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Restroom Facilities of Malls in Surabaya: A universal interior design applications

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Abstract

The restroom in public facilities is also an element that needs to be studied and applied with universal design approach. Surabaya, as one of the largest cities in Indonesia with many public facilities particularly malls truly needs to consider universal design applications. The purpose of this research is to study, identify problems of the design applications of restroom facilities as well as to produce alternative solutions to those problems with an approach to universal design in the shopping centres around Surabaya. Qualitative research is used for the study and production of solutions. The design thinking method is used in this research.

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Keywords: Restroom facilities; universal design; design thinking

1. Introduction

1.1. Entrance and circulation facilities of public space-building

The restroom is an indoor facility that is always necessary in every public building-space, usually used to clean and groom one-self. It is usually designed separately for male and female to maximise comfort. However, this separation also becomes a problem for some people with special needs such as children or the elderly with different sex but need assistance while in the restroom. Restrooms in public building-

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space can also be accompanied with other facilities to accommodate activities of general care such as changing clothes, nappies and others (particularly for babies and the elderly).

Restroom has a variety of designations according to activity undertaken and the existing fixture customary respectively (toilet, bathroom, ladies-room, changing room, nursery room, etc.). But in general restroom in a public space-building divided only into two classifications based on main activity: to clean or tidy up; and self maintenance or changing of clothing). Both classifications of these activities will be discussed in this paper.

The first classification is a restroom that serves to accommodate the activities of self cleaning or tidying. This private or personal activity is requirement by all people periodically repeated in a day, everywhere. This private or personal activity has become very important to be accommodated for the cleanliness and health of human beings or society. Primarily in public space-building facilities, the restroom facility is a necessity to be establishing in amount related with the capacity of space-building visitors.

Usually, the restroom facility in a public space-building is divided according sex (male and female) to provide comfort and safety in use. But often also required unisex restroom because there needs tidying up or cleanup activities that cannot done person independently (need help from others who may be different sex). This usually happens or is done for children and elderly who need help from their parents or spouse with different sex.

The second classification is a restroom that works for physical care and clothing changing activities that need to be done, either in an emergency or on a regular basis. These activities require private or personal space to accommodate, particularly for those with limited physical abilities or degradation of physical ability. Space required also need to be unisex, in addition to efficiency of the intensity of use that is not as often as the first classification restroom, usually requiring space are people who need help from others (can be different sex).

The physical environment in buildings and public spaces are media (facilities) to accommodate the activities that apply to the public. This obviously requires the applied consequences of physical space-building facilities which are universal, or inclusive; these are the physical space-building facilities that could be used by everyone as visitors of space-buildings. Physical space-building facilities with a universal approach (inclusive) as a consequence of these public space buildings have not become commonly applied in Indonesia. Many of the physical space building designs that are mostly applied have not considered the needs of the certain sides that have physical limitations, the range of certain age, and also the difference between the sexes equally. The paradigm stating applied universal or inclusive design is an expensive application causes insufficient efforts for the application and development of the universal or inclusive design. Whereas the universal applied design will indirectly ease all users of the facility without exception. Thus, productivity of all users can be improved to produce investment if it experiences degradation in age or physic.

Besides the development of legislation and public awareness of the facilities and universal design, access for user groups with special needs also receive less attention in the world of design practitioners. Although the standard rules of construction applications have stated about the applied design facility that can be accessed universally, universal design concepts and methods are not (yet) generally taught in design school. The head and manager of design studies program is often lacking in awareness, sensitivity, information and skills to teach students about disability issues, minimum versus optimum standards, and the state of the art in accessible design (Greer, 1987). It also includes the lack of learning about the entrance and circulation facilities on a public space-building with universal design approach.

Therefore, we are doing the studies of applied restroom facilities (including nursery room) on the public space-buildings (in this discussion is the mall) in terms of universal design. The Identification of mapping the applied facilities will be equipped with proposed solutions of universal design that can be

applied to any malls. Surabaya, was chosen as a model city for applied research object and universal design solutions as fairly representative as big cities in Indonesia, which is trying to develop public facilities (including the mall).

1.2. Problem, purpose, and objective

The restroom facilities as one of the spatial elements in public facilities are also elements that need to be studied and applied with universal design approach. Surabaya, as one of the largest cities in Indonesia with many public facilities particularly shopping centres truly needs to consider universal design applications. How the restroom facilities of malls in Surabaya have been applied and the solutions to the existing designs become the issues (problem) of this research paper.

The purpose of this research is to study, identify problems of the application of the restroom facilities as well as to produce alternative solutions to those problems with an approach to universal design in the shopping centres around Surabaya.

The objective of this research is determined the mapping of applied physical restroom facilities on malls in Surabaya and proposed a design solution with universal design approach. Applied mapping and proposed design solution can be a suggestion that can be followed up with community services agenda.

2. Universal Interior Design: Restroom and It's Parameter

Universal design is a design approach for products and elements of building-space facilities that could be used by every person without exception. This approach is truly needed particularly in public building facilities so that every user can perform his activities independently, easily and optimally. Unfortunately, physical building-space facilities with a universal (inclusive) approach as a consequence of a public building-space has not yet become a basic application in Indonesia. The restroom in public facilities is also an element that needs to be studied and applied with universal design approach.

A good design and a design that is equipped with the attention to the issues of the users can be a key in solving the problem of universal design. These human factors issues are related to human physical conditions in the use of the design product, and have become standard principles in universal design approach. The principles of universal design by Story (1998: 34-35) are as follows:

- **Equitable Use:** The design is useful and marketable to people with diverse abilities.
- **Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities.
- **Simple and Intuitive Use:** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- **Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- **Low Physical Effort:** The design can be used efficiently and comfortably and with a minimum of fatigue.
- **Size and Space for Approach and Use:** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

The type of restroom facilities provided should be appropriate to the purpose of the building and designed to enable access for all potential building users (mall visitors). Restroom facilities on malls should be easily identified and clear signage. This is particularly important in public space-building where people unfamiliar with their surroundings. Visitors should be able to rely on effective signage to locate suitable facilities.

Checklist restroom parameter for universal design in this paper will be adopted from Building for Everyone: A Universal Design Approach, booklet 5 (www.universaldesigns.ie). Bellows are checklist restroom parameter for universal design that has been simplified and adjusted to the needs of research at malls in Surabaya:

2.1. Checklist restroom parameter for universal design in Surabaya's malls

- Restroom facilities located in an accessible part of the building and conveniently located in relation to the main entrance, any waiting areas, and other key facilities.
- A unisex accessible toilet should be provided at each floor level in a building and should be clearly identified.
- Routes to restroom facilities should be free of obstructions and the travel distances as short as possible (no more than 40m).
- Door-free entrances to washrooms and communal changing areas .
- Restroom facilities signage easily identified.
- Single-sex toilets is universally designed (including washbasins with different heights).

2.2. Checklist baby-changing parameter for universal design in Surabaya's malls

- Provide unisex accessible facilities for baby-changing.
- Consider supplementary baby-changing facilities in male and female toilets.
- Install changing tables at two heights.
- Include hand-washing and drying facilities.
- Establish separate facility for breast-feeding.

3. Methodology

Qualitative research is used for the study and production of solutions. Design thinking become the chosen approached methodology that will be applied in this study with adopting design thinking from some of the literature (Riverdale & IDEO, 2011:4; Lockwood, Thomas, 2010:50; Tim Brown, 2009:16; Ambrose, Gavin and Harris, Paul, 2010:12; Lawson, Bryan, 2005) and adjusted with the research's steps. The design thinking method is used in this research with the following work sequences:

- Exploration is comprehension and empathy as the mall's visitors to observe and documentation to the object restroom facility.
- Identification is definition, selection and synthesis problems in physical approached on restroom facility.
- Ideation is idea and creation as designer to give alternative's design solution for restroom facility with approach to universal design principal
- Visualization is model by drawing sketches as alternative media communication design for restroom facility.
- Evaluation and Persuasion are presentation and feedback for perfection in alternative design solution in restroom facility.

For this research, there are 15 malls that have been selected as the research objects. Selection of the objects was under consideration of mall diversity, location distribution, establishment distribution, and the popularity of malls.

4. Findings

Surabaya, as one of the major cities in Indonesia with a lot of shopping center public facility, need to pay attention to universal design application. The malls in Surabaya itself, has a unique definition and its own characteristics. Here is a short description of the uniqueness of these malls. Marina Plaza, the plaza formerly known as Fountain Court is an exclusive shopping center in the South Surabaya and also has sports facilities such as a swimming pool. Royal Plaza is a family mall concept to provide all the needs of the family in one place. Surabaya Town Square (or commonly abbreviated SUTOS) is a mall that was founded in 2008 and consists of 4 floors with tenants - tenants who are known as large companies both nationally and internationally. Then there is also Tunjungan Plaza (or commonly abbreviated TP) which is a largest shopping center in Surabaya, as well as the most popular plaza in the city of Surabaya, was founded in 1986 and has four main buildings are interconnected (Tunjungan Plaza East, Center and West). THR Mall is a Computer Sales PC / Notebook is the most complete in Surabaya is located in Jalan Kusuma Bangsa. Pakuwon Trade Center and Supermal Pakuwon Beautiful is a shopping center located Jl. Raya Puncak Indah Lontar 2 West Surabaya with the concept of "one stop servicing all matters". Ciputra World Surabaya is a superblock built by Pt. Ciputra Surya Tbk which is in the area of Jl. Mayjend. Sungkono, Surabaya. Superblock has 2 towers used for apartments by the name of The Via & The Vue (V2), have 1 mall a number of floors 6 floors and currently they are also building hotel Ciputra. Grand City Surabaya is the largest shopping center in Surabaya, and also have the Grand City Convention and Exhibition Hall with area of 21.000 square meters. Pasar Atom and Pasar Atom Mall Surabaya located North Surabaya region with a land area of over 6 acres. Pasar Atom is a shopping center with its distinctive interesting icons where the visitors do not just come for window shopping rather than shopping buyers, where they come to shop. The average rate of visits per day is 20,000 to 30,000 people per day for weekday and more than 50,000 people per day to weekend. Galaxy Mall was established in the East Surabaya. This mall consists of 5 floors with tenants - tenants who are known as large companies both nationally and internationally. Surabaya Plaza shopping center in Surabaya is located in the heart of the city, located adjacent to Submarine Monument and very close to the Surabaya Plaza Hotel. Previously, or Delta Plaza or Surabaya Plaza is the location of the historic Hospital Dr. Soetomo time. However, now converted into a shopping center that has 6 floors with a magnificent building features spacious flats parking both below and above. WTC Surabaya is located adjacent to the Delta Plaza, is well known as a shopping center mobile phone (cell phone). City of Tomorrow (CITO) is a shopping center located at the entrance and adjacent to the city of Surabaya Juanda airport.

Exploration of the restroom facilities of malls in Surabaya has been done by observation and documentation. Researchers apply as a visitor or user of the facilities, so it can be more objective in the process to find and use the restroom as needed. Here is the documentation of the restroom exploration facility on the malls in Surabaya:

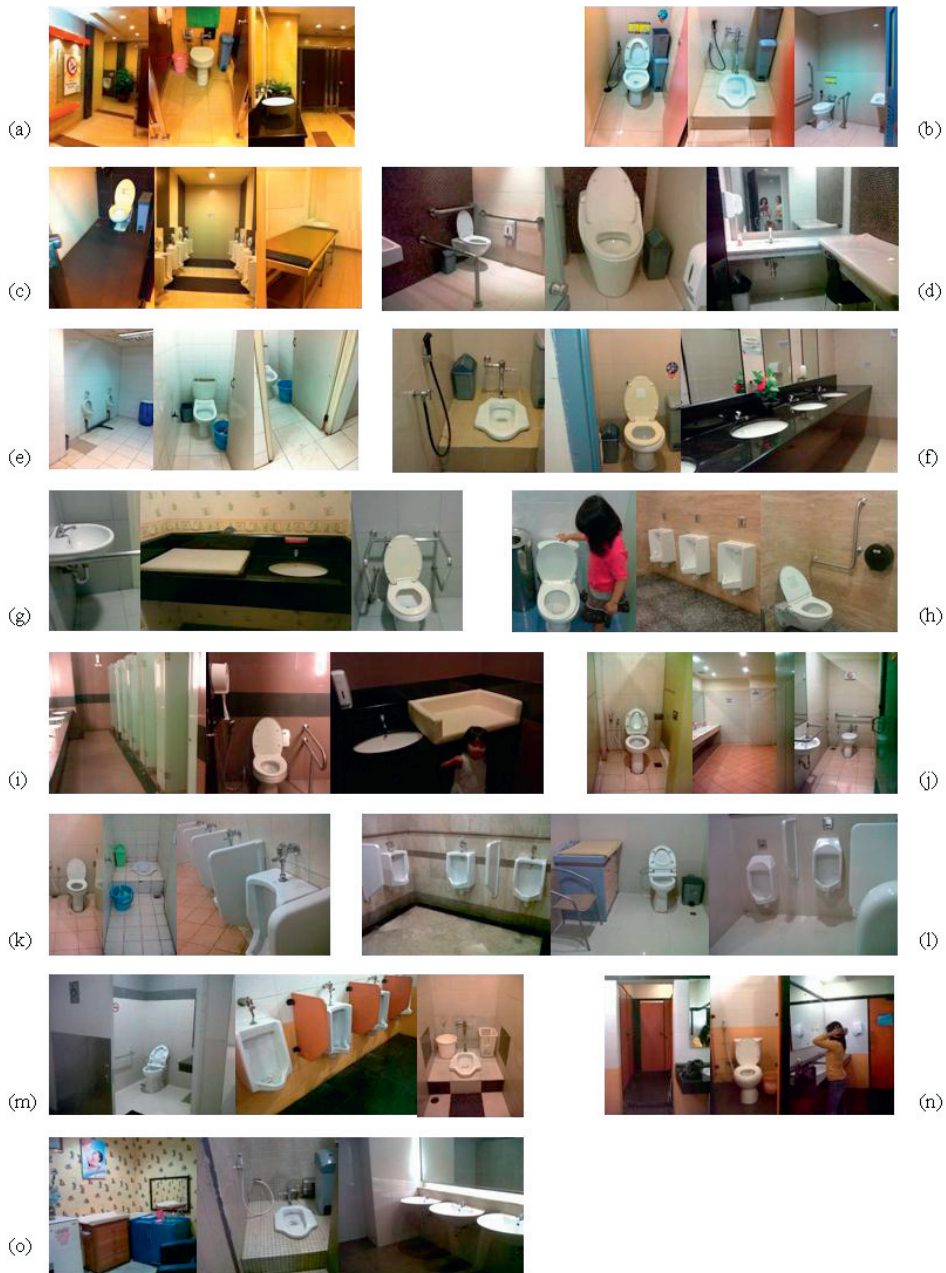


Fig. 1. Documentation of restroom facilities of malls in Surabaya (a) Plaza Marina; (b) Royal Plaza; (c) Surabaya Town Square; (d) Tunjungan Plaza; (e) Hi-Tech Mall; (f) Pakuwon Trade Centre; (g) Supermall; (h) Ciputra World; (i) Grand City; (j) Atum Mall; (k) Pasar Atum; (l) Galaxy Mall; (m) Plaza Surabaya; (n) World Trade Centre; (o) City of Tomorrow

The observations and repeated observations in documentation file produce identification in physical condition at restroom facilities of the mall in Surabaya. Observations of applied physical restroom

Install changing tables at two heights.	-	-	□	□	-	□	□	□	□	-	-	□	-	-	□
Include hand-washing and drying facilities.	-	-	□	■	-	■	■	■	■	-	-	■	-	-	■
Establish separate facility for breast-feeding.	-	-	□	□	-	□	□	□	□	-	-	□	-	-	□

Notes:

- : applied and as universal design’s criteria
- : applied, not the same with universal design’s criteria
- : No application

The results’ of applied physical restroom facilities checklist suggests that aspects ‘located in an accessible part of the building and conveniently located in relation to the main entrance, any waiting areas, and other key facilities’, ‘a unisex accessible toilet should be provided at each floor level in a building and should be clearly identified’, and ‘restroom facilities signage easily identified’ are aspects that has been applied optimally in all malls. Aspect ‘door-free entrances to washrooms and communal changing areas’ and ‘Single-sex toilets is universally designed (including washbasins with different heights) have not been optimally applied. Malls which have applied all aspects of universal design restroom criteria optimally are Ciputra World and Grand City.

The results’ of applied physical baby-changing facilities checklist suggests that aspects ‘provide unisex accessible facilities for baby-changing.’ and ‘include hand-washing and drying facilities’ are aspects that has been applied optimally in most mall. ‘Install changing tables at two heights’ and ‘establish separate facility for breast-feeding’ aspect have not been optimally applied (more than 50% of the malls in this research). There were no malls which have applied all aspects of universal design baby-changing facilities criteria optimally. Malls with no applied all aspects of universal design baby-changing facilities criteria are Plaza Marina, Hi-Tech Mall, Atum Mall, Pasar Atum, Plaza Surabaya, and World Trade Centre.

The results’ of last checklist suggests that so many malls with no applied all aspect of universal design baby-changing criteria. Surabaya Town Square is the mall relatively new with the most lack application in the checklist criteria. This is very interesting facts to be discussed if it correlated with other data and findings related to the mall establishment and the mall’s target market. Discussion related to the facts discussed at the later stage.

At this stage, the identification of physical application in restroom facility produced a map of universal design issues. This map of issues will be followed up in the discussion and analysis for the proposed solution to the universal design approach.

5. Discussion and Analysis

Research has been done on the restroom facilities of malls in Surabaya conducted from the researcher perspective as mall visitors. Observations conducted by researchers’ direct experience as mall visitors who looking for and use the restroom facilities. Constraints due to the not optimally or not exist applied universal design at the restroom facility are the findings based on the orientation of the users’ orientation (as the main target of mall users). The process is also part of the post occupancy evaluation of the malls. The result could be one of the considerations for the development of physical facilities of malls.

The stage of discussion and analysis stated with a discussion of design thinking stages of ideation and visualization. At this stage, all the physical mapping applied restroom facilities sorted and responded according to the characteristics of the problem. Applied physical problems restroom facilities related to universal design approach is divided into two characteristics, which is what the application of universal

design approach but not optimal, and there is no universal approach applied to the design of physical restroom facilities.

Problems on the object space-buildings that have applied physical restroom facilities with universal design approach but not optimal solved by given the design's solution with adjustment and following the criteria of universal design. Adjustment of universal design criteria performed primarily in terms of the physical dimensions of the restroom facilities, which is related to the width of the restroom facilities, and applied space complement system arranged to adjust the physical condition of users. Other adjustments made to the restroom support facilities, such as sanitary fixtures and others technical applied.

Problem at the mall that have not implemented universal object restroom facilities were given a solution by making a universal restroom facilities. Proposed design of the provision object with universal design criteria related to providing a complementary space to facilitate the activities of, and applied details restroom facilities fixtures.

Here are some examples of design solutions with a sketch directly on the pictures in restroom facilities that have problems by not optimally applied universal design:

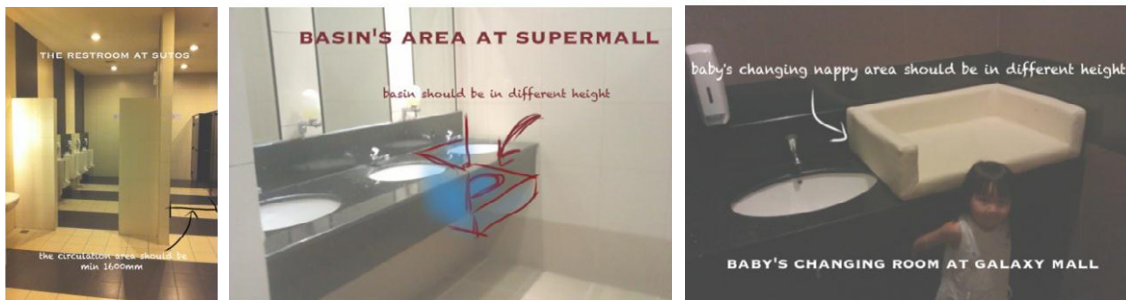


Fig. 2. Sketches of universal design solutions on multiple objects of restroom do not conform to the criteria of universal design

The proposed design of the universal design approach is presented directly on the image documentation applied object. Directly sketch solution on that object is the principle of universal design's solution as ideas that can be developed in more detail if it will continue in practice improvement activities, adjustments and additions to the object. Details that can be developed on objects facility of restroom are related to the shape, dimension / size, material, and also the object surface finishing. Details will affect to the achievement of optimization applied at restroom facility in accordance with the criteria of universal design

The data findings of applied physical restroom facilities identified in the previous checklist, then attempted to compare and analyze the data description of the identity of each mall in Surabaya. The result is that the mall had been built (over 10 years) has many problems of applied physical restroom facilities with universal design approach. While the mall which still relatively new (about 5 years) have the applied restroom facilities with a good approach of universal design. Correlation can be stated is that the old malls do not have an attention by applying the restroom facilities with universal design approached yet. Malls that are relatively new already have an orientation and concerned with universal design's issues applied in the restroom facilities.

In addition, the findings of applied restroom facility that complies with the standards of universal design or not, can be correlated with the target market in each mall. Malls which have a target market of middle to upper was more concerned applying the restroom with universal design approach. Although the

mall is old establishment, but because it has targets middle to upper market and is ideally located in the center of city, the mall development progressing and regularly follow the trends and issues of ecology and social-design, including the universal design. An exception occurred in Surabaya Town Square, a relatively new mall with top-level target market that implement one of the restroom facilities (baby-changing room) but not optimal. This can be correlated with the dominance of visitors' characteristics and its operational hours, which different from other malls. Visitors' characteristic of Surabaya Town Square dominated by youth and up, and their activities at the mall until after midnight. Since there was not many visitors used the baby-changing room, making it less noticeable for maintain and develop it.

6. Conclusion and Recommendation

The conclusion from the research with the interior universal design approached in the objects of restroom facilities are as follows:

- Applied physical restroom facilities on malls in Surabaya with universal design approach still has many problems, especially in the aspect of door-free entrances and universally single-sex toilet.
- Baby-changing room is the object of restroom that still not applied in almost half of the malls in Surabaya.
- Mall in Surabaya which still lack in physical applied restroom facilities with universal design approach is Pasar Atum.
- Design solution with universal design approach that can be offered for restroom facilities are the customization design with universal design standards, particularly in terms of dimensions (on objects that have applied universal design but not optimal) and provision of physical facilities, restroom with universal design standards (on the objects that have not yet applied the entrance and circulation with universal design standards).

Recommendations for further similar research is continuing research of 'Kajian dan Usulan Solusi Universal Design pada Bangunan Ruang Fasilitas Publik di Surabaya' ('A Universal Interior Design Study and Suggestion for Solution on Space-Building of Public Facilities in Surabaya'), with the object of commercial public space-building facilities (other than restroom facilities), and non-commercial space-building facilities. Some of non-commercial public space-building facilities are transportation service space-building (airport, train station, bus station), cultural and conservation space-building (museum, art gallery), information space-building (city library, tourism information centre), and recreational space-building (city park, zoo) in Surabaya. That public space-building research, complementary research of public space-building in Surabaya as a whole, so that the applied physical mapping with universal design approach will be completed. The mapping of the universal design physical problem on public facilities in Surabaya can be follow up with the community service activities involving design faculties, design students, and industries.

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