EVALUATION OF
DETECTABLE WARNINGS/DIRECTIONAL SURFACES
ADVISORY COMMITTEE (EDWAC)

Division of the State Architect
Underwriters Laboratories Inc.

Minutes of a Public Meeting held on:
Wednesday, October 12, 2005

1102 Q Street, 5th Floor Conference Rooms
Sacramento, California

MEETING ATTENDANCE – DAY TWO
ON WEDNESDAY, OCTOBER 12, 2005

Committee Members Present
David Cordova
Jeff Holm
Arfaraz Khambatta
Eugene (Gene) Lozano, Jr.
Minh Nguyen
Michael Paravagna
Paula Anne Reyes-Garcia
Richard Skaff
Jane R. Vogel

Committee Members Absent
Doug Hensel
Tom Whisler

DSA Staff Present
Aaron Noble
Derek Shaw

UL Staff Present
Jeff Barnes
Esther Espinoza
Andre Miron

Others Present
Regina Baak, Tactile Guideways
Ron Baak, Tactile Guideways
Joe Dunnigan, ADA Solutions
Jeff Gillies, East Jordan Iron Works Inc.
Francis Hamele, Wausau Tile
Paul Hantz, Wausau Tiles
Mark Heimlich, Armor-Tile
Jon Julnes, Vanguard ADA Systems Of America
Russ Klug, ADA Concrete Domes
Jeff Koenig, Detectable Warning Systems Inc.
Pat Merriman, Masco CAST in Tact
Chris Orme, Neenah Foundry Company
Jeff Patterson, Muller Construction Supply
Lex Zuber, Norsestar Construction

OCTOBER 12, 2005

***General* – A meeting of the Evaluation of the Detectable Warnings/Directional Surfaces Advisory Committee (EDWAC) was held on October 11 – 12, 2005 at the California Community Colleges Building in Sacramento, California. The purpose of the meeting was to discuss known technologies, review testing programs provided in a draft of proposed requirements, and to discuss other issues related to the evaluation of detectable warnings and directional surfaces.**

The following minutes/meeting report is not intended to be a verbatim transcript of the discussions at the meeting, but is intended to record the significant features of those discussions.

1. Call to Order [Jeff Barnes/UL]

Jeff Barnes called the fifth meeting of the advisory committee for detectable warnings and directional surfaces to order at 9:10 a.m. Two new discussion items were added to Item 10, EDWAC Recommendations for the Final Report.

1) Discuss the interim requirements of DSA once the EDWAC project has been completed.
2) Discuss EDWAC recommendations for handling future revisions of the standard for detectable warnings.

2. General Updates (Exhibit A) [Jeffrey Barnes/UL]

Topics:

a) Acoustic Quality

b) UV Exposure

c) Bond Strength – Conditioning

Andre Miron provided general updates on the development of three current requirements, and reported on some hurdles encountered and overcome, and on others not yet resolved.

a) Acoustic Quality –

Andre Miron recently contacted the Bioacoustics Research Program at Cornell Laboratory of Ornithology, Cornell University. The university conducts research into sound acoustics produced by animals and birds, etc. Andre in his previous research came across some acoustic software that allowed for sound recordings and displayed a sound spectrum that was geared towards bird watching and other animal research. However, Cornell University offered access to top of the line software that does not require full-on voice recognition type software. The software from Cornell University has the ability to conduct sound correlation between two sound files. Andre is still uncertain if this system will work well for detectable warnings until UL starts to conduct tests. Andre plans to start test research in a week or so to see if the program is going to work for detectable warnings. UL plans to look at the data and provide test data at the next meeting. The sound spectrum will be examined and compared to other recorded sound spectrums. Andre will begin soon looking at the sound spectrums and compare to concrete, asphalt, and to one another.

Floor Discussions

Richard Skaff asked if there was a possibility of having the University assist with the detectable warning research, creating solutions, and using students with masters' degrees. Having students do the research work would be a great resource for the committee. Having a test site available at their site, would instead of at CALTRANS would prevent the UL from recreating other test sites

Andre Miron replied that the University is interested in conducting research on animal sounds, not on developing a test program for detectable warning products. The University is more interested in sounds of animals, birdcalls, and other living creatures. Would take time for the EDWAC to eventually find a research partner at a University. Maybe in the

future a University might want to get involved in a project like this, although it would take time to locate an interested college, and make arrangements.

Jeff Barnes pointed out that the committee can further this concept, if they can determine what will work and what needs to be done in order to measure any degradation of sound. Once the committee has collected all that it needs, including suggestions and working software, there might be some interest later from interested Universities.

Richard Skaff also proposed considering using college assistance in other areas too, such as with slip resistance and in other areas like the changing of the shoe on the test fixture for slip resistance. Possibly some engineering departments, if given the opportunity to utilize engineering concepts in a class project, might consider assigning their students to the project.

Andre Miron notes that most engineers at a University are more interested in developing new products that can be used out in the field. These engineering students are generally not interested in developing tests protocols for already developed products.

Paul Hantz notes that Michigan Tech just started a Bachelor Of Science Program in Sound this year. Could be useful for the EDWAC or UL to contact the school for general information.

Andre Miron reports that UL doesn't have a lot acoustical data yet, other than what has already been shown, with the various freeware sound programs. The new software programs from Cornell University are more detailed, with better resolution that provides nice color prints of the sound spectrums, provide an extra dimension to view the prints more

closely. In addition, the software is capable of time off set comparisons where the program will examine two sounds and indicate their closeness and competence level. The staff at Cornell University has used this program successfully for birdcalls, but is not certain that the program will work with the acoustical sounds for detectable warning products.

b) UV Exposure –

Andre Miron reports that there are some issues to resolve with UV Exposure Testing. The UV chamber at Underwriters Laboratories Inc (UL) is too small to test heavy samples, and testing might unbalance the equipment causing major damage. The test chamber does not have a lot of capacity, and was designed for lightweight plastics, and not for heavy detectable warning samples. Andre is reviewing a couple of options. Either the size of the test samples should be decreased so that they can be tested in the current UV Chamber or UL needs to purchase or obtain access to a large UV exposure chamber that can handle testing large heavy test samples. There is no intent to buy a test chamber; however UL may try to contract out some of the testing. Andre is considering adding only portions of the samples to the chamber, although he may need to consider if using smaller test specimens will affect the test results for an entire product sample. Other alternatives are to have Xenon-Arc exposure replaced with Xenon-Arc with amplified daylight exposure (using mirrors to focus additional UV radiation from the sun onto a specimen), or to use fluorescent exposure lighting. There are problems related to using both of these alternative methods, and will require more research to resolve. Andre notes that it is essential to apply some kind of UV Exposure onto the specimens. It’s an important test, both from a physical standpoint for plastic and also needed to test fading and other product issues. Andre welcomes any suggestions, or any information on suitable equipment available for contract testing.

Paula Reyes-Garcia asked if any data suggests how far UV wavelengths will penetrate a sample? In addition would it be reasonable to ask for samples that have been cut down?

Andre Miron replied that light penetration depends on the material type, because some materials have a tendency to be more photo translucent then other materials, although most wavelengths penetrate not more than a 1/8 of an inch, unless glass material is provided on top. Cutting test samples to smaller sizes would be possible for some tests, such as for color fading. Problems occur when physical evaluation tests are conducted on small samples. The sample size many make a difference when conducting physical tests like the impact test. Obviously a piece of plastic backed up to concrete perform better by its own merits. Cutting down test specimens may be robbing the samples of vital strength, possibly strength that is needed for the sample to comply with some of the requirements. Reduced sample sizes may cause more difficulties when trying to pass some tests. It is not UL's intent to create a test that is overly stringent. Andre is considering the possibility of aging some of the plastic panels, then after aging, attaching the samples to a piece of concrete for testing Therefore, Andre may consider testing the plastic material only, and then attaching the plastic specimen to the concrete later for additional testing.

Andre Miron notes that there are several tests that will be conducted after the UV exposure tests, possibly in a cycling series. For example some of these tests include, chemical exposure, dirt application, salt spray, cycle abuse, compressive and impact test, snow plow testing, acoustics tests, color fade, and similar tests, are some of the tests planned.

David Cordova reports that CALTRANS uses 3000 hours of Xenon-Arc testing for plastics in new products. CALTRANS doesn't face the same situation for sample size limitations. David suggested that UL ask only for smaller samples for conducting Xenon-Arc tests.

Maybe could adjust ratings to allow for the smaller samples, to make reasonable adjustments for the differences.

Andre Miron replied that there would be no problem with shrinking down samples to at least four domes, but the other issues noted earlier are a concern. Andre asked committee members and the public to contact him if they have access or knowledge of available test chambers? Andre reports that he has been looking at interesting research on UV light and how products degrade under testing

c) Bond Strength – Conditioning –

Andre Miron reports that test fixtures for bond strength tests are on order. The fixtures should arrive by the end of the month, after the UL move. Andre will drill some cores into specimens in order to conduct some test pulls to confirm that this test method will work. Need to check bond strength in a 2-inch area. If it turns out that some of those bonds are too strong to pull apart, Andre may need to bring the sample size down to a 1- inch area. Elevated temperatures will be part of testing soon. Typically for plastic material evaluations, the test temperate evaluation for aging is set at 70 degrees C, for 7 days (approximately 140 degrees F). Looking at asphalt studies, there are guidelines on typical hot asphalt recorded in the State of California. Andre will add additional temperatures, if needed, to increase relative aging. Following kinetics the idea is that any degradation that you have occurs faster when subjected to higher temperatures. This type of aging testing is done all the time by UL and numerous other test agencies. UL needs to develop a lifeline to determine degradation levels for the products. Andre conducted calculations and found 40000 hours represent approximately 5 years of aging. Andre wants to look at typical degradation mechanisms that he can use for this project. An adhesive is used, and Andre is looking for additional adhesive information from manufactures. Andre needs data to

determine assumptions for approximating age, and create a lifeline. Will develop cycling tests here too.

Floor Discussions

Richard Skaff asked about using increased humidity to conduct some of the tests.

Andre Miron replied that testing could be conducted at higher humidity values although generally a typical humidity of 50 percent relative humidity is used for testing. Andre will consider dry and wet conditions for the sample for particular materials or situations if suitable. Andre will also look to test some of the products soon and determine a degradation level, and also add cycling methods and elevated temperatures to these tests procedures.

Gene Lozano asked if running samples through UV exposure testing would affect bond strength product?

Andre Miron replied that it might or might not affect bond strength, except when using a transparent product; UV exposure does not go deeper than 1/8 deep inch. So UV should not affect attachment properties, although may be an issue for physical properties.

Gene – Has seen products that were a plastic dome attached to concrete that are very thin, and attached by glue may be affected by UV.

Andre Miron clarifies his response by noting that he was speaking earlier of products that are homogeneous, which is when the fields and domes are of the same material. For non-homogeneous products where the fields and domes are of different materials, attachment would need UV exposure testing. In addition, the present set up for attachment tests needs

to be tweaked to allow for these types of materials. When the field is preexisting and painted, with a 2-inch disk adhered over the domes attached to the field, the set-up will not provide a reliable reading for the attachment strength of those domes So the committee is going to have to look at non-typical non-homogeneous quality between fields and domes. Andre needs to look at this further to determine what to do with this situation.

Jeff Barnes reports that Andre needs to consider the surface applied material when considering the adhesive bond, but around the edges failure could occur if not homogeneous products

3. Manufacturer/Public Comments [Jeffrey Barnes/UL]

There were no comments on the general updates from manufacturers or public representatives.

4/5. Color (Exhibit A) and Manufacturer/Public Comments [Andre Miron/UL and Jeff Barnes/UL]

Andre Miron notes that the EDWAC needs to decide what is important as far as color is concerned. As far as codes out there, some codes require federal yellow, some require light on dark, or dark on light, with a 70 percent contrast. However there is very little information available on the amount of fade allowed, and how do you determine that light and dark was maintained. What amount of fade is permitted? Andre adds that the committee has the means to look at and evaluate color, determine what color fading looks like and place numbers on color. Andre mentioned that he could calculate for a delta e value, but does this provide any real value? Probably not unless compared to a certain color.

Paula Reyes-Garcia notes that Billie Bentzen has research specifying that certain shades of yellow worked best for those with limited vision. And a 40 percent contrast difference was noted between the brightness of the color and the surrounding. We should be able to make some comment or recommendation based on color, or note contrast information.

Several committee members including Jane Vogel, who represents 38 major organizations, strongly suggested that the committee make formal recommendations to DSA requesting a code change that would require federal yellow color be used on all detectable warnings. This is important and is a safety issue that needs to be addressed. Too many colors or no colors but contrast, is used throughout the state. Studies have shown that federal yellow has been seen best by those with limited vision.

Minh Nguyen agreed with the general recommendation to use federal yellow for detectable warning, however he notes that this is not a requirement by the State of California. Minh suggests that unless the code changes, should address the contrast difference between adjacent materials. The committee should work on testing for contrast differences because this is part of the code. Designers will have problems with using federal color, and what about the color of interior stairs, which could be a problem, especially since the color is not a state requirement.

David Cordova adds that CALTRANS has a special provision that goes into every contracts, which complies with the DSA bulletin, specifying federal yellow for many years, although yellow is not required in the building code on curb ramps, it is still required on state highways construction for curb ramps, and this provides consistency. The color is used throughout the state, except on occasion when cities objects, and threaten lawsuits. David

strongly urges consistency whenever possible. And the color yellow would be best when faced with having to test fading characteristics for many different colors. Making sure that color fastness doesn't degrade in 5-years could be a nightmare to address.

Arfaraz Khambatta notes that there have been occasions when the use of yellow did not provide enough contrast. The addition of a black strip 1-inch wide may be needed. But if used, the black strip should be integral to the construction of the product. In San Francisco they are using a darker concrete for the curb, and the color yellow, to get a contrast too, so you have a 70 percent contrast.

Jeff Barnes agrees that this is a good opportunity to make a recommendation to DSA, based on today's feedback. Suggests that Richard Skaff, Gene Lozano and Jane Vogel prepare a written recommendation on these issues.

Andre Miron notes that there is also the light vs. dark contrast at 70 percent. Testing for contrast would be more difficult then verifying that the detectable warning product uses the correct shade of Federal yellow. Testing for contrast is a bigger issue. Measuring light reflectance can be taken, and recorded, and a threshold determined. Could also test federal yellow colors before and after tests. However, if colors fade or lighten, could affect the contrast percentage, causing product failure. Any further suggestions on this issue would be welcome.

Minh Nguyen notes that it is not our assigned task to check for contrast, just for color fading or degradation.

Andre Miron states that the manufacturers should indicate which tiles are set for light on dark, or dark on light contrast, and a lab should verify that the dark does not lighten further. Or light shouldn't darken. This is all that Andre can do for now.

Jane Vogel reported that as a vision specialist, she has observed that persons who are colorblind see gradations of gray, although the color federal yellow is still visible. Those with low vision can see the yellow color most, much more than any other color. If there isn't enough contrast, black can be used, but not too much black, which is seen as a drop off, and a danger. Large black areas could be seen as a threat, although it could be useful to warn of a drop off. In general if black is used, should use a small black strip of color.

Andre Miron has seen examples of this, will send out links to all. The Wisconsin study provides specific details. However, for now Andre must work within the code and address contrast. However preparing a written recommendation to would be a good idea. One study for research purposes used low vision goggles and the color yellow was most visible. And the best approach for recommending the color is to suggest a range of federal yellow, since the color federal yellow can vary in shade and intensity. Andre will work to get this information made available and added to the list of recommendation being prepared for DSA. We still need to make a provision for contrast in the standard since contrast is currently a requirement in the building code.

Arfaraz Khambatta notes that if the color yellow is evaluated on a plot of color range, weathering could cause test failure. Suggest plotting the color on a graph, and the color should endure past 5-year limits

Andre Miron notes that the federal yellow chips can vary in shade and intensity of yellow, and so a range would be needed to address this. Would need to obtain a true color chip to start with. The committee can work with the colors available and decide on a range, to be used as a recommendation.

6/7. Certification Program Recommendations for Final Report and Manufacturer/Public Comments [Andre Miron/UL and Jeff Barnes/UL]

Jeff Barnes discussed several topics briefly as matters of concern, or to consider as we craft formal recommendations for discussion.

a) Environment of Detectable Warning – Cold climate, indoor and outdoor use, coastal climates (salt-spray concerns)

b) Application/Location – Different applications would be an issue. May need to note that the product is suitable for curb ramps, or transit platforms, or has a suitable contrast, and resiliency quality type.

c) Color – Provide contrast information, and do products have its appropriate color or contrast, as specified in the building code.

d) Post list of Approved Manufacturers and Products on a website – Need to provide this information so that contractors can have access to this list at any given time. This list should be implemented immediately as soon as it becomes available, and CALTRANS will provide immediate reference to the list.

e) Website Fee – Built in fee into the certification program for website maintenance, so that it can be updated immediately after products have been certified. (Paula)

f) Dielectric Properties – Are important in terms of application, and in potentially hazardous areas, especially those areas using metal tiles near transit boarding platforms. Gene Lozano also notes that in the past, a company from Boston did not want to use any of their metal products in certain hazardous area. Another concern is the toxicity and flammability of the material in boarding areas and tunnels.

g) Color- Should UL test colors of all kinds or just test federal yellow? Andre notes that this would depend on the product and on the requirements. Some pigments on products can have a dramatic effect on the life of a product in response to UV exposure. Not likely to occur in concrete applications. UL would probably just test for color fade here. In plastic products, there are certain pigments that absorb UV light more readily, and as such may tend to a longer life in plastics, and there are certain pigments that actually break down when is UV present and produce free radicals that reacts to the pigment and helps degrade the plastic material even faster. A given pigment can be helpful or more harmful to plastics, and colors will fade readily or less readily depending on type of constructed material. So need to evaluate the physical properties of plastic material, and test a range of plastic colors of the range of pigments to be used. This would need to be looked at on a case-by-case basis as far as what pigments are being used and what the base material is. May not need to apply all the same test requirements for all the materials.

h) Potential Interaction between tiles and substrates - Aluminum and concrete should not be combined as noted in many website research links with test data and studies advise against it. Andre Miron notes that the aging test should see the interaction between the materials.

And so the test specimen would demonstrate during aging process if there were any interaction. Jeff Barnes notes that aluminum can be used, if designed with a built-in barrier or insulation. Aluminum can be useful because it is lightweight. David Cordova adds that if there are additional questions about the aluminum being used, he has a name of a person that has done extensive research. Andre will call David to get this information. This section focuses on corrosion of materials.

l) Asphalt - previous meetings indicate that detectable warning installed on asphalt would be considered as temporary installation. Asphalt installed in malls, are sometimes installed on a bed of concrete, some are not. Asphalt itself will degrade over time, and there will be some peeling. We can evaluate samples installed on asphalt, but this is optional testing.

j) Sound on cane testing – A status update was requested on whether it would be better to conduct a sweeping test with a tapping test, or instead of a tapping test, or instead conduct a Sound Transmission for Sound Test on cane tests. Andre is still looking into the sweeping tests however it appears evident that a sweeping test over domes and flat surfaces will result in a difference. Whether or not this is an adequate difference will up to the committee to consider. Andre requested that the committee provide their thoughts on this. When Andre reads about the requirements of acoustic quality, it basically states that there will be some kind of acoustic quality as far as the materials concerned with respect to the surrounding concrete. Sweeping test would not be more effective than the tapping test.

Jeff Barnes notes that the committee needs to look at acoustics, and that it needs to provide a particular acoustical sound, however it is essentially independent of how it’s hit to obtain the sound. If you hit adjoining material the same way, there will still be a difference of sound or how the product reacts. The main objective is to find out if there is a change in

sound over time. This test should be conducted after the aging test. We can measure a waveform, and after the aging test, measure the waveform and compare the values, to determine if it has changes. We need to determine if there has been a change of sound over a period of time. The users at transit boarding platforms and hazardous vehicular areas want to detect a difference of sound in these areas. These areas are required to have a difference in sound with their adjoining surfaces. The current program will not be able to tell the inspector that product A will have a set decibel value, and will depend on installation, surrounding substrate materials, etc. This is a big issue. We are looking at consistency of sound, and that it not change over a period of time.

Richard Skaff recommends a rating system for the acoustical sound to assist inspectors, city officials, etc.

Jeff Barnes replies that acoustic sound is so dependent on what is around it that would be difficult to provide consistent acoustical data.

Richard Skaff suggests that there is a need to provide assistance or sample values that are likely for the materials. So inspectors and city officials have a reasonable idea of the product test information. We need some lab numbers of expected material, surrounded by a special material, which should provide some guidance. Richard notes that even if just a report is provided, it could be stated that the value is not absolute.

Jeff Holm notes that maybe this could be done by making a recommendation to DSA for them to consider this issue further. Couldn't we provide the measurements from the test site, and gather data?

Mark Heimlich notes that there is a need to provide some information for those people who need the audio clues, and need additional assistance. There is a need to know the amount of differences now, or changes or if degrades over time.

Paul Hantz and other commenters note that there are lots of products with no significant difference in sound evident and there is no proof that the sound on cane sounds are effective in noisy areas, nor is it required in many other states.

Gene Lozano notes that in noisy areas, detection is more a factor of texture, and there is more swinging and sliding of the cane in use. Those products with a small cavity between the surface and substrate, whether plastic or metal, have a more apparent sound. Sometimes sound can be drowned out. At the last meeting, tapping was considered worst-case scenario, because you would probably pick up more sound difference with a sweeping sliding motion. Would like to note that resiliency, textures, sound, and color all combined, make the best type of surfaces.

Arfaraz- suggest including as a benchmark, specifying concrete properties and numerical values for color, quality of sound, impact, slip resistance and resiliency. And then it’s up to the building official, public works official, inspector, etc to make their final selections. They should note all benchmarks, so that contractors can make the best decision based on the numerical values.

David Cordova adds there are some assumptions that should be disclosed, for example conditions of acceptability. Because if the product is not used properly due to lack of information, and therefore misused, it could result in a lawsuit.

Jon Julnes reports that a common method to produce sound on cane effects is to create a hollow below material, and add layers of foam beneath the hollow. In southern states, the summer temperatures acts as a green house, and causes moisture to stay inside, this may cause crumbling of the concrete. This may also change the material in colder climates that have freeze-thaw issues, which cause popping of the material. Weather will effect material and air gaps on the products after two years. With the sound on cane requirement, this is part of the problems resulting from the need for sound on cane testing on detectable warning products.

8. Conformation (Exhibit A, Section 5) [Jeffrey Barnes/UL]

Jeff Barnes reports that this portion of the certification program includes measuring dome heights, distances, spacings between domes, and verifying that the detectable warnings dimensions comply with the building code. In addition, some new terminology from DSA will be added to the standard, although this information may eventually be superceded by a DSA bulletin. Jeff will work with DSA to obtain this information, and provide that data for review at a future EDWAC meeting.

9. Manufacturer/Public Comments [Jeffrey Barnes/UL]

There were no comments on confirmation from manufacturers or public representatives.

10. EDWAC Recommendations for Final Report [Jeffrey Barnes/UL]

Jeff Barnes discussed a basic list of recommendations that the committee can consider for EDWAC recommendations for the final report. Note the following issues.

a) Appeal Process –

Final DSA recommendations should include an appeal process. David notes that DSA has an appeal process, and CALTRANS has four appeal processes. Suggest starting with the DSA process.

b) Method of analyzing the product after installation, to show that the certification program worked, or if doesn't work, to revise as needed –

David Cordova recommends that this be voluntary, and products tracked to see if the product continues to operate properly.

Jeff Barnes notes that the feedback loop would be generated on failures, so if something has to be replaced, a photograph or report is made.

David Cordova suggests that the independent agencies and DSA be kept in the loop, to remove listed products that are no longer in compliance.

c) Asphalt –

Jeff Barnes notes that this material should be viewed as an optional material for testing and specifying that the concrete is the primary test substrate, and asphalt could be tested if selected as an option.

David Cordova notes that manufacturers of asphalt material manufacturing are consistent and very similar from batch to batch. However, CALTRANS still inspects batches to make sure that they are correct. Inspectors look for correct thickness, aggregate, compactness, etc. Misc. concrete is used for sidewalks and walkways.

d) Recertification of the Product –

Jeff Barnes notes that once a product has been tested and certified, recertification will be required every two years. This may not require a complete retest in the two years, but an evaluation of the product and some testing may be needed. Although if the product appears to have deteriorated, should have a full test program implemented.

Gene Lozano notes that he would like confirmation in lab or field, that it is the same product as originally installed. Need to confirm that it's the same product being evaluated.

Minh Nguyen states that there is need to make sure that this doesn't depend on the judgment of an inspector. Should have a process formalized for inspections. Jeff Barnes agrees and replies that a feed back system should also be included.

David Cordova suggest that this should be part of the fees charged initially, or maybe have a fee charged if triggered by certain events or inspection results.

Other recommendation proposed by committee members and non-members include the following.

1) Use required labels on products already tested and recertified.
2) Recommend an external code on front of sample that could be labeled and is clearly visible.
3) Use label on product however avoid interfering with the domes. Permanent label could be a problem on tile surface could be a problem.
4) Markings could be provided on the shipments, instead of on the tiles. A marking on the product could be provided if small. Under current program, manufacturer would

require that changes be submitted to DSA for review. A formal program would require the manufacturer to be part of a follow-up program, with UL markings provided. But this product may not need this level of control. There may not be a demonstrated control for this.

5) At the last meeting, labeling batches of products were discussed. A product could be shipped with a batch number provided on a label, and a label would be included in each box or batch of products shipped. This could make possible to track the bad batches of samples if necessary. Maybe the committee could put together a quick list of information that inspectors could use to help with inspections.
6) A member proposed requiring corporate symbols, batch numbers on the products, in case the documents were misplaced
7) A member recommends that the independent entity issue a letter of approval, that can be shown to inspectors whenever necessary. The letter would be useful for tracking purposes. This will also prevent the manufacturer from stockpiling lots of products that are already pre-marked with the approval markings.
8) Need sample tagging so that everyone including the public can have access to the information labeled on a product. Therefore a label, in a brief code or full markings, should be provided on each product.
9) The manufacturer should be held responsible for tracking approved and non-approved samples.
10) A member notes that markings may not be needed if the manufacturer and model number is known, and the information can be crossed checked on the website.
11) Markings may not be needed since the manufacturers keep detailed records on the date of purchases, name of buyer, and a list of products purchased. This information is used to replace the products that are defective.

12) A member suggested use of a small label, date stamp, and expiration date. Concerned with record keeping. Some marking providing identification information is needed on the product. Noting recalls on a DSA website would be a good idea.

13) Suggestions notes that the format of the marking or tagging system should be kept simple to keep cost down, and architects can go to website to check on this information if necessary.

14) Some products have very small surfaces for labeling, so a letter of acceptance instead of product markings might work best in these kinds of cases.

15) A member suggested conducting a survey for manufacturers, to determine if it would be a problem to add markings to products.

16) Engraved, or embedded markings were suggested as an option.

17) Expiration dates on products could be a problem, causing buyers to rip up good products that didn't need to be replaced. This would be more costly for everyone too. If an expiration date is needed, should add to the website data instead of on the sample.

e) Timeline of Certification Start -

Aaron Noble reported that for now the DSA bulletin is in affect. DSA will continue to emphasize the importance of the bulletin and all should be abiding by these requirements. For the Dept. of transportation, must continue to require a 5-year warranty. DSA did issue the bulletin 2 years ago, however it is still in effect. The legislation passed the law, but there were no criteria for this requirement. They issued a bulletin, and placed the responsibility to manufacturer to provide a 5-year guarantee. There are 600 public jurisdictions in the state of CA. Aaron agreed since this is for public right of way, this provision also impacts public roads.

Richard Skaff notes that any public entities may not have this information, and don't appear to always follow the 5-year warranties. Should document this further so that local entities are kept informed. Richard suggests contacting public work agencies to remind them of this, and to also keep them informed of the current project on detectable warnings.

Gene Lozano adds that the building code is not just limited to the public right of way, but for all detectable warnings products.

Mark Heimlich notes that providing a company name on the front of a product is not a problem, but providing the model number too is difficult sometimes because the model number may be too long. Date codes are generally provided on back of the product. It should be noted that if a product has changes, that the model number may change.

Jeff Barnes states that when changes are made, the list of changes should be submitted to the test lab for review, and if does not affect results, may not need addition testing, or maybe only limited testing. .

Paul Hantz adds that concrete is different, so lettering would be very large, and might affect tolerances.

Richard Skaff replies that in cases like that, the company could use company logos or symbols, or any image that is recognizable, and could be tracked. Richard emphasizes that the issue is proper maintenance of documents. Should be able to depend on the agency or private owners to maintain the product. The warranty will also have the information, which is sent to the public agency that purchased the tile, and has all the needed information.

Minh Nguyen replies that we cannot depend on the paper trail. And not so concerned about the public agencies keeping track of the paper trail so much as the private owners. And notes that it would be difficult to tie the tile to the paperwork without markings

David Cordova emphasizes that the owners have the responsibility for maintaining their own tiles.

Derek Shaw mentions that there could be some sort markings required on each detectable warning, based on Administrate Code, Part 1, Chapter 5, Article 3, Section 5-301.6. Public agencies install large numbers of products, and private agencies may or may not maintain the files.

Gene Lozano adds that utility companies will also install some products after completing their work, and frequently add new curb ramps. At times the Dept. of Transportation was not aware of this, and there may be some errors. Relying strictly on paper trail is not enough, without considering adding markings to samples.

Jeff Holm notes that there should be some level of comfort for all, and so a letter of some kind should be issued when products are certified.

11. Manufacturer/Public Comments on EDWAC Recommendations for Final Report

[Jeffrey Barnes/UL]

There were no comments on EDWAC recommendations for the final report from the manufacturers or public representatives.

David Cordova agreed with Jon's comments, and notes that this proposal is consistent with other programs in DSA. The intent was not to drive anyone out of business. And should be flexible as possible within the letter of the law.

Paul Hantz agreed with Jon that the cost of testing products could be very expensive. If possible, would like to minimize the test program done every two years, although new models should require additional testing. The labeling process comments are acceptable.

Pat Merriman adds that new emerging products would likely not be introduced in California because of the high cost of product recertification.

Gene Lozano feels that the language in the building code is vague enough that UL and DSA could work could use the input from mfrs, to make modifications by rewriting the language, and not eliminate the companies. It is important to have trust extended towards the manufacturers, although there is a history of a few problems.

Richard Skaff asked if a model number guarantees that the material is assembled the same at all times?

Andre Miron notes that some tests will provide that data but not all. A follow up program could be set up that would not require a full testing program.

David Cordova mentions that this is consistent with CALTRANS who handles approved proprietary products. It includes random checks. The independent entity could handle this.

Gene Lozano understands the hardships for manufacturers certifying their products. Gene would like to see some checks and balances. If the independent party did some random unannounced visits, new processed evaluations, etc. would be very helpful. Maybe the manufacturers could provide some recommendations. Gene would like to see a reduction of politics and outside influences affecting product certifications.

Jeff Holm requests that UL come up with some ideas for abbreviation of the 2-year re-certification program. Could UL bring this proposal to the next meeting for discussion?

Jeff Barnes agrees to add this to the meeting agenda for the next meeting. This in fact was the intent of the committee discussion for this topic.

12. Meeting Evaluation [Jeff Barnes/UL]

There were no comments on the meeting format from manufacturers or public representatives.

Jeff Barnes announced that the next EDWAC meeting is proposed for December 1 – 2, 2005 in Sacramento California. These dates are tentative, and subject to change until confirmed by Jeff Barnes.

13. Adjourn

Jeff Barnes adjourns meeting at 3:00 pm.