Improving road safety through innovative street design

Chris Kost
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Promoting equitable and sustainable transport worldwide
Vehicle movement
Parking
Walking?
Cycling?
Spaces to meet your friends?
Organised street vending?
A more equitable approach

How we usually plan streets

A more equitable approach
Roads v. streets

- Farms
- Setback
- Clear Zone
- Centerline Out
- Trees
- Building In
Footpath design: the zone system

At least 2 m of clear width for walking
The zone system

Frontage zone

Pedestrian zone

Furniture zone
Fences obstruct pedestrian movement
Bollards to protect footpaths from encroachment
Nairobi’s disappearing tree canopy

Ngong Rd, 2015

Ngong Rd, 2017
Existing trees can be retained during road improvement projects.
Designing for safety

Vehicle Impact Speed vs. Pedestrian Injury
(initial impact only)

Impact Speed (kph)

AIS Severity (6=fatal)

Small Injuries

Usually Fatal
30 km/h
45 km/h
60 km/h
• Increase travel time and distance
• Not accessible to persons with disabilities
• Dangerous at night (and maybe during the daytime too!)
• Elevators and escalators are expensive and break
• Usually obstruct the footpath
Analysis of crash data in Nairobi

- Foot overbridges are not preventing pedestrian deaths at crossing locations

Source: AccidentsKE
Priority for vehicles...
... or priority for people?
Crossing with universal access

Ramps to reduce vehicle speeds

Pedestrians remain at the level of the footpath
Transjakarta at-grade station access pilot

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<th>Bank Indonesia</th>
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75 percent reduction in time spent accessing the station

At Bank Indonesia station, 60% of passengers switched to using the zebra crossing
> Speed limits on urban streets should not exceed 50 km/h
Speed management

**Street typology**

- **Local streets with shared space.** At speeds of up to 15 km/h, motor vehicles, pedestrians, and cyclists can safely mix. Traffic calming is needed to minimise vehicle speeds.

- **Local and collector streets.** Streets with speeds of 30 km/h require separate footpaths. With traffic calming, cyclists can share the carriageway with mixed traffic.

- **Arterial streets.** Streets with speed limits of 40-50 km/h require physically separated cycle tracks and footpaths. Traffic calming or signalisation is required at pedestrian crossings.

**Sample cross section**

- 15 km/h
- 30 km/h
- 50 km/h

- Shared lane
- Footpath
- Carriageway
- Cycle track

*Street Design Manual for Urban Areas in Kenya*
Cycle tracks

Physically separated from mixed traffic

Minimum clear width of 2 m

Smooth surface material

Wide adjacent footpath (4 m)

Dar es Salaam
Well-designed cycle tracks can be used by tricycles
Clear space for walking and cycling behind bus stops
Do our intersections cater to pedestrian movement?
Direct crossings for NMT users
Direct crossings follow pedestrian desire lines
Universal access

Max gradient 1:12
Slower vehicle speeds
Shorter crossing distance

Turning radius (cont.)
Tactical bike lane & intersection design

Cairo
Thank you

africa.itdp.org
Twitter: @itdpafrica

Streets for Walking & Cycling
Arabic released
French coming soon