

5.4 Project Cost Estimate

The project cost is estimated as follows:

Cost to be borne by Nepalese side is estimated to be about 9 million rupie (about 39 million yen) after confirming the undertaking by the Nepalese side as shown in the following breakdown.

	(Unit: Rs)
1. Approach road intersection	2,000,000
2. Site preparation	100,000
3. Water intake work	800,000
4. Drainage work (drainage boundary to Vishumati river)	1,000,000
5. Power intake work	500,000
6. Telephone intake work	100,000
7. Fencing and landscape work	4,000,000
8. Installation work for furniture and fixture	500,000
Total	9,000,000

KTM Budget Allocation for the Above Amount

KTM 1991 annual budget ('91 Aug.-'92 July)	Rs5,000,000
1992 annual budget ('92 Aug.-'93 July)	Rs4,000,000

5.5 Project Implementation Schedule

Detailed design and construction are estimated to take 3 and 12 months respectively and the schedule is shown in the following chart.

- (1) June to September is the monsoon season with much rain so care should be taken in scheduling outside work.
- (2) Construction to be implemented by the Nepalese side (refer to 5.2 Demarcation of Undertaking and Drawing).

- 1) Intersection work

This work should be completed when the Japanese side construction is completed.

Construction should be implemented in accordance with the specifications in 4.3 Civil Work Plan.

- 2) Site preparation

Preparation should be completed one month before the project construction contract is signed.

- 3) Infrastructure work

The scope of work is given in 5.2 Demarcation of Undertaking and 4.5 Facility Plan.

Project Implementation Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12
Detailed Design	□	(Survey in Nepal)		□ (Work in Japan)			□ (Confirmation in Nepal)		(3 Months in total)			

Month	1	2	3	4	5	6	7	8	9	10	11	12
Execution & Procurement	□ (Preparation)		□ (Kerb & Drainage Work)			□ (Subbase & Pavement Work)		□ (Foundation Work)		□ (Main Structure Work)		
	□ (Facilities Work)		□ (Reclamation Work)			□ (Finish Work)		□ (Cleaning & Touch Up Work)				

5.6 Procurement Plan

(1) Construction Materials

This project plan is designed to use construction materials produced in Nepal and those available locally as much as possible. The procurement sites of earth for building up site level, sand and gravel were also surveyed.

1) Borrow pit

Since the soil around Kathmandu is mostly silty clay, soil suitable for building up land is very scarce. Borrow pits 1 and 2 (refer to Fig. 5-6-1) introduced to the team by KTM were formerly owned by local government agency, but mining right is now given to private enterprise. Borrow pit 1 is located 3 km west of the project site and the transportation distance is about 4 km. The National Construction Corporation (NCC) now owns this pit and is digging boulders. Soil for building up land can be obtained here, but it must be separated from boulders, furthermore the access road is narrow with many houses and people, also one unsteady bridge which could easily be damaged by dump trucks must be crossed. Borrow pit 2 is located 10 km southeast of the project site with a transportation distance of about 13 km, and a private sand and gravel operator owns the mining right. This soil was used for building up land for the Kathmandu airport and soil for the project could be obtained by bench cutting this hill and necessary quantity is available, but the quality is poor since it is silty soil. During this supplemental study borrow pit 3 was discovered 8 km east of the project site. The transportation distance is about 9 km and this soil, which quality is similar to that of borrow pit 2, is available. Since this pit is nearer to the site, this soil seems to be more advantageous.

2) Sand pit

Sand for sand mat can be collected from the Vishumati river, Bagmati river and Manohara river. Sand pit 1 and 2 (refer to Fig. 5-6-1) recommended by KTM is located near the project site but the quantity is little and quality is poor, furthermore the river width is narrow and there is scouring on the river, so further digging may badly affect the river. However, quantity and quality in sand pits 3-10 are sufficient, so sand for this project will be collected from pits 3 and 4 located 5 km south of the project site with a transportation distance of about 7 km.

3) Crushed stone

There are small crushed stone operators (10-25 t/h capacity) in Kathmandu, but one operator alone will not be able to supply the requirement of the project so supply must be obtained from a number of operators. The operators are all located about 5 km from the project site and produce two grades of crushed stones 40 mm and under, and 20 mm and under. However, since they only have a primary crusher, fineness cannot be graded by sieving and also crushed stone of 5 mm and under for concrete and asphalt is not available. Therefore, in order to provide high quality concrete and asphalt for this project a secondary crusher with sieve will be necessary.

4) Cement

In Nepal, cement is produced at Himal and Hetauda but total monthly production is only 330,000 tons, furthermore quality is too poor to be used for structural purposes. Therefore, much cement is imported from Korea, India, Indonesia and Malaysia. The quality of

cement from Indonesia is the highest. When the cement plant being constructed in Udaipur with a monthly capacity of 240,000 tons is completed in 1992, high quality, low cost cement will be available. In this project, Korea and Indonesian cement which is available in Kathmandu is planned to be used.

5) Earth disposal location

Two locations along the ring road were recommended by KTM for disposing earth (refer to Fig. 5-6-1). Location No.1 is 4 km southwest of the project site with a transportation distance of about 5 km and location No.2 is 3.5 km east of the project with a transportation distance of 5 km. Both locations are located inside the ring road. There is a long upward climb to location No.2 and the speed of dump trucks will slow down so location No.1 will be used for this project since it will be more efficient.

6) Steel bars

Steel bars are readily available in Kathmandu, but since bars are not produced in Nepal, large amount of steel bars must be imported from India or other countries. The steel bars available in Kathmandu are Indian twisted bars of Indian specification. These bars have little elasticity and fails at low stress, so they are not suitable for structural purposes, but there is no problem for using in drainage structure of this project.

7) Other construction materials

Other main materials are shown in the following Table 5-6-1.

Table 5-6-1 Material Procurement List

Material	Nepal	Japan	Third country	Reason for selection
Steel		o		Quality and supply are stable
Brick	o			Local product is available
Lumber	o			Local product is available (quality selection is limited)
Tile	o			Local product is available (quality selection is limited)
Window frame		o	Δ	Quality and supply are stable
Asphalt		o	Δ	Quality and supply are stable
Sodium lamp	o			Imported but locally available
Color corrugate steel sheet		o		Quality and supply are stable
Paint	o			Imported but locally available
Glass	o			Imported but locally available
Finishing materials		o	Δ	Quality and supply are stable
Main equipment		o		Quality and supply are stable

(2) Construction Equipment

Construction equipment is available in Kathmandu on a rental basis but selection and quantity are limited. Furthermore, as most of the equipment is of old type and is of many different type, it is difficult to obtain spare parts in case of breakdown. Equipment can be rented from the heavy equipment division of the Department of Road when it is not in use, so there is no assurance that it will be available and from the National Construction Corporation (NCC) a semi public agency and from local contractors.

From our survey, general purpose equipment for land build up may be rented in Kathmandu but not all equipment. When considering to rent equipment, the following points should be studied.

- 1) Equipment necessary for a short period such as truck crane could be rented.
- 2) Equipment which cannot be rented in Kathmandu must be brought in from abroad (Japan).
- 3) Equipment necessary to maintain quality or construction schedule must be brought in from abroad (Japan).
- 4) Since it is difficult to rent large number of equipment such as dump trucks, the number necessary for a long period should be brought in from abroad (Japan) but the number necessary for peak period could be rented.

Equipment which should be brought in from abroad (Japan) and which could be rented locally is expected to be as shown in Table 5-6-2.

Table 5-6-2 Breakdown of Equipment

Equipment	Specification	Overseas (Japan)	Locally rented
1. Bulldozer	21 t	-	1
2. Dump truck	8 - 11 t	5	5
3. Back hoe	0.6 m ³	1	-
4. Wheel loader	1.4 m ³	-	1
5. Tire roller	8 - 20 t	1	1
6. Vibrating roller	500 kg	-	1
7. Truck with crane	2.9 t	-	1
8. Compactor	80 kg	-	1
9. Truck crane	10 t	-	1
10. Welder	300 A	-	1
11. Portable concrete mixer	0.5 m ³	2	-
12. Macadam roller	11 t	1	-
13. Motor grader	3.1 m	1	-
14. Asphalt finisher	3.1 m	1	-
15. Asphalt sprayer	200 l	1	-
16. Asphalt plant	30 t/h	1	-
17. Secondary crushing plant	20 t/h	1	-

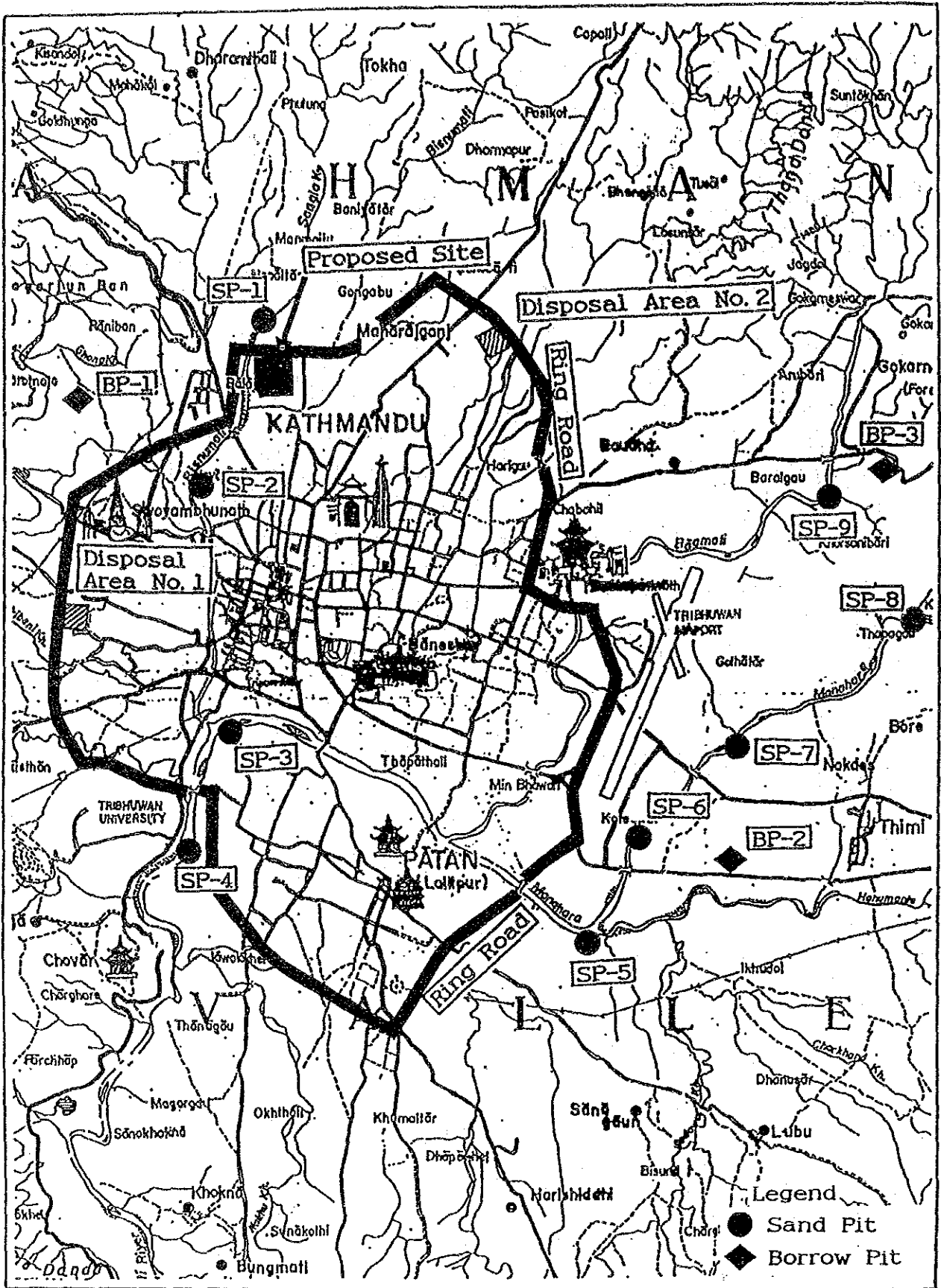


Fig. 5-6-1 Borrow Pit, Sand Pit and Earth Disposal Area

5.7 Bus Operation Control Plan

5.7.1 Operation Control Inside the Bus Terminal

The congestion of the present terminal is due mainly to insufficient facility and conduct of Nepalese people unfamiliar with traffic rules. The main reasons for congestion are described below.

- (1) Bus operation schedule is not set up to provide an efficient operation.
- (2) Bus operation control is insufficient due to shortage of traffic signs and markings.
- (3) Facility to inform operation information to passengers and drivers is not available.

In order to resolve these problems, the following measures are prepared in order to make the new bus terminal much more efficient.

- (1) The most important matter to effect an efficient bus operation control of many private bus companies operating from this terminal is to set up a good bus operation schedule. For example, the departure of long route buses to Dharan are concentrated at 16:00. This is because there is no coordination among the private bus companies. Therefore, if NTEA will coordinate the bus schedule of member buses and prepare a well coordinated bus schedule, it will contribute greatly to provide a smooth efficient bus operation. Based on this schedule, bus will be operated under the following flow chart.

Arrival at designated offboarding berth — parking lot — (bus driver will confirm departure berth No., berth entrance time and departure time) — enter designated boarding berth — inform departure time (announce departure time) — gate

- (2) Separate the boarding/offboarding berth according to bus route, and provide sign and marking (separate color) for controlling passenger and traffic circulation.
- (3) Announce operation information by microphone to passenger and driver. The newest information should be provided comparing with the scheduled time.
- (4) Initially, since everybody is still unfamiliar with terminal operation, traffic instructors should see that traffic rules and berths designation are observed.

5.7.2 Operation Plan and Route

(1) Medium/Long Route Bus

In this supplemental study, bus route and number of arrival and departure of medium/long route bus was confirmed to be the same as that observed in the basic design study. NTEA is now preparing an operation plan which will satisfy the function of the terminal facility.

(2) Connecting Transportation

1) Operation plan

After the new bus terminal is completed, the present bus terminal will be used only as city bus terminal and medium/long route bus must be obligated to arrive/depart, from the new terminal (refer to appendix A1-1). Some measures should be provided for medium/long route buses not to enter the ring road

for commercial reason or for parking in order to achieve efficient utilization of the new terminal. The new terminal is located along the ring road 3.5 km away from the old terminal. Some kind of transportation is necessary for transferring from medium/long route bus terminal to the city bus terminal. For this transportation, shuttle buses are most suitable and Sajha Yatayat will operate the shuttle bus, but as bus owned by Sajha is limited, buses available for shuttle service will also be limited. Therefore, taxis and tempos must be utilized to cover the shortage. Mini buses operated by NTEA members should also be used as shuttle bus.

Figure 5-7-1 shows the present city bus route. Passengers proceeding to towns outside the ring road must first go to the present bus terminal by the shuttle bus to transfer to city buses, however since many passengers will use the shuttle bus it will increase the number of necessary shuttle bus. In order to alleviate such condition, it is proposed to operate loop buses on the ring road with new bus stops at intersections of city bus route and ring road so passengers proceeding to these towns may transfer at these stations.

2) Bus operation route

There are three routes between the new terminal and the present terminal. They are the Nayabazar road, Samakusi road and Maharajganji road, so in order to determine the best route, a traffic survey was conducted at the two points shown in Fig. 5-7-2 during the supplemental study. The amount of traffic according to this study was as shown in Tables 5-7-1 and 5-7-2, therefore a plan to separate the shuttle bus route and the taxi, tempo route which is described in the following paragraphs was considered.

i) Shuttle bus route

Considering the present road width and traffic volume, the best shuttle bus route to the present terminal seems to be through the Maharajganji road. This route (refer to Fig. 5-7-3) is a bit longer, about 8.2 km, than the route through the Nayabazar road, but higher speed is possible on the ring road and the Maharajganji road is wider (6.5 m) with sidewalks for pedestrians. The traffic volume during peak period is 1,100 cars/hour but large vehicle is only 3% so shuttle bus operation should not cause congestion, however since the road is of two lanes, parked cars or slow speed vehicles (horse wagon, farm vehicle) on the road may obstruct the traffic so traffic control is necessary.

ii) Taxi and tempo route

Taxi and tempo are free to select the nearest route which is different from buses which must travel a determined route.

The shortest route to the city terminal will be from the ring road through Samakusi road and Nayabazar road. The Samakusi road is narrow, 3-5 m width, and since there is no sidewalk, it is difficult for large vehicle to travel this road. Also there are many pedestrians on this road. The Nayabazar is the main road to Trisuli and Kakani with a peak traffic volume of 650 cars/hour, also quite a high percentage, 15% of large vehicles travel this road and furthermore since there are no sidewalks in many parts of the road, it is very congested during traffic peak. Especially, the large number of pedestrian around the intersection of Samakusi road and Nayabazar road is the main reason of the congestion.

Therefore as a result of the survey, it is proposed to take a route from the ring road through the Samakusi road and through the road between the Indian Embassy and British Embassy after widening this road as shown in Fig. 5-7-4. The road should be widened to 9.50 m; 6.50 m road with a 1.50 m sidewalk on both sides of the road. After this road is widened, shuttle bus traveling the Maharajganji road can also use this route. However, if road widening is not completed when the new terminal is completed, the Samakusi road as shown as the alternative route in Fig. 5-7-4 may be used by prohibiting entrance of large vehicles and enforcing one way traffic, but some repair must be made on the road.

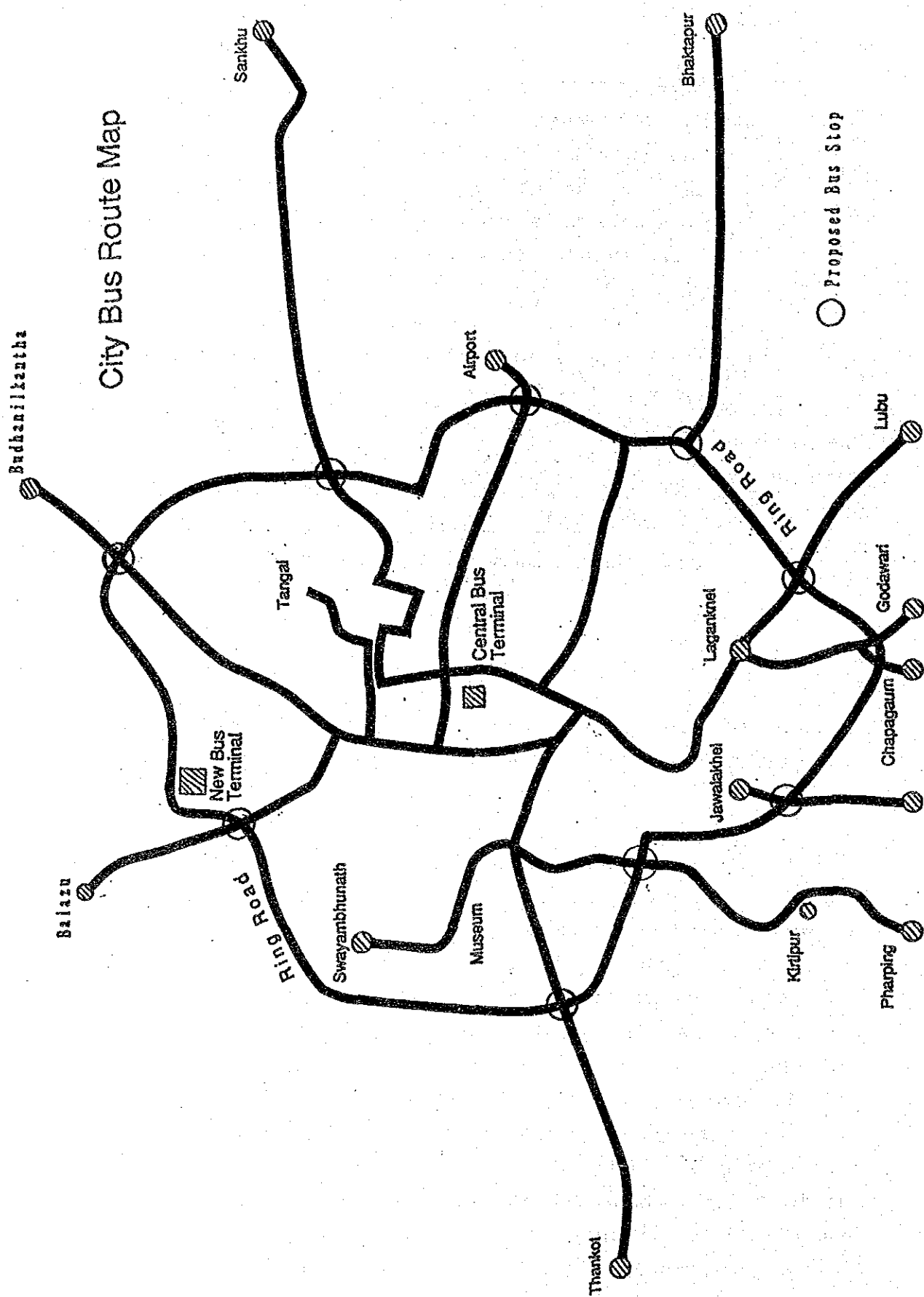


Fig. 5-7-1 City Bus Route Map

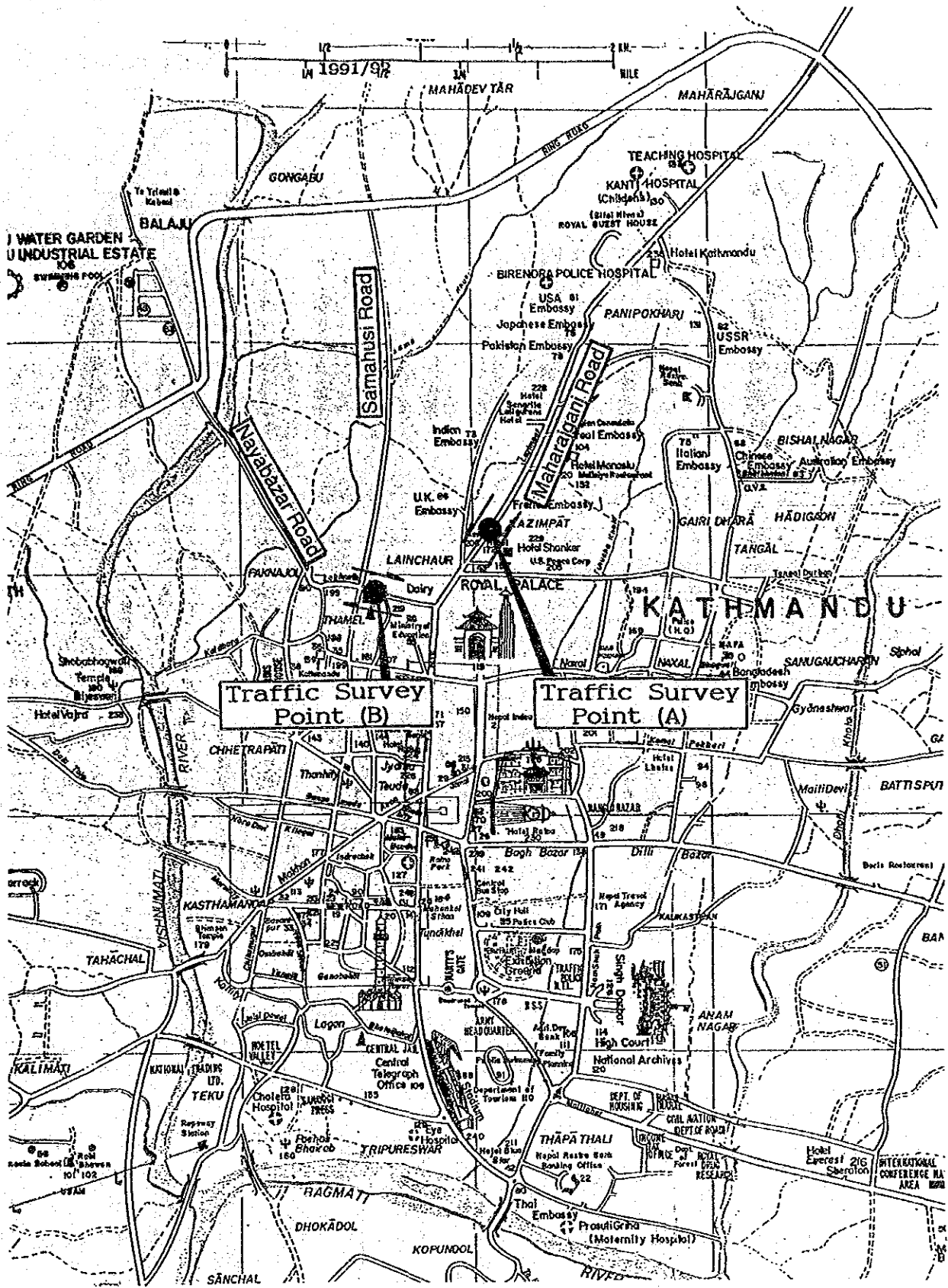
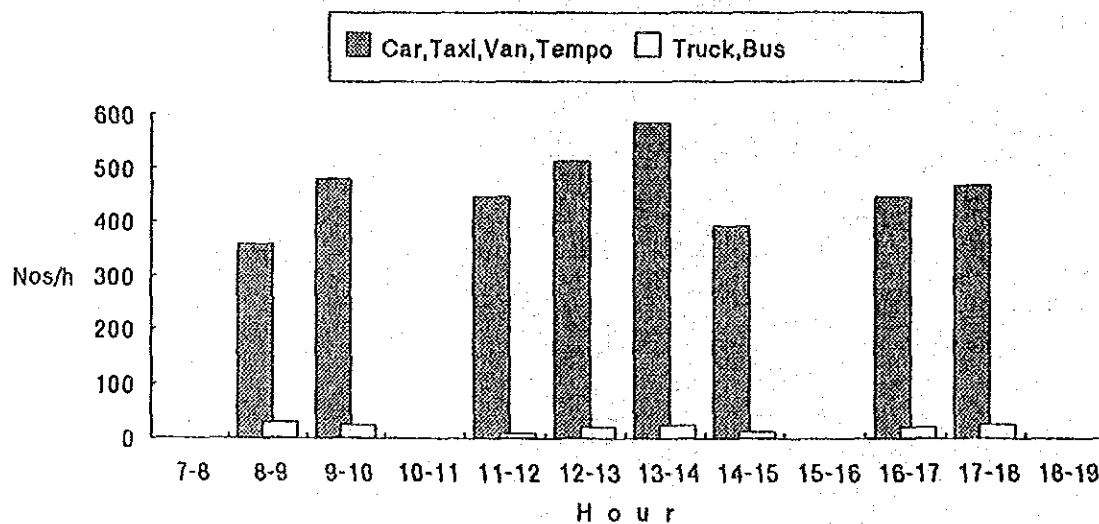


Fig. 5-7-2 Traffic Survey Location Map

Table 5-7-1 Traffic Survey Results (A) (Maharajganj Road)

Traffic Volume (Maharajganj Road)				
Hour	from N to S		from S to N	
	Grp-A	Grp-B	Grp-A	Grp-B
7- 8				
8- 9	358	29	393	30
9-10	480	24	502	25
10-11				
11-12	447	9	412	10
12-13	514	21	495	14
13-14	584	24	552	19
14-15	392	12	376	16
15-16				
16-17	446	21	437	31
17-18	468	25	454	33
18-19				
Total	3,689	165	3,621	178
Notes:	Grp-A : Car, Van, taxi, Tempo			
	Grp-B : Truck, Bus			

Traffic Volume (Maharajganj Road) -from North to South-



Traffic Volume (Maharajganj Road) -from South to North-

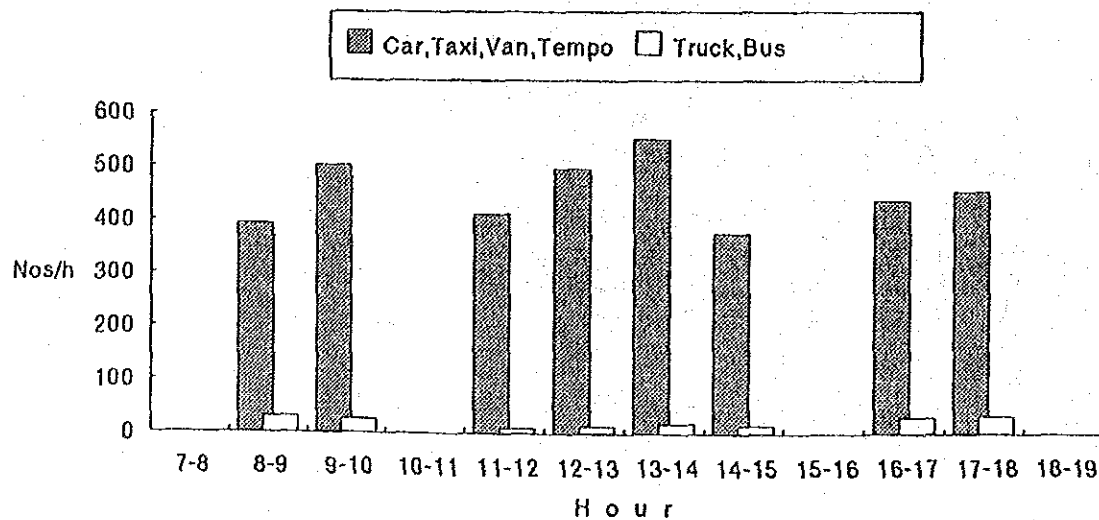
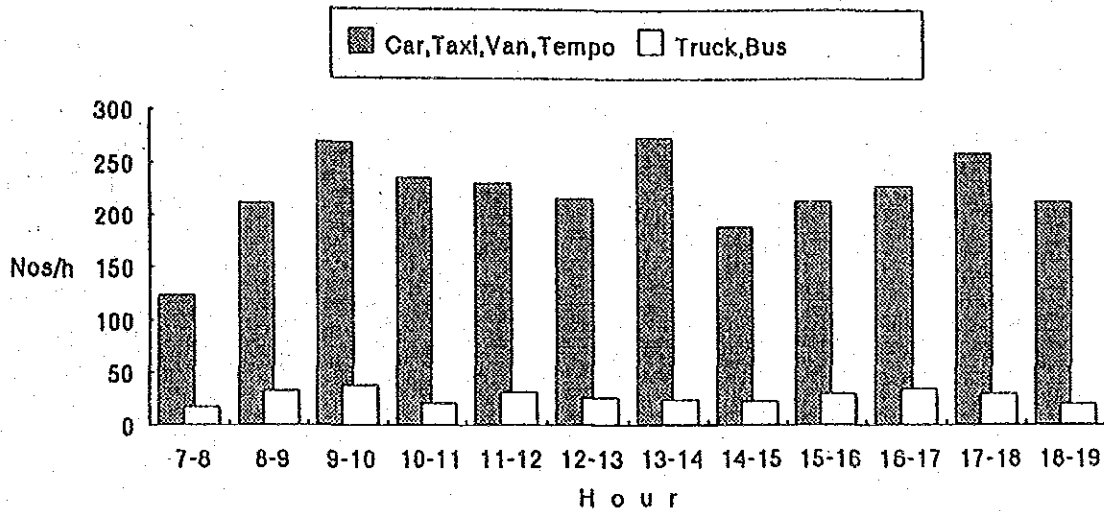


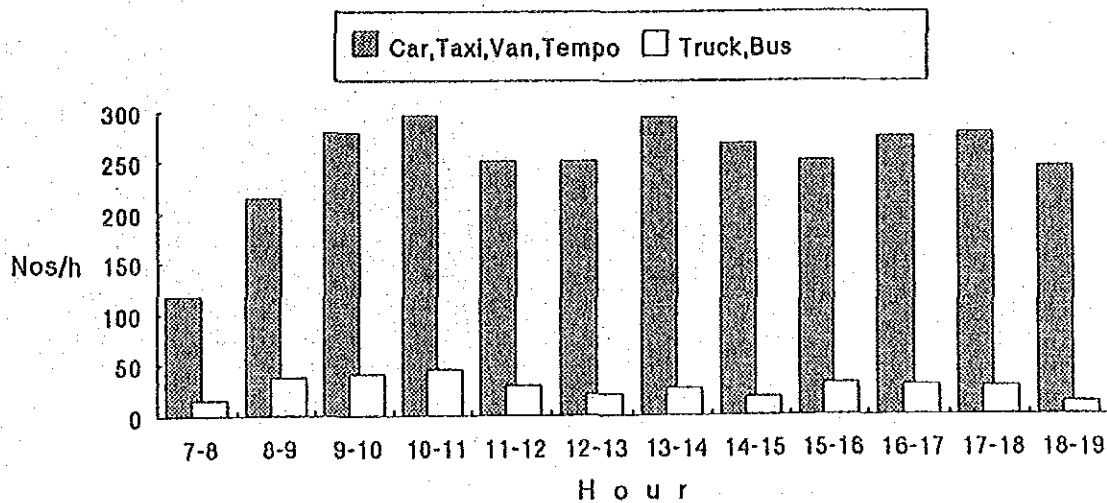
Table 5-7-2 Traffic Survey Results (B) (Nayabazar Road)

Traffic Volume (Nayabazar Road)				
Hour	from E to W		from W to E	
	Grp-A	Grp-B	Grp-A	Grp-B
7- 8	124	17	118	15
8- 9	213	33	216	37
9-10	271	38	280	40
10-11	237	21	298	45
11-12	232	32	252	29
12-13	218	27	252	20
13-14	276	24	296	26
14-15	190	23	269	18
15-16	215	30	252	31
16-17	230	35	276	29
17-18	261	30	280	27
18-19	215	20	246	12
Total	2,682	330	3,035	329
Notes:	Grp-A : Car, Van, taxi, Tempo			
	Grp-B : Truck, Bus			

Traffic Volume (Nayabazar Road) -from East to West-



Traffic Volume (Nayabazar Road) -from West to East-



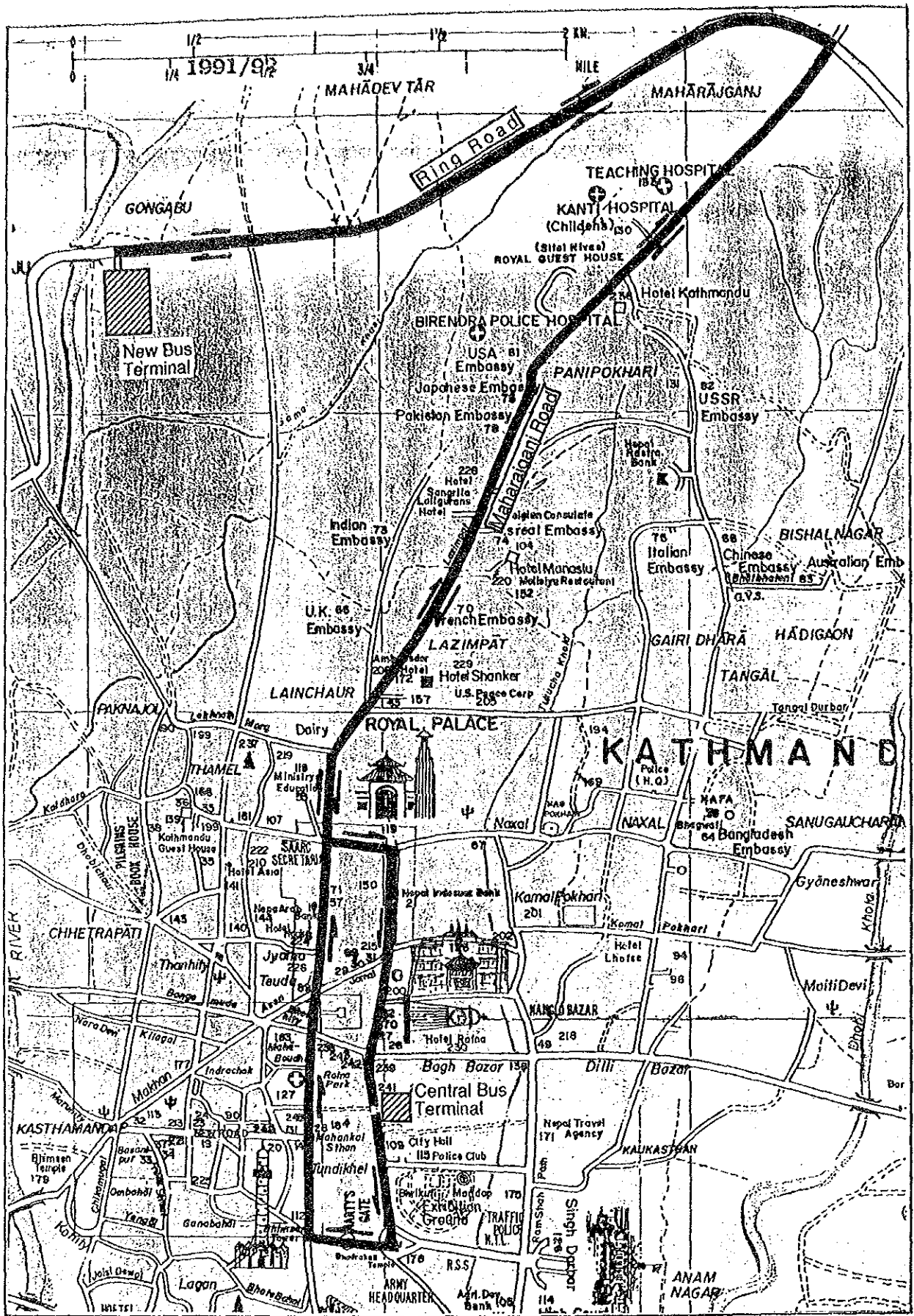


Fig. 5-7-3 Shuttle Bus Travel Route

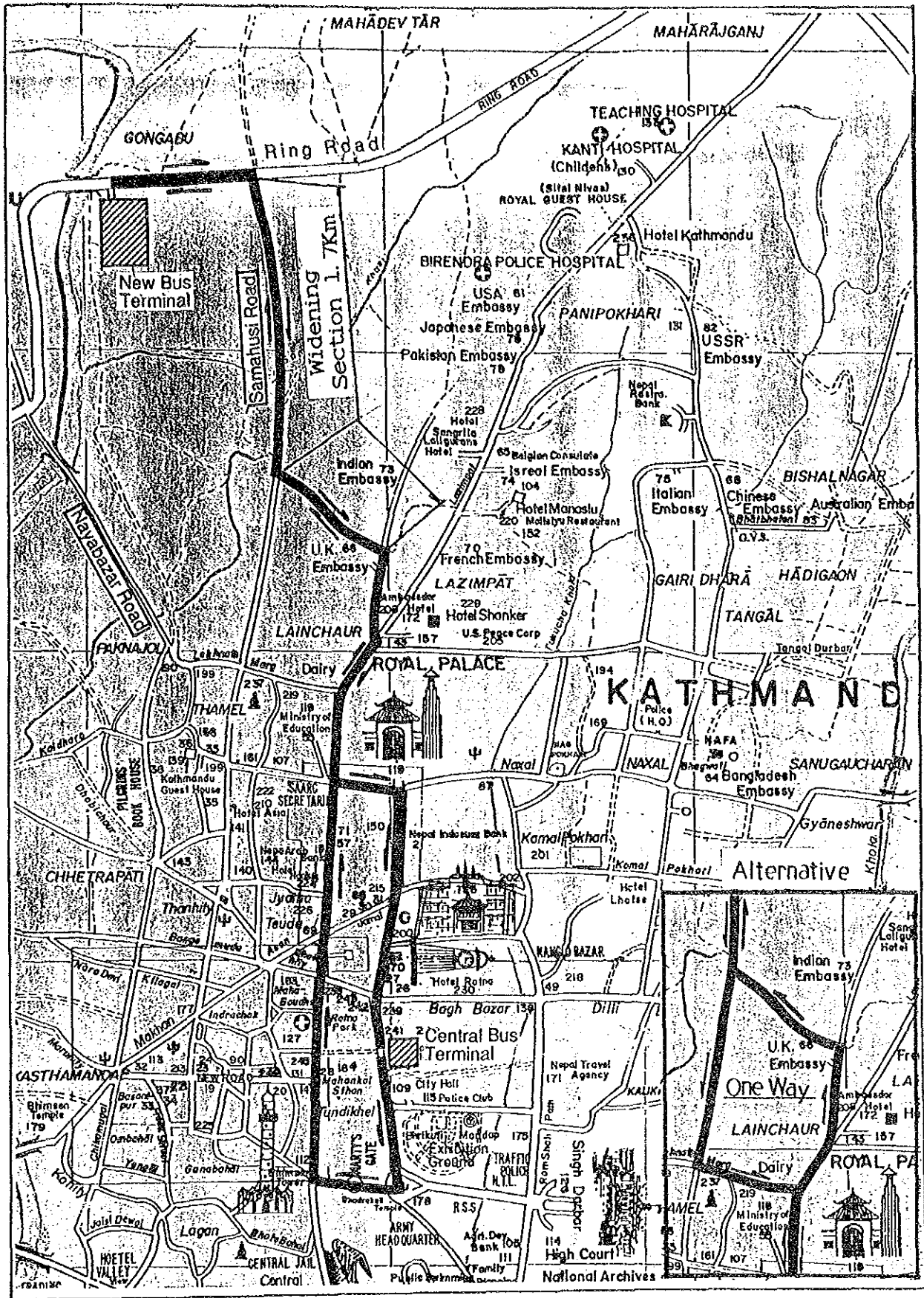


Fig. 5-7-4 Taxi, Tempo Travel Route

CHAPTER 6

BENEFITS OF THE PROJECT AND CONCLUSION

CHAPTER 6. BENEFITS OF THE PROJECT AND CONCLUSION

6.1 Benefits of the Project

The benefits expected from the project are described in the following paragraphs.

6.1.1 Direct Benefits

(1) New Bus Terminal

By proper operation of the terminal, the essential function of the terminal can be expected as shown in the following table.

Item	Present terminal	New terminal	Benefits
(1) Medium/long route bus	Difficult for all buses to use the terminal, so some buses must be parked on the road.	All buses can use the terminal	Medium/long route bus schedule can be kept Safety is improved.* *This applies to items (2) to (5) and (7).
(2) City transportation	Connection with medium/long route bus is not considered.	Connection with medium/long route bus is fully considered.	Passenger service is improved.
(3) Traffic zoning for different vehicles	No clear traffic zoning exists.	Clear traffic zoning is provided.	Confusion is resolved and easy access to different transportation is provided.
(4) Separation of boarding and offboarding	No clear separation exists.	Boarding and offboarding is clearly separated.	Vehicle and passenger movement is smooth, which resolves confusion.
(5) Separation of platforms for different destinations	No clear separation exists.	Platforms for different destinations are clearly separated.	Same as above
(6) Information service	No service exists.	Time schedule of departure and arrival is displayed and announced.	Passenger service is improved.
(7) Baggage service	No control on baggage handling.	Baggage handled by terminal attendants.	Confusion is resolved and bus waiting time is reduced.
(8) Ticket service	Tickets are sold by each company and no control exists.	Tickets are sold at ticket counter.	Passenger service is improved.

(2) Present Terminal

The present terminal will be remodeled as a short route bus and city bus terminal, which is expected to contribute toward smooth operation of buses as well as other transport.

6.1.2 Indirect Benefits

Since traffic congestion can be relieved owing to reasons described in (1), (2) and (3) below, air pollution and traffic accidents will be reduced, leading to a better living environment in the city center. Also, population dispersion from city center to suburbs can be expected.

- (1) The new terminal will provide transportation to districts outside Kathmandu without entering the city center. (Note: As a result of the survey, it was found that among passengers of medium/long route buses only 25% were destined for city center and the remaining passengers were destined for suburbs.)
- (2) Medium/long route buses entry into city center are restricted.
- (3) Parking and repairing medium/long route buses on the road are eliminated.

6.2 Conclusion

When this project is implemented, the reliability of buses originating from Kathmandu will be greatly improved and the city traffic congestion will also be relieved. This bus terminal will be the first real bus terminal in Nepal to provide connecting transportation similar to the central station of a railroad, and will be of a great benefit to the people of Nepal.

Furthermore, since the terminal operations will be conducted by KTM under the cooperation of NTEA, which has a rich background in operating buses, as well as the necessary organization, an efficient operation can be expected. Since the maintenance and the management expenses is expected to be covered by revenues from the terminal, it is not expected to be a burden on KTM's budget. However, in view of the importance of this project, KTM will allocate a separate reserve fund each year in its budget.

The Kathmandu Bus Terminal Project is expected to revolutionize bus operation services in the Kingdom of Nepal and greatly promote passenger transportation which is of great importance for the development of the Kingdom. This project is expected to greatly benefit the people of Nepal. To produce the best results from the Project, the implementation of the following items is necessary.

- (1) Require all buses to use the bus terminal

It is recommended that the objectives of the bus terminal as a basic policy of the nation and the city be clearly understood, and that bus operators, as well as passengers, appreciate the objectives of the terminal. Furthermore, it is recommended that all medium/long route buses departing from and arriving at Kathmandu be required to use this new bus terminal.

- (2) Provide better service to passengers using the new terminal

In order to provide easy access to this new terminal placed in the suburbs of Kathmandu, the frequency of buses must be increased and the travelling time must be reduced to provide a high level of service.

- 1) Widen the Samakusi road and the road running between the Indian Embassy and British Embassy to a width of 6.5 m with an additional 1.5 m wide sidewalk on both sides of the road for a combined total of 9.5 m. Widening the Samakusi road and the road running between both embassies will improve the access from the new terminal to the city.
 - 2) Since the Samakusi, the Nayabazar, and the Maharajganji roads, which connect the new terminal and the city, are expected to be heavily travelled until the widening of the Samakusi road is completed, traffic control, such as prohibiting car parking on roads and entry of large vehicles, must be enforced for pedestrian safety.
 - 3) The following items should be implemented in the bus operation plan to assure smooth transfers at the terminal and to reduce passenger waiting time.
 - i) Prepare a medium/long route bus schedules and provide transportation according to these schedules
 - ii) Display arrival/departure schedules and provide bus operation information to the public.
 - iii) Set up connecting bus schedules to coordinate with medium/long route bus arrival/departure schedules.
- (3) Maintain sound financial condition

The terminal is designed to be self-supporting after reviewing the operation of the present terminal. The main funds for operating the new terminal are to be obtained from the terminal fees collected from medium/

long route buses. To maintain sound financial conditions, the following points should be considered.

- 1) It is desired that the number of bus departures/arrivals be gradually increased in line with the demand. To achieve this objective, all buses should be required to use the terminal, and to raise the value of the terminal, it should be made more appealing to bus operators and passengers. The development of the terminal vicinity should also contribute greatly to raising the value of the terminal.
- 2) In this report, the new bus terminal fees were calculated on the present terminal fees to provide a conservative profit and loss report for maintaining and managing the new bus terminal.

The present terminal fees may be revised since the services provided by the new terminal will be greatly improved over that of the present terminal. Any revision of terminal fees should be determined by the Nepalese side to assure a sound profit and loss condition.

(4) Recommendations to improve the efficiency of the new terminal:

- 1) The education of bus drivers and assistant drivers

It is recommended that drivers and assistant drivers be instructed on the rules for the new terminal to assure smooth and efficient operations, that drivers be reinstructed on traffic rules, and that their driving techniques and vehicle inspection performance be upgraded before they resume their driving.

- 2) The education of operation administrator and building administrator

It is recommended that these administrators be fully trained as to the functions of the terminal so that they may properly manage it. Training may be provided at similar facilities in Japan or in other areas.

- 3) Consideration for increasing the number of buses

The increase in the number of medium and long route buses can be managed substantially by reducing the waiting time for buses. Now the boarding time is set at 30 minutes, and offboarding time is set at 20 minutes, which are much longer than the usual standard. This extra time is attributable to the unloading of large pieces of baggage, to passengers not used to using a terminal, and to the confusion within the terminal. But the operation of the new terminal is expected to improve this situation. The area south of the site may be extended for a parking lot.

- (5) Development of the terminal vicinity

It is believed that the daily departures/arrivals of 400 medium/long route buses and connecting transports together with the movement of 20,000 people, will create a huge market for enterprises.

Service facilities for buses, such as for washing, inspection, maintenance, and repair, as well as for spare parts shops, are necessary for bus operations. Although they are not provided in this terminal, it is needless to say that such facilities are desirable to be located within the terminal or in its immediate vicinity. The demand for basic passenger facilities, such as for restaurants, tea stands, kiosks and hotels can also be expected.

If plants and shops to satisfy these needs should move from the city to this location, it would also be desirable to prevent overcrowding in the area. If these facilities become operational, city facilities for people working here will also become necessary. These developments, in turn, will raise the value of the bus terminal.

KTM should have a vision and plan for the development of the vicinity and the unused areas of the terminal by inducing qualified enterprises and parties to open operations there. The development should be regulated and controlled to prevent disorderly development as can be seen in the present terminal. It is hoped that an orderly and pleasant environment for town development, with the terminal serving as a nucleus, will be realized.

APPENDIX

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A. Supplemental Basic Design Study Survey

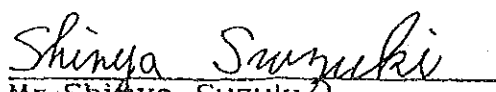
1-1 Minutes

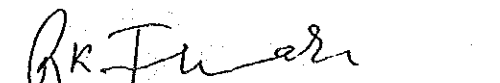
MINUTES OF DISCUSSIONS
OF
THE SUPPLEMENTAL BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTING THE BUS TERMINAL
IN KATHMANDU,
THE KINGDOM OF NEPAL

In accordance with the result of Annual Consultation in 1990 between His Majesty's Government of Nepal (hereinafter referred to as HMGN) and the Government of Japan decided to carry out a supplemental basic design study (hereinafter referred to as the Study) on the project for Construction of Bus Terminal in Kathmandu (hereinafter referred to as the Project) and the Japan International Cooperation Agency (JICA) sent the study team, headed by Mr. Shinya Suzuki, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, from February 3rd to 17th, 1991.

The team had a series of discussion with the authorities concerned of HMGN and conducted a field survey, both parties confirmed the main items described on the attached sheets. The team will proceed to the works and prepare the Supplemental Basic Design Study Report.

Kathmandu, 11th February, 1991


Mr. Shinya Suzuki
Leader,
Supplemental Basic Design
Study Team, JICA


Mr. R. K. Tiwari
Joint Secretary,
Ministry of Local
Development

ATTACHMENT

1. Objectives

The general objective of the Project is to improve and strengthen the public transportation services in Nepal, and the specific objectives of the Project are to alleviate the traffic congestion in Kathmandu City and to maintain smooth operation of the long/middle distance bus services by replacing the existing bus terminal with new one.

2. Executing agency

- (1) Responsible organization: Ministry of Local Development
- (2) Executing organization: Kathmandu Municipality

3. Project site

The Project Site is located at Kathmandu as shown in Annex I.

4. Necessary items for the realization of the Project

After discussions with the Study Team, the items shown in Annex II were judged necessary for the realization of the Project. However, the final items of the Project may differ from the above items, if it is judged necessary after further studies in Japan in consent with Nepal side.

5. Measures to be taken by HMGN

HMGN will take necessary measures as listed in Annex III on condition that the Grant Aid by the Government of Japan will be extended to the Project.

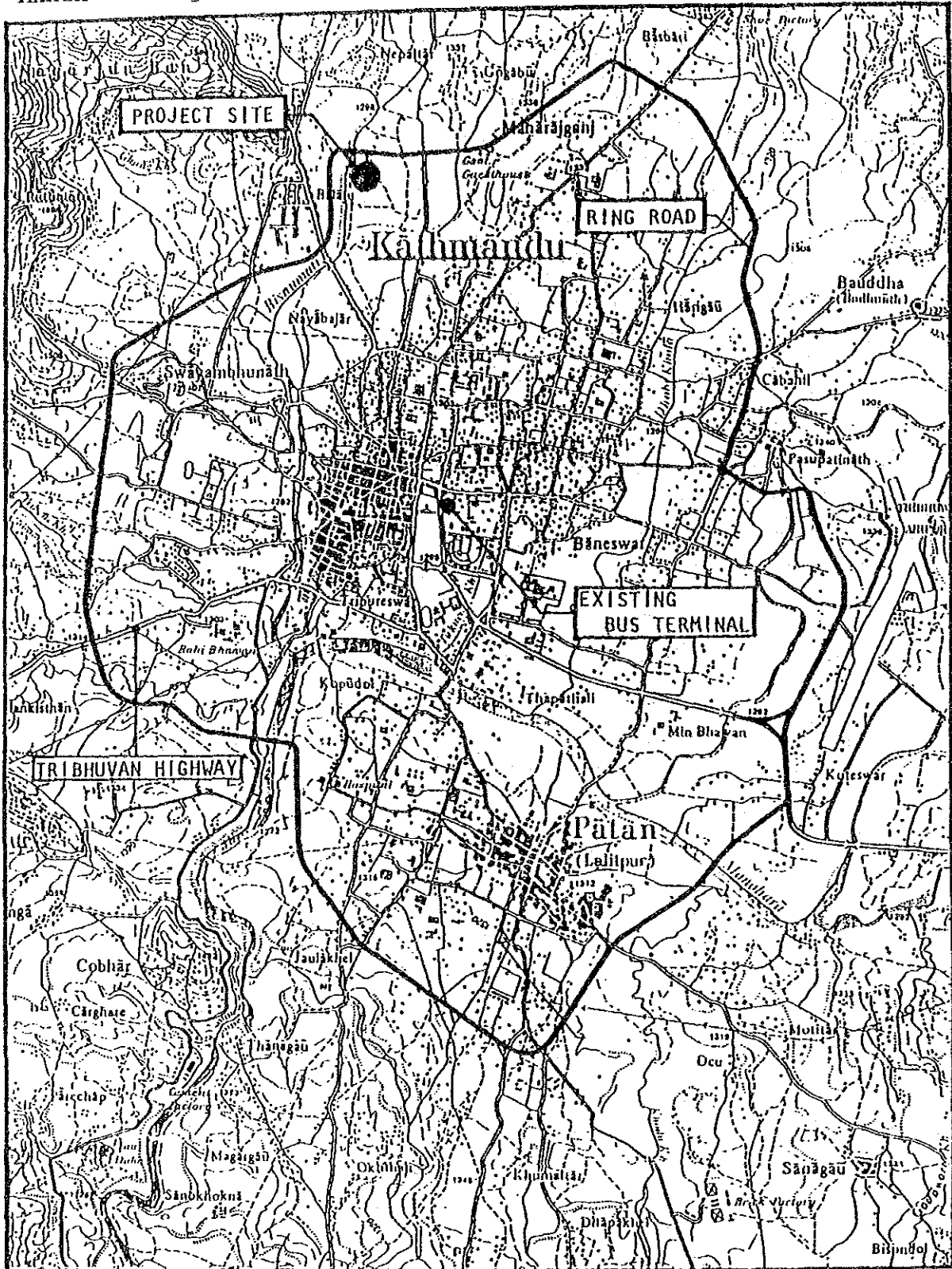
6. Advisory Board

Nepal side promised Japanese side that the Advisory Board listed in Annex IV will be established and the Manager of the new bus terminal will be decided before the Exchange of Note between both Government.

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Annex I Project Site



KATHMANDU

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Annex II

The necessary items for the Project are as follows:

1. Land preparation

-Site area	Approx. 34,200 m ²
-Top level of pavement	1297.0 m
-Embankment	Approx. 33,000 m ³

2. Civil works

-Pavement	Asphalt pavement
-Road width	5.0 m
-Drainage system	Surface drainage by concrete gutters

3. Facilities for long route bus

-Off boarding platform	8 berths
-Boarding platform	12 berths
-Parking lot	Space for 113 buses

4. Facilities for city transport

-Bus platform	12 berths
-Taxi platform	6 berths
-Taxi pool	Space for 15 taxis
-Private car parking lot	Space for 30 cars

5. Terminal building

(Main structure: R. C.)

-Office	144 m ²
-Bus driver rest room	45 m ²
-Electricity room	36 m ²
-Maintenance store	72 m ²
-Ticket counter	72 m ²
-First aid	9 m ²
-Information counter	18 m ²
-Post office & Telephone room	27 m ²
-Police stand	18 m ²
-Waiting area	504 m ²
-Others	63 m ²
	total 1008m ²

6. Auxiliary building

-Platform roof Roof area(3m width)	894 m ²
-Public toilet (R. C frame structure)	148 m ²

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7. Facilities

-Electrical equipment

Indoor lighting
Telephone equipment
Public address system
Outdoor lighting

-Water supply equipment

City water supply

-Air ventilation equipment

Fan and ceiling fan

8. Equipment

-Crossing equipment

Manual type

-Baggage carts

10 cart

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Annex III

The necessary measures to be taken by HMGN are as follows:

1. To take any measures to direct long and middle distance buses to depart from and arrive to the proposed terminal only.
2. To secure the connection bus services from the new terminal to the existing terminal and also to the other of the passenger.
3. To bear the cost for operation and management of the new bus terminal, if it would come short.
4. To provide facilities for distribution of electricity, water supply, drainage, telephone system and other incidental facilities to the Site.
5. To bear two kinds of commissions to the Japanese foreign exchange bank for the banking services.
6. To prompt customs clearance and internal transportation in the Kingdom of Nepal of the products purchased under the Grant.
7. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the Kingdom of Nepal and stay therein for the performance of their work.
8. To provide and/or acquire necessary permission, licenses and other authorizations necessary for carrying out the Project.
9. To exempt Japanese nationals engaged in the Project from custom duties, internal taxes and other fiscal levies which may be imposed in the Kingdom of Nepal with respect to the supply of the products and services under the verified contracts.
10. To bear all the expenses, other than those to be borne by the Grant, such as gardening, fencing, gates, exterior lighting, etc.

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Annex IV Advisory Board

Advisory Board will be established so that proper policies and guideline can be fixed for smooth operation and management of the terminal. The Advisory Board will consist of the following:

1. Mayor, Kathmandu Municipality
2. Vice-Mayor, Kathmandu Municipality
3. Representative of Ministry of Local Development
4. Representative of NTEA
5. Representative of Traffic Police
6. Representative of Sajha Yatayat.

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1-2 Members of Supplemental Basic Design Study Team

Assignment	Name	Position
Team Leader	Shinya SUZUKI	Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Project Coordinator	Satoru WATANABE	Grant Aid Study and Design Department JICA
Architectural Planner	Kenjiro HIROSE	AZUSA SEKKEI CO., LTD.
Civil Engineering Designer	Toshio ICHIKAWA	AZUSA SEKKEI CO., LTD.
Operation Planner	Kazutsugu YOKOO	AZUSA SEKKEI CO., LTD.

1-3 Itineraries of Supplemental Basic Design Study Team

Date	Members	Activities	Place
February 3, Sunday	Hirose Ichikawa Yokoo	· Leave Tokyo by JL 733	
4, Monday	Hirose Ichikawa Yokoo	· Arrive in Nepal by TG 311 · Courtesy visit to JICA Office · Explanation of survey schedule and contents	Kathmandu
5, Tuesday	Hirose Ichikawa Yokoo Suzuki Watanabe	1) Discussion at KTM 2) Visit to Sajha Yatayat 3) Reconnaissance survey on proposal borrow pits 4) Visit to Project Site · Leave Tokyo by TG 312	Kathmandu Bangkok
6, Wednesday	Hirose Ichikawa Yokoo Suzuki Watanabe Hirose Ichikawa Yokoo	1) Visit to Existing Bus Terminal 2) Reconnaissance survey on the route, Existing Bus Terminal - Thankot - Plant Site · Arrive in Nepal by TG 311 · Courtesy visit to JICA Office and Japanese Embassy	Kathmandu
7, Thursday	Suzuki Watanabe Hirose Ichikawa Yokoo	1) Courtesy visit to MLD 2) Explanatory meeting with related organizations on supplementary Basic Design Study	
8, Friday	Suzuki Watanabe Hirose Ichikawa Yokoo Watanabe Hirose Ichikawa Yokoo	1) Discussion on draft of Minutes at MLD 2) Visit to Sajha Yatayat 3) Visit to NCC 4) Visit to NTEA	

Date	Members	Activities	Place
9, Saturday	Suzuki Watanabe Hirose Ichikawa Yokoo	1) Discussion on survey results	Kathmandu
10, Sunday	Hirose Ichikawa Yokoo	1) Visit to 3 Bus Companies who are NTEA's member 2) Survey on construction equipment at Department of Road 3) Discussion at KTM	
11, Monday	Suzuki Watanabe Hirose Ichikawa Yokoo Hirose Ichikawa Yokoo	1) Sign on Minutes of Discussion at MLD 2) Visit to Water Supply and Sewerage Corporation 3) Visit to Department of Housing and Urban Development 4) Reconnaissance survey on newly proposed borrow pit	
12, Tuesday	Hirose Ichikawa Yokoo Suzuki Watanabe Hirose Ichikawa Yokoo	1) Meeting with KTM 2) Team meeting	
13, Wednesday	Suzuki Watanabe Hirose Ichikawa Yokoo	· Courtesy visit to JICA Office and Japanese Embassy · Left Nepal by TG 312 1) Visit to Nepal Oil Corporation 2) Visit to Department of Road 3) Visit to NTEA 4) Visit to NEA	Bangkok Kathmandu
14, Thursday	Hirose Ichikawa Yokoo Suzuki Watanabe	1) Traffic survey on Nayan Bazar Road 2) Traffic survey on Maharajganj Road 3) Survey on construction materials · Arrive in Tokyo	Kathmandu

Date	Members	Activities	Place
15, Friday	Hirose Ichikawa Yokoo	1) Supplemental traffic survey on Maharajganj Road 2) Visit to Department of Road 3) Courtesy visit to JICA Office and Japanese Embassy	Kathmandu
16, Saturday	Hirose Ichikawa Yokoo	1) Meeting with KTM · Left Nepal by TG 312	Bangkok
17, Sunday	Hirose Ichikawa Yokoo	· Arrive in Tokyo by TG 760	

1-4 List of Persons Met

Ministry of Local Development	Acting Secretary	Mr.P.R.Subedi
	Joint Secretary	Mr.R.K.Tiwari
	Section Officer	Mr.A.Ghimire
	Section Officer	Mr.L.B.Upadhyaya
Kathmandu Town Municipality	Executing Secretary	Mr.D.B.Basnet
	Section Officer	Mr.D.Dongol
Ministry of Works and Transport	Joint Secretary	Mr.G.P.Ranjitkar
Department of Road	Director General	Mr.N.D.Sharma
	Deputy Director General	Mr.S.B.Adhikary
	Senior Divisional Engineer	Mr.K.B.Khadgi
Department of Housing	Deputy Director	Mr.B.Sharma
Sajha Yatayat	General Manager	Mr.N.R.Satyal
	Adm. Officer	Mr.K.Karki
Nepal Water Supply Corporation	Senior Manager	Mr.N.M.Pradhan
District Police Office	Deputy S.P	Mr.B.Singh
	Police Inspector	Mr.K.S.Bhandari
Nepal Transport Entrepreneurs Association	General Secretary	Mr.S.C.Sharma
Nepal Electricity Agency	Manager of Kathmandu Division	Mr.P.N.Sharma
National Construction Corporation	General Manager	Mr.Subedi
Embassy of Japan	Councilor	Mr.T.Nishina
	Secretary	Mr.S.Teramura
	Secretary	Mr.K.Hiroki
JICA, Nepal Office	Resident Representative	Mr.S.Kumano
	Deputy Representative	Mr.M.Nagatomo
	Assistant Resident	Mr.M.Oyama
Sajha Yatayat	JICA Expert	Mr.T.Ogawa

B. Data

3.1-1 Expenditure Budget of KTM for F/Y 1990/91

**Expenditure Budget of KATIMANDU MUNICIPALITY
for Fiscal Year 1990/91**

Total Budget : NRso 11,75,24,459/08

Budget Breakdown :

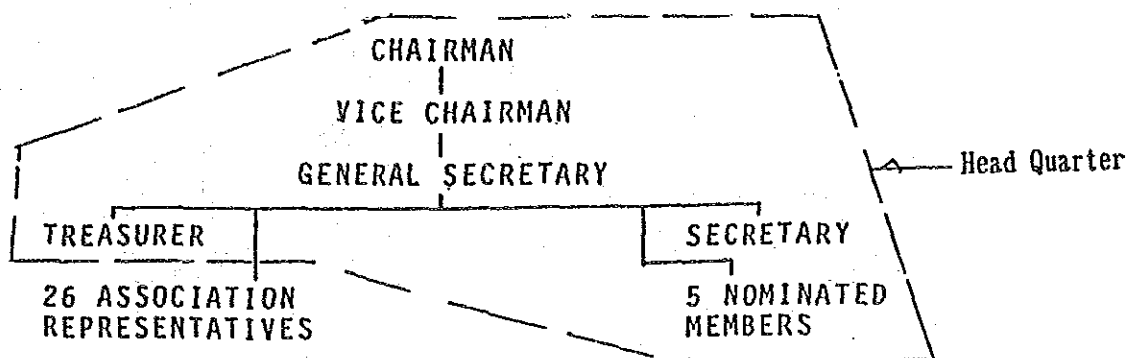
1. Salary	— 1,71,50,000/00
2. Allowances	— 23,43,000/00
3. Daily Allowance & Travel Allowances	— 5,00,000/00
4. Urban Services	— 9,50,000/00
5. Rents	— 6,00,000/00
6. Maintenance	— 10,50,000/00
7. Office Materials	— 43,77,000/00
8. Economic Cooperation, Aid & Prizes	— 4,00,000/00
9. Economic Aid to other Municipalities	— 3,07,26,030/00
10. Miscellaneous	— 26,81,000/00
11. Expenses for Thankot Octri Tax Office	— 10,00,000/00
12. Due Payment [Expenses]	— 67,00,000/00
13. Useable Materials	— 36,00,000/00
14. Land Acquisition and New Building Construction	— 30,00,000/00
*15. City Development Works & Maintenance	— 4,24,47,428/00

* Bus Terminal Works Finance by this budget.

3.1-2 Organization and Proposed Budget for F/Y 1990/91 of NTEA

NTEA

a) This association consists of 26 different associations within the country. NTEA is the central association for these 26 associations. The total members of the association's central committee is 36. Following is the organisational chart:



b) list of association members:

1. Eastern Region Motor Syndicate, Dharan
2. Prithvi Highway Bus manager Comm., Pokhara
3. Bus Entrepreneurs Comm., Butwal
4. Eastern Region Minibus Syndicate, Biratnagar
5. Arniko Transport Service Comm., Kathmandu
6. Nepal Minibus Entrepreneurs Comm., Butwal
7. Pokhara Minibus Comm., Pokhara
8. Narayani Transport Entrepreneurs Association, Hetauda
9. Pokhara Truck Entrepreneurs Comm.
10. Mahakali Seti Bus Entrepreneurs Comm., Mahandranagar
11. Kosi Bus Entrepreneurs Association, Biratnagar
12. Bagmati Zone Transport Entrepreneurs Association, Kathmandu
13. Bheri Zone Bus/Minibus Entrepreneurs Comm., Nepalgunj
14. Rapti Zone Transport Entrepreneurs Association, Bhairawa
15. Far Western Bus Entrepreneurs Comm., Dhangadi
16. Morang Car Syndicate Board, Biratnagar
17. Sidhartha Transport Association, Bhairawa
18. Sunsari Motor Syndicate Board, Dharan
19. Morang Truck Transport Association, Biratnagar
20. Mechi Transport Association, Birtamod
21. Sagarmatha Transport Association, Rajbiraj
22. Western Truck Entrepreneurs Association, Butwal
23. Eastern Transport Entrepreneurs Association, Birtamod
24. Janakpur Transport Entrepreneurs Association, Janakpur
25. Chitwan District Transport Entrepreneurs Association
26. Kosi Truck Entrepreneurs Comm., Dharan.

PROPOSED BUDGET (FISCAL YEAR 1990 - 1991)

OF NEPAL TRANSPORT ENTREPRENEURS ASSOCIATION.

INCOME

01. Due Payment from Association Member (Fiscal Year 89-90)	Rs. 21,321.75	01. NTEA Office Rent Rs. 3000/- Per Month	Rs. 36,000.00
02. Existing Bus Park ticket counter Rent.	Rs. 1,86,338.00	02. Salary for NTEA Officials	Rs. 60,000.00
03. Earned Money deposited for Telephone	Rs. 47,428.00	03. General Secretary Salary 3000/- per month.	Rs. 36,000.00
04. Association's Bank Balance	Rs. 1,423.27	04. NTEA organisation - meeting Allowances.	Rs. 18,000.00
05. Bus company Association Renewable Rs. 35/- per company (total Company 151)	Rs. 5,285.00	05. Post, Electricity, Telephone, Water Expenses.	Rs. 18,000.00
06. New membership distribution (1500 numbers)	Rs. 7,500.00	06. Travel Allowance	Rs. 12,000.00
07. Representative Admission fee Total 505 - rate Rs.35/- per one representative	Rs. 7,170.00	07. Advertisement (Newspaper, Radio etc)	Rs. 6,000.00
08. Miscellaneous Income From Existing Bus Park.	Rs. 79,711.68	08. Stationery expense.	Rs. 15,000.00
09. Income from Member Associations.	Rs. 1,67,500.00	09. Press & Printing Expense	Rs. 15,000.00

T O T A L

RS. 7,25,569.70

INCOME

EXPENDITURE

10.	Anniversary, Welcome ceremony and other related expense	Rs. 20,000.00
11.	Maintenance	Rs. 2,000.00
12.	Auditing	Rs. 2,500.00
13.	Miscellaneous Expenses	Rs. 6,500.00
14.	Type & other necessary equipment expenses.	Rs. 10,000.00
15.	A Due Amounts to be paid	Rs.1,04,287.52
16.	Earnest Money to be returned	Rs.1,37,455.00
17.	Amount to be paid to Kathmandu Municipality for ticket counter of Existing Buspark	Rs.1,31,151.84
18.	Loss amount mentioned by Auditor in fiscal year 1989-1990 to be balanced.	Rs.1,00,019.34

T O T A L Rs.7,25,569.70

LIST OF MEMBER ASSOCIATIONS AND INCOME.

01.	Eastern Motor Syndicate	Rs. 12,500.00	15.	Pokhara Local Truck Service Association.	Rs. 2,000.00
02.	Prithivi Rajmarga Bus Committee	Rs. 12,500.00	16.	Mahakali Seti Bus Service Committee	Rs. 6,000.00
03.	Bus service committee Butawal	Rs. 9,000.00	17.	Koshi Bus Service Association.	Rs. 12,000.00
04.	Nepal Mini Bus	Rs. 7,000.00	18.	Bagmati Zone Service Association.	Rs. 14,000.00
05.	Mechi Transport Association	Rs. 7,000.00	19.	Bheri Zone Service Association.	Rs. 6,000.00
06.	Sagarmatha Trasport Association	Rs. 5,000.00	20.	Rapti Zone Service Committee	Rs. 7,000.00
07.	Eastern Minibus	Rs. 3,000.00	21.	Far Western Bus Service Association	Rs. 6,000.00
08.	Arniko Transport Service Association.	Rs. 10,000.00	22.	Chitawan District Transport	Rs. 2,000.00
09.	Western Truck Service Association	Rs. 2,000.00	23.	Morang Motor Syndicate	Rs. 1,500.00
10.	Koshi Truck Service Committee	Rs. 2,000.00	24.	Sidwartha Transport Association.	Rs. 4,000.00
11.	Pokhara Local Minibus	Rs. 2,000.00	25.	Sunsary Motor Syndicate.	Rs. 1,000.00
12.	Narayani Transport Service Association	Rs. 13,000.00	26.	Taxi Service Committee Pokhara	Rs. 1,500.00
13.	Janakpur Zone Transport Service Association	Rs. 7,000.00	27.	Lalitpur Transport Association	Rs. 1,500.00
14.	Morang Truck Association	Rs. 2,000.00	28.	Bagmati Zone Taxi Service Association	Rs. 1,000.00
			29.	Tempo Service	Rs. 1,000.00
			30.	Eastern Transportation service	Rs. 2,000.00
			31.	Kathmandu Service	Rs. 1,000.00
			32.	Lalitpur Mini Bus Service	Rs. 1,000.00
			33.	Baudha - Gausala Mini Bus	Rs. 1,000.00
			34.	Kathmandu - Trishuli Bus Service	Rs. 1,000.00
			35.	Airport - Gausala Bus Service.	Rs. 1,000.00

T O T A L

Rs.167,500.00

BUDGET COMMITTEE

01. Mr. Sarad Upreti
Coordinator
Budget Committee
(NTEA)
02. Mr. Jagadish Aryal
Member
Budget Committee
(NTEA)
03. Mr. Udaya Raj Bhandar
Member
Budget Committee
(NTEA)
04. Mr. Purusotam Niraula
(Assistant).

3.3-1 Kathmandu Valley Present Water Sources



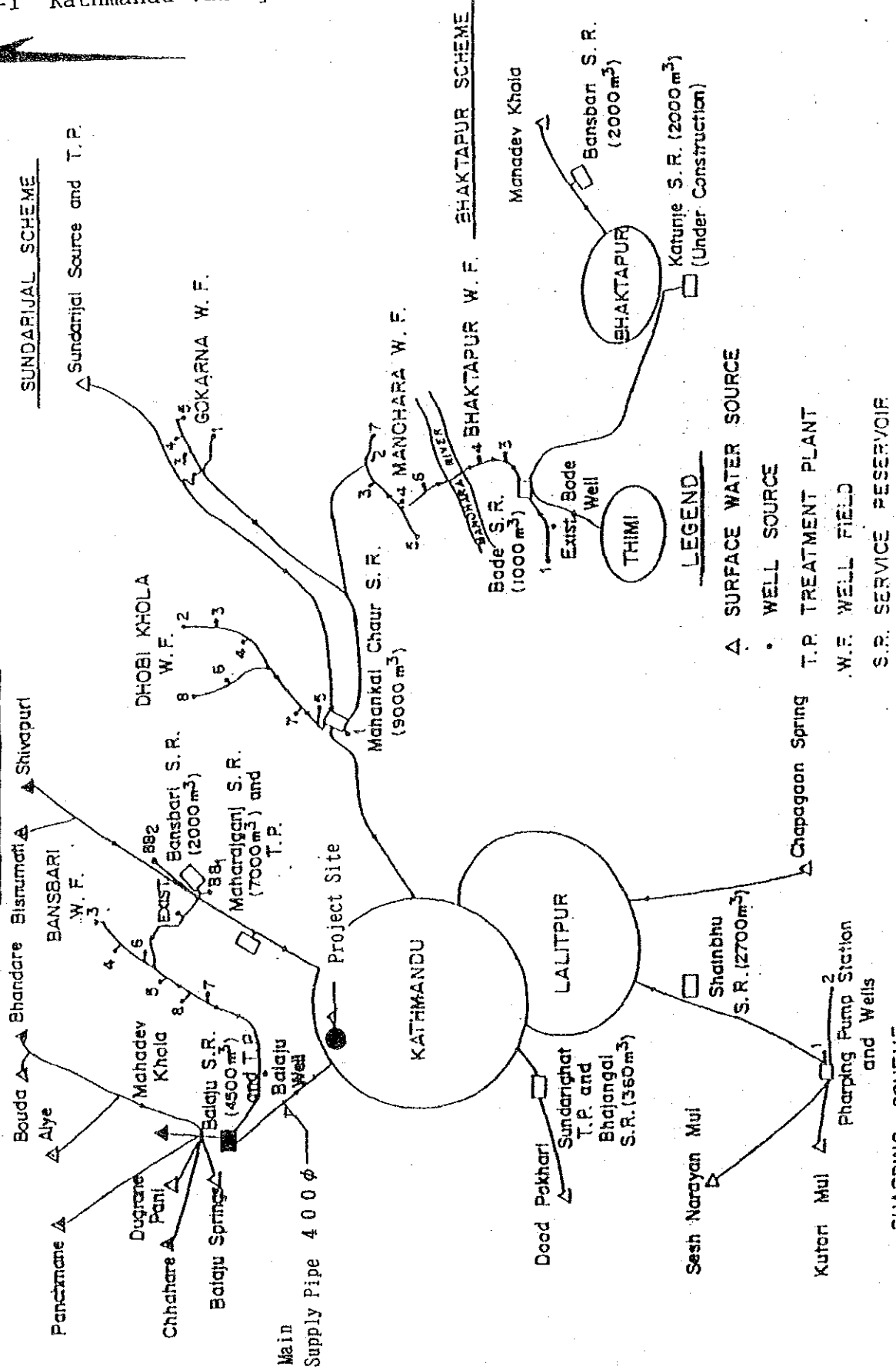
KATHMANDU VALLEY
PRESENT WATER SOURCES

TRI BHIM DHARA SCHEME

BIR DHARA SCHEME

SUNDARIJAL SCHEME

SHAKTAPUR SCHEME





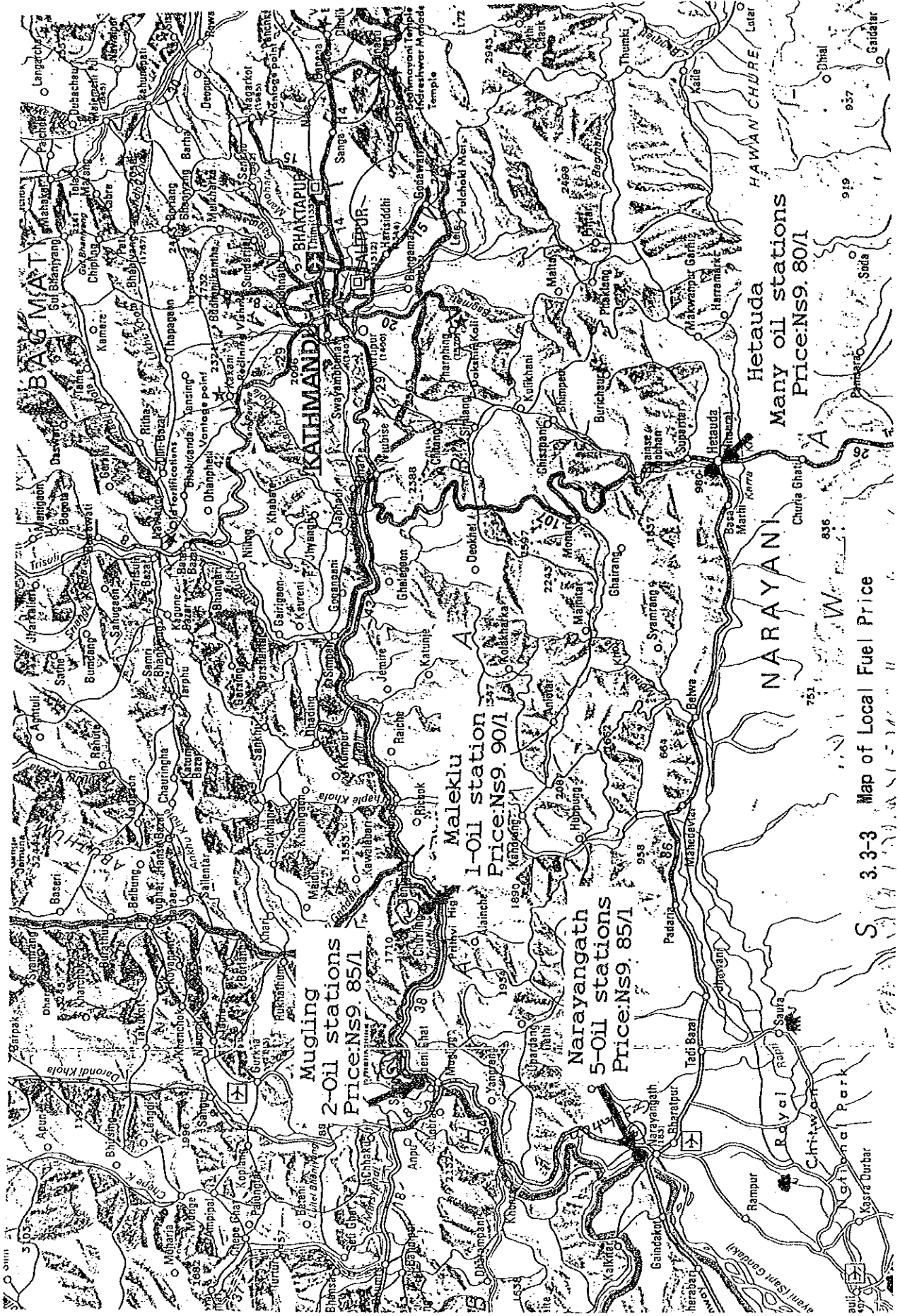
Project Site

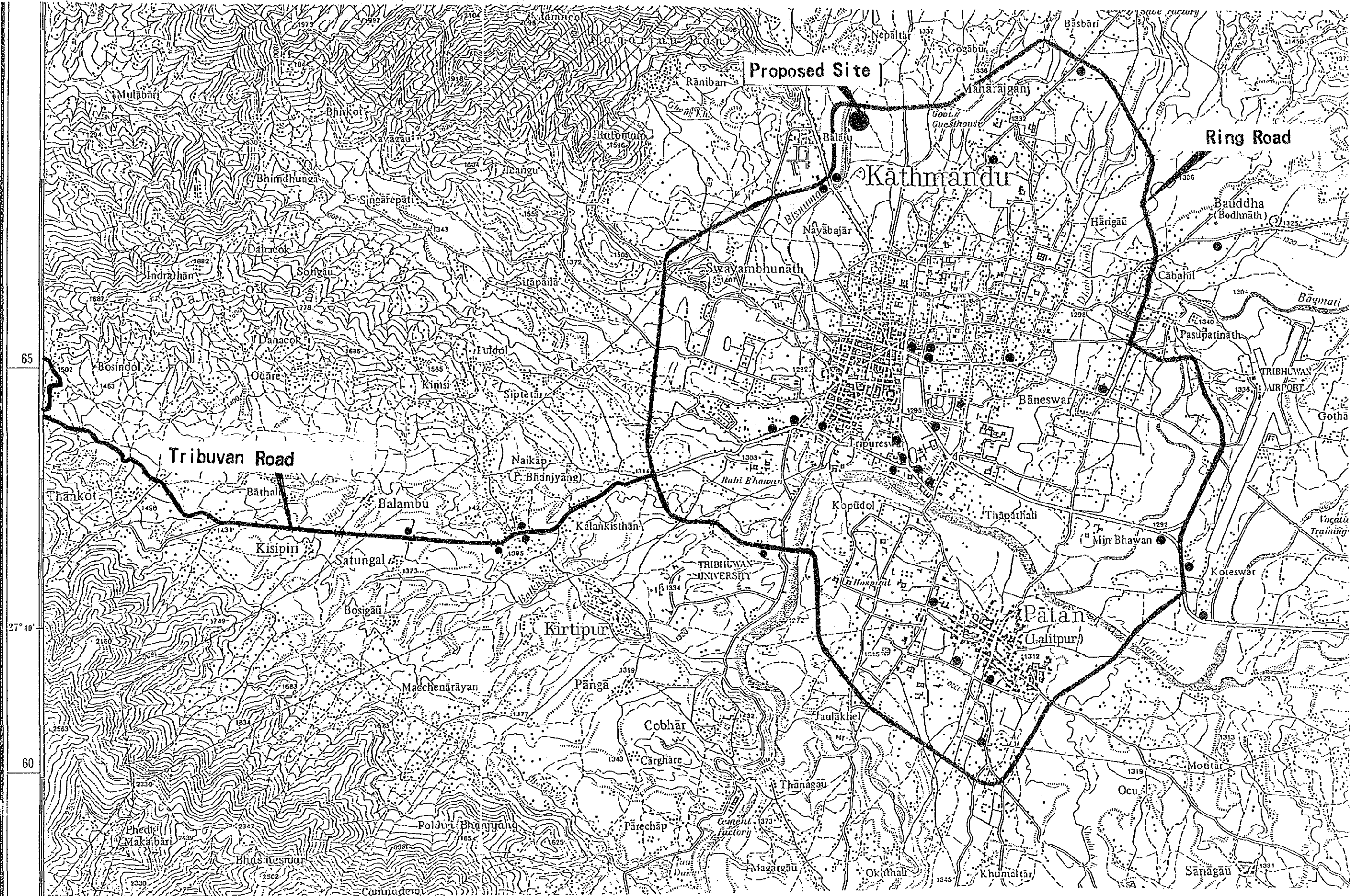
Balaju Industrial Estate

Kathmandu

Small Repair Shops

3.3-2 Repair Shop Location Map





3.3-4 Fuel Stand Location Map

A-23

● --- Fuel Stand

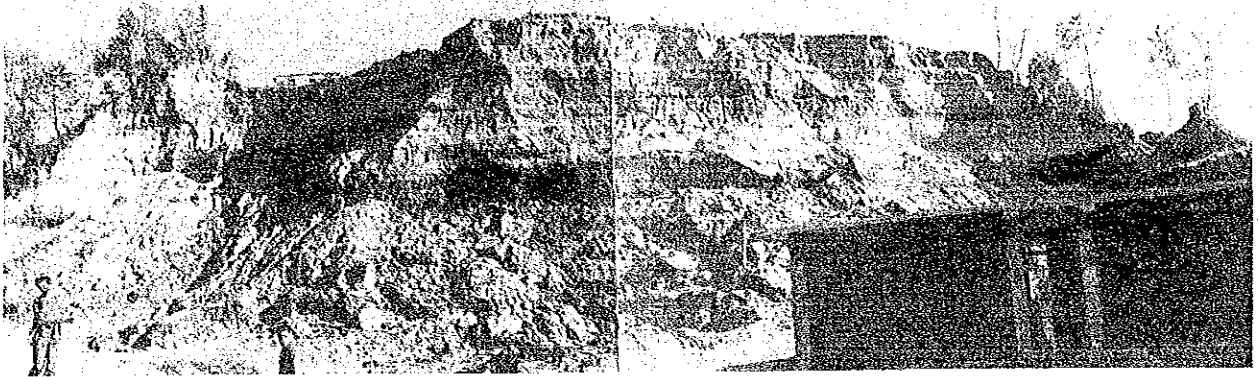
C. Photographs



Project site



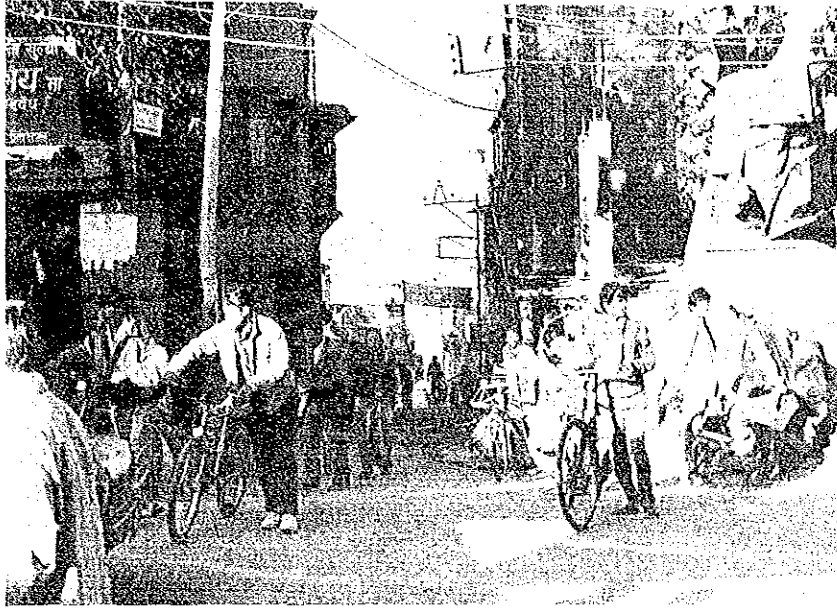
Project Site Boundary Pillar



Borrow Pit No.3



Bus Company (Simrik Travels Coach)



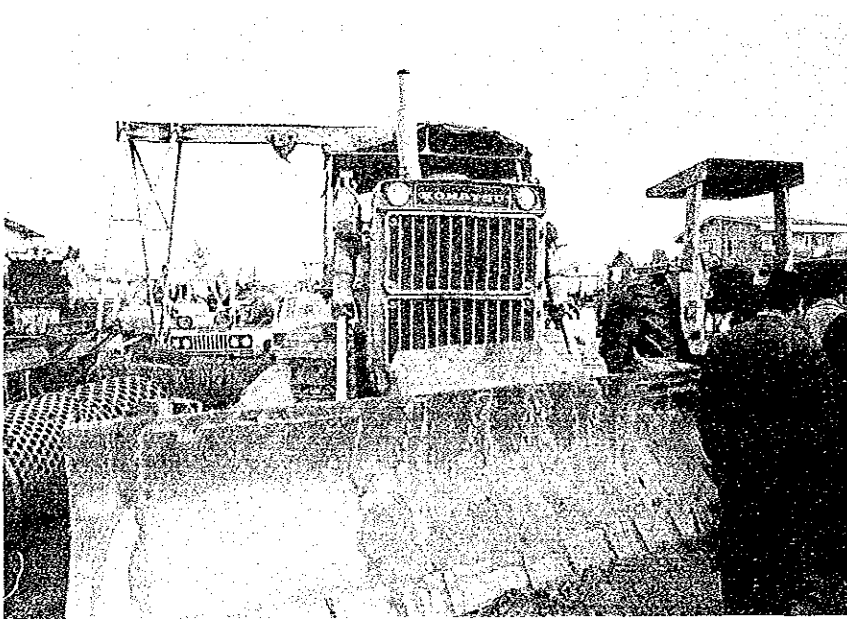
View of Samakushi Road at branching point
from Nayabazar Road



Road between British Embassy and Indian Embassy (3M width)



Fuel Stand at Intersection of Ring Road and Nayabazar Road



Construction Equipment of Department of Road

JICA