

URBAN95

Udaipur – An Urban95 City PHASE II

Detailed Project Report for design of three Child and Family-friendly junctions and 1.5km Connected shared Street
Estimated Cost of the Project – INR 168.86 Lac



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Executive Summary

Realizing the need to transform its urban built environment into more Infant, Toddler, and their Caregivers (ITC) responsive and ITC friendly, Udaipur in Rajasthan has agreed to be part of Urban95 Program, and in the process has joined hands with BvLF via a formal Memorandum of Understanding (MoU). The Phase-I of the Program began in June 2019 for 18 months and given the success of the same, Udaipur now has moved into a larger and bigger phase starting Feb'21, planned for 36 months.

As a part of Urban95 Phase-II scoping, a 1.5 kms Road/ Street and 3 connected junctions are planned to be developed under Phase-II at the identified site for transforming these road/ street stretch and 3 junctions into an urban95 model road/ street and junctions by plugging in the suitable ITCN features.

It is in this context a road stretch known as 'Saheli Marg', situated between **UIT Junction and Fatehepura Police Chowki (also known as Seva Mandir Chauraha)** along with the road stretch known as 'Big Bazaar Road' situated between **'Saheli Marg Triangular Junction'** & 'Sukhadia Circle Junction' has been identified and finalized for transformation of the same into *Urban95 model roads/ streets and junctions*.

The above has been finalized basis on available Right of Way (RoW), availability of other ITCN destinations (neighbourhood parks, AWCs, PHCs, etc.) within close proximity, higher footfalls of ITCs etc. along with ITCN surveys (Footfalls count, Stationary Mapping, Activity Mapping etc.)

Moreover, one more important factor for finalizing the above is because of one of the famous and 'must visit' touristic hubs, i.e. 'Saheliyon-ki-Bari' on Saheli Marg, giving the transformed roads and junctions larger visibility of ITCN aspects.

In continuation, a conceptual design proposal was planned and finalized for its feasibility to transform these roads/ streets and junctions into Urban95 model roads and junctions. Based on the Feasibility Report, a few of the important design features are taken in this DPR :

- Continuous and unobstructed footpaths/ sidewalks;
- Traffic Calming Measures- table tops, road markings, and signages;
- Bus shelters and earmarked Intermediate Public Transport (IPT) waiting and parking spaces and their pick-up and drop-off locations;
- Public Bicycle Sharing (PBS), Bicycle Stands;
- ITC Enabled Street Furniture including Shaded Resting Areas- benches, light poles, dustbins, water ATMs, Feeding Booths, along with road side planters;
- Sidewalks Games, Public Art, Murals;
- ECD messages at regular intervals informing community and service providers on the importance of these elements and moreover informing caregivers on the importance of Outdoor Activities for children for their overall growth and development etc.;

The **Total cost** of the project **Rs 168.86 Lacs (including operation and maintenance)**.

Interestingly 'Saheli Marg' and the 3 junctions fall under **UIT jurisdiction** while the Big Bazaar Road falls under **UMC jurisdiction**. It is in this context UIT was loop in (via several discussions and meetings) with consent from UMC for UIT's approval in developing/transforming the identified roads and junctions into an Urban95 road and junctions. It is in these discussions, it has come out that the 'Saheli Marg' Road Improvement tender has already been out and a contractor was also finalized for taking up same.

However, UIT has agreed for adding in suitable ITCN elements in the already finalized design for on-ground implementation. The identified and finalized elements are- Continuous Footpaths/ Sidewalks, Sidewalks Games, and Shaded Resting Areas including Street Furniture (Benches, Light Poles, Dustbins etc.) Public Art, Bollards, Road Side Planters, Water ATMs, Feeding Booths, and Bus Shelters. **The total cost to UIT for the convergence of these design elements is Rs. 57.68 Lacs.**

UMC also shall be taking up the overall road & junctions improvement plan with almost similar design elements in its jurisdiction and the **total cost to UMC is Rs. 95.83 Lacs.**

The project is proposed to be implemented from June 23 till November 23 and handed over to the stakeholders by the end of November 23.

After on-ground implementation, PMU shall be taking up 'Post Implementation Impact Assessment' using the pre-implementation survey techniques and means (Surveys-. The results of the same shall be showcased to city authorities for them to understand the importance of such road improvement plans using ITCN principles, ensuring long-term sustainability and scalability as well.

Preface

Creating connected Shared Streets with Child and Family-friendly for the youngest people and their caregivers.

Experiencing the city from an elevation of 95 cm, we are creating spaces/zones specific to young children and their caregivers, which will further improve:

- The quality and frequency of interactions between young children and their caregivers, and the well-being of these caregivers
- Through the provision of early childhood services, public space, transport, and planning neighborhoods.
- Need frequent, warm, responsive interactions with loving adults and a safe, stimulating physical environment to explore.
- Experience the world at a much smaller scale and have a dependent and far the shorter range of mobility than the typical city-dweller is particularly vulnerable to air and noise pollution.
- Need to travel regularly to early childhood services such as PHC, aanganwadi and childcare is always to be found with their caregivers.
- This means safe, accessible, and comfortable streets that cater for the basics of a young family needs, junctions that attract all generations while allowing small children to explore safely, and reliable transport that makes it easy, affordable, and enjoyable for families with young children to travel where they need to go.



Green Public Space

Transforming existing public spaces into places for young children to play and explore nature and for caregivers to meet and rest.



Mobility for families

Facilitating caregivers and young children to walk or cycle to access healthcare, childcare, play areas and a source of mode of transport.



Data driven decision making

Collecting and applying neighborhood level data on young children and caregivers to target resources and facilitate coordination across sectors.



Parent coaching

Surrounding parents with ideas for ways to incorporate play and storytelling into daily routines, and nurture their children's developing minds.

Figure 1 Main focus areas for Urban95. Source: (ITC, 2022)

Background

Indian cities are urbanizing and growing at an unprecedented speed in recent decades, and the growth has been so rapid and uncontrolled, that cities infrastructure services has been outstripped to meet the physical and social needs much faster than anticipated. With increase in urbanization and population, India is witnessing robust growth in younger population, with 10% (~36 million) is constituted by children below 6 years¹ and another 32% of its population (~120 million) is constituted by children between 6 to 18 years of age².

Growing up in the cities is as complex as it is exciting, as with plenty of opportunities- access to better schools, sports facilities and health care, the urban environment is also wrought with threats- pollution, lack of independent mobility, inadequate play spaces, lack of recreational/public spaces and break down of community support structures, that impact the overall growth and development of a child.



It is a well- known fact that issues that make urban life difficult for an infant, toddler or a grown-up child also make it difficult for their care giver too- parents, grant parents, and other vulnerable section of society in general- women, elderly and disabled people. Thus, making cities more infant, toddler, and their care giver (ITC) friendly is an objective that cuts across many overlapping problems and doesn't just benefit children. The overall focus on Early Childhood Development (ECD) into planning and management of cities is a matter of great concern in India.



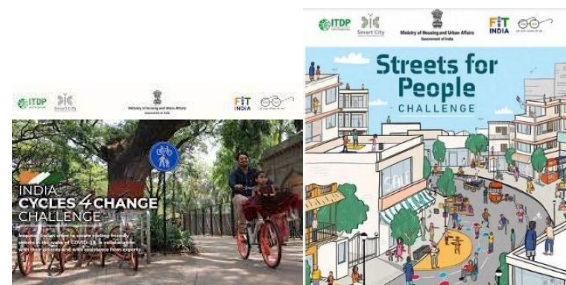
Figure 2: Young kids & children are the most impacted one with Air Pollution (Source: ICLEI-South Asia)

Recognizing children as a national asset, Government of India (GoI) has initiated and taken up various programs, plans and policies, initiatives, flagship missions etc. to make cities more responsive and friendly from the perspective of children and their families, such as Smart City Mission (SCM) and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) with focus on ensuring public safety in public spaces, streets, roads etc. especially for children, women and elderly along with promoting development of pedestrian areas, enhancement of cities by creating and upgrading green spaces, parks and recreation centers especially for children.

In addition to the above, the latest and recent ECD focused initiatives at national level are-

1 Census 2011
2 Census 2011

1) 'Cycle4Change Challenge' and 'Street for People Challenge', initiatives of MoHUA in collaboration with Institute for Transportation and Development Policy (ITDP), aiming at Inspiring Indian cities to create pedestrian & cycling-friendly streets through quick measures, in response to COVID-19;



2) 'Nurturing Neighbourhoods Challenge', an initiative of Ministry of Housing and Urban Affairs (MoHUA) in collaboration with Bernard van Leer Foundation (BvLF), aims to incorporate an ECD focused planning and management of Indian cities;



3) "Climate Smart Cities Assessment Framework(CSCAF)" as a step towards holistic, climate responsive urban development. Within the broader framework of urban planning, green cover and biodiversity by taking appropriate measures, to increase cities resilience to climate-related shocks. This is important from the perspective of environment, with suitable adaptation (adapting to various measures such as distributed generation, energy efficiency, electric vehicle and alternate fuel transportation system) and mitigation measures (sustainable transport infrastructure, Integrated Waste Management, water management etc.). Cities can mitigate impact on health, environment and air pollution, in the form of Greenhouse Gas (GHG) emissions, which are known to have adverse impact on children health.

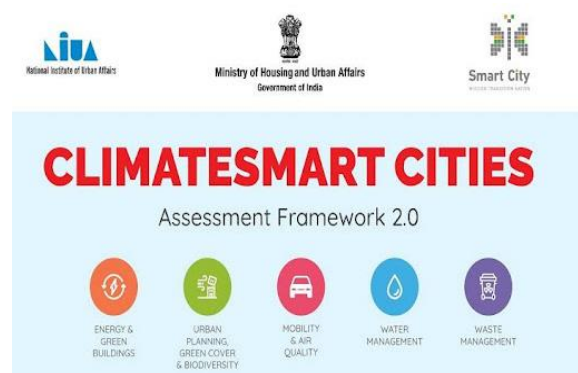


Figure 3: Recent Initiatives by National Government on making cities more resilience and ECD friendly & ECD responsive

(Source: ICLEI-South Asia)

The National Institute of Urban Affairs (NIUA) has also undertaken a programme on building Child-Friendly Smart Cities (CFSC) to promote policies and practices to make Indian cities child friendly within the urban agenda of building smart cities.

In the process, NIUA has also partnered with Bernard van Leer Foundation (BvLF) to develop a programme focusing on interventions and advocacy related to the needs of small children. The goal of

the project is to mainstream the needs of young children in Indian cities by addressing the gaps in Urban Planning & Design with objective of bringing greater awareness amongst urban planners and policy makers about the interrelationship between a young child's health and the built environment/ living conditions.



Figure 4: Pic Courtesy- CFSC, NIUA

Urban95

About Urban95

Urban95 is BvLF's global initiative, aims to create healthy, prosperous, and vibrant cities where babies, toddlers and their families can thrive. The initiative is meant to make lasting change in the urban landscape and provide opportunities that can shape the crucial first five years of children's lives. The goal of this initiative is to support healthier, safer, and more exciting urban neighborhoods for young children, for those who care for them, and for everyone.

Urban95 is rooted in the belief that when urban neighborhoods work well for pregnant women, babies, toddlers and young children and their care takers, they also tend to nurture strong communities and economic development.

Urban95 in India

The challenges of any urban city in India are mirrored across length and breadth of the country and can be broadly categorized into rapid and chaotic growth concentrated on informal, slum settlements with inadequate infrastructure; open defecation; parks not being accessible; lack of footpaths, streetlights, and safe places to cross roads; and children in some neighborhoods needing to use public transport, which is not child-friendly, to get to the nearest school.

Thriving and happy children are indicators of a healthy and sustainable society with high levels of well-being. Children form an understanding of their environment through everyday discoveries and encounters in the park, at school, during a stroll in neighborhood or by imagining and inventing games and stories. The built environment plays a crucial role in shaping young children's narratives of the city, and their understanding and experience of urban spaces.

Realizing the need to address the issues surrounding the ITC, Bhubaneswar in Odisha, Pune in Maharashtra and Udaipur in Rajasthan became the part of the Urban 95 program as a part of its Phase-I which was for 1 year period.

Urban95 in Udaipur

Realizing the need to transform its urban built environment into more Infant, Toddler, and their Caregivers (ITC) responsive and ITC friendly, Udaipur in Rajasthan has agreed to be part of Urban95 Program, and in process has join hands with BvLF via a formal Memorandum of Understanding (MoU). The Phase-I of the Program began in June 2019 for a period of 18 months and given the success of the same, Udaipur now has moved into larger and bigger phase starting Feb'21, planned for 36 months.

1. City Profile - Udaipur

Udaipur, also known as the City of Lakes, is the administrative headquarters and municipal corporation in the district of. It has an area of 64 Sq km, divided into 70 election and revenue wards.

As per 2011 census, Udaipur city has a population 451,100 with 233,959 males and 217,141 females. Udaipur has seen considerable growth in population due to the development of industrial and educational centers which have created an economic base for in-migration. The city also has a pleasing weather throughout the year which coupled with natural and built heritage of the city creates a popular tourist destination. Due to the regional topography, the city has seen growth towards the northeast and western part along the National Highways NH8 and NH76. The city's regional connectivity also plays a major role in the influx of people.

With increasing population and spread of the city, the overall quality of life is degrading, especially for children and their caregivers. Flooding and increasing temperatures are also worsening the urban environment of the city, having adverse impact on ECD.

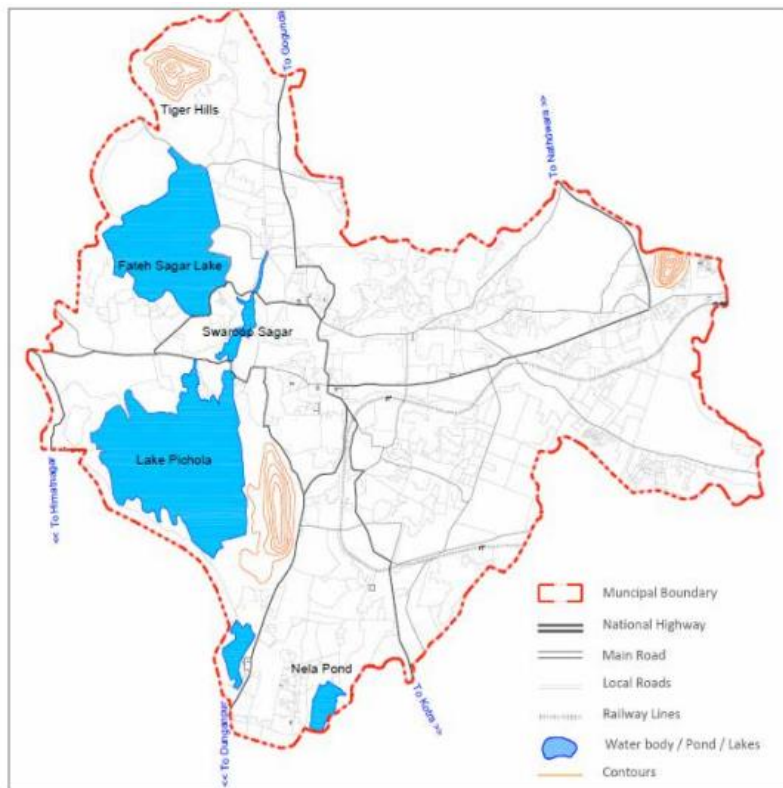


Figure 5 Municipal area, Udaipur. Source: (City_Report_Udaipur, 2019)

1.1. Population and Decadal Growth Rate

Udaipur is the 6th largest city in the state with more than 1 lakh population. The Udaipur Municipal Corporation population accounts for 2.65% of the urban population of the state and 74.14% of the urban population of the Udaipur district.

The city has witnessed considerable population growth in the last four decades while acting as a magnet city for the surrounding region. The growing economy and growing tourism sector has attracted both urban as well as rural populace. The decadal growth rate from 2001 to 2011 was 15.83% which is close to natural growth rate of population. Areas outside the core city started developing during the last few years.

According to Census 2011, the young children population (0-6 years) has been recorded at 47,932 and significant improvement in the sex ratio has been observed over the decades in the UMC area, i.e. from 844 in 1981 to 928 (state average too) in 2011. The sex ratio of young children (0-6 years) in Udaipur is 866 compared to the state average of 888.

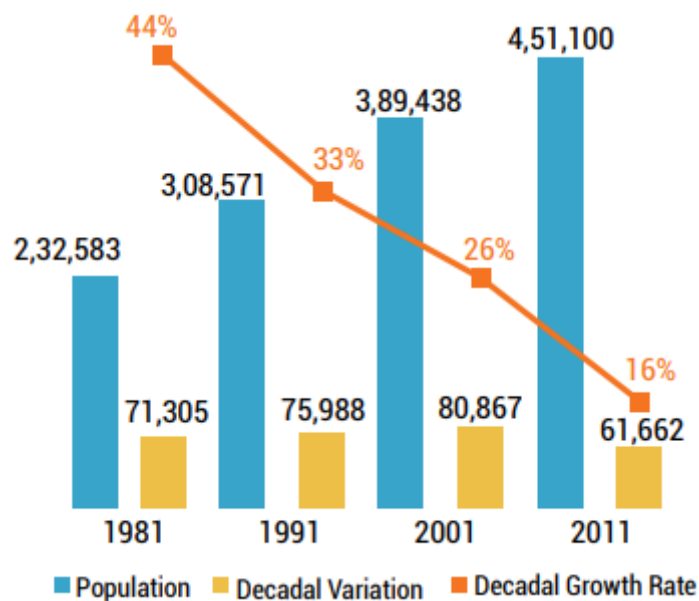


Figure 6: Udaipur Population Growth, Source: City Development Plan of Udaipur

According to the latest Udaipur district report, infant mortality rate in Udaipur district is 63 (2012-13) compared to 41 at state level, and under five mortality rate is 91 (2012-13) compared to just 45 at state level indicating a high percentage of mortality.

The Crude Birth Rate (CBR) and Crude Death Rate (CDR), for Udaipur is 21.9 and 5.9 respectively while neo- natal mortality rate and post- natal mortality rate is 35 and 12 respectively. The maternal mortality rate in Udaipur is 39, which is highest among all the major districts of the state.

Due to the expansion of municipal area and the addition of a new census town to the overall city area, the population density within the city has declined from 10,525 people per square kilometre (2001) to 7048 people per square kilometre (2011).

1.2. Social and Cultural Resources

Udaipur has places of natural and historical significance like lakes Pichola, Fatehsagar, City Palace, Lake Palace, Jag Mandir, Sajjangarh, Shilp gram, Saheliyon ki Bari, Sukhadiya Circle, Moti Magri, etc. The city has the fourth largest tourist influx in Rajasthan after Mount Abu, Jaipur and Pushkar with tourist growth at 15-20% consistently over the past 20 years.

With three universities, six colleges, and more than 160 high schools, Udaipur is also a major educational centre. The esteemed Indian Institute of Management is also a part of this. Medical institutions are expanding at a pace of 35% annually while higher education is rising at a rate of 50%. Janardan Rai Nagar Rajasthan Vidyapeeth University (RVU) and Big Medicine Charity Trust are collaborating to establish the first Eco-Cultural Entrepreneur Center and Business Incubator in Udaipur (BMCT).

Complementing the rich cultural heritage of the state of Rajasthan, the city of Udaipur hosts a number of fairs, folk dance and music festivals like Udaipur Lake festival, Gangaur festival, Shilpgram Utsav, Jagannath Rath Yatra, ASEAN Art camp, World Music festival, etc.

2. Aim, Objectives and Methodology

2.1. Aim

The aim of this assignment is to make Udaipur an Infant Toddler and Caregiver (ITC) Friendly city, such that it encourages ITC to actively use its public spaces and assets for wholistic and inclusive development.

2.2. Objectives

The objectives of this assignment are-

1. The Urban Built Environment has a direct impact on children's safety. An unsafe environment in and around ITC facilities can increase the likelihood of accidents and injury, which can have physical as well as psychological implications for the child. Therefore, it is imperative to have a model case that can provide a safe built environment for young children in cities.
2. To Develop connected shared street including child and family friendly junctions in Udaipur which facilitates young children and their caregivers.
3. This facility will be planned along an important collector road of the city and will disseminate the idea of streets as public spaces with dedicated walking space, cycling space, pause points and children play area, a better journey experience and traffic calming measures which motivates caregivers to walk or cycle with their young children.

2.3. Purpose of this document

- A. This document will give a detailed understanding of the selected site , design of the street and junctions, details of all components, Operation and Maintenance protocols, financing plan and the block cost estimates.

2.4. Expected Behavioral changes envisaged through this assignment

1. The site would become more inclusive as the ITC may start interacting with each other, use the spaces more actively and thereby footfalls may increase.
2. The site would become safe and accessible, encouraging Caregivers and guardians to allow ITC to explore the areas.
3. The proposed playful activities and landscaping may encourage ITC to spend more time in these public spaces.

2.5. Methodology

Following methodology has been adopted for this assignment.

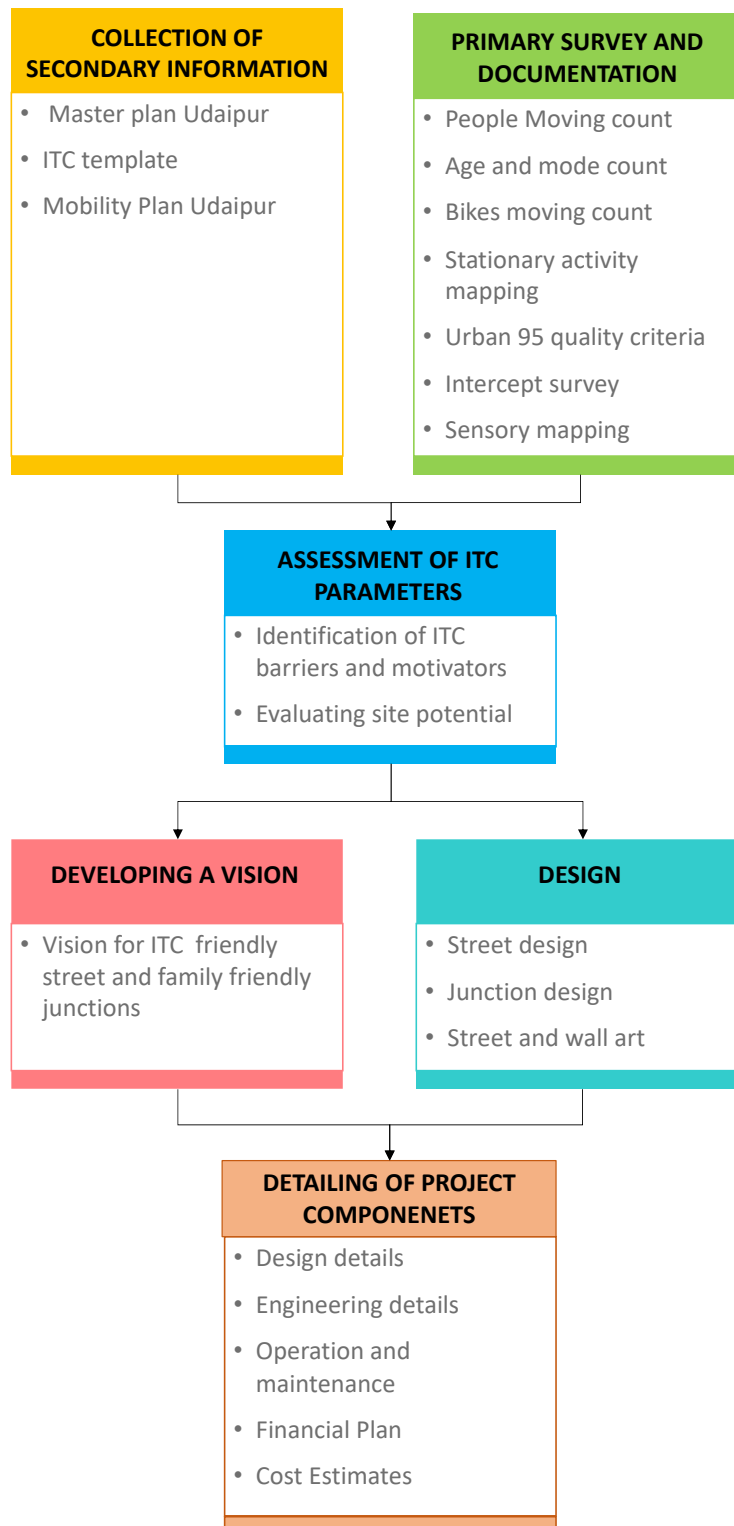


Figure 7: Methodology adopted

3. Site- Saheli Marg

3.1. Introduction

Saheliyon Ki Bari is an important destination in the northern part of Udaipur city. It is connected to the UIT circle in the south and the Sukhadia Circle junction to its east via Saheli Marg. It links city-level public places and tourist destinations like Saheliyon ki Bari, Fathehsagar Pal, Maharana Pratap Smarak, Sukhadia Garden and parks. (See Figure below)

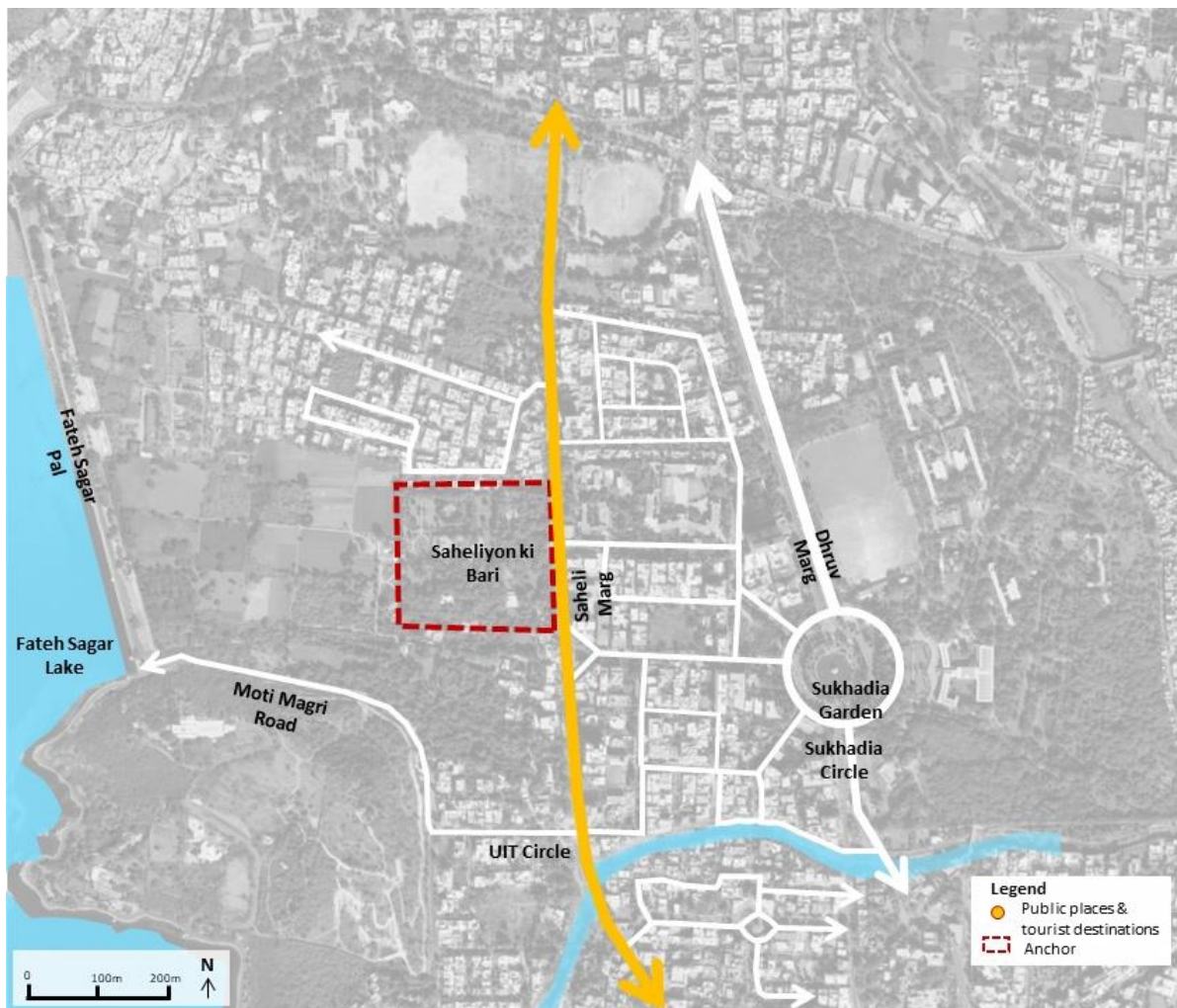


Figure 8: Saheliyon ki Bari as anchor institution, Source: (Author, 2022)

Saheliyon ki Bari is a major garden and ITC destination of Udaipur abutting Saheli Marg. Therefore, Saheliyon Ki Bari has been selected as the anchor institution for the assessment of the site area and a radii of 600m from the Triangular Junction at the center of Saheli Marg, has been taken as the study area. (See Figure above)



Figure 9: Caregivers with toddlers heading towards Saheliyon ki Bari at Saheli Marg Junction, Source: (Author, 2022)

3.2. Site Characteristics

Saheli Marg from Saheliyon Ki Bari upto Sukhadia Circle, located in Ward number 3, is the central spine abutting major residential and recreational areas. It is connected to important public places of interest and ITC destinations for example play schools, parks, gardens, and childcare health centre. (See Figure 9)

Saheli Marg is an important movement corridor for pedestrians and vehicular traffic which is used by ITCs to reach their destinations. Sukhadia Circle is connected through internal roads to Saheli Marg within a walkable distance. UIT circle and Saheli Marg triangular junction lie along the Saheli Marg road, to the south. These nodes are major crossing points for people destined to Saheliyon ki bari, Fateh Sagar Pal and surrounding residential areas. It is to be noted here that no primary healthcare or anganwadi centre abuts the Saheli Marg.

Following are the parts of the site (Refer Figure 9 Below)-

1. 1.5Km connected shared street comprises of-
 - a. Saheli Marg starting from Fateh pura Police Chowki Junction at the North upto UIT Circle towards south
 - b. Big Bazaar Road from Triangular Junction upto Sukhadiya Circle Junction
2. Three Family Friendly Junctions-
 - a. Saheli Junction at Saheliyon Ki Bari entrance

- b. Triangular Junction at Saheli Marg
- c. Sukhadia Junction

All parts of the site mentioned above are proposed to be taken up for redevelopment to include ITC and family related facilities. The stretch of Saheli Marg from Saheli Junction to Triangular Junction is proposed to be taken up for Tactical Intervention to test the proposed ITC related transformation.

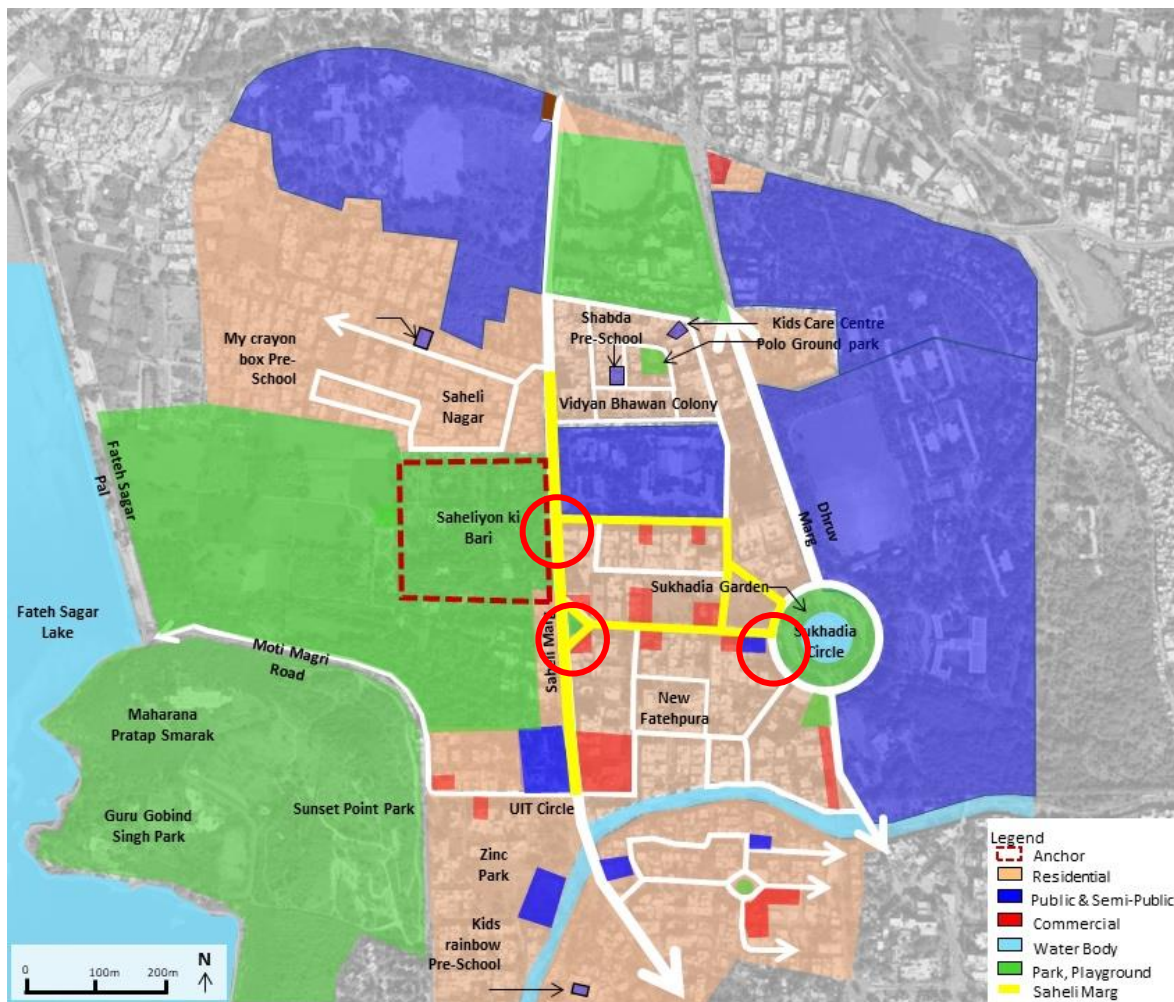


Figure 10 : Context of study area, Source: (Author, 2022)

3.3. Site Jurisdictions

The stretch of Saheli Marg starting from UIT Circle upto Fatehpura Chowki is under the jurisdiction of Udaipur Improvement Trust, while the Big Bazar Road from Semi circular roundabout upto Sukhadia Circle is under the Jurisdiction of Udaipur Municipal Corporation. Respective agencies would have to take up the improvement works in their areas of jurisdiction.



Figure 11: Saheliyon ki Bari Entrance Junction, Source:(Author, 2022)

Saheliyon ki Bari Garden, Sukhadia Garden, parks, department stores, eateries, playschools et al are major Anchors within the Study Area. The Shabd 'De Infancia', My Crayon Box and Kids Care Centre (See Figure 11)are important ITC Destinations within 600m and Rainbow Play School lies beyond it. At the time of site visits all these ITC Anchors were found to be non-functional.



Figure 12 : ITC destinations in study area, Source: (Author, 2022)

Saheliyon ki Bari with central water feature, gardens and water-fountain is a major attraction point for young children, families, domestic and international tourists (See Figure 13). Sukhadia Circle is a large roundabout around Sukhadia Garden and is a recreational place with food stalls, pond, boat ride and child`s play area (See Figure 14).



Figure 13: Child playing inside Saheliyon ki Bari, Source: (Author, 2022)



Figure 14: Food stalls at Sukhadia Circle, Source: (Author, 2022)

3.4. Significance of Saheli Marg and Big Bazar Road

Table 1: Assessment of significance of the selected site

Parameter	Saheli Marg
Safety	<ul style="list-style-type: none"> • High ITC footfall • Presence of Police Booth • CCTV surveillance at entrance of Saheliyon ki Bari Garden.
Public Infrastructure	<ul style="list-style-type: none"> • Well-connected and easily accessible through primary and secondary streets. • Parking space
Health Factor	Presence of Soni hospital at Saheli Marg Triangular Junction.
ITCN elements	<ul style="list-style-type: none"> • Water fountains as natural play elements at Saheliyon ki Bari Garden. • Lack of ITC play areas and caregivers well-being facilities.
Economic and social aspects	<ul style="list-style-type: none"> • Presence of eateries, juice shops, cafes. • Saheliyon ki Bari act as same-day tourist destination. • Fateh Sagar Pal, a major ITC and tourist spot of Udaipur in its surroundings.
Current and potential activities	Absence of ITC playscapes, creative and physical activities.
Recreational anchors	Major ITC destination and public spaces like Saheliyon ki Bari Garden and Fateh Sagar.
Environmental anchors	Well maintained green spaces and water features in Saheliyon ki Bari Garden.

4. Survey Findings

4.1. Surveys and Analysis

Surveys mentioned below have been conducted at the stage of preparation of feasibility Study of this assignment. The feasibility Report includes details of all surveys conducted and their analysis. The inferences or findings of various surveys have been included in this report which provide basis to the proposed designs.

4.2. Site Surveys

For cities to provide ITC-friendly and responsive urban environment, it is imperative to focus on the same during the planning and design stages. This requires collection of data on public life, specifically on how children and their families explore the urban realm. BvLF and The Gehl Institute have developed a set of tools to analyse the everyday experience of ITCs. These tools provide insight into the characteristics of a place and the physical changes required to make urban areas sustainable. These tools have been applied to conduct the surveys and assessments along the corridor.

4.2.1. Survey locations

The five (5) critical locations (See Figure 14 & 15) within 600m radius of the Saheli Marg Study Area identified to conduct surveys as per the Gehl Toolkit are as follows:

- i. Junction at the entrance of Saheliyon ki Bari,
- ii. Triangular Junction at Saheli Marg
- iii. UIT Circle
- iv. Sukhadia Circle Junction
- v. Big Bazar Road (Stretch from Saheli Marg Triangular Junction to Sukhadia Circle)





Figure 15: Survey Locations, Source: (Author, 2022)

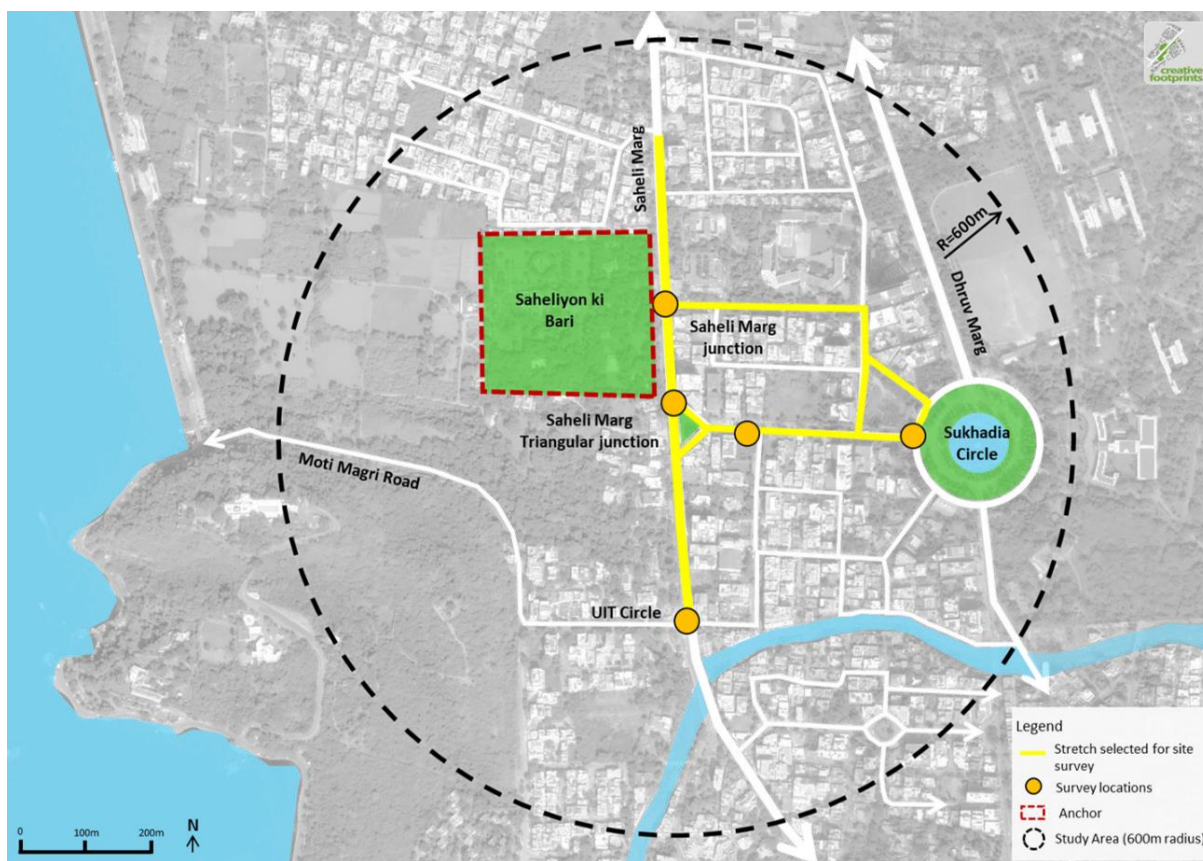


Figure 16: Map showing survey locations in the study area, Source: (Author, 2022)

4.3. Inferences from Surveys

1. Saheli Junction:

a. Inferences from the People Count Survey:

- i. The total number of samples of people moving (walking) at Saheli Junction was found to be the highest. The reason for this could be that Saheliyon Ki Bari Garden is an important destination for all tourists.
- ii. The proportion of ITC at Saheli Junction were found to be highest during Afternoon Peak.

- iii. The Survey also reflected that the junction requires footpaths, crossing facilities, traffic calming and traffic lights.
 - b. Inferences from the Age and Mode Count Survey:
 - i. The footfall of ITC in the morning hours was found to be the least. This may be because most visitors in the morning come to Saheliyon Ki Bari for morning walks. Most families did not have ITC with them during the Morning Walks.
 - ii. Most ITC at the Junction during afternoon and evening hours prefer to walk around the junction, mostly to either enter or exit Saheliyon Ki Bari Garden.
 - iii. During Afternoon and Evening Hours, Caregivers were also found carrying ITC in hand or in Strollers. This was encouraging, because even with poor quality walking and crossing facilities, caregivers were found to be using such modes for ITC. In future, if the walking and crossing facilities are improved, the destination may witness much higher numbers of ITC use.
 - iv. The number of ITC carried on strollers or Hand-in-Hand during evening hours was found to dip, as compared to evening hours. This may be due to the lower illumination at the junction.
 - c. Inferences from Bicycle Count Surveys conducted at Saheli Junction
 - i. The number of bicyclists was found to be too low at the Junction.
 - ii. Not even a single bicycle was found to be carrying ITC or any-other passenger.
 - iii. Two and four wheelers were found to be the most preferred modes of transport.
 - d. Inferences of findings from Stationery Survey during Morning Peak
 - i. It was found that most shops and stalls, in and around Saheliyon ki Bari entrance were closed during morning hours.
 - ii. It is only after 09:00 am that shops begin to start operating. Most visitors were engaged in taking a break from their morning exercise routines, eating or drinking items they carried with them or bought from a few shops open, or waiting for buses and autorickshaws in the morning.
 - iii. During morning hours, no ITC behaviour was observed at the junction as most visitors were found to be adults and teenagers.
 - e. Inferences of findings from Stationery Survey during Afternoon Peak
 - i. During the afternoon, number of ITC visitors and tourists increased with the increasing footfall of tourists (local, national, and international).
 - ii. Several hawkers selling balloons, toys and refreshment were observed.
 - iii. The left side of the entrance at Saheliyon ki Bari Garden was encroached by two-wheeler parking.
 - iv. Most of the four-wheelers and autorickshaws were parked along the road stretch opposite to the garden's entrance.
 - f. Inferences of findings from Stationery Survey during Evening Peak
 - i. During the evening, the number of small children (0-5 years) visiting Saheliyon ki Bari decreases.

- ii. Most of the caregivers were waiting for bus or autorickshaw at the entrance or walking towards Sukhadia Circle.
 - iii. Food stalls usually operate till 8pm on the road opposite to the garden entrance.
 - iv. As the area gets darker, hawking activities also decreases at the entrance of Saheliyon ki Bari.
- g. Inferences from Urban95 Quality Survey:
 - i. The undulated carriageway, fast-moving traffic, lack of safe pedestrian crossings and dedicated footpaths, discourage the protection of ITCs.
 - ii. Basic amenities like drinking water facilities and toilets within study area are inadequate for the given footfall.
 - iii. There is a lack of ITC-friendly infrastructure like breastfeeding booths, diaper changing areas et al to support caregivers, especially mothers.
- h. Inferences from the Intercept Surveys
 - i. About 64% respondents were tourists who visited Saheliyon ki Bari for short duration due to availability of playful activities at Saheliyon Ki Bari for children in comparison to other Public Spaces in Udaipur.
 - ii. Most of the respondents felt safe in the place while one, was neutral.
 - iii. Most of the respondents visited the site after more than one week.
 - iv. The ITC interaction between separate group of visitors was found to be generally low (at 9%). Even the likelihood of interaction between ITC was found to be low (29%)
 - v. Most respondents found it easy to orient themselves in the area and move around.
 - vi. Most respondents rated the area average in quality to encourage ITC play activities.
 - vii. Autorickshaws, private cars and then taxis are popular mode of travel to reach there, in the given order.
 - viii. The greenery and fountains were the most popular features inside the garden. Caregivers pointed to the lack of seating there, besides the apprehensions of slip and fall due to absence of barricades near the fountains.
- i. Inferences from Sensory Mapping
 - i. There is a lack of playing areas, activities, play equipment, and stimulating built environment for ITC.
 - ii. Non-porous boundary walls restrict visual engagement of ITC with the surroundings.
 - iii. Parked vehicles diminish young children's visibility due to their short height.
 - iv. High level of noise pollution from moving traffic affects health of young children.
 - v. It also reduces chances of meaningful interaction of ITC with different groups.
 - vi. Aroma of food from the nearby stalls attracts children.

- vii. Absence of footpaths discourages safe and comfortable mobility of ITC to their key destinations.

2. Saheli Marg Triangular Junction

- a. Inferences of People Moving Count, Age and Mode Count and Bicycle Moving Count
 - i. While 136 people were found reaching the survey location, all except two were found to directly enter private premises. While some cars and two wheelers were also found stationery on site, ITC were not allowed to step out of the vehicle by care givers. One of the prime reasons for this was complete lack of ITC destination at the junction.
 - ii. The absence of Zebra Crossings also made walking and cycling movement at the location difficult.

3. UIT Circle Junction

- a. Inferences of People Moving Count, Age and Mode Count and Bicycle Moving Count
 - i. Low to moderate footfall was observed at UIT circle during morning hours. However, no ITC footfall was visible at the site.
 - ii. The number of children (all above the age of 5) using bicycle was high at UIT Circle as compared to the Saheli Junction.
- b. Inferences from Urban95 Quality Criteria Survey
 - i. Lack of active frontages and absence of ITC friendly crossing facilities discourage ITC behavior at the UIT circle junction.

4. Sukhadia Circle Junction

- a. Inferences from People Moving Count, Age and Mode Count and Bicycle Sharing Count
 - i. Sukhadia Circle junction receives high footfall due to presence of a large vending zone with food stalls.
 - ii. Some visitors were found to be using Strollers are carried by Caregivers, even in the absence of walking spaces. As such, any walking improvement would increase the use of such ITC movement modes.
 - iii. The Junction lacks quality public space and infrastructure to provide quality time for the visitors.
 - iv. The area witnesses congestion, traffic mis-management, waste dumping and other issues which are barriers for ITC usage of the area.
 - v. Even the children's park at the roundabout is neither accessible nor in the condition of safe usage by ITC.
- b. Inferences from Stationery Survey
 - i. Sukhadia Circle junction is vibrant during the evening with several food stalls along the road and hawkers selling balloons, toys etc.
 - ii. Infact, the Sukhadia Street food market is the only food court in the area and doubles as a halt point for ITCs desiring to spend quality time besides being frequented by residents, tourists, and those passing through it.
 - iii. The vending zones, seating areas etc, require organization to clear space for movement.

- iv. Improvements of walking facilities and inclusion of other ITC facilities would enhance the footfall of ITC in the area.
- c. Inferences from Urban95 Quality Criteria Survey
 - i. Sukhadia circle has a makeshift seating zone with folding tables and plastic chairs, which is used by food stalls as an extended zone for serving and eating.
 - ii. While ITC-friendly infrastructure like a park with play equipment and drinking water facility is also present here, these are not used due to poor maintenance.
- d. Inferences from Urban95 Intercept Survey
 - i. Most respondents had come to the survey location to spend time with family including ITC needs and would come there more than once a week.
 - ii. While the area is chaotic with traffic and hawkers all over, the respondents (all of them) found the area safe. This shows that the expectations of residents from such a space was very low.
 - iii. Most respondents were found to go to the site, once a week and spent more than 30 mins in the area.
 - iv. Most respondents showed interest in interacting with others in the area but could not interact due to lack of recreation spaces.
 - v. Most respondents found it safe to move around as all of them had arrived by personal motor vehicles.
 - vi. Most respondents did not feel that the area is suited for ITC use, while the felt it suited needs of elder generations.
- e. Inferences of Sensory Mapping
 - i. The junction has lot of hawkers, some green areas, seating spaces etc. However, as the area is congested with traffic and hawkers, most caregivers do not allow ITC to move freely. This also restricts their interactions with the space and its elements.
 - ii. The presence of hawkers, illumination of various colour, balloon sellers etc., raise interest in ITC to interact with the environment.

5. Big Bazar Road

- a. Inferences from the People Moving Count, Age and Mode Count and Bicycle Moving Count Surveys:
 - i. Very low ITC footfall was observed at the location.
 - ii. Due to absence of Footpaths, only a few ITC were observed to be walking in the area.
 - iii. Only 1 ITC was found to be on a bicycle.
 - iv. The stretch requires designated footpaths, ITC enables spaces, crossing and traffic calming facilities.
- b. Inferences from Stationary Activity Mapping
 - i. Mapping of activity patterns at the stretch from Saheli Marg Triangular junction to Sukhadia Circle was done during the evening and was noted to be devoid of any playful activities for young children.
 - ii. As a result, no ITC behaviors were observed at the stretch. The seating area at the triangular junction was not in use due to its poor condition.

- c. Inferences from Urban95 Quality Surveys
 - i. Due to poor quality of pedestrian infrastructure and encroachment by on-street parking, ITC and other users were observed to be reluctant to walk along the stretch.
 - ii. Most users would rather arrive or leave from the site in private vehicles and only walk to or from their private vehicles and desired destinations.
- d. Inferences from Urban95 Intercept Survey
 - i. Most of the respondents were present there either for Personal needs or took a halt while they were passing through the area. Not even a single respondent was there solely for the needs of ITC.
 - ii. The respondents (all of them) found the area safe as most of them were there because of adjoining private uses.
 - iii. Most respondents were found to go to the site once a week and spent 5-30 mins in the area. This shows that people don't spend long hours due to lack of recreational facilities.
 - iv. All respondents did not show interest in interacting with others in the area.
 - v. Most respondents found it safe to move around as all of them had arrived by personal motor vehicles.
- e. Inferences from the Sensory Mapping
 - i. The stretch was found to only have negative stimulation due to lack of footpaths, resting areas, spaces for ITC, high traffic noise etc.

Table 2 : Availability of ITC indicators at Saheli Marg

Indicator	Availability	Motivator/ Barrier	Reason
Streets			
Footpath	Y	Motivator	Existing paved sidewalks/ footpaths at some locations act as supporting pedestrian infrastructure providing opportunity for enhancement.
Waiting Area	Y	Barrier	Entrance of Saheliyon ki Bari act as the waiting area for visitors waiting for transport. However, it is devoid of any seating or designated waiting zones for safety and comfort of caregivers.
Active façade along route	N	Barrier	Non-porous boundaries along the Saheli Marg stretch restricts the visual engagement of children and caregivers. Due to lack of activities, there are no eyes-on-street for safety of children.
Shading	Y	Motivator	Existing trees act as shading elements at the junction enabling caregivers and children to take refuge under shade during daytime.
ITC play furniture	N	Barrier	Due to absence of ITC play furniture, scope for active learning, interaction of children with built environment and the amount of time spent in public space, decreases.
Wayfinding Signages for directions and utilities	N	Barrier	Lack of signages make it difficult to move around in public spaces and reach destinations.
Safety signage for traffic	N	Barrier	Absence of traffic signages make it unsafe for children and caregivers while crossing and moving along the stretch.
Street Infrastructure	N	Barrier	Other ITC Indicators, like Safe crossings, Lane marking, Rumble Strips, Handicapped parking, Bollards, Public Toilets, Kerb extensions, Surface material and textures, Benches/Seating, Planters were not present at the site.

Indicator	Availability	Motivator/ Barrier	Reason
Utilities			
Breast Feeding Booths	N	Barrier	Absence of breast-feeding booth make it difficult for mothers to breast feed their babies and threatens their privacy.
Drinking Water Facility	Y	Motivator	Supporting ITC infrastructure
Toilets	Y	Motivator	Supporting ITC infrastructure
Dustbins	Y	Motivator	Supporting ITC infrastructure



Figure 18: Existing drinking water facility supports ITC infrastructure, Source: (Author, 2022)



Figure 19: Existing police booth supports safety and security of visitors, Source: (Author, 2022)



Figure 20: Existing drinking water facility at entrance of Saheliyon ki Bari, Source: (Author, 2022)



Figure 21: Existing trees act as natural shading elements for children and caregivers waiting outside Saheliyon ki Bari entrance, Source: (Author, 2022)

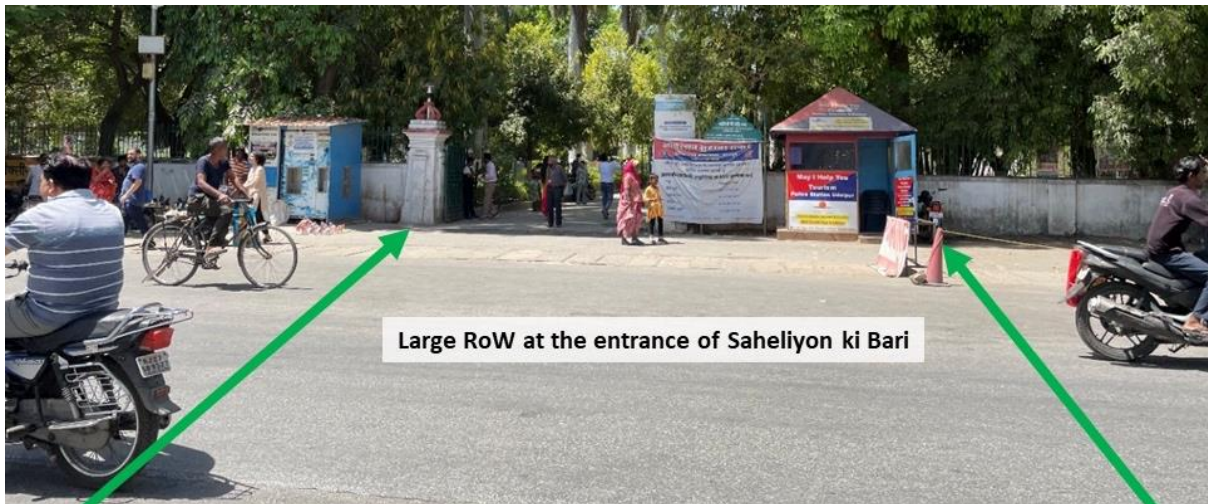


Figure 22: ROW at Saheli Marg junction provides opportunity for introducing ITC friendly street infrastructure and activity zones, Source: (Author, 2022)



Figure 23: Non-porous boundary wall restricts visual engagement and eyes-on-street, Source: (Author, 2022)



Figure 24: Poorly maintained potential public space and dilapidated infrastructure at Saheli Marg triangular junction, Source: (Author, 2022)



Figure 25: The existing seating at Saheli Marg triangular junction can be utilized as resting and play zones for caregivers and children. Source: (Author, 2022)



Figure 26: The transformer placed above seating risks the safety of caregivers. There is lack of barricade to safeguard children from the poles. Source: (Author, 2022)

6. Stakeholder Inputs

Consultation with Udaipur Improvement Trust and Udaipur Municipal Corporation were conducted to discuss the feasibility of redevelopment/ retrofitting of the identified streets and junctions to make them ITC friendly. Following inputs have been received from the stakeholder-

1. Saheli Marg from Fatehpura Police Chowki upto UIT Circle is under redevelopment by UIT, where following items of works are already under construction-
 - a. Storm water drains under footpaths along both sides of the road.
 - b. The storm water drain cover will act as footpath. The resultant height and average width of the footpath will be 300mm and 1.25m approximately.
 - c. Along the footpaths 1.7m wide and 100mm high space of road is being finished with grass paver blocks
 - d. Streetlights have already been installed/ repaired.

1.75m wide and 100mm high Grasscrete zone

1.25m wide and 300mm high footpath above SWD



Figure 27: Existing condition of Saheli Marg. Source: (Author, 2022)

2. At the triangular junction, a small parking with seating and landscaping has already been implemented. The same cannot be changed.



Figure 28: Semi Circular roundabout after redevelopment. Source: (Author, 2022)

3. At the UIT Junction, improvement works have been completed recently.



Figure 29: UIT Circle after improvements. Source: (Author, 2022)

4. Big Bazar road from the semi-circular round about at Saheli Marg upto Sukhadia Circle is under Udaipur Municipal Corporation. The same can be completely redeveloped as per the needs of ITC.

Inferences:

1. Only following improvements along Saheli Marg have been explored-
 - a. Construction of table tops at regular intervals to negotiate the level differences between carriageways, Grass Crete area and footpaths.
 - b. Providing Lane Marking, Rumble Strips and traffic signage. (all signage can to be installed on existing street lights, poles or tree trunks)
 - c. Installing pedestrian lights on existing street light poles
 - d. Providing seating/ resting space at regular intervals
 - e. Converting the stretch of grasscrete adjoining Saheliyon Ki Bari from Fatehpura Police Chowki Junction upto UIT Circle into a cycle track with bollards. The stretch of grasscrete area on the other side of the road will be retained as on-street paid parking.
 - f. Providing bus stops near Saheliyon Ki Bari entrance.
 - g. Relocating some vendors from in front of the Saheliyon ki Bari Entrance near the Semi-Circular round about.
2. Following Improvements along Big Bazar Road (from Semi Circular round about upto Sukhadia Circle) have been explored-
 - a. The outer footpath of the semi-circular roundabout has been redesigned as an ITC and Family Friendly space.
 - b. The stretch of road space between carriageway and adjoining boundary wall along the LHS of the road has been designed with footpath and cycle tracks. Opposite side of the road retains the footpaths and existing on-street parking space.
 - c. The left-hand side corner of the outer green area of Sukhadia circle has been redesigned as an ITC friendly pause point. The opposite side space is not being considered as it has been recently redeveloped by an existing temple.

7. Design Concept

7.1. Concept Design for Saheli Marg from Fatehpura Police Chowki Junction upto UIT Circle

The findings from surveys, site visits and appraisals show that the street from Fatehpura Police Chowki Junction via Saheliyon Ki Bari and Semi-Circular Roundabout upto UIT circle need to be upgraded with ITC friendly infrastructure. The following concept design is based on the 'Template of Infant, Toddler and Caregiver (ITC) integration in Udaipur' adopted by Udaipur. The design focuses on provision of the following ITC features mentioned in Table below³.

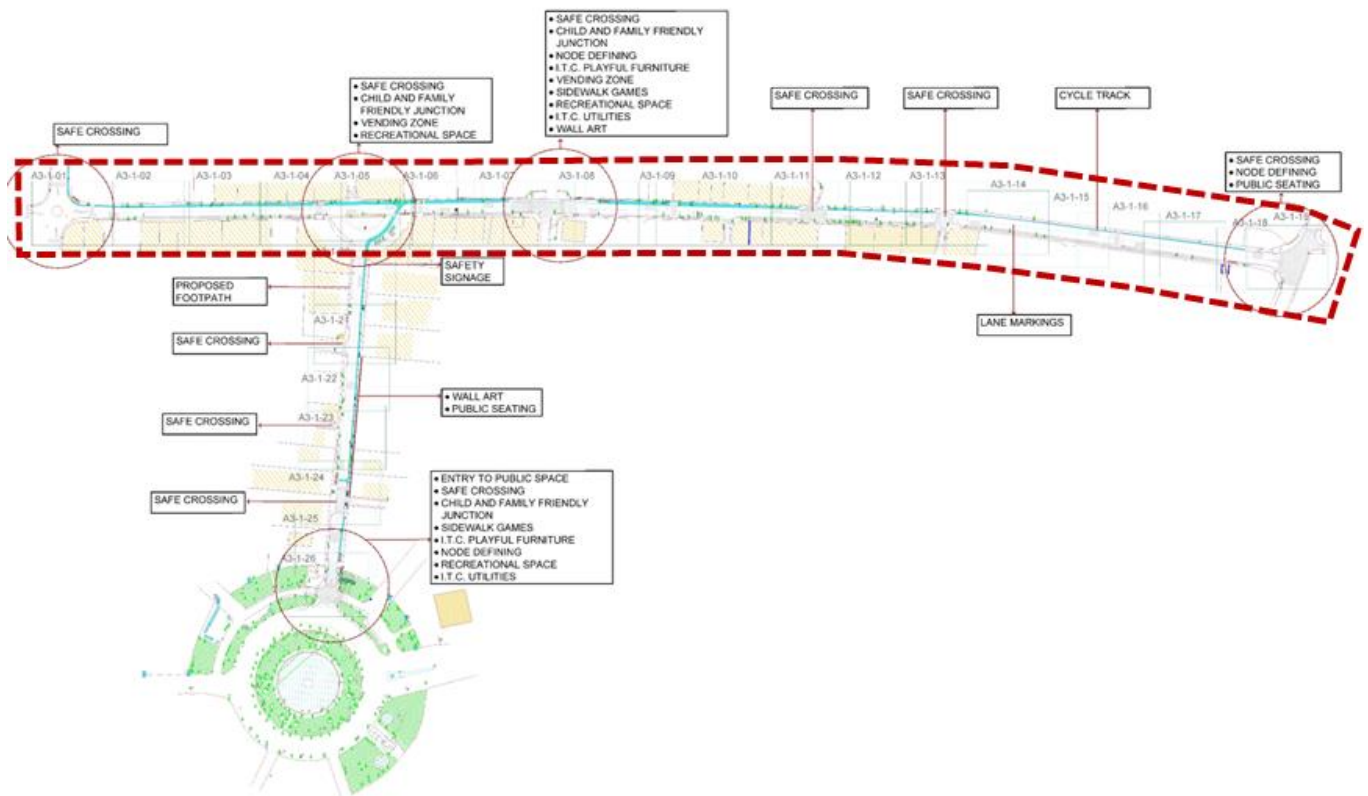


Figure 30: Key map highlighting interventions along Saheli Marg

³ In addition to the Table below, standard traffic related features that reinforce safety may be prospected by city administration.

Table 3: Proposed ITC indicators at Saheli Marg

Street/Junction		Utilities
Footpath (Existing)	ITC playful furniture	Breast feeding booths (At Saheliyon Ki Bari Junction)
Kerb Ramp	Planters	Drinking water facility (At Saheliyon Ki Bari Junction)
Cycle stand	Bollards	Toilets (Existing inside Saheliyon Ki Bari and at food outlets near Semi Circular roundabout)
Cycle track (On existing grasscrete surface)	Seating along planters	Dustbins
Ramps for ITC	Wayfinding signages for destinations & utilities	
Waiting area	Safety signage for traffic	
Handicapped parking (To be provided inside Saheliyon Ki Bari)	Safe crossings	
Side-walk games	Kerb extensions	Parks and open public space
Active facade along route	Rumble strips	Camera monitoring (Existing)
Surface material and textures	Lane marking	
Benches	Chicanes	
Shading devices	Public Art	
Lighting (Installing on existing poles)		

NOTE: Indicators highlighted in Green are either existing or part of another section in this report, while those marked in red are not feasible to be provided as available width of footpaths are not sufficient. Moreover, as road redevelopment has taken place recently, widening of footpaths etc are also not feasible.

The Concept Design of Saheli Marg is shown in Figures 34, 35&36.

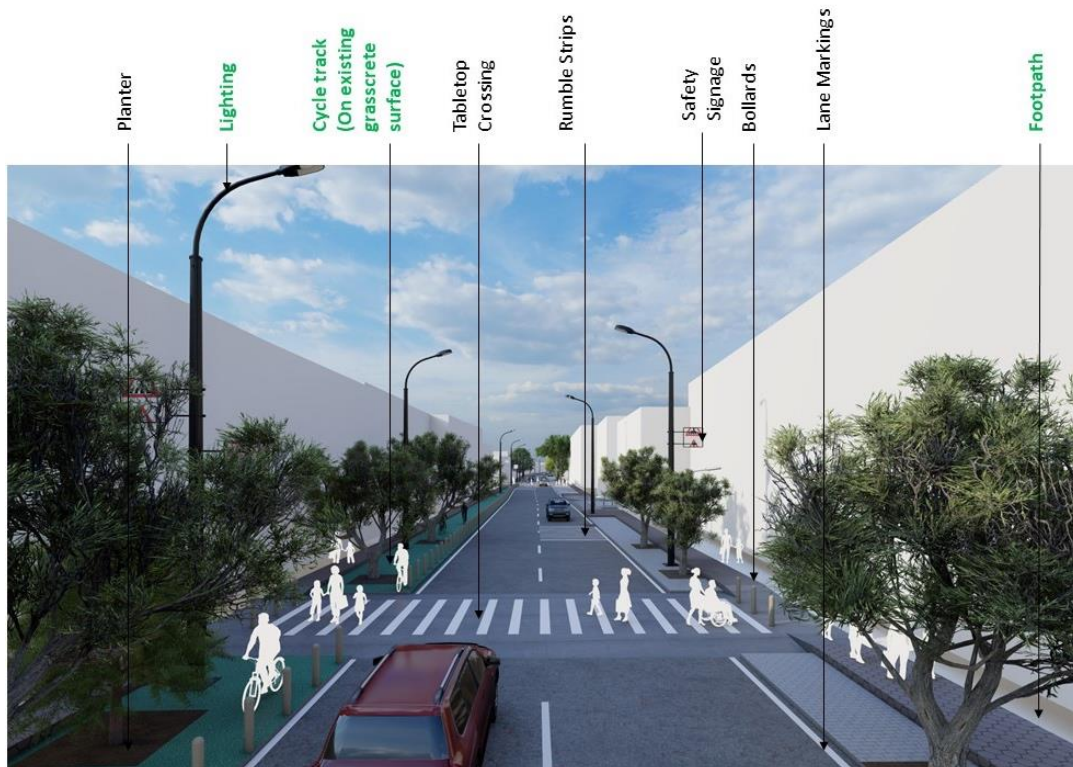


Figure 31: Concept Design of Saheli Marg from Fatehpura Police Chowki to Saheliyon Ki Bari, Source: (Author, 2022)

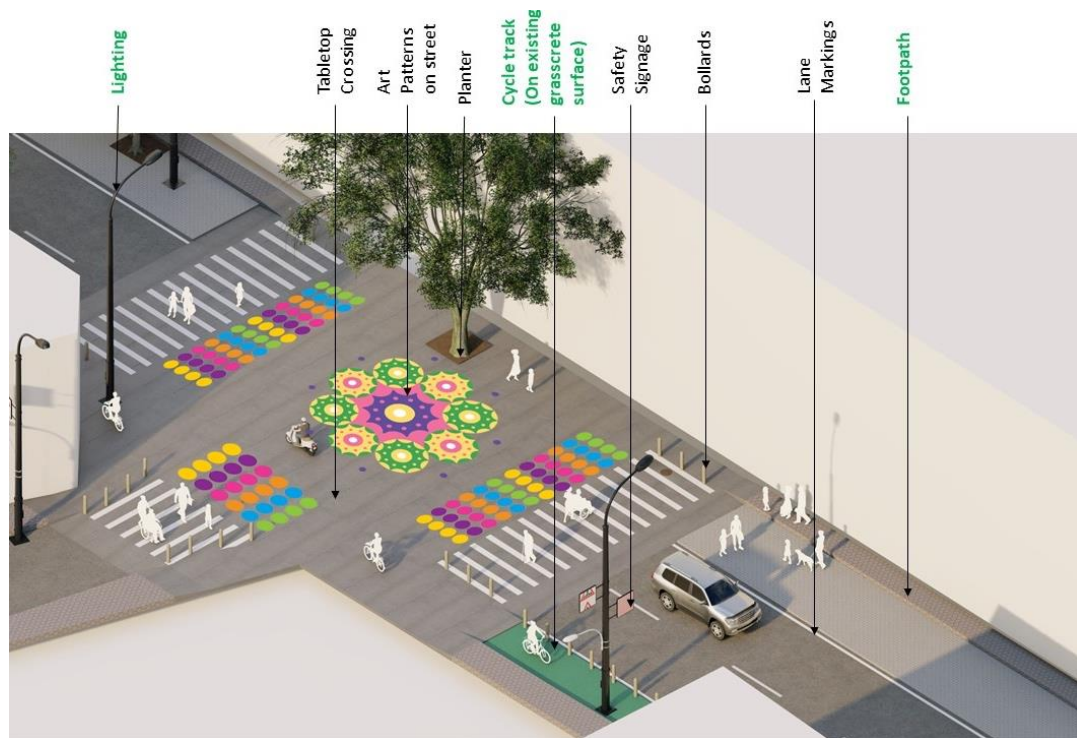


Figure 32: Concept Design of Saheli Marg from Saheliyon Ki Bar upto Semi Circular roundabout, Source: (Author, 2022)

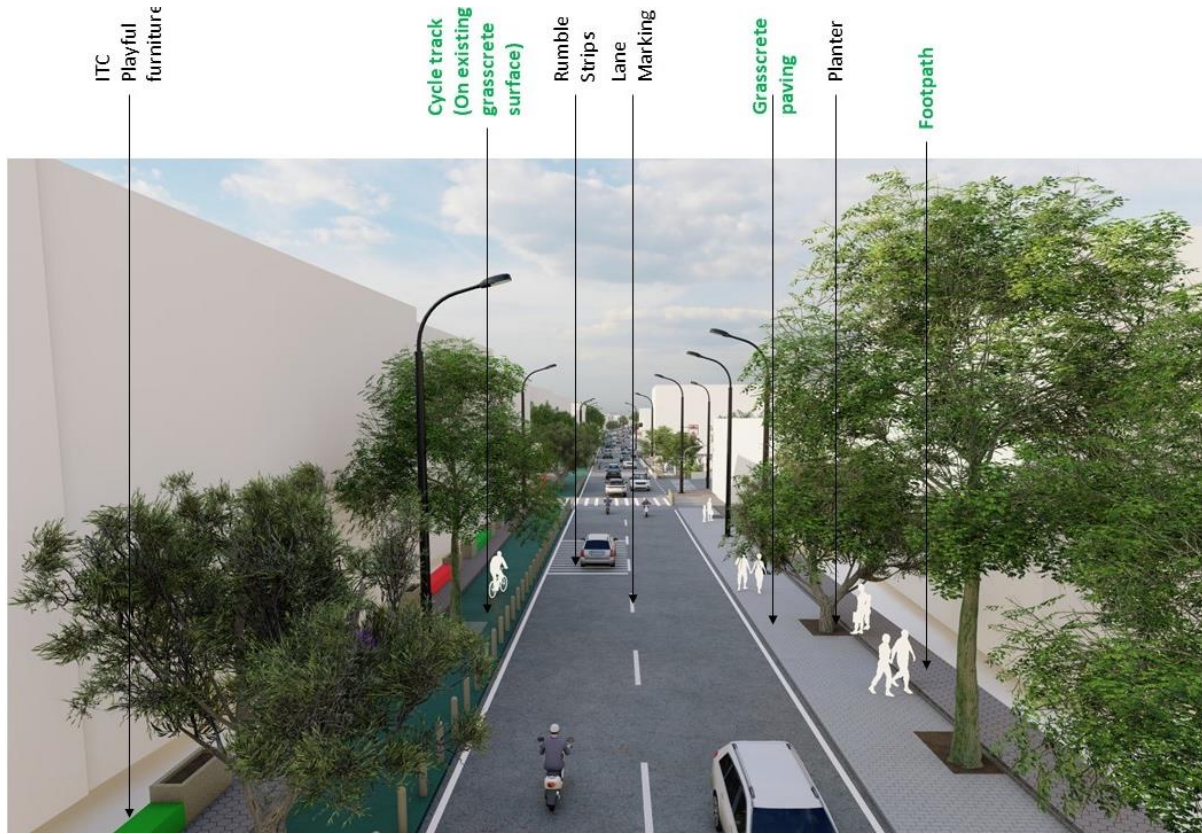


Figure 33: Concept Design of Saheli Marg from Semi Circular roundabout upto UIT Circle, Source: (Author, 2022)

7.2. Saheli Marg Junction at the entrance of Saheliyon Ki Bari

The Design of Junction at the entrance of Saheliyon Ki Bari focuses on provision of NMT zone (Footpath and Cycle Track in mixed condition), two lane carriageway, NMT Crossings, and other ITC infrastructure mentioned in Table 6. The proposed design also provides space for vending kiosks and designated parking facilities.

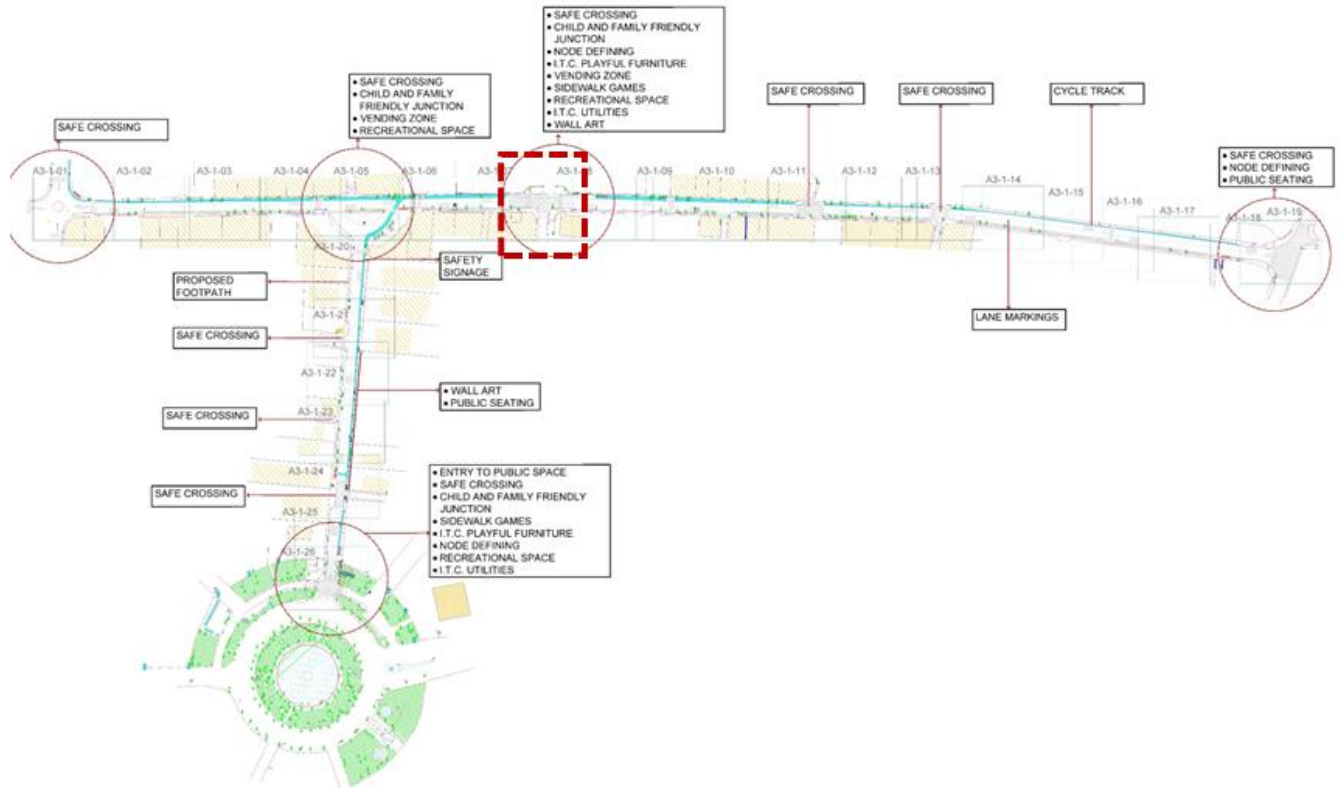


Figure 34: Key map highlighting interventions at Saheliyon Ki Bari entrance

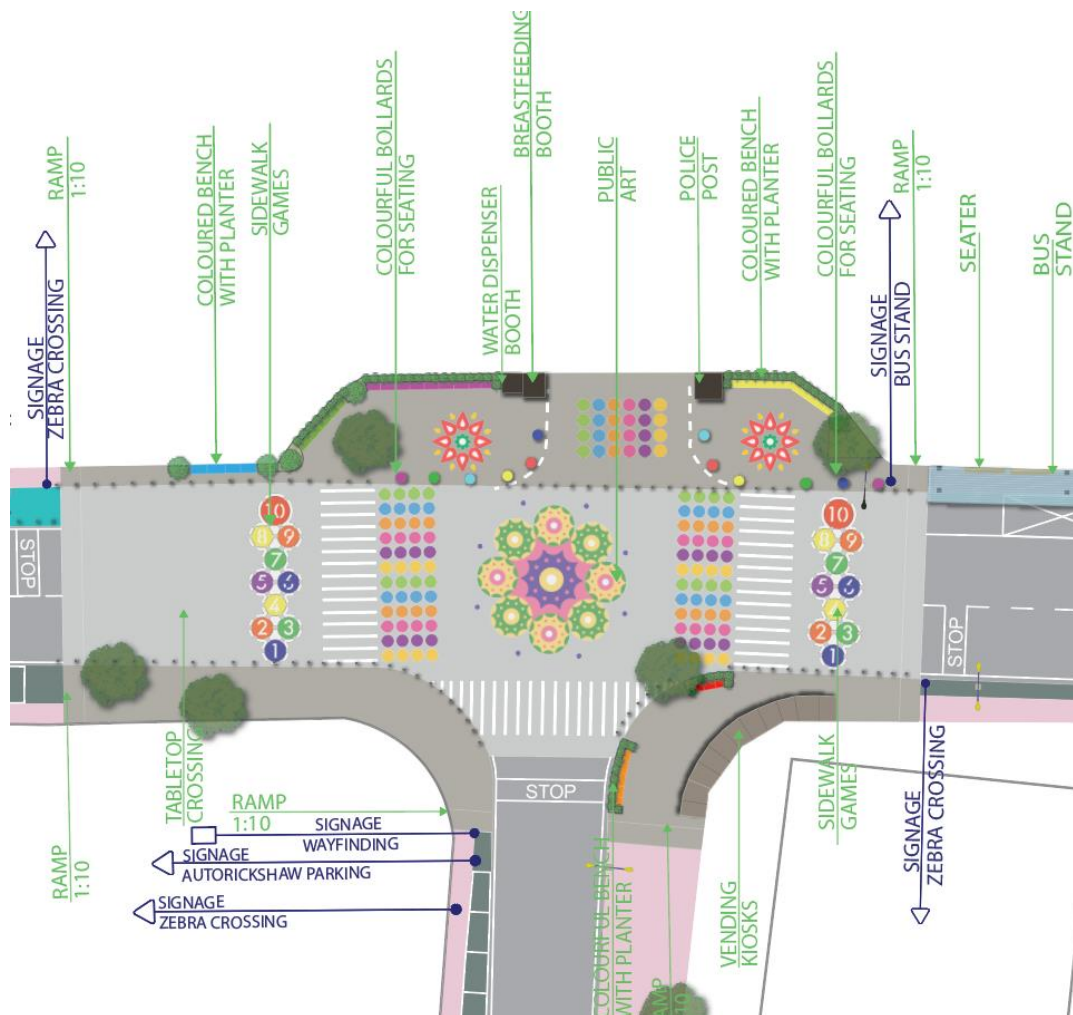


Figure 35 Design Scheme: Saheliyon ki Bari Junction

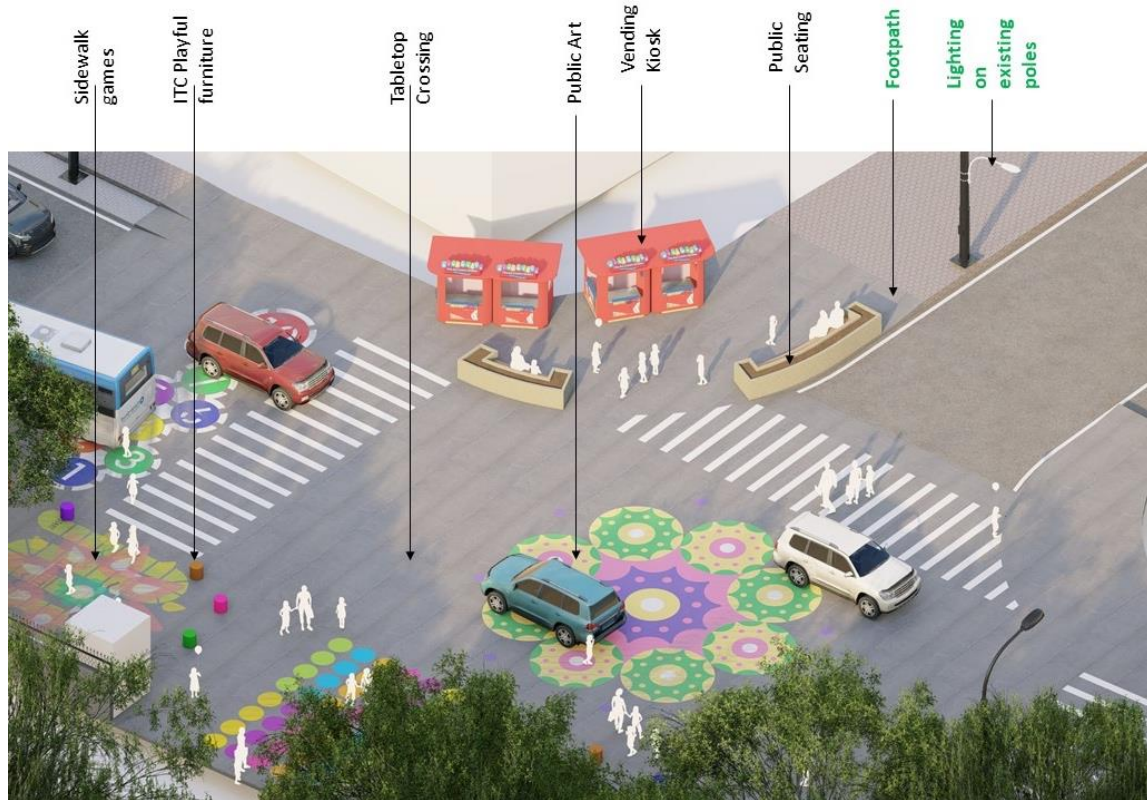


Figure 36: Concept design scheme for Saheli Marg Junction, Source: (Author, 2022)

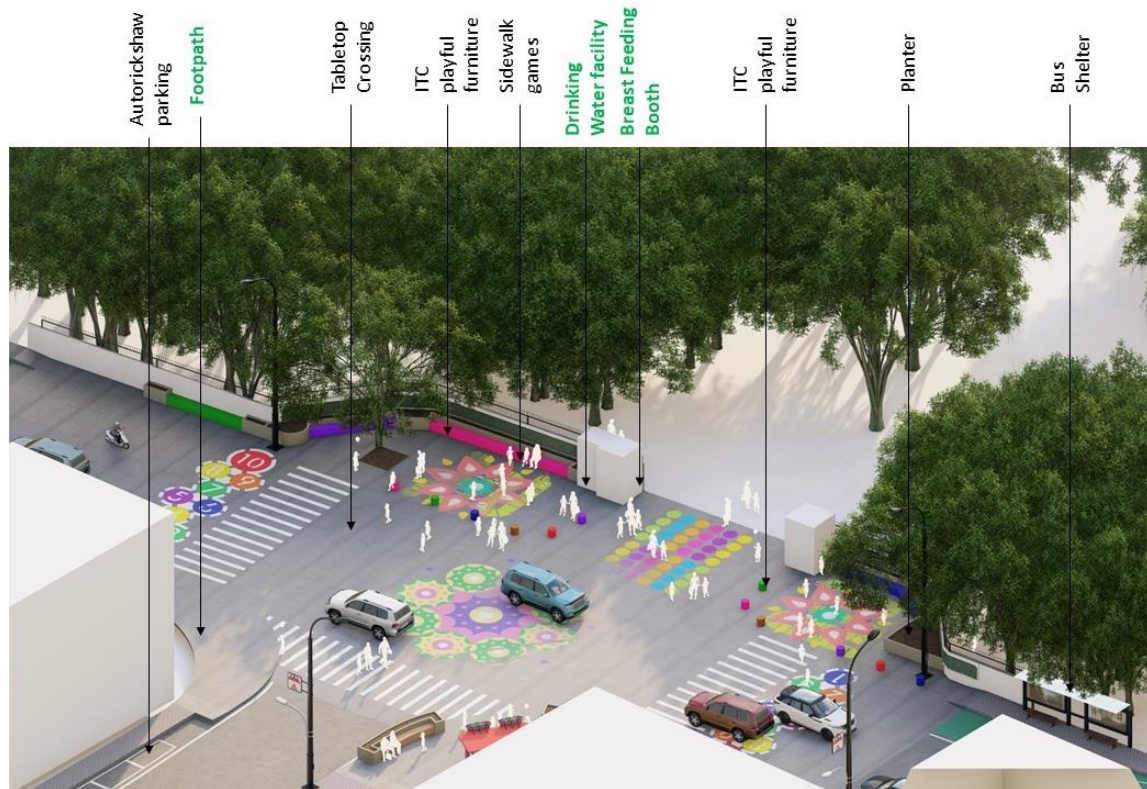


Figure 37: Concept Design of Saheli Marg Junction at the entrance of Saheliyon Ki Bari, Source: (Author, 2022)

Table 4: Proposed ITC indicators at Saheli Marg Junction

Street/Junction		Utilities
Footpath	ITC playful furniture	Breast feeding booths
Kerb Ramp (table top is proposed)	Planters	Drinking water facility (Existing)
Cycle stand	Bollards	Toilets (Existing inside Saheliyon Ki Bari)
Cycle track	Seating along planters	Dustbins
Ramps for ITC (table top is proposed)	Wayfinding signages for destinations & utilities	
Waiting area	Safety signage for traffic	
Handicapped parking (To be provided inside Saheliyon Ki Bari)	Safe crossings	Parks and open public space
Side-walk games	Kerb extensions	Camera monitoring (Existing)
Active facade along route	Rumble strips	
Surface material and textures	Lane marking	
Benches	Chicanes	
Shading devices	Public Art	
Lighting		

NOTE: Indicators highlighted in Green are either existing or part of another section in this report, while those marked in red are not feasible to be provided as available width of footpaths are not sufficient. Moreover, as road redevelopment has taken place recently, widening of footpaths etc are also not feasible.

7.3. Saheli Marg Triangular Junction

The Junction of Saheli Marg and Road leading to Saheliyon Ki Bari has an existing traffic island, where seating and landscaping areas are currently under construction. The junction has been designed as a raised tabletop junction with crossing facilities aligned with desired movement lines. The proposed ITC facilities for this junction are shown table 7 below.

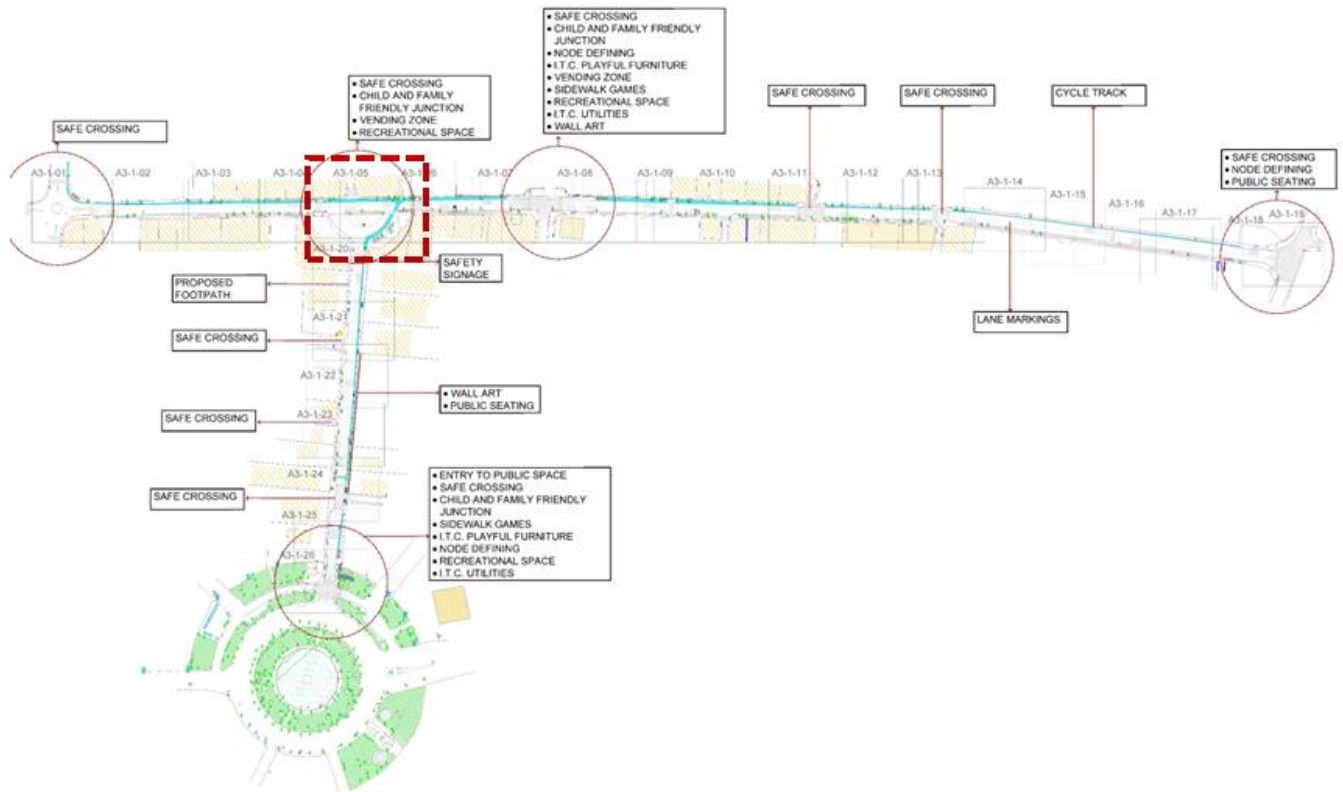


Figure 38: Key map highlighting interventions at Semi Circular roundabout

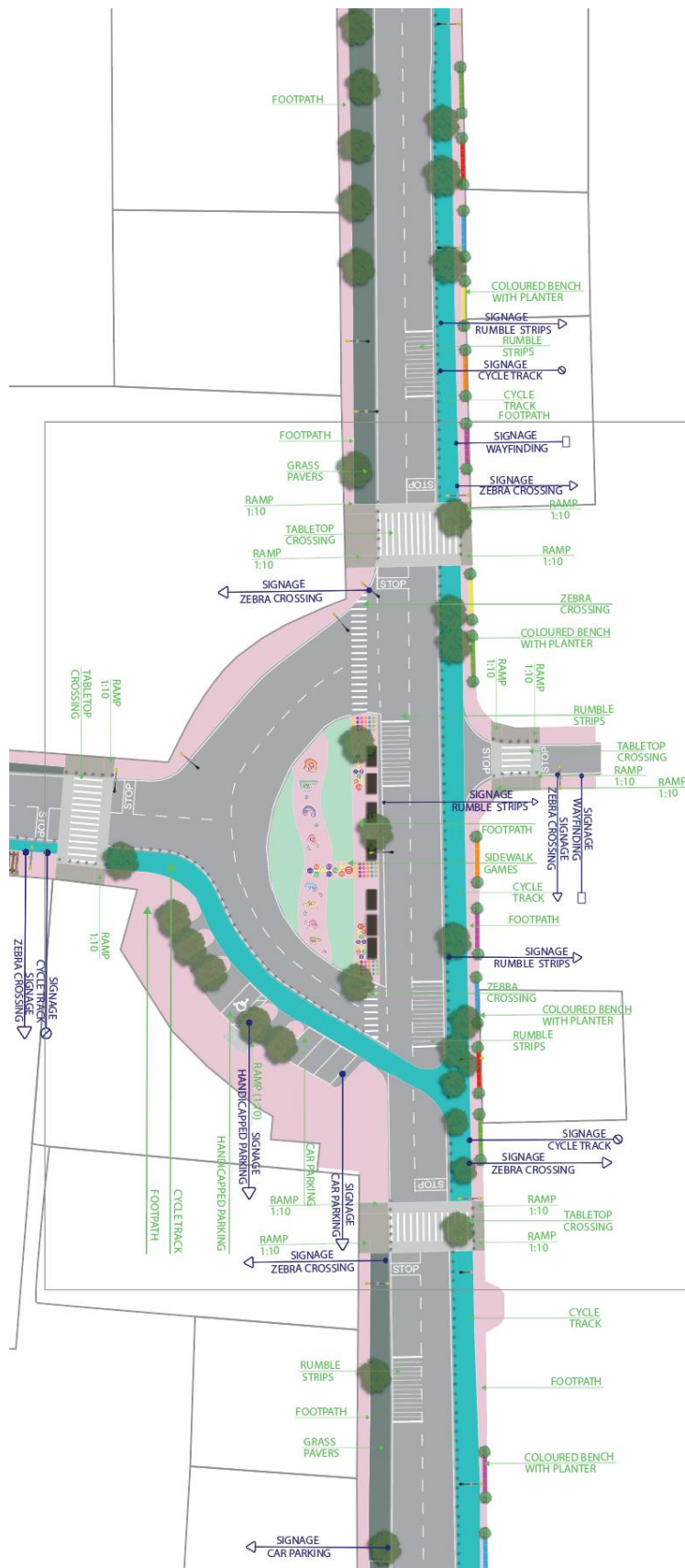


Figure 39 Design Scheme: Saheli Marg Semi Circular Junction

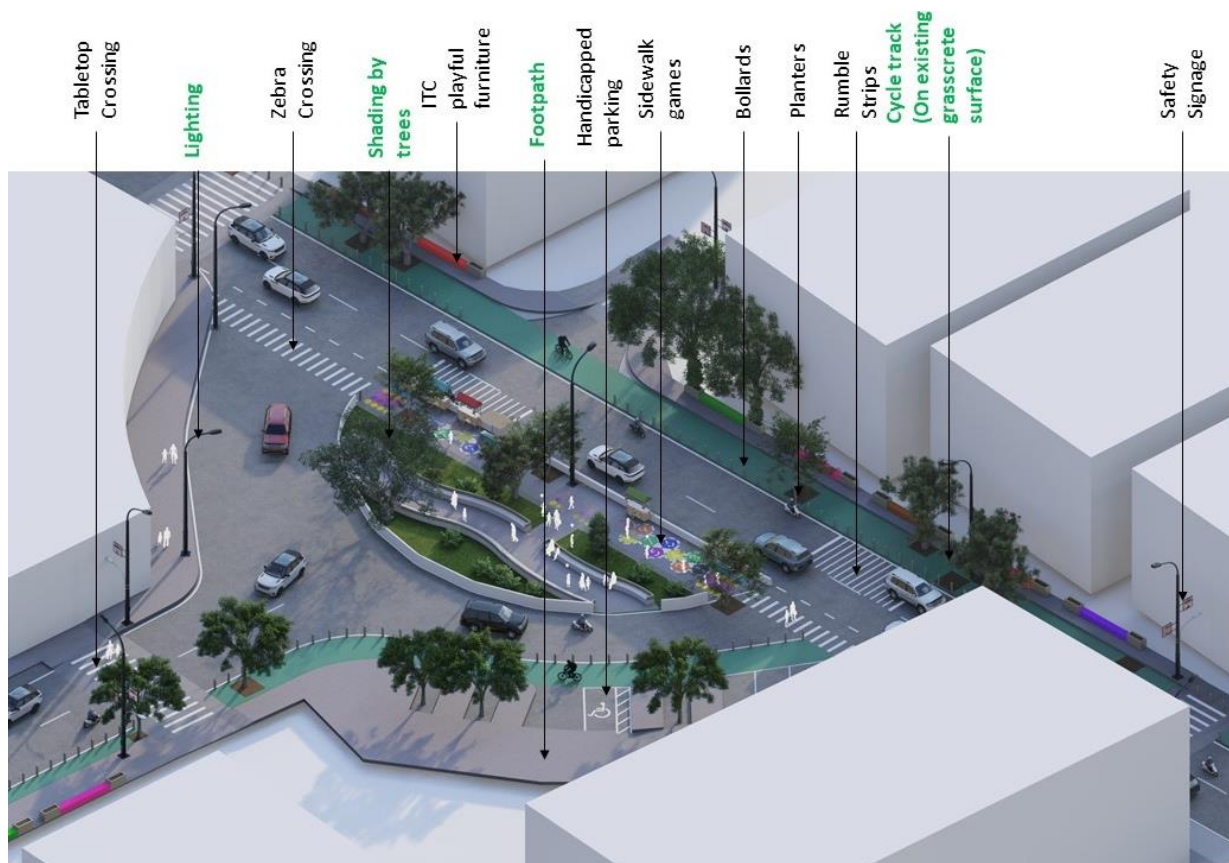


Figure 40: Concept Design Scheme for Saheli Marg Triangular Junction, Source: (Author, 2022)

At this junction, the left-over space between existing carriageway and the existing traffic island can accommodate vendors which will be proposed to be removed from Saheliyon ki Bari Junction. As part of this project, only the space for vending will be created and connected with the traffic island seating. Kiosks/ carts for vending will have to be brought by the vendors themselves as per rules laid out by the concerned agencies for licensing of vending spaces.

Table 5: Proposed ITC indicators at Saheli Marg Triangular junction

Street/Junction		Parks and open public space
Footpath	ITC playful furniture	Camera monitoring
Kerb Ramp	Planters	Shading devices (Already shaded by trees)
Cycle stand	Bollards	Lighting
Cycle track	Seating along planters	ITC playful furniture
Ramps for ITC	Wayfinding signages for destinations & utilities	Public Art
Waiting area	Safety signage for traffic	Surface materials & Textures
Handicapped parking	Safe crossings	
Side-walk games	Kerb extensions	Utilities
Active facade along route	Rumble strips	Drinking water facility (Inside existing food outlets)
Surface material and textures	Lane marking	Toilets (Inside existing food outlets)
Benches	Chicanes	Dustbins
Shading devices (Already shaded by trees))	Public Art	
Lighting		

NOTE: Indicators highlighted in Green are either existing or part of another section in this report, while those marked in red are not feasible to be provided as available width of footpaths are not sufficient. Moreover, as road redevelopment has taken place recently, widening of footpaths etc are also not feasible.

7.4. Big Bazar Road and Sukhadia Circle Junction

The proposed concept design of Big Bazar Road upto Sukhadia Circle emphasises on the following key aspects-

1. Organising traffic movement through designated lanes.
2. Raised tabletop junction for traffic calming.
3. Designated crossing facilities for safe NMT and ITC movement
4. Creating a zone for ITC resting and recreation along with provision of other ITC facilities.

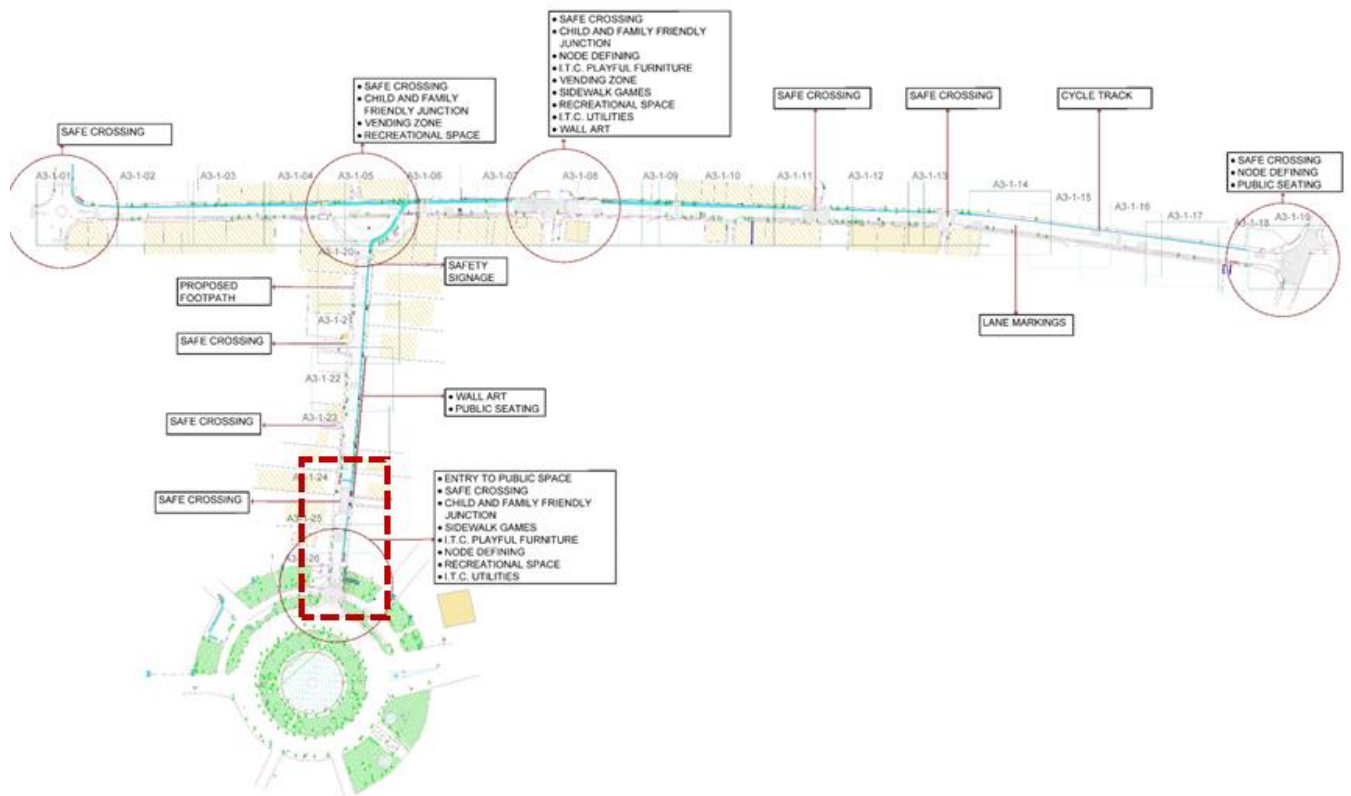


Figure 4|Key map highlighting interventions along Big Bazar road upto Sukhadia Circle

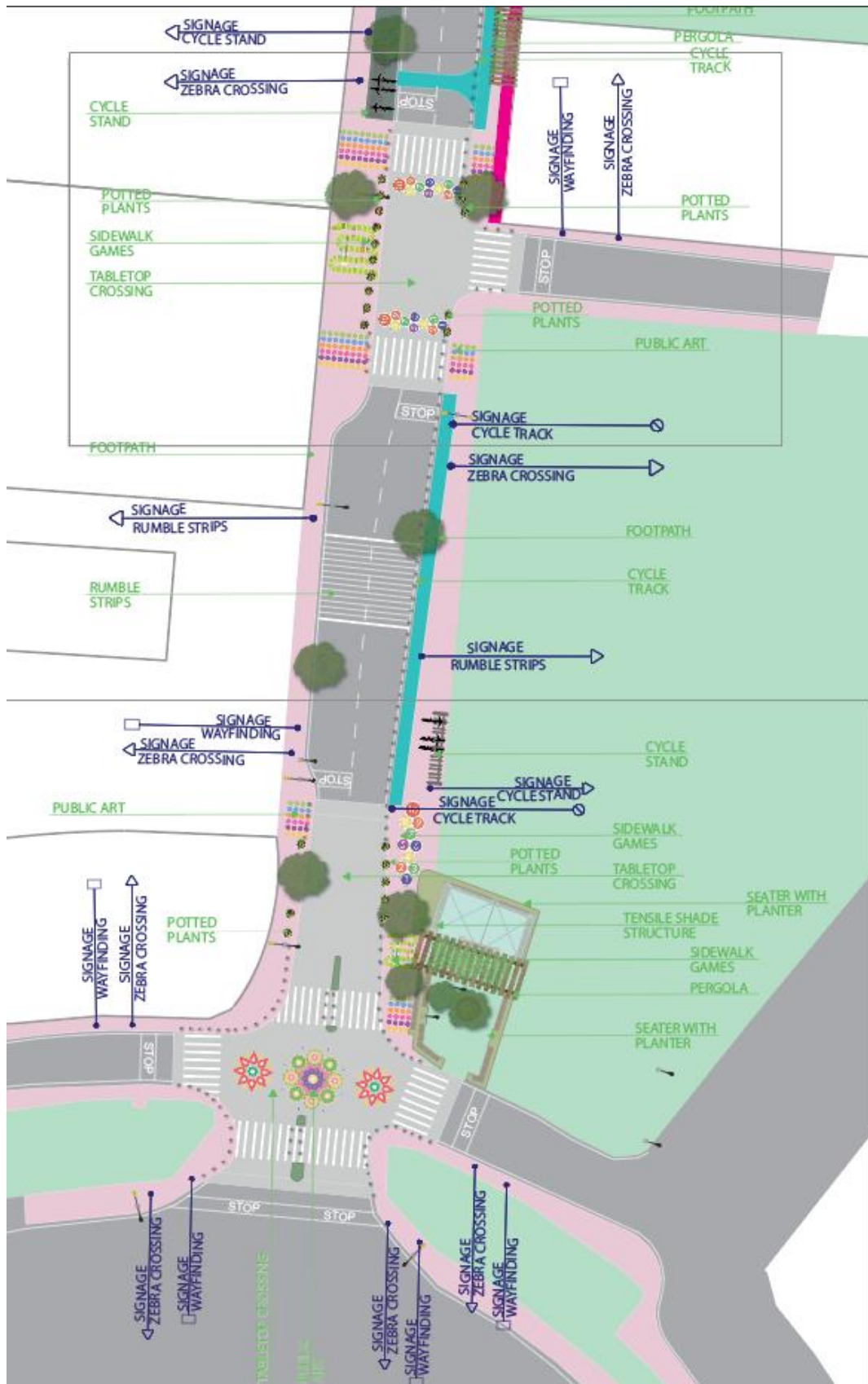


Figure 42 Design Scheme: Sukhadia Circle Junction

Figures 46 and 47 show the proposed concept design, while the table 38 show the ITC features provided in the concept scheme.

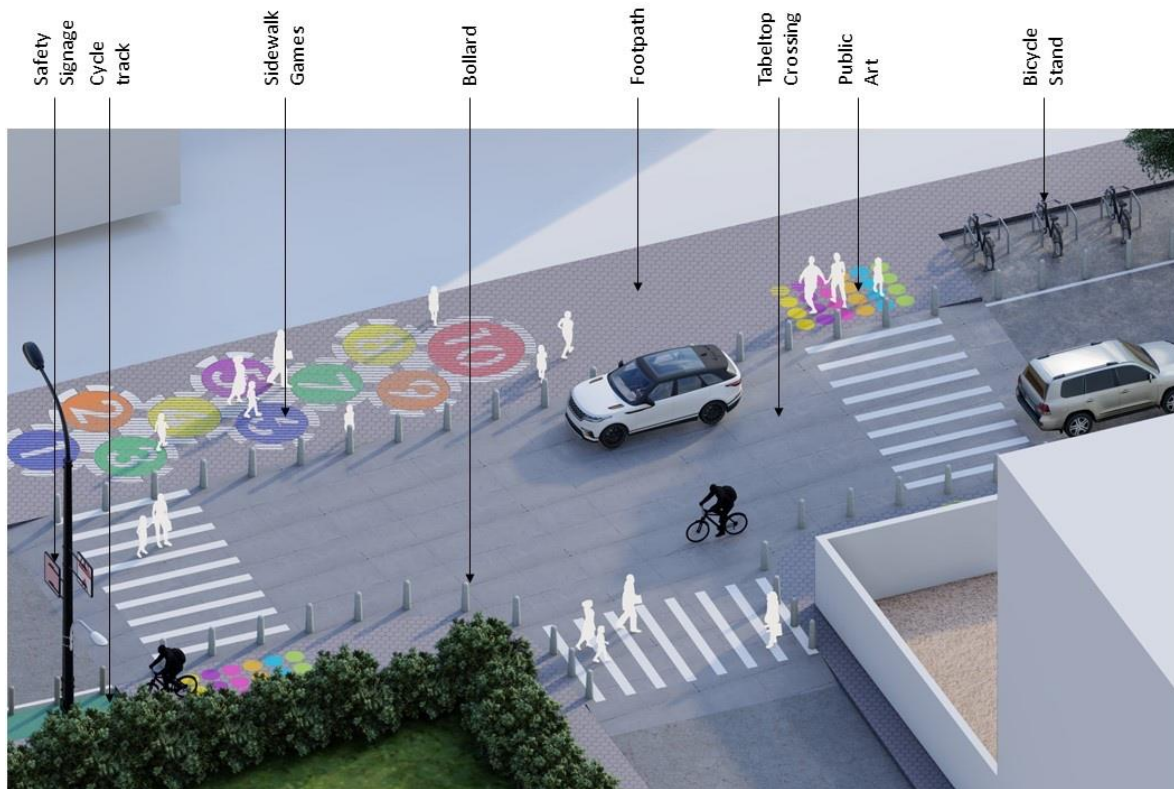


Figure 43: Concept Design for Big Bazar Road, Source: (Author 2022)

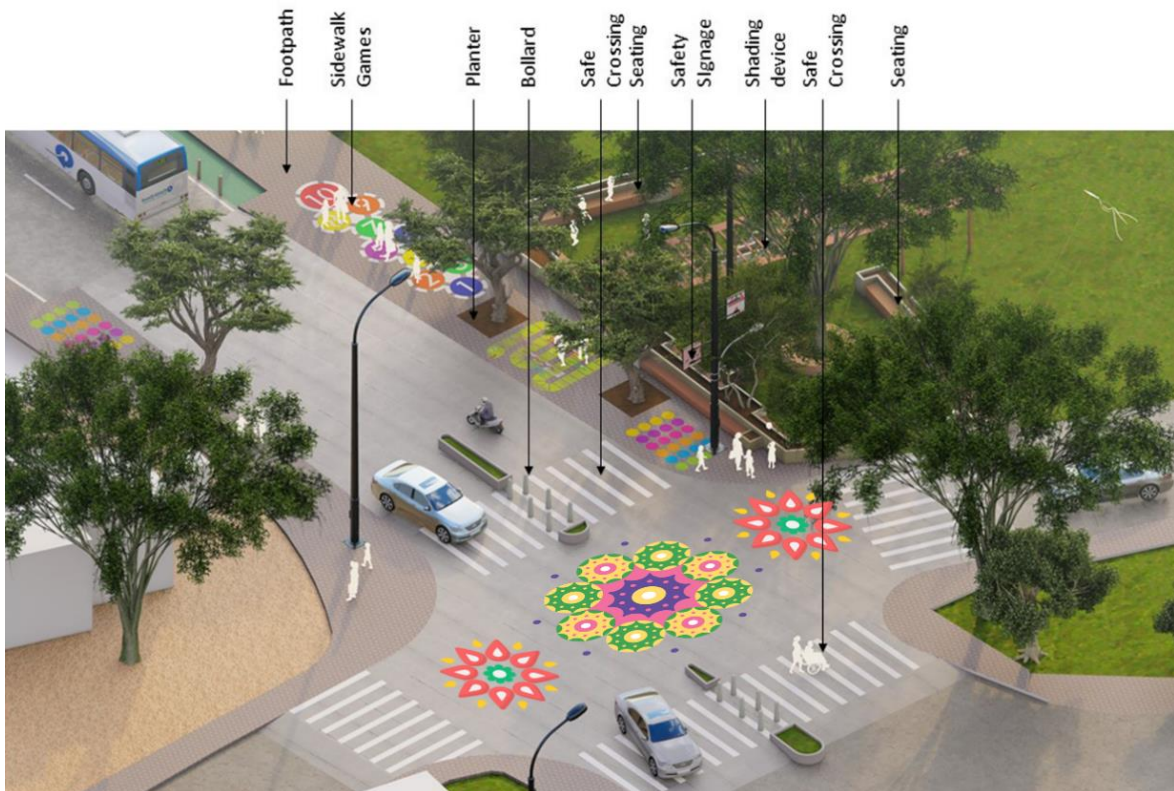


Figure 44: Concept Design for Sukhadia Circle Junction, Source: (Author, 2022)

Table 6: Proposed ITC indicators along Big Bazar road upto Sukhadia Circle Junction

Street/Junction		Parks and open public space
Footpath	ITC playful furniture	Fencing/Permeable perimeter
Kerb Ramp	Planters	Camera monitoring
Cycle stand	Bollards	Ramps for ITC
Cycle track	Seating along planters	Benches
Ramps for ITC	Wayfinding signages for destinations & utilities	Shading devices
Waiting area	Safety signage for traffic	Lighting
Handicapped parking	Safe crossings	ITC playful furniture
Side-walk games	Kerb extensions	Play equipment
Active facade along route	Rumble strips	Planters
Surface material and textures	Lane marking	Public Art
Benches	Chicanes	Surface materials & Textures
Shading devices	Public Art	Natural Play elements
Lighting		

Utilities

Breast feeding booths	Toilets (Existing)
Drinking water facility (Existing)	Dustbins (Existing)

NOTE: Indicators highlighted in red cannot be provided as these would lead to changes in road geometry which is not recommended for the chosen site.

7.5. UIT Circle Junction

The proposed concept design of the UIT Circle junction emphasises on the following key aspects-

1. Organising traffic movement through designated lanes.
2. Raised tabletop junction for traffic calming.
3. Designated crossing facilities for safe NMT and ITC movement.

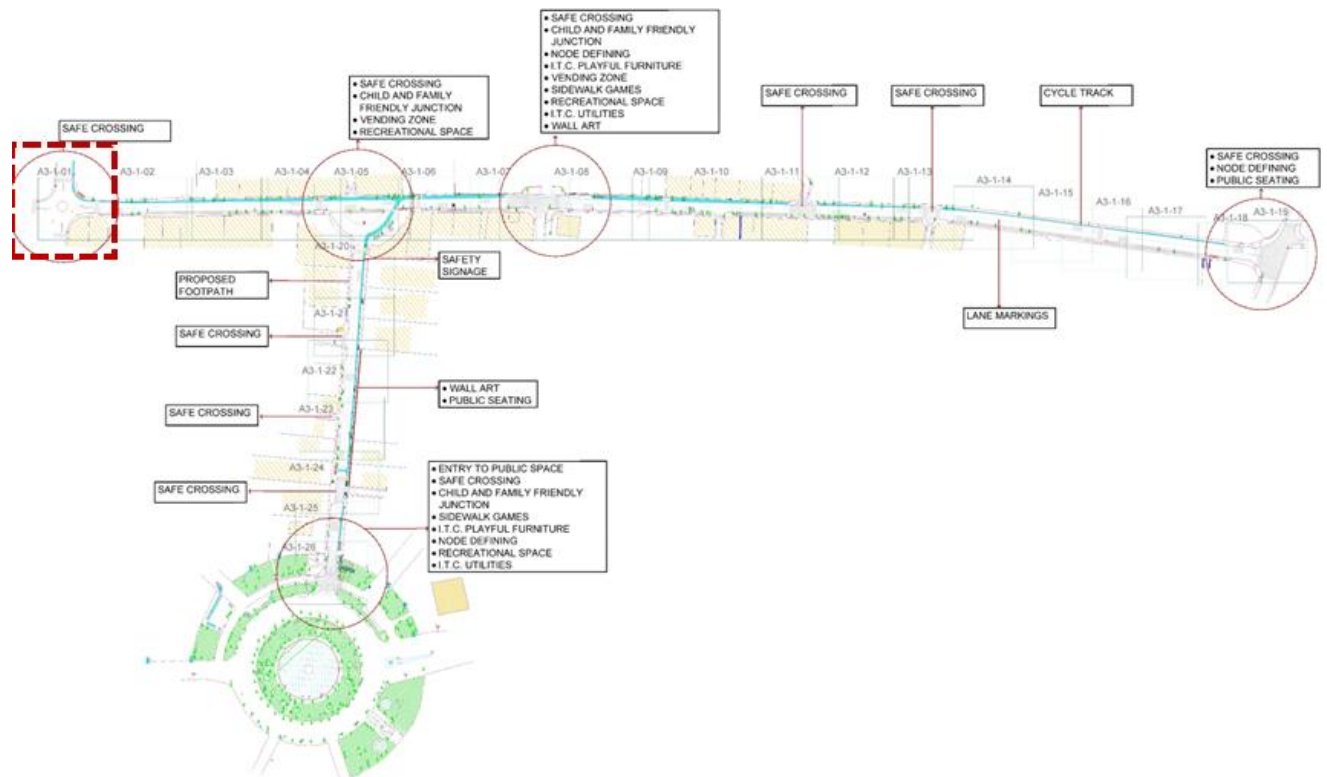


Figure 45: Key map highlighting interventions at UIT Circle

Figure 35 below show the proposed concept design, while the table 9 show the ITC features provided in the concept scheme.

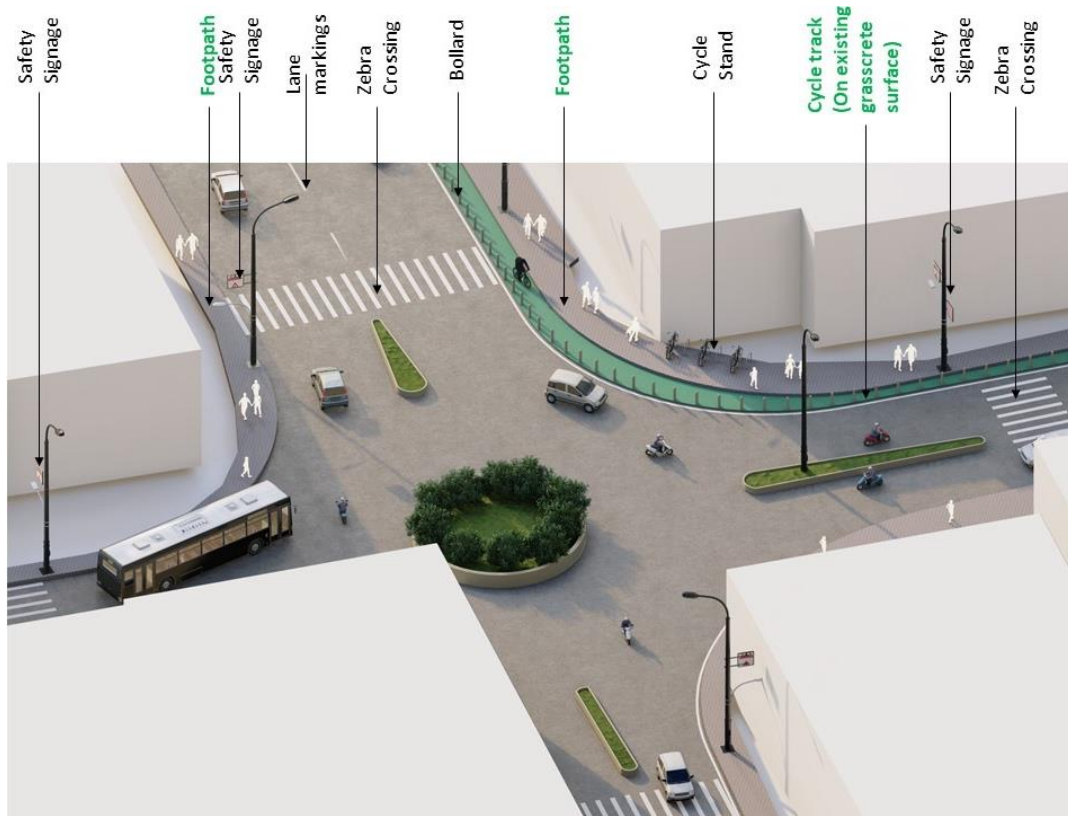


Figure 46: Concept Design Scheme for UIT Circle, Source: (Author, 2022)

Table 7: Proposed ITC indicators at UIT Circle Junction

Street/Junction	Utilities
Footpath (Existing)	Seating along planters
Kerb Ramp	Wayfinding signages for destinations & utilities
Cycle stand	Safety signage for traffic
Cycle track	Safe crossings
Ramps for ITC	Kerb extensions
Waiting area	Rumble strips
Handicapped parking	Camera monitoring
Active facade along route	Lighting
Bollards	Shading devices
Benches	Chicanes
Lane marking	Public Art
	Drinking water facility
	Dustbins

8. Environmental Impacts

The project proponents may have following environmental impacts-

1. As there no change in road geometry has been proposed, there would not be any change in the traffic pattern along the site.
2. As new cycle tracks and footpaths are proposed, users would be encouraged to walk and cycling in the site. As such, it is expected that users may be encouraged to shift from motorized modes of transport to non-motorised modes of transport. This may have a nominal impact on vehicular emissions along the site.
3. As street furniture, including dustbins are proposed, it is expected that it would be easier to maintain the site clean. This would also reduce waste dumping and associated pollution along the site.
4. The existing storm water drains are proposed to be cleaned and waste dumping in it is stopped through better enforcement. This also would lead to reduction in storm water pollution.
5. As the site is being made ITC friendly with designated crossing facilities, traffic calming etc, it is expected that the need for honking would reduce. This would reduce noise pollution in the site.
6. Most of the materials recommended for use along the stretch will have lesser carbon footprint, like use of natural and recycled materials, plantation, etc.
7. During the construction phase there might be air and noise pollution, which can be mitigated through proper construction techniques.

Proposed measures for reduction of pollution during construction works-

1. All loose items should always be covered
2. Material like sand and cement should always be covered.
3. Site should be cordoned off by installing protective sheets to avoid outside contact and pollution
4. Water should be sourced from Corporation as per local procedures and ground water should not be extracted.
5. All waste generated during construction works should be segregated, stored in covered bins and disposed regularly as per local procedures.
6. All construction debris would be covered with wet cloth and disposed frequently as per local procedures.

9. Social Behavior Change Impacts

The Feasibility Report for this assignment studied the existing behavior of users through primary surveys, analyzed the behavioral trends and provided strategies for behavioral changes. The summary of findings from Behavioral Analysis is provided below, which also included the expected Social behavior Change from the project.

Table 8: Summary of findings from Behavioural Analysis

Sl. No.	Theme	Identified Behavioural Issues	Possible Solutions	Expected behavioral change after implementation
1.	Inclusive	<ul style="list-style-type: none"> Lack of interaction spaces Lack of shaded areas 	<ul style="list-style-type: none"> ITC friendly shaded waiting areas required Playful activities along Saheli Marg and the junctions required Provision of ITC amenities like breastfeeding booths, public drinking water facilities etc. required at the junctions 	<ul style="list-style-type: none"> ITC Footfall in the areas may enhance ITC to actively use spaces and interact with others
2.	Safe	Restricted pedestrian movement due to heavy traffic and no provision of dedicated footpath for ITC	<ul style="list-style-type: none"> Pick-up and drop off zones for auto-rickshaws, taxis etc. Provision of Footpaths, ITC ramps and cycle tracks ITC friendly street infrastructure 	<ul style="list-style-type: none"> Caregivers and guardians may allow ITC to explore the areas.
3.	Accessible	No provision of dedicated footpath and other amenities for ITC pedestrianization	<ul style="list-style-type: none"> Provision of ITC friendly pedestrian footpath and cycle tracks. ITC friendly street infrastructure 	
4.	Green	Lack of plantation and green zones along the stretches.	<ul style="list-style-type: none"> Provide green belts, wherever feasible 	<ul style="list-style-type: none"> ITC Footfall may increase. ITC may also spend time interacting
5.	Playful	Inactive streets due to lack of	Inclusion of playful activities in children play	

		playful activities leading to less ITC footfall	areas, footpaths and other pedestrian areas.	with green zones.
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10. Project components

10.1. Site cleaning

The site is mostly clean, except the near Sukhadiya Circle, where the **drains are clogged**, and **garbage is being dumped** in the open. Even along the Big Bazar road, at some points garbage is being dumped in the open. These would have to be cleaned before start of the work.

10.2. Integration of proposals from this DPR with the on-going works

The on-going works of laying Storm water Drains and Grasscrete edges of carriageway along Saheli Marg will have to take into consideration the recommendations of this DPR. Especially the **construction of tabletop crossings** and **installing of bollards** along proposed cycle track will have to be taken up along with ongoing works.

10.3. Drain maintenance

Big Bazar Road has storm water drains running on both of their sides. These drains are not maintained and have debris, garbage and tree litter filled in them that clog the drains near Sukhadia Circle and make it a breeding spot for mosquitoes. The first step here would be **unclogging these drains, repair the damaged parts of these drains with plastering wherever required and checking their existing slope**, and if required, fixing them.



Figure 47: Portion of Storm water drain near Sukhadiya Circle. Source: (Author, 2022)

10.4. Drain covering

The next step would be to **cover these drains with Kota Stone slabs as drain covers supported by MS T sections underneath**. The Ferro concrete drain covers are not recommended as these increase the height of the footpaths to 300mm making them inaccessible. This would allow the water to pass through the drains and keep it clear from the garbage and debris falling into it. These drain covers can be removed for maintenance.

Along Saheli Marg, at most places Ferro Cement Concrete covers have already been installed making the footpath 300mm high. To make the footpaths accessible with minimum changes, the **detail of the cover of Storm Water Drains** at the location of table tops will have to be changed. Instead of 150mm thick concrete covers, 35mm thick kota stone slabs with metal T sections underneath may be provided.



Figure 48: 150mm thk drain cover makes footpath inaccessible. Source: (Author, 2022)

10.5. Sidewalks and Cycle Tracks

Along Saheli Marg, the sideways are already constructed and the the same cannot be changed. The 1.75m wide stretch of Grasscrete surface from Fatehpura Police Chowki Junction upto UIT circle is proposed to be used as a cycle track.

Along Big Bazar Road, new Footpath and cycle track is proposed along LHS from Circular roundabout to Sukhadiya Circle. On the opposite side the existing footpath is to be made continuous. **These sidewalks would be make with cement concrete paver blocks on the top and kerb stones on the edge. It would be at a height of 150mm form the street level.** These sidewalks would be ITC friendly with **colourful paver blocks and**

floor games pattern painted on them, making them visually appealing for young children and safe for the pedestrians.

Artistic paintings in the form of way finders towards Saheliyon Ki Bari and Sukhadiya circle would also be painted on these sidewalks. This would help the caregivers and young children to identify their way towards these destinations, while engaging and creating a cognitive development activity.



Figure 49 Sidewalk games. Source: (Template of ITC Integration: Udaipur)

	Width (Min.)
A. Dead Width	500 mm
B. Footpath (Clear Space)	1800 mm
C. MUZ Zone (Sidewalk Play Area)	1800 mm



Figure 50 Wide and accessible sidewalks in Chennai.
Source: (Author, 2022)



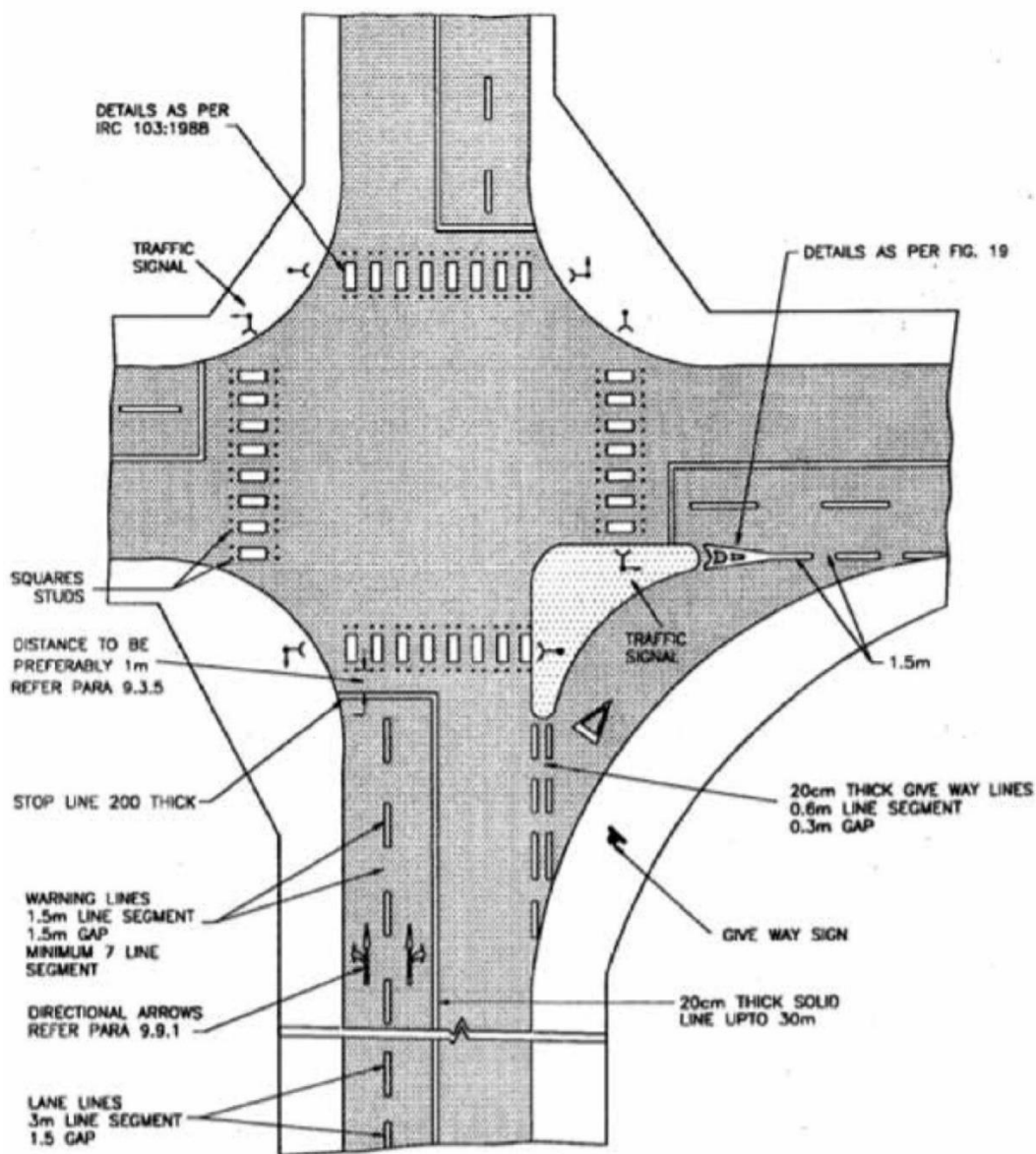
Figure 51 Extended ramps and on street parking encroaching the walking space for pedestrians. Source: (Author, 2022)

Large Number of properties along Big Bazar Road have constructed illegal ramps to access their properties on the road space compromising the space for footpath. These ramps would have to be broken to provide continuous footpaths. These ramps are not too steep for safe and comfortable pedestrian movement.

10.6. Street Markings

All junctions and streets in the project area require demarcation and dedicated zones for pedestrian and vehicular markings, that depict the upcoming turns for the next lane and makes the streets safer for the pedestrians. **These street markings would indicate an incoming vehicle about the turns that street has, allowing it to slow down before the turn arrives, making the chances of an accident low.**

These markings would include arrows on street painted with thermoplastic paint that makes it permanent and visible from far.



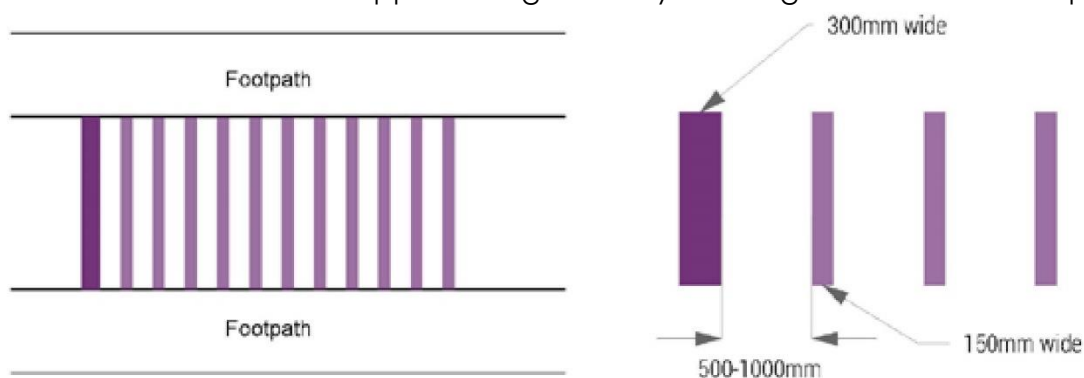
Source: Guidelines for Road Markings (UTTIPEC) and Code of Practice for Road Markings (IRC:35-1997)

Figure 52 - Road markings. Source: (IRC:35, 1997)

10.7. Traffic calming elements

All junctions and streets in the project area require traffic calming elements to make the streets ITC friendly. **These traffic calming elements would make the vehicle slow down before approaching nodes and various ITC destinations.** For this, various types of traffic calming elements would be used such as - **rumble strips, zebra crossings, table tops, road signages and reflector signages.**

1. **Rumble strips** – 5 of these rumble strips of thermoplastic paint with 7mm thickness would be painted before each pedestrian crossing/ STOP sign, making the vehicle slow down before approaching these by creating friction with the strips.



Note

The raised rumble strip markings using thermo plastic paint or mastic sheets can be used with installation across the carriageway for deliberate reduction of speed for child friendly design in urban areas. The first application can be of 300 mm wide strips and second can be of 150 mm. These strips shall be provided at 500 mm to 1000 mm spacing's in a series / set comprising 15 to 20 strips at the distance of 130 m to 180 m from the start of the crossing point, for both directions of traffic.

Figure 53 7mm thermoplastic rumble strips. Source: (IRC:55, 2014)

- Zebra crossings** – Zebra crossings would be painted on each pedestrian crossing after the rumble strips to give the pedestrians a safe crossing path and installing a habit to use zebra crossings while crossing streets and roads.

Note

The width of the pedestrian crossing is governed by the pedestrian volumes crossing the road and by local requirements but in no case should it be less than the width of footpath subject to a minimum of 1.5 m. The width of the crossing generally lies between 2 m and 4 m. Marking for pedestrian crossing mostly used is the Zebra pattern consisting of equally spaced white stripes generally 500 mm wide should be marked. A warning sign to indicate that the pedestrian crossing is ahead should also be installed.

A mid-block pedestrian crossing in urban areas, may be advantageous to install flashing signals along with the markings, so that the drivers receive advance warning about the presence of the crossing.

Source: *Guidelines for Road Markings (UITIPEC)* and *Code of Practice for Road Markings (IRC:35-1997)*

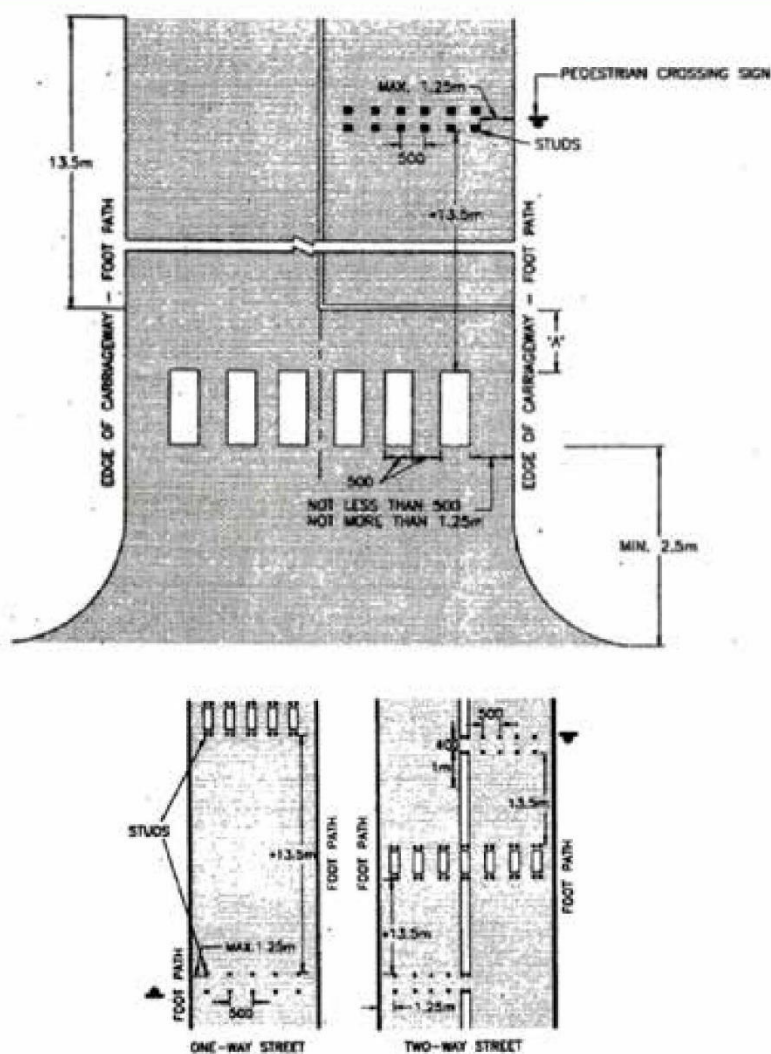


Figure 54: Zebra crossing for safer movement across the street. Source: (IRC:35, 1997))

3. **Bicycle crossing** – Painted bicycle track crossing would be provided along with Zebra Crossings.



Figure 55: Painted cycle track with bollards for safety. Source: (www.jagran.com, 2022)

4. **Tabletops**—Along Saheliyon Ki Bari, footpaths have already been constructed at a height of 300m. As such, and to provide universal accessibility, only tabletop crossings are feasible. As such, all crossings along Saheli Marg are recommended to be tabletops.



Figure 56 Tabletop crossing. Source: (Author, 2022)

5. **Road signages and reflector signages** – Road signages and reflector signages would be installed at key junctions and nodes, as well as near the ITC destinations and ITC play areas to create awareness as well as creating a cautionary notification about these spaces where the incoming traffic should take extra care while driving. Signages depicting Child friendly zones, ITC destinations, Slow down signs, Zebra crossing ahead signs and speed limit signs would be installed throughout the neighbourhood.

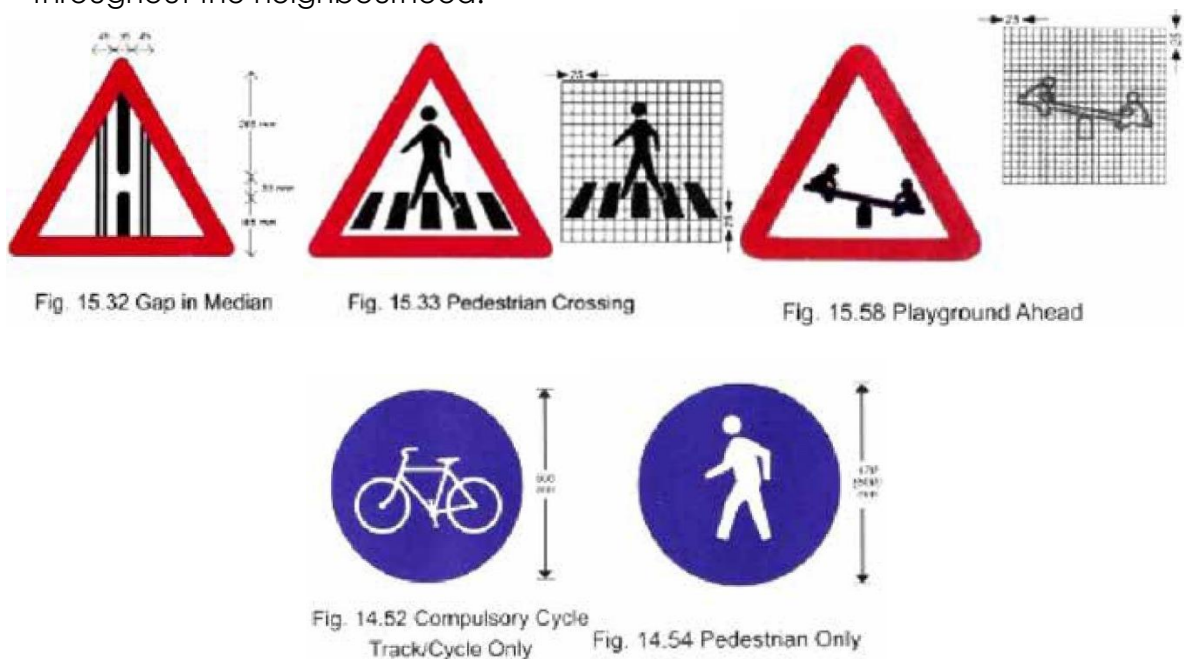


Figure 57 - Street signages. Source: (IRC:35, 1997)

10.8. Installing ITC friendly furniture

The streets and junctions in the project area requires ITC friendly furniture. Furniture like ITC friendly benches and cycle stands are required along the street and at junctions. **This would help change the walking and cycling experience of the streets and junctions and make it more efficient for the caregivers to use footpaths and cycle tracks on a regular basis.**

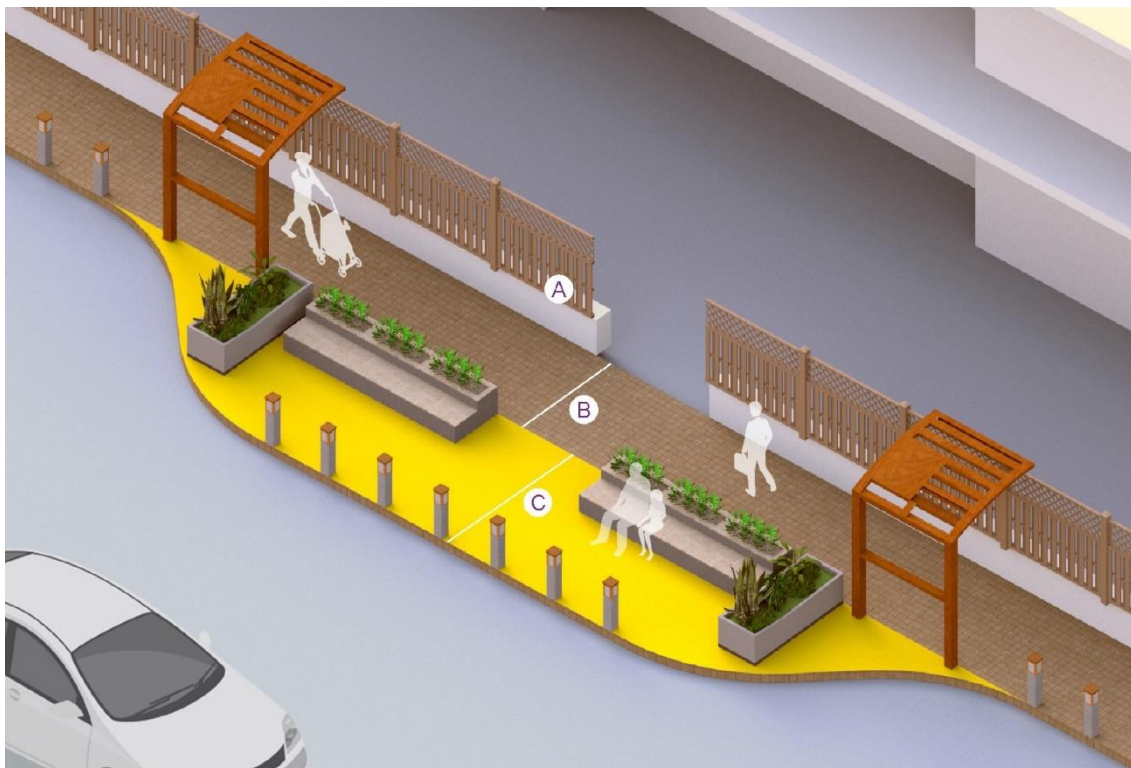


Figure 58 ITC friendly furniture. Source: (Template of ITC Integration: Udaipur)

	Width (Min.)
A. Dead Width	500 mm
B. Footpath (Clear Space)	1800 mm
C. MUZ Zone (Waiting Area)	1800 mm

10.9. Creating ITC friendly zones at the junctions

The identified junctions within the project area provide opportunity for different kind of activities and engagement for ITC.

1. **Fatehpura Police Chowki** junction is an important entry to the Saheli Marg. However, the junction itself does not have any destination for ITC. As such, this junction has been provided with facilities for all age groups. Space for resting and taking a pause while walking or cycling have been provided near the police station. In addition to it, the junction geometry have been improved to make it safer for all users including ITC. Provision for crossing, traffic calming and universal accessibility have also been provided.

2. **Saheliyon Ki bari Junction** is an important destination for ITC. Surveys reflect that the junction and precinct receives high footfall of ITC either destined to Saheliyon ki Bari or coming out of it. As such, space for active and passive recreation have been provided at the junction in addition to the provision of crossing, universal accessibility, traffic calming, vending zones, etc. This would **help in their Early Childhood Development, the Saheliyon Ki Bari entry has been provided space that is specifically dedicated to the children of age 0-5 years**, with dedicated play equipment and an interactive zone with floor painted patten where these young children can play and learn.
3. The **Semi-Circular Junction** of Saheli Marg and Big Bazar Road has been improved with landscaping and seating spaces. It is proposed to create a vending zone parallel to the Saheli Marg abutting this island where some of the vendors from Saheliyon Ki Bari can be rehabilitated.
4. **UIT Circle Junction** has recently been improved. Moreover it does not have any destination for ITC. The surveys showed large number of cyclists passing through this junction in the morning hours, comprising of various age, income and gender groups. As such, only crossing facilities, traffic calming, seating space etc. being proposed to make this junction a viable pause point for cyclists and pedestrians.
5. **Sukhadiya Circle Junction** where the Big Bazar road comes and meet is being designed with suitable crossing, traffic calming facility. At the entry of the green area an ITC friendly resting area is being proposed.

10.10. ITC friendly furniture along the shared street and the junctions

The shared street and the junctions require ITC friendly furniture along footpaths and kerb extensions. Furniture like ITC friendly benches are essential for caregivers to sit in a range where they feel secure for their child as well as are also comfortable spending time while walking, cycling or taking a pause.



Figure 59: ITC friendly furniture with planters. Source: (Template of ITC Integration: Udaipur)

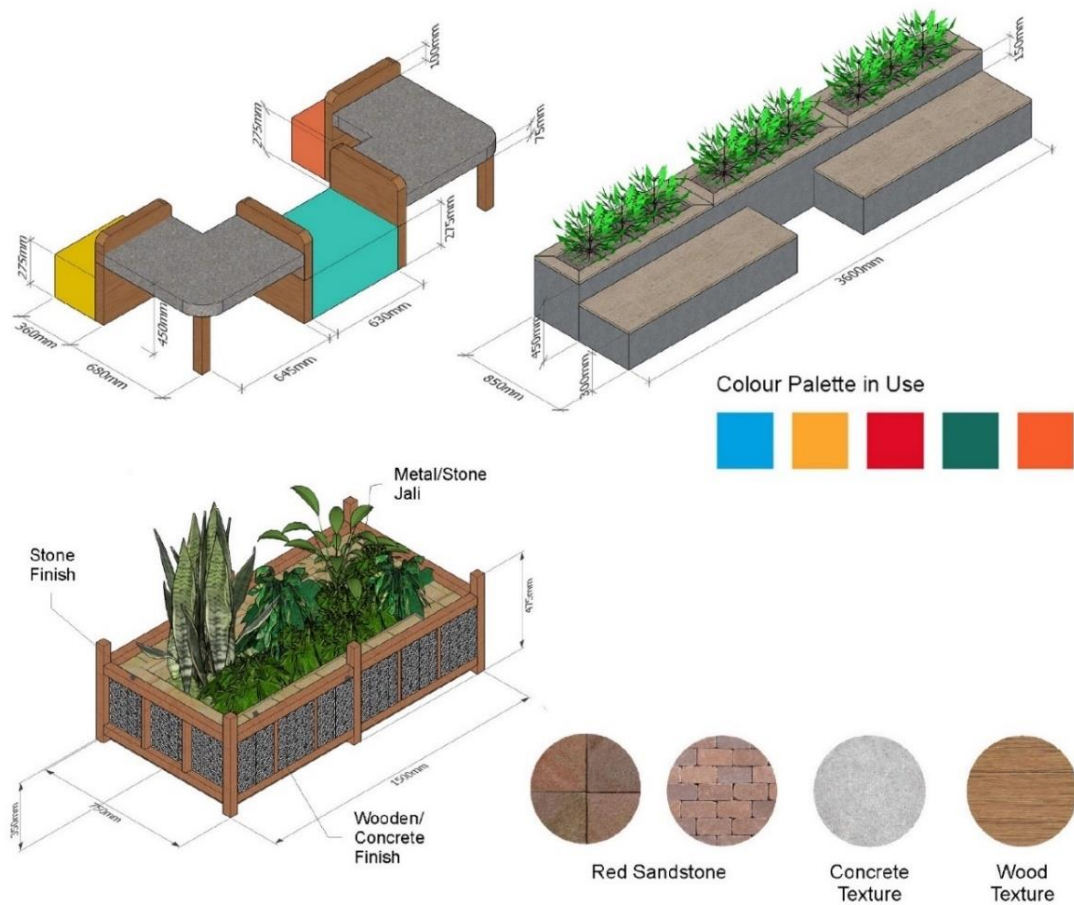


Figure 60 ITC friendly furniture with planters. Source: (Template of ITC Integration: Udaipur)

10.11. Addition and maintenance of the plantation around the anchor institute

The existing plantation along the street and junctions are well maintained by the respective agencies. However, regular pruning, providing tree gratings for both preserving the earth base of the tree roots and provide even surface for walking and cycling is essential. More potted plants are proposed along the footpaths and junctions to bring nature within close proximity of ITC's walking and resting experience. Maintenance in terms of trimming the overgrown plants and removing of weeds from the plants and grasses are required. Regular watering is also included in this.



Source: Planter Near Vidya Bhawan School

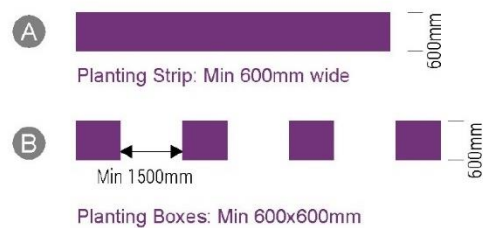


Figure 61– Planters. Source: (Template of ITC Integration: Udaipur)

10.12. Repairing and beautifying the dead boundary walls

Most part of the shared street and the junctions either have active frontage, private boundary walls or murals on the walls. Some sections of boundary walls along Saheli Marg, Saheliyon Ki Bari and a section of Big Bazar road, on the opposite side of "I love Chappan Bhog, Kaner Bistro and Belgian Waffle Restaurants" has dead boundary walls. The property behind the wall is vacant with wild plantation. It is recommended that this section of the wall be plastered, and painted with ITC friendly wall art. Artistic

paintings would be done on these walls with ECD paintings and informative graphics making the approach engaging, fun and attractive for ITC.

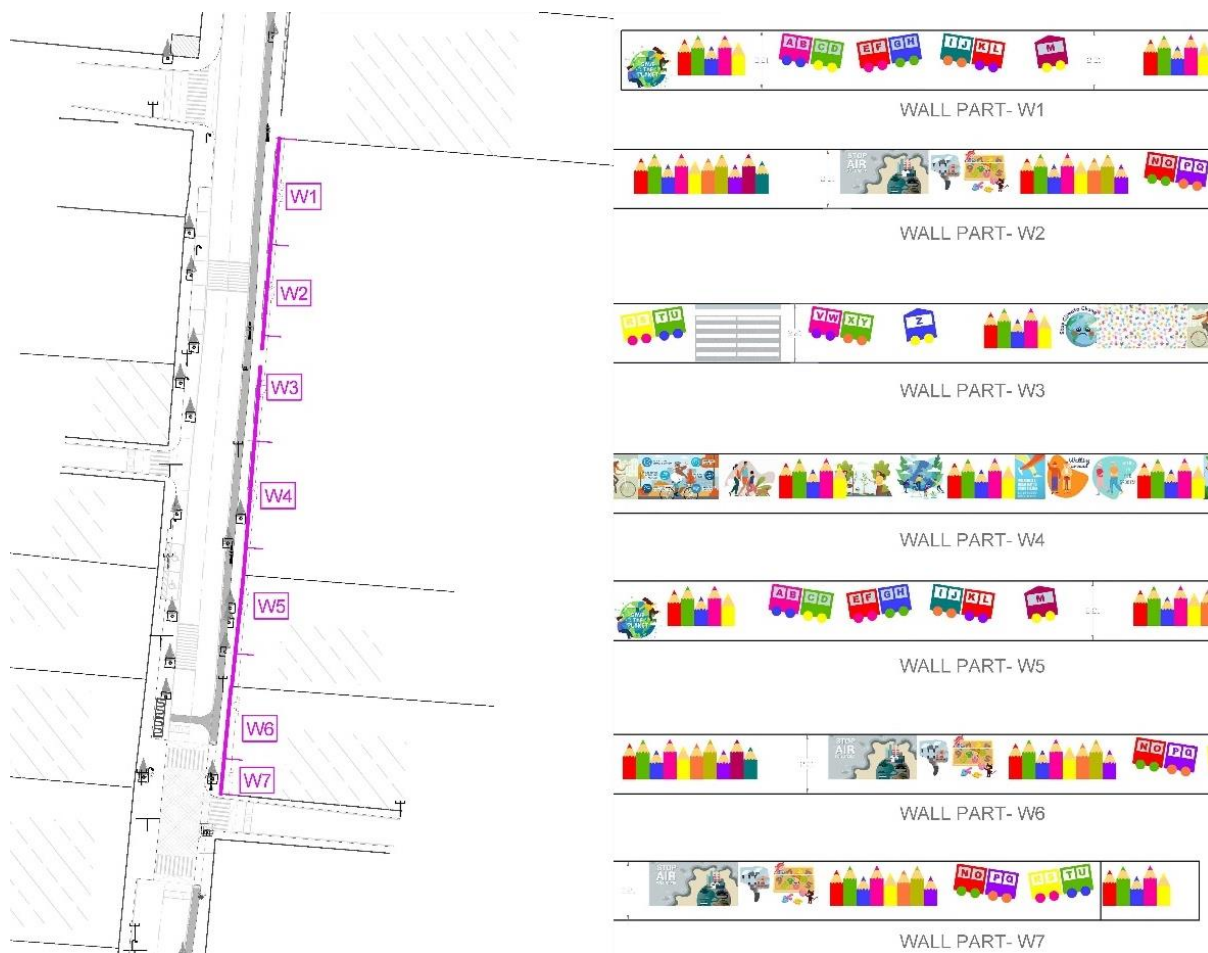


Figure 62 Proposed wall art along Big Bazar Road



Figure 63: Dead Boundary walls along Saheli Marg. Source: (Author, 2022)



Figure 64: Dead Boundary walls near Saheliyon Ki Bari. Source: (Author, 2022)



Figure 65: Sections of Dead Boundary walls along Big Bazar Road. Source: (Author, 2022)



Figure 66 Existing dead boundary wall near Fatehpura Junction. Source: (Author, 2022)

10.13. Drinking water facility

A drinking water facility already exists on the road opposite to the Saheliyon Ki Bari Junction. The same has to be repaired, repainted and maintained.



Figure 67: Drinking water facility existing at Sahilyon Ki Bari Junction. Source: (Author, 2022)

10.14. Vending Zone at the Semi-Circular roundabout

The improved **Semi-Circular Junction** would continue to function as a landscaped zone with seating space and will now be connected with the vending zone through a small gate. This will make this island usable for people of all age groups and also reduce congestion at Saheliyon Ki Bari Junction due to ad hoc vending stalls.



Figure 68: Improved Semi-Circular island. Source: (Author, 2022)



Figure 69: Vending Zone area at Semi Circular Island. Source: (Author, 2022)

10.15. Other Recommendations

To make the space inclusive and accessible, four-wheeler parking bays have been proposed at Saheli Marg Junction for cars with Differently Abled (Two Parking Bays), and cars driven by Single Women drivers (One Parking Bay) and Senior Citizens (One Parking Bay). This would also promote and encourage caregivers which need special assistance to access these areas.

- *Consideration should be given to the distribution of spaces for use by the Persons with Disabilities in accordance with the frequency and persistency of parking needs.*
- *Two accessible parking lot should be provided for every 25 car parking spaces.*

Source: Harmonised Guidelines and Space standards for Barrier Free Environment for Persons with Disabilities (Ministry of Urban Development, 2016)

10.16. Operation and maintenance of facilities provided

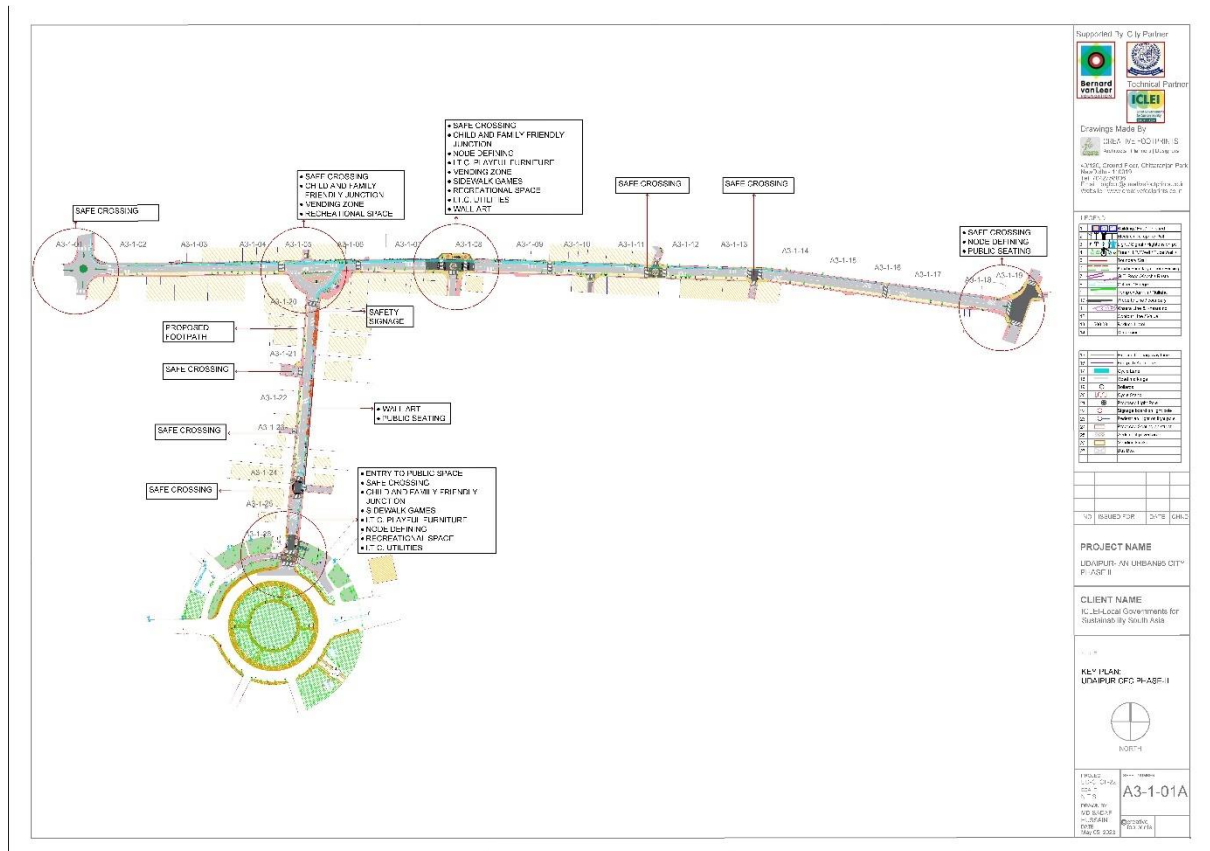
Operation and maintenance of the street, junction and all the new facilities provided should be taken care of while implementing and operating them.

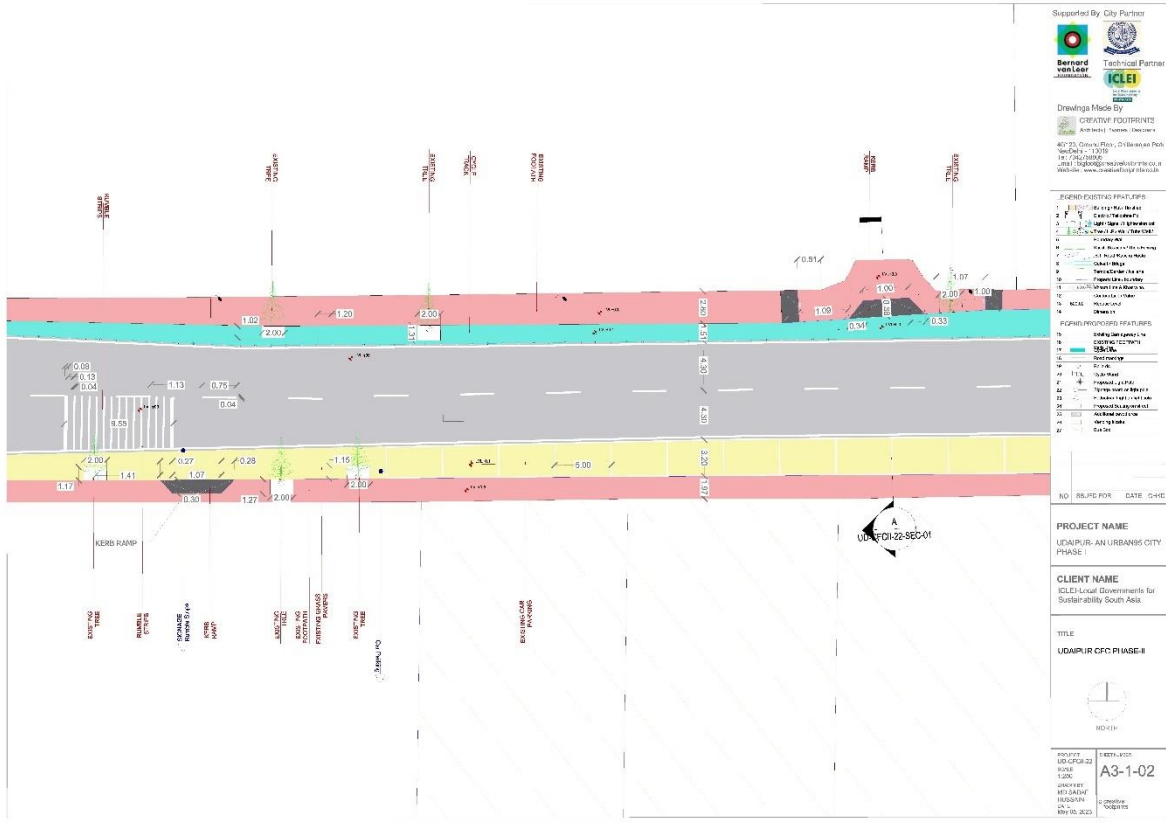
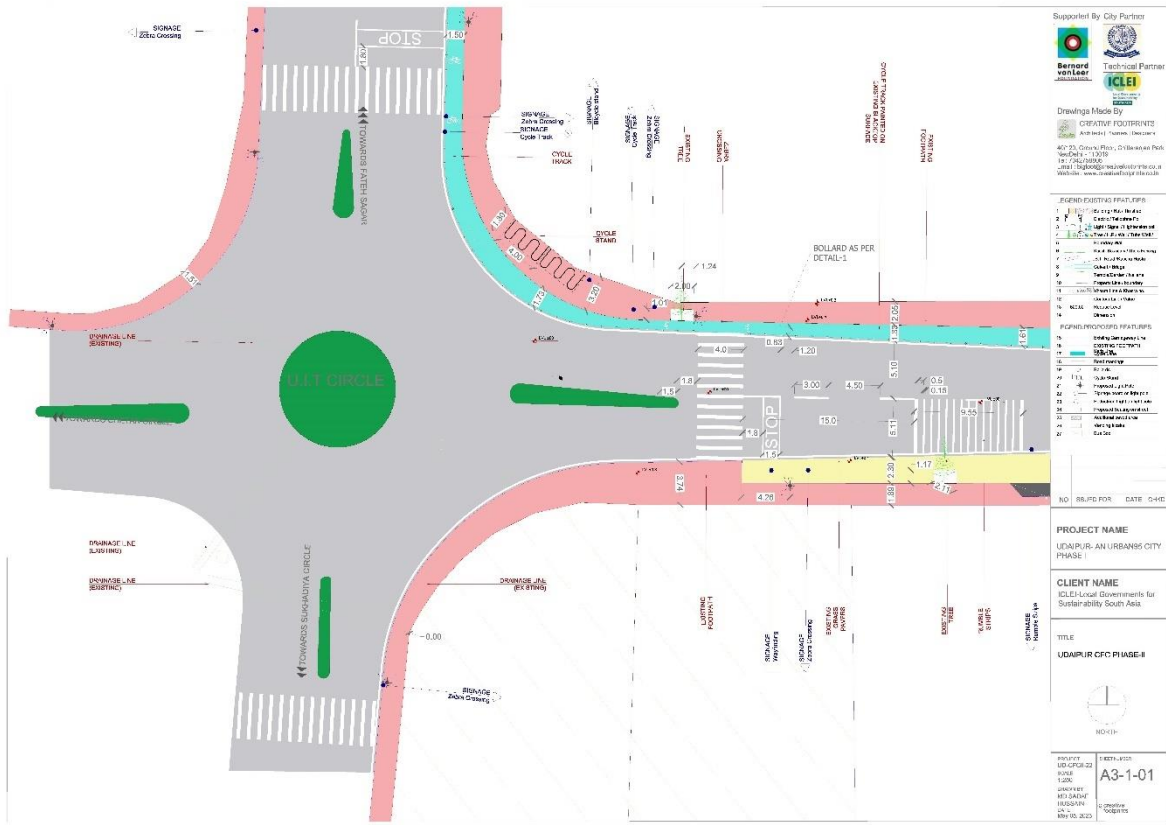
1. The concerned road owning agency would have to keep the sites clean.
2. All street furniture, like bollards, benches, dustbins etc. would have to be repaired / replaced from time to time based on its wear and tear.
3. All electrical fixtures would have to be checked atleast once a month and preferably every fortnight.
4. All plants would have to be supplied with manure, water and regular maintenance by the horticulture department. Plants which dry out, will have to be replaced with new plants/ saplings.
5. All lane markings, signage, rumble strips etc, would have to be repaired/ re-drawing from time to time based on its wear and tear.
6. All wall art and street art would have to be repainted from time to time, based on its wear and tear.

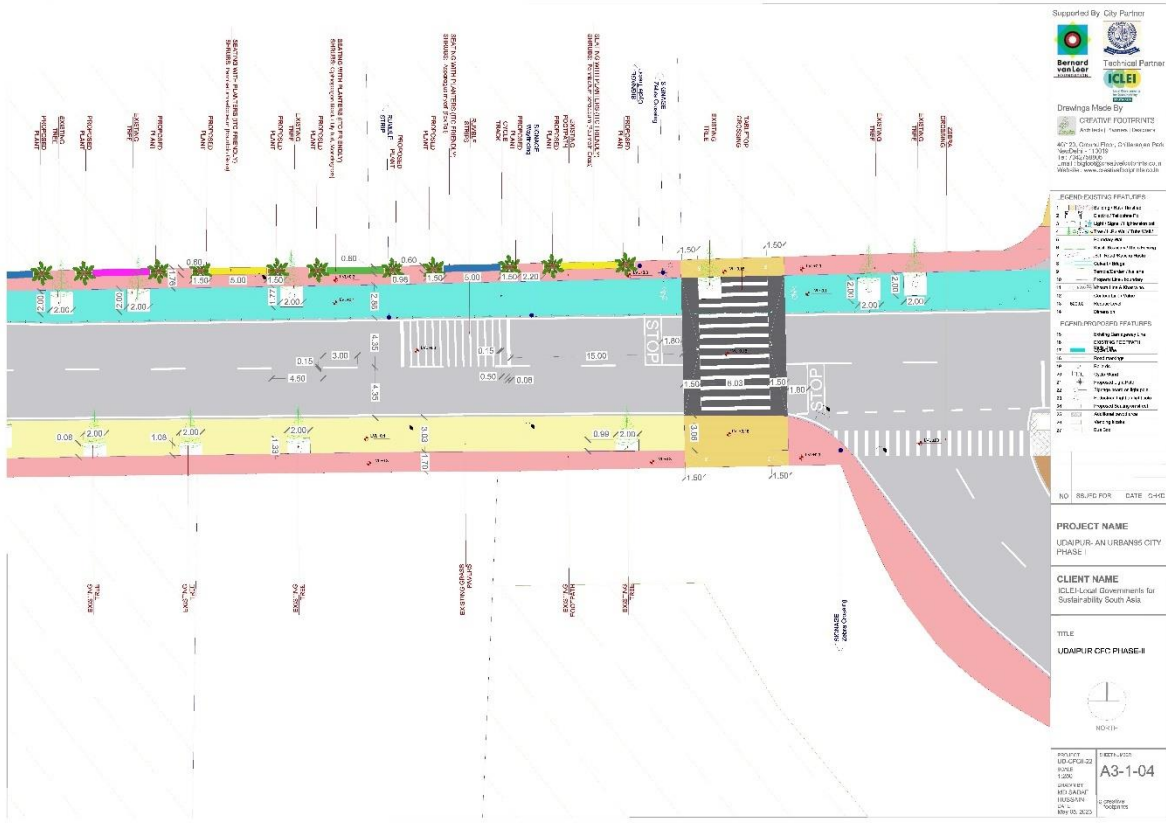
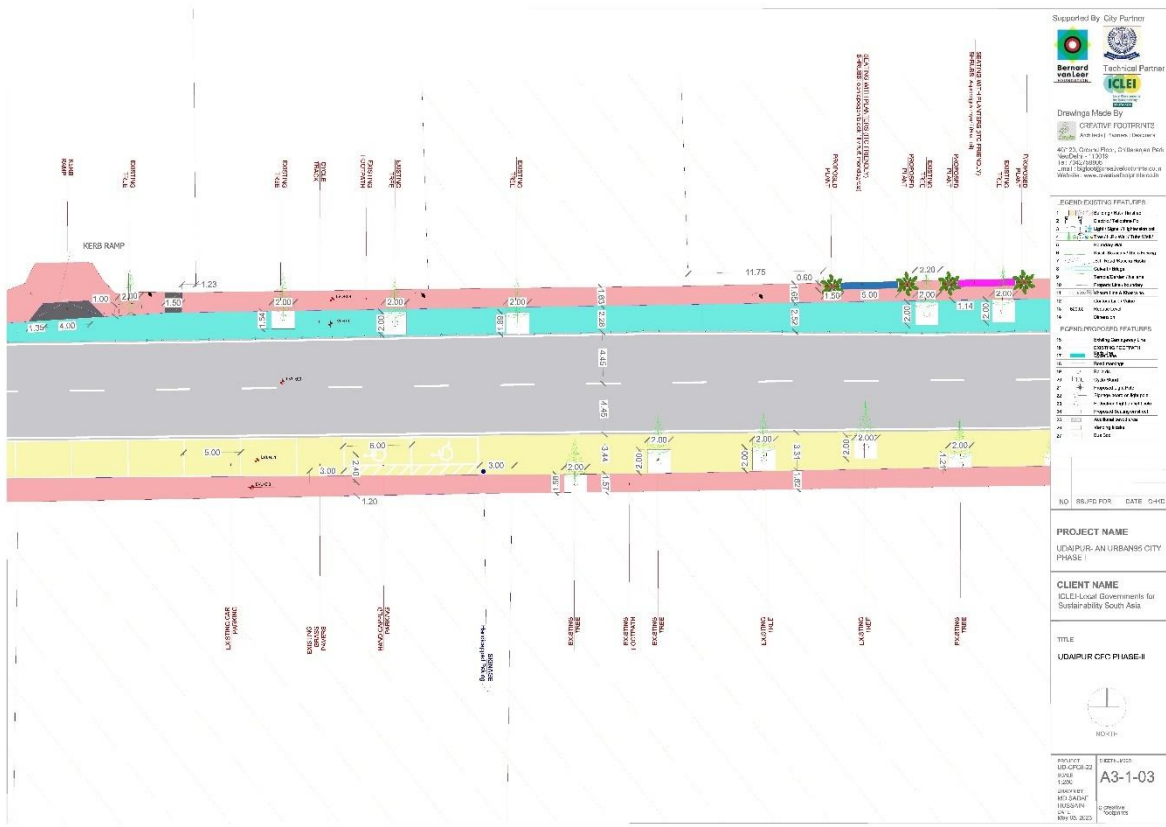
10.17. Project Construction Phasing

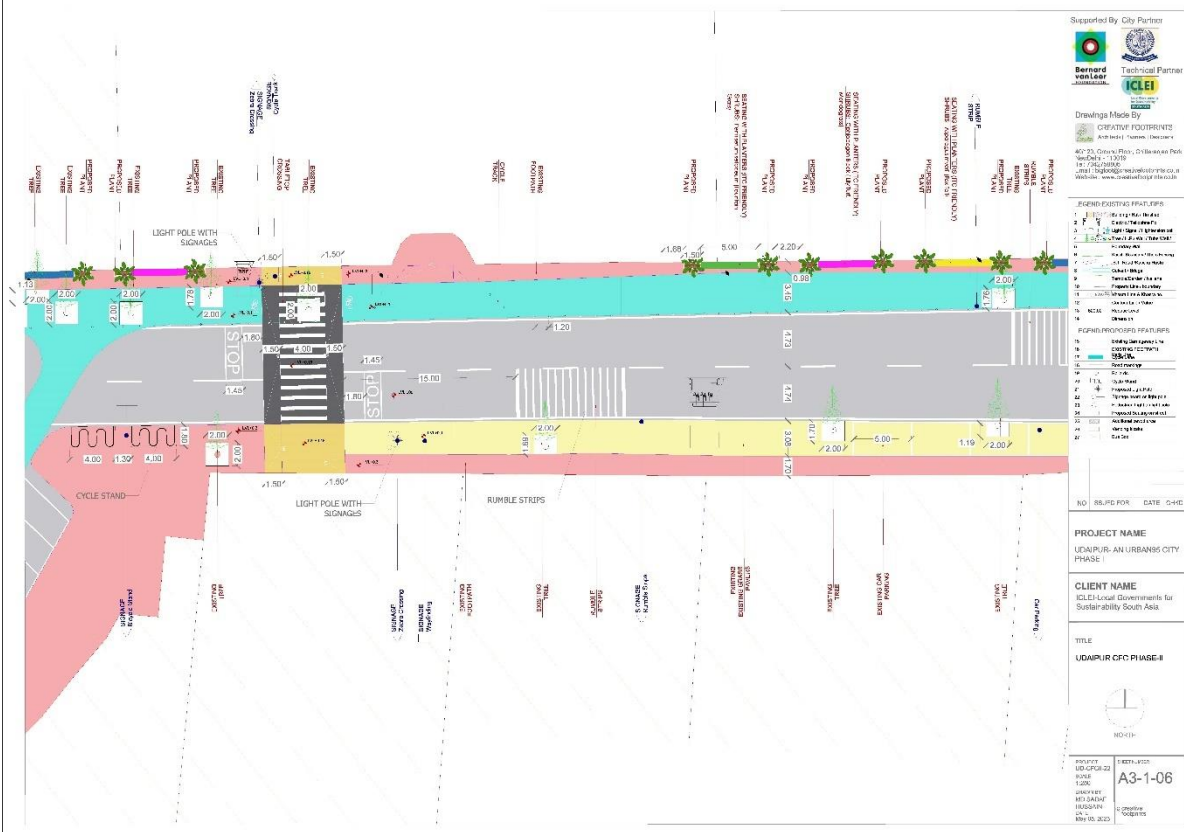
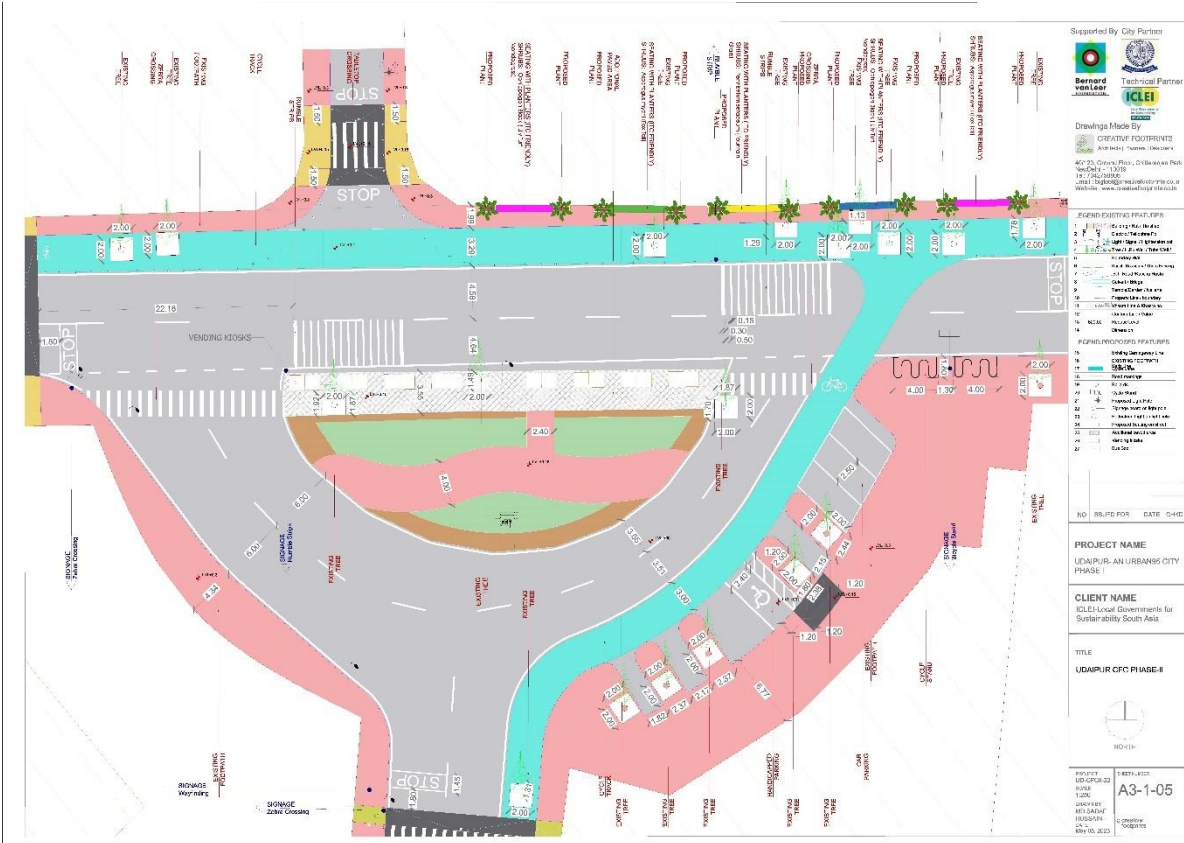
S.no	Project Milestones	ACTIVITIES	Jul-23				Aug-23				Sep-23				Oct-23				Nov-23				Dec-23			
			WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4
1	Issuing of LOA to the contractor	a) Depurting of labour and material on site b) Site study and understanding of the drawings with UMC/UIT Engg and PMU Team																								
2	Commencement of work on site	a) Correcting the geometry on site b) Clearing of drains c) Repair of drains if necessary (out of the scope)																								
3	Correcting of Bitumen on the road edges	a) Blacktop repair and maintenance (out of scope)																								
4	Dismantling and excavation works	a) Any impediment to implementation of design should be identified and removed (out of scope) b) Excavation for various civil works should be undertaken																								
5	Construction of foundation, PCC, RCC	a) PCC and RCC works for tabletop, ramps, bollards, seating with planter and other street furniture b) Lay foundations for pergolas, bollards, seating bollards, seating with planters, etc. c) Lay concrete for sidewalks																								
6	Construction of planters	a) Complete all civil works of seating with planters																								
7	Starting Sidewalks	a) Laying of new kerb edges and repairing of existing (if any) b) Laying of any electrical cable wherever necessary c) Installation of paver block and Ferro cover on drains																								
8	Construction of table tops	a) All major junctions and crossings, table tops are to be constructed																								
9	Installation of fabricated items	a) Install pergola and other street furniture b) Road marking and safety signages to be installed c) Installation of Cycle Stand																								
10	Wall and floor arts	a) Paint all wall art items b) Paint all floor art items																								
11	Landscaping and plantation works	a) Prepare areas identified for landscaping and plantation with good earth and manure b) Plant turfs and trees c) Water the landscaping and plantation areas till handing over																								
12	Painting of cycle track	a) Paint cycle track b) Paint the symbol of cycle track by stenciling																								
13	Thermoplastic Paint	a) Rumble strips b) Zebra Crossings c) Junction Crossings																								
14	Handing Over of Site	Completion of all the work as per the drawing issued																								

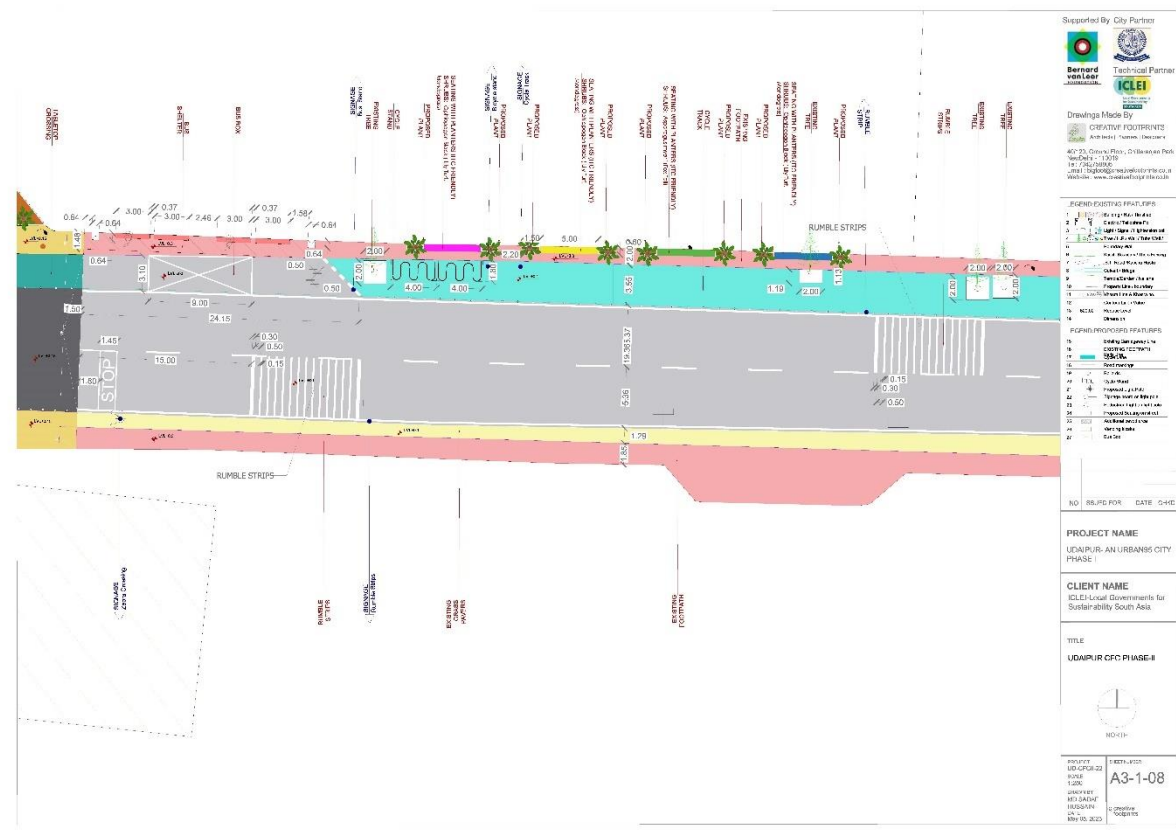
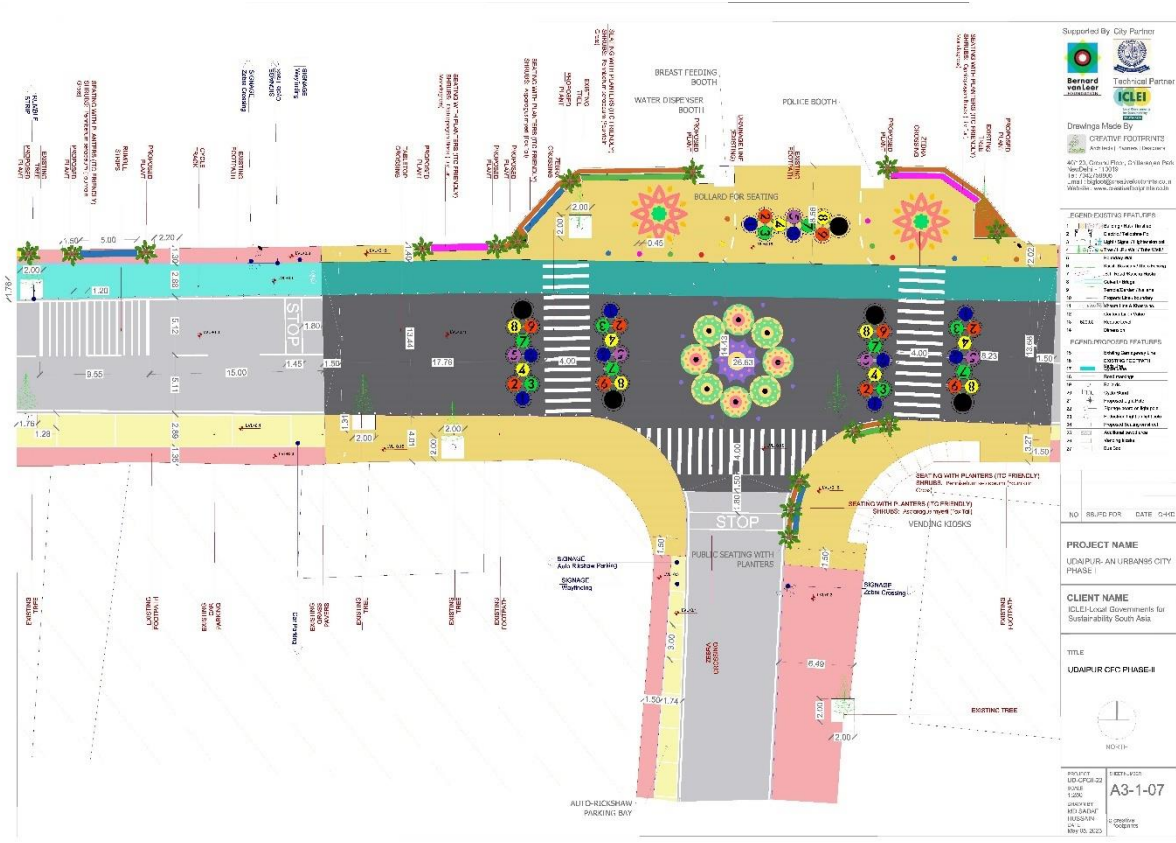
11. Annexure A- Design Details

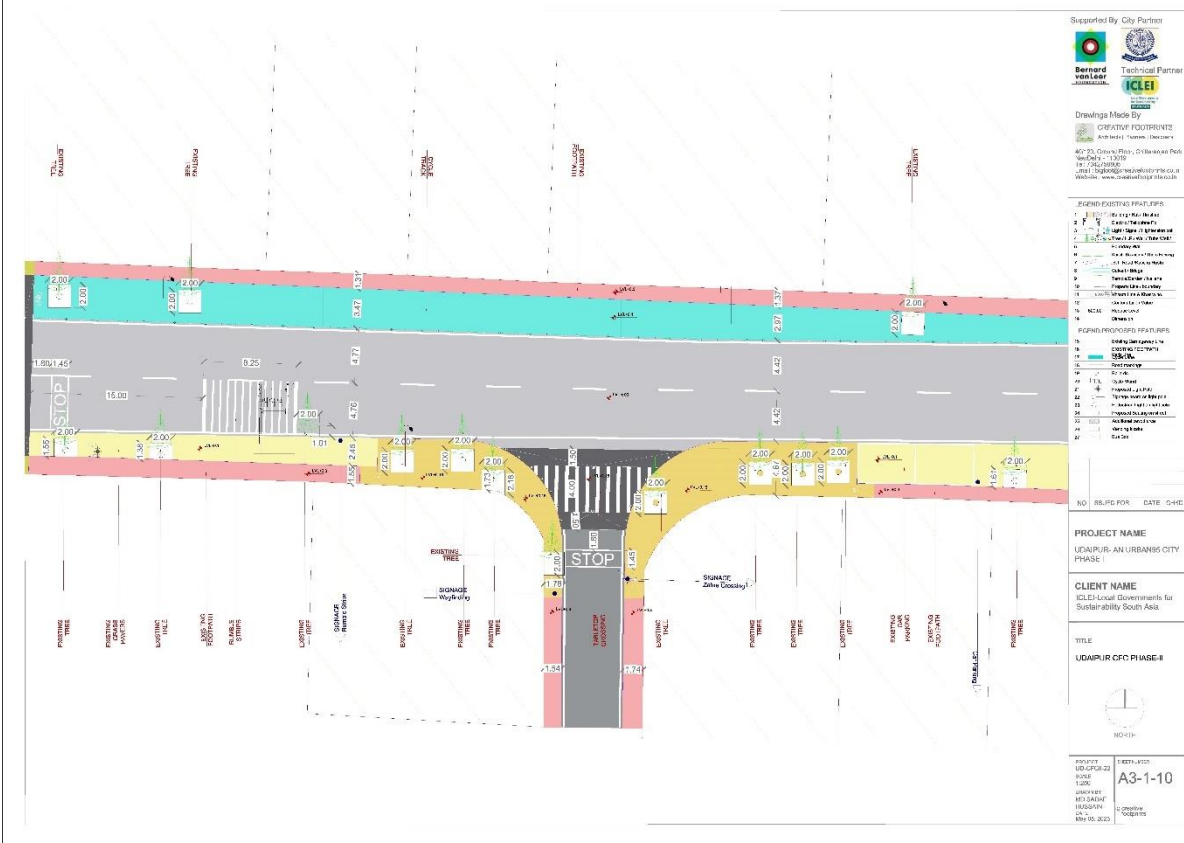
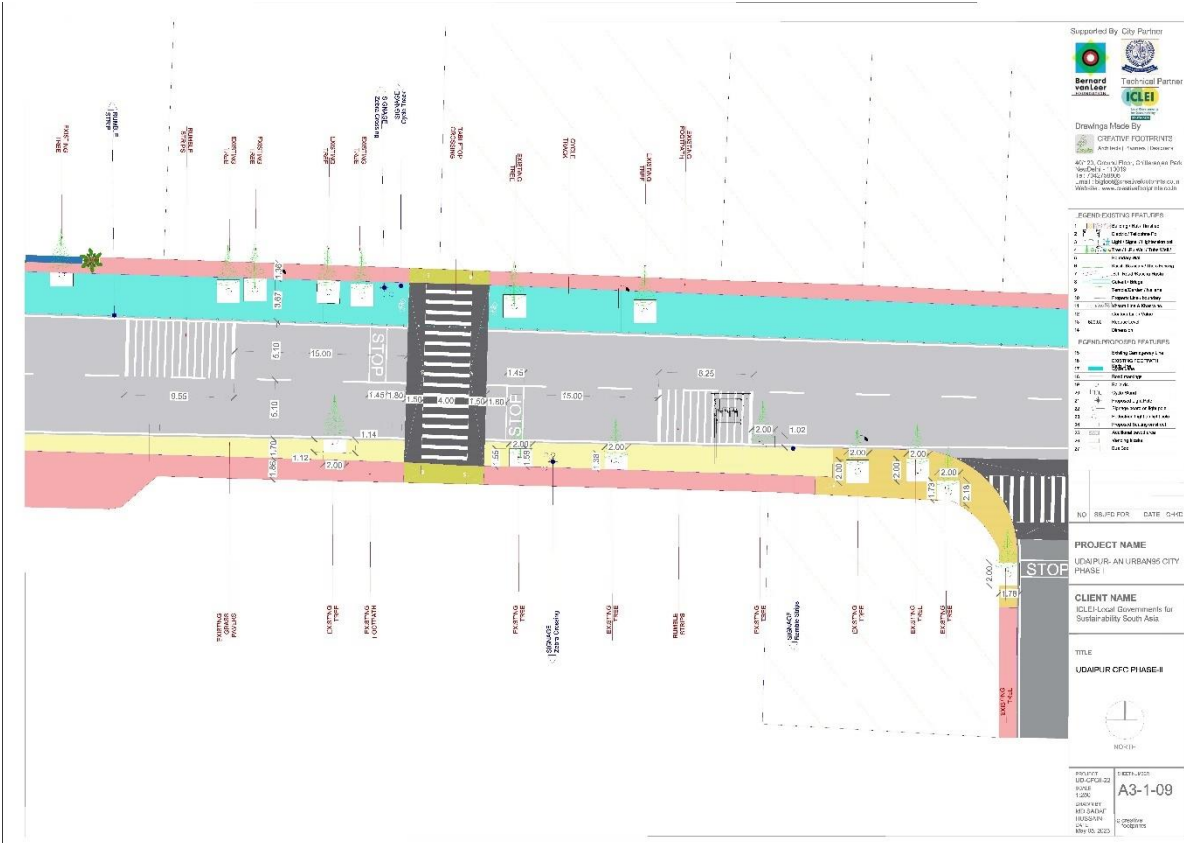


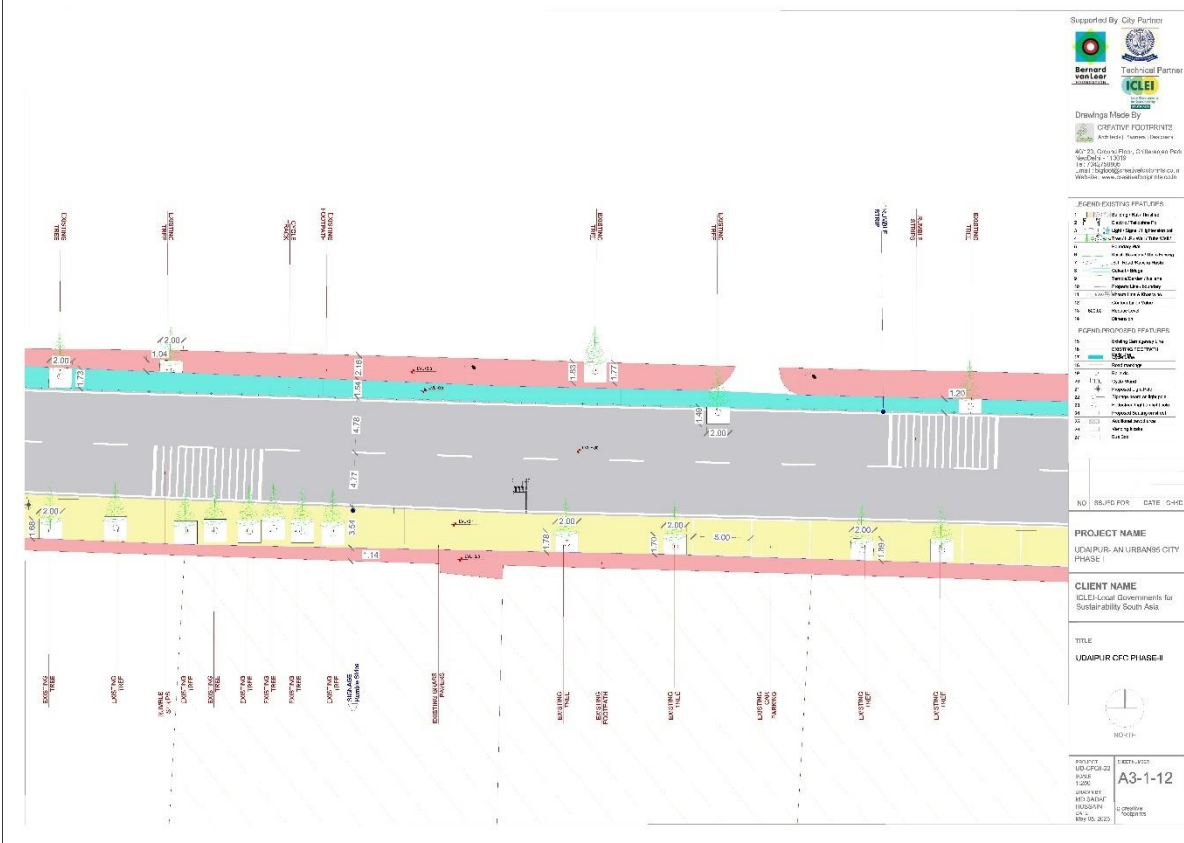
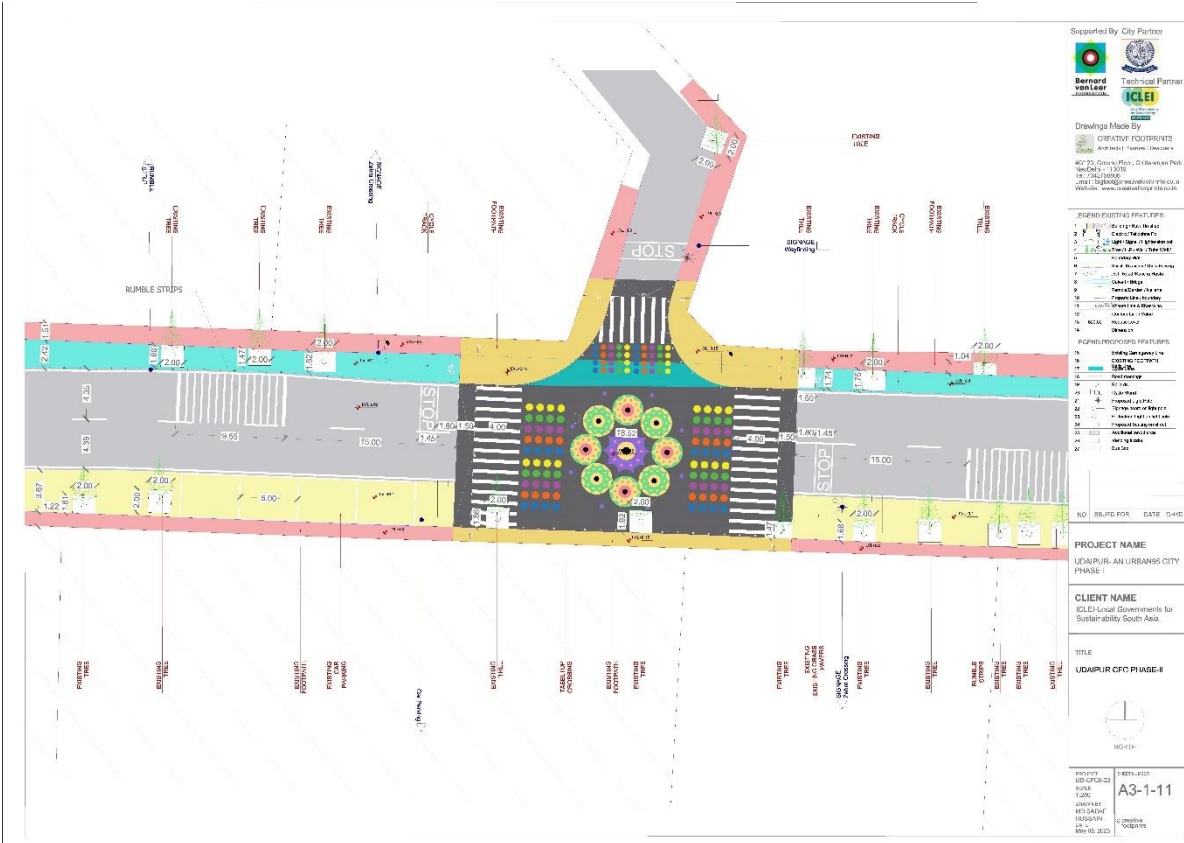


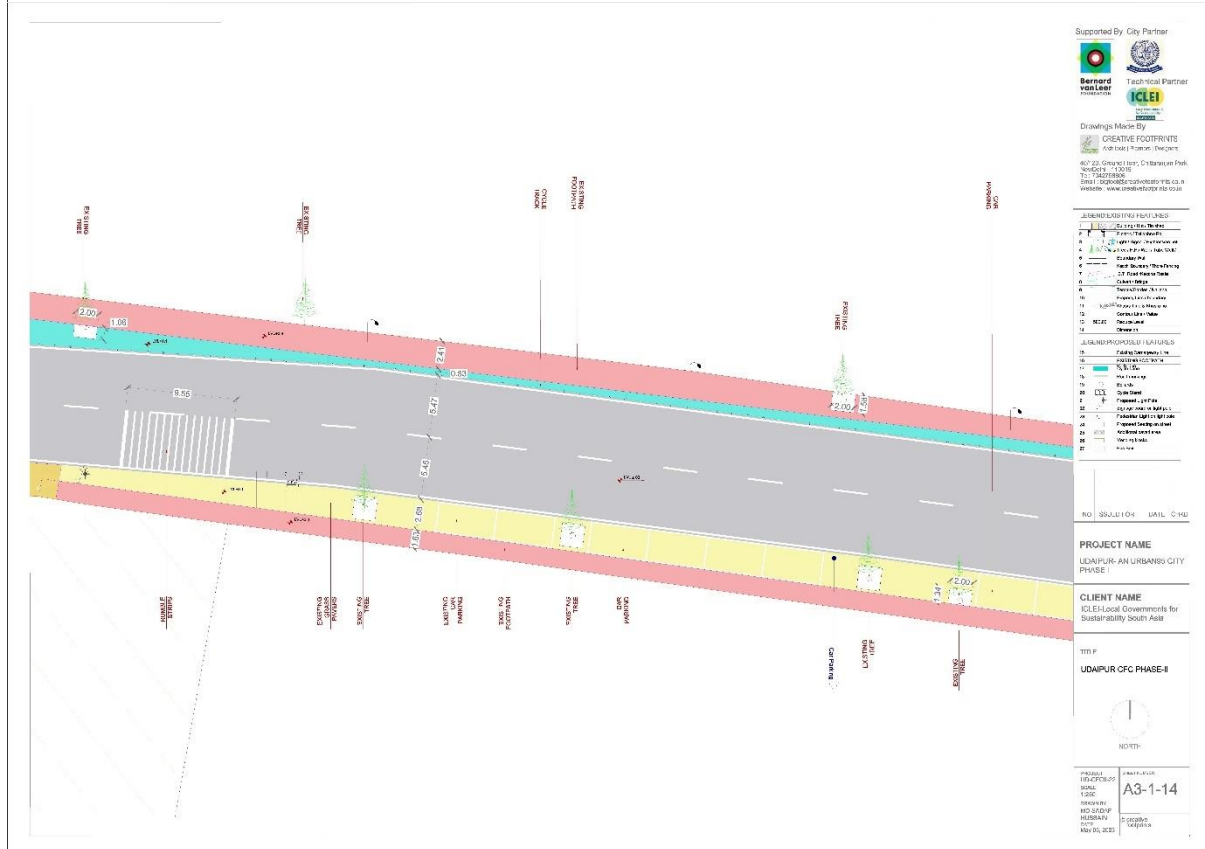
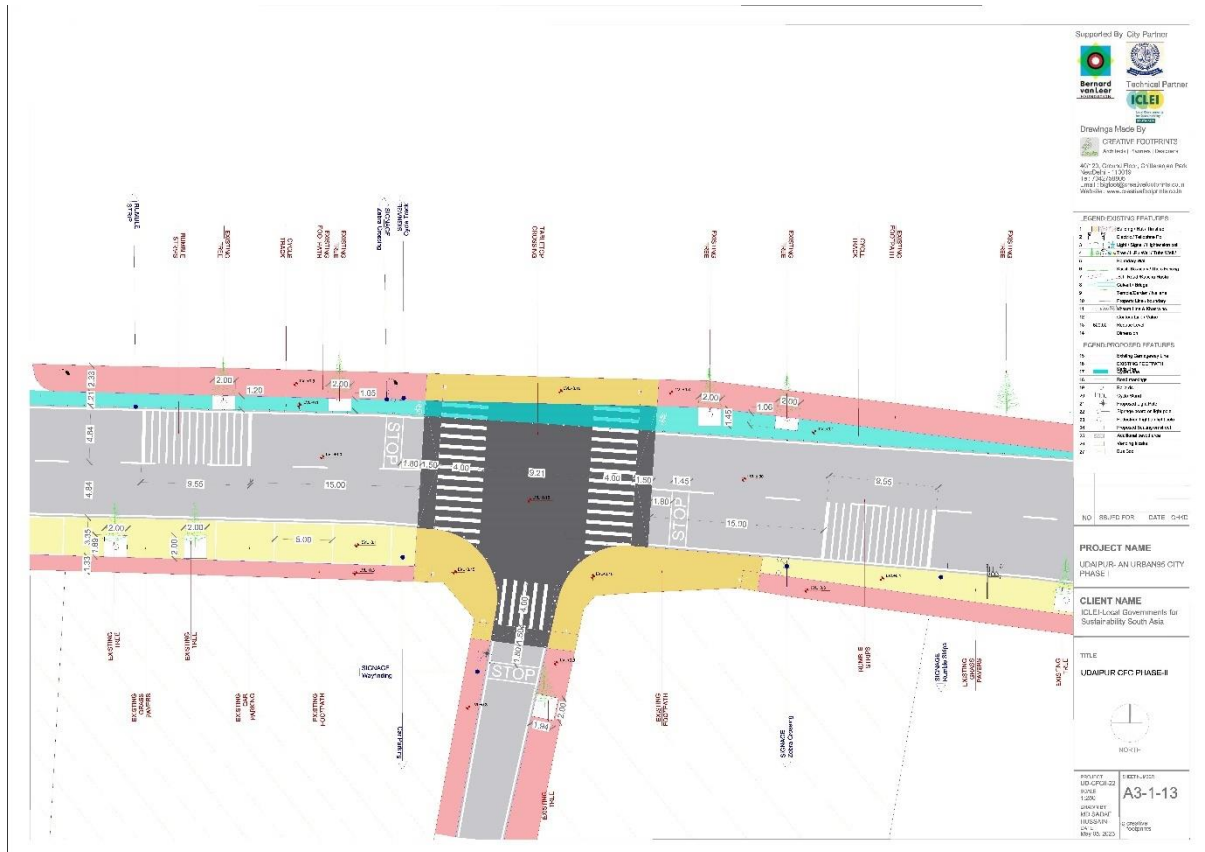


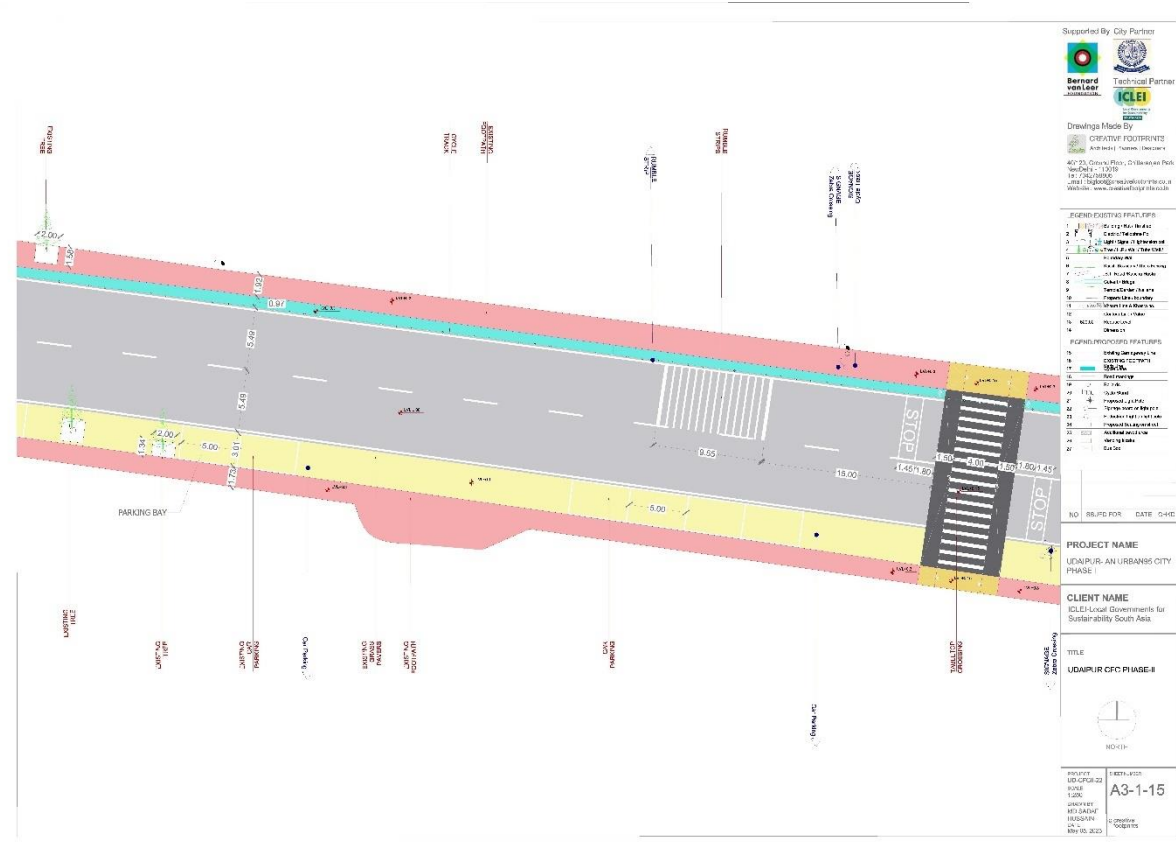


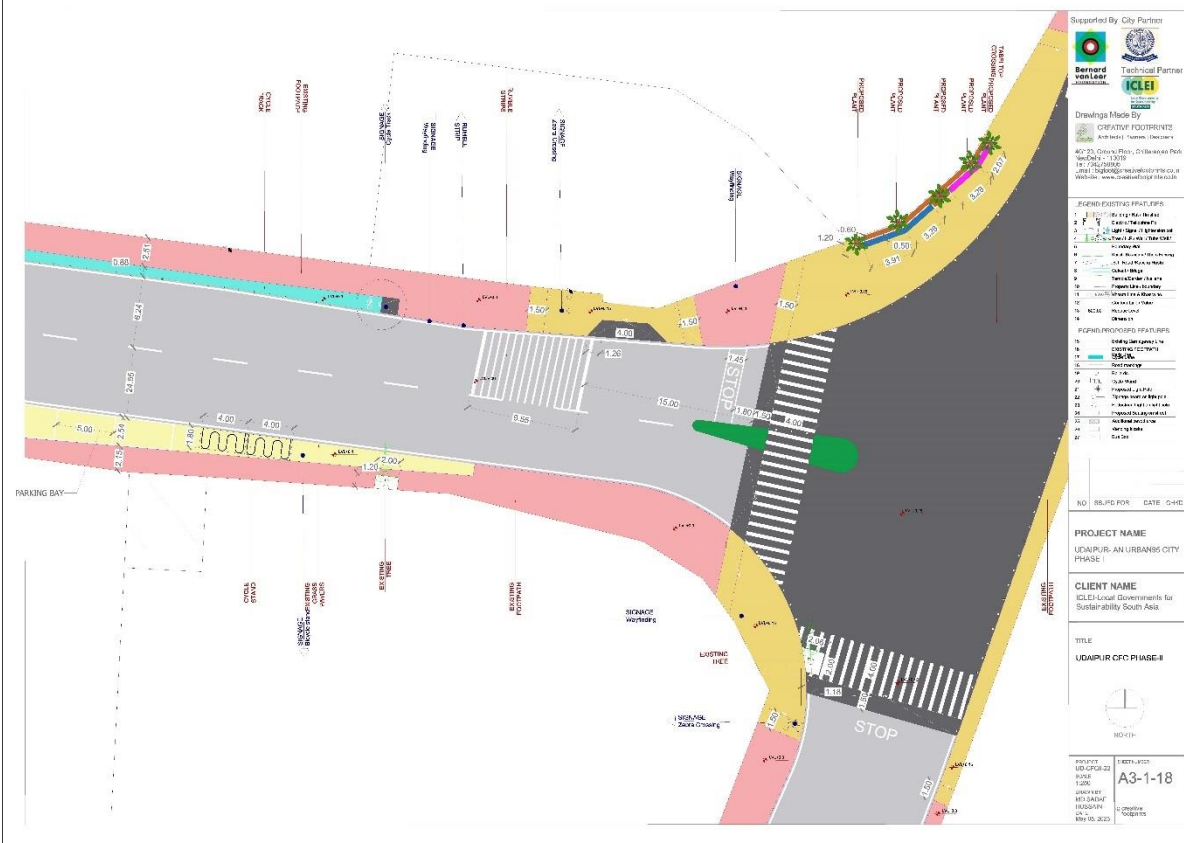
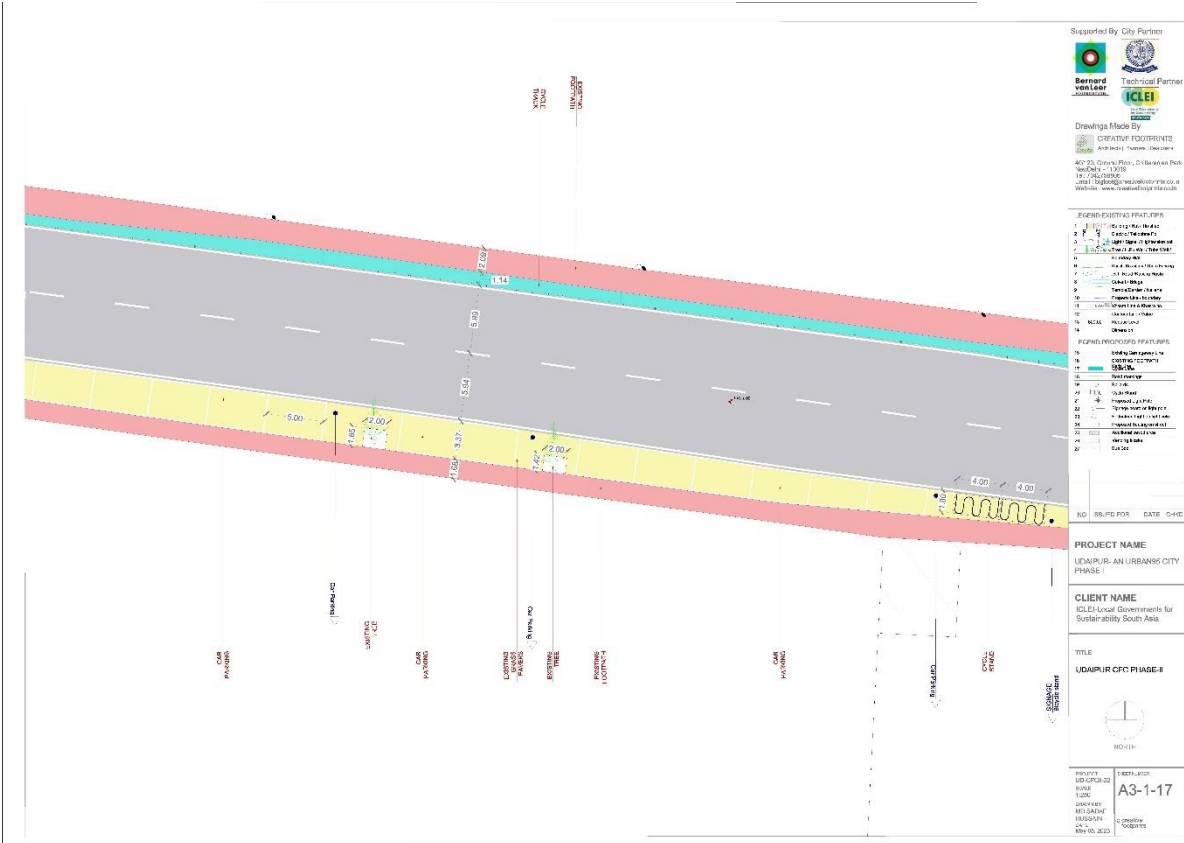


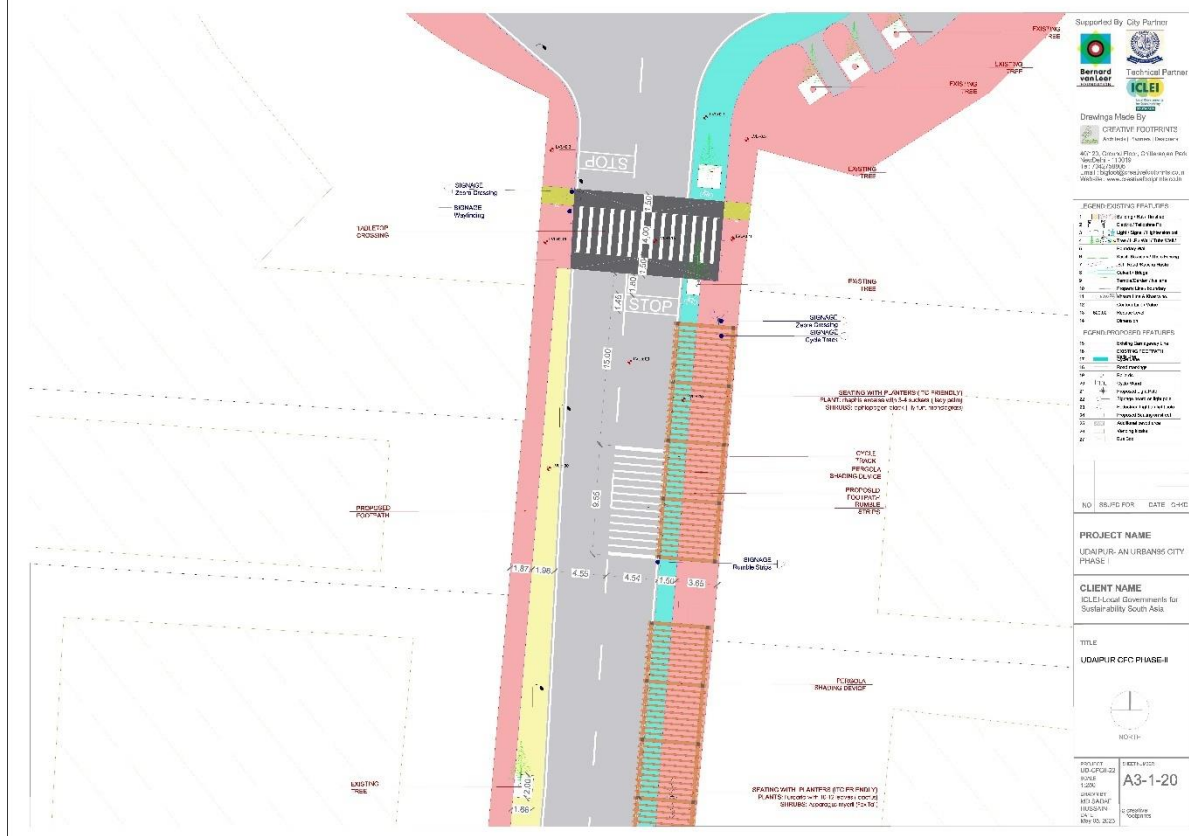


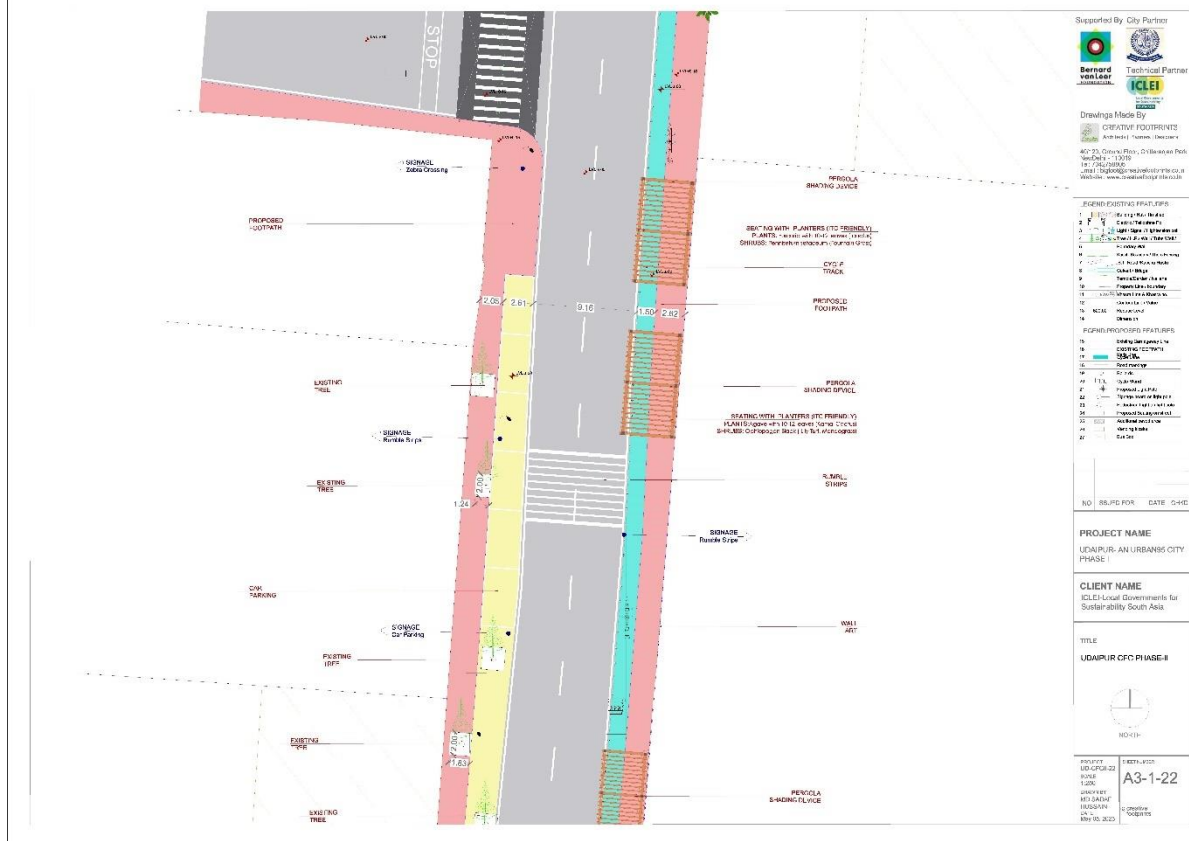
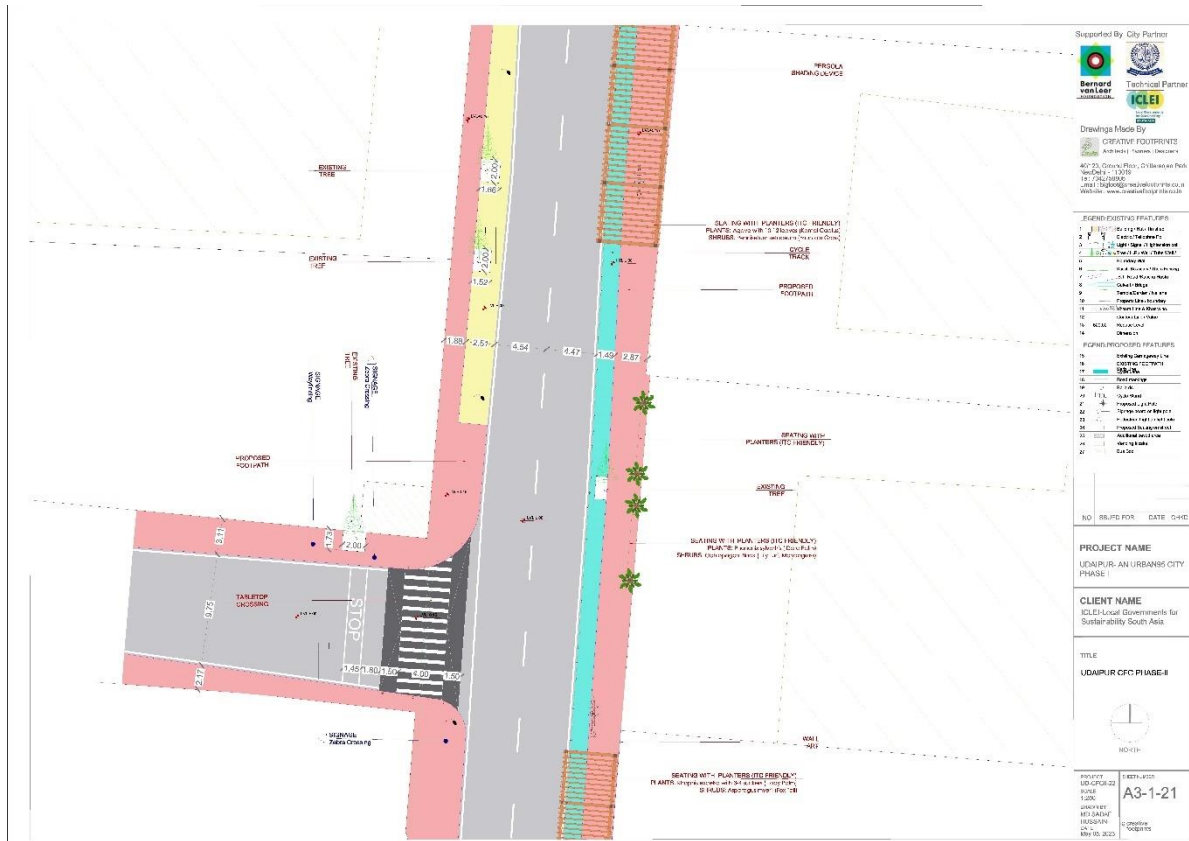


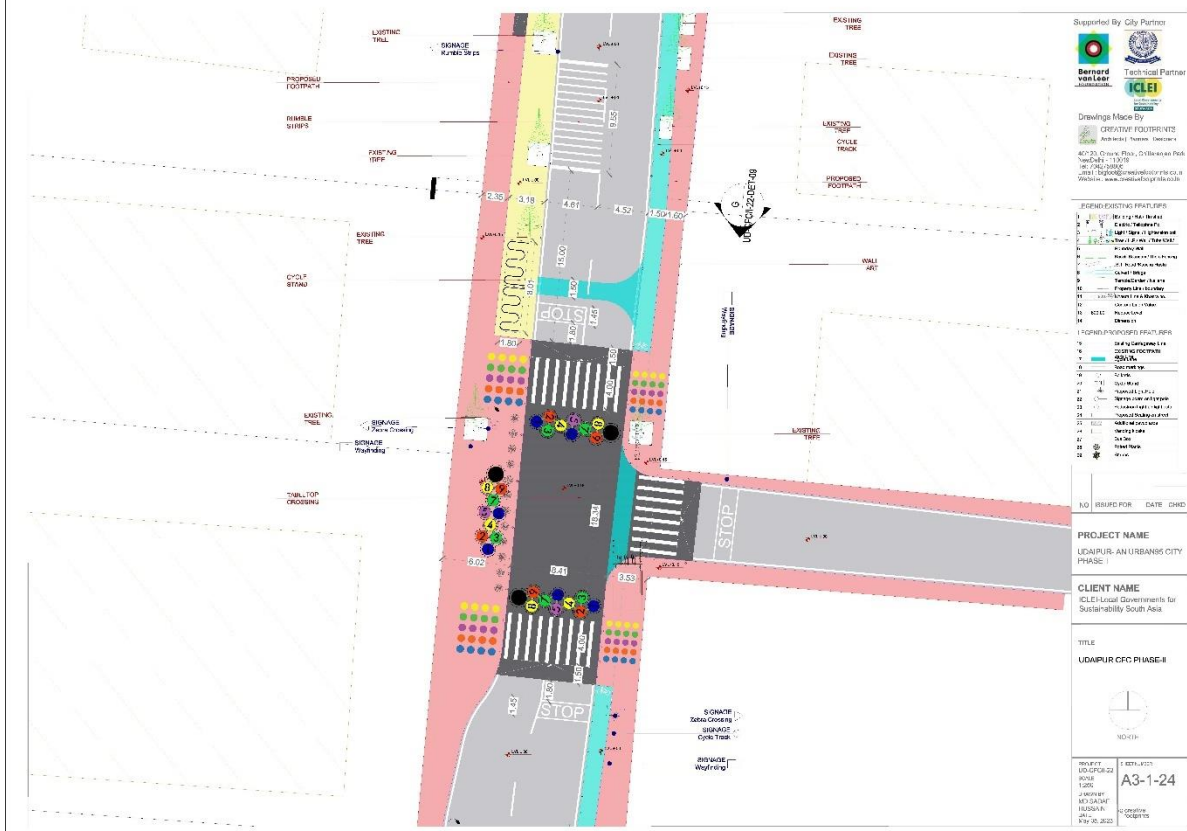
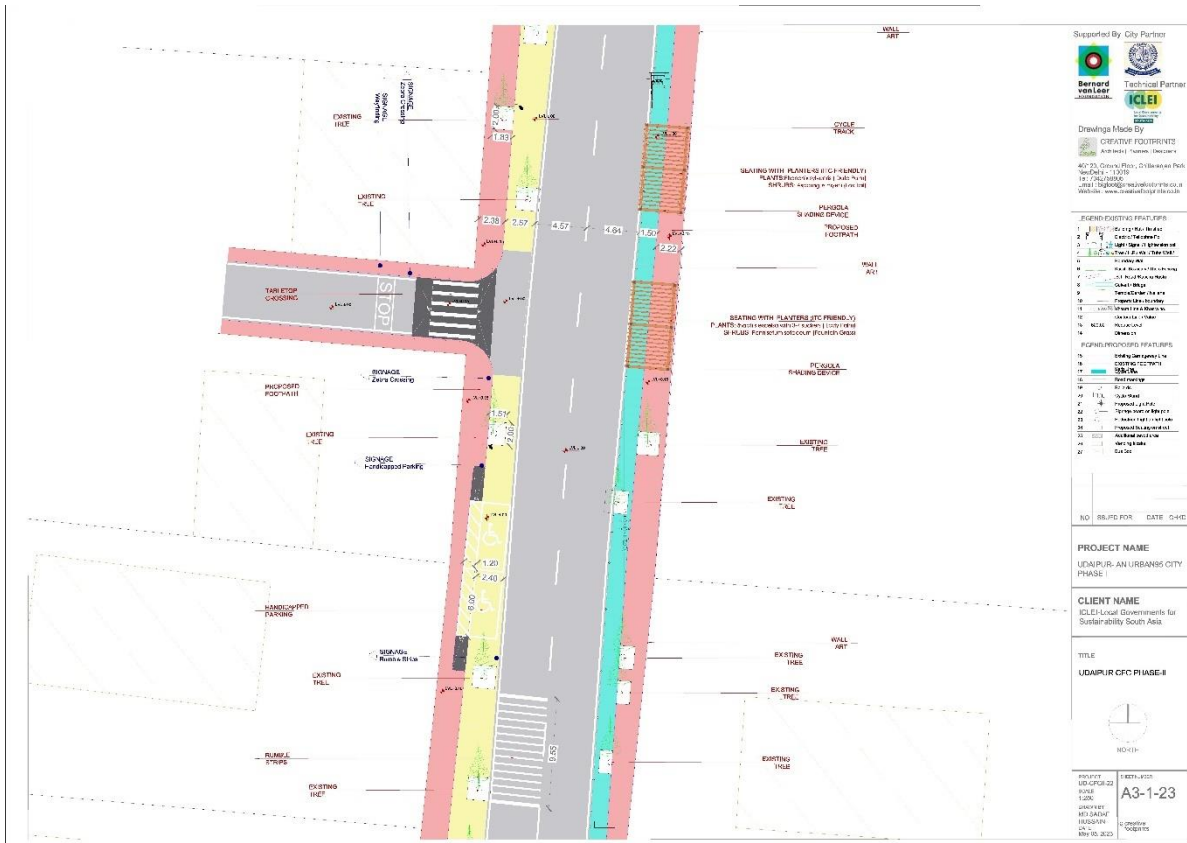


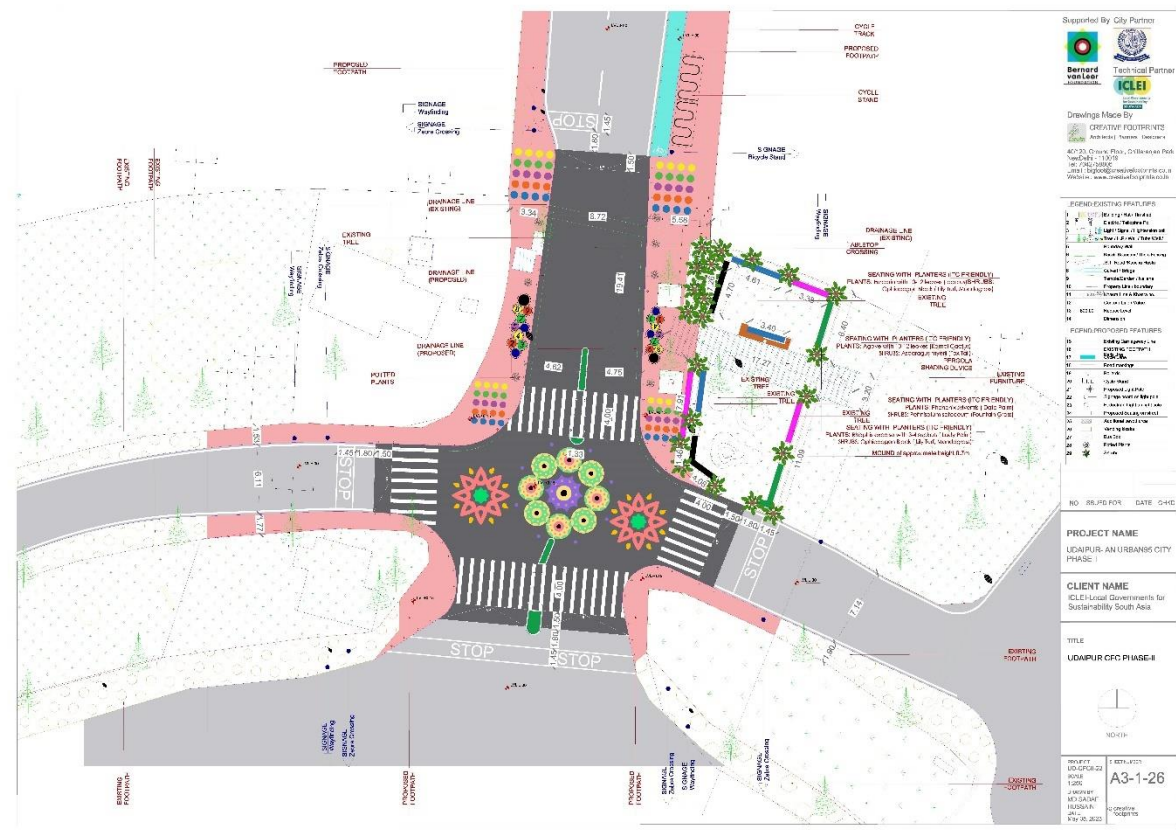
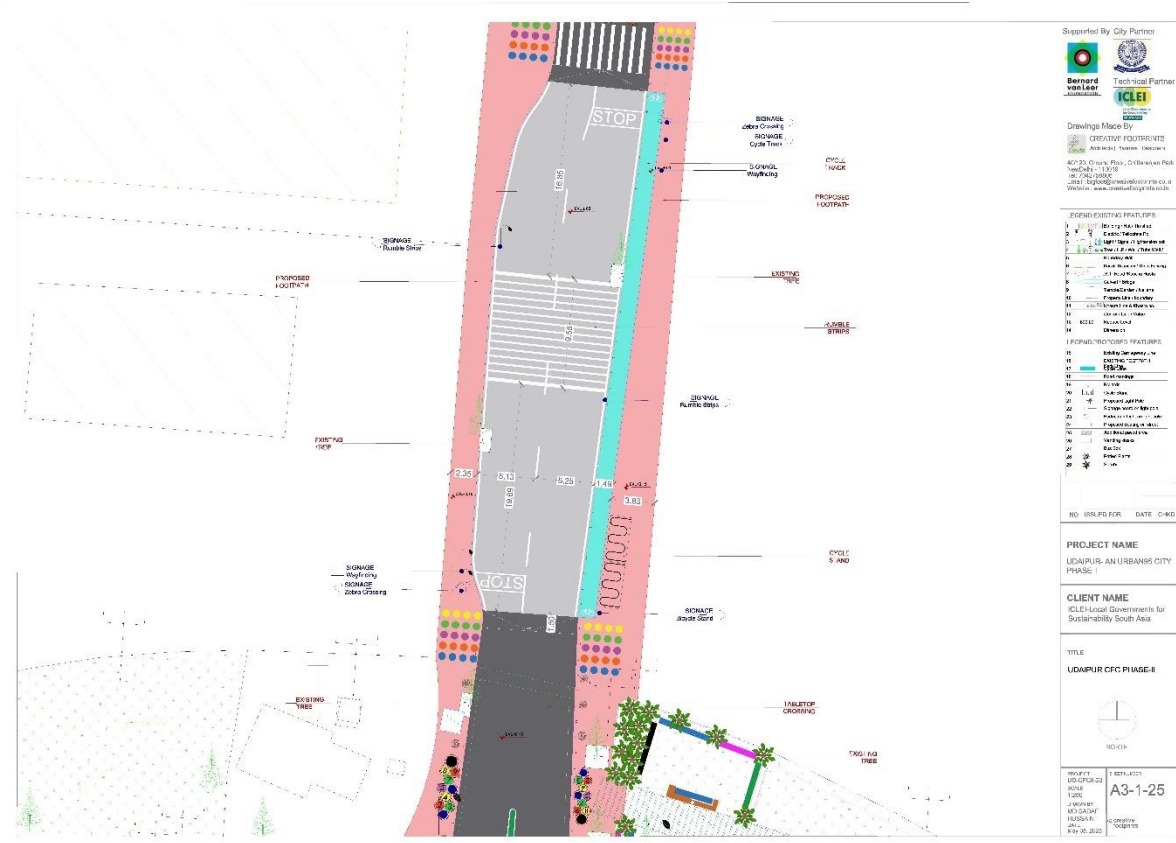


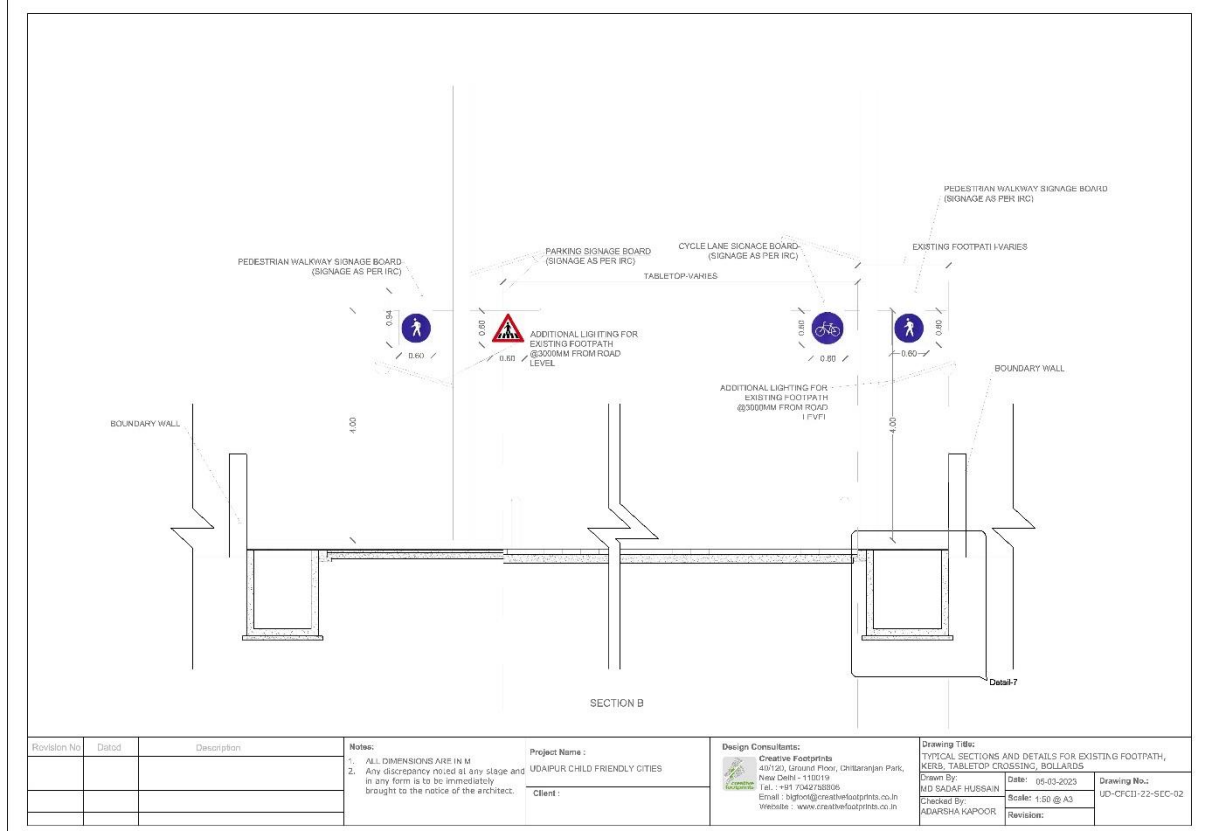
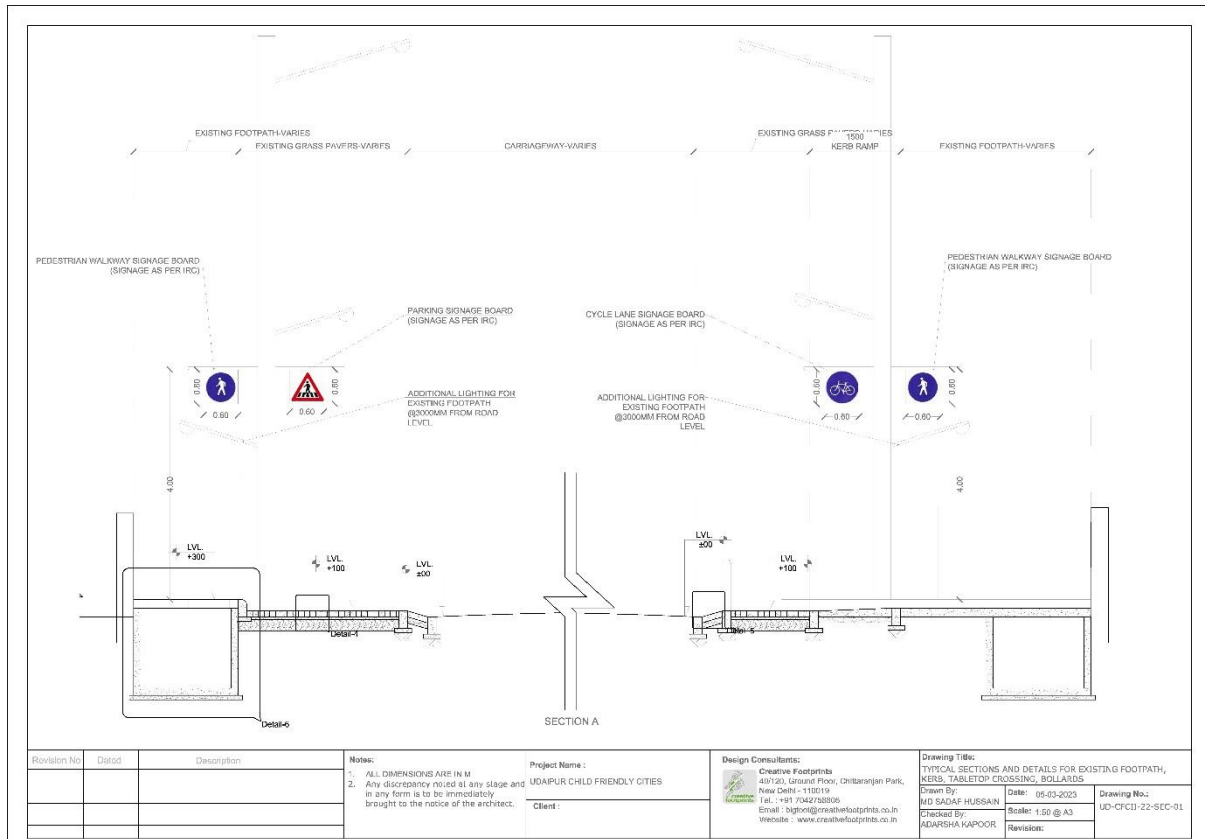


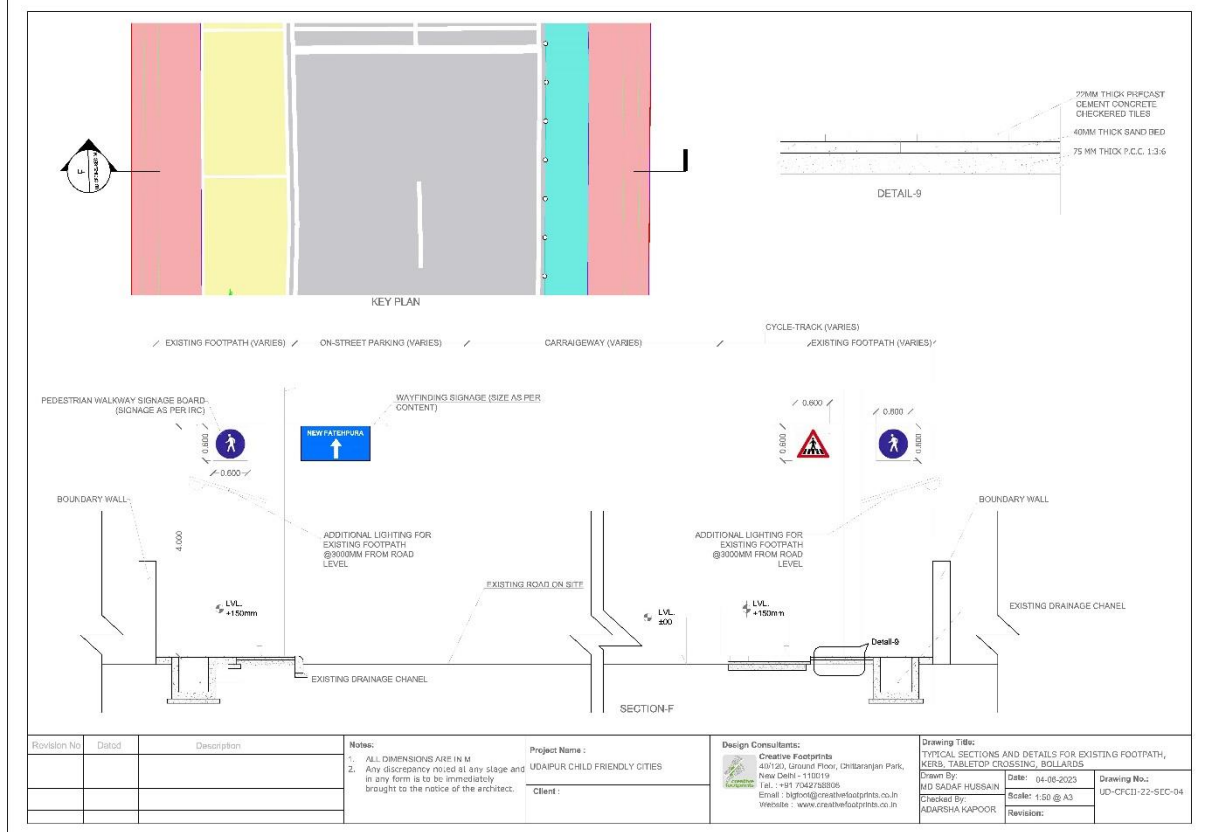
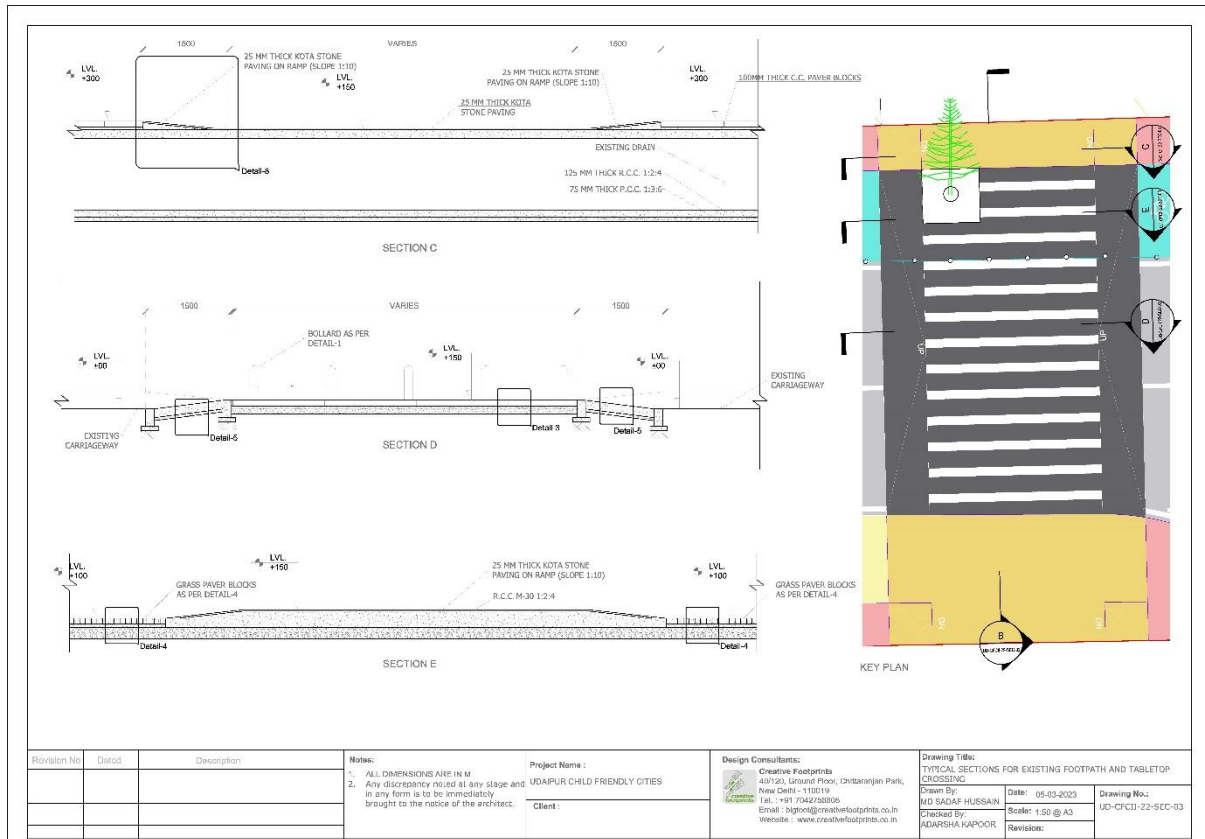


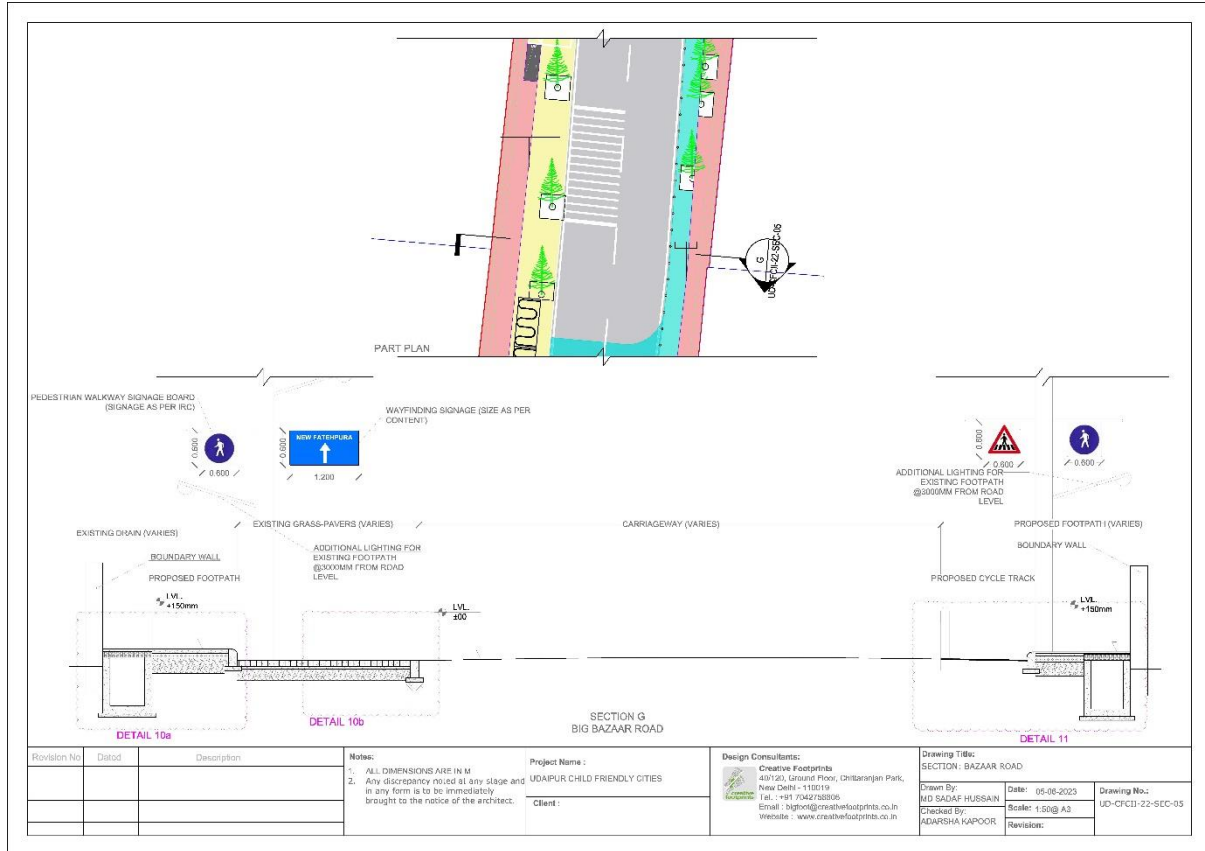


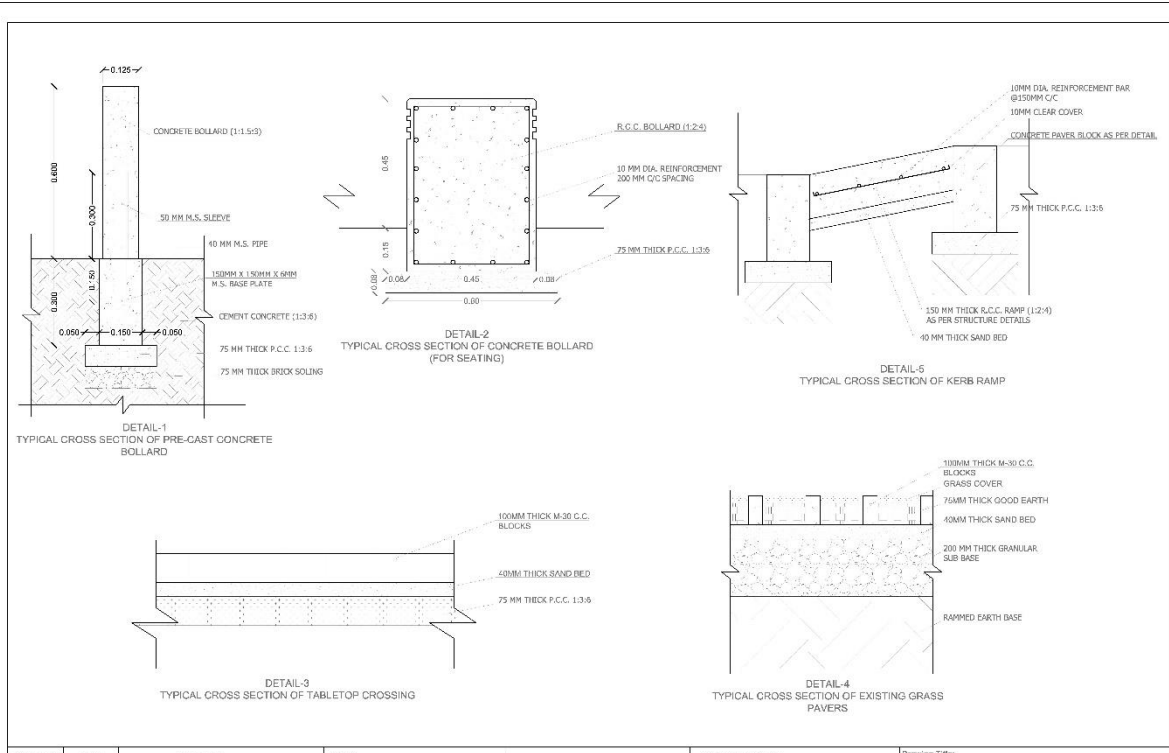




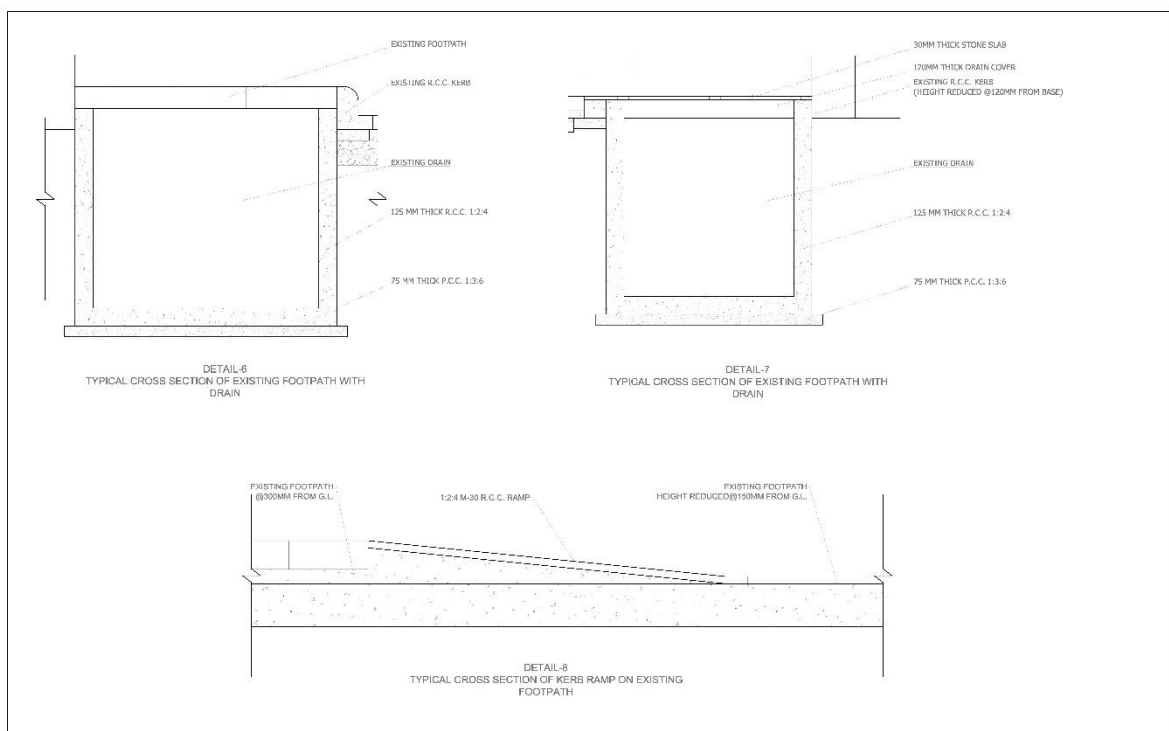




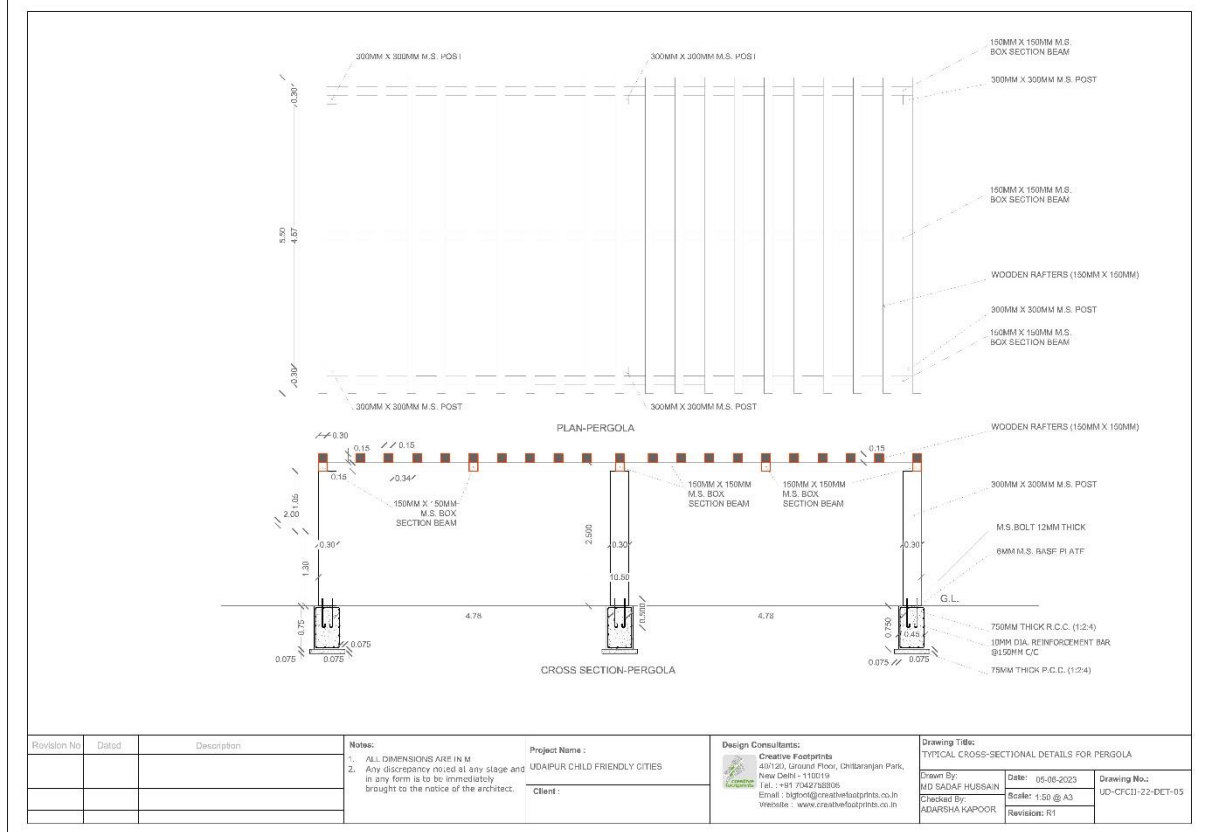
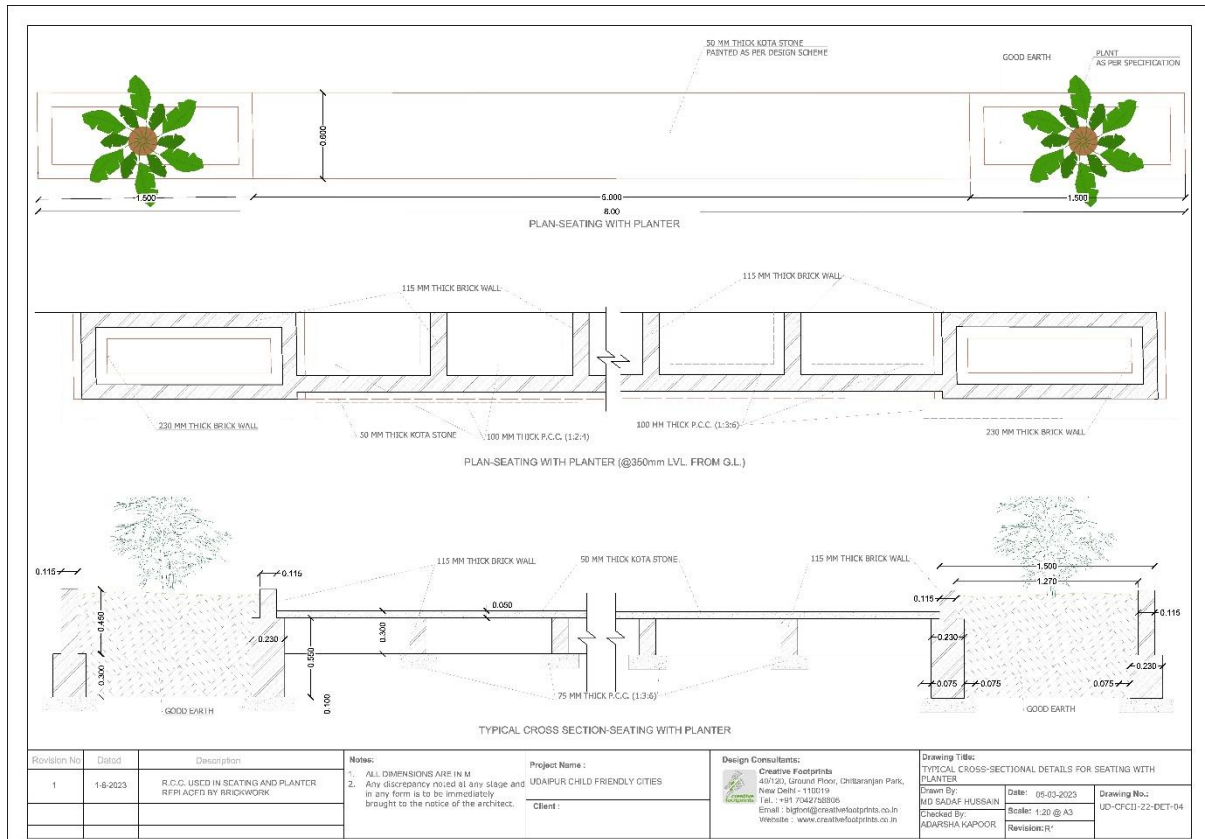




Revision No.	Date	Description	Note:	Project Name:	Design Consultants:	Drawing Title:	Date:	Drawing No.:
1	16-03-2023	DETAIL-1 REVISED	1. ALL DIMENSIONS ARE IN M 2. Any discrepancy noted at any stage and in any form is to be immediately brought to the notice of the architect.	UDAIPUR CHILD FRIENDLY CITIES	Creative Footprints 4/9/20, Ground Floor, Chitranganj Park, New Delhi - 110019 Tel: +91 7342 138306 Email: dgfoot@creativefootprints.co.in Website: www.creativefootprints.co.in	TYPICAL CROSS-SECTIONAL DETAILS FOR BOLLARDS, EXISTING GRASS PAVERS AND TABLETOP CROSSING	01-06-2023	UD-CFCU-22-DCT-01
				Client:	Checked By: ADARSHA KAPOOR	Scale: 1:10 @ A3	Revision: R1	



Revision No.	Date	Description	Note:	Project Name:	Design Consultants:	Drawing Title:	Date:	Drawing No.:
			1. ALL DIMENSIONS ARE IN M 2. Any discrepancy noted at any stage and in any form is to be immediately brought to the notice of the architect.	UDAIPUR CHILD FRIENDLY CITIES	Creative Footprints 4/9/20, Ground Floor, Chitranganj Park, New Delhi - 110019 Tel: +91 7342 138306 Email: dgfoot@creativefootprints.co.in Website: www.creativefootprints.co.in	TYPICAL CROSS-SECTIONAL DETAILS FOR EXISTING FOOTPATH, KERB, TABLETOP CROSSING, BOLLARDS	05-03-2023	UD-CFCU-22-DCT-02
				Client:	Checked By: ADARSHA KAPOOR	Scale: 1:20 @ A3	Revision:	



PLAN-BREASTFEEDING BOOTH

ELEVATION B-BREASTFEEDING BOOTH

ELEVATION A-BREASTFEEDING BOOTH

SECTION X-X' BREASTFEEDING BOOTH

DETAIL 6a

DETAIL 6b

DETAIL 6c

DETAIL 6d

Revision No.	Date	Description

Notes:

- ALL DIMENSIONS ARE IN M
- Any discrepancy noted at any stage and in any form is to be immediately brought to the notice of the architect.

Project Name: UDAIPUR CHILD FRIENDLY CITIES

Client:

Design Consultants:
 Creative Footprints
 43/20, Ground Floor, Chitranganj Park,
 New Delhi - 110019
 Tel: +91 7042 233006
 Email: dlp@creativefootprints.co.in
 Website: www.creativefootprints.co.in

Drawing Title: TYPICAL DETAILS FOR BREASTFEEDING BOOTH

Drawn By: MD SADAF HUSSAIN
Date: 05-03-2023
Scale: 1:25 @ A3

Checked By: ADARSHA KAPOOR
Revision:

Drawing No.: UD-CFCU-22-DCT-06

PLAN-BAMBOO SCREENING OF TRANSFORMERS

ELEVATION A-BAMBOO SCREENING OF TRANSFORMERS

ELEVATION B-BAMBOO SCREENING OF TRANSFORMERS

Notes:

- ALL DIMENSIONS ARE IN M
- Any discrepancy noted at any stage and in any form is to be immediately brought to the notice of the architect.

Project Name: UDAIPUR CHILD FRIENDLY CITIES

Client:

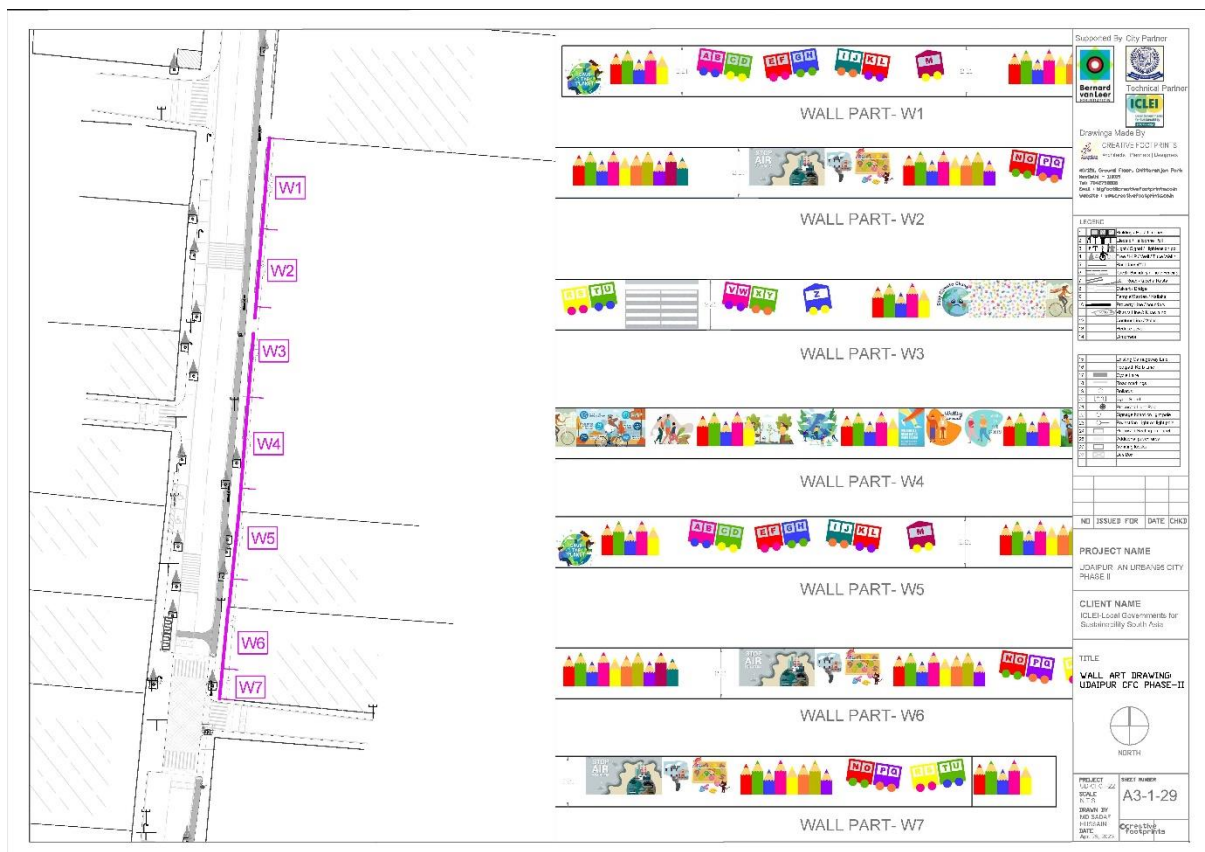
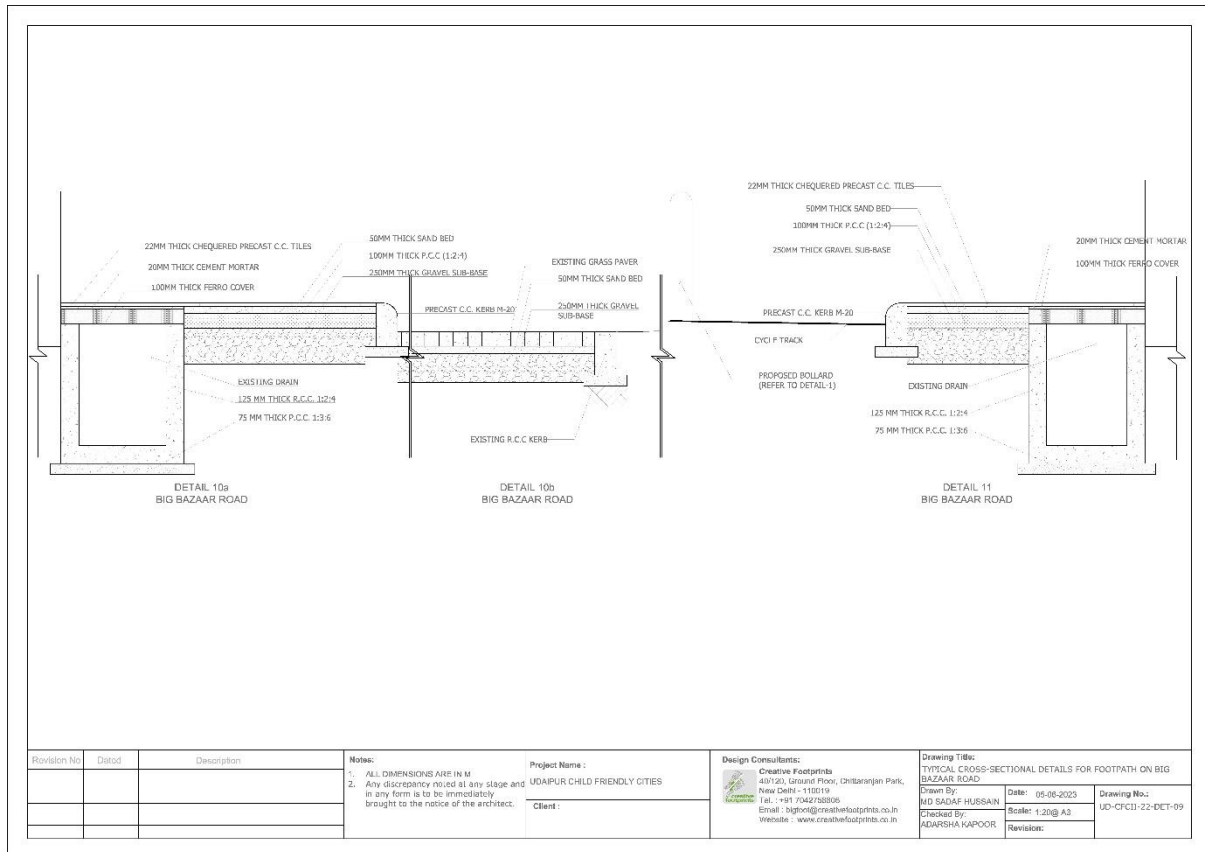
Design Consultants:
 Creative Footprints
 43/20, Ground Floor, Chitranganj Park,
 New Delhi - 110019
 Tel: +91 7042 233006
 Email: dlp@creativefootprints.co.in
 Website: www.creativefootprints.co.in

Drawing Title: TYPICAL DETAILS FOR BAMBOO SCREENING

Drawn By: MD SADAF HUSSAIN
Date: 18-05-2023
Scale: 1:20 @ A3

Checked By: ADARSHA KAPOOR
Revision:

Drawing No.: UD-CFCU-22-DCT-08



12. Annexure B- quantities & Estimation

12.1. Bill of Quantities and estimates

The total estimated cost for all works required to implement ITC friendly 1.5Km connected shared street including three child and family friendly junctions is **INR 1,68,86,109/-**

Table 9: Summary of Estimate for Works

Development of three Child and Family-friendly junctions and 1.5km Connected shared Street at Saheli Marg (Total Including O&M)		
S/n	PARTICULAR FOR SAHELI MARG	Amount
1	Part A – Saheli Marg	57,67,856.00
	Part B – Big Bazaar Road	95,83,153.00
	Subtotal (Part A+ Part B)	1,53,51,008.00
2	Part C - O&M for 5 years (@10% of subtotal)	15,35,101.00
3	Grand Total (Part A +Part B +Part C)	INR 1,68,86,109.00

Table 10: Estimate for Works on Saheli Marg

S.No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
SM-01	24.1	Brick work with FPS bricks of class designation 75 in foundation and plinth in:				
	24.1.1	Cement mortar 1:4 (1 cement : 4 coarse sand) Full Brick work in footing of seating with planter	cum	₹ 5,160.00	23.48	₹ 1,21,143
SM-02	24.7	Brick work 7 cm thick with FPS brick of class designation 75 in cement mortar 1:3 (1 cement : 3 coarse sand) in superstructure				
		Half brick work in seating with planter	sqm	₹ 528.00	250.78	₹ 1,32,413
SM-03	32.2	Cement plastering including T&P, scaffolding, material and complete labour, including cost of water, curing, racking of joints etc. with 15 mm cement plaster on the rough side of single or half brick wall of mix :				
	32.2.1	1:4 (1 cement : 4 fine/ coarse sand) Plaster on seating with planter	sqm	₹ 237.00	250.78	₹ 59,435
SM-04	9.10	Providing and fixing of precast concrete interlocking tiles of desired shape of M 30 grade manufactured from fully computerized automatic stationery hydraulic vibro pressed machine and fully computerized automatic batching plant of class A1/A2 as per BS 6717:2001. The CC interlocking paving blocks be laid on average 50mm. thick bed of coarse sand and the joint is to be filled with fine sand. Laying procedure on compacted sub-base as defined. Complete job is to be executed as per the instruction of Engineer incharge. The rates to be inclusive of all lead & Lifts etc. complete as per specifications. Tensile splitting strength, abrasion and braking load etc. as per BS 6717:2001, Grey cement.				
	9.10.3	100mm thick In Table tops	sqm	₹ 752.00	3028.66	₹ 22,77,552
SM-05	10.8	Providing and laying marking of center line and stop line etc with hot thermoplastic compound 2.5 mm thick on road/ plain surface, including reflectorising glass beads @ 250 gms per sqm area with special applicator machine, as per IRC:35 including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control involved. The finished surface to be level, uniform and free from streaks and holes as per clause 803 of MoRT&H Specification including all material, labour, machinery, lighting, guarding and maintenance of diversion.	sqm	₹ 428.00	1447.48	₹ 6,19,522
SM-06	10.9	Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 3 metre long and size 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing including all material, labour.				
	10.9.2	60 cm equilateral triangle	each	₹ 2,895.00	74.00	₹ 2,14,230
	10.9.3	60 cm circular	each	₹ 3,845.00	11.00	₹ 42,295

S.No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		Both the above are traffic signage				
SM-07	39.3	Supplying and stacking good earth at site of work.				
		1) Loading, unloading and carriage to be paid extra as per actual lead.				
		2) Earth measured in stacks will be reduced by 20% for payment				
		Good Earth in Seating with Planter	cum	₹ 206.00	18.17	₹ 3,742
		Good Earth in traffic island	cum	₹ 206.00	3.09	₹ 636
SM-08	E181300	Providing & Fixing of IK07 IP 66 protected LED Street Light Luminaire on existing bracket/pole. Fixture made of powder coated single piece pressure die cast aluminum LM6/ ADC12 material with heat dissipation fins on housing with UV stabilized PC/Toughened Glass cover (UV stabilization report submitted for UV cover) and secondary lens on each LED & should be SMD type . The System level Luminaire efficacy ≥ 120 lm/ wt with High Power LEDs is to be used and potted driver must be potted & has a unique BIS R number with Input Voltage AC 120 to 270 V AC with High voltage Cutoff ≥ 300 V AC and Auto resetting Safety ,Input Frequency 50Hz \pm 3% Power Factor >0.95 driver Efficiency $>85\%$,THD(I) 70 and CCT 5700K +355K. Surge protection shall be min ≥ 4 KV internal and min 10 KV external. driver should be Phase to phase protection of 440 V for 4 Hrs. Manufactures Word Mark/Name Engraved/Embossing on die cast housing to allow traceability/authenticity. Fixture shall be AS PER IS 10322 Complied. OEM Must have its own in house NABL lab setup for all testing facilities for LED fixtures. (LM79/LM80) Certificate/ report with liable warranty of product/accessories from OEM shall be submitted. All as per pre approved by Engineer in charge. For additional technical parameters of products/ work , refer Annexure "A" attached with this BSR .				
	E181304	LED Street Light fixture 60 Watt Street lights to be fixed on existing poles/ posts.	Each	₹ 4,794.00	32.00	₹ 1,53,408
SM-09	10.10	Providing and erecting direction and place identification retroreflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick framed to angle iron 40x40x5mm with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing including all material, labour.	sqm	₹ 9,510.00	11.00	₹ 1,04,610
		For rectangular wayfinding signage (size as per content)				
SM-10	4.1	Dressing of earth work in surface excavation including cutting and filling upto 30cm depth including disposal of excavated earth upto 50m and lift upto 1.5 m.				
		Dressing of earth in planter of seating	sqm	₹ 37.80	60.55	₹ 2,289
SM-11	4.2	Earth work in excavation for roadway, including trimming bottom and side slopes in				

S.No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		accordance with requirement of line, grades and cross sections, including disposal of surplus material with all lift and lead upto 1000 metre as per MoRT&H specification clause 301.				
	4.2.1	In all type of soil				
		Excavation for table tops	cum	₹ 214.50	454.30	₹ 97,447
		Excavation for zebra crossing ramps	cum	₹ 214.50	2.38	₹ 511
		Excavation for table top ramps	cum	₹ 214.50	2.84	₹ 609
		Excavation for Traffic Islands	cum	₹ 214.50	6.16	₹ 1,322
SM-12	32.35	Finishing walls with Acrylic Smooth exterior paint of required shade :				
	32.35.1	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kg/ 10 sqm).				
		Floor Art	sqm	₹ 134.50	1382.14	₹ 1,85,898
		Wall Art	sqm	₹ 134.50	63.48	₹ 8,538
		Walls of seating with planter	sqm	₹ 134.50	250.78	₹ 33,730
SM-13	12.7	Providing and fixing stone slab covering of required size over drains including filling of joints with cement sand mortar 1:3 complete as per direction of Engineer-in-charge.				
	12.7.2	Average thickness 40 to 50 mm				
		Benches (Kota Stone) rectangular Units	sqm	₹ 383.00	110.40	₹ 42,283
		Benches (Kota Stone) curved	sqm	₹ 383.00	23.70	₹ 9,077
		For kota stone finish on seating with planter				
SM-14	28.155	Supply and Installation of SMALL ROOM (TOILET & GUARD ROOM) with following thickness PREFABRICATED INSULATED PPGL FACE closed lip panels (for door, wall and roof) of thickness mentioned below. Panel shall have 0.50mm (+/-0.04mm) thick pre-coated metal sheet on both sides of rigid PUR insulation. The pre-coated metal sheet shall be PPGL (Pre Painted Galvalume Sheet with AZ coating) sheet having SDP (Super Durable Polyester) colour coat of 18 micron(min). The Pre coated metal sheet on both sides must be pre-strengthened by full lengthwise stiffening with semicircular beading of 12mm wide & 3mm depth at 240 (+/-5) mm pitch. Panels shall have closed lengthwise sides made by right angle flange on both side of Pre coated metal sheets, free from cap type covers. The top and bottom part on width wise sides of panels must have full width MS Square tube insert of (min 25mm x 1.0mm) for better screw retention and strength. The insulation core shall be selfextinguishing DIN 4102,Class B3 fire retardant class rigid PUR with thermal conductivity of 0.025 W/mK and with density of 40kg/m ³ (+/- 2kg) suitable for temperature range of -30 degree C to +80 degree C. The panel must be made using glue-free high pressure hot pressing self-bonding method free from major undulations. PPGL sheet on both sides of panel shall have a min15 micron protective plastic guard film to avoid scratches during transportation.				
	28.155.2	Thickness of 50mm (+/-2mm)				
		For breast feeding booth in front of Saheliyon Ki Bari Entrance	sqm	₹ 3,345.00	25.92	₹ 86,702
SM-15	DSR-2021-4.9	Precasting and placing in position 125 mm dia Bollards 600 mm high of required shape				

S.No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		including providing M.S. Pipe Sleeve 50 mm dia 300 mm long in the Bollard and M.S. Pipes 40 mm dia and 450mm long with 150x150x6mm M.S. plate welded at bottom and embedded 150mm in cement concrete 1:3:6 (1 Cement : 3 coarse sand (zone-III) derived from natural sources : 6 graded stone aggregate 20 mm nominal size derived from natural sources), including necessary excavation of size 250x250x450mm deep for the same in bitumen/concrete pavement at specified spacing.				
		Precast bollards, including all items and cement in the foundation, but excluding cement in the section above ground	each	₹ 785.70	1081.00	₹ 8,49,342
SM-16	21.1	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work upto plinth level :				
	21.1.2	1:1½:3 (1 Cement : 1½ coarse sand : 3 graded stone aggregate 20 mm nominal size). Cement in the section above ground of precast concrete bollards	cum	₹ 5,810.00	7.32	₹ 42,524
SM-17	21.1	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work upto plinth level :				
	21.1.5	1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size). P.C.C. in Seating Bollards (12 nos)	cum	₹ 4,785.00	0.25	₹ 1,217
		P.C.C. In seating with planters	cum	₹ 4,785.00	3.18	₹ 15,206
SM-18	23.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases upto two stories excluding the cost of centring, shuttering, finishing and reinforcement:				
	23.3.1	M-15 Grade Concrete (1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) -As per design mix)				
		R.C.C. In table tops	cum	₹ 6,580.00	5.68	₹ 37,389
		R.C.C. In table tops ramps	cum	₹ 6,581.00	4.76	₹ 31,331
		R.C.C. In footpath ramps	cum	₹ 6,582.00	6.58	₹ 43,288
	23.3.2	M-20 Grade Concrete (1:1½:3 (1 cement : 1½ coarse sand : 3 graded stone aggregate 20 mm nominal size) -As per design mix)				
		R.C.C. In Seating Bollards	cum	₹ 7,030.00	1.14	₹ 8,046
SM-19	39.41	Supply and planting following in poly bags / earthen pots well branched, well established & free from disease of 300 mm min. height ground covers at site in 0.3 m dia holes, 0.3 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, backfilling the hole watering etc as required.				
	39.41.4	Ophiopogon Black (Lily Turf, Mondoglass)	sqm	₹ 268.50	20.18	₹ 5,419
	39.41.5	Asparagus myerii (Fox Tail)	sqm	₹ 388.50	20.18	₹ 7,841
	39.41.9	Pennisetum setaceum (Fountain Grass)	sqm	₹ 255.50	20.18	₹ 5,157
SM-20	28.113	Providing and fixing Bamboo jaffery/ fencing consisting of superior quality 25mm dia (Average) half cut bamboo placed vertically and fixed together with three numbers horizontal running members of hollock wood in scantling of section 50X25mm fixed with				

S.No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		nails and G.I wire to existing surface complete as per direction of Engineer-in-charge.				
		Bamboo Jafri for screening of transformers on the road (Refer dwg. UD-CFCII-22-DET-08)	sqm	₹ 526.00	100.80	₹ 53,021
SM-21	32.47	Providing and applying two coats of fire retardant paint unthinned on cleaned wood/ply surface @ 3.5 sqm per litre per coat including preparation of base surface as per recommendations of manufacturer to make the surface fire retardant.				
		Fire retardant paint for bamboo jafri	sqm	₹ 314.50	100.80	₹ 31,702
SM-22	23.19	Reinforcement for R.C.C. work at all levels including straightening, cutting, bending, placing in position and binding all complete.				
	23.19.6	Thermo-Mechanically Treated bars.				
		Reinforcement bars in R.C.C. for Table tops, its ramps and footpath ramps	kg	₹ 64.20	2013.00	₹ 1,29,235
		Reinforcement bars in R.C.C. for Seating Bollards	kg	₹ 64.20	139.37	₹ 8,948
SM-23	10.1	Providing and fixing precast cement concrete M-20 grade (Using mechanical Concrete Mixer) kerb stone top and bottom width 115 and 165 mm respectively, 250 mm high on 150 mm thick PCC M-10 grade foundation as per design, including fixing at site as per clause 408 of MoRT&H Specification including all material, labour, machinery, lighting, guarding and maintenance of diversion.				
		Kerbstone for traffic island at Fatehpura Junction	metre	₹ 312.50	28.40	₹ 8,875
SM-24	39.13	Grassing with ' Carpet ' grass (selection no. 1) including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed.(The good earth shall be paid separately)				
	39.13.2	With grass Turf				
		Grass on Fatehpura Junction Traffic Island	sqm	₹ 1,049.00	16	₹ 17,252
SM-25	32.55	Floor painting with floor enamel paint of approved brand and manufacture of required colour to give an even shade:				
	32.55.1	Two or more coats on new work.	sqm	₹ 108.50	2175	₹ 2,36,033
		Cycle Track Blue paint				
SM-26	Non Scheduled	Procurement for Cycle Stands	Each	₹ 9,660.00	4.00	₹ 38,640
SM-27		TOTAL (in Rs.)				₹ 57,67,856

Table 11: Estimate for Works on Big Bazar Road

S. No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
BB-01	24.1	Brick work with FPS bricks of class designation 75 in foundation and plinth in:				
	24.1.1	Cement mortar 1:4 (1 cement : 4 coarse sand)				
		Full Brick work in footing of seating with planter	cum	₹ 5,160.00	17.24	₹ 88,960
BB-02	24.7	Brick work 7 cm thick with FPS brick of class designation 75 in cement mortar 1:3 (1 cement : 3 coarse sand) in superstructure				

S. No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		Half brick work in seating with planter	sqm	₹ 528.00	183.16	₹ 96,708
BB-03	32.2	Cement plastering including T&P, scaffolding, material and complete labour, including cost of water, curing, racking of joints etc. with 15 mm cement plaster on the rough side of single or half brick wall of mix :				
	32.2.1	1:4 (1 cement : 4 fine/ coarse sand) Plaster on seating with planter	sqm	₹ 237.00	183.159	₹ 43,409
BB-04	30.21	Chequerred precast cement concrete tiles 22 mm thick in footpath & courtyard jointed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and cleaning etc. complete on 20 mm thick bed of cement mortar 1:4 (1 cement: 4 coarse sand).				
	30.21.3	Dark shade using ordinary cement. Finish for proposed pavements along Big Bazar Road	sqm	₹ 854.00	2907.09	₹ 24,82,655
BB-05	10.1	Providing and fixing precast cement concrete M-20 grade (Using mechanical Concrete Mixer) kerb stone top and bottom width 115 and 165 mm respectively, 250 mm high on 150 mm thick PCC M-10 grade foundation as per design, including fixing at site as per clause 408 of MoRT&H Specification including all material, labour, machinery, lighting, guarding and maintenance of diversion.				
		Kerb stone for new footpath along the road side opposite to big bazar from semi circular junction upto Sukhadia Circle	met re	₹ 312.50	1086.68	₹ 3,39,588
		Kerb stone for traffic island at Sukhadiya circle	met re	₹ 312.50	24.6	₹ 7,688
BB-06	9.10	Providing and fixing of precast concrete interlocking tiles of desired shape of M 30 grade manufactured from fully computerized automatic stationery hydraulic vibro pressed machine and fully computerized automatic batching plant of class A1/A2 as per BS 6717:2001. The CC interlocking paving blocks be laid on average 50mm. thick bed of coarse sand and the joint is to be filled with fine sand. Laying procedure on compacted sub-base as defined. Complete job is to be executed as per the instruction of Engineer incharge. The rates to be inclusive of all lead & Lifts etc. complete as per specifications. Tensile splitting strength, abrasion and braking load etc. as per BS 6717:2001, Grey cement.				
	9.10.3	100mm thick C.C. Paver Blocks at Table Top of Sukhadia Circle Jn.	sqm	₹ 752.00	552.150	₹ 4,15,217
		C.C. Paver Blocks at Table Top of Smart Bazaar Jn.	sqm	₹ 752.00	269.550	₹ 2,02,702
		C.C. Paver Blocks at Table Top of Vinayak Complex Jn.	sqm	₹ 752.00	45.660	₹ 34,336
		C.C. Paver Blocks at Table Top of Kumbha Marg Jn.	sqm	₹ 752.00	20.730	₹ 15,589
		C.C. Paver Blocks at Table Top crossing near semi-circular roundabout	sqm	₹ 752.00	40.080	₹ 30,140
BB-07	10.8	Providing and laying marking of center line and stop line etc with hot thermoplastic compound 2.5 mm thick on road/ plain surface, including reflectorising glass beads @ 250 gms per sqm area with special applicator machine, as per IRC:35 including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control involved. The finished surface to be level, uniform and free from streaks and holes as per clause 803 of MoRT&H Specification including all material, labour, machinery, lighting, guarding and maintenance of diversion.	sqm	₹ 428.00	904.586	₹ 3,87,163
BB-08	10.9	Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made				

S. No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 3 metre long and size 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing including all material, labour.				
	10.9.2	60 cm equilateral triangle	each	₹ 2,895.00	27	₹ 78,165
	10.9.3	60 cm circular	each	₹ 3,845.00	3	₹ 11,535
		Both the above are traffic signage				
BB-09	39.3	Supplying and stacking good earth at site of work.				
		1) Loading, unloading and carriage to be paid extra as per actual lead.				
		2) Earth measured in stacks will be reduced by 20% foe payment				
		Good earth in planters with seating	cum	₹ 299.50	16.467	₹ 4,932
		Good earth in traffic island	cum	₹ 299.50	1.125	₹ 337
BB-10	39.2	Preparation of mounds of various size and shape by available excavated/surplus/earth in layers not exceeding 20 cm in depth, breaking clods, watering of each layer, dressing etc.lead upto 50 meters and lift upto 1.5 m as per direction of officers in charge.				
		Mound of approximate height 0.7m at proposed ITC seating and recreation area at Sukharia Circle Junction (refer dwg. A3-1-26)	cum	₹ 354.00	12	₹ 4,248
BB-11	E181300	Providing & Fixing of IK07 IP 66 protected LED Street Light Luminaire on existing bracket/pole. Fixture made of powder coated single piece pressure die cast aluminum LM6/ ADC12 material with heat dissipation fins on housing with UV stabilized PC/Toughened Glass cover (UV stablzation report submitted for UV cover) and secondary lens on each LED & should be SMD type . The System level Luminaire efficacy >=120 lm/ wt with High Power LEDs is to be used and potted driver must be potted & has a unique BIS R number with Input Voltage AC 120 to 270 V AC with High voltage Cutoff @>=300 V AC and Auto resetting Safety ,Input Frequency 50Hz±3% Power Factor >0.95 driver Efficiency >85% ,THD(I) 70 and CCT 5700K +355K. Surge protection shall be min ≥ 4 KV internal and min 10 KV external. driver should be Phase to phase protection of 440 V for 4 Hrs.				
		Manufactures Word Mark/Name Engraved/Embossing on die cast housing to allow traceability/authenticity. Fixture shall be AS PER IS 10322 Complianced. OEM Must have its own in house NABL lab setup for all testing facilities for LED fixtures. (LM79/LM80) Certificate/ report with liable warranty of product/accessories from OEM shall be submitted. All as per pre approved by Engineer in charge. For additional technical parameters of products/ work , refer Annexure "A" attached with this BSR .				
	E181304	LED Street Light fixture 60 Watt Fixing street lights on existing poles/ posts	Each	₹ 4,794.00	6.00	₹ 28,764
BB-12	10.10	Providing and erecting direction and place identification retroreflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick framed to angle iron 40x40x5mm with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the				

S. No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
		ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing including all material, labour.				
		For rectangular wayfinding signage (size as per content)	sqm	₹ 9,510.00	13	₹ 1,23,630
BB-13	4.1	Dressing of earth work in surface excavation including cutting and filling upto 30cm depth including disposal of excavated earth upto 50m and lift upto 1.5 m.	sqm	₹ 37.80	54.89	₹ 2,075
		Dressing of the proposed mound near Sukhadiya Circle junction				
BB-14	4.2	Earth work in excavation for roadway, including trimming bottom and side slopes in accordance with requirement of line, grades and cross sections, including disposal of surplus material with all lift and lead upto 1000 metre as per MoRT&H specification clause 301.				
	4.2.1	In all type of soil				
		Excavation for table tops	cum	₹ 214.50	139.23	₹ 29,864
		Excavation for zebra crossing ramps	cum	₹ 214.50	8.29	₹ 1,778
		Excavation for table top ramps	cum	₹ 214.50	6.72	₹ 1,442
		Excavation for traffic islands	cum	₹ 214.50	2.26	₹ 485
BB-15	10.29	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work in all kind of soil.				
		Excavation and backfilling for foundation of pergola posts	cum	₹ 408.50	7.34	₹ 3,000
BB-16	32.35	Finishing walls with Acrylic Smooth exterior paint of required shade :				
	32.35.1	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kg/ 10 sqm).				
		Floor Art	sqm	₹ 134.50	1435.38	₹ 1,93,059
		Wall Art	sqm	₹ 134.50	320.64	₹ 43,126
		Walls of seating with planter	sqm	₹ 134.50	183.16	₹ 24,635
BB-17	12.7	Providing and fixing stone slab covering of required size over drains including filling of joints with cement sand mortar 1:3 complete as per direction of Engineer-in-charge.				
	12.7.2	Average thickness 40 to 50 mm				
		For kota stone finish on seating with planter	sqm	₹ 383.00	75.3	₹ 28,840
BB-18	DSR-2021-4.9	Precasting and placing in position 125 mm dia Bollards 600 mm high of required shape including providing M.S. Pipe Sleeve 50 mm dia 300 mm long in the Bollard and M.S. Pipes 40 mm dia and 450mm long with 150x150x6mm M.S. plate welded at bottom and embedded 150mm in cement concrete 1:3:6 (1 Cement : 3 coarse sand (zone-III) derived from natural sources : 6 graded stone aggregate 20 mm nominal size derived from natural sources), including necessary excavation of size 250x250x450mm deep for the same in bitumen/concrete pavement at specified spacing.				
		Precast bollards, including all items and cement in the foundation, but excluding cement in the section above ground	each	₹ 785.70	407	₹ 3,19,780
BB-19	21.1	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work upto plinth level :				

S. No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
	21.1.2	1:1½:3 (1 Cement : 1½ coarse sand : 3 graded stone aggregate 20 mm nominal size).				
		Cement in the section above ground of precast concrete bollards	cum	₹ 5,810.00	2.76	₹ 16,010
BB-20	21.1	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work upto plinth level :				
	21.1.5	1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size).				
		P.C.C. under brickwork for seating with planters	cum	₹ 4,785.00	2.29	₹ 10,977
BB-21	23.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope upto 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases upto two stories excluding the cost of centring, shuttering, finishing and reinforcement:				
	23.3.1	M-15 Grade Concrete (1:2:4) (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) -As per design mix)				
		R.C.C. under table top and zebra crossing ramps	cum	₹ 6,580.00	30.03	₹ 1,97,602
		R.C.C. in footing of the pergolas (450 x 450 x 750mm)	cum	₹ 6,580.00	3.65	₹ 23,984
BB-22	39.41	Supply and planting following in poly bags / earthen pots well branched, well established & free from disease of 300 mm min. height ground covers at site in 0.3 m dia holes, 0.3 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, backfilling the hole watering etc as required.				
	39.41.4	Ophiopogon Black (Lily Turf, Mondograss)	sqm	₹ 268.50	18.30	₹ 4,913
	39.41.5	Asparagus myerii (Fox Tail)	sqm	₹ 388.50	18.30	₹ 7,108
	39.41.9	Pennisetum setaceum (Fountain Grass)	sqm	₹ 255.50	18.30	₹ 4,675
BB-23	28.113	Providing and fixing Bamboo jaffery/ fencing consisting of superior quality 25mm dia (Average) half cut bamboo placed vertically and fixed together with three numbers horizontal running members of hollock wood in scantling of section 50X25mm fixed with nails and G.I wire to existing surface complete as per direction of Engineer-in- charge.				
		Bamboo Jaffri for screening of transformers on the road (Refer dwg. UD-CFCII-22-DET-08)	sqm	₹ 526.00	28.8	₹ 15,149
BB-24	28.57	Providing beams including hoisting, fixing in position and applying wood preservative for the unexposed surfaces, etc. complete with :				
	28.57.2	Hollock wood.				
		Wood in Pergola- 150mm x 150mm rafter	cum	₹ 58,000.00	25.974	₹ 15,06,492
BB-25	29.2	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:				
		Structural steel in Pergola- 300mm x 300mm hollow post with 10mm thickness	kg	₹ 88.10	5428.8	₹ 4,78,277
		Structural steem peripheral and intermediate beams in Pergola- 150mm x 150mm hollow post of 5mm thickness	kg	₹ 88.10	20376.1	₹ 17,95,134
		For baseplate in the pergolas	kg	₹ 88.10	168.48	₹ 14,843
		For bolts,screws etc. for the pergolas (refer dwg. UD-CFCII-22-DET-05)	kg	₹ 88.10	53.91	₹ 4,750

S. No.	RUIDP SOR-2022	ITEM DESCRIPTION	UNIT	RATE	QTY	AMOUNT
BB-26	32.47	Providing and applying two coats of fire retardant paint unthinned on cleaned wood/ply surface @ 3.5 sqm per litre per coat including preparation of base surface as per recommendations of manufacturer to make the surface fire retardant.				
		Fire retardant paint on woodwork in Pergola- 150mm x 150mm rafter	sqm	₹ 314.50	692.64	₹ 2,17,835
		Fire retardant paint on woodwork in Transformer screen in Bamboo Jafri	sqm	₹ 314.50	28.8	₹ 9,058
BB-27	39.43	Supply and planting following in poly bags / earthen pots well branched, well established & free from disease of 600 mm min. height shrubs at site in 0.45 m dia holes, 0.45 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, backfilling the hole watering etc as required.				
		Rhaphis excelsa with 3-4 suckers (Lady Palm)	each	₹ 1,215.00	5	₹ 5,771
		Furcaria with 10-12 leaves (cactus)	each	₹ 1,415.00	5	₹ 6,721
		Agave with 10-12 leaves (Kamal Cactus)	each	₹ 1,622.00	5	₹ 7,705
		Phonenix sylvertris (Date Palm)	each	₹ 2,222.00	5	₹ 10,555
BB-28	23.19	Reinforcement for R.C.C. work at all levels including straightening, cutting, bending, placing in position and binding all complete.				
		Thermo-Mechanically Treated bars.				
		Reinforcement bars in R.C.C. for table tops and footpath ramps	kg	₹ 64.20	1286	₹ 82,550
		Reinforcement bars in R.C.C. pergola foundation	kg	₹ 64.20	555	₹ 35,662
BB-29	39.13	Grassing with ' Carpet' grass (selection no. 1) including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for moving including supplying good earth if needed.(The good earth shall be paid separately)				
		With grass Turf				
		Grass on earth mound at Sukhadia Circle	sqm	₹ 1,049.00	15	₹ 15,735
		Grass on Sukhadia Junction Traffic Island	sqm	₹ 1,049.00	5	₹ 5,432
BB-30	32.55	Floor painting with floor enamel paint of approved brand and manufacture of required colour to give an even shade:				
		Two or more coats on new work.	sqm	₹ 108.50	397	₹ 43,047
		Cycle Track Blue paint				
BB-31	Non Schedules	Procurement for Cycle Stands	Each	₹ 9,660.00	2	₹ 19,320
BB-32		TOTAL (in Rs.)				₹ 95,83,153