3

INSTITUTIONAL FRAMEWORK OF INFRASTRUCTURE DEVELOPMENT

Infrastructure is the pillar of industrial and agricultural output, as well as global and domestic business. It is the basic organizational and physical structure needed to run a successful firm or nation. Communication, transportation, monetary systems, education, health, safe drinking water, and sewage, are all examples of fundamental infrastructure in an organization or for a nation. The infrastructure of a nation has a direct impact on its economic and social development. Because of the enormous expansion of economic and social infrastructures, several developed nations have made significant developments. Infrastructure consists of the following components power and the objects used to construct it, such as coal and oil, roads and rail transportation, telecommunications, sea ports and airports Irrigation is a significant element of agriculture's infrastructure. As a result of a good infrastructure, the work process is more efficient, resulting in greater productivity.

LEARNING OUTCOMES

After studying this lesson the learner:

- summarizes the application of road infrastructure by various authorities
- explains the coordination of road infrastructure develop between various authorities;
- identifies the Importance of National Highway Numbers;
- lists the Allocation of National Highway Numbers;
- identifies the operation structure of NHAI;
- defines the functions of NHIDCL and State PWD.

3.1 SIGNIFICANCE OF NATIONAL HIGHWAY NUMBERS

3.1.1 National Highways

The National Highways are the backbone of the road infrastructure that links all metropolitan city of India such as ports, capitals of states etc. There one two, four or more lanes constructed with charcoal and cement concrete. The Ministry of Road Transport and Highways is mainly responsible for the development and maintenance of National Highways (NHs). The Ministry receives several proposals from diverse State Governments and Union Territories (UTs) for the declaration of State roads as new National Highways (NHs).However, the Ministry from time to time has consider the declaration of only few State roads as new NHs based on the need for connectivity, inter-se priority as much as availability of funds.

The declaration of these State roads as new NHs is taken into account based on well established principles such as the condition for State roads for declaration as new NHs adding the roads based on following

- Roads moving through length
- The breadth of the nation
- Linking towards adjacent nations
- National Capitals along with State Capitals
- Mutually the State Capitals
- Major and non-major ports
- Large industrial centers or tourist centers
- Roads connecting very significant strategic necessity in hilly and isolated location
- Arterial roads which facilitate sizeable decline in travel distance and attain substantial economic development thereby
- Roads which assist by opening up huge tracts of backward location and
- Regions in hilly (other than strategically significant ones), attain a National Highways grid of 100 km, etc.

1. Indian National Highway structure

The National Highways in India are a network of trunk roads managed by the Ministry

of Road Transport and Highways. It is built and administered by several organizations such as

- The National Highway Authority of India
- The National Highways and Infrastructure Development Corporation Limited, and
- The Public Works Departments of State Governments.

2. National Highway Numbers

Till the year 2010, the National Highways continued to be numbered in the same way they were numbered. In addition, the National Highways are listed every National Highway according to the National Highways Act of 1956. In order to rationalize the numbering system, during the year 2010, the government had sent notification strating that "The number of National Highway which is currently existing does not offer any indication of its spot and direction". As a result, the new system is framed so that all roads east-west will have odd numbers, and all roads north-south will have odd numbers, and all the highways of north-south will have even numbers. In the north-south direction of odd numbered highways the number increases. In such a case a highway from the spot Jodhpur to Kanpur will be have a smaller number of lanes them a highway from Mumbai to Chennai. For highways which start with even-numbers the numbers rise from east to west. Similarly a highway which connects from Kolkata to Chennai will increases have feuer roads than a highway starting from Delhi to Mumbai.

The digits of each number will educate anyone whether an interstate links multiple metro areas, or exists exclusively within a single metro location. The Interstates with multiple regions usually have one-digit and two-digit span, while interstates with three-digit spans are more likely tope domestic. The rest of the structure flows from this most fundamental starting point.

3. The system of one/two-digit

There exist three factors that move towards determining the number for a two-digit interstate:

1. The East-west roads receive even numbers, whereas north-south roads will obtain odd numbers.
2. The lowest numbers start in the south and west, and rise from north and east.
3. The most significant cross- nation interstates receive numbers which are divisible by five, meaning they generally end with zero or five.

Thus, for instance, the name I-95 was given to the farthest east main national cross-country interstate that traverses towards a north-south path. Similarly, the name I-10 was assigned to the farthest south main interstate traversing towards an east-west path.

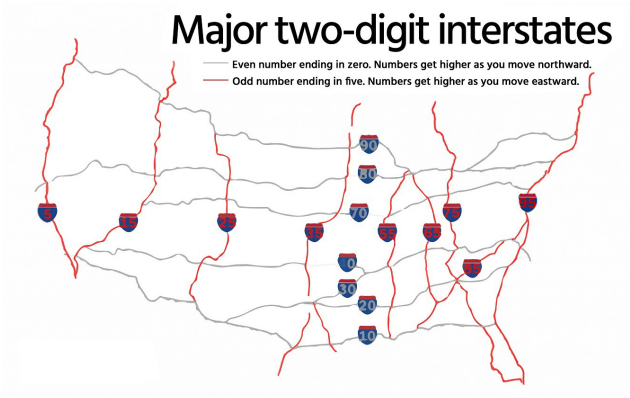

Fig. 3.1: **(a) Major Two-Digit Interstates**

The interstates with smaller two-digit numbers are those ending in digits either zero or five and do follow the same similar geographic rule of east-west or north-south, but in a much losser from. The Diagonal highways generally do not always fit the structure. While few interstates were added to the network after it was initially constructed, moving in the exact order wasn't feasible forever. Until 1998, I -99 not designated, and move into Central Pennsylvania well to the west of I-95.

Fig. 3.1: **(b) Major Two-Digit Interstates**

The major interstates with two-digit (fives and zeros) will have unique numbers; there exists only one highway which is named I-95, only one I-70, etcetera. While numbers could repeat as long as they are distant apart from one another. For instance, there exist separate I-76s in Pennsylvania as well as in Colorado as well as separate I-87s in the city such as New York as well as North Carolina .

There are a very few short two-digit interstates that perhaps should have received three-digit numbers instead. The North Carolina's highway I-87 is only 13 miles long, where as Maryland's I -97, which links Baltimore to Annapolis, which is less than 18.

4. The system of three-digit

The interstates with Three-digits are shorter paths that serve individual metro locations, as opposed to the two-digit intercity paths. They link towards the longer two-digit paths, and they act as beltways, spurs, or even connectors. There are two factors that move into three-digit numbering:

A. The second two digits reflect whatever two-digit interstate the path connects to. For instance, I-395 links to I-95, and I-270 links to I-70.

B. The first digit always reflects the intention of the road. Loops and by passes that connect with their chief two-digit interstate in two locations generally have even first digits. Spurs and connectors that only intersect once typically have odd first digits.

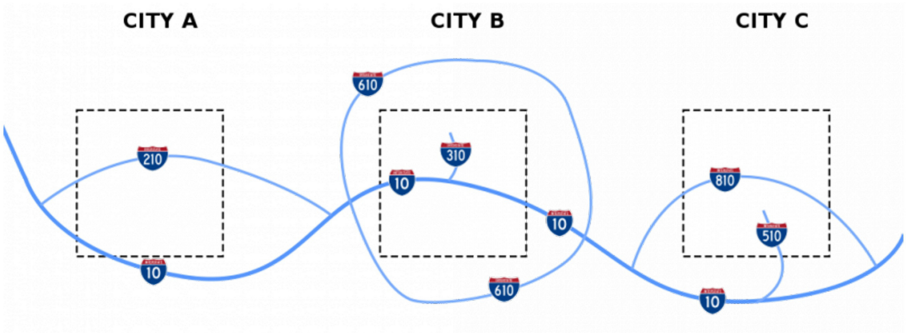

Fig. 3.2: **The system of three-digit**

The interstates with three-digits numbers can repeat as often as necessary as long as it does not repeat inside the same state. For example, there one seven diverse I-395s and four diverse I-270s. Observe that in developed nations like the United States both Baltimore and Washington have their own spur I-395, whereas Baltimore does not have an I-495 becouse Washington's Beltway penetrates into Maryland.

Certainly, there exist several exceptions. For example in USA say the city number Maryland's I-270 is a real troublemaker: The question is why should a spur link to I-70 at the same location obtain an even first digit in spite of an odd? I-370 is the spur off of a spur in Gaithersburg, so why doest I-270 in Bethesda also get it own number maybe I-570?

The main exception perhaps falls to I-238 in the vicinity of San Francisco Bay. There is no I-38 and therefore there should be a number I-238. I-238 links I-580 and I-880, which are each spurs off of I-80. As a general rules I-238 could have received an I-x80 number, but since California was in California, all the available options one through nine were in advance for other such highways. While I-238 which used to be California rate 238 was transformed into an interstate.

a. Hawaii, Alaska, and Puerto Rico

In spite of having no direct land links to the rest of the United States, Hawaii, Alaska, as well as Puerto Rico all have their interstate highways. These are generally given in lattered prefixes such as H for Hawaii, A for Alaska and similarly PR for Puerto Rico. Moreover, they also have an easy numbering structure, with highways numbered consecutively starting with 1. Hawaii's first interstate is H1, Alaska's A1, and Puerto Rico's PR1.

5. Merits of Highway numbers

The Highway numbers which is placed can benefits the commuters in the following ways:

- Low risk / High Speed Travel
- Identification of type of road
- Cross Traffic Eliminated
- Median between opposing lanes
- No pedestrians, bikes, slow moving vehicles
- Wide shoulders make good escape paths
- Signs well posted, in advance to warn drivers
- Can hold large volumes of traffic
- Straighter roads, no traffic signals
- Higher speed limits
- Minimizes distance between major cities
- Evacuation routes
- Military usage

INTEXT QUESTIONS 3.1

1. Define National highways
2. The major interstates with two-digit numbers will have a unique numbers -True / False
3. The National highways in India which has a network of _____ roads maraged by the Ministry of Road Transport and Highways.
4. The interstates with smaller two-digit numbers are those end with zero or _____.

3.2 NATIONAL HIGHWAYS NUMBERS WITH ITS STATE CONNECTIVITY

Fig. 3.3: **National Highways Numbers**

Table 3.1: **Significant National Highway Numbers in India**

S. No.	National Highway Number	States through which it moves
1	No 1	**Jammu and Kashmir** (URI, Baramulla, Kargil, Srinagar and Leh)
2	No 2	**Assam, Nagaland, Manipur, Mizoram:** (Dibrugarh, Sivnagar, Wokha, Imphal, Kohima, Mokokchung

3	No 3	**Punjab, Himachal Pradesh, Jammu & Kashmir** (Atari, Amritsar, Jalandhar, Hoshiarpur, Hamirpur, Mandi, Kullu, Manali)
4	No 4	**Andaman & Nicobar Island** (Mayabunder, Port Blair, Chidiatapu)
5	No 5	**Punjab, Chandigarh, Haryana, Himachal Pradesh** (Ferozepur, Moga, Jagraon, Ludhiana, Chandigarh, Kalka, Solan, Shimla, Thiyog, Narkanda, Rampur)
6	No 6	Meghalaya, Assam, Mizoram (Zorabat, Shillong, Badarpur, Kolasib, Aizawl, Badarpur, Panchgram
7	No 7	**Punjab, Chandigarh, Haryana, Himachal Pradesh, Uttrakhand** (Fazilka, Abohar, Bhatinda, Barnala, Sangrur, Patiala, Panchkula, Raipur Rani, Dehradun, Rishikesh, Devprayag, Rudraprayag, Karnaprayag, Chamoli, Badrinath)
8	No 8	Assam, Tripura (Karimganj, Agartala, Udaipur)
9	No 9	**Punjab, Haryana, Delhi, Uttar Pradesh, Uttrakhand** (Dabwali, Sirsa, Fatehabad, Hisar, Hansi, Rohtak, Bahadurgarh, Delhi, Gaziabad, Moradabad, Rampur, Bilaspur, Rudrapur, Tanakpur, Pithoragarh)
10	No 10	**Sikkim, West Bengal** (Siliguri, Kalimpong, Gangtok)
11	No 11	**Rajasthan** (Jaisalmer, Pokhran, Bikaner, Ratangarh, Fatehpur)
12	No 12	**West Bengal** (Raiganj, Malda, Farakhha, Barhampur, Krishnanagar, Ranaghat, Baarasaat, Kolkata)
13	No 19	**Delhi, Haryana, Uttar Pradesh, Bihar, Jharkhand, West Bengal** (Delhi, Mathura, Agra, Kanpur, Allahabad, Varanasi, Mohania, Aurangabad, Asansol, Kolkata)
14	No 20	**Bihar, Jharkhand, Odisha** (Bakhtiyarpur, Bihar Sharif, Nevada, Hazaribagh, Ranchi, Khooti, Chakradharpur, Chaibasa)

15	No 21	**Rajasthan, Uttar Pradesh** (Jaipur, Dausa, Bharatpur, Agra)
16	No 24	**Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, West Bengal, Assam** (3507 Kms); (Porbandar, Udaipur, Chittorgarh, Kota, Shivpuri, Jhansi, Kanpur, Lucknow, Faizabad, Gorakhpur, Gopalganj, Muzaffarpur, Darbhanga, Araria, Purnia, Siliguri, Guwahati, Dispur, Silcher)
17	No 44 (longest NH in India)	**Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Uttar Pradesh, Madhya Pradesh, Maharashtra, Telangana, Andhra Pradesh, Karnataka, Tamil Nadu** (3,745 Kms); (Srinagar, Jammu, Pathankot, Ludhiana, Ambala, Karnal, Panipat, Delhi,Faridabad, Mathura, Agra, Gwalior, Jhansi, Nagpur, Adilabad, Nizamabad, Hyderabad, Kurnool, Bengaluroo, Dharmapuri, Selam, Madurai, **Kanyakumari.**
18	No 48	**Delhi, Haryana, Rajasthan, Gujarat, Maharashtra, Karnataka, Tamil Nadu** (2807 Kms); (Delhi, Jaipur, Kishangarh, Chittorgarh, Udaipur, Ahmedabad, Vadodara, Ankaleshwar, Mumbai, Thane, Pune, Satara, Kolhapur, Bengaluru, Krishnagiri, Vellore, Chennai
19	No 53	**Gujarat, Maharashtra, Chhattisgarh, Odisha** (1781 Kms); (Surat, Jalgaon, Bhusawal, Akola, Amaravati, Nagpur, Bhandara, Devri, Rajanandgaon, Durg, Raipur, Saraipalli, Baargarh, Sambalpur, haridaspur, Paradeep Port

INTEXT QUESTIONS 3.2

1. National highway No. 4 passes through Gujarat, Maharashtra, Chhattisgarh, Odisha -True / False.
2. National highway No. 12 passes through West Bengal -True / False
3. National highway No. 48 ends at _____.
4. National highway No. 53 starts at _____.

3.3 PURPOSE AND ACTIVITIES OF NHAI

The NHAI was formed through the promulgation of the National Highways Authority of India Act, 1988. According to the Section 16(1) of the NHAI Act the key purpose of NHAI is to develop, sustain as well as manage the national highways and other highways which is entrusted or connected to it by the Indian Government.

Fig. 3.4: **Purpose and Activities of NHAI**

Moreover it has been delegated with the project of National Highways Development in addition to other small business enterprises which have been vested by National Highways for development, maintenance and administration of 50329 kms. The total length of NH (comprising expressways) in the country at present is around 1,32,499 kms. While the Highways /Expressways comprise merely about 1.7% of the length of all roads, they cover about 40% of the road passageway. One of the main purposes of NHAI is to implement the National Highways Development Project (NHDP), which is considered to be as India's largest highway project undertaking in a phased scheme.

There are three tier of NHAI :

- The Headquarters (HQ),
- The Regional Offices (ROs) and
- The Project Implementation Units (PIUs).

The National Highways Authority of India's Headquarters is located in New Delhi.

3.3.1 Main Functions of NHAI are as follows

- To develop, maintain and manage the National Highways which are vested in it by the respective Government.
- For appropriate management of National highways, it should collect fees, regulate and control the plying of vehicles.

- To develop and provide construction and consultancy services in India and abroad, as well as to carry out research and development work in connection with the development, maintenance and supervision of highways or any other amenities there at.
- Advising the Central Government on matters related to highways.
- To facilitate the respective State Government in the formulation and implementation of schemes for highway development and mutually agreed upon such terms and conditions
- Construct the offices, workshops and create and sustain hotels, motels, restaurants and other rest-rooms which are close to the highways
- Construct houses and townships for its Employees
- Legalize and control the plying of vehicles on the highways
- Provide amenities for the users of the highways which is necessary for the smooth stream of passage on such highways.

3.3.2 PROJECTS AWARDED BY NHAI

The projects awarded by NHAI are as follows:

Fig. 3.5: **Project awards by NHAI**

INTEXT QUESTIONS 3.3

1. NHAI was formed in the year ____.
2. NHAI has three-tier structure -True / False
3. The key purpose of NHAI is to develop _____ and manage national highways and other highways.
4. One of the main purposes of NHAI is to implement the National Highways _____ Project.

3.4 RESPONSIBILITIES OF NHIDCL

The National Highways and Infrastructure Development Corporation Limited (NHIDCL) is a fully owned organization which is formed under the Ministry of Road Transport & Highways, Government of India. It is responsible for managing a system of over 5,500 km of National Highways out of 1, 15,000 km in India. According to the Goverment, the Cabinet Secretariat is currently in place. (Allotment of Business) Rules, 1961 were framed and the subjects were assigned to the Ministry of Road Transport & Highways.

Fig. 3.6: **Building Infrastructure**

This Ministry is responsible for

- The development and maintenance of National Highways

- The Central Road Fund Administration and
- Formation and execution of policies relating to road transport.

Furthermore this Organization plays several roles which are as follows

- Upgrading
- Carry out surveys
- Establishes
- Designs
- Builds
- Operates
- Administers and
- Promotes the National Highways and Strategic Roads

Comprising interrelating the roads in divisions of the country which assign global boundaries with neighboring nations. The impoved provincial linkage would enhance the cross border trade and assist in safeguarding the nation's worldwide borders. This would lead to the development of a more integreded and economically consolidated North America and South East Asia. In addition to the above, there are general economic benefits for the general public and benifits by integrating the peripheral divisions with the conventional in a more energetic manner. In order to build the road, through the assistance of this Organization, an estimated cumulative length of 10,000 kms has been recognized. The company aims to create customized as well as specialized skills. In terms of dealing with the issues like complications of environmental regions and spotlighting the broad harmonization basics with defense bureaus, the Organization would also take effort to start infrastructure ventures comprising metropolitan infrastructure and consignment and execute as a bureau for the development of all types of Infrastructure. A cross-allocation of technical know how has been visualized as part of business development with other nations and their bureaus, such as multilateral organizations and other institutions.

To assist competent and safe consignment regionally with other member nations in South Asia Subregional economic Cooperation (SASEC), the company also recommended to develop the road linkage and efficiency of the global business passage, by extending about 500 Kms of pathways in the nation of North Bengal towards Northeastern

region.Furthermore,for the above business ventures the fund was allocated by the ADB (Asian Development Bank).

3.4.1 Functions

- A first, step will be use of electronic tools like e-Office, e-Tendering, e-Monitoring, e-Access.
- Second, in order to ease infrastructure business the company is revisiting different measures and processes.
- Third, to keep pace with the latest developments, NHIDCL is engaged itself in stable capability building of staff and stakeholders comprising contractors. In order to become energetic partners in building of Highways and other infrastructure, the capability growth of domestic contractors and engineers in the North Eastern Region and Strategic divisions will facilitate them and thereby take ahead towards the comprehensive development of these divisions.
- The endeavor of the firm, as a fourth strategy, is to promote the use of the latest but suitable technology in materials, design and work. This will enable improvement in quality, durability, execution speed, cost reduction, security values and to emphasize ecological concerns.
- In order to become a leader in the trade, NHIDCL will create a platform to exchange ideas by linking experts and leading research centers.
- The sixth approach is in order to avoid needless litigations; the NHIDCL has dedicated to offer a speedy Dispute Resolution Mechanism.
- Finally, in order to create one vision, one mission as seventh planned progress, it involves constant communication with stakeholders.

INTEXT QUESTIONS 3.4

1. NHIDCL stands for_____.
2. The Govt. of India (Allotment of Business) Rules, 1961 were framed in the year _____.
3. One of the final plans of NHDCL is to create one _____ one mission.
4. NHIDCL _____ plan is in order to develop into a leader in the trade.

3.5 FUNCTIONS OF STATE PWD

Fig. 3.7: **State PWD**

In the production and conservation of Government Buildings, the Public Works Department is measured as one of the oldest service sectors of the Government. This Department has been rendering its eminent services for the past 153 years. It is divided into the Water Resources Department as well as the Buildings Organisation.Numerous buildings and monuments position as demonst rate to the engineering skills of PWD. By implementing the current trend of e-government, this organization will deliver sperior service offering to the general bublic. The department with its long term vision is striving to deliver excellent service. By implementing sophisticated technology and following the requirements of the Indian Standard Code, the Organization provides structural security to all public buildings. Moreover this department safeguards all the Monuments and Heritage buildings, by protecting their Architectural, Aesthetic, Historic, archeological as well as famous symbolic values. (Keeping in mind that, it was under) the control of the Government. By executing best evolved practice and sophisticated modern technologies, this department has long term visualization for superiority service for secure and secure public buildings at (an affordable) price.

3.5.1 Functions

PWD is one of the oldest departments in charge of works. The functions of PWD comprises the following -

1. Planning
2. Construction
3. Maintenance
4. Repairs

PWD executes those projects which are financed by the state government and are considered civil works.

This organization builds and preserves those buildings of different Government Departments such as

- School Education
- Health and Family Welfare
- Home (Judicial, Transport, Prison, Fire and Rescue)
- Revenue
- Agriculture
- Animal Husbandry
- Dairying and Fisheries
- Tourism and Art Culture Department
- Labor and Employment and
- Social Welfare Department.

Moreover, this department also provides excellence services for Secure Government buildings at reasonable prices by utilizing fashionable technologies and knowledge acquired through years of practice.

3.5.2 Organization Structure of Public Works Department

The Public Works Department Organization Structure consists of following:

1. Secretary (P.W.D.)
2. Dy. Secretary (P.W.D)
3. Chief Engineer (P.W.D.)
4. Executive Engineer (P.W.D.)
5. Assistant Engineer (P.W.D.)
6. Junior Engineer (P.W.D.)

3.5.3 Central Public Works Department

While, the Central Public Works Department is under the Central Government, each

state has its own PWD department, which is controlled by the state government Therefore the Central Public Works Department (CPWD) assists all the civil works relating to such a project.

The CPWD has the main responsibilities such as

- constructing roads
- bridges
- buildings
- auditoriums
- laboratories
- flyovers
- border roads etc.

At present, this CPWD has become a construction administration department, and it offers services such as completion and maintenance of projects.

In addition to leading the Central Public Works Department, Director General (DG) acts as the principal technical advisor to the Government of India. There exists special DGs and they are heading of those regions, In addition to these regions a DGs is also head the sub-regions, and the chief engineers administer the zones in any part of state. At present, a Chief Project Manager (CPM) is also setup to administer the major projects of the CPWD.The CPWD can undertake most challenging tasks, such as building and maintaining complex projects.

3.5.4 Functions of CPWD

- Projects of the Central Government other than railways, communications, atomic energy, defense services. These normally consist of non-residential buildings, designs, construction and maintenance of the same.
- Construction of accommodation for employees of the Central Government Services.
- Construction projects for Central Armed Police employees. These consist of projects connected to the CRPF, CISF, BSF, etc. Additionally, maintenance of the assets of the CRPF.
- Proper maintenance of developments under the Cabinet Secretariat such as the SSB.

- Projects related to construction for Public Sector Undertakings. The Construction of engineering firms and other organizations either government or private. PWD also works on projects related to the deposit work. The CPWD undertakes the Deposit Works and outlay is provided wholly or in part shape
- The Public funds which are not added in financial estimates as well as the accounts of the Union of India.
- Contributions of the public
- Contributes a major role by offering consultancy in civil engineering projects. These are related to the planning, designing, and construction of goverment and autonomous buildings.
- Abroad construction ventures after obtaining permission from the Ministry of External Affairs.
- Border fencing and other border security projects assigned by the government.
- Construction of roads under diverse government programs such as PMGSY and RSVY.

INTEXT QUESTIONS 3.5

1. The Public Works Department has been providing outstanding services for a number of _____ years.
2. Every state has a separate PWD department - True / False
3. The _____ is in charge of the Central Public Works Department.
4. The Public Works Department is measured as one of the _____ service sectors of the Government.

3.6 MAJOR ACTIVITIES OF PUBLIC WORKS DEPARTMENT

1. It plans, designs, constructs and maintains the Government Buildings which are considered as the capital assets of the respective State.
2. It Constructs and maintains monuments and memorials under the authority of the government.

3. It executes the Local Area Development Scheme which normally uses MLAs' and MPs' funds as deposit works.
4. It executes any reconstruction works which are related to calamity such as Emergency Tsunami Reconstruction projects.
5. Renovating and restoring of heritage monuments.
6. In addition to its deposit work, it constructs buildings for Central government undertakings and state universities etc.
7. Conducting research and development in the areas related to construction materials and practices.
8. Upon request from Vigilance, Anti-Corruption Department and Judiciary the organization performs building valuation.
9. Assesses the structural stability of private buildings in order to provide rent reasonableness certificates.

3.6.1 Role of PWD in Irrigation

The Public Works Department has been serving in the construction and maintenance of irrigation structures for the past 153 years. Several dams serve as a testimony to their engineering skill. In order to derive greatest benifit from artificial recharge, improved water management, restoration of water bodies, and water users contribution to this endevour, it is well understood that water users should contibute. The department is working diligently hard to gain a thorough understanding of irrigation competence. In order to supply adequate water for irrigation, drinking and other purposes, Intra-linking of rivers is necessary for diversion of flood water. With a long-term vision the department is taking all efforts to improve service delivery.

INTEXT QUESTIONS 3.6

1. The Public Works Department undertakes building valuations on the request of _____.
2. PWD conducts Research and Development in the areas related to agriculture products - True / False.
3. The PWD is working extremely diligently to gain a clear understanding of _____ complence.
4. The PWD is taking all efforts for better service _____ with long term vision.

WHAT YOU HAVE LEARNT

- The National Highways are the backbone of the road infrastructure that links all metropolitan city of India such as ports, capitals of states etc. A charcoal or cement concrete lane is composed of two, four or more lanes. The Ministry of Road Transport and Highways is mainly responsible for the development and maintenance of National Highways (NHs).
- The National Highway Numbers in India starts from No 1 Jammu and Kashmir and the No 44 (longest NH in India) Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Uttar Pradesh, Madhya Pradesh, Maharashtra, Telangana, Andhra Pradesh, Karnataka, and Tamil Nadu**.**
- The NHAI was formed through the promulgation of the National Highways Authority of India Act, 1988. According to the Section 16(1) the NHAI Act the key purpose of NHAI is to develop, sustain as well as manage the national highways and other highways which is entrusted or connected to it by the Indian Government.
- The National Highways and Infrastructure Development Corporation Limited (NHIDCL) is a fully owned organisations which is formed under the Ministry of Road Transport & Highways, Government of India. It is responsible for managing a system of over 5,500 km of National Highways out of 1, 15,000 km in India.
- PWD is one of the oldest departments in charge of public works. The functions of the PWD include 1. Planning, 2. Construction, 3. Maintenance and 4. Repairs.
- The CPWD has the main responsibilities such as constructing roads, bridges, buildings, auditoriums, laboratories, flyovers and border roads etc. At present, this CPWD has become a construction administration department, and it offers services such as completion and maintenance of projects.

KEY TERMS

Highway	Transport	Road	Ministry
Number system	Highways	Route	Department
State	Expressway	Organization	Public

TERMINAL EXERCISE

1. What do you mean by Union Territories?
2. Define National Highway Numbers.
3. Define the system of two digit numbers.
4. Explain the route map for NH No 5.
5. Explain the formation of NHAI.
6. Sketch the structure of the Indian national highway.
7. Explain the role of PWD in irrigation.
8. Bring out the organization structure of PWD.
9. List out of the Responsibilities of NHIDCL.
10. Write a note on NH 44.
11. Outline any five significant national highway numbers with their state connectivity.
12. Sketch the responsibilities of NHIDCL.
13. List out the activities of NHAI.
14. Highlight the main functions of CPWD.
15. Bring out the major activities of PWD.

ANSWERS TO INTEXT QUESTIONS

3.1

1. The National Highways are the backbone of the road infrastructure that links every metropolitan cities of India such as ports, capital of states etc.
2. True
3. Trunk
4. Five

3.2

1. False

2. True
3. Tamil Nadu
4. Gujarat

3.3

1. 1988
2. True
3. Sustain
4. Development

3.4

1. National Highways and Infrastructure Development Corporation Limited.
2. 1961
3. Vision
4. Fifth

3.5

1. 153
2. True
3. Director General
4. Oldest

3.6

1. Vigilance, Anti-Corruption Department and Judiciary
2. False
3. Irrigation
4. Delivery

DO AND LEARN

Learners can undertake their activity work in the areas of Road infrastructure highway development organizations.