Planning Issues in Roorkee Town

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ABSTRACT
This is a case study of town of Roorkee to understand the existing condition of the study area in terms physical and social infrastructure. This paper also attempts to study the existing landuse and also study the character and nature of the commercial and informal sectors. Aanalyse the existing transport infrastructure of the area and character of roads has been done. The different uses of the building and height of building to assess the nature and character of the built form has been done.

The study will finally concentrate on study of the build form and urban character of the space. The study of social and physical infrastructure, landuse and build-form, with some emphasis on traffic- transportation and informal sector.

INTRODUCTION TO THE STUDY AREA
Roorkee is located at 29.87°N 77.88°E.[15] It has an average elevation of 268 metres (879 feet). Roorkee is 172 kilometres (107 mi) north of the Indian capital, New Delhi between the rivers Ganges and Yamuna, close to the foothills of the Himalayas. Before the creation of Uttarakhand on November 9, 2000,[16] Roorkee was a part of the state of Uttar Pradesh.

Roorkee is a small city and seat of a municipal corporation in Haridwar district, Uttarakhand, that spread over a flat terrain with the grand spectacle of Himalayas ranges flanking it in the East and the North-east. It is on the banks of the Ganges canal on the national highway 58 between Delhi and Dehradun. The dominant feature of the city is the Upper Ganges Canal which flows north-south and bisects the city. Also known for Roorkee Cantonment, one of the country's oldest cantonment area, and the headquarters of Bengal Engineer Group (Bengal Sappers) since 1853. The renown Indian Institute of Technology, Roorkee is located in this city.

Due to its location away from any major water body and its proximity to the Himalayas, Roorkee has an extreme and erratic continental climate. Summers start in late March and go on until early July, with average temperatures around 28 °C (82 °F). The monsoon season starts in July and goes on until October, with torrential rainfall, due to the blocking of the monsoon clouds by the Himalayas. The post monsoon season starts in October and goes on until late November, with average temperatures sliding from 21 °C (70 °F) to 15 °C (59 °F). Winters start in December, with lows close to freezing and frequent
cold waves due to the cold katabatic winds blowing from the Himalayas. The total annual rainfall is about 2600 mm (102 in).

Roorkee is famous for the manufacture of survey and nautical instruments. It started in early 1900, with the repairing of instruments of the Thomason College of Civil Engineering (later University of Roorkee and then IIT Roorkee) and moving on to manufacturing of compasses, levels and other surveying instruments. After getting the state status to Uttarakhand, Roorkee has grown to having 100+ industries and corporate houses under SIDCUL.

The small towns like Roorkee are also facing this problem of infrastructure facilities. A number of residential colonies have come up in this small town during last 15-20 years but the development is only limited to residential buildings along with approach roads and even these roads are not sufficient as the load of vehicles is increasing day by day. There are also problems of other infrastructure facilities like water supply, sewerage and proper drainage system. People have their own tube-wells / hand pumps with septic tanks for excreta disposal. In the rainy season majority of colonies are choked with water. Some efforts by the government by declaring the Roorkee area as regulated one and even by some private developers are there for a better quality of infrastructure but these are not sufficient. There is a need of some strong planning legislation to support the urban planning activities and proper integration of infrastructure facilities.

Roorkee is a business centre also. It has many business and service centres. After birth of Uttarakhand State it is developing as a leading business and service centre of the state. Apart from other services, it has many advertising agencies also providing print, electronic, outdoor, online media services.

The study area is a part of the Roorkee town. We have studied at part of the areal falling under Civil Lines zone of the municipal boundary. This area has a mixed character of residential and commercial. There are some of the institutional buildings. The area is has some major physical infrastructure and some of the major social infrastructure of the town. The Study area is a part of the Civil Lines area of Roorkee. The area of the pocket assigned for study to this group is 46 hectare. The estimated population of the study area is 12,700. The building located in the study area is around 840.

FIGURE 0-1: LOCATION OF STUDY AREA
LAND USE PATTERN

The study area has a good mix of different landuses which can be seen in the given table no. 1 and chart no. 1. We find that the study area is primarily a residential pocket of the town. Being located on the major road and junions of the town the development of the mixed use along the road can easily be seen in the town.

The study area has around 46 percent as residential uses. The percentage of the recreational space is 26 out of the total. We can find that the green space is smaller and highly distributed in the study area.

TABLE 1: LANDUSE DISTRIBUTION

<table>
<thead>
<tr>
<th>Landuse</th>
<th>Percentage</th>
<th>Area in Hactar e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>46</td>
<td>21.16</td>
</tr>
<tr>
<td>Commercial</td>
<td>5</td>
<td>2.3</td>
</tr>
<tr>
<td>Mixed Use</td>
<td>2</td>
<td>0.92</td>
</tr>
<tr>
<td>Recreational Use and Open Spaces</td>
<td>26</td>
<td>11.96</td>
</tr>
<tr>
<td>Public and Semi-Public</td>
<td>4</td>
<td>1.84</td>
</tr>
<tr>
<td>Transportation</td>
<td>15</td>
<td>6.9</td>
</tr>
<tr>
<td>Utilities and Services</td>
<td>1</td>
<td>0.46</td>
</tr>
<tr>
<td>Agricultural Land and Water Bodies</td>
<td>1</td>
<td>0.46</td>
</tr>
<tr>
<td>100</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

BUILD ENVIRONMENT

The character of the build environment in the study area is unique in itself as the area has a good mix of low income housing, middle income housing, high income housing; commercial space racing from informal sector to organized showrooms; the mix of mass and void is clearly visible in the study.
area. The gross floor area ration (FAR) of the study area is 0.89 while the residential area have FAR of 1.2. The ground coverage of the building is varied over large extent, while the smaller plots have 100% ground coverage, the government houses have 25-30% ground coverage.

PLAN: 1: THE BUILDING HEIGHTS OF THE BUILD AREA IS SHOWN HERE.

The study area comprises of Newly Developed areas and Modern style houses can be seen in majority. Still we can see some old colonial style of buildings in the areas. We can see this contrast in the given figures.

Few Colonial style and old housing stock could be witnessed too. No kachcha houses.

Most of the building are double storied followed by single and few triple storeyed. Surprisingly, the dilapidated houses are rare to find in the study area.

The study area is free from any slum like structures and living conditions.

FIGURE 0-2: COLONIAL STYLE OF OLD BUILDING

WATER SUPPLY SYSTEM

Water is a precious natural resource vital, for sustaining all life on the earth. It is in a continuous circulatory movement - hydrologic cycle. It is not uniformly distributed in time and space. Due to its multiple benefits and the problems created by its excesses, shortages and quality deterioration, water as a resource requires special attention.

SEWERAGE SYSTEM
There are different types of sewage systems, which can be described as on-site systems, and sewage or effluent systems. An example of an on-site disposal system consists of a septic tank and leach drains.

A sewage or wastewater system disposes of the effluent from a community at a central place usually called a sewage lagoon or effluent pond. The sewage can be treated in a septic tank at each building just before the lagoon in a large septic tank or macerator system, or in the lagoon itself. There is no planned sewerage network in the town. Most of the disposal of sewerage in Roorkee is done through septic tanks. Some parts like Indian Institute of Technology campus and cantonment board area have their own decentralized sewerage disposal mechanism.

Existing water network and facilities are in bad shape. Most of the existing drains are opened. In some areas the drains are in bad shape which can be seen from the photographs taken from the area.

The road networks in the study area are mostly based on gridiron pattern in the residential areas but overall the network of the road seems to be very organic in nature and character. The National Highway no. 58 passes at one side of the study areas and there is some collector road. We can clearly see three level of the hierarchy of the road in the study area. The figure plan given below will depict in a better manner.

**WATER DRAINAGE**

**FIGURE 0-1: HIERARCHY OF ROAD IN THE STUDY AREA**

**FIGURE 0-2: TRAFFIC JUNTIONS NOT DESIGNED PROPERLY**
There is gross lack of segregation of solid waste at household level and handling and management improvements at wards and town levels with an emphasis on waste minimization. The provision of solid waste collection and transportation equipment is there and it is active in the sense that there is a weekly collection of the solid waste from the study area. Construction of sanitary landfills in accordance with GoI’s Municipal Solid Waste Management and Handling Rules 2000 is missing in the city.

HEALTH FACILITIES

There are two hospitals and around eight small clinics in the study area. There is no government primary health center. Both the hospitals are private and one is run on charity basis. The small clinic cater to the well-off families and render immediate services.

SOLID WASTE

FIGURE 0-1: A PRIVATE HOSPITAL IN THE STUDY AREA

FIGURE 0-2: A PRIOVATE CHARITY HOSTPITAL

FIGURE 0-3: BUS STAND OF THE ROORKEE TOWN FALLING UNDER THE STUDY AREA LIMIT

FIGURE 0-4: MAJOR TRAFFIC JUNTIONO OF THE AREA
COMMUNITY FACILITIES

There is a Shiva temple in the study area. Besides this, there are some smaller temples too. There is a club for old aged people in the area. There is no other planner community facilities in the study area.

RECREATIONAL USES

The study area no planned parks and playground but still the open spaces of the campuses of the public buildings acts as temporary open space and recreational spots. The bank of the Ganga Canal following adjoining to the study area serves as a good recreational spot. There is good Ghats created along the Canal near the temple.

INFORMAL SECTOR

The study area has good number of informal sector mushrooming. The roadside vendors and small dhabas are common along the major roads. The study of the informal sector gives us an insight into how the incidental space turn to be of value to people who have no means to run a shop or small business. There is a weekly market called Mangal Bazar in the study area. Where you can find a lot of stuffs of day to day uses in the study area this also gives opportunities for small traders from other places to come and display their goods and services for sale during the particular day.

<table>
<thead>
<tr>
<th>Commercial Uses</th>
<th>Distribution of Commercial Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothes Related Shops</td>
<td>17</td>
</tr>
<tr>
<td>Repair Shops of Electronic Goods</td>
<td>11</td>
</tr>
<tr>
<td>Eateries</td>
<td>14</td>
</tr>
<tr>
<td>Stationary Shops</td>
<td>9</td>
</tr>
<tr>
<td>Gift Shops</td>
<td>2</td>
</tr>
<tr>
<td>Show Rooms</td>
<td>3</td>
</tr>
<tr>
<td>Service Providers Like Tailor, Washerman etc.</td>
<td>4</td>
</tr>
<tr>
<td>Groceries</td>
<td>24</td>
</tr>
<tr>
<td>WholeSale</td>
<td>1</td>
</tr>
<tr>
<td>Fruit and Vegetables</td>
<td>3</td>
</tr>
</tbody>
</table>
COMMERCIAL USES

In the name of commercial uses we, find small shops and some show rooms. The commercial facilities are not well distributed. There is no hierarchy of the commercial spaces in the study area. We find most of the commercial uses along the major collector roads.

FIGURE 0-1: COMMERCIAL USES

FIGURE 0-2: COMMERCIAL USES
MIXED USES

Most of the collector road has mixed use character. The unplanned growth of commercial spaces and unregulated licensing for commercial uses is turning every street into commercial spaces. The lack of any planned hierarchal commercial space is another good reason for the growth of the mixed uses.

SWOT ASSESSMENT ARE STUDY AREA

The strength, weakness, opportunities and threats (SWOT) analysis gives us an opportunity to condense our finding and it becomes the basis of reform and improvement proposals.

CONSOLIDATED ISSUES

Following are the major problems of the area.

1. Lack of open spaces
2. Non-hierarchical commercial open spaces
3. Lack of pedestrian facilities
4. Unsignalled traffic junctions
5. Uncovered drains
6. FAR is very low and high ground coverage

STRATEGIES AND RECOMMENDATIONS FOR REFORM

1. There is gross lack of open space and the best solution would be to develop the canal front as a recreational spaces.
2. The unorganized commercial spaces can be better organized through the
controlling of the permissible mixed-use zones in the streets.

3. The drains can be covered and the choked drains can be maintained properly if the public agency initiates the participatory urban management approach.

4. The pedestrian facilities can be improved through the use of the spaces along the road and paving the footpath to make them good for walking.

5. FAR is very low which can be increased to accommodate more population and contain the urban sprawl taking place.

REFERENCES


