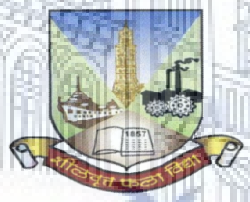
R.T.O AT PANVEL

By

SHAIKH DANISH MOIN

A REPORT

Submitted in partial fulfillment of the requirements for the degree of Bachelor of Architecture.



University of Mumbai

2018

AIKTC
SCHOOL OF ARCHITECTURE

CERTIFICATE

This is to certify that the Design Dissertation titled **R.T.O FOR PANEL** is the bonafide work of the student **SHAIKH DANISH MOIN** From Final Year B. Arch of AIKTC School of Architecture and was carried out in college under my guidance.

Sign of the guide:

Name of the guide: **AR.SUJIT PARAB**

Sign of the Dean: _____

Date:

DECLARATION

I hereby declare that this written submission entitled "**R.T.O AT PANVEL** " represents my ideas in my own words and has not been taken from the work of others (as from books, articles, essays, dissertations, other media and online); and where others' ideas or words have been included, I have adequately cited and referenced the original sources. Direct quotations from books, journal articles, internet sources, other texts, or any other source whatsoever are acknowledged and the source cited are identified in the dissertation references.

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Roll No:

Date: Place:

▪ ACKNOWLEDGMENT

I owe a great many thanks to a great many people who helped and supported me during the writing of this book.

My deepest thank to my guide **Ar. SUJIT PARAB**, who has taken pain to go through to project and make necessary correction as and when needed and I also express my gratitude to my panel members **Ar. ABHISHEK KADAM**.

I would also thank my institution and my faculty members without whom the project would have been a distant reality. I also extent my heartfelt thank to my friends and family and well wishers to help me and brought up at this position.

▪ LIST OF CHAPTERS

INDEX

1. ABSTRACT

This thesis topic investigate and describe the present changes made in the working criteria (offline to online) and system in the R.T.O. the study mainly focus on the future changes that will be implemented in the working system in the R.T.O. and also due to the paperless technology, it will impact a lot of changes in the working formats of R.T.O.

Since it's an adaptation based thesis and in which more kind of designing and arranging of spaces for futuristic work pattern, it shall give an architectural thinking to design and designing the spaces considering the future departmental and proceeding changes. The research was for the information regarding the population of the people under MH-46 zone and the population of vehicles registered in the R.T.O.

Panvel R.T.O. is selected as it is a live project with reallocation and extension of existing bases or increase industry and vehicular registration.

The study help's to understand the problem faced by the visitors and staff. The main aim was to collect the information of the work done in the R.T.O. to the connectivity of spaces determine the working and the process of the work.

To solve the issue, the site should fulfil all needs of the project with future expansion and by giving a better architectural solution to the new structural program.

2. INTRODUCTION

The Regional Transport Office or Regional Transport Authority (RTO/RTA) is the association of the Indian government in charge of keeping up a database of drivers and a database of vehicles for different conditions of India. The RTO issues driving licenses, composes accumulation of vehicle extract obligation (otherwise called street duty and street finance permit) and offers customized enlistments.

Alongside this, the RTO is additionally mindful to review vehicle's insurance and clear the pollution test.

The RTO distinguishes untaxed vehicles, and recognize managers of cars entering different Indian states, or who surpass speed confines on a street that has speed cameras by coordinating the autos to their attendants using the RTO database.

The High Security Registration plates (HSRP) was acquainted with help lessen vehicle crime and enhance security. It is proposed to stop crooks from camouflaging stolen cars with the personality of scrapped or rejected vehicles. There are different gateways where one can check their permit status.

Each state and city have their very own RTO (Regional Transport Office). Each R.T.O is dependable to complete the capacities and activities that are spread out in Motor Vehicles Act, 1988. The Motor Vehicles Department has been built up under section 213(1) of the Motor Vehicles Act, 1988. This is a focal demonstration pertinent all through the nation. Motor vehicle department is in charge of implementing different arrangements of this demonstration. This division is going by the Transport Commissioner.

Activities Performed By RTO

- Registration Of Vehicles
- Motor Vehicle Tax Collection
- Issue Of Licenses For Public Transit And Freight Traffic
- Conduct Driving Test And Issue Learner's And Permanent Driver's License And Renewing The Same
- Maintain Database Of Registered Vehicles
- Vehicle Transfer And Registration Of Mortgage Transactions
- Maintaining A Proper Check On The Validity Of Insurance On Motor Vehicles
- Mechanical Inspection Of Accidental Vehicles
- Grant Certificate Of Fitness To Transport Vehicles
- Issue Badges To The Drivers Of Public Services Vehicles Like Auto Rickshaws And Taxis
- Issue International Driving Permits

2.1 Background Study

The motor vehicles act was made in the year 1939 anyway was adjusted by particular standards and heading of appraisals and showed up in 1958, where the precepts as for the charges, wage (pay), explanation (enrolment), et cetera were made. Due to more enthusiasm of giving stock through roadways the showing was made. Because of more interest of providing merchandise through roadways the demonstration was made. The demonstration keeps the records of vehicles running on street and the drivers by giving them permit and allows. This demonstration enables the organization of engine vehicle to act to create the income by applying a few duties on engine vehicles barring those which are utilized in the homesteads of ranch lands. The expenses are forced by the kind of vehicles utilized by the general population like stacked or emptied. The demonstration forces certain obligations under engine vehicle reviewers, they have to assess transport vehicle and issue them the wellness endorsement, examine the vehicles for enrollment reason, to test the ability of the driver to drive the engine vehicles, to test a man applying for permit. The acts some of the rules are listed below which were prepared in 1958 are as follows.

The Maharashtra Motor Vehicles Tax Rules, 1958.

1. Short title, extent and commencement
2. Definitions
3. Assessment of rate of tax
4. Means of payment of tax
5. Certificate for non-user
6. Declaration
7. Manner of delivery of declaration
8. Period within which declaration is to be made
9. Additional declaration
10. Forms of declaration and additional declaration from whom to be obtained
11. Taxation Authority to satisfy itself that declaration or additional declaration is Complete.

11-A. Period within which amount of tax payable by reason of enhancement of rate of tax shall be paid

11-B. Condition subject to which interest may be remitted under section 8A

12. Application for refund under section 9
13. Certificate of refund
14. Payment of refund
15. Register of refund
16. Levy of tax, etc. in case of fleet-owner
17. Vehicles exempted from tax under section 13
18. Power to stop motor vehicle

18-A. Procedure for seizure and detention of motor vehicles in case of non-payment of tax

19. Composition of offences
20. Record of interest and of sums paid by way of composition of offence to be maintained.
21. Declaration to be submitted in respect of vehicles brought into State
22. Deleted
23. Issue of certificate of taxation in case of vehicle brought for use in the State
24. Deleted
25. Alteration, etc., of receipt or certificate of taxation
26. Fraction of rupee
27. Register of receipts of tax
28. Notice of place and time of business
29. Appeal under Section 14 to Appellate Authority
29-A. Grant of stay in Appeal and Revision
30. Procedure on appeals
31. Supply of copies
32. Supply of information regarding payment of tax, etc.
33. Penalty for disputing the rules.

After certain time, in 1988 the demonstration was altered and numerous new capacities were composed by the administration like every one of the vehicles which keeps running on street should be enlisted under the engine vehicle act, regardless of whether the vehicles is utilized for any reasons record of drivers to be kept up by giving licenses to specific vehicles, and so forth and this framework and method developed into the local transport office/specialist.

The Regional Transport Office (RTO) is the organization made by the Indian government which is in charge of keeping all database of drivers and vehicles for different conditions of India. This is a focal demonstration appropriate all through the nation engine vehicles offices for the most part in charge of upholding different arrangement of this demonstration engine vehicles office is going by the vehicle official.

Functions of motor vehicle department

- Enforce the provision of the motor vehicle act 1988,, the central motor vehicles rules 1989 and the Maharashtra motor vehicles rule 1989.
- Ensure a co ordinate development of road transport through the regim of permit.
- Levy and collection of tax on motor vehicle under the Bombay motor vehicles tax act on passenger under the Bombay motor vehicles (transport of passenger) act 1958.

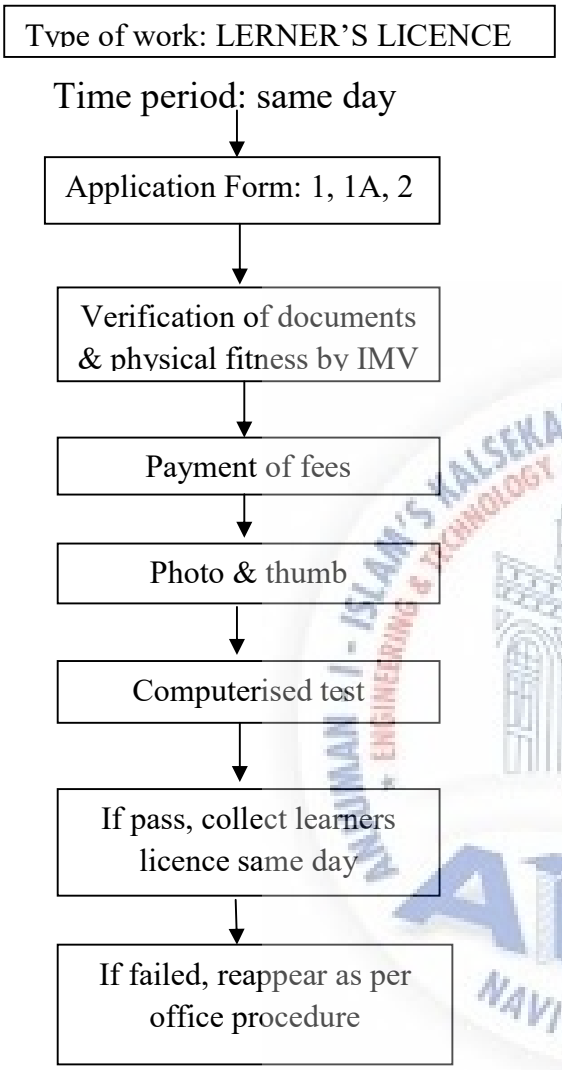
Activities performed by the motor vehicles department

- Issue of learner's license to drive a motor vehicle.
- Issue of permanent license to drive a motor vehicle and renew the same.
- Issue badges to the driver of public service vehicles like auto rickshaw, taxis etc.
- Issue international driving permit.
- Issue permit to stage carriages
- Registration of motor vehicles
- Assignment of registration mark of this state in respect of vehicles registered in other state and kept for use in this state for a period more than one year
- Grant certificate of fitness to transport vehicles
- Inspect private vehicles which are more than 15 year old and renew the registration
- Issue permits to transport vehicles counter sign them and thereby keep control on transport vehicles .
- Issue of authorisation and permits for national permit vehicles
- Issue authorisation and permit for all India tourist cabs and buses.
- Ensure that the motor vehicles are covered by valid certificate of insurance.
- Take action on vehicles owner not complying with the provision of the motor vehicles tax act.
- Levy and collect motor vehicles tax as provided under the Bombay motor vehicles act 1958 and enforce the related provision.

https://en.wikipedia.org/wiki/Regional_Transport_Office

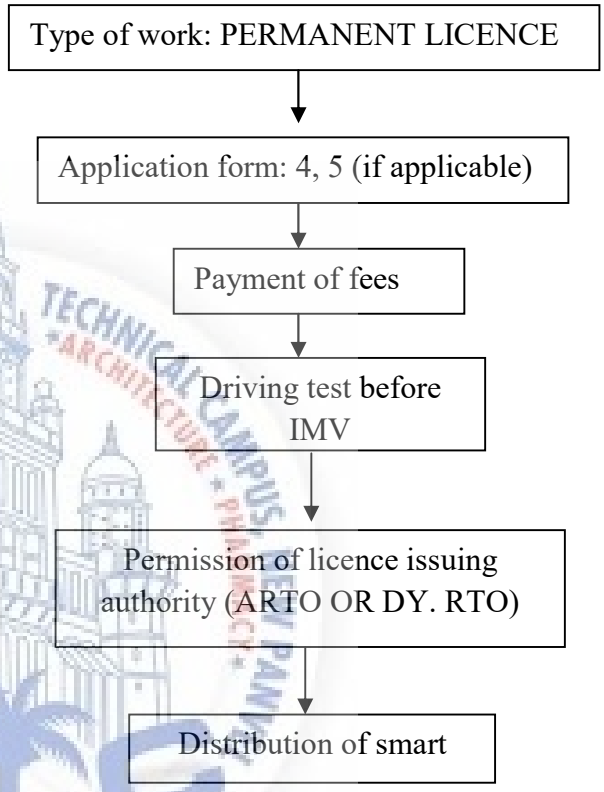
Departments and process of working in R.T.O

ISSUE OF LEARNER'S LICENSES

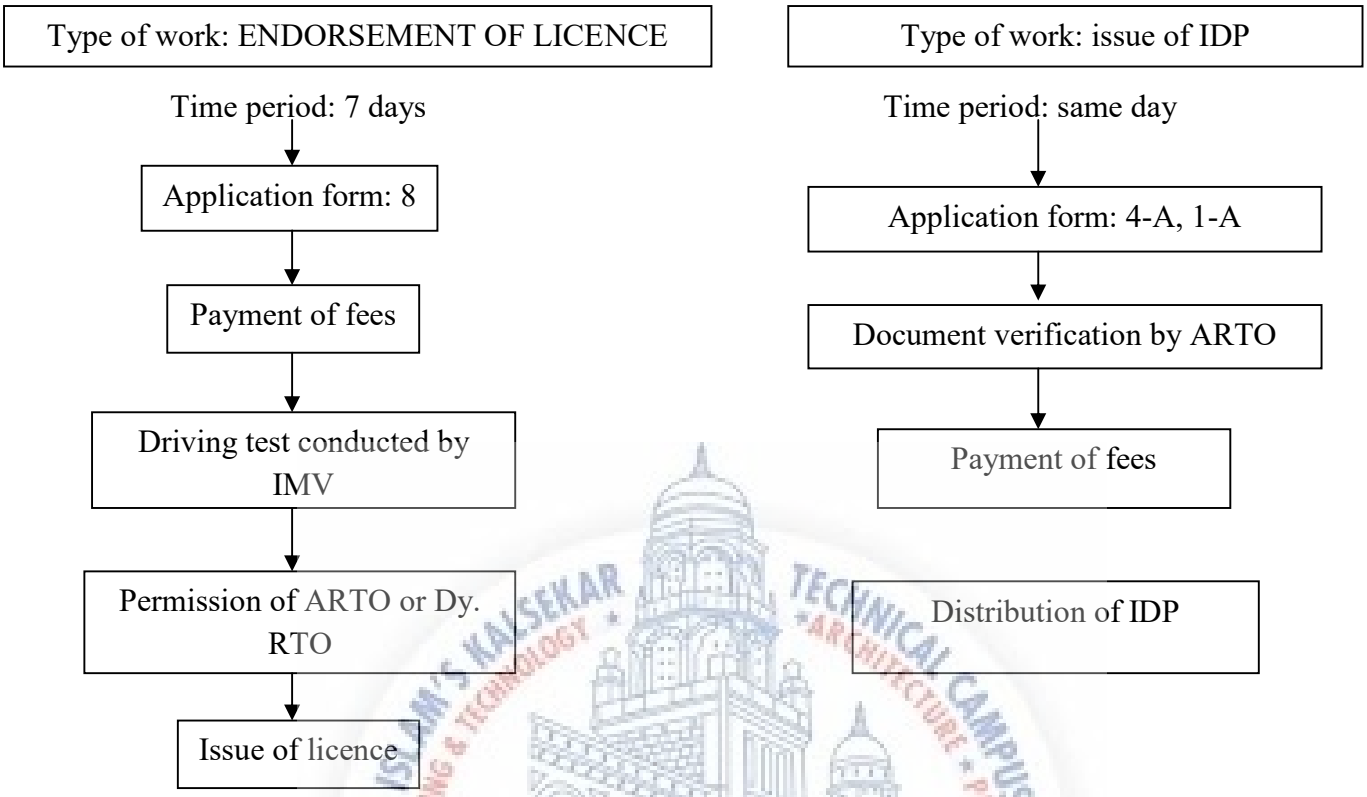


Office procedure for obtaining Learners License

ISSUE OF DRIVING LICENSES

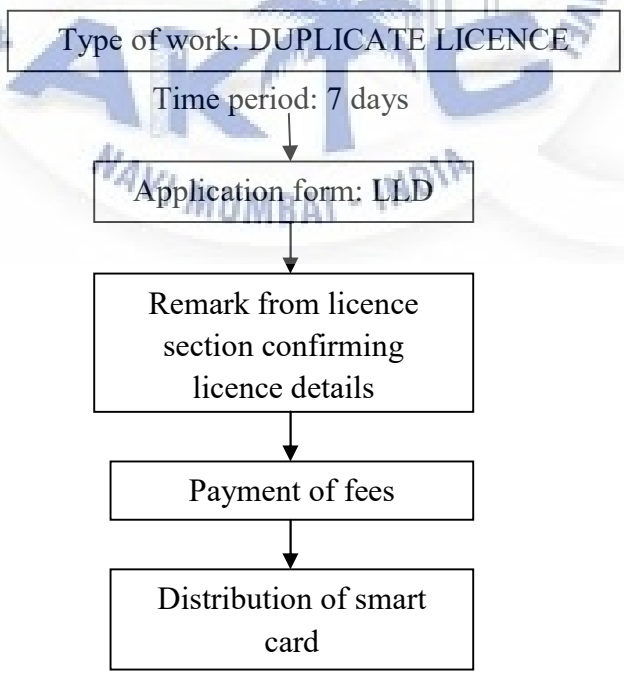


Office procedure for issue of permanent License



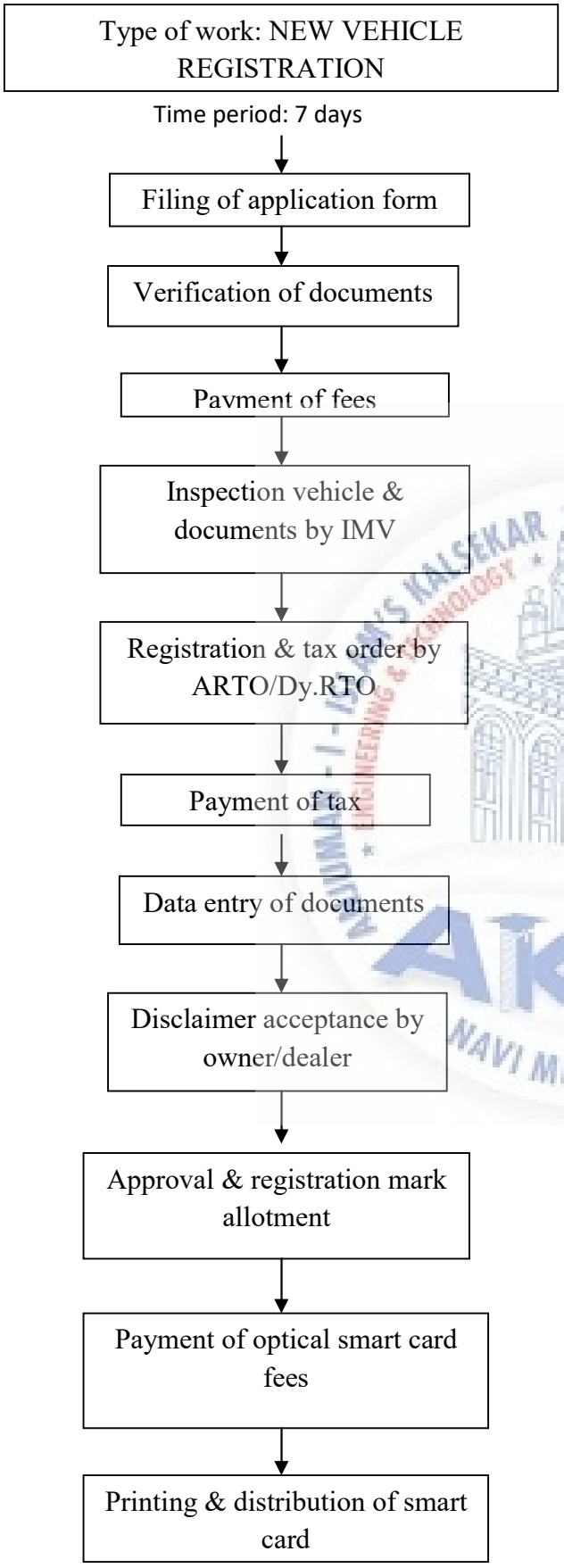
Office procedure for addition of class to the driving license

Office procedure for issuance for international driving licence

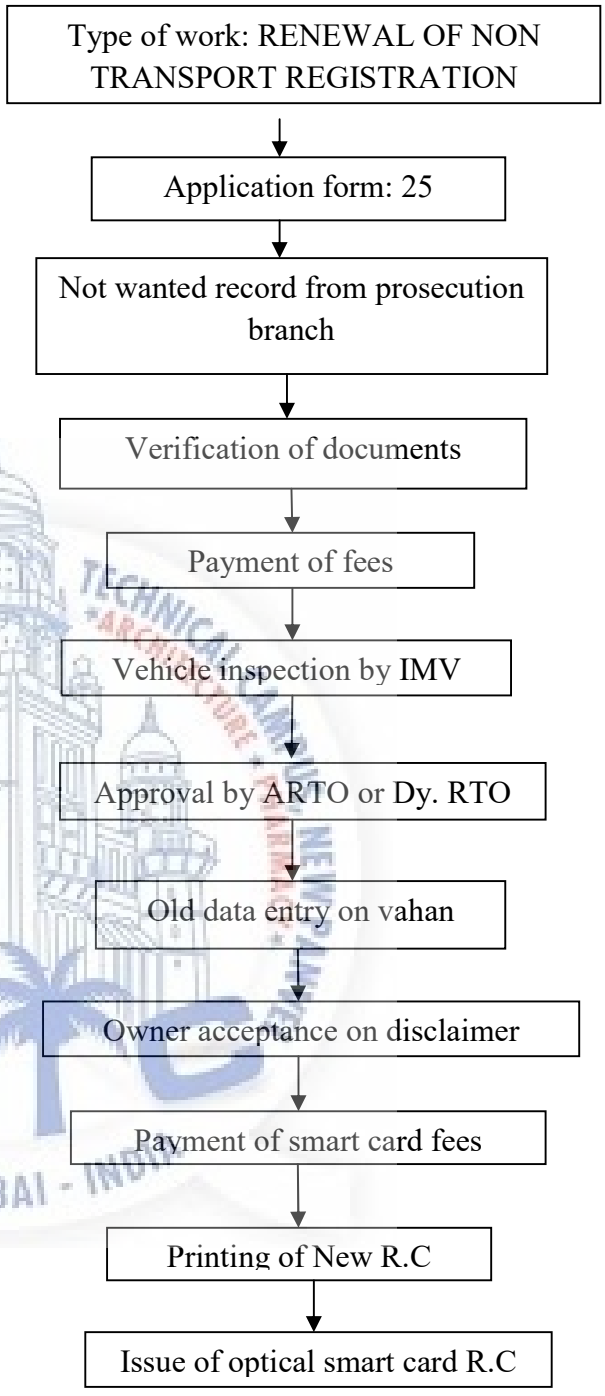


Office procedure for Duplicate License

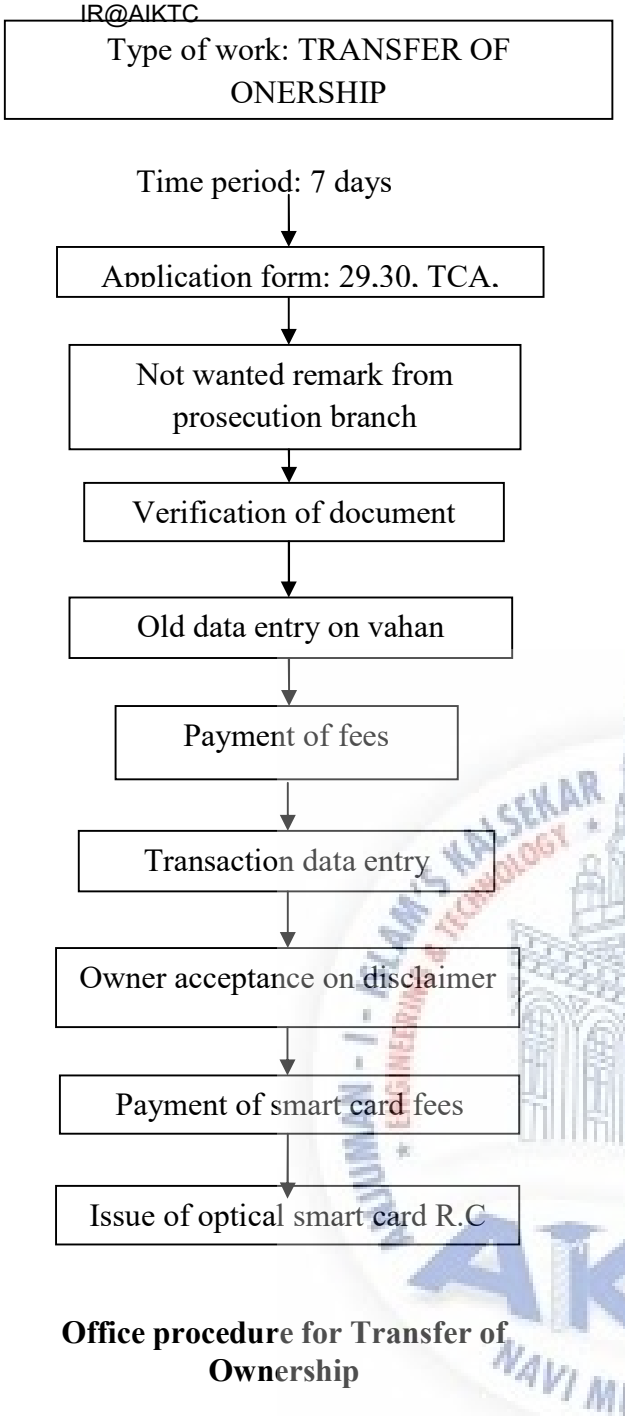
REGISTRATION OF MOTOR VEHICLES



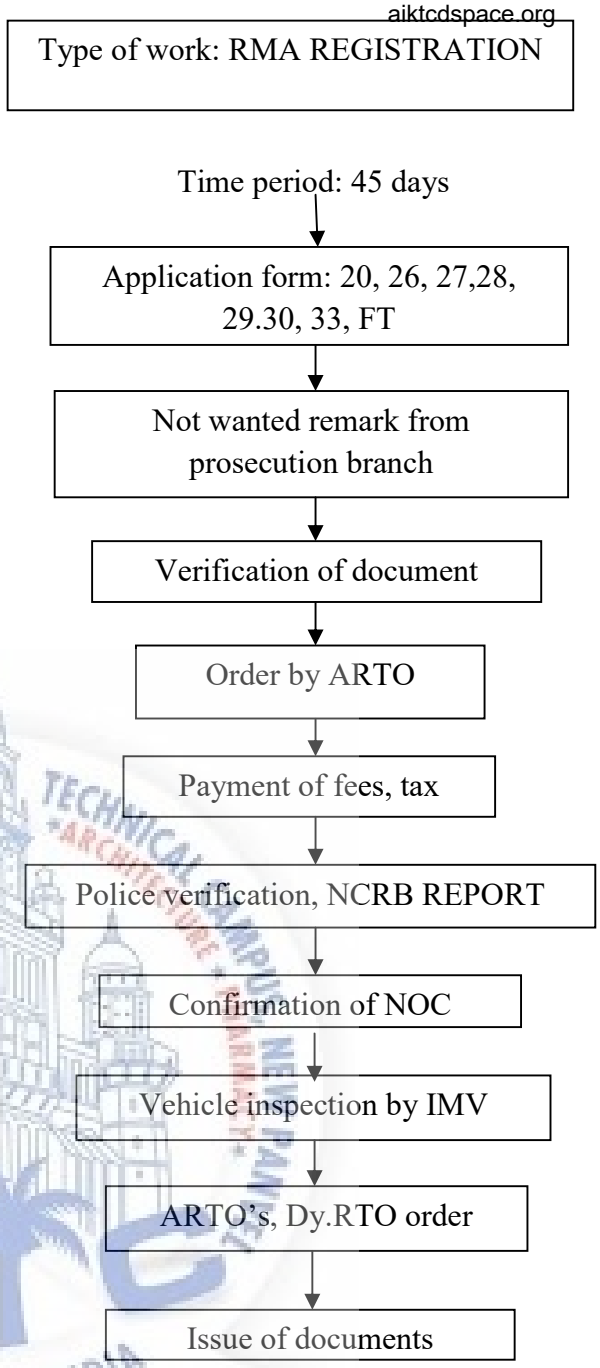
Office procedure for new vehicle registration



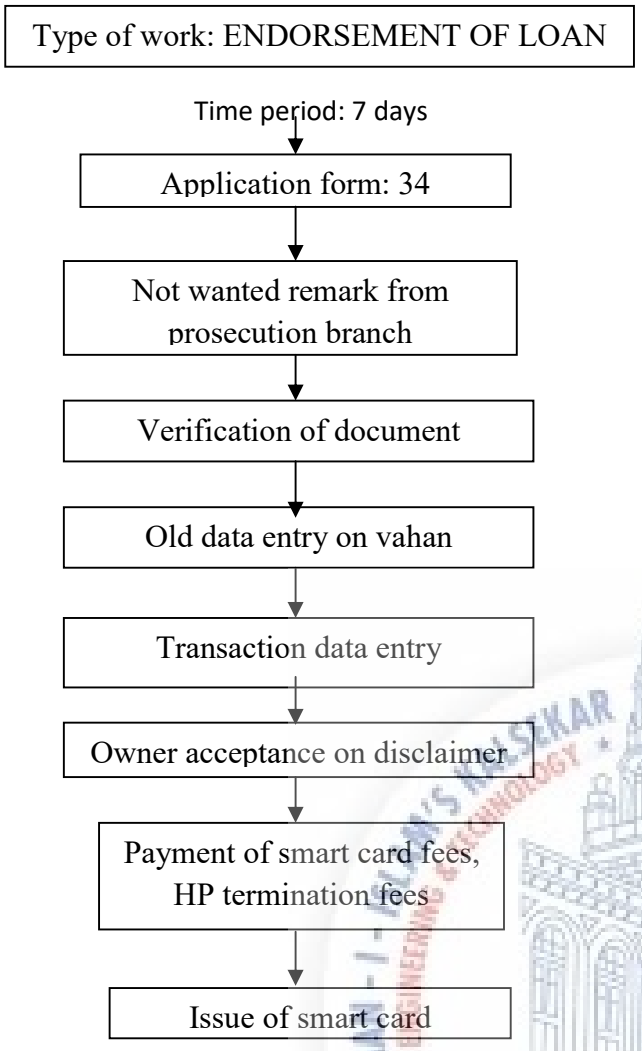
Office procedure for renewal of registration of non-transport vehicles



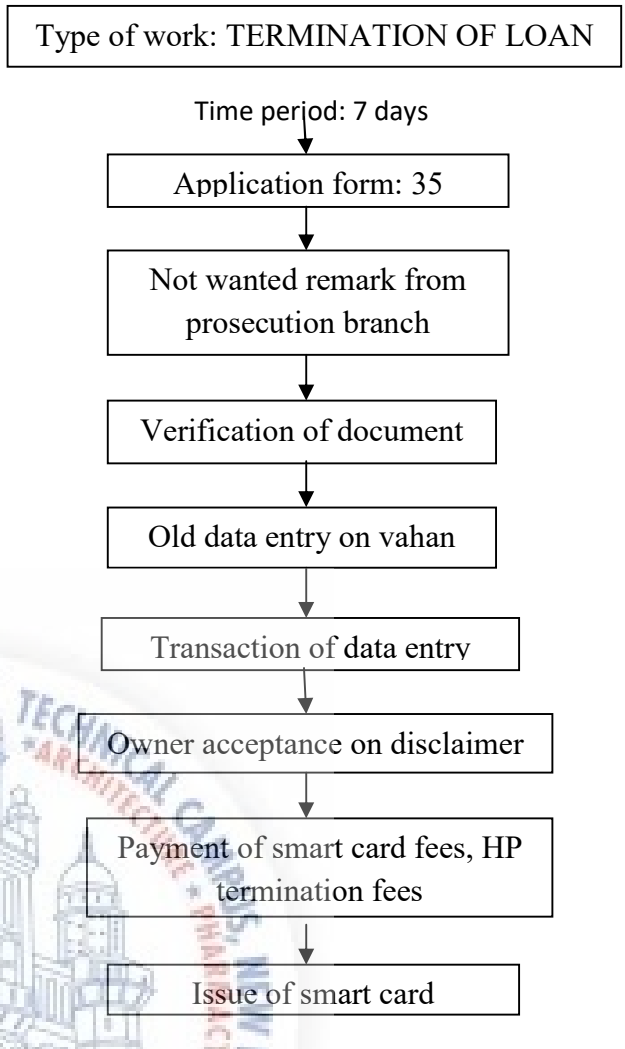
Office procedure for Transfer of Ownership



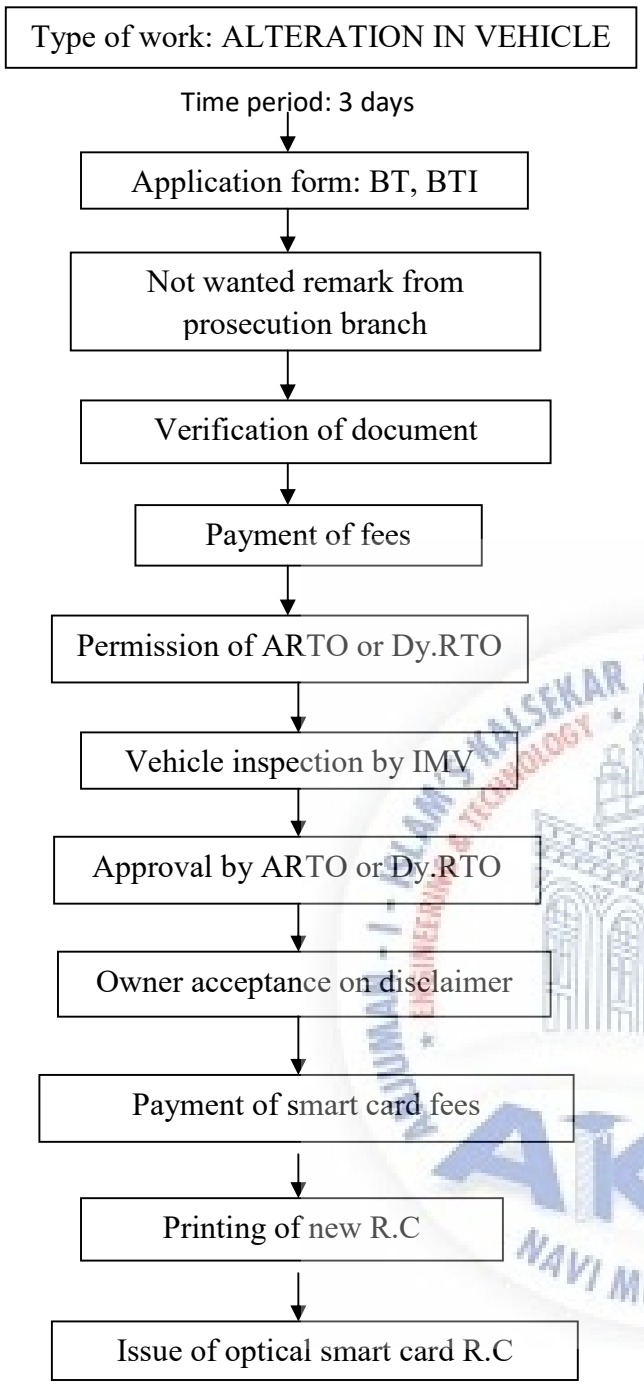
Office procedure for Registration of vehicles brought from other state To Maharashtra State



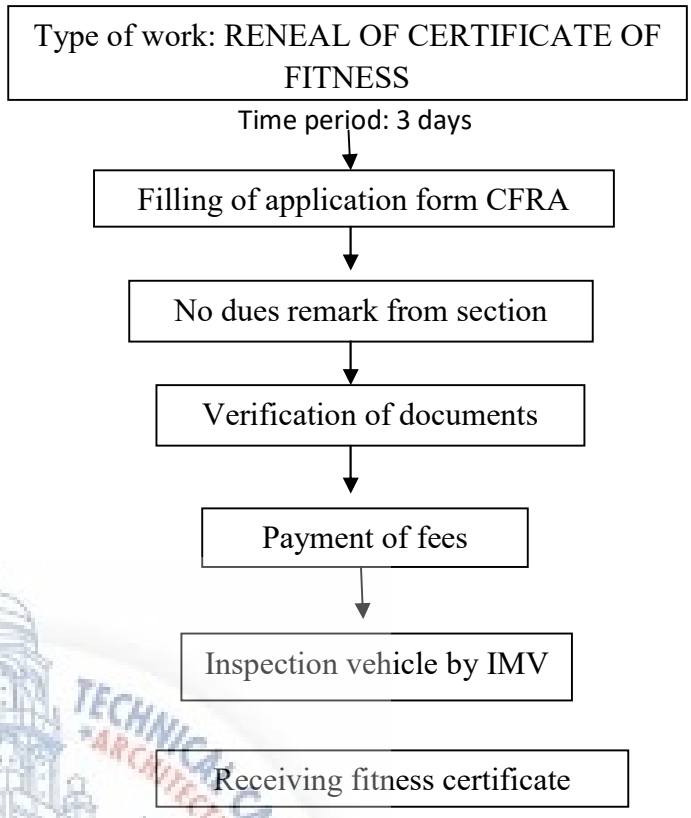
Office procedure for endorsement HP Agreement / Hypothecation



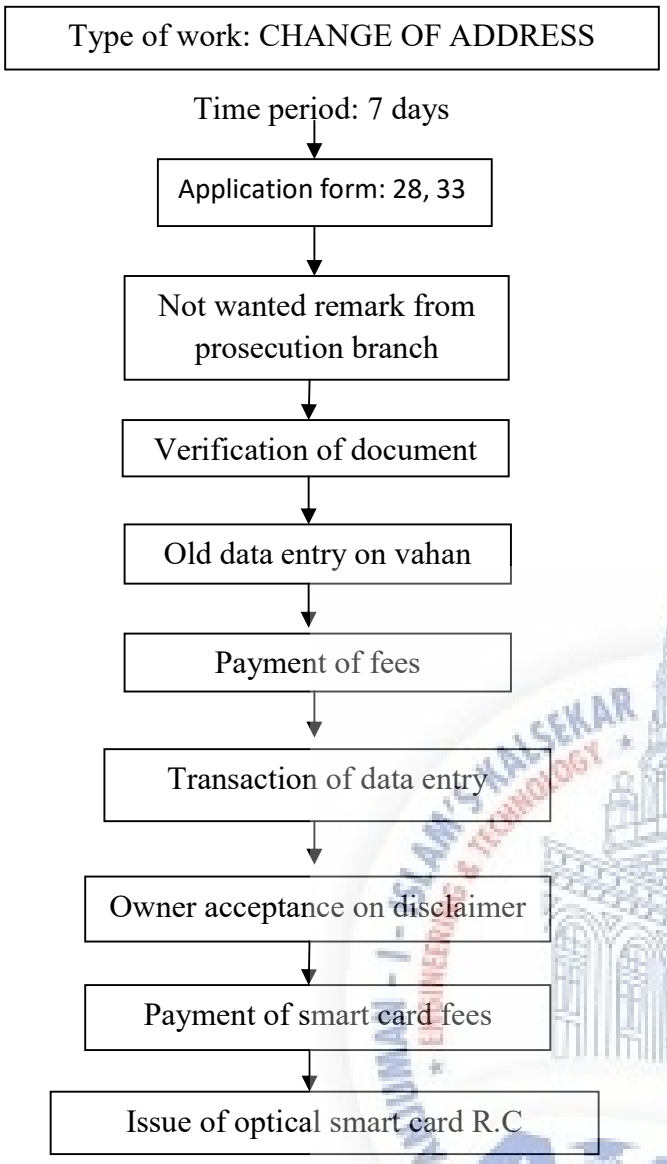
Office procedure for Termination of HP Agreement / Hypothecation



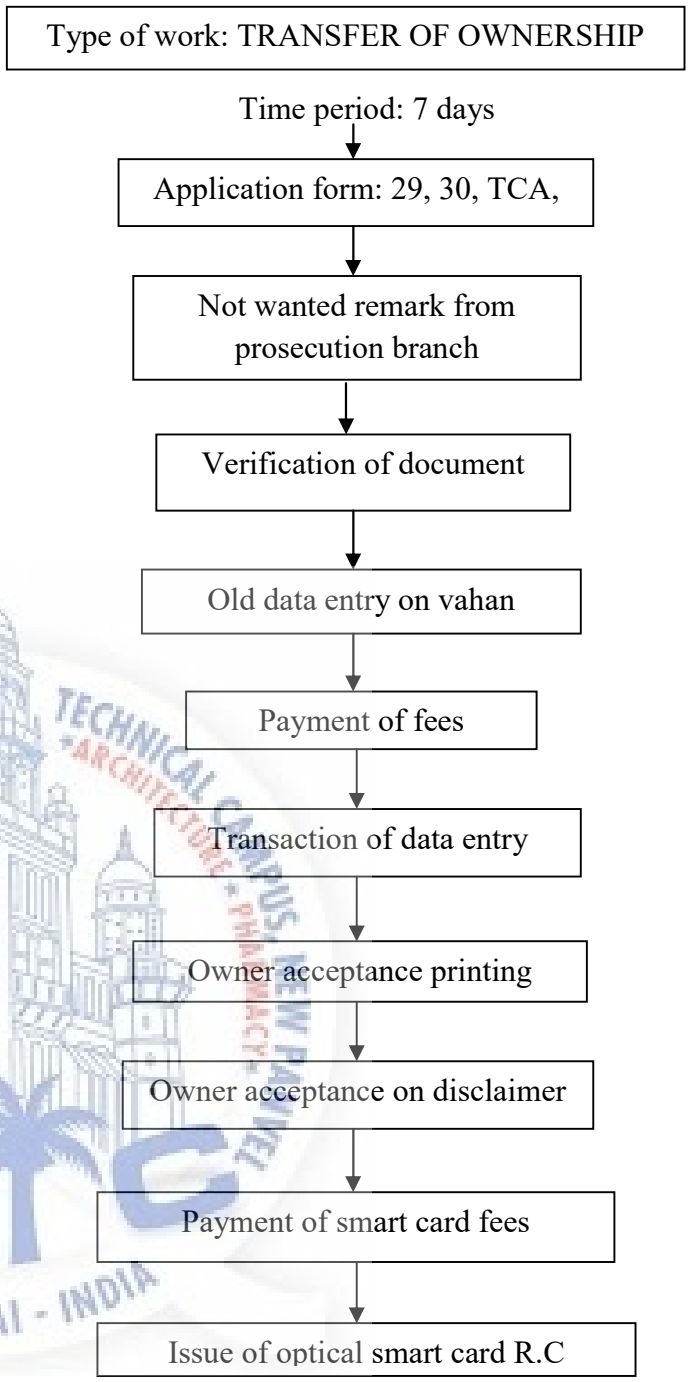
Office procedure for Alteration in vehicle



Office procedure for certificate of fitness

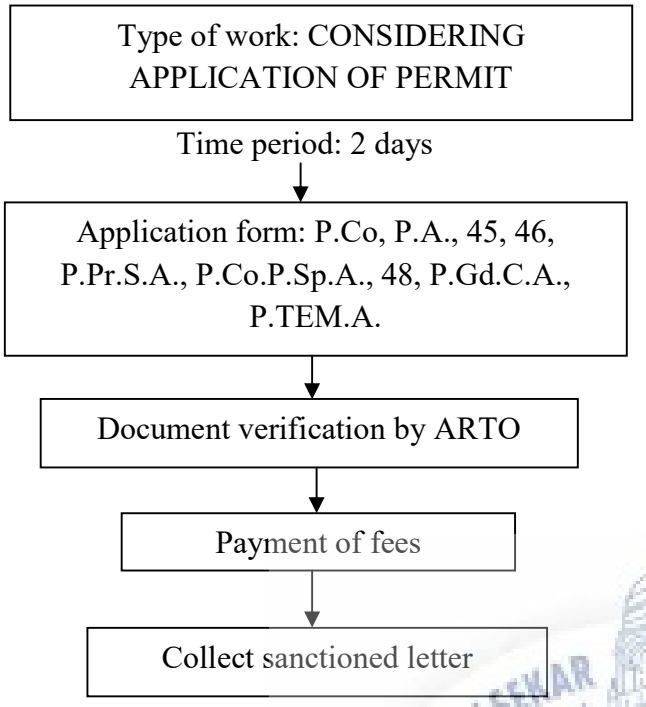


Office procedure for Change of address

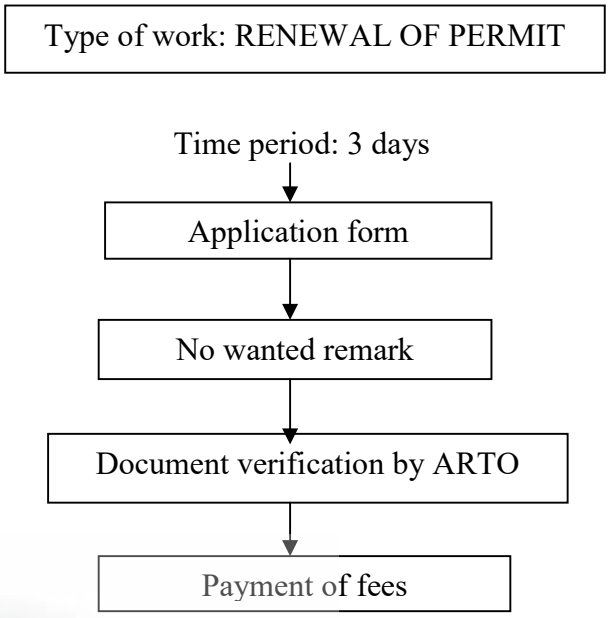


Office procedure for noting of transfer of ownership

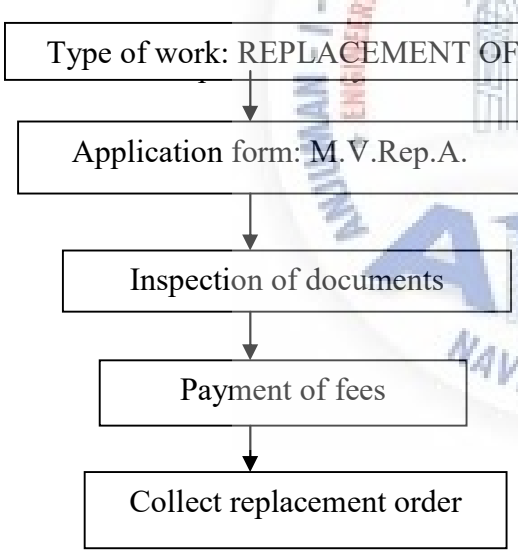
5. PERMITS



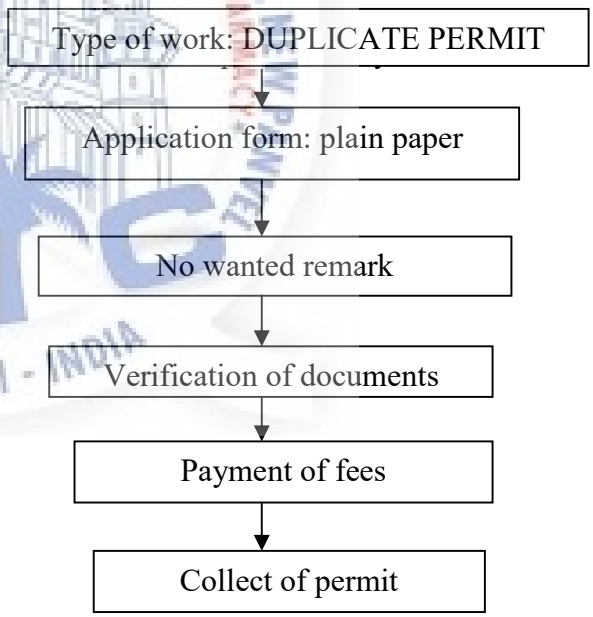
Office Procedure for Application for Permits



Office Procedure for Renewal of permit



Office Procedure for Replacement of Permit



Office Procedure for Duplicate of Permit

http://www.mahatranscom.in/departmentmanual.aspx

In some of the above process and working departments, many counters/inspectors work simultaneously for two to three different types of works. In case of : endorsement of licence and issuing of international driving permit, the fees are collected in a same counters, which in turn helps to reduce in increasing of staff and also helps to avoid separate counters for each other. Since the visitors are less to endorse there licence and issue international permits, one single counter catered the number of visitors excess to get there work done. Similarly in the registration of vehicles the collection of smart card fees is catered by the single counter which in turn helps to avoid two different counters. Similarly in other process of working the spaces of two to three different types of work is merged in a single counter which helps to avoid extra spaces and also helps to keep records safe.

2.2 Problem Statement

The RTO of Panvel came into existence in the year 2010 but the RTO started recording the record of vehicle registration and licences from 2012. In the year 2012 the total no vehicle in panvel registered is 113141 i.e. around 500 vehicles including motor cycle, trucks, cars, Lorries etc. are registered in one day.

The number of vehicle registration increases in the year 2013 with 650 vehicles per day. This increase in the number of registration creates a lot of problem to the visitors as well as to the staff because the RTO set in Panvel has no proper parking space and space to gather the visitors to get there work done.

The number of vehicle registration goes on increasing every year and in 2014, 2015 and 2016 it rises to 850, 1080 and 1320 approx respectively. By considering the condition of RTO and registration of vehicle, the Panvel RTO officers has put the proposal of new RTO for Panvel.

The proposal for the RTO was putted in the year 2010 when it was established but due to the problem of space the RTO was shifted to kalamboli in steel market and half of it next to karnala ground. After a year the cidco has provided a land in karanjade which is the end of the cidco jurisdiction for the RTO.

Office wise Growth of Vehicles on Record

Sr. No	Name of the office/ region	2010	2011	Growth %	2012	Growth %
1.	Mumbai (C)	593902	601176	1.22	637768	6.09
2.	Mumbai (W)	809225	870558	7.58	950394	9.17
3.	Mumbai (E)	364671	398577	9.30	440338	10.48
Greater Mumbai		1767798	1870311	5.80	2028500	8.40
4.	Thane	1284402	1393260	8.48	1499482	7.62
5.	Kalyan	374736	421042	12.36	472306	12.18
6.	Vashi	202252	231449	14.44	257831	11.40
7.	Vasai	0	0	0	0	0
Thane region		1861390	2045751	9.90	2229619	8.99
8.	Panvel	0	0	0	113141	0
9.	Pen-raigad	413967	445674	7.66	414396	-7.02
10.	Sindhudurg	89422	99096	10.82	111817	12.84
11.	Ratnagiri	169059	180026	10.04	189619	1.92
Panvel region		672448	730796	8.58	828973	13.43
12.	Kolhapur	635709	708949	11.52	801192	13.01
13.	Sangli	410553	460723	12.22	522417	13.39
14.	Satara	410148	480010	12.16	499720	8.63
15	Karad	0	0	0	23234	0
Kolhapur region		145410	1629682	11.90	1845563	13.31
16.	Pune	1907794	2092614	9.86	2265973	8.26
17.	Solapur	417013	455944	9.34	507298	11.26
18.	Pimpri	703476	812107	15.44	928129	14.29
19.	Baramati	150792	180480	19.69	208944	15.77
20.	Akluj	82890	104354	25.89	127829	22.50
Pune region		3261965	3645499	11.76	4038173	10.77
21.	Nashik	781098	861459	10.29	957382	11.13
22	Ahmednagar	332265	3722485	12.10	422070	13.31
23.	Shirampur	330157	383622	16.19	446279	16.33
24.	Malegaon	170826	195566	14.18	222796	13.92
Nashik region		1614346	1813132	12.31	2048527	12.93

2013	Growth %	2014	Growth %	2015	Growth %	2016	Growth %
676514	6.08	707806	4.63	79015	12.32	874137	9.95
1026821	8.04	1101673	7.29	1202643	9.17	947597	21.21
484063	9.95	523327	8.11	373540	9.80	624425	8.87
2187398	7.83	2332806	6.65	2571204	10.22	2819652	9.96
1610249	7.39	1660117	3.10	1737987	4.69	1824739	4.99
523202	11.83	589400	11.59	655203	11.16	730745	11.53
275255	6.76	3.1731	9.62	310959	3.06	351620	13.08
42314	0	127322	200.9	183969	44.49	254071	38.11
2456020	10.15	2678570	9.06	2888112	7.82	3161175	9.45
153004	39.45	200567	26.94	253406	26.34	309461	22.12
429800	3.72	290625	32.38	306599	5.50	322287	5.12
125480	12.22	139516	11.19	155690	11.59	174617	12.16
223602	20.56	247349	8.20	269513	8.96	288623	7.09
941888	13.62	878057	-0.78	985208	12.20	1094988	11.14
890173	11.11	977139	9.77	1073782	9.89	1178248	9.73
574106	9.89	628798	9.53	680934	8.29	723117	6.19
525306	5.32	571633	8.61	618243	8.15	661981	7.07
62411	180.14	99380	47.42	122012	22.77	143314	17.46
2057996	11.45	2276950	10.64	2494921	9.57	2706660	8.49
2461811	8.64	2664616	8.24	2850451	6.97	3072003	7.77
554731	9.05	607456	9.50	665933	6.63	722513	8.49
1045984	12.70	1155783	10.50	1289526	11.57	1429301	10.84
232029	11.05	263368	13.59	291983	10.78	318373	9.04
145433	13.7	169610	16.62	203613	20.05	228867	12.40
4439988	9.05	4861033	9.48	5301526	9.06	5771057	8.86
1053892	10.08	1154243	9.52	1257227	8.92	1365292	8.60
463883	9.01	505443	8.96	551280	9.07	598061	8.49
493429	10.57	545093	10.47	594599	9.08	644374	8.37
250403	12.39	285141	13.87	318943	11.85	353619	10.87
2261605	10.40	2489920	10.10	2722049	9.22	2961346	8.79

Table 2: - Office wise Growth of Vehicles on Record

http://www.mahatranscom.in/statistics.aspx

Category wise vehicle registered in Panvel during the year 2013-2016

Sr no.	Category	2013-14	2014-15	2015-16
1.	Motor cycle	25574	26432	24955
2.	Scooters	0	0	6399
3.	Mopeds	0	0	5
Two wheelers		25574	26432	31359
4.	Cars	13577	15096	14293
5.	Jeeps	0	1	18
6.	Station wagons	0	0	0
7.(a)	Taxi meter fitted	0	0	56
7.(b)	Taxi tourist cabs	445	790	1409
8.	Auto rickshaw	172	2167	727
9.	Stage carriages	0	7	24
10.	Contract carriages/ mini bus	115	82	67
11.	School buses	165	110	184
12.	Private service vehicles	29	25	0
13.	Ambulances	21	20	34
14.	Articulated/multi Axled vehicles	908	2994	3032
15.	Trucks and lorries	837	2460	2515
16.	Tankers	201	116	154
17.	Delivery van (4 wheel)	695	1500	1912
18.	Delivery van (3 wheel)	803	535	191
19.	Tractors	51	15	2
20.	Trailors	23	0	0
21.	Others	184	104	246
Total		43800	52454	56223

From the above table it can be analyzed that how many vehicles is registered in the RTO per day. Considering the vehicle like two wheeler, cars, tourist cabs, multi axled vehicle, trucks and lorries and delivery vans came to register per day in the RTO. So in the year 2013-14, total number of two wheeler registered is 25574 i.e. 110 vehicle in one day. The number of registration of two wheeler increases in the year 2014-15 and 2015-16 with 115 and 130 respectively. Similarly for cars the total number of vehicle registered in the year 2013-14 13577 i.e. 60 cars approx per day. The number increases to 60 in the year 2014-15 and then reduces to 55 in the year 2015-16. In case of tourist cabs the total no of cab registered in the year 2013-14 is 445 i.e. 2 per day and the registration increases to 4 and 6 in the year 2014-15 and 2015-16 respectively. In case of trucks and lorries and delivery van the total number of vehicle registered is 837 and 695 in the year 2013-14 i.e. 3 and 3 per day respectively. The number for the same increased with 10, 10 and 6, 8 in the years 2014-15 and 2015-16 respectively.

From the above analysis the parking space to be provided in the RTO can be determined:

Sr. No.	Category of vehicle	Number of parking
1.	Two wheeler	80
2.	All types of Cars	80
3.	Auto rickshaw	
4.	Trucks and lorries	20
5.	Delivery van and types	20

1.5 Post provided in R.T.O

Sr. No.	Name of the post	Name of the Region				Gr. Mumbai including T.C.Office	Name of the Region			
		T.C. office	Mumbai (C)	Mumbai (W)	Mumbai (E)		Thane	Panvel	Kolhapur	Pune
1	2	3	4	5	6	7	8	9	10	11
1	Transport Commissioner	1	0	0	0	1	0	0	0	0
2	Additional Transport Commissioner	1	0	0	0	1	0	0	0	0
3	Joint Transport Commissioner	1	0	0	0	1	0	0	0	0
4	Deputy Transport Commissioner (H.Gr.)	4	0	0	0	4	0	0	0	0
5	Deputy Transport Commissioner (L. Gr.)	1	0	0	0	1	0	0	0	0
6	Deputy Transport Commissioner (Acc.)	1	0	0	0	1	0	0	0	0
7	Regional Transport Officer	0	1	1	1	3	1	1	1	1
8	Asst. Police Commissioner	1	0	0	0	1	0	0	0	0
9	Deputy Regional Transport Officer	2	2	2	2	8	5	4	4	6
10	Motor Vehicle Prosecutor	2	1	1	1	5	1	0	1	1
11	Assistant Regional Transport Officer	1	4	7	5	17	8	4	9	10
12	Assistant Transport Commissioner.	3	0	0	0	3	0	0	0	0
13	Law Advisor (on Contract)	1	0	0	0	1	0	0	0	0
14	Motor Vehicle Inspector	4	18	31	19	72	72	36	43	79
	Total Class-1 Officer (Group-A)	**23**	**26**	**42**	**28**	**119**	**87**	**45**	**58**	**97**
15	Assistant Motor Vehicle Prosecutor	1	1	1	1	4	1	0	1	1
16	Research Officer	1	0	0	0	1	0	0	0	0
17	Organisation & Management Officer	1	0	0	0	1	0	0	0	0
18	Administrative Officer	1	0	1	0	2	1	0	0	1
19	Programmer	1	0	0	0	1	0	0	0	0
20	Processor Adm. (Pranali Prashashak)	0	0	0	0	0	1	0	0	1
21	Public Relation Officer	1	1	1	1	4	0	0	1	1
22	Account Officer	2	1	2	1	6	1	0	1	2
	Total Class-2 Officer (Group-B)	**8**	**3**	**5**	**3**	**19**	**4**	**0**	**3**	**6**
23	Asst. Motor Vehicle Inspector	2	15	13	7	37	35	28	30	41
24	Stenographar (Higher Gr.)	2	0	0	0	2	0	0	0	0
25	Asst. Processor Adm.	0	0	0	0	0	0	0	1	0
26	Office Superident	1	1	1	1	4	1	0	1	1
27	Head Clerk (Urban)	12	4	3	2	21	4	1	2	1
28	Sr.Auditor	2	1	2	1	6	1	0	2	1
29	Sr.Accountant	1	0	0	0	1	0	0	0	0
30	Asst. Account officer	1	0	0	0	1	0	0	0	0
31	Accontant (Urban)	2	1	2	2	7	1	0	0	0
32	Assistant Programmer	1	0	0	0	1	0	0	0	0
33	Research Assistant	1	0	0	0	1	0	0	0	0
34	Stenographar (Lower Gr.)	8	1	2	1	12	2	0	2	2
35	Tax Recovery Officer	0	2	2	2	6	3	0	2	3
36	Vehicle Checker (on Contract)	0	2	2	2	6	3	1	3	4
37	Deputy Accountant	8	4	1	1	14	0	0	0	0
38	Junior Auditor	5	11	10	8	34	8	3	8	15
39	Head Clerk (Rural)	0	0	0	0	0	3	2	4	4
40	Statistical Assistant	3	2	1	1	7	1	0	1	2
41	Accountant (Rural)	1	0	0	0	1	4	3	5	5
42	Senior Clerk	35	19	22	16	92	27	12	25	30
43	Librarian	0	1	0	0	1	0	0	0	1
44	Head Cashier	0	1	2	1	4	3	4	4	4
45	Head Typist	1	0	0	0	1	0	0	0	0
46	Telephone Operator	0	1	0	0	1	0	0	0	0
47	Typist	0	0	0	0	0	0	0	1	0
48	Junior Clerk	0	0	0	0	0	0	0	0	0
49	Clerk Typist	110	87	96	54	347	94	52	83	117
50	Assistant Cashier	4	16	21	16	57	25	14	22	26
51	Tax Investigator	0	28	7	6	41	10	0	16	21
52	Driver	8	10	9	8	35	7	4	11	14
	Total Class-III (Group - C)	**208**	**207**	**196**	**129**	**740**	**232**	**124**	**223**	**292**
53	Messenger	0	0	2	2	4	1	0	1	1
54	Naik	2	2	1	1	6	1	0	2	3
55	Transport Hawaldar	6	7	6	4	23	3	3	8	8
56	Peon	14	8	8	8	38	16	12	12	16
57	Sweepar	1	4	2	1	8	3	1	4	3
58	Kata Chalak	0	0	0	0	0	9	4	2	1
59	Watchman	3	3	3	3	12	5	3	5	7
60	Mali	0	1	0	1	2	0	0	0	1
61	Loader (Hamal)	1	1	1	1	4	1	0	0	0
	Total Class-IV (Group - D)	**27**	**26**	**23**	**21**	**97**	**39**	**23**	**34**	**40**

Table 1: - No of post sanctioned to each R.T.O

http://www.mahatranscom.in/statistics.aspx

Area and Population of Maharashtra State, (According to 2011 Census)

Sr. No.	Name of the District	Area (in sq. km.)	Sex		Total Population (in '000)	Sector		Total Population (in '000)	Density No. of Persons per sq. km.	Percentage Distribution of Population
			Male (in '000)	Female (in '000)		Rural (in '000)	Urban (in '000)			
1	2	3	4	5	6	7	8	9	10	11
1	Mumbai	157	1712	1434	3146	0	3146	3146	20038.22	2.80
2	Mumbai (Suburban)	446	5025	4307	9332	0	9332	9332	20923.77	8.30
3	Thane	9558	5879	5175	11054	2551	8503	11054	1156.52	9.84
4	Raigad	7152	1348	1287	2636	1663	973	2636	368.43	2.34
5	Ratnagiri	8208	759	853	1613	1349	264	1613	196.39	1.43
6	Sindhudurg	5207	417	432	849	742	107	849	163.05	0.76
Konkan Region		**30728**	**15140**	**13488**	**28630**	**6305**	**22325**	**28630**	**931.66**	**25.48**
7	Nashik	15530	3164	2945	6109	3511	2598	6109	393.37	5.44
8	Dhule	8063	1056	993	2049	1477	572	2049	254.12	1.82
9	Nandurbar	5034	835	811	1646	1371	275	1646	326.98	1.46
10	Jalgaon	11765	2198	2026	4224	2881	1343	4224	359.03	3.76
11	Ahmednagar	17048	2349	2194	4543	3630	913	4543	266.48	4.04
Nashik Region		57440	9602	8969	18571	12870	5701	18571	**323.31**	**16.53**
12	Pune	15643	4936	4491	9427	3687	5740	9427	602.63	8.39
13	Satara	10480	1513	1491	3004	2434	570	3004	286.64	2.67
14	Sangli	8572	1436	1385	2820	2101	719	2820	329.09	2.51
15	Solapur	14895	2234	2082	4315	2917	1398	4315	289.76	3.84
16	Kolhapur	7685	1983	1891	3874	2644	1230	3874	504.10	3.45
Pune Region		57275	12102	11340	23440	13783	9657	23440	**409.29**	**20.86**
17	Aurangabad	10107	1928	1768	3696	2079	1617	3696	365.69	3.29
18	Jalna	7718	1015	943	1958	1581	377	1958	253.69	1.74
19	Parbhani	6517	946	890	1836	1266	570	1836	281.72	1.63
20	Hingoli	4524	609	570	1179	1000	179	1179	260.61	1.05
21	Beed	10693	1353	1233	2586	2071	515	2586	241.84	2.30
22	Nanded	10528	1733	1624	3357	2443	914	3357	318.86	2.99
23	Osmanabad	7569	865	795	1661	1379	282	1661	219.32	1.48
24	Latur	7157	1276	1179	2455	1830	625	2455	343.02	2.18
Aurangabad Region		64813	9725	9002	18728	13649	5079	18728	**288.94**	**16.67**
25	Buldhana	9661	1342	1246	2588	2039	549	2588	267.88	2.30
26	Akola	5429	936	883	1819	1097	722	1819	335.05	1.62
27	Washim	5153	621	576	1197	985	212	1197	232.29	1.07
28	Amravati	12210	1483	1405	2888	1851	1037	2888	236.53	2.57
29	Yavatmal	13582	1426	1350	2775	2176	599	2775	204.39	2.47
Amravati Region		46035	5808	5460	11267	8148	3119	11267	**244.77**	**10.03**
30	Wardha	6309	666	630	1296	875	421	1296	205.42	1.15
31	Nagpur	9802	2388	2265	4653	1475	3178	4653	474.70	4.14
32	Bhandara	3895	605	594	1199	965	234	1199	307.83	1.07
33	Gondia	5425	662	660	1323	1097	226	1323	243.69	1.18
34	Chandrapur	11443	1120	1074	2194	1424	770	2194	191.73	1.95
35	Gadchiroli	14412	543	529	1072	954	118	1072	74.38	0.95
Nagpur Region		51286	5984	5752	11737	6790	4947	11737	**228.83**	**10.44**
Maharashtra State		307577	58361	54011	112373	61545	50828	112373	**365.35**	**100**

Table 2: -Region Wise Population of Maharashtra State

http://www.mahatranscom.in/statistics.aspx

2.3 AIM

- The aim of the project is to understand the issues and give an architectural solution to overcome the problem faced in the function of the motor vehicle department.
- It also aims to improve the working condition of the employees in spaces and ergonomics.

2.4 OBJECTIVE

- To make sure that the the progress is achieved in an environmentally sustainable way.
- To provide enough spaces for the employees to work in a busy and chaotic condition.
- To overcome and understand the function of the each spaces and provides a better and efficiently working spaces in the motor vehicle department.
- Simplify the processes of working.
- Service orientation with better infrastructure for citizen services.

2.5 SCOPE

- R.T.O mainly faces the problem of space crunch, so this is an issue which can be resolved by selecting a proper site.
- Due to fast growing population the department faces problem of more number of vehicle registration so a new proposal for R.T.O can resolve this problem.
- Since the working system of RTO is transforming into digitalisation so there will be a scope to provide with better architectural solution to the structure, spaces and function.

2.6 LIMITATIONS

- Limited to only one corporation.
- Height restriction.
- Site oriented.

2.7 RESEARCH METHODOLOGY

- Topic Justification
- Statistics

TOPIC JUSTIFICATION

- R.T.O's mainly faces the problem of space crunch, so this is an issue which can be resolved by selecting a proper site in which each and every function's perform in the motor vehicle department can be fulfilled.
- Some department covers a large area or numbers of places in Maharashtra, so due to the fast growing population the department faces the shortage of spaces, so by considering the statistics and density of population and the future perspectives of that particular area the space should be designed.

STATISTICS

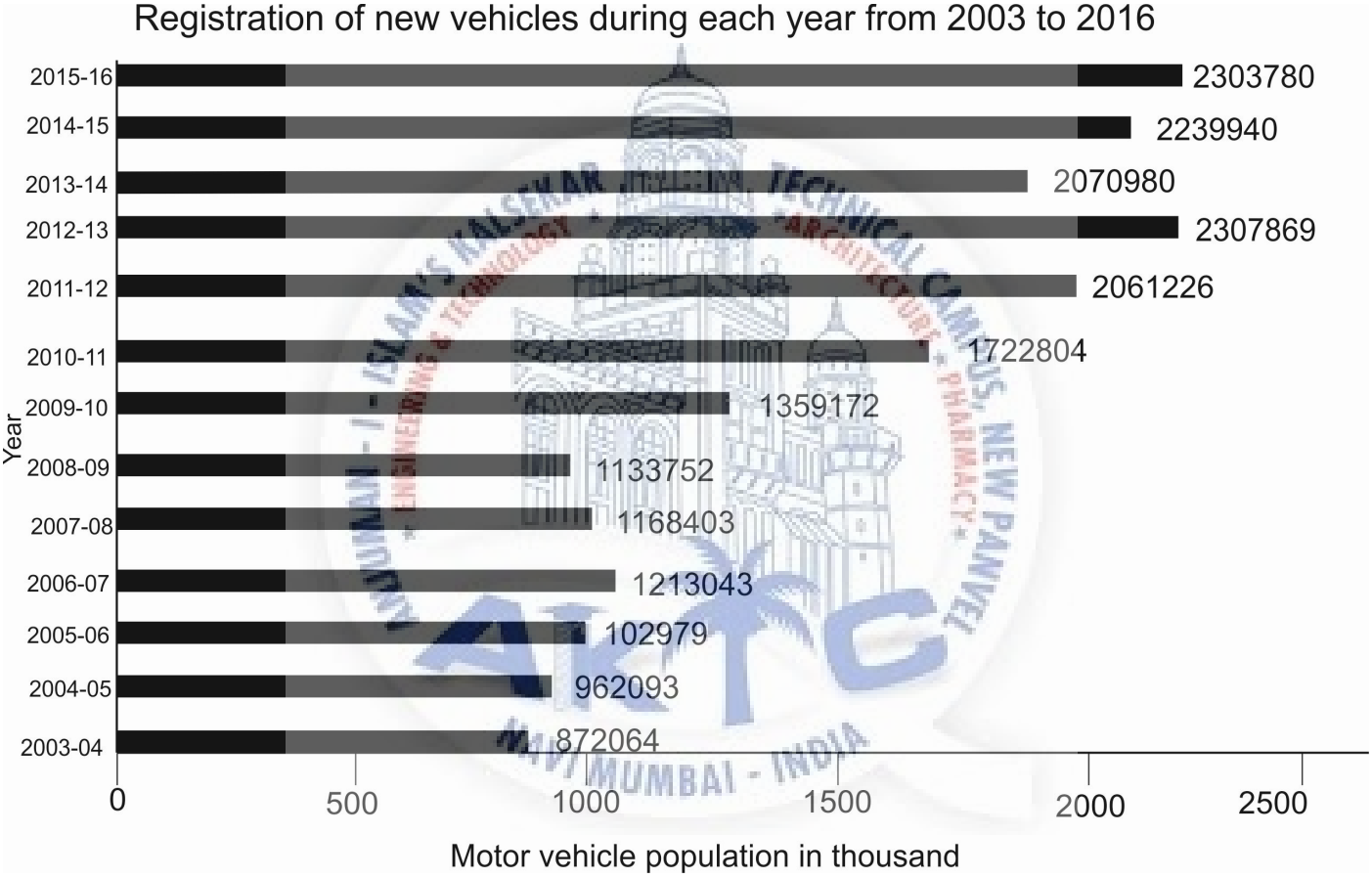
Registration of Vehicles

Growth of Vehicles from 1971– 2015:-

The total number of registered motor vehicles in Maharashtra State, increased from 3,07,030 as on 31st March, 1971 to 2,55,92,175 as on 31st March, 2015.

Yearly Registration of Vehicles in the state of Maharashtra:

Total number of vehicles registered during the year 2015-16 is 2303780 having increased from 8, 72,064 as in the year 2003-04. Thus, percentage increase in a decade is 37.85 %.

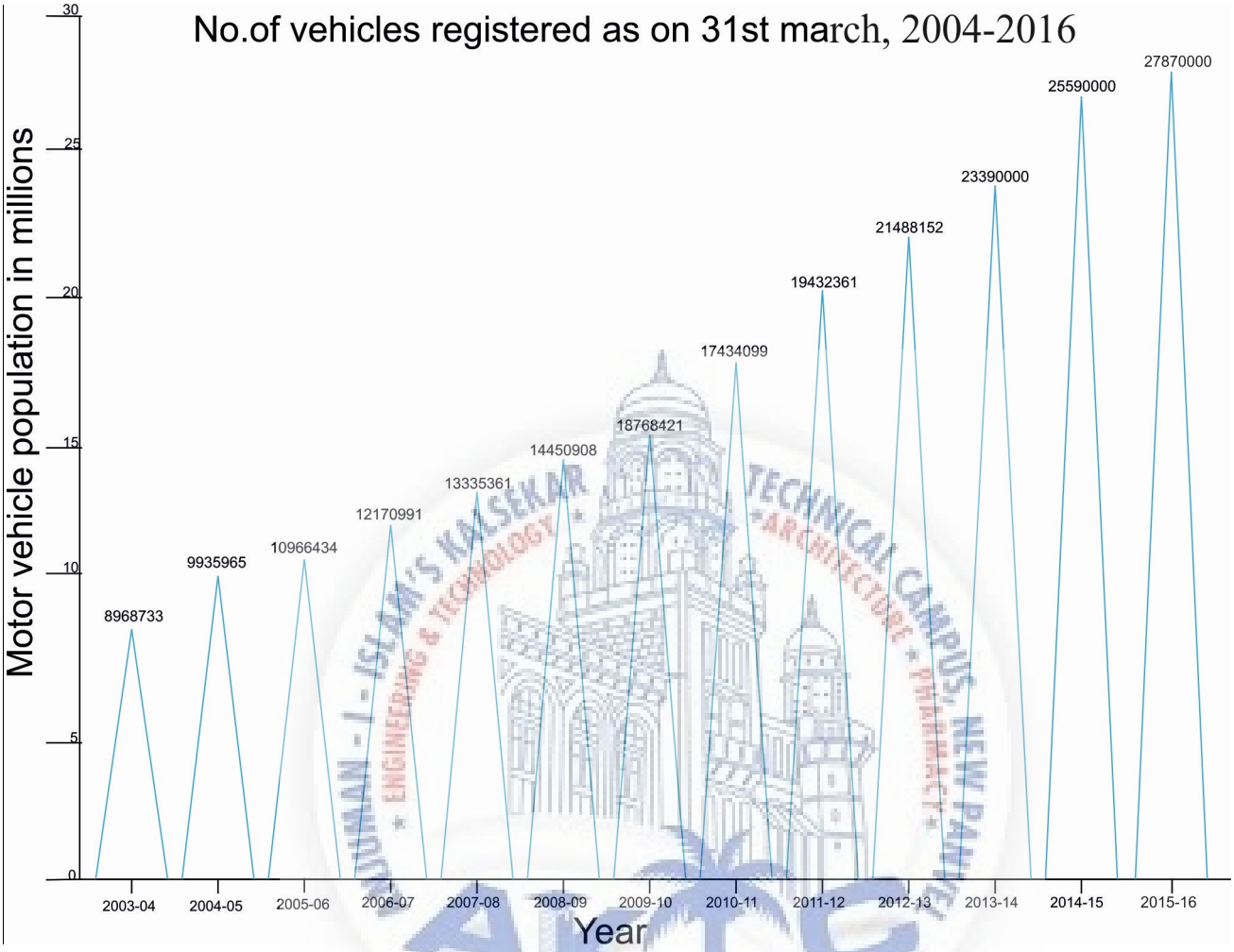


Registration of vehicle from year 2003-2016

The number of vehicles during every year in the state of Maharashtra goes on increasing on a wide range in the year 2013 it come down to very low number of registration to 2070980 in comparison from the previous year 2012 which is 2307869. So to handle the population of vehicle the central government took up an action to transform the working system of RTO from paper/documents to digitalisation and hence each and every RTO started transforming there offices both in infrastructure and technology wise.

Vehicles on Road as On 31.03.2004 to 31.03.2015:

As on year 2003-04 there were 89, 68,733 vehicles plying in the Maharashtra State, whereas in the year 2015-16 the number grew to 2,78,70,000. The percentage of vehicle increases is 32.81%.



Registration of vehicle on road from year 2003 to 2016

The above graph shows the record of vehicles in the state of Maharashtra. The population of vehicle in Maharashtra has grown in a rapid speed from 2010. Before 2010, it was very gradually increasing in number. The record of above numbers of vehicles was stored in the form of documents/papers which needs a lot of storage to preserve it. Each document contain more 10-12 pages and every day more 500 vehicles were registered so it is become very difficult to store the amount of paper by the RTO. So the technique of online registration coming into existence and all the process of working in the RTO is converting into paperless system.

Major Regions of Maharashtra Share of Vehicles for the year 2013

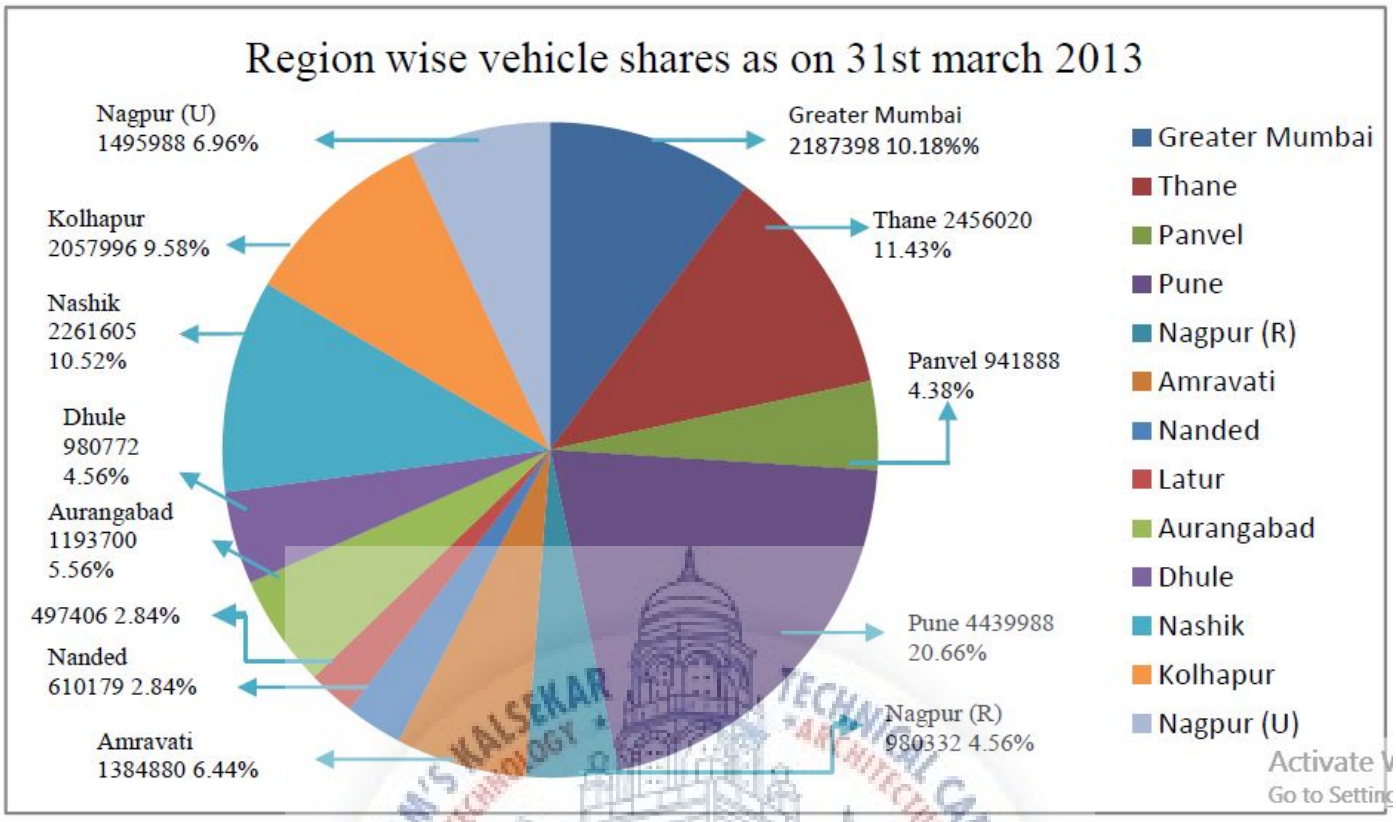
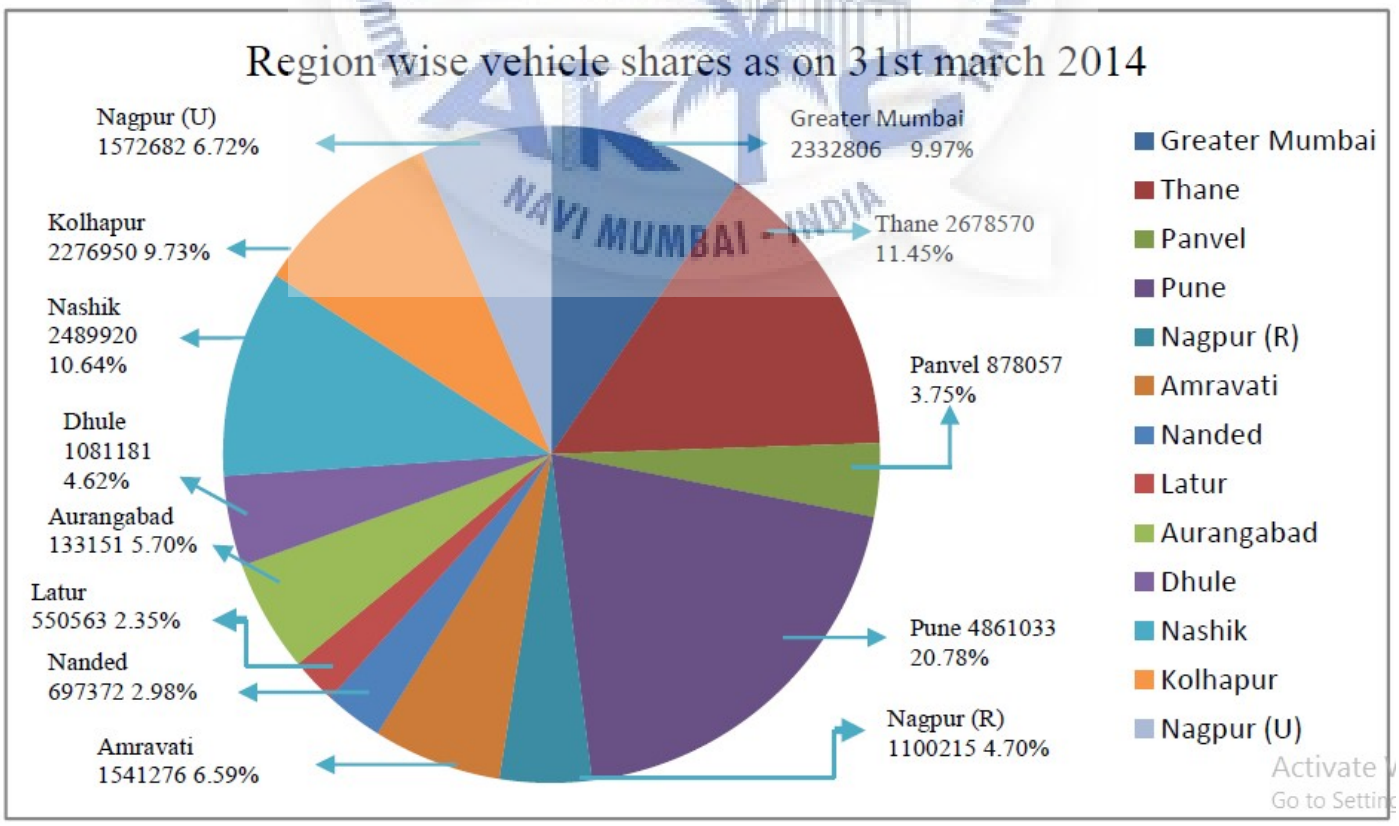


Chart 1: - Region wise share of motor vehicles 2013

Major Regions of Maharashtra Share of Vehicles for the year 2014



M Major Regions of Maharashtra Share of Vehicles for the year 2015

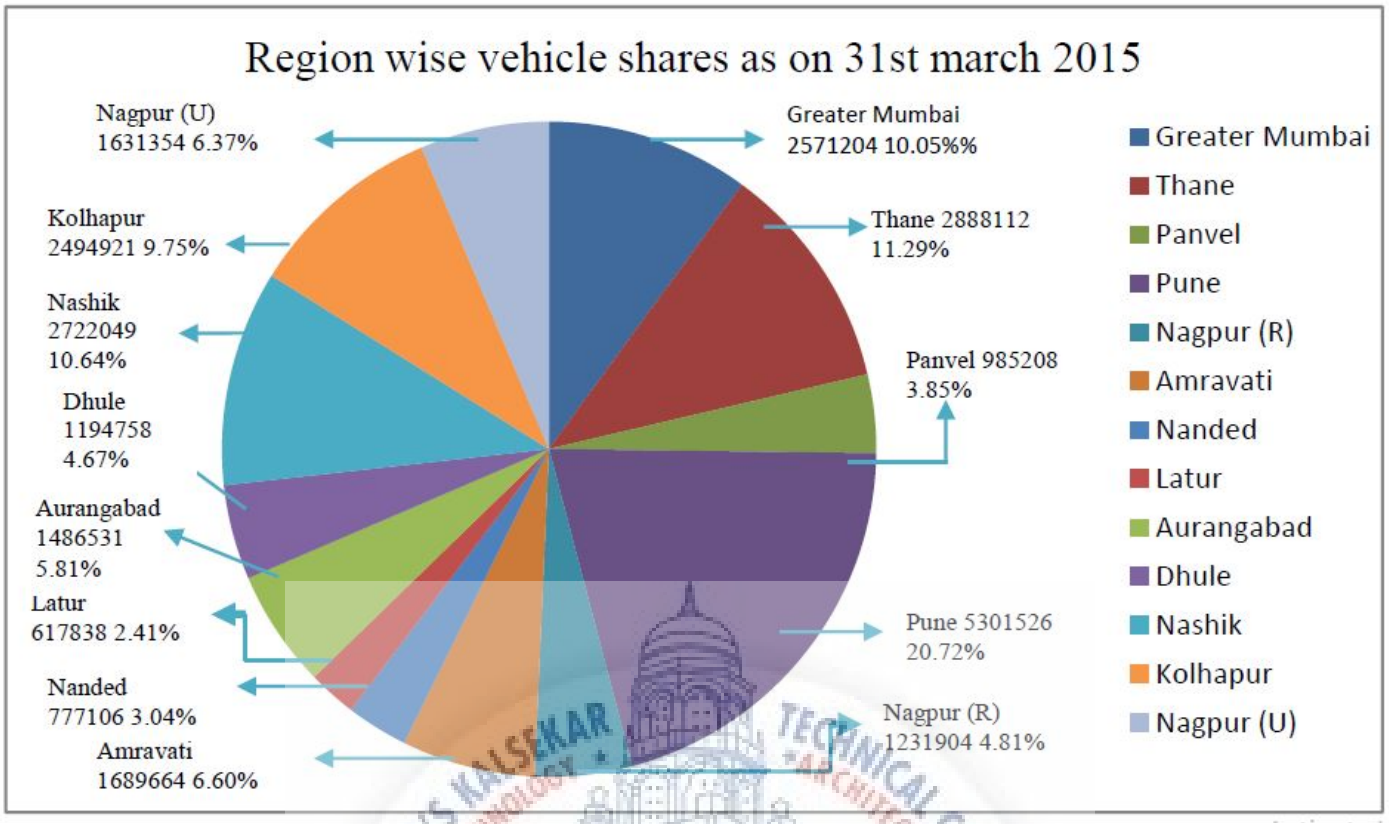
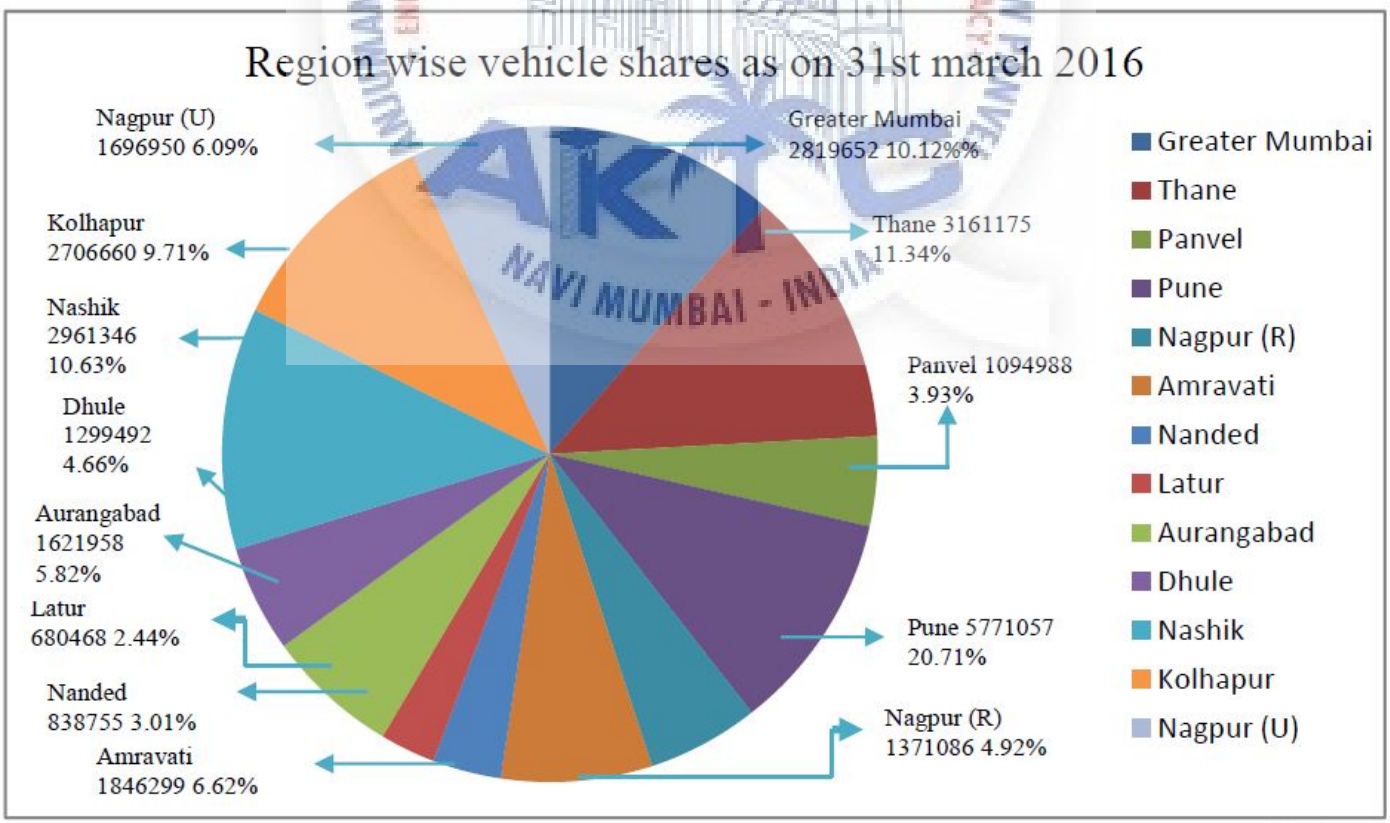


Chart 2: - Region wise share of motor vehicles 2015

Major Regions of Maharashtra Share of Vehicles for the year 2016



http://www.mahatranscom.in/statistics.aspx

From the above pie charts it is analysed that during the period of 4 year there are very slight changes in the percentage of vehicle population in the entire region.

In 2013,2014,2015,2015 Pune is the only region, which is at the top position in term of vehicle population and also at the top in the percentage of population with in Pune. While comparing the population of the year 2013 with 2014 there is a growth of 8.7% of population, similarly for the year 2014 with 2015 the growth is of 8.4% of population and for the year 2015 with 2016 the growth is of 8.2% of population.

The growth in the population of vehicle in pune might be because of the area covered under the Pune RTO. Pune covers a large area under its jurisdiction, so there would be more rural area under its jurisdiction so this area might be diverging towards urbanization and the demands of vehicle in this area are increasing.

Similarly taking the example of greater Mumbai there is a sudden increase in the population vehicle from the year 2013-14 to 2014-2015. Comparing the population of the year 2013 with 2014 the growth is 6.2% but when it is compared from 2014 with 2015 the growth is 9.3% and decreases in 2015-16 with 8.9%.

The increasing and decreasing in the population of vehicle is seen in each and every region of RTO. The main issue is how the population is catered in day to day life. For example taking the e.g. of Mumbai in the year 2013 the total no vehicle shares is 2187398, so in a single day 10,000 vehicle approximately shares in Mumbai. Than this no vehicle is to be registered with the respective RTO.

Since Mumbai is divided with 4 different registration number the above figure is dived according to the address of the owner's vehicle. So the difficulty and load of work is distributed.

But in case of Pune the total population of share for the year was 4439988, which is like in one day around 19,000 approximately vehicle are shares and registered in the RTO. The RTO might face huge problem to register this population of vehicle and as well the visitors who came in the RTO to get different kind of work done.

Similarly other region RTO also faces the shares and registration of vehicles which came under their jurisdiction due to the increase in population of vehicle.

Hypothesis

This theory subject explore and describe the present changes made in the working criteria and framework in the R.T.O. the examination for the most part centre around the future changes that will be actualized in the working framework in the R.T.O. and furthermore because of the paperless innovation, it will affect a considerable measure of changes in the working format of R.T.O

The R.T.O building as a whole and each of its sections should be perceived by users, visitors and employees as pleasant and inviting. The population that the R.T.O aims to attract is diverse in terms of age. Even though silence will be maintained in part of the office areas in order to facilitate concentration of the employees.

Designing the spaces considering the future departmental and continuing changes. The exploration was for the data with respect to the number of inhabitants in the general population under MH-46 zone and the number of inhabitants in vehicles enrolled in the R.T.O. Panvel R.T.O. is chosen as it is a live venture with reallocation and augmentation of existing bases or increment industry and vehicular enrolment.

The design of the sections intended for users and visitors, including the outdoor areas, should facilitate and encourage communication between people. Interaction opportunities are particularly important for creating communities of frequent users.

The examination help's to comprehend the issue looked by the guests and staff. The primary point was to gather the data of the work done in the R.T.O. to the network of spaces decide the working and the procedure of the work.

3. Literature Review

A literature review is an evaluative report of information found in the literature related to your selected area of study. The review should describe, summarize, evaluate and clarify this literature. It should give a theoretical base for the research and help you (the author) determine the nature of your research. Works which are irrelevant should be discarded and those which are peripheral should be looked at critically.(Dr. Barbara Webster, 2000)

3.1 Definition and Description

A literature review is an account of understanding particular topic or a preface to and rationale for engaging in primary research. Generally a literature review is done to identify the general topic, issue or area of concerns. For proceeding any project, proper and adequate knowledge is a must. Almost theoretical knowledge for proper understanding of the project is gained through study of literature such as books, journals, reports, articles and so on.

OBJECTIVES:-

- To collect required data on various aspect
- Analysis of requirements and developing concepts
- Theoretical standards for general requirement
- Theory based on experience and researches, giving guidelines.

3.2 Articles by other authors

Soon, Panvel RTO to get own building in karanjade (Times of India)

NAVI MUMBAI: If everything goes as per plan, Panvel RTO will soon get an independent office building at Karanjade. The Panvel Deputy RTO office operated from a rented building at Kalamboli steel yard, which had insufficient infrastructure as the office did not have a parking lot or training tracks.

Bifurcated from the District RTO office, the Panvel Deputy RTO office was commissioned in 2010 at Karnala Sports Academy Complex at Panvel for covering the jurisdiction comprising Panel, Karjat and Khalapur Talukas. Later the office was shifted to a rented building in Kalamboli Steel Yard in 2011. Since the RTO does not have 400 meter asphalt tracks for conducting tests for driving license and road fitness, the officials and motorists faced difficulties. So these tests are conducted on the roads near the Income Tax office.

Only limited vehicles are inspected every day due to the absence of infrastructure at Kalamboli, said Amar Singh Gill, a motorist "We hopefully wait for the new building to come up so as to end our woes"

After getting a 2.5 hectare plot at Karanjade from CIDCO, the RTO officials have submitted the requirements to the Public Works Department. The RTO authorities have proposed 5 storied buildings in order to house the offices of RTO, Deputy RTO, Assistant RTO, and various offices of administrative departments. In addition to this, 400 meter training tracks, rest rooms and interior roads will also be constructed on the plot.

The Public Works Department has already prepared the master plan for the new building and tracks, which will be built at a cost Rs 28 crore. After the plan is approved tender will be invited for constructing the new building, said RTO Arun Yevale.

The decision is taken in the wake of huge surge of vehicles being registered in Panvel and adjoining nodes in the last couple of years. With mega projects like Metro and International Airports on the anvil the authorities anticipate the population to explode and a proportionate increase in the number of vehicles in the near future.

"We expect to extend our service to maximum number of beneficiaries once the office is shifted to the new building" said Yevale.

http://timesofindia.indiatimes.com/city/navi-mumbai/Soon-Panvel-RTO-to-get-own-building-in-Karanjade/articleshow/46376324.cms

3.3 Case Studies

3.3.1.PUNE R.T.O.

Location: - Pune

Pune is the second biggest city in the province of Maharashtra after Mumbai. Pune is likewise an authoritative base camp of Pune region and was set up by Shivaji Maharaj and once the focal point of intensity of the Maratha Empire.

The focal piece of Pune is completely secured by managerial offices, where all the business related to civil and training are provided food here this part is situated close encompassing of railroad station and transport warehouse, so the availability is simple and close-by.

The R.T.O is situated at 500m of separation from railroad station interfacing the principle Mumbai-Pune roadway. The aggregate region of grounds covers under the R.T.O site is 11,800 Sqm roughly. The R.T.O has a principle place of business of G + 2 with a square of learning division isolated with the primary building. The testing track is far from the site situated at 20 km from Pune. The R.T.O satisfies the need of the locale in all viewpoints, as it covers a huge under MH-12. The site does not have enough spaces to dump the dropped vehicles, so a substitute space gave far from the city where all the dropped vehicles are dumped.

The examination covers the capacity and the way toward working in the R.T.O for the duration of the day and the space gave by their advantages and needs.

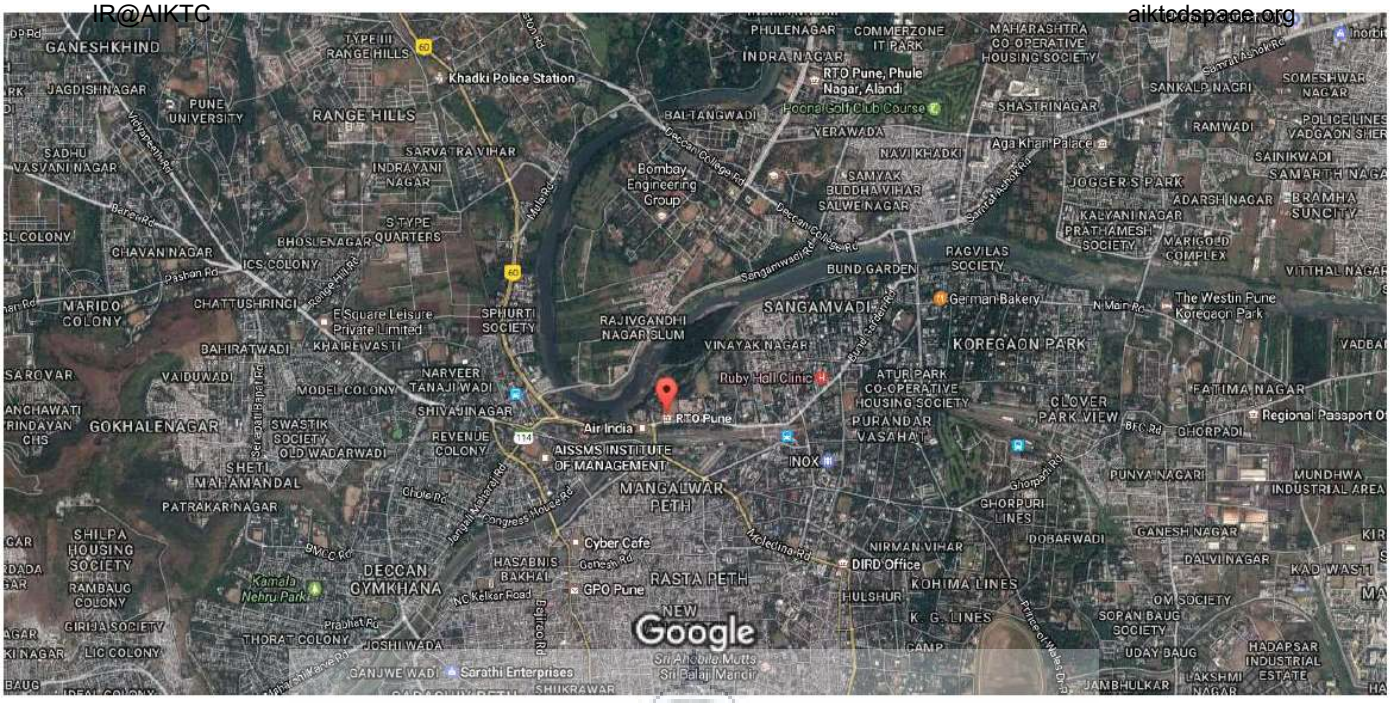


Figure 2: - Location plan of Pune R.T.O

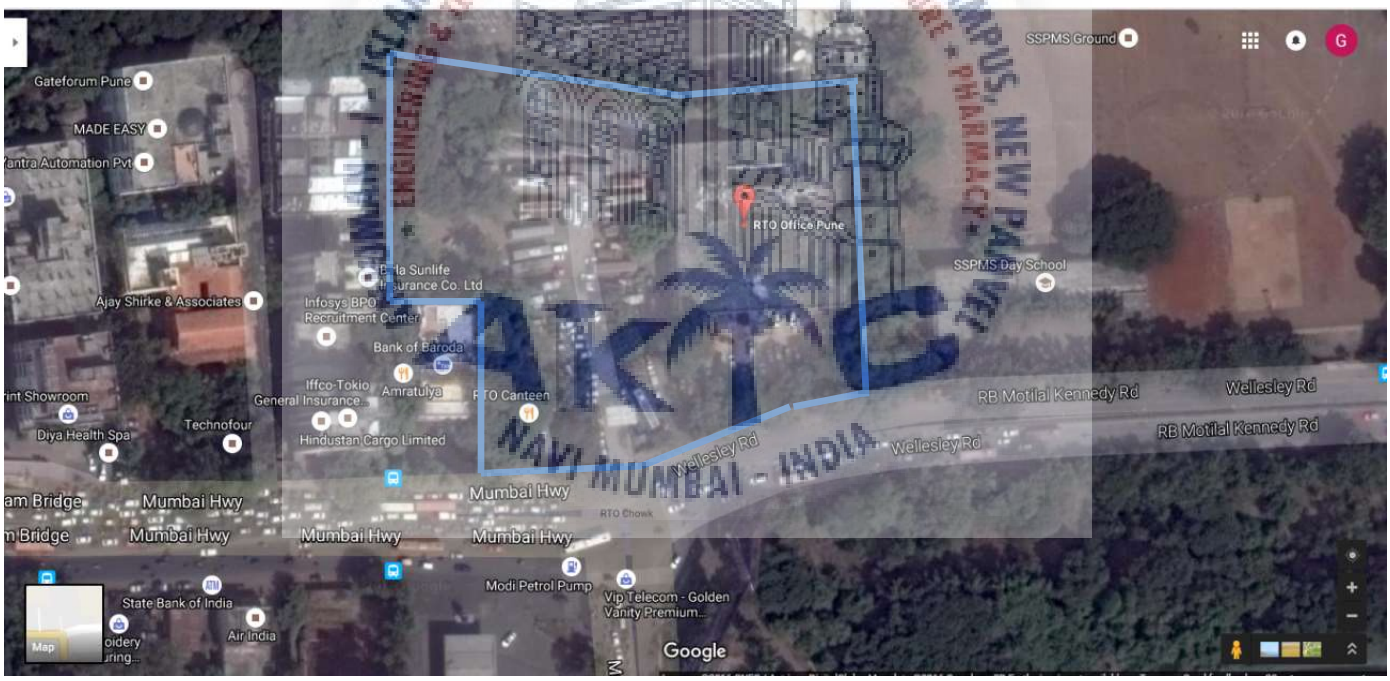
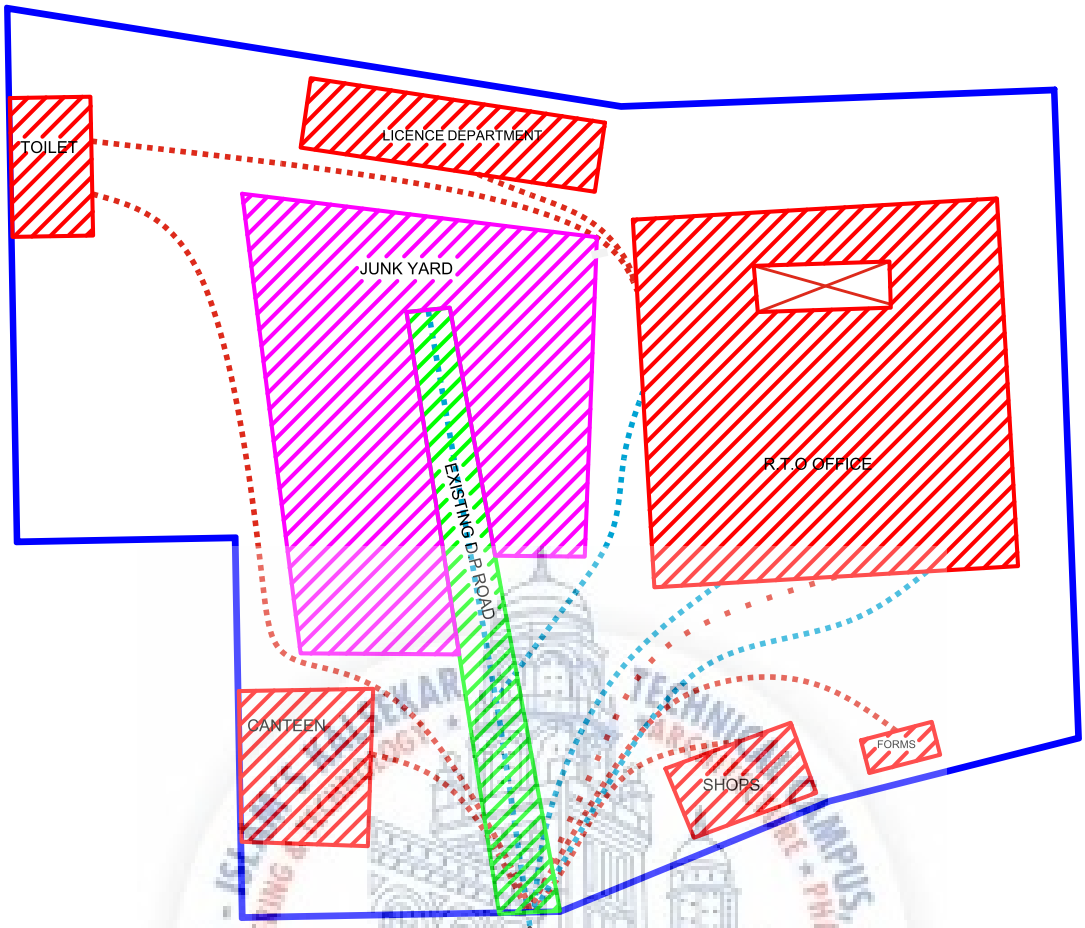


Figure 1: - Site plan



SITE PLAN SCALE 1:1000

LEGENGS:-

- ..... :- PEDESTRIAL MOVEMENT
- ..... :- VEHICULAR MOVEMENT
- ——— :- JUNK YARD
- ——— :- STRUCTURES

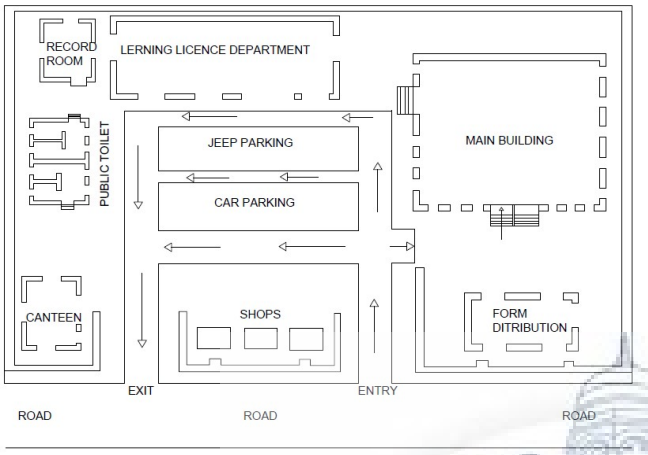


Figure 6: - Schematic site plan

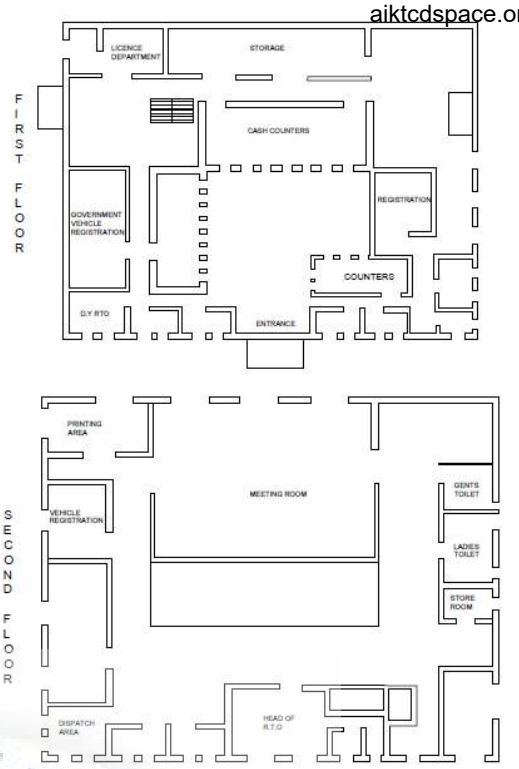


Figure 3: - Floor plans

Figure 5: - Public toilet

Figure 4: - R.T.O canteen

- ——— :- Public toilet on the site which is in a very bad condition.
- The access to the toilet is very conjusted due to the vehicles which are parked ireegular.
- ——— :- Record room is used as a storage room for old files and documents.
- The accessible is very difficult due to the parked vehicles

- R.T.O canteen is very small.
- It cannot fulfil the requirement of the people in the r.t.o.
- No separate canteen for r.t.o staff.

Figure 10 : - Shops

Figure 9: - Physically challenges block

- The shops are given on rent one to run a Xerox centre and another for the soft drinks etc.

- A separate block on the right side of the entrance designed only for physically challenged person considering the barrier free function

Figure 7: - Form distribution block

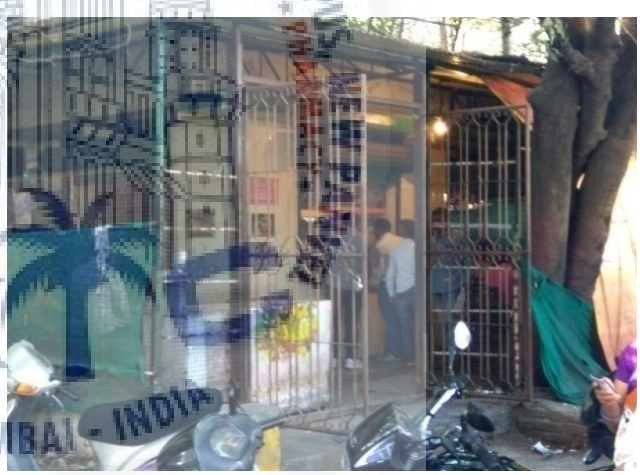


Figure 8: - Canteen

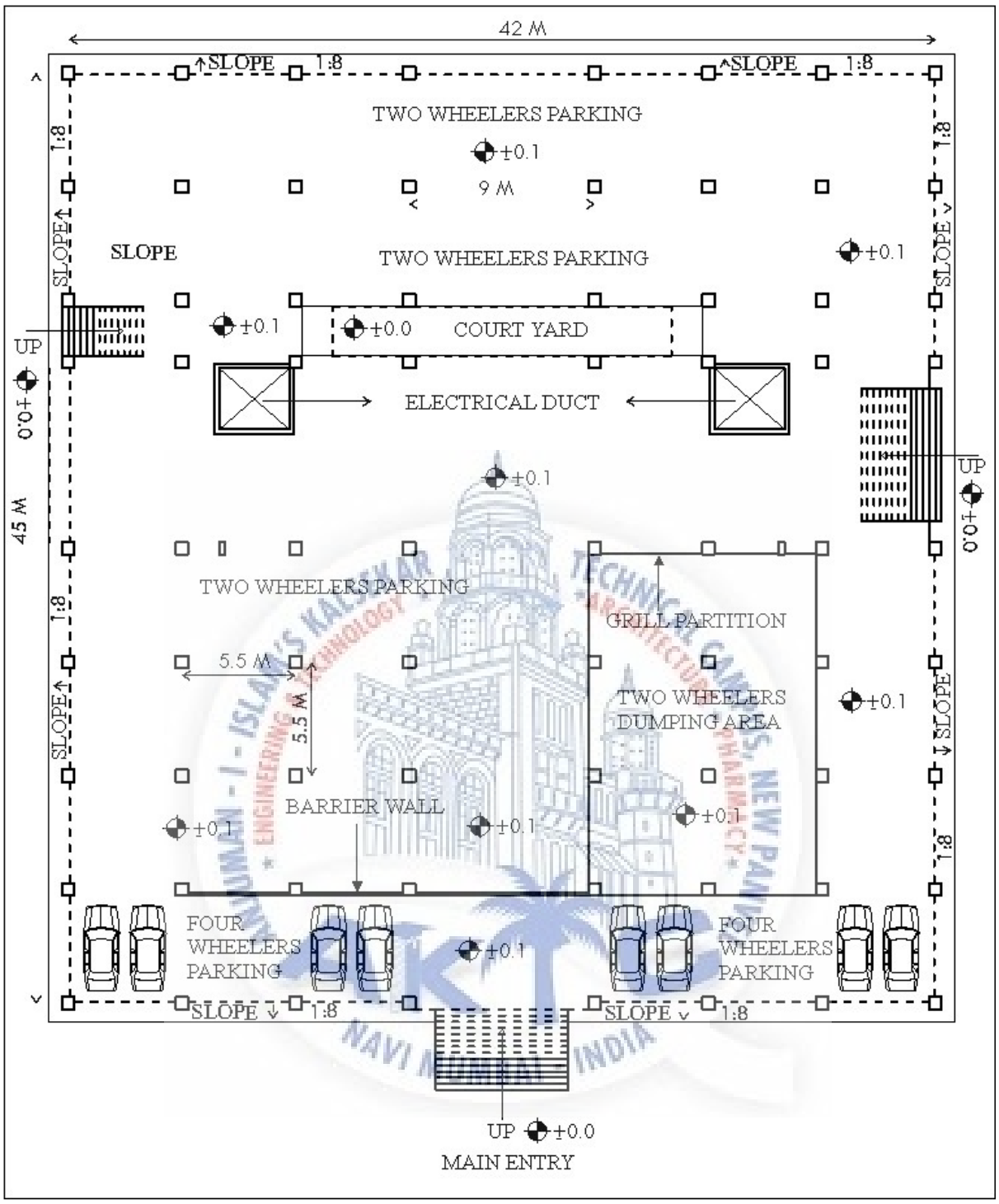
- A small block just adjacent to the handicapped block is for the distribution of forms.
- The forms are distributed only in the morning period

- An alternative and temporary kind of canteen is constructed on the recreation space to fulfil the requirement of the staff and visitors.

Figure 12 : - Meter Room

Figure 11 : - Licence department

- A meter room is provided on the corner of the site without providing the set backs
- Learner's license section is divided from the main building and it is temporary structure.
- This department was constructed later as there was space problem in the main building.



GROUND FLOOR SCALE 1:250

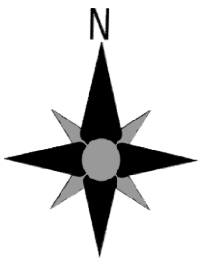


Figure 14 : - Dumping yard

- Part of the ground floor is used for the junk yard for two wheelers.
- Due to the junk yard there is lot of dust and garbage around the yard.

Figure 13 : - Entrance to licence department

- A separate entry inside the main building is provided from the west side of the structure

Figure 15 : - Existing DP Road

- The central DP road divides the site in to two parts the DP road act as a vehicular movement and agent's kiosk.

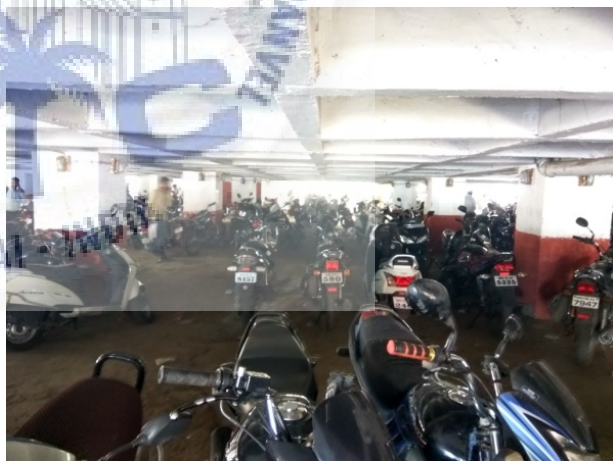


Figure 16 : - Two wheelers parking

- The space under the main building is used for parking's.
- While some spaces also used as an agent's kiosk.

Figure 17 : - Parking in front of building

Figure 19 : - Basement parking

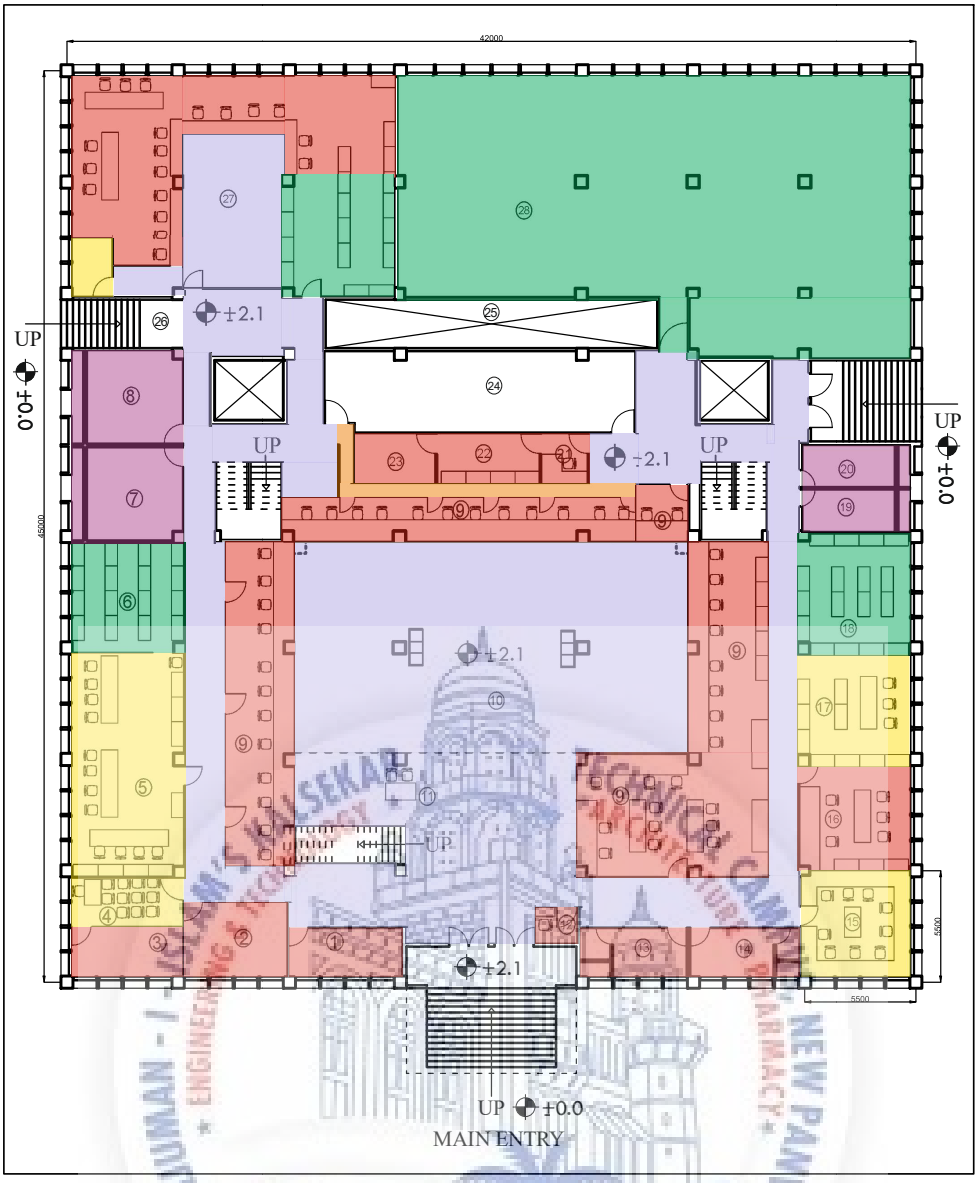
- The front spaces are used to park the four wheeler as the space provided under the building cannot fulfil the requirement
- Similarly, in the case two wheeler parking, the space provided cannot fulfil the requirement so people park their vehicles outside the building which create problems

Figure 18 : - Emergency exit

- An emergency entry or an alternate entry is provided from the east side of the main building
- This entry is not in a used

Figure 20 : - Front view of building

- The large space in front of the main building is used for parking.
- Very congested and difficulties face by the visitors to walk.



FIRST FLOOR SCALE 1:250

LEGENDS:-

1. M.V.I motor vehicle inspector.	**2.** Assistant regional transport officer.	**3.** Sub-regional transport officer
4. Auto-rickshaw permits section	**5.** Storage	**6.** Gents toilet
7. Ladies toilet	**8.** Visitors space for queue etc	**9.** Agent kiosk.
10. P.R.O cabin	**11.** Assistant regional transport officer	**12.** Assistant regional transport officer
13. Registration for private vehicles	**14.** Number plate and R.c book registration	**15.** Out of jurisdiction vehicle registration
16. Empty room	**17.** Gents toilet	**18.** Ladies toilet
19. Data entry	**20.** Storage	**21.** Scanning room
22. Storage	**23.** Courtyard	**24.** Secondary entry from licence department
25. Licence related work	**26.** Storage	

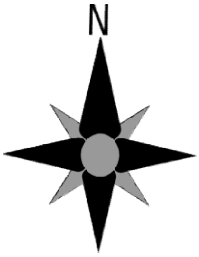


Figure 21: - Toilets

- Toilets which are not in use.

Figure 22: - narrow passages to enter the head offices

- Very narrow corridor to enter assistance's offices.

Figure 23 : - Scanning room

- Scanning is very small, as the room is totally full with old documents
- No different stortage space for the scanned documents

Figure 24 : - Central space for gathering/queue

- Double height central feels visitor to feel open.
- Good ventilation and light in this space.
- Clear view of this area gets from every corner of the building.

Figure 27 : - Central courtyard

- Connecting corridor with central courtyard to the other building/license department

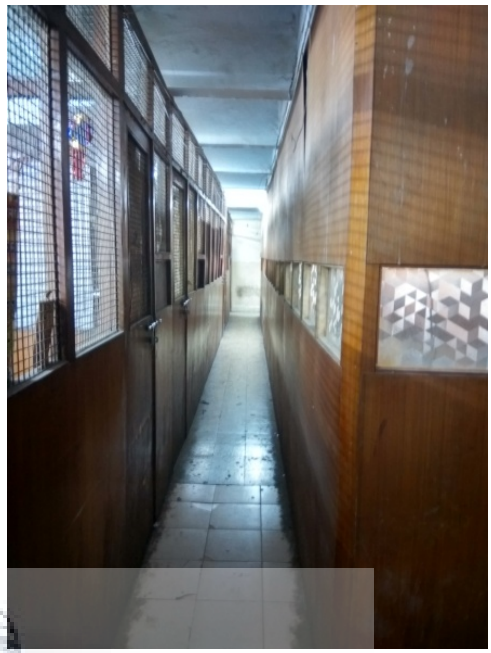


Figure 28 : - Narrow corridor

- Very narrow corridor for staff to enter into the counter

Figure 26 : - Registration department

- New vehicles registration department.

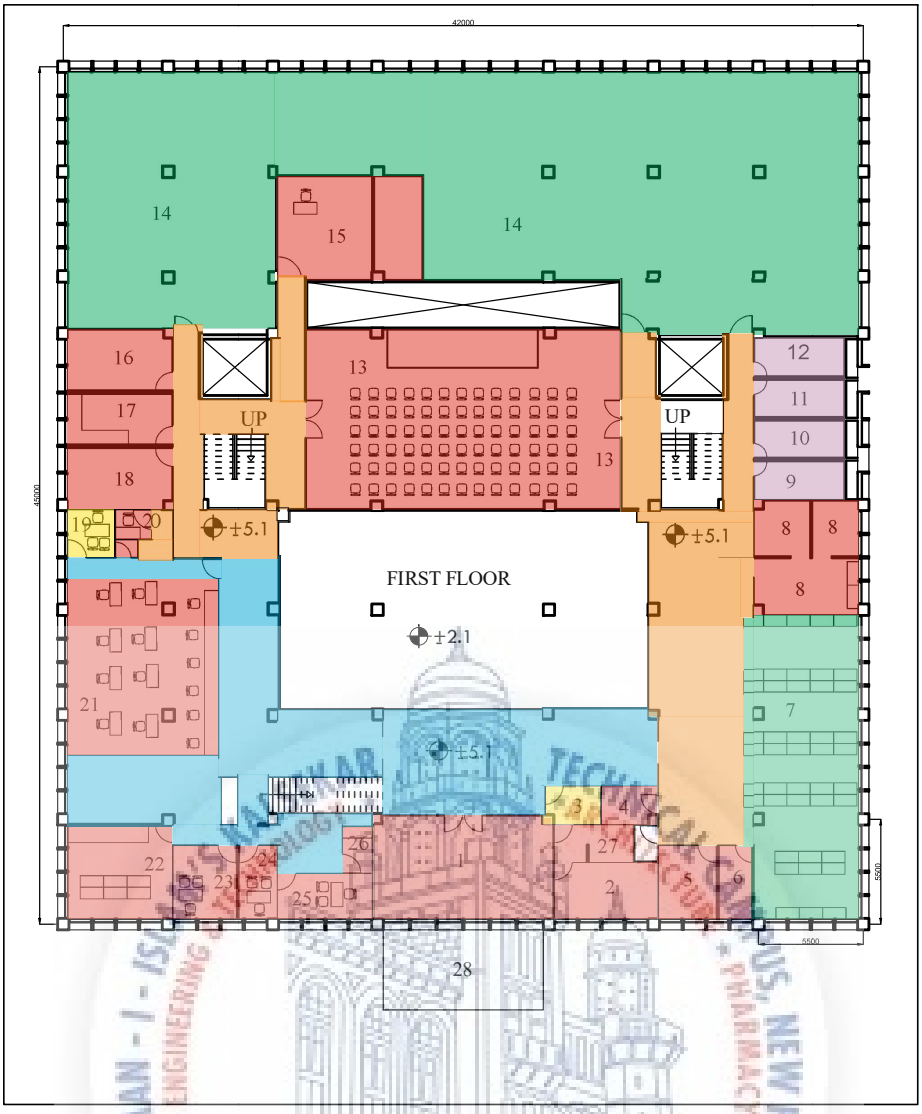
Figure 25 : - Private Registration Department

- the private vehicle registration work done here.
- The space is conjusted whole day.
- The spaces provided is very less as compared to the visitors.

Figure 29 : - Counters

Figure 30 : - Licence department

- The counters/windows are of 1.2m in lenght.
- The spaces provided in front of the windows is enough to catered/stand 20 people at a time in each window.
- The counter provided inside the main building for license department just catered the problem/issues regarding the license.



SECOND FLOOR SCALE 1:250

LEGENDS:-

1. Regional transport officer	**2.** Assistant officer of regional transport officer	**3.** Reception of assistant
4. Work done under guidance of regional transport officer	**5.** R.T.A Pune	**6.** Office
7. Establishment area	**8.** Storage	**9.** Toilet
10. Toilet	**11.** Toilet	**12.** Toilet
13. Seminar room	**14.** Storage	**15.** R.C book and licence printing
16. Dispatching area	**17.** Storage	**18.** Store room
19. I.M.V (assistant co-prosecutor).	**20.** Assistant of R.T.O	**21.** Back offices and temporary permit
22. Fees collecting counter	**23.** Accounts officers	**24.** Accounts officers
25. Offices	**26.** P.C.O	**27.** Toilet
28. Canopy		

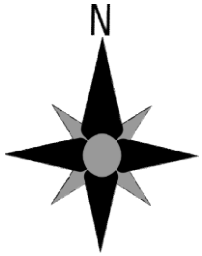


Figure 32 : - Seminar hall

Figure 31 : - Services lines are used in courtyard

- Multipurpose room for the internal staff's
- Courtyard not maintained properly.

Figure 34 : - Toilet

Figure 33 : - Establishment room

- Toilet provided on the second floor is very small.
- This toilet is only for staff.
- The large space provided for establishment area where lots of wardrobe fill with documents are placed.

Figure 36: - P.C.O.

- P.c.o is provided on the second floor for staff and visitors

Figure 35: - Dispatching Area

- The documents and license are dispatch from second floor.

Figure 38 : - P.A of head of R.T.O

- Assistance of the department cabin

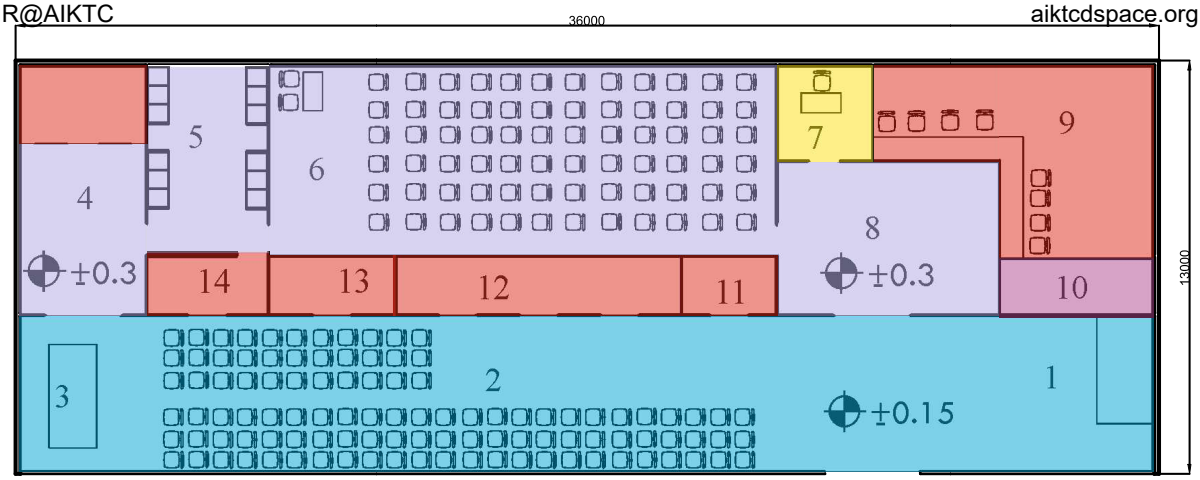
Figure 37 : - Head of District R.T.O cabin

- Head of the district cabin

Figure 39 : -Fees collecting counter

Figure 40 : - Permit section

- Fees collecting counters for license and registrtation cook counters are provided on the second floor.
- Permits are issued for interstate and state vehicles.



MAIN ENTRY

LICENCE DEPARTMENT SCALE 1:250

Legends: -

1. Drinking water
2. Waiting area with seating's
3. Document verification
4. Data entry
5. Waiting area for exam
6. Examination hall
7. Bio-metric lab
8. Queue area
9. Counters for various other types of licence
10. Storage
11. Counter
12. Fees collecting
13. Fees collecting
14. Token

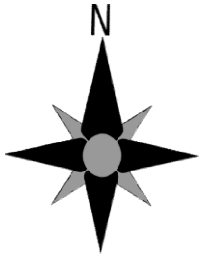


Figure 42 : - Document verification counter

- Document verification center is temporary kind of structure.
- It is very conjusted due to only one counter i.e. for verification

Figure 41 : - data entry counters

- Data entry room which is very large.
- The requirement of space is not so large but they have provided with enough space which is not in function.

Figure 44 : - Exam hall

- Exam hall is quite large to catered 50 people at a time amd maintained.

Figure 43 : - Waiting area

- Waiting area for the visitors came for making their license.

Figure 45 : - Bio-metric lab

Figure 46 : - Fees collecting counter

- Bio-metric lab where people snap thier pics for license purpose.
- The no of table is less as compared to the people who visit the deparment to make their license.
- Their are 5 fees collecting counter which helps visitor to done their easily.

Case study 2

2.2 Tardeo R.t.o (Mumbai central).

Location:-Mumbai central

The city of Mumbai is partitioned into regulatory division. More noteworthy Mumbai is the urban agglomeration of 16 million individuals 9 the biggest in India and one of the six biggest on the planet) which goes under the metropolitan company of more noteworthy Mumbai. So for the managerial reason the more noteworthy Mumbai is partitioned into zones each comprising of wards named one after another in order.

The R.T.O is one of the fundamental managerial office which causes Mumbai to help transport framework. As Mumbai is partitioned into zones to deal with the issues and issues also the R.T.O. is separated into 3 unique workplaces with enlistment number MH-01 (Tardeo), MH-02 (Andheri), MH-03 (Vadala).

The investigation of Tardeo R.T.O covers the capacity, process and prerequisite of working in the R.T.O amid the time of day. The fundamental center was to comprehend the phases of working from which the program can be produced.

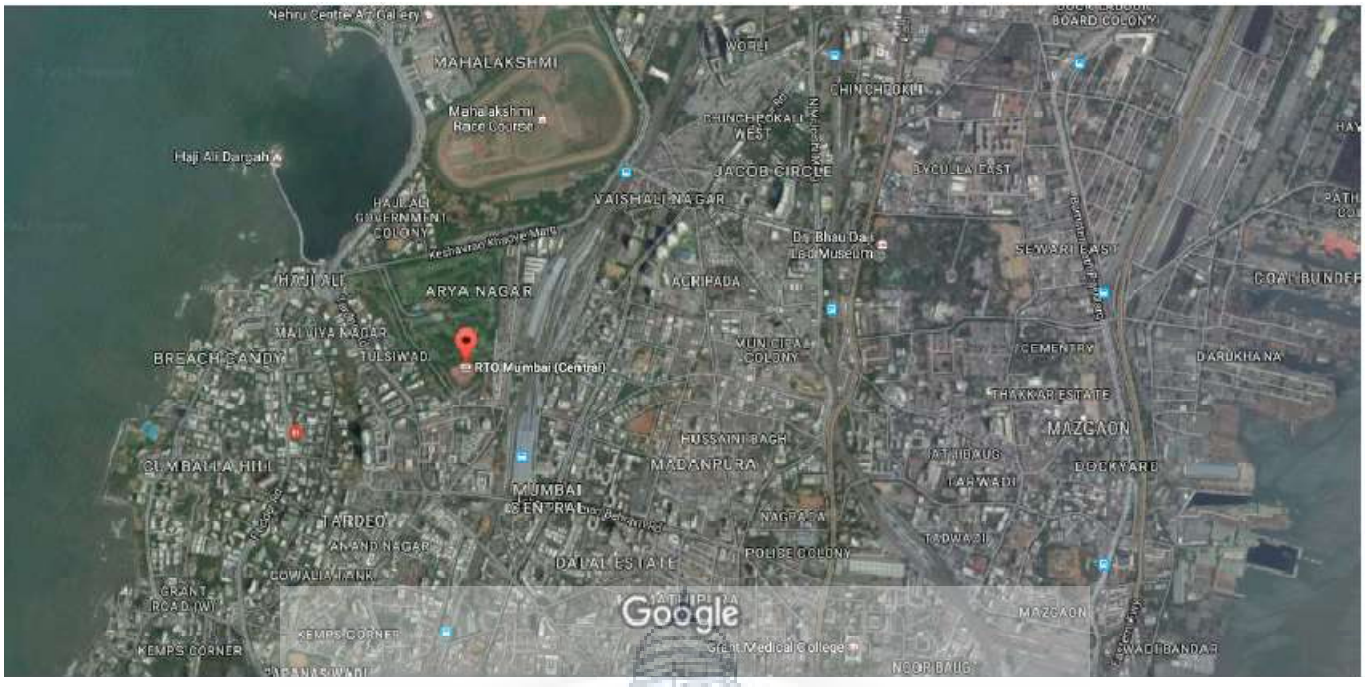


Figure 48 : Location plan of Tardeo R.T.O

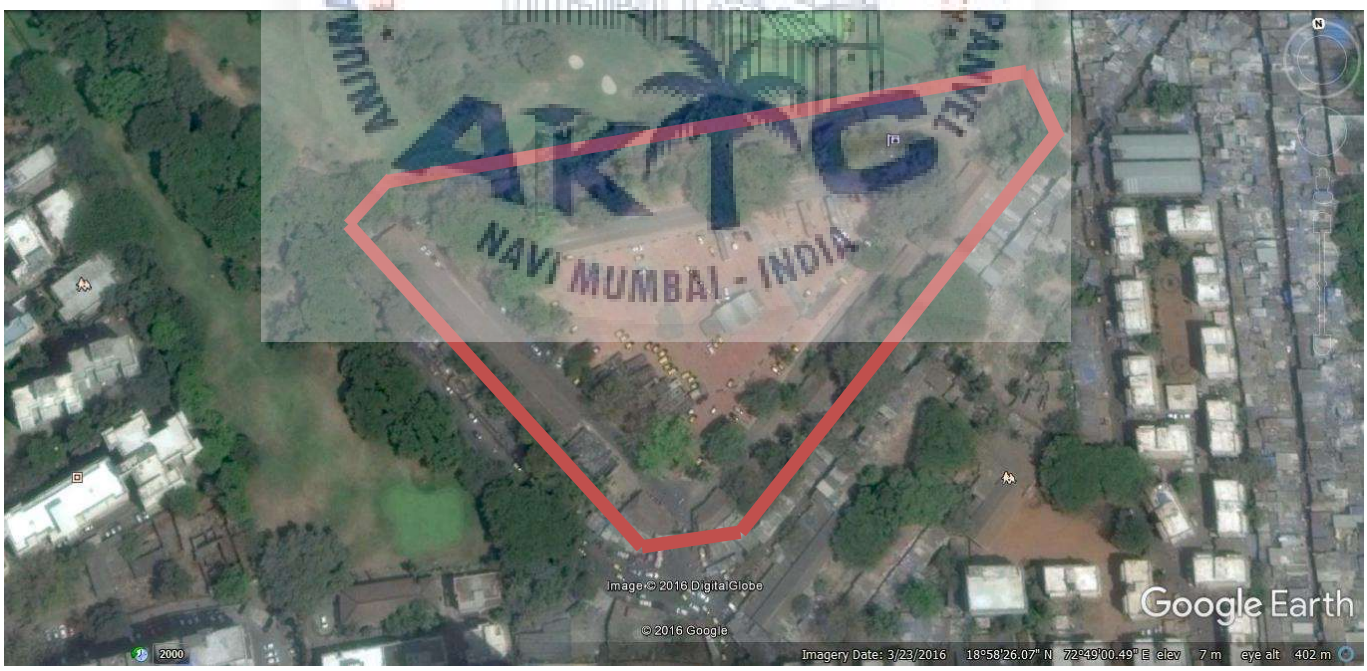
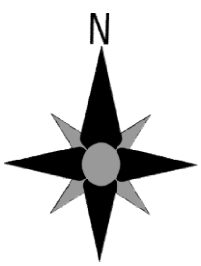


Figure 47 : - Site location plan



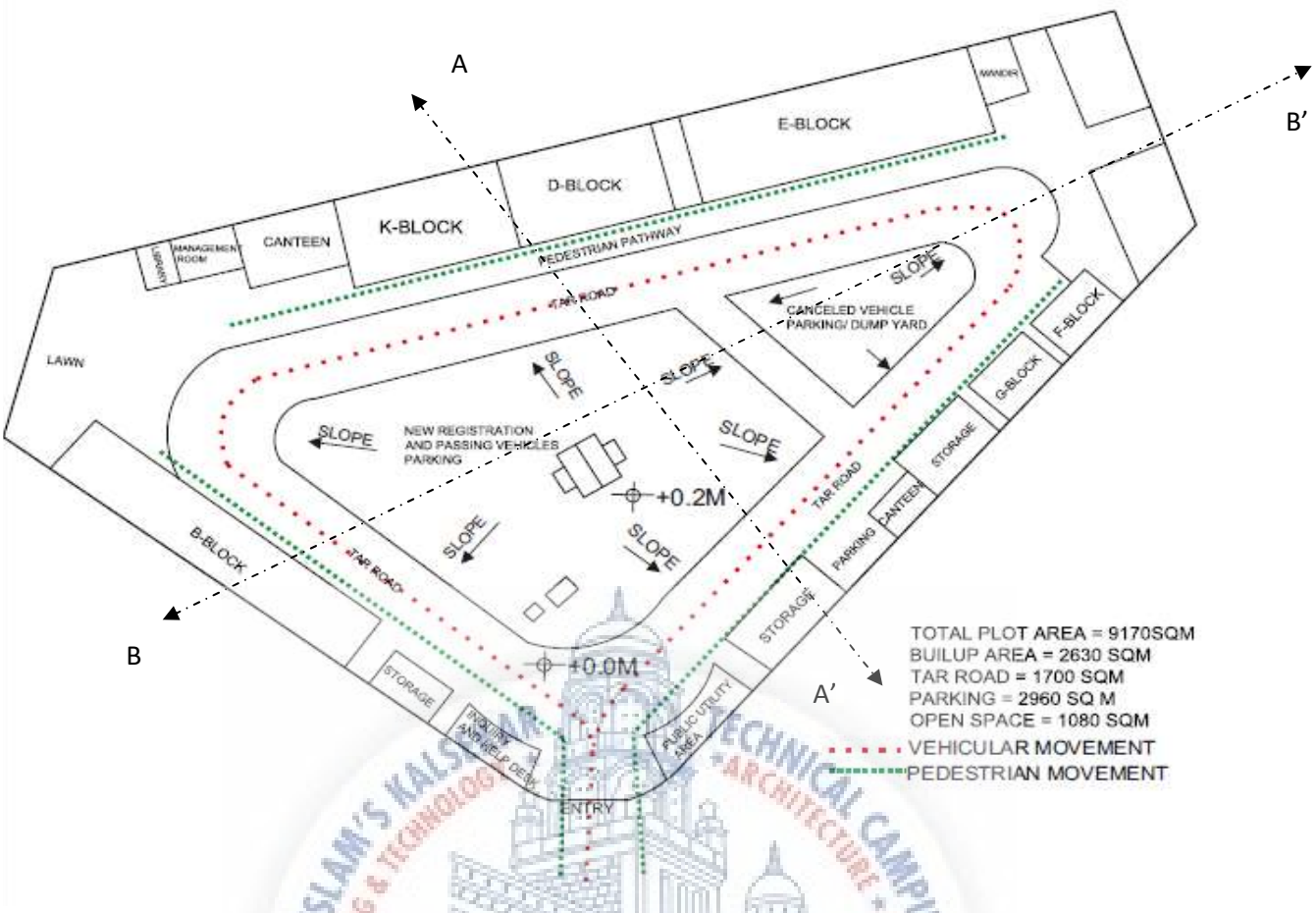


Figure 49 : - Site plan

- The periphery of the site is surrounded by structure which perform various function like shops, hutments and agents kiosks
- The road adjacent to the structure act as a asphalt track for break testing and driving checking.
- The track is 100 mts in length.
- The central part of the site is divided in two parts in which one smaller part is used as a dumping yard for cancelled vehicles, and the other larger area for the testing, passing and parking of vehicles.
- No parking space is provided on the site
- The spaces provided for working to the staff are very small, which in turn creates chaos and long queue.
- No proper differentiation between pedestrian walk and vehicular road.
- The blocks are rectangular in shape with no internal walls; the internal spaces are made with partition of plywood i.e. constructed according to their use.
- Comparing the statistics of Mumbai, the spaces provided in site for registration and parking is very less.
- Some of the main function of R.T.O is not working properly, due to the structural system etc.

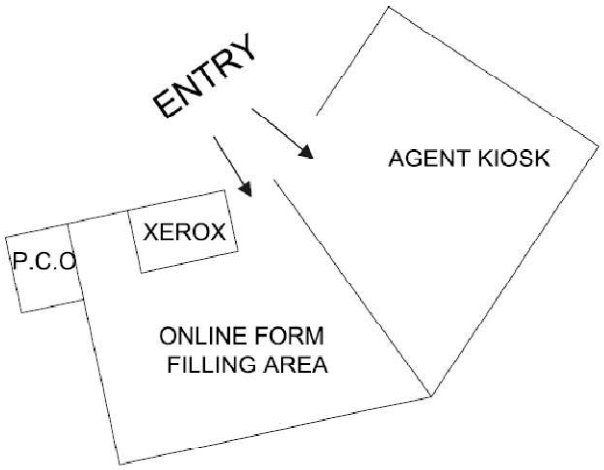


Figure 50 : -Public utility area

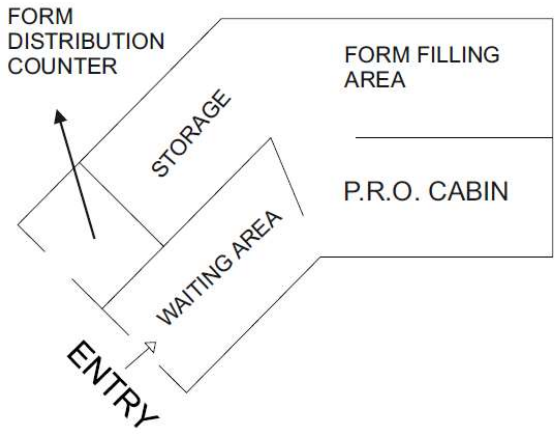


Figure 51 : - Inquiry counter

- Security area is used as an inquiry office and distribution and fillings of forms
- Xerox counter is very small as compared to the, long queue and chaos are there during working hours
- The spaces are not used according to the allotment i.e. (misuse of space)

Figure 52 : - Recreational and management room

- Staff management area here keeps the records of staff
- Library is provided in the R.T.O for staff but remains closed

Figure 54: - Main entrance

Figure 53 : - Public utility department

- The entry is 5m wide and differentiated as vehicular and pedestrian pathway

- The public utility area is always full with agents.
- A very small Xerox counter with P.C.O is provided at the entrance

Figure 55 : - K-Block and D-Block

- Dispatching of licenses and records of it's are maintained and stored.
- Head of R.T.O cabin is separated from other officer's block.
- Less public interference in this block
- One common toilet for two blocks

- Passing of motor vehicles are done in this block
- Number of counter without any signage's confused visitors to check there passing status.
- Chaotic space in the passing counters area.
- Final signature and approval basis signature done in this block.

Figure 56 : - Registration Parking's

Figure 57 : - Water harvesting system

- The image shows the central part where the vehicle is parked for registration etc.
- The area is paved instead of tar road.

- Rain water harvesting systems are used on the site, where rain water is collected and adjacent to the site is a golf court where this water is used for landscape.

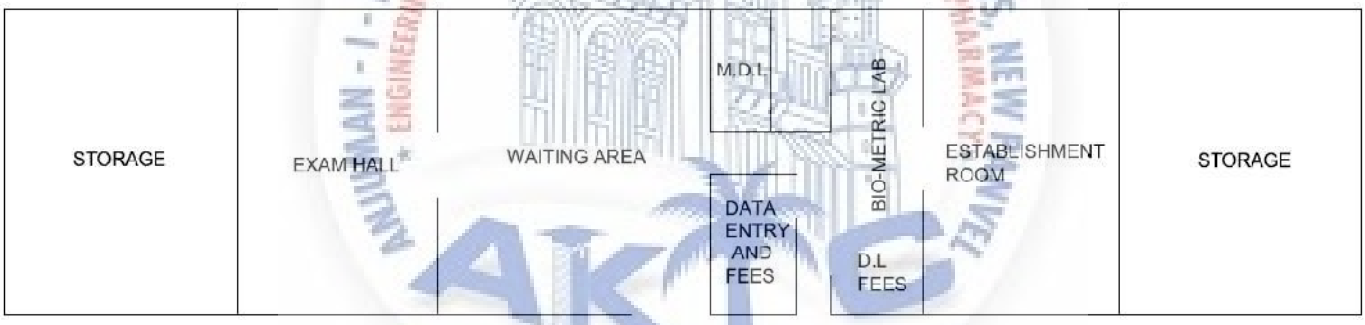


Figure 58 : - B-Block

- Only license related work is done in this block.
- Learning-driving license related every work is done in this block.
- The spacer is always busy and chaotic.
- An average 150 people/hr visit the space.
- According to the population of people visiting to make their license, the space provided is very small.
- Staffs are very less also the spaces provided to them is very small.

Figure 59 : - Licence department

- The track is totally no parking zone.
- The road is used as a pedestrian pathway for the visitors who visit to make their license
- Agent kiosk are made in front of the block which creates noise

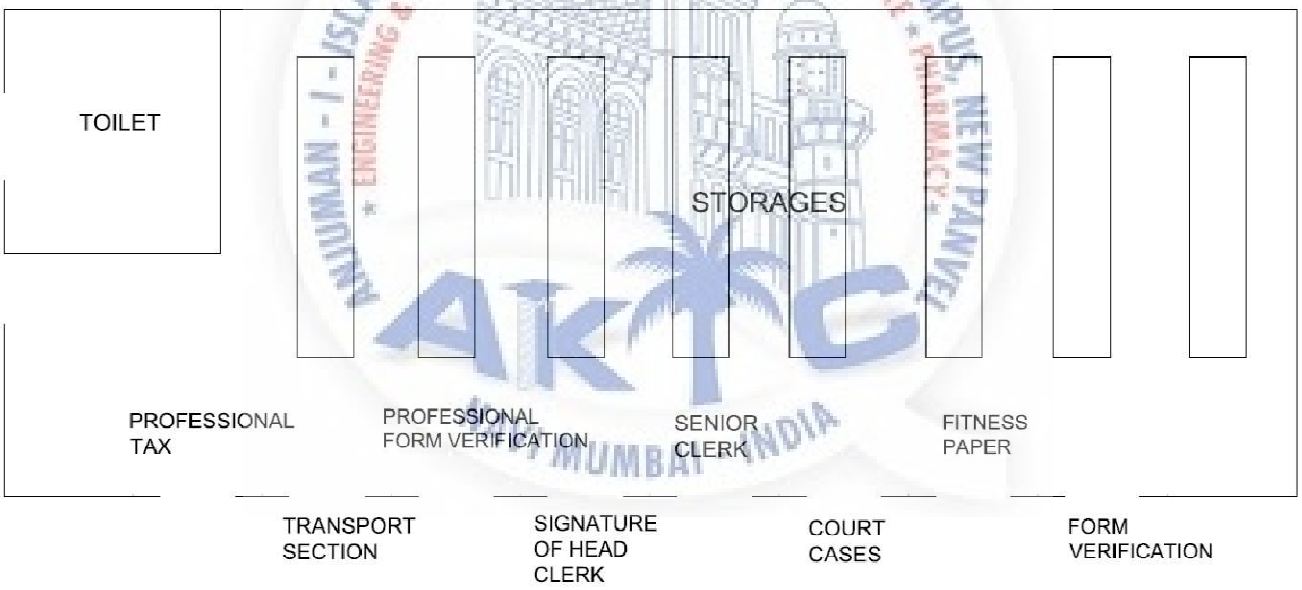


Figure 60 : - E-Block

- Only tax related work is done in this block.
- This blocks/working area requires large storage spaces
- Toilets provided are very small and not properly specified for gents and ladies.
- The block is not properly maintained.
- No privacy.
- Spaces provided to staff are congested and creates problem to work for staff.

Figure 61 : - E-Block view

- The image of the above block shows that how the people stand in a queue.
- Not proper space to form a queue.
- People need to stand on pathway.

Figure 62 : - View of block

- The long elongated block is shown where the tax related work is done.
- No intermediated entry.
- Staff/visitor need to enter from one side to work at another end.

Figure 63 : - G-Block

- Only renewing, duplicate, dispatching, posting of license etc. related work is done the block.
- The spaces for the officers who approve the form are not properly designed and very small.
- Storage is filled with old documents and also not maintained.
- Very small meeting room as compared to the total staff of R.T.O.
- Congested space for letters and license dispatching
- Small toilets which stinks a lot
- Irregular functions around toilet, meeting room and approval table.

Figure 64 : - view of G-Block

Figure 65 : - Registration vehicle parking

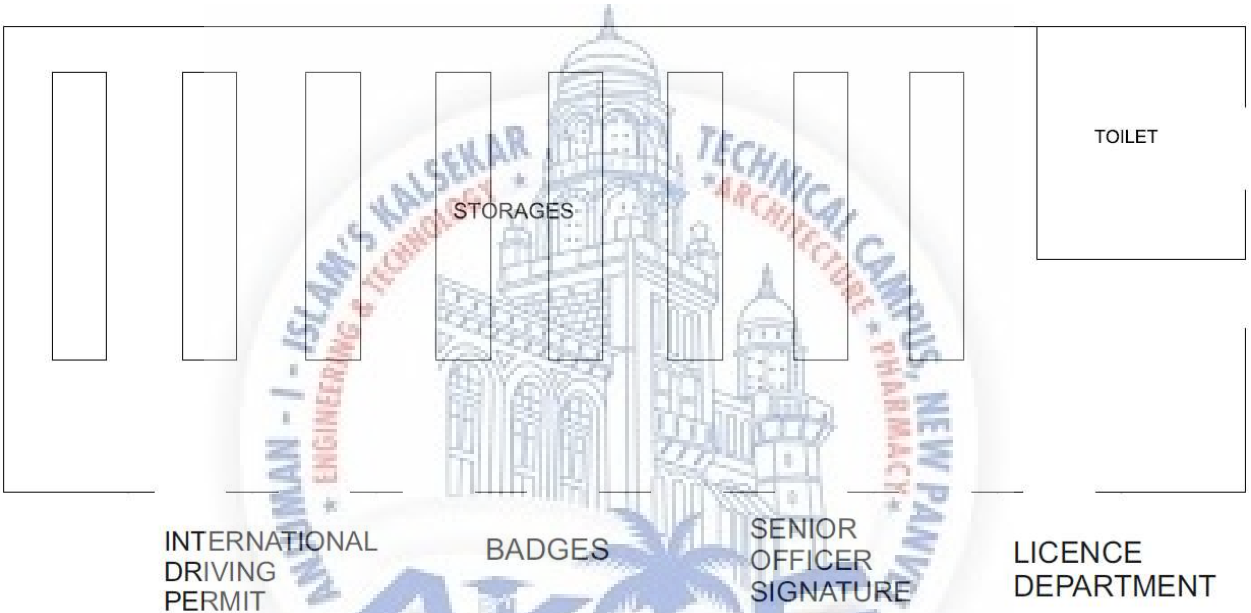


Figure 66 : -F-Block

- Work related to government vehicles and public vehicles done here, like B.E.S.T. buses, taxi, rickshaw.
- Many works related to cashier, badges, record, license, international permit etc done here.
- No proper toilet facilities.
- Being a large area the spaces provided to staff is congested due to storages.

Figure 68 : - View of parking's

Figure 67 : - Data entry of incoming vehicles

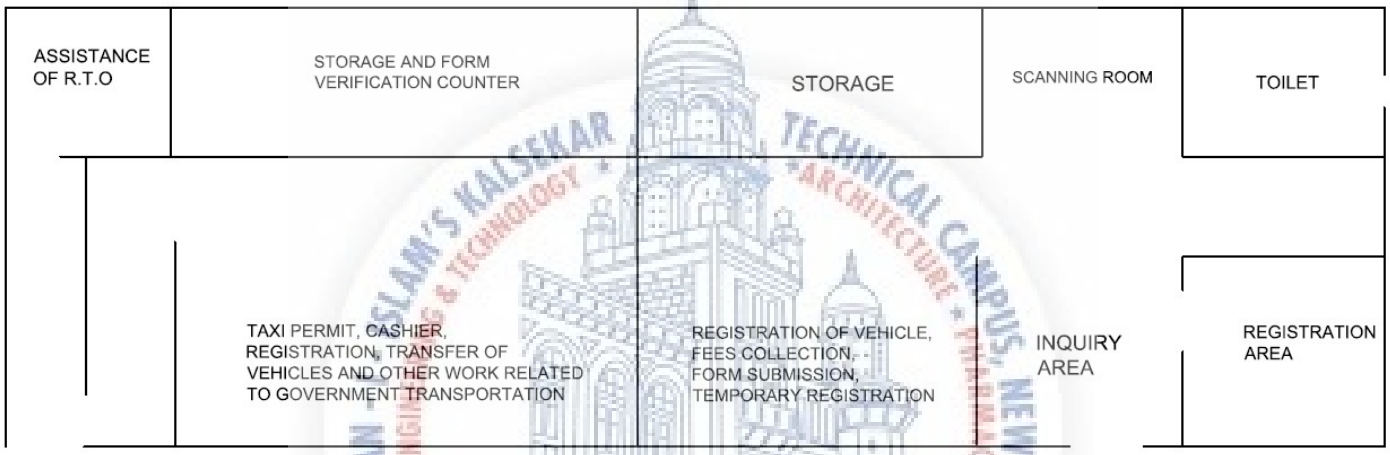


Figure 69 : - E-Block

- The images show the area where the vehicles are park for registration and testing etc.
- According to the no of staff the toilet provided is very small.
- Storage provided is very small and not maintained.
- No privacy inside the working area.
- Toilets provided is only for staff, but used by the visitors as well.
- Each windows/counter are have long queue during working hours.
- Toilet entry is from outside.
- Windows are equally arranged in a working process i.e. stages of working.

Figure 70 : - Inquiry counter

- P.R.O cabin is inside this area.
- Form distribution and filling done here in this block.

Figure 71 : - Online submission form area

- Xerox centre is very small provided.
- Agent sits inside this block.
- Space provided for online submission of form.

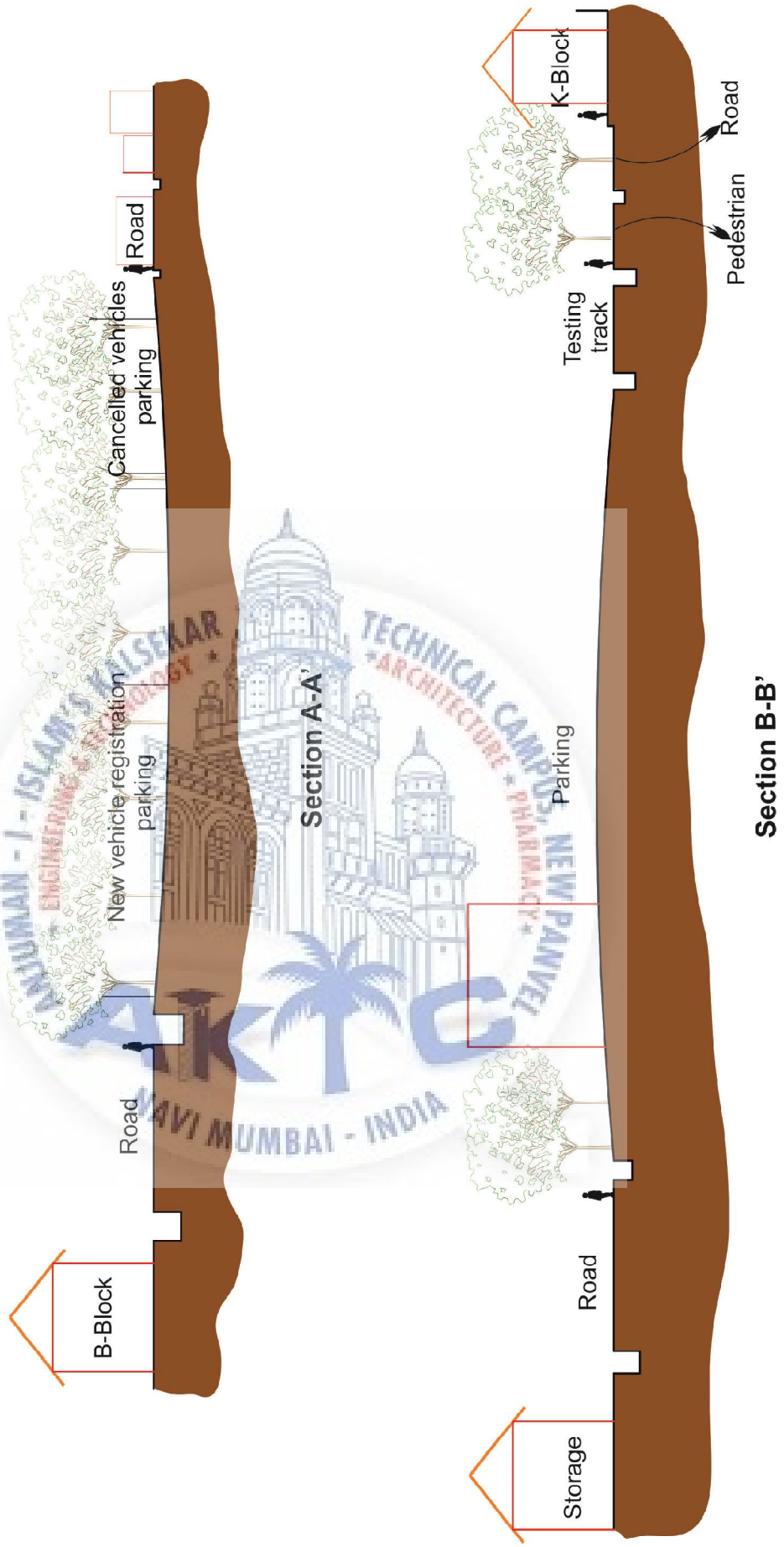


Figure 72: - Sections

Case study 3

SWARNIM RTO (Gujarat)

By experimentation of different frameworks (innovation shrewd) for the Regional Transport Office, Gujarat government has attempted to bring straightforwardness, proficiency strategy to the whole procedure of working.

The legislature of Gujarat expressed utilizing current innovation and make administrations accessible to the natives with less problems, and that is the reason the state government has chosen to completely modernize the RTOs in each locale.

The Gujarat state has seen a quick development in both the quantity of vehicles and drivers. While 4.32 lakh vehicles had been enlisted in 2001-02, 11.22 lakh vehicles have been enrolled in the state in the year 2010-11. The relating figures of driving licenses issued are 7.79 lakh and 10.16 lakh separately, which flag the exceptional development of versatility in the state. It is normal that this pattern will quicken and a bigger number of vehicles and drivers will be incorporated into the vehicle arrange, in view of the state's higher development rate when contrasted with the country.

The activity was intended to guarantee and increment proficiency and straightforwardness and to systematically actualize the procedures of e-administration by securing new capacities in innovation, coordinations and organization.

Single Window Applications

In the counter/window system, the applicant was required to move from one window to the other and wait for his turn, which ultimately resulted in long queues. This system was very time-consuming and tiring, causing inconvenience to the visitors and the staff as well. Therefore, the Single Window System was conceived. All the processes related to an application like receiving applications, scrutinising, fee collection, bio-metrics, etc., are processed at a single window (counter). The applicant is required to wait at the counter while his application is being processed. There will be number of such counters. Thus, effectively, the queues are eliminated.

Exhibit 1: Old Process Flow for Obtaining Learning License

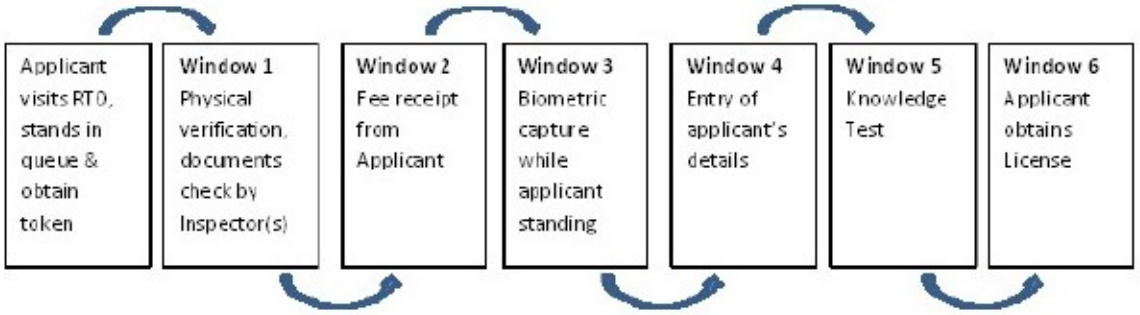
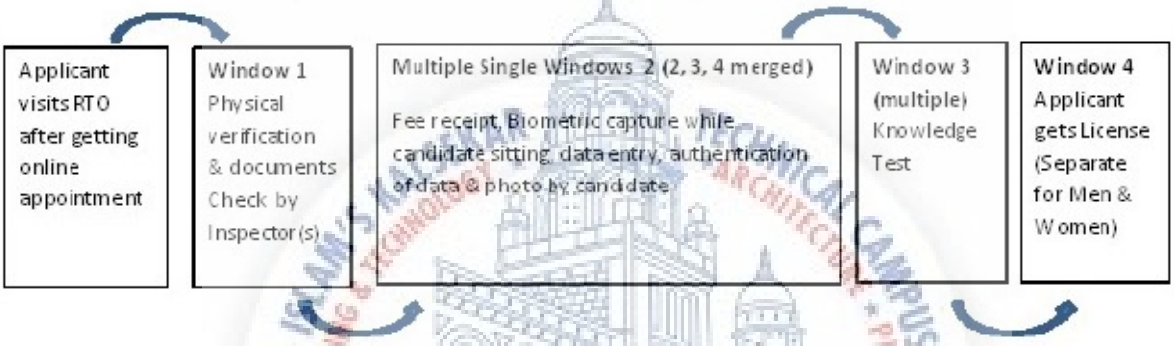


Exhibit 2: New Process Flow for Obtaining Learning License



Online Appointment System

The flow of the single window application processes is controlled through an online appointment or token system. Through this, people can arrive at designated time slots without having to wait.

Status after Implementation of new system:

Cost Reduction

1. Amount of Paper work saved: By Applicant: Saving of 12 pages per application resulting in annual saving of 12 million pages approx.
2. By Department: Saving of 1.2 million pages approx every year along with saving in manual effort involved in writing.

Service Improvement:

1. Time in Queue : Saving of 3 hrs per person on average basis resulting in saving of 3 million man hours
2. Time in Services : Saving of 25mins per person to both system and person

Re-Engineered Processes

The previously existing process was complex and awkward and full of redundancies. It has been replaced by a simplified and standardised process to reap (collect) full benefits of the computerised system.


Re-Engineering of Processes

Document Delivery Initiatives through post office

RTOs have a tie-up with the regional post offices to ensure safe and timely delivery of documents like RC Books, licences, etc., to designated addresses. This process has ensured that the customer need not visit RTO offices repeatedly for obtaining the required documents. This also ensures that the address of the applicant is verified while delivering the document.

Modernisation of RTO's

The old offices were designed for manual and low volume work. In recent times, there has been a surge in the number of applications for driving licences and vehicle registrations through speed post services. This has necessitated computerisation of the entire system, along with the renovation of the offices to suit infrastructural needs.


Modernisation of offices

Digitisation and Driving Test Tracks Other initiatives

The RTO office keeps a record of all vehicle registrations, driving licence issuances and hence, it has to maintain a huge amount of data spanning over decades. The State Government has undertaken the task to digitise these records completely in a span of one year. This will help in building the master database and will facilitate easy retrieval of records, and the public will have access to the database, avoiding their frequent visits.

The automated driving test tracks are being made by the department to ensure that a higher bar is set for checking the driving skills of a prospective licence holder. The track will be equipped with electronic sensors which will help in providing an on the spot grading of the drivers skill, knowledge and the movements will also be recorded

Major function to be adopted in the new RTO

Facilitation Area: - which is equipped with a help desk, token counter and LED displays.

Waiting hall: - has been air conditioned and remodelled to have civic amenities. It also has an audio-visual display for viewing road safety films/ messages while waiting.

Service zone: - has single window counters with seating facilities and also the knowledge test centre.

http://negd.gov.in/writereaddata/files/Case%20Study%20-%20Swarnim%20RTO%2C%20Gujarat.pdf

https://www.trafficinfratech.com/gujarat-rtosa-new-service-paradigm/

http://www.cips.org.in/documents/DownloadPDF/downloadpdf.php?id=159&category=E-Governance

New system of testing a candidate to issue a driving licence

New system for the candidate to achieve the two wheeler driving licence will have to perform the following test:

- Identifying Traffic symbols.
- Ability to drive forward on a serpentine.

Pre-requisites for the Test

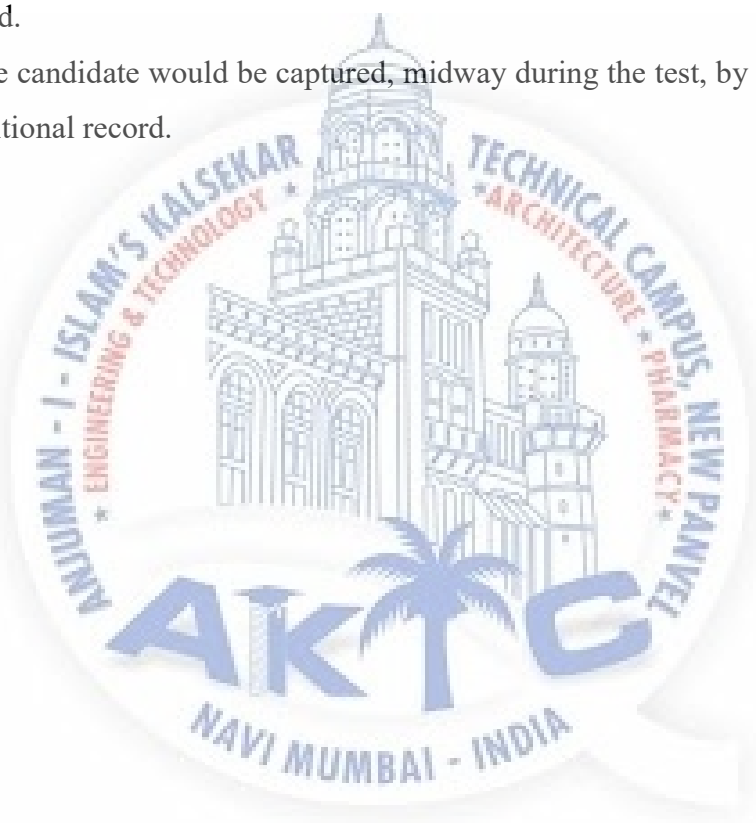
- Candidate should possess a valid Learner's License.
- Candidate should have Driving Licence Test Fee Paid receipt.
- Obtain a Test Date and Time Slot at the respective (LL Issued) RTO.
- Candidate should obtain test slot separately for Two Wheeler.
- Present himself at the RTO on the appointment taken date and time.

Two Wheelers Licence Track Test (The Serpentine Test)

The sequence of the test is taken as under:

- The candidate in the above testing (serpentine) track has to drive the two wheeler in the forward direction without stepping his foot on the ground and within the stipulated time.
- The candidate on the track would be guided by the signal light.
- During the testing time the candidate ID is verified by the computer system.
- If the candidate ID is verified and he/she is eligible for test, the signal will set to green and the driver is allowed to for the test.

- There are poles on the side of the track, the driver need to cross the track without knocking the poles. If he knocks the poles the test is failed and again he/she need to take an appointment for another chance.
- When the driver start to drive and crosses the start line, the computer system start a timer which will run till the time the driver cross the stop line or maximum time allotted for the test.
- During the course of the test, if any of the sensors disturbed from their position, the computer system would detect all such violations and allocate suitable penalty marks.
- When the test is complete either due to the candidate crossing the STOP line or the timer running out, the computer system would allocate marks based on the number of sensors disturbed and the time taken for completing the test.
- The vehicle movement during the test would be recorded on video and stored as part of the candidate's record.
- The picture of the candidate would be captured, midway during the test, by a camera mounted inside the LMV, as additional record.



http://drivingtesttrack.in/two-wheelers-license.htm

LMV or Four wheeler Test Sequence

Several skills are assessed for a motor car driver to achieve the licence:

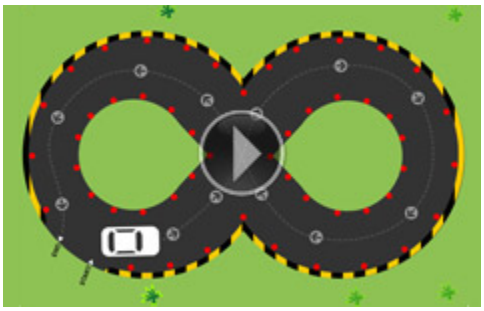
- Ability to Parallel Park (alongside a kerb).
- Ability to drive forward on a road with upward Gradient without any backward movement.
- Ability to drive forward on an '8' shaped road.
- Ability to drive backward on an 'S' shaped road.

Up-Gradient Track Test

The process of this test is as under:

- In the above testing track the candidate is expected to drive forward on an inclined track without having any backward movement.
- The candidate will be guided by Signal Lights in the track.
- Before the testing time the candidate ID is verified by the computer system.
- If the candidate ID is verified and he/she is eligible for test, the signal will set to green and the driver is allowed to for the test.
- The candidate starts his vehicle to move forward and cross the Stop line without any backward movement.
- The Signal light will turn Red immediately after the crossing of the Stop line by the vehicle.
- The computer system will monitor and detect any backward movement of the vehicle to allocate suitable penalty points
- The vehicle movement during the test would be recorded on video and stored as part of the candidate's record
- The picture of the candidate would be captured, midway during the test, by a camera mounted inside the LMV, as additional record

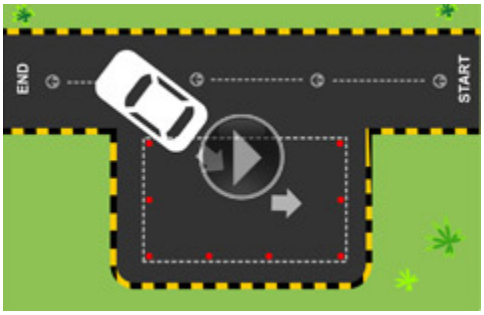
Forward ‘8’ Shaped Track Test



The process of this test is as under:

- In the above testing track the candidate is expected to drive in the forward direction with in the stipulated time
- The candidate will be guided by Signal Lights in the track
- Before the testing time the candidate ID is verified by the computer system.
- If the candidate ID is verified and he/she is eligible for test, the signal will set to green and the driver is allowed to for the test.
- The candidate has to start his vehicle to move forward and cross the Start line.
- The Signal light would turn Red immediately after the crossing of the Start line by the vehicle.
- There are poles on the side of the track, the driver need to cross the track without knocking the poles. If he knocks the poles the test is failed and again he/she need to take an appointment for another chance.
- When the driver start to drive and crosses the start line, the computer system start a timer which will run till the time the driver cross the stop line or maximum time allotted for the test.
- During the course of the test, if any of the sensors disturbed from their position, the computer system would detect all such violations and allocate suitable penalty marks.
- When the test is complete either due to the candidate crossing the Stop line or the timer running out, the computer system would allocate marks based on the number of sensors disturbed and the time taken for completing the test.
- The vehicle movement during the test would be recorded on video and stored as part of the candidate’s record
- The picture of the candidate would be captured, midway during the test, by a camera mounted inside the LMV, as additional record.

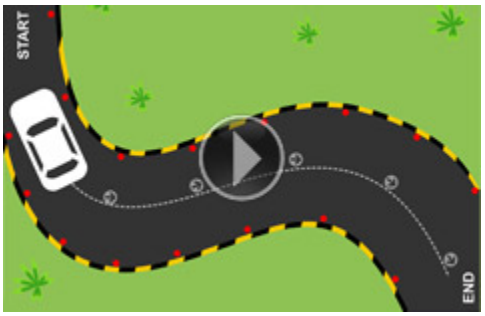
Parallel Parking Test



The process of this test is as under:

- In this above track, the candidate is expected to park his vehicle in reverse parallel direction in the slot provided.
- The candidate will be guided by Signal Lights in the track
- Before the testing time the candidate ID is verified by the computer system.
- If the candidate ID is verified and he/she is eligible for test, the signal will set to green and the driver is allowed to for the test.
- The candidate has to start his vehicle to move forward and cross the Start line.
- The Signal light will turn Red immediately after the crossing the Start line by the vehicle.
- The candidate has to reverse the vehicle and move to the left side , diagonally and move into the parking slot provided without knocking down any of the marker poles positioned on the borders of the parking slot.
- When the driver start to drive and crosses the start line, the computer system start a timer which will run till the time the driver cross the stop line or maximum time allotted for the test.
- The candidate has to position the vehicle clearly within the parking slot. If any protruding part of the vehicle is detected by the sensors as violating the border lines, suitable penalty marks may be awarded.
- If the vehicle is positioned properly within the stipulated time, the computer system would turn the Signal to Green indicating to the candidate that the test is complete and he/she can exit the track.
- During the course of the test, if any of the sensors disturbed from their position, the computer system would detect all such violations and allocate suitable penalty marks.
- When the test is complete either due to the candidate crossing the Stop line or the timer running out, the computer system would allocate marks based on the number of sensors disturbed and the time taken for completing the test.
- The vehicle movement during the test would be recorded on video and stored as part of the candidate's record
- The picture of the candidate would be captured, midway during the test, by a camera mounted inside the LMV, as additional record.

Reverse ‘S’ Track Test



The process in this test is as under:

- In this track, the candidate is expected to drive the vehicle in the backward direction, within the stipulated time.
- The candidate will be guided by Signal Lights in the track
- Before the testing time the candidate ID is verified by the computer system.
- If the candidate ID is verified and he/she is eligible for test, the signal will set to green and the driver is allowed to for the test.
- The Signal light will turn Red immediately after the crossing the Start line by the vehicle.
- The candidate has to drive reverse on the track, without knocking down any of the marker poles positioned on the borders of the parking slot.
- When the driver start to drive and crosses the start line, the computer system start a timer which will run till the time the driver cross the stop line or maximum time allotted for the test.
- During the course of the test, if any of the sensors disturbed from their position, the computer system would detect all such violations and allocate suitable penalty marks.
- When the test is complete either due to the candidate crossing the Stop line or the timer running out, the computer system would allocate marks based on the number of sensors disturbed and the time taken for completing the test
- The vehicle movement during the test would be recorded on video and stored as part of the candidate’s record
- The picture of the candidate would be captured, midway during the test, by a camera mounted inside the LMV, as additional record.

Overall Design for the four wheeler testing track

http://drivingtesttrack.in/four-wheelers-license.htm

3.4 Case Studies inference

- No proper facilities provided to staff
- Issues of space crunch
- No proper movement on the site
- Programs are generated with the help of studies.
- Requires a lot of parking space
- Department are separated from each other, which creates chaos and problem to identity the place.
- Polluted area
- No separated junk yard.
- Toilets are very less as compare to the population if people visit in the R.T.O.

4. Research Design

4.1 Standards and Data Collection

Design principles physically challenged in public and government building

Signage: Text and symbols on the signage should contrast from the frame and the entire sign frame should contrast from the background.

Measurement Specification

- **DOOR**

- Door width—Min 900mm
- Height of Door handles – 850mm-1100mm
- Length of the handle—300mm
- Space between the door and handle—45mm
- Height of door locks ---1030mm
- Thresholds of doorways (not exceed 20 mm).
- Use contrast colour at the boarders of the door to distinguish doors for people with visual impairments.
- Handles, pulls and other opening devices.
- (Lever handles and push type mechanisms are recommended.)

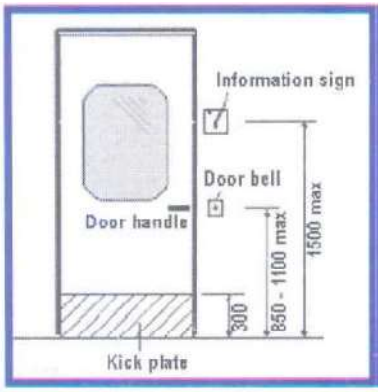
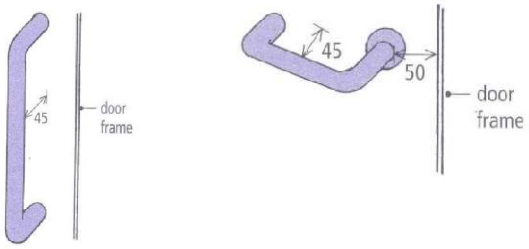
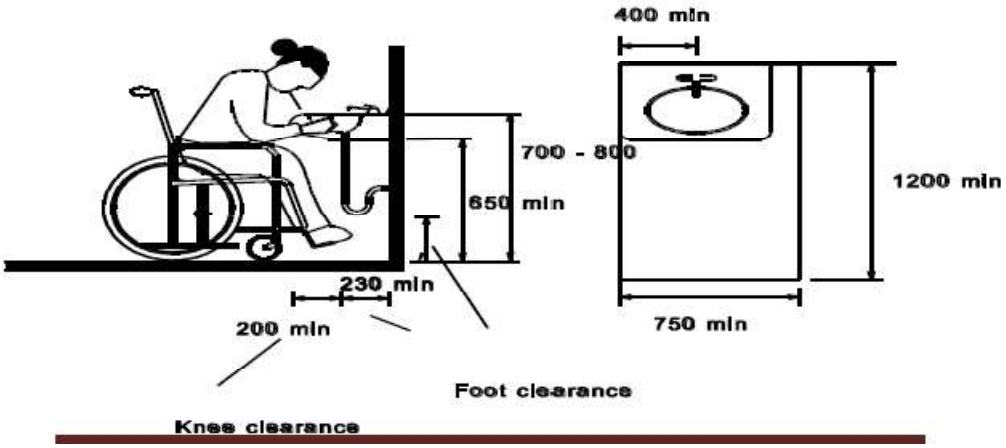


Figure 21
Door handle details



➢ Wash basin



➢ Toilet

Toilet seat height from ground level- 450mm-475mm

Grab rails

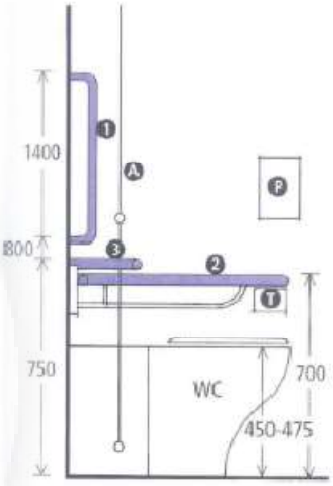
The rails should be 35mm diameter, contrast colour with walls

Vertical railing

- Height from ground level to the bottom point of railing- 800mm
- Length – 600mm

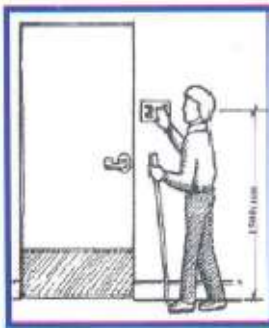
Horizontal rail

- Height from ground level—700mm
- Length of the bar – should be equal to the width of the basin from wall



➢ Sign board

- Sings should be in contrasting colour and preferably be embossed in distinct relief to allow person with visual impairment to obtain the information by touching them.
- The size of the character and symbols should be based on the intended viewing distance and determined Height of the letters in the sign for varying viewing distance should be determined
- The height of sign board placed from ground level—1500mm



http://disabilityaffairs.gov.in/upload/uploadfiles/files/11__RTO_Nashik.PDF

CIDCO BYLAWS:

ENTRY FROM THE HIGHWAY/IMPORTANT ROADS:

The width of the main street on which the building abuts shall not be less than 12 meters.

The approach to the building and open spaces on its all sides (see Regulation No. 15.1) and the layout for the same shall be done in consultation with the Chief Fire Officer.

Main entrances to the plot shall be of adequate width to allow easy access to the fire engine and

In no case it shall measure less than 4.5 meters.

The main entrance should have a minimum vertical height of 4.5 meters.

ROADS I STREETS IN LAND SUB-DIVISION OR LAYOUT:

For all land uses the width of the approach from the street to building shall not be less than 3.5 m. If its length is more than 9 m. but if the area salved exceeds 800 sq.mt. Or the length exceeds 70 m, a regular street shall have to be provided as per requirements.

OPEN SPACES AND HEIGHT LIMITATIONS:

EXTERIOR OPEN SPACES:

Buildings Abutting Two or More Streets: Where a building abuts two or more streets, the setbacks from the streets shall be such as if building was fronting each such street.

Front Setback - 12 m. from the road or 37 m. from centre line of reservation from National

Highway, State Highway and Major District Road whichever is more.

Side and Rear Open Space - Side and rear marginal distance to be left open shall be 6 m.

However this shall apply only to principle building.

Projection into open spaces: Every open space provided either interior or exterior shall be kept free from any erection thereon and shall be open to the sky.

Canopy: A canopy over an entrance not accessible from the upper floor and leaving a clear margin of at least 1.5 m. from nearest plot boundary.

HEIGHT LIMITATION:

The maximum height of building shall not exceed 1.5 times the width of road abutting plus the front open space.

If a building abuts on two or more streets of different widths, the building shall be deemed to face upon the street that has the greater width.

PARKING SPACES:

For Government and Private Offices - One parking for every 70 sq.mt Of total floor area up to 1500 sq.mt. And one parking for every 150 sq.mt. Or part thereof for areas exceeding 1500 sq.mt.

In addition to the above 10 percent of total parking spaces shall be provided for visitors parking and 10 percent for two wheelers parking.

50 percent of the open space around the building may be used for parking and loading, unloading provided that a minimum distance of 3.0 m. around the building shall be kept free from any parking and loading, unloading spaces.

In the case of parking spaces provided in basements at least two ramps of adequate width & slope (See Regulation No. 19) shall be provided, located preferably at opposite ends.

Sr. No.	Type of Mode	Size of Parking Bay
1.	Car	2.5 m. x 5.0 m.
2.	Scooter	1.2 m. x 2.5 m.
3.	Bicycle	0.7 m. x 2.0 m.
4.	Truck	3.75 m. x 10.0 m.

REQUIREMENTS OF PARTS OF BUILDINGS:

Plinth: The plinth or any part of a building shall be so located with respect to surrounding ground level that adequate 1drainage of the site is assured but not at a height less than 45 cm.

Interior Courtyards: Every Interior courtyard shall be raised at least 15 cm. above the surrounding ground level and shall be satisfactorily drained.

Height: The height of all rooms for human habitation shall not be less than 2.75 m. measured form the surface of the floor to the lowest point of the ceiling (bottom of slab). In case of centrally air-conditioned building, height of the habitable room shall not be less than measured form the surface of the floor to the underside of the slab or to the underside of the false ceiling. The minimum clear headroom under beam shall be 2.4 m.

PANTRIES - SHALL HAVE:

A floor area of not less than 3sq.mt. With the smaller side not less than 1.4 m.

A sink for the cleansing of kitchen's utensils which shall drain through a grated and tapped connection to the waste water pipe where water borne sewerage system is available; in case water borne sewerage system does not exist the grated connection should be met to the pakka surface drain leading to a soap pit, or other approved system of disposal.

An impermeable floor and an impermeable dado 0.9 m. high.

ROOFS:

The roof of a building shall be so constructed or framed as to permit effectual drainage of the rainwater there from by means of sufficient rain-water pipes of adequate size, wherever required, so arranged, jointed and fixed as to ensure that the rain-water is carried away from the building without causing dampness in any part of the walls or foundation of the buildings or those of an adjacent building.

BASEMENT:

The height of the basement shall normally not exceed 2.4 m. if constructed for service purposes.

The minimum height of the ceiling of first basement floor below ground level shall be 0.9 m. and maximum of 1.2 m. above the average surrounding ground level.

Adequate ventilation shall be provided for the basement. The standard of ventilation shall be the same as required by the particular occupancy according to Regulations. Any deficiency may be met by providing adequate mechanical ventilation in form of blowers, exhaust fans, air-conditioning systems etc.

The access to the basement shall be separate from the main and alternate staircase providing access and exit from higher floors

VENTILATION SHAFT:

For ventilating the spaces or water closets and bath room, if not opening on the front side, rear and interior open spaces, shall open on to the ventilation shaft, the size of which shall not be less than the values given below:

Height of Building in m.	Size of Ventilation Shaft in square m.	Minimum Size of Shaft in meter
Up to 12	2.8	1.2
18	4.0	1.5
24	5.4	1.8
30	8.0	2.4
30 and above	9.0	3.0

*For building above 30 m. mechanical ventilation system shall be installed besides the provisions of minimum ventilation shaft.

EXIT REQUIREMENTS:

General: The following general requirements shall apply to exits:

Every, building meant for human occupancy shall be provided with exits sufficient to permit safe escape of occupants in case of fire or other emergency.

All exits shall be free of obstructions.

Exits shall be clearly visible and the routes to reach the exit shall be clearly marked and sign posted to guide the population to floor concerned.

All exit ways shall be- properly illuminated.

Fire fighting equipment where provided along exits shall be suitably located and clearly marked but must not obstruct the exit way and yet there should be clear indication about its location form either side of the exit way;

Alarm devices shall be installed for buildings above 15 m. in height to ensure prompt evacuation of the population concerned through the exits.

All exits shall provide continuous means of egress to the exterior of a building or to an exterior open space leading to a street and;

Exits shall be so arranged that they may be reached without passing through another occupied unit.

Lifts and escalators shall not be considered as exits.

Arrangements of Exits:

Exits shall be so located so that the travel distance on the floor shall not exceed 22.5 m.

Whenever more than one exit is required for a floor of a building exit shall be placed as remote from each other as possible. All the exits shall be accessible from the entire floor area at all floor levels.

For all buildings excepting single and multi-family dwellings below 15 m. in height, there shall be a minimum of two staircases and one of them shall be an enclosed stair-way and the other shall be on external walls of buildings and shall open directly to the exterior, interior open space or to any open place of safety.

Doorway:

Every exit doorway shall open into an enclosed stairway, a horizontal exit, on a corridor or passageway providing continuous and protected means of egress.

No exit doorway shall be less than 95 cm. in width, Doorways shall be not than 200 cm. In height. Doorways for bathrooms, water-closet, stores etc. shall be not less than 75 cm. wide;

Exit doorways shall open outwards, that is, away from the room but shall not obstruct the travel along any exit. No door, when opened, shall reduce the required width of stairway or landing to less than 90 cm; overhead or sliding doors shall not be installed.

Exit door shall not open immediately upon a flight or stairs; a landing equal to at least the width of the door shall be provided in the stairway at each doorway; level of landing shall be the same as that of the floor which it selves; and

Exit doorways shall be accessible from the side which they selves without the use of a key.

Stairways:

Interior stairs shall be constructed of non-combustible materials throughout.

Interior staircase shall be constructed as a self-contained unit with at least one side adjacent to an external wall and shall be completely enclosed. For building more than 24 m. height, all staircases shall be enclosed.

Note: However, above shall not apply to any structure connecting only two floors and their height separation is limited to maximum 4.2 m.

A staircase shall not be arranged round a lift shaft unless the latter is entirely enclosed by a material of fire-resistance rating as that for type of construction itself. For building more than

15 m. in Height, the staircase location shall be to satisfaction of chief Fire Officer, CIDCO.

Fire Brigade:

The minimum width of treads without nosing shall be 30 cm. The treads shall be constructed and maintained in a manner to prevent slipping.

The maximum height of riser shall be 15 cm. They shall be limited to 16 per flight.

Handrails shall be provided with a minimum height of 90 cm. from the centre of the tread.

In case of single staircase it shall terminate at the ground floor level and the access to the basement shall be by a separate staircase. Wherever the building is served by more than one staircase, one of the staircases may lead to basement levels provided the same is separated at ground level by either a ventilated lobby of a cut-off screen wall without opening, having a fire resistance of not less than 2 hours.

Ramps:

Ramps with a slope of not more than 1 in 10 may be substituted for and shall comply with all the applicable requirements of required stairways as to enclosures, capacity and limiting dimensions. Ramps shall be surfaced with approved non-slipping material.

The minimum width the ramps in hospitals shall be 2.25 m.

Handrails shall be provided on both sides of the ramp.

Ramps shall lead directly to outside open space at ground level or courtyards or safe place.

Refuge Area:

For all buildings exceeding 15 m. in height, excepting multi-family dwellings, refuge area shall be provided as follows:

For floors above 15 m. - One refuse area on the floor and up to 24 m. immediately above 18 m.

For floor above 24 m. - One refuge area on the floor and up to 30 m. immediately above 24 m.

Refuge area shall be provided on the external walls as cantilever projection or in any other manner (which will not be covered in F.A.R.) with a minimum area of 15 sq.mt.

Corridors:

The minimum width of a corridor shall not be less than 75 cm. in the cases of 2 storey raw housing residential building and 100 cm. in the case of other building and actual width shall be calculated based width of the staircase provided.

In the case of more than one main staircase of the building interconnected by a corridor or other enclosed space, there shall be at least. One smoke-stop door across the corridor or enclosed space between the doors in the enclosing walls of any two staircases

Lifts:

All the floors shall be accessible for 24 hours by the lifts. The lifts provided in the buildings shall not be considered a means of escape in case of emergency.Grounding switch at ground floor level to enable the fire services to ground the lift cars in an emergency shall also be provided.

The lift machine room shall be separate and no other machinery shall be installed therein.

In case of the existing building for construction of one additional floor the existing lift may not be raised to additional floor.

SANITARY REQUIREMENTS:

Sr. No	Fitments	For Male Personnel	For Female Personnel
1.	Water Closet	One for every 25 person	One for every 15 person
2.	Ablution Taps	One in each water closet	One in each water closet
	One water tap with draining arrangements shall be provided for every 50 persons or part thereof in the vicinity of water closet and Urinals		
3.	Urinals.	• Nil up to 6 person • One for 7-20 person • Two for 21-45 person • Three for 46-70 person • Four for 71-100 person • From 101-200 person add at the rate of 3% and for over 200 person onwards at the rate of 2.5%	
4.	Wash Basin	One for every 25 person	
5.	Drinking Water Fountains	One for every 100 person with a minimum of one for each floor	
6.	Bath	Preferably one on each floor	
7.	Cleaners Sink	One per floor minimum preferably in or adjacent to sanitary rooms	

BUILDING REQUIREMENTS FOR PHYSICALLY CHALLANGED:

The specified facilities for the buildings for physically handicapped persons shall be as follows:

Approach to Plinth Level: Every building should have at least one entrance accessible to the handicapped and shall be indicated by proper signage. This entrance shall be approached through a ramp together with the stepped entry.

Ramped Approach: Ramp shall be finished with no slip material to enter the building.

Minimum width of ramp shall be 1800 mm. with maximum gradient 1: 12. Length of ramp shall not exceed 9.0 m. having 800 mm. high handrails on both sides extending 300 mm. beyond top and bottom of the ramp. Minimum gap from the adjacent wall to the handrail shall be 50 mm.

Stepped Approach: For stepped approach, size of tread shall not be less than 300 mm. And maximum riser shall be 150 mm. Provision of 800 mm. high handrail on both sides of the stepped approach similar to the ramped approach.

Exit/Entrance Door: Minimum clear opening of the entrance door shall be 900 mm. and it shall not be provided with a step that obstructed the passage of wheel chair user.

Entrance Lauding: Entrance landing shall be provided adjacent to ramp with the minimum dimension 1800 x 2000 mm. The entrance landing that adjoins the top end of a slope shall be provided with floor materials to attract the attention of visually impaired persons (hereinafter referred to as “the said guiding floor material”). Finishes shall have a non-slip surface with a texture traversable by a wheel chair. Curbs wherever provided should bend to a common level.

LIFTS:

Wherever lift is required as per Regulations, provision of at least one lift shall be made for the wheel chair user with the following cage dimensions:

Clear internal depth - 1100 mm.

Clear internal width - 2000 mm.

Entrance door width - 900 mm.

TOILETS:

One special W.C. in a set of toilet shall be provided for the use of handicapped with essential provision of wash basin near the entrance for the handicapped:

The minimum size shall be 1500 x 1750 mm.

Minimum clear opening of the door shall be 900 mm. and the door shall swing out.

Suitable arrangement of vertical/horizontal handrails with 50 mm. Clearance from wall shall be made in the toilet. The W.C. seat shall be 500 mm. from the floor. One of the wash basins in the toilet block on each floor shall be fixed at height of 75 mm. above the finished floor level, with a tap. A similar arrangement for the drinking water has to be made.

2.4 Site Selection and Justification

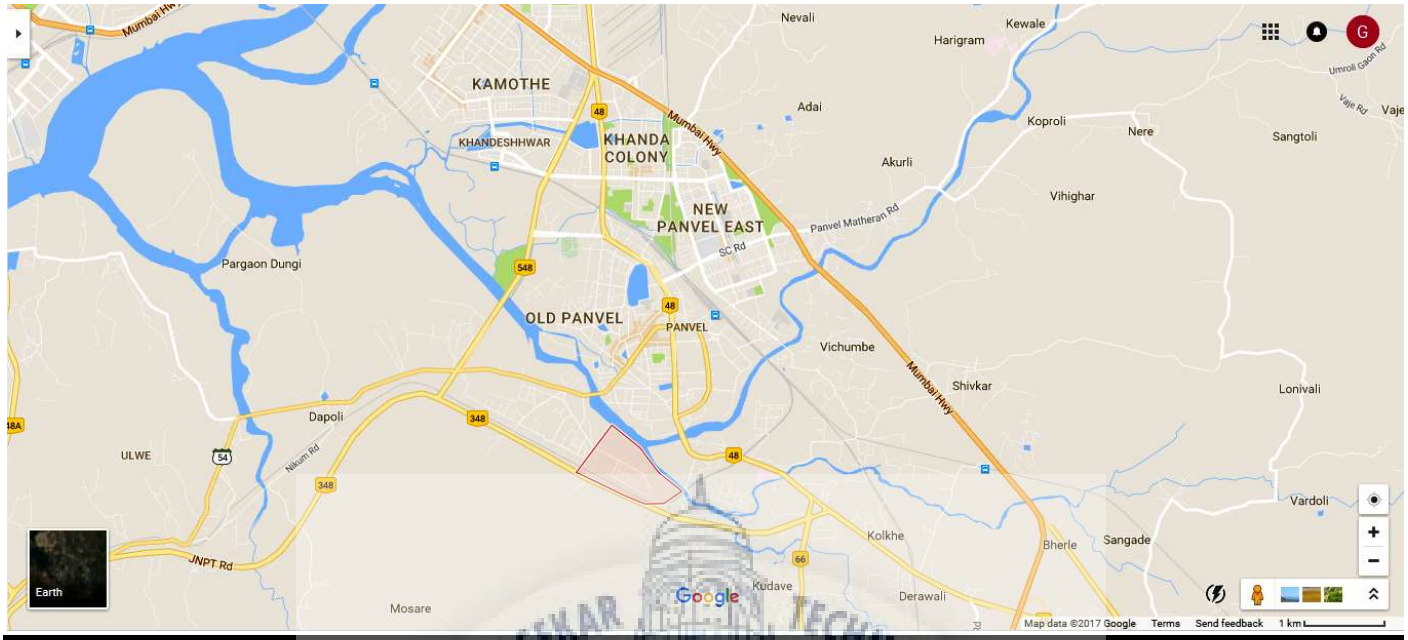
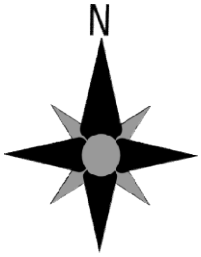


Figure 73:- Location nap with the site demarcated

Figure 74: - Satellite image of site



Details of Karan jade

As navi Mumbaikars are often curious about the updated on international airport proposed in navi Mumbai- the twin city of Mumbai which is estimated to eat-up part of the burgeoning traffic at the existing chatrapati shivaji international airport, Mumbai Recently, the union ministry has given green signal to finalize the bids for the proposed navi Mumbai airport.

Karan jade node, adjacent to the proposed international airport has gradually picked up pace and is all set to steal the show with more and more real estate builders developing residential complex in this node. This is as a result of the proposed developments announces by city and industrial development corporation of Maharashtra limited (CIDCO), the planning authority of navi Mumbai. In this node, CIDCO has already provided basic infrastructure like roads, footpaths, street lights water connection, electricity connection and drainage system.

Karan jade close to old panvel market is surrounded by scenic hills and is blessed with pleasant atmosphere, suitable for nature admires. The node is in close proximity to khandeshwar and Panvel railway stations (approximately 4 to 5 km from either station) situated on harbour line,. The node currently enjoys good road connectivity and further exists to JNPT, Pune expressway and Goa highway.

Proposals

Figure 75: - Survey plan (CIDCO)

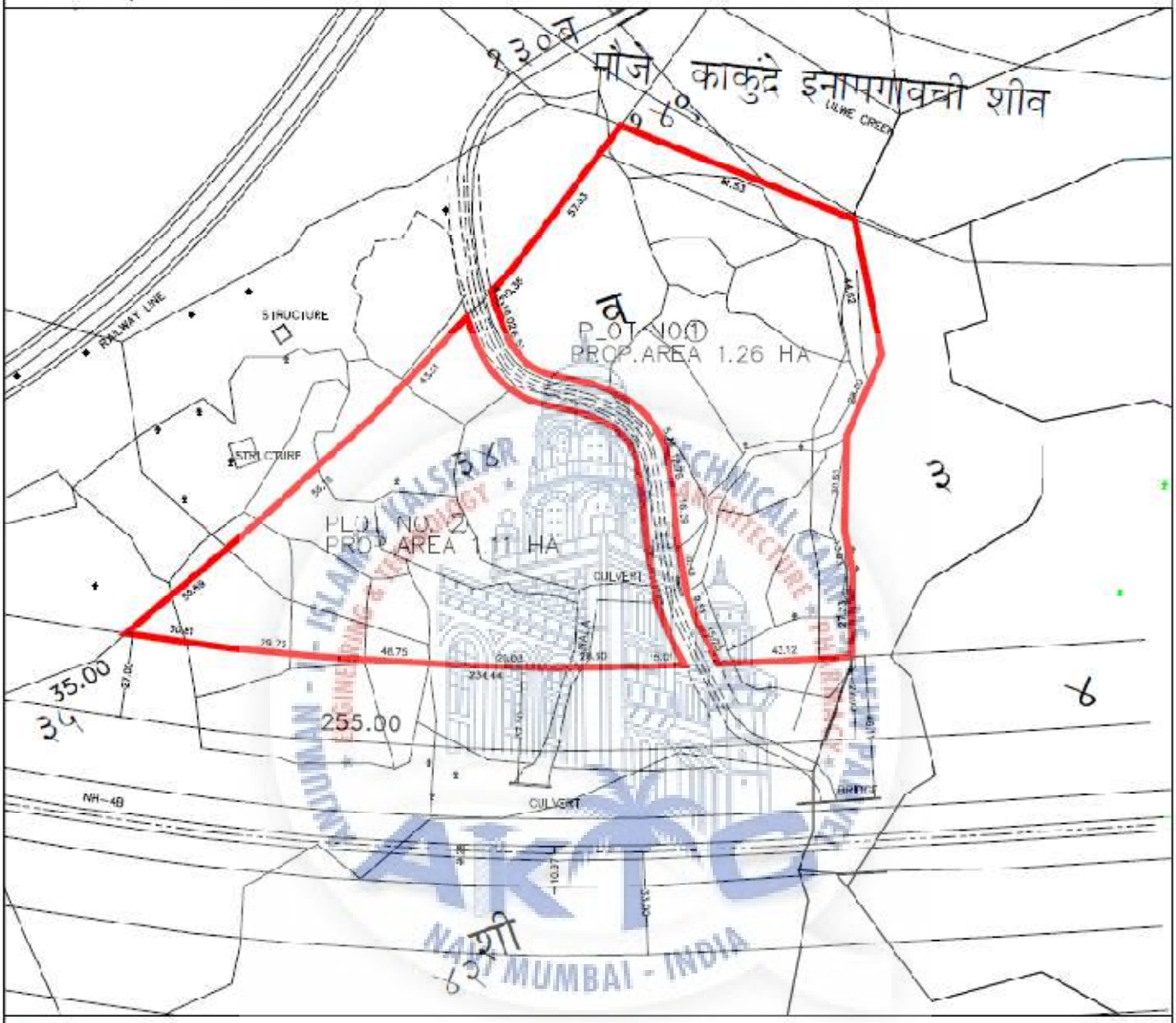
No. CIDCO/SP(DP/GIS)/ 2013/ Date 18/11/2013

SUB :- Draft Confirmation of plot no. 01 and 02 in Regional Park Zone (RPZ) KARANJADE, NAVI MUMBAI

REF :- CIDCO/LANDS SURVEY/ASO/2013 / nil DATE 04.02.2013.

NOTES :

1. The plot is confirmed on the basis of demarcation received from lands section.



NOTES:

1. The applicable FSI on each pocket shall be 0.15 as per clause 16.3(1a)G of CIDCO GDCRs.
2. As the said land is detached from developed node, the applicant may be offered the said land on 'as is where is basis'.
3. Course of natural drain shall be maintained by R.T.O. and CIDCO will maintain natural drain OR may construct box drain. In future, for periodic maintainance of natural/ box drain R.T.O. shall allow entry to CIDCO / Authority
4. Access to these plots shall be through service road of JNPT-Palaspe highway.

PLOT AREA IN SQ. MTS.

PLOT NO	NET AREA (IN SQ.M.)	TOTAL AREA (IN SQ.M.)
01	12640.32	23763.07
02	11122.75	

TO

1) ASO–II

2) MM–I

NORTH

PART PLAN OF PLOT NO.1 & 2, in Regional Park Zone (RPZ) KARANJADE, NAVI MUMBAI

REMARKS :
BOUNDARY OF THE CONFIRMED PLOT IS INDICATED THUS.
ALL DIMENSIONS ARE IN METRES.

SCALE : NTS

CIDCO WE MAKE CITIES

PLANNING (DP/GIS)

CIDCO
WE MAKE CITIES

City and Industrial Development
Corporation of Maharashtra Ltd.

Marketing Manager-II
CIDCO Bhawan
CBD Belapur
Navi Mumbai,
Pin:400614
Tel:67918192
Fax:67918277

Reference No: 20009073/90029443 /618
Customer No: 21656

Date:21.03.2014

To,
Company. R.T.O
Regional transport officer
Central facility building
steel market, kalmboli
Navi Mumbai-410213 Tel : 02227424444

Sub: Allotment of Plot No.1+2 ,
in sector REGIONAL PARK , at New Panvel (w), Navi Mumbai.

Dear Sir/Madam,

This is with reference to your Application/ Offer No: 346 to acquire a plot on lease from our Corporation. I am directed to inform you that our Corporation has accepted your request/Offer and hereby communicates to you its acceptance through this letter of allotment. The detailed terms of allotment are as follows:

A. DETAILS OF PLOT ALLOTTED

a) Plot Alloted	:P-KARAN-EXT-1+2
b) Plot Number	:1+2
c) Road Number/Name	:
d) Sector No	:REGIONAL PARK
e) Node	:New Panvel (w)
f) Area of Plot	:23763.070sqm
g) Rate Rs./Sqm	: 0.00
h) Total Lease Premium (Rs)	: 33,764,520.00
i) Permissible FSI/VPR	:0.15
j) Use of Plot/Land Use	:REGIONAL TRANSPORT OFFICE

B. TOTAL PRICE OF PLOT

Total Lease Premium of Plot(Rs)	Amount already Paid (EMD) (Rs)	Balance Amount to be Paid(Rs)
33,764,520.00	3,376,500.00	30,388,020.00

1+2

नं. 664987 20/3/14

नं. 665000 28/3/14

Received on 18/6/2014 (late by 3 m)

18/6/2014

पावती क्र. 4052 18-6-14
प्रादेशिक परिवहन कार्यालय

CIDCO
WE MAKE CITIES

City and Industrial Development
Corporation of Maharashtra Ltd.

Marketing Manager-II
CIDCO Bhawan
CBD Belapur
Navi Mumbai,
Pin:400614
Tel:67918192
Fax:67918277

Reference No: 20009073/90029443

D. PAYMENT SCHEDULE

Installment No	Amount in Rs.	Due Date
01.	15,194,010.00	12.05.2014
02.	15,194,010.00	11.06.2014

* Payments to be made on previous working day if due date for installment is a holiday.

E. MISCELLANEOUS CHARGES

	Charges (Rate)	Amount in Rs.
1.Documentation Charges	500.00	500.00
2.Annual Lease Rent(Area)	0.00	0.00
3.Annual Lease Rent(Fixed)	0.00	0.00
4.60 Yrs Lease Rent(Fixed)	6,000.00	6,000.00
5.Water Distribution Betterment Charges	50.00	1,180,000.00
6.Power Supply Network Development Charges	0.00	0.00
7.Power Connection Charge	0.00	0.00
8.DepositPowerConnection	0.00	0.00
9.Water Connection Charge	0.00	0.00
10.Deposit water connection	0.00	0.00
11.Drainage Conn. Charges	0.00	0.00
12.Deposit Drainage Conn.	0.00	0.00
13.Other Charges	0.00	0.00
Total Miscellaneous Charges:		1,186,500.00

F. F.S.I. The General Development Control Regulations in force at the time of submission of development proposal shall be applicable. The Corporation may at its sole discretion allow the consumption of any additional F.S.I. which may be permitted as per the General Development Control Regulation for Navi Mumbai 1975 on the recovery of such additional lease premium as may be prescribed.

We will be thankful to you if you dispatch acknowledgement in token of receipt of this allotment letter without any delay and expedite the payment as per payment schedule in presiding para. The terms and conditions of the concluded agreement by this letter of allotment are produced as attached annexure.

Thanking You,

Yours faithfully,

Marketing Manager-II

Dimension plan

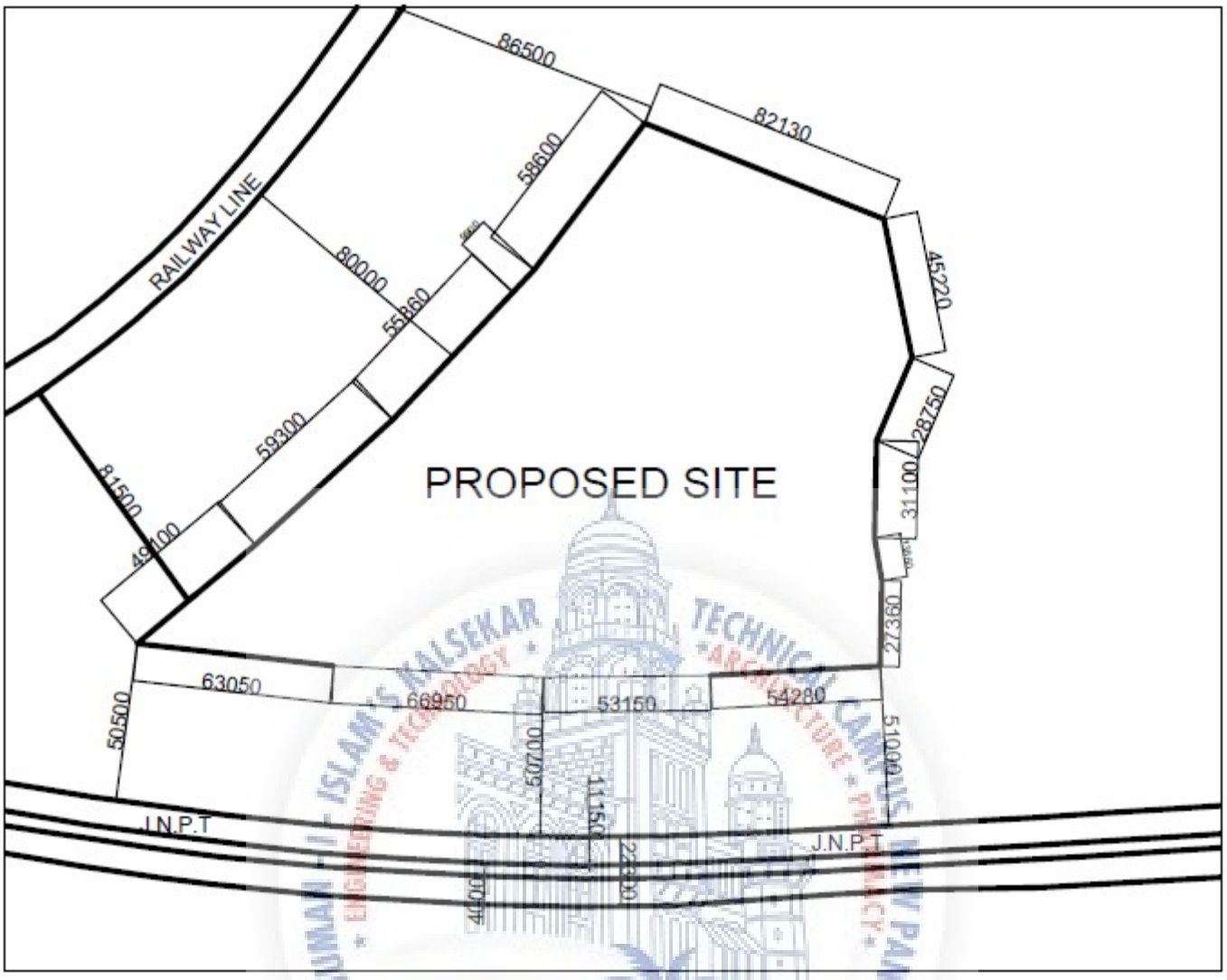


Figure 76: - Dimension plan of site with reference to road

Site analysis

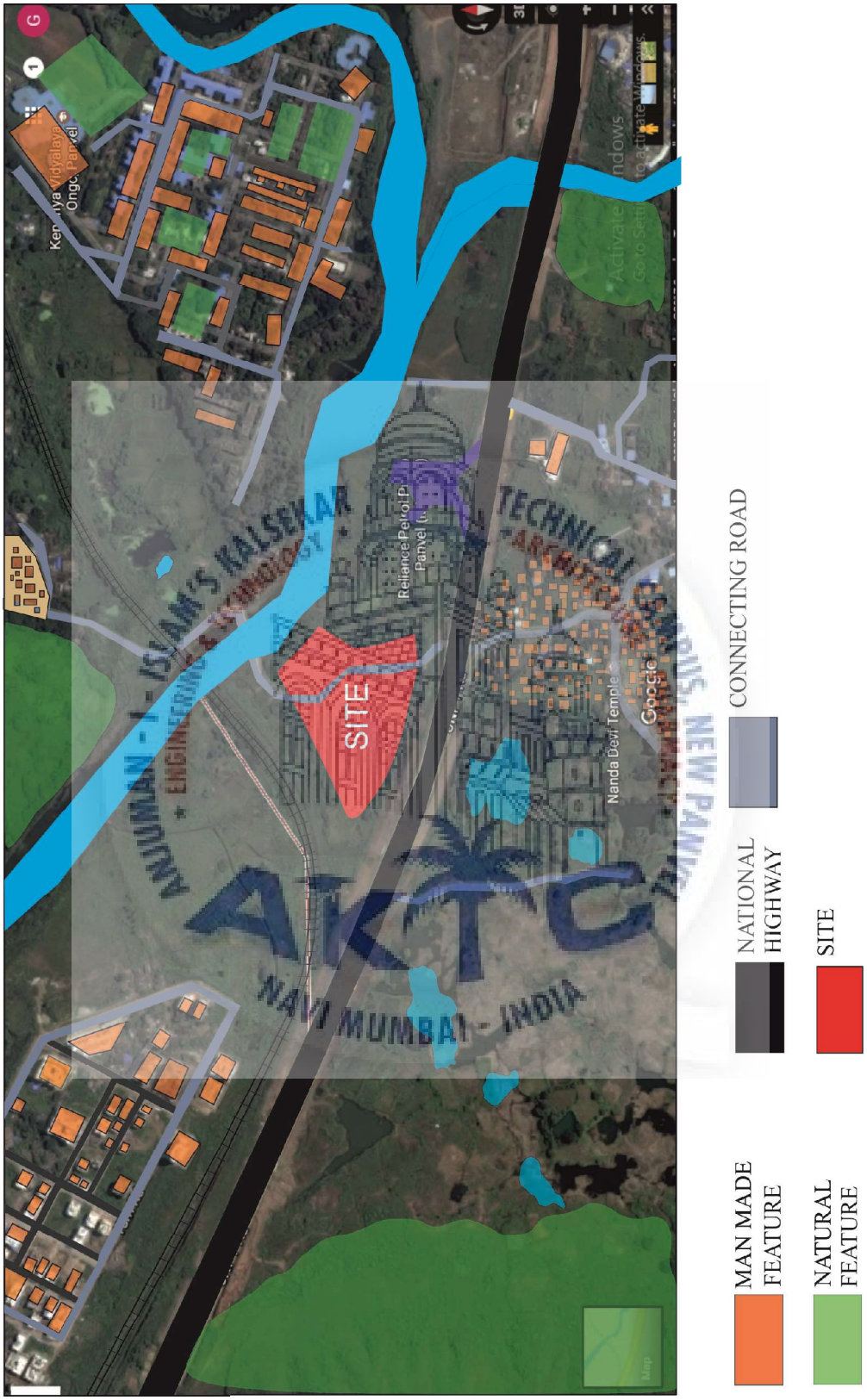


Figure 77: - Natural and manmade features around the site

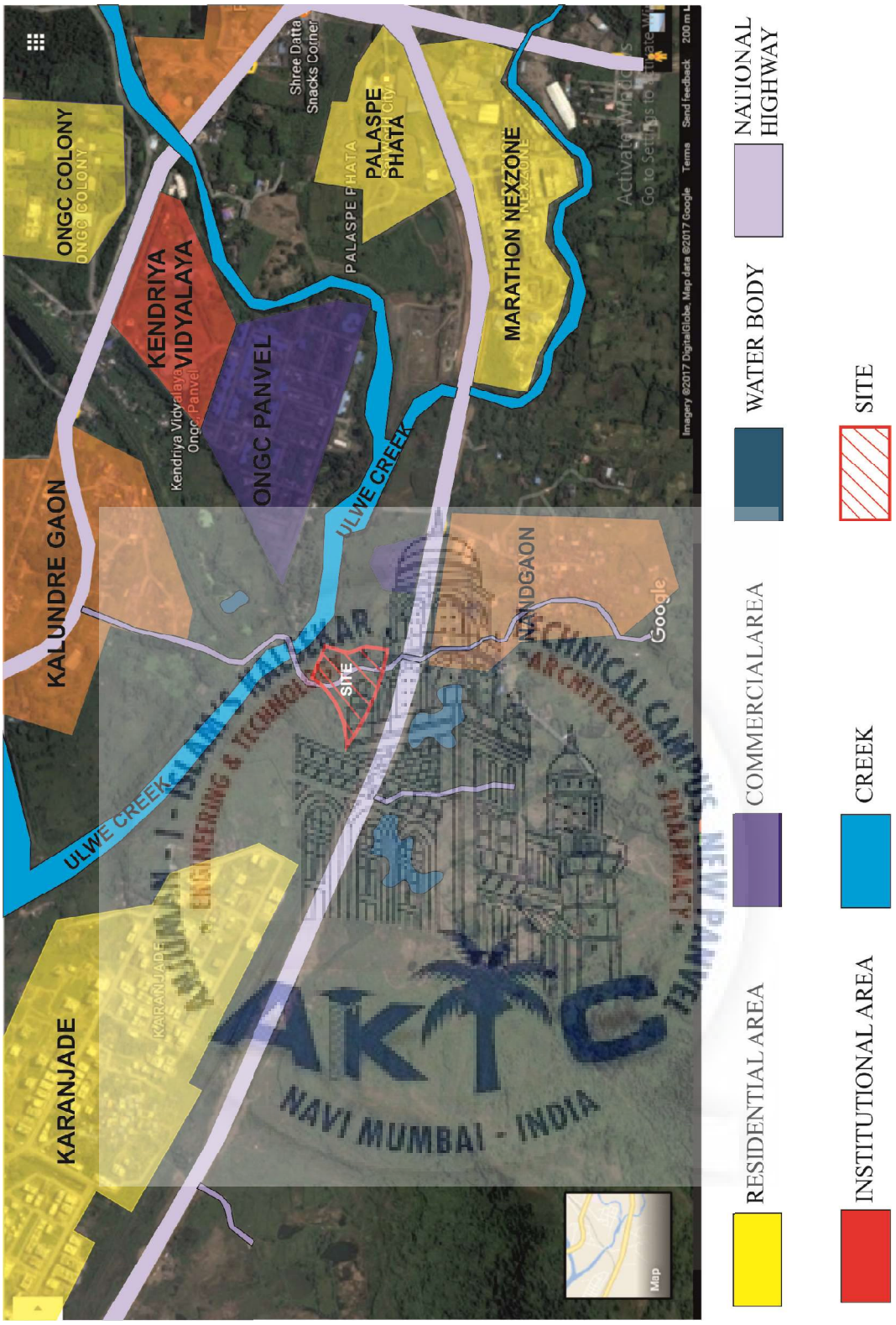


Figure 78: - Land use around the site

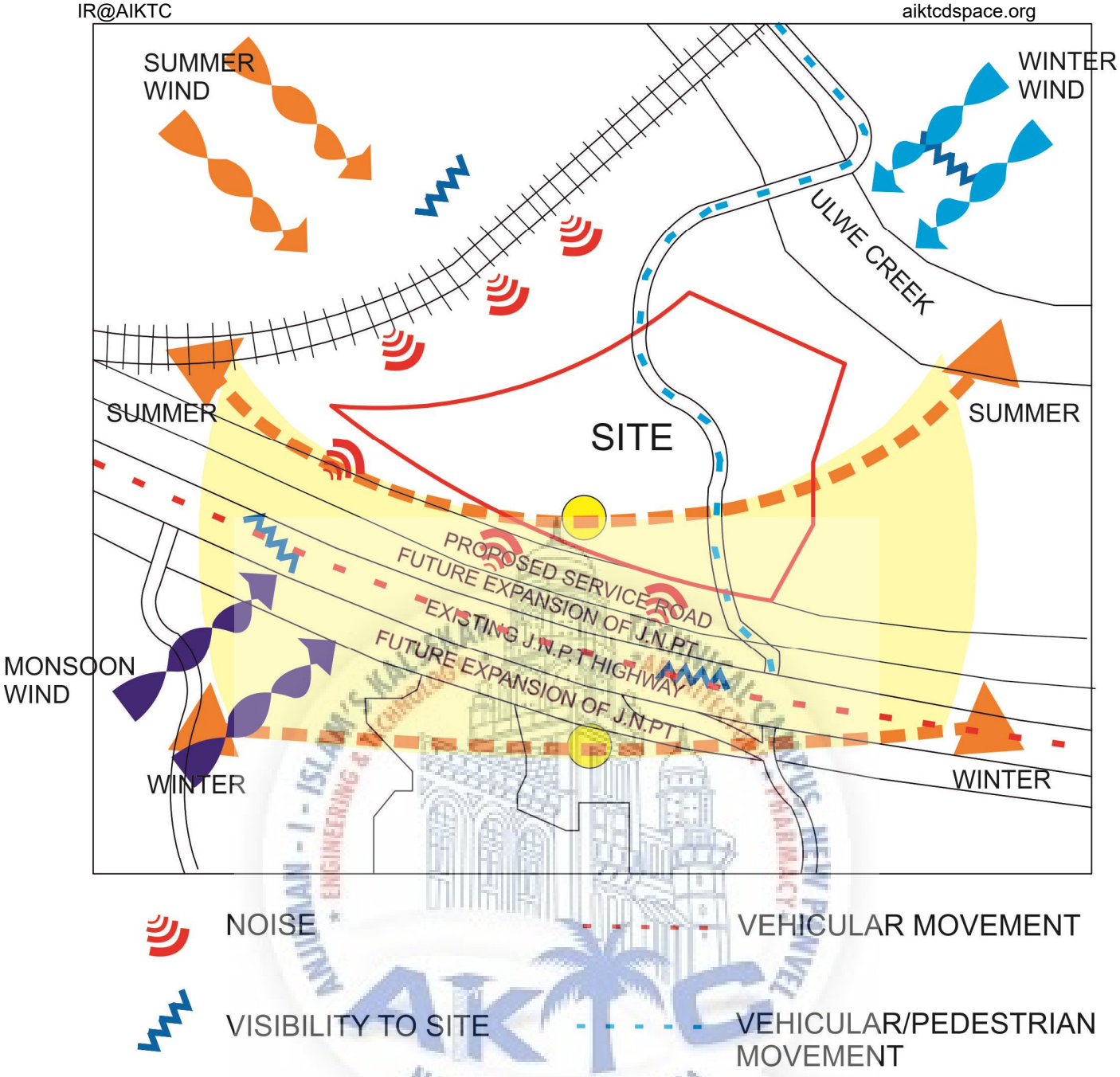
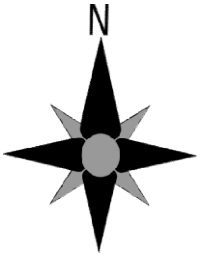


Figure 79: - Climatic and sensory analysis of site



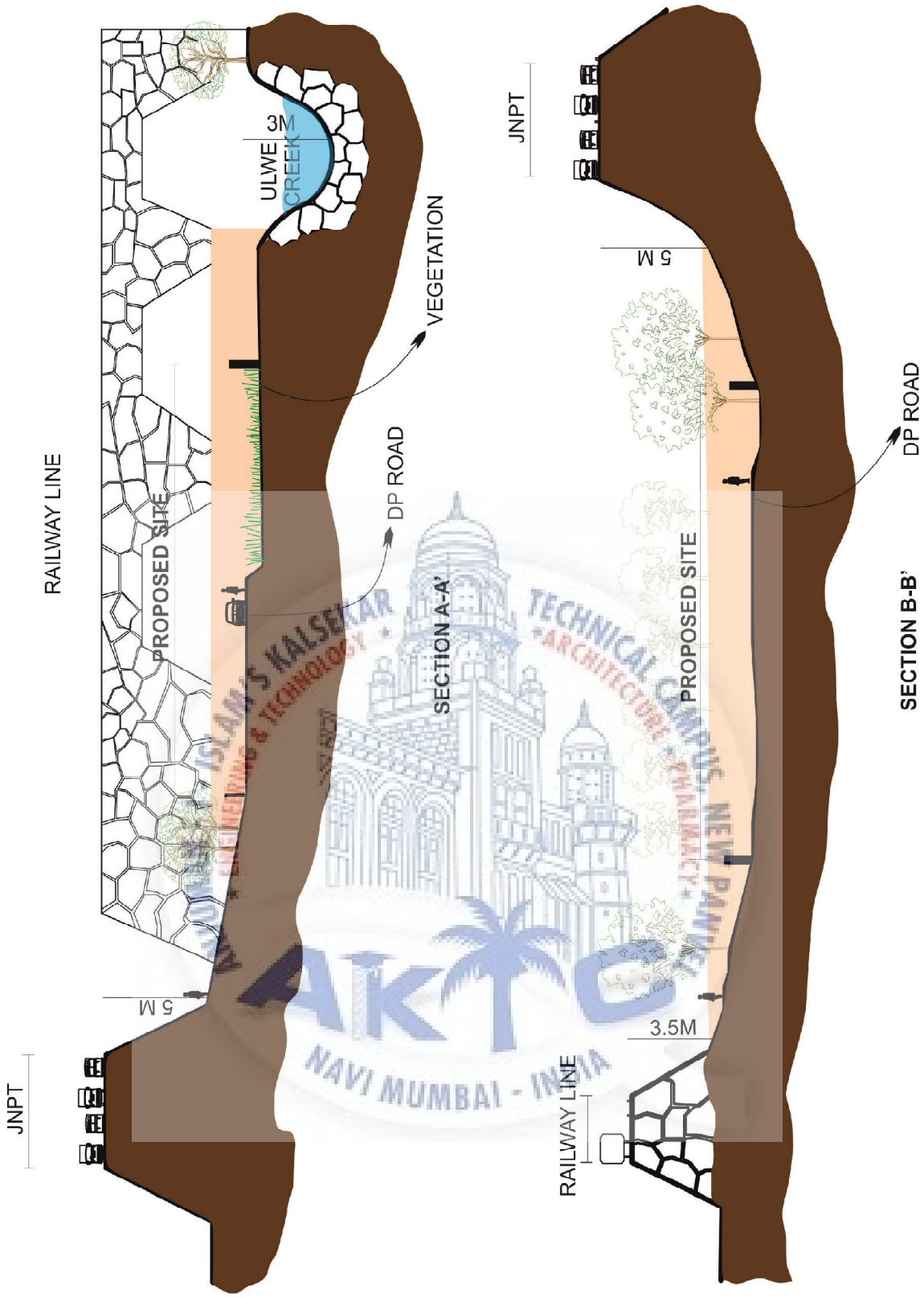


Figure 80 : - Section

SWOT Analysis of Site

Strength	Weakness
▪ The site can be reached from all the main highways of Navi Mumbai. ▪ The Ulwe creek runs just opposite to the site. ▪ The site has a existing Dp road from which the site can be access from highways. ▪ The site is at the central part of the Panvel Rto jurisdiction. ▪ The site is away from the residential area.	▪ There are no structures around the site. ▪ Lots of noise pollution due to railway track and highway. ▪ There are lots of level differences on site w.r.t highway and railway line. ▪ There are lots of vegetation around the site
Opportunity	**Threat**
▪ No problem of pollution as the site is away from the residential zone. ▪ The creek view will be the best part to design the structure. ▪ The existing Dp road is used by less no of people. ▪ The site can be viewed from far distances.	▪ The privacy for the staff will matter. ▪ The public transportation is far away from the site, so there will be lot of chances of public assaults. ▪ The public movement is very less around the site during both day and night.

Figure 83 : - View from point D

There is J.N.P.T highway which runs adjacent to the site at a distance of 80m approx, due to which it is possible to create noise and air pollution.

Figure 84 : - View from point C

The site is temporarily used as a vegetation land by the people residing in surrounding villages.

Figure 82 : - view of petrol pump

There is an existing petrol pump of reliance on the J.N.P.T highway. The access to the petrol pump is directly from the highway.

Figure 81 : - View from point A

There is an existing railway line which runs adjacent to the site boundary at a distance of 60m approx.

The intensity of sound generated while the train passes disturbed the surrounding of site

Figure 85 : - View from point B

There is no structure around the site, but far at a distance there is a structure coming up on the ongc department land next to the marathon.

Figure 86 : - View of railway line and J.N.P.T

Both the highway and railway line meets at the corner of the site.

A clear view of the site gets from the highway as well as from railway track

Wind rose of Panvel area

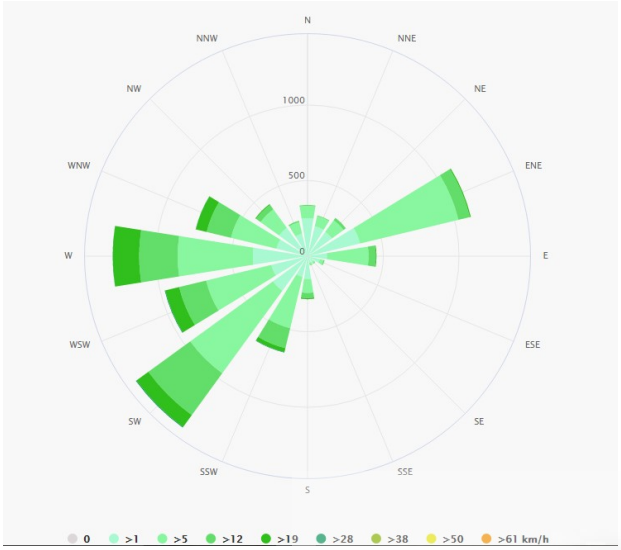


Chart 3: - wind rose diagram

Rainfall of panvel

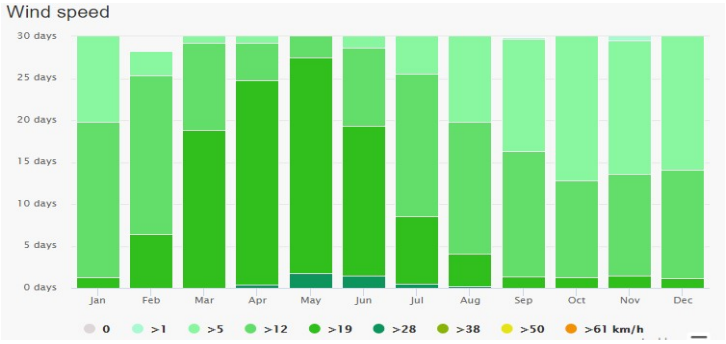


Chart 4: - wind speed diagram

Climate Graph Panvel

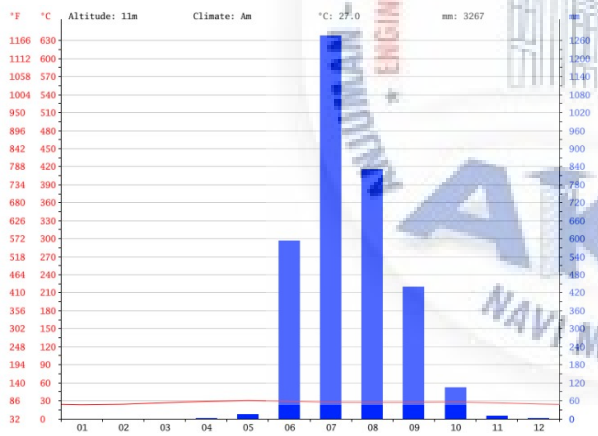


Chart 5: - Rainfall diagram

Temperature of Panvel

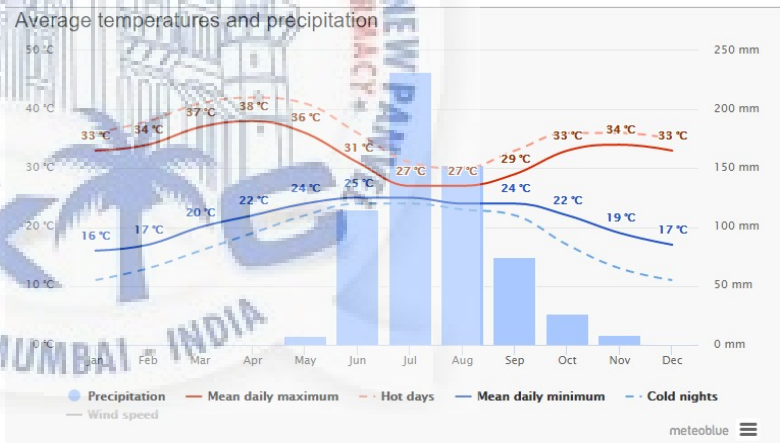


Chart 6: - Temperature

The climate here is tropical. The average annual temperature in Panvel is 27 0 c in a year.

6. Tentative Architectural Space Program

Design Brief

Existing process of RTO is very time consuming process. Today many people are purchasing two wheelers, four wheelers etc. So the RTO employees having lot of work burden of making registration, License issue, transfer etc., which required lot of paper work. As a result people cannot get the things done in right time, which waste the time, energy. Similarly the vehicle owner sometimes forgets to carry the license, and forgets the insurance date at the time of enquiry.

Sometime the people visiting in the R.T.O may be have to spend to much time due to the working process of the R.T.O. The people visiting in the R.T.O feel like when there work will be done and they can leave. This topic will make sure that the people visiting in the R.T.O should not get such kind of feeling and due to new paper less technology it will help in designing the new spaces for the people. Such spaces will make sure that the people visiting in the R.T.O should not have bad experience. They should not feel like they are in that old government office which is full of papers and files.

The outdoor areas should be perceived as an integral part of the overall conception of the building. It is assumed that many of the frequent users, who spend long hours in the R.T.O, will choose to spend some of their time outside – resting, socializing, and engaging in discussions with colleagues. Moreover, the outdoor areas play a large part in the initial impression the R.T.O makes on people coming to it, or even passing. Therefore, these areas should be designed by so as to arouse the desired feelings and convey the required messages, in accordance with the requirements detailed below regarding the building.

Objective

- To Provide easiest and efficient way for completion of RTO work.
- To ensure transparency in the day-to-day management and administration of the officials in RTO department.
- To make sure people have a good experience while they are visting R.T.O.
- Conceiving the building with its various parts and outdoor areas as one interconnected, harmonious structure.
- Openness and Accessibility.
- A pleasant, inviting space that encourages lengthy visits and frequent use
- A space that encourages human interaction
- Reflecting the major purpose of the building in its design

Area programme

Sr. No.	particulars	Area sq.m (approx)
1.	Help desk/inquiry desk	**2.5**
2.	Form distribution counter	**3**
3.	P.R.O cabin	**6.5**
4.	Form filling area (online, offline)	**40**
5.	Agent kiosk/room	**24**
6.	Stationary/Xerox store	**6**
7.	STD/PCO	**2.5**
8.	Record room	**30**
9.	Parking (Visitors)	**50 cars** **100 bikes**
10.	Canteen	**150**
11.	Incoming vehicles data entry counter	**20**
12.	Public toilet	**80**
13.	Public recreational space	**100**
14.	Waiting area	**100**
15.	Religious space	**50**
16.	Meter room	**20**
17.	Asphalt track	**400 m**
18.	Junk yard (temporary)	**100**
19.	Storage	**200**

License department

1.	Examination hall (50 seats)	**120**
2.	Waiting area	**120**
3.	Token and fees collecting area	**10**
4.	Fees collecting counter for driving license	**15**
5.	Establishment area	**150**
6.	Counters	**60 nos.**

Offices

1.	Area to be provided where work done under the guidance of head of R.T.O.	**18**
2.	Head of R.T.O	**12**
3.	Assistant of R.T.O	**9**
4.	D.Y of R.T.O	**9**
5.	Waiting area	**18**
6.	Toilets	**15**
7.	Storage	**50**
8.	Dispatching and checking area	**12**
9.	Area to b provided where work done under the guidance of D.y. of R.T.O	**15**
10.	Meeting room	**35**
11.	Counters	**100 nos.**

Work related to license (duplicate, renew etc)

1.	Posting and forwarding of license	**10**
2.	Meeting hall/waiting area	**20**
3.	Signature/approval and verification counter	**12**
4.	Toilets	**15**
5.	Storages	**75**
6.	Counters	**50 nos.**

Registration department

1.	Assistant R.T.O office	**6**
2.	D.y R.T.O for signing and verification	**6**
3.	Scanning of form/document	**20**
5.	Inquiry counter	**6**
6.	Counters	**60 nos.**

Work related to government vehicles and public vehicles

1.	License department (verification)	**6**
2.	Senior officer signature counter	**6**
3.	Record room	**15**
4.	Counters	**50 nos.**

Work related to tax and transport section

2.	Professional tax counter	**6**
3.	Signature and verification counter	**6**
4.	Transport section (buses, truck)	**6**
5.	Signature of head clerk counter	**6**
6.	Court Cases department	**6**
7.	Fitness paper issue counter	**6**

Separate physically challenges block for each and every work. 20 sq.m approx

AREA DISTRIBUTION

Total area of plot: - 23763.07sq m

Built up area: - 2740 sq m

40% total circulation: - 9505 sq m

25% green/setback/ R.G: - 5940 sq m

Parking: - 2000 sq m

LIST OF FIGURES

LIST OF TABLES

LIST OF CHART

LIST OF FLOW CHART

BIBLOGRAPHY

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