

**ACCESSIBILITY TO BUS-STOPS FOR SENIOR CITIZENS IN
URBAN NEIGHBOURHOODS:
*AN OVERVIEW OF BEST PRACTICES***

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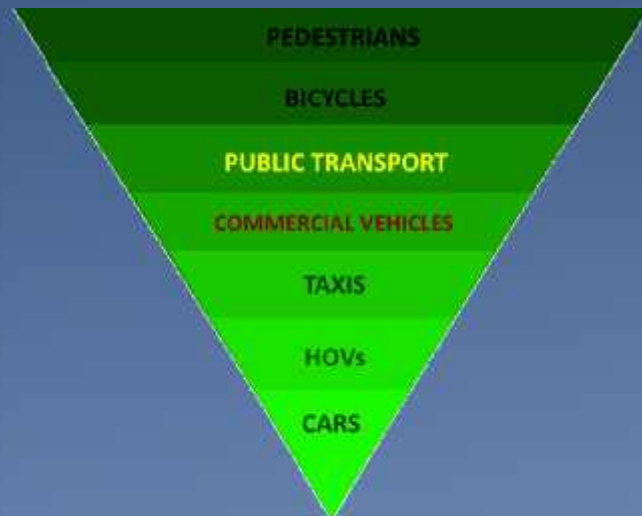
- Public bus transport
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- Aim and Objectives of the Paper
- Bus Journey: Significance of Bus-stops
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Sustainable transportation

“A developed country is not a place where the poor have cars; it’s where the rich ride public transport.”

- Enrique Penalosa, Mayor of Bogota, 1998-2001

- Effectiveness and efficiency
- Positive contribution to the environmental, social and economic sustainability of the communities
- Access - to work, education, goods and services, friends and family



Bus-stops



Critical Transition points

Mobility = Movement + Accessibility

Elderly mobility

- Physical and psychological factors
- Financial constraints
- Access amenities and needs
- Socializing
- Independence



Aim of the paper

To achieve an inclusive-urban design of *bus-stops* in neighbourhoods to facilitate easy access and usage of the bus-stops aiding mobility of elderly citizens.

Objectives

- *Ideal-location* of bus-stops in neighbourhoods within walkable-range
- Urban design elements for *inclusive-planning*
- To enhance *public-realm* in and around the bus-stops



BUS JOURNEY

A Two-way bus trip availing a direct bus comprises of **BASIC 12 steps** the passenger covers:

1. **Walking** to bus stop
 2. **Waiting** at the bus stop
 3. **Boarding** the bus
 4. **Journey** in the bus
 5. **Alighting** the bus at destination stop
 6. **Walking** to accomplish the job/ purpose of visit
 7. **Walking** back to bus stop to board bus
 8. **Waiting** at the bus stop
 9. **Boarding** the bus
 10. **Journey** in the bus
 11. **Alighting** at the bus stop
 12. **Walking** back home
- 1, 6, 7, 12- Walking to or from the bus-stop
 - 2, 3, 5, 8, 9, 11- Using bus-stop
 - 3, 5, 9, 11- Transition between bus-stop and bus
 - 4, 10- Bus journey itself

Issues

- Access
- Land-use
- Encroachment
- Safety
- Identity
- Shelter
- Waiting areas
- Boarding and alighting
- Ambience & Lighting
- Seating, information & signage



Bus-stops as Urban Elements

Prominent *urban public spaces*

Waiting-intervals and interactions

Innovative concepts

Arena for other activities at a neighbourhood scale

- Advertising
- Social-awareness
- Social-interactions
- Cultural-nodes
- Local notice-boards
- Last-minute Shopping
- Refreshments



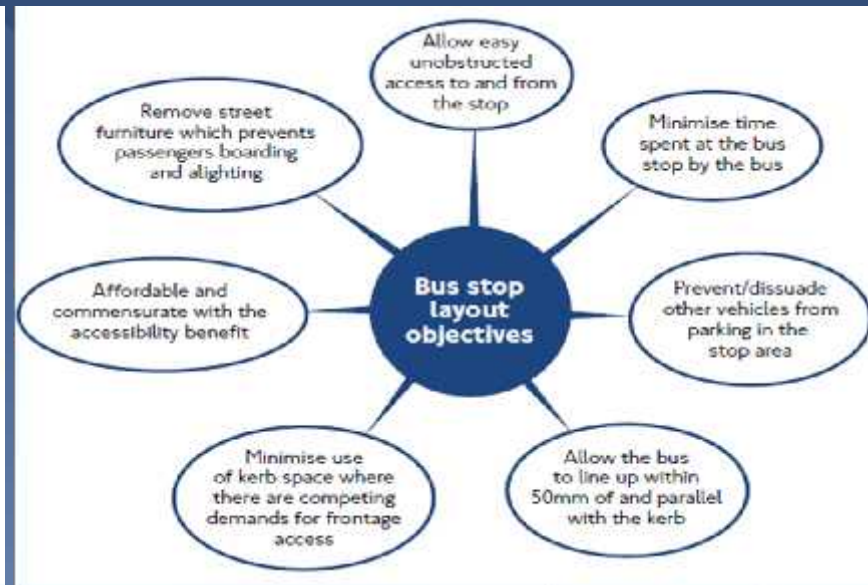
Urban design objectives

- *Accessibility*- Barrier-free pedestrian access
- *Integration*- Integral part of neighbourhood
- *Safety*- Physical and psychological safety
- *Shelter*- Protection from environmental-factors
- *Comfort*- Visual, acoustical, physical & psychological

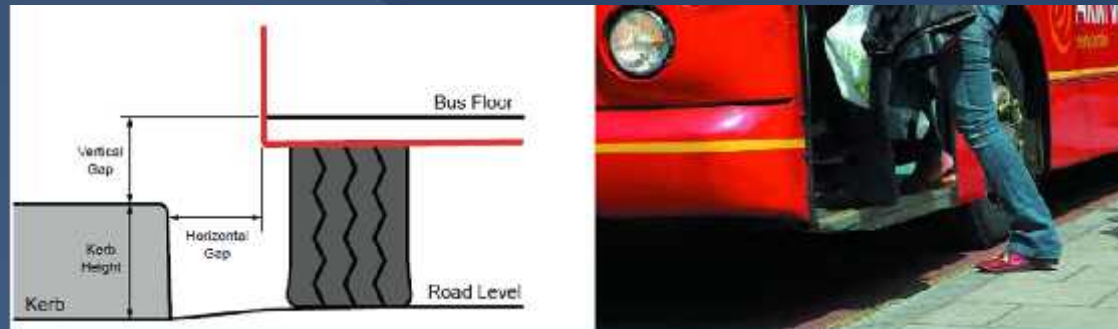
Best practices

1. Transport for London (TfL) Bus network

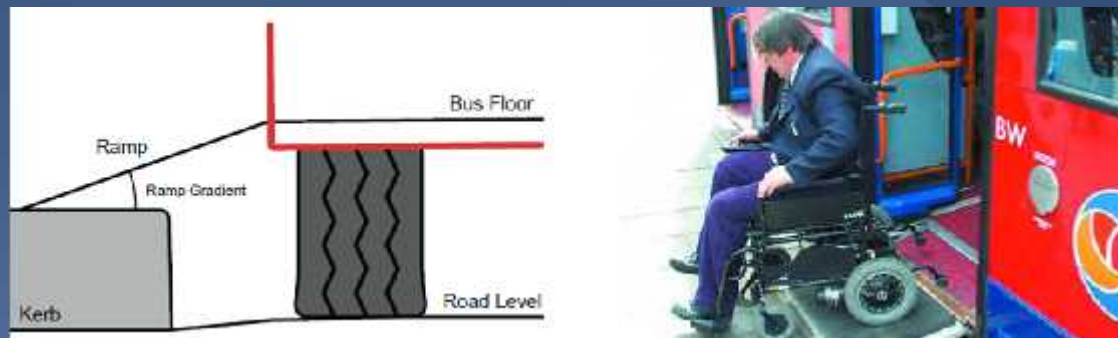
- Low floor buses- Single step entry
- Layout design
- Location
- Inclusive public transport system- *Accessibility & Approach*



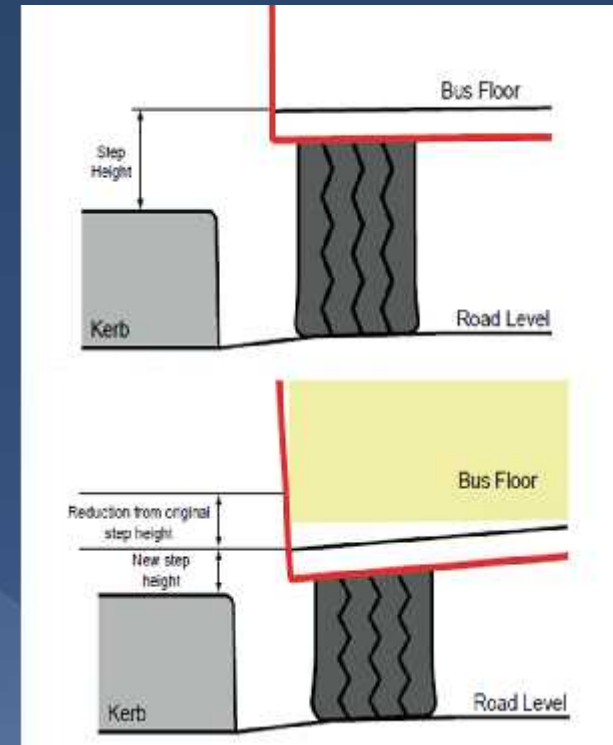
TfL Bus-stop Layout objectives



Relationship between bus and kerb



Ramp Gradient



Normal & Kneeling step heights

2. Washington Metropolitan Area Transit Authority (WMATA)

Guidelines for the Design and Placement of Transit Stops, Final Report, December, 2009 prepared by KHF group

LIGHTING

- Stops without sheltered lighting be located within 30 feet of an overhead light source.
- Light fixtures 2.0 to 5.0 foot candles
- Avoid spotlight effect
- Solar powered 'stop call light' as-needed source of light.



Solar lighted shelter & seating, Seattle

TRASH RECEPTACLES

- Resemble other publicly owned trash cans along the corridor
- Maintenance and pick-up
- Avoid obstruction to access
- Secured to avoid tipping or unauthorized movement



Shelter design, (WMATA)

- Transparent sides for visibility
- Name of stop/ location
- Seating
- Wheelchair landing pad
- Unobstructed sidewalk
- Unobstructed access to shelter
- Shelter opening 36" min width
- Clear usable floor space at least 36"x 48"
- No obstructions or steps
- Provision for maps



Walter Reed East Super Stop prototype

3. Ahmedabad Bus Rapid Transit System (ART) Bus Stop Design and Location

Location of bus-stops

- Key element in improving bus transit efficiency
- Safety and Operating elements.

SAFETY ELEMENTS

- Passenger protection from passing traffic
- Access for people with disabilities
- All-weather surface to step from/to the bus
- Proximity to pedestrian crossings
- Proximity to major trip generators
- Street lighting



OPERATING ELEMENTS

- Adequate curb space
- Bus routing patterns
- Directions (one-way etc) and widths of intersection streets
- Types of traffic signal controls (signal, stop, or yield)
- Volumes and turning movements of other traffic
- Width of pedestrian pavements
- Pedestrian activity through intersections

Urban design transformations



Parting with Traffic | Fraser St. and 45th Ave, Vancouver

Urban design transformations



Seating the Public | Lonsdale Ave. and 15th St, City of North Vancouver

Urban design transformations



Walkable Block | Nanaimo St. and Grant Ave, Vancouver

The realm

Context



Windsor Street #16 neighbourhood bus stop,
Brisbane. © DAN THE MAN



Another neighbourhood bus stop, Queensland © BETH ORME

Proposals

PROPOSED STRATEGIES FOR BUS- STOPS IN NEIGHBORHOODS

- Master-plan for the city/neighbourhood
- Urban elements
- Reflect the character of the land and settlement
- Icons representing the neighbourhood
- Inclusive in nature
- Involve elderly residents in decision-making
- A survey to understand elderly needs, aspirations, difficulties faced and various other inputs to reinforce efficient planning and design guideline formulations.

Proposed concept 'Quality Wholesome Trip'

- Formulation and design of overall passenger's bus journey
- Enhance pedestrian movement
- Bus-stops crucial in the trip
- A network of fully accessible bus-stops to achieve inclusive planning

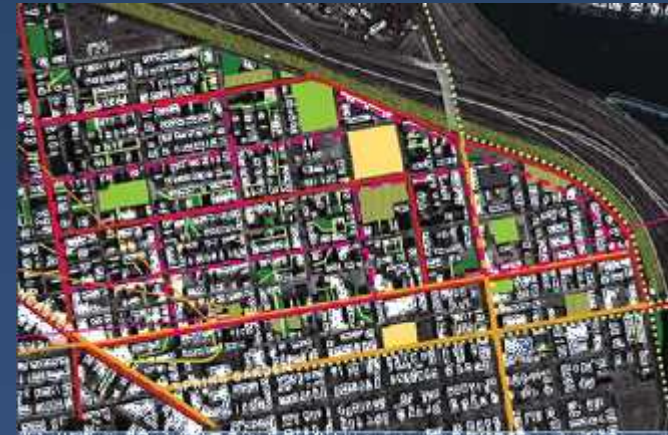
Three-fold Strategy

1. Locational-strategy
2. Environmental-strategy
3. Design-strategy

Locational-strategy

Guidelines for ideal location of bus-stops given the mobility network and population in the residential neighbourhood.

- Network of bus stops
- Spacing of bus-stops
 - Ideally at 400m
 - Good accessibility from surrounding areas.
 - Proximity to high level pedestrian movement zones
- Bus-stops as urban nodes
 - *Zones of activity* - destination
 - Clubs, cultural centres for yoga, meditation, parks, grievance cell, bank, post office etc.
- Accessibility
 - Network of safe walkways and crossings
 - Street network to induce identity - character, feel and familiarity



Mantua neighbourhood transportation networks with safe pedestrian routes, market kiosks connected to bus-stops and parks.



CDTA bus stop in front of ShopRite Albany, N.Y.

Environmental-strategy

Immediate realm and design of the urban precinct

- **Pedestrian approach**
 - Barrier free
 - Walkway design
- **Land-use**
 - Moderately active uses
 - Discourage hawking activities
 - Amenities at strategic points
 - Auto or taxi stand in the vicinity
- **Safe precinct**
 - A multi-directional visibility into the surrounding areas
- **Signals & traffic calming techniques**



Source: *Designing for Pedestrian Safety*



A pedestrian crossing that provides convenient access to a bus stop. *Photo by Dan Burden*

Design-strategy

Urban design and Architecture of the bus-stop itself.

Urban elements- representative icons of the neighbourhood

- **Cross walks:** Barrier free, unobstructing pedestrian passage
- **Shelter/enclosure:** Durable yet aesthetically pleasing
- **Seating:** Clear view of the street from the seating.
- **Lighting:** Efficient but not glary
- **Signage:** Legible and clear
- **Safety:** Hand-rails at a height of 800-900 mm; anti-slippery, smooth, floor finish, barrier-free
- **Clear Information panels:** visual, tactile, audio or video
- **Amenities:** Drinking-water, trash-cans, telephone booth
- **Aesthetics:** Well maintained street side, street art, landscaping
- **Technology:** Interactive-panels, charging-points, digital-display, Wi-fi
- **Additional facilities:** Newspaper rack, radio, emergency call facility to authorities
- **Innovations:** Solar panels, water harvesting, secure cycle stands- owned or for hire.

Conclusion

- Strengthen Bus-stops as crucial links in Public bus transport
- Need for integrated planning
- Pedestrian accessibility and approach design
- Urban realm of the stop
- Strategies at neighbourhood scale, immediate scale and bus-stop design
- User-base analysis to achieve inclusiveness

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Thank you

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