International Journal of Advanced Educational Research
ISSN: 2455-6157
Impact Factor: RJIF 5.12
www.educationjournal.org
Volume 2; Issue 5; September 2017; Page No. 30-33

Transport network in the planned city Chandigarh

Anuradha Nandal
Department of Geography, Panjab University, Chandigarh, Punjab, India

Abstract
Present study concentrate on the transport network of Chandigarh and attempts are made to find out the major system of road network. In this study draw the bus routes with important places points. City transport always an important mean of public transport. Chandigarh is the first planned city in India and having the well managed public transport with more than thousands buses. In this study explore the capability of public transport and route coverage.

Keywords: bus, Chandigarh, public, road, terminal, transport, traffic flow, vehicles

Introduction

Transport or transportation is the movement of people and goods from one location to another. Transport is performed by modes, such as air, rail, road, water, cable, pipeline and space. The field can be divided into infrastructure, vehicles, and operations. The form capacity and efficiency of these networks have a substantial impact on our standard of living. A mode of transport is a solution that makes use of a particular type of vehicle, infrastructure and operation. The transport of a person or of cargo may involve one mode or several modes, with the latter case being called intermodal or multimodal transport. Each mode has its advantages and disadvantages, and will be chosen for a trip on the basis of cost, capability, route, and speed.

Infrastructure consists of the fixed installations necessary for transport, it may be roads, railways, airways, waterways, canals and pipelines, and terminals such as airports, railway stations, bus stations, warehouses, trucking terminals, refueling depots (including fueling docks and fuel stations), and seaports. Terminals may both be used for interchange of passengers and cargo, and for maintenance. Vehicles traveling on these networks may include automobiles, bicycles, buses, trains, trucks, people, helicopters, and aircraft. Operations deal with the way the vehicles are operated, and the procedures set for this purpose including financing, legalities and policies. In the transport industry, operations and ownership of infrastructure can be either public or private, depending on the country and mode.

Passenger transport may be public, where operators provide scheduled services, or private. Freight transport has become focused on containerization, although bulk transport is used for large volumes of durable items. Transport plays an important part in economic growth and globalization, but most types cause air pollution and use large amounts of land. While it is heavily subsidized by governments, good planning of transport is essential to make traffic flow, and restrain urban sprawl.

A road is an identifiable route, way or path between two or more places. Roads are typically smoothed, paved, or otherwise prepared to allow easy travel; though they need not be, and historically many roads were simply recognizable routes without any formal construction or maintenance.[6] In urban areas, roads may pass through a city or village and be named as streets, serving a dual function as urban space easement and route.

Urban travel presents the most challenging problem before the planners and policy makers of our time. In addition high standard of living and high levels of consumptions have created a high degree of spatial interactions, which in turn depends upon a highly developed and complex transportation system. At present raw material manufactured goods and people have to be moved in large volumes, transportation has to be provided on a large scale.

In well populated and urban industrial areas there is usually a dense pattern of transport lines. A set of transportation lines or roads which may and frequently do join and cross of functions forms a transportation net (network). Basically a transportation network may be regarded as a set of inter connected route ways along which movement take place in addition to its functions of distribution. The network also serves to link location together. Example farm to market, residence area to market, and city centre etc. network may change with time. They may change their function.

The features, characteristics and pattern of transportation networks are capable of investigation and analysis and in recent past geographers have applied humorous techniques for these purposes.

Chandigarh is the first planned modern city of India designed by the French architect Le Corbusier. Chandigarh is a city in India that serves as the capital of two states – Punjab and Haryana. However, the city does not belong to either state. Rather, the city is administered by the federal government and hence classified as a union territory. Chandigarh and the area surrounding it were constituted as a union territory on 1st November, 1966. The city was named after the mother goddess of power, Chandi, whose temple Chandi mandir is a feature of the new city. Le-Corbusier was assisted by his cousin, Pieree Jeanneret and the English couple E. Mazwell

Fry and Jane B. Druel. These three architects are responsible for most of the public and residential building raised in Chandigarh between 1950 and 1965. The city beautiful city is also known as 'city of roses' because of a garden entirely devoted to roses.

Chandigarh is bounded on the north and west by Punjab and east and south by Haryana. Total area of the union territory is 114 Sq. Km. it is located in Latitude 76.420 to 76.510 North Longitude 30.400 to 30.460 East. Chandigarh is located in the fringes of the Shivalik range at 30° 44' 14 N latitude and 76° 47' 14 E longitude. The area falls under the Indo-Gangetic Plain a few miles south of the Shiwalik Hills and between two seasonal hill torrents, the Sukhna Choe and the Patiali Rao. The land is a flat, fertile tract of alluvial soils. It covers an area of approximately114 km² and shares common boundaries with the states of Haryana in the south and east, and Punjab in the north and west. Chandigarh has a sub-tropical continental monsoon climate characterized by a seasonal rhythm, hot summers, cool winters, unreliable rainfall and great variation in temperature (0 °C to 44 °C). In winters, frost sometimes occurs during December and January. The average annual rainfall is 104.8 cm. It also receives occasional winter rains from the western disturbance. The best season is between September and November when the sky is crystal clear and mornings and afternoons are delightful.

Chandigarh city which is a well planned capital city of Punjab and Haryana states in India is composed of rectilinear grid iron pattern of road. Here in the project report a modest attempt has been made to prepare a database on GIS technology; with the following objectives: To identify the nodes in transport network, the efficiency level of nodes, the discrepancies in the present transport network.

Major Roads

Chandigarh has a grid iron pattern of roads, spread over the length and breadth of the city. All the roads are almost straight and the curves are very rare on the Chandigarh roads.

The noticeable feature of the city planning is the uniqueness in the pattern of building, Drainage and particularly in road system. The system of the road is termed by the Le- Corbusier as the seven V's (Voice- de – Circulation). The seven V systems represents a fully organized, Universally applicable system, establishing a breakdown of traffic into a scene of seven category containing energy level of circulation frame arterial roads to apartments houses.

V1: The V1 represents the regional highway leading to the city from outside. In a case of Chandigarh this would be grand trunk road coming from Delhi on one side and national highway from Shimla can be other side. These roads are meant to have no physical development on the either side but are to provide for smooth, fast, uninterrupted and graceful approach to the city.

V2: The V2 forms the main horizontal axis of the town. On these roads, there are important public and commercial buildings on one side or both sides. In Chandigarh, the important V2s are Madhya Marg connecting the city centre to capital complex which intersects at the lower edge. Another projected V2 (Dakshin Marg). V2 is a system of separate lanes to accommodate the various classes of traffic, fast and slow moving vehicles and pedestrians.

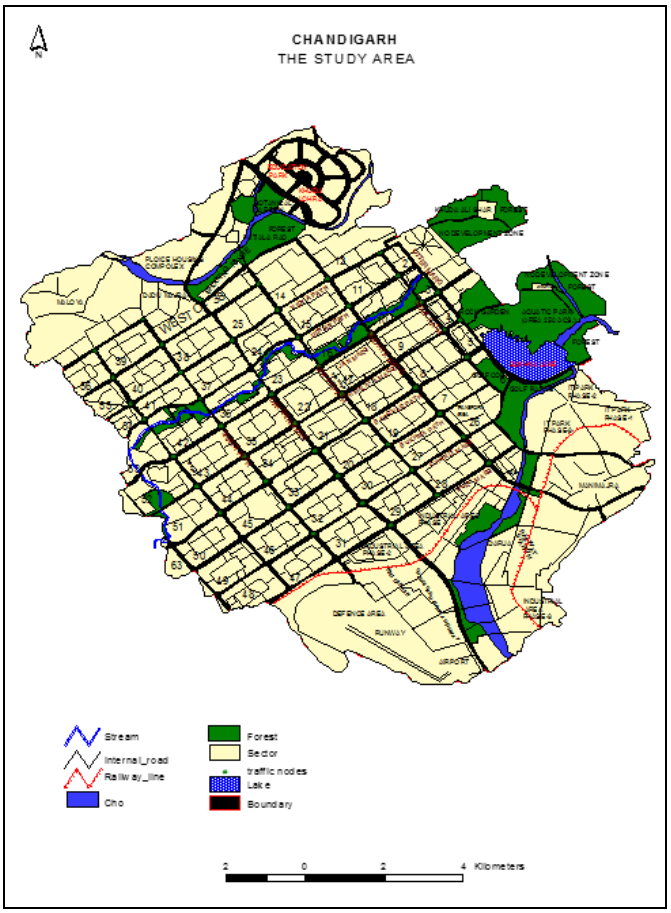

Fig 1

V3: V3 is reserved for the fast and slow moving motor traffic. It surrounds the residential sectors which forms the grid pattern of the city. These are corridors for the singular functions of movement and to provide access to the various sectors located along side.

V4: The bisects in each sector is V4 or shopping street. This is intentionally open to a variety of traffic but permitting only relatively slow movement. The street is meant to cater to all type of traffic with ample parking space for vehicles and bicycles but unlike V2s the traffic is supposed to move at controlled speed. Hence running through the street is provided with several curves and round about on it's short of 800m through a sector.

V5: The road intersecting V4 at two points would be a V5. It is a loop road distributing low traffic with in confines of sectors and connecting with adjoining sectors.

V6: The extremities of the network are the V6 paths leading to the doors of the houses.

V7: These are the paths designed to carry cyclists and pedestrians through the park belts of the city. It is narrow pedestrian meandering through the linear open spaces of the

sectors so as to provide a released and eye soothing environment to the pedestrians.

V8: V8 have been recently included in the system of roads for separate move.

Vidya Path: This road starts from sector 2 and goes to straight to sector 55. Utter path is in the north of this path and it divides sector 12 and 11, 14 and 15, 25 and 24, 38 and 37, 40 and 41, and lastly 55 and 54. This is known as Vidya path because many education institute lies beside this road like Punjab engineering college; sector-12, Post graduate institute of medical and research in sector 12, Panjab university in sector 14, University institute of engineering and technology in sector 25, this is the part of Panjab university; Chandigarh. Dental college also located in sector 25 along this road. So we can see through above mentioned location why this path is known as Vidya Path. This is V3 road.

Udyan Path: This road is parallel to the Vidya path. This road divides 3 in the north and 54 and 53 in the south. Utter path is in its north and Vidya path is in its east and in the west there is Jan path. In the left side of this road are sector 2, 11, 15,24,32,41 and on the right side there are sectors 3,10,16,23,36,42,53. This is V3 road.

Jan Marg: This Marge is parallel to the Udyan path and separates sector 3 and 4 in the north and 53 and 52 in the south in between it divides sector 10 and 9, 16 and 17, 23 and 22, 36 and 35, 42 and 43. This is V3 road. In the left side of this road there are sectors3, 11, 15, 24, 32, and 41 and in the right side there are 4, 9, 17, 22, 35, 43, and 52. This is V3 road.

Himalaya Marg: This marg divides sector 4 and 5, 9 and 8, 17 and 18, 22 and 21, 35 and 34, 43 and 44, 52 and 51. In the north of this road there is Utter Marg and in the south there is Shanti path. This is V3 road.

Sarover Path: It starts from the main gate of Sukhna Lake and that's why known as Sarover path and it separates sector 5 and 6 in the north and 51 and 50 in the south. In the left side of this road there are sectors 5, 8, 18, 21, 33, 44, 51 and in the right side there are 7, 19, 20, 33, 45, and 50. This is V3 road.

Sukhna Path: It lies parallel to the Sarover path and in the eastern side of it. This road also leads to the Sukhna Lake and is known as Sukhna Lake. It separates sector 7 and 26, 19 and 27, 20 and 30, 33 and 32, 45 and 46, 50 and 49. This is V3 road. In the north of this road there is Vidya path and in the south there is Shanti path.

Chandi Marg: This road lies west of the Purav marg and parallel to it; it separates sector 26 and 26 transport area, 27 and 28, 30 and 29, 32 and 31, 46 and 47, and 49 and 48. This is V3 road.

Purav Marg: This is the eastern most marg of the city and that's why known as the Purav marg. It divides sector 26 transport area and 26 east, 28 and Industrial area phase-I, 29 and Industrial area phase-I, 31 and Industrial area phase-II, 47 and 48 lies in its west. This is V3 road.

Utter Marg: This is the northern most road of Chandigarh and that's why it is known as the Uttar Marg. It passes through north of sector 2, 3, 4, 5, and 6 and leads to Suhkna Lake. This is V3 road.

Vidya Marg: There is another Vidya marg parallel to the Madhya marg and in north east side of it. . It starts from sector 2 and goes to golf course sector 6. It separates sector 11 and 2, 10 and 3, 9 and 4, 8 and 5, 7 and 6. This is known as Vidya path because many colleges lie in the sector separated by this road like Government College for men and women in sector 11, DAV College in sector 10 etc. this is V3 road.

Madhya Marg: This road is known as Madhyamarg because this pass through the centre of Phase-I in Chandigarh and this is the major and very busy route as it connects Maniumajara, Panchkula, and it leads to Pinjore and opens the gate to Shimla in Himachal Pradesh. This road separates sector12 and 14, 11 and 15, 10 and 16, 9 and 17, 8 and 18, 7 and 19, 26 and 27 and 26E and IA-I etc. This is V2 road.

Udyog Path: This road is parallel to the Madhya marg and is known as Udyog path as it is the road going to the Industrial area phase-I. This roads starts from sector 25 and separates sector 14 and 25, 15 and 24, 16 and 23, 17 and 22, 18 and 21,19 and 20, 27 and 30, 28 and 29 and then goes to Industrial area phase-I. This is V2 road.

Dakshin Marg: This road lies in the south of the city and that's wahy known as the dakshin marg. It divides sector 25 and 38, 24 and 37, 23 and 36, 22 and 35, 21 and 34, 20 and 33, 30 and 32, 29 and 31, IA-I and IA-II and then goes to Ambala via Zirakpur. This is also one of the major and busiest roads. This is V2 road.

Shanti Path: This pass through sector 38w and 39, 38 and 40, 37 and 41, 36 and 42, 35 and 43, 34 and 44, 33 and 45, 32 and 46 and lastly 31 and 47. This is V3 road.

Slip Roads: Slip roads are made on the round abouts for the smoother flow traffic. When a vehicle is coming from the left side or from the right side and that has to go its left side then it can easily move with the shortest path with the help of slip road. There are many round abouts in Chandigarh on which slip roads are made for the smoother flow of traffic.

Need of slip road: Chandigarh is the first planned city of the India. When Chandigarh was developed there were only round about. But presently slip roads are also developed with the round about. There is reason behind it. When Chandigarh was developed the population was less but with the passage of the time the population was also increased and with the population traffic also increased. Due to heavy traffic there was traffic jam at the round abouts. So, to divert the traffic from the roundabouts slip roads were developed. With the help of slip vehicles can move to another direction before reaching to the roundabout. Slip roads are very helpful in

reducing the traffic jams on the nodes.
This table is showing the location of slip roads on the different round abouts. Out of 46 round abouts slip roads are made on 15 round abouts. Among the 15 roundabouts with slip road 3 are on Chandi marg these are on the round abouts of the sector 32/30, 30/27, 27/26. 3 are on Sarover path these are on the round abouts of the sector 34/21, 21/18, 18/8. 3 are on Sukhna path these are on the round abouts of the sectors 33/20, 20/19, 19/7. 2 are on Himalya marg these are on sectors 35/22, 22/17. One is on Udyan marg this is on the sector of 37/24. One is on Jan marg this is on 36/23 round about. One is on Purav marg this is on 31/19 round about. One last is on Dakshin marg on the round about of 11 sectors.

Traffic Lights: Traffic lights, which may also be known as stop lights, traffic lamps, stop-and-go lights, robots or semaphore, are signaling devices positioned at road intersections, pedestrian crossings and other locations to control competing flows of traffic. They assign the right of way to road users by the use of lights in standard colors (Red - Amber - Green), using a universal color code (and a precise sequence, for those who are color blind).The most common traffic lights consist of a set of three lights: red, amber, and green. When illuminated, the red light indicates for vehicles facing the light to stop; the amber indicates caution, either because lights are about to turn green or because lights are about to turn red (depending on the region of the world you are in); and the green light to proceed, (if it is safe to do so).

Need of traffic lights: When Chandigarh was developed there was no traffic lights because there were many roundabouts in Chandigarh and these roundabouts were made for the smooth flow of traffic. At the round round about vehiles move slowly but they do not stop. But with the passage of time and increase in the volume of vehicles there were persistent traffic jams on the round abouts due to heavy traffic. So. In order to avoid the traffic jams, traffic lights have to estblished on the round abouts where the traffic was heavy. Traffic lights are not develpoed on the all round abouts these are only where there was heavy rush. Majority of these traffic lights are installed in the southern sectors and those roads which are conecting Mo This table is showing the location of traffic light on the different round abouts.

Recent development
Chandigarh is planned city and it has been made with the proper planning but with the passage of time population has increased and with the population traffic is also incresed. Due to the heavy flow of traffic a number of accidents started occuring. So to avoid the accidents some developments are done by the planning commission. These are:

Typical design of cycle track on V3 and V5 road
It has been observed that the cycle track on the V3 road opens in the V5 roads would only be feaseble if the A.T.C. signals is installed on V3/V5 road. Usually the A.T.C. signal is installe on V3/V5 road by which the functioning of cycle track when merged to V5 road prone to accidents. It is suggested that the cycle track on V3/V5 junction should emarge in the V3 road 120’ ahead of junction and further suggested from V3 road beyond 120’ of junction as shown on the layout plan.

Widening of V5 roads
It is brought to your notice that as per planning of roads in Chandigarh with a perticular sector V5 roads are most important for smoother movement of vehicular as well as pedstrain from V6 roads has to pass through V5 roads for reaching V3 roadsas well as the sectoral markets located on V4 roads. Besides no. of instutions like shool, dispancsaries etc. are also located on V5 roads. The present width of V5 roads to 24’-0” which was sufficient to meet the volume of traffic in the initial stages of the development of the city. However now with a tremondous increase in vehicular traffic and also coming up of no. of schools and other institutions on V5 roads, these roads have become quite dangerous with their width of 24’-0”. Considering of all these aspects corporate has requested the chief Architect, U.T, Chandigarh for giving permission to take up a project for widening V5 roads from their ultimate width of 24-0 to 33-0.

Conclusion
Transport network in Chandigarh is of grid iron system. All the roads are known by their name. There are two bus stands in the Chandigarh. One is in sector 17 and another is in sector 43. Madhya marg is the busiest route network as it connects Maniumajara, Panchkula, and it leads to Pinjore and opens the gate to Shimla in Himachal Pradesh. Due to heavy traffic there was traffic jam at the round abouts. So, to divert the traffic from the roundabouts slip roads were developed. With the help of slip vehicles can move to another direction before reaching to the roundabout. When Chandigarh was developed there was no traffic lights because there were many roundabouts in Chandigarh and these roundabouts were made for the smooth flow of traffic. At the round round about vehiles move slowly but they do not stop. But with the passage of time and increase in the volume of vehicles there were persistent traffic jams on the round abouts due to heavy traffic.

References
1. Eliot Hurst, michael El. Transportation Geography Published by Mcgrow-hill. 1974
2. Kalia, Ravi. Chandigarh- The making of an India city published by S.K. Mackerjee. New Delhi. 1987
3. Mehta VP, Sharma SK. Chandigarh- A city beautiful, Vishvas publicayion, Chandigarh. 1974
4. Prakash Aditya, Prakash Vikramaditya. Chandigarh- The city beatiful, Abhishek Publication Chandigarh. 1990