Operational Instruction

Pedestrian and Cyclist Walkthroughs and Refuges
AMENDMENT RECORD

<table>
<thead>
<tr>
<th>Version</th>
<th>Page(s)</th>
<th>Date</th>
<th>Amendment Description</th>
<th>Init</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td></td>
<td>03/00</td>
<td>Draft (prep by R Zeitz)</td>
<td>RZ</td>
</tr>
<tr>
<td>ED2R0</td>
<td></td>
<td>05/02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED2R1</td>
<td></td>
<td>16/06/07</td>
<td>Approved</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>All</td>
<td>22/05/08</td>
<td>Format Changes Only</td>
<td>DW</td>
</tr>
<tr>
<td>5</td>
<td>All</td>
<td>12/01/18</td>
<td>References to Standard Drawings added; removal of road design</td>
<td>CT</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>4/12/18</td>
<td>commentary; format changes</td>
<td></td>
</tr>
</tbody>
</table>

This document has been prepared by the Traffic Operations. It has been approved and authorised for use by Councils, the Department of Planning, Transport and Infrastructure and its authorised agents by:

Manager, Traffic Services
17 / 12 / 2018

Excerpts may be reproduced providing the subject is kept in context and the source is acknowledged. Every effort has been made to supply complete and accurate information. This document is subject to continual revision and may change.

For information regarding the interpretation of this document please contact:

Traffic Operations, Safety and Service Division, DPTI
Email: dpti.tassadminsupport@sa.gov.au

For additional copies or to confirm the current status of this document refer to the website below:
CONTENTS

1. Scope..................................................................................................................1

2. Definitions ..........................................................................................................1

3. Walkthroughs for Pedestrian and Cyclist .........................................................1

4. Refuges for Pedestrian and Cyclist .................................................................2
   4.1 Linemarking and Retroreflective Raised Pavement Markers ..................2

5. Dimensions and Alignment ..............................................................................2

6. Adequate Sight Distance ..................................................................................3

7. Warning Tactile Ground Surface Indicators ....................................................3

8. Warning Signs ..................................................................................................3

9. Parking Restrictions ..........................................................................................4

10. Kerb Ramps ......................................................................................................4
    10.1 Tactile Ground Surface Indicators ..............................................................4
    10.2 Vertical Plinths .............................................................................................4
    10.3 Kerb Extensions at Pedestrian and Cyclist Refuges ...............................5

11. Pedestrian/Cyclist Holding Rail ......................................................................6
    11.1 Holding Rail Position at Walkthroughs and Refuges .................................6
    11.2 Holding Rail Position at Kerb Ramps .........................................................7
    11.3 Holding Rail Dimensions ..........................................................................7
    11.4 Holding Rail Footings ................................................................................8

12. Road Lighting ....................................................................................................8

13. References .........................................................................................................9
1. **Scope**

The purpose of this operational instruction is to provide a uniform approach to the installation of pedestrian and cyclist walkthroughs and refuges.

2. **Definitions**

**Walkthroughs (Pedestrian and Cyclist)** may be installed at mid-block locations within existing or proposed raised medians on single or multi-lane two-way roads to provide fully accessible crossing opportunities for pedestrians and cyclists.

**Refuges (Pedestrian and Cyclist)** may be installed within mid-block locations where centrally located raised medians do not exist or installed within existing or future painted island schemes.

3. **Walkthroughs for Pedestrian and Cyclist**

Walkthroughs may be installed at locations where there is a significant frequency of pedestrian and/or cyclist movement and where the numbers of pedestrians and cyclists do not warrant the installation of a controlled pedestrian crossing. Warrants for controlled pedestrian crossings are specified in DPTI’s *Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices, Part 2 – Code of Technical Requirements*.

Walkthroughs may be created by removing a segment of existing central raised median to allow pedestrians including those using or in wheeled devices, or cyclists to cross the road carriageway without having to negotiate the kerb of the raised median or travel to the nearest intersection to cross the road. Walkthroughs may also be included in new designs as part of road engineering projects. All walkthroughs must have appropriately located fully accessible kerb ramps leading to the walkthrough. The exact location of a walkthrough may be aligned with the location of pedestrian network paths leading to a road or be determined by conducting a pedestrian and traffic survey in accordance with Appendix E of DPTI’s *Code of Technical Requirements*.

---

**Figure 3.1** Separated Walkthrough

**Figure 3.2** Shared Walkthrough
4. **Refuges for Pedestrian and Cyclist**

Refuges are installed to provide a physical separation of pedestrians and cyclists from vehicles within the roadway when there is no existing median to provide a walkthrough. A pedestrian or shared use refuge is a short length of isolated median and approach pavement marking provided as a staging area to assist pedestrians and cyclists crossing the road. They may be installed in existing or proposed road environments. They may also be installed at midblock locations and located within existing or proposed flush painted median devices.

![Image of a shared refuge]

**Figure 4.1 Shared Refuge**

The exact location of a refuge may be aligned with the location of pedestrian and shared network paths leading to a road or be determined by conducting a pedestrian and traffic survey in accordance with Appendix E of DPTI's [Code of Technical Requirements](#).

### 4.1 Linemarking and Retroreflective Raised Pavement Markers

Approach line marking is needed to ensure that vehicles are safely guided past the refuge. Line marking shall be in accordance with DPTI [Pavement Marking Manual](#) Section 3.20 and Departmental Standard Drawing S-4075 Sheet 4. Retroreflective Raised Pavement Markers (RRPMs) shall be installed in accordance with [AS 1742.2](#) and DPTI's [Pavement Marking Manual](#) Section 2.14 Raised Pavement Markers.

### 5. Dimensions and Alignment

Departmental Standard Drawing [S-4075 Sheet 4](#) shows the design layout of pedestrian refuge/walkthrough and [AS 1742.10](#) shows crossing dimensions and signs layout.

The minimum median width shall be not less than 2.0 m and the gap between the medians for the refuge/walkthrough shall be a minimum of 2.1 m.
All refuge/walkthrough in medians shall be aligned at 90 degrees to the median kerb to provide directional wayfinding clues to assist pedestrians who are blind or vision impaired to cross the road and find the destination kerb ramp.

Refuges should not unexpectedly constrict road width, or create a hazard for on-road cyclists. Vehicles must be able to successfully negotiate any deviation from their normal travel path around the refuge while maintaining sufficient clearance from the refuge and parked vehicles. Care should be taken when locating refuges in the vicinity of bus stops.

For further information refer to AS 1742.10 - 2009 Section 9.2 and Austroads Guide to Road Design Part 4: Intersections and Crossings Figure 9.2. For information on shared refuges refer to AS 1742.9 - 2000 Section 3.7.3.

6. Adequate Sight Distance

Refuges/walkthroughs must provide appropriate sight lines for pedestrians and cyclists waiting at kerb ramps, kerb protuberances and the central median to oncoming vehicles. Sight distance calculations can be made using Austroads Guide to Road Design Part 4A – Unsignalised and Signalised Intersections Section 3.3 Pedestrian Sight Distance Requirements.

Care must be taken with the selection, planting and maintenance of vegetation, and the installation of signs near the refuges/walkthroughs to ensure that adequate sight distance is maintained at all times for pedestrians, children and vehicles.

7. Warning Tactile Ground Surface Indicators

Warning tactile ground surface indicators (WTGSIs) shall be installed in refuges in accordance with Departmental Standard Drawing S-4075 Sheet 4. Warning and directional tactile ground surface indicators (WTGSI's and DTGSI's) shall be installed in kerb ramps in accordance with Departmental Standard Drawing S-4074 Sheet 6.

8. Warning Signs

To maintain the effectiveness of pedestrian and bicycle warning signs, they shall only be installed where the crossing point is not easily detected by an approaching driver due to sight restrictions.

Warning signs are usually used to warn motorists of the unexpected presence of pedestrians and/or cyclists who may be crossing the road and should not be considered as a standard requirement for the installation of a pedestrian and/or pedestrian/bicycle refuge/walkthrough. Warning signs should not be provided where the likely presence of pedestrians is obvious (ie shopping centres).

The Pedestrians Warning Sign (W6-1) or Pedestrian/Bicycle Warning Sign (W6-9 & W8-23) or Children Warning sign (W6-3) shall be used in advance of pedestrian walkthroughs only where:
• visibility is restricted, i.e. where the sight distance to the walkthrough is less than the stopping sight distance given in Table 2.3 of AS 1742.2 - 2009

• where the presence of pedestrians and bicycles may be unexpected

Pedestrian and bicycle warning signs are generally installed on the left side of the carriageway and may be duplicated on the right side of the carriageway on multi-lane roads. Where signs are duplicate they shall be manufactured and installed to show the pedestrian symbol facing towards the road. Care is needed in locating signs to ensure that they do not obscure visibility.

Where refuges are installed the supplementary sign indicating the presence of a refuge (W8-25) shall be installed.

Refer to AS1742.10 Figure 7 for signing layout

9. Parking Restrictions

Refuge locations and parking restrictions should be checked to ensure that vehicles are able to negotiate any deviation from their normal travel path with sufficient clearance from both the refuge and parked vehicles. Parking restrictions greater than those specified in AS 1742.10 - 2009 Figure 7 or Austroads Guide to Road Design Part 4: Intersections and Crossings Figure 8.1 may be required to achieve required sight distance for pedestrians or cyclists waiting to cross the road at the kerb ramp or kerb protuberance.

Liaison with local councils is necessary to implement parking restrictions.

10. Kerb Ramps

Kerb ramps at pedestrian and cyclist walkthroughs and refuges shall be installed in accordance with Departmental Standard Drawing S-4074 Sheet 6.

10.1 Tactile Ground Surface Indicators

Warning and Directional Tactile Ground Surface Indicators (WTGSI's) shall be provided in all accessible kerb ramps in accordance with the requirements of Departmental Standard Drawing S-4074 Sheet 6.

10.2 Vertical Plinths

The provision of a vertical plinth and standard holding rail orientated in the required direction of travel can assist the blind or vision impaired to reach the
destination median or refuge gap or kerb ramp. Plinths shall be provided on the left side of kerb ramps where a minimum clearance of 1500 mm is available behind the holding rail for circulation space of wheelchairs. Holding rails placed at the back of the vertical plinth will effectively remove any tripping hazard it may cause. Refer Departmental Standard Drawing S-4074 Sheet 6 for Types 3 and 4 kerb ramps.

Standard kerb wings enable wheeled devices to reach the trafficable area adjacent the kerb ramp. Where the area on either side of the kerb ramp is not trafficable (i.e. an unformed un-trafficable verge), vertical plinths shall be used on both sides of the kerb ramp instead of standard kerb wings. Refer Departmental Standard Drawing S-4074 Sheet 6 Types 5 and 6.

![Figure 10.1 Kerb Ramp](image)

### 10.3 Kerb Extensions at Pedestrian and Cyclist Refuges

Kerb extensions minimise the width of the carriageway to be crossed, and place pedestrians in a position where their visibility is not obscured by kerb side obstacles or parked vehicles. They shall be constructed opposite a pedestrian refuge where full-time parking is permitted, or where the remaining portion of a road to cross exceeds 4.5 m for two lane-two way roads, to prevent drivers overtaking.

For kerb extensions refer to Departmental Standard Drawing S-4074 Sheet 5. Note dimension K* is used for the length of a kerb extension at un-signalised crossings. The size of the kerb extension may be adjusted to suit environmental features such as driveways and on-street parking, and the anticipated volume of pedestrians and cyclists which may be stored on the kerb extension at one time. The kerb ramp shall be aligned so that pedestrians cross the road perpendicularly to reach the refuge.
The width of a kerb extension will depend on the available road width and lane width requirements for the expected motor vehicle composition along the road. Kerb extensions should not reduce single travel lane past the protuberance to less than 4.5 m as this width enables all motor vehicles and cyclists to effectively share road space leaving legal clearances when passing.

A kerb extension can be incorporated in the road verge or nature strip if drainage can be provided. Otherwise a channel between the kerb extension and the existing kerb is required for drainage. If this drainage has the potential to be a hazard to pedestrians, the channel should be covered or the pedestrians should be physically prevented from reaching it.

Tubular loop, “Belmont” style fencing, or the equivalent, 1.2 m in height may be used at the kerb side to direct pedestrians to refuges where possible. Fencing must not be used on the refuge or on the kerb extension.

A holding rail and vertical plinths shall be provided on the kerb extension in accordance with Departmental Standard Drawing S-4074 Sheet 6, to suit the kerb extension size and trafficable area.

Kerb extensions shall be suitably delineated with painting of the kerbs, pavement marking, and Unidirectional Hazard markers (D4-1-2) in accordance with AS 1742.2 - 2009.

11. Pedestrian/Cyclist Holding Rail

Holding rails provide stability for pedestrians or cyclists waiting to cross the road. Holding rails and vertical plinths on the left side of kerb ramps also provide additional assistance to people who are blind or vision impaired to determine the required direction of travel.

11.1 Holding Rail Position at Walkthroughs and Refuges

Departmental Standard Drawing S-4074 Sheet 6 shows the positioning of holding rails, with holding rail details shown on Departmental Standard Drawing S-4020.
11.2 Holding Rail Position at Kerb Ramps

Holding rails shall be placed at kerb ramps in accordance with Departmental Standard Drawing S-4020 Sheet 1 and S-4074 Sheet 6. Holding rails shall not be installed at kerb ramps if there is insufficient width between the kerb line and the edge of the footpath to accommodate the holding rail leaving 1500 mm behind the holding rail to enable circulation space for a wheelchair.

11.3 Holding Rail Dimensions

Holding rail dimensions are shown on Departmental Standard Drawing S-4020 Sheet 1. The length of the holding rail on median widths less than 1.8 m wide shall be 600 mm. Holding rail length on medians 1.8 m wide or greater shall be 1200 mm. Kerb ramp holding rail length shall be 600 mm.
11.4  Holding Rail Footings

Footing details are shown on Departmental Standard Drawing S-4020 Sheet 1.

Holding rails shall be installed securely so that they are not unstable or loose enough to be removed by the public.

During a vehicle collision the holding rails should come free from the footing so that they cause minimal damage to the vehicle and so that the footings are not damaged to the point at which they have to be replaced.

12.  Road Lighting

Walkthroughs and refuges shall be adequately illuminated to the extent that pedestrians and cyclists on the roadway, or entering from footpaths or medians can be seen by drivers in sufficient time for them to take any necessary action to avoid a collision.

Pedestrian and cyclist walkthroughs and refuges should be lit to a level as specified in AS/NZS 1158.1.1 table 2.2 for the lighting sub-category appropriate for the road.
13. References


DPTI Standard Drawing S-4020 Sheet 1 (www.dpti.sa.gov.au/?a=101521)
DPTI Standard Drawing S-4074 Sheet 6 (www.dpti.sa.gov.au/?a=101528)
DPTI Standard Drawing S-4075 Sheet 4 (www.dpti.sa.gov.au/?a=101534)

DPTI Pavement Marking Manual (www.dpti.sa.gov.au/?a=40257)


AS 1742.10 – 2009, Manual of uniform traffic control devices Part 10: Pedestrian control and protection, Standards Australia, Sydney

AS/NZS 1428.4.1 – 2009, Design for access and mobility Part 4.1: Means to assist the orientation of people with vision impairment - Tactile ground surface indicators, Standards Australia/Standards New Zealand, Sydney

AS/NZS 1158.1.1 – 2005, Lighting for roads and public spaces Part 1.1: Vehicular traffic (Category V) lighting – Performance and design requirements, Standards Australia/Standards New Zealand, Sydney


Austroads 2017, Guide to Road Design Part 4: Intersections and Crossings - General, Austroads, Sydney