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From:

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RE: Low-vision/no-vision friendly research project.

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Reviewer: Janet Barlow, Certified Orientation and Mobility Specialist
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Main concerns to be addressed:

1) Sidewalk Safety (Best Design) for all pedestrians, wheel chair users and bicyclists. Consider:

a) Bar tile guiding surface design: Side placement of bar tiles (4 raised bars which create guiding grooves for sensing canes) to avoid "sidewalk transit" issues associated with centrally located bar tiles.

b) Depending on sidewalk location, inner or outer-located bar tile surface should be considered. Note that wheel chair and bicycle -friendly intersection design does not require major modification, but tile bar guiding surface should lead to it.

c) Depth and elevation of guiding surface: use available US manufactured of tiles whose design is based on international customarily used guiding surfaces **(See Appendix below)**

d) Colored tile (pigment incorporated in tile material, no painted surfaces)

e) Well transited sidewalk to avoid deposition of dirt between the bars of the bar tile surface.
f) Wheel features of wheelchairs and bicycles to be tested. Research wheels width and traction features of wheelchairs and bicycles and select most popular designs for testing.
g) Interaction between wheel chairs and bicycles with bar tile guiding surface(s)
Design wheel chair and bike trajectories to test bar tile guiding surface effect on stability of wheel chairs and bicycles. Consider parallel and angled approaches to the bar tile guiding surface and brake use.

2) Site of sidewalk testing (assuming that research will be done by the Town of Chapel Hill)
a) Prioritize type of sidewalk selected for initial testing.
i) Sidewalk with corner to corner guiding surface to facilitate transit of low-vision and non-vision persons between street crossings OR,
ii) Sidewalk to facilitate arrival to and exit from specific destinations that provide public or private services where pedestrian transit is crucial; for example: sidewalks that reach post offices, schools, educational centers, health care centers, shopping malls, senior centers, etc.
b) Identify sidewalk in need of repair that could serve as testing ground. Once identified, seek approval to incorporate bar tile guiding surface on newly restored sidewalks.

3) Selection of volunteers
a) Local volunteers (seniors and paratransit EZ riders users which are low or no vision and/or wheelchair users and, bicyclers.

b) Blind volunteers from regional associations. NCSU Sarah O Brien knows of specific associations which could provide interested volunteers.

4) Funding sources.
Funding sources are available through NCDOT which are granted to municipalities for building infrastructure for a project. See program links
at: https://connect.ncdot.gov/municipalities/Funding/Pages/default.aspx
https://connect.ncdot.gov/municipalities/Funding/Pages/LPM%20Handbook.aspx

I have yet to find sources of funds to carry out the Research. But there may be ways to make it happen.

About the funding issue I quote Ms. Sarah O'Brien: "I recommend that you ask the Town to explore the possibility of whether requesting and conducting experimentation for a new traffic control device following the request process laid out in the Manual on Uniform Traffic Control Devices (MUTCD) found in Section 1A.10
here: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd2009r1part1.pdf would allow them to do so."

Appendix:
Information provided by Ms. Janet Barlow

ADA does not have specifications for a specific bar tile type surface, but it does have specifications that relate to any change in height within the sidewalk basically no more than 1/4 inch with some specifications for situations where it's 1/2 inch. There are also requirements related to height of detectable warnings (truncated domes), at no more than .2 inch I've copied those here. ISO information is below this ADA info.

303.2 Vertical. Changes in level of 1/4 inch (6.4 mm) high maximum shall be permitted to be vertical.

303.3 Beveled. Changes in level between 1/4 inch (6.4 mm) high minimum and 1/2 inch (13 mm) high maximum shall be beveled with a slope not steeper than 1:2.

705 Detectable Warnings

705.1 General. Detectable warnings shall consist of a surface of truncated domes and shall comply with 705.
705.1.1 Dome Size. Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch (23 mm) minimum and 1.4 inches (36 mm) maximum, a top diameter of 50 percent of the base diameter minimum to 65 percent of the base diameter maximum, and a height of 0.2 inch (5.1 mm).
705.1.2 Dome Spacing. Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inch (17 mm) minimum, measured between the most adjacent domes on a square grid.
705.1.3 Contrast. Detectable warning surfaces shall contrast visually with adjacent walking surfaces either light-on-dark, or dark-on-light.

ISO (International Standards Organization) http://www.iso.org/iso/bringing_down_barriers-infography_final.pdf

ISO 23599 Assistive products for blind and vision impaired persons — Tactile walking surface indicators

4.1.3.2 Specifications for flat-topped elongated bars
4.1.3.2.1 Height
The height of flat-topped elongated bars shall be 4 mm to 5 mm.
In indoor environments with exceptionally smooth surfaces, the minimum height of 4 mm may be preferable.
NOTE When flat-topped elongated bars are surrounded by exceptionally smooth surfaces, such as terrazzo, plastic or rubber, they can be detected more easily than when they are surrounded by rougher surfaces, such as brushed concrete, bricks or manufactured pavers. A height that is more than what is necessary for reliable detection can cause tripping.