# Implementation and Systemic Change with UTTIPEC Street Design Guidelines

Presented by:

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# Structure of presentation

1. **Overview** of the UTTIPEC Street Design Guidelines and there adaptability to all Indian cities.
2. **Success stories:** Aurobindo Marg, I P Marg, Bhairon Marg
3. **Reclaiming street space from private parking:** Pilot at Vikas Marg
4. **Multimodal Integration at Metro stations:** Pilot at Chhatarpur Station:
5. **Systemic Capacity Building:** The training workshops and issues identified and important leanings.
6. **Third party Audits and Community feedback:** Findings & Next Steps
7. **International & National relevance:** Ongoing participation with Pune, Mumbai, Hyderabad, etc.

# 1 Overview

**Street Design Guidelines:**

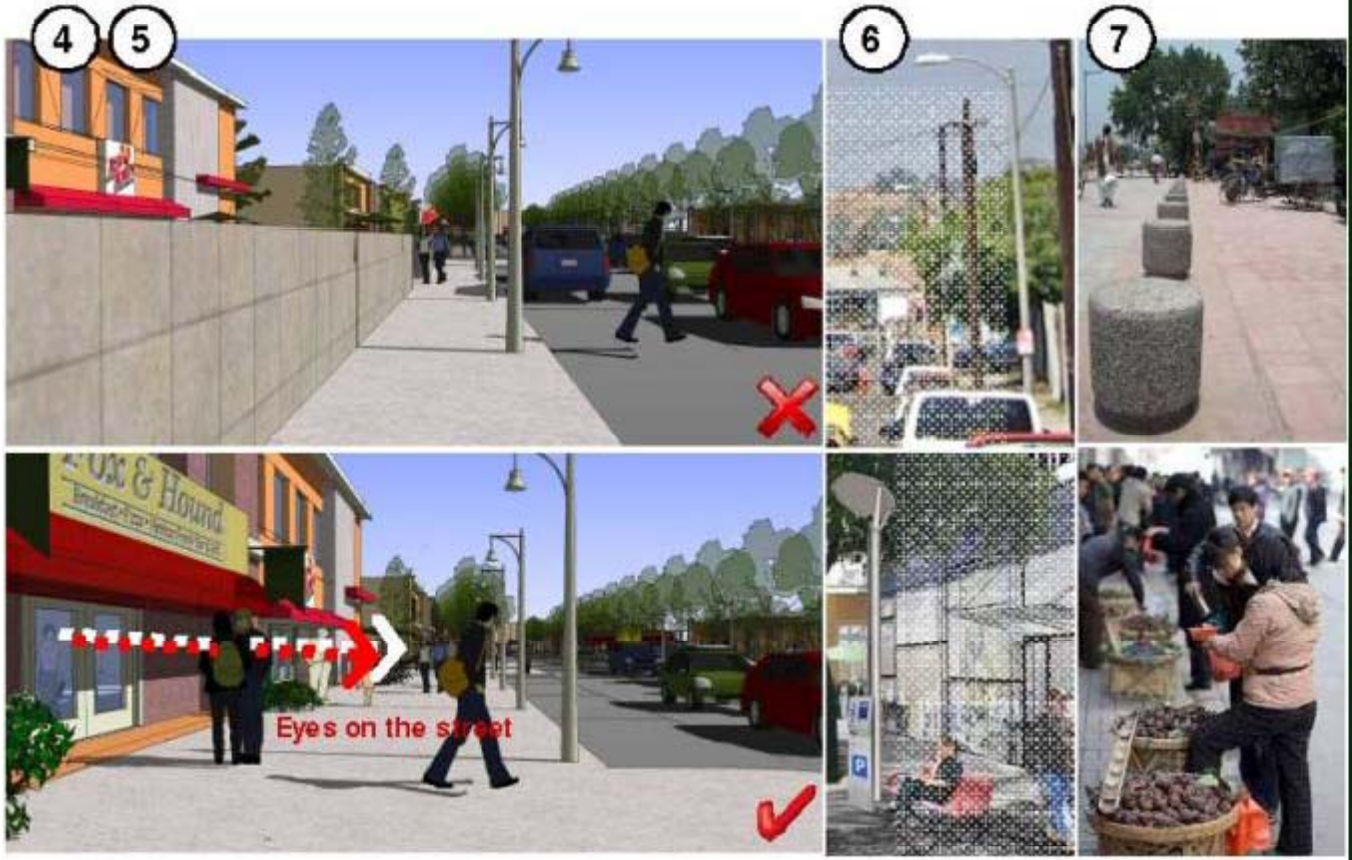
**Adopted by (in Delhi):**
PWD, CPWD, MCD, NDMC, etc.

**Incorporated Nationally:**
IRC Codes

**Being Adopted by (still in process):**
Corporations and Public Works departments in Mumbai, Pune, Hyderabad

# Street Design Guidelines: Key Principles

## HUMAN SAFETY AND COMFORT




To ensure pedestrian safety:

4. Create "eyes on the street" – by removing setbacks and boundary walls and building to the edge of the street ROW. This would allow people from inside to look out on to the pavement, thus discouraging misbehaviour, shady corners, peeing, etc.)
5. Require commercial facades to have minimum 30% transparency.
6. Provide adequate Street Lighting for pedestrians and bicycles.
7. Create commercial/ hawking zones at regular intervals (10 minute walk from every home in the city) to encourage walkability, increase street activity and provide safety. (e.g. Mumbai, Shanghai)

Source: UTTIPEC Street Design Guidelines

# Street Design Guidelines: Key Principles

## PROVIDE CLIMATIC COMFORT

For climatic comfort:

8. *Trees* are an essential component for all streets – to provide shade to pedestrians and reduce solar gain.

9. *High albedo* (diffuse reflectivity) materials for paving reduces urban heat island effect.

10. Built to Pavement edge buildings with overhangs and arcades provide excellent protection to pedestrians.



Source: UTTIPEC Street Design Guidelines

# Street Design Guidelines: Key Principles

## UNIVERSAL ACCESSIBILITY AND PUBLIC UTILITIES




To ensure universal accessibility and amenities for all street users:

11. Provide at-grade crosswalks (and overpasses on highways) at maximum intervals of ~70-250 M, aligning with location of transit stops, type of street / landuse activities and neighboring building entries and destinations.
12. Provide Dustbins, postboxes, signage and other public amenities at street corners for high usability.
13. Provide Accessible Public Toilets at every 500 -800 M distance – preferably located close to bus stops for easy access by pedestrians and public transport users.
14. Follow universal accessibility design standards to make public streets & crosswalks fully navigable by the physically handicapped.

Source: UTTIPEC Street Design Guidelines

# Street Design Guidelines: Key Principles

## REDUCE HEAT ISLAND EFFECT & STORM WATER MANAGEMENT

To reduce urban Heat Island Effect and aid natural storm water management:

15. Decrease impervious surfaces through permeable paving, tree planting zones, etc. to increase ground water infiltration & prevent seasonal flooding.

16. Integrate Natural Storm Water filtration and absorption into street design through bio-filtration beds, swales and detention ponds.

17. Decrease Heat Island Effect (HIE) by increasing greenery, planting trees, using reflective paving, etc.


Permeable Paving

Infiltration beds

Bio-filtration beds

Source: UTTIPEC Street Design Guidelines

# Street Design Guidelines:

Aims to make Delhi pedestrian friendly and encourage use of PT by Street Design

# 2a Success stories: Aurobindo Marg

**Aurobindo Marg**

**Cycle Accidents**


**Pedestrian Accidents**


# Aurobindo Marg does a U-turn

**SAFER** In comparison to last year's 9 deaths till Aug 15, only 1 person has died on the stretch this year

Subhendu Ray
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**NEW DELHI:** Infamous for being among the 20 deadliest road stretches in Delhi till last year, Aurobindo Marg has today become one of the safest for road users.

A major arterial road in south Delhi that connects the historic Safdarjung's Tomb with Qutab Minar, Aurobindo Marg recorded an average of 13 road deaths till last year. This year, however, only one death has been recorded to date.

Traffic police officials claimed that certain steps had resulted in the sharp decline.

"We have taken measures to restrict the speed of vehicles on the road. Only one person has been killed in a road accident this year as of now. This is a record," said Satyendra Garg, joint commissioner of police (traffic).

The accident happened on the morning of July 20, when a pedestrian died after being hit by an unknown vehicle.

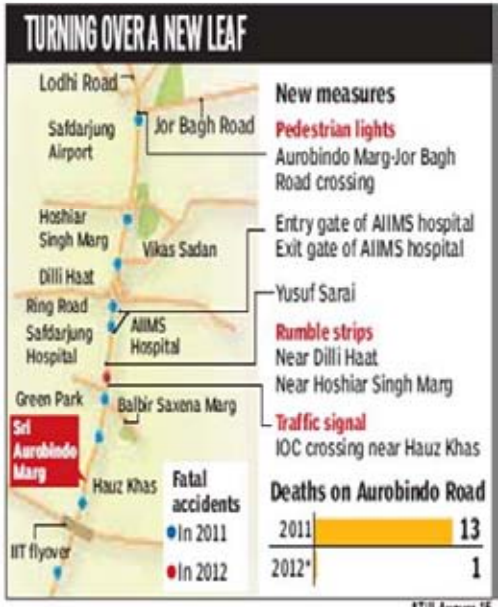
Till August 15 last year, as many as nine persons were killed in accidents on the road. This included five pedestrians, one two-wheeler rider, one car driver, one riding an auto-rickshaw and one cyclist. Thirteen people were killed during the year.

Since then, the traffic police have put four pedestrian lights, two speed-calming rumble strips and one traffic signal on the 2.5-km stretch connecting IIT flyover and Lodhi Road crossing on Aurobindo Marg.

Pedestrian lights have been placed near Aurobindo Marg-Jor Bagh Road crossing, entry and exit gates of AIIMS hospital and Yusuf Sarai, rumble strips near Delhi Haat and Hoshiar Singh Marg and traffic signal at IOC near Hauz Khas.

Road users, however, have complained that these steps have slowed down traffic on the stretch and at times cause jams.

"We are examining whether we can do away with the problem. If it is feasible, we will do it," said a traffic police officer.




**At-Grade crossing with Pedestrian Signal at Aurobindo Marg**

# 2b Success stories: I P Marg


Implemented by: PWD Delhi; R/W 45m, Street Design Consultant: Oasis Designs Inc.

Plan


View of IP Marg Junction

INDRAPRASTHA MARG, New Delhi



**A pedestrian friendly junction-**

**View of I.P. Marg Junction**

INDRAPRASTHA MARG, New Delhi

BEFORE


**Redesigned for Universal Access-** **Footpath along P.H.Q.**

INDRAPRASTHA MARG, New Delhi


**Redesigned for pedestrians and cyclists- Footpath ICAI**

**Redesigned for Universal Access-** **Provision of tac-tiles**


**Provision of Public Amenities-** **Near ITO Bus stand**

INDRAPRASTHA MARG, New Delhi


**Provision of MUZ-** **Footpath along P.H.Q.**

# Success stories: Bhairon Marg

## site before intervention


The path connecting crafts museum to Pragati Maidan, irregular, undefined and uninviting

Footpath not continuous. The pedestrian has to jump across the railing and climb down the high kerb to cross the entry of national science centre.

Pedestrian marginalized, no equitable distribution of road space.

Large stretches of extra tar space all along the road for various reasons.( Here for a bus bay) with no tree cover on top- leading to extreme heat island effect

The entry and exit to the parking not planned properly, leading to unnecessary long queues during exhibition time.

Steep subway steps on either side of Bhairon Marg- designed like a stepped well-further connections confusing and without directions especially on the other side of Pragati Maidan, it wasn't clear where the subway was leading to.

Footpath missing at many stretches. This shows pedestrian generally is the last priority in our city

Unutilized vehicular underpass connecting the parking , being used as a garbage dump.

The largest car and bus parking serving Pragati Maidan is along this road. No storm water management and no tree cover.

Bhairon Mandir entry. Not defined

# Success stories: Bhairon Marg

## site after intervention



All large pterospermum trees incorporated in the design.


A new pedestrian plaza created along Bhairon marg connecting the 2 subway


Seamless pedestrian connection in front of National science centre.


Cycle track front path & a que up lane added at road level next to the purana


All existing trees incorporated as an integral part of the design scheme.


The walk between crafts museum to pragati maidan showing a wide promenade like path with a seating wall, the cycle track is loosely segregated by concrete seating block & pili panels.


The 1st flight of the subway steps in removal lowering the level of the linear plaza.


The existing underpass that was earlier vehicular at one end of the linear plaza.


A typical walkway on Bharon marg with trees seating walls, cycle track.


Equitable distribution of road space lighting provided for the pedestrian

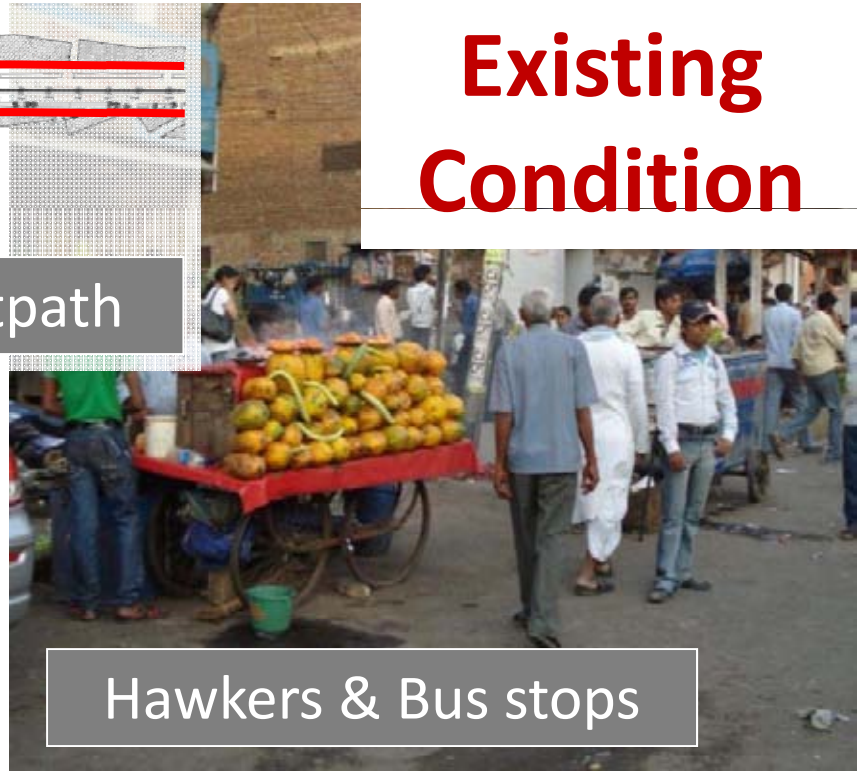

**Provision of MUZ-** **Footpath along Pragati Maidan**

# 3 Reclaiming street space from private parking:

## Pilot at Vikas Marg

# Existing Condition


Encroachment on footpath

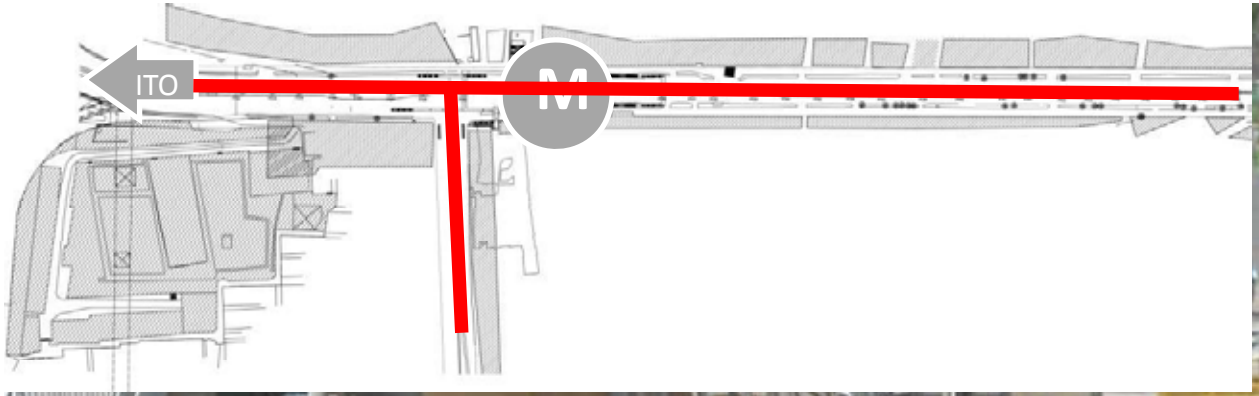


Hawkers & Bus stops

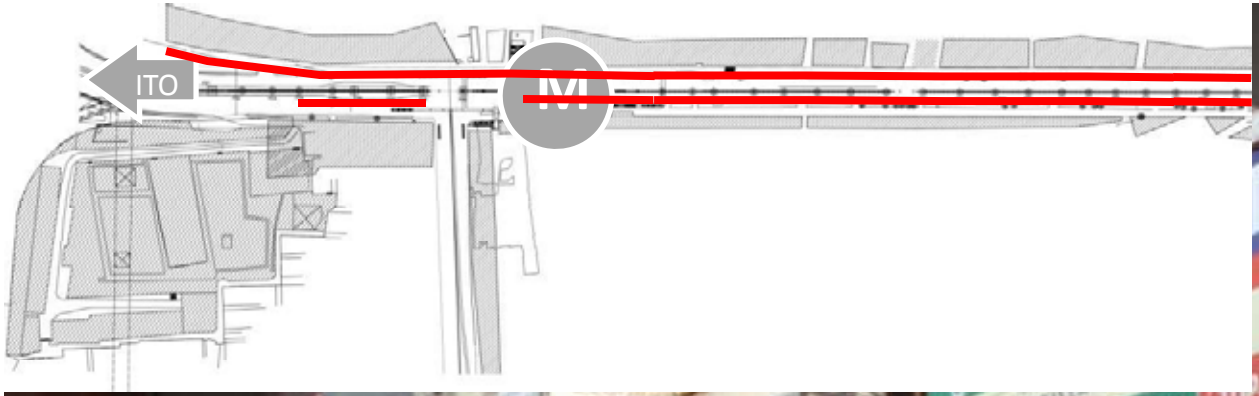
Public Utilities

Cars & Rickshaws

# Existing Condition




Separate lanes required for NMT




Slip Roads have taken over pedestrian zones

# Pilot at Vikas Marg

## Key Principles of redesign:

**Planning of a parking allocation strategy-**

On-street Short Term & Off-Street Long Term

**Redesign of existing Footpaths and Service lanes-**

on Principles of UTTIPEC Street Design Guidelines and Multi Modal Integration

**Working out Parking management and Parking Fee Strategy**

**Urban Design Improvement of Reclaimed Land**

# STEP-1

## Provision of Parking lots for Long-term stay


**Image Source: Vikas Marg Transit Corridor improvement project, UTTIPEC**

# STEP-2 Redesigning Footpaths and service lanes

Pedestrians

NMT

Motorized Vehicles

Buses

Intermediate Public Transport (Autos)


Public Utilities

Hawkers/ Vendors

Table tops and kerb ramps for universal access

## Equitable distribution of road space.

Image Source: Vikas Marg Transit Corridor improvement project, UTTIPEC

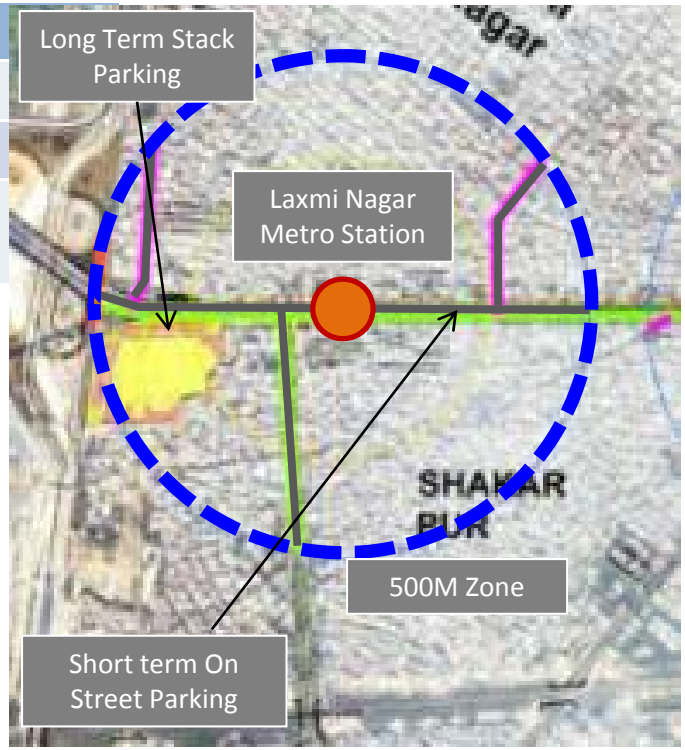
# STEP-3 Parking management and fee strategy

| Type of Parking | Location | Existing Rates | Proposed Rates | Penalty for extra time |
|---|---|---|---|---|
| 5 Min Drop off | On Street | Rs. 10 | Free | Pay for 1 Hr |
| Upto 1 Hr | On Street | Rs. 10 | Rs. **X** | Pay for 1.5 Hr |
| Upto 1 ½ Hrs | On Street | Rs. 10 | Rs. 2**X** | Pay for 2 Hrs |
| Upto 2 Hrs | On Street | Rs. 10 | Rs. 4**X** | Either move to stack parking OR the Car would be Impounded with Rs.1000 as fine. |
| **NO ON STREET PARKING ALLOWED BEYOND 2Hrs.** | | | | |
| 8Hr | Stack Parking | Rs. 10 | Rs. 2**X** | |
| Night Only | Stack Parking | Rs. 20 | Rs. 1 ½ **X** | |
| Monthly | Stack Parking | Rs. 600-700 | Rs. 60**X** | |

**Exponentially high street Parking fees**

**Symbiotic ON/OFF street parking**

**One PMZ ⇔ One Management**



# STEP-4

**Removal of illegally parked cars into authorised parking lot-**

**Leading to Urban Improvement**

**Image Source: Vikas Marg Transit Corridor improvement project, UTTIPEC**

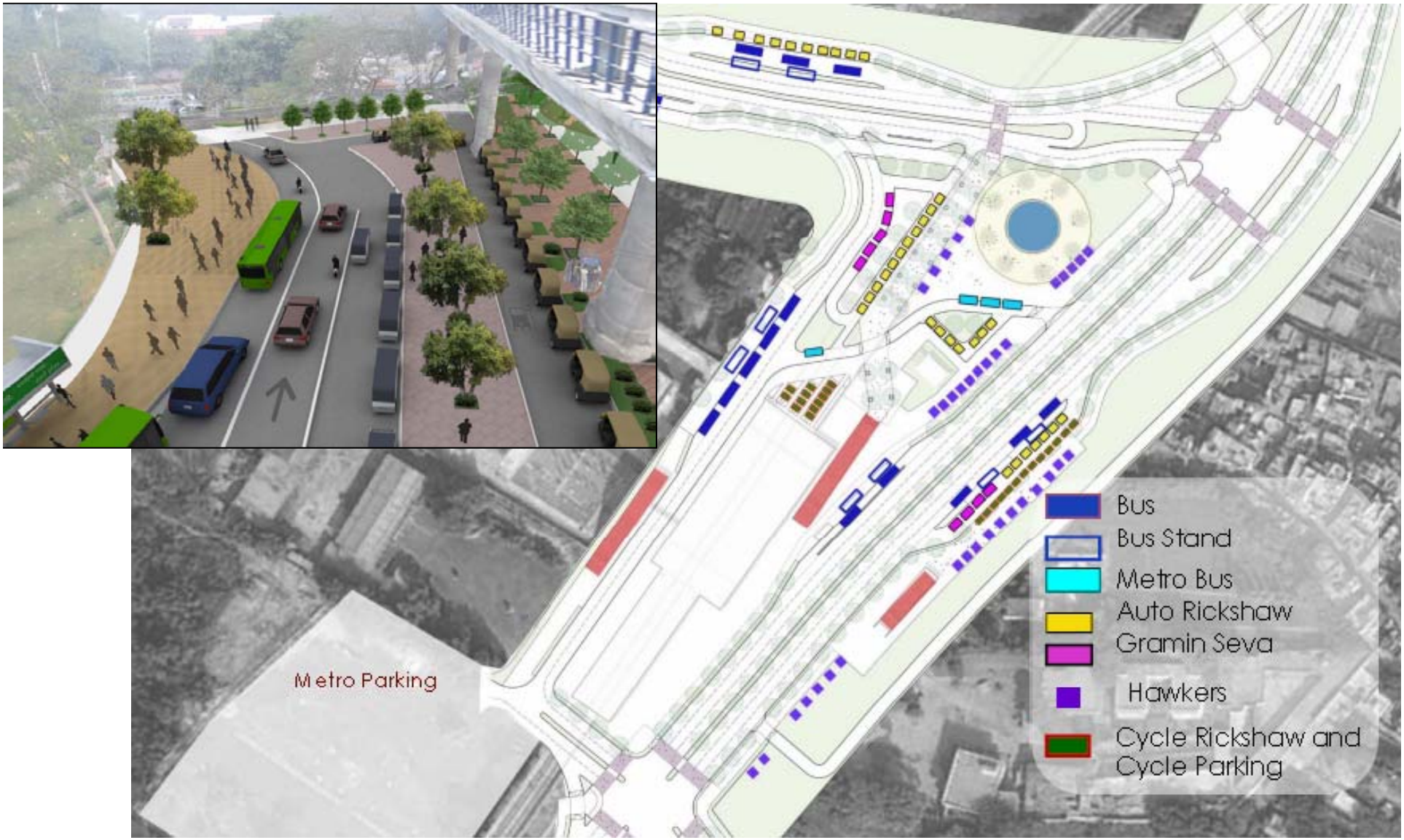
Exisitng


Pedestrians walking on Service lane | NMT traffic merging with Pedestrians | Cars parked on Footpath


Proposed
P
3104
Footpath for the Pedestrians I Segregated Track for NMT I Cars & Cycles parked in Parking Bays

# 4 Multimodal Integration at Metro stations:

## Pilot at Chhatarpur Station



# 5 Systemic Capacity Building:

## The training workshops.



# Workshop on street design guidelines

Chanchal Mukherjee
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To guide the engineers and architects working on public projects so that they make roads safe and usable for pedestrians, cyclists, rickshaws, street vendors as well as cars and two-wheelers, a workshop on street design guidelines was organised by the East Delhi Municipal Corporation (EDMC) last Saturday at Udyog Sadan.

These guidelines were put together by the Unified Traffic and Transportation Infrastructure Planning and Engineering Centre (UTTIPEC) three years ago, to be followed on roads across the city.

Everybody from top officials to junior engineers working in EDMC participated in the workshop. A questionnaire for engineers was also circulated, to get their viewpoint.

Said an engineer on condition of anonymity, "It was an interactive session and we were engineers got a chance to clear their doubts and queries regarding the construction of roads and pavements, as per the guidelines."

The UTTIPEC guidelines also state how persons with disabilities (physically and visually challenged persons) can feel safe while negotiating a street. They also suggest how streets can be made in a manner that stormwater does not accumulate on the roads or flows back into homes.

Said SC Mittal, superintending engineer, "During the presentation we were given some vital tips."

The officials said although the guidelines were adopted three years ago, the engineers in various departments have not been able to adopt and implement them, due to various reasons.

These range from lack of understanding of the guidelines to shortcomings in coordination, stakeholder consultation and understanding the need and importance of the proposed techniques.

**THE GUIDELINES ALSO STATE HOW PERSONS WITH DISABILITIES CAN FEEL SAFE WHILE NEGOTIATING A CROWDED STREET.**

Often road improvement projects only involve relaying of the motorable carriageway, while improvement of footpaths and provision of amenities like toilets, vendor spaces, organised parking, etc are overlooked.

According to officials of the municipal corporation, the LG office gave some directives recently regarding this to make changes in the current ways of executing road projects and sensitising the engineers.

# 6 Third party Audits and Community feedback:

## Findings & Next Steps

### Audit Cell Structure

| Part-I (Planning/ Safety Audit) | Part-II (Quality Audit) |
|---|---|
| • UTTIPEC Core Team<br>• Samarthyam (Universal Accessibility Audit)<br>• Jagori ( Women Safety Audit) | • CRRI<br>• IIT<br>• NCBM<br>• DTU<br>• SRI |

Audit cell to check city's infrastructure projects

RUHI BHASIN
NEW DELHI, NOVEMBER 1

LIEUTENANT Governor Tejendra Khanna's office has approved a proposal to set up an audit cell, ...

# Soon, audit cell for road projects

## To Check Planning, Safety & Quality Of All Major Infrastructure Projects

Rumu Banerjee | TNN

New Delhi: The problems of potholes on newly constructed roads or entire stretches caving in after rains will soon be addressed. A proposal for setting up an audit cell

TOI file photo

taking samples from the site, says the proposal, which gives a check-list of tests that can be carried out. The quality audit team will be empanelled, said the official.

UTTIPEC is also finalising the terms of reference or

from the third party audit carried out by the agencies. The basis of the two audits will be the street design guidelines as set by UTTIPEC. For the quality audit, the guidelines are the IRC/BIS specifications, added the official.

**KEEPING TABS**

- It's proposed to audit all UTTIPEC-approved projects, including those of road development
- Audit will be done by an Audit Cell consisting of institutes such as CRRI, IIT, NCBM, DTU and others as well as Jagori (for women safety)

**AUDIT WILL BE DONE IN TWO STAGES**

- A planning and safety audit

# 6 Third party Audits and Community feedback:

## Findings & Next Steps

- **Administrative**

  1. Street Design Guidelines (or the IRC 103) not reflected in the CPWD Delhi Schedule of Rates (DSR).
  2. No ownership / accountability.
  3. Lack of coordination between various departments / agencies

- **Budgetary**

  1.Budget approvals mostly not based on adherence to Street Design Guidelines;

  2.Part item-based budget approvals hamper comprehensive retrofitting schemes.

  3.Extremely low maintenance budgets restrict on-going maintenance.

# 6 Third party Audits and Community feedback:

## Findings & Next Steps

- **Design**

1. Capacity building to understand and interpret the principles of and technical solutions provided in the Street Design Guidelines and Storm Water Management.
2. Strengthening in-house team of road owning agencies to include architects, planners and urban designers to build in-house design capacity.
3. Need to 'localise and personalise' the Street Design Guidelines

- **Implementation**

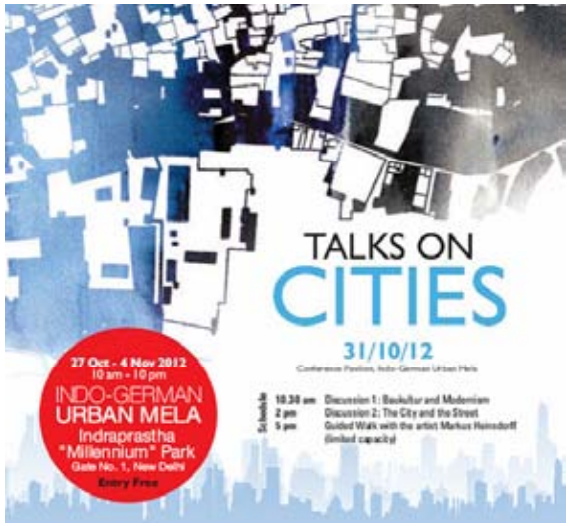
1. Service lines with higher levels or improper locations are a roadblock for implementation of Street Design Guidelines.
2. Lack of public awareness acts as a hindrance in execution.

# 7 International & National Relevance:

Ongoing participation at International Forums

## International Relevance

- Participation on **Sustainable Development at Indo-Urban German Mela**, New Delhi.




- Recent participation at **Transit Oriented Development in London.**

## National Relevance

**MUMBAI**


**HYDERABAD**

## State Relevance

**BPR & D,
New Delhi**


**CSE,
New Delhi**