apply for non-conformances relating to inappropriate use of speed limits and other TGS non-conformances. The penalties that shall apply are outlined in Clause 3 of Annexure MRTS02.1.

In the case of non-conformance, the Superintendent will request the Contractor raise a non-conformance report. Non-conformances will include but are not limited to the following:

a) failure to maintain and update the TMP
b) failure of the TGS to comply with the principles outlined in Clause 1.3
c) failure to install and maintain speed limit signs as detailed in a TGS (speed limit signage conformance penalty applies)
d) failure to maintain any other traffic control device detailed in a TGS (TGS con-conformance penalty applies)

e) failure to maintain minimum travelled path dimensions

f) traffic delay periods exceeding any maximum period nominated in the Contract

g) failure to cover/remove unused signs and traffic control devices within two hours of completion of any revised traffic arrangement (TGS con-conformance penalty applies)

h) reduced speed limits introduced more than one hour prior to the commencement of the works. Speed limit signs may be installed but should be covered until immediately prior to the need for their use applies (speed limit signage con-conformance penalty applies)

i) failure to cover/remove signs and traffic control devices associated with reduced speed limits within two hours of completion of the shift or work requiring the reduced limit (speed limit signage con-conformance penalty applies)

j) failure to provide the required information/notice to the community or local businesses of changes to traffic movement

k) failure to use other than designated construction workplace entries or exits for the works (TGS con-conformance penalty applies)

l) failure to maintain an obstruction free travelled path

m) undertaking traffic rearrangements without an approved TGS except where required for incident management purposes (refer to Clause 6.3.7) (TGS con-conformance penalty applies)

n) failure to assist with assisting in mitigating the impacts of traffic incidents as much as is reasonably practicable

o) any other issue raised by the Superintendent deemed to be a non-conformance

Notwithstanding the requirements of MRTS05, all non-conformances shall be remedied by the Contractor within two hours of receipt of notice request for the non-conformance report. Failure to remedy any non-conformance within the two hour period shall entitle the Principal to carry out any remedial work deemed necessary pursuant to the Contract. All costs related to this work shall be charged to the Contractor, in addition to the financial penalties as set out in Clause 3 of Annexure MRTS02.1.

6.2.7 Complaints

The Contractor shall keep a register of all complaints received and actions taken to address each complaint. The complaints register shall be forwarded to the Superintendent on a weekly basis. The Contractor shall similarly keep a register of requests for information from the public. This public information request register shall also be forwarded to the Superintendent on a weekly basis.

6.3 Traffic Management Provisions

6.3.1 General

The provision of traffic management at works sites should at all times be cognisant of the need to maintain safe and effective traffic flow that minimises traffic delays and the risk of off-site incidents and driver frustration.
Further guidance is available in TRUM Note 7.9 – Traffic Operations Level of Service for Roadworks Sites, with regards to methods for the assessment of impacts on traffic (available at www.tmr.qld.gov.au).

6.3.2 Works Restriction

Work shall conform to the following principles unless approved otherwise.

**Work on shoulder areas** – is limited to one side of the road or of a divided road's carriageway at a time in any section.

**Vertical clearance** – Not less than 4.6 metres vertical clearance shall be provided from the trafficked surface, including any side-tracks or detours, to any obstacle. The Contractor shall make the necessary arrangements and obtain the necessary approvals from the appropriate Electricity and/or Communications Authority in the case of overhead cables.

**Length of 40km/h zone** – In sections of the project where the speed restriction is 40 km/hr, the maximum length of roadway with a 40 km/hr speed limit, excluding tapers and acceleration zone shall be in accordance with Clause 4.2 of the MUTCD Part 3.

**Hazardous lift events** – During the erection of bridge girders, deck units and other bridge components and/or while lifting and fixing street light poles and sign gantries no traffic shall be allowed under or within the distance the lifted item could fall. Traffic shall be temporarily stopped or diverted while such work is carried out.

**Specific restrictions on work which impacts on traffic** – No work which impacts on traffic is permitted on:

- Thursday before Easter
- Anzac Day
- During the period from the day prior to Christmas Day until New Year's Day, both inclusive
- During any other event deemed by the Superintendent as set out in Clause 4.1 of Annexure MRTS02.1 to be a major commercial, sporting or cultural event, where the Superintendent considers that such closure would cause an unacceptable level of disruption to the traffic operations associated with such events.

**Prohibition Notice** – The Principal is subject to a Prohibition Notice which restricts personnel from crossing high speed, multilane divided roads with posted speed limit of 100 km per hour or greater. The Contractor is to conform to the requirements of this Prohibition Notice and at all times refrain from crossing these roads without the use of lane closures or speed reductions.

6.3.3 Traffic Lanes Restrictions

Lane restrictions shall conform to the following principles unless approved otherwise.

**Minimum number of lanes** – Clause 4.2 of Annexure MRTS02.1 sets out the following minimum requirements for various time periods and for various locations in the work site:

a) the number of traffic lanes which shall be available to traffic
b) the trafficable width of the lanes
c) the clearance of roadside objects from traffic lanes, and
d) the minimum posted speed limits
Where the number of traffic lanes is not listed in Clause 4.2 of Annexure MRTS02.1, the required lane availability shall be determined using traffic analysis as detailed in TRUM 7.9 – Traffic Operations Level of Service for Roadworks Sites (available at www.tmr.qld.gov.au) or recent historical information as follows:

- 24 hour traffic count information at the site
  - less than 3 months old
  - not during school holidays
  - undertaken on a day of the week which is expected to have the greatest traffic volumes
- number of lanes to be determined so that average lane flow at all times is less than 1400 vehicles per hour per lane

Single lane reversible flow – Where single lane reversible flow (to serve both directions) is allowed, the Contractor shall maintain traffic flow under the control of traffic controllers or portable traffic signals in such a way that no road user is delayed in excess of the acceptable delay specified in Clause 4.3 of Annexure MRTS02.1. In all cases, the length of one-lane, two-way operation shall be limited to one kilometre.

Stopping traffic in both directions – The Contractor may stop traffic in both directions simultaneously only for purposes of construction of specific work and during the specific period stated in Clause 4.4 of Annexure MRTS02.1. The maximum delay to any road user shall be as stated in Clause 4.4 of Annexure MRTS02.1.

Specific periods where lane closures are not permitted – Work under the Contract involving lane closures, stop/slow arrangements or construction traffic entering or leaving any through traffic lanes shall not be carried out during any periods stated in Clause 4.5 of Annexure MRTS02.1 and unless otherwise stated, such restrictions shall apply 24 hours per day.

Measuring traffic delays – Where stated in Clause 4.6 of Annexure MRTS02.1, the Contractor shall undertake surveys to monitor the impact of the activities on the road user. Traffic surveys shall be undertaken as stated in Clause 4.6 of Annexure MRTS02.1 and according to TRUM Note 7.10 – Travel Time Surveys on Large Projects (available at www.tmr.qld.gov.au). Typical periods during which delays shall be recorded include during full road closures and during all road closures which require detours off site. Baseline traffic conditions prior to the commencement of works shall be measured for comparison.

6.3.4 Over Dimension, Over Weight and Dangerous Goods Vehicles

The Contractor shall not reduce pre-existing provisions for the movement of heavy vehicles including over dimension, over weight and dangerous goods vehicles that have approval from the Superintendent and/or other relevant Authorities.

6.3.5 Access to Private Property

Existing accesses to private properties affected by the work shall be maintained in useable condition during the construction, or alternative access arrangements acceptable to the property owners/tenants shall be made. The Contractor shall permit and provide for the free movement of traffic in and out of the properties at all times except as otherwise agreed to by the property owners/tenants.
The Contractor shall, at no expense to the Principal, make good any damage to accesses to private properties which results from the Contractor's operations during the construction of the work under the Contract.

6.3.6 Pedestrian Movements

Where it is necessary to provide for pedestrian and/or cyclist access along or across portions of the work under the Contract, the Contractor shall provide such temporary pathways as necessary in accordance with the requirements of the MUTCD Part 3.

The pathways shall be clearly delineated, signed and fenced to prevent unintended access to the remainder of the work under the Contract. Signs shall be provided adjacent to the pathway to clearly indicate that access to the remainder of the work under the Contract is prohibited.

Adequate illumination shall be provided during all periods of darkness.

Where a large volume of pedestrian traffic has to cross the work site, consideration shall be given to directing pedestrians to suitably constructed and protected crossings.

Special provision for pedestrians may be required where the direction of traffic flow is opposite to that normally expected.

6.3.7 Incident management

An incident management plan is to be prepared by the Contractor for sites of longer than 3 days duration and submitted to the Superintendent detailing the measures to be implemented in the event of a traffic incident that occurs within the worksite or on any detour route.

The Superintendent or the Queensland Police Service may direct the Contractor as per Clause 6.2.5 to implement detours for incident management, without preparation of an incident management plan or without acting in accordance with any existing plan.

6.4 Implementation of Controls

6.4.1 Traffic Control Devices

6.4.1.1 General Traffic Control Devices

Traffic control devices and their use shall conform to the requirements of the MUTCD Part 3 and such other additional Standards as may be issued by Transport and Main Roads.

All traffic control devices shall be securely fixed in the correct position and maintained in an effective and clean condition suitable for day and night operations whilst employed on the work under the Contract. Devices which are damaged or worn, or which do not conform to the above requirements, shall not be used.

The Contractor shall comply with the requirements for traffic control devices and ITS installation stated in Clause 5.1 of Annexure MRTS02.1.

6.4.1.2 Additional Optional Traffic Control Devices

Variable Message Signs (VMS) and other ITS Devices – VMS and other ITS devices can be used to supplement other traffic control devices, particularly in communicating complex arrangements to drivers. The need for these devices should be determined through a risk assessment either to supplement other traffic control devices or as an alternative traffic control device when site conditions constrain a preferred TGS layout.
Where they are used, the Contractor shall coordinate operation of temporary VMS and other early works ITS devices with the operations of the traffic control room or traffic management centre as appropriate.

**Use of Police** – Police presence should be limited to those occasions where:

a) a risk assessment indicates that their presence mitigates the need for other more costly measures, or

b) any situations stated in Clause 5.2 of Annexure MRTS02.1.

Where police officers are to be employed to assist in the control of traffic around or through the work site, the Contractor shall be responsible for making all necessary arrangements with the local Police Station or relevant branch of the Queensland Police Services and for making all payments.

**Speed enforcement** – In addition to speed enforcement undertaken through Principal submission of speed limits for enforcement, the Contractor can implement additional speed enforcement at roadworks sites to ensure that traffic speeds are in compliance with the posted speed limits. This can result in savings associated with the TMP by being able to implement lower cost solutions by not having to cater for higher vehicle speeds.

Contractors wishing to implement site specific speed enforcement would do so at their own cost and would need to make the necessary arrangements with the QLD Police.

### 6.4.2 Traffic Route Alterations

#### 6.4.2.1 General Requirements for Traffic Route Alterations

A traffic route alteration refers to the act of closing one section of road and redirecting traffic onto another road. The traffic route alteration refers to the re-direction task only and once traffic is flowing safely on the new road, the traffic route alteration is deemed to be finished. Traffic route alterations include re-directing traffic to and from:

a) the road under construction

b) a detour on an existing road

c) a side-track

#### 6.4.2.2 Specific Requirements for Construction under Traffic

When construction under traffic is permitted as per Clause 5.3 of Annexure MRTS02.1, the Contractor shall arrange its construction program and sequencing so traffic flow is maintained through the Works in accordance with the requirements of this document and the MUTCD Part 3, as supplemented or amended by any requirements in Clause 5.3 of Annexure MRTS02.1.

In accordance with the principles in Clause 1.3, it is expected that speed limit reductions be kept to minimum durations. This will require that speed signs be changed as soon as they are no longer appropriate.

#### 6.4.2.3 Specific Requirements for Detours

When specified in Clause 5.4 of Annexure MRTS02.1, traffic may be detoured away from the Works via existing roads. Detours that involve the diversion of traffic off the work site are not permitted except for the express purpose of implementing a full carriageway closure to allow specific construction activities.
Any proposed detour shall be fully documented in the relevant TGS. The Contractor shall provide details within the TGS to demonstrate that detours proposed for the purpose of implementing a full carriageway closure have sufficient capacity and are capable of supporting the traffic volumes expected during the use of the detour. The TGS shall show:

a) maximum extra length added to motorist trips
b) maximum extra delay for motorists
c) maximum number of hours which a detour is to be implemented
d) any parking or other restrictions required to accommodate the detour.

The Contractor shall liaise with and make all necessary arrangements with the relevant Local Government(s) and/or other authorities concerned. These arrangements shall include making provision for such matters as the issuing of public notices in respect of the detour and ensuring the classification and condition of the roads concerned are adequate for the volume and composition of traffic to be detoured.

In implementing the detour, the Contractor shall:

a) inspect the route for adequacy for the entire length of the detour
b) implement any parking or other restrictions required to allow the suitable flow of detoured traffic
c) provide suitable directional signage and other infrastructure to guide motorists
d) restore or arrange restoration as necessary following cessation of the detour period to the approval of the relevant Authorities.

6.4.2.4 Specific Requirements for Side-tracks

Where re-directing traffic onto a side-track is permitted by Clause 5.5 of Annexure MRTS02.1, construction of the side-track shall comply with the requirements set out in this document and any additional requirements stated in Clause 5.5 of Annexure MRTS02.1. All aspects of the side-track design shall be signed off by an appropriately experienced RPEQ.


Location of side-tracks – The location and route of side-tracks shall be in accordance with the details provided in Clause 5.5 of Annexure MRTS02.1 and/or as shown on the Drawings.

Surface and clearing – The ground surface of the areas on which a side-track is to be constructed shall be cleared, grubbed and stripped of vegetation and any other undesirable matter. Such operations shall extend for not less than the full width of the surface formation of the side-track. Any tree or other object within 3 metres of the edge of the side-track shall be removed, shielded or delineated.

Alignment – Side-tracks shall be aligned, formed, graded, drained and maintained so as to provide for safe, comfortable passage of vehicles at the indicated speed limit. In general, not more than 4% surface cross-fall shall be provided.

Surface – The requirements for paving and/or sealing of a side-track shall be as stated in Clause 5.6 of Annexure MRTS02.1 or the MUTCD Part 3. Where paving and/or sealing of a side-track is required,
the Contractor shall prepare the side-track formation and carry out the paving and/or sealing operations in accordance with the requirements of the relevant Technical Specification and such other requirements as may be stated elsewhere in the Contract. Materials for construction of side-tracks shall comply with the provisions of the relevant technical specification.

**Geometric requirements** – The minimum geometric standards of a side-track shall be as specified in Clause 5.7 of Annexure MRTS02.1.

Where a side-track is used as a part of an overnight road occupancy (e.g. crossovers on motorways between divided carriageways) only, the side-track may be designed for a lower posted speed. The Contractor shall ensure that the length of road, which the reduced speed is applied to, is as short as possible according to the MUTCD Part 3.

**Width** – The width of a side-track shall be as specified in Clause 5.7 of Annexure MRTS02.1. If the normal width of a the road is less than 6 metres, suitable passing facilities, not less than 30 metres in length and providing an available width of not less than 6 metres, shall be located at minimum intervals of 800 metres along the side-track and at locations where sight distance is less than 100 metres.

**Waterway crossings** – unless the construction of special waterway crossings has been provided for elsewhere in the Contract, the form and design of waterway crossings along the route of a side-track shall be determined through an appropriate risk assessment provided by the Contractor and approved by the Principal.

The risk assessment shall consider the consequences of flooding, the time of year, and the traffic impact of road closures. When the waterway crossing design is based upon a rainfall Average Recurrence Interval that is lower than the current crossing, the Contractor must advise this in their Offer.

The waterway crossing shall be constructed for the full width of the side-track. The edges of waterway crossings shall be signed and delineated effectively both day and night, in accordance with the requirements of the MUTCD and MRTS14.

**Traffic control** – Side-tracks shall be signed and delineated to ensure the clarity of the route.

**Lighting** – Side-tracks shall be lit at the points of divergence from the existing roadway to comply with Clause 6.7 or at any other points where the driving task may be more difficult to comply with.

**Reuse of side-tracks** – Where a side-track is to be reused, all temporary pavement markings shall be updated and / or removed as necessary to comply with the Contract.

**Maintenance** – Side-tracks shall be maintained to the standard to which they were built and to always ensure safety of users. They shall be maintained such that:

a) pavement markings or delineation is clearly visible at all times

b) lane closures on the side-tracks only occur when maintenance is undertaken or traffic control devices are being moved

**Decommissioning** – After a side-track has been used for the last time during construction, it shall be completely removed and rehabilitated. All temporary line marking used on any permanent road surface, including tie-ins on the approach / departure to the works, that becomes obsolete shall be obliterated from the permanent road surface, and the site shall be restored to a condition equivalent to that existing before the side-track was constructed.
Any removed materials shall be disposed of in accordance with Clause 11 of MRTS01.

6.4.2.5 Implementation of Traffic Route Alterations

Escort vehicles may be required to implement a traffic route alteration during the process of transferring vehicles from or to an altered route.

6.4.2.6 Contingency Planning

On occasions a traffic route alteration can lead to excessive unforeseen delays and other impacts not predicted within the TMP.

The Contractor must include in the TMP, a contingency to address this possibility which can be implemented immediately should traffic operation delays or safety issues exceed those identified within the accepted plan. This contingency plan may include restoration of the route in existence prior to implementation of the traffic route alteration until such time that as alternative arrangements can be developed.

6.4.3 Dust Control

The Contractor shall take adequate precautions to effectively minimise the generation of dust during the construction of the work under the Contract which may affect the safety and general comfort of the travelling public, the Contractor’s employees and/or occupants of adjacent buildings.

In this respect, the Contractor shall carry out regular applications of water or other palliative measures along the sections of the work traversed by the travelling public, as required, to minimise dust.

6.4.4 Night Work

Only machinery fitted with reversing or other alarms, which adjusts the alarm sound output to no more than 5dB above the surrounding noise level and an alarm sound output range of 85dB – 115dB, will be used to work from midnight to 6 am.

6.4.5 Stored Plant and Materials

Where plant or materials is stored on the site, the Contractor shall comply with the minimum clear zone requirements of the MUTCD Part 3. Any plant or materials stored overnight within 9 metres of the edge of any trafficked lane shall be delineated with warning lights, unless located behind a safety barrier.

6.4.6 Preventing End of Queue Crashes

Additional traffic controllers, or other end of queue risk control measures deemed to be adequate for the site circumstances, shall be used in high speed situations or where sight-distance is restricted, to prevent rear end collisions where vehicles are stopped or slowed by the work under the Contract. Additional traffic controllers shall also be used in other situations where described in Clause 6 of Annexure MRTS02.1. Additional guidance is provided in TRUM regarding supplementary devices at roadworks to reduce speed.

6.4.7 Delineation of Trafficked Corridors

6.4.7.1 General

Where described in Clause 7 of Annexure MRTS02.1, direction hazard markers, temporary raised reflective pavement markers, line marking, reflective mesh fencing and/or other such delineation
devices shall be used in addition to the requirements of the MUTCD Part 3 to delineate trafficked corridors.

6.4.7.2 Materials

Materials used for temporary pavement markings shall be subject to the approval of the Superintendent. Only materials which can be removed without damaging the pavement surface shall be used for temporary marking of the final pavement surface.

Delineation shall consist of bollards, traffic cones, individual hollow plastic ballasted barrier elements or mesh fencing using a heavy, highly visible plastic safety mesh. Star pickets shall not be used within 1m of the edge of adjacent traffic lanes for speeds of 80 km/hr or more.

When used as delineators, hollow plastic TRSB elements are not required to be filled with water or be linked but shall be partially filled with water to provide stability against movement by the action of passing traffic or by winds.

Drums and cylinders which can roll if dislodged by impact or wind shall not be used as temporary delineators. Stand-alone non-interconnected lightweight modules, which do not meet the requirements for a TSRB, shall not be used as temporary delineators.

6.4.7.3 Construction

Under no circumstances shall temporary painted or thermoplastic line marking materials or temporary raised pavement markers be used on the surface of a final pavement layer.

Temporary pavement marking and temporary raised pavement markers shall be installed in accordance with the requirements of MRS45 Road Surface Delineation.

Temporary delineation devices shall not damage the surface of the Works.

6.4.8 Direction and Street Signs

Where access to streets and side roads has been altered during the construction of the Works, the Contractor shall supply and erect all such temporary signs necessary to assist the travelling public to find their way to such streets and roads.

6.4.9 Work Site Access

Vehicular access points to and from the work site shall be in accordance with the Transport and Main Roads Road Planning and Design Manual. Acceleration and deceleration lanes and tapers shall comply with the traffic volume, speed and sight distance warrants specified in that document. Cross section widths for acceleration and deceleration lanes should be a minimum of 3.2 m.

6.5 Temporary Road Safety Barriers

6.5.1 General

Temporary Road Safety Barriers (TRSB) shall be used to contain and redirect errant vehicles so as to reduce the likelihood of them entering the work site. They may also be used to separate opposing traffic.

6.5.2 Provision

 Provision shall be made for TRSB at the following locations:

- at those locations identified in Clause 8 of Annexure MRTS02.1
• at locations that meet worker safety requirements of the MUTCD Part 3
• at locations where a risk assessment determines that TRSB are the most appropriate method of separation between traffic and the work site or other hazards.

Where TRSB are shown on the drawings, the type and location of barriers shall be as shown on the drawings.

Opposing flows of traffic may be separated with TRSB with sufficient offset provided to reduce the likelihood that TRSB deflect into opposing traffic flow in the event of impact.

When TRSB are used to protect the works site, the requirements to maintain a clearance zone behind the TRSB as specified in the MUTCD Part 3 shall apply. The maximum dynamic deflection is specified by the manufacturer.

6.5.3 Barrier Types

Only those TRSB which are included in the *Transport and Main Roads – Road Safety Barrier Systems and End Treatments (Assessed as compliant with AS3845:1999) and Other Related Road Safety Devices* shall be used. Where TRSB are manufactured according to Transport and Main Roads standard drawings referenced within this document, they shall be manufactured in accordance with MRTS14.

Steel Beam Guardrail, in accordance with Standard Drawing 1474 and 1475, may be used instead of TRSB in some locations subject to the approval of the Superintendent. End treatments shall be in accordance with Standard Drawing 1462, 1470, 1474 and 1475, or with an approved proprietary end treatment listed in the *Transport and Main Roads – Road Safety Barrier Systems and End Treatments (Assessed as compliant with AS3845:1999) and Other Related Road Safety Devices*.

Steel Beam Guardrail shall not be used for temporary erection where posts have to be installed through pavements which remain part of the permanent works.

6.5.4 End Treatments

Provision shall be made to treat the approach and/or departure ends of both permanent and TRSB that are exposed to on-coming traffic, including barriers that are flared to terminate outside the clear zone.

Only those end treatments listed in the *Transport and Main Roads – Road Safety Barrier Systems and End Treatments (Assessed as compliant with AS3845:1999) and Other Related Road Safety Devices* shall be used.

6.5.5 Design of Barrier System

The performance of a TRSB system is dependent not only on the design of the barrier segment, but also in the correct design of the entire TRSB system including the minimum length of TRSB and the location and form of end treatments.

Any TRSB placement shall be designed in accordance with the requirements stated in:

- AS 3845
- MRTS14 – Roadside Furniture
- MUTCD Part 3
- Chapter 8 – TMR Road Planning and Design Manual
Care shall be taken at intersections to prevent visibility problems for motorists negotiating the intersection.

When a need for TRSB is identified, the barrier type shall be determined on the basis of:

a) the type, shape, deflection performance and test characteristics of the TRSB
b) the speed of traffic travelling through the work site
c) the clearance between the traffic and the work area

6.5.6 Installation

All TRSB and end treatments shall be installed in accordance with the department's Standard Drawings and/or the manufacturer's specifications.

Water filled plastic barriers shall be filled with water to the level specified in the manufacturer's specifications.

TRSB shall have recesses at their base to allow drainage at ground surface level under the barriers.

6.5.7 Maintenance

The Contractor shall maintain TRSB on their correct alignment for the period that they are installed on the work site.

6.6 Anti-Gawking Screens

Anti-gawking screens are used to minimise visibility of the construction activities to the travelling public.

When the requirement for anti-gawking screens is identified at per Clause 9 of Annexure MRTS02.1, they shall be installed where:

- so stated in Clause 9 of Annexure MRTS02.1, and
- where activities are being undertaken within 3.5 metres of the lane edge and such activities are likely to cause traffic delays or may be a visual distraction to drivers.

Anti-gawking screens shall be provided as per TRUM Note 7.5 – Anti-gawking screens (available at www.tmr.qld.gov.au).

6.7 Temporary Road Lighting

Where roadway lighting currently exists, lighting shall generally be provided during roadworks. Ideally, existing lighting shall not be removed until alternative temporary lighting is provided to at least the same standard as the existing lighting. If temporary lighting is not provided, the associated risk must be managed.

Temporary road lighting shall be provided if so stated in Clause 10 of Annexure MRTS02.1.

Temporary road lighting may include conflict points and potential hazards and it shall include two spans of lead-in lighting in advance of the conflict point, including:

a) significant changes in carriageway width
b) changes from single to divided carriageway
c) converging and diverging traffic streams
d) crests and humps
e) curves below 100 m radius, and

f) road sections with high night time crash rates.

The Contractor shall install, operate and maintain the temporary road lighting installations for the full period during which the relevant road is required and/or until the permanent road lighting is installed and becomes operational.

Artificial lighting shall be arranged in such a manner as to avoid creating levels of glare arising from shallow angles of incidence towards the drivers of vehicles using the adjacent traffic lanes. At no time shall artificial lighting be directed towards oncoming traffic.

7 Supplementary Requirements

The requirements of MRTS02 Provision for Traffic are varied by the supplementary requirements given in Clause 11 of Annexure MRTS02.1.