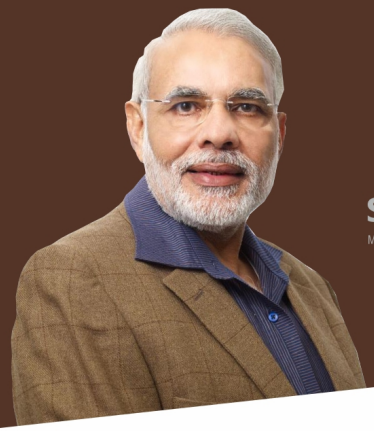


Smart City
MISSION TRANSFORM-NATION

my GOV
मेरी सरकार

SMART CITY MISSION

MAKE OUR SURAT CITY SMART (ROUND-2)

Contest For Visual Improvement-Street

SURAT SMART CITY

Smart City
MISSION TRANSFORM-NATION

WINNER : 1
RAJAN RATHOD

MAKE OUR SURAT CITY SMART

ROUND 2

STREET

VISUAL IMPROVEMENT DESIGN CONTEST

PERSONAL INFO

NAME : Rajankumar Ishwarlal Rathod
ADDRESS : A-806, Akshar Plaza, Opp. Sarita Sagar Sankul. Adajan, Surat
AGE : 52 yrs
GENDER : Male
PROFESSION : Owner- MIRA Consultancy
CONTACT NO : 94281 47635
EMAIL : rirathod64@gmail.com

EXISTING SITUATION STREET

- The contest is divided into two parts ie Junction- Parvat Patiya & Street between Parvat Patiya junction to Jay veer Society.
- **Parvat Patiya Junction - Present Major Issues**
  1. One of the biggest junctions of Surat- Unplanned & Unsafe for Pedestrians and for Vehicular movements.
  2. During peak hours, heavy traffic creates chaos at Junction and complete lack of traffic sense of people has been seen, which is like time bomb for mobility and safety of people crossing the junction.
  3. Existing creek is polluted heavily by local people. It creates environmental and health related issues at the Junction and nearby area.
  4. Lack of Urban infrastructure and available infrastructure is at worst condition.
  5. Encroachment is biggest problem at the Junction.

1 Unplanned & Unsafe Junction

Unsafe

Many people randomly walking in heavy traffic

Random vehicle driving- Creates Chaos situation

Unplanned

EXISTING SITUATION STREET

2 Lack of traffic sense in people

Danger

Rickshaws going on main track in wrong direction

3 Creek : Pollution & Activities

Pollution

Pollution & Dangerous activities in creek

4 Poor Infrastructure

Poor

Condition of Waste Collection Bin not upto the mark

5 Encroachment at Junction

Encroachment

Encroachment at start of BRT route, Puna Road

EXISTING SITUATION STREET

- **Street between Parvat Patiya Junction to Jay veer soc. - Present Minor Issues**
  - **While visiting this street, it seems that existing street is in "good" condition except few issues as mentioned below.**

1 Inaccessible Pedestrian Crossing

Inaccessible Crossing at Krishna Junction

2 Unplanned Parking on Road

Unplanned On-Street Parking

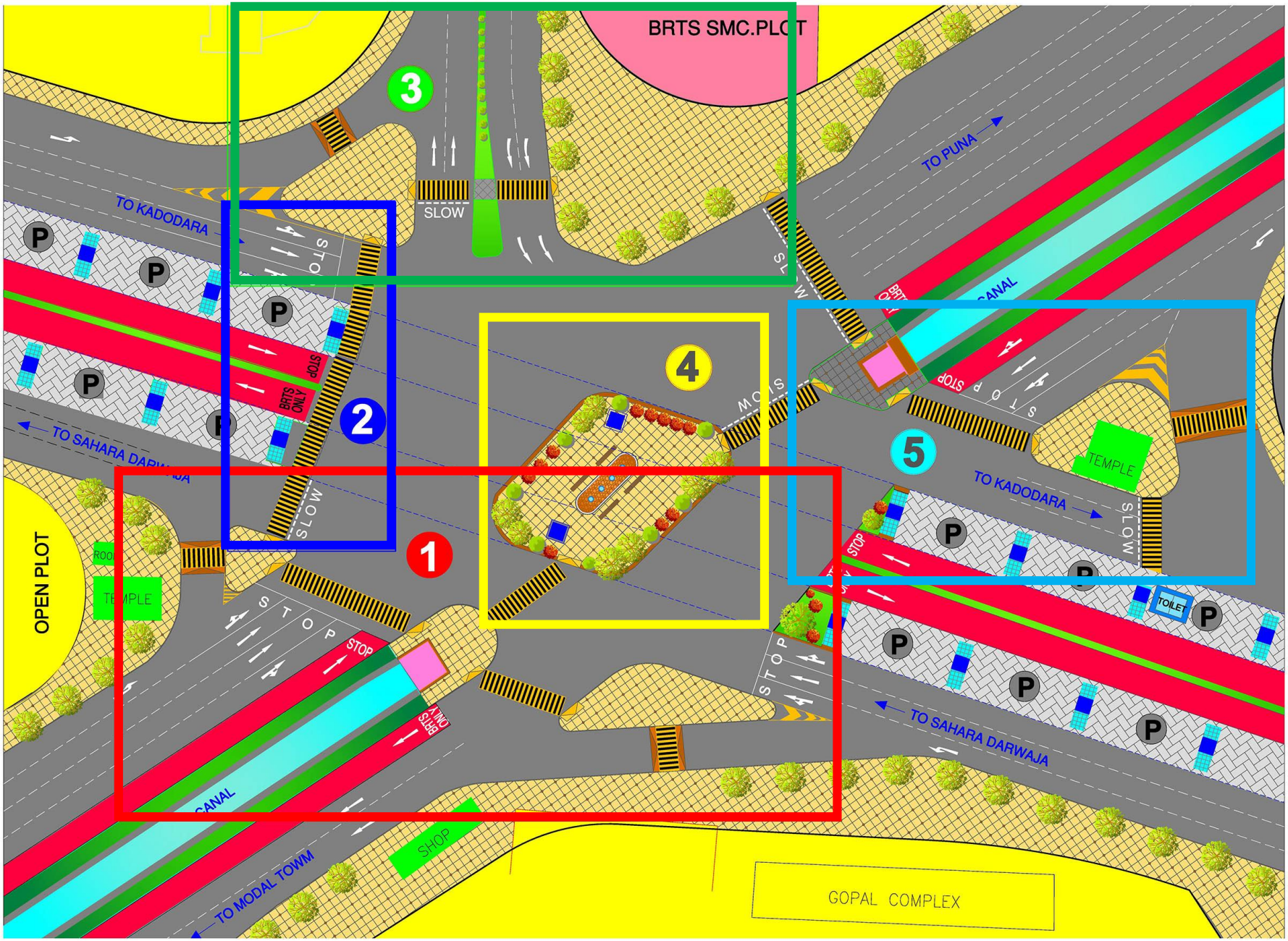
3 Encroachment on Footpath

Encroachment on Footpath on various places

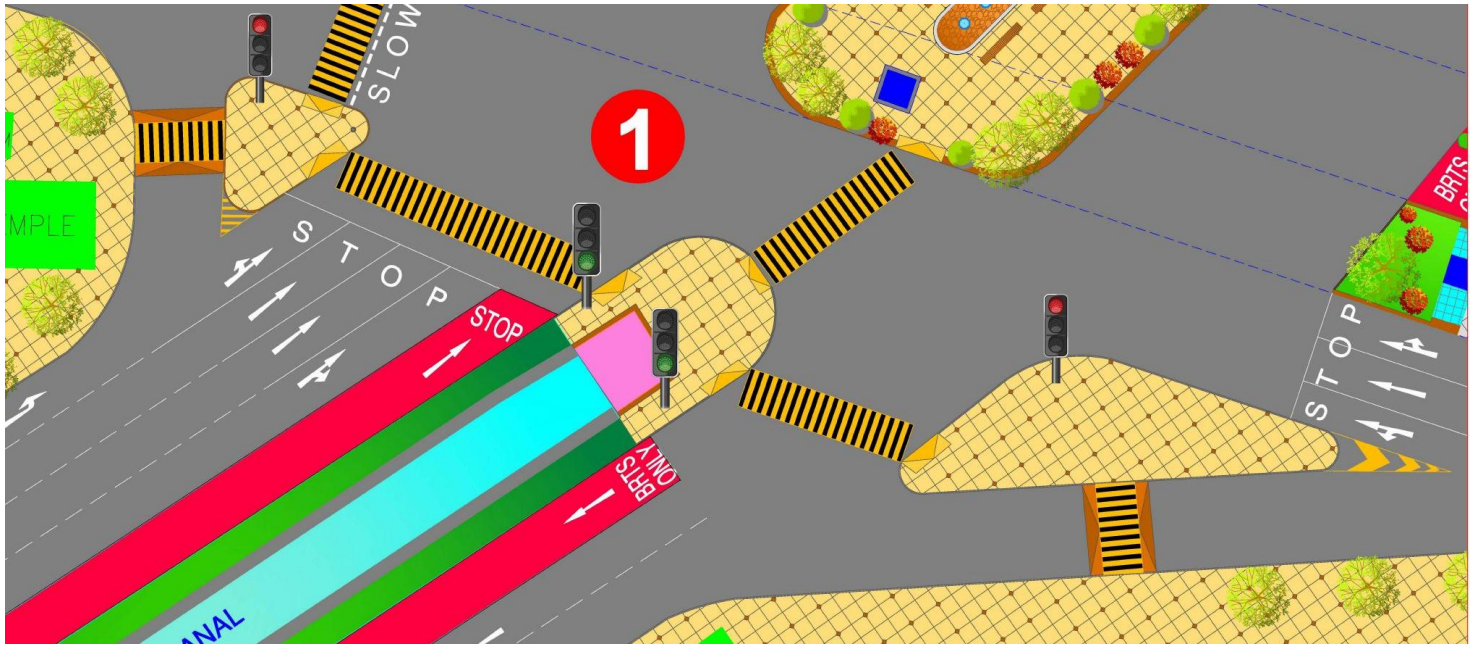
4 Street: Poor Condition at Some Places

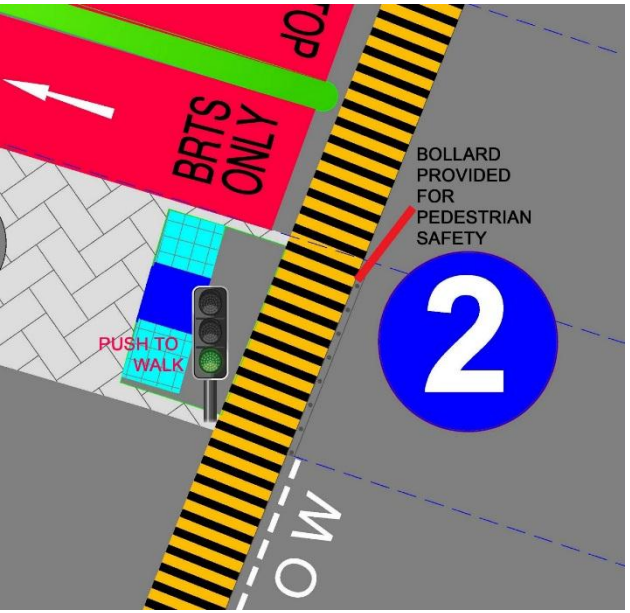
Broken Footpath at various places

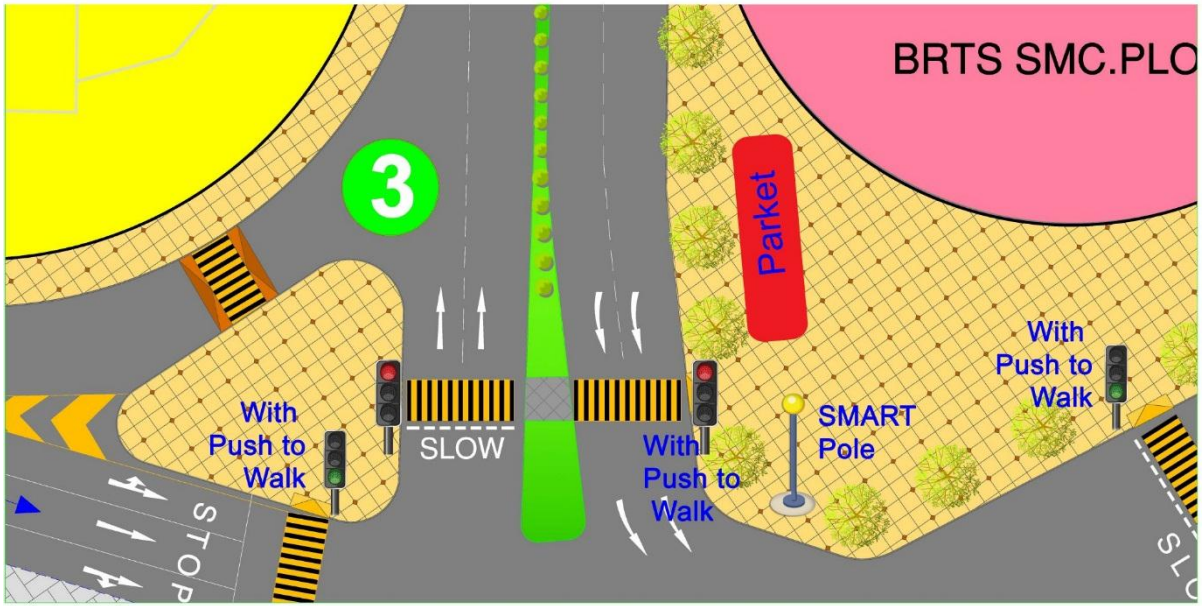
PROPOSED SOLUTION : RETROFITTING PARVAT PATIYA JUNCTION



PROPOSED SOLUTION : RETROFITTING PARVAT PATIYA JUNCTION

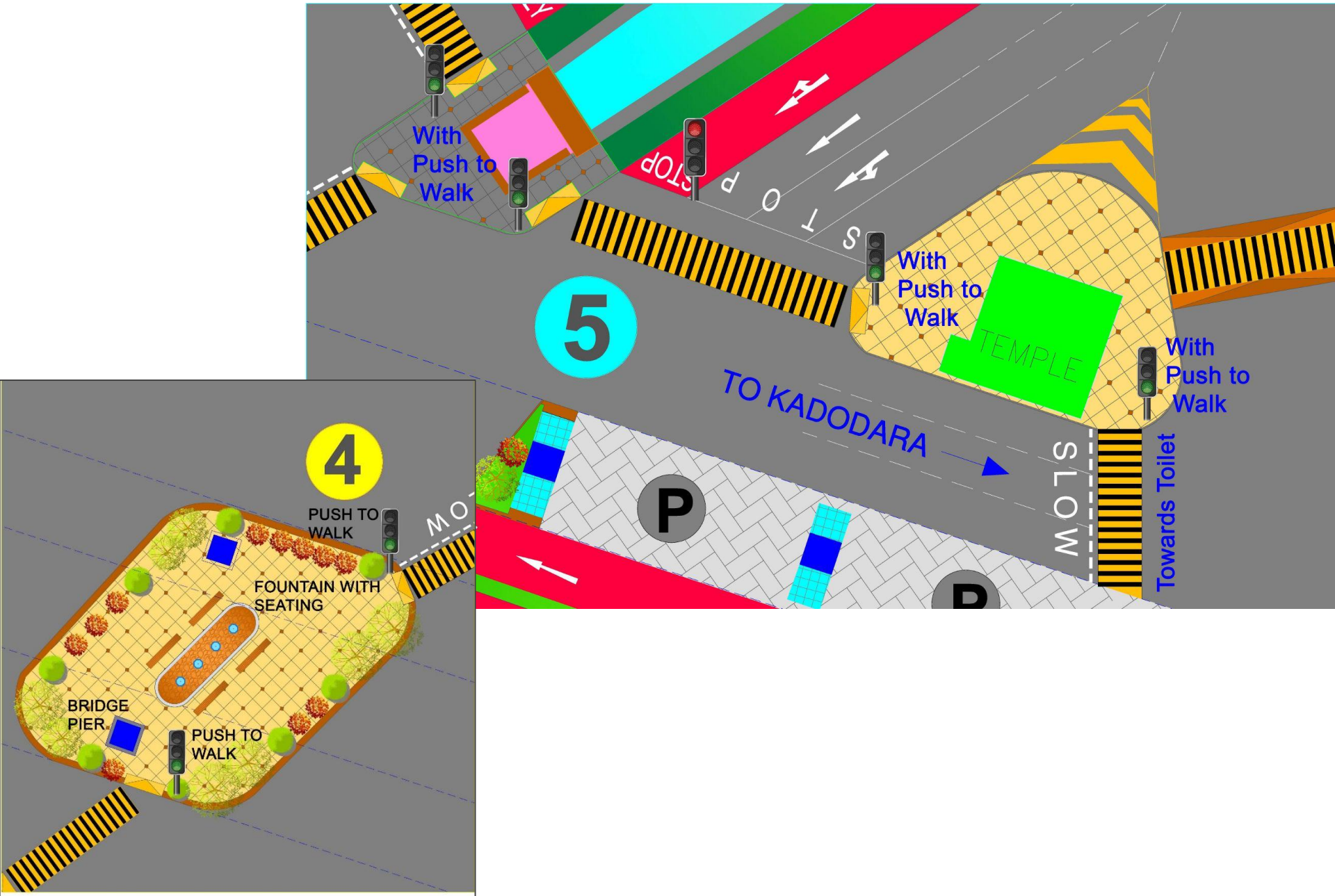






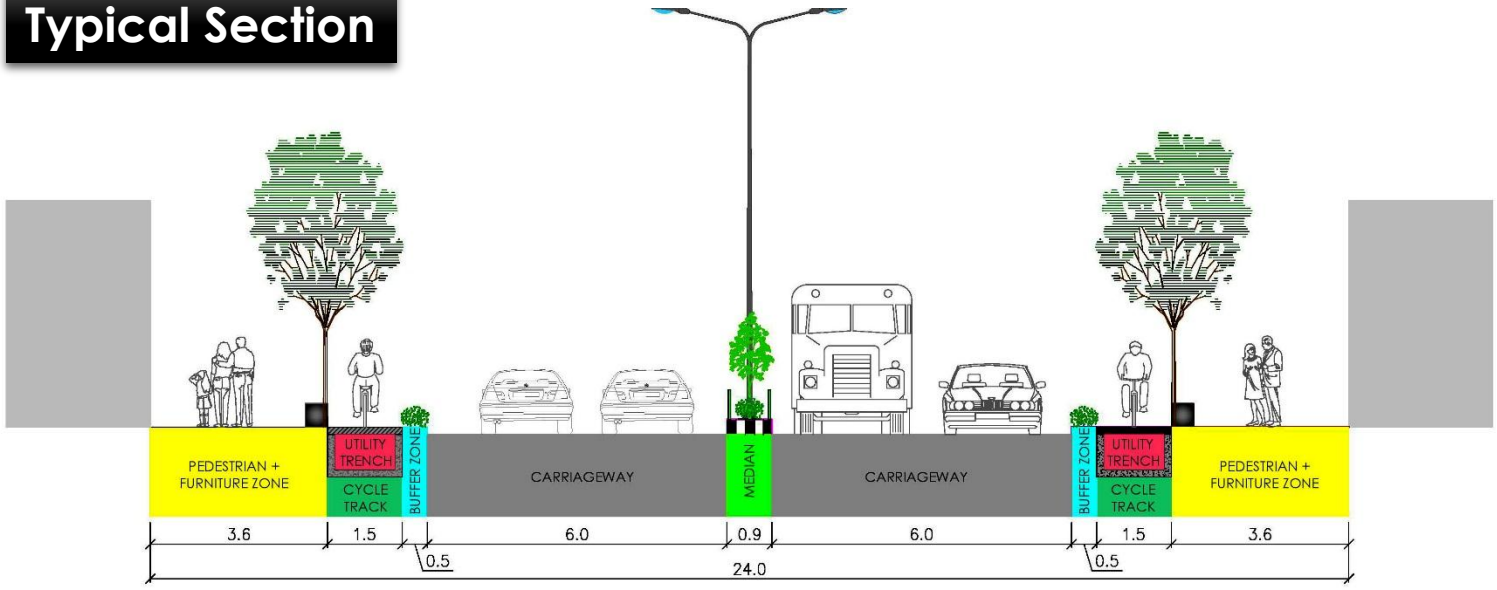
PROPOSED SOLUTION : RETROFITTING

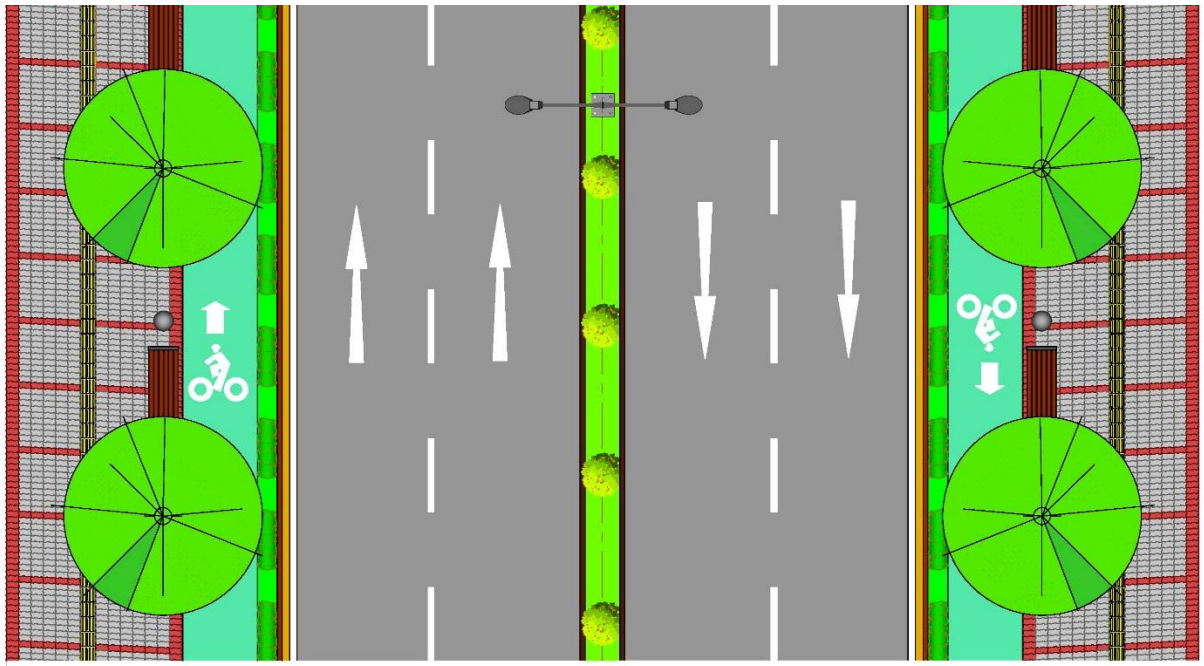
PARVAT PATIYA JUNCTION



PROPOSED SOLUTION : RETROFITTING STREET

Typical Section



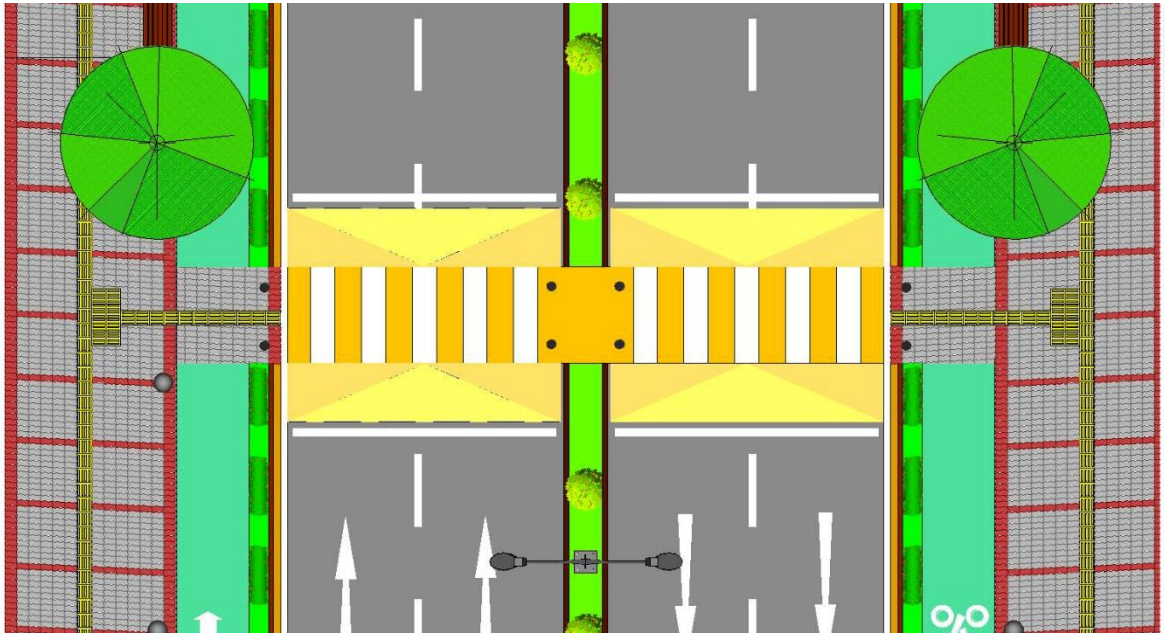


Typical Plan

Features:

- **Tactile Paving at center of footpath**
- **Utility Duct proposed under cycle track or footpath**
- **Pedestrian Light proposed along with Street furniture**

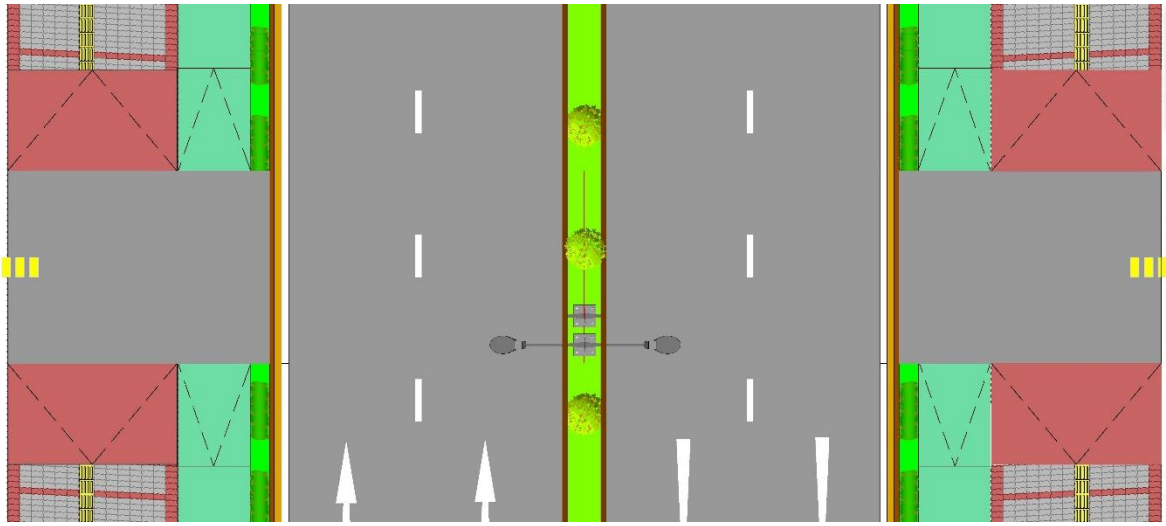
PROPOSED SOLUTION : RETROFITTING STREET



Typical Plan for Cross work

Features:

- 2.0m width of cross work proposed with 8.33% slope on road.
- Height is 150mm
- Bollard spacing 1.3m c/c.
- Tactile paving extended upto road edge



Typical Plan for Property Entry/Exit

Features:

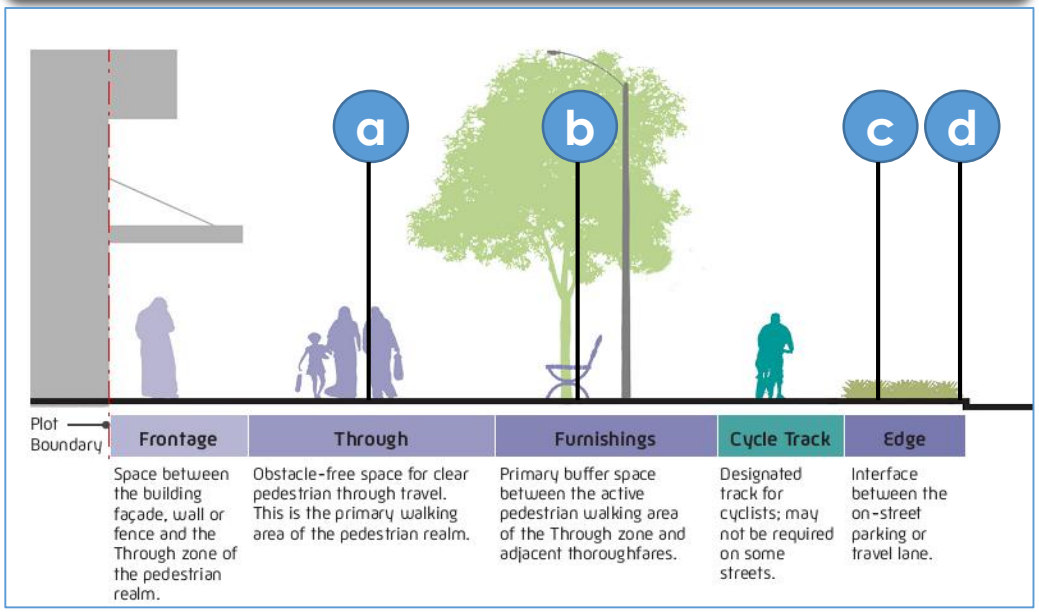
At adjoin property entry/exit, footpath with cycle track has given ramp to match the road level, so that vehicles can pass through without any obstruction.

Road Elements

1. Pedestrian Realm
   a. Footpath
   b. Footpath Essential Furniture
   c. Landscape
   d. Storm Drainage
2. Cycle Track
3. Parking–On Street
4. Median
5. Cross works

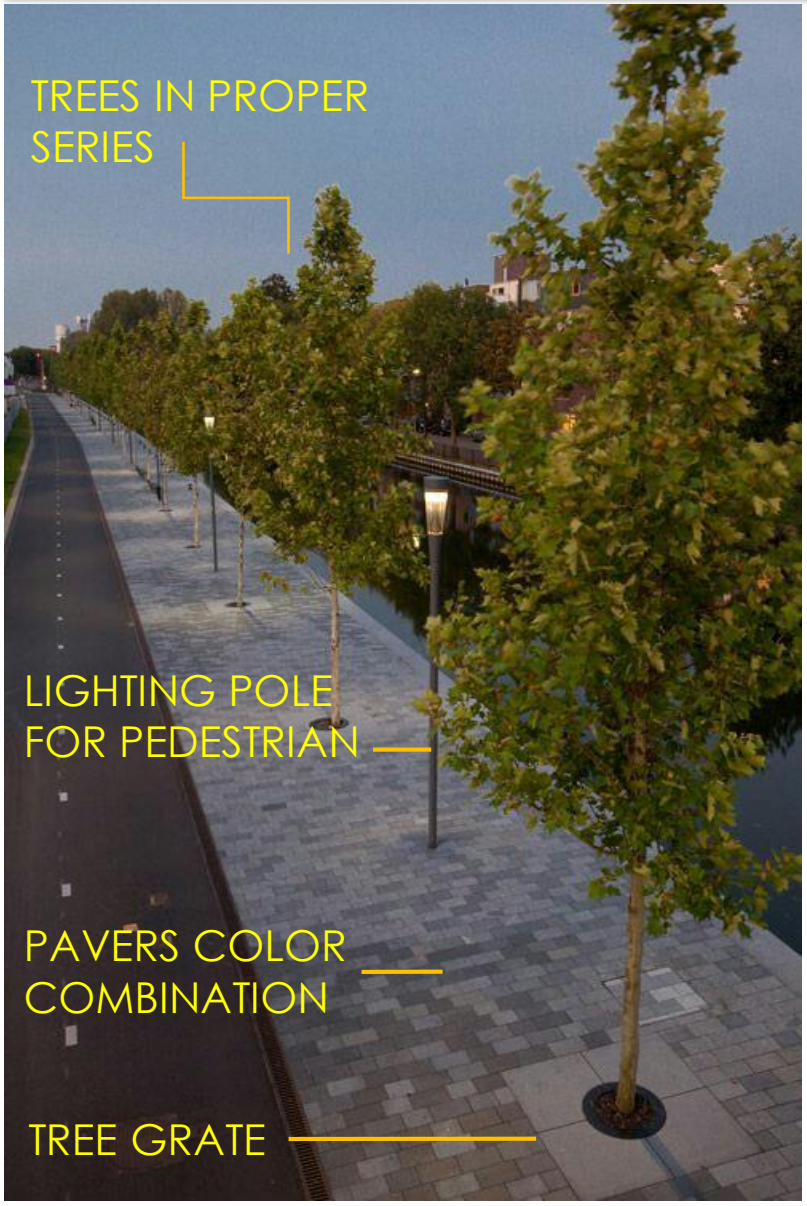
6. Smart Solutions
7. Urban Furniture

1. Pedestrian Realm



"As shown in image tree plantation done in Through zone and as retrofitting has to be done, keeping existing trees in Through zone and other facilities proposed accordingly"

1A. FOOTPATH – PAVER PATTERNS



"Aesthetical Look Matters – Left side image shows modern pattern simple yet attractive and top image shows conventional pattern (Top image from Lisbon). Footpath height should not be more than 150 mm."

"The street describes identity and characteristic of City"

1B. FOOTPATH ESSENTIAL FURNITURE – SEATING (TWO OPTIONS)

3D Model

OPTION # 1

OPTION # 2

1C. LANDSCAPE

1D. STROM DRAINAGE

Surat

ECOLOGY

"Very Essential Feature to recharge ground water through landscaping and the attractive water table/ conduit provided which lead storm water either to inlet chamber or facilitate to penetrate it into ground through landscaping. "

No need to lower storm drain chamber top to road level. Provide Conduit with fancy water table & connect it to storm drain chamber.

2. Cycle Track – Safe & Separated from Main Lane

"Cycle: The most eco friendly mode of transportation and its usage has become prime important as pollution and health related problems increasing day by day in City."

Three type of Cycle tracks shown here:

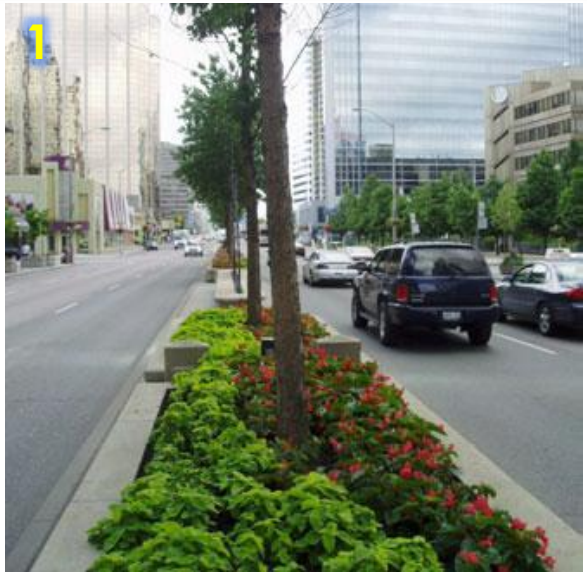
1. Coloring Paving Blocks used for Aesthetical look
2. Simple Marking can be done- Economical Solution
3. Complete tracked colored- Expensive Solution

3. On Street Parking – Smart Solution

"Parking Meter is already implemented in foreign countries and it must be implemented in Surat, as it is smart solution for parking. One can pay cashless using card or wallet and no need to deploy any additional man power to collect the money for parking and also citizens get the information regarding parking plots on App so this can be a "SMART MOVE".

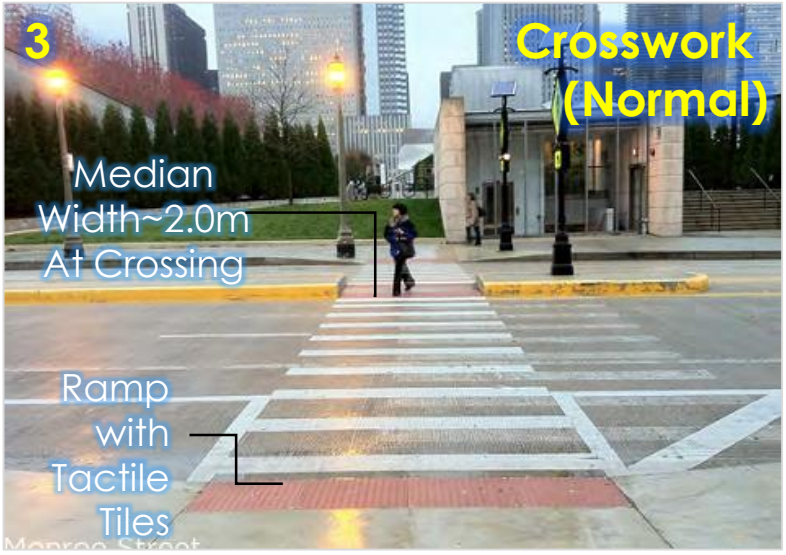
"Three images show on-street parking for all type of vehicles, with simple marking to thermoplastic paint on road. Even corporation can use colored paving blocks with pattern in terms of visual improvement for parking space."

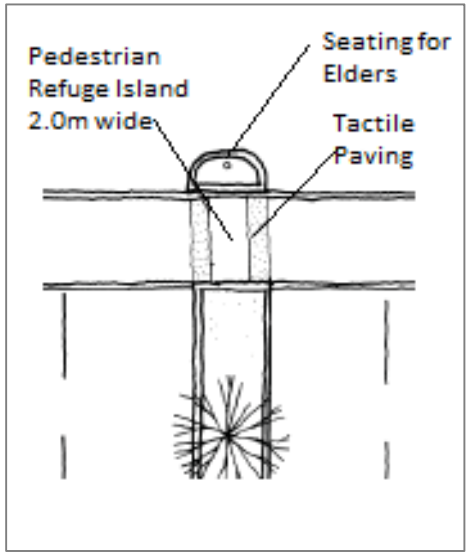
4. Median



"Median should be designed to attract road users. I personally consider it as main theme of road, it speaks beauty of road. Median should be decorative with beautiful landscaping and with grill in case of restricted road crossing."

5. Cross Works



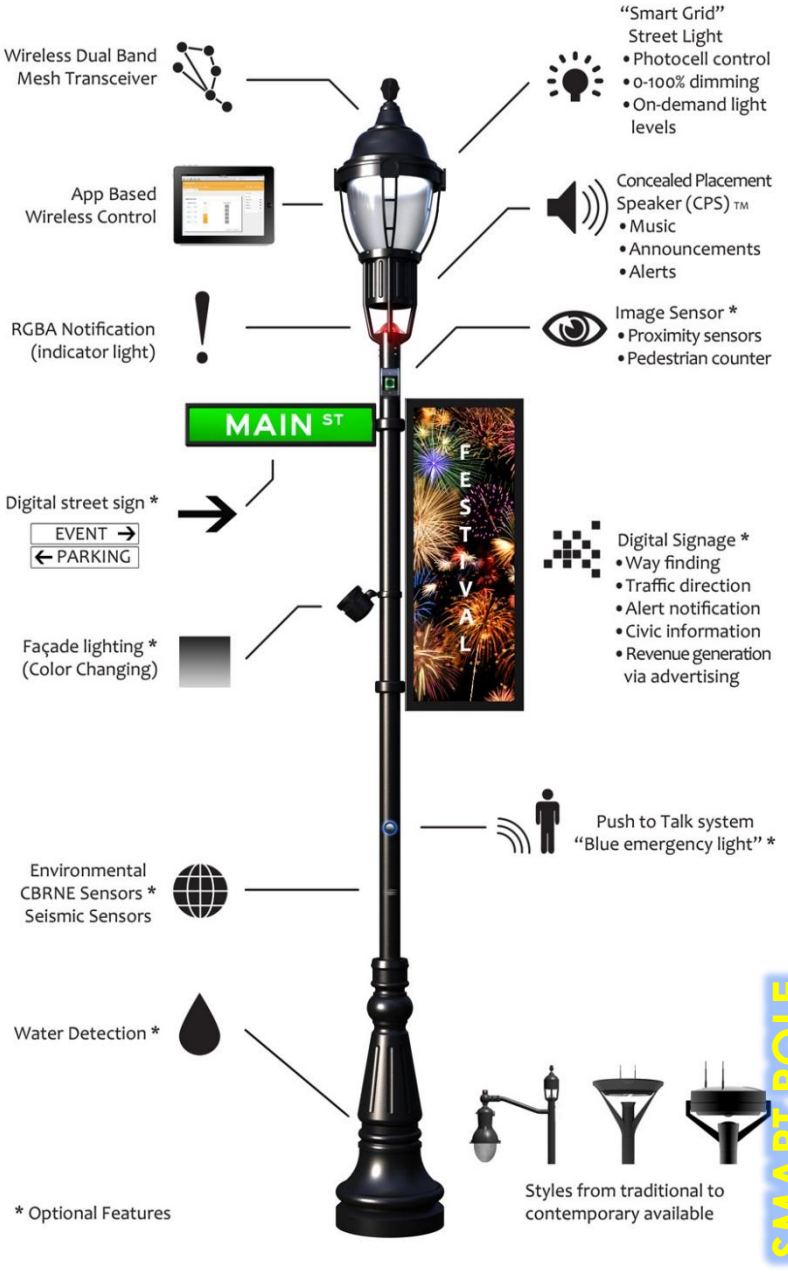


"Two type of crosswork proposed. One is Raised Crosswork, which acts as traffic calming and Other with ramp (Slope 8%) to facilitate hassle free movement for physically disabled citizens. As shown in image 3 & 4, median width proposed 2.0 m, as it is proposed considering wheelchair person. As shown in 2nd image, Corporation may think to provide designer crosswork to create unique identity of Surat city"

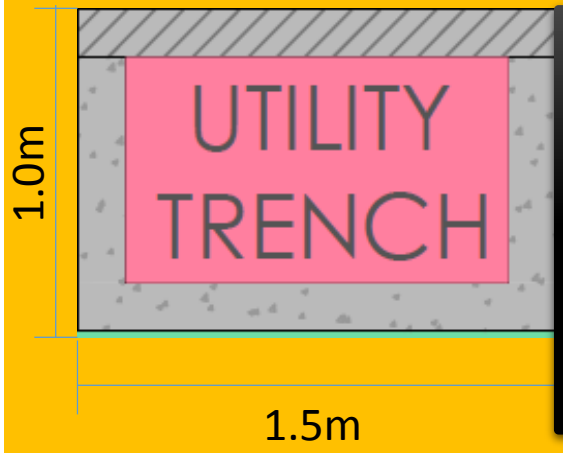
6. Smart Solutions – Smart Pole

"Push to talk having audible signals installed at Pedestrian Crossing specially for Children, Elder & Handicapped. It may also be installed on Smart Pole."

"Moving towards Smarter City, Surat has to install Smart Poles- it contains support for all the mentioned utilities under single pole"



6. Smart Solutions – Utility Trench/Duct

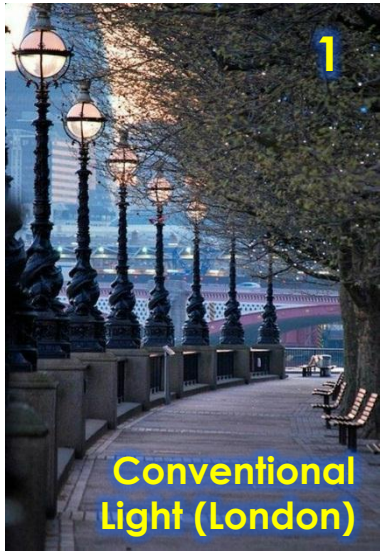


"Consider this as Smart Solution because it is unavoidable still not implemented in Surat city. Though it is retrofitting only, pipelines not included in this duct. It is proposed for cables."

6. Smart Solutions – Smart Parking

"Smart Parking: Due to higher vehicle sale in Surat and due to insufficient parking space, smart parking is to be introduced in City as it works smartly and occupies lesser area of land"

8. Urban Furniture- Street Light



"LED Street Light: It now becomes essential to use environmental friendly LED lights. LED street lights with solar panel is to be used in grid system."

7. Urban Furniture – Parklet: An Urban Facility

"Parklet : An urban form for seating with landscape and gym equipment- where citizen can relax for a while. It's new concept adopted globally and Surat should also look in this matter to develop such Parklet for Citizens. Parking can be done beside Parklet."

7. Urban Furniture- Bus Stand

Digital Screen

Time to Move Towards Digital India

7. Urban Furniture- Way Finding

Beautiful Way findings (London)

7. Urban Furniture- Waste Bin

Separate recycle & trash units

Waste Collectors can be planned underground

All Essential Info must be shown alongwith City Map

7. Urban Furniture- Street Art

Flyover Pier Art


Road Art


Utility Box Art

Encourage Creativity of Citizens

7. Urban Furniture- Miscellaneous


Stone Bollards


Decorative Manhole Cover


Drinking Water Facility

ROAD SPECIAL FEATURE STREET

Special Features for Disabled People

VISUALLY CHALLENGED PEOPLE


Tactile Paving

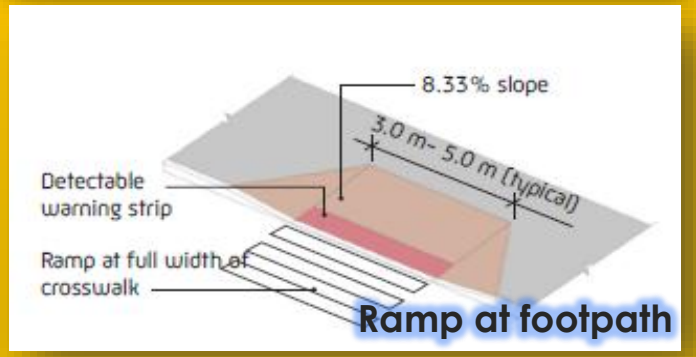
Braille Signage (Sydney)

Braille WayFinding

Audible Push to Walk

HANDICAPPED PEOPLE

Ramp in bus



Ramp at footpath

In BRTS, bollard distance must be more than 1.0m

MESSAGE

"I am proud to be citizen of Surat city & thankful SMC for great work. Only request to implement above facilities for disabled people asap."

CITY is always Smart until and unless Citizens are "SMART"

THANK U!

Smart City
MISSION TRANSFORM-NATION

WINNER : 2
MIRZA BISMILBEG

MAKE OUR SURAT CITY SMART (ROUND-2)

STREET VISUAL IMPROVEMENT DESIGN CONTEST

PERSONAL DETAILS

NAME	: Mirza Sajidbeg Bismilbeg
ADDRESS	: 203, Mariya Palace, Near Jain Derasaar, Shahpura, Surat
AGE	: 33 yrd
GENDER	: Male
PROFESSION	: Service
CONTACT NO	: 90996 40150
EMAIL	: mirzamira85@gmail.com

PARVAT PATIYA JUNCTION- SITE OBESERVATIONS

PARVAT PATIYA JUNCTION- SITE OBESERVATIONS

ISSUE NO. 1 – ENCROACHMENT

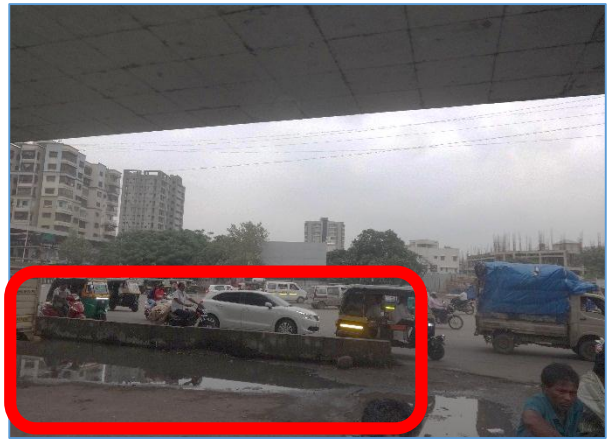
ISSUE NO. 2 – CANAL POLLUTION

ISSUE NO. 3 – Waste Container Condition

PARVAT PATIYA JUNCTION- SITE OBESERVATIONS

ISSUE NO. 4 – People driving in wrong side on main lane

ISSUE NO. 5 – Worst Planned Roundabout



STREET- SITE OBESERVATIONS

ISSUE NO. 1 – Unplanned Zebra Crossing

ISSUE NO. 2 – Encroachment on Footpath

STREET- SITE OBESERVATIONS

ISSUE NO. 3 – Dangerous Inclined Tree

ISSUE NO. 4 – Footpath break at some location

STREET- SITE OBESERVATIONS

CRITICAL ISSUE– Railing & Tree/Shrubs extended upto at End point of Median at Cross Roads

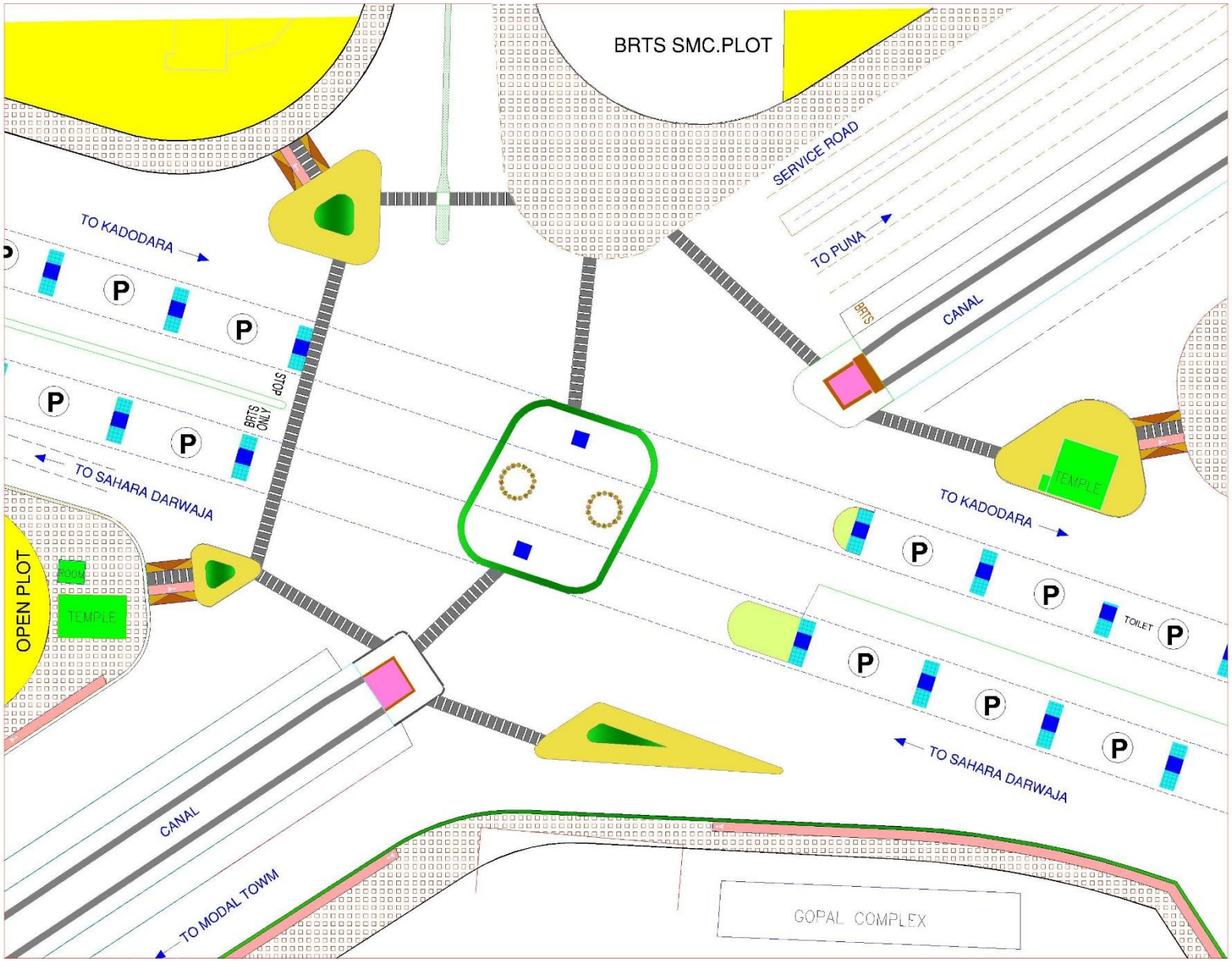
I have seen **Railing & Tree/Shrubs extended upto End point of Median at Cross Roads** at most of places in Surat where this is common and for safety point of view, I found this as **"Critical Issue",** How????

Ans: See these Pictures of Median at Cross Roads.

While crossing this median, due to railing and shrubs extended above eye level of driver, driver who is crossing the median, is not able to see the vehicles coming from the other side and vice versa. The vision of driver is obstructed due to shrubs. Also the width of the median at cross roads is 1.0m in this street. If one may think of wheelchair person, who wishes to cross the road, how he/she will cross the road or even stay at median location **"SAFELY"** where the width is only **1.0m**, whereas wheelchair person requires minimum 1.5- 2.0m width.

Think over it… Citizens are really SAFE on Streets !!!!

PROPOSED PARVAT PATIYA REDESIGN

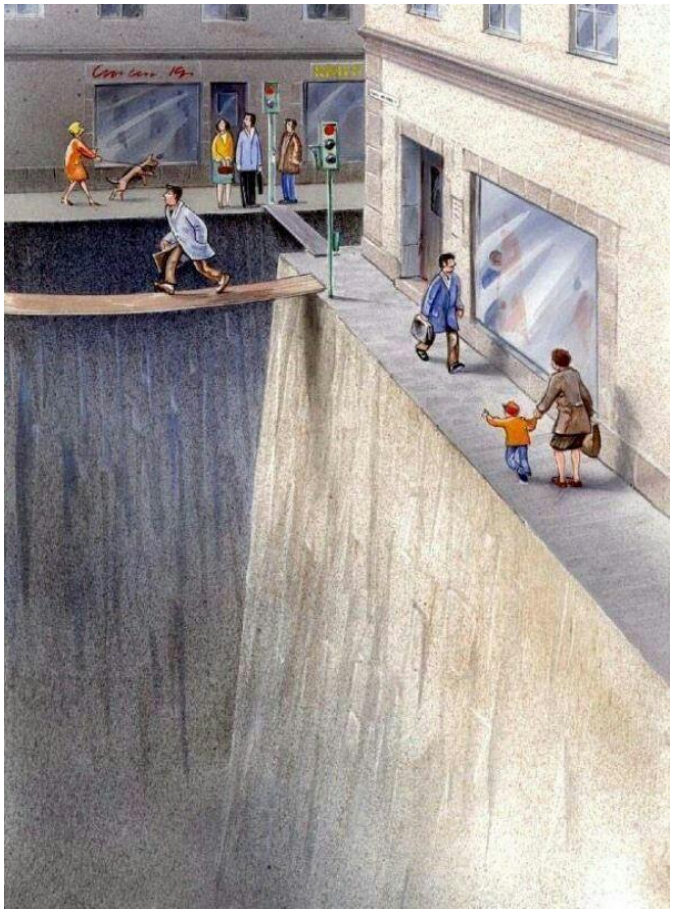


PROPOSED PARVAT PATIYA REDESIGN

Junction Design Features:

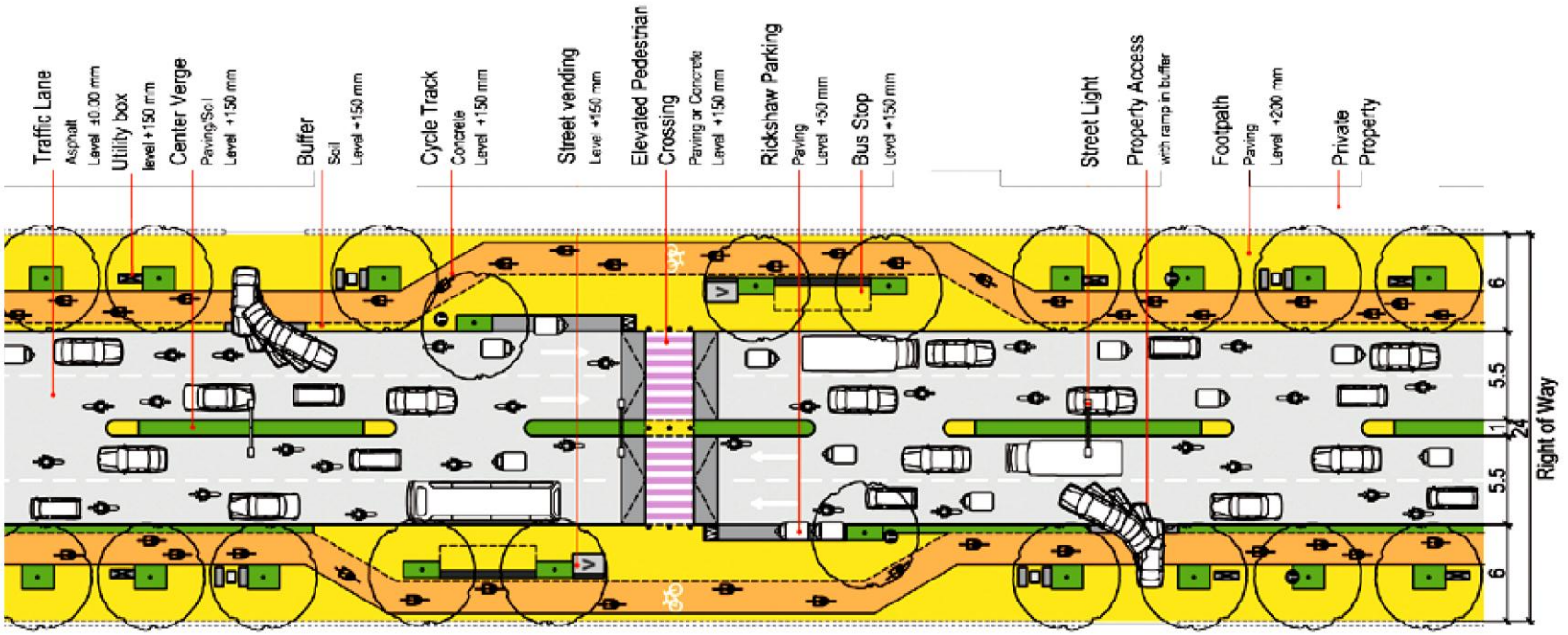
See the artist has made a great cartoon showing current burning issue for pedestrian in growing city like Surat.

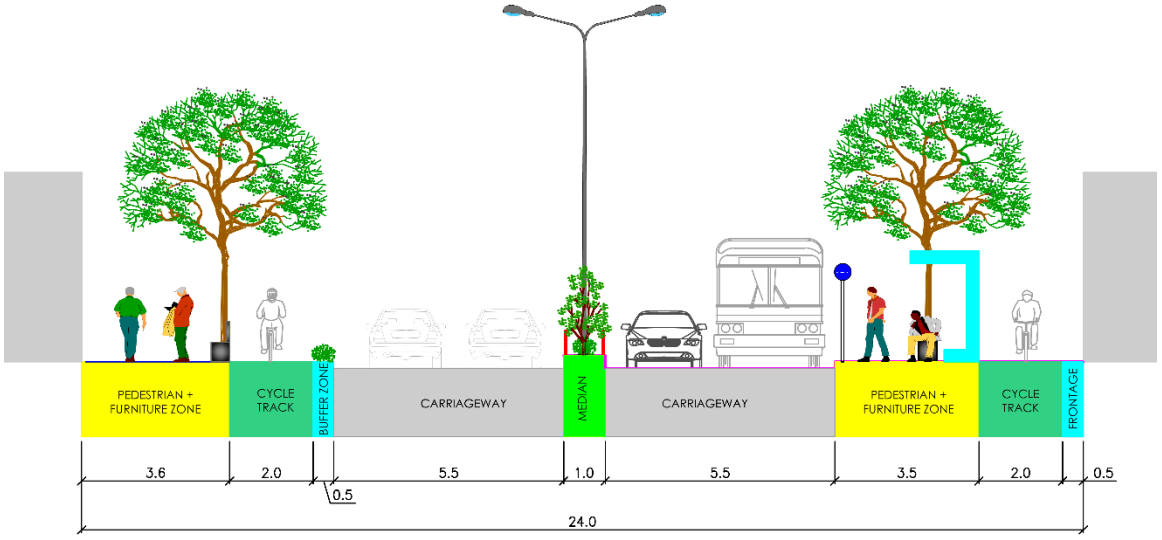
- Considering this theme, the junction is designed for giving priority to Pedestrian and Cyclist mobility at junction. Zebra crossing is proposed of 2.0m for pedestrian and 1.5 m for Cyclist total 3.5m wide of zebra crossing on sharing basis by Pedestrian and Cyclists.
- Junction is functioning with present traffic signaling which I proposed to be replaced by Adaptive type of traffic control/monitoring system.
- Urban Furniture, like Parkets need to be developed for Citizens at junction.
- At all zebra crossings, push to walk mechanism with audible must be installed for the safety of Children, Elders and Disabled persons, so that they can safely cross the road.



Where is the space for walk in Urban City?

PROPOSED 24.0M WIDE STREET REDESIGN (OPTION-1)



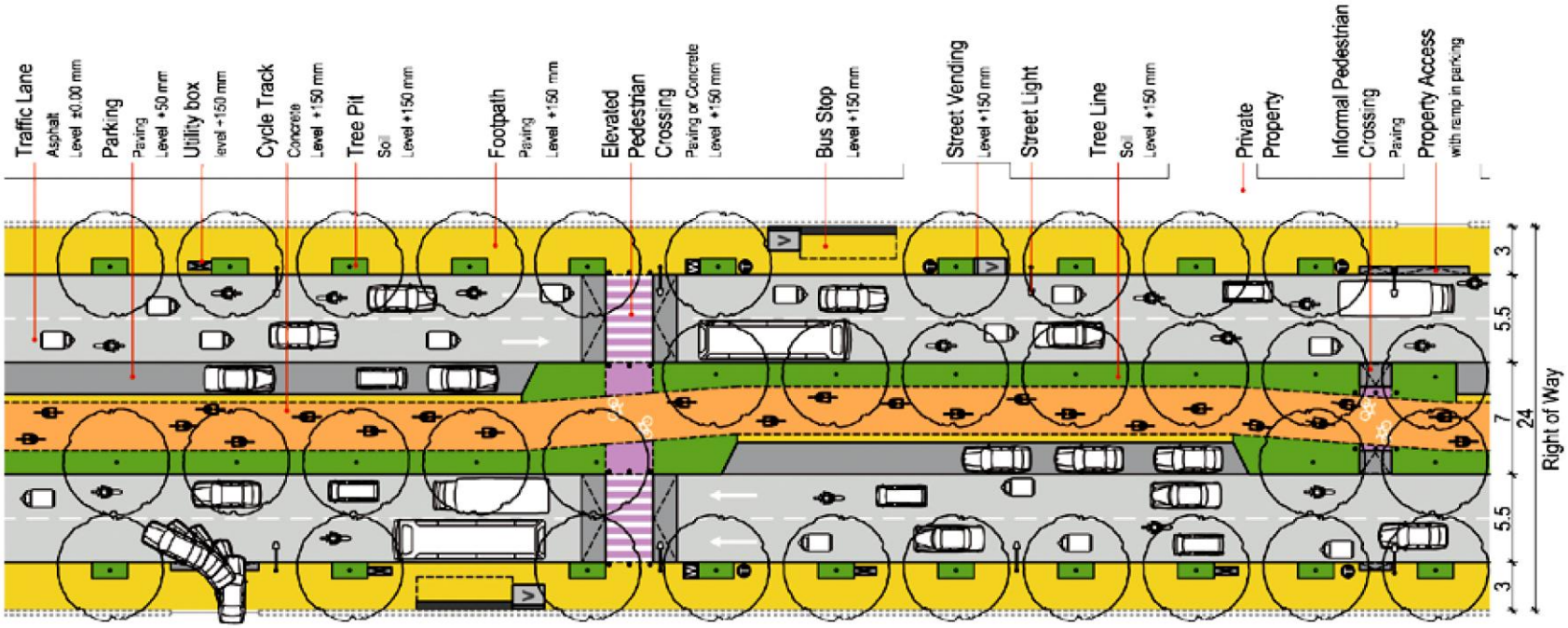


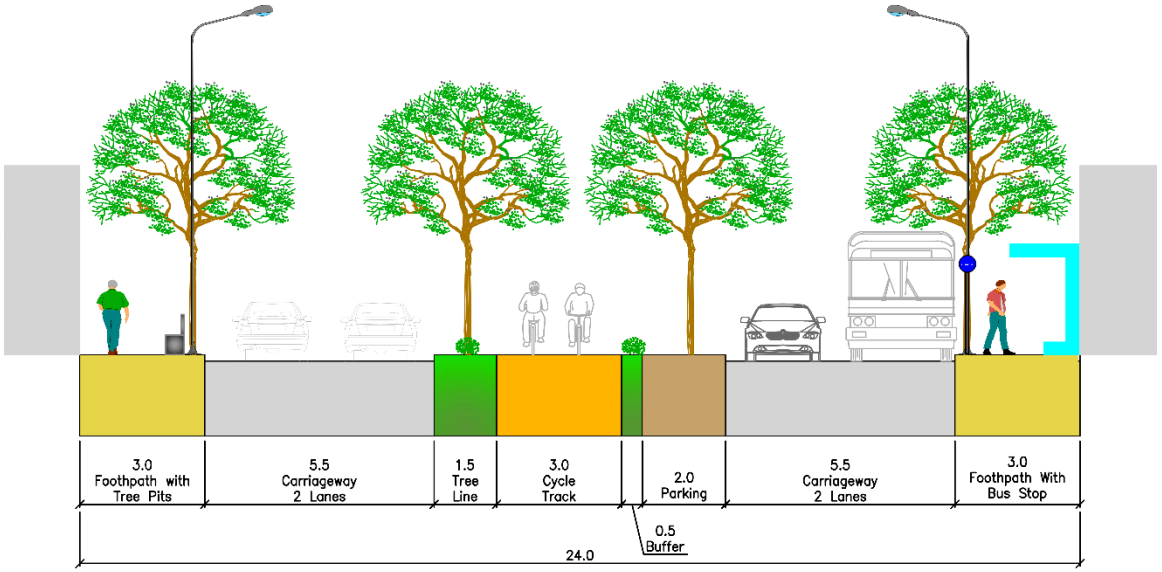
OPTION-1:

(Low Volume Traffic Considered)

- Pedestrian Space – Footpath
- Service Lane – Not provided
- On Street Parking – Provided
- Vending Space – Provided
- Urban Furniture – Provided
- Vehicle Mobility – Divided Carriageway
- Cycle Track – Single lane, Both side

PROPOSED 24.0M WIDE STREET REDESIGN (OPTION-2)





OPTION-2:

(Low Volume Traffic Considered)

- Pedestrian Space – Footpath
- Service Lane – Not provided
- On Street Parking – Provided
- Vending Space – Provided
- Urban Furniture – Provided
- Vehicle Mobility – Divided Carriageway
- Cycle Track – Centrally

SMART URBAN ELEMENTS FOR DISABLED PEOPLE

HANDICAPPED PEOPLE

Provisions for Handicapped: First Image shows ramp provision for public transport, second image shows proper slope/ramp to get on road comfortably & third image shows bollards having min. spacing 1.2 m.

BLIND PEOPLE

Provisions for Blind: First Image shows tactile paving for direction guidance, second image shows braille signage/way finding & third image shows push to talk with braille signage and audible signal.

SMART URBAN FURNITURE

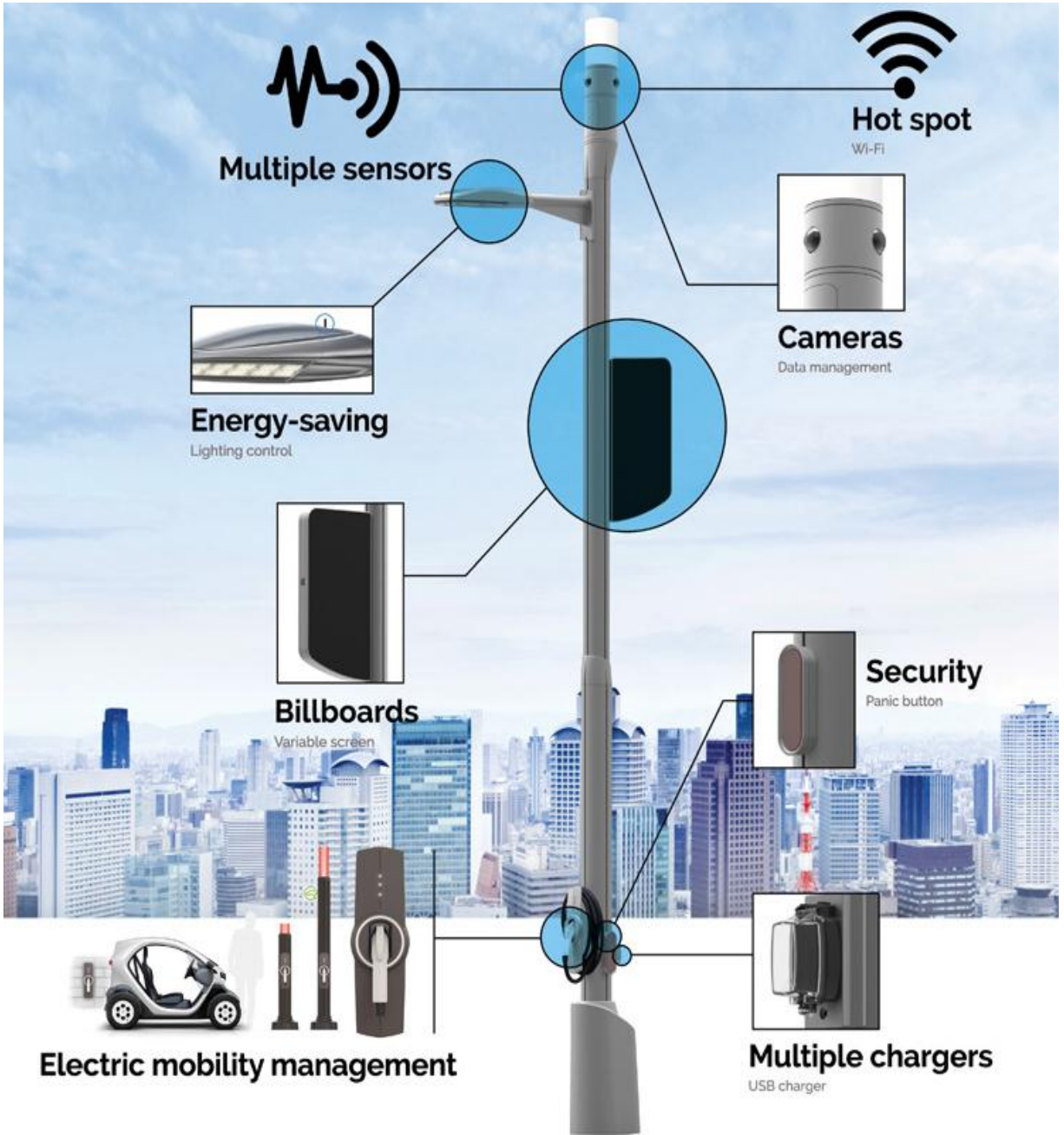
SMART POLE

It offers the multi-functions on single pole:

- Multiple Sensors
- Wi-Fi Hot Spot
- Camaras
- LED Light Fitting
- Digital Screen
- Security Push Button for Emergency
- Multiple USB Charger Points
- Electric Mobility Management

All these facilities are as add-on type, new elements can be attached with the pole or any element can be removed if not required.

Smart Poles requirement is essential for Surat City to going forward to become Smart City.

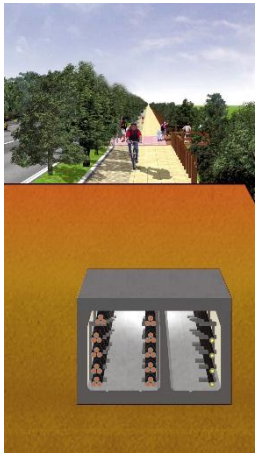


SMART URBAN FURNITURE

SMART Waste Containers

- It contains two part, part above ground is carrier and other underground part, which is Waste Container.
- It aesthetically looks good and contains sensors which detect the amount waste collected in Containers.
- Installing this kind of Containers, Keep waste collection space clean & healthy.

SMART Utility Duct



- Schematic diagram of Utility Duct is shown here.
- SMART word used for Utility duct, because it keep road free from digging and that way keep road maintenance free from utility installation point of view.
- SMC must definitely go for SMART Utility Ducts for City.

SMART BRTS Route Auto Gate Operation

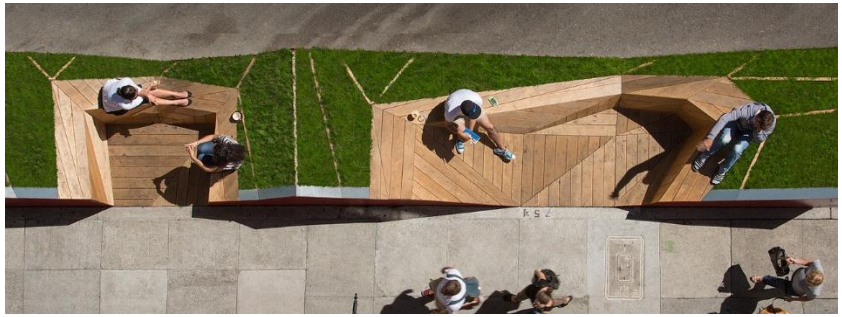
It is now become very much essential for city BRTS to be equipped with such automatic gate opening/closing mechanism for BRTS corridors to avoid other vehicles to enter in this routes.

SMART URBAN FURNITURE

Parklet

- A parklet is a sidewalk extension that provides more space and amenities for people using the street. Usually parklets are installed on parking lanes and use several parking spaces. Parklets typically extend out from the sidewalk at the level of the sidewalk to the width of the adjacent parking space

- Parklets are intended for people. Parklets offer a place to stop, to sit, and to rest while taking in the activities of the street. In instances where a parklet is not intended to accommodate people, it may provide greenery, art, or some other visual amenity. A parklet may accommodate bicycle parking within it, or bicycle parking may be associated with it



SMART URBAN FURNITURE

Portable Charging Station

Portable EnGoPlanet is a portable solar charging station and lighting system. Mobile is also charged due to standing on Kinetic tiles attached to the charging station.

Use:

This unit is designed to have a wide range of applications, from marketing and branding to emergency situations and disaster recovery and Educational Activities.

SMART URBAN FURNITURE

Smart Solar Bench

EnGoPLANET's Smart Solar Benches are new urban furniture that will help cities, universities, retail or business centers to create better and more safer and user friendly environments.

Features

- Equipped with LED lighting, Charging Station, wi-fi connections, smart sensors.
- Illuminated display on both sides presents a good advertising and branding opportunities.
- Different Content such as city information, maps or directory can be easily and securely placed on the unit.

SMART URBAN FURNITURE

Smart City Station

EnGoPLANET's City Station is a micro grid device design to serve as a off-the-grid charging station, info kiosk and WiFi tower.

Features

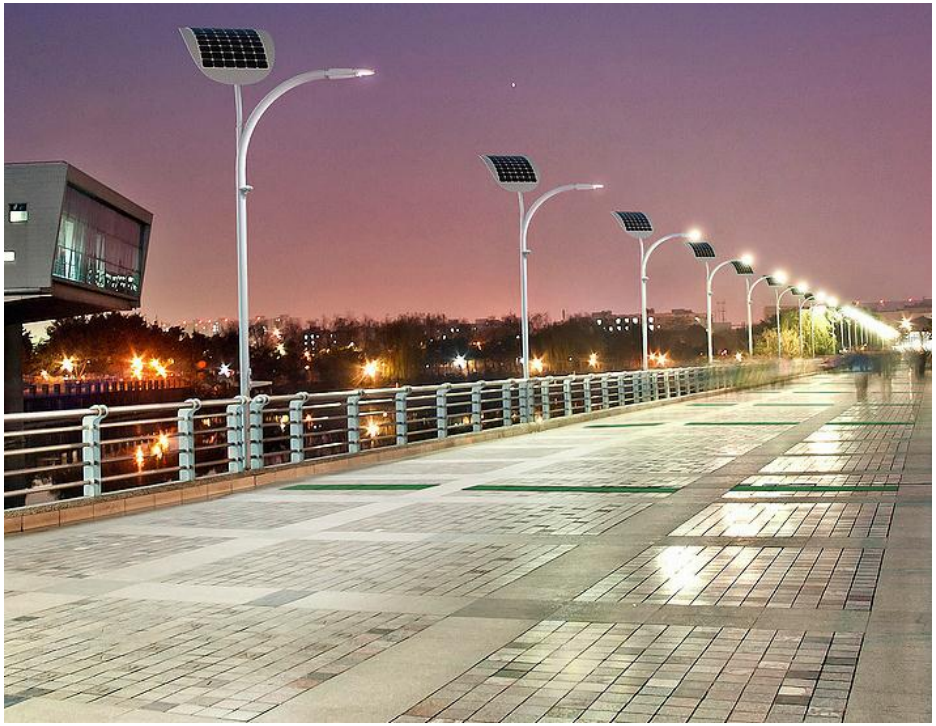
- Equipped with Charging Station, wi-fi connections & smart sensors. It supports wireless charging as well.
- Equipped with Kinetic tiles so it is feasible to install City station in Public places.
- Large illuminated display on the unit great for posting city information, maps, directory or Advertisement.

Smart LED Lights with Solar Panel

EnGoPLANET's Smart Street Light is innovative, modern and multifunctional off-the-grid street lighting solution powered by solar and kinetic energy.

Features

- Equipped with Solar panel & its unit supports latest LED technology from reputable producer.
- Equipped with Charging Station 2 USB Charger and wireless charging pod and wi-fi connection.
- Equipped with Kinetic tiles so every footstep on these tiles will generate electricity.



SMART URBAN FURNITURE

EnGoPlanet Smart Solutions

SMART URBAN FURNITURE

Paris: Intelligent Urban Furniture

JCDecaux's Intelligent Street Furniture

1. Digital Totem

It offers:

- HD Digital Imaging even in bright sunlight
- Info of cultural activities of Paris.
- Local Municipal News.
- Twitter updates from Town Hall

2. The Concept- Bus Shelter

It offers an array of multi-services:

- Free Wi-Fi connection.
- Mobile Charging connection.
- 72-inch screen displaying high-quality historic photos of Paris.
- Local classified ads.
- Map of City with All info regarding Hotel, Pharmacy, store, theatre etc.

SMART URBAN FURNITURE

The Concept- Bus Shelter Smart Features

1. Digital display, 72-inch screen Images from the Parisienne de Photographie picture gallery and the City of Paris
2. Wider bench along its entire length
3. AFP news feed, bus waiting times
4. Glazed roof, acting as a filtering and lighting system
5. Defibrillator
6. 42-inch "Décodeur Urbain"
7. 22-inch e-Village screen displaying classified ads
8. 22-inch "Décodeur Urbain", accessible to wheelchair users.
9. USB sockets, to charge mobile phones

3. Digital Harbour

It offers :

- Free WiFi connection: Internet access is indicated by an illuminated circle on the Digital Harbour, a real urban beacon
- Seats for working alone or with others: swivel seats enable users to enjoy a moment of privacy or to interact with other people 72-inch screen displaying high-quality historic photos of Paris.
- Sockets to power and recharge electronic devices.
- The opportunity to use "Décodeur Urbain" applications to a large 42-inch screen installed in the center of the Digital Harbour.
- Enjoy a break in a peaceful environment, thanks to the seats and the plant-covered roof.

Digital Harbour Smart Features

1. Free WiFi access indicated by the illuminated circle
2. A 42-inch "Décodeur Urbain" touchscreen
3. Seats equipped with USB sockets to recharge electronic devices
4. Self-maintaining plant-covered roof
5. Load-bearing elements covered with laminated wood
6. 2 sockets to plug in electronic devises

SMART URBAN FURNITURE

4. e-Village

It offers:

- Three multi-touch screens, including one designed for users in a wheelchair.
- Specifically designed to provide access to local classified ads.

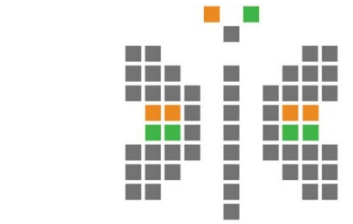
5. Play

- The Play street furniture item is comprised of two large touchscreens inclined for greater Visibility.
- Each screen (play table) provides access to a selection of games.
- Each table and screen unit can be rotated around an off-centre axis.

Play Smart Features

1. A swivelling table providing access for a wheelchair
2. 2 large multi-touch screens
3. Very high-quality colour image, full HD

End...



WINNER : 3
ANKITA RUDANI

CONTEST # 1 STREET - VISUAL IMPROVEMENT DESIGN CONTEST

- **Name :** Ankita Rudani
- **Address:**15, miranagar soc.
  Lok samarpan raktadan kendra,
  forth floor, minibazar,
  varchha road, surat – 6
- **Age:**21 years
- **Gender:** Female
- **Profession:** Student (B.tech 4th year Civil Engineering)
- **Institute:** C.G.P.I.T. , Bardoli
- **Contact:** 9537278132
- **Email:** ankir2165@gmail.com
- **Contest:** Street design

Photo ID

Key Issues

- Speed Regulating Mechanism N/A.
- The footpath is not continuous and is obstructed by Trees, distribution board, property owners, parking etc.
- Caution signs near pedestrian crossing and disable friendly facilities N/A.
- Condition of signage is faded.
- No proper signage near intersection:
- Hindrance to traffic signage: trees
- There is no planned street furniture on the street.
- Trees, poles and signage are located randomly on the footpath.
- No Dustbins on footpath.
- Obstructions on footpath: Parking, poles, distribution boards and trees.
- No Provision of pedestrian movement along the junction:
- No provision of pedestrian movement in traffic signals available.
- Public washroom facility at traffic node: Not available
- Parking is along the road in the stretch, although this not designated parking.
- Faded markings.
- No area for street vending.

Salient Features

Feature	Proposed
Carriage Way ,Median, Lighting, manholes	Kept as it is in the report. One light pole is removed which is hindering the crossing near Krishna Circle.
Storm Water Drainage Infrastructure	Planting Strip with Storm Current Situation Water Management is proposed for future.
Footpath and Pedestrian Facilities	**Width**:(3.8-4)Mtrs **Height**: 0.25Mtrs **Material used**: Cement concrete **Texture**: Rough **kerb stone:** Height- 0.25m **Kerb ramp provided:** 3m width Footpath is made continuous removing all the obstructions. Tactile paving (0.5m wide) is provided for differently-abled people.
Pedestrian Crossings	**Raised "Table-top" Crossings along with tactile paving and visual and auditory signal proposed** **Cautionary signs and disabled friendly facilities proposed.**

Feature	Proposed
Street Signage	Height- 2.5m All the hindrance like tress removed. Faded are need to be repainted. Signage near intersections, crossings, turning, etc are provided along with all the informatory signs. Direction map is proposed at every crossing and intersection. Signage for Amenities, Auto stand, Public toilet is given. Signa Board – 33 no. Signals – 7 no. Direction Signage – 12 no.
Trees and Street Furniture	Hindrance on footpath removed. Benches - 23 no. Bollards are proposed at crossing. New scrubs along both side having total length 212.17 m. Dustbins – 51 no. Flood light 1 no. at Krishna circle. 6 trees cut and 42 planted new ***(deciduous trees)***.
Traffic Nodes	Washrooms with separate men and women is proposed along with water facility. – 10m x 3m
Parking	Below Parvat Patya bridge. Road side is not allowed.
Street Vending	Separate space provided. -76.3 m^2

Salient Features

Feature	Proposed
Auto Stand	2 No. of size 14m x 3m
Traffic Island	5 No.
Garbage Collection Area	25.2 m^2
Area below bridge at Junction	Area with kerb at Parvat Patiya junction below the bridge reduced from approx. 985m^2 to 844m^2
Krishna Circle	Dia. Increased from 11m to 14m providing fencing and shrubs
Shop Near Junction on modal town road	Removed

- Traffic Calming system is provided before crossing and intersections before 25m.
- Signage of speed breakers, pedestrian crossing, signals provided before 50 m.
- CCTV cameras are proposed at each signal and light pole.

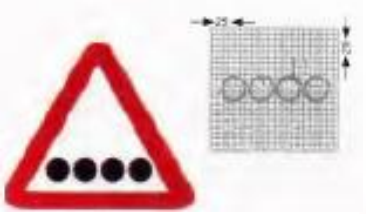
Junction is designed without O&D studies and traffic count, for traffic controlling purpose only which can be changed further.

AUTOCAD picture of proposed design

Auto Rickshaw stand

Pedestrian Crossing

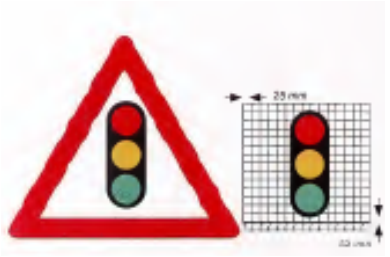
Gap in median



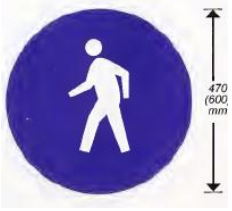
Blind person likely to cross road

Rumble Strip

Toilet Facility



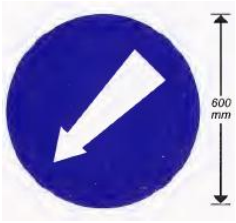
Traffic Signal



Pedestrian Only

Roundabout

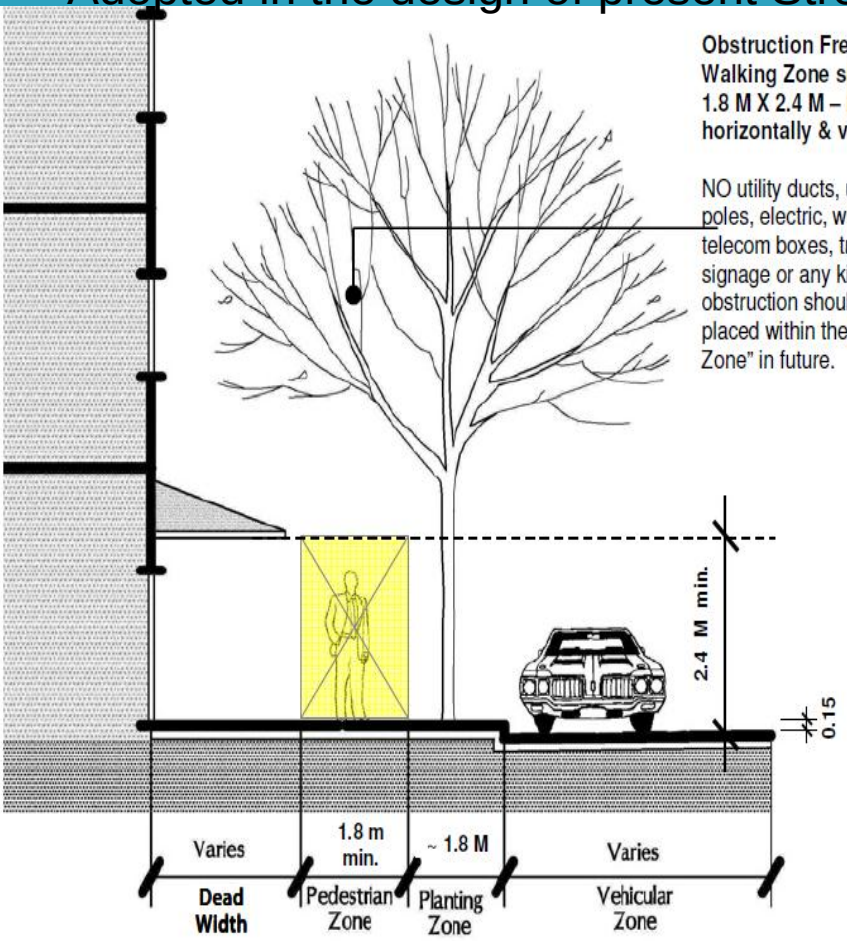
Fig. 14.29 No Parking



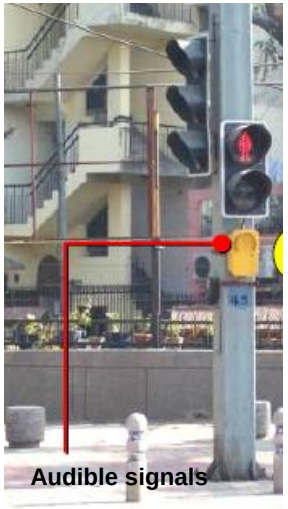
Compulsory keep left

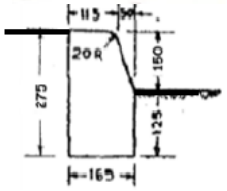
Y intersection

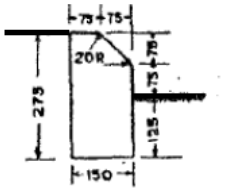
Source IRC-67 2012



*Base Graphic Source: Streetscape Design Guidelines for City of Lancaster Pennsylvania







Graphics Source: IRC (modified)

Raised crossings should be located at:

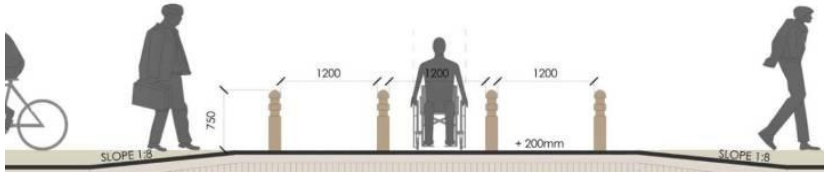
- At Slip Roads (free left turns)
- Where high-volume streets intersect with low-volume streets, such as at alley entrances,
neighbourhood residential streets, and service lanes of multi-way boulevards.
- At Mid-Block Crossings

Key Design Guidelines:

- Raised crossings bring the level of the roadway to that of the sidewalk, forcing vehicles to slow before passing over the crossing and enhancing the crossing by providing a level pedestrian path of travel from kerb to kerb. Cobble stone are not recommended on the top, but on the slopes.
- Raised Crossings also increase visibility of pedestrians and physically slow down traffic allowing pedestrians to cross safely.

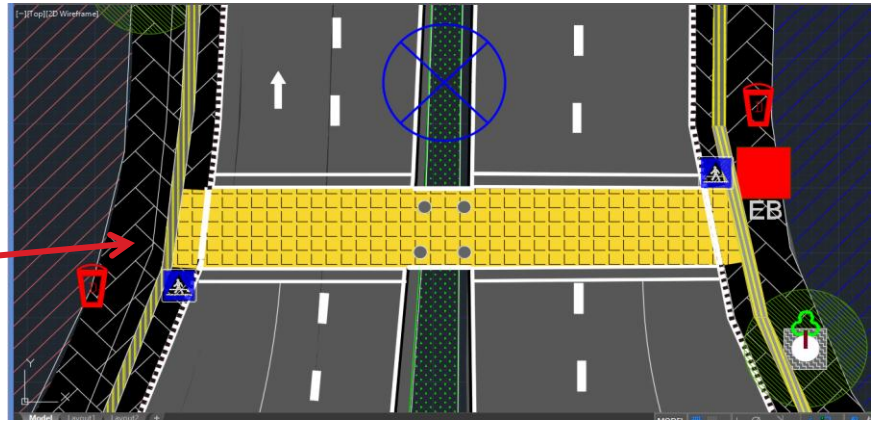
Provided:

- Width 3m
- Yellow colour to increase visibility of pedestrians and physically slow sown traffic .



Sample Drawings Courtesy: Oasis Designs Inc.

Adopted same in design.
Source: Google images



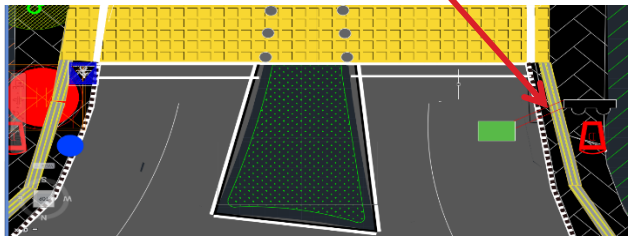
AUTOCAD picture of proposed design

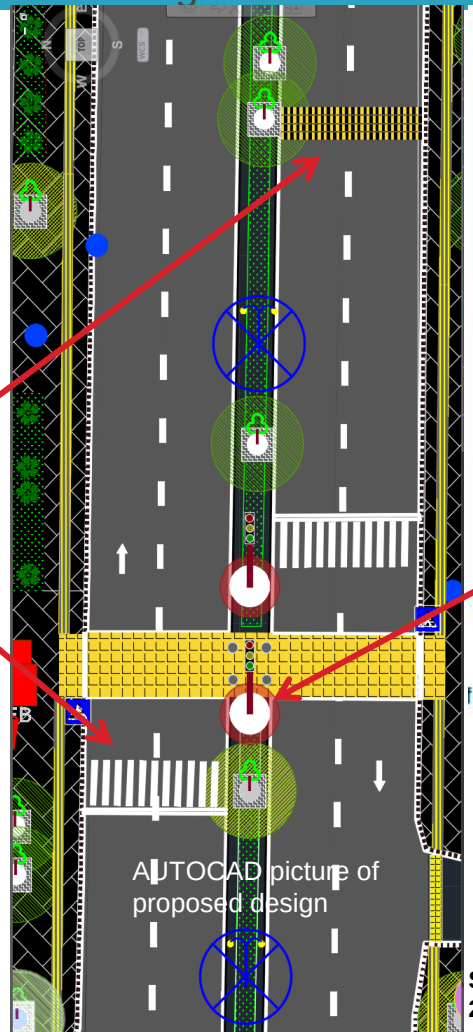
Key Principles:

- Crossings should be at least as wide as the sidewalk, and wider in locations with high pedestrian demand.
- Crossings should be no less than 3 M in width. A more desirable width is 5 M.
- Crossings must be outfitted with kerb ramps and tactile warning strips.
- All light signals are to have '**auditory**' mechanism.

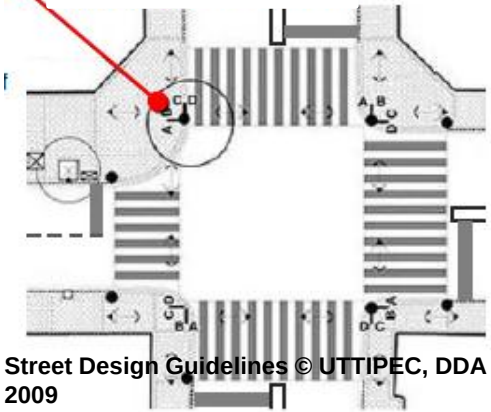
- **Advance stop and yield lines** should be considered at stop- or signal-controlled marked crossings with limited crossing visibility, poor driver compliance, or non-standard geometrics.
- Stop and yield lines can be used from 1 to 15 M in advance of crossings, depending upon location, roadway configuration, vehicle speeds, and traffic control.
- **Traffic Calming** Treatment starting least 25 m before the zebra/ table-top crossing is essential in Surat due to unruly traffic.
- **Way finding Signage** for Pedestrian orientation and directional guidance must be provided at street intersections. Amenities like dustbins are also needed.

Source: San Francisco Better Streets Plan





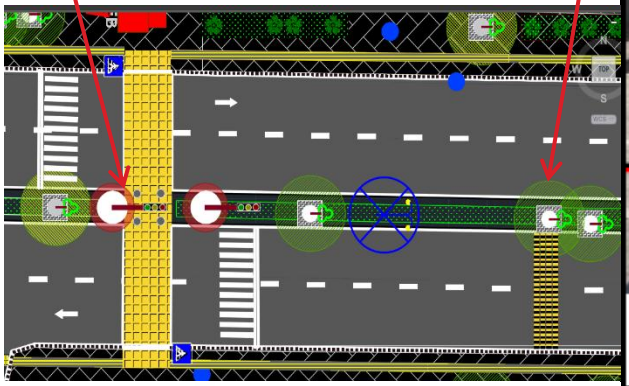
Traffic Light Mounted Street Name Plate, with Address Range and Other Directional Signage.

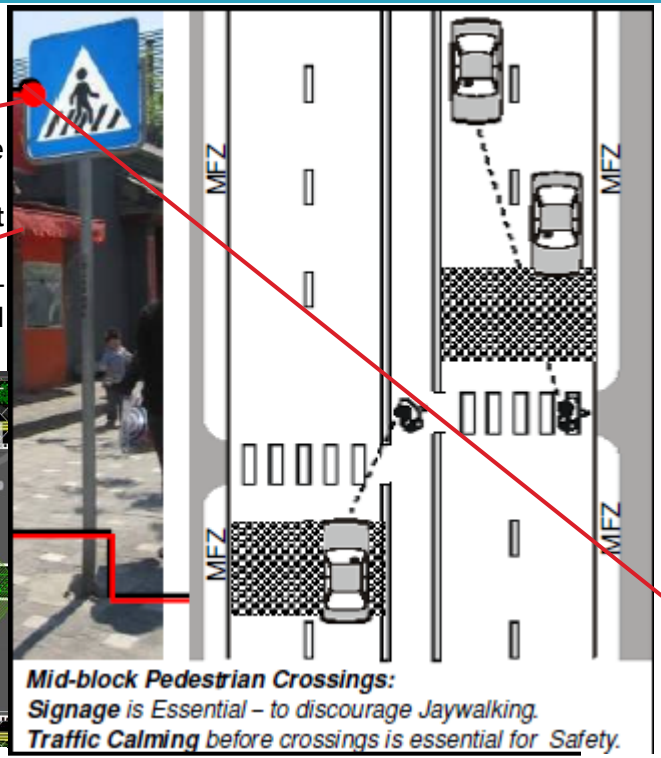


Street Design Guidelines © UTTIPEC, DDA 2009

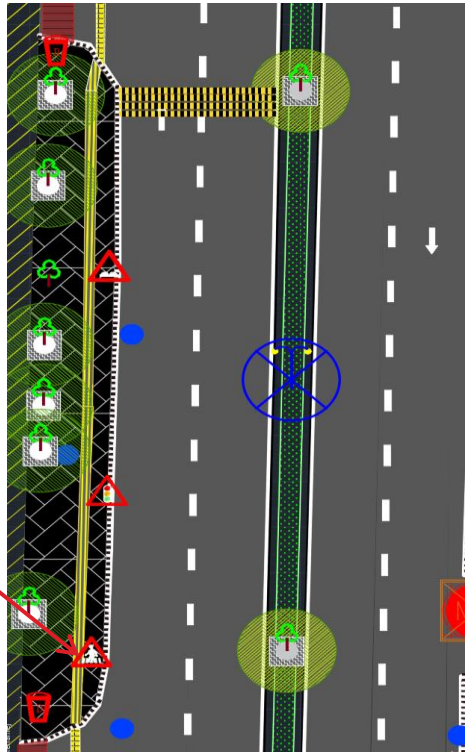
Mid-block crossings must include the following:

- Signage visible from min. 100m away.
- Auditory signals are required to provide assistance to the differentially-abled.
- Traffic Calming Treatment **starting least 25 m** before the zebra/ table-top crossing.
- Minimum 20-second pedestrian signal – either as pelican or as a synchronized signal with the nearest full traffic signals.

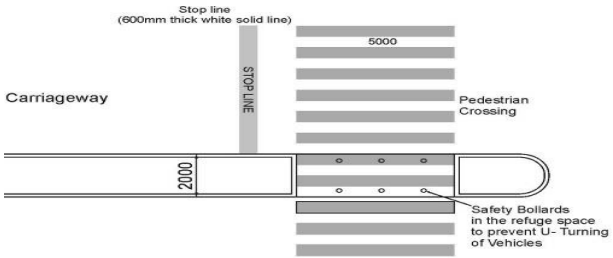




Source: "American Association of State Highway and Transportation Officials", Pedestrian and Bicycle Safety, Lesson 12 Midblock Crossings



AUTOCAD picture of proposed design



(Drawing Courtesy: ICE and SG Architects)

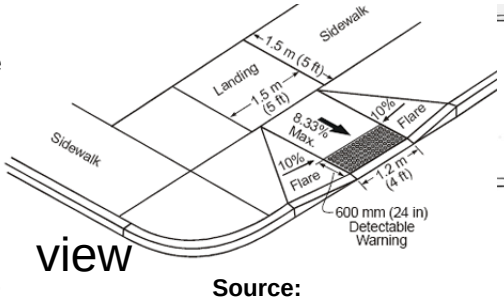
Kerb Ramps

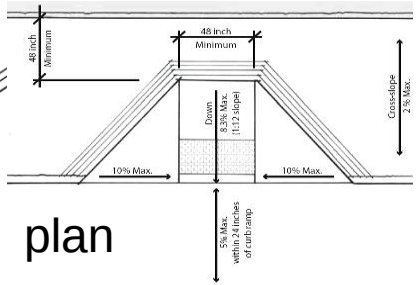
Kerb ramps provide pedestrian access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcarts, bicycles, and pedestrians who have trouble stepping up and down high kerbs. **The absence of kerb ramps prevents any of the above users from crossing streets.**

Kerb ramps must be installed at all intersections and mid-block locations where pedestrian crossings exist.

Key Design Guidelines:

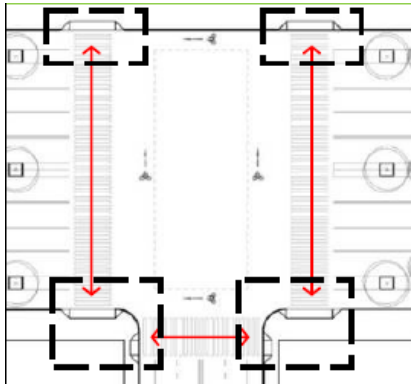
- Standard kerb ramps are cut back into the footpath (flush with roadway), at a gradient no greater than 1:12, with flared sides (1:10) providing transition in three directions.
- Width of the kerb ramp should not be less than 1.2 M.
- Tactile warning strip to be provided on the kerb side edge of the slope, so that persons with vision impairment do not accidentally walk onto the road.
- The ramps should be flared smooth into the street surface and checked periodically to make sure large gaps do not develop between the gutter and street surface.
- It is desirable to provide two kerb cuts per corner. Single ramp located in the center of a corner is less desirable. Separate ramps provide greater information to pedestrians with vision impairment in street crossings.
- Mid block crossings accessible for persons with disability should be provided for blocks longer than 250M.

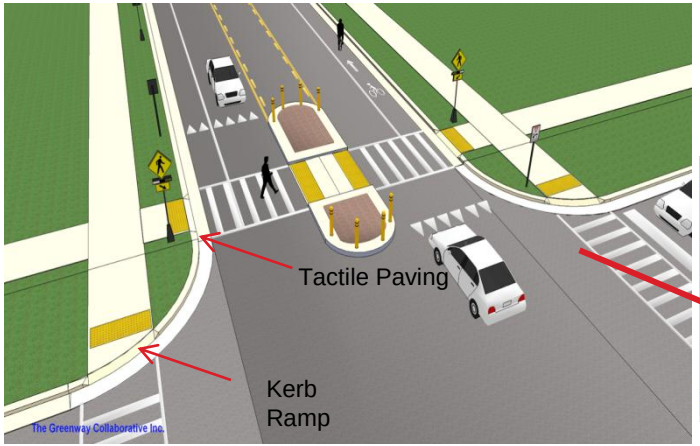


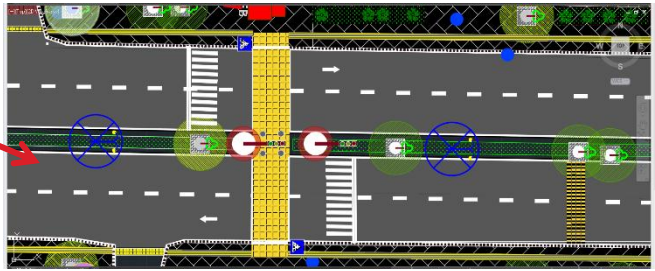


Source:
San Francisco **Kerbed Ramp with Tactile Paving** Better Streets Plan

Location of Kerb Ramp must align with the Zebra Crossing location and the location of Kerb ramp on the opposite side.







Source: Guidelines for Inclusive Pedestrian Facilities, Report for IRC by Anjlee Agarwal, Samarthyam.org

Adopted same in design.
Source: Google images

AUTOCAD picture of proposed design

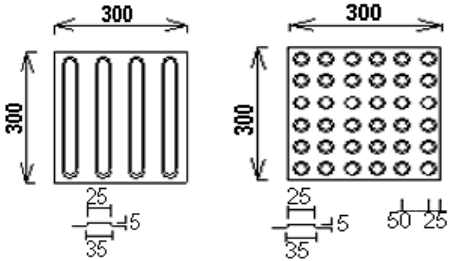
Persons with vision impairment need guidance in using a pedestrianized area, especially if the footway crosses larger open spaces where the usual guidance given by the edge of the footway or building base is not available, or when pedestrians need guidance around obstacles.
A continuous tactile guide (guiding & warning tile) in the direction of pedestrian travel, which has a different texture to the rest of the footway, can provide this guidance.

Key Design Guidelines:

- A **distance of 600-800mm to be maintained from the edge of footpath**/ boundary wall/ any obstruction.
- A **height of about 5mm** for the raised part of the surface is sufficient for almost all persons with vision impairment to detect, without causing too much discomfort for other pedestrians.
- Tactile paving must be maintained to ensure that the profile does not erode away.

Vitrified non-glazed tactile pavers are preferable.

- Tactile tiles should have a colour (preferably canary yellow), which contrasts with the surrounding surface.
- Tactile Paving should be **minimum 300mm wide** so that someone can't miss it by stepping over it.



"Go" - Guiding Tile *"Stop" - Warning Tile*

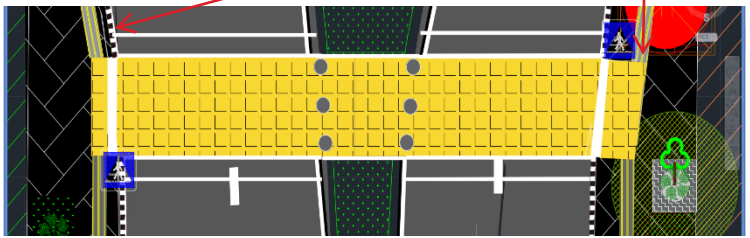
Source: Guidelines for Inclusive Pedestrian Facilities, Report for IRC by Anjlee Agarwal, Samarthyam.org

Design specifications:

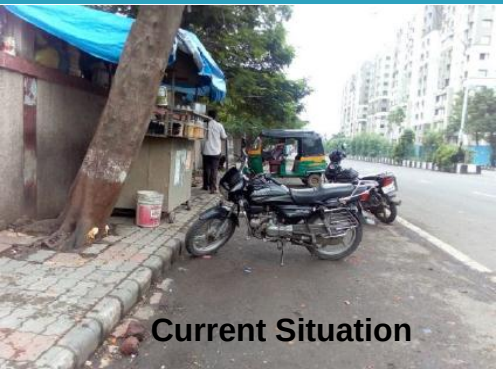
Ramp slope	8% maximum
Gutter slope	5% maximum
Flare slope	10% maximum
Lip at roadway	6mm maximum, flush surface
Ramp width	1200mm minimum, width of crossing
Landing width	1500mm
Cross fall on landing and approach	2% maximum
Width of tactile warning surface	610mm

Tactile paving on footpath leading to ramp and crossing: BRT Corridor, Delhi

Tactile paving on footpath leading to ramp and crossing, BRT Corridor Delhi



AUTOCAD picture of proposed design

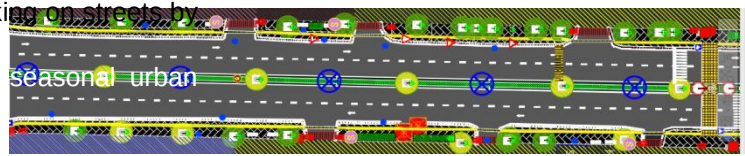


Current Situation

Source: Report

Street Trees are an essential on all Streets to provide the following:

- Provide shade to pedestrians and cyclists.
- Reduce local ambient heat through shading of surfaces and evaporative cooling - making the street more comfortable for all users.
- Absorb pollutants and improve local air quality.
- Increase local humidity so help absorb dust.
- Helps to create a sense of enclosure and place making on streets by creating relaxation spaces.
- Flowering or deciduous trees create a changing seasonal urban experience on streets.



Key Design Guidelines:

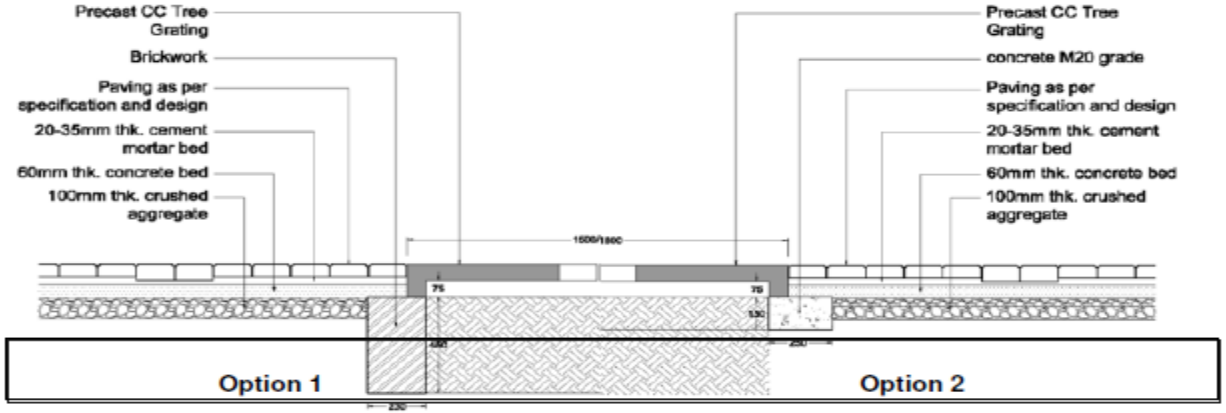
- **Trees must be planted in the specifically allocated MFZ which is an essential requirement on all categories of streets.**
- The Clear Pedestrian Zone (minimum 1.8 M Wide) and Utility Easements/ CUDs/ Duct Banks must be placed separately from the Tree Planting Zone/ MFZ.
- **Trees must be placed such that they do not obstruct street lighting** as well as visibility of traffic signals. Therefore the Tree Planting Plan must be prepared in conjunction with the Street Lighting Plan.
- Trees must be **pruned from the bottom** such that all safety devices, signage and traffic signals are clearly visible to all road users.
- Before the start of every project, all **existing trees** must be identified, numbered and marked on a Survey Plan and **kept intact as much as possible.**
- **Deciduous Trees** that shade in summer and shed their leaves to let sunlight through in winter are ideal for Delhi.
- **Only Native trees** should be planted on streets in order to minimize irrigation requirements and prolong tree life.
- Trees like Eucalyptus, Australian Acacia, Lantana, Lucena, Mast tree (False Ashoka) **should be avoided.**

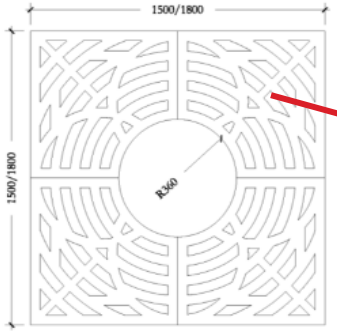
Tree Pits and Tree Grates

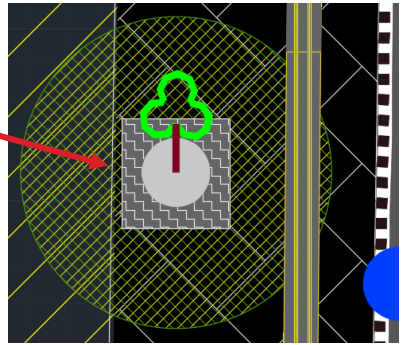
Suffocated Tree pits

Open Tree pits are acceptable but they are difficult for pedestrians to walk over.

- **A clear width of 1800 x 1800 M is to be left free of concrete, in order to allow access of nutrients to the roots of trees.**
- **Tree Grates allow pedestrians to walk close to trees, without discomfort to either.**







Sample Detail of
Precast Cement Concrete Tree Grating.
Source: Pradeep Sachdeva Design Associates, Nov 2009

Used in design

Public toilets are provided for the floating population / general public in places such as markets, train stations or other public areas, where there is a considerable number of people passing by.

Bio Digester: A bio-digester toilet is an anaerobic multi-compartment tank with inoculum (anaerobic bacteria) which digests organic material biologically. This system converts faecal waste into usable water and gases in an eco-friendly manner.

Septic tanks for public / community toilets

Considered

No. of users	Length (m)	Breadth (m)	Liquid depth (cleaning interval of)	
			2 years	3 years
50	5.0	2.00	1.0	1.24
100	7.5	2.65	1.0	1.24
150	10.0	3.00	1.0	1.24
200	12.0	3.30	1.0	1.24
300	15.0	4.00	1.0	1.24

***Public Toilets* - Norms for toilet seats**

S. No.	Sanitary Unit	For Male	For Female (A)
i.	Water Closet	One per 100 persons up to 400 persons; For over 400 persons, add at the rate of one per 250 persons or part thereof	Two for 100 persons up to 200 persons; over 200 persons, add at the rate of one per 100 persons or part thereof
ii.	Ablution Taps	One in each W.C.	One in each W. C.
iii.	Urinals	One for 50 persons or part thereof	Nil
iv.	Wash basins	One per W. C. and urinal provided	One per W. C. provided

Treatment units

1. Bio Digester with reed bed systems/ soak pits
2. Bio Tank
3. Septic Tank with Soak Pits

Implementation Mode

All toilets shall be constructed through PPP mode with inbuilt provision of O&M for at least a period of 5 years.

Source: *Manual on Sewerage and Sewage Treatment Systems, 2013 Part A Engineering*

Source: Guidelines for **Swachh Bharat Mission (SBM)** December,2014

It must be ensured that adequate water supply arrangement shall be made for proper functioning and upkeep of toilets. Wherever possible, ensure that public and community toilets are outfitted with solar panels for the generation of electricity to ensure uninterrupted power supply and bring down Operation & Maintenance costs.


Connaught Place, New Delhi


Fashion Street, Mumbai

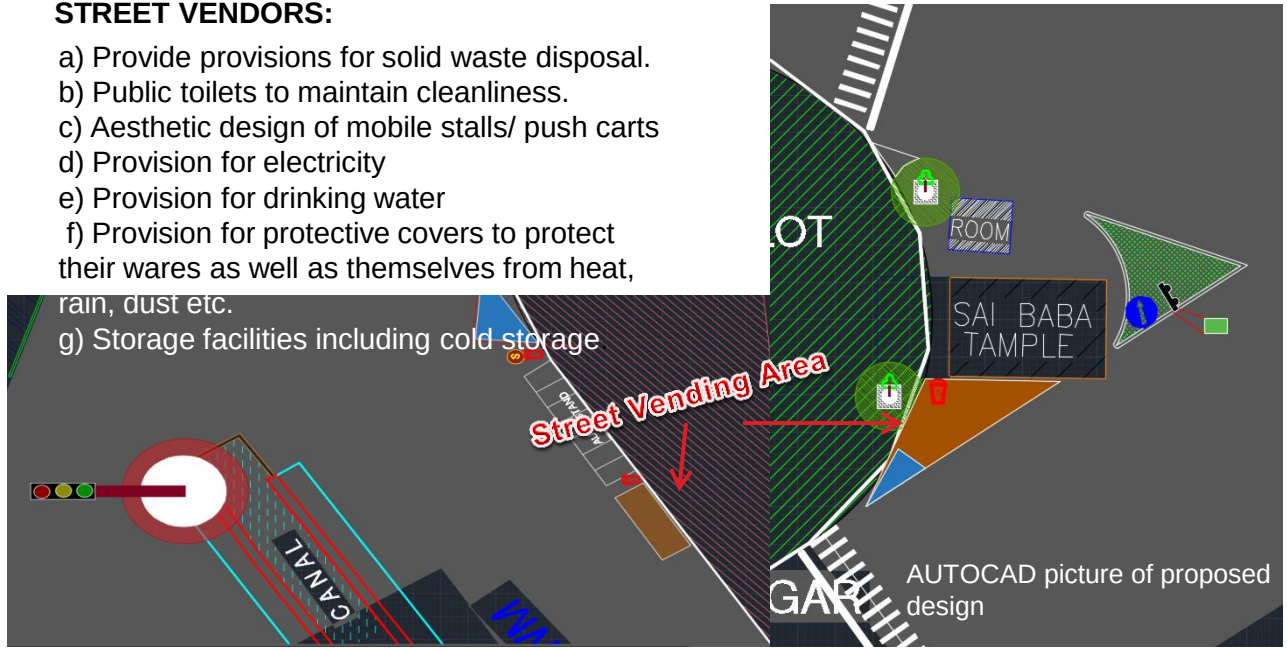
Hawkers must be given designated space within the road Right-of-Way, so that they don't occupy the Minimum Clear 1.8 M Pedestrian Walking Zone.

Designated spaces will make enforcement easier which has not been possible so far.

Key Principles:

- **Hawkers MUST be accommodated within the Road RoW – approximately every 500-1000 M** on a public street.
- They are needed at all commercial centres and must be at walking distance from offices, homes and retail areas.
- Essential Utilities also must be provided as outlined in the **NATIONAL POLICY FOR URBAN STREET VENDORS:**

a) Provide provisions for solid waste disposal.
b) Public toilets to maintain cleanliness.
c) Aesthetic design of mobile stalls/ push carts
d) Provision for electricity
e) Provision for drinking water
f) Provision for protective covers to protect their wares as well as themselves from heat, rain, dust etc.
g) Storage facilities including cold storage



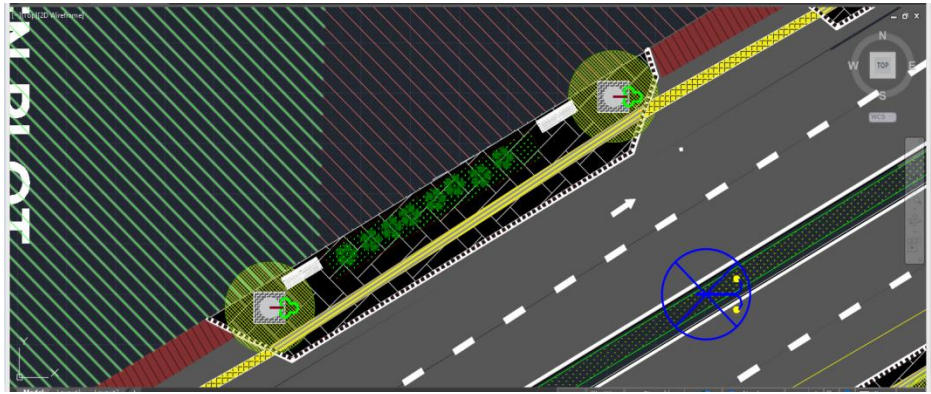
AUTOCAD picture of proposed design

Lack of Adequate Seating Facilities

Seating is an essential piece of Street Furniture which provides pedestrians and especially public transport users an opportunity to rest or pause, in the mist of their daily schedules…

- Seating provided must be easy to clean, located in areas that are well watched, busy, and well shaded by trees or artificial canopies - to protect people from the harsh Delhi heat.
- Ideally low maintenance seating should be located under deciduous trees and designed for easy cleaning and maintenance.

Functional Public Art: SHADED SEATING….
Chair extensions hold up the roof over your head, while providing a seating place at the same time.
(Street furniture: Hudson Riverfront, New York)



AUTOCAD picture of proposed design

Well shaded, easy-to-maintain Seating, Beijing

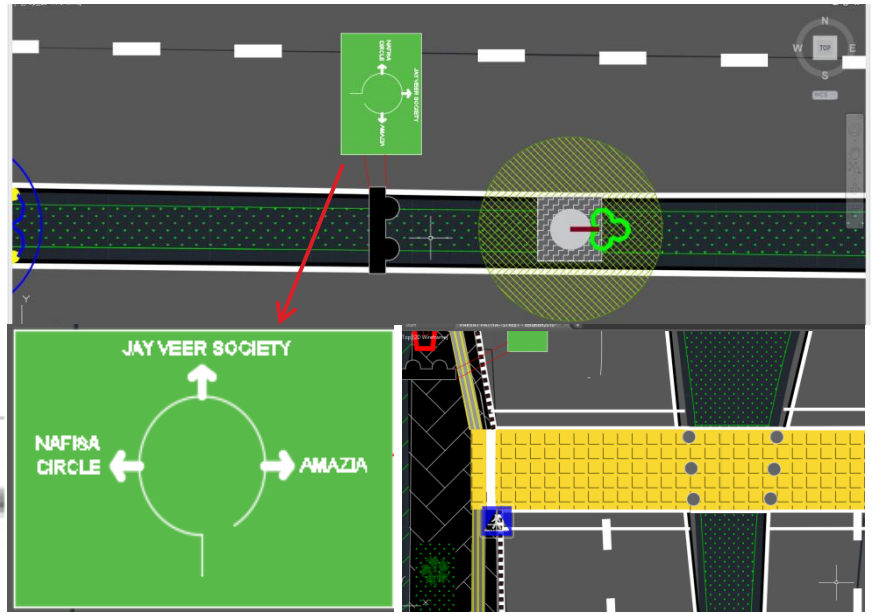
Key Principles:

Signage for Way finding and Information of Pedestrians and Cyclists are essential for creating a public transport friendly city. Signage provides help to pedestrians to navigate the city with ease and safety, and have the following functions:

- **Orientation – Way finding**(Street Signs)
- **Availability of Public Transit nearby** (Transit Signs)
- **Guiding Street Flow** (Traffic Signs)
- **Announcing about City's specific features or attractions** (Information Signs)
- **Conveniences** (Toilet, dustbin, hawker signs).

➢ Signs should reinforce the overall character of the specific district and be consistent throughout the City.

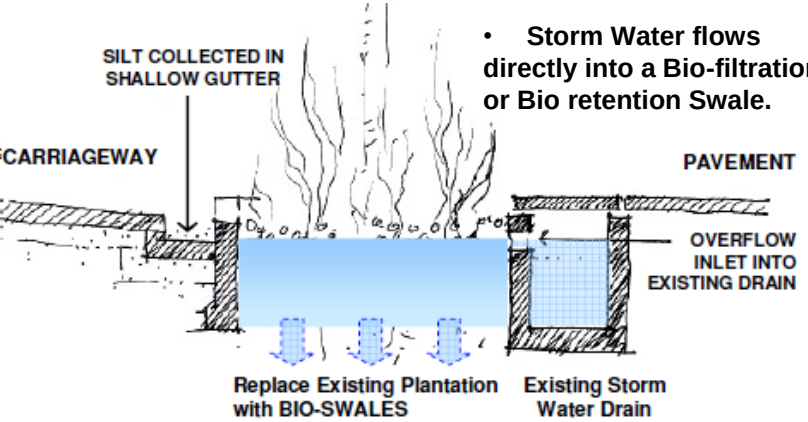
➢ Posts and poles should be arranged to minimize the number and avoid clutter.



Visual Signage is preferable for Amenities and General Information

AUTOCAD picture of proposed design

Proposed Option: Bioswale



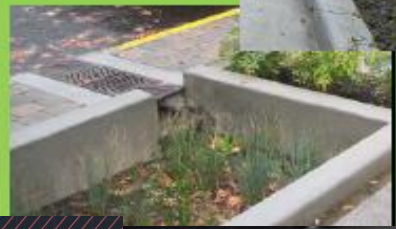
- **Storm Water flows directly into a Bio-filtration or Bio retention Swale.**
- **Water is retained and infiltrated in the bio-swale.**
- **In heavy rains, extra storm water overflows into the existing S.W. Drain.**

Sketches Source: Romi Roy, Sr. Consultant, UTTIPEC DDA, Oct 2009

Areas that could be used for Storm Water Management in Roads:

"Green Streets", Portland.

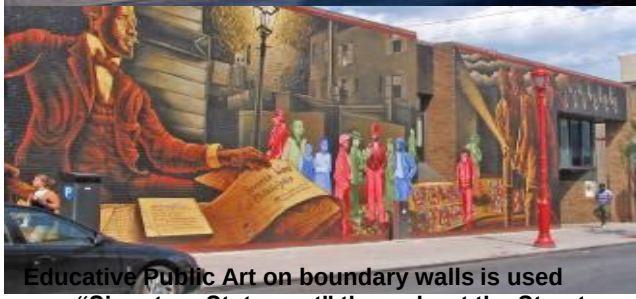
Photos: Seattle Department of Transportation.



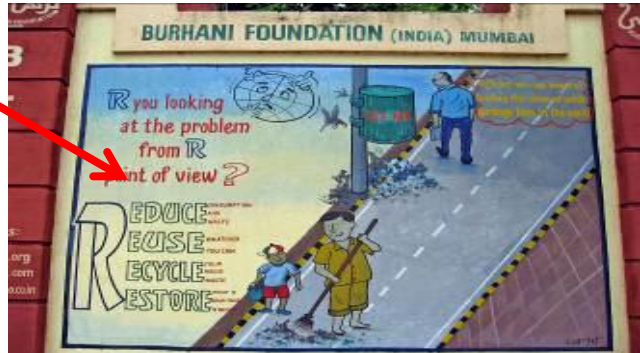
Natural Storm Water Management can be incorporated along Planting Strips of Roads.

The long-term solution to walls and footpaths being used for public urination and spitting **- is the removal of boundary walls and creating "eyes on the street" – which would also make the city safe for women.**
In the short-term – **the abundant boundary walls around the city could be used for educative public art.**

A Boundary Wall in Kalbadevi, Mumbai used for 'Environmental Education' Art – created by children through NGO cooperation



Educative Public Art on boundary walls is used as a "Signature Statement" throughout the Streets of Philadelphia, US



Innovative, clean, well maintained and well loved Dustbins are the key to a "Clean" City.

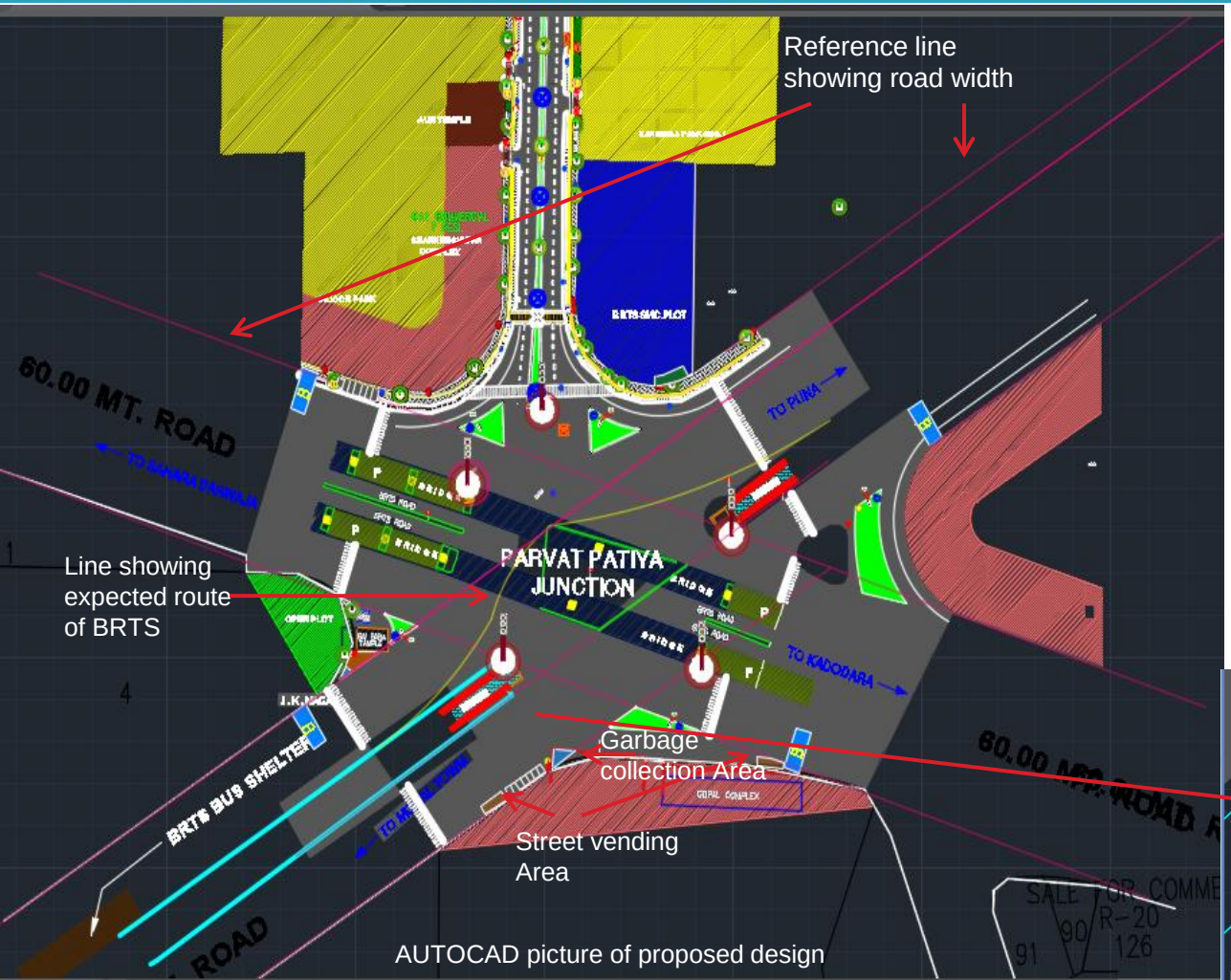
An Artistic way (graphics, cartoons) could convey –
why and what kind of waste should go into which bin
– even to illiterate users.

In Philadelphia, Art on Dustbins strongly convey the Environmental Philosophy of the City.

Maps on dustbins showing
location of nearest landmarks and
public toilets.

Art for Conveying……. Important SOCIAL MESSAGES:
Bus stops can be used as canvases of public art conveying messages about
anti-eve teasing, anti-molestation of women, anti sexual abuse etc....

Example of Social abuse Signage at a Bus Stop in New York.



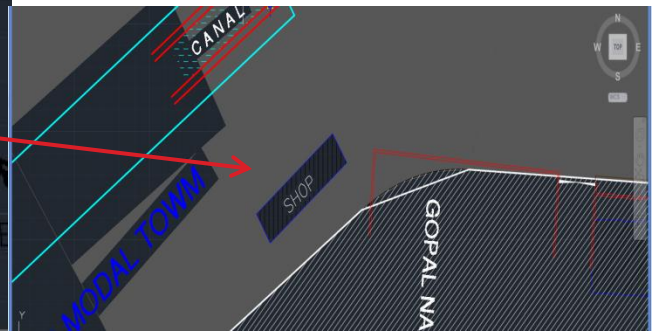
AUTOCAD picture of proposed design

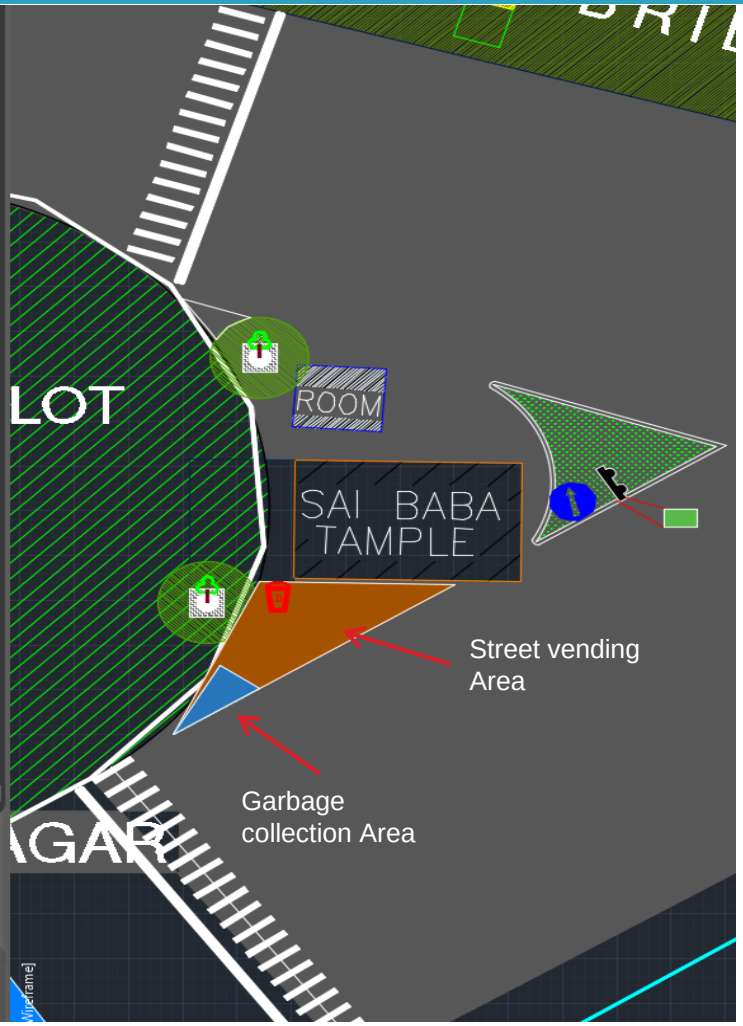
- Area with kerb at Parvat Patiya junction below the bridge reduced from approx. 985m^2 to 844m^2

  As it was hindering the route of BRTS causing it to take longer turn.

- Shop on Modal town road is removed as it was coming in between road width.

Before

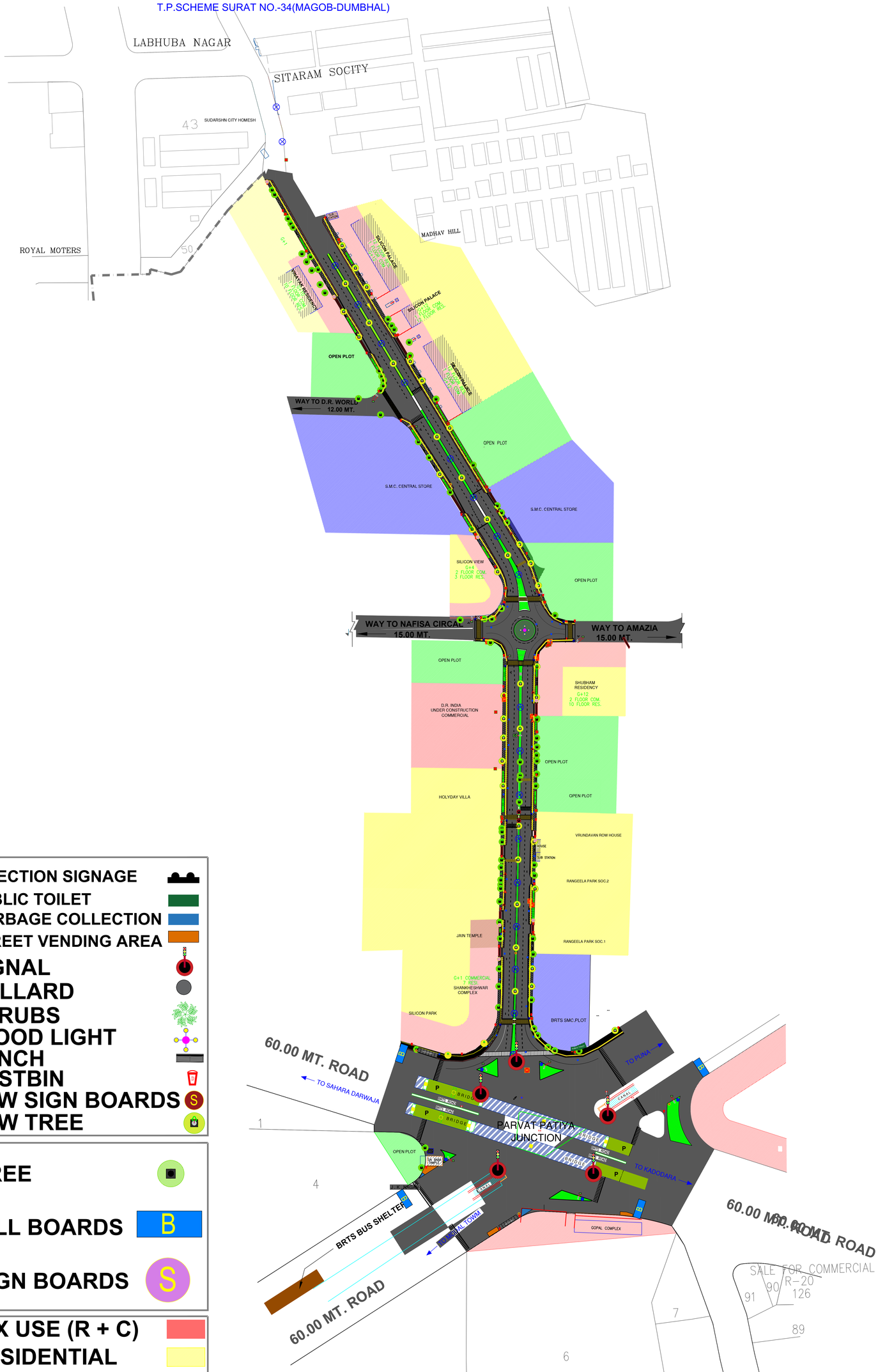




Here, temple is creating full blockage of the road after making an island, but if its positioned can be change then full road can be used and Street vending area and Garbage collection area can shifted.

AUTOCAD picture of proposed design

T.P.SCHEME SURAT NO.-34(MAGOB-DUMBHAL)



DIRECTION SIGNAGE	
PUBLIC TOILET	
GARBAGE COLLECTION	
STREET VENDING AREA	
SIGNAL	
BOLLARD	
SHRUBS	
FLOOD LIGHT	
BENCH	
DUSTBIN	
NEW SIGN BOARDS	S
NEW TREE	

TREE	
BILL BOARDS	B
SIGN BOARDS	S

MIX USE (R + C)	
RESIDENTIAL	
COMMERCIAL	
INTITUTIONAL	
RELIGIOUS	
OPEN PLOT	
PARKING	P

STREET LIGHT		MANHOLES	
ELECTRICAL BOX	EB	STORM DRAIN	

N

MAP.: STREET DESIGN