Motorcyclists at road worksites

Vulnerable road users

Motorcycle safety

Motorcycles require special consideration when designing road worksites as the changed conditions can present serious challenges for these vulnerable road users.

The dynamic stability characteristics of motorcycles are different from other vehicles. They are very sensitive to changes in the shape, texture or skid resistance of the road surface, including the presence of water or debris on the road. These hazards also need to be considered and addressed when developing and implementing the Traffic Management Plan (TMP) and Traffic Guidance Scheme (TGS).

Ensuring road worksites are designed in a manner that maximises safety for motorcyclists can have benefits for all road users.

No traffic management solution should negatively impact the safety of motorcyclists. It is the responsibility of all traffic management personnel, in both design and implementation to ensure the safety of motorcyclists at road worksites.

This fact sheet explores motorcyclist safety at road works, highlighting current issues and key safety considerations.

Current issues

Some road worksite designers overlook motorcyclist safety when designing and managing the site. A variety of common motorcycle behaviour patterns, physical road conditions and design factors can pose hazards to motorcyclists.

Behavioural patterns that motorcycle riders may exhibit through a road worksite which pose safety concerns include:

- travelling at excessive speed through the road work site
- lane filtering/splitting, including using the shoulder as a lane.

Physical hazards to motorcyclists that may be observed at road worksites typically fall into one of five categories which are listed on page 2. Unfortunately, these physical conditions cannot always be avoided at road worksites, and in some cases may have been present prior to construction commencing. Ensuring rider awareness of the potential hazards is crucial.

Although these physical and behavioural conditions can occur anywhere and anytime on a given road, they tend to develop more frequently in road worksites where work activity has changed the conditions and/or usage patterns of the existing road. Stability at high speed is a far greater concern for motorcycles than cars and this is particularly pertinent when motorcyclists are exposed to the above physical conditions.
### Physical hazards to motorcyclists at road worksites

<table>
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<th>Changes in roadway geometry</th>
<th>Pavement discontinuities and abrupt elevation changes</th>
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<td>• Alignment shifts in travel lanes</td>
<td>• Uneven lanes</td>
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<tr>
<td>• Narrowing or closure of shoulders</td>
<td>• Loose or rough bridge and pavement joints</td>
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<tr>
<td>• Curves without superelevation or with adverse cross fall</td>
<td>• Steel plates</td>
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<tr>
<td>• Hazards in the ‘lean’ space</td>
<td>• Longitudinal or lateral rumble strips</td>
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### Change in pavement friction

- Loose gravel, sand or soil
- Liquids on the pavement surface
- Large pavement markings
- Steel plates
- Loose road surfacing (particularly mounding of gravel)
- Trench cover plates (less of an issue if sufficient friction supplied)
- Blacked out pavement markings (less of an issue if sufficient friction supplied), Raised Reflective Pavement Markings (RRPMs) and Temporary Raised Pavement Markers (TRPMs)

### Traffic control devices

- Safety barriers with poor end treatment
- Inadequate delineation
- Temporary kerbing
- Hazards in the ‘lean’ space

### Degradation in pavement surface quality

- Longitudinal grooves from pavement milling
- Unpaved or gravel surfaces
- Rough and broken pavement sections
- Grooved road surfaces
Key considerations

A summary of the key considerations for motorcyclists and where to look for further information is provided in the table below.

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<th>Issue</th>
<th>Key considerations for Traffic Management Designers</th>
<th>Further information</th>
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| Site speed limit              | • Shall be appropriate for all road users and the works being undertaken  
• Situations requiring sudden braking of traffic should be avoided  
• For motorcyclists the following should be considered:  
  o Manoeuvrability of motorcyclists  
  o Changes to alignment and superelevation  
  o Lean space requirements  
  o Surface hazards  | MUTCD Part 3 Clause 4.9.3 (Manual of Uniform Traffic Control Devices) |
| Alignment and superelevation | • Should be like that of the existing roadway  
• Should avoid the use of compound curves  
• Should, where practical, avoid changes to superelevation, (this is especially important during manoeuvres)  
• Registered Professional Engineer Queensland (RPEQ) advice may be necessary | Austroads Report AP-R515-16 |
| Lean space                    | • Should be considered as motorcycles are often required to lean whilst manoeuvring  
• Consideration should be given to offsetting opposing traffic flows to avoid motorcyclists entering the ‘head-on zone’  
• RPEQ advice may be necessary | Austroads Report AP-R515-16 |
| Signage                       | • Shall be clear from the path of travel, and highly visible (including at night time) to all road users, including motorcyclists  
• Shall be credible and minimal, instantly informing motorcyclists of the hazard and desired behavior  
• Should be erected in advance of the road worksite to allow sufficient time for all road users to make changes to their travel behavior  
• Should be frangible for road users  | MUTCD Part 3 Clause 2.5.2 |
| Temporary line marking        | • May be required to ensure there is clear delineation of traffic lanes, including road edges and shoulders, especially at night  
• Should not create a surface hazard or issues with surface drainage | MUTCD Part 3 Clause 3.9.4 |
| Surface hazards               | • Hazards should be mitigated by either offsetting road users from the hazard, or temporarily removing the hazard for the duration of the works  
• Hazards may include: service covers, raised pavement markers, kerbing (temporary or permanent), speed humps, and joins between pavements | Austroads Report AP-R515-16 |
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| **Pavement surfaces**                | • Should have sufficient skid resistance (typically greater than 55BPN), be without grooves, snag hazards, severe elevation changes, bumps, potholes or major surface defects  
  • Surface should be swept down regularly, and any loose gravel or debris should be cleared as required  
  • RPEQ advice may be necessary | MUTCD Part 3 Clause 2.1, 4.14.2  
  Austroads Report AP-R515-16          |
| **Steel road plates**                | • Should be treated with a skid-resistant surfacing (skid resistance value of 55BPN is usually appropriate)  
  • Should be adequately signed and be appropriately ramped  
  • Roadworks should, where practical, be staged to avoid using steel plates altogether | Austroads Report AP-R515-16       |
| **Adequate drainage**                | • Shall be provided during road works to ensure water doesn’t pond on the road surface during heavy rainfall  
  • RPEQ advice may be necessary | Austroads Report AP-R515-16       |
| **Lighting**                         | • Should be provided in rural areas where there is substantial deviation from the normal travelled path  
  • Should be provided in urban areas to supplement existing lighting where necessary  
  • Care should be taken to avoid creating sources of glare | MUTCD Part 3 Clause 2.3.6          |
| **Barriers, fencing, cones and bollards** | • Devices shall be placed so they do not pose a hazard to road users, and do not interfere with the ‘lean space’  
  • They should be placed to ensure a clear view of intersections, around curves, and of approaching and turning traffic  
  • Shall have retroreflective delineation installed as required by the MUTCD | MUTCD Part 3 Clause 2.5.2          |
| **Alternative routes**               | • Should be considered where the route through site is a potential hazard to motorcyclists, subject to the outcomes of the site specific risk assessment  
  • Alternate route shall be suitable for motorcyclists | MUTCD Part 3 Clause 3.6, 4.14       |
| **Maintenance programs**             | • Are in place to ensure the road is clear of debris, loose gravel, broken pavement etc |                                  |
| **Monitoring and auditing reviews**  | • Are conducted regularly to:  
  o assess the reliability and validity of the treatments in place  
  o identify non-compliance aspects  
  o prompt corrective actions. | MUTCD Part 3 Clause 2.6            |

For more information please email TMDesign@tmr.qld.gov.au