

Understanding the need for Street Design Guidelines



19.12.2022





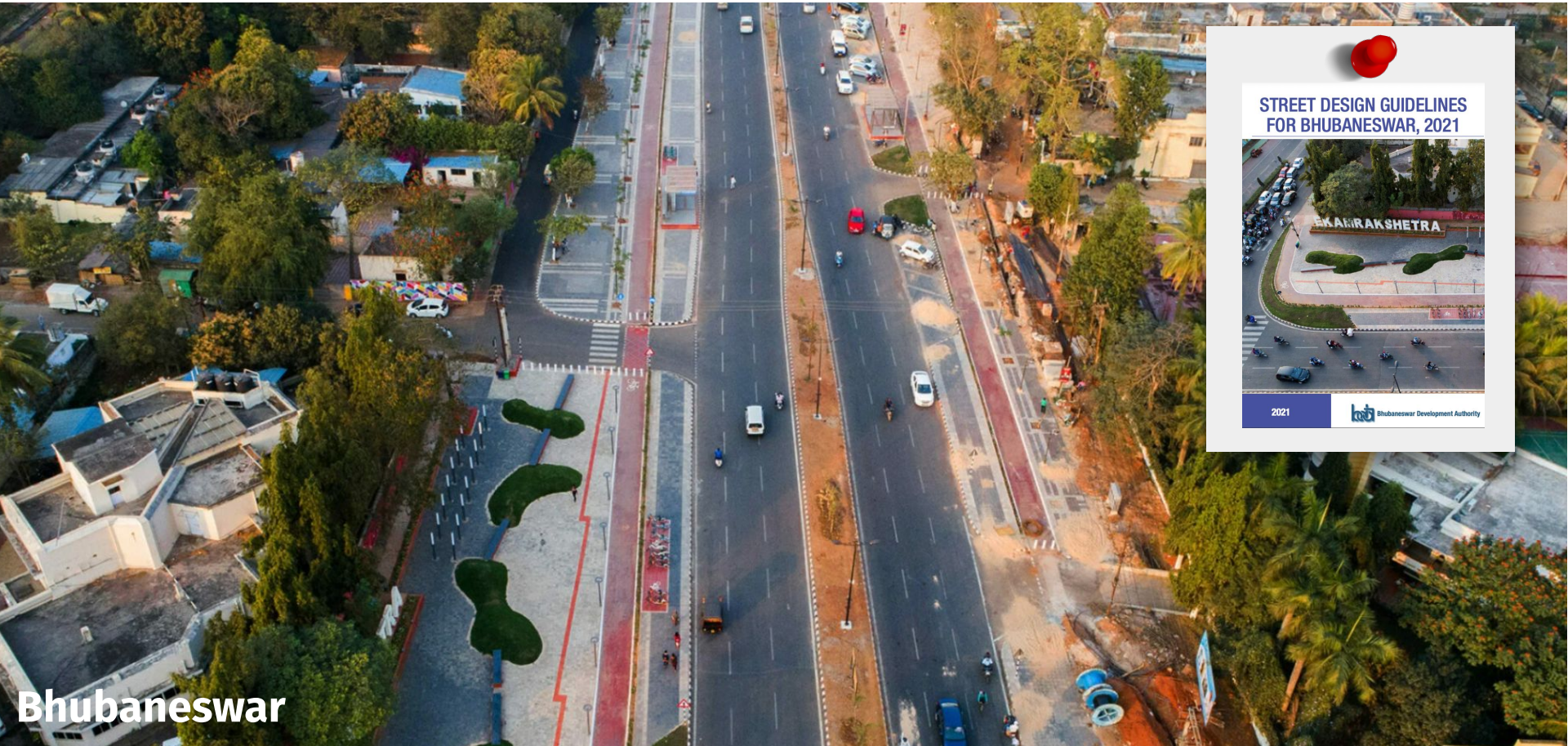
We are users of the 'street'

We are creating *Healthy Streets* TOGETHER



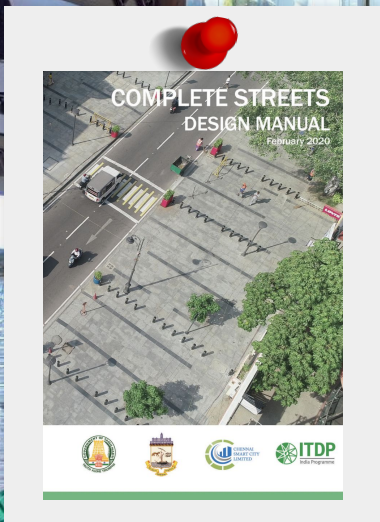
Chandigarh

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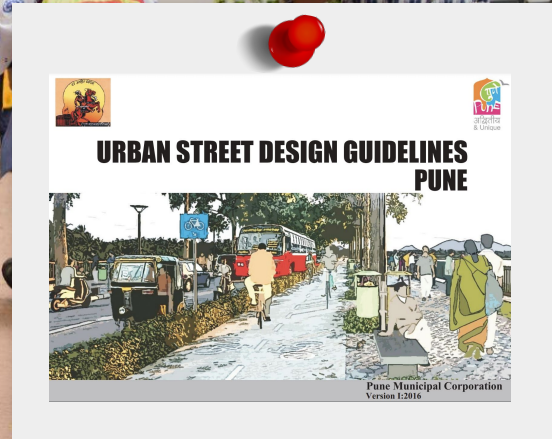
Bhubaneswar

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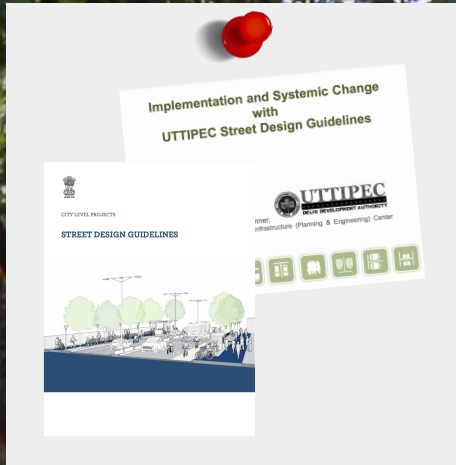
Chennai

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Kochi

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New Town Kolkata

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Ahmedabad

**It is now time to reflect upon the work so far, learn from our
OWN experiences and prepare for a scale-up!**

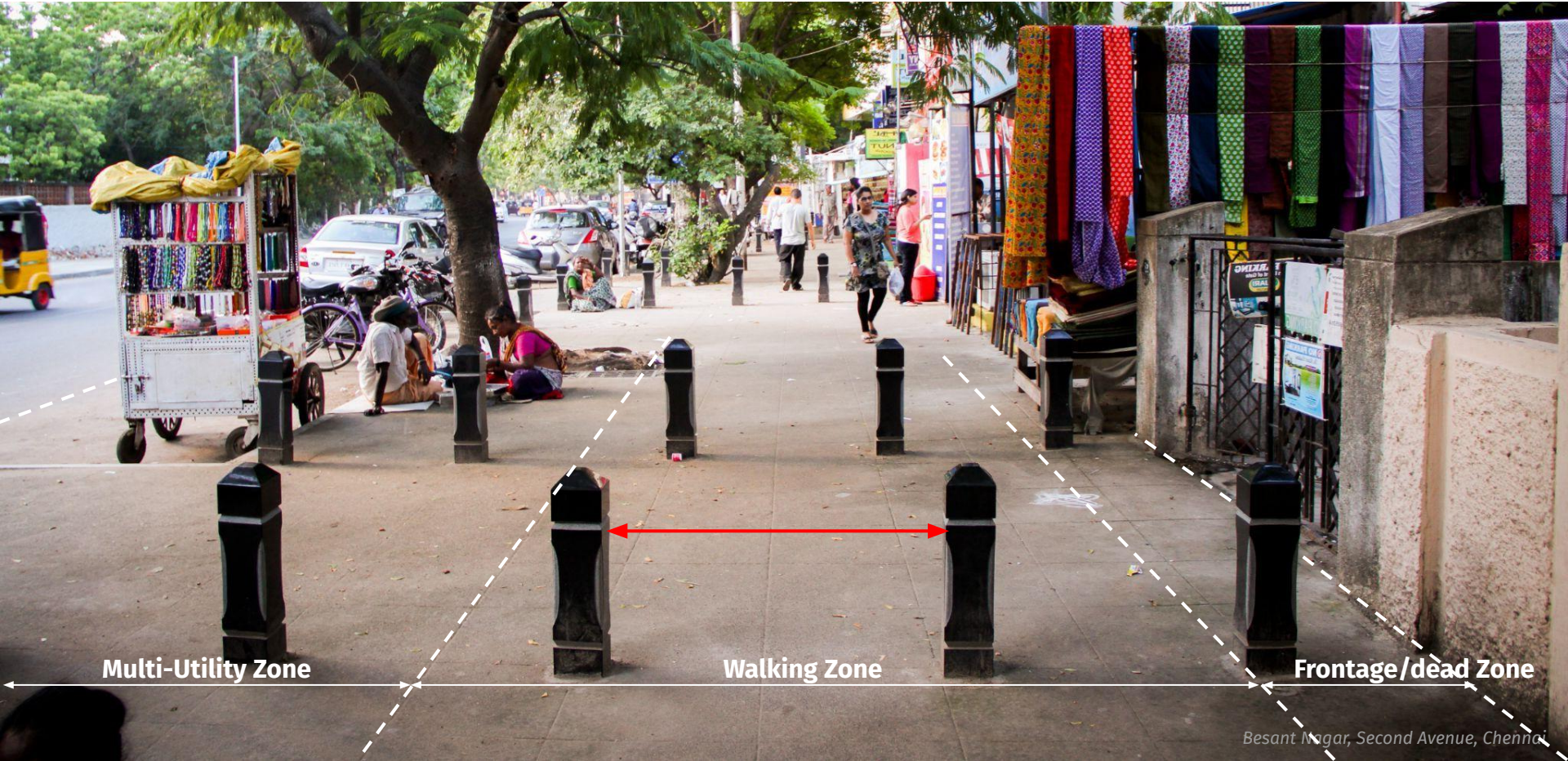
1. One street, one width



2. Park it Right



3. Provide unobstructed walking space for all



4. Ensure safety and comfort for all



4. Ensure safety and comfort for all



4. Ensure safety and comfort for all



4. Ensure safety and comfort for all



**The Healthy Streets Design Workbook will
simplify and amplify our efforts!**

Preparing the Workook

1

Collating the
on-ground learnings

2

Reviewing the IRC standards
& other Global documents

3

Design principles as per the
Healthy Streets Policy

First Draft

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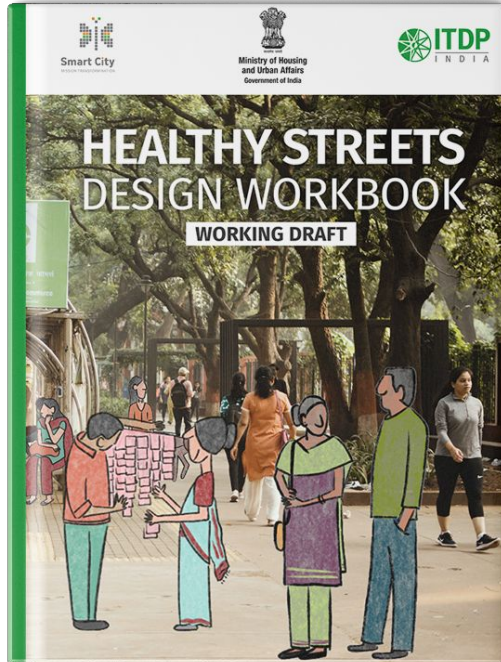
4

**Review by
External Experts**

5

**Review by
City working teams**

Healthy Streets Design Workbook



Chapter & Section numbers

Colour of accent bands match the corresponding element/chapter

1.2 What is a Healthy Street?

A Healthy Street prioritises walking, cycling, and public transport to enable all citizens to access work, education, and nearby amenities comfortably and safely.

A Healthy Street ensures that no one gets left behind. Vulnerable users are placed at the core of all initiatives, through barrier-free transport and a 'Vision zero' philosophy, to eliminate all traffic fatalities and severe injuries.



Every citizen gets a fair share of road space



Everyone breathes clean air



No lives are lost



Walking and cycling are attractive



Everyone moves around the city seamlessly



Public transport is easily accessible



Local businesses flourish



Women, children, and the elderly feel safe at all times



People enjoy street life



The design adapts to climatic

Chapter number

Chapter name

Structure of the Workbook

1

Introduction

- 1.1 What is a Street?
- 1.2 What is a Healthy Street?
- 1.3 How to create a Healthy Street?
- 1.4 How to implement a Healthy Street?

2

Street Design Elements

- 2.1 Footpaths
- 2.2 Cycle Tracks
- 2.3 Pedestrian & Cyclist Crossings
- 2.4 On-street Parking
- 2.5 Carriageway
- 2.6 Service Lane
- 2.7 Traffic-calming Elements
- 2.8 Public Amenities

3

Street Design Templates

- 3.1 Design Process
- 3.2 Design Templates

4

Intersection Design

- 4.1 Design Process
- 4.2 Example - Roundabout
- 4.3 Example - Complex intersection

5

Street Materials

- 5.1 Criteria for material selection
- 5.2 Floor Finish
- 5.3 Bollards
- 5.4 Seating

6

Institutionalising Healthy Streets

1. Learn how to approach & implement Healthy Streets

1.3 How to create a Healthy Street?

Embrace a Test-Learn-Scale approach

Before finalising designs and making substantial investments, it is important to first test the design with active participation and feedback from citizens and other stakeholders. This gives a fair idea of what works and what doesn't work, and gives an opportunity to refine and improve the designs based on the on-ground learnings and citizen feedback.

TEST

Experience the future before committing to it by testing designs.



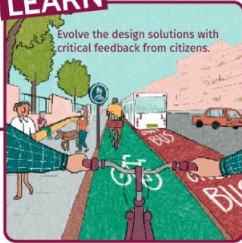
Testing the Design

Tactical urbanism is an approach to neighbourhood building that uses short-term, low-cost and scalable interventions to catalyse long-term change. It creates the opportunity for people to physically experience a different reality on the streets and prepare them towards embracing the permanent interventions. It also helps in analysing the public benefit before investing in permanent infrastructure.

Using simple, low-cost materials like pots, planters, traffic cones, paint, chalk, tapes, traffic cones, etc that are readily available help understand the impact of the design quickly. It is important to document the testing process, to be able to capture the impact of the interventions in streamlining traffic, improving pedestrian safety, and more. Refer the [implementation guidelines](#) here.

LEARN

Evolve the design solutions with critical feedback from citizens.



Learning from citizen feedback

Measuring the impact of the testing process helps to assess what works and what does not and further guides to improve the proposed interventions for various stakeholders. It can be further developed to showcase the benefits of the initiative to citizens and other stakeholders, such as traffic police, urban local body engineers, designers, political representatives, which may prove instrumental in getting a buy-in for similar projects easily. It also creates an opportunity to reflect on the collaborative working methods for the testing process.

Refer the [guide](#) to capture learnings.

SCALE

Expand successful street design initiatives across the city.

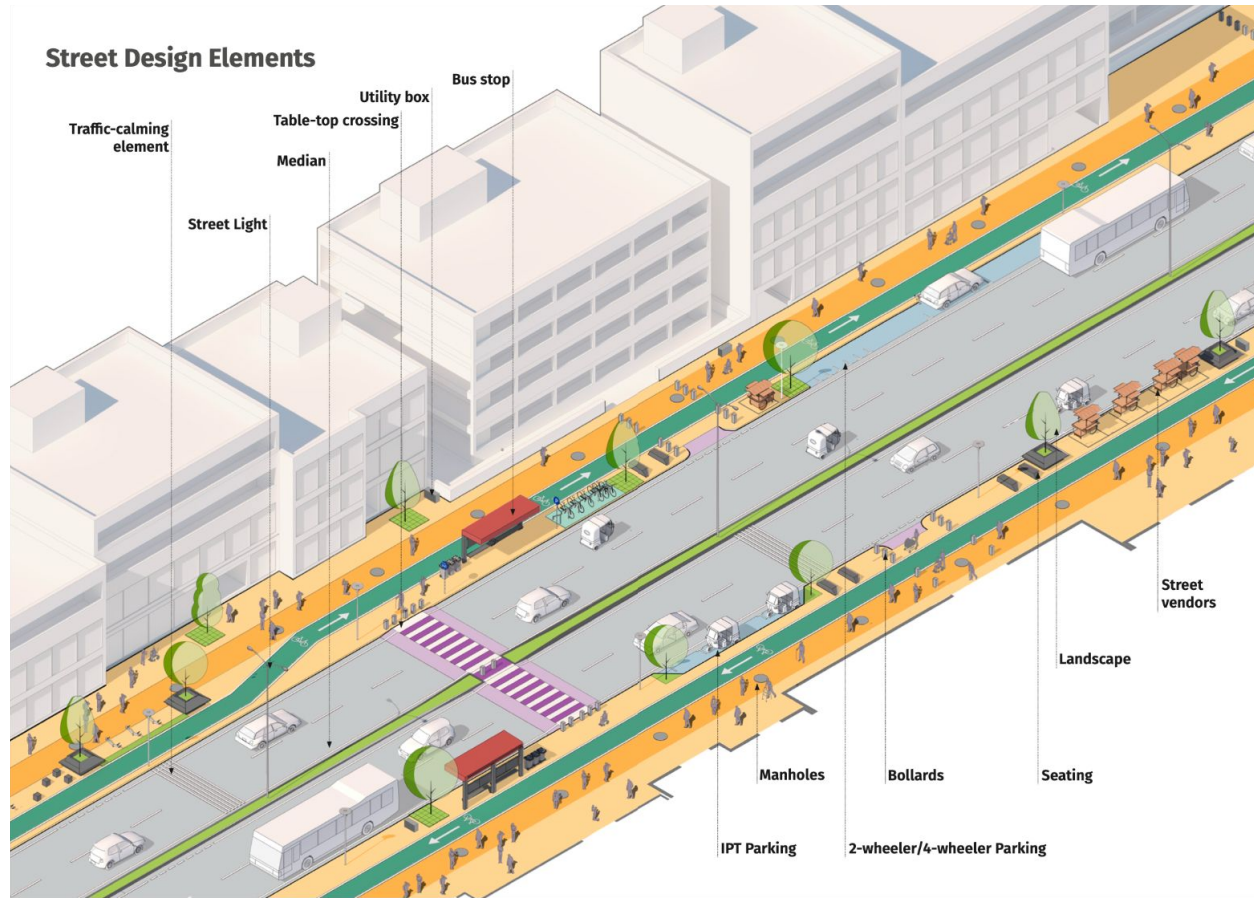


Scaling-up for long-term impact

The long-term goal towards creating Healthy Streets across the city can be initiated by making the successful test pilots permanent. Further, more sites can be identified to be tested in the coming months. This leads to long-term outcomes towards creating a walking and cycling-friendly city.

Refer the [guide](#) to embrace the [test-learn-scale mantra](#).

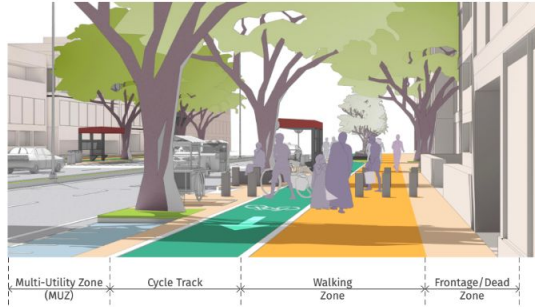
2. Design Healthy Streets using relevant elements



2. Design Healthy Streets using relevant elements

2.1 Footpaths

Footpaths are vital to pedestrian mobility. Segregated footpaths enhance connectivity, improve safety & comfort and ensure accessibility for all pedestrians, including all genders, ages, abilities. They activate streets and boost businesses by providing places for people to walk, sit, meet, talk, shop and eat.



Footpath Zones

Frontage/dead zone

Space adjoining the property edge that acts as a buffer from the boundary wall and can contain any spill-over activities, like waiting crowd at shops. It allows for an unobstructed walking zone.

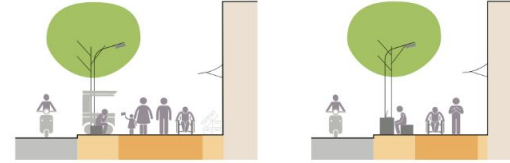
Walking zone

Continuous one-level walking space, free of any obstructions, and ensuring a clear height of 2.4m throughout.

Multi-Utility Zone

Space to provide facilities like street furniture, bus stops, IPT (Informal Public Transit) stands, landscape, children play equipment, street signages, street lighting, telecom and electric boxes, on-street vending, on-street parking, and other public utilities.

Width



High-intensity Commercial Streets

Frontage zone minimum 1m
Walking zone minimum 4m
Multi-utility zone minimum 2m

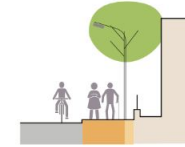
Commercial Streets

Frontage zone minimum 0.5m
Walking zone minimum 2.5m
Multi-utility zone minimum 2m



Residential Streets

Frontage zone minimum 0.5m
Walking zone minimum 2m
Multi-utility zone minimum 0.5m



Narrow streets

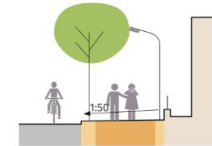
Footpath may be provided only on one side of the ROW $\leq 10m$. MUZ can be optional or provided as discontinuous patches.

Height & Gradient



Height

Top of the kerb should be 150mm high from the finished carriageway surface to prevent mounting of vehicles & ensure comfortable walking for all.



Gradient

Recommended gradient of 1:50* should be maintained for surface runoff.
*Footpath height to be 150mm at kerb edge

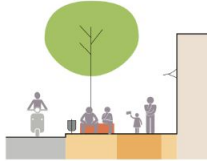
2. Design Healthy Streets using relevant elements

2.1.2 Street Furniture

Street furniture includes seating, play equipment, bollards, railings, street lights, signage etc. It invites people to the location and offers a safe and comfortable place to sit, rest and interact with each other.

While durability of materials should be considered for street furniture, it is essential to have a maintenance plan involving local partners. The design of street furniture should ensure that it is safe to use, aesthetically pleasing, and easily available in case of repairs and/or replacement.

Location & Material



Location

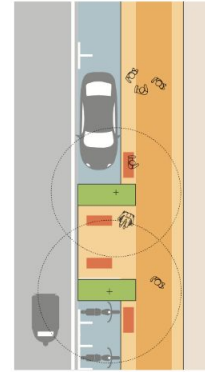
All street furniture should be located in the MUZ to avoid obstruction in the walking zone. The layout of furniture should be such that it is universally accessible and convenient to use and maintain.

Material

Street furniture should be made of materials that are durable, easy to procure, and cheap to maintain.



2.1.2A Seating



Layout

Seating layout should be planned keeping in mind the landscape layout and/or other shaded areas to ensure climatic comfort.

Orientation

Streets with wide MUZ (>1.5m) can have a group seating layout perpendicular to the direction of pedestrian movement.

Streets with narrow MUZ (<1.5m) can have a linear seating layout along the direction of pedestrian movement.



Design

Seats may have backrest and armrest. Height and depth of seats should be 450mm (excluding backrest).

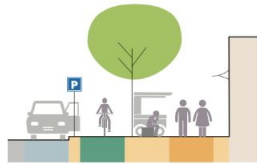


2. Design Healthy Streets using relevant elements

2.2 Cycle Tracks

Physically segregated cycle tracks ensure safety and reduce the possibility of encroachment by motor vehicles and street vendors. Cycle tracks should be continuous, with smooth turnings to allow uninterrupted movement and well-shaded to provide comfort. It is important to provide sufficient walking space and clearly demarcate space for cyclists to avoid pedestrians walking in the cycle tracks.

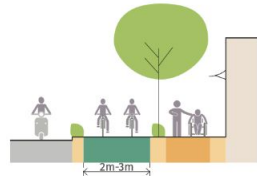
Location



A buffer of minimum 0.5 m should be provided between cycle track and parking lane / carriageway to protect the cyclists from dooring.

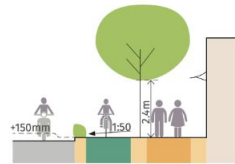
For wider footpaths, MUZ and its elements can be located between the walking zone and the cycle track as a buffer.

Design



Width

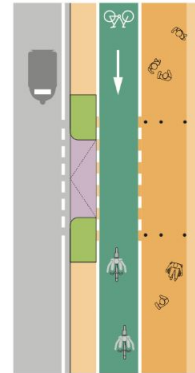
Cycle tracks should be minimum 2m wide for one-way movement and minimum 3m wide for two-way movement.*



Height

Cycle tracks should be raised at the same level as the footpath, with 1:50 gradient for surface runoff. Vertical clearance of 2.4m should be maintained at all points.

Continuity



Across property entrances

At property entrances, the cycle track should continue at the same level and vehicle access should be provided by a ramp in the buffer, where possible.

Bends of 30 m radius or more are preferred on segregated bicycle tracks to allow cycling at comfortable cruising speeds



Pashan Sus Road, Pune

2. Design Healthy Streets using relevant elements

2.7 Traffic-calming measures

Traffic-calming elements ensure pedestrian and vehicle safety by reducing speed and therefore, reducing the risk of fatalities and serious injuries on impact. Well-designed traffic-calming measures provide a safe environment to pedestrians and cyclists when they share the road space with motor vehicles.



Aundh D.P., Road, Pune

Vertical Displacement



Speed Tables

In streets with high pedestrian footfall, speed tables combined with transverse bar marking (as per IRC:99) should be provided for midblock crossings.



Speed Bumps

Speed bumps are ready to install bumps that can be nailed to the carriageway. Speed bumps can be provided on local and collector streets with less traffic.

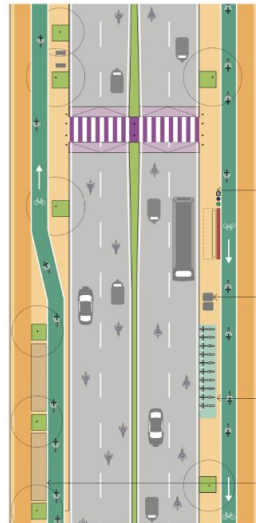
2. Design Healthy Streets using relevant elements

2.8 Public Amenities

Integrating public amenities, like public bicycle sharing, dustbins, drinking water facilities, toilets, garbage containers, and clean environment on the streets enhance its attractiveness.

Location

Public amenities should be located within 50m distance from all transit stations, commercial shop fronts and vending areas, owing to the expected high footfall and nature of activity.



Dustbins

Separate wet and dry waste dustbins should be provided in the MUZ within a maximum surface area of 1.5 sq.m. at a preferable frequency of 50-75m.

Public Toilets

Modular public toilets should be located in the MUZ along major streets near high footfall areas (like transit stops, vending), and in underserved neighbourhoods.

Public Bicycle Sharing Station

Public bicycle sharing stations should be located at a maximum distance of 300m apart, close to the cycle tracks in the MUZ.

Play & Gym Equipment

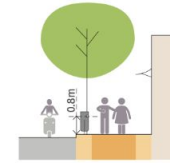
Play & Gym equipment can be located in the MUZ based on the demand and adjacent building-uses.

Design



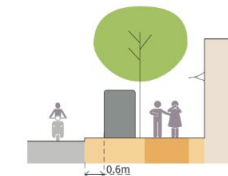
Public Bicycle Sharing Stations

Public Bicycle Sharing Stations should be located adjacent to the cycle tracks, within the MUZ, ensuring a 0.5m buffer from the cycle track and adequate space for pedestrians.



Trash bins

Opening of the bins should not be above 0.8m.



Public Toilets

Modular public toilets should be placed at a minimum 0.6m clear distance from the kerb edge and a minimum 2m clear walking zone in front of it.

Toilets should be universally accessible and the environment around them should be pleasant.*

*Refer IRC:SP:117 for detail design.



Play & Gym Equipment

Play & gym equipment should be located within the MUZ, ensuring safety from moving vehicles.

Seating arrangement should be integrated with the equipment, preferably every 50-100 m, to ensure the comfort for caregivers.

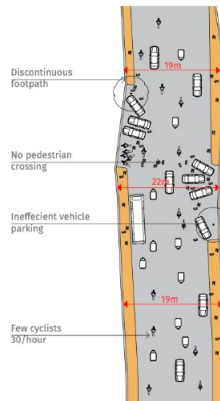
3. Test new ideas by contextualising design templates

3.1 Design Process

The design process initiates with a study and analysis of the existing streets to understand:

- Narrowest Right of Way along the street
- Demand for parking
- Number of cyclists (both directions) every hour
- Vehicle entrances per 100m of street
- Pedestrian & vehicle counts and movement patterns

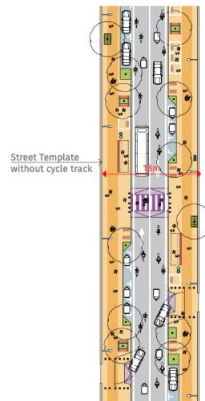
Based on the above findings, appropriate street template can be contextualised to suit the local context.



Step 1: Study existing conditions

Study the existing conditions on the street, including, the available Right-of-Way (RoW), pedestrian movement, desire lines, parking counts and violations, vehicular traffic, etc.

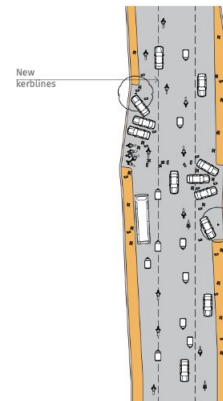
Identify and demarcate all the different RoWs on the street between two consecutive intersections.



Step 2: Identify relevant street template

Based on the following key points, select a relevant street template:

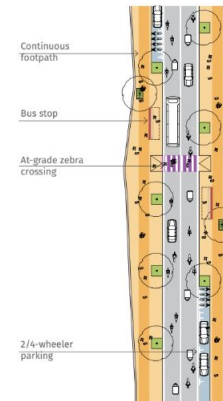
- Narrowest RoW of the existing street to identify the closes street width template
- Proposed and identified pedestrian, cyclist, and parking counts to determine the typology
- Number of property entrances to determine the need for service lane



Step 3: Overlay the template on existing street

Overlay the selected template on the drawing of the existing street

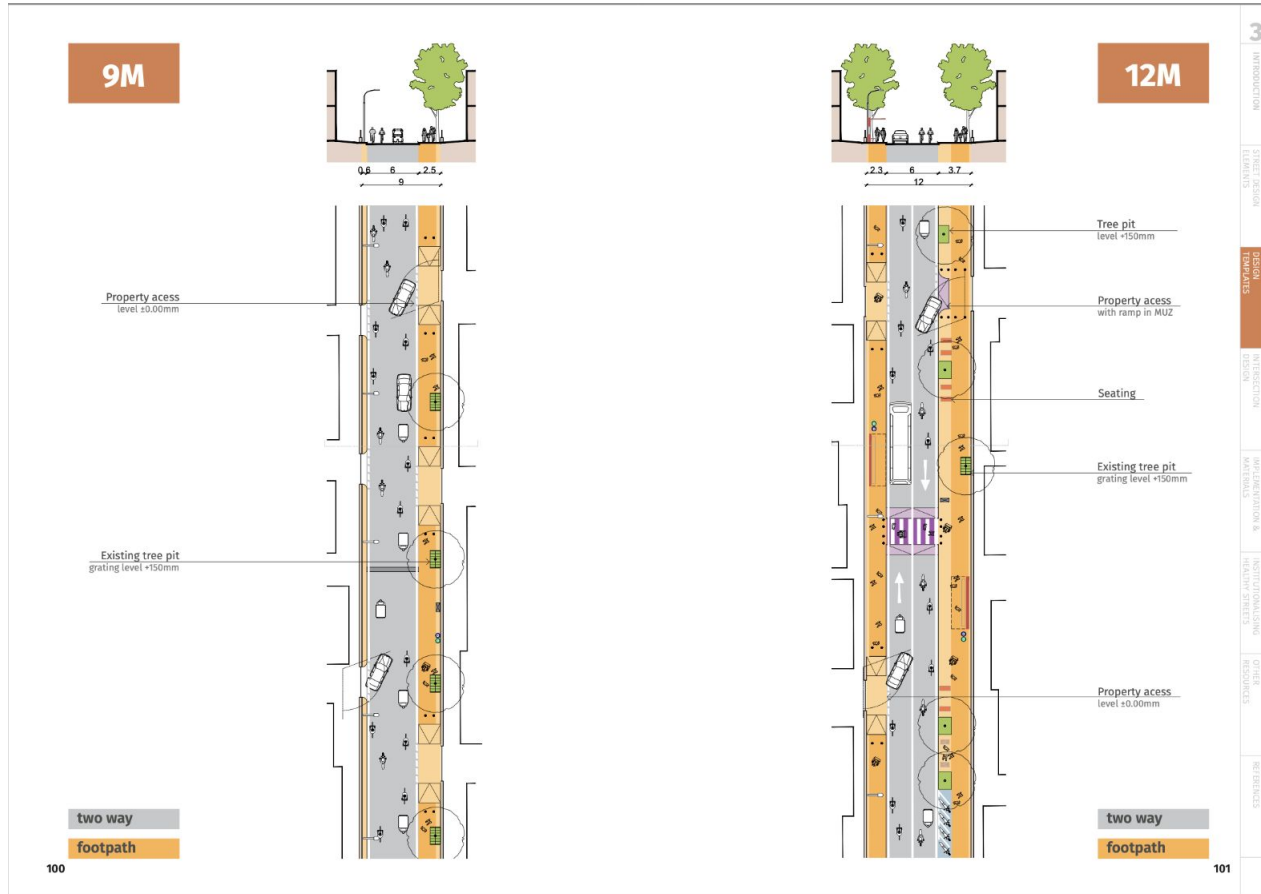
Align the centreline and mark the new kerblines on the street



Step 4: Detail the street design

Refer to 'Chapter 2: Street design elements' and detail out the street edge to suit the local context.

3. Test new ideas by contextualising design templates

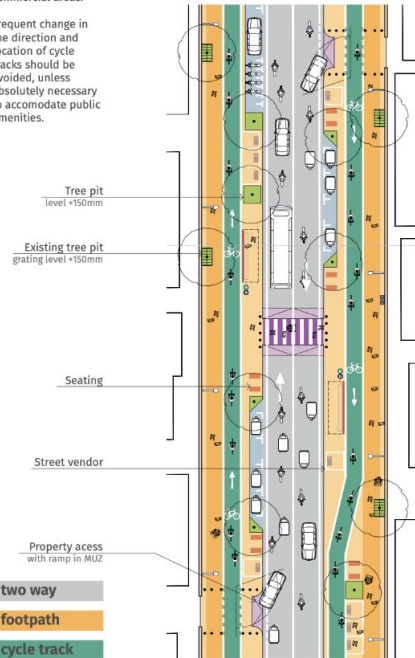
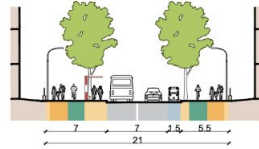


3. Test new ideas by contextualising design templates

21M

It is recommended to provide IPT stands only in locations with high footfall, like transit stations, hospitals, schools, commercial areas.

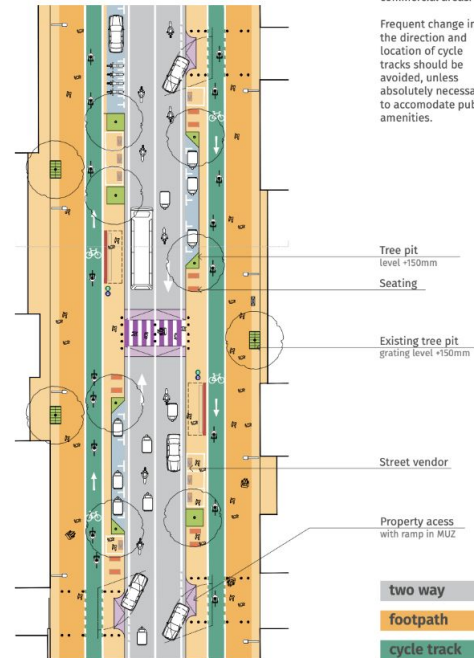
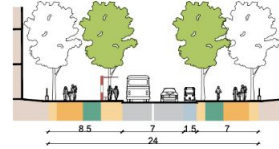
Frequent change in the direction and location of cycle tracks should be avoided, unless absolutely necessary to accommodate public amenities.



24M

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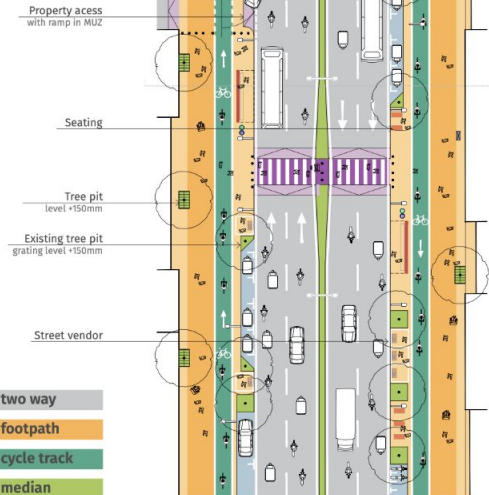
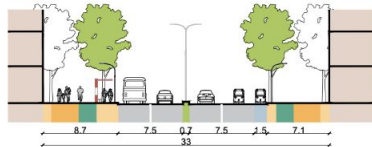
3	INTRODUCTION
	STREET REGION
	ELEMENTS
	DESIGN
	STANDARDS
	INTERSECTION
	INTERSECTION DESIGN
	MARKETPLACES & MATERIALS
	MARKETPLACES & MATERIALS
	CONTEXTUALISING HIGHWAY STREETS
	OTHER RESOURCES
	REFERENCES

3. Test new ideas by contextualising design templates

33M

It is recommended to provide IPT stands only in locations with high footfall, like transit stations, hospitals, schools, commercial areas.

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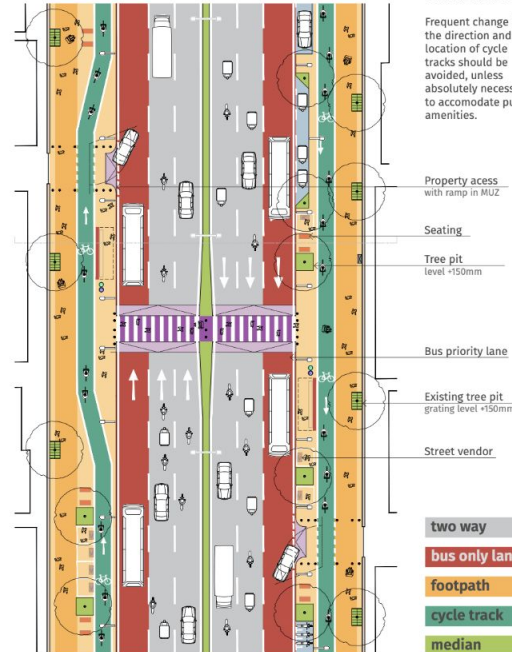
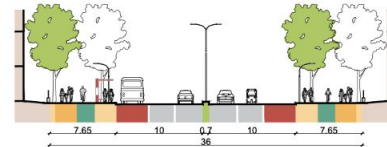


- two way
- footpath
- cycle track
- median

36M

It is recommended to provide IPT stands only in locations with high footfall, like transit stations, hospitals, schools, commercial areas.

Frequent change in the direction and location of cycle tracks should be avoided, unless absolutely necessary to accommodate public amenities.



- two way
- bus only lane
- footpath
- cycle track
- median

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STREET DESIGN	STREET DESIGN ELEMENTS
DESIGN TEMPLATES	DESIGN TEMPLATES
INTERSECTION DESIGN	INTERSECTION DESIGN
ROADWAY DESIGN & MAINTENANCE	ROADWAY DESIGN & MAINTENANCE
INSTITUTIONALISM	INSTITUTIONALISM
OTHER RESOURCES	OTHER RESOURCES
REFERENCES	REFERENCES

3. Test new ideas by contextualising design templates

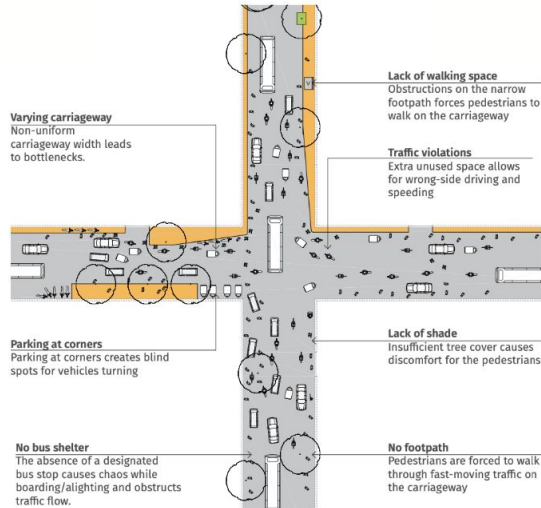
4.2 Example - Roundabout

This example represents two perpendicular streets, intersecting at an unsignalled junction. Each street has a 12m wide Right of Way and two-way vehicular movement with buses plying and haphazard parking.

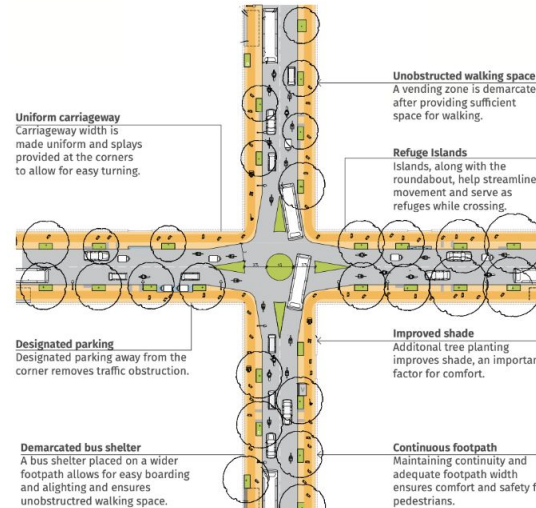
In unsignalled intersections, a roundabout can improve safety by simplifying turns, consolidating intersection movements and reducing speeds.



Before



After



4. Choose the right materials for your context

5.2 Flooring Finish

There are three types of flooring finish:

- Unit paving - natural stone
- Unit paving - manufactured
- Cast-in-situ

Flooring finish should be selected such that it is adaptable to different weather conditions and suitable as per universal accessibility requirements.



5.2.1 Unit paving - natural stone



Stone Blocks

Pros

- Highly durable, less prone to weathering; 0.08 m thick stone blocks can be used for bearing vehicular load as well
- Can be laid in variety of design patterns
- Easy to dismantle for future repairs

Cons

- Expensive; heavy to transport
- Results in uneven surface and sinking if sub-base is not prepared with care
- Prone to dismantling if kerbs are not installed properly

Application

On carriageways for slowing traffic, landscaped zones, shared streets, at entries for gates and ramps; avoided on footpath due to its highly undulated surface

Stone Slabs/Tiles

Pros

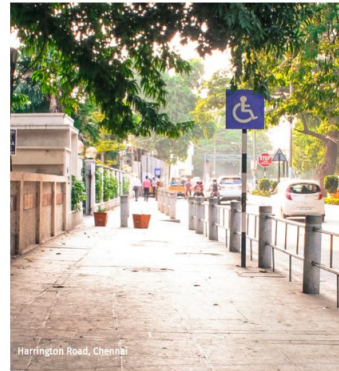
- Thicker slabs are durable; less prone to weathering
- Can also be used as cladding or seating to compliment the pavement finish

Cons

- Expensive and heavy
- Thinner slabs prone to breakage if mishandled or dropped
- Labour-intensive to install
- Slippery during rains if polished
- Results in uneven surface and sinking if sub-base is not prepared with care

Application

Sandblasted/leather finished stone on footpath - generally in select projects; not recommended on cycle tracks and load-bearing areas



4. Choose the right materials for your context

5.4 Seating

There are four preferred types of seating materials:

- Stone
- Precast concrete
- Metal
- Fibre reinforced polymers

Seating material should be selected such that it provides comfort in all weather conditions.



J.M. Road, Pune



Stone

- Pros**
- Highly durable, less prone to weathering
 - Does not chip away easily

- Cons**
- Expensive
 - Labour-intensive to install



Precast concrete

- Pros**
- Cost-effective
 - Can be cast in different shapes as per design
 - Pigmented concrete mixture results in homogeneity, as opposed to painted seats

- Cons**
- Tends to chip off with time
 - If painted, colour chips off with time

J.M. Road, Pune

**We hope to bring together LEARNINGS from all of us to
scale-up 'Healthy Streets, Healthy Cities, Happy Lives'**

Share your learnings with us

streets4peoplechallenge@gmail.com

cycles4changechallenge@gmail.com

