Tactile Walking Surface Indicators (TWSIs):
Design Considerations

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Presentation Overview

Presentation can be downloaded from the DesignABLE website; www.designable.net/oaa2016.html
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Go to Resources page
Choose 2016 OAA Conference
Presentation Overview

1. Terminology and Acronyms
2. How people use TWSIs
3. Legislative requirements in Ontario
4. Canadian and International Standards
5. Installation Principles
6. Materials and Installation Options
7. Application Exercise
Who am I? Who are we?
1 Terminology and Acronyms

- TAI/TWSI
- Attention Pattern
- Guiding Pattern
- Colour Contrast
- Detectable
- LRV
- Luminance
1 Terminology and Acronyms

- TAI/TWSI
- Attention Pattern
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**TAI** – Tactile Attention Indicator (OBC)
**TWSI** – Tactile Walking Surface Indicator (AODA and ISO)
1 Terminology and Acronyms

- TWSI
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2 How people use TWSIs

- Use residual sight
- Use a mobility aid
  - long cane
  - guide dog
  - sighted companion
2 Residual Sight

Tactile Walking Surface Indicators (TWSIs): Design Considerations
2 Mobility Aids

Tactile Walking Surface Indicators (TWSIs): Design Considerations
2 How people use TWSIs
3 Legislative Requirements in Ontario

Ontario Building Code

- Attention TAI/TWSIs required at
  - Exit stairs (3.4.6.1.(2)) and 9.8.9.6.(4))*
  - Entry to vehicle routes where no curb or other element provide to separate people from vehicles (3.8.3.2.((1))
  - Curb Ramps (3.8.3.2.((2))
  - Platform edges (3.8.3.17 (1))
  - Pool Decks (3.11.3.1 (14))

*Part 9 requires TAI/TWSIs on all stairs except stairs serving a single dwelling unit or service space
3 Legislative Requirements in Ontario

AODA Accessibility Standards for the Design of Public Spaces

- TAI/TWSIs required at
  - Exterior stairs not regulated by the OBC (80.25)
  - Curb ramps not regulated by the OBC (80.26)
  - Depressed curbs at pedestrian crossings (80.27)
## 3 Legislative Requirements in Ontario

### Technical Requirements for TAI/TSAIs

<table>
<thead>
<tr>
<th>OBC</th>
<th>AODA-DOPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- At the top of stairs starting one tread depth back from the edge of the top of the stair</td>
<td>- At the top of all flights of stairs</td>
</tr>
<tr>
<td>- At the leading edge of stair landings with a door</td>
<td>- Extend full width of stair starting one tread depth back from the edge of the top of the stair</td>
</tr>
<tr>
<td>- Specific location criteria not provided for curb ramps or depressed curbs</td>
<td>- Extend full width of curb ramp / depressed curb, commencing 150-200 mm back from the curb edge</td>
</tr>
<tr>
<td>- At platform edges</td>
<td>- At platform edges</td>
</tr>
<tr>
<td>300 – 610 mm deep</td>
<td>At least 610 mm deep</td>
</tr>
<tr>
<td>Comply with clauses 4.1.1+2* of ISO 23599 (truncated-domed surface)</td>
<td>- Must have tactile elements raised above adjacent surfaces</td>
</tr>
<tr>
<td>*Note that the colour-contrast requirements from the ISO standards are not referenced</td>
<td>- Must have high tonal contrast to adjacent surfaces</td>
</tr>
</tbody>
</table>
4 Canadian/International Standards

- TAI/TWSI requirements have been harmonized in 2015 updates
4 Attention TAI/TWSIs

**Train tracks / transit route below platform**

<table>
<thead>
<tr>
<th>Top diameter of truncated domes or cones mm</th>
<th>Spacing mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>42 to 61</td>
</tr>
<tr>
<td>15</td>
<td>45 to 63</td>
</tr>
<tr>
<td>18</td>
<td>48 to 65</td>
</tr>
<tr>
<td>20</td>
<td>50 to 68</td>
</tr>
<tr>
<td>25</td>
<td>55 to 70</td>
</tr>
</tbody>
</table>
### 4 Guidance TAI/TWSIs

![Diagram of Tactile Walking Surface Indicators](image)

<table>
<thead>
<tr>
<th>Top width of flat-topped elongated bars mm</th>
<th>Spacing mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>57 to 78</td>
</tr>
<tr>
<td>20</td>
<td>60 to 80</td>
</tr>
<tr>
<td>25</td>
<td>65 to 83</td>
</tr>
<tr>
<td>30</td>
<td>70 to 85</td>
</tr>
</tbody>
</table>
5 Shorelines versus TAI/TWSIs?

- A shoreline is a continuous edge (curb, wall, etc.) that a person with vision loss using a long cane can *safely* use for directional guidance
- *Unobstructed* shorelines are preferable to TAI/TWSI guidance paths
- TAI/TWSI guidance paths should be considered where shorelines do not exist (such as across a plaza or concourse)
5 Shorelines versus TAI/TWSIs?
5 Guidance Path Installation Principles

Always use the K.I.S.S. Principle

K Keep
I It
S Simple
S Stupid

Limit the use of tactile guiding paths to primary routes and elements

Conceptual design of a guidance route system for Rotterdam Central Station (Source: PBT consult)
5 Guidance Path Installation Principles

- Straight guidance paths are preferred
- 300 – 600 mm wide
- Maintain 600 mm clear space on either side of path
- Minimise number of turns
- Use 90° turns wherever possible
- Perpendicular approach to elements
- Terminate 600 mm from wall or other elements
- 50% LRV Contrast
5 Guidance Path Installation Principles

- Lead people to the usable parts of elements (elevator call button, stair handrail, etc.)
- Use 600 x 600 mm attention surfaces at decision-making points
- Keep guiding paths clear of obstructions (street furniture, overhanging tree branches, etc.)
5 Guidance Paths
6 Materials and Installation Options

- Cast in Place Systems
  - Precast concrete pavers
  - Composite panels
  - Cast iron systems
  - Porcelain stoneware tiles
  - Flexible polymer tiles
  - Other Systems
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Source: Tile Tech Pavers

Source: Pavestone
6 Materials and Installation Options

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Source: Armor Tile

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Source: Duralast
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Source: Urban Access Solutions
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• Surface-Applied Systems
  – Composite systems
  – Plastic/Metal Stud/Bar systems (often called discrete systems)
  – Thermoplastic/epoxy systems
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Source: PBT consult
7 Let’s try it: Design Study
Learning Objectives

• Understand the purpose for and key characteristics of TWSI’s

• Identify the design principles appropriate for the design of TWSI systems
Learning Objectives

• Identify commonly used TWSI types, TWSI materials and installation options

• Develop a design for an effective TWSI system for a small building
Thank you!

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