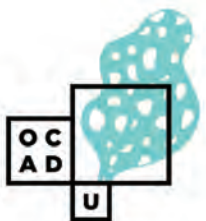
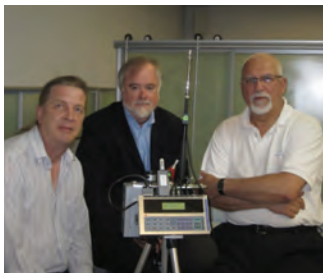
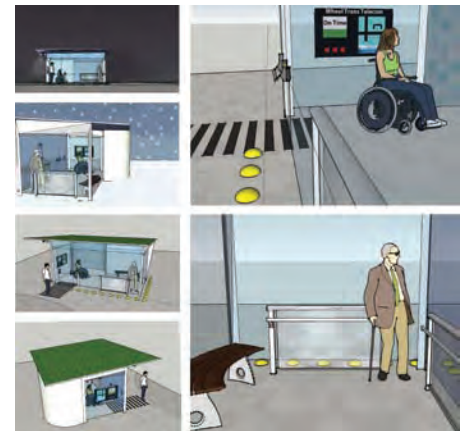


# INCLUSIVE WAYFINDING

## IN THE SOCIAL HOUSING CONTEXT



Toronto Community Housing



inclusive design research centre  
OCAD University

Orfield Laboratories Inc

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# Project Participants

Toronto Community Housing



## Toronto Community Housing Corporation (TCHC)

### **Project Director:**

Elizabeth Jassem, M.Sc (Arch), Manager, Universal Accessibility

### **Accessibility Implementation Advisory Committee:**

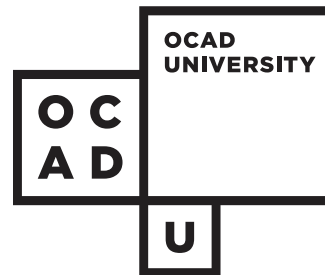
Chester Lam, Lynn McCormick, Jerry Monk, Penny Lamy, Gerald Schamerhorn, Maryanne Schamerhorn, Harriet Lahman, Bill Power, Michael Boyle, Tracy Izzard

### **AIAC Committee Advisors:**

Elizabeth Jassem, TCHC, Chair & Leanne Davidson, Ontario Federation Cerbral Palsy & Tricia Morley, Balance for Blind Adults

### **TCHC Advisors:**

Catherine Wilkinson, Kathryn Ashbury, Stanley Lampa



## OCAD University (OCADU)

Toronto, Canada

### **Project Director:**

Doreen Balabanoff, M.Arch A/Dean, Faculty of Design

### **Prime Investigator:**

Cheryl Giraudy B.Arch OAA Associate Dean, Faculty of Design

**Project Co-ordinator:** Mary-Anne Lee, B.A

### **Lead Research Assistant:**

Jesse Klinitz B.A (Arch), M.Arch

### **Graduate Research Assistants:**

Theresa Lee B.Des (Environmental Design), Katerina Gloushenkova, B.Des. (Environmental Design), Michelle Hopgood B.Des (Graphic Design)

### **Research Assistants:**

Ozana Gherman (4th Year, Environmental Design), Stephanie Ho, B.Des (Advertising), Stephanie Pete, B.FA (Drawing & Painting, Integrated Media), Elyse Leffler, B.Des (Environmental Design)

# Project Advisors

Orfield Laboratories Inc



## Orfield Laboratories

Minneapolis, Minnesota, USA

Orfield Laboratories' Architectural Research Group from Minneapolis, Minnesota are consultant advisors to OCADU on this first research project with TCHC. They bring decades of experience in occupancy studies of building populations including objective and subjective methodologies to capture perceptual experiences and a non-traditional needs survey along with analysis of data and support for outcomes of the research. Research Assistants learned about environmental data capture from Orfield including data measures for day lighting, lighting, acoustics, thermal comfort, indoor air quality and other key perceptual measures.

### **Orfield Laboratories Advisors:**

Steven J. Orfield, President

J. Wesley Chapman, Director, Architectural Group

Michael R. Role, Architectural Group

## Inclusive Design Research Centre & Adaptive Technologies Resource Centre

Toronto, Canada

The IDRC/ATRC is an internationally recognized centre of expertise on Inclusive Design of information technology. Research and development focus on influencing the early design stages of emerging technologies to ensure that the technologies and practices support human diversity.

### **IDRC Advisors:**

Jutta Treviranus Director & Founder, IDRC/ATRC

Jorge Silva, PhD -Mobile Accessibility Research, ATRC

# Forward

Design Research is a critical focus of OCAD U's commitment to engage users in the design process and evolve new approaches to problem investigation. TCHC's wayfinding project effectively mobilized the experience and expertise of a wide variety of participants to evolve innovative, workable, engaging solutions that allow this important piece of the City's infrastructure to accommodate its users in an enviable manner while informing the field of wayfinding for application.

**- Carl Knipfel B.Arch, OAA, RPP**

Manager, Design Research Centre,  
Research & Graduate Studies  
OCAD University



# Acknowledgements

Report of Project 1 owes its existence to the tremendous energy and commitment of the Research Assistants who compiled work of the research for a complex project. The information distilled in this document gives insight to the participatory methods undertaken for studying wayfinding in social housing contexts.

OCAD University Research Assistants Katerina Glousenkova, Theresa Lee, Stephanie Pete, Ozana Gherman, Stephanie Ho, Elyse Leffler and Michelle Hopgood are to be congratulated for their excellent work under the able guidance of Lead Researcher, Jesse Klimitz. Jesse has been steadfast in his dedication to the project and commended for his thoroughness in managing all phases of work.

Professor Doreen Balabanoff, A/Dean Design, director of the project on behalf of OCAD University initiated the undertaking with Ms. Elizabeth Jassem, Manager for Universal Design at Toronto Community Housing Corporation (TCHC). They worked tirelessly to develop a collaborative partnership agreement that would propel both OCADU and TCHC into deep research on inclusive environments in response to forthcoming accessibility legislation in Ontario (AODA).

Under the agreement, Research Pilot Project 1 was launched with Cheryl Giraudy, Associate Dean Design as the designated Prime Investigator.

The Accessibility Implementation Advisory Committee (AIAC) embraced the principles of the project and were supportive of new ways of working and sharing ideas with the OCADU research team. They were willing to commit time and effort to engage with young designers in capturing key information about wayfinding in common areas of their residential communities.

Thanks to Chester Lam, Lynn McCormick, Jerry Monk, Penny Lamy, Gerald and Maryanne Schamerhorn, Harriet Lahman, Michael Boyle, Tracy Izzard and Bill Power for their contributions to this project. Beverly Smith is also thanked for her keen interest in design research for accessible communities. Thanks also go to Stanley Lampa (TCHC), Leanne Davidson (OFCP), Tricia Morley (Balance for Blind Adults), Catherine Wilkinson (TCC) and Kathryn Asbury (TCHC) for their valuable contribution.

# Pilot Project 1



# Executive Summary

Wayfinding is the sensory and cognitive experience of movement through or within cities, spaces and places and is an essential concept for planning built environments. Wayfinding is particularly important for many of the population who face physical challenges be they permanent or temporary states of ability, as they navigate their communities on a daily basis. As part of inclusive strategies for planning accessible housing, Toronto Community Housing Corporation understands that Wayfinding is more than signage. In serving and supporting the thousands of TCHC community members as they live, work and play in dense housing complexes, TCHC seek innovative and economically sustainable solutions for meeting forthcoming Accessibility Legislation (AODA) in the province of Ontario.

TCHC partnered with OCAD University's Design Research Centre in 2010 to creatively address issues like Wayfinding in public or common spaces through applied design research and participatory design processes and outcomes.

Pilot Project 1 was developed as a first step in developing Guidelines and Best Practices for Wayfinding in the revitalization and renovation of TCHC facilities.

This partnership sought to give nascent undergraduate and graduate design researchers a rich experience with stakeholders and end users while providing innovative strategies for applying inclusive/universal design to a large housing complex in the centre of a major city. Moss Park housing complex was chosen as the research site in order to prepare design strategies in advance of forthcoming renovations to the complex to meet new accessibility standards.

The outcomes of the first research project under the umbrella agreement were multifold and included:

1. TCHC striking an Accessibility Implementation Advisory Committee (AIAC) to work with OCAD University for a series of research projects under the partnership agreement;

2. Engagement of Orfield Laboratories Inc., USA, a pioneering Architectural Research group focused on cognitive and perceptual research for occupants and communities with diverse abilities and challenges;

3. Introduction of evidence-based design principles to students of design and user - participant groups;

4. Development of a tailor made, multifaceted approach to user participation in design research including on site surveys engaging participants, focus groups, user preference juries, and sharing of findings for user feedback at each stage of the research work;

5. Data Base of international and local design precedents including new adaptive technologies for Wayfinding that will be relevant for further design development;

6. Environmental findings that identify issues and opportunities for planning Wayfinding systems to meet user/occupant needs and preferences

7. Perceptual and pre-cognitive findings that indicate wayfinding issues for specific groups of disabled users/occupants in common areas of housing facilities;

8. Establishment of recurring themes to be addressed in inclusive design solutions including the role that community making and common spaces play in successful wayfinding;

9. Development of preliminary design solutions and case study for inclusive wayfinding, and

10. Identification of areas for further collaboration as TCHC aims for creating Design Guidelines and Best Practices for inclusive Wayfinding.

The collaboration between TCHC and OCAD University has shown the strong potential for further design research in the area of urban housing and accessible and inclusive design. This is research, which could benefit thousands of residents, particularly as TCHC works towards implementing forthcoming accessibility legislation. The report herein demonstrates how design research brings insight to problem solving with the aim to contribute to sustainable, economical and effective design solutions for long-term implementation.

A major benefit of the effort undertaken in Pilot Project 1 is the engagement of young designers with disabled and abled residents and their community workers in understanding how each group can help the other in meaningful ways as they work with new inclusive planning processes for making viable, effective housing environments that meet the needs of the broadest spectrum of occupants.

**Cheryl Giraudy, B.Arch. OAA, MRAIC**  
Prime Investigator & Associate Dean

Faculty of Design  
OCAD University,  
Toronto

**It's not just about  
designing for the  
disabled or impaired.  
It's about making our  
environments and  
experiences better for  
everyone. Everyone has  
a stake in the  
implementation of  
inclusive design.**

# Objectives

- **Engage graduate and undergraduate research assistants**  
in inclusive research methodologies, participatory research and evidence based design centred on way-finding and navigation of public, semi-public and common spaces at TCHC facilities
- **Engage residents and TCHC housing**  
in the research collaboration and provide opportunities for OCAD research assistants to work with TCHC at various levels in undertaking the project
- **Present findings, preliminary design strategies and approaches**  
for improving Wayfinding at Moss Park as TCHC embarks on renewal projects for this existing housing complex

# **Inclusive Design & Wayfinding**





# Orientation and Wayfinding

From childhood, we learn to understand the language imbedded in our natural and built environment. The understanding of this language is rooted in cultural traditions and can vary significantly in different places around the world. Some of the elements we perceive are: paths, edges, links, shapes, thresholds, transitions, and built form landmarks. Symbolism in architecture, sculpture, texture, colour and form as well as aspects such as symmetry, hierarchy, balance and order all play a role in how we engage with our environment and navigate our way through it.

People also absorb information from their environment directly through the senses. We may experience “intuition” about our surroundings, based on memory and past experiences. These cues are perceived simultaneously to orient us in the surroundings and to direct our movement through it. There is fascinating research on “body memory” theory identifying that the body, as well as the brain, is capable of storing memories. This has significance for further studies on wayfinding and sensory experience.

Coco Raynes Associates created an award-winning accessible navigation system for the Charles De Gaulle airport, France. The system includes an information table with a tactile map sand blasted on a slab of laminated glass.

Stainless steel handrails embedded with Braille and audio information are installed at key locations along the path. Slightly raised, bright yellow dots mounted on the floor delineate the path and make a sound when tapped with a cane.

Supplementary information in the environment that identifies spaces, routes and destinations is essential to good navigation. Good signage also provides us this information in a good place, at a good time. Signage may include language, graphics, digital, interactive, audio and tactile elements.

Ultimately, good design creates spaces where wayfinding is an intuitive experience, minimizing the need for graphic signage and other text based interventions.

Kevin Lynch, a well known advocate for good planning and design referenced “wayfinding” in his 1960 book ‘The Image of the City’. He studied how people perceive and understand spatial information as they navigate through cities.

Lynch identified that people form mental maps of cities with five basic elements or concepts:

1. Paths: streets, sidewalks, lanes
2. Edges: walls, surfaces, buildings
3. Districts: large sections of the city, distinguishable by characteristics
4. Nodes: focal points, intersections
5. Landmarks

In 1984, Designer Paul Arthur, along with Romedi Passini published their book Wayfinding in Architecture and coined the terms “signage” and “wayfinding” for the use of pictograms, words, colors and architecture to help people find their way quickly and easily in a built environment. The book has since become a standard on the subject for graphic designers and architects worldwide.

# Universal Design Principles

The Seven Principles of Universal Design adopted by Inclusive Design advocates are defined as:

1. The design does not segregate users but is usable by everyone;
2. The design accommodates a wide range of abilities;
3. The design is easy to understand and use;
4. The design communicates necessary information accommodating different sensory abilities;
5. The design has tolerance for error;
6. The design can be used comfortably without fatigue and
7. Appropriate size and space provided for reach and manipulation, regardless of user's body size, posture or mobility.

# **Why Wayfinding Matters:**

**Wayfinding affects our feelings about a space, and even the people in it. Poor wayfinding can cause stress, anxiety, anger and fear. It can save or waste our time. It can make us feel included, or ignored.**

**It affects public safety, and it affects how we go about our daily lives and rituals. For these reasons the work of Pilot Research Project 1 considered Wayfinding as one of the most important topics to undertake with participants.**

# How do you design an inclusive city?

A prime aspect of creating accessible built environments is 'Wayfinding'. To fulfill our daily needs we travel from place to place through complex interior and exterior urban settings. Navigation and wayfinding are integral aspects of everyday life. Finding one's way is key to one's ability to access and make use of the city's resources in a free and inclusive way.

Efficient, accessible, safe and spatially attractive wayfinding encompass multiple levels of research and design, including planning, architecture, communication and technology, as well as graphic signage to navigate and orient people in spaces and places.

A survey completed by Romedi Passini, Environmental Psychologist demonstrated that 90% of blind people in Montreal consider public buildings to be 'inaccessible' because of difficulties associated with wayfinding.

The everyday difficulties that many people experience while trying to navigate around complex urban settings cannot be overlooked. Applying the principles of Inclusive Design is essential to make our cities livable for everyone.



Image from Norwegian Design Council to represent their 'Inclusive Design'

**“Inclusive Design is an approach to design that honors human diversity. It addresses the right for everyone from childhood into their older years to use all spaces, products and information in an independent, inclusive and equal way.”**

— Elaine Ostroff, Universal Design Handbook

# Emerging Trends & Signals





# New Trends in Thinking

The transformation of society is taking place not only in legislation, but also in attitude. As the segregations between communities begin to dissolve, new trends in thinking begin to emerge. These ideas affect design practice, shifting it from a prescribed set of sequential procedures to a more human-centered and empathic approach which is re-iterative and dynamic.

Architects and designers have long painted utopian visions that depict physically fit and model-like users enjoying their buildings, products and beautifully designed interiors. However, these abstract and stereotyped characters do not reflect real people and real lives with real challenges to face on a daily basis.

We are left on the one hand with pro-active designers and planners who are starting to prepare universal and Inclusive Design solutions while on the other hand, developers who are lagging behind with unrealistic and non-inclusive images for marketing to potential buyers and residents.

People have differences in perception, cognition, and mobility. Some of these human conditions are permanent, some are temporary, some are invisible, while others are more pronounced. The difference between “abled” and “disabled” users is difficult to define. A person who is angry or a disoriented traveler in a foreign country may be said to exhibit a sort of temporary ‘cognitive impairment’.

The user who is pushing a stroller or carrying a heavy load may be classified as ‘mobility impaired’. Every user eventually ages and loses even the sharpest of senses and strongest of bodies. In short, nobody is always “unimpaired” so that physical disabilities are not the only areas and impetus for rethinking of design approaches and processes in achieving accessibility goals.

For every person that is continuously excluded from using a product or environment, there are many others who have negative experiences when using the same products and environments. All it may take is being tired or distraught

# Inclusive design is simply – good design.

for a person to struggle with the design. It stands to reason that people are not disabled by their own bodies, but by badly designed products and environments that neglect to consider the natural range of human abilities.

Everyone has a stake in the implementation of universal or Inclusive Design. The improvements geared to accommodate people with disabilities actually benefit everyone. Inclusive design holds our products and environments to a higher standard.

Ontario is leading the way internationally to a barrier free culture, environment and society with the ground-breaking development of mandatory, province-wide accessibility standards. The mandated standards of the AODA (Accessibility for Ontarians with Disabilities Act), developed in 2005 are being brought into effect as law to remove barriers to equal access and participation of people with disabilities in all aspects of life.

The sequential implementation of the five AODA standards will cover customer service, employment, communications, transportation and the built environment. These will apply to both private and public sectors by 2025.

The AODA Customer Service Standard is currently in effect for all institutions in the public sector. The integration of the next three standards into a single harmonized regulation is in progress and will be available for review in

early fall 2010. Private business and not-for-profits will have to comply with this first standard by January 1, 2012.

Accessible customer service includes services provided online, by phone, in person and by alternate formats. Since many Ontario businesses have employees that are not in Ontario, but work and live in other places, employers must provide training, and ensure that their employees understand practices and policies nationally and internationally.

As noted by Dan Shire, IBM at the University of Guelph's 2010 conference 'Aiming for Access', the result of this phenomenon is that Ontario standards are influencing businesses, policies, practices and procedures around the world. Additionally, the AODA Standard for the Built Environment, essential to consideration of Way-finding, will communicate and demonstrate the standards for inclusion that Ontario is setting. Tourists, guests and professionals visiting Toronto will be inspired by the innovation of the Inclusive Design practices in Ontario.

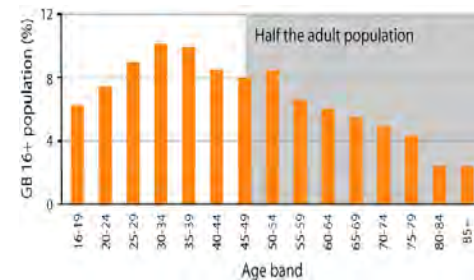
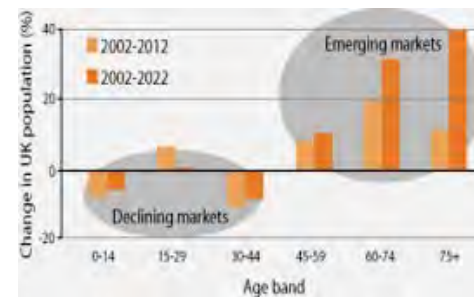
Regarding the AODA standard for the Built Environment the Ontario government reminds businesses to "make your premises accessible to people with a wide range of disabilities, including physical, sensory, learning, developmental and mental health. This means paying attention to more than just ramps and accessible wash-rooms" (1)

# Changing Demographics

The global rise in the aging population and the emerging demographic of super elders (people over 85) have increased the number of people living with a wide range of disabilities or physical challenges. Throughout the past century, the growing diversity in the population was reflected by a growing pursuit of independence and equal rights.

At the beginning of 20th century, older adults and persons with disabilities were a true minority. By the 1950's two world wars, and many advances in medical science contributed to a large population of veterans living with disabilities and needing integration into communities.

By the 1990's, a global rise in aging population and people living well over the age of 85 was evident and the trend is continuing with the Baby Boomers coming into senior years in the coming decade.



Charts above indicate Age Band for UK population & emerging groups (Universal Design Toolkit, 2005 UK)

**Nobody is always  
“unimpaired” so  
physical disabilities are not  
the only areas and  
impetus for rethinking of  
design approaches and  
processes in achieving  
accessibility goals.**

# Assistive Technologies

Personal assistive devices act as extensions to our bodies and minds. Technology can enhance our physical, sensory and cognitive abilities and enhance how we interact with the environment, and other people. Technology can transform our everyday experience and provide more access, empowerment and independence.

As an example, Researchers in MIT's Touch Lab "BlindAid" created a system that helps the visually impaired "feel" their way around a virtual model of a room or building so they can familiarize themselves with an environment before entering it. Using a joystick, people receive tactile feedback as they navigate around a virtual environment which they cannot see, but only feel, since the joystick is responsive and stiffens or loosens as it passes over features of the environment.



Graphic: Christine Daniloff 2009.  
MIT News.

**Technology can transform our everyday experience and provide more access, empowerment and independence.**

# Inclusive Cultural Experience

Charles Reeve, Associate Professor in the Faculty of Liberal Studies and On site Curator of [at] OCADU recently presented a paper as part of the “Taking Part: arts, culture and civil society” conference, hosted by Southbank Centre and Goldsmiths, University of London (UK).

A major international and multidisciplinary conference, Taking Part engaged with questions regarding the role of arts and cultural activity in society. Reeve’s paper, “Museum Activism and the Culture of Disability” discussed the role for museums and galleries to play in engaging with disability beyond improving physical access - specifically in shifting from a medical model of disability to a social model.

Inclusive ways of designing cultural experiences, as well as providing physical accessibility is essential for many with disabilities who may be currently excluded from fully participating in a rich and important part of community and civil society.

Museums such as MoMA in New York City created “Programs for Visitors with Disabilities,” where the museum demonstrates that cultural facilities and experiences can be accessible to all visitors, regardless of physical differences and challenges. Braille labels, large-print booklets, tactile surfaces, and verbal imaging tours are some of the inclusive strategies for visitors and there is a collection of arts works that can be touched and explored through touch and scent.

# Participatory Research at Moss Park





# Moss Park Background

Moss Park is named for the abundant moss that grew on the Allen family estate home, which once stood on the west side of Sherbourne between Queen and Shuter. During the original 'urban renewal' the area was redeveloped into a housing project, community was considered as integral to the space with the inclusion of a large park and community centre on the site of the old estate.

Moss Park was selected by TCHC to be the case study for the research work with OCAD U. It is a residential neighbourhood in the heart of downtown Toronto and is roughly L-shaped, bounded on the north by Carlton Street; on the east by Parliament Street and the Don River; on the south by Front Street and on the west by Jarvis Street.

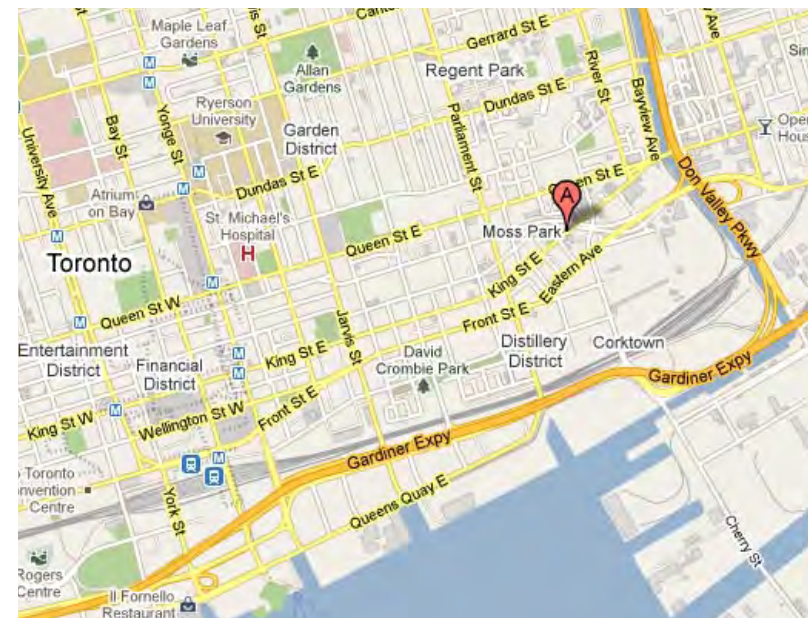
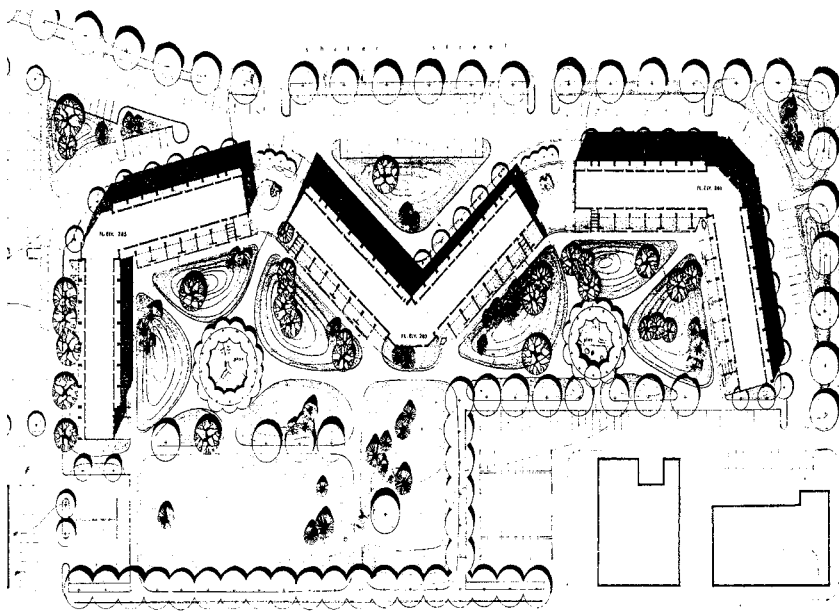
Moss Park consists primarily of six buildings: 155, 191, and 201 Sherbourne Street, and 275, 285, 295 Shuter Street. It is home to many low-income families, numerous shelters, public parks, an arena, and the Moss Park Armoury. Torontonians often think of Moss Park as

consisting solely of the public housing project with three massive buildings and open areas in between. Many of the old industrial structures nearby, however, have been retrofitted into new homes and upscale shopping venues. The Moss Park neighbourhood includes the residential areas known as Corktown, the Garden District and lower Cabbagetown.

Wayfinding was selected as an area of focus, particularly as it relates to public, and common spaces and encompasses the important navigation and circulation of the overall facility. Approaches, entry and lobby areas, as well as corridors, common rooms and service areas were studied to assess how well residents, care and service providers, and visitors find, engage and use the facilities at Moss Park.

Feedback on existing wayfinding in common areas is an important aspect of evidence based research and it is hoped this approach will help in determining best practices for revitalization planning.

**Moss Park will undergo major revitalization in the coming years. Studying Moss Park early in the planning stages of a revitalization project positions TCHC as being both proactive and strategic. Applying inclusive design principles and a framework for developing best practices will also help guide project designers in their work with TCHC.**



# Research Process

The research process began with a visit to the residential tower of 275 Shuter Street-Moss Park in March, 2010. The OCADU research team and the AIAC Committee and advisors became acquainted with one another and discussed their work and interests for the project. The team also met with residents, advisors and TCHC representatives to speak about facilities and accessibility needs.

Preliminary on-site observations were made of the facility and surrounding context. Photographs and videos were taken to understand the relationships between common spaces and the overall layout of the building. The research team traveled throughout the facility to determine exterior and interior wayfinding routes, the building challenges and areas of overall concern to be researched.

Building performance measurements of 275 Shuter were conducted by Orfield Laboratories, research partner and consultant to the project. Utilizing proprietary equipment and software, they provided readings for day lighting, lighting, acoustics, thermal comfort, and indoor air quality.

Interior spaces were measured for environmental data at the older Moss Park and newer Regent Park facility (a major revitalization project underway) to compare both facilities. Areas measured for environmental data included vestibules, lobbies, corridors, recreation rooms, laundry rooms and stairwells, all considered key areas of common use.

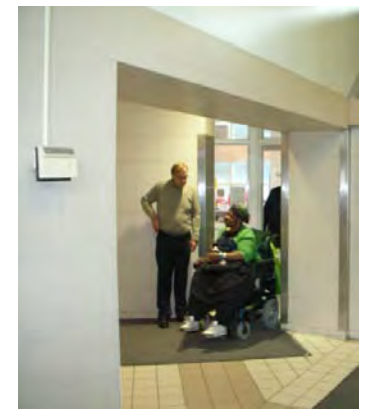
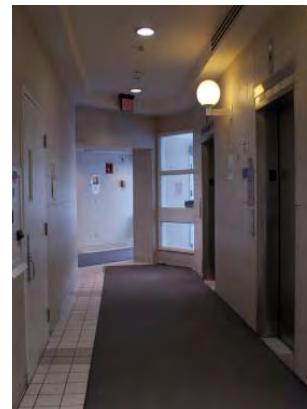


Photo credit: OCADU Research Assistant

# On Site Research & Analysis

On April 9th, 2010 an entire day of on-site activities with TCHC took place at 275 Shuter Street. TCHC tenants, and staff assisted the research team to gather both qualitative and qualitative information about the facilities.

The research team conducted wayfinding route analysis and POP visual jury using techniques pioneered by Orfield Laboratories throughout the day. The OCADU “Charette” conducted by the student team involved TCHC identifying areas for design improvements as well as key accessibility concerns. Mapping and schematic drawing exercises were also conducted.

The route analysis engaged tenants and other TCHC representatives in travelling throughout the building on specified routes with members of the research team to experience barriers to good wayfinding. Problematic building issues were identified for further research and inclusion in the set of topics to be addressed in wayfinding design strategies.

The Visual jury or (Perceptual Occupant Programming)™ pioneered by Orfield Laboratories was conducted during the afternoon session on April 9th. The visual jury required that participants view a series of images and rate each of these images on a scale of bi-polar (opposite) semantics (i.e comfortable-uncomfortable), to assess the precognitive reaction to forms, spaces and environments for common areas in a wide range of buildings types, styles and scenarios.

Building performance testing was completed for the public areas of both Moss Park and Regent Park facilities under the following areas: Day lighting, Acoustics, Indoor Air Quality, Lighting, Thermal Comfort.

In addition to the ground floor measurements, several other common areas were measured for environmental data at the two TCHC facilities. Common areas included: Inside main recreation areas, Inside main lobby near entrance vestibule, Outside elevators on ground floor, Outside elevators on upper floors, Outside laundry rooms and common service areas.

# Exterior Approaches



Several common Wayfinding scenarios at Moss Park were identified and analyzed through a series of collaborative on-site group explorations and design charrettes involving TCHC and OCADU teams. Major public exterior and interior spaces of 275 Shuter were incorporated into four main Approach sequences (A,B,C,D) along with a typical interior Route exercise.

Moss Park Apartments occupy a large property between Queen, Shuter, Sherbourne and Parliament streets. The three buildings are situated in the middle of the site and are surrounded by two large open spaces: a park, and a parking lot. Most people access 275 Shuter Street from Queen Street at the south side, and Shuter street from the north side of the property.

It can be difficult to identify the building from the main city streets for first time visitors. There is no visible signage confirming the buildings' address or distinguishing them from one another.

The entrances cannot be clearly seen from the distance, blocked by the fenced park and the parking lot surrounding the building. The entrances to the parking lot and the park are situated with little relationship to transit access and also lack clear identifying features. As a result, it is at first difficult to make a clear choice for approach, or establish a direct accessible route to the building for a visitor unfamiliar with the area or collection of buildings in the complex.

With the exception of Seaton Street, residents must walk through the park, or through the parking lot when approaching south and west entrances of 275 Shuter from the connecting city streets. Due to the layout of both the park and the parking lot, the pedestrian approaches to the building are lengthy and indirect, which reduces the ease and safety of the journey to the building, particularly at night.

The large open spaces of the park, and the parking lot buffer and isolate the buildings from the city; fences discourage human presence. Dense trees, landscape hills and cars block the clear view of surroundings creating hidden spaces that may present opportunities for crime and may be perceived as unsafe.

The exterior environment is dominated by parking lots and asphalt roads, leaving little room for outdoor public spaces for the community at 275 Shuter Street. There are no spaces that foster social interaction and activity, except a few benches and two small children's playgrounds. This contributes to lack of 'human presence' in the area.

Throughout the site, the overall level of illumination is low, which poses additional safety and visibility challenges during nighttime. The key pedestrian paths and areas nearing the entrances are also poorly lit.

Several parking lot driveways intersect the pedestrian paths used to access the building. These intersections do not contain stop signs, warnings or any other means to control the flow of cars and intersection with people. This may pose further safety concerns for the pedestrians, particularly for mobility device users, persons with vision loss and nighttime wayfinding.



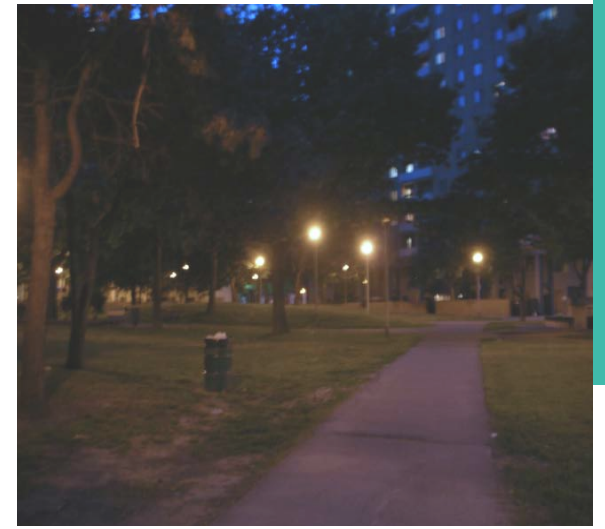


Photo credit: OCADU Research Assistant

The paved surfaces along key pedestrian paths contain mobility barriers - such as uncomfortable grating, cracks and heaves, wide expansion joints and inaccessible curb cuts. Some pathways are narrow, providing a small turning radii for a mobility devices and may present difficulties if two mobility devices have to pass one another. In some places sidewalks contain wide openings for trees, which leave little room for a mobility device to comfortably pass. As a result of these barriers, some wheelchair users choose to travel on the driveways and roads because of wider access but risk collisions with cars.

Most exterior transitional spaces such as paved sidewalks, paths and intersections use low contrast materials that are virtually indistinguishable from one another for someone with vision loss. High contrast visual and tactile guides and markers can be very helpful for persons with vision loss to navigate environments.

The need for such features is evidenced by a preference for vision impaired persons to walk directly on vehicular roads and driveways using the adjacent curb as a guide, instead of using the pedestrian sidewalk. Such situations compromise pedestrian safety.

Weather conditions often create obstacles in forms of snow and puddles along the pedestrian paths, which can become barriers for navigation through the site. Snow in winter also conceals many wayfinding markers commonly relied on by persons with vision loss during most of the year and renders many environments seasonally inaccessible.

There is a lack of common public utilities: bicycle racks, weather protection, bus shelters at the Sherbourne and Shuter stops, rest or waiting spaces along pedestrian paths or near the major entrances.



**The need for inclusive features is evidenced by a preference for vision impaired persons to walk directly on vehicular roads and driveways using the adjacent curb as a guide, instead of using the pedestrian sidewalk. Such situations compromise pedestrian safety.**

# Night Analysis for Wayfinding at Moss Park

The senior research team visited Moss Park from early evening to midnight in May, 2010. Members of the AIAC also spoke with Researchers regarding their concerns, issues and ideas for general night wayfinding at TCHC facilities. This topic of research is incomplete however, and further phases of the work with TCHC will address in more detail the aspects of night navigation, transition, orientation and safety issues for residents, visitors and facilities operators alike.

General observations were made for each of the following: Landmarks and Architecture, Signage, Sidewalks, Pathways, Lighting, Rest Spaces, Entry, and Activity Spaces.

## Landmarks and Architecture

There are no specific landscape elements other than park lighting standards that address night time navigation. However, the more prominent entrance canopy which is well lit offers a visible destination point, once a pedestrian is well within the housing complex and grounds.

## Signage

Inclusive and sufficient signage has already been identified as an area lacking at Moss Park, and nighttime access to the complex, facilities and town homes remains problematic without appropriate guides and identification systems, and without a longer range view of signage programs for community housing.

## Sidewalks

Curbs and edges at changes in surfaces have already been cited as problematic for residents who are both ambulatory or reliant on assistive devices such as wheelchairs, walkers, and canes. Obstructions, including poorly located light standards, trees and planters also pose a risk for both daytime and night time pedestrians.

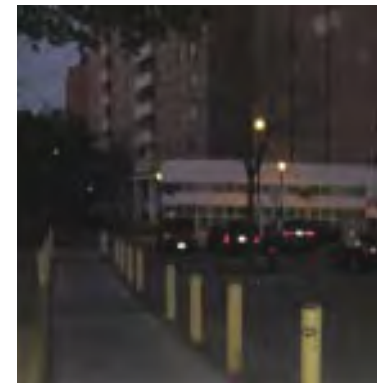
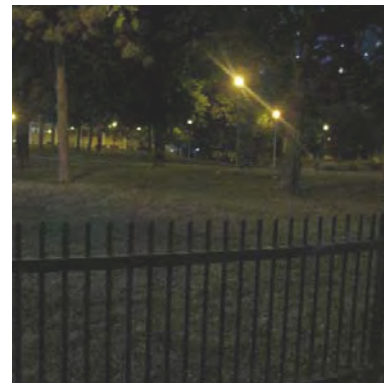
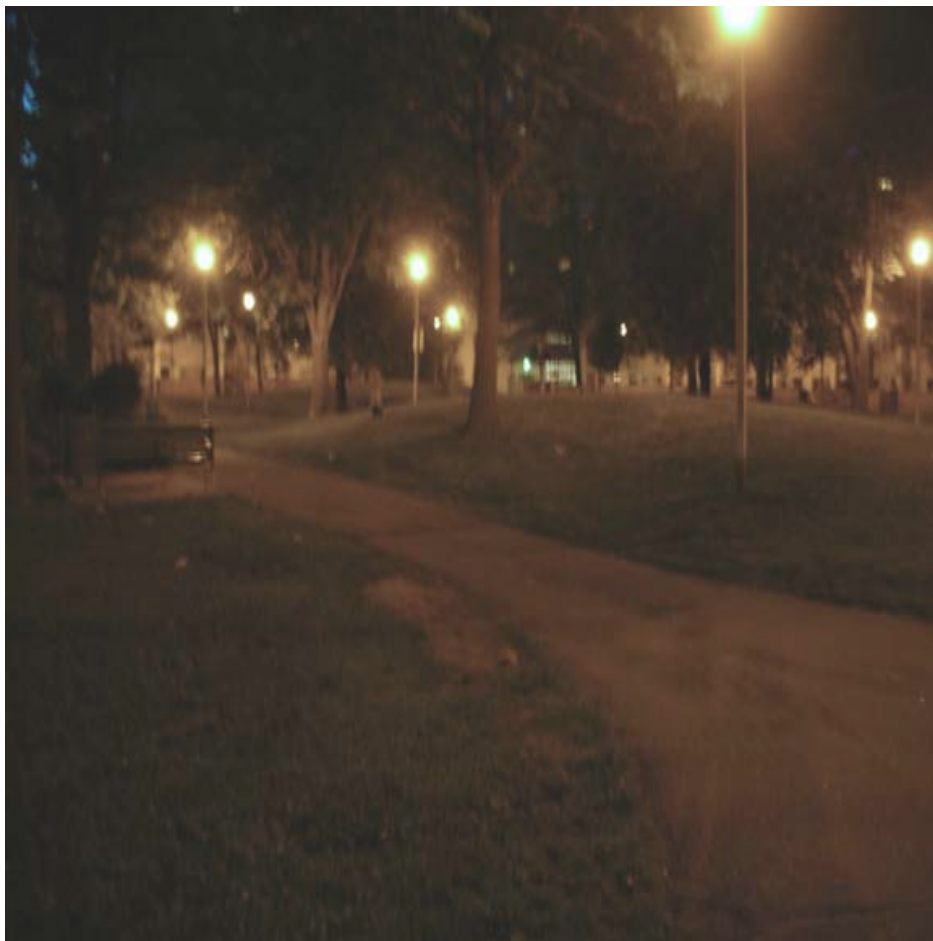


Photo credit: OCADU Research Assistant

## Pathways

Residents and researchers observed that pathways need to be consistently marked with signage, navigation and orientation cues, as well as appropriate lighting, well defined edges and surface materials. The rough concrete or asphalt surfaces are prone to heaving/cracking and general deterioration, making trips and other hazards more prevalent at night. Fluorescent painted bollards do serve the path from the parking lot, however, this path was observed to be fairly narrow for wheel chair access.

## Lighting

A lighting program and monitoring system for day and night use for the entire complex at Moss Park should be considered. Enormous amounts of site lighting, concentrated in one location is not a viable solution, however. Rather, strategic and sustainable lighting principles should be applied to address a multiplicity of areas, activities and needs for a range of abilities. Health studies show that highly concentrated areas of light at night have an effect on residents exposed to it, and does not entirely solve issues of wayfinding and navigation of streets and buildings. There are new concepts for outdoor lighting which are explored under the Emerging Themes, Strategies and Precedents sections of the report.

## Rest Spaces

Seating/rest and pause areas are important amenities and support movement throughout a well planned city. These amenities serve both night and daytime users. Currently, park benches are the only option for rest or pause areas.

## Entry

At night, residents or visitors rarely seem to use approaches that lead across the park, or to the rear entry for fear of safety concerns. The current main entrance at 275 Shuter remains a “beacon” for residents returning home in the dark as it holds promise for contact with security or facilities personnel and contact with like minded neighbours and other residents.

## Activity Spaces

While outdoor activities are limited by weather, there may be strategies for Moss Park that bring recreational or social activities into the open public domain including courtyards, common grounds and parks. Vitality, engagement or interaction, and population is needed to keep the outdoor complex viable and safe. Currently, the common areas of activities are limited, located within the buildings, with the exception of a small playground.

# Interior Routes



Both entrances to 275 Shuter Street are small and tend to blend into a background of large glazed tile walls. In addition to lack of signage and visual identifying features, there are also no tactile or audio markers that define these as main entry points to the building are hidden behind multiple corners.

The security desk also has limited visibility of the ground floor the station is not always occupied by security personnel. Again, low visibility and lack of reassuring human presence increases opportunities for crime and also affects ones perception of vulnerability.

The interiors of spaces such as vestibules, lobby, elevators and the fire exits are characterized by low visual contrast between walls, ceiling and floor – which can contribute to a sense of disorientation. Users found such spaces to appear clinical and commented on how they are neither functional nor feel welcoming. Spaces, such as the main vestibule are over-crowded with posters, notices and other print media and fail to communicate the necessary information to either residents or visitors. The communication methods used do not accommodate for persons with different sensory abilities and miss an opportunity for supplementary audio, and tactile materials.

Hallways are functional, but the design layout is less successful in drawing attention to important transitions and arrival points such as the fire exits, elevators, laundry and other essential service spaces.

Some thresholds - door openings of the two building entrances and the elevator door are too narrow by contemporary standards. The elevator dimensions are too small for the users of mobility devices who must travel facing away from the elevator door. Some automatic doors such as the elevator door do not stay open long enough to allow persons using mobility devices or those with visual loss to enter and exit safely.

Small size, and low colour and texture contrast between materials of the hardware such as push buttons make it difficult for persons with vision loss to operate devices, such as elevators or open automatic doors. Small hardware using directional push can also present difficulty for persons with sensitive dexterity.

Overall, the technology used throughout the building does not accommodate for persons with different sensory abilities. Most products are not equipped with additional audio, and tactile features that are helpful for operating devices, in elevators, orientation systems such as identification of floors and spaces.

Lack of accessible signage, floor and room identification makes it more difficult for persons with vision loss to orient themselves in the building. Transparent materials without additional markers can sometimes be difficult to detect for persons with vision loss.

The commonly used interior elements and furnishings such as carpet on the floors of the vestibule and lobby, or handrails - all act as tactile guides for those with vision loss who recognize spaces by objects that are typically present within them.



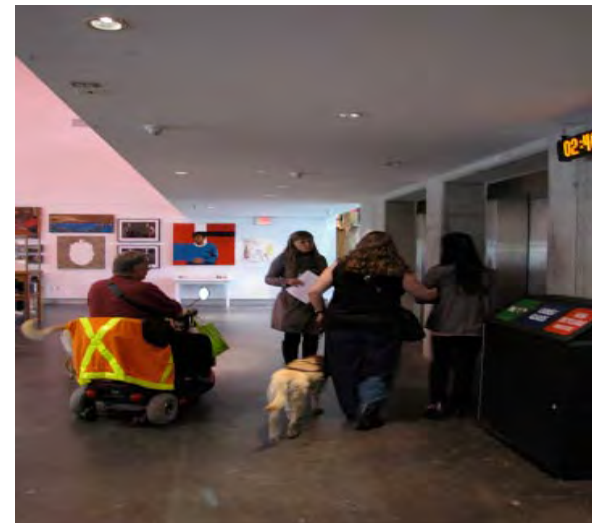
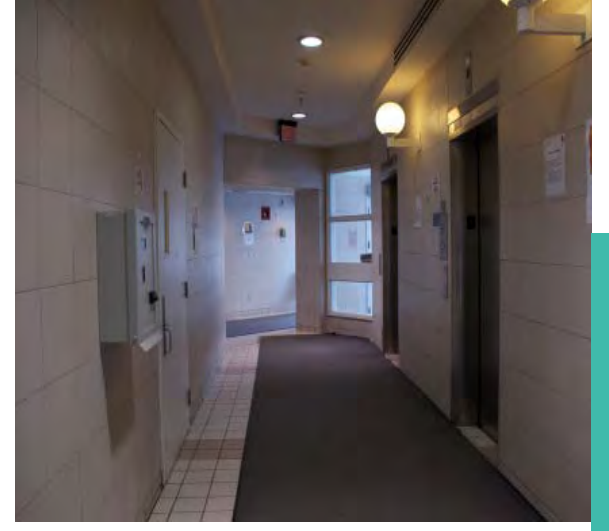


Photo credit: OCADU Research Assistant

In emergency situations - signage, materials, colours, light and textures are effective in shaping orientation during evacuation. Supplementary auditory and tactile guides that accommodate different sensory responses allow smoother transitions for everyone involved.

There is a lack of consistent lighting in interior spaces. Levels are usually insufficient, despite many types of light fixtures in spaces – especially in the ground floor lobby. The contrast between artificial light and natural light can cause discomfort when transitioning from the dark lobby to outdoors, or when passing by a bright window in the corridor.

Throughout much of the building – lobbies, elevators, hallways and designated fire escapes, there is a need to replace outdated lighting fixtures that cause uncomfortable glare and hot spots. Avoiding use of reflective materials near such sources of light will also minimize glare.

During the day the south vestibule, and the so called “bubble room” receive a significant amount of sun. Due to this situation, these spaces can get uncomfortably warm and bright with glare on light colour or reflective surfaces. Filtering intense daylight is just as important as providing adequate illumination. There is also an opportunity to harness the natural sunlight with solar panels, given that the property, despite the numerous trees, offers sun exposure.

In many interior spaces, including vestibules, lobbies, elevators and corridors there are acoustic issues such as strong echo and background noise caused by air fans and outdated mechanical systems. This has a disorienting effect on those who rely on the acoustic characteristics of a space to define it. The effect of sound and ambient noise in a space – sound reflection and sound absorption by various surfaces provides information that can be very useful to persons with visual loss.

Many of the measured building performance problems could be resolved at the design phase of any new project by the inclusion of the Certified Building Performance Standards (CBPS) for that building type, multi-housing.

**The interiors of spaces such as vestibules, lobby, elevators and the fire exits are characterized by low visual contrast between walls, ceiling and floor – which can contribute to a sense of disorientation.**

# Interior Route Analysis

In addition to studying the approaches/access to the facility from the city and neighbourhood at night, researchers made general observations about interior common spaces during night time use. While brightly lit, the common lobbies and entrances appeared dull, uninviting and more institutional than residential during night time use. General observations for Interior Routes at Night were made for each of the following: Acoustics, Materials/Comfort, Lighting, and Signage.

## Acoustics

Similar to the main entry, there is too much background noise caused by fans and mechanical systems. There is an echo in the space, and a high pitched noise sounds disorienting when entering the vestibule.

## Materials/Comfort

Throughout the day, the back entry receives a significant amount of sun. Due to this, the confined space in the vestibule can get very warm. Walls and flooring lack contrast making it difficult to navigate around the tight angles.

## Lighting

The reflection from the glass causes glare on reflective surfaces during the day. This makes it uncomfortable when moving through the space for people with vision loss. In addition, there is no transition from light to dark. So when users come into the building from outside they need to take time to allow their eyes to adjust because of the high contrast in visual brightness (luminance).

## Signage

Entering from the back vestibule along a narrow corridor hides the location of the elevator lobby, making it difficult to move through to main spaces and has the added effect of feeling unsafe. Users had difficulty trying to see what was around the corner when moving through the space. This was especially true for persons with scooters and wheelchairs. New visitors to the building could not find an in-depth map to help orient themselves around the building, causing them to guess where they were going.

**In order to evaluate inclusive strategies for Wayfinding in common building areas, it was important to include a complement of characteristics that imply inclusiveness to the resident or user.**

# Environmental Data Capture

The Environmental data portion of the research project was intended to compare two public housing projects for the TCHC to better understand the perceptual environmental qualities of common spaces within each facility for residents, their caregivers, visitors and operators of the facilities. Orfield Laboratories have guided these sections of the research project as they relate to Building Performance measurements (BP) to support evidence based design approaches to effective Wayfinding design.

In order to evaluate inclusive strategies for Wayfinding in common building areas, it was important to include a complement of characteristics that imply inclusiveness to the resident or user. BP measures are often called the “comfort variables” in that they are the variables that cause the most complaints in buildings when they are not in a reasonable comfort range. They measure perceptual comfort in each domain, which means that their measured values fall within an acceptable range. Where they fall outside of that range they are deemed “uncomfortable”.

The research indicated whether or not the established “comfort zone”, part of TCHC building performance standards were adequate or appropriate for the widest possible group of building users in common areas.

Sample Findings for Environmental Data Capture:

## Temperature and Thermal Comfort

The temperature and thermal comfort levels appear to be close to established comfort levels for a majority of occupants. When viewed using parameters for elderly or disabled individuals, the Predicted Percentage of Dissatisfied users increases dramatically for the Moss Park building while the Regent Park building is perceived as “more comfortable”.

## **Illuminance**

Illumination levels appear to be lower than needed in certain areas. Both buildings show low levels at the first floor elevator banks but the Moss Park building has measurably higher levels by the elevators on the upper floors. This is probably due to the fact that upper floors in the Moss Park building have windows located adjacent to the elevators, providing areas of natural light. The Moss Park building has brighter (white) wall finishes that also contribute to light distribution and reflectance.

Moss Park had reflection due to smooth, light coloured finishes on walls, floors, and ceilings. In addition, light fixtures appeared to provide significantly higher levels of luminance, which typically imply higher levels of associated glare. Glare and contrast are issues that should be addressed in any new facility or upgrade of buildings at Moss Park to ensure comfortable wayfinding for those with varying degrees of vision loss and vision challenges when moving from the exterior to the interior of spaces.

## **Acoustic Findings**

Perhaps due to the fact that it is a newer building with systems that are reasonably well adjusted, Regent Park had lower levels of background noise compared to Moss Park. That being said, Moss Park seems considerably more acoustically reverberant than Regent Park due to the higher level of reflective materials used in the public areas of the building. However, extreme levels of reverberation were also detected in certain areas of both buildings, including the elevator corridors on the upper floors of Moss Park, and the main recreation area of Regent Park on the ground floor.

## **Air Quality Findings**

Both Regent Park and Moss Park have normal carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>) readings in accordance with current standards for comfortable and healthy environments. CO<sub>2</sub> levels in Moss Park have more of a variability compared to Regent Park. However, there were higher concentrations of CO in the entry at Regent Park, and it can be surmised that the entrance is closer to the main streets and arterial routes where car and truck traffic are greater than observed at the Moss Park setting with greater levels of foliage and landscaping.

# Visual Jury

Perceptual Occupant programming was pioneered by Orfield Laboratories and engages “visual jurying” as a methodology for capturing user preferences . The semantic test or jury uses a bi-polar attribute scale, expressing conceptual opposites that can be used for ranking. The test is well established in psychology and is considered to be a pre-verbal test of feelings and associations produced by the stimulus set.

This test is employed instead of a test of opinions, as opinion testing has little predictive value as a subjective measurement tool to assess qualitative preferences for architectural space and environments.

Orfield Laboratories tutored the Research Assistants on the methods for Visual Jurying, and are developing Auditory, Tactile (and possible olfactory) jurying processes in response to the work the RAs and TCHC are undertaking to include participants who have limited or varying levels of sight capabilities. However, it should be noted that the AIAC members who were vision challenged or fully blind were engaged in the

jurying process for this project, through verbal communication and descriptions of visual materials.

The Jury process requires the participant to review a series of images of the environment (the stimulus set), and to rate each of these images on 8-10 semantic differential scale during a period of less than a minute for each image. This study employs common language semantics (not specialized design language) and semantics (selection of words) are intended to provide attribute qualities for a variety of scenarios. For non visual participants, the images were described in detail, using consistent and non specialized language.

Semantics are intended to reflect simple descriptors of “feelings” elicited by the viewer or associations that the juror draws from the ‘viewing’ experience, and stand in contrast to verbal discussion and rationalization techniques used in opinion polls, design focus groups and sample interviews, methods often used by designers to determine or pre-determine design options and outcomes.

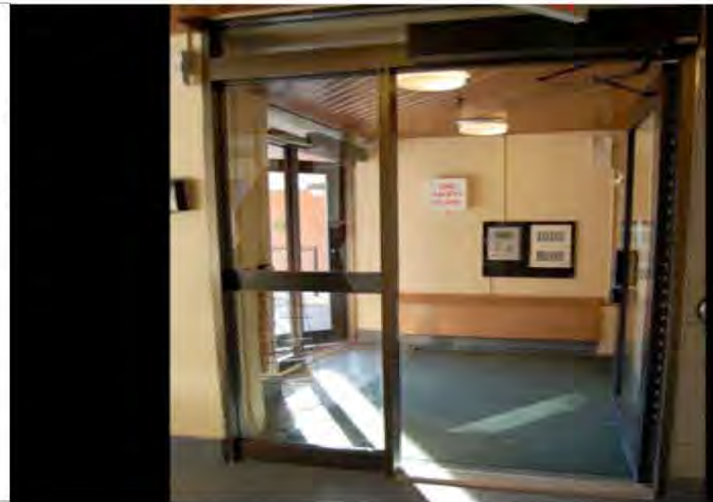
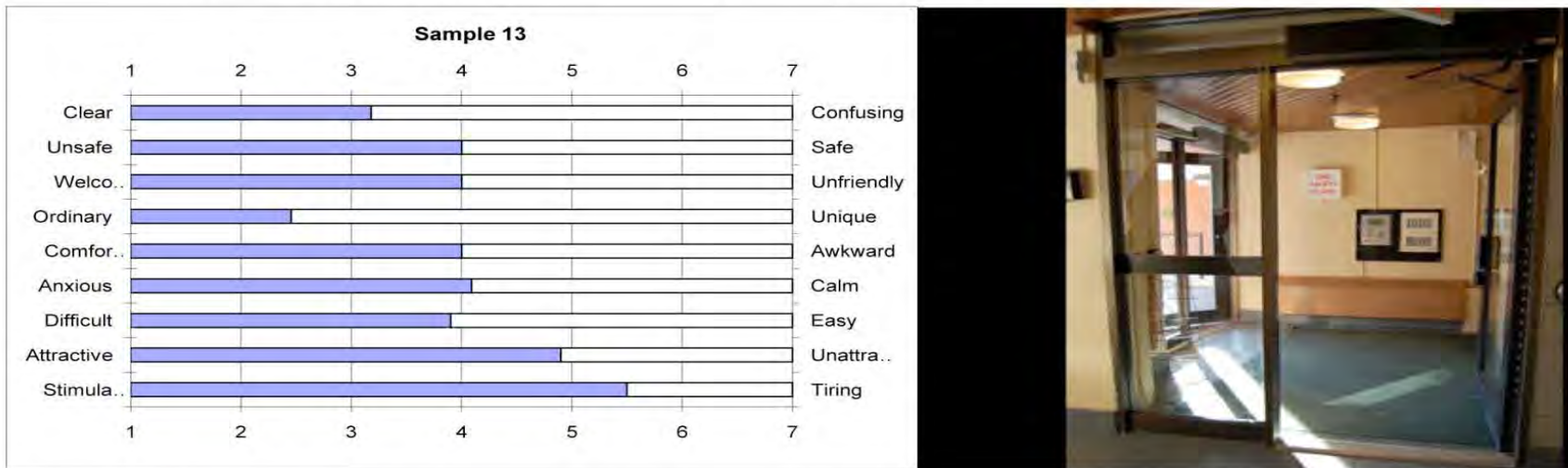


The development of the set of semantic descriptors, determined through research by the RAs and they created a semantic vocabulary that reflects the specific subject of Wayfinding, such as clear, confusing, etc. A total of eighteen images were selected for the visual jury process. These images encompassed important topics for further understanding of wayfinding issues including approaches to buildings, main entry ways, ground floor lobby spaces, elevator corridors.



Photo credit: OCADU Research Assistant

<b>Total</b>	35	40	44	27	40	45	39	49	55	<b>Average</b>
<b>Average</b>	3.18	4.00	4.00	2.45	4.00	4.09	3.90	4.90	5.50	4.00
<b>Opposite</b>	4.82	4.00	4.00	5.55	4.00	3.91	4.10	3.10	2.50	4.00



## Summary of Observations from Jury for Perceptual Occupant Programming

Tabulation of answers gives an indication of general preferences for certain images. When combined, the data on all responses reveals very interesting information. On average, ranking for all visual samples, for those with a stated disability, ranked the visual samples lower on the semantics scale i.e. confusing, unsafe, awkward, anxious and difficult.

Using a combined metric that represented the responses for unsafe, awkward, anxious and difficult, this relationship was very clear, and this may be a useful construct for having an “anxiety grouping” of semantics in future perceptual Juries and research with participants results suggests the need for a separate study to develop benchmarks for inclusion of disabled populations - of potential interest to the international arena of inclusive design research.

# Participant Preferences

Content mapping of the scored Visual Jury samples have revealed the following aesthetic preferences relating to Approaches, Entrances and Lobbies of residential building types. Overall, content mapping suggests that the positive perceptions below tend to suggest many of the same visual preferences. Most of the multi-clustered positive images are rich in foreground content, clear in orientation and often have a strong color attribute.



**Attractive** perception may be supported by 'openness' and 'spatiality',



**Calm** perception may be supported by 'daylight', 'long views', 'sun'



**Comfortable** perception may suggest 'long views', 'low visual background',

**Unique** perception may suggest 'color', 'lightness', 'daylight'

**Easy** perception may suggest 'visual simplicity', 'color', 'symmetry',

**Safe** perception may suggest 'lightness', 'daylight', 'clear foreground',

**Stimulating** perception may suggest 'lightness', 'daylight', 'personal scale'

The following responses were captured from participants in the Visual Jury:

## **Approaches**

Those with stated disabilities ranked this poorer on confusing, anxious, difficult, unattractive and tiring, with the strongest differences being on confusing, difficult and tiring.

## **Entrances**

Those with stated disabilities ranked this poorer on confusing, unsafe, unfriendly, ordinary, awkward, anxious, difficult, unattractive and tiring, and the strongest responses were on confusing, unsafe, difficult, awkward and anxious. The entrance category showed a greater disparity than any other.

## **Lobbies**

Those with stated disabilities ranked this poorer in unsafe, anxious, difficult, however, they preferred it for the semantics of clear, friendly, unique, comfortable, attractive and stimulating. This may show that the lobby category of images have many positive connotations, possibilities and preferences for those with stated disabilities participating in the research. Thus, we have a hierarchy of stronger general negative response, with the Entrance images evoking the most concern, and with the Lobby images evoking the most positives.

# Auditory and Tactile Juries

There is a clear need to address non-verbal or pre-cognitive preferences for participant groups who are visually challenged, and this approach was undertaken at a very preliminary level with two of the TCHC accessibility committee members. Their feedback on the process was important and encouraging for the research team.

Auditory assessments were made by determining what noises or sounds were disruptive or helpful to wayfinding activities. Tactile assessments were made by navigating various paths and routes to entrance and exit locations at OCADU, while participants expressed their likes or dislikes for various surface finishes, textures and forms.

# Early Conclusions

Orfield Laboratories had been encouraging designers to deal with perceptual challenges, like reduced vision and hearing, in the same direct way that they do with basic mobility challenges. The responses from this preliminary research on Wayfinding for TCHC participants, showed a general, diffuse negative response from physically and visually disabled that is stronger than overall population averages.

The idea that the disabled operate under a general anxiety in new environments argues for a study on the variables that would turn these issues into a positive response set for each of the subgroups, physical, visual, and auditory. This would begin to identify key environmental and building features that address issues of anxiety in Wayfinding.

**One of the questions for further research might be, “what are the visual cues or drivers that provoke these responses?” and “what are the strongest visual cues or drivers eliciting the opposite or positive response?”**

**Emerging Themes  
& Wayfinding  
Recommendations**





# Emerging Themes

All research methods undertaken included the opportunity to engage in discussions with participants either in one to one scenarios or in small groups. TCHC participants shared personal accounts and observations, as well as pointed out key needs and requirements of residents, as they toured the Moss Park site or attended presentations by the Research Assistants.

The importance of signage, landmarks, tactile markings, community support, accessible and functional paths, and different definitions and conditions for safety are examples of the information shared during these times. These concerns were made more urgent by the personal knowledge and experiences of the participants. The information gathered was valuable in assessing qualitative measures for further research and design.

Throughout this collaborative discourse, the research team recognized that several key 'themes' were recurring. The themes of Safety, Travel, Technology, Facilities, Community, Perception and Orientation were the most out

standing topics raised in terms of shared experiences with existing conditions and wayfinding at TCHC residential complexes.

Each theme was defined by both the residents and researchers to ensure a common language and mutual understanding for ease of communication and use of terminology in subsequent phases of research work. The emerging themes have led to a series of preliminary planning and design strategies. These strategies were developed to address the multiplicity of physical, psychological and perceptual factors that affect wayfinding experiences in the common areas of TCHC facilities studied. They are in essence, the preliminary strategic design solutions to address outmoded, or dysfunctional wayfinding systems identified by the participant group.

Overall, research to date indicates that TCHC residents have the same concerns about navigating facilities as the general population might experience in navigating public urban spaces. However, there are indicators discussed

elsewhere in the report that suggest that residents with single or multiple disabilities experience higher levels of anxiety that make navigation a potentially more negative and frustrating experience, as well as a more complex and challenging undertaking. How best to address these indicators, and understand more fully the negative emotional and perceptual experiences of the physically and cognitive challenged resident, is the subject of further stages of research work with TCHC and the resident participants.

Along with improving accessibility in public or common areas used by TCHC residents, the proposed design strategies and cited precedents, are motivated by an integrated philosophy: recognize the potential of inclusive design to empower individuals, create positive experiences, recognize difficult challenges faced by individuals, build strong communities, invite neighbourhoods to flourish, and transform the face of Toronto Community Housing for its residents, and the larger urban communities where facilities are located.

Inclusive design for wayfinding starts with accessible planning of facilities and spaces used by all, while good city planning and place-making are broader tasks and goals that contribute to successful and accessible communities at all levels. To address the range of abilities and challenges of users or occupants, a multifaceted approach to wayfinding is needed. Finding the most optimal, single, universal solution to meet everyone's needs is desirable economically and functionally,

but it may be the combination of a number of programs, systems, products, and technologies employed in an integrated or contiguous way that best meet the goals for inclusive wayfinding.

The research team mapped out a number of preliminary strategies to address each emerging theme identified in the research and graphically presented these to the participants as a starting point for discussion on design solutions to meet stated concerns.

The variety of environmental solutions suggested by the researchers ranged from using new types of surface materials, to newer systems for wayfinding graphics and communications. Technology solutions included upgrading existing systems to incorporate contemporary digital technologies such as voice recognition, tactile and auditory cues and other sensory components to improve navigation and cognition of spaces. New technologies including sonar systems, lighting controls, responsive materials, are identified among the myriad of products being researched both in Canada and around the globe, all of which have potential to be incorporated into accessible designs for wayfinding in residential complexes.

One of the charts mapping preliminary design strategies against the emerging themes and key areas of concern for TCHC participants is shown in the appendix.



**Recognize the potential  
of Inclusive Design to  
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to flourish, and  
transform the face of  
Toronto Community Housing.**

# Safety

The prime concern for Moss Park and TCHC residents is safety including personal, and community safety. Crime on or near the complex; nighttime conditions; lighting of all public, and semi-public areas, and unoccupied parking lots or abandoned spaces around the complex have been identified as key areas to address.

Public Safety concerns are centred on the zig-zag approaches to the facilities through poorly lit open space, as well as the cars, trees, hills, corners, walls, and other visual barriers that conceal points of entry, or provide visual connection to other pedestrians, security personnel and facilities management representatives.

TCHC residents are concerned for their residential communities when apparent intruders loiter, or pass through the building grounds, and these intruders are perceived to be hanging around the desolated and abandoned spaces of the facilities complex including the parking lots or refuse/garbage handling areas. Driveways interrupt pedestrian paths and there are currently no environmental guides for persons with vision loss creating ongoing risk of accidents and adding to

other layers of concerns residents have.

Night time conditions intensify concerns, where residents must traverse long paths to get to places of safety. Transit stops, and the main streets of the neighbourhood are at a distance from entrances to any of the Moss Park buildings. Darkened areas, poor visibility, lack of sense of security and insufficient lighting along these pathways make movement from public transit an important concern for residents.

## Community Safety

The outdoor setting of Moss Park does not appear to facilitate safe and accessible interaction for local residents and visitors. In order to invite people to navigate freely, the site requires a set of orientation cues that support arrival points, exits and activity spaces. Currently, the outdoor pathways are complex and lack direction despite some sparse graphic signage. This maze-like spattering of approaches can cause problems with quality of maintenance, ease of navigation, nighttime orientation, access to security personnel, all leading to a poor sense of personal safety.

# “At night people don’t use certain approaches because of fear and safety problems – across Shuter there are drug dealers and junkies at night”

-AIAC Committee Member

Additionally, there is a need for activity spaces of sufficient size, location and amenities to serve the local community and perhaps the city at large. More active and social spaces will encourage human presence and increase community interaction as a way of developing and supporting a stronger sense of place-the concept that Moss Park is somewhere that people live, play, rest and intricate and communicate with one another, and welcome visitors to the community.

This human presence increases safety and over time develops the ‘character’ of the place that informs the built environment or acts as the catalyst for new interventions and initiatives. Areas for gathering can help populate the grounds during the day. After school or evening activity centres and organized sports encourage friendly community interaction. These hubs will also support a variety of safe travel paths, interactive spaces and rest places which can accommodate assistive devices, and service animals.

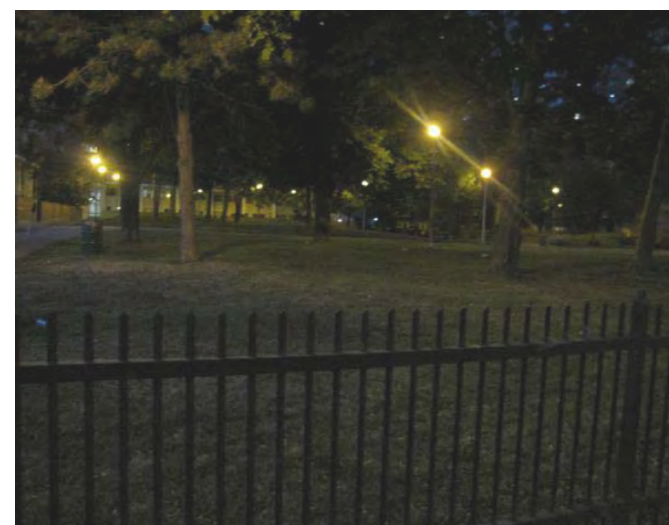


Photo credit: OCADU Research Assistant

**More active and social spaces will encourage human presence and increase community interaction as a way of developing and supporting a stronger sense of place.**

### **Human Presence & Community Guardianship**

Strategies for urban design focus on increasing pedestrian use of environments by incorporating mixed land use, public services and amenities and attracting mixed demographics to the communities. Social gathering spaces indoors and outdoors encourage interaction between neighbours and contribute to positive human presence, playing a role in successful and safe communities.

### **Transparency of Surroundings & Natural Surveillance**

Open surroundings both outdoors or indoors allow people to see and be seen. Clear views should be permitted along main routes, entry points, and ground floor lobby. Additionally, to keep “eyes on the street”, residents need to be able to observe the building premises from apartments and communal spaces. Lighting design is an important consideration in creating visibility of surrounding throughout day and night.

### **Lighting**

Site-specific lighting solutions address needs for both general illumination and security lighting along pathways, entrances/exits as well as potential problem areas such as stairs, parking areas and recreation areas. Some of the basic strategies for lighting design include use of more diffused lighting to eliminate glare and deep shadows, introduction of dynamic lighting, and attention to lighting placement to illuminate the ground and people’s faces.





Design Concept by Research Assistant

## Controlling Access

Establishing a clear hierarchy of public and private space can be achieved through reception areas, mechanical and operational control features, such as FOB's, security systems and personnel. Additionally, providing residents with tools for easy and anonymous crime intervention will empower individuals and build a stronger resistance to crime.

## Investment and Ownership

Materials quality and workmanship, as well as maintenance and property repair all establish territorial ownership and communicate an alert and active presence occupying the space - deterring potential offenders.

# Transition

## Layout and planning

Understanding the linkages between connecting city streets, public transit and existing and planned services and facilities should inform site and building layout. Attention should be paid to providing direct, simple and accessible pedestrian routes between city streets, property and major entrances/exits; as well as clearly defined and accessible paths to destinations. Ensure that mobility device users are able to use the exact same wayfinding routes as able bodied users, and minimize alternative routes and entrances. Fire exits and escapes should be the same familiar routes that are used on a regular basis in normal conditions.

## Surfaces

Smooth, even, non-slip ground materials should be chosen for exterior and interior applications, with considerations for their durability and maintenance. Detailing of material connections, such as curb cuts, expansion joints, and thresholds also plays a role in surface quality that is suitable for navigation.

## Change in elevations, spaces and environments

Accessible considerations along routes and junctions should include simple navigation with no sharp angles and sudden turns of space, or inaccessible changes in elevations. Providing adequate size for movement should allow two mobility devices to pass one another comfortably, as well as providing additional room for people to gather in high traffic zones, such as vestibules, elevator lobbies, waiting areas, entrances/exits, road crossings.

## Tolerance

Avoid physical architectural barriers such as stairs or heavy doors. High traffic openings, such as main entrances should incorporate swing or sliding doors with automatic technology and be large enough for mobility device and service animals. Tolerance of speed and error should be employed when programming the timing of automatic doors and elevators, to consider people carrying heavy loads, users of mobility devices or those with vision loss.

## Seasonal Considerations

Seasonal challenges pose additional difficulties for accessible navigation. While there are practices in place to clear snow from roads and main sidewalks, there is still much to be done about improving access for pedestrians and bicyclists. Weather protection, drainage, surface traction and clearing of seasonal obstructions such as snow, water, and leaves helps ensure all-year access of outdoor environments.

## Legibility

Features to increase legibility and defining horizontal and vertical planes of travel for persons with varying degrees of vision loss include materials that provide directional cues by visual contrast and tactile guides that can be located with a cane. Special considerations should be paid to multi-sensory warning indicators at road crossings and other potential danger zones, as well as alerting users to changes in levels, or direction.

## Transportation

Provisions for diverse modes of transportation should be included on the building premises, without conflicting with one another. Bicycle routes and protected bicycle parking areas should be located as close as possible to main entry without interfering with other users. A designated protected drop-off area for Wheel-trans to park without obstructions from traffic

and parked vehicles should be located as close as possible to main entry. In absence of indoor vehicle parking, provide an accessible, safe and direct pedestrian route from outdoor parking area to the building entrance.

## Transitions

A key area to address in any revitalization project for Moss Park is Transition from one space or zone and another. Travel & Navigation need to be studied further to determine how best to locate the buildings on the site, and the entry point to meet the needs of residents and visitors alike. Currently there are no directional, visual or tactile cues such as landmarks, or clear signage to identify buildings.

Other transitional recommendations must include opportunities for rest spaces to wait for Wheel-trans or other vehicles as well as better, higher contrast between ground surface materials and level changes. Background noise must be addressed to ensure spaces are not disorienting and confusing when users transition through the spaces.

# Applied Technology

## **Inclusive Operating Devices**

Upgrading operating devices such as call buttons and door handles with more inclusive models that are more accommodating of diverse dexterity and sensory abilities. Factors to consider when choosing and installing devices are size, consistency, tactility, visibility and placement of operating devices so that they are easily located from heights of persons standing or seated in a wheelchair. Devices that provide multi-sensory feedback are more satisfying to use - by anyone.

## **Personal Assistive Devices**

Consider adaptation of personal assistive technology systems (PATS) with existing building systems or services, or mobile technology such as GPS or iPhone apps for orientation, communication, or remote operating of devices, facilities and services.

## **Multi-Sensory Interfaces**

Upgrade existing devices, interfaces and systems such as tenant directories, elevators, signage and orientation tools to incorporate multi-sensory technologies - voice recognition, tactile cues, auditory feedback and other sensory components. Other new technologies include sonar systems, lighting controls, responsive materials, among the myriad of products being researched.

## **Responsive Technologies**

Consider embedding smart technologies such as Rfid tags or sensors within spaces that can recognize and respond to the presence of an individual. Such intelligent technologies can then activate and operate lighting, doors, orientation devices, security or HVAC systems.

## Adaptive & Assistive Devices

Technological and digital solutions often address issues of universal access equitably and can be embedded across the design process and effort including site planning, architectural layouts, detailing and finishes. Current concerns that might be addressed by upgrading technology, mechanical devices and digital solutions include:

- Elevators that do not have auditory support, correct size or location of buttons in accordance with accessible standards.
- The lack of digital technologies to address audio and visual feedback at entrances, in elevators and in service areas as well as support user interface with facilities through auditory signals.
- Lack of embedded technologies such as wireless access to support personal devices used for orientation (e.g. Cell phones, intercoms, personal assistive devices, and keyboards)

## Talking Signs

Talking Signs® technology provides human voice messages sent from an infrared transmitter to those holding a hand-held infrared receiver. By scanning the environment with the receiver, users pick up various infrared message signals from transmitters in the environment. Since the light signals are directional, the user can, at a distance, find the exact location of the sign by walking in the direction from which the message is received.

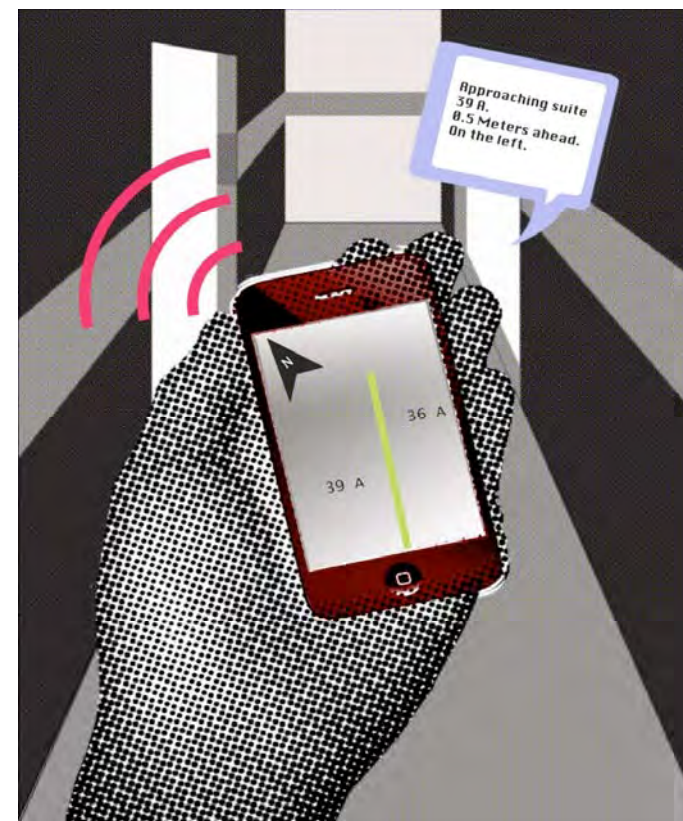
Talking Signs® remote infrared audible signage technology has, through scientific evaluations and extensive user experience over the past fifteen years, been proven to greatly enhance the ability of blind and print impaired people to effectively and safely navigate complex travel tasks.

## Quick Response Systems

A “QR” Code is a matrix code (or two-dimensional bar code) created by Japanese corporation Denso-Wave in 1994. The “QR” is derived from “Quick Response”, as the creator intended the code to allow its contents to be decoded at high speed. The purpose of this barcode is to allow users to receive information at a high speed. For example this can be used to download further information at a certain location.

### tagin!

tagin! is an open source, location tagging engine that may be used to create indoor, location-based services and applications. Developers can use tagin! to manage points of interest (POI) and digital signs making them available to their applications on WiFi-capable devices. This device is being developed by Dr. Jorge Silva, at ATRC, Toronto



“Talking Map”

Design Concept by Research Assistant

**Assistive technology can transform our everyday experience and provide more access, empowerment and independence.**

# Facilities

## Availability

Inclusive facilities require a comprehensive understanding of available public spaces and human needs. Facilities include amenities such as refuse and garbage handling areas, washrooms, laundry facilities, recycling, common recreational and meeting spaces, indoor and outdoor rest spaces, facilities for services animals and other facilities to accommodate the daily needs of community. Important features such as elevators and public washrooms must be easily available, identifiable and physically accessible across a range of abilities and disabilities.

## Comfort

Weather protection, accessible drinking fountains, rest areas, supportive railing, inclusive washrooms and emergency contact should be provided where possible within or in proximity to services and facilities. Views to outside, versatile and comfortable furnishings are some of the considerations that recognize that spaces often serve multiple functions such as waiting areas, transition zones and opportunities for community engagement.

## Places for People

Envisioning commonly under-designed spaces such as corridors, lobbies, and other circulation spaces as opportunities for meeting other residents, zones for resting or exercise as part of the day to day navigation and travel paths of the facility. Living Laneways, and animated city paths help in making use and adding value to otherwise lonely, orphaned or abandoned spaces in and around communities and buildings.

## Facilities-Places & Built Form

Moss Park complex in it's existing condition has several areas of concern for residents, equally as it offers many opportunities for inclusive and accessible planning, place-making and built form. Moss Park has homogeneous building types that lacks scale, detail, colour, and variety or interest in material selection. This in addition to the way-finding issues around safety, planning, activities and engagement with the complex identified by the researchers and TCHC representatives alike suggest that a major revitalization is needed to provide solutions the residents, caregivers and facilities operators desire.



Addressing issues at Moss Park for wayfinding will also support the larger community of downtown east-with Moss Park playing a vital role in place-making in Toronto.

The elevator lobby offers a great opportunity for a central “Themed” zone to supports the activities of waiting, transition, and navigation. In addition, theme zones contribute to a sense of arrival to one’s own buildings and unit. The use of colour at both exterior and interior spaces highlights areas, provides contrast and definition of spaces, and announces activity areas or entrances to new zones and spaces.

## **Creative Streetscapes**

Creative Streetscapes that engage or utilize art and creative works in materials, paths, and built forms of the new housing complex. Eldon Garnet’s work for the entrance to Riverdale, Toronto uses both signage banners, and inlaid lettering to resonate with commuters at the level of daily experience. Garnet states that, “The text in this work is written for a metropolis of readers moving past. It is in parts, read in parts; never at one place at one time. It is text in flux.”

## **Colour**

Colour at the interior and exterior of buildings to enhance forms, give clarity to pathways, and engage building surfaces to identify and guide people through spaces effectively. Colour-coded floors with large painted numbers act as a memory tool for wayfinding. Community murals/ art projects specific to each floor also add interest and support for navigation.

# Community

## Diversity

Provide a choice of indoor and outdoor activity spaces, play spaces, rest spaces, social and gathering spaces where individuals and groups of diverse cultures and demographics are welcomed and engaged. Flexibility and versatility in design of these facilities should recognize the varied needs of families, students, children, elderly, residents, visitors, caregivers, staff and others. In addition, incorporating areas for animals' play and relief is an important consideration.

## Community Design Initiatives

“Placemaking is a dynamic human function: it is an act of liberation, of staking claim, and of beautification; it is true human empowerment.” From the Heart of the Community. PPS: Project for Public Spaces. Placemaking is driven through a connection to the community.

In Ampersand (2002) by Micah Lexier, a Toronto artist, an installation in the Leslie Street Toronto Transit subway station engages visitors and the

community alike in a wayfinding installation. It consists of 17,000 ceramic tiles with the words “Sheppard” and “Leslie” written in 3,400 different pieces of handwriting gathered from the community in 1997.

The steel Truss bridge on the Queen Street Viaduct in Toronto incorporates a public art installation created in 1996 by Eldon Garnet. It consists of a clock that ceased to work with the phrase “this river I step in is not the river I stand in” written in large letters in steel across the top of the bridge. This phrase becomes a banner that commuters using the streetcar (trolley) underpass daily.

This is one work of three installation sites. It encircles the Queen Street /Broadview Avenue community with text. In short, this work addresses a specific audience, people in motion, the commuters that traverse the Queen Street Viaduct in cars, on bicycles, on foot, in assistive devices and with public transportation.

## Communication and Involvement

Tackle isolation by facilitating contact and communication in the community. Multiply opportunities for involvement, such as engaging residents in mural projects, community gardens and other initiatives that become a source of community ownership and pride. Various local programs, events and festivals help attract local residents and visitors alike and connect people. Inform and allow input – the give and take of an open dialogue builds more inclusive and democratic communities.

## Community Presence at Main Entries

- Entry area and the bubble as a new revitalized community space
- Wide rain canopy that shields community zone from rain and sun
- Green Curb separates pedestrian and vehicular traffic

## Enhance Interior Spaces

- Bubble merges with Lobby and becomes open area for gathering, spontaneous discussions while waiting for transit
- Open concept to provide visibility to the Security Desk and a Reception

## Entry

- Current flooring material at entry is not slip-resistant, in addition to the uneven carpet which is a safety concern for tripping
- There is not adequate space in entry to allow room for two mobility devices to maneuver past each other while people are waiting and the current accessible door is not large enough for a mobility device and service animal to pass through
- There should be no obstructions at main entries that may obstruct a mobility device from entering, ie. Brick retaining wall and service ramp at south entry

## Vestibule/Lobby

- The vestibule and lobby space must have sufficient amount of space for two mobility devices to maneuver past each other especially when crowds gather while waiting
- The building's design layout must consider what angled or irregular walls will create and how these might contribute to confusing and prolonged routes to destination points
- Implementation of clear Wayfinding indicators, such as deep colours on the floor (carpet or tile or other) to aid in navigation through spaces to major destination points such as elevators and common rooms
- The lighting needs to be consistent through the space to help define the route through the space

## Community Guardianship

Foster meaningful social interaction between neighbours to keep spaces active, watched and controlled. Complexes which have a variety of housing types, including ground level accommodation as well as a variety of communal interior and exterior activities permit engagement at several levels.

Some design considerations include:

## Human Presence Through Planning

- Planning for and Encouraging human activity
- Mixed-use public services and amenities

## Transparency of Surroundings

- Minimize visual barriers
- Clarity of main routes and entry point
- Minimize visual barriers
- Clarity of main routes and entry point
- Allow people to see and be seen times throughout the day.

## Controlling Access

- Minimize entry points and make main entrances clear
- Hierarchy of public and private space, identify and make clear where residents, caregivers where day workers and service providers enter and where visitors are welcomed
- Security control features such as cameras allow visitors to understand that there are eyes on all public and semi-public spaces
- Define Reception areas and security personnel stations

## Natural Surveillance

- Residents need to be able to observe the building premises
- Permit clear views from apartments and communal spaces
- Provide residents with tools for crime intervention

## **Community Spaces**

The outdoor setting of Moss Park lacks safe and accessible interaction for local residents and visitors. The site requires clear orientation cues that support arrival points, exits and activity spaces. Currently, the outdoor pathways are a concern for both residents and visitors in regards to safety and complexity of direction.

There is a need for activity spaces of sufficient size, location and amenities to serve the local community and city at large. Furthermore, there exists a lack of rest spaces at appropriate locations for relaxing and pause sessions.

# Design Strategies to Ensure Viable Community Space

The following examples and schematics offer solutions for several of the concerns expressed about inclusive communities at Moss Park.

## Hierarchy of Pathways

Establish a hierarchy of pathways that are infused within outdoor activity spaces. This hierarchy can be designed as a primary route establishing clear destination points with secondary routes immersed within congregation zones.

## Social Interaction & Integration

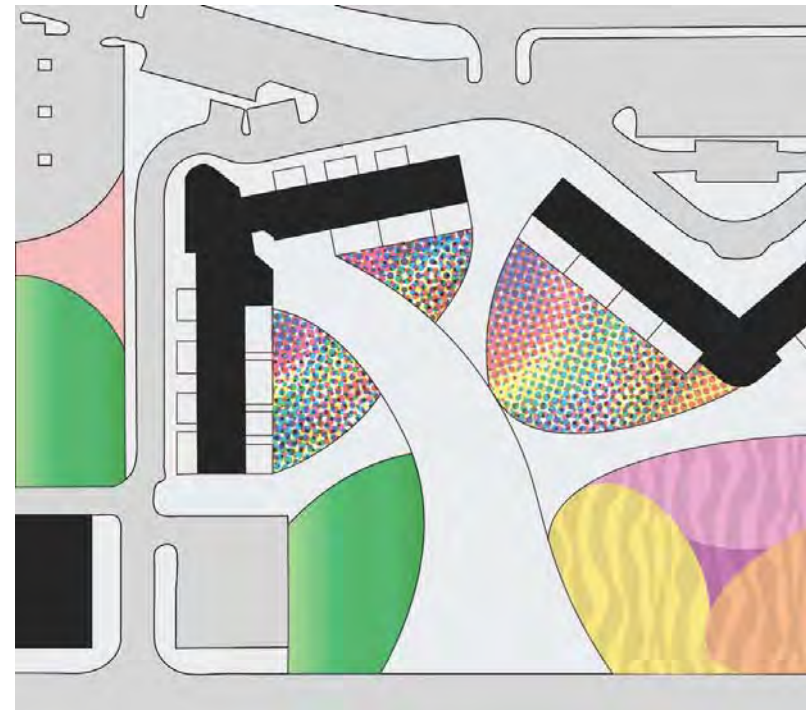
Areas of gathering will create conversation and community activity. These hubs will provide a variety of safe travel spaces, interactive spaces and rest spaces

## Animal Relief Areas

Accommodate for animal relief and play areas. These pet and service animal areas will permit owners to engage with other animal supporters.

## Inclusive Community Gardens

The creation of outdoor community garden areas can be maintained and taken care of by local residents. The community gardens and landscaping activities will engage a diversity of users and experiences through many senses. The gardens will stimulate visual, olfactory, auditory and tactile senses.



Design Concept by OCADU Research Assistant



Design Concept by OCADU Research Assistant

## Community Design Proposal

The Moss Park landscape can become infused with many of the previous examples illustrated. A direct route across the site can help enable clear navigation for residents and visitors. The site will become infused with social spaces, rest spaces, waiting areas and green spaces. In part, Moss Park will become an interactive and supportive outdoor setting for a multiplicity of users with different abilities.

# Perception

## Design Strategies for Optimum Environmental Conditions

Ambient environmental conditions such as Lighting, Acoustics, Thermal Comfort and Air Quality can become environmental stressors once they are outside of the optimum comfort range. These stressors alter users' mental state by causing anxiety and can affect wayfinding experience and perception.

### Interior Lighting

Greater zoning, or programmable zoning, for lighting to allow for flexibility of future controls and new environmental technologies. Use of dimming ballasts to allow for finer adjustment in lighting levels in various zones and regions of facilities. Use of color addressable LED lighting for changing the perceptual warmth or coolness of the space (i.e. cooler lighting and ambiance during warmer weather) or as cues to outdoor environmental conditions or directional orientation. Use of full spectrum lamps or lamps that emulate sunlight. Use of colour and psychology research i.e. calmer spaces that use certain ranges of colour lighting.

## Perception in Environments

Users moving through space depend on their senses to successfully arrive from one destination to the next. Concerns that can disrupt the users journey were identified as transition, temperature, lighting, disorientation, and responsiveness of the built environment. Transition from outdoor to indoor is challenging depending neutral or hidden transitions. Temperature ranges from heating to cooling in common areas adds a pleasurable and memorable transition through spaces.

In lighting, consideration of day and night conditions, awareness of glare created by the interior materiality of the space and optimal lighting for ideal human perception range; all areas reduce obstacles in the space. Disorientation found by busy and calm pedestrian movement is concerning to navigation, built landmarks can act as guides to help users. As well, responsive surroundings that react to movement create bodily dialogue with the space because neutral environment puts a lot of dependency on the user.

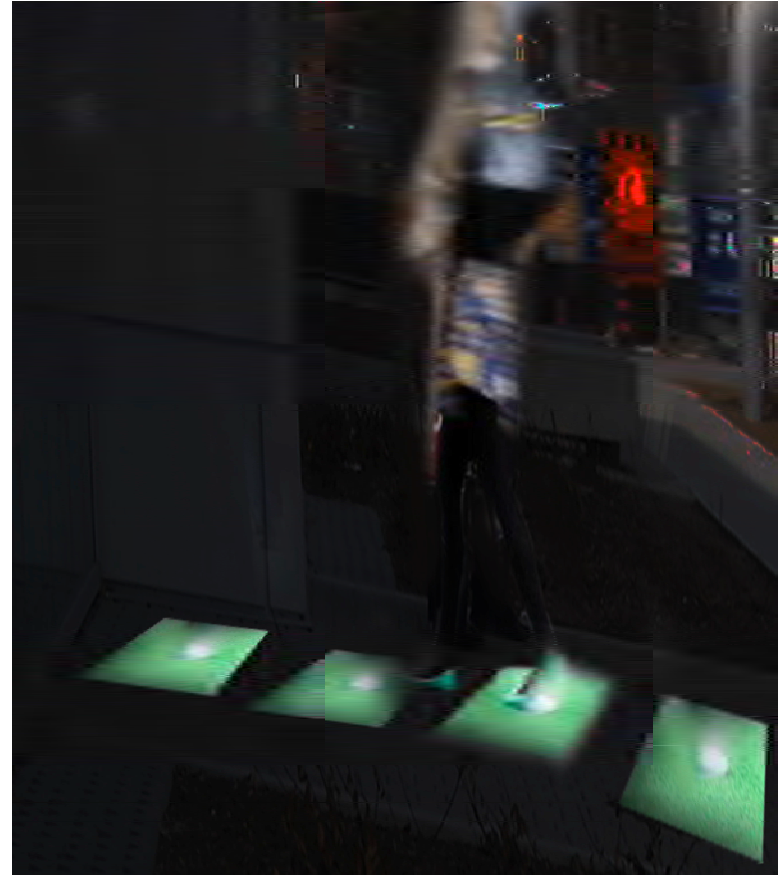


## Highlighting Essential Services

Essential services must be highlighted for ease of experience. In emergency our senses are being tested so making emergency services easy to access with tactile, visual and audio cues can assure higher safety for users even when other systems breakdown. Evacmap, “are manufactured using rigid aluminum substrates. Anti-slip stair tread markers offer additional safety.” The Evacmap uses multiple methods to stimulate the senses in places that could impose high stress, especially when dealing with an emergency. Providing easy access and transition is calming to the user and can allow reasonable decision making in time of panic

## Highlighting Busy Access Points

To provide easy navigation buildings can use textural definer to highlight important transition points. Our orientation is often challenged in places of transition therefore playing to people senses will help create smooth and pleasurable transition. Installing a system like the Pavegen Project would provide a visual cue because of the light shining in front of the entrance as well as a change in texture to indicate to the traveler that there will be a change coming up in the path. This system also provides a sustainable method of lighting the entrance using the energy in the high traffic entrance to generate the light because the tiles run on kinetic energy.



Design Concept by Research Assistant

## Responsive Environments

Successful responsive installations for built environment can be LED lighting and responsive lighting that changes intensity through interaction. rAndom International's You Fade to Light was an installation made up of hundreds of warm white Philips OLEDs and camera based motion tracking system, custom motion tracking software by Chris Shea. This light installation responded to people adjacent to the screen by generating the movement back on the screen. Although this is meant to be a more interactive and conceptual project such idea begin address issues of addressing the user in the space. An environment that acknowledges the user will receive the same treatment from the user. Simple details such as lights that adapt to time of day or the entrance that recognizes a person coming in could have a strong impact on the sensorial and navigational experience through a building.

## Negative Spaces as Definers of Navigation

Navigating a space at night is difficult especially with disorienting components. The Musee Du Quai Bonfy in Paris France provides a good example through the "lake of lighting" permanent installation piece. It gives stimulating lighting experiences while providing proper navigation by illuminating the negative space to form a path.

It is also partly located under a covering which reflects off the ceiling to provide an internal glow. The tall lighting simultaneously creates a tactile navigational cue. Instead of using light in linear methods to define paths light can become a sculptural tool to define an outdoor or indoor space. Especially at night, light can act as a guide while making a memorable experience.

## Vegetation as Navigation

Plant life can act as a guide for the senses by providing a visual path and an olfactory signal for navigating the space while enjoying the experience. Inexpensive and long-lasting perennials soak up water and regenerate the soil while at the same time provide a low maintenance green space. Large vegetated areas need ways to guide the user especially in a large spanning surface area. A proper balance of open field with elevated gardens allows for a greater range of abilities to enjoy the vegetation and navigate to desired destinations. Raised beds give closer proximity to the plants, fully stimulating the olfactory sense and also in reach for tactile stimulation. These raised beds, in part, can provide a surface that illuminates the path at night addressing the visual sense.



Design Concept by Research Assistant

# Orientation

## Environmental Information

There are many methods that orientation strategies can be incorporated within the environment. It is preferable to provide the wayfinding cues by embedding them in the landscape, architecture and detailing, rather than through signage. Form, layout, texture, lighting, contrast and colour can all communicate necessary information to the user. At its most basic level, in order to facilitate wayfinding, design of a setting should include clearly defined paths to destinations, emphasize entrances and exits, and incorporate landmarks.

## Stimulation vs Overload

It is important to find a balance between a stimulating environment, and one that is overwhelming. Not enough information causes feelings of helplessness and frustration; while information overload causes confusion and anxiety.

## Identification

Signage should serve as supplementary information that identifies locations, spaces, routes, facilities and destinations. Signage may take form of language, symbols and graphics, digital, interactive, audio and tactile elements.

## Legibility

Legibility of signage is critical to its success. Size and placement of graphic information should be determined by the position and distance from they are meant to be viewed, so that users do not have to put effort to walk towards it, or even climb stairs to read it. (i.e. – building address and number should be visible from the street). Graphic signage must take into account access from the height of diverse user groups, as well as persons with varied visual abilities. Include use of strong contrasts in colour and brightness to increase visibility of signage. Illuminated signage provides visibility and guidance in dark spaces and in the case of emergencies.

## Multi-Sensory Solutions

Pairing visual with non-visual information is desirable for efficient navigation for all users, especially in articulating roads, sidewalks, elevators, identification, operating devices and emergency alarms. Tactile signs provide information that can be “read” by touching. Braille and raised images and textures provide information that can be seen and felt. Audible signs, such as a voice announcing the floor the elevator has reached, can provide information that is useful for everyone.



Design Concept by Research Assistant

# Design Strategies to Enhance Orientation & Signage

Concern for orientation centre on lack of sufficient directional cue including auditory, tactile and visual cues. Use of colour and contrasting materials as well as sculptural or 3D elements to direct travel, help with transitions or announce and celebrate arrivals are good solutions to mitigate this issues.

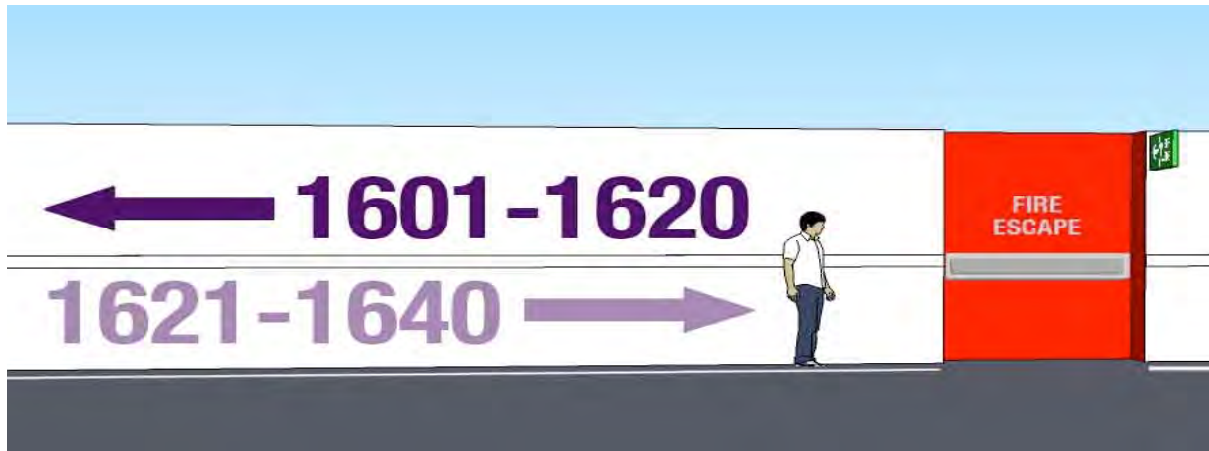
Other concerns centre on:

- Arrival on floors is unannounced and confusing. and numbers are inadequate in size and location
- Lobbies and corridors appear abandoned and lonely
- Fire Escapes are not well detailed, stairs lack definition, signs are not lit, and exit doors are marginal in material selection and signage information



Design Concept by Research Assistant

Above: Audio and visual feedback when waiting for the elevator indicate both arrival and departure at each floor. When getting out of the elevator, not only will there be braille to show what floor you are on, you will also have braille telling you which side to go: party room on your right – laundry room on your left.



This image shows big lettering on the opposite wall from the elevators, indicating which way to go for either the party room or laundry room. Design Concept by Research Assistant.

## Large Font Sinage

There is a horizontal bar going across the middle of the wall in the image above. This is slightly raised away from the wall, to help those with visual impairments to feel their way through the hall. The white lines at the base of the wall are glow in the dark strips, that would light up when there is a power outage, or during a fire. The Fire escape door is bright red, to clearly distinguish it from other entries and surrounding wall surfaces.

This image also shows a fire escape sign that is next to the fire escape door. When dark, it will be a bright green with backlight helping to read the white sections of the sign. On the horizontal raised bar from the wall, there is braille on top indicating when the evacuee has reached the fire escape door.

With glow in the dark tape (or strip, paint etc.) it helps to distinguish between steps, for a more confident walk down or up. When dark/or in case of smoke filled fire escape, the glow in the dark lines will illuminate the stairs to help those who are ambulatory walk up or down without worrying about tripping/overstepping.

# Case Study

by Stephanie Pete, Research Assistant





# Case Study: Wheel-Trans Shelter

Inclusive facilities require a comprehensive understanding of available public spaces and human needs. Important features such as elevators and public washrooms must be easily available, identifiable and physically accessible across a range of abilities and disabilities. Facilities include amenities such as bicycle racks, weather protection, indoor and outdoor rest spaces, basic daily needs including washrooms and garbage, and facilities for service animals.

Waiting areas become important facilities for persons with disabilities, many of whom use Wheel-trans (one of Toronto based accessible bus systems) as a primary form of public transportation. Due to the high demand for Wheel-trans in Toronto, a person can experience long wait times, as well as missing the vehicles if drivers are early.

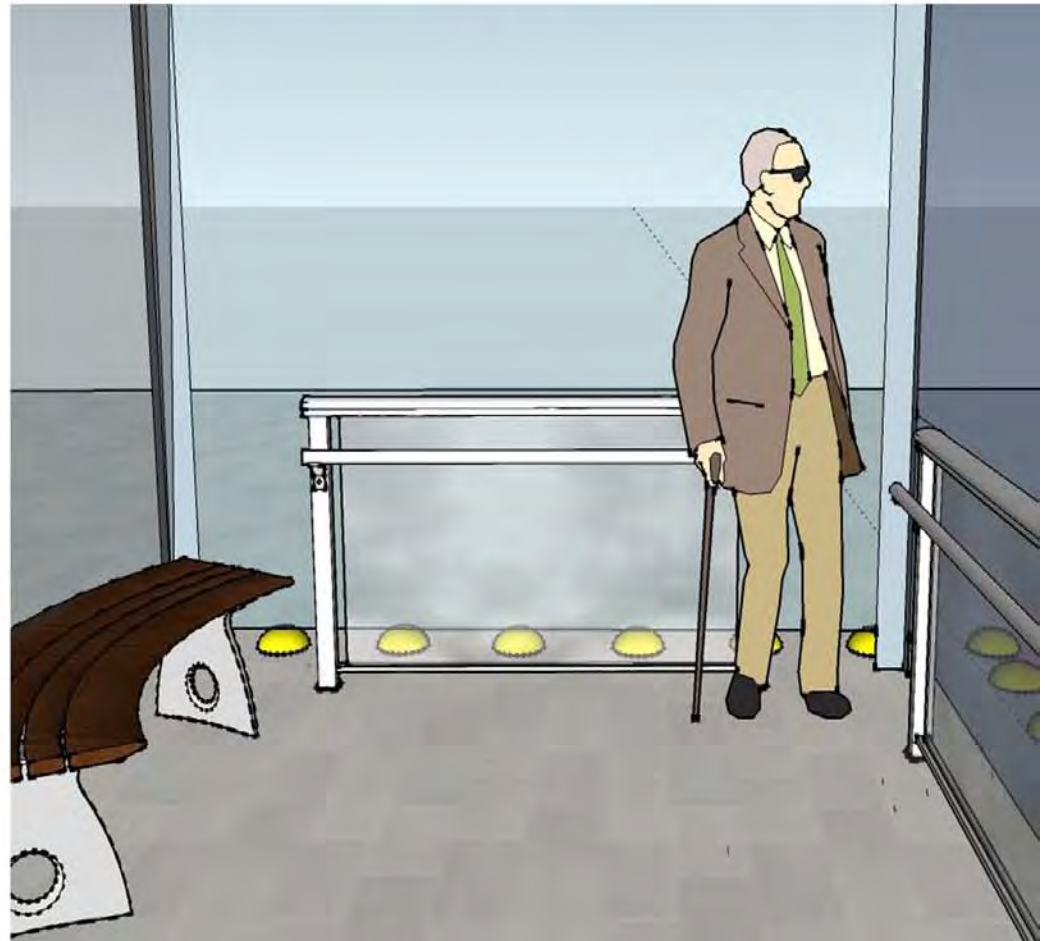
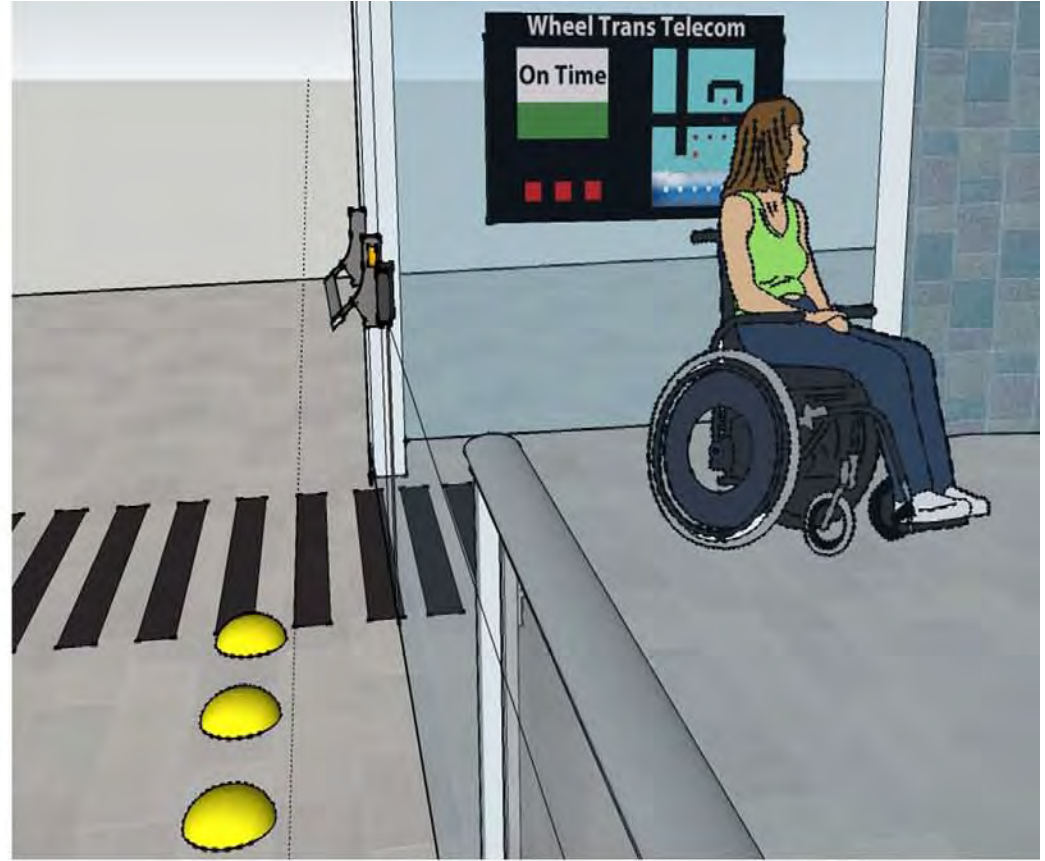
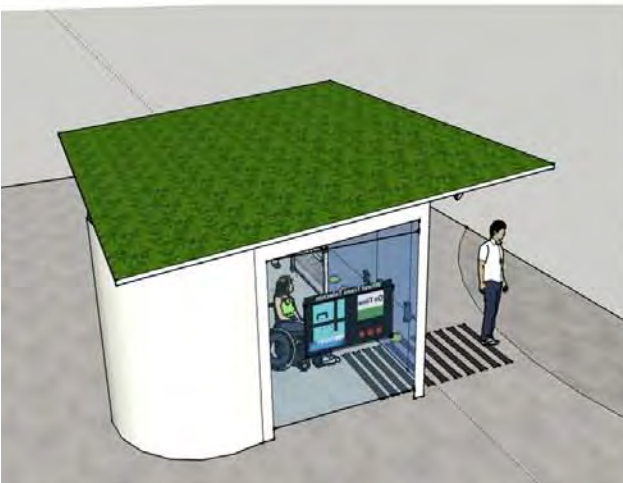
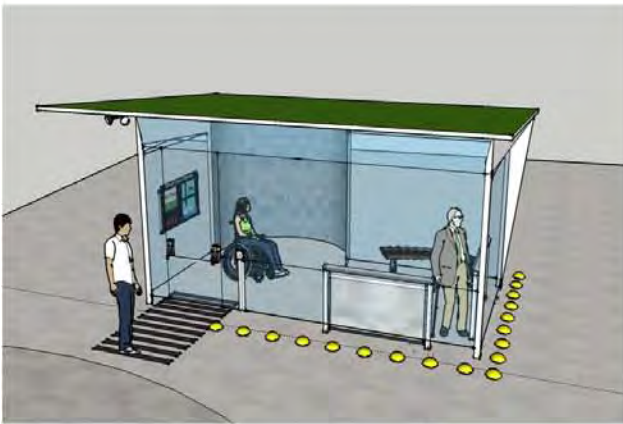
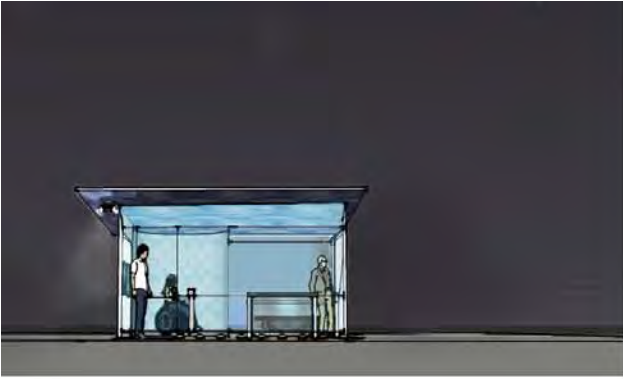
## Interactive Signage and Telecom System

Providing outdoor shelter specific to the needs of persons using Wheel-trans services allows a person to wait comfortably and safely for Wheel-trans vehicles, reducing miscommunication and missed ride appointments. Providing an interactive sign and telecom can allow passengers to maintain communication with drivers, providing

notification of traffic issues, longer wait times, missed arrivals, and other delays. An interactive system would also provide information to the driver, creating a system of notification of passengers arrival at the waiting area. In Toronto's seasonal climate, weather conditions must be considered. Waiting structures must be mostly enclosed, provide cool air in the summer, and warmth in the winter. Doors must feature automatic openers. Lights and sensory lighting promote safety for nighttime Wheel-trans appointments.

## Sustainability, Creativity and Community

The images shown are illustrations of a shelter that has considered the above, as well as providing ample room for multiple mobility devices and users requiring seating. The structure features a green roof, promoting sustainable ideals while encouraging indigenous growth on a protected platform. Lighting and heating/cooling systems are powered by solar energy. A turn around features a unique opportunity for an artist or community mosaic or mural, embedding this structure in the local cultural fabric.



# Conclusions

Research Pilot Project 1 was developed to investigate Wayfinding in common spaces. This project was the first step in developing Wayfinding Guidelines and Best Practices for the revitalization and renovation of TCHC facilities. The key overarching goal of the pilot project was to employ a participatory method of research. The research team gathered precedents (examples of best practice from across the globe), facility and occupant data through a series of on-site, off-site and independent research. This data was carefully recorded and compiled, leading towards preliminary design strategies and schematic proposals for Wayfinding solutions in public and semi-public areas of TCHC residential facilities.

The research sought to identify emerging digital technologies and precedents that may provide or support viable design solutions for inclusive Wayfinding in high density housing complexes. These precedents manifest as emerging trends in design concepts, technologies and materials. The research process introduced evidence-based

design principles to our participating emerging designers. In accordance with TCHC's mandate that accessibility is "a fundamental right for each person," the project ultimately aims to create inclusive and usable environments across the broadest spectrum of users.

As a result of this work, and in order to proactively comply with new provincial legislation, Moss Park will be among the first high-density social housing complexes in the City of Toronto to meet the new far-reaching building accessibility laws in the province of Ontario.

This project culminated with multiple accomplishments, including a solid foundation for further research, preliminary recommendations and establishment of strong user-centric processes for engagement of TCHC residents and clients with the potential enhancement of their living environment and community. Among the successes of this pilot project are the formations of integral relationships between ATRC, TCHC, OCADU, IDRC and Orfield Laboratories.

**The collaboration has shown a strong potential for further research and accessible/ inclusive design strategies, which could benefit thousands of residents in TCHC housing.**

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