What Appears Trivial Can Make or Break Universal Design

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The following article can be read as a sequel to my other article on "Universal Design", HKIA Journal Issue No. 27/1st Quarter 2001, pp. 34-38. At the time of writing that article then, universal design was still a new concept to us. After these few years, synergy of efforts from various sectors of the construction field nourished the growth of universal design awareness. To name but a few, the implementation of universal design concept in all new developments in Housing Authority since 2002; the promulgation of Universal Design Guidebook for Residential Developments by Housing Society in early 2005; the lately prize awarded research on Universal Accessibility - Best Practices and Guidelines by Architectural Services Department, are evidence of the efforts by various organizations in the field. I understand that Buildings Department is currently reviewing the Design Manual: Barrier Free Access, 1997 to extend concerns beyond the persons with disabilities towards a more universal design approach. The adoption for universal design has noticeably flourished in most designers' minds.

As an architect of the Housing Department, I am glad to have the chance to observe and learn from the implementation of the Universal Design in the new housing developments for the past few years. What I feel strongly is things that appear to be trivial can sometimes make or break the universal design. I would therefore like to share with you these "trivialities" so that with all your genius minds, they will not be stumbling blocks on our way towards universal design any more.

Designer's Perception

When we can walk or run freely, it is indeed difficult to figure out the constraints of being wheelchair bounded. When we design, we sub-consciously assume that the users or the occupants are as healthy and active as we are. Once when we face with constraints like spatial or financial limitations that will likely impinge upon our master piece, we will soon review whether it is worthy to entertain these minorities' different to "normal" needs. It is easy to excuse ourselves as there are usually greater agenda to fulfil or simply, greater problems to resolve. Inevitably, these perceptions of the designers reflect in their designs and the product of these designs will subsequently stand for the next half century, but not being able to serve everybody. We would wonder, what if a little more thought has put in the design, would it be able to serve mankind better?

Holistic planning

Sometimes, it is a shame to find that the whole site cannot be fully accessible just because of the hiccup by a few steps or inadequate signage. This scenario may not have happened if we have a more holistic approach in the planning. I think what aggregates to the problem is perhaps the imbalance of the few requirements on the external areas when compared with the more comprehensive requirements on the inside of buildings in the Regulations, which often gives the despaired impression of barrier free access is more important within the buildings than the external areas.

What a shame if the site cannot be fully accessible because of the hiccup by a few steps.

One practical but simple method to check our design is to draw out the accessible routes on the layout plan. By drawing the routes out, it would help us to identify the complete travel loop from important transport drop off points to their flats, offices, functional areas as well as the landscaped areas. Along these routes, they shall be barrier free and should leave no room for the unexpected steps or lead-you-to-nowhere signage.

Tactile guide path leads to a smooth non-tactile directory do not help the visual impaired. What if the directory is also tactile?

Design in their shoes

Many buildings may be elevated by a few steps in their entrance to manifest the grandeur of the building. Or, the steps are necessary to negotiate the level differences of the site. Sometimes, we may not want to build ramps in the front entrance, it would easily lead us to think of using the emergency vehicular access (EVA) or the service route for the barrier free access. Since wheelchair and cars do have wheels, the pavement along the EVA or the service route should be a practical alternative. Providing the gradient of the pavement are suitable, this may work. However, have we thought of how the users feel? They feel humiliated and have posted this question to me: why they cannot have the same respect as "normal" persons, why they need to use the EVA or the service route to enter the building at the back lane amongst the refuse collection area or the loading and unloading bays?!

Another often happened scenario is when we come to a point that it is not easy to provide the design to cater for the needs of the persons with disabilities, we thought the assistance by the caretaker or the guards can fill the gap. We understand that as an architect, we can only design for the hardware. To solve problems of the human being, software should take a leading role. But the persons with disabilities protest for their human rights. If people who are able to see, to walk and to hear can go to their destinations at their own wills, why they need to depend on others for help simply because the design has not catered for their needs? All I can say is, we shall fully stretch our minds to seek for an architectural solution before we give it up too soon.

Put ourselves in the users' shoes may be easier to let us understand how others feel. Sometimes, how we provide our services is as important as the services we have provided.

Aesthetic concerns

It has been so many times that I have heard architects saying that the tactile paving are ugly and will affect their floor pattern design, or sometimes, they will leave the design of the tactile paving to the last minutes knowing that there are some add-on plastic paving tiles available. However, problems usually do not go away when we try to escape from them. If we did not consider the tactile paving as one of the important design criteria in our floor pattern design, it will be a miracle if it can end up with a satisfactory final product.

Tactile paver in same colour as the surrounding tiles is not distinguishable by the visual impaired but increasing chances for trip over.

Another interesting example is, the architect, in order not to intrude upon his floor pattern design, use the tactile guide path in the same colour as the surrounding tiles. He may be able to barely fulfil the requirement of the Regulations, but he cannot serve the visual impaired besides creating chances for trip over by the elderly or the children because of the unnoticeable undulation of the tactile pavers.

Aesthetic can only be achieved by careful design and not by avoiding the problem.

Technical Trivialities

Besides the perception of the architects that will affect the design, the technical know-how is also important in shaping the details. Some construction details that can easily slip our mind can turn out to be crucial points that hinder the accessibility.

Thresholds

We used to think 25 millimetres high thresholds can be crossed over by wheelchairs. Now, we understand that this will be too high for electronic wheelchairs and it is better to be lowered to 13 millimetres or below. However, there is yet another detail that would easily be overlooked. It is the cross section of the threshold. The edge needs to be bevelled to a gradient of less than 45°. Do not think this is a fuss of detail. I have seen one wheelchair user almost topple over the un-bevelled thresholds. If you try on a wheelchair, you will notice that the bevelled edges help the wheels of the wheelchair to glide over the thresholds smoothly.

Bevelled edges are essential for the wheels of the wheelchair to glide over the threshold.

Turning radius

This often happens inside the flats. In order to save space for the bedrooms or other function areas, internal corridors usually would not be lavished in width. We need to be careful. Even when we have provided a door width of 750 millimetres or 800 millimetres clear and a corridor of 900 millimetres, it may not be adequate for a wheelchair to turn right angle from the corridor to enter the room. Mindful of the turning radius is essential especially in tight space and in need of turning. In these cases, there is a need to widen either the door opening or the corridor.

Reach

Reach is another issue that easily put out of our mind. When we design a passage, we think we have provided a barrier free access. Sometimes, it is more than the passage alone. The reach of the hands for being able to control buttons or the eyesight for seeing the necessary signs are important considerations as well. Kitchen cabinet underneath the sink providing no knee space for the wheelchair often makes it inaccessible for wheelchair users as the water tap will then be at least 700 millimetres away, which is beyond the reach of the hands.

The reach of hands to fittings are important consideration in the universal design too.

PVC tactile paver can be peeled off leaving disjointed guide path leading to nowhere but confusion.

Homogenous colour treads make level differences indistinguishable.

High luminous contrast is essential for the legibility of the signage.

Tactile paving

Tactile paving always seems to give a lot of nuisance to designers. The PVC tactile pavers though can be glued onto other tile surfaces making it very convenient for maintenance work or any last minute changes, they need maintenance. Otherwise, they can peel off and completely defeat its purpose. Just imagine the affliction that the visual impaired are in when they walk on the disjointed guide path that leads them nowhere but confusion.

Nosing tiles

This often happens in the external area: large flight of steps in homogenous colour treads with neither distinguishable nosing tiles nor differentiation between step edges. It is not only insurmountable by the elderly or people with weak eyesight, it is also a herculean task for the average people to negotiate these steps. Design to help people to distinguish the level differences between steps or else, you as the designer will be cursed by users each time they walk down the steps.

Luminous contrast

The term "luminous contrast" may be new to many people. What we used to say was "colour contrast". The contrast in colour is essential for the visual impaired to identify the changes in vertical or horizontal surfaces and to read the signage with their limited vision. The contrast need to be high in order to be distinguishable. The reasons why we now term it as luminous contrast is because red and green are high contrast colours which look the same in the eyes of the colour blind. The brightness of the colour, similar to a black and white print, will give a more meaningful visibility requirement for the visual impaired.

Signage is meant to convey message to people. If the letterings are too small or illegible because of the low luminous contrast, they will be meaningless no matter how well the graphics or the designs are.

Everyone Has His Part to Play

However, the make or break of universal design should not rely on architects alone. After all, it is not a sole show. There should be other stakeholders on stage.

The Government, for example, should take a leading role in pushing forward the universal design by providing some incentive schemes such as bonus plot ratio for widened access, provision of refuge areas for fire escape in staircases or even widened bathrooms, etc. Since the requirements on barrier free access in the external area is still a black hole in the Regulations, Buildings Department should consider more on this aspect in their review of the Design Manual for Barrier Free Access.

There are some areas that need more research from the industry. The non-governmental organizations (NGOs) can play their parts. One good example is the provision of Braille. We cannot read the Braille and this is beyond the stretch of imagination by architects to check whether the Braille we installed in the lift or in the signage are correct. The organizations for the visual impaired should be able to partner with the construction industry to provide services for advice, checking or manufacturing of some prefabricated messages for use. Other necessary researches include the luminous contrast, slip resistance, and assistive devices such as induction loops.

The building management personnel are key persons to sustain the design by architects. Unblocked access, unlocked disabled toilets, well maintained signage, etc. are some of the areas that would easily break down the Universal Design.

Residents need to be educated so that they will understand that universal design is not just a barrier free design for the people with disabilities. It is they who will benefit. The universal design enables universal accessibility for the widest spectrum of people at all ages. This means the residents would be able to remain in their existing homes and in familiar surroundings, without facing the upheaval of being re-housed when they have aged or developed some kind of physical disabilities. That is, their home will be more sustainable for future needs. Once when they understand, they will not complain on the slightly enlarged bathroom or widened corridors.

When the concept of universal design is recognized by the market as the basic needs, the client will be willing to put it in the client's brief for their new projects.

Remarks

In the next 25 years, there will be more than one quarter of the population aged 60 and above. To enable this sector of population to live independently, the concept of universal design should apply to all buildings and all environments to attain a universal accessibility. To achieve this goal, no effort shall be spared by any sectors of the society to work in close collaboration. Universal design is not just for the people with disabilities, but for you and for me.

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References

Hong Kong Housing Authority, *Audit Report (2003-2005) in Development and Construction Division,* Hong Kong: Housing Department, 2003-2005. (Internal document, unpublished).

____, *Design Guidelines for Universal Design Approach,* Hong Kong: Housing Department, 2002. (Internal document, unpublished)

PREISER Wolfgang F. E., editor in chief, *Universal Design Handbook,* USA: McGraw-Hill, 2001.

Hong Kong Housing Society (HKHS), *Universal Design Guidebook for Residential Developments,* Hong Kong: HKHS, 2005.

Architectural Services Department (Arch SD), *Universal Accessibility - Best Practices and Guidelines,* Hong Kong: Arch SD, 2005.