
Design Determinants for Safety in Public Spaces

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ABSTRACT

Delhi today is aspiring to attain global standards in terms of infrastructural facilities, social services (healthcare, education, sanitation, etc.) among other things in order to achieve a 'good QOL'. One of the foremost requirements to achieve this goal is the city's role as an enabler for people to realise their capabilities and potentials fully. And a pre-requisite to that is the right to live in a safe and secure environment. The issue of public safety has assumed increasing significance over the last decade. This paper establishes the relation between the physical environment and the perception of safety in public spaces. This is done through a detailed study and analysis of the physical spatial characteristics and the proxemic characteristics of one such public space in the city of Delhi in order to establish the relation between the physical spatial morphology and the perception of safety, i.e. The Connaught Place, the central business district of the city. The study employed a variety of research methodologies to gather the data, including direct observation, field surveys and on-site route mapping. For the purpose of this study, only the Connaught Circus (referred to as 'CP' in the paper) was taken as the area of analysis. The three Circles of CP were studied at different times of the day and during different days of the week. The findings were collated for a meta-analysis. The survey sample size was small but it is fairly indicative. Moreover it is understood that the physical environment is only one of the many factors that determine perception of safety. Other factors ;like the social interactions, presence of street vendors, familiarity with the place, electronic and manual surveillance, infrastructure, etc. are also critical, which were taken up as a subsequent study.

Keywords

Design of Public Space, Safety, Planning, Building.

1.1. INTRODUCTION

Public spaces provide the arena for a myriad of human interactions that are a characteristic of a thriving and active city. It is through these intersections and interactions that the social, cultural and financial assets of a city are generated. As Jacob (1961) states, "Vital cities have marvelous innate abilities for understanding, communicating, contriving, and inventing what is required to combat their difficulties... Lively, diverse, intense cities contain the seeds of their own regeneration, with energy enough to carry over for problems and needs outside themselves." The same can be extended to public spaces in a city. It follows, then that , people experience the city through its public realm and it is here that the importance of safety becomes especially critical. As argued by Lynch (1981), even though much of the literature assumes that urban public space is a common property resource to which everyone has equal and free rights of access, in many instances, this is not the case, because it has competing uses.

CP is one of the oldest and largest CBD of the city of Delhi. Lakhs of people come to work, shop, eat recreate, do business play, meet each other, pass through and generally just be in this vibrant public place in the city. It is served by the largest Metro Station- Rajeev Chowk, which sees a footfall of lakhs of people every day. A substantial portion of this volume is either destined to CP or passes through CP.

With this view what becomes a critical point from the perspective of safety are the journeys:

- from the Metro Station to the workplace in the morning
- from the door of the workplace to the Metro Station entry points in the evening

Moreover there are a broad types of users like the destined office workers, workers and shopkeepers, a large number of informal vendors selling their wares, the shoppers, the people visiting for recreation and so on. For most of them the journey to and from the workplace and public transport points like the entry to the Metro Station, bus stops, auto taxi stands and parking lots is the most important point of concern.



Fig 1: Image of CP showing the Radial Planning

1.2. PARAMETERS OF SPATIAL MORPHOLOGY

For people walking in CP the pedestrian domain is where they interact with the actual physical space. This pedestrian domain comprises of pavements, corridors, parking lots, subways, metro station entry and roads and it is this space which is of importance from an urban design point of view to assess if the route well-designed or not, lit up or not, visible from outside, has people or is deserted, is the parking lot lit up and visible or is isolated and dark, is the pedestrian path segregated from vehicular, is the corridor wide enough and so on. Therefore, the physical attributes of the space become critical in gaining an understanding of the “where, how and why” of the way different users interact with the spaces and thereby experience them.

For this three spots were identified in the three Circles. The design characteristics of the built form at each of these was studied in detail and the activity patterns were observed. A detailed analysis was done to understand the relationship between the physical form and the behaviour pattern of the users. The focus was on the public realm of the built fabric, which is the main area of concern for the purpose of this study.

The design parameters of spatial morphology were categorized as under:

1. Planning
2. Building Use
3. Building Edge
4. Nodes/ Corners
5. Pedestrian Path Characteristics
6. Visual Connectivity
7. Open Space Use
8. Parking
9. Signage/ Legibility

2.1. THE PLANNING OF CP

Connaught Circus is designed as Two Circular Rings of Concentric Buildings around a central park. The 3 rings of building are accessed by 3 circular vehicular roads, thus demarcating them into Inner Circle, Middle Circle and Outer Circle. These are further divided by 7 radial roads into 6 blocks, named A to F. Each of the resultant trapezoidal blocks is planned with buildings on edge with courtyards in the centre. The main access to the buildings is from the periphery with the courtyards acting as secondary entrances or as service zones.

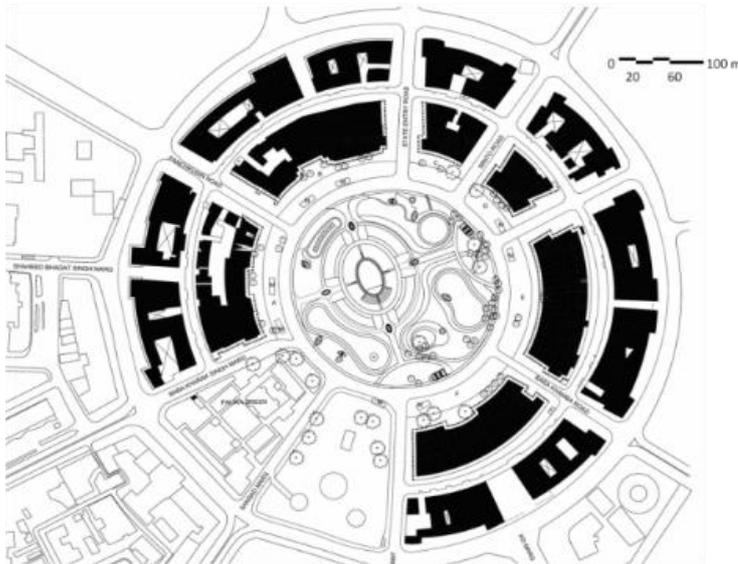


Fig 2: Plan of CP showing the Radial Planning

The access and service zone characteristics are:

- All buildings face a busy circle or a radial road with access off them. All pedestrian movement happens through a very public zone. It is, along most of the stretch and for most of the time, “exposed” or under informal surveillance- of shopkeepers, shoppers, office goers, vendors, service providers, etc. A multitude of “eyes on street” lends not only a perception of safety but provides actual safety by virtue of the sheer number of people.
- Service courtyards, that otherwise, can be deserted, ill-maintained and thereby become possible threats are in CP, easily accessed from the main roads. Also they do not fall on the most traversed pedestrian routes.



Fig 3: Inner circle and outer circle roads create a continuous Front- No Boundary walls



Fig 4: Service Courtyards Accessed From Radial Roads And Middle Circle Road

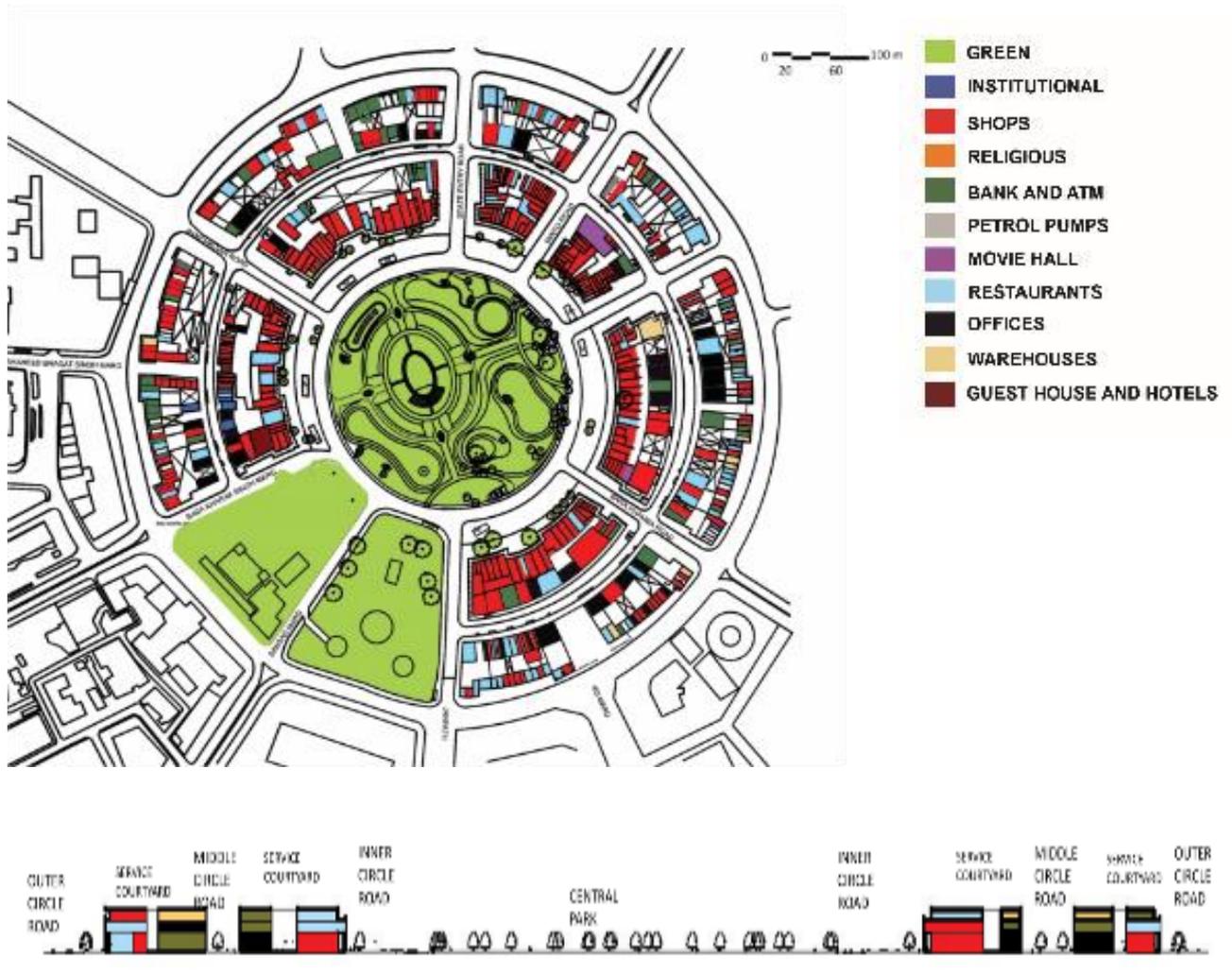


Fig 5: Building Use Plan on Ground Floor of Connaught Circus and Section Through the Circus

2.2. BUILDING – USE CHARACTERISTICS

The planning is intricately connected to the “Functions” that are housed in the buildings i.e. Building Use. Being a CBD the primary functions in CP are retail and offices along with all the support functions. The functions that attract not only a large volume of people but also a wide spectrum of user types at all times of the day especially till late at night which is the time when security is most critical are retail commercial, restaurants and movie halls. Offices on the other hand, though a substantial quantum, provides a limited time frame of users, which significantly dwindles in the evening hours.

As is evident from the building use data, Inner Circle has the highest percentage of the top two “people catcher” uses i.e. retail commercial and restaurants at about 81% followed by Middle Circle at 52% and Outer Circle at 31%. A point to note is that many Dead facades due to no occupancy/ construction in middle circle make certain stretches unsafe.

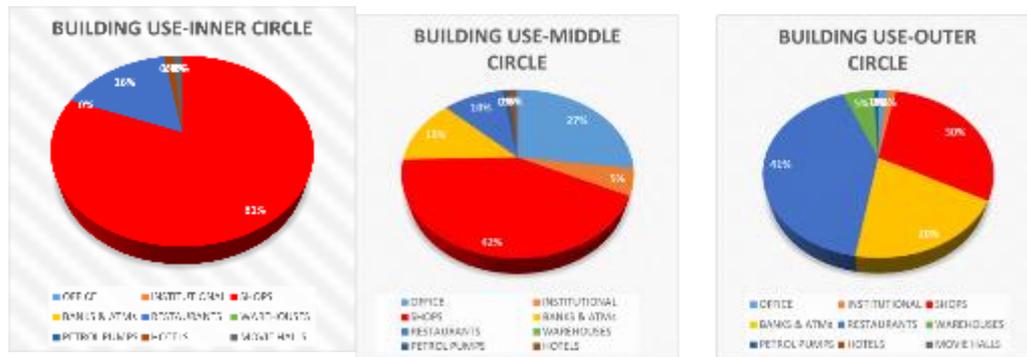


Fig 6: Building Use Percentage break-up on Ground Floor of Inner, Middle and Outer circle

2.3. BUILDING EDGE

The concave profile of the Inner circle building is built on edge of the pedestrian zone, without any setbacks. It is a three floor high building with shops, restaurants, banks and other retail establishments on the ground and first floors and primarily offices on the second floor. The ‘front’ side has a 2.5 m wide and two floors high covered pedestrian corridor. Shops on ground floor are accessed directly from the corridor while there are staircases at intervals, off the corridor, to lead to the first floor. The corridor is colonnaded with double-height singular, circular columns. It is continuous with no dead ends. Adjacent to the colonnade is a ring of 2.5 m wide paved area with seats, landscaping elements like trees and shrubs, dustbins, street lights, railings etc. Next to this are dedicated and manned parking areas along the inner circle road. The second floor is accessed mostly from the rear courtyard.

The Outer circle building has a similar pattern but the ‘front’ side of Outer Circle has a convex profile.

Sandwiched between the Inner Circle and the Outer circle buildings is the Middle Circle of buildings with a very different built character. The two facing building edges alongside a vehicular road have no setbacks. The pedestrian paths, unlike at Inner and Outer Circles, are not covered. There are entrances to the building at intervals all along the two lengths. At times the entrances lead to inner courtyards and stairwells. The two opposite faces have convex and concave profiles. The pedestrian zone is flanked by buildings on either side in an X:Y ratio of approx. 1.5:1.



Fig 7: Building edge characteristics of Inner circle

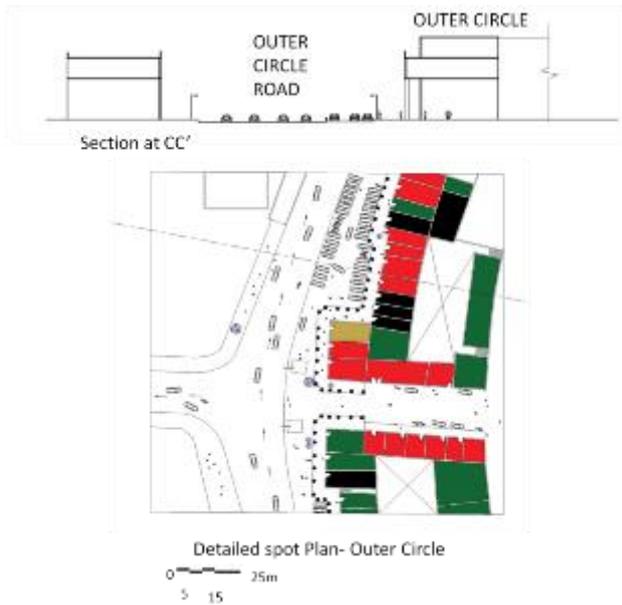


Fig 8: Building edge characteristics of Outer circle

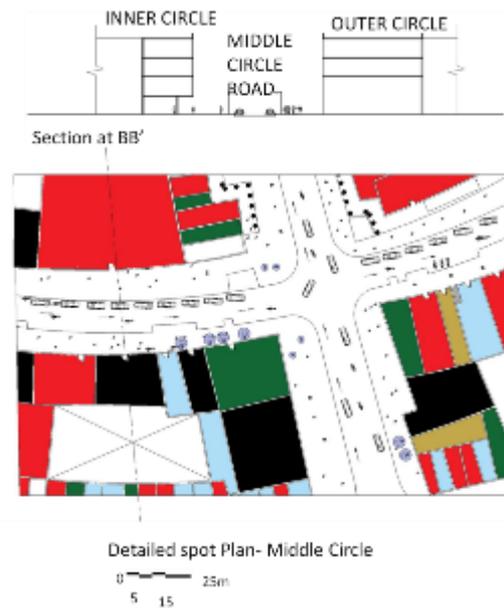


Fig 9: Building edge characteristics of Middle circle

2.4. NODES/ CORNERS

Both in Inner and Outer Circle the ends of the colonnade in each block are well- defined. The corridor width increases at the ends; the colonnade projects out and is defined by twin columns with arches in contrast to singular columns in the corridor with flat beams. In contrast, in the Middle Circle there is no definition of end of pedestrian paths but the presence of public toilets located at the nodes serve as a sort of a marker.



Fig 10: Building Corner characteristics of Inner and Outer circle



Fig 11: Pedestrian Path characteristics of Middle circle

2.5. PEDESTRIAN PATH CHARACTERISTICS

In Inner and Outer Circle there is unhindered, clearly defined pedestrian path. There is continuity of engaging shop fronts and display windows. The shaded corridor provides protection from natural elements thereby making the pedestrian experience a comfortable one. In contrast, the pedestrian path in Middle Circle is discontinuous due to the presence of entrances to buildings and courtyards. The presence of many encroachments, large dustbins and other physical hindrances like metro ventilation shafts etc. results in a hindered pedestrian movement, forcing them to move on the road. There is no clear segregation of vehicular and pedestrian movement.

2.6. VISUAL CONNECTIVITY

In the inner Circle the users have continuous visual engagement with the ‘inside’ through store fronts and shop windows and the colonnade permits the users to be continually visually connected to the ‘outside’. The concaveline of movement creates an inclusive line of vision and a continuously changing panorama. Due to the concave profile the cone of vision is ‘inward looking’ and ‘contained’, thereby the visual experience seems more structured and legible.

As in Inner Circle, although there are continuous storefronts and shop windows but the presence of many closed fronts creates breaks in the continuity of the pedestrian experience. The pedestrian is not engaged for the entire length of the journey. Moreover, the convex layout limits the line of vision of the pedestrian- the whole is not perceived. Due to the convexity the cone of vision is ‘outward looking’ and ‘uncontained’. It does not seem defined and controlled leading to a loss of orientation and hence legibility to an extent.

Office entrances interspersed with many stretches of blank, dead facades result in visual opacity. The walk along such a non-engaging built edge makes it more of a utilitarian experience. The blank stretches create a visual disconnect and a sense of ‘no-man’s land’. Both convex and concave profiles create a limited line of vision and one cannot see far ahead- one does not know what lies ahead. Moreover, both the edges of the road are used for on street parking. This not only hinders physical access but also creates a visual barrier to the entrances of buildings.

2.7. OPEN SPACE USE

In the Inner Circle adjacent to the pedestrian colonnade is a ring of 2.5 m wide paved area with seats, landscaping elements like trees and shrubs, dustbins, streetlights, railings etc. This allows for the pedestrians to spill out into the open thereby providing a ‘break’ in the activity of moving. This is the place where they have the opportunity to pause and engage in other activities like sitting, relaxing, standing and talking, eating, lounging and so on. There is a continuous in and out movement of pedestrians across the very porous edge of the building. The entry/exits of the Metro station as well as the pedestrian under-passes are also located in this area, making the pedestrian movement quite seamless. These also generate a constant sizeable flow of pedestrian traffic.

In the outer Circle this area is not designed as a space for active pedestrian use. It lacks any cohesive streetscape design. This makes it an unused space that is merely utilitarian in nature. Absence of entry/exits of either Metro station or pedestrian under-passes further leads to an absence of pedestrians.

In stark contrast, in Middle Circle there is an absence of pedestrian-friendly streetscape design, no spaces for refuge from the elements, pause and rest.

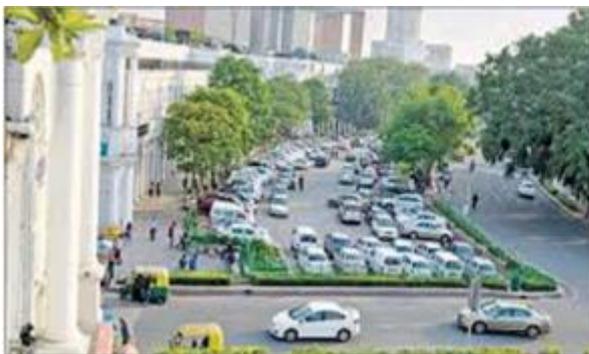


Fig 12: The inner and the outer circle have defined and clearly visible parking lots where you can park till the edge of walkway

2.8. PARKING

Inner and Outer Circles have a ring of dedicated and manned parking areas adjacent to the road, which clearly separates the pedestrian from the vehicular and also allows easy access from the road to the parking area and from the parking area to the corridor and shops.

In Middle Circle the edges of the road are used for manned on-street parking. Although this allows easy access from the road to the building but lack of clear allocated areas for parking create a physical as well as a visual chaos that is not conducive to smooth and seamless pedestrian movement.

2.9. SIGNAGE and LEGIBILITY

The pedestrian path is clear and well lit with adequate daylight and artificial lighting. Although the circular form and similarity of built form is disorienting at times, the Central Park, which is visible from Inner circle, provides a visual landmark that aids in orientation while there is a lack of visual landmarks on the Outer Circle, except at the junctions of Barakhamba Road (Gopal Das Tower, The Statesman Building) and Janpath (Palika Greens, LIC Building, Regal Block). The signage for Block number is visible from outside the block but while walking in the corridor there is no clear signage indicating of Block number. This leads to locational disorientation. A few distinct entrances and public toilets at the ends provide some local markers in Middle Circle.

3.1. CONCLUSIONS

An analysis of the above observations of the physical form and the behaviour pattern of the users lead to following conclusions about the morphological characteristics of the physical space that help in enhancing the perception of safety.

All such zones that are bound to be used by people the most and the route that are the most traversed are best located along an active building front. Presence of boundary walls often reduces the safety factor., especially if they are high and opaque. Any development is bound to have service zones but the challenge for the designer is to locate them in such a place so that they do not become ‘urban backyards’ which are unmanned, unlit, un seen and ill-maintained. ‘No Man’s Land’ need to be eliminated. Moreover, the presence of a variety of functions attracts a diverse range of people based on their purpose to be in that space, age, gender, socio-economic background, ownership, time of usage the space, etc. This multiplicity creates a vibrant place that is safe by virtue of presence of people, ‘the yes on the street’ effect at all times, especially at night.

The pedestrian experience is of the utmost importance to enhance the perception of safety. A continuous, shaded, pedestrian- friendly walkway that clearly separates the pedestrian from the vehicular and provides for unhindered, comfortable and safe pedestrian movement is desirable. Presence of dead-ends, dark corners, sharp turns where visibility of what lays ahead is hindered are detrimental. Therefore, the corners of buildings and paths and their intersections need to be well- defined, both, spatially and architecturally. Such articulated nodes help in orientation and legibility. Further, physical and visual connectedness and porosity enhances ease of orientation and legibility. Provision of well-defined space for people to stand, sit, talk and interact with benches, seats, dustbins and trees makes it a vibrant space. Clearly defined, visible and well-lit parking lots, building entrances, underpasses and metro exits, clear visible signage create an ease of navigation for the users that contribute to a safe space.

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