



ACT
Government

Transport Canberra
and City Services

Development Review and Coordination

ENGINEERING ADVISORY NOTE

EAN 8

Title: TACTILE GROUND SURFACE INDICATORS (TGSIs)

BACKGROUND

AS/NZS 1428.4 controls the product and the installation requirements of Tactile Indicators.

The information in the EAN does not eclipse the designer's responsibility to ensure compliance with AS1428.4 and other relevant design standards. The EAN provides additional guidance for project planners and designers regarding TGSIs and identifies preferred materials and colours.

TGSIs purpose is to provide a tactile surface on public pathways & access routes that can be felt underfoot and recognised as a warning of impending pedestrian hazard, particularly to the vision impaired, but also as an added safety precaution to all pedestrians.

Tactile Indicators are products made from various materials installed into or atop the ground surface consisting of a series of raised studs or bars. They are installed in the form of laid paving units, individual shaped studs drilled and fixed into the ground or mats glued to the ground surface.

The major points to be aware of regarding TGSIs are;

- Hazard indicators and directional indicators
- Discrete and integrated products
- Luminescence contrast requirements
- Placement requirements
- Slip resistance

Hazard versus Directional

Hazard Tactile Indicators (also referred to as warning and decision tactiles) - They are installed to the walking surface in a raised grid pattern of studs or 'dots' and used to warn blind and vision-impaired pedestrians of an approaching hazard but not what the nature of the hazard will be. Typical hazards can include: steps/ stairs, ramps, kerb ramps, escalators, rail and light rail platforms, bus stops, ferry wharfs, and in areas where change in direction occurs. These indicators are paramount and should be installed

Directional Tactile Indicators – In the public space physical cues to visually impaired users can be provided through buildings or other hard built edges such as raised path edges. These typically provide a 'shore line' for users, in-lieu of dedicated directional tactile indicators. Where 'shore lines' are not available, are ambiguous or there is a need to denote multiple paths of direction, directional tactile indicators should be provided.

Discrete verses Integrated

Discrete TGSi – TGSi that are **individually installed**, which either provide a homogenous luminance for the sloping and upper surface of the truncated cone, or for composite versions, have differing luminance for the sloping and upper surface of the truncated cone. Typically these TGSi are installed into ground surfaces.

Integrated TGSi – TGSi that are **in a defined pattern and are of the same luminance and material as the base surface**. Typically they are in mat form, and are recessed or set atop ground surfaces.

Luminance contrast

The majority of people with vision impairment retain some sight and for this reason, the luminance contrast plays an important role on the selection of TGSi colour and material. A vision impaired person can detect the contrast provided by suitably coloured tactile.

TGSi colour selection is critical as you must factor in the colour of the base surface, to ensure you achieve the required contrast.

This contrast must be maintained in both wet and dry conditions, high UV and frost conditions.

Locations

Each site identified is unique and as such each site shall be examined on its own merits and as part of the overall network and shall be designed/re-designed to incorporate TGSi's where required by the standards.

The priority location for the installation of TGSi's is areas of high pedestrian activity and where persons with vision impairment are frequently likely to visit. These areas include:

- Canberra City
- Town Centers
- Group Centers
- Local Centers and other areas of high pedestrian movement
- Pedestrian facilities connecting to and at Public Transport Stops (including bus and light rail)
- Accessible Pedestrian Network (refer to Appendix A)

Materials

TGSi can be manufactured in a range of different materials some include: polyurethane, stainless steel, brass, ceramic, concrete polymer, and concrete material.

You must consider the following when choosing a TGSi material type:

- Whole-of-life term costs, including replacement
- Durability of the material
- Supplier availability

ADVICE

Discrete and Integrated

Discrete TGSIs are typically located at high amenity, high pedestrian traffic areas such as Group and Town Centres as they provide a 'soft touch' urban design. However they require more consideration to ensure the required contrast between the TGSIs and the base surface in which they will be installed. They are also used in situations where large tile TGSIs (typically integrated TGSIs) are difficult to install due to physical constraints such as complex curves or varying grades.

Integrated TGSIs have a homogenous luminance and material to their base surface, meaning they are often more conspicuous in the urban space. They offer a wide coverage area, generally an easier installation method, and a more cost effective solution.

*Integrated TGSIs are the preferred choice for Transport Canberra and City Services (TCCS), and must be installed into the substrate and **not** onto. TCCS also do not support 'blade' or 'strip' discrete TGSIs.*

Materials

Supported

TCCS support the following materials:

- i) Ceramic (non flexible); and
- ii) Composite stainless steel



Figure 1: Ceramic integrated hazard TGSIs and integrated directional TGSIs



Figure 2: Discrete composite stainless steel hazard TGSIs

When selecting the TGSIs care must be made to choose suitable adhesive material conducive to the ACT's severe temperature variations.

Ceramic TGSIs tiles must be inset into the substrate and should not be installed on top.

Not supported

TCCS do not support the following materials:

- i) Complete stainless steel products; and
- ii) Polyurethane and concrete polymer (flexible)

Discrete hazard and directional 316 grade stainless steel tactile ground indicators (as shown below) are not supported by TCCS as they may pose as a slipping hazard in wet weather.



Figure 4: Discrete stainless steel hazard TGS



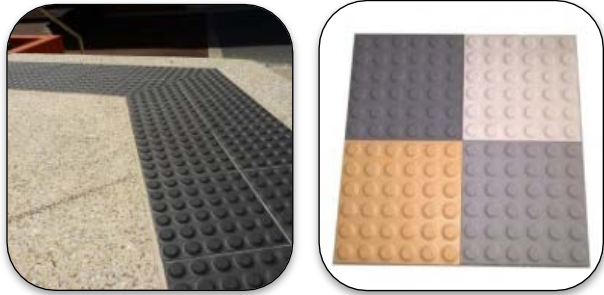
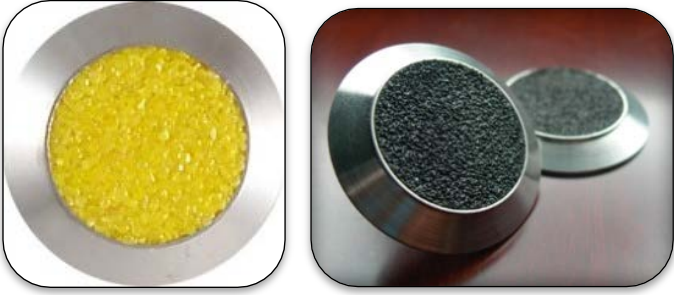

Figure 5: Discrete stainless steel directional TGS

Polyurethane and concrete polymer (flexible) tactile ground indicators (as shown below) are not supported by TCCS as they pose a trip-hazard due to the use of sub-standard adhesion agents not conducive to the ACT's severe temperature variance.



Figure 6: Integrated concrete polymer TGS

Preferred TGSi Applications

TGSi	Material	Preferred Colours	Location	Information	Suitable substrates (subject to manufacturers specification)
<p>INTEGRATED TGSi</p> <p>➤ Preferred choice for Transport Canberra and City Services (TCCS) ➤ Must be installed into the substrate and not onto</p>					
	<ul style="list-style-type: none"> Ceramic 	<ul style="list-style-type: none"> Black Yellow Grey 	<ul style="list-style-type: none"> Public Transport Nodes Everywhere else 	<ul style="list-style-type: none"> Durable Optimal whole-of-life costs Good option for installation into non-smooth or raised profile surfaces Are dimensionally stable so as not to move once bonded Difficult to install at complex curves or grades 	<ul style="list-style-type: none"> Concrete Bitumen Pavers Ceramics
<p>DISCRETE TGSi</p> <p>➤ Limited to locations where it is difficult to install tile TGSi due to physical constraints such as complex curves or varying grades ➤ Connected TGSi or strips are not allowed and must be individual install TGSi only</p>					
	<ul style="list-style-type: none"> Composite stainless steel with coloured polymer or carborundum centre 	<ul style="list-style-type: none"> Black Yellow 	<ul style="list-style-type: none"> High amenity areas Town Centre Group Centre Local Centre 	<ul style="list-style-type: none"> Can be more costly Durable More consistent slip resistance due to the crown being composite material Can be installed into pre-existing holes 	<ul style="list-style-type: none"> Concrete Asphalt Stones Woods Plastics Steel Rubber
	<ul style="list-style-type: none"> Polyurethane 	<ul style="list-style-type: none"> Black Yellow 	<ul style="list-style-type: none"> High amenity areas Town Centre Group Centre Local Centre 	<ul style="list-style-type: none"> Economical tactile indicator Hard wearing Non-brittle, non-shape deformation, chemical resistant Tap in, non adhesive fixation to concrete 	<ul style="list-style-type: none"> Concrete Asphalt Stones Woods Plastics Steel Rubber

NOTE: Use and installation of all TGSi must be in compliance with manufacturer's specification. Choice of adhesion agent should be compliant with both the manufacturer's specification and conducive to the ACT's severe temperature variation.



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Design Drawings

On design drawings that show a requirement to install TGSIs, the designer/consultant/contractor is to provide information on the nominated background colour, the type of TGSi, and the material to be installed, as well as the luminance contrast rating as advised by the Manufacturer.

ADMINISTRATIVE ARRANGEMENT

This Engineering Advisory Notice takes effect from date of endorsement by the Directors below:

Len Marshall
Director
Roads ACT
Transport Canberra and City Services

Ben McHugh
Director
Capital Works and Development Support
Transport Canberra and City Services

APPENDIX A - ACCESSIBLE PEDESTRIAN NETWORK

The Accessible Pedestrian Network (APNs) is a series of walkways (continuous accessible paths of travel) that have been assessed as appropriate for use by disabled persons including the vision impaired. Not all paths within an area are included in an APN.

The objective of APNs is to provide logical and clear accessible walkway routes around prescribed areas to enable access for the vision impaired people to facilities in a safe and easy manner. This involves definition of continuous, clear paths of travel with access to all features such as designated car parking spaces, taxi ranks, set down areas, bus stops, building entrances and fixtures.

Tactile Ground Surface Indicators are to be provided on Accessible Pedestrian Networks in town, group and local centres.