



Tactile Ground Surface Indicators (TGSIs)

Design Note – Supplement to
section 799 October 2021

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1. INTRODUCTION

1.1 This Design Note supplements Council's Specification No 799 for the use and installation of TSGIs and should be read together with the Specification.

1.2 In the event of any inconsistency between this Design Note and the Specification, the Specification will take priority to the extent of that inconsistency.

2. REFERENCES

- Building Code of Australia (BCA)
- *Disability Discrimination Act 1992*
- *Disability (Access to Premises) Standards 2010*
- Design for Access and Mobility
 - Part 1: General requirements for access – New building work AS 1428.1 2009
- Design for Access and Mobility
 - Part 4.1: Means to assist the orientation of people with vision impairment – Tactile ground surface indicators – AS/NZS 1428.4.1 2009
- VicRoads Road Design Note
 - Guidelines for the placement of Tactile Ground Surface Indicators (February 2005)
- Traffic Engineering Manual
 - Volume 1 Chapter 4 – September 2008
 - Volume 2 Chapter 21 – December 2001
- *Road Safety Road Rules 2009*
- Wyndham City Council – TGSI Specification section 799

3. DEFINITIONS

accessible means the access component of a site, building or facility which complies with AS/NZS 1428.4.1, AS1428.1, the *Disability Discrimination Act 1992* and the *Disability (Access to Premises – Buildings) Standards 2010*.

Activity Centre means "any place that attracts people for shopping, working, studying, recreation or socialising" (Department of Sustainability and Environment, 2002). It is predominantly a mixed-use urban area with a concentration of commercial and other land uses (e.g. Werribee CBD, Point Cook Town Centre, suburban strip shopping centres).

carriageway means that portion of a road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes. It is usually designated as that part of a public road (way) between kerbs.

Project Manager means the Council officer assigned to design and/or construct works for Council capital works projects. In the context of third party and/or subdivision development works the Project Manager means the party responsible for the works by way of the relevant permit (Town planning/Consent for works within road reserve/relevant other permit issued by Wyndham Council or Authority).

ramp has the same meaning as in AS 1428.1, an inclined access way with a gradient steeper than 1 in 20 but not steeper than 1 in 14, with landings at spacing of between 15m and 9m relative to the gradient of the ramp. Note: For requirements for TSGIs at ramps, see AS/NZS 1428.4.1.

Responsible Department means the area of Council responsible for the specification and approval of TGSIs within an asset area.

TGSIs mean truncated cones or bars installed on the ground or floor surface designed to provide pedestrians who are blind or vision impaired, with warning or directional orientation information.

vehicle crossing means the portion of a property's driveway located between the edge of the road and the property boundary.

4. APPROVALS

Approvals for the installation of TGSIs will be at the discretion of the Responsible Department, in line with this Design Note and Council's Specification Section 799.

5. TGSIs GENERAL REQUIREMENTS

In addition to other requirements the following apply:

- (a) Directional TGSIs must be laid so that there is no likelihood of the edges lifting.
- (b) Where directional TGSIs are placed across the direction of travel, to ensure they are detected, they must extend over a depth of 600 mm to 800 mm.
- (c) A directional TGSIs must be slip-resistant.
- (d) Directional TGSIs must have the top surface no more than 4 mm to 5 mm above the base surface, see AS/NZS 1428.4.1 Figure 3.1(b).
- (e) The base surface of an integrated directional TGSIs must not be more than 3 mm above the abutment surface of the surrounding floor or ground surface and must have all exposed external edges chamfered.
- (f) Warning tactile indicators must be located at crossing entry points and must be installed for the full width of the path of travel.

6. UNIQUENESS OF SITES

Each site is unique and there is no one size fits all approach. The Project Manager and designer must examine the constraints presented by the site, use the relevant Standards as a basis, consult with relevant stakeholders as required and develop a TGSIs arrangement to suit. The Responsible Department must review and approve the proposed arrangement.

7. PRIORITY LOCATIONS

7.1. Installation of TGSIs will be undertaken as appropriate in conjunction with new infrastructure as well as a program to retrofit existing infrastructure. The priority for installation of TGSIs in both areas will be given to areas of high pedestrian activity and where persons with vision impairment are likely to frequent. These areas include:

- (a) Activity Centres;
- (b) Public transport stops (responsibility of Public Transport Victoria);

- (c) Signalised intersections;
- (d) Signalised pedestrian crossings; and
- (e) Special need schools.

7.2. A flow chart to assist in identifying if a site requires TSGIs is at Appendix 1.

8. ASSESSMENT OF SITES

8.1. Where practical the design of infrastructure should minimise the need for TSGIs to be installed, without compromising the needs of other users.

8.2. Pedestrian priority at vehicle crossings and carpark entries is defined in the *Road Safety Road Rules*. In order to minimise confusion between the driver and pedestrian regarding priority, the use of TSGIs on vehicle crossings and carparks should be limited to high volume public carparks in Activity Centres which meet the following criteria:

- (a) The driver's vision of a pedestrian is obstructed by a building or wall; or
- (b) The vehicle crossing by design operates as a defector carriageway.

8.3. A driver's vision will be taken to be obstructed by a building or wall if whilst travelling at 10km per hour the driver would not safely be able to avoid a collision with a pedestrian when exiting the carpark. Evaluation of a driver's ability to avoid the collision can be obtained by matching features on the subject site to those shown in Figure 1 below.

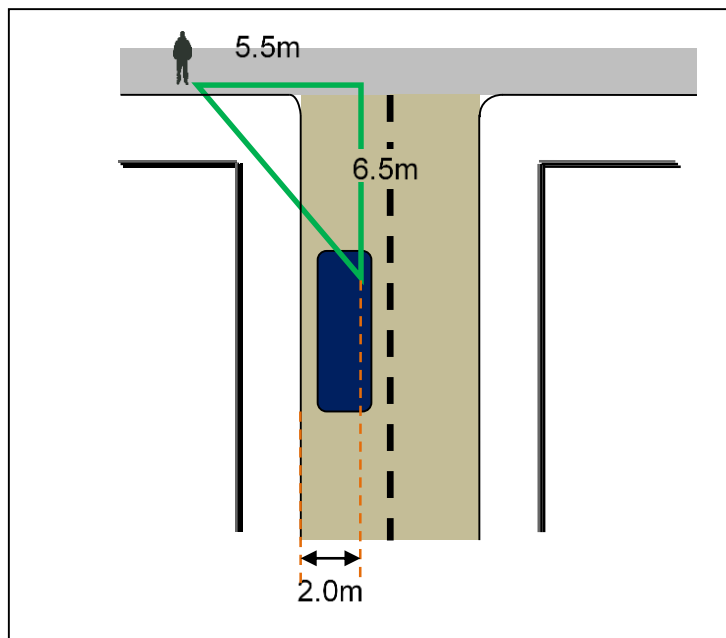
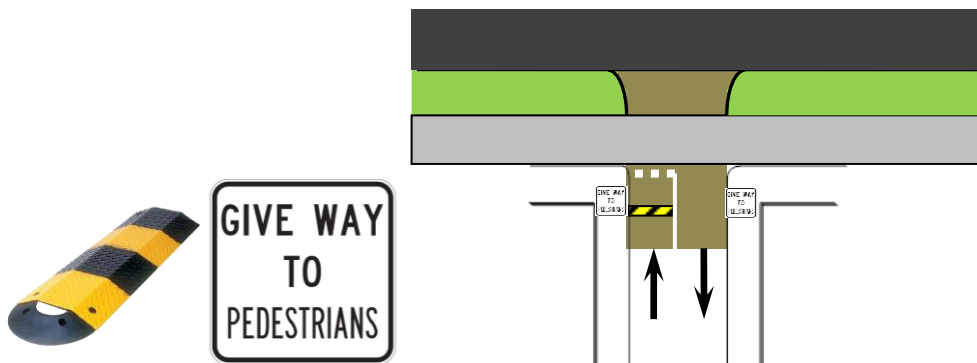


Figure 1: Required Stopping Sight Distance at 10km per hour

9. HIGH VOLUME CARPARK VEHICLE CROSSINGS

- 9.1. Where high volume carpark with vehicle crossings which do not meet the sightline requirements for the installation of TGSIs exist, consideration needs to be given to providing clear visual definition to drivers that pedestrians have right of way as required under the *Road Safety Road Rules*. TGSIs in these circumstances do not substitute for the rights or limited road safety comprehension of a child and engineering treatments must be directed towards the driver.
- 9.2. Potential options include, but are not limited to, the use of narrow bolt down speed humps on the property side of the crossing, coloured approach pavements, illuminated 'give way to pedestrian' signs and/or a zebra crossing (where authorised by Council).



10. MEDIAN CROSSINGS

- 10.1. Raised islands in median crossings must be cut through level with the street or have kerb ramps at both sides and a level area at least 1200mm long in the part of the island intersected by the crossings.
- 10.2. TGSIs must be provided at medians under the following circumstances:
- (a) Path of travel changes between the median and outer road edge kerb ramp;
 - (b) Major traffic control pedestrian facility exists, for traffic lights a pedestrian button must be present in the median;
 - (c) Kerb ramps are provided with 1200mm long level area between; and
 - (d) Median is separating a multi-lane road.

11. ROUNDABOUTS

Well-designed roundabouts provide significant road safety benefits for drivers; however, they alter the normal right-of-way priority between a pedestrian and driver. In rural areas or urban residential areas with low volumes and vehicle speeds this altered right-of-way may not cause difficulty for pedestrians negotiating the intersection and no additional cues may be necessary. In the following circumstances though, the use of TGSIs at a roundabout is considered advisable to improve the situational awareness of the hazards confronting visually impaired pedestrians:

- (a) Location is an Urban Arterial Road;

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- (b) Location is an Urban Collector Roads Category 4;
 - (c) Location is an Urban Collector Roads Category 3, where post development vehicle volumes are expected to exceed 3000 vehicles per day; and
 - (d) Roundabout has concrete splitter islands with change of pedestrian crossing direction between island and kerb ramps.

12. WARNING OF HAZARDS WITHIN THE CIRCULATION SPACE, OR ADJACENT TO A CONTINUOUS ACCESSIBLE PATH OF TRAVEL

12.1. Where there are impediments or hazards with less than 2000mm height clearance in an accessible open public space with no clearly defined continuous accessible path of travel (e.g. areas under a stairway, escalator or moving walkway), contact with overhead hazard must be prevented by a suitable barrier such as:

- (a) enclosing the area; or
- (b) providing handrails with kerbs or kerb rails in accordance with AS/NZS 1428.4.1 (see Figures 2.6(A) of AS/NZS 1428.4.1.).

12.2. In the absence of a suitable barrier, TGSIs must be installed as shown in AS/NZS 1428.4.1 Figures 2.6(B).

13. TGSi MATERIALS

13.1. Product selection for replacement of existing TGSIs will be made on a case by case basis with the approval of the Responsible Department taking into account the existing material, product cost and ongoing maintenance. Where ceramic TGSi are to be replaced, use of Fibre Reinforced Polymer (surface applied only) tiles should be considered as an expedient alternative to full excavation of existing pathways. The hollow from the removed ceramic must be filled with high strength non shrink grout when in concrete or a new 100mm reinforced concrete bed prepared in asphalt surfaces before installation of the Fibre Reinforced Polymer TGSIs by an accredited installer.

13.2. Previous experience using a range of other materials and providers has proven the durability, superiority, ease of installation and cost effectiveness of Fibre Reinforced Polymer TGSIs.

Other new materials and products will be reviewed by Council's Engineering Standards Committee prior to inclusion as an alternative to Fibre Reinforced Polymer TGSIs.

13.3. TGSi installation by State Government Departments, where they retain liability and responsibility for maintenance for the installation, will be in accordance with the relevant Standards and requirements they subscribe to. Where installations are to be managed and maintained by Council, they must meet Council's standards, including compliance with Council's Specification for TGSIs.

14. TGSi INSTALLATION

TGSi installations must be undertaken by an appropriately trained and accredited installer conversant with the current Standards and requirements. At completion of installation of fibre

reinforced polymer TGSIs, a warranty must be provided to Council at handover. Incorrectly installed TGSIs must be replaced to the satisfaction of the Responsible Department, including repair of any damage to the underlying path at the installer's expense.

15. COLOUR SCHEME

The preferred colour scheme for use in Wyndham is white, to be used on plain and exposed aggregate concrete and light-coloured surfaces (including pavers). Alternative colours black, beige/ivory and stainless steel may be considered in areas where colour luminescence contrast requirements are not met by the standard colours and with the prior approval of the Responsible Department.

16. DESIGN OPTIONS

See AS/NZS 1428.4.1 Appendices C and D, for guidance on options on how to arrange TGSIs. Below are examples of basic design options. Refer to AS/NZS 1428.4.1 for full details.

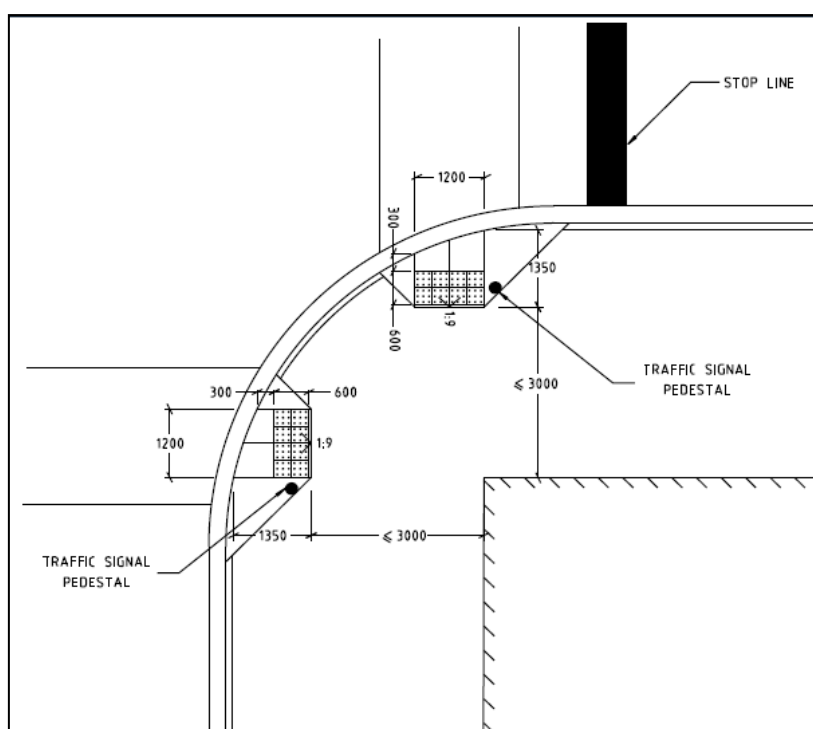


Figure 2: Right Angle Intersection
< 3000mm from property boundary to top of ramp
For kerb ramp gradients of 1:8.5 or steeper

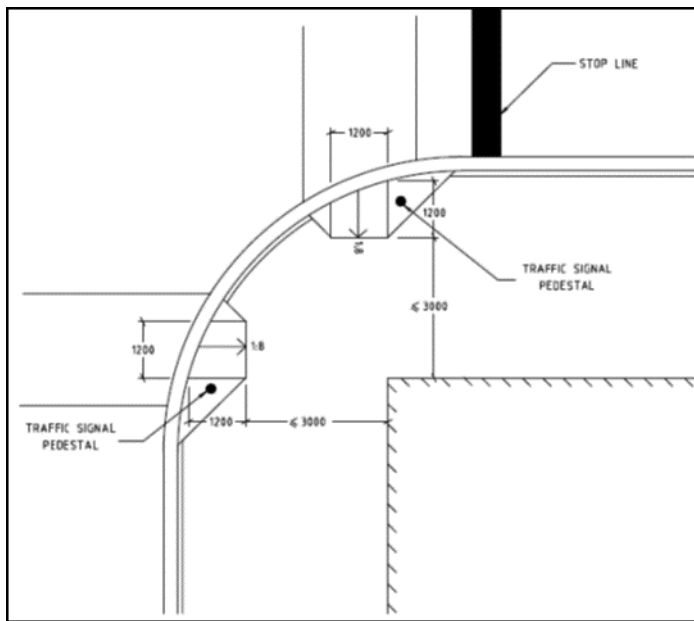


Figure 3: Right Angle Intersection
 < 3000mm from property boundary to top of ramp
 For kerb ramp gradients flatter than 1:8.5

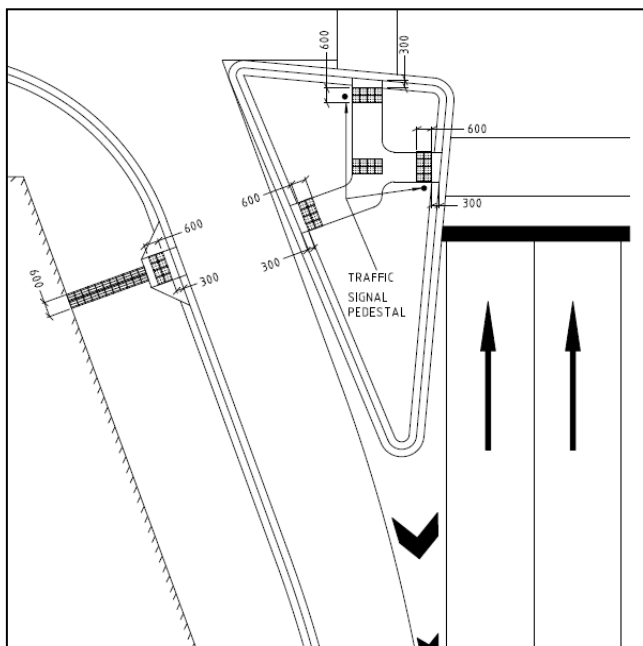


Figure 4: Slip Road Crossing with Raised Island Cut Through

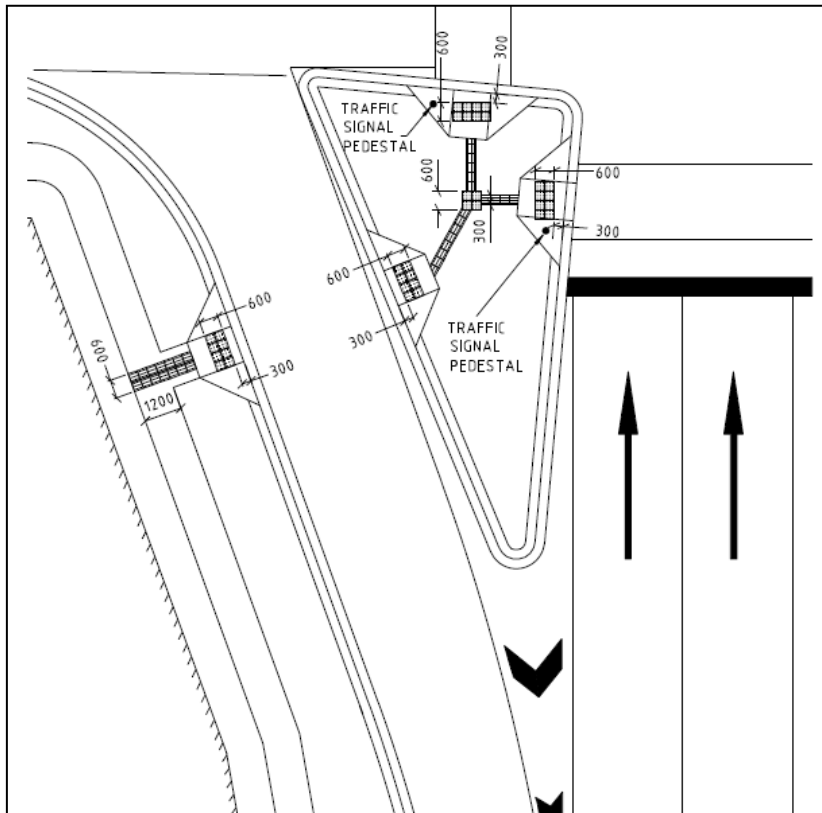


Figure 5: Slip Road Crossing with Raised Island

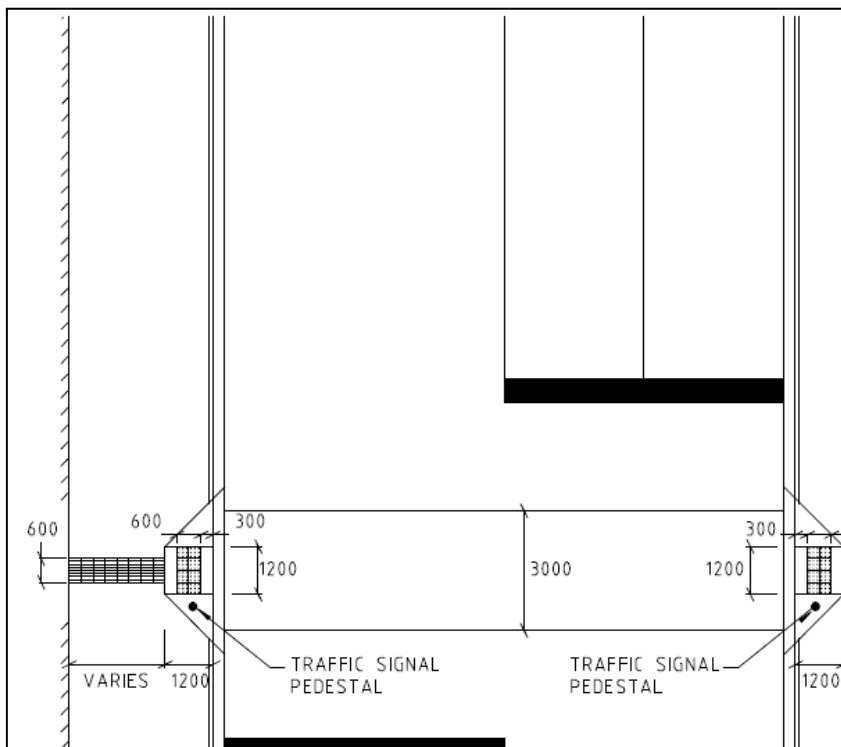


Figure 6: Mid-block Crossing

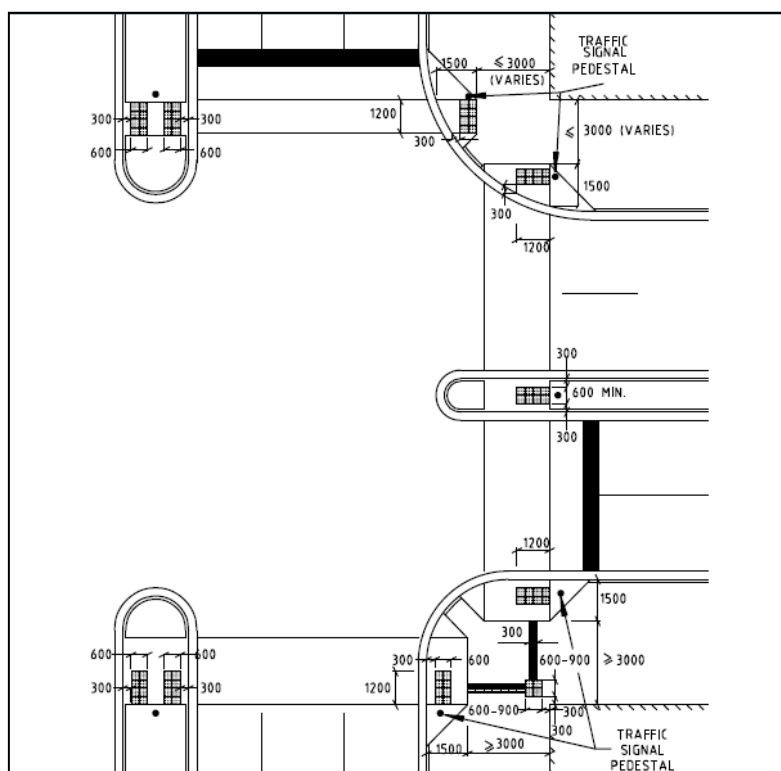
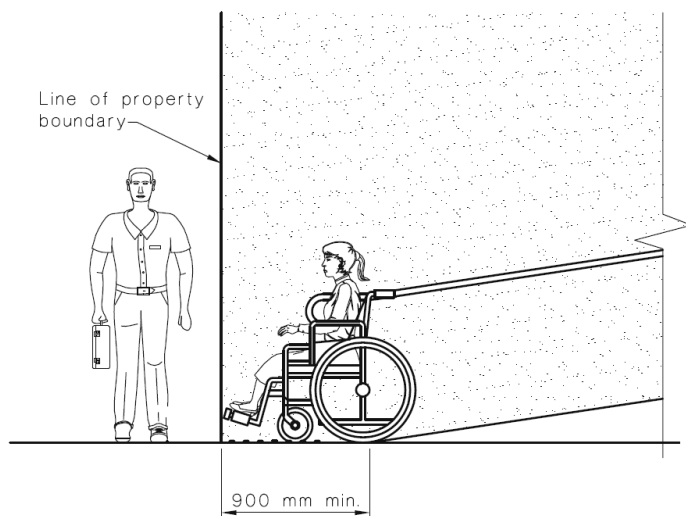


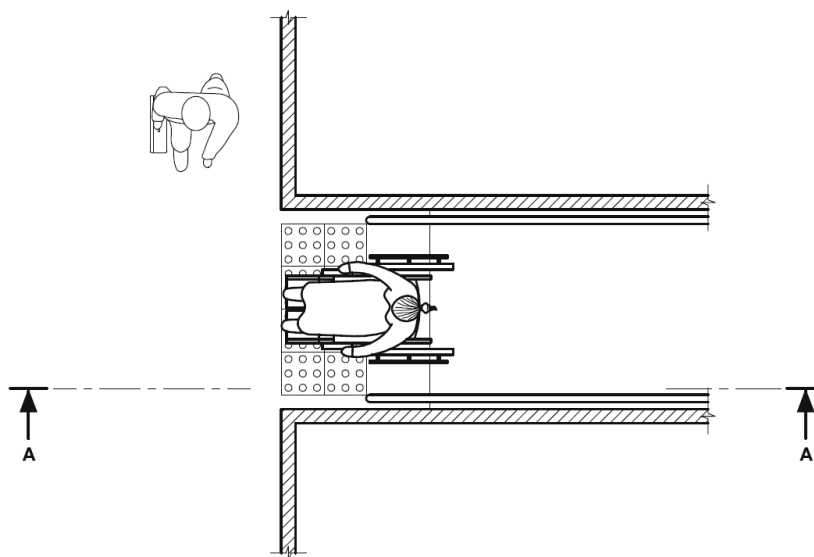
Figure 7: Right Angle Intersection

17. TGSIs REQUIRED FOR BUILDINGS UNDER BCA

- 17.1. The following figures provide a guide to installing and retrofitting TGSIs to buildings where the installation is abutting the road reserve. The installation of TGSIs and any associated handrail infrastructure must be contained entirely within the title boundary so as not to cause confusion or hazards for vision impaired pedestrians using the road reserve.
- 17.2. AS1428.1 section 10.3(f) specifically requires that where the intersection is at the property boundary, the ramp must be set back by a minimum of 900mm so that the handrail and TGSIs do not protrude into the transverse path, Figure 8. Additional examples are included as Figures 9, 10 and 11 where the title boundary is depicted as a dashed line.



SECTIONAL ELEVATION A-A



Plan

NOTE: TGSIs to be installed within the property boundary.

Figure 8: Location of Ramp at a Boundary to Prevent Protrusion of Handrails and Tactile Ground Surface Indicators (TGSIs) into a Transverse Path of Travel

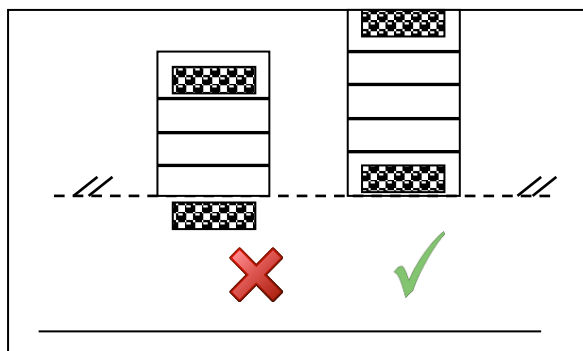


Figure 9: Staircase Perpendicular to Title Boundary

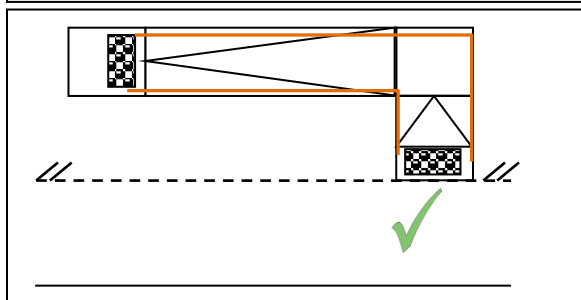
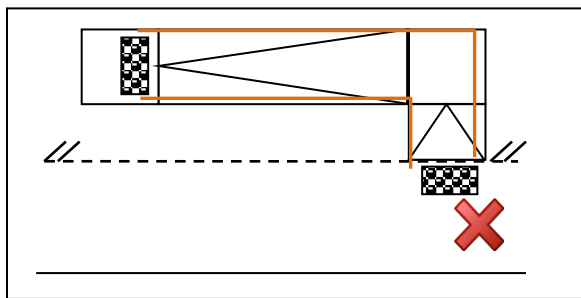


Figure 10: Ramp Parallel to Title Boundary

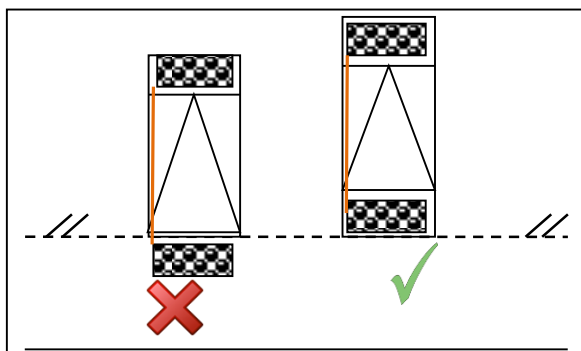


Figure 11: Ramp Perpendicular to Title Boundary

APPENDIX 1: TGSi INSTALLATION FLOW CHART

