

Montana Department of Transportation
Research Program
October 2003

POST-CONSTRUCTION INITIAL EVALUATION REPORT

Detectable Warning Devices (Truncated Domes) for use by the Visually Impaired

Location: Great Falls, 6th St. N. W.
Project No.: STPU 5201(11)
Description: Baseline experimental evaluation of various detectable warning devices for sidewalk curb ramps
Evaluation Date: October 22, 2003
Participants: Craig Abernathy
Experimental Project Coordinator

Objective

Test the ability of several manufacturer designs in the use of truncated domes as preferred detectable warning devise (DWD) for use by the visually impaired. Report on the construction application of each treatment, durability and maintenance requirements of such products. This initial evaluation is to establish a baseline of performance for comparison on how well these devices will perform through the first winter season. All treatments were installed during the months of July and August 2003.

Experimental Design

Seven similar types of truncated domes on 15 random curb ramp locations in a seven block linear area of 6th St. N. W. The following are the names of the chosen manufacturers and the products selected. Refer to attachment A to locate the approximate curb ramp site of these devices.

1. ADA Fabricators

Copolymer Composite Tiles

2. Disability Devices

Wet Anchors Box Systems
Polyurethane Detectable Warning Mat

3. Vanguard ADA Products of America

Applied Truncated Domes

4. Strongwarn Industries

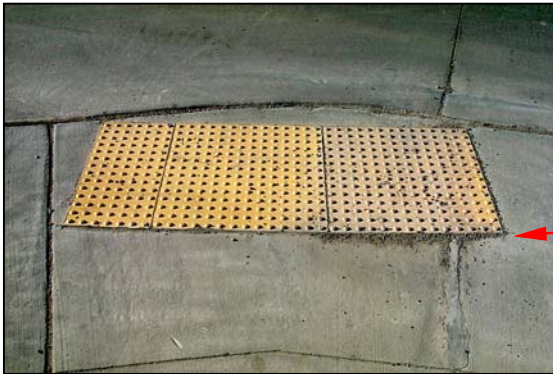
Applied Latex Modified Mortar Domes

5. Cote-L Industries

Safty-Trax Plastic Sheets
Safty-Trax New Rubber Mat

Manufacturer: ADA Fabricators
Treatment: Three installations of Copolymer Composite Tiles
Site Location: 1A, 1B, 1C

All three site installations were in good condition at the time of this inspection. No noticeable loss of adhesion or mat deterioration was observed. The following images are the individual treatments with comments.



Installation 1A: Located on the northeast corner at the intersection of the east entrance to the Expopark adjacent to 5th Ave. N. W.

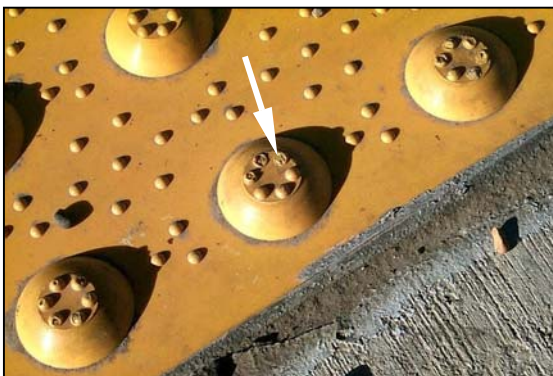
◆ Note the surface discoloration (right side of image) and collected debris from drainage across the mat.



Installation 1B: Located on the southwest corner of the intersection 4th Ave. N. W. & 6th St. N. W.



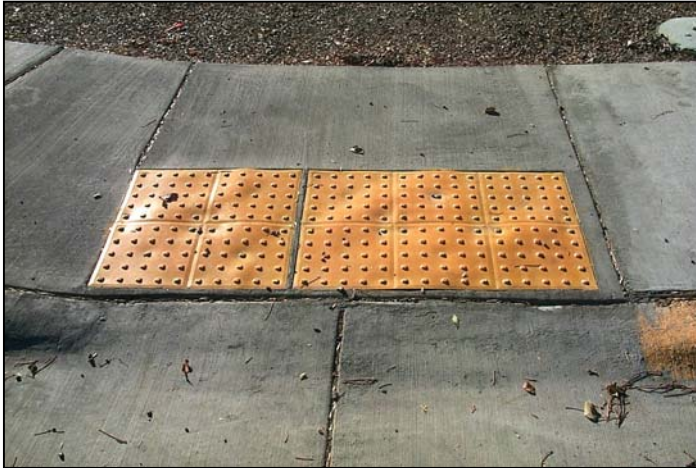
Installation 1C: Located on the southwest corner of the intersection 5th Ave. N. W. & 6th St. N. W. This treatment connects the east-west pedestrian walkway.



It was noticed that the skid-resistance texture atop the truncated domes were suffering from abrasion or shearing from wear. This was seen mostly around the perimeter domes of the mat.

Manufacturer: Disability Devices
Treatment: One installation of the Wet Anchor Box system
Site Location: 2

This treatment appears in good condition since construction. As stated in the October construction report, the wrong adhesive application was used during installation. This caused the undulating surface texture of the mat. At this time it is unsure whether this will be a detriment to performance. It was noticed the plastic setting pins have pushed up slightly and are exposed above the dome. Most likely, they will eventually be broken off through use.



Installation 2: Located on the southwest corner at the intersection of 6th Ave. N. W. and 6th St. N. W.



Installation 2: Side view looking east. Note the wavy texture of the mat.

Notice the setting pins pushed above the truncated domes (white arrows).

Manufacturer: Disability Devices
Treatment: Two installations of the Polyurethane Detectable Warning Mat
Site Location: 3A, 3B

All installations were in good condition at the time of this inspection. No noticeable loss of adhesion or mat deterioration was observed. Some of the plastic setting pins have pushed up several millimeters from the dome attachment.

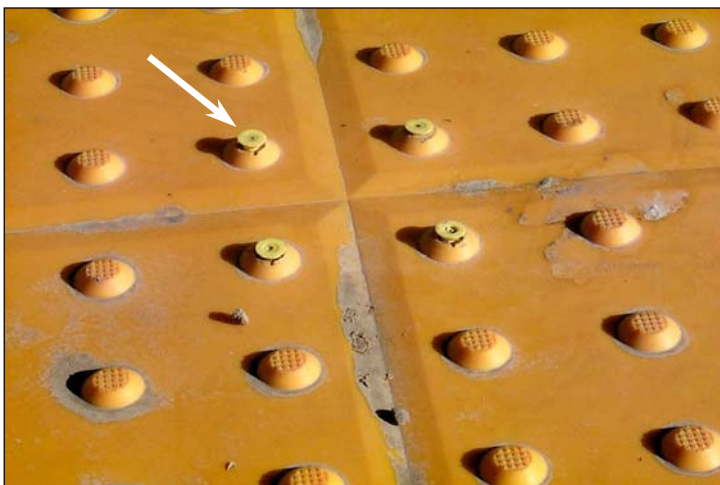


Installation 3A: Located on the northwest corner of the intersection of 5th Ave. N. W. and 6th St. N. W.

This treatment connects the north-south pedestrian walkway.



Installation 3B: Located on the southwest corner of the intersection of 1st Ave. N. W. and 6th St. N. W.



Note the setting pins exiting above the dome attachments. It is premature to determine if this will be a detriment to performance

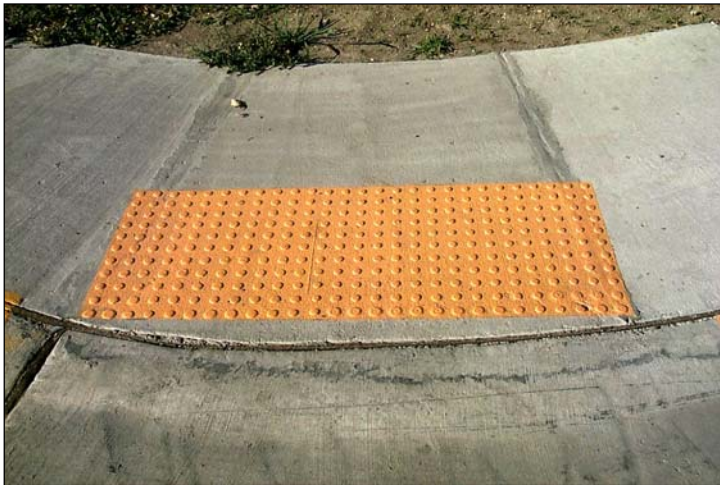
Manufacturer: Vanguard ADA Systems
Treatment: Three installations of the Applied Truncated Domes
Site Location: 4A, 4B, 4C

All installations were in good condition at the time of inspection. All of the mortar domes are intact



Installation 4A: Located on the southwest corner of 5th Ave. N. W. and 6th St. N. W.

This treatment connects the north-south pedestrian walkway.



Installation 4B: Located on the northwest corner of 5th Ave. N. W. and 6th St. N. W.

This treatment connects the east-west pedestrian walkway.



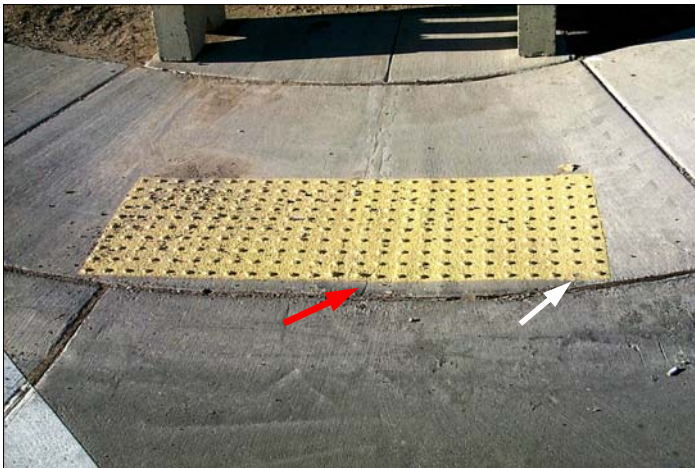
Installation 4C: Located on the northwest corner of 2nd Ave. N. W. and 6th St. N. W.

Manufacturer: Strongwarn Industries
Treatment: Three installations of the Applied Latex Modified Mortar Domes
Site Location: 5A, 5B, 5C

These installations are performing well although at this time there are minor problems with one of the applications (5B).



Installation 5A: located at northwest intersection of 1st Ave. N. W. and 6th St. N. W.



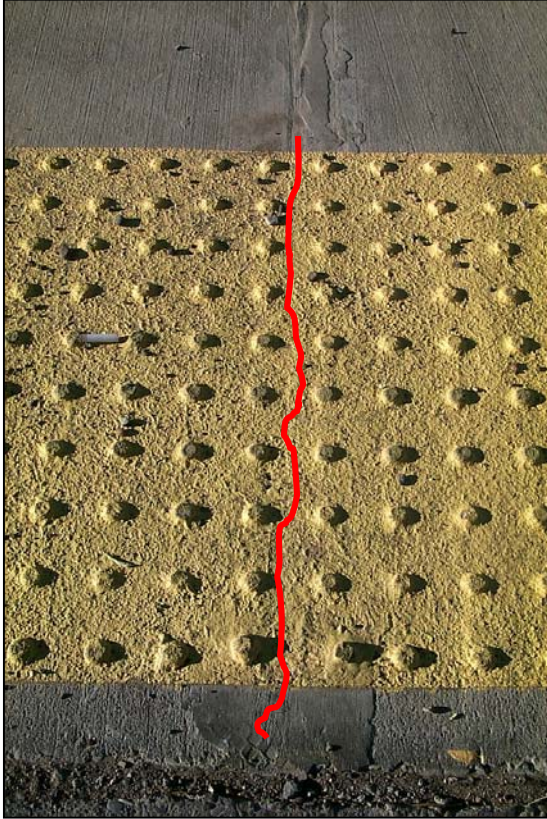
Installation 5B: Located at the southwest intersection of 3rd Ave. N. W. and 6th St. N. W.

This treatment has suffered the loss of one dome in the extreme northeast quadrant of the mat (white arrow) and has a reflective crack appearing through the base from the underlying mortar joint (red arrow)



Installation 5B: Close-up of missing dome. It is unclear how this dome was lost; however there was evidence of heavy-lugged tire treads on top and around the mat. You can see the skid tracks on the top surface of the domes.

Manufacturer: Strongwarn Industries – continued.



Installation 5B: Minor reflective cracking from the mortar joint. To better view the crack a line has been superimposed over the image where the crack is located on the mat.



Installation 5C: Located on the southeast corner of the east Expopark entrance and 6th St. N. W.

This treatment connects the east west crosswalk.

Note the accumulation of debris from drainage.

Manufacturer: Cote-L Industries
Treatment: Two installations of Safti-Trax Plastic Sheets
Site Location: 6A, 6B

All installations were in good condition at the time of inspection. All domes are intact.



Installation 6A: located on the southwest corner of the intersection 2nd Ave. N. W. and 6th St. N. W.

Note the accumulated debris from drainage.



Installation 6B: located on the northwest corner of the intersection 4th Ave. N. W. and 6th St. N. W.

Manufacturer: Cote-L Industries
Treatment: One installation of Safti-Trax New Rubber Mat
Site Location: 7

This treatment has suffered torn and loss domes. It is difficult to ascertain the reasons for this damage. It may be from tire damage since there are tread marks around the installation but earlier photos show these tracks were present before installation.



Installation 7: Located on the northwest corner of the intersection of 3rd Ave. N. W. and 6th St. N. W.

Areas of dome damage are circled in red.

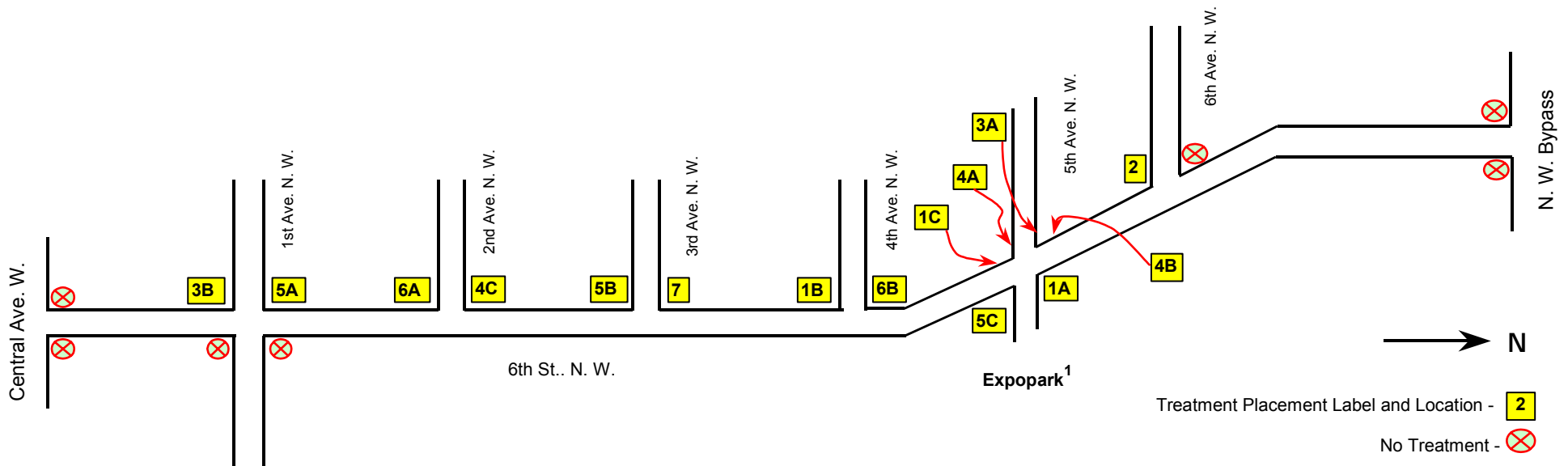


Installation 7: Close-up of damaged mat. Loss of dome and ripped mat. Extreme southwest quadrant of installation.



Installation 7: Additional close-up of damaged mat. Loss of dome and ripped mat. Mid-west quadrant of installation.

<u>Treatment Type</u>	<u>Manufacturers</u>	<u>Label</u>	<u>Frequency</u>
Copolymer Composite Tiles	ADA Fabricators	1	3 (a, b & c)
Wet Anchor Box System	Disability Devices	2	1
Polyurethane Detectable Warning Mat	Disability Devices	3	2 (a & b)
Applied Truncated Domes	Vanguard ADA Systems	4	3 (a, b & c)
Applied Latex Modified Mortar Domes	Strongworn Industries	5	3 (a, b & c)
Safti-Trax Plastic Sheets	Cote-L	6	2 (a & b)
Safti-Trax New Rubber Mat	Cote-L	7	1



Exopark¹ - No N. East or S. East treatment on east-side of 5th Ave. at Exopark entrance

Experimental Layout
Detectable Warning Devices
Truncated Domes for Curb Ramps
Project STPU 5201(11)
Great Falls