Transforming Streets for Safety and Sustainability in the Global South

NACTO Designing Cities Conference
Denver - May 16, 2023
Who Are the Presenters?

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Eduardo Pompeo  
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<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>1:05 pm – 1:20 pm</td>
<td><strong>Transforming Streets in the Global South</strong></td>
<td>Eduardo Pompeo</td>
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<td>1:20 pm – 1:35 pm</td>
<td><strong>Ecuador Case Studies</strong></td>
<td>Fernando de la Torre</td>
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<td>1:35 pm – 1:50 pm</td>
<td><strong>Rajender Nagar Neighborhood Improvement Project</strong></td>
<td>Uditi Agarwal</td>
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<td>1:50 pm – 2:15 pm</td>
<td><strong>Discussion</strong></td>
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Global Designing Cities Initiative

Global Programs

- Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS)
- Collaboration with Bloomberg Associates (BA)
- Streets for Kids (SfK)
- Early Childhood Development (ECD)
Policy and Design Guidance

Capacity Building and Community Engagement

Interventions and Transformations

Metric Collection and Evaluation
Publications

Global Designing Cities Initiative

Designing Streets for Kids

Global Designing Cities Initiative

2020
Global Designing Cities Initiative

Publications

- Global Street Design Guide
- Designing Streets for Kids
- How to Implement Street Transformations: A focus on pop-up and interim road safety projects
- How to Evaluate Street Transformations: A focus on pop-up and interim road safety projects

2022
Global Designing Cities Initiative

Publications

NACTO Designing Cities 2022
Transforming Streets in the Global South
Global Programs

- Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS)
- Collaboration with Bloomberg Associates (BA)
- Streets for Kids (SfK)
- Early Childhood Development (ECD)
1.35 million traffic fatalities every year
93% of which occur in low- and middle-income countries
1. Enforcement
2. Data
3. Media
4. Safe Streets & Safe Mobility

**Partners**
- World Resources Institute (WRI)
- WB/ Global Road Safety Facility
- Global Designing Cities Initiative (GDCI)
- Global Road Safety Partnership
- Johns Hopkins Bloomberg School of Public Health
- Vital Strategies
- World Health Organization
- International Association of Chiefs of Police (IACP)
- Global Health Advocacy Incubator
Global Designing Cities Initiative

Global Programs

- Delhi, India
- Quito & Guayaquil, Ecuador
- Beijing, China
- Shenzhen, China
- Jakarta, Indonesia
- Bogota, Colombia
- Cali, Colombia
- Fortaleza, Brazil
- Recife, Brazil
- Sao Paulo, Brazil
- Cordoba, Argentina
- Bangalore, India
- Mumbai, Maharashtra, India
- Kolkata, India
- Hanoi, Vietnam
- Da Nang, Vietnam
- Kuala Lumpur, Malaysia
- Addis Ababa, Ethiopia
- Mombasa, Kenya
- Mexico City

- BIGRS
- Bloomberg Associates
- Street for Kids
- Early Childhood Development
Policy and Design Guidance

Capacity Building and Community Engagement

Interventions and Transformations

Metric Collection and Evaluation
Opportunity to quickly transform streets using temporary or interim materials
Interim Street Transformations
Interim Street Transformations
Interim Street Transformations
Repurpose existing infrastructure into safer and accessible spaces for pedestrians and cyclists

Fortaleza, Brazil
Implement changes quickly
with easily accessible, low-cost materials
Engage and invite stakeholders
to participate in changing in their neighborhood streets

Istanbul, Turkey
Demonstrate bold or new ideas
and gather evidence of their success

Recife, Brazil

68% fewer people with disabilities walking on the roadbed
Trial and refine designs prior to capital investments
Inspire new policies and practices
and build capacity to design in new ways city-wide

Addis Ababa, Ethiopia
How to Implement Street Transformations

Evaluate impact and share results

After the pop-up
Space for everyone!

Reclaimed public space: 2,250 m²
Reduced crossing distances

Bogotá, Colombia
Move towards long term impact
Why is this relevant for the North-American context?

1. Context matters: every city is unique
1. Context matters: every city is unique

2. Specificities derived from resource limitation
Why is this relevant for the North-American context?

1. Context matters: every city is unique
2. Specificities derived from resource limitation
3. Universal challenges and opportunities
Ecuador Case Studies
Elements to remark

Data collection

Community Engagement Strategies
Quito
Quito

Context

2,900 masl (2 miles high) • 3 million inhabitants • 10 miles from the equatorial line (MIDDLE OF THE WORLD)
Quito

Context

196,000 trips by bike • 80% use transit, are peds or cyclists
2.a San Bartolo project
¿Por qué se eligió SAN BARTOLO?

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<tr>
<th>Año</th>
<th>Siniestros</th>
<th>Lesionados</th>
<th>Fallecidos</th>
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<td>2019-2021</td>
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<td>25</td>
<td>1</td>
<td>10</td>
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</tbody>
</table>

San Bartolo

Road Crashes
San Bartolo

Conflicts

¿Por qué se eligió SAN BARTOLO?

Zonas de riesgo para la comunidad y desafíos que encontró el equipo

Puente peatonal bloquea el libre tránsito peatonal, las personas caminan peligrosamente por la calzada

Cruces peatonales y cebra inexistentes
¿Por qué se eligió SAN BARTOLO?

Presencia de dos unidades educativas cercanas a vías arteriales en un sector con alto número de siniestros de tránsito.

- Instituto Tecnológico Superior Sucre
- Escuela Virginia Larenas
Peatones que no usan el cruce peatonal

Peatones que usan el cruce peatonal casi desvanecido

Peatones que usan el cruce peatonal elevado
La seguridad en los cruces a nivel de piso es necesaria.
LOS PEATONES USAN 5 VECES MÁS LOS CRUCES A NIVEL QUE EL PUENTE PEATONAL

484 ground level

96 ped bridge
San Bartolo

PUNTOS DE TOMA DE VELOCIDAD

- Primera toma
- Segunda toma

Quito
Community Engagement
Recolección de Datos

¿CUÁN SEGURO SE SIENTE EN ESTA ACERA?

- 33% Muy Seguro
- 35% Seguro
- 13% Neutro
- 5% Inseguro
- 5% Muy Inseguro

¿CUÁN SEGURO SE SIENTE CRUZANDO ESTAS CALLES?

- 21% Muy Seguro
- 23% Seguro
- 19% Neutro
- 31% Inseguro
- 2% Muy Inseguro

100 encuestas de percepción a moradores, comerciantes y transeúntes
San Bartolo

Por pedido de la comunidad
Reunión con la Comunidad San Bartolo

Ideas y peticiones recogidas desde la comunidad

- Reubicación de parqueaderos
- Dar seguridad vial para espacios de tránsito para estudiantes
- Unidireccionalidad tramo calle Pungalá
- Proyecto de Ciclovía
- Espacios seguros para peatones

Casa Somos – 28 de octubre de 2021
San Bartolo

Showcase Examples

Bosa, Bogotá, Colombia

Antes

Después

Extensión de Acera

Cruces Seguros

Pacificación de Tráfico
San Bartolo

Showcase Examples

Dragão do Mar, Fortaleza, Brasil

Antes

Después

Extensión de espacio peatonal

Cruces seguros

Espacio público añadido
Componentes de la Propuesta General
San Bartolo

Show Proposal

Renders
Implemented Project
San Bartolo
Quito

San Bartolo

Outcome
Quito
San Bartolo
Outcome
Guayaquil
2.b Cristo Rey project
Cristo Rey
Data Collection
Guayaquil
Cristo Rey

Guayaquil, Ecuador
Ubicación

Usos de suelo
Comercio
Recreativo
Vivienda
Educativo

Site description
Guayaquil

Cristo Rey

Vehicular
Aforos

| Ubicación: Avenida Ráurez de Vallenilla (Iglesia Cristo Rey) |
| **RECEPCIÓN** | Agosto, 2022 - 7:30 am |
| **GIROS** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | **TOTAL** |
| **HORARIO** | 0-6h | 6-12h | 12-18h | 18-24h |
| **Vehículos** | **Aforo Vehicular** |
| **F. S. E. S.** | Liviano | Pesado | Moto | Triciclo |
| **12h-24h** | Liviano | 712 | 192 | 180 | 212 | 218 | 28 | 312 | 358 | 78 | 232 | 44 | 9 | 12 | 96 | 12 | 256 | 2058 |
| **12h-24h** | Pesado | 50 | 20 | 0 | 10 | 12 | 0 | 0 | 0 | 0 | 16 | 4 | 4 | 190 |
| **12h-24h** | Moto | 480 | 180 | 72 | 150 | 72 | 28 | 116 | 124 | 20 | 20 | 216 | 0 | 18 | 28 | 4 | 100 | 1538 |
| **12h-24h** | Triciclo | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 18 | 4 | 4 | 40 |
| **TOTAL** | Liviano | 1252 | 392 | 260 | 376 | 296 | 90 | 452 | 480 | 112 | 260 | 254 | 5 | 28 | 140 | 20 | 372 | 4420 |

*TOTAL expresado en vehículos mixtos*
### Cristo Rey

#### Peatonal Aforos

**VIBRACIÓN:** Avenida Santa Cruz de la Sierra (Iglesia Cristo Rey)
**FECHAS:** Agosto, 2018 - 7:30am

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<th>3</th>
<th>4</th>
<th>5</th>
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<td>36</td>
<td>5</td>
<td>29</td>
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<td>NIÑOS Y NIÑAS</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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#### TOTAL

- ADULTO: 344
- NIÑOS Y NIÑAS: 48
- HOMBRE: 4
- PERSONA CON DISCAPACIDAD: 4
- PADRES COCHE: 0

---

**Counts**

---

[Map of Cristo Rey area with markers indicating different points of interest.]
Guayaquil

Cristo Rey

Líneas de deseo peatonal
Aforos
Guayaquil

Cristo Rey

Stats

Plano de ocupación de espacio público
Guayaquil
Cristo Rey

Toma de velocidades

<table>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>23</td>
<td>km/hora</td>
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<tr>
<td>3</td>
<td>29</td>
<td>km/hora</td>
</tr>
<tr>
<td>total</td>
<td>28</td>
<td>km/hora</td>
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</table>
Información demográfica

**Equipamiento Urbano**
- Iglesia Cristo Rey
  - 1,000 feligreses semanales
  - 800 días domingo
  - 350 capacidad máxima

**Colegio Patria Ecuatoriana**
- 3,320 estudiantes

**Demographics**

**Uso Residencial**

Zona residencial, nivel bajo de comercio.

**Colegio Patria ecuatoriana - Estudiantes**
- **Mañana**
  - 960 alumnos
  - Entran 6:40am
  - Salen 12:45

- **Tarde**
  - 2,060 alumnos
  - Entran 12:45
  - Salen 6pm

- **Noche**
  - 300 alumnos
  - Entran 6:40pm
  - Salen 9:40
Registro fotográfico

Comercio informal en la Avenida Venezuela y Vicente Ramón Roca.
Situación actual
Salida de estudiantes Colegio Patria Ecuatoriana (12:30pm).

90% 8% 2%

Situación actual
Avenida Mariette de Veintimilla invasión de carril en la Avenida Colombia.

70 vehículos mixtos/hora.
Community Engagement
Socialización
11.09.22 - Identificar en el mapa los lugares más seguros e inseguros del sector.
Socialización
11.09.22 - Identificar en el mapa lo que le gusta de la propuesta de urbanismo táctico del sector.
Socialización
11.09.22 - Problemas evidenciados por los moradores acerca del sector.

Mucha afluencia de tráfico o exceso de velocidad. No existe presencia de agentes de tránsito AT. La 39, Colombia y Camilo Destrue se ha convertido en un caos. Exceso de vehículos que no respetan la velocidad, ocurren accidentes.

Los vehículos van a alta velocidad y en la 39 y Colombia ingresan en contravía y no permiten a los peatones cruzar de manera segura.

Ruido de pito Demasiada velocidad

Hay mucha inseguridad en el alrededor de la iglesia consumo de droga, bulla. Se llama a la autoridad y nunca llegan y los carros no respetan a los peatones.

Peligro vial en las calles por la seguridad para peatones y en especial a los estudiantes y cerca de la parroquia Cristo Rey existen escuela calle 41 Colegio Patria Ecuatoriana y en especial a los feligreses de la iglesia personas mayores y niños.

Que hay mucha afluencia de vehículos que van incluso en contravía ocasionando accidentes.

- Vehículos a exceso de velocidad
- Muchos vendedores ambulantes en la 39 desde Portete hasta la calle Colombia

- Límites de velocidad
- Conductores con exceso de velocidad
- Caos vehicular al salir a la calle del Colegio Patria Ecuatoriana.

- Niveles de velocidad
- Motorizados
- Vehículos Pesados
- Aglomeración
Guayaquil
Cristo Rey

Engagement

Socialización
11.09.22 - Registro fotográfico de la participación ciudadana.
porque siempre toda iglesia tiene mucha gente que se acerca, muchos niños y adultos.
Intervenciones

Ejemplo de propuesta de intervención mediante urbanismo táctico.

Distrito Cultural de Dragao do Mar
Fortaleza, Brasil.

Piazza Spoleto
Milán, Italia.

antes

antes

interino

interino
Intervenciones
Ejemplo de propuesta de intervención mediante urbanismo táctico.
Guayaquil
Cristo Rey

Show Proposal

Intervenciones

Peatonalización de la Avenida Mariette de Veintimilla entre Colombia y Camilo Destruge
Guayaquil

Cristo Rey

Show Proposal

Intervenciones
Peatonalización de la Avenida Mariette de Veintimilla entre Colombia y Camilo Destruge

Antes

Después
Intervenciones

Propuesta macro del sector de la Iglesia Cristo Rey
Intervenciones
Propuesta del sector de la Iglesia Cristo Rey
Implemented Project
Cristo Rey

Community Involvement
Guayaquil
Cristo Rey
Outcome
Guayaquil

Cristo Rey

Outcome
Guayaquil
Cristo Rey
Outcome
Cristo Rey

The Dream Team
Link for the video:
https://drive.google.com/file/d/1zOkCOGqINyjGcnHD99-_qJNsm8UiNLF9/view?usp=sharing
Delhi
03 Rajender Nagar Neighborhood Improvement Project
Old Rajendra Nagar located in the central zone is well connected to the city, it is bordered by the Central Ridge Reserved Forest on the east and south making it an ecologically enriched zone.

ORN is well connected to other commercial centers like Connaught Place and Patel Nagar through mass transit networks like Metro and Bus and via the arterial road network.

Ganga Ram hospital which borders the neighbourhood in the east attracts high volumes of traffic and emergency vehicles movement.

Across Pusa road on the north, lie commercial centres of Karol Bagh and Gaffar Market.

Proximity and access to two metro stations within a walkable range (<500m) is an asset for the neighbourhood and the large population of students who rely on public transport for commute.
Old Rajendra Nagar's periphery is marked by three arterial roads - Pusa Road, Shankar Road and Ganga Ram Marg which connect the area to other parts of the city. The arterial roads act as 'hard edges' between Old Rajendra Nagar and adjacent neighbourhoods of Karol bagh and New Rajendra Nagar. Heavy motorised traffic flow forms a barrier to pedestrian movement across these adjacent neighbourhoods.

Pusa road and Shankar road are predominantly mixed-use, commercial activity seeps in into the neighbourhood through these edges. Bada Bazaar - the internal commercial and mixed use street intersects with the two arterial roads- Pusa & Shankar Road, these junctions form interesting intersections & points of entry into ORN.
Bada Bazaar Marg

Gol Chakkar Marg
Neighbourhood streets
Community Engagement
Target User Groups in Old Rajendra Nagar

- Students
- Residents (Elderly)
- Residents (Women)
- School Students
- E-rickshaw Drivers
- Rickshaw Pullers
- Motorists
- Pedestrians
Public Wall Activities in ORN
Interviews and Group Discussions with User Groups
Neighborhood-level Strategies
Interventions in Old Rajendra Nagar

Design Brief

Improving mobility experiences and quality of life

- Create safe mobility experiences for the most vulnerable — like school students and the elderly — within the neighbourhood and adjacent areas
- Encourage and reinforce sustainable choices in transport modes — like walking, cycling and shared transit like metro
- Revive open spaces and green infrastructure in the neighbourhood and to improve liveability and reverse the impact of concentration of vehicles
Neighbourhood-Level Strategies

1. Prioritizing Pedestrians + NMT
2. Regulating Vehicular Movement + Parking
3. Streets as Public Space
Multimodal streets offer people options for safe, attractive, and convenient travel by foot, by cycle, on transit, as well as in motorized vehicles.

**Redistributing ROWs →**
Redistributing street ROWs to embrace multi-modality and prioritise pedestrians, cyclists and create unobstructed footpaths.

**Car-free corridors →**
Selected streets that support high pedestrian movement, or provide access to transit stations or parks are proposed as car-free zones in the neighbourhood.

**NMT Infrastructure →**
Elements like sidewalk extensions, refuge islands and ramps are proposed with parking and signages dedicated to cyclists.
Rethinking mobility in the neighbourhood to create new networks of two-way streets, one-way lanes, and shared streets.

**Operational changes** →
Operational changes like diverters, one-way couplets to regulate vehicular traffic in the neighbourhood

**Traffic calming elements** →
Elements like narrower lanes, speed bumps and sidewalk extensions to reduce traffic speed and improve road safety

**Parking regulations** →
Unregulated parking patterns obstruct traffic flow, and encroach sidewalks. Many residents park their cars on Shankar road or near the Gol Chakkar.
Streets play a big role in the public life of cities and communities, and should be designed as places for cultural expression, social interaction, celebration, and public demonstration.

**Open space networks →**
Revival of open spaces and green infrastructure in the neighbourhood and reverse the impact of concentration of vehicles in the area

**People doing business →**
Establishing symbiotic relationship with businesses like coaching institutions, libraries, book sellers and food joints

**Street elements for comfort and safety →**
Elements like shaded parklets, seating spaces and street lights to elevate the experience of users on the street and offers spaces for pause and play
Intervention Sites
A heat map activity was conducted at different locations on site to understand the trends and patterns of usage, inhibitors and facilitators within Old Rajendra Nagar.

The exercise was facilitated near high-footfall landmarks to generate a ‘heat-map’ based on people’s perception of road safety & comfort within the neighbourhood. Participants were encouraged to map areas where they felt safe (green sticker) & where they felt unsafe (red sticker).

A series of hotspots emerged forming tentative sites for intervention.
Furthermore, location specific responses from qualitative research conducted in the form of interviews, FGDs and other public activities were overlaid on the plan.

The patterns emerging out of the responses complement the patterns of the heat map.
Identifying Critical Sites

Proposed Sites for Intervention

Legend

1. Residential Block
2. Bada Bazaar Stretch
3. Rajendra Place Metro Station to Shankar Road
4. Vajiram Junction
5. Gol Chakkar Intersection
4.1 Residential block
Unsafe pedestrian experience →
The limited ROW is unable to accommodate vehicular and pedestrian flow with parking. The absence of sidewalks forces them to walk on the road bed along with fast-moving vehicles.

Unregulated parking →
Unregulated parking patterns obstruct traffic flow, and encroach sidewalks. Many residents park their cars on Shankar road or near the Gol Chakkar.

Lack of open space →
Small parks and interstices which were an integral part of the initial planning have invariably transformed into parking lots. This has resulted in a lack of open spaces in the neighbourhood.

Context and Challenges

Typologies of streets and open spaces within the residential block
Residential Block

Distributor/Collector Roads [12-15m RoW]
PROPOSED DESIGN

1—Two way traffic
Retaining two way traffic to allow for easy entry and exit into the residential block. Creating organized parking spaces for all.

2—Traffic calming elements
Continuous sidewalks combined with raised crossings, curb extensions and speed limits signs to improve pedestrian safety.

3—NMT infrastructure
Cycle-friendly infrastructure like stands and signages are incorporated into the design
Access Roads [6-9m RoW]
**Residential Block**

**Access Roads [6-9m RoW]**

**PROPOSED DESIGN**

1 — One-way traffic
Unidirectional flow of vehicular traffic to create space for other elements on the street

2 — Shared carriageway
Pedestrians share the carriageway with cyclists and slow-moving vehicles

3 — Parallel parking
Alternate parking modules to form chicanes which would further slow the speed down

4 — Chicanes
Accommodating trees within chicanes to slow down the traffic speed and create shaded rest spaces
Residential Block

Parking plots as Public Plazas

PROPOSED DESIGN

Transforming parking lots into public plazas and shared open spaces which ties in with the pedestrian network.

These plazas have immense potential to become vibrant and active spaces that bring the community together and promote intergenerational interactions.
4.2 Bada Bazaar
Bada Bazaar

Context and Challenges

The Bada Bazaar is the primary commercial cum-institutional zone in Old Rajendra Nagar. Coaching institutes, book shops and food centres line the street with a heavy flux of students on foot.

**Obstructed footpaths** →
Absence of a clear footpath forces pedestrians to walk on the carriageway alongside e-rickshaws, cars and vendors. Shops spill over and unregulated parkings and vendors cover the pathway.

**Lack of infrastructural upkeep** →
E-rickshaws, vendor carts and vehicles navigate potholes with unexpected maneuvers that cause a safety hazard to all users on the street.
Concept Explorations for RoW Distribution

<table>
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<th>Pedestrianized</th>
<th>One-way vehicular</th>
<th>Two-way vehicular</th>
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<tr>
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<td>Yes</td>
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<td>Yes</td>
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<tr>
<td>Retail spill-outs</td>
<td>Yes</td>
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<tr>
<td>Cycle + NMT lanes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Vendor zones</td>
<td>Dedicated</td>
<td>Shared with parking + loading/unloading bays</td>
<td>Shared with parking + loading/unloading bays</td>
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Partial Pedestrianization [Block based scheme]
Art Corridor Connecting Central Plazas to Sindhi Park and Salwan Public School
Art Corridor — Detailed Design
4.3
Metro Access Corridor
The streets that connect ORN with metro stations and adjacent neighbourhood like NRN are shared between high pedestrian footfall and vehicular traffic like cars, motorbikes and E-rickshaw.

Unsafe & obstructed pedestrian experience →
The route poses a visible conflict that puts pedestrians, especially vulnerable user groups, at risk and make the experience unsafe and obstructed.

Roadside parking →
Lanes are filled with roadside parkings which further reduces usable spaces on such streets

Underutilised spaces →
Specific intersections and spaces along blank walls are left with low usages. Such spaces can be used for “pause & play” and adding back to the network of open spaces within the neighbourhood
Existing Conditions

- Sub-Arterial Road
  - 30M ROW
- Distributor / Collector Road
  - 12-15M ROW
- Access Streets
  - 4M-6M
- Laneways/ Alleys
  - 2M-4M
1 — Restricting vehicular thoroughfare
Introducing signs and barriers to indicate 'local traffic only' and ensure low speeds.

2 — Pause & Play
Elements like seating, benches and landscaping to make spaces for leisure for different user groups — especially for elderly.

3 — Night parking spots for residents
Streets would accommodate parkings for residents during the night time (say 8:00 PM to 8:00 AM).
Connections with Metro Stations

1—Pinch points at corners
   Discouraging parking near the metro station

2—Active parkings for e-rickshaws
   Dedicated parking for e-rickshaws on the inner street to regulate pickups

3—Active parkings for vehicular traffic
   Dedicated parking for motor vehicles like auto-rickshaw, cabs on the main roadside

4—Raised crossing
   Prioritizing safety of pedestrians walking across junctions
Connection 1: Rajendra Place Metro Station

Connection 2: Shankar road
Reclaimed intersection for a Public Plaza

1 — Reclaiming the carriageway
Demarcating the space using different material or an artwork to prohibit vehicles from entering the space. Placing heavy objects like bollards and planters that alert drivers to the new curb line.

2 — Placemaking
Populating the area with temporary and permanent street furniture to give its contextual use cases.
can we use a photo with more people?
4.4

Vajiram Junction
Unsafe pedestrian experience →
Lack of continuous pathways and safe crossings across the junction hamper road safety for pedestrians

Unregulated usage →
Unregulated elements like e-rickshaws, parking and street vendors at the junction itself, add to the inconvenience for pedestrian movement

Irregular carriageways →
Presence of curbs with large turning radius, slip lanes, ambiguous edges of carriageways poses a challenge to regulated flows for all users of the streets
1— Geometric correction
Simplifying the geometry of the junction to reduce the distance and travel time to cross the junction for pedestrians and vehicles

2— Reclaiming carriageway
Slip lane removal and tightened corners to reclaim space for unobstructed pedestrian passage, shared transit and street vendors

3— Improving pedestrian experience
Introduction of traffic calming and accessibility elements like raised crossings, refuge Islands and ramps to improve experience for pedestrians

4 — Facilitating shared transit
Incorporating facilities dedicated drop-off/pick up points for rickshaws and e-rickshaws
Detailed Design

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4.5
Gol Chakkar
Context and Challenges

Unregulated usage →
Unregulated elements like e-rickshaws, parking and street vendors at the junction itself, add to the inconvenience for pedestrian movement.

Fragmented open spaces →
Open spaces including four corners and the roundabout are underutilised and disconnected.

Thoroughfare for vehicular movement →
Located at the heart of the neighbourhood, it connects two major vehicular streets for ORN. It encourages vehicular movement for shortcuts, connectivity to major arterial roads.
Intersections / Gol Chakkar Junction

Existing Conditions
Redistributing surface areas between carriageways and open spaces to make the junction more efficient for vehicles and open spaces more lively for the residents.

1 — Reclaiming excess carriageway
Implementing measures like geometric corrections, prohibiting parking spaces along the edges.

2 — Improved accessibility to the park
Establish pedestrian connections to connect open spaces at the center as well as the four corners with barrier-free edges.

3 — Reclaiming street as a public space
Activating edges with designated street hawkers and elements for pause & play where residents can use these spaces for leisure.

Concept
Existing condition
Proposed design

Detailed design

- Street furniture's while preserving existing trees
- Existing infrastructure
- Shared streets
- Outdoor Play area
- Vendor location
- Retail spill out
- Clear pathway for Pedestrians (raised)
- Multi utility zone

Placemaking while preserving existing greens and trees
Proposed design

View 1: Access to Rotary

1 - Optimized carriageway
Measures like consistent lane width, no roadside parkings along the intersection and lane separators to build an efficient traffic flow and management.

2 - Extended spaces for pedestrians
Reclaimed carriageways to be used for establishing dedicated pathways for pedestrians like a high-paced pedestrian loop and extended footpath along the central park.

3 - Improved access to central rotary
Demarcating a pedestrian prioritised conflict zone at the T-junctions.

4 - Upgrading infrastructure
Introducing street lighting to increase safety and security for all users.
Proposed design

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Proposed design

View 2: Axes road

1 - Activating edges along the carriageway
Wide pathways that can host different activities from leisure to play spaces.

2 - High paced pedestrian loop
Introducing a dedicated loop along the edge to strengthen pedestrian movement
1 - Activating edges along the carriageway
Wide pathways that can host different activities from leisure to play spaces.

2 - High paced pedestrian loop
Introducing a dedicated loop along the edge to strengthen pedestrian movement.
1 — Barrier-free at-grade open spaces
Retaining two way traffic to allow for easy entry and exit into the residential block. Creating organized parking spaces for all.

2 — Placemaking with existing greens and other infrastructure

3 — Secondary corridor for pedestrian

View 3: Open spaces at corners
Proposed design

View 3: Open spaces at corners

1 — Barrier-free at-grade open spaces
Retaining two way traffic to allow for easy entry and exit into the residential block. Creating organized parking spaces for all.

2 — Placemaking with existing greens and other infrastructure

3 — Secondary corridor for pedestrian
Proposed Design: Interim Phase
Material palette has been divided into 5 broad categories. Grouping materials by function is intended to embrace the resourcefulness and creativity that is essential to the project.

- Barriers
- Surface treatments
- Street furnitures
- Landscaping elements
- Signages
Barriers

**Posts**
- Traffic Cones
- Bollards

**Solid Barriers**
- Painted Metal Barriers
- Plastic Barriers

**Planters**
- Wooden Planters
- Tire Planters

**Curbing**
- RCC/Granite stones
- Rubber Barrier Curbs
### Surface treatments

<table>
<thead>
<tr>
<th>Striping</th>
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<th>Signages</th>
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<td>- Thermoplastic paints</td>
<td>- Using stencils with spray/ brush paints</td>
<td>- Acrylic paints</td>
<td>- Traffic signs</td>
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<tr>
<td>- Traffic tapes</td>
<td></td>
<td>- Water based paints</td>
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</tbody>
</table>

### Signages
- Traffic signs
Street Furniture

**Milk Crates as**
- Screens/barriers
- Planters
- Benches

**Shipping pallets**
- Screens/barriers
- Planters
- Benches
- Bicycle parking

**Table & Seatings**

**Shade structure/Movable Umbrella**
Landscaping elements

Grass surface
- Astro turf
- SOD (Live Grass)

Small trees

Small/medium plants
Signages

Traffic signs

Wayfinding signs

Information signs
Interim Transformation
Data Collection
41% Additional area reclaimed for public use

59% decrease in crossing time

28% increase in safe pedestrian space
How safe do you feel on this Street?

77% more users felt safer using the intersection after the transformation.
*Total number of people observed from 3 sessions throughout the day
Vehicular speeds

Before: 22 kmph
After: 17.75 kmph
-16%

Before: 17.8 kmph
After: 15 kmph
-19%

Before: 22 kmph
After: 17.75 kmph
-19%
Thank you