THE POLITICS OF SPACE:
TACTILE GROUND SURFACE INDICATORS AND THE BENEFITS OF HARDWEARING SOLUTIONS

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TURNING A MOUNTING ISSUE INTO AN OPPORTUNITY

Now more than ever, the need for architecture and design to address accessibility and mobility within and around our public spaces is coming to the fore. Australia's aging population is one contributing factor to such an issue, brought about in part from increasing lifespans among both able-bodied and disabled people alike.[1] As such, the number of people expected to live with disability is expected to only increase – particularly age-related impairments such as those associated with vision, with the current 357,000 blind or vision impaired Australians expecting to increase in number to 564,000 by 2030.[2]

Despite growing awareness amongst industry professionals and the wider public that a sufficient response to these demands has been largely absent, the attitude unfortunately remains that many of the solutions aimed at improving accessibility and mobility wherever they are not required by law are optional, costly extras. This is despite the fact that simple equivalent inventions such as stairs or doors that assist movement and circulation for able-bodied persons are not seen in the same light, but rather as extensions of the human body.

Universal design, definable as creative solutions that meet the needs of all occupants of the built environment regardless of well being or ability, is one such tactic useful in creating truly democratic space and limiting the impacts of such circumstances.[3] Like all design solutions, the best are often the simplest. The focus of this whitepaper is one of these solutions, Tactile Ground Surface Indicators (TGSIs), and the benefits of harder-wearing options over their cheaper plastic counterparts.

Architects and specifiers must be conscientious of all of their diverse users' equally diverse needs in order to not only address these problems, but to do so using products that abide by the set standards.

UNDERSTANDING THE PURPOSE AND POTENTIAL OF TGSIS

TGSIs are produced in two forms almost universally: as warning indicators, notifying those with the aforementioned issue of visual impairment of a nearby hazard such as stairs or the edge of a train platform, and as directional indicators, guiding those with visual impairment along a pre-defined, obstacle-free route. Both of these forms appear in blocks composed of multiple rows of indicators so that anyone depending on them for unimpeded movement or warnings cannot unintentionally miss them. As such, they are incredibly valuable in providing a level of physical autonomy to those who need it most, the alternatives to which are being restricted in their movement, or having to depend on costly personal alternative solutions.

However, as within many areas of architecture and design, the cheapest tactile solutions presented often cannot properly address the needs of people living with blindness or visual impairment. Temporary plastic TGSIs have a limited lifespan, are prone to lifting up, and are not manufactured to withstand constant pedestrian or vehicular traffic – reducing their effectiveness over time and potentially even serving as an additional danger should they become a tripping hazard. These are often made available as discrete-type TGSIs: tactile indicators to be installed individually with adhesive and/or via mechanical fastenings, although discrete-type TGSIs are also available in other, approved materials. However, these stand in counterpoint to integrated TGSIs, where the tactile indicators are integrated into a tile or paver, eliminating the risks of both lifting and, assuming they have been correctly manufactured, non-compliant installation.

Providing proper levels of accessibility requires proper planning, an area which has not always been Australia's strong suit in this area. The Australian Human Rights Commission has documented instances of too narrow warning blocks; incorrectly located blocks; and the installation of TGSIs that impede wheelchair users, despite official standards existing on all of these aspects.[4] Like many areas of architecture and design, non-conforming and non-compliant products are prevalent when it comes to accessibility. Architects and specifiers must be conscious of all of their diverse users' equally diverse needs in order to not only address these problems, but to do so using products that abide by the set standards.

THE PROBLEMS WITH PLASTIC

The inclusion of TGSIs is mandated by the BCA, referencing the relevant sections of AS 1428.1 and AS/NZS 1428.4:2009 in order to guarantee compliance. However, while size, shape, location and luminance contrast are specified, the materials out of which TGSIs are made are not. Even disregarding non-conforming and non-compliant products, this oversight has paved the way for inexpensive tactile solutions and the problems that may arise as a result.

Degradation and unexpected safety hazards

Non-durable plastic TGSI sheeting is often specified as a cheap solution towards improved accessibility, or as a temporary retrofit to the site, wherever the need or benefits to their inclusion was previously overlooked. Featuring a more limited lifespan than their hardwearing, integrated counterparts, the wear that inevitably occurs over time due to pedestrian or vehicular traffic is accelerated, limiting their effectiveness and requiring increased maintenance as a result.

Furthermore, since they are often included as an afterthought or budget-saving measure, these solutions run more of a risk of improper or non-compliant installation, and are unable to take advantage of the benefits afforded by foresight and proper planning. Surface stick-on type TGSIs have been known to lift, becoming a potential tripping hazard for anyone using the site – not just those with visual impairments. Main Roads Western Australia has declined to approve their use on Western Australian road infrastructure for this reason, making an exception only if they are to be installed with additional mechanical fastenings to hold them in place.[5] While a valid concession, the additional steps that must be taken in these cases inevitably increases both installation time and costs.

Improper luminance contrast

The success of TGSIs in aiding those living with disability lies in both their tactile nature along with how well they contrast with the surrounding environment, ideally being distinct from their surroundings even to those with visual impairment. This characteristic is defined by a luminance contrast value, which measures the difference of light reflected back from a light source. An adequate luminance contrast is deemed to be 0.3 or 30 per cent for integrated TGSIs, and 0.45 or 45 per cent for discrete TGSIs, and is affected by a number of different factors. These include adequate initial specification, natural and artificial lighting conditions, soiling, cleaning and maintenance, water absorption, sealants, fading, and UV degradation.[6] Depending on the location of TGSIs, many of these factors may be out of anyone's immediate control. However, this simply reinforces the need to invest in high quality, compliant products from the outset of a project, limiting any potential impact of external circumstances. Inexpensive solutions have a higher chance of non-compliance or non-conformity and are likely to be of significantly poorer quality, lacking valuable properties such as UV stability. Even if they comply with luminance contrast values upon purchase, enough time in the sun is likely to degrade their colour and reduce their effective luminance contrast – along with their efficacy as a mobility aid.

The issue of luminance contrast is not restricted to poorly made TGSIs, with the 30-45 per cent contrast values depending on the surrounding surfaces for definition. Stainless steel and other reflective metals may also demonstrate poor luminance contrast given the wrong conditions, and specifiers must carefully consider relevant materials in tandem to one another so that a suitable solution may be found.[7]

MEETING THE NEEDS OF AN UNDER-REPRESENTED DEMOGRAPHIC

TGSIs are one of many ways to assist those living with disability, and to provide the much-desired physical autonomy that much of the built environment fails to provide. However, doing so should not be seen as an optional extra, or only implemented as a late or retrofitted addition to our public spaces and buildings. Architects and specifiers must be conscientious of the variety of needs held by all users in these spaces, and invest in high quality products that can hold up to the task without cause for later concern.

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For over 10 years, Chelmstone has been developing and manufacturing TGSI pavers, allowing them the experience to establish the optimal qualities for their use as a mobility aid. Up to now, these developments have culminated in their fibre reinforced precast concrete TGSI pavers. Featuring compressive strength of 48mpa, Chelmstone TGSI pavers are able to withstand the potential impact and overloading of both pedestrian and vehicular traffic alike, whilst the same high strength concrete mix also ensures their salt, water and abrasion resistance.

As an integrated paver, Chelmstone's TGSIs are guaranteed to comply with Australian and New Zealand Standards regarding slip resistance and TGSI size and spacing. Chelmstone's pavers are readily available in a variety of standardised colours to meet luminance contrast requirements in a variety of settings, while their flexible manufacturing process is capable of affording clients even more choice through customisation. Using CCS oxides for colouring, the entirety of the paver is tinted – meaning there is no need for paint, and no chance of any chipping that would reduce their efficacy as a visual aid. By the same process, all Chelmstone tactile pavers are UV resistant.

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