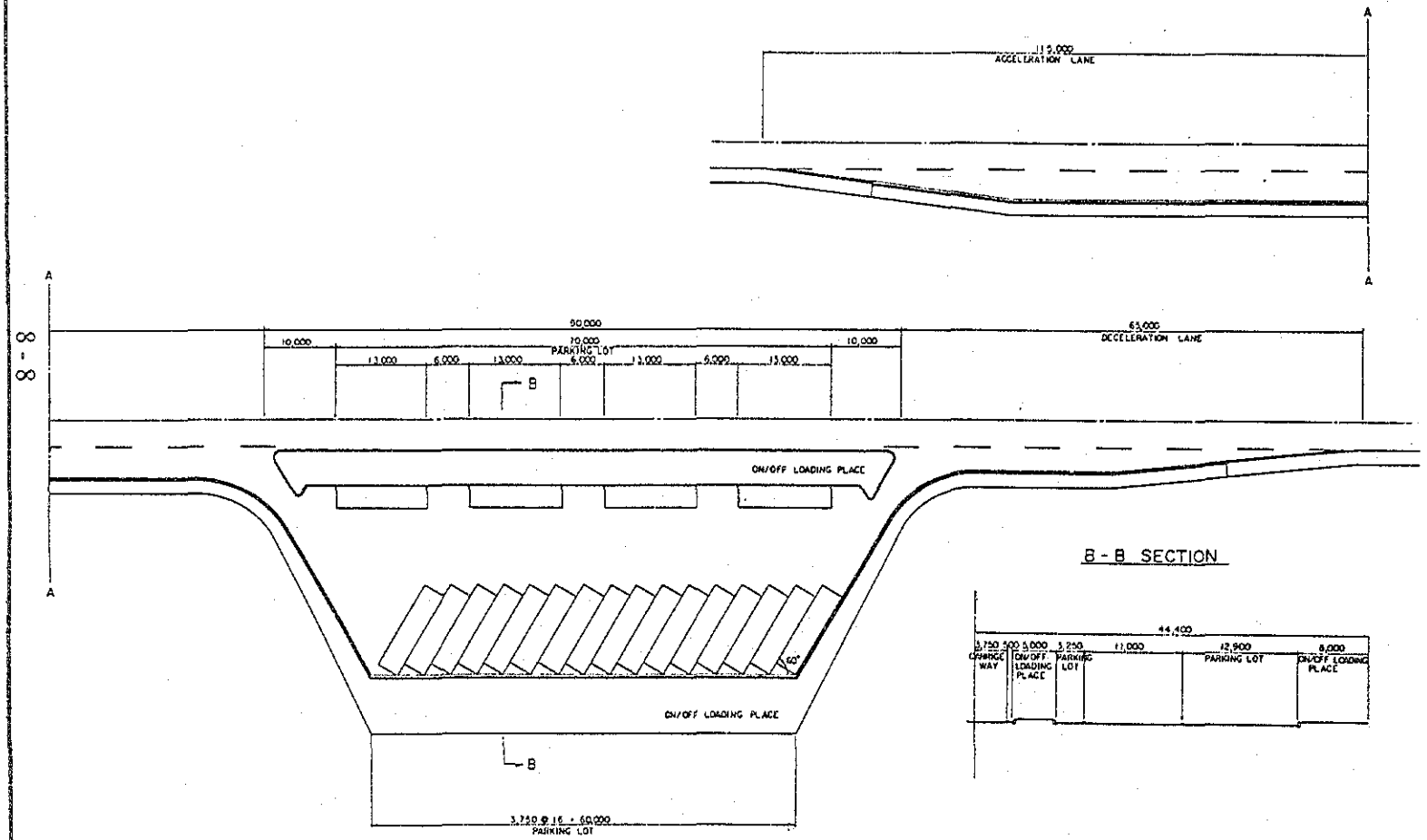
## LAYOUT PLAN of TRUCK YARD




## B - B SECTION




## LEGEND

HIS MAJESTY'S GOVERNMENT OF NEPAL
(H.M.G)

KATHMANDU VALLEY
URBAN ROAD DEVELOPMENT

LAYOUT PLAN OF TRUCK YARD

FIG. 8.4

JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA)

## TABLE 8.3 IDENTIFICATION OF INTERSECTIONS TO BE IMPROVED

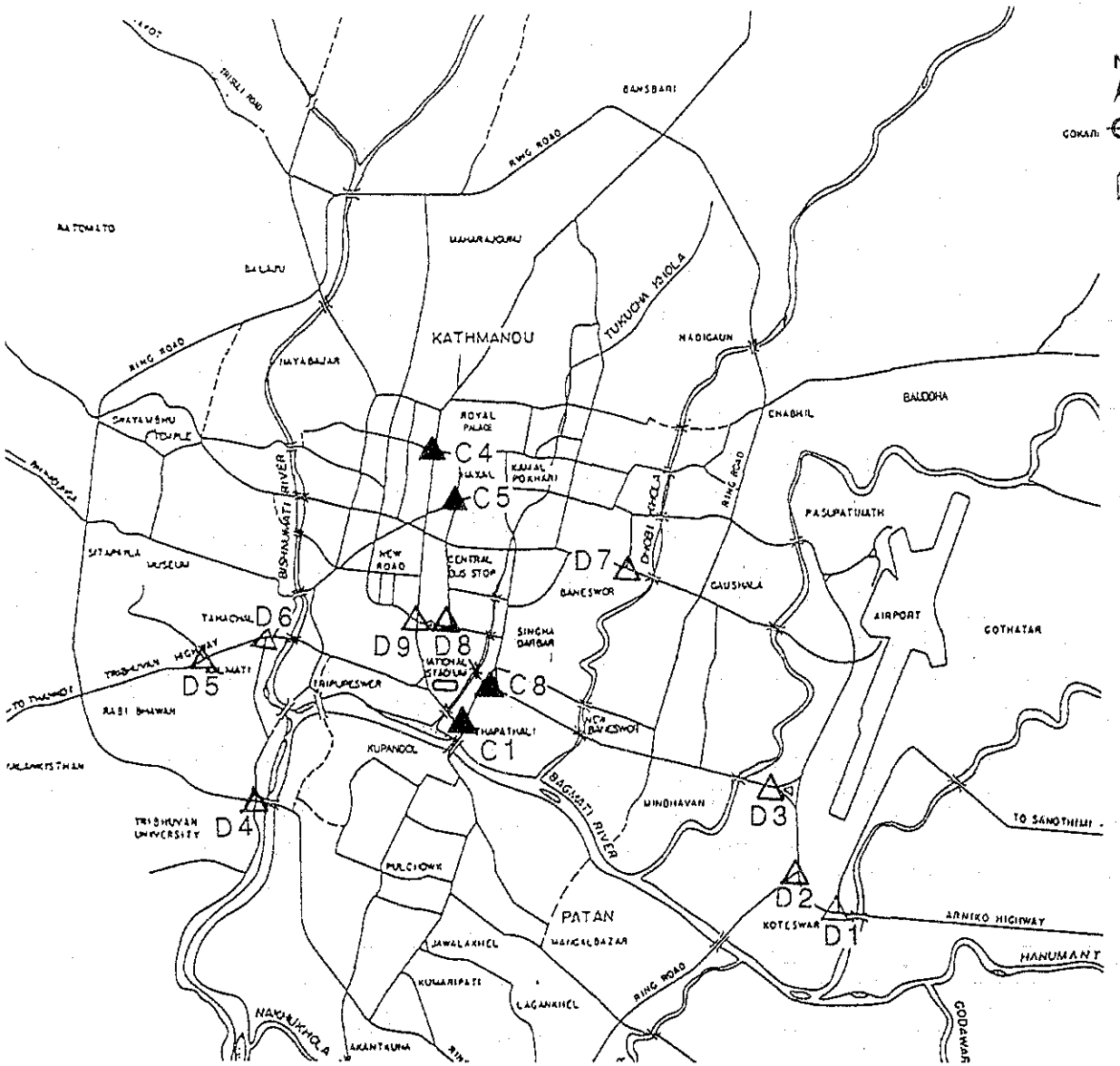
| Name of Intersection | Present Issues | Measures for Improvement | Remarks |
|---|---|---|---|
| THAPATHALI (C1) | INTERSECTION WITH EXCEEDING CAPACITY<br>CAUSES<br>(1) Tight radius for left turning vehicles.<br>(2) Improper channelisation of pedestrians.<br>(3) No segregation of pedal cycles and slow-moving vehicles.<br>(4) Improper phasing of existing traffic signals.<br>(5) Bus stop near the intersection.<br>(6) Improper road markings around the junction. | (1) Radius should not be less than 15 m.<br>(2) Efforts must be made to divert cyclist and slow moving vehicles to where they can share facilities with pedestrians.<br>(3) Two decades old traffic signals must be removed and phasing of signals have to be redesigned according to traffic volume. | Over-saturation |
| KESHARMAHAL (C4) | CAUSES<br>(1) Inadequate turning radius for three left turning movements.<br>(2) Improper channelisation of pedestrians.<br>(3) Improper phasing of existing traffic signals.<br>(4) No enforcement of offside priority in rotary.<br>(5) No pedestrian refuge. | (1) 7.5 - 15.00 m compound curves and minimum 9 m radius of simple curves are recommended.<br>(2) Pedestrian crossing should be provided.<br>(3) Signals should be shifted as per intersection improvement and phasing of signals must be adjusted.<br>(4) Flag poles shown in the drawing must be adjusted or removed. | Over-saturation<br>Morning Peak : 1.02<br>Evening Peak : 1.20 |
| TINDHARA (C5) | CAUSES<br>Similar as C4 | Similar as C4 except for traffic signals. | Over-saturation<br>Morning Peak : 1.02<br>Evening Peak : 1.20 |
| MAITIGHAR (C8) | CAUSES<br>(1) Inadequate turining radius for vehicles coming from Thapathali and going towards Babar Mahal.<br>(2) Inadequate visibility for drivers due to commercial activity inside the rotary.<br>(3) Walkways along the rotary and no proper channelisation of pedestrians.<br>(4) Poor road marking and road signs.<br>(5) Poorly designed barriers on physical island causes night time accident<br>(6) No lighting arrangement around the junction. | (1) Proposed radius is shown in the drawing.<br>(2) Buildings inside the rotary must be demolished and proper road signs must be introduced.<br>(3) Proper marking for channelisation of vehicles are recommended<br>(4) Proper lighting installation is strongly recommended. | Over-saturation<br>Morning Peak : 1.10<br>Evening Peak : 1.13 |

## TABLE 8.3 IDENTIFICATION OF INTERSECTIONS TO BE IMPROVED (Continued)

| Name of Intersection | Present Issues | Measures for Improvement | Remarks |
|---|---|---|---|
| ARNIKO HIGHWAY - SANO - THIMI (D1) | ACCIDENT PRONE INTERSECTION<br>CAUSES<br>(1) Inadequate turning radius<br>(2) Improper channelisation of pedestrians and vehicles<br>(3) No walkway on major road.<br>(4) No enforcement for priority.<br>(5) Poor road sign and markings | (1) 15 m radius is recomended for turning vehicles.<br>(2) Major/Minor priority must be enforced<br>(3) Introduction of road signs and markings. | |
| KOTESHWOR - RING ROAD (D2) | CAUSES<br>(1) Uncontrolled parking, illegal access and spread of unauthorised commercial acitivity<br>(2) Excessive speed on intersection approaches<br>(3) Minor road traffic failing to stop or yield.<br>(4) Others same as D1 | (1) Strong building regulations should include building line.<br>(2) Others same as D1. | |
| KOTESHWOR (TINKUNE) (D3) | CAUSES<br>(1) Three-legged intersection without proper channelization<br>(2) Collision among through, crossing and merging traffic.<br>(3) Unpaved shoulder<br>(4) Poor road marking and traffic sign<br>(5) No lighting installation<br>(6) No formal crossings for pedestrians | (1) Channelisations are shown in the Drawing.<br>(2) Collisions are reduced by converting to roundabout | |
| RING ROAD (BALKHU) (D4) | CAUSES<br>(1) Poor road geometry<br>(2) No road marking and traffic sign<br>(3) No facility for pedestrians | (1) Radius should not be less than 15 m.<br>(2) Buildings at minor road side must be demolished to provide sufficient visibility of the intersection. | |

## TABLE 8.3 IDENTIFICATION OF INTERSECTIONS TO BE IMPROVED (Continued)

| Name of Intersection | Present Issues | Measures for Improvement | Remarks |
|---|---|---|---|
| SOALTEE INTERSECTION (D5) | CAUSES<br>(1) Inadequate turning radius<br>(2) Excessive speed on intersection<br>(3) No facility for pedestrian crossing<br>(4) Poor road markings and traffic sign<br>(5) Minor road traffic failing to stop or yield. | (1) 7.5 m and 15 m compound curve is recommended for turning vehicles.<br>(2) Reflective paints and warning sign must be used to highlight the presence of intersection<br>(3) Guardrails and traffic signals are recommended | |
| KALIMATI (D6) | CAUSES<br>(1) Encroachment of market stalls in intersection<br>(2) Poor road geometry<br>(3) Pedestrian/vehicle conflict | (1) Unauthorised development must be stopped immediately<br>(2) Proper channelisation of vehicles should be provided and pedestrian crossing must be clearly marked.<br>(3) Pedestrian/vehicle conflict must be reduced by providing traffic signals | |
| MAITIDEVI (D7) | CAUSES<br>(1) Similar as D6 | (1) Same as D4 except for traffic signals.<br>(2) Guardrails are recommended. | |
| BHADRAKALI (D8) | CAUSES<br>(1) Narrow merging lane<br>(2) Poor turning radius<br>(3) Poor road markings and traffic sign<br>(4) Bus stop near intersection | (1) Minimum 15 m radius is recommended<br>(2) Existing bus stop near the intersection should be removed.<br>(3) Proper lighting arrangement around the intersection is recommended. | |
| NAGASTHAN (D9) | CAUSES<br>(1) Heavy cross traffic<br>(2) Pedestrians exposed to high risk<br>(3) Congestion | (1) Compound curve 7.5 - 15 m. radius is recommended | |




## LEGEND

▲ : Intersection with Exceeding Capacity

△ : Accident Prone Intersection

0 250 500 1000 2000km

SCALE=1 : 25, 000

HIS MAJESTY'S GOVERNMENT OF NEPAL (H.M.G)

KATHMANDU VALLEY URBAN ROAD DEVELOPMENT LOCATION OF INTERSECTION TO BE IMPROVED

FIG. 8.5

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

TABLE 8.4 ESTIMATION OF COST FOR INTERSECTION IMPROVEMENT

Unit: 1,000 NRs

| No. | Name of Intersection | Type of Improvement | Improvement Cost |
|---|---|---|---|
| C1 | Thapathali | Traffic Signal | -*) |
| C4 | Kesharmahal | Traffic Signal | 6,900 |
| C5 | Tindhara | Rotary | 1,500 |
| C8 | Maitighar | Rotary | 3,600 |
| D1 | Arniko Highway - Sanothimi | Priority Intersection | 400 |
| D2 | Koteswor - Ring Road | Rotary | 700 |
| D3 | Koteswor (Tinkune) | Rotary | 18,600 |
| D4 | Ring Road (Balkhu) | Priority Intersection | 600 |
| D5 | Soaltee Intersection | Traffic Signal | 6,400 |
| D6 | Kalimati | Traffic Signal | 7,100 |
| D7 | Maitidevi | Priority Intersection | 600 |
| D8 | Bhadrakali | Rotary | 2,800 |
| D9 | Nagasthan | Traffic Signal | 7,600 |
| Total | | | 56,800 |

*): Cost for improvement at intersection C1 is included in the construction cost of the New Bagmati Bridge.

### 8.2.3 歩行者対策

(1) 計画の背景

歩行者が車道に侵入することにより、事故の原因になり交通状況の悪化を招く。歩行者対策については、現在、主要交差点で交通警察が交通規制を行っているだけで、特に目立つ対策はみられない。歩行者の車道の占有は激化しており、急速な対策が必要である。

歩行者の車道占有には次の要因がある。

- 歩行者の交通行動が不適切であること
- 主要道路の横断歩道の設置が明確でないこと
- 道路幅員が狭く歩道が明確でないこと
- 沿道の不法行為に対する規制の弱いこと
- 公共交通機関の乗降場の指定がないこと

(2) 計画内容

次の施設整備手法を提案し、適当な効果を期待する。

- 歩行者侵入防止柵の設置
- 歩行者用信号の設置

歩行者侵入防止柵の設置

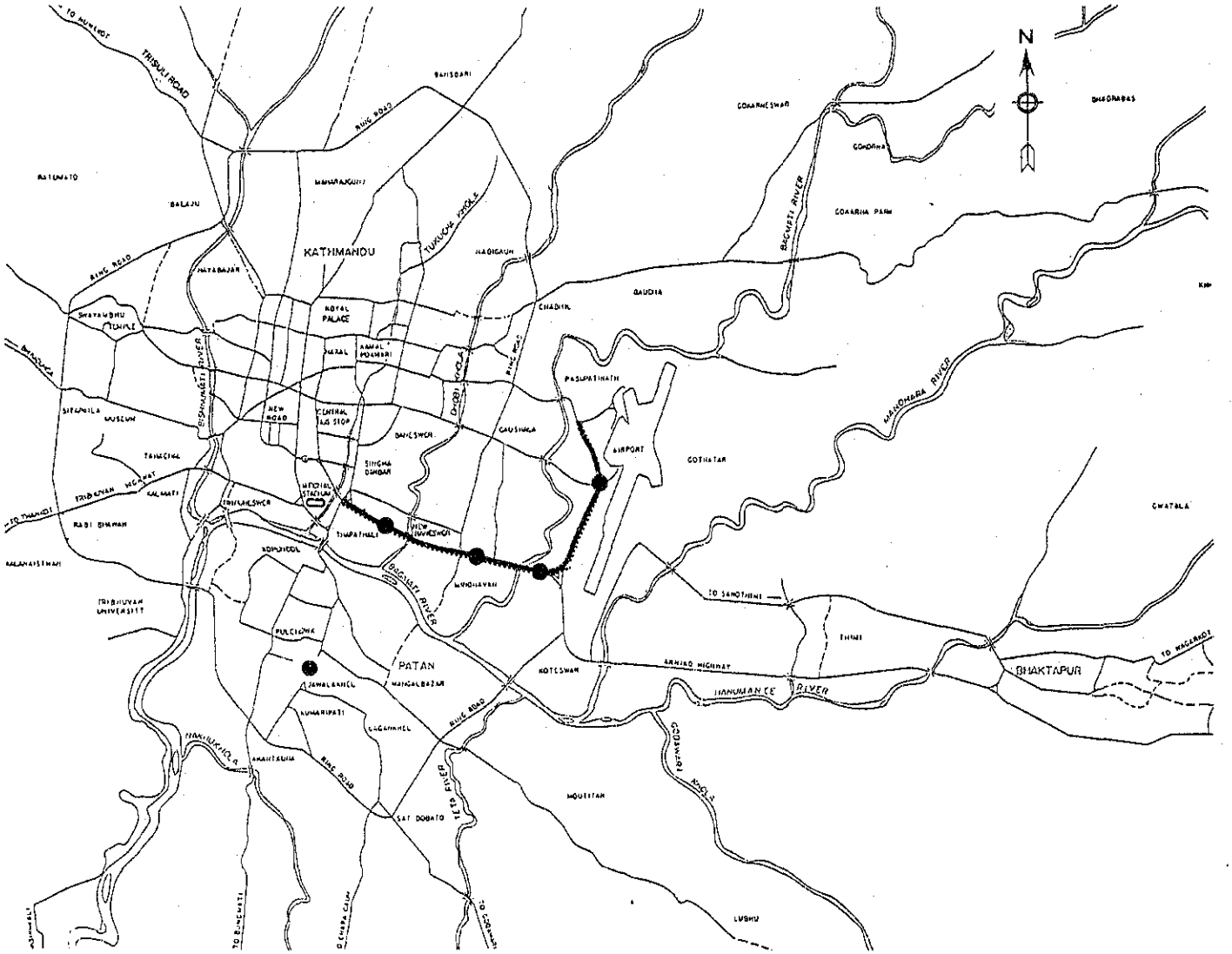
この計画の目的は交通量が多く歩道も多い道路区間の中央帯にフェンスを設置することである。この計画の実施可能な位置は図8.6に示すアーニコ・ハイウェイとリングロード上の区間である。この位置設定は充分に幅員があること、高速走行が可能なこと、横断する歩行者交通があること、歩行者事故が多いことなどの理由による。この計画は横断歩道位置と対向車線沿いの建物へのUターンレーンについても触れている。標準的なイメージを図8.7に示した。

歩行者用信号の設置

この計画の目的は交通量の多い道路区間に歩行者用信号を設置することで、横断環境を改善することである。計画位置は事故が多い地区、歩行者侵入防止柵が設置されていない区間を考えて図8.7のとおり選定した。

(3) 事業費の積算

歩行者の道路横断を制限することで対人交通事故は減少するとともに、自動車の運転条件も改善する。この計画実施に必要な事業費は約32百万ネパールルピー（約95百万円）である。




## LEGEND

- Pedestrian Intrusion Control Fence
- Pelican Signal

HIS MAJESTY'S GOVERNMENT OF NEPAL
(H.M.G)

KATHMANDU VALLEY
URBAN ROAD DEVELOPMENT
LOCATION OF PEDESTRIAN CONTROL DEVICE

Fig. 8.6

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

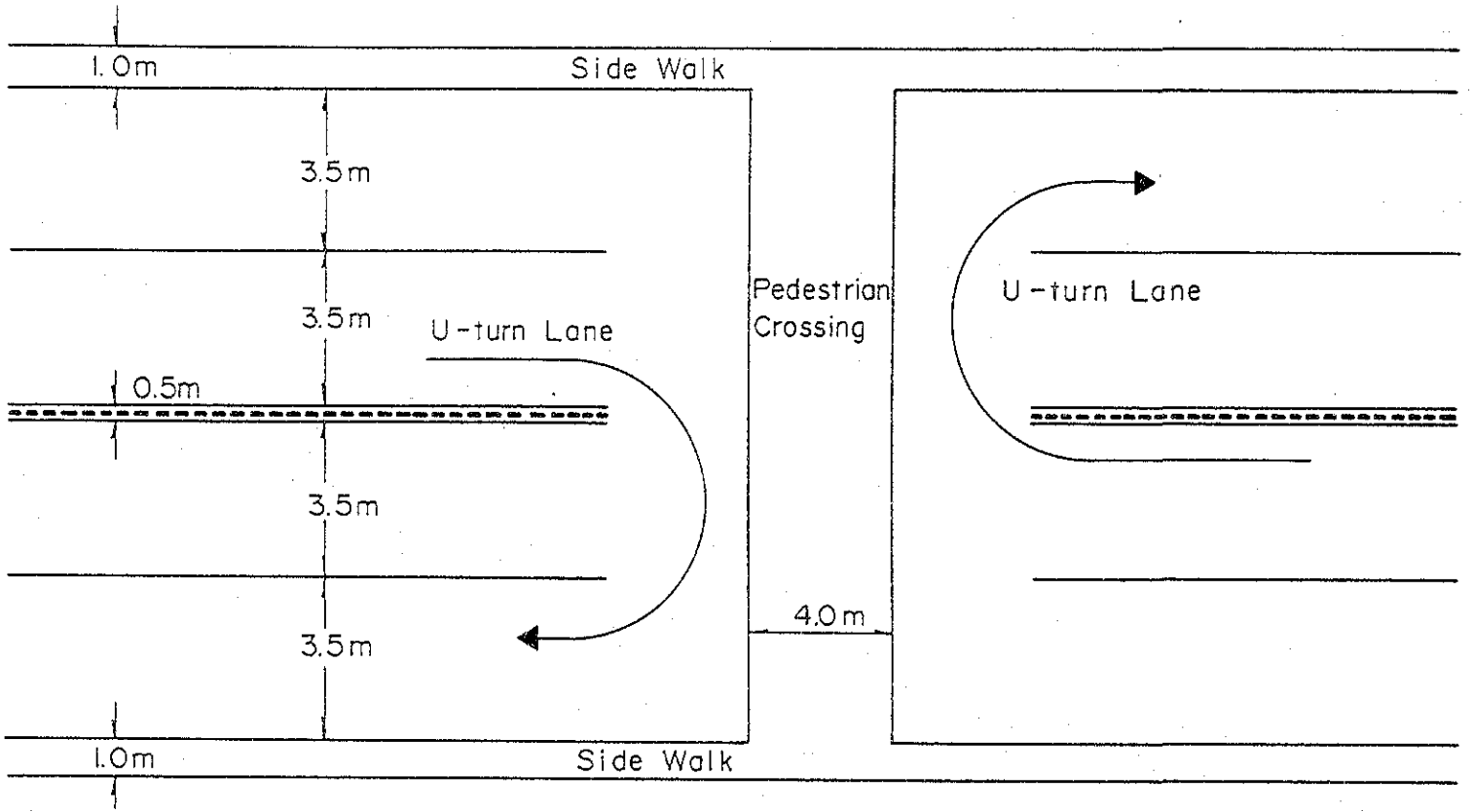



FIG. 8.7 PLAN OF PEDESTRIAN INTRUSION CONTROL FENCE

### 8.2.4 交通技術教育機関

(1) 計画の背景

交通管理、規制のための研究訓練を含む交通運輸問題に対処するために、ネパール政府の公共事業運輸省の下に独立組織「交通技術教育機関」を設立することを提案する。

(2) 計画内容

提案する教育機関の業務範囲は以下のとおりである。

- 交通運輸問題の調査研究を実施すること
- 交通関連業務職員に対する教育を実施すること
- 次のデータベースをコンピューターを利用して作成すること
  - 主要道路の速度と交通量
  - 交通事故
  - 交通法違反行為
  - 車両の使用年数別、性能別の数量
  - 交通管制
- 次の交通調査を定期的に実施すること
  - 旅行速度
  - 交通量
  - 軸荷重
  - 車線別交通量分布
  - 沿道環境（大気汚染、騒音）
- マスメディア（新聞、広告、ラジオ、テレビ、セミナー、ワークショップ等）により、学生、生徒、一般市民への交通技術教育を実施すること
- 一方通行、速度制度、駐車禁止、信号等による技術手法を採用すること
- 交通事故を科学的に調査研究すること
- DOR 、交通管理局、サジャ・ヤタヤットバス公社、ネパール国営運輸そして交通警察の連携を指導、調整する。

(3) 組織

この教育機関は次のセクションから成る。

- 業務経理部
- コンピューター・センター
- 訓練部
- 調査研究部

- 調整部
- 文書保管部（図書館を含む）
- 教育広報部

(4) 事業費の積算

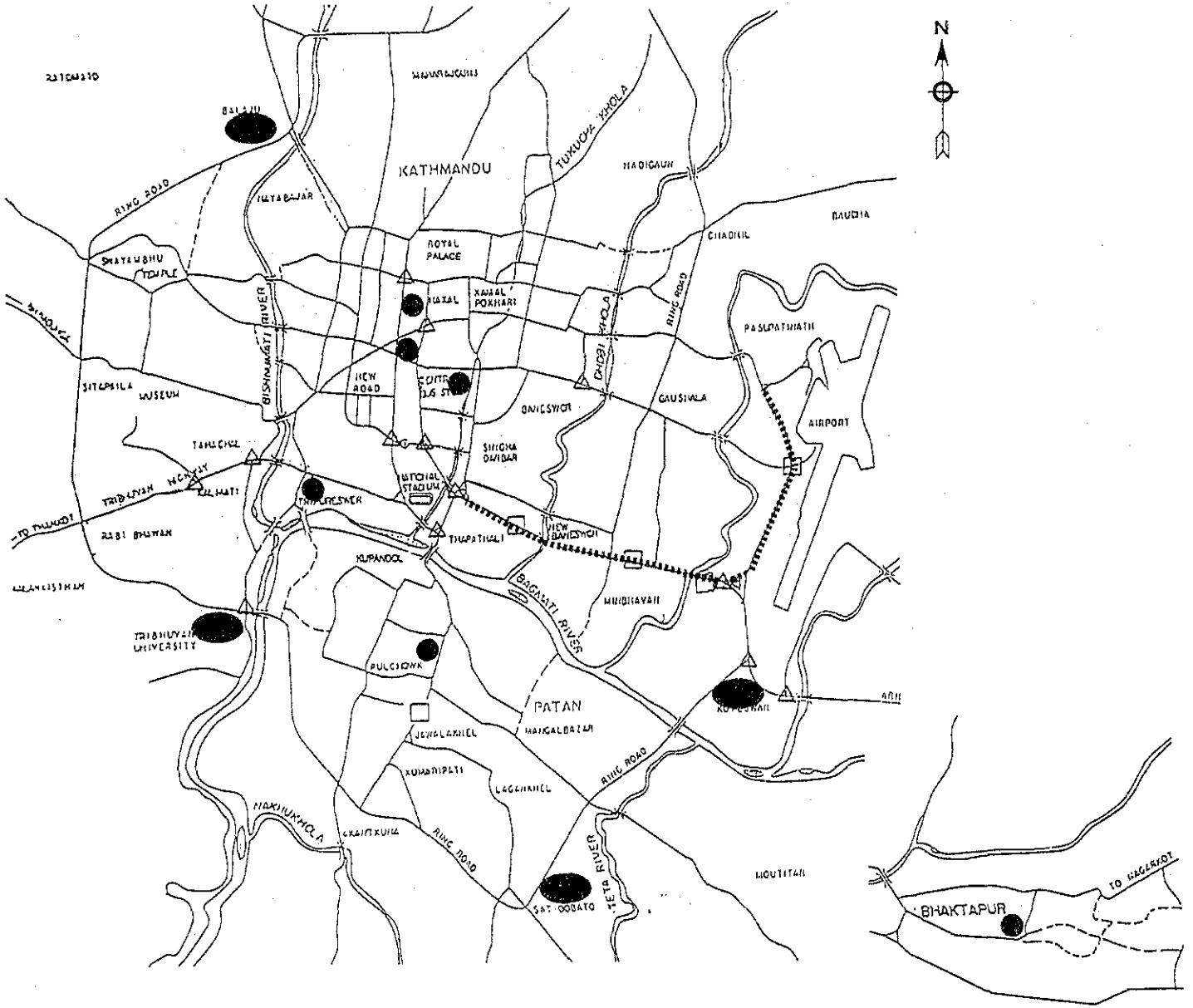
交通技術教育機関は交通問題の基礎研究や知識の普及に寄与し、利用者の交通行動改善に効果がある。この計画の実施に必要な事業費は約11.5百万ネパールルピー（約32百万円）と推定される。

## 8.3 交通管理基本計画

前記提案の計画を交通管理基本計画として、とりまとめたのが図8.8である。

Estimated Cost for Traffic Management Plan

| | |
|---|---|
| 1. Reduction of Roadside Parking | |
| (1) Public Parking Lot | NRs. 114 million (¥336 million) |
| (2) Truck Yard | NRs. 38 million (¥104 million) |
| Subtotal | NRs. 152 million (¥440 million) |
| 2. Improvement of Intersection | NRs. 57 million (¥168 million) |
| Subtotal | NRs. 57 million (¥168 million) |
| 3. Pedestrian Management | |
| (1) Pedestrian Intrusion Control Fence | NRs. 23 million (¥67 million) |
| (2) Pelican Signal | NRs. 9 million (¥28 million) |
| Subtotal | NRs. 32 million (¥95 million) |
| 4. Traffic Engineering Institute | NRs. 12 million (¥32 million) |
| Subtotal | NRs. 12 million (¥32 million) |
| Grand Total | NRs. 253 million (¥735 million) |




## LEGEND

- Public Parking Lot
- Truck Yard
- Intersection to be Improved
- Pelican Signal
- Pedestrian Intrusion Control Fence

HIS MAJESTY'S GOVERNMENT OF NEPAL (H.M.G)

KATHMANDU VALLEY URBAN ROAD DEVELOPMENT

TRAFFIC MANAGEMENT PLAN

FIG. 8.8

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

# 第 9 章

# 整備計画と実施スケジュール

# 第９章　整備計画と実施スケジュール

## 9.1　短期整備計画

長期の整備基本計画は、道路整備計画、公共交通計画、交通管理計画の３つの項目から構成され、その結果については第６章から第８章で記載した。

この結果をもとにして、短期の整備計画を策定した。短期整備計画の基本姿勢としては、第５章でも触れたが、最小限の交通インフラの整備と現在の施設から最大限のサービスを得るような交通管理方法の導入にある。さらに短期計画では公共交通サービスの許容レベルまでの改善と道路の安全性の確保も必要である。こうした状況のもと、短期整備計画の目標としては次の２つに主眼をおいた。

- 都市部道路でのボトルネック対策
- トランスポーテーション・プア対策

### 9.1.1 短期道路整備計画

短期の道路整備計画は1997年までの計画であり、第６章で策定した基本計画にもとづき検討した。短期計画実施後の道路ネットワークを図9.1に示し、その考え方を以下に記載した。

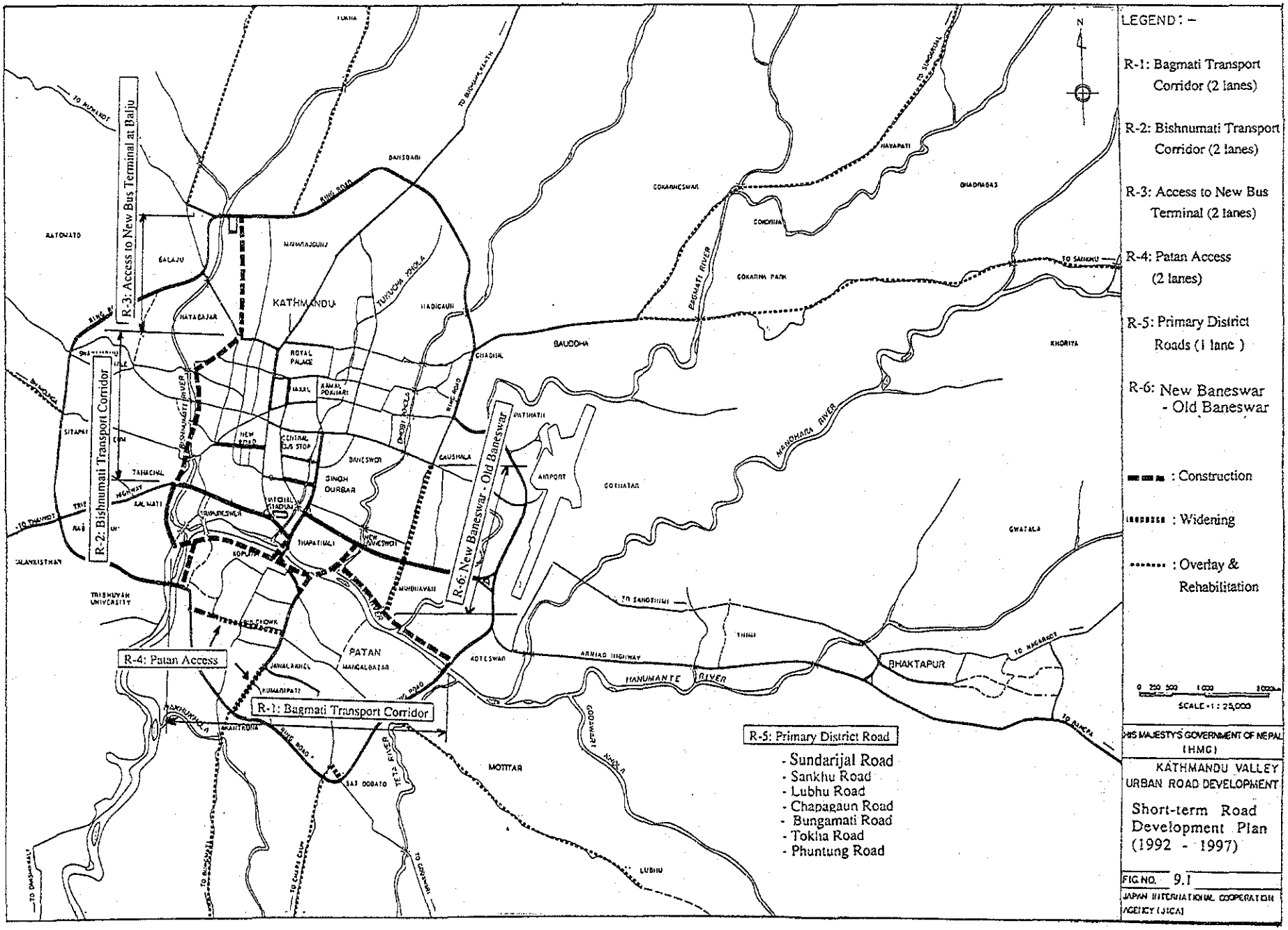
(1)　バグマティ・コリダーの整備

第５章で述べたように、カトマンズ市とラリトプール市との連携は、リングロード外での都市圏の拡大とラリトプール市の急速な都市化に伴い進みつつある。バグマティ川をタパタリ～クパンドール間で通過する交通量は、1991年12月の交通調査結果によると約５万台／日と現在の２車の容量を超えており、バグマティ川の渡河能力はカトマンズ～ラリトプール間の交通需要に対して非常に少ない。

その上、このバグマティ橋は1991年８月から1992年３月まで基礎の崩壊により通行不能になり、さらにカトマンズ～ラリトプール間の交通流は妨げられることとなっていた。そこで、バグマティ川を横断する交通容量の増大は異なるルート上の橋梁の新設と含めカトマンズ～ラリトプールの交通需要に対応するための本質的な課題であると考えられる。

こうした状況の下、カトマンズ市とラリトプール市を結ぶ容量の増大の必要が認識されており、次の目的でバグマティ・コリダーの整備を提案する。

- カトマンズ～ラリトプール間の南北方向の将来交通、ラリトプール南部への都市拡大に対応する。


R-3: Access to New Bus Terminal at Balju
R-2: Bishnumati Transport Corridor
R-6: New Baneswar - Old Baneswar
R-4: Patan Access
R-1: Bagmati Transport Corridor
KATHMANDU
PATAN
BHAKTAPUR
R-5: Primary District Road
- Sundarijal Road
- Sankhu Road
- Lubhu Road
- Chapagaun Road
- Bungamati Road
- Tokha Road
- Phuntung Road
LEGEND : –
R-1: Bagmati Transport Corridor (2 lanes)
R-2: Bishnumati Transport Corridor (2 lanes)
R-3: Access to New Bus Terminal (2 lanes)
R-4: Patan Access (2 lanes)
R-5: Primary District Roads (1 lane )
R-6: New Baneswar - Old Baneswar
: Construction
: Widening
: Overlay & Rehabilitation
SCALE : 1 : 25,000
HIS MAJESTY'S GOVERNMENT OF NEPAL (HMG)
KATHMANDU VALLEY URBAN ROAD DEVELOPMENT
Short-term Road Development Plan (1992 - 1997)
FIG NO. 9.1
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

- タパタリ～クパンドール間のバグマティ橋の交通を別のルートに転換させることにより減少させる。
- バグマティ南北の低密地域の整備を促進する。

バグマティ・コリダーは図9.2に示すように次の整備内容から成る。

- アーニコ・ハイウェイのドビ・コーラ付近とクレスウォール～カリマティ道路とを結ぶ内環状道路南リンク（以下、南環状道路）の建設
- 内環状道路ドビ・コーラ付近とリングロード南部との連絡道路（サネパ連絡線）の建設
- 内環状道路ドビ・コーラ付近とリングロード東部との連絡道路（コテスウォール連絡線）の建設
- タパタリ～クパンドール間の新バグマティ橋（2車）の建設
- 内環状道路とラリトプールとの連絡道路（パタン連絡線）の建設

南環状道路の線形はサンカモール寺院から約1km離れているので、GTZとネパール政府によって進められているラリトプールの歴史的建造物保存プロジェクトに抵触しない。

KVUDPPの調査では、ラリトプールの北部から北東部にかけての地区にアーニコ・ハイウェイからバグマティ川を越えてアクセスする第2のルートを供給するためにサンカモール橋の建設を提案している。本調査ではサンカモール橋の代わりにドビ・コーラ沿いに南環状道路の建設を提案する。

(2) ビシュヌマティ・コリダーの整備

KVUDPP 調査で提案されているビシュヌマティ・リンク道路は内環状道路の西部区間として位置づけられている。ビシュヌマティ・コリダーの整備はネパール政府住宅開発省の長期構想にもあり、KVUDPPの調査でも提案されている。

このコリダー整備の目的は次のとおりである。

- カトマンズ～ラリトプール間の南北交通流に対応する。
- カンチパットを通る交通を転換させることにより、また、西側地区からのアクセスを止めることによりカトマンズの歴史的中心地区を保存する。
- 堅固な堤防を建設することにより、河岸環境の改善を図る。

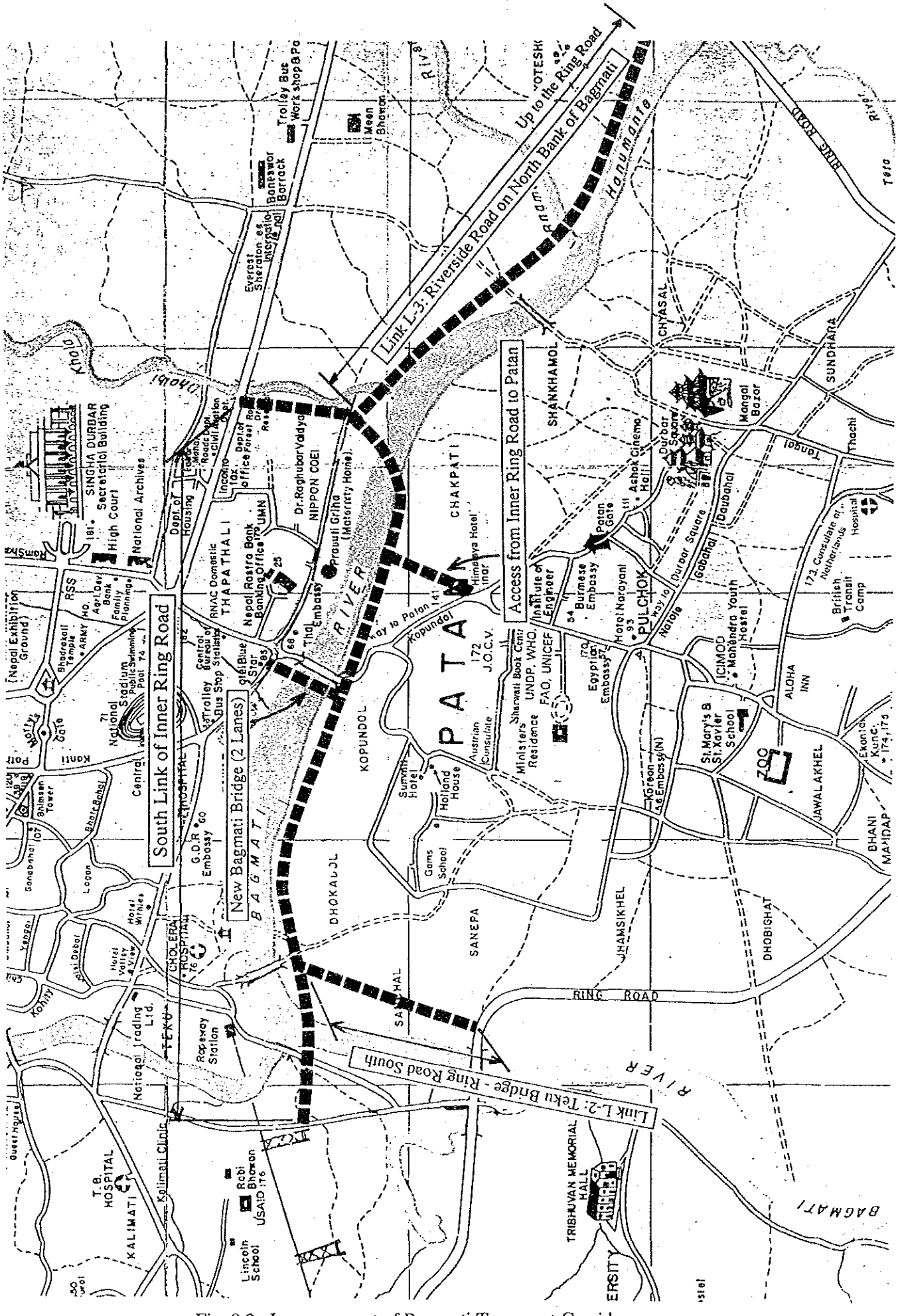



Fig. 9.2 Improvement of Bagmati Transport Corridor

本調査ではビシュヌマティ・リンク道路の短期的整備の実施を環境保護、交通需要の観点から認めている。KVUDPPで提案されているビシュヌマティ・リンク道路の線形は図9.3に示すとおりである。この道路はカリマティを始点とし、ビシュヌマティ川の西岸、カンケスウォリの歩行者用つり橋を通り、新しい橋により東岸に渡り北上してインドラヤニ寺院の東側を通り、GLD敷地の南側に沿って東へ向かいバラジュへの道路との交差点を終点とするルートである。

ビシュヌマティ・リンク道路の北端はバラジュの新バスターミナルへのアクセス道路と接続することとし、都心地区からの交通の分散を図り、効果的で円滑な交通流を実現するものである。

(3) バラジュ新バスターミナルアクセス整備

新バスターミナルは日本政府の資金援助により建設中であり、1993年3月完成予定である。完成後カトマンズ市の長距離バスはすべてラトナパークのバスターミナルから移動させる予定である。

都心方向のナヤバザールから新バスターミナルへの連絡道路としては1車線4.0mの現道が使われることになる。この道路は近い将来バスターミナルへの交通需要のため拡幅の必要性があるが、その沿道は建造物が多く拡幅の困難は大きい。

本調査では次の理由から現道の拡幅の代わりに図9.4に示す新連絡道路を提案する。

- 現道拡幅は沿道状況から困難なこと。
- KVUDPP提案のビシュヌマティ・リンク道路との連続性を確保する必要があること。
- カトマンズの北西部の都市化を誘導すること。

本調査ではレクナス・マルグの交通量を減らし、公共交通の円滑な走行を可能にするため、インド大使館から新アクセス道路への一方通行を提案する。

(4) ラリトプール市内の道路整備

ラリトプール市の都市部の拡大とそれに伴う自動車交通増に対処するため、道路ネットワークの強化が不可欠である。ラリトプール市内の道路は公共交通サービスの改善、交通流の適正化のため拡幅、延伸が図られるべきである。そのため次の道路整備短期計画を提案する。（図9.5参照）

- ジャムシケル～リングロード間の道路新設、拡幅
- ジャワラケル～リングロード間の道路拡幅
- サト・ドバド～リングロード間の道路拡幅

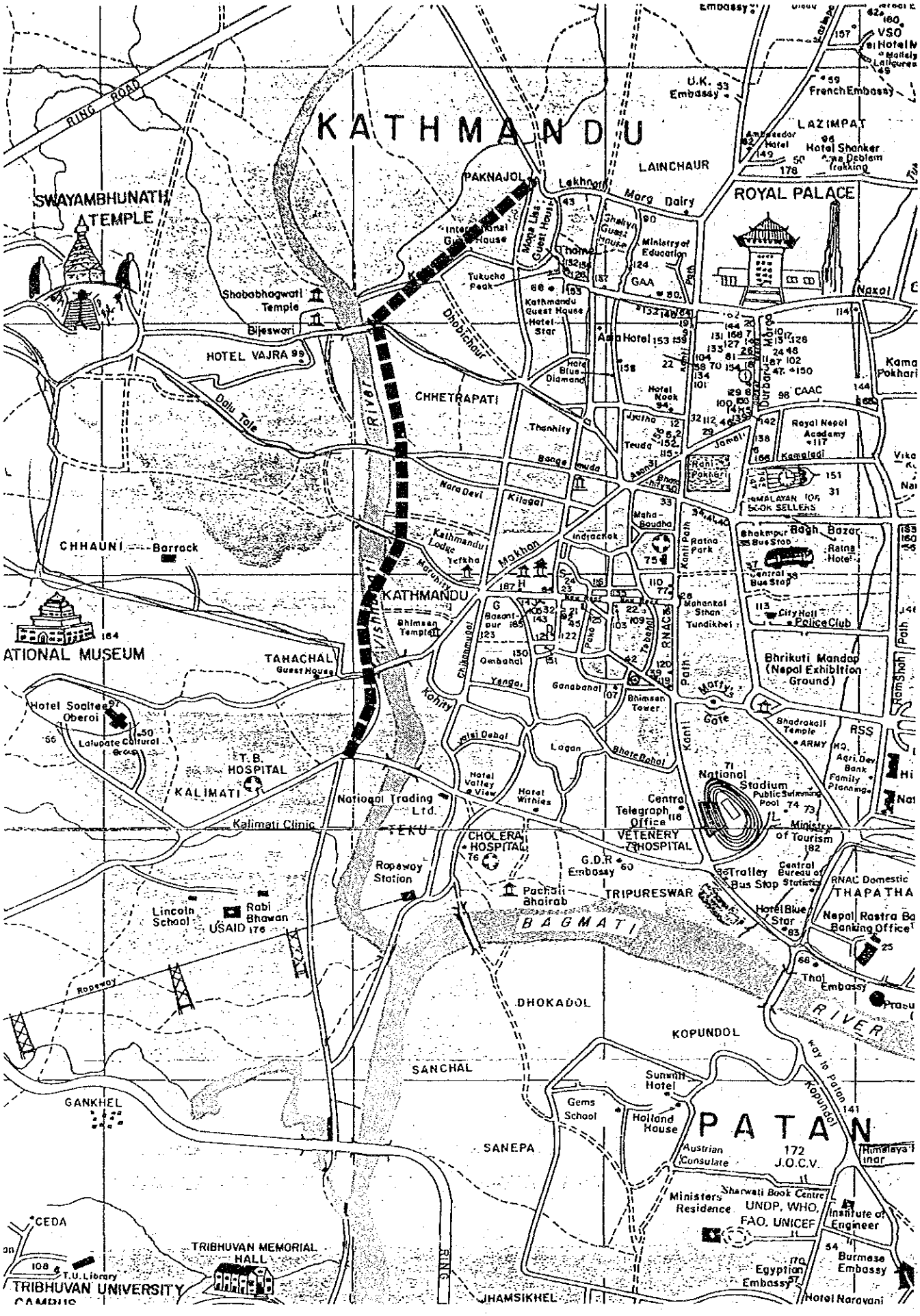



Fig. 9.3 Improvement of Bhishnumati Transport Corridor

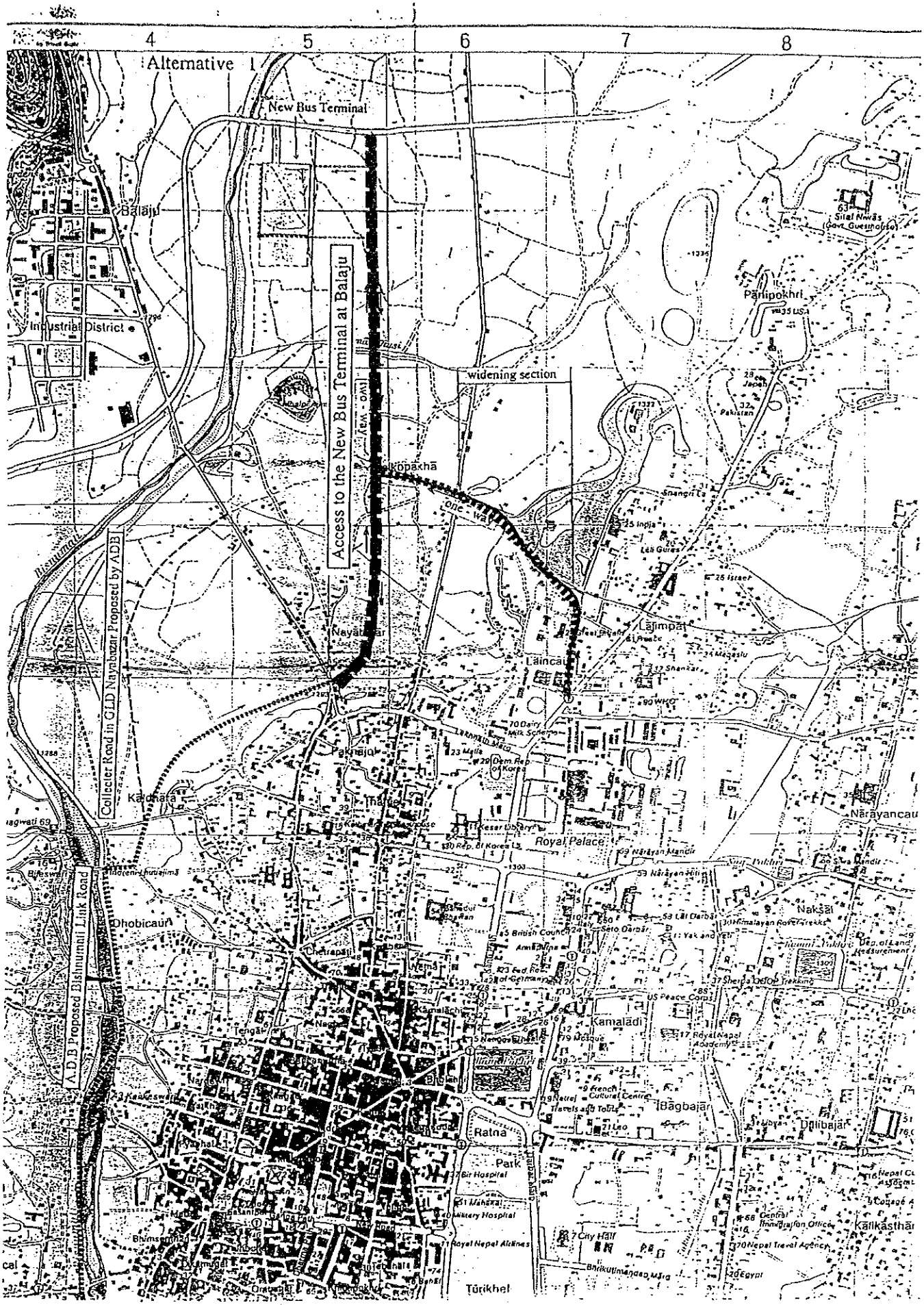



Fig. 9.4 Construction of Access to the New Bus Terminal at Balaju

(5) 放射状道路整備

リングロードから放射状に延びる道路は主要なバスルートとなっているが、ナショナル・ハイウェイを除き満足できる道路状況にはない。カトマンズバレー内の都市開発やバスサービス改善のためにこうした道路の整備を提案する。公共交通サービスが天候にかかわらず提供できるようにするために、次の施策を実施することが望ましい。

- 道路の2車拡幅
  - スンダリジャール道路
- オーバーレイ、復旧
  - サンク道路
  - ルブ道路
  - チャバガオン道路
  - ブンガマティ道路
- 舗装
  - ビムドゥンガ道路
  - トカ道路
  - プタング道路

### 9.1.2 短期公共交通整備計画

短期の交通交通整備計画については、公共交通問題の早期解決のため、次の計画を提案する。

- 新長距離バスターミナルへのシャトルバスサービスの導入
- 郊外部ディストリクト・ロードでの都市バスサービスの改善（バス運行の改善と新規バスサービス）
- 主要バスストップの施設整備
- 3輪公共交通機関の路線制限

### 9.1.3 短期交通管理計画

交通管理計画については、そのすべての提案を短期に実施し、都市交通の流れの適正化を図るべきである。これらの計画は交通混雑や交通事故の減少に寄与する。

短期計画での実施を提案する計画は次のとおりである。

- 公共駐車場の建設
- リングロード沿いのトラックヤードの建設
- 交差点改良
- 歩行者侵入防止柵の設置
- 歩行者用信号の設置

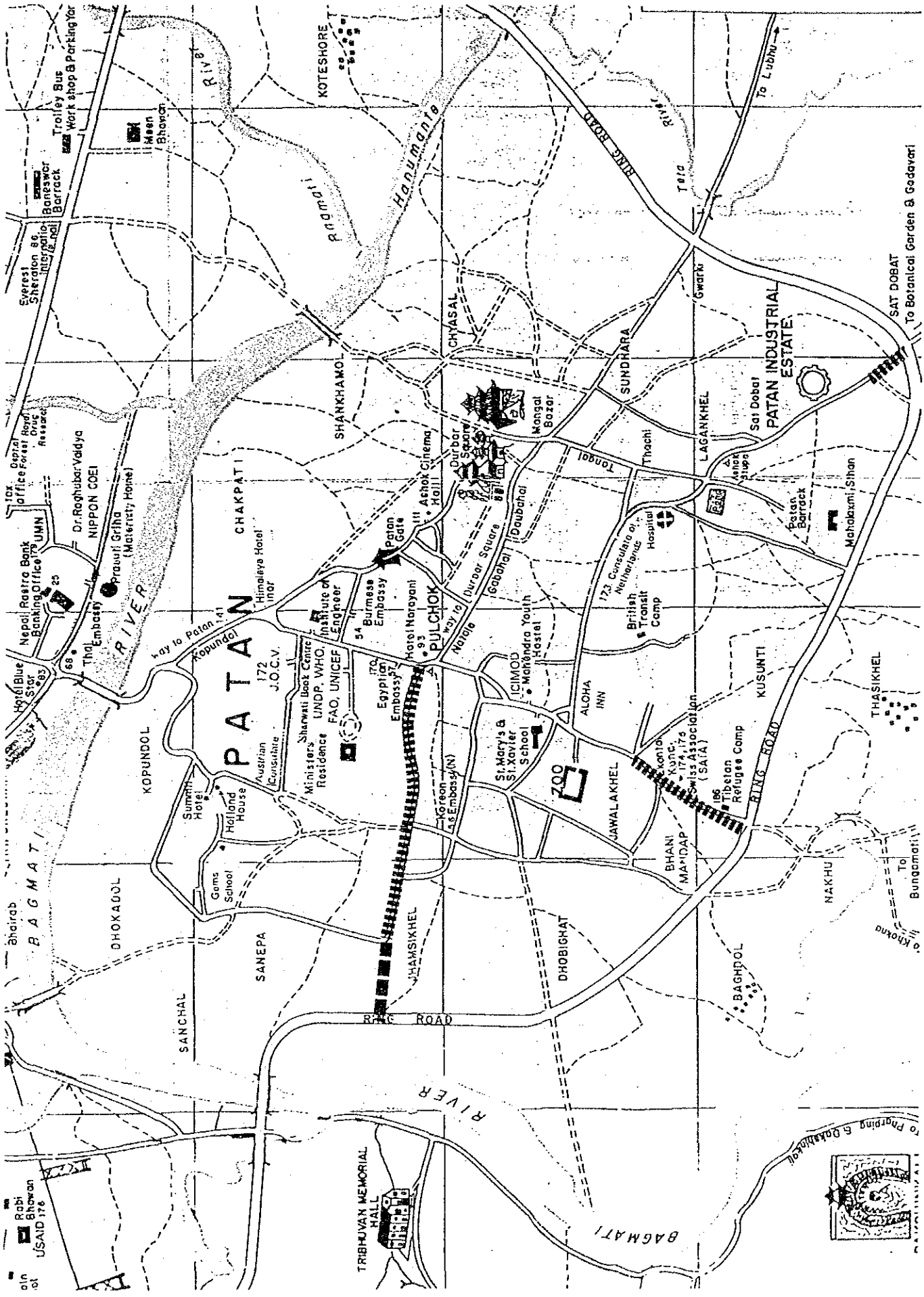



Fig. 9.5 Improvement of Patan Access

## 9.2 実施スケジュール

前項で提案した短期整備計画と長期整備計画とから実施スケジュールを作成した。このスケジュールは第5章の交通整備戦略に従っており、その概要を表9.1と図9.6に示した。

### 9.2.1 短期整備計画の実施スケジュール

短期整備計画の実施スケジュールは次の点を考慮して作成した。

- プロジェクト実施に向けてのフィージビリティ調査、詳細設計を含む継続業務に必要な時間
- ネパール政府による土地と建物の取得、補償の調整
- プロジェクト実施に必要な投資スケジュールのバランス

道路、公共交通、交通管理それぞれの整備計画の短期実施スケジュールの概要を表9.2に、それにもとづく投資計画を表9.3 に示した。

### 9.2.2 長期整備計画の実施スケジュール

長期計画の目標年次は2015年として設定しているが、ここでは、その途中段階として中期を設定し、1998年から2005年までの計画を中期、2006年から2015年までの計画を長期として区分した。

中期計画の実施スケジュールは交通需要からみた必要性、周辺部での都市化の促進あるいは抑制、長期計画に向けての骨組みの形成といった点を考慮して作成し、長期計画の実施スケジュールは都市圏の均衡あるネットワークの確立、交通需要等の点を考慮して作成し、その結果を表9.4 に示した。また、それにもとづく投資計画を表9.5に示した。

基本計画で提案したプロジェクト全体の経済的妥当性を確かめるために、投資計画をもとに概略経済評価を行った。評価のための基本条件は次のとおりである。

- 費用は表9.3および表9.5に示す値のうち、建設に必要な経済費用のみとし、用地取得費、維持費は除外した。
- 便益は1997年と2015年の交通量配分結果をもとに計算した。便益には提案したプロジェクトにより発生する走行費用の節約と旅行時間の節約が含まれる。
- プロジェクトライフは25年とした。

1997 年の便益は1.74 億ネパールルピー、2015年の便益は20.20億ネパールルピーであり、内部収益率(IRR) は13.6%と計算された。

Table 9.1 Concept of Implementation Schedule for Road Development

| Road Development Plan and Projects | Project Length (km) | Overall Implementation Plan | | |
|---|---|---|---|---|
| | | Short-term Plan (~1997) | Middle-term Plan (1998~2005) | Long-term Plan (2006~2015) |
| 1. Road Development as a Capital of Nation | | | | |
| (1) Construction of Amiko Bypass | 7.5 | | | O |
| (2) Construction of 2nd Tribhuvan Highway | 8.5 | | | O |
| 2. Road Development in the wave of outward shift of Urban Areas | | | | |
| (1) Widening of the following Primary District Roads: | 43.7 | | O | |
| - Bhimdhunga (4.7), Tokha (4.0), Phuntung (3.0), Sundarijal (9.0), Sankhu (8.0) | | | | |
| Lubhu (5.0), Chapagaun (6.0), Bungamati (4.0) | | | | |
| (2) Construction of Outer Ring Road | [19.5] | | | |
| - Jorpati (Balargau) - Lubhu Section | 9.0 | | O | |
| - Budhanikantha Road - Jorpati Section and Lubhu - Bungamati Section | 10.5 | | | O |
| (3) Construction of Thimi North-South Ladder Step Roads | 1.8 | | O | |
| (4) Construction of Gothathar Road | 2.5 | | O | |
| 3. Road Development for the Integration of Kathmandu, Lalitpur and Bhaktapur | | | | |
| (1) Widening of Existing Thimi Feeder Road | 7.2 | | O | |
| (2) Widening of Existing Bhaktapur Ring Road | 3.0 | | O | |
| (3) Construction of Baneswar-Thimi Short-cut Road | 0.8 | | O | |
| 4. Road Development to Streamline Traffic Flow inside the Ring Road | | | | |
| (1) Construction of Inner Ring Road with 2 lanes | [15.0] | | | |
| [1st Stage: 2 lanes] | | | | |
| - North Section (West-East Transport Corridor in Northern Kathmandu) | 3.0 | | O | |
| - West Section (Bishnumati Transport Corridor) | 4.5 | O | | |
| - South Section (Bagmati Transport Corridor) | 3.5 | O | | |
| - East Section (Dhobi Khola Transport Corridor) | 4.0 | | O | |
| [2nd Stage: 4 lanes] | | | | |
| - Widening of Inner Ring Road from 2 lane roads to 4 lanes road | 15.0 | | | O |
| (2) Construction and Widening of Linkages between Inner Ring Road and Ring Road | | | | |
| - L-1: Bijeswari-Swayambhu | 2.0 | | O | |
| - L-2: Teku Bridge to the Ring Road | 0.8 | O | | |
| - L-3: Riverside Road on North Bank of Bagmati | 2.4 | O | | |
| - L-4: Hadigaun - Ring Road North | 1.0 | | O | |
| - L-5: Access from the Inner Ring Road to Patan | 0.8 | O | | |
| (3) Widening of Kantipath from 2 to 4 lanes road | 3.5 | | O | |
| (4) Widening of Bhaktapur Ring Road to 2 lanes road | 3.0 | | O | |
| 5. Road Development with Impending Necessity to Improve the Existing Bottleneck | | | | |
| and Alleviation of Transport-poor | | | | |
| (1) Construction of New Bagmati Bridge with 2 lanes | 0.2 | O | | |
| (2) Construction of Access to New Bus Terminal Balaju | 1.8 | O | | |
| (3) Widening of Old Baneswar - New Baneswar | 1.5 | O | | |
| (4) Improvement of Patan Access | | | | |
| - Construction of Jhamsikhel-Ring Road | 1.4 | O | | |
| - Widening of Jawalakhel - Ring Road | 0.8 | | | |
| - Widening of Sat Dobato - Ring Road | 0.3 | | | |

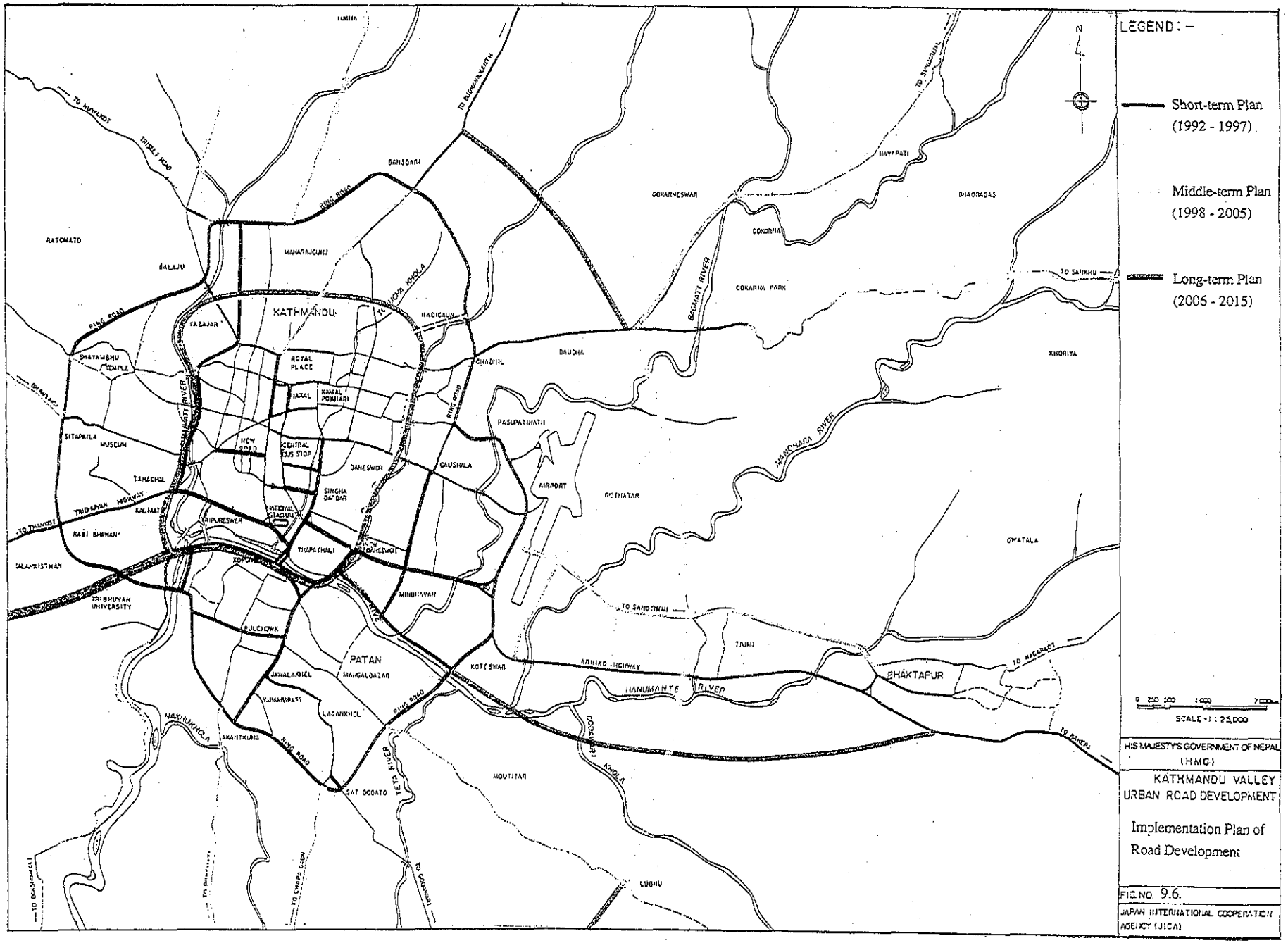

LEGEND : –
Short-term Plan (1992 - 1997)
Middle-term Plan (1998 - 2005)
Long-term Plan (2006 - 2015)
KATHMANDU
PATAN
BHAKTAPUR
BALAJU
BANSBARI
MAHARAJGUNJ
GOKARNESWAR
BHADRABAS
GOKARNA PARK
BAGMATI RIVER
DAUDHA
KHORITA
CHABHIL
PASUPATINATH
AIRPORT
GAUSHALA
GWATALA
MANOHARA RIVER
HANUMANTE RIVER
RING ROAD
TRIBHUVAN UNIVERSITY
KOTESWAR
MOUTITAR
LUGHU
SCALE : 1 : 25,000
HIS MAJESTY'S GOVERNMENT OF NEPAL (HMG)
KATHMANDU VALLEY URBAN ROAD DEVELOPMENT
Implementation Plan of Road Development
FIG.NO. 9.6.
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Table 9.2 Proposed Implementation Schedule of Short -term Urban Road Development Plan in Kathmandu Valley

| Programme No. | Target for Development: (1) Improvement of Bottlenecks in Urban Traffic Conditions (2) Improvement of Transportation-Poor Area / Development Programme | Short-term Development Plan (1993 - 1997) 1993 | 1994 | 1995 | 1996 | 1997 | Remarks |
|---|---|---|---|---|---|---|---|
| [Supporting Actions Required for Road Development Projects in the Short-term Plan] | | | | | | | |
| A. Traffic management | | | | | | | |
| A-1 | Legal/Administrative Measures | | | | | | |
| | (1) Introduction of Parking Code into Building Code and Introduction of Penalty System | | | | | | |
| | (2) Enforcement of Vehicle Inspection System | | | | | | |
| | (3) Enforcement of Motor Vehicle Act | | | | | | |
| | (4) Coordination of Policies among the Concerned Agencies | | | | | | |
| | (5) Regulation on Slow Vehicles on Major Arterial Roads | | | | | | |
| A-2 | Institutional Measures | | | | | | |
| | (1) Control on Road-side Parking | | | | | | |
| | (2) Control on On/Off Loading on the Major Road | | | | | | |
| | (3) Control on Illegal Activities on Right-of-Way | | | | | | |
| D. Land-use Development Plan | | | | | | | |
| D-1 | (1) Enforcement of Zoning Act and Introduction of Penalty System | | | | | | |
| [Proposed Projects to be Implemented in the Short-term Plan] | | | | | | | |
| Category A | Traffic Management Plan: | | | | | | |
| AS-1 | (1) Construction of Public Parking Spaces (multi-storied) | | | | XXXXXXXXX | XXXXXXXXX | |
| AS-2 | (2) Improvement of Intersection Facilities | | XXXXXXXXX | XXXXXXXXX | | | |
| AS-3 | (3) Improvement of Crossing Facilities for Pedestrians on Busy Roads | XXXXXXXXX | | | | | |
| AS-4 | (4) Establishment of Traffic Engineering Institute in DOR | | | XXXXXXXXX | | | |
| AS-5 | (5) Construction of Truck Yards along the Ring Road | | | | XXXXXXXXX | | |
| Category B | Public Transport Development Plan : Improvement of Bus Transportion-poor | | | | | | |
| BS-1 | Shuttle Bus Services at New Long-distance Bus Terminal at Balaju | XXX | XXX | | | | |
| BS-2 | Improvement of Bus Service Route on Primary District Roads: | | | | | | |
| | (1) Improvement of Bus Services | XXX | XXX | | | | |
| | (2) Pavement of Primary District Roads of Bhimdhunga, Tokha and Phutung Roads | | XXXXXXXXX | | | | |
| | (3) Widening of Sundarijal Road | | | XXXXXXXXX | | | |
| | (4) Overlay and Rehabilitation of Pavement for Sankhu, Lubhu, Chapagaun and Bungamati District Roads | | | | XXXXXXXXX | XXXXXXXXX | |
| BS-3 | Improvement of Bus Stop Facilities at Major Junctions | | XXXXXXXXX | XXXXXXXXX | | | |
| BS-4 | Route Regulation on Three-Wheeler Public Transport Services | | | | XXXXXXXXX | XXXXXXXXX | |
| Category C | Road Development Plan : | | | | | | |
| CS-1 | Improvement of Bagmati Transport Corridor | | | | | | |
| | (1) Construction of South Link of the Inner Ring Road | | XXXXXXXXX | XXXXXXXXX | XXXXXXXXX | XXXXXXXXX | |
| | (2) Construction of Linkage L-2 (Teku Bridge - Ring Road) | | | XXXXXXXXX | | | |
| | (3) Construction of Linkage L-3 (Riverside Road on North Bank of Bagmati) | | | | XXXXXXXXX | XXXXXXXXX | |
| | (4) Expansion of Bagmati Bridge from 2 to 4 lanes | XXXXXXXXX | XXXXXXXXX | | | | |
| | (5) Access from Inner Ring Road to Lalitpur | | | | | XXXXXXXXX | |
| CS-2 | Improvement of Access to New Bus Terminal at Balaju | | | | | | |
| | (1) Construction of Access (Nayabazar- Ring Road at Balaju) | XXXXXXXXX | XXXXXXXXX | | | | |
| CS-3 | Improvement of Bishnumati Transport Corridor | | | | | | |
| | (1) Construction of West Link of the Inner Ring Road | | XXXXXXXXX | XXXXXXXXX | | | |
| CS-4 | Widening of Old Baneswor- New Baneswor Road | | XXXXXXXXX | XXXXXXXXX | | | |
| CS-5 | Improvement of Lalitpur Access | | | | | | |
| | (1) Construction of Jhamsikhel - Ring Road | | | XXXXXXXXX | | | |
| | (2) Widening of Jawalakhel - Ring Road | | | | XXXXXXXXX | | |
| | (3) Widening of Sat Dobato - Ring Road | | | | | XXXXXXXXX | |

Table 9.3 Proposed Investment Programme of Short -term Urban Road Development Plan in Kathmandu Valley

Unit : NRs. x Million

| Programme No. | Development Programme | Target for Development: | Short-term Development Plan (1993 - 1997) (1) Improvement of Bottlenecks in Urban Traffic Conditions (2) Improvement of Transportion-poor Area | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Year: | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | | |
| | | Cost Required: | Construction | Land/House | Construction | Land/House | Construction | Land/House | Construction | Land/House | Construction | Land/House | |
| [Supporting Actions Required for Road Development Projects in the Short-term Plan] | | | | | | | | | | | | | |
| A. Traffic management | | | | | | | | | | | | | |
| A-1 | Legal/Administrative Measures | | | | | | | | | | | | |
| | (1) Introduction of Parking Code into Building Code and Introduction of Penalty System | | | | | | | | | | | | |
| | (2) Enforcement of Vehicle Inspection System | | | | | | | | | | | | |
| | (3) Enforcement of Motor Vehicle Act | | | | | | | | | | | | |
| | (4) Coordination of Policies among the Concened Agencies | | | | | | | | | | | | |
| | (5) Regulation on Slow Vehicles on Major Arterial Roads | | | | | | | | | | | | |
| A-2 | Institutional Measures | | | | | | | | | | | | |
| | (1) Control on Road-side Parking | | | | | | | | | | | | |
| | (2) Control on On/Off Loading on the Major Road | | | | | | | | | | | | |
| | (3) Control on Illegal Activities on Right-of-Way | | | | | | | | | | | | |
| D. Land-use Development Plan | | | | | | | | | | | | | |
| D-1 | (1) Enforcement of Zoning Act and Introduction of Penalty System | | | | | | | | | | | | |
| [Proposed Projects to be Implemented in the Short-term Plan] | | | | | | | | | | | | | |
| Category A | Traffic Management Plan: | | | | | | | | | | | | |
| AS-1 | (1) Construction of Public Parking Spaces (multi-storied) | | | | | | | | 60 | 0 | 55 | 0 | |
| AS-2 | (2) Improvement of Intersection Facilities | | | | 25 | 0 | 35 | 0 | | | | | |
| AS-3 | (3) Improvement of Crossing Facilities for Pedestrians on Busy Roads | | 30 | 0 | | | | | | | | | |
| AS-4 | (4) Establishment of Traffic Engineering Institute | | | | | | 10 | 0 | | | | | |
| AS-5 | (5) Construction of Truck Yards along the Ring Road | | | | | | | | 40 | 0 | | | |
| | Subtotal (A) | | 30 | 0 | 25 | 0 | 45 | 0 | 100 | 0 | 55 | 0 | |
| Category B | Public Transport Development Plan : Improvement of Bus Transport Poor | | | | | | | | | | | | |
| BS-1 | Shuttle Bus Services at new Long-distance Bus Terminal at Balaju | | 20 | 0 | 15 | 0 | | | | | | | |
| BS-2 | Improvement of Bus Service Route on Primary District Roads: | | | | | | | | | | | | |
| | (1) Improvement of Bus Services | | 20 | 0 | 15 | 0 | | | | | | | |
| | (2) Pavement of Primary District Roads of Bhimdhunga, Tokha and Phulung Roads | | | | 210 | 30 | | | | | | | |
| | (3) Widening of Sundarijal Road | | | | | | 80 | 40 | | | | | |
| | (4) Overlay and Rehabilitation of Pavement for Sankhu, Lubhu, Chapagaun and Bungamati District Roads | | | | | | | | 80 | 0 | 75 | 0 | |
| BS-3 | Improvement of Bus Stop Facilities at Major Junctions | | | | 10 | 0 | 10 | 0 | | | | | |
| BS-4 | Route Regulation on Three-wheeler Public Transport Services | | | | | | | | | | | | |
| | Subtotal (B) | | 40 | 0 | 250 | 30 | 90 | 40 | 80 | 0 | 75 | 0 | |
| Category C | Road Development Plan : | | | | | | | | | | | | |
| CS-1 | Improvement of Bagmati Transport Corridor | | | | | | | | | | | | |
| | (1) Construction of South Link of the Inner Ring Road | | 0 | 200 | 150 | 0 | 280 | 150 | 230 | 0 | 140 | 0 | |
| | (2) Construction of Linkage L-2 (Teku Bridge - Ring Road) | | | | | | 80 | 20 | | | | | |
| | (3) Construction of Riverside Road on North Bank of Bagmati | | | | | | | | 120 | 0 | 120 | 0 | |
| | (4) Expansion of Bagmati Bridge from 2 to 4 lanes | | 250 | 10 | 180 | 0 | | | | | | | |
| | (5) Access from Inner Ring Road to Lalitpur | | | | | | | | | | 80 | 0 | |
| CS-2 | Improvement of Access to New Bus Terminal at Balaju | | | | | | | | | | | | |
| | (1) Construction of Access (Nayabazar- Ring Road at Balaju) | | 60 | 80 | 40 | 0 | | | | | | | |
| CS-3 | Improvement of Bishnumati Transport Corridor | | | | | | | | | | | | Under negotiation with ADB |
| | (1) Construction of West Link of the Inner Ring Road | | | | 160 | 180 | 160 | 180 | | | | | |
| CS-4 | Widening of Old Baneswor- New Baneswor Road | | | | 60 | 100 | 50 | 70 | | | | | |
| CS-5 | Improvement of Lalitpur Access | | | | | | | | | | | | |
| | (1) Construction of Jhamsikhel - Ring Road | | | | | | 100 | 80 | | | | | |
| | (2) Widening of Jawalakhel - Ring Road | | | | | | | | 60 | 40 | | | |
| | (3) Widening of Sat Dobato - Ring Road | | | | | | | | | | 40 | 70 | |
| | Subtotal (C) | | 310 | 290 | 590 | 280 | 670 | 500 | 410 | 40 | 380 | 70 | |
| | Total (A) + (B) + (C) | | 380 | 290 | 865 | 310 | 805 | 540 | 590 | 40 | 510 | 70 | |
| | | | Construction cost total | | | 3,150 | | | | | | | |
| | | | Land/House Acquisition cost | | | 1,250 | | | | | | | |

TABLE 9. 4 Proposed Implementation Schedule of Middle & Long -term Urban Road Development Project in Kathmandu Valley

| Programme No. | Development Programme | Proposed Implementation Schedule (1997 - 2015) | |
|---|---|---|---|
| | | Middle-term Plan (1997 - 2005) | Long-term Plan (2005 - 2015) |
| | Target of Development: | (1) Formation of Skeleton for Long-term Plan<br>(2) Minimization of Concentration to Central Area | (1) Establishment of Well-Balanced Road Network System<br>(2) Homogeneous Development of the Valley |
| | [Supporting Actions Required for Road Development Projects in the Long-term Plan] | | |
| | A. Traffic Management | | |
| | A-1. Legal/Administrative Measures | | |
| | (1) Revision of Traffic Law to cope with changing Traffic Demand and Pattern | | |
| | (2) Introduction of Scientific Traffic Accidents Data Base | | |
| | A-2. Institutional Measures | | |
| | (1) Control on Road-side Parking in Fringe Areas | | |
| | (2) Regulation on Heavy Vehicle Operation in the Central Area | | |
| | D. Land-use Development Plan | | |
| | (1) Promotion of New Location of Urban Facilities in Sub-urban Areas | | |
| | (2) Dispersion of Commercial Facilities to Urban Fringes | | |
| | (3) Relocation of Government /Educational Facilities to Sub-urban Areas | | |
| | (4) Creation of Commercial Sub-centres at Urban Fringes | | |
| | [Proposed Projects to be Implemented in the Middle-term and Long-term Plan] | | |
| | Category A Traffic Management Plan: | | |
| | Category B Public Transport Development Plan : | | |
| B-1 | Introduction of Bus Terminal for East-bound Long-distance Bus Terminal | | XXXXXXXXXXXXXXXXXXX |
| B-2 | Introduction of Bus Priority Lane on the Inner Ring Road | | XXXXXXXXXXXXXXXXXXX |
| | Category C Road Development Plan : | | |
| | [Middle-term] | | |
| CM-1 | Construction of North Section of Inner Ring Road | XXXXXXXXXXXXXXXXXXX | |
| CM-2 | Construction of East Section of Inner Ring Road (Dhobi Khola Transport Corridor) | XXXXXXXXXXXXXXXXXXX | |
| CM-3 | Widening of Bhaktapur Ring Road to 2 lanes | XXXXXXXXXXXXXXXXXXX | |
| CM-4 | Improvement of Thimi Transport Corridor | | |
| | (1) Widening of Existing Thimi Feeder Road | XXXXXXXXXXXXXXXXXXX | |
| | (2) Construction of Thimi North-South Roads | XXXXXXXXXXXXXXXXXXX | |
| CM-5 | Construction of Gothatar Service Road | XXXXXXXXXXXXXXXXXXX | |
| CM-6 | Construction of Baneswor - Thimi Short-cut Road | XXXXXXXXXXXXXXXXXXX | |
| CM-7 | Widening of Primary District Roads to 2 lanes-road | | |
| | - Bhimdhunga, Tokha, Phuntung, Sundarijal, Sankhu, Lubhu, Chapagaun, Bungamati | XXXXXXXXXXXXXXXXXXX | |
| CM-8 | Wideing of Kantipath from 2 to 4 lanes | XXXXXXXXXXXXXXXXXXX | |
| CM-9 | Widening of Linkage L-3 (Bijeswari - Swayambhu) | XXXXXXXXXXXXXXXXXXX | |
| CM-10 | Construction of Linkage L-4 (Hadigaun - Ring Road) | XXXXXXXXXXXXXXXXXXX | |
| | [Long-term Plan] | | |
| CL-1 | Widening of Inner Ring Road | | XXXXXXXXXXXXXXXXXXX |
| CL-2 | Construction of Outer Ring Road | XXXXXXXXXXXXXXXXXXX | XXXXXXXXXXXXXXXXXXX |
| CL-3 | Construction of Arniko Bypass | | XXXXXXXXXXXXXXXXXXX |
| CL-4 | Construction of 2nd Tribhuban Highway | | XXXXXXXXXXXXXXXXXXX |

Table 9. 5 Proposed Investment Programme of Middle & Long -term Urban Road Development Project in Kathmandu Valley

Unit : NRs. x Million

| Programme No. | Development Programme | Implementation Schedule: | Proposed Implementation Schedule (1997 - 2015) | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Middle-term Plan (1997 - 2005) | | Long-term Plan (2006 - 2015) | | |
| | | Target of Development: | (1) Formation of Skeleton for Long-term Plan<br>(2) Minimization of Concentration to Central Area | | (1) Establishment of Well-Balanced Road Network System<br>(2) Homogeneous Development of the Valley | | |
| | | Cost Required (NRs. Million): | Construction Cost | Land/House Acquisition Cost | Construction Cost | Land/House Acquisition Cost | |
| [Supporting Actions Required for Road Development Projects in the Long-term Plan] | | | | | | | |
| A. Traffic Management | | | | | | | |
| A-1. Legal/Administrative Measures | | | | | | | |
| (1) Revision of Traffic Law to cope up with changing Traffic Demand and Pattern | | | | | | | |
| (2) Introduction of Scientific Traffic Accidents Data Base | | | | | | | |
| A-2. Institutional Measures | | | | | | | |
| (1) Control on Road-side Parking in Fringe Areas | | | | | | | |
| (2) Regulation on Heavy Vehicle Operation in the Central Area | | | | | | | |
| D. Land-use Development Plan | | | | | | | |
| (1) Promotion of New Location of Urban Facilities in Sub-urban Areas | | | | | | | |
| (2) Dispersion of Commercial Facilities to Urban Fringes | | | | | | | |
| (3) Relocation of Government /Educational Facilities to Sub-urban Areas | | | | | | | |
| (4) Creation of Commercial Sub-centres at Urban Fringes | | | | | | | |
| [Proposed Projects to be Implemented in the Middle-term and Long-term Plan] | | | | | | | |
| Category A | Traffic Management Plan: | | - | - | | - | |
| Category B | Public Transport Development Plan : | | | | | | |
| B-1 | Construction of East-bound Long-distance Bus Terminal | | - | - | 200 | 100 | |
| B-2 | Introduction of Bus Priority Lane on the Inner Ring Road | | - | - | 10 | 0 | |
| | | Subtotal (A+B) | | | 210 | 100 | |
| Category C | Road Development Plan : | | | | | | |
| [Middle-term Plan] | | | | | | | |
| CM-1 | Construction of North Section of Inner Ring Road (Nayabazar - Hadigaun - Ring Road) | | 300 | 240 | | | |
| CM-2 | Construction of East Section of Inner Ring Road (Dhobhi Khola Corridor) | | 400 | 320 | | | |
| CM-3 | Widening of Bhaktapur Ring Road to 2 lanes | | 120 | 220 | | | |
| CM-4 | Improvement of Thimi Transport Corridor | | | | | | |
| | (1) Widening of Existing Thimi Feeder Road | | 290 | 260 | | | |
| | (2) Construction of Thimi North-South Roads | | 70 | 40 | | | |
| CM-5 | Construction of Gothatar Service Road | | 180 | 60 | | | |
| CM-6 | Construction of Baneswor - Thimi Short-cut Road | | 520 | 20 | | | |
| CM-7 | Widening of Primary District Roads | | | | | | |
| | -. Bhimdhunga, Tokha, Phuntung, Sundarijal, Sankhu, Lubhu, Chapagaun, Bungamati | | 870 | 230 | | | |
| CM-8 | Widening of Kantipath from 2 to 4 lanes | | 350 | 390 | | | |
| CM-9 | Widening of Linkage L-1 (Bijeswari - Swayambhu) | | 140 | 70 | | | |
| CM-10 | Construction of Linkage L-4 (Hadigaun to Ring Road) | | 100 | 50 | | | |
| [Long-term Plan] | | | | | | | |
| CL-1 | Widening of Inner Ring Road to 4 lanes | | | | 1,500 | 1,500 | |
| CL-2 | Construction of Outer Ring Road | | 550 | 300 | 820 | 400 | |
| CL-3 | Construction of Arniko Bypass | | | | 750 | 450 | |
| CL-4 | Construction of 2nd Tribhuban Highway | | | | 1,280 | 510 | |
| | | Subtotal (C) | 3,890 | 2,200 | 4,350 | 2,860 | |
| | | Grand Total | 3,890 | 2,200 | 4,560 | 2,960 | |

### 9.2.3計画実現へ向けての提言

(1) 短期整備計画のための資金調達

表9.6は第７次計画（1986～90）と第８次計画(1993～97)で必要な投資を部門別に示したものである。第８次計画の運輸通信部門への投資計画は５年間で26,016百万ネパールルピーであり、総額189,537百万ネパールルピーの13.7%に相当する。また、第８次計画によると、総投資額の約60%は自国の資金であり、残り40%（75,815百万ネパールルピー）のうち約1/4が(18,950百万ネパールルピー)がグラント（贈与）、約3/4（56,815百万ネパールルピー）がローン（借款）を予定している。

本調査の短期整備計画で提案したプロジェクトの総費用は表9.3に示すとおり3,080百万ネパールルピー（1992年価格）と推計され、これは第８次計画の運輸通信部門の投資計画の約12%に相当する。

用地取得補償費、建設技術といった点を除く建設費の総額を考慮すると、短期計画のなかから次のプロジェクトの外国からのグラントやローンによる実施を提案する。

- バラジュ新長距離バスターミナルでのシャトルバスサービス（BS-1）
- 内環状道路の南側区間および（バグマティ・コリダー(CS-1)）および西側区間（ビシュヌマティ・コリダー(CS-3)）の建設
- バラジュ新長距離バスターミナルへの連絡道路の建設（CS-2）

短期計画の総額3,080百万ネパールルピーのうち、ローンは320百万ネパールルピー（CS-3）、グラントは1,685百万ネパールルピー（BS-1, CS-1およびCS-2）を予定する。

Table 9.6 Total and Sectoral Investment Requirement

| | Seventh Plan (1986 - 90) | | Eighth Plan (1993 - 1997) | |
|---|---|---|---|---|
| | Amount (NRs. million) | Share (%) | Amount (NRs. million) | Share (%) |
| Total Gross Fixed Investment | 107,147 | 100.0 | 189,537 | 100.0 |
| Agriculture | 26,283 | 24.5 | 49,735 | 26.2 |
| Manufacturing & Industry | 7,876 | 7.4 | 17,751 | 9.4 |
| Electricity | 17,938 | 16.7 | 29,812 | 15.7 |
| Construction | 3,518 | 3.3 | 5,686 | 3.0 |
| Trade & Restaurant | 2,785 | 2.6 | 7,911 | 4.2 |
| Transport & Communication | 16,518 | 15.4 | 26,016 | 13.7 |
| Finance & Real Estate | 24,932 | 23.3 | 37,059 | 19.6 |
| Social Services | 7,297 | 6.8 | 15,567 | 8.2 |

Source: Approach to The Eighth Plan 1992 - 97, National Planning Commission, November, 1991.

(2) 中期および長期整備計画のための資金調達

本調査での中期および長期整備計画に必要な総投資額は表9.5に示すとおり9,450百万ネパールルピー（1992年価格）である。

内環状道路と外環状道路は外国からの贈与か借款により実施し、その他のプロジェクトは自国資金により実施することを提案する。外国機関によるローンあるいは援助国によるグラントの総額は4,640百万ネパールルピーと推計した。

(3) 用地取得計画

用地の取得、建物の補償に関する問題は特に都市部での道路整備プロジェクト実施には重大な事項である。用地取得等にかかる費用は短期計画、長期計画それぞれ表9.3、表9.5に示すとおりであり、そうした計画の実施のために次のアクションプログラムを提案する。

内環状道路

内環状道路は長期には4車で計画するが、短中期では暫定的に2車で建設する。内環状道路は都市交通網のなかで重要な役割を果たすので、将来4車への拡幅にそなえて充分な道路敷地を確保しておくべきである。

南環状道路（バグマティ・コリダー）と西環状道路（ビシュヌマティ・コリダー）は短期計画で提案しており、この区間の用地取得、建物補償は財源確定後、早急に開始する必要がある。また、南環状道路（バグマティ・コリダー）の線形についてはフィージビリティ調査のなかで決定することとし、西環状道路（ビシュヌマティ・コリダー）の線形はADBのKVUDPPのなかですでに検討されており、ネパール政府はその計画に従って、用地取得を開始することになる。

外環状道路およびその他のリングロード外の新設道路

長期には都市圏の拡大に対応して、リングロード内外にいくつかの道路の新設が必要になるが、こうした道路の線形を早急に決定し、その用地の線引きや取得を行う必要がある。

現道拡幅

都市内道路の大半は沿道の乱開発、道路敷地の不法占拠の問題をかかえている。敷地内の建造物はしばしば交通流を妨げ、道路機能、交通容量に悪影響を及ぼしている。DORはこれを規制する権限をもち、道路拡幅のための用地取得を急速に進めるべきである。これは特にオールド・バネスウォール～ニュー・バネスウォール間の区間で早急に必要である。

(4) 実施計画の実現可能性

短中長期の計画全体の建設費は約11,530百万ネパールルピーであり、短期はそのうち約3,080百万ネパールルピー、中長期は約8,450ネパールルピーである。本調査で提案した短期の整備計画の費用はネパールの第８次計画の運輸通信部門の投資予定総額の約12%であり、これは充分に実施可能な値であるといえる。また、長期整備計画の費用も次の５ヶ年計画の運輸通信部門の投資計画における資金で充足できると思われる。

用地取得の問題は充分検討すべき事項である。短期の用地取得費は1,060百万ネパールルピーであり、長期では5,160百万ネパールルピーである。ネパール政府は用地取得を実行する責任があり、その費用は自己資金から供給すべきである。しかし、問題はネパールに明確な用地取得の手続きがないことであり、一部GLDのような用地取得手法が都市開発について適用されているが、大半は不完全で組織的でない方法で実施されている。日本で用いられている土地区画整理事業等合理的な用地取得手法をネパールでも早急に確立する必要がある。用地取得手法、換地方式を含む補償方法等を規定した制度の導入により、より効果的な用地取得の達成が大きく促進できる。

## 9.3 フィージビリティー調査の対象とする優先プロジェクト

本調査では下記の視点で短期道路整備計画を評価した（表9.7参照）。

- 建設費
- 用地取得補償費
- 建設の容易性
- プロジェクトの緊急性
- 交通流の円滑化への寄与
- 交通事故の減少効果
- 建設技術
- 公共交通サービスの利便性

その結果次のプロジェクトを優先プロジェクトとして選定し図9.7に示した。

- バグマティ・コリダーの整備
  - 南環状道路
  - サネパ連絡線
  - コテスウォール連絡線
  - タパタリ～クパンドール間の新バグマティ橋（２車）
  - パタン連絡線
- バラジュ新バスターミナル連絡道路

上記優先プロジェクトに必要なコストは表9.8にまとめられる。フィージビリティー調査は優先プロジェクトの技術的経済的実現可能性を明確にするために実施する。

Table 9.7 SELECTION OF HIGH PRIORITY PROJECTS TO BE CONDUCTED FOR FEASIBILITY STUDY

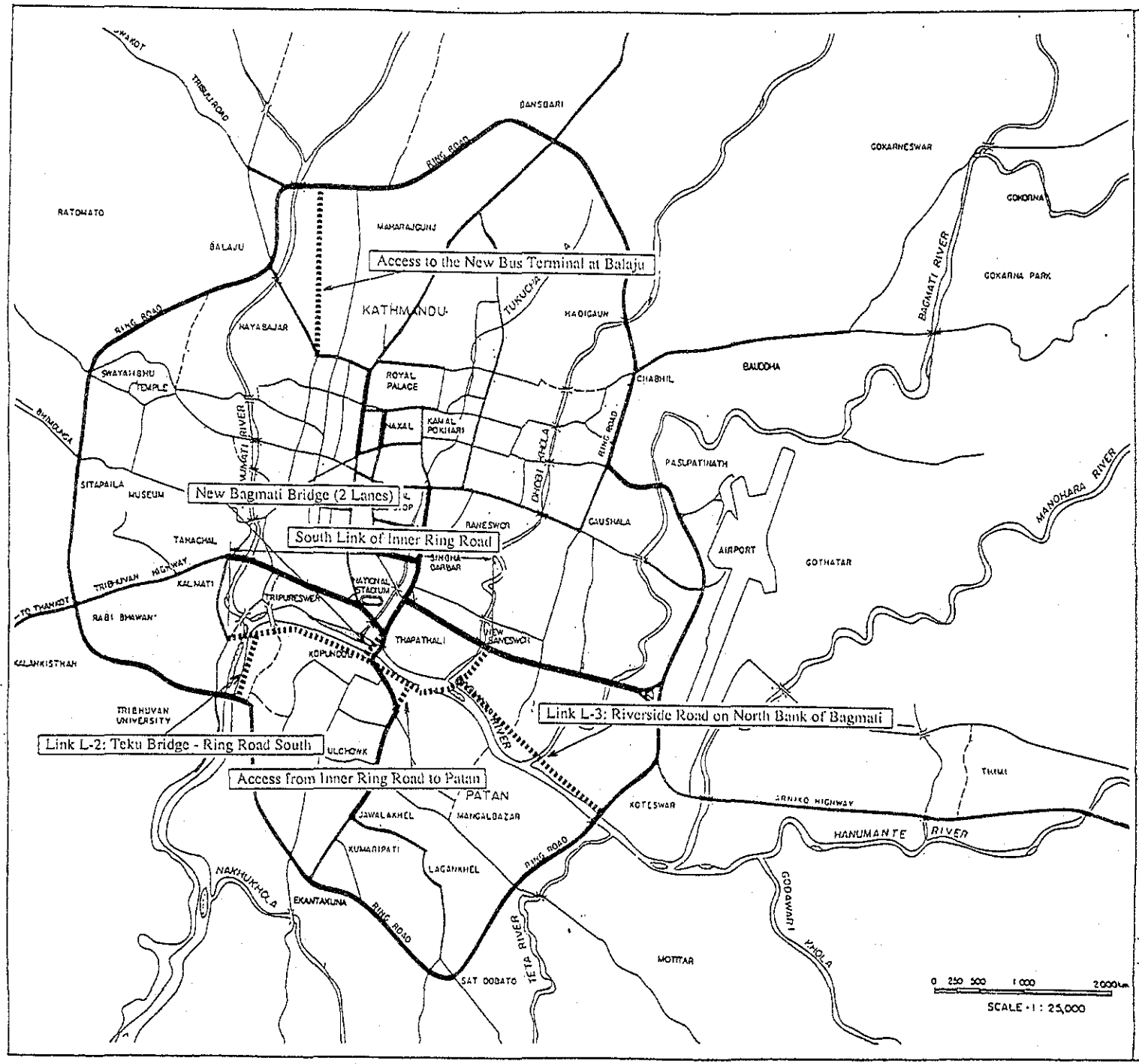
| Evaluation Items | Proposed Road Network | | | | |
|---|---|---|---|---|---|
| | CS-1: Improvement of Bagmati Transport Corridor | CS-2: Improvement of Access to the New Bus Terminal | CS-3: Improvement of Bishnumati Transport Corridor | CS-4: Widening of Old Baneswar-New Baneswar | CS-5: Improvement of Patan Access |
| 1. Required amount of Construction Cost | C | A | B | B | A |
| 2. Required Local Fund for Land/House Aquisition | B | B | C | C | B |
| 3. Ease of Construction from the View Point of Acquiring Land | A | A | C | C | B |
| 4. Urgency of the Project | A | A | A | A | B |
| 5. Improvement of Local Traffic Movement | A | A | A | A | A |
| 6. Reduction of Traffic Accidents | A | B | A | A | B |
| 7. Construction Technology | A | B | A | C | C |
| 8. Improvement of Access to the Public Transport Services | A | A | A | A | A |
| Total Score | 21 | 21 | 19 | 18 | 18 |
| Priority | 1 | 1 | 3 | 4 | 4 |
| RECOMMENDED HIGH PRIORITY PROJECTS TO BE CONDUCTED FOR FEASIBILITY STUDY | O | O | (DOR is negotiating with ADB for implementation of this project) | | |

NOTE: MARK A = 3 point, MARK B = 2 point, MARK C = 1 point

Table 9.8 Proposed Investment Programme of High Priority Projects

Unit : NRs. x Million

| High Priority Projects | Target for Development: | High Priority projects to be implemented in the Short-term Plan<br>(1) Improvement of Bottlenecks in Urban Traffic Conditions<br>(2) Relief of Transport-Poor | | | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year: | 1993 | | 1994 | | 1995 | | 1996 | | 1997 | | | |
| | Cost Required: | Construction | Land/House | Construction | Land/House | Construction | Land/House | Construction | Land/House | Construction | Land/House | Construction | Land/House |
| (A) Improvement of Bagmati Transport Corridor | | | | | | | | | | | | | |
| (A-1) Construction of South Link of the Inner Ring Road | | | | 350 | 60 | 350 | 20 | 300 | 0 | | | 1000 | 80 |
| (A-2) Construction of Teku Access | | 30 | 20 | | | | | | | | | 30 | 20 |
| (A-3) Construction of Riverside Road on North Bank of Bagmati | | | | | | | | 120 | 30 | 120 | 30 | 240 | 60 |
| (A-4) Expansion of Bagmati Bridge from 2 to 4 lanes | | | | | | | | 160 | 10 | 100 | 0 | 260 | 10 |
| (A-5) Access from Inner Ring Road to Patan | | | | | | | | | | 20 | 10 | 20 | 10 |
| (B) Improvement of Access to New Bus Terminal at Balaju | | | | | | | | | | | | | |
| (B-1) Construction of Access (Nayabazar- Ring Road at Balaju) | | 100 | 90 | | | | | | | | | 100 | 90 |
| Total (NRs.x Million) : | | 130 | 110 | 350 | 60 | 350 | 20 | 580 | 40 | 240 | 40 | 1,650 | 270 |
| Total (Equiv. to Yen x Million) : | | 380 | 330 | 1,050 | 180 | 1,050 | 60 | 1,720 | 120 | 710 | 120 | 4,910 | 810 |




## LEGEND

- High Priority Projects to be followed by feasibility study

(A) Improvement of Bagmati Transport Corridor

- A-1: South Section of Inner Ring Road
- A-2: Teku Access
- A-3: New Bagmati Bridge with 2 lanes at Kupandol
- A-4: East Bagmati Riverside Road along north bank of Bagmati River
- A-5: Access from Inner Ring Road to Patan

(B) Access to New Bus Terminal at Balaju

HIS MAJESTY'S GOVERNMENT OF NEPAL (H.M.G)

KATHMANDU VALLEY URBAN ROAD DEVELOPMENT HIGH PRIORITY PROJECTS TO BE FOLLOWED BY F/S

FIG. 9.7

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

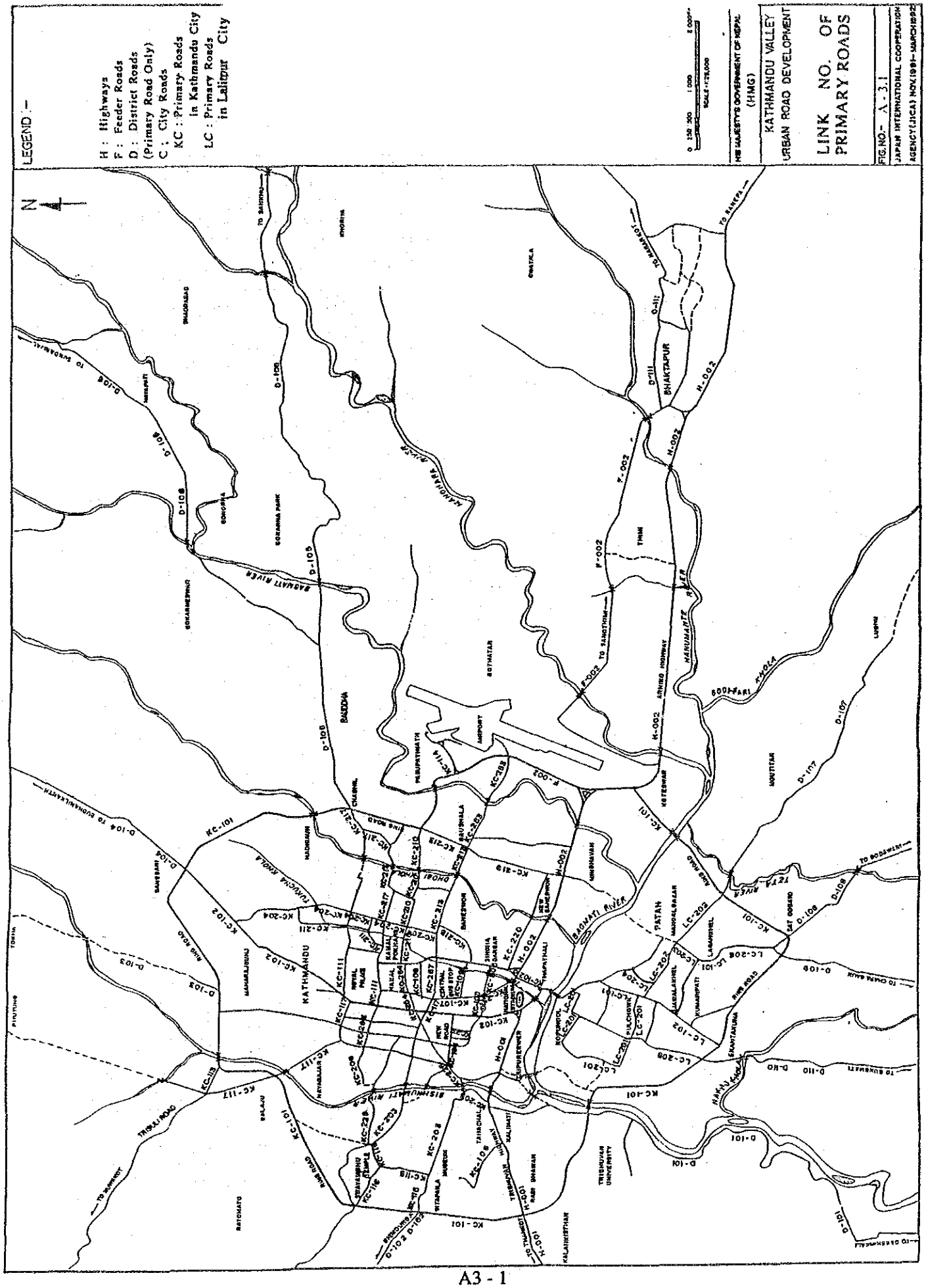
# 参考資料

# CHAPTER 3 PRESENT TRANSPORTATION SYSTEM

Appendix 3-1 Summary of Road Inventory

Appendix 3-2 Traffic Capacity of Existing Road

# APPENDIX 3-1 SUMMARY OF ROAD INVENTORY



## KATHMANDU VALLEY URBAN ROAD DEVELOPMENT STUDY

### Name of Road Link

| Link No. | Name of Road |
|---|---|
| (1) Highway | |
| H-001 | Tribhuvan Highway |
| H-002 | Arniko Highway |
| (2) Feeder Road | |
| F-001 | Trisuli Road |
| F-002 | Thimi Road |
| (3) District Road (Primary Road only) | |
| Kathmandu District | |
| D-101 | R.R.(Tribhuban Univ.)- Pharping- Dakshinkali |
| D-102 | R.R.(Kimdol) - Sitapaila- Bhimdhunga |
| D-103 | R.R.(Maharajgunj) - Tokha |
| D-104 | R.R.(Bansbari)- Budhanilkanth |
| D-105 | R.R.(Chabahil)-Gokarna-Sankhu |
| D-106 | Baralgaun (Jorpati)-Sundarijal |
| D-107 | Balaju - Phutung |
| D-108 | R.R.(Gwarko)-Lubhu-Lamatar |
| D-109 | R.R.(Sat Dobato)-Thaiba-Godawari |
| D-110 | R.R.(Sat Dobato)-Thecho-Chapagaun-Lele |
| D-111 | R.R.(Jaulakhel) - Nakhu - Bungamati |
| D- 112 | Bhaktapur-Nagarkot |
| (4) City Road | |
| Kathmandu City Class A Roads | |
| KC-101 | Ring Road |
| KC-102 | Maitighar - Thapathali |
| | Thapathali (Bagmati Bridge) - Tripureswor Junction |
| | Tripureswor - Nagasthan |
| | Nagasthan- Ranipokhari |
| | Ranipokhari - Lainchour |
| | Lainchour - Maharajgunj-Ring Road Jn. |
| KC-103 | Nagasthan - Shahid Gate - Bhadrakali |
| | Bhadrakali - Singh Durbar |
| KC-104 | New Road Gate-Kasthamandap-Hanumandhoka |
| KC-105 | Kalimati - Kuleswor |
| | Kuleswor - Ring Road |
| KC-106 | Kalimati - Hotel Soaltee Oberoi |
| KC-107 | Bhadrakali - NEA-Trichandra Campus |
| | Trichandra Campus-Royal Palace |
| KC-108 | Trichandra Campus - Kamaladi (RNA) |
| KC-109 | Bus Stop - City Hall- Padmodaya HS |
| KC-110 | Maitighar - Singh Durbar - Putalisadak |
| KC-111 | Keshar Mahal - Nagpokhari |
| | Nagpokhari- Nanigunj-Lainchour |
| KC-112 | Bhotahity - Former Zonal Commissioner's Office |
| KC-114 | Ring Road - Tribhuvan Airport |
| KC-115 | Ring Road - Museum - Swoyambhu |
| KC-116 | Road around Swoyambhu |
| KC-117 | Lainchaur - Amrit Campus |
| | Amrit Campus - Balaju |
| | |
| Lalitpur City Class A Roads | |
| LC-101 | RR(Sat Dobato)-Lagankhel(Bus Stop) |
| | Lagankhel(Bus Stop)-Jawalakhel(Roundabout) |
| | Jawalakhel (Roundabout)- Pulchowk |
| | Pulchowk - Bagmati Bridge |
| LC-102 | Jawlakhel(Roundabout)-Ekantakuna |
| | Ekantakuna-Ring Road |
| LC-103 | Patan Gate- Kopundole |
| | |

| Link No. | Name of Road |
|---|---|
| Kathmandu city Class B Roads | |
| KC-202 | Gaushala - Pashupati - Guheswori |
| KC-203 | Kalimati - Tankeswori - Tahachal - Museum |
| KC-204 | Shital Niwas - Baluwatar - Rastra Bank - Bhatbhateni |
| | Bhatbhateni- Tangal - Bhagwatibahal- Kamalpokhari |
| | Kamalpokhari - Dilli Bazar |
| KC-206 | Keshar Mahal - Thamel(Nursing Campus) |
| | - Chhetrapati - Shova Bhagawati |
| KC-207 | Nagasthan - Bhimsen Tower - Khichhapokhari |
| | - New Road ( American Library) |
| KC-209 | Jaya Nepal Cenema - Hattisar - Krishna Pauroti |
| | Krishna Pauroti - Kamaladi Ganesh |
| KC-210 | Krishna Pauroti - Kamal Pokhari |
| | Kamal Pokhari - Gyaneshor - Rato Pul |
| | Rato Pool - Gaushala |
| KC-211 | Nag Pokhari - Singh Dobato - Gairi Dhara - |
| | Rastra Bank - Baluwatar |
| KC-212 | Singh Dobato - Bal Mandir |
| KC-213 | Dilli Bazar - Maitidevi-Old Baneswor |
| | Old Baneswor -Gaushala |
| KC-215 | Sano Gauchar - Gyaneswor |
| | Gyaneshor - Maitidevi - Ghattekulo |
| KC-216 | Dilli Bazar - Kalikasthan - Putalisadak |
| KC-217 | Nag Pokhari - Bhagawati Bahal - Sano Gauchar |
| | Sano Gauchar - Kalo Pool - Shifal - Chabahil |
| | Chabahil(Mitra Park) - Guheswori |
| KC-218 | Old Baneswor - Mahadevsthan - New Baneswor |
| KC-219 | Thapathali - Maternity Hospital - Babar Mahal |
| KC-220 | National Archieves - Back side of Babar Mahal |
| | - International Conference Centre |
| KC-224 | Kathmandu Ganeshthan - Nardevi - Chhetrapati- |
| | Sorhakhutte |
| KC-225 | Kathmandu Ganeshthan - Bhimsensthan - |
| | Tankeswori (Bishnumati Bridge) |
| KC-229 | Dallu - Shodha Bhagawati |
| KC-230 | Swoyambhu - Bijeswori - Shodha Bhagawati |
| KC-252 | Adwait Marg |
| KC-253 | Sinamangal -Old Baneswor |
| KC-254 | Rastriya Nachghar-Tindhara Pathsala - Krisha |
| | Pauroti - Kamalpokhari |
| KC-255 | Bhadrakali - Maitighar |
| KC-257 | Former Zonal Commissioner's Office-Bagh Bazar |
| | |
| Lalitpur City Class B Roads | |
| LC-201 | Kupandol-Sanepa-Pulchowk |
| LC-202 | Pulchowk-Gabahal |
| | Gabahal-Durbar Square |
| | Durbar Square-Gwarko |
| LC-203 | Durbar Square-Lagankhel |
| LC-204 | Gabahal-Patan Gate |
| LC-205 | Jhamsikhel- Ring Road |
| LC-206 | Lagankhel-Army Barrack-Ring Road |
| | |
| Bhaktapur City Class B Roads | |
| BC-201 | Sallaghari Jn.- Bus Park |
| BC-202 | Bus Park- Durbar Square |
| BC-203 | Bus Park- Thimi Road Jn.-Nagarkot Road Jn. |
| BC-204 | Nagarkot Road Jn.-Arniko Highway |

## SUMMARY OF ROAD INVENTORY IN KATHMANDU VALLEY

| | DOR Road Statistics in 1990 | | | | JICA Study Team in 1990 | | | |
|---|---|---|---|---|---|---|---|---|
| | Road Length (km) | Blacked Topped (Km) | Gravelled (km) | Earthen (km) | Road Length (km) | Blacked Topped (km) | Gravelled (km) | Earthen (km) |
| **Road Network by District** | | | | | | | | |
| 1. Kathmandu District | | | | | | | | |
| Highway | 18.0 | 18.0 | 0.0 | 0.0 | 18.0 | 18.0 | 0.0 | 0.0 |
| Feeder Road | 0.0 | 0.0 | 0.0 | 0.0 | 17.0 | 17.0 | 0.0 | 0.0 |
| District Road | 172.0 | 51.0 | 72.0 | 49.0 | 172.0 | 51.0 | 72.0 | 49.0 |
| Urban Road | 250.0 | 146.0 | 66.0 | 38.0 | 250.0 | 146.0 | 66.0 | 38.0 |
| Total (1) | 440.0 | 215.0 | 138.0 | 87.0 | 457.0 | 232.0 | 138.0 | 87.0 |
| 2. Lalitpur District | | | | | | | | |
| Highway | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Feeder Road | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| District Road | 91.0 | 32.0 | 15.0 | 44.0 | 91.0 | 32.0 | 15.0 | 44.0 |
| Urban Road | 73.0 | 41.0 | 22.0 | 10.0 | 73.0 | 41.0 | 22.0 | 10.0 |
| Total (2) | 164.0 | 73.0 | 37.0 | 54.0 | 164.0 | 73.0 | 37.0 | 54.0 |
| 3. Bhaktapur District | | | | | | | | |
| Highway | 16.0 | 16.0 | 0.0 | 0.0 | 16.0 | 16.0 | 0.0 | 0.0 |
| Feeder Road | 8.0 | 8.0 | 0.0 | 0.0 | 8.0 | 8.0 | 0.0 | 0.0 |
| District Road | 79.0 | 29.0 | 39.0 | 11.0 | 79.0 | 29.0 | 39.0 | 11.0 |
| Urban Road | 16.0 | 6.0 | 10.0 | 0.0 | 16.0 | 6.0 | 10.0 | 0.0 |
| Total (3) | 119.0 | 59.0 | 49.0 | 11.0 | 119.0 | 59.0 | 49.0 | 11.0 |
| Total (1)+(2)+(3) | 723.0 | 347.0 | 224.0 | 152.0 | 740.0 | 364.0 | 224.0 | 152.0 |
| | | | | | | | | |
| **Road Network by Classification** | | | | | | | | |
| 1. Highway | | | | | | | | |
| Kathmandu District | 18.0 | 18.0 | 0.0 | 0.0 | 18.0 | 18.0 | 0.0 | 0.0 |
| Lalitpur District | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Bhaktapur District | 16.0 | 16.0 | 0.0 | 0.0 | 16.0 | 16.0 | 0.0 | 0.0 |
| Total (1) | 34.0 | 34.0 | 0.0 | 0.0 | 34.0 | 34.0 | 0.0 | 0.0 |
| 2. Feeder Road | | | | | | | | |
| Kathmandu District | 0.0 | 0.0 | 0.0 | 0.0 | 17.0 | 17.0 | 0.0 | 0.0 |
| Lalitpur District | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Bhaktapur District | 8.0 | 8.0 | 0.0 | 0.0 | 8.0 | 8.0 | 0.0 | 0.0 |
| Total (2) | 8.0 | 8.0 | 0.0 | 0.0 | 25.0 | 25.0 | 0.0 | 0.0 |
| 3. District Raod | | | | | | | | |
| Kathmandu District | 172.0 | 51.0 | 72.0 | 49.0 | 172.0 | 51.0 | 72.0 | 49.0 |
| Lalitpur District | 91.0 | 32.0 | 15.0 | 44.0 | 91.0 | 32.0 | 15.0 | 44.0 |
| Bhaktapur District | 79.0 | 29.0 | 39.0 | 11.0 | 79.0 | 29.0 | 39.0 | 11.0 |
| Total (3) | 342.0 | 112.0 | 126.0 | 104.0 | 342.0 | 112.0 | 126.0 | 104.0 |
| 4. Urban Raod | | | | | | | | |
| Kathmandu District | 250.0 | 146.0 | 66.0 | 38.0 | 250.0 | 146.0 | 66.0 | 38.0 |
| Lalitpur District | 73.0 | 41.0 | 22.0 | 10.0 | 73.0 | 41.0 | 22.0 | 10.0 |
| Bhaktapur District | 16.0 | 6.0 | 10.0 | 0.0 | 16.0 | 6.0 | 10.0 | 0.0 |
| Total (4) | 339.0 | 193.0 | 98.0 | 48.0 | 339.0 | 193.0 | 98.0 | 48.0 |
| Total (1) + (2) + (3) + (4) | 723.0 | 347.0 | 224.0 | 152.0 | 740.0 | 364.0 | 224.0 | 152.0 |

# Kathmandu Valley Urban Road Development
## Summary of Road Inventory - Rural Road

SY: Sajha Yatayat
MB: Mini-bus
TMP: Tempo  Y: Yes, N: No

| Link No. | Name of Road | Road Length (km) | Classification | Lane No. | Carriage-way Width (m) | Pavement Type: Black-topped (km) | Pavement Type: Gravelled (km) | Pavement Type: Earthen (km) | Pavement Condition: Good (km) | Pavement Condition: Fair (km) | Pavement Condition: Poor (km) | Bridge Nos., Length(m): Good | Bridge Nos., Length(m): Bad | Bus Route SY,MB,TMP | Side Walk Y, N | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Highway | | | | | | | | | | | | | | | | |
| H-001 | Tribhuvan Highway(Tripureswar-Soaltee) | 2.0 | Highway | 4.0 | 12.5 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 1.0 | | SY,MB,TMP | Y | |
| | Tribhuvan Highway (Soaltee - Ring Road) | 1.0 | " | 2.0 | 7.0 | 1.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | | SY,MB,TMP | N | |
| | Tribhuvan Highway (Ring Road - Nagdhunga) | 9.0 | " | 2.0 | 7.0 | 9.0 | 0.0 | 0.0 | 0.0 | 9.0 | 0.0 | 1.0 | | SY,MB,TMP | N | |
| H-002 | Arniko Rajmarg (Thapathali-Koteswar) | 5.0 | " | 4.0 | 14.0 | 5.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 2.0 | | TB,MB,TMP | Y | Orignially excluded |
| | Arniko Rajmarg (Koteswor - Bhaktapur) | 9.0 | " | 2.0 | 6.5 | 9.0 | 0.0 | 0.0 | 8.0 | 0.0 | 0.0 | 2.0 | | TB,MB | N | Originally 52.0 km |
| | Arniko Rajmarg (Bhaktapur- Sanga) | 8.0 | " | 2.0 | 6.0 | 8.0 | 0.0 | 0.0 | 7.0 | 0.0 | 0.0 | 1.0 | | MB | N | |
| | Total of Highwat (1) | 34.0 | | | | 34.0 | 0.0 | 0.0 | | | | | | | | |
| 2. Feeder Road | | | | | | | | | | | | | | | | |
| 2.1 Kathmandu District | | | | | | | | | | | | | | | | |
| F-001 | Trisuli Highway(R.R-Balaju) | 0.4 | Feeder Rd | 2.0 | 7.0 | 0.4 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | SY,MB | N | From Nuwakot Distr. |
| | Trisuli Highway(Balaju- Thulo Khola) | 16.6 | " | 1.0 | 5.0 | 11.7 | 0.0 | 0.0 | 0.0 | 11.7 | 0.0 | 0.0 | 0.0 | | N | |
| 2.2 Lalitpur District | | | | | | | | | | | | | | | | |
| | - | 0.0 | | | | 0.0 | 0.0 | 0.0 | | | | | | | | |
| 2.3 Bhaktapur District | | | | | | | | | | | | | | | | |
| F-002 | A.R.M (Koteswor)-Thimi-Bhaktapur | 8.0 | Feeder Rd | 1.0 | 3.8 | 8.0 | 0.0 | 0.0 | 0.0 | 8.0 | 0.0 | 2.0 | | SY,MB | N | |
| | Total of Feeder Road (2) | 25.0 | | | | 20.1 | 0.0 | 0.0 | | | | | | | | |
| 3. District Road | | | | | | | | | | | | | | | | |
| 3.1 : Kathmandu District | | | | | | | | | | | | | | | | |
| D-101 | R.R.(Tribhuban Univ.)-Pharping-Dakshinkali | | Distr. Rd | | | | | | | | | | | | | Primary District Road |
| | R.R.(Tribhuban Univ.)-Chobhar | 4.0 | " | 2.0 | 7.0 | 4.0 | 0.0 | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 | | SY,MB | N | |
| | Chobhar- Dakshinkali | 14.0 | " | 1.0 | 4.0 | 14.0 | 0.0 | 0.0 | 14.0 | 0.0 | 0.0 | 0.0 | | SY,MB | N | |
| D-103 | R.R.(Kimdol) -Sitapaila-Bhimdunga | 7.0 | " | 1.0 | 3.0 | 1.0 | 6.0 | 0.0 | 1.0 | 0.0 | 6.0 | 0.0 | | No | N | Primary District Road |
| D-104 | R.R.(Maharajganj)-Tokha | 4.0 | " | 1.0 | 4.0 | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 | 4.0 | | 1.0 | | N | Primary District Road |
| D-105 | R.R.(Bansbari)- Budhanilkantha | 6.0 | " | 2.0 | 7.5 | 6.0 | 0.0 | 0.0 | 1.0 | 5.0 | 0.0 | 0.0 | 0.0 | SY,MB,TMP | N | Primary District Road |
| D-106 | R.R.(Chabahil)-Gokarna-Sankhu | | | | | | | | | | | | | | | Primary District Road |
| | R.R.(Chabahil)-Gokarna | 4.0 | " | 2.0 | 10.0 | 4.0 | 0.0 | 0.0 | 4.0 | 0.0 | 0.0 | 1.0 | 0.0 | SY,MB,TMP | Y | |
| | Gokarna-Sankhu | 8.0 | " | 1.0 | 3.8 | 8.0 | 0.0 | 0.0 | 8.0 | 0.0 | 0.0 | 0.0 | 2.0 | SY,MB | | |
| D-107 | Baralgaun (Jorpati)-Sundarijal | 9.0 | " | 1.0 | 3.5 | 0.0 | 9.0 | 0.0 | 0.0 | 0.0 | 9.0 | | 2.0 | MB | N | Primary District Road |
| D-108 | Balaju - Phutung | | " | 1.0 | 3.5 | 0.0 | 4.0 | 3.0 | 0.0 | 0.0 | 7.0 | | 1.0 | - | | |
| | Total of Kathmandu District Road (1) | 63.0 | | | | 37.0 | 23.0 | 3.0 | | | | | | | | |
| 2.2: Lalitpur District | | 0.0 | | | | | | | | | | | | | | |
| D-109 | R.R.(Gwarko)-Lubhu-Lamatar | 9.0 | Distr. Rd | 1.0 | 3.5 | 5.0 | 3.0 | 1.0 | | 5.0 | 4.0 | 0.0 | 2.0 | MB | N | Primary District Road |

## Kathmandu Valley Urban Road Development
## Summary of Road Inventory - Rural Road

SY: Sajha Yatayat
MB: Mini-bus
TMP: Tempo  Y; Yes, N; No

| Link No. | Name of Road | Road Length (km) | Classi-fication | Lane No. | Carriage-way Width (m) | Pavement Type | | | Pavement Condition | | | Bridge Nos., Length(m) | | Bus Route | Side Walk | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Black-topped (km) | Gravelled (km) | Earthen (km) | Good (km) | Fair (km) | Poor (km) | Good | Bad | SY,MB,TMP | Y, N | |
| D-110 | R.R.(Sat Dobato)-Thaiba-Godawari | | | | | | | | | | | | | | | Primary District Road |
| | R.R.(Sat Dobato)- Harisiddhi | 2.5 | " | 2.0 | 6.0 | 2.5 | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 | 1.0 | 0.0 | SY,MB | N | |
| | Harisiddhi-Thaiba-Godawari | 7.5 | " | 1.0 | 3.7 | 7.5 | 0.0 | 0.0 | 7.5 | 0.0 | 0.0 | 0.0 | 0.0 | SY,MB | N | |
| D-111 | R.R.(Sat Dobato)-Thecho-Chapagaun-Lele | 13.0 | " | 1.0 | 3.0 | 7.0 | 0.0 | 6.0 | 7.0 | 0.0 | 6.0 | 0.0 | 0.0 | MB | N | Primary District Road |
| L-112 | R.R.(Jaujalakhel) - Nakhu - Bungamati | 8.0 | " | 2.0 | 5.5 | 7.0 | 1.0 | 0.0 | 7.0 | | 1.0 | 0.0 | 1.0 | MB | N | Primary District Road |
| | Total of Lalitpur District Road (2) | 40.0 | | | | 29.0 | 4.0 | 7.0 | | | | | | | | |
| 2.3: Bhaktapur District | | | | | | | | | | | | | | | | |
| D-113 | Bhaktapur-Nagarkot | 20.0 | Distr. Rd | 1.0 | 3.5 | 20.0 | 0.0 | 0.0 | 0.0 | 0.0 | 20.0 | 0.0 | 0.0 | MB | N | Primary District Road |
| D-114 | Bhaktapur- Changunarayan | 6.0 | " | 1.0 | 3.0 | 6.0 | 0.0 | 0.0 | 0.0 | 6.0 | 0.0 | 0.0 | 0.0 | MB | N | |
| | Total of Bhaktapur District Roads (3) | 26.0 | | | | 26.0 | 0.0 | 0.0 | | | | | | | | |
| | Total of District Roads (1)+(2)+(3) | 129.0 | | | | 92.0 | 27.0 | 10.0 | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Summary of Highway and Rural Roads in KTM Valley | | | | | | | | | | | | | | | | |
| | 1. Highway | 34.0 | | | | 34.0 | 0.0 | 0.0 | | | | | | | | |
| | 2. Feeder Road | 25.0 | | | | 25.0 | 0.0 | 0.0 | | | | | | | | |
| | 3. District Road | 129.0 | | | | 92.0 | 27.0 | 10.0 | | | | | | | | |
| | Total | 188.0 | | | | 151.0 | 27.0 | 10.0 | | | | | | | | |

# Kathmandu Valley Urban Road Development
## Summary of Road Inventory - Urban Road

Note: Urban road subject to the Study consists of Highway inside Ring Road and City roads in each district.
City road subject to the Study are Class A and Class B roads only .

SY: Sajha Yatayat C: Commercial area
MB: Mini-bus R: Residential area
TMP: Tempo A: Agricultural/other area
Y; Yes N; No

| Link NO. | Name of Road | Road Length | Lane No. | Carriage-way width | Pavement Type | | | Pavement Condition | Side-walk | Roadside Clear-ance | Roadside Condition | One-way System | Parking Space | Signal Controlled | Bus Route | Bridge | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Black-topped | Gravelled | Earthen | | | | | | | | | Type | Width | Length | |
| | | (km) | | (m) | (km) | (m) | (m) | G,F,P | (m) | (m) | C,R,A | Y,N | Y,N | Y,N | SY,MB,TMP | | (m) | (m) | |
| 2. Urban Road | | | | | | | | | | | | | | | | | | | |
| KC-101 | Ring Road | | | | | | | | | | | | | | | | | | |
| | Tribhuban Highway Jn.- Trisuli Road Jn. | 6.20 | 2 | 10.0 | 6.20 | 0.0 | 0.0 | G | 0.0 | 20.0 | C,R,A | N | N | N | SY,MB | RC | 10.0 | | 2m sidewalk in |
| | Trisuli Road Jn.- Chabahil | 6.30 | 2 | 10.0 | 6.30 | 0.0 | 0.0 | G | 0.0 | 20.0 | C,R,A | N | N | N | SY,MB | RC | 10.0 | | each Bridge |
| | Chabahil - Gausala | 1.00 | 2 | 10.0 | 1.00 | 0.0 | 0.0 | G | 3.5 | 10.0 | C | N | N | Y | SY,MB | RC | 10.0 | | |
| | Gausala - Arniko Highway Jn. | 4.50 | 2 | 10.0 | 4.50 | 0.0 | 0.0 | G | 0.0 | 10.0 | C,R | N | N | N | SY,MB | RC | 10.0 | | |
| | Arniko Highway Jn.- Tribhuban Highway Jn. | 10.00 | 2 | 10.0 | 10.00 | 0.0 | 0.0 | F | 0.0 | 20.0 | C,R,A | N | N | N | MB | RC | 10.0 | | |
| | Subtotal of Ring Road | 28.00 | | | 28.00 | 0.00 | 0.00 | | | | | | | | | | | | |
| 2.2 Kathmandu District City Road | | | | | | | | | | | | | | | | | | | |
| 2.2.1 Class A Road (Primary Road) | | | | | | | | | | | | | | | | | | | |
| KC-102 | Koteswor - Maitighar - Thapathali ** | 0.50 | 4 | 14.0 | 0.50 | 0.0 | 0.0 | G | 2.5 | 0.0 | C, R, A | N | Y | Y | SY, MB | | | | 5km in HW |
| | Thapathali (Bagmati Bridge) - Tripureswor Jn. | 0.50 | 4 | 14.0 | 0.50 | 0.0 | 0.0 | G | 2.5 | 0.0 | C, R | N | Y | Y | SY, MB | | | | |
| | Tripureswor - Ranipokhari | 1.00 | 2 | 9.0 | 1.00 | 0.0 | 0.0 | G | 2.0 | 0.0 | C, R | Y | N | Y | SY | | | | Partly one way |
| | Ranipokhari - Lainchaur | 0.50 | 4 | 13.0 | 0.50 | 0.0 | 0.0 | G | 2.5 | 0.0 | C, R | N | Y | Y | SY, MB, TMP | | | | |
| | Lainchaur - Maharajgunj-Ring Road Jn. | 3.40 | 2 | 7.5 | 3.40 | 0.0 | 0.0 | G | 2.0 | 0.0 | C, R | N | N | N | SY, TMP | | | | |
| KC-103 | Nagasthan - Sahid gate - Bhadrakali | | | | | | | | | | | | | | | | | | |
| | - Singh Durbar | 0.94 | 4 | 15.0 | 0.94 | 0.0 | 0.0 | G | 2.5 | 0.0 | C | Y | N | Y | SY,MB,TMP | - | - | - | Partly one way |
| KC-104 | New Road Gate - Kasthamandap - | | | | | | | | | | | | | | | | | | |
| | Hanuman Dhoka | 0.80 | 4 | 12.0 | 0.80 | 0.0 | 0.0 | G | 2.4 | 0.0 | C | N | N | Y | - | - | - | - | |
| KC-105 | Tripureswor - Kalimati ** | 0.00 | 2 | 8.8 | 0.00 | 0.0 | 0.0 | G | 2.0 | 0.0 | C | N | N | N | SY,MB,TMP | RC | 8.8 | | Tribhuvan HW |
| | Kalimati - Ring Road | 1.70 | 2 | 5.2 | 1.70 | 0.0 | 0.0 | G | 0.0 | 4.0 | C,R | N | N | N | SY,MB,TMP | | | | |
| KC-106 | Kalimati - Hotel Soaltee Oberoi ** | 0.00 | 2 | 8.8 | 0.00 | 0.0 | 0.0 | G | 2.0 | 0.0 | C,R | N | N | N | - | | | | Tribhuvan HW |
| KC-107 | Bhadrakali - NEA-Trichandra Campus | 1.26 | 2 | 8.5 | 1.26 | 0.0 | 0.0 | G | 2.5 | 0.0 | C | Y | N | Y | SY,MB,TMP | | | | |
| | Trichandra Campus Palace | 0.48 | 4 | 18.0 | 0.48 | 0.0 | 0.0 | G | 2.3 | 0.0 | C | N | N | Y | - | | | | |
| KC-108 | Trichandra Campus - Kamaladi(RNA) | 0.53 | 2 | 7.5 | 0.53 | 0.0 | 0.0 | G | 2.0 | 0.0 | C,R | N | N | N | | | | | |
| KC-109 | Bus Stop - City Hall- Padmodaya HS | 0.57 | 2 | 8.4 | 0.57 | 0.0 | 0.0 | G | 2.0 | 0.0 | C | N | N | N | SY,MB | RC | 8.4 | | |
| KC-110 | Maitighar - Singh Durbar - Putalisadak | 0.57 | 4 | 13.3 | 0.57 | 0.0 | 0.0 | G | 2.0 | 0.0 | C | N | Y | Y | | | | | |
| KC-111 | Keshar Mahal - Nagpokhari | 0.60 | 4 | 10.0 | 0.60 | 0.0 | 0.0 | G | 3.0 | 0.0 | C | N | N | Y | | | | | |
| | Nagpokhari- Nanigunj-Lainchaur | 1.54 | 2 | 7.5 | 1.54 | 0.0 | 0.0 | G | 3.0 | 0.0 | R | N | N | N | | | | | |
| KC-112 | Bhotahity - Former Zonal Commissioner's Office | 0.22 | 4 | 14.0 | 0.22 | 0.0 | 0.0 | G | 3.0 | 0.0 | C | Y | Y | Y | SY,MB,TMP | | | | |
| KC-113 | Ring Road ( Balaju Bypass )-Balaju | 0.20 | 2 | 7.0 | 0.20 | 0.0 | 0.0 | G | 0.0 | 10.0 | A | N | N | N | SY, MB | | | | |
| | Balaju-Nagarjun | 1.40 | 1 | 3.8 | 1.40 | 0.0 | 0.0 | G | 0.0 | 10.0 | A | N | N | N | SY,MB | | | | |
| KC-114 | Ring Road - Tribhuvan Airport | 0.90 | 2 | 7.5 | 0.90 | 0.0 | 0.0 | G | 2.5 | 10.0 | A | N | N | Y | SY | | | | |
| KC-115 | Ring Road - Museum - Swayambhu | 2.36 | 1 | 4.0 | 2.36 | 0.0 | 0.0 | F | | | C, R | N | N | N | - | | | | |
| KC-116 | Road around Swayambhu | 2.34 | 1 | 3.8 | 2.34 | 0.0 | 0.0 | F | 0.0 | 2.0 | R, C | N | N | N | - | | | | |
| KC-117 | Lainchaur - Amrit Campus | 0.30 | 2 | 8.5 | 0.30 | 0.0 | 0.0 | F | 2.8 | 0.0 | C, R | N | Y | N | SY, MB, TMP | | | | |
| | Amrit Campus - Balaju | 2.04 | 2 | 5.0 | 2.04 | 0.0 | 0.0 | P | 0.0 | 6.0 | C, R | N | N | N | SY, MB, TMP | | | | |
| | Subtotal of Class A roads | 24.65 | | | 24.65 | 0.00 | 0.00 | | | | | | | | | | | | |
| 2.1.2 Class B Road (Secondary Road) | | | | | | | | | | | | | | | | | | | |
| KC-202 | Gaushala - Pasupati - Guheswori | 1.19 | 2 | 5.0 | 1.19 | 0.0 | 0.0 | F | 0.0 | 5.0 | C, R | N | N | N | | | | | |

# Kathmandu Valley Urban Road Development
## Summary of Road Inventory - Urban Road

Note: Urban road subject to the Study consists of Highway inside Ring Road and City roads in each district.
City road subject to the Study are Class A and Class B roads only .

SY: Sajha Yatayat C: Commercial area
MB: Mini-bus R: Residential area
TMP: Tempo A: Agricultural/other area
Y; Yes N; No

| Link NO. | Name of Road | Road Length | Lane No. | Carriage-way width | Pavement Type | | | Pavement Condition | Side-walk | Roadside Clear-ance | Roadside Condition | One-way System | Parking Space | Signal Controlled | Bus Route | Bridge | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Black-topped | Gravelled | Earthen | | | | | | | | | Type | Width | Length | |
| | | (km) | | (m) | (km) | (m) | (m) | G,F,P | (m) | (m) | C,R,A | Y,N | Y,N | Y,N | SY,MB,TMP | | (m) | (m) | |
| KC-203 | Kalimati - Tankeswori - Tahachal - Museum | 1.95 | 2 | 5.7 | 1.95 | 0.0 | 0.0 | F | 0.0 | 5.0 | C, R | N | N | N | | | | | |
| KC-204 | Sitai Niwas - Baluwatar - Rastra Bank - Bhatbhateni | 1.40 | 2 | 3.7 | 1.40 | 0.0 | 0.0 | F | 0.0 | 3.1 | R, C | N | N | N | SY | | | | |
| | Bhatbhateni- Tangal - Bhagwatibahal- Kamalpokhari | 1.30 | 2 | 3.7 | 1.30 | 0.0 | 0.0 | F | 0.0 | 3.1 | C, R | N | N | N | SY, TMP | | | | |
| | Kamalpokhari - Dilli Bazar | 0.40 | 2 | 6.5 | 0.40 | 0.0 | 0.0 | F | 0.0 | 6.0 | C, R | N | N | N | | | | | |
| | Dilli Bazar - Putali Sadak | 0.40 | 2 | 7.2 | 0.40 | 0.0 | 0.0 | F | 2.0 | 0.0 | C, R | Y | N | N | SY, MB, TMP | | | | |
| | Putali Sadak - Padmodaya School | 0.67 | 4 | 13.25 | 0.67 | 0.0 | 0.0 | G | 2.5 | 0.0 | C, R | N | Y | Y | SY, MB, TMP | | | | |
| KC-206 | Keshar Mahal - Thamel(Nursing Campus) | | | | | | | | | | | | | | | | | | |
| | - Chhetrapati - Shobha Bhagawati | 1.82 | 1 | 2.0 | 1.82 | 0.0 | 0.0 | P | 0.0 | 3.7 | C, R | N | N | N | | | | | |
| KC-207 | Nagasthan - Bhimsen Tower - Khichhapokhari | | | | | | | | | | | | | | | | | | |
| | - New Road ( American Library) | 0.75 | 2 | 12.0 | 0.75 | 0.0 | 0.0 | F | 2.5 | 0.0 | C, R | N | Y | N | | | | | |
| KC-209 | Jay Nepal Cenema - Hattisar - Krishna Pauroti | 0.29 | 2 | 7.5 | 0.29 | 0.0 | 0.0 | G | 2.0 | 0.0 | C, R | N | N | N | | | | | |
| | Krishna Pauroti - Kamaladi Ganesh | 0.89 | 2 | 7.6 | 0.89 | 0.0 | 0.0 | G | 2.0 | 0.0 | C, R | N | N | N | | | | | |
| KC-210 | Krishna Pauroti - Kamal Pokhari | 0.50 | 2 | 6.8 | 0.50 | 0.0 | 0.0 | G | 0.0 | 2.0 | C, R | N | N | N | MB | | | | |
| | Kamal Pokhari - Gyaneswor - Rato Pul | 0.90 | 2 | 6.0 | 0.90 | 0.0 | 0.0 | F | 0.0 | 4.0 | C, R | N | N | N | | | | | |
| | Rato Pul - Gaushala | 0.77 | 2 | 6.0 | 0.77 | 0.0 | 0.0 | F | 0.0 | 6.0 | R, A | N | N | Y | | | | | |
| KC-211 | Nag Pokhari - Singh Dobato - Gairi Dhara - | | | | | | | | | | | | | | | | | | |
| | Rastra Bank - Baluwatar | 1.76 | 2 | 5.5 | 1.76 | 0.0 | 0.0 | F | 0.0 | 4.0 | R, C | N | N | N | | | | | |
| KC-212 | Singh Dobato - Bal Mandir | 0.45 | 2 | 7.5 | 0.45 | 0.0 | 0.0 | G | 0.0 | 4.0 | R, C | N | N | N | TMP | | | | |
| KC-213 | Dilli Bazar - Maitidevi | 0.38 | 2 | 7.0 | 0.38 | 0.0 | 0.0 | F | 2.0 | 0.0 | C, R | Y | N | N | SY,MB,TMP | | | | |
| | Maitidevi - Old Baneswor | 0.97 | 2 | 8.0 | 0.97 | 0.0 | 0.0 | F | 2.0 | 0.0 | C, R | N | N | N | SY,MB,TMP | | | | |
| | Old Baneswor - Gaushala | 0.80 | 2 | 8.7 | 0.80 | 0.0 | 0.0 | F | 0.0 | 12.5 | C, R | N | Y | Y | SY,MB,TMP | | | | |
| KC-215 | Sano Gauchar - Gyaneswor | 0.36 | 2 | 5.0 | 0.36 | 0.0 | 0.0 | F | 0.0 | 0.7 | C, R | N | N | N | | | | | |
| | Gyaneswor - Maitidevi - Ghantekulo | 1.02 | 1 | 4.2 | 1.02 | 0.0 | 0.0 | F | 0.0 | 3.5 | C, R | Y | N | N | SY,MB,TMP | | | | |
| | Dilli Bazar - Kalikasthan - Putalisadak | 0.85 | 2 | 6.5 | 0.85 | 0.0 | 0.0 | G | 0.0 | 2.0 | C, R | N | N | N | | | | | |
| KC-217 | Nag Pokhari - Bhagbati Bahal - Sanogauchar | 0.53 | 1 | 3.7 | 0.53 | 0.0 | 0.0 | G | 0.0 | 2.0 | C,R | N | N | N | | | | | |
| | Sano Gauchar - Kalo Pool - Shifal - Chabahil | 1.12 | 1 | 3.7 | 1.12 | 0.0 | 0.0 | F | 0.0 | 1.8 | C,R | N | N | N | - | | | | |
| | Chabahil(Mitra Park) - Guheswori | 0.70 | 1 | 3.5 | 0.70 | 0.0 | 0.0 | F | 0.0 | 2.0 | R | N | N | N | - | | | | |
| KC-218 | Old Baneswor -Mahadevsthan - New Baneswor | 1.60 | 1 | 3.2 | 1.60 | 0.0 | 0.0 | P | 0.0 | 2.5 | R, C | N | N | N | | | | | |
| KC-219 | Thapathali - Maternity Home - Babar Mahal | 1.00 | 1 | 3.5 | 0.50 | 0.5 | 0.0 | P | 0.0 | 0.0 | R,C | N | N | N | - | | | | |
| KC-220 | National Archieves - Back side of Babar Mahal | | | | | | | | | | | | | | | | | | |
| | - International Conference Centre | 1.60 | 1 | 4.2 | 0.80 | 0.8 | 0.0 | P | 0.0 | 7.8 | R, C | N | N | N | | | | | |
| KC-224 | Kathmandu Ganeshthan - Nardevi - Chhetrapati | | | | | | | | | | | | | | | | | | |
| | Chhetrapati - Sorhakhutte | 1.69 | 2 | 5.0 | 1.69 | 0.0 | 0.0 | P | 0.0 | 1.5 | C, R | N | N | N | | | | | |
| KC-225 | Kathmandu Ganeshthan - Bhimsensthan - | | | | | | | | | | | | | | | | | | |
| | Tankeswori(Bishnumati Bridge) | 0.45 | 2 | 7.3 | 0.45 | 0.0 | 0.0 | F | 0.0 | 2.3 | C , R | N | N | N | | | | | |
| KC-229 | Dallu - Shobha Bhagawati | 0.95 | 1 | 4.0 | 0.95 | 0.0 | 0.0 | P | 0.0 | 2.0 | C, R | N | N | N | | | | | |
| KC-230 | Swyambhu - Bijeswori - Shobha Bhagawati | 1.05 | 1 | 4.5 | 1.05 | 0.0 | 0.0 | F | 0.0 | 2.7 | C, R | N | N | N | | | | | |
| KC-252 | Adwait Marg | 0.62 | 1 | 4.5 | 0.00 | 0.6 | 0.0 | P | 0.0 | 1.0 | C,R | N | N | N | | | | | |
| KC-253 | Sina Mangal - Baneswor | 1.90 | 2 | 7.5 | 1.90 | 0.0 | 0.0 | F | 2.0 | 2.0 | C,R | N | N | N | | RC | 6.6 | 66.0 | |
| KC-254 | Rastriya Nachghar - Tindhara Pathsala - Krishna | | | | | | | | | | | | | | | | | | |

## Kathmandu Valley Urban Road Development
## Summary of Road Inventory - Urban Road

SY: Sajha Yatayat C: Commercial area
MB: Mini-bus R: Residential area
TMP: Tempo A: Agricultural/other area

Note: Urban road subject to the Study consists of Highway inside Ring Road and City roads in each district.
City road subject to the Study are Class A and Class B roads only .

Y: Yes N: No

| Link NO. | Name of Road | Road Length | Lane No. | Carriage-way width | Pavement Type | | | Pavement Condition | Side-walk | Roadside Clear-ance | Roadside Condition | One-way System | Parking Space | Signal Controlled | Bus Route | Bridge | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Black-topped | Gravelled | Earthen | | | | | | | | | Type | Width | Length | |
| | | (km) | | (m) | (km) | (m) | (m) | G,F,P | (m) | (m) | C,R,A | Y,N | Y,N | Y,N | SY,MB,TMP | | (m) | (m) | |
| | Paouroti - Kamal Pokhari | 1.31 | 2 | 7.5 | 1.31 | 0.0 | 0.0 | G | 2.0 | 0.0 | C,R | Y | N | Y | | | | | |
| KC-255 | Bhadrakali - Maitighar | 0.70 | 2 | 6.3 | 0.70 | 0.0 | 0.0 | F | 2.5 | 0.0 | R | N | N | N | | | | | |
| KC-257 | Former Zonal Commissioner's Office-Bagh Bazar | 0.67 | 2 | 8.6 | 0.67 | 0.0 | 0.0 | F | 2.9 | 0.0 | C, R | Y | N | Y | SY, MB | | | | |
| | Subtotal of Class B city roads | 35.71 | | | 33.79 | 1.92 | 0.00 | | | | | | | | | | | | |
| | Total of Kathmandu city roads (Class A & B) | 60.36 | | | | | | | | | | | | | | | | | |
| 2. Lalitpur District City Roads | | | | | | | | | | | | | | | | | | | |
| 2.1 | Lalitpur District City Road (Class A) | | | | | | | | | | | | | | | | | | |
| LC-101 | RR(Sat Dobato)-Lagankhel | 0.80 | 2 | 7.0 | 0.80 | 0.0 | 0.0 | G | 0.0 | 1.0 | C | N | N | N | SY,MB,TMP | | | | |
| | Lagankhel-Jawalakhel | 1.30 | 2 | 7.5 | 1.30 | 0.0 | 0.0 | G | 0.0 | 6.5 | C | N | N | N | SY,MB,TMP | | | | |
| | Jawalakhel - Pulchowk | 1.00 | 4 | 10.5 | 1.00 | 0.0 | 0.0 | G | 2.5 | 4.0 | C | N | N | N | SY,MB,TMP | | | | |
| | Pulchowk - Bagmati Bridge | 0.90 | 4 | 14.5 | 0.90 | 0.0 | 0.0 | G | 2.5 | 4.0 | C | N | N | N | SY,MB,TMP | | | | |
| LC-102 | Jawlakhel-Ekantakuna | 0.40 | 2 | 7.5 | 0.40 | 0.0 | 0.0 | G | 2.0 | 0.0 | C,R | N | N | N | MB | | | | |
| | Ekantakuna-Ring Road | 0.40 | 2 | 5.5 | 0.40 | 0.0 | 0.0 | P | 0.0 | 2.8 | C,R | N | N | N | MB | | | | |
| LC-103 | Patan Gate- Kupandol | 0.30 | 2 | 6.5 | 0.30 | 0.0 | 0.0 | G | 0.0 | 2.5 | R | N | N | N | MB,TMP | | | | |
| | Subtotal of Class A City Roads | 5.10 | | | 5.10 | 0.00 | 0.00 | | | | | | | | | | | | |
| 2.2.2 | Lalitpur District city roads (Class B ) | | | | | | | | | | | | | | | | | | |
| LC-201 | Kupandol-Sanepa-Pulchowk | 3.30 | 1 | 4.00 | 3.30 | 0.0 | 0.0 | F | 0.0 | 4.0 | R | N | N | N | N | | | | |
| LC-202 | Pulchowk-Gabahal | 0.40 | 4 | 13.50 | 0.40 | 0.0 | 0.0 | G | 2.5 | 0.0 | C | N | N | N | N | | | | |
| | Gabahal-Durbar Square | 0.60 | 2 | 6.50 | 0.60 | 0.0 | 0.0 | G | 0.0 | 0.0 | C | N | N | N | N | | | | |
| | Durbar Square-Gwarko | 1.20 | 1 | 4.40 | 1.20 | 0.0 | 0.0 | P | 0.0 | 0.0 | C,R | N | N | N | N | | | | |
| LC-203 | Durbar Square-Lagankhel | 0.50 | 2 | 5.5 | 0.50 | 0.0 | 0.0 | P | 0.0 | 0.0 | C | N | N | N | N | | | | |
| LC-204 | Gabahal-Patan Gate | 0.35 | 1 | 4.0 | 0.35 | 0.0 | 0.0 | P | 0.0 | 2.5 | C,R | N | N | N | N | | | | |
| LC-205 | Jhamsikhel- Ring Road | 1.20 | 1 | 3.8 | 1.20 | 0.0 | 0.0 | P | 0.0 | 1.5 | C,R | N | N | N | N | | | | |
| LC-206 | Lagankhel-Army Barrack-Ring Road | 0.80 | 1 | 3.5 | 0.80 | 0.0 | 0.0 | F | 0.0 | 1.5 | C,R | N | N | N | N | | | | |
| | Subtotal of Class B Roads | 8.35 | | | 8.35 | 0.00 | 0.00 | | | | | | | | | | | | |
| | Total of Lalitpur City Roads | 13.45 | | | | | | | | | | | | | | | | | |
| 3. Bhaktapur City Roads | | | | | | | | | | | | | | | | | | | |
| BC-101 | Sallaghari Jn.-Bus Park | 1.00 | 2 | 6.5 | 1.00 | 0.0 | 0.0 | G | 0.0 | 3.0 | R | N | N | N | SY,MB | - | - | - | |
| BC-102 | Bus Park- Durbar Square | 0.70 | 1 | 3.2 | 0.70 | 0.0 | 0.0 | F | 0.0 | 0.0 | C,R | N | N | N | | - | - | - | |
| BC-103 | Bus Park- Thimi Road Jn.- Nagarkot Road Jn. | 4.40 | 1 | 3.8 | 4.40 | 0.0 | 0.0 | P | 0.0 | 2.5 | C,A | N | N | N | MB | - | - | - | |
| BC-104 | Nagarkot Road Jn.-Arniko Highway | 1.70 | 2 | 5.5 | 0.00 | 0.0 | 1.7 | P | 0.0 | 3.0 | C,A | N | N | N | MB | - | - | - | |
| | Total of Bhaktapur City Roads | 7.80 | | | 6.10 | 0.00 | 1.70 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Total of Primary City Road in KTM Valley | | 37.55 | | | 35.85 | 0.00 | 1.70 | | | | | | | | | | | | |
| Total of Secondary City Road in KTM Valley | | 44.06 | | | 42.14 | 1.92 | 0.00 | | | | | | | | | | | | |
| Total of City Road in KTM Valley | | 109.61 | | | 105.99 | 1.92 | 1.70 | | | | | | | | | | | | |

RNA: Royal Nepal Academy HS: High School Jn.: Junction

# Possible Traffic Capacity of Road Network in Kathmandu Valley

C2=2500xrLxrCxrNxrI C4=2200xrLxrCxrNxrIxN

**District: Kathmandu, Lalitpur and Bhaktapur** rN=100/(100+axPm+bxPb)

| Link No. | Name of Road | Nos. of lane | Lane Width | Adjust. factor (rL) | Lateral Clearance | Adjust. factor (rC) | (%) of M/cycle Pm | Conv. to P/car a | (%) of bicycle Pb | Conv. to P/car b | Adjustment for Mixing rN | Roadside Condition rI | Possible Traffic Capacity 2 lanes C2 | Possible Traffic Capacity 4 lanes C4 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) Highway | | | | | | | | | | | | | | | |
| H-001 | Tribhuvan Highway | | | | | | | | | | | | | | |
| | Tripureswor - Soaltee | 2 | 4.40 | 0.85 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 1.00 | 1670 | | |
| | Soaltee - Kalankisthan | 2 | 3.50 | 1.00 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.75 | 1030 | | |
| | Kalankisthan - Nagdhunga | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.70 | 1360 | | |
| H-002 | Arniko Highway | | | | | | | | | | | | | | |
| | Maitighar - Koteswor | 4 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.90 | | 6210 | |
| | Koteswor - Bhaktapur | 2 | 3.25 | 0.94 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.75 | 1370 | | |
| | Bhaktapur - Sanga | 2 | 3.00 | 0.85 | 2.0 | 1.00 | 10 | 0.5 | 10 | 0.5 | 0.91 | 0.80 | 1550 | | |
| (2) Feeder Road | | | | | | | | | | | | | | | |
| F-001 | Trisuli Road | | | | | | | | | | | | | | |
| | R.R.- Balaju | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.75 | 1450 | | |
| | Balaju - Thulokhola | 1 | 3.50 | | | | | | | | | | 50 | | |
| F-002 | Thimi Road | | | | | | | | | | | | | | |
| | ARM- Thimi- Bhaktapur | 1 | 3.80 | | | | | | | | | | 140 | | |
| (3) District Road (Primary Road only) | | | | | | | | | | | | | | | |
| Kathmandu District | | | | | | | | | | | | | | | |
| D-101 | R.R.(Tribhuban Univ.)- Pharping- Dakshinkali | | | | | | | | | | | | | | |
| | R.R.(Tribhuban Univ.) - Chodhar | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.80 | 1550 | | |
| | Chovar - Dakshinkali | 1 | 4.00 | | | | | | | | | | 200 | | |
| D-102 | R.R.(Kimdol) - Sitapaila- Bhimdhunga | 1 | 3.00 | | | | | | | | | | 50 | | |
| D-103 | R.R.(Maharajgunj) - Tokha | 1 | 4.00 | | | | | | | | | | 200 | | |
| D-104 | R.R.(Bansbari)- Budhanilkanth | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.80 | 1550 | | |
| D-105 | R.R.(Chabahil)-Gokarna-Sankhu | | | | | | | | | | | | | | |
| | R.R.(Chabahil)-Gokarna | 2 | 5.00 | 1.00 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.70 | 1360 | | |
| | Gokarna-Sankhu | 1 | 3.80 | | | | | | | | | | 140 | | |
| D-106 | Baralgaun (Jorpati)-Sundarijal | 1 | 3.50 | | | | | | | | | | 50 | | |
| D-107 | Balaju - Phutung | 1 | 3.50 | | | | | | | | | | 50 | | |
| Patan District | | | | | | | | | | | | | | | |
| D-108 | R.R.(Gwarko)-Lubhu-Lamatar | 1 | 3.50 | | | | | | | | | | 50 | | |
| D-109 | R.R.(Sat Dobato)-Thaiba-Godawari | | | | | | | | | | | | | | |
| | R.R.(Sat Dobato)- Harisiddhi | 2 | 3.00 | 0.85 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.80 | 1320 | | |
| | Harisiddhi-Thaiba-Godawari | 1 | 3.70 | | | | | | | | | | 110 | | |
| D-110 | R.R.(Sat Dobato)-Thecho-Chapagaun-Lele | 1 | 3.00 | | | | | | | | | | 50 | | |
| D-111 | R.R.(Jawalakhel) - Nakhu - Bungamati | 2 | 2.75 | 0.77 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.75 | 1120 | | |
| Bhaktapur District | | | | | | | | | | | | | | | |
| D- 112 | Bhaktapur-Nagarkot | 1 | 3.50 | | | | | | | | | | 50 | | |
| | | | | | | | | | | | | | | | |
| (4) City Road | | | | | | | | | | | | | | | |
| Kathmandu City Class A Roads | | | | | | | | | | | | | | | |
| KC-101 | Ring Road | 2 | 5.00 | 1.00 | 5.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 1.00 | 1960 | | |
| KC-102 | Maitighar - Thapathali | 4 | 3.50 | 1.00 | 2.5 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4830 | |
| | Thapathali (Bagmati bridge) - Tripureswor Junction | 4 | 3.50 | 1.00 | 2.5 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4830 | |
| | Tripureswor - Nagasthan | 2 | 4.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Nagasthan- Ranipokhari | 2 | 4.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.85 | 1670 | | Oneway, High pedestrian |
| | Ranipokhari - Lainchaur | 4 | 3.25 | 0.94 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.85 | | 5510 | |
| | Lainchaur - Maharajgunj-Ring Road Jn. | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-103 | Nagasthan - Shahid Gate - Bhadrakali | 4 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.85 | 1670 | | Oneway, High pedestrian |
| | Bhadrakali - Singh Durbar | 4 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 1.00 | | 6900 | |

# Possible Traffic Capacity of Road Network in Kathmandu Valley

C2=2500xrLxrCxrNxrI C4=2200xrLxrCxrNxrIxN

**District: Kathmandu, Lalitpur and Bhaktapur**

rN=100/(100+axPm+bxPb)

| Link No. | Name of Road | Nos. of lane | Lane Width | Adjust. factor (rL) | Lateral Clearance | Adjust. factor (rC) | (%) of M/cycle Pm | Conv. to P/car a | (%) of bicycle Pb | Conv. to P/car b | Adjustment for Mixing rN | Roadside Condition rI | Possible Traffic Capacity 2 lanes C2 | Possible Traffic Capacity 4 lanes C4 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KC-104 | New Road Gate-Kasthamandap-Hanumandhoka | 4 | 3.00 | 0.85 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4110 | |
| KC-105 | Kalimati - Kuleswor | 2 | 3.00 | 0.85 | 10.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1170 | | |
| | Kuleswor - Ring Road | 2 | 2.75 | 0.77 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1060 | | |
| KC-106 | Kalimati - Hotel Soaltee Oberoi | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-107 | Bhadrakali - NEA-Trichandra Campus | 2 | 4.25 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.80 | 1570 | | Oneway, High Pedestrian |
| | Trichandra Campus-Royal Palace | 4 | 4.50 | 1.00 | 2.5 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4830 | |
| KC-108 | Trichandra Campus - Kamaladi (RNA) | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-109 | Bus Stop - City Hall- Padmodaya HS | 2 | 4.40 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-110 | Maitighar - Singh Durbar - Putalisadak | 4 | 3.25 | 0.94 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4540 | |
| KC-111 | Keshar Mahal - Nagpokhari | 2 | 5.00 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Nagpokhari- Nanigunj-Lainchour | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-112 | Bhotahity - Former Zonal Commissioner's Office | 4 | 3.50 | 1.00 | 3.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4830 | Oneway, High Pedestrian |
| KC-114 | Ring Road - Tribhuvan Airport | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-115 | Ring Road - Museum - Swyambhu | 1 | 3.75 | | | | | | | | | | 130 | | |
| KC-116 | Road around Swyambhu | 1 | 3.75 | | | | | | | | | | 130 | | |
| KC-117 | Lainchour - Amrit Campus | 2 | 4.25 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Amrit Campus - Balaju | 2 | 2.75 | 0.77 | 5.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1060 | | |
| | | | | | | | | | | | | | | | |
| Lalitpur City Class A Roads | | | | | | | | | | | | | | | |
| LC-101 | RR(Sat Dobato)-Lagankhel(Bus Stop) | 2 | 3.50 | 1.00 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 960 | | |
| | Lagankhel(Bus Stop)-Jawalakhel(Round About) | 2 | 3.75 | 1.00 | 6.5 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Jawalakhel (Round About)- Pulchowk | 2 | 5.25 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Pulchowk - Bagmati Bridge | 4 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4830 | |
| LC-102 | Jawlakhel(Round about)-Ekantakuna | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Ekantakuna-Ring Road | 2 | 2.75 | 0.77 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1060 | | |
| LC-103 | Patan Gate- Kupandol | 2 | 3.25 | 0.94 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1290 | | |
| | | | | | | | | | | | | | | | |
| Kathmandu city Class B Roads | | | | | | | | | | | | | | | |
| KC-202 | Gaushala - Pashupati - Guheswori | 1 | 5.00 | | | | | | | | | | 500 | | |
| KC-203 | Kalimati - Tankeswori - Tahachal - Museum | 2 | 2.75 | 0.77 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 740 | | |
| KC-204 | Shital Niwas - Baluwatar - Rastra Bank - Bhatbhateni | 1 | 3.70 | | | | | | | | | | 110 | | |
| | Bhatbhateni- Tangal - Bhagwatibahal- Kamalpokhari | 1 | 3.70 | | | | | | | | | | 110 | | |
| | Kamalpokhari - Dilli Bazar | 2 | 3.25 | 0.94 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 900 | | |
| KC-206 | Keshar Mahal - Thamel(Nursing Campus) | | | | | | | | | | | | | | |
| | - Chhetrapati - Shodha Bhagawati | 1 | 4.50 | | | | | | | | | | 350 | | |
| KC-207 | Nagasthan - Bhimsen Tower - Khichhapokhari | | | | | | | | | | | | | | |
| | - New Road ( American Library) | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-209 | Jaya Nepal Cenema - Hattisar - Krishna Pauroti | | | | | | | | | | | | | | |
| | Krishna Pauroti - Kamaladi Ganesh | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-210 | Krishna Pauroti - Kamal Pokhari | 2 | 3.40 | 0.95 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1300 | | |
| | Kamal Pokhari - Gyaneswor - Rato Pul | | | | | | | | | | | | | | |
| | Rato Pul - Gaushala | 2 | 3.00 | 0.85 | 3.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1170 | | |
| KC-211 | Nag Pokhari - Singh Dobato - Gairi Dhara - | | | | | | | | | | | | | | |
| | Rastra Bank - Baluwatar | 2 | 2.75 | 0.77 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1060 | | |
| KC-212 | Singh Dobato - Bal Mandir | 2 | 2.75 | 0.77 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 740 | | |
| KC-213 | Dilli Bazar - Maitidevi | 2 | 3.50 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | Oneway, High Pedestrian |
| | Maitidevi - Old Baneswor | 2 | 4.00 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| | Old Baneswor - Gaushala | 2 | 4.35 | 1.00 | 3.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-215 | Sano Gauchar - Gyaneswor | 1 | 5.00 | | | | | | | | | | 500 | | |

# Possible Traffic Capacity of Road Network in Kathmandu Valley

C2=2500xrLxrCxrNxrI C4=2200xrLxrCxrNxrIxN

**District: Kathmandu, Lalitpur and Bhaktapur** rN=100/(100+axPm+bxPb)

| Link No. | Name of Road | Nos. of lane | Lane Width | Adjust. factor (rL) | Lateral Clearance | Adjust. factor (rC) | (%) of M/cycle Pm | Conv. to P/car a | (%) of bicycle Pb | Conv. to P/car b | Adjustment for Mixing rN | Roadside Condition rI | Possible Traffic Capacity 2 lanes C2 | Possible Traffic Capacity 4 lanes C4 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gyaneshor - Maitidevi - Ghattekulo | 1 | 4.20 | | | | | | | | | | 260 | | Oneway, High Pedestrian |
| KC-216 | Dilli Bazar - Kalikasthan - Putalisadak | 2 | 3.25 | 0.94 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1290 | | |
| KC-217 | Nag Pokhari - Bhagawati Bahal - Sano Gauchar | 1 | 3.70 | | | | | | | | | | 110 | | |
| | Sano Gauchar - Kalo Pul - Sifal - Chabahil | 1 | 3.70 | | | | | | | | | | 110 | | |
| | Chabahil(Mitra Park) - Guheswori | 1 | 3.50 | | | | | | | | | | 50 | | |
| KC-218 | Old Baneswor - Mahadevsthan - New Baneswor | 1 | 3.20 | | | | | | | | | | 50 | | |
| KC-219 | Thapathali - Maternity Hospital - Babar Mahal | 1 | 3.50 | | | | | | | | | | 50 | | |
| KC-220 | National Archieves - Back side of Babar Mahal | | | | | | | | | | | | | | |
| | - International Conference Centre | 1 | 4.20 | | | | | | | | | | 260 | | |
| KC-224 | Kathamandu Ganeshsthan - Nardevi - Chhetrapati- | | | | | | | | | | | | | | |
| | Sorhakhutte | 1 | 5.00 | | | | | | | | | | 500 | | |
| KC-225 | Kathmandu Ganeshthan - Bhimsensthan - | | | | | | | | | | | | | | |
| | Tankeswori (Bishnumati Bridge) | 1 | 3.75 | | | | | | | | | | 130 | | |
| KC-229 | Dallu - Shodha Bhagawati | 1 | 4.00 | | | | | | | | | | 200 | | |
| KC-230 | Swoyambhu - Bijeswori - Shodha Bhagawati | 1 | 4.50 | | | | | | | | | | 350 | | |
| KC-252 | Adwait Marg | 1 | 4.50 | | | | | | | | | | 350 | | |
| KC-253 | Sina Mangal -Old Baneswor | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-254 | Rastriya Nachghar-Tindhara Pathsala - Krishan | | | | | | | | | | | | | | |
| | Pauroti - Kamal Pokhari | 2 | 3.75 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | |
| KC-255 | Bhadrakali - Maitighar | 2 | 3.00 | 0.85 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1170 | | |
| KC-257 | Former Zonal Commissioner's Office-Bagh Bazar | 2 | 4.30 | 1.00 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 1370 | | Oneway, High Pedestrian |
| | | | | | | | | | | | | | | | |
| Lalitpur City Class B Roads | | | | | | | | | | | | | | | |
| LC-201 | Kupandol-Sanepa-Pulchowk | 1 | 4.00 | | | | | | | | | | 200 | | |
| LC-202 | Pulchowk-Gabahal | 4 | 3.25 | 0.85 | 2.0 | 1.00 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | | 4110 | |
| | Gabahal-Durbar Square | 2 | 3.25 | 0.94 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 900 | | |
| | Durbar Square-Gwarko | 1 | 4.40 | | | | | | | | | | 320 | | |
| LC-203 | Durbar Square-Lagankhel | 2 | 2.75 | 0.77 | 0.0 | 0.70 | 19 | 0.5 | 36 | 0.5 | 0.78 | 0.70 | 740 | | |
| LC-204 | Gabahal-Patan Gate | 1 | 4.00 | | | | | | | | | | 200 | | |
| LC-205 | Jhamsikhel- Ring Road | 1 | 3.80 | | | | | | | | | | 140 | | |
| LC-206 | Lagankhel-Army Barrack-Ring Road | 1 | 3.50 | | | | | | | | | | 50 | | |
| | | | | | | | | | | | | | | | |
| Bhaktapur City Class B Roads | | | | | | | | | | | | | | | |
| BC-201 | Sallaghari Jn.- Bus Park | 2 | 3.25 | 0.94 | 1.5 | 0.95 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.70 | 1210 | | |
| BC-202 | Bus Park- Durbar Square | 1 | 3.20 | | | | | | | | | | 50 | | |
| BC-203 | Bus Park- Thimi Road Jn.-Nagarkot Road Jn. | 1 | 3.80 | | | | | | | | | | 140 | | |
| BC-204 | Nagarkot Road Jn.-Arniko Highway | 2 | 2.75 | 0.77 | 2.0 | 1.00 | 18 | 0.5 | 40 | 0.5 | 0.78 | 0.70 | 1040 | | |
| | | | | | | | | | | | | | | | |

NEA: Nepal Electricity Authority HS: High School RNA: Royal Nepal Academy RR: Ring Road

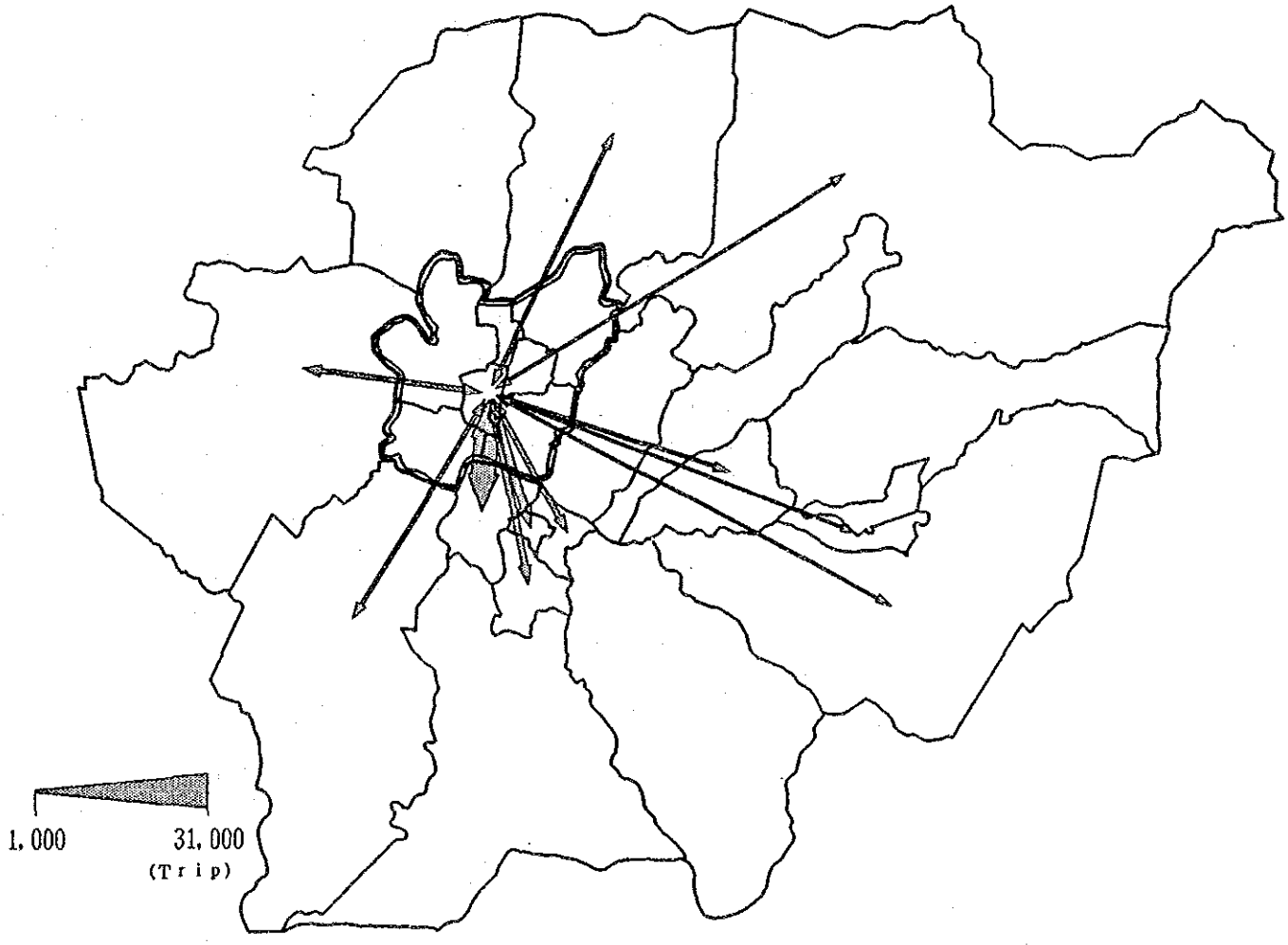
# CHAPTER 4 PRESENT TRAFFIC SITUATION

Appendix 4-1 Present Traffic Desire Lines (Vehicle)

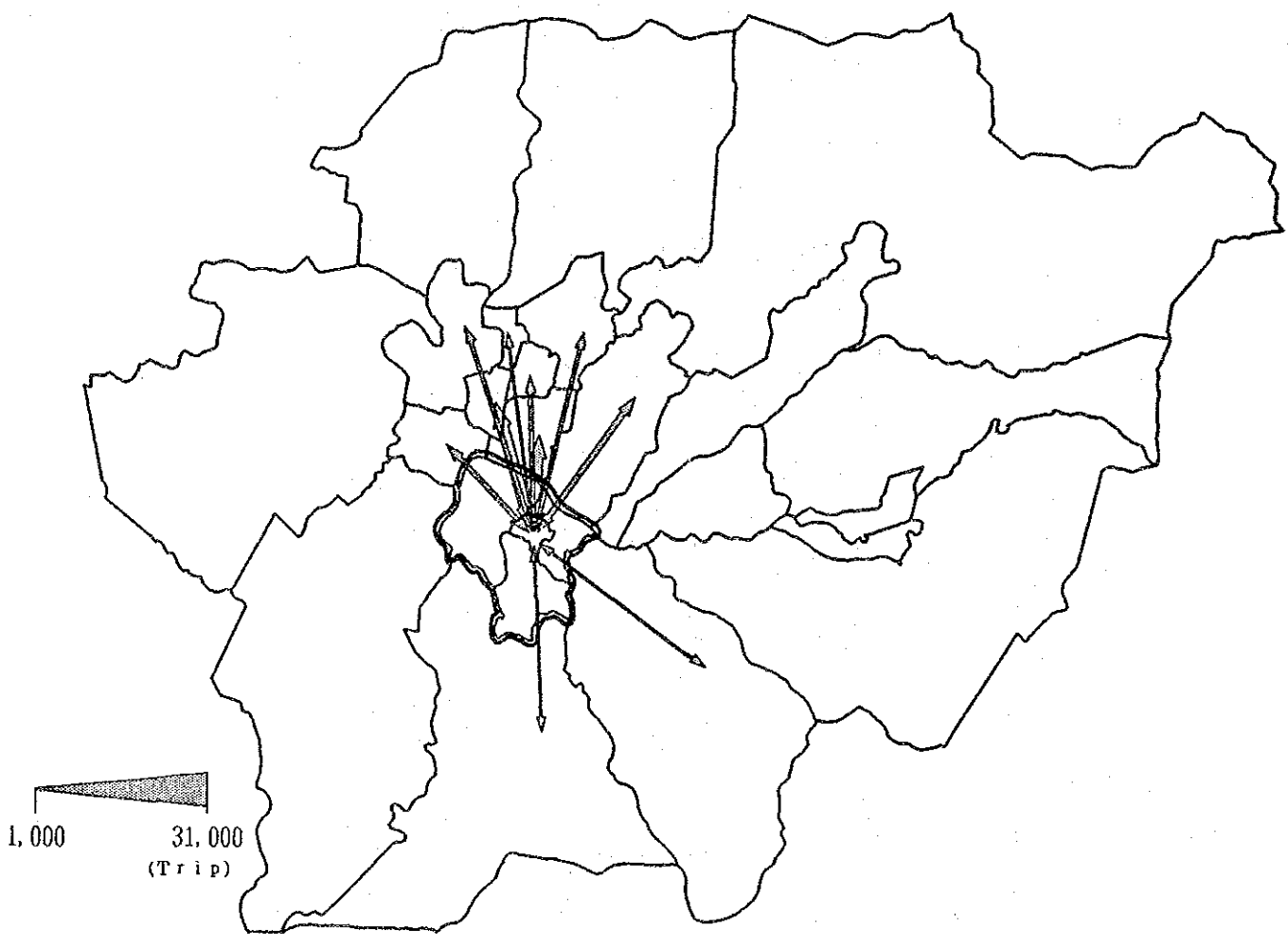
Appendix 4-2 Present Degree of Saturation at Intersection

# APPENDIX 4-1 PRESENT TRAFFIC DESIRE LINES (VEHICLE)

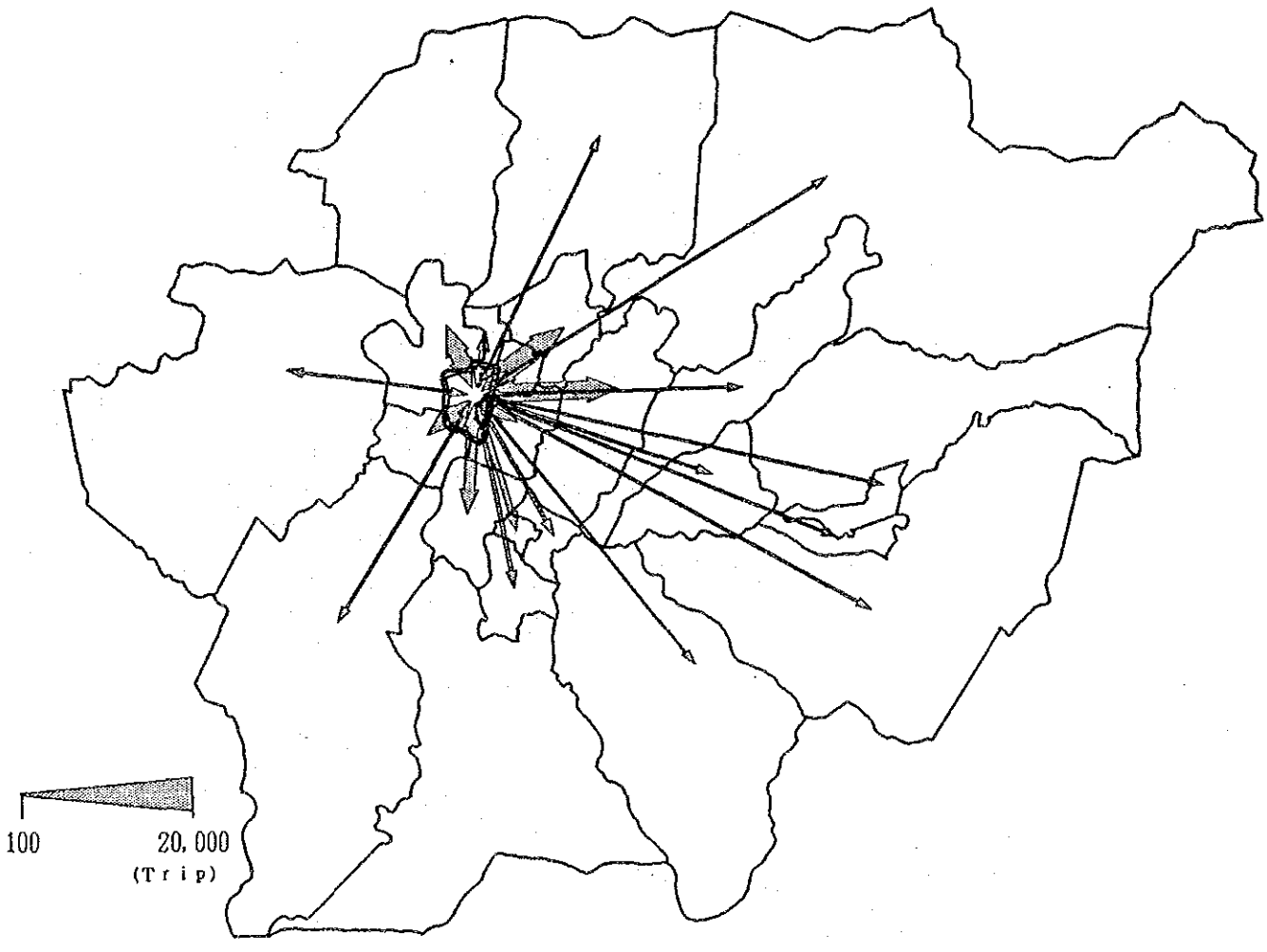
(Vehicle) Excluding Bicycle (KATHMANDU CITY)



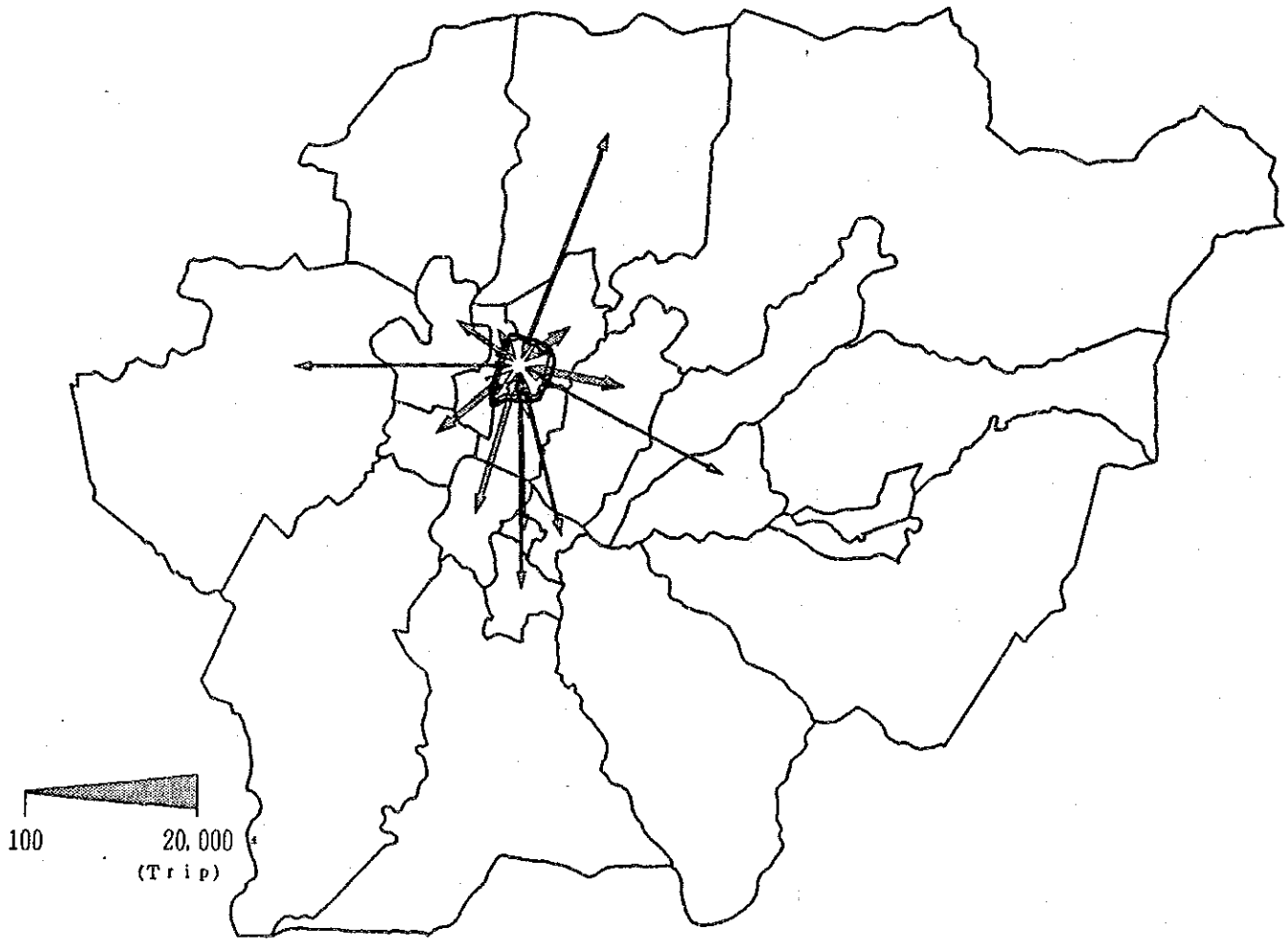
(Vehicle) Excluding Bicycle (PATAN CITY)



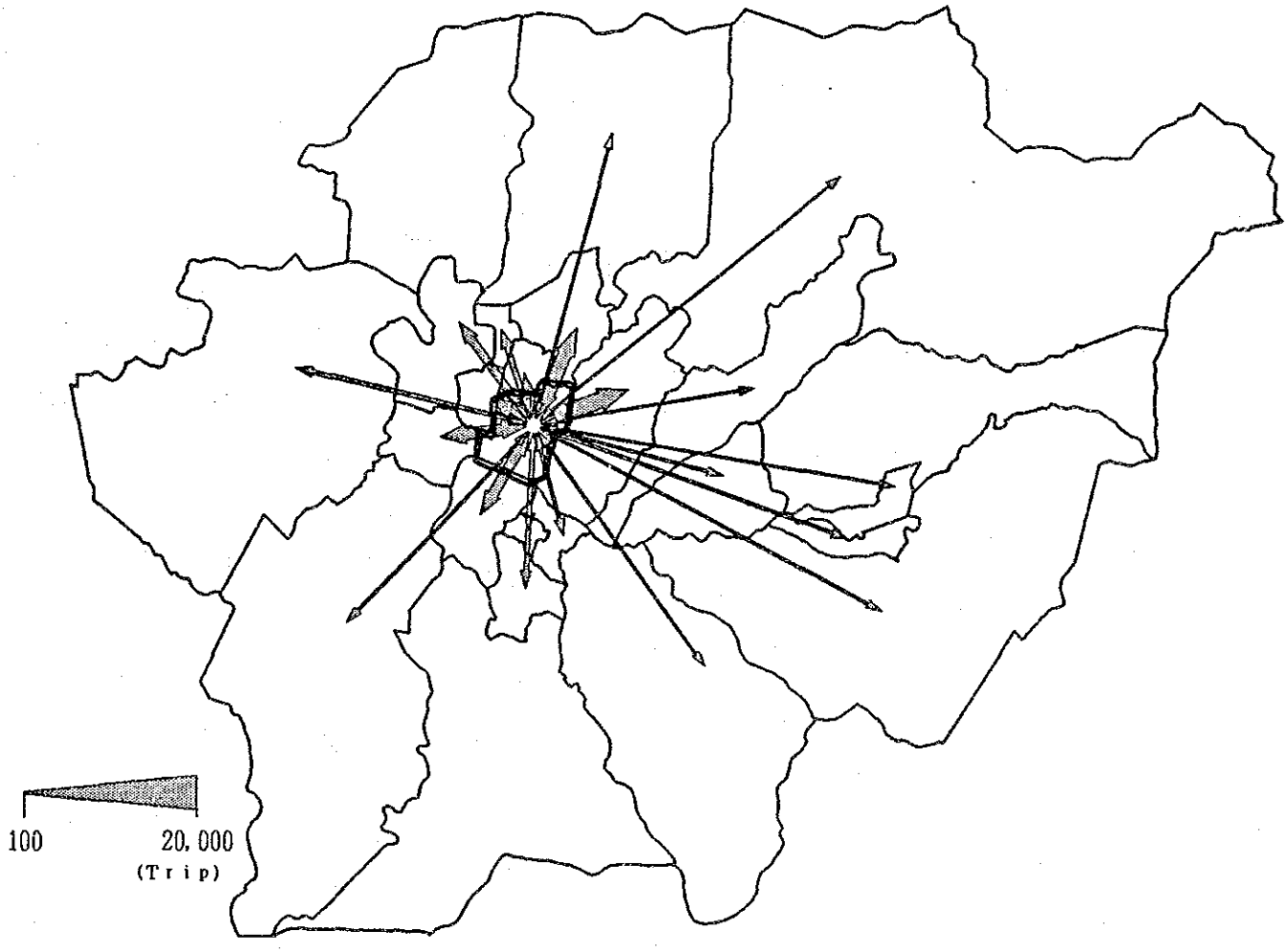
(Vehicle) Excluding Bicycle (ZONE1)



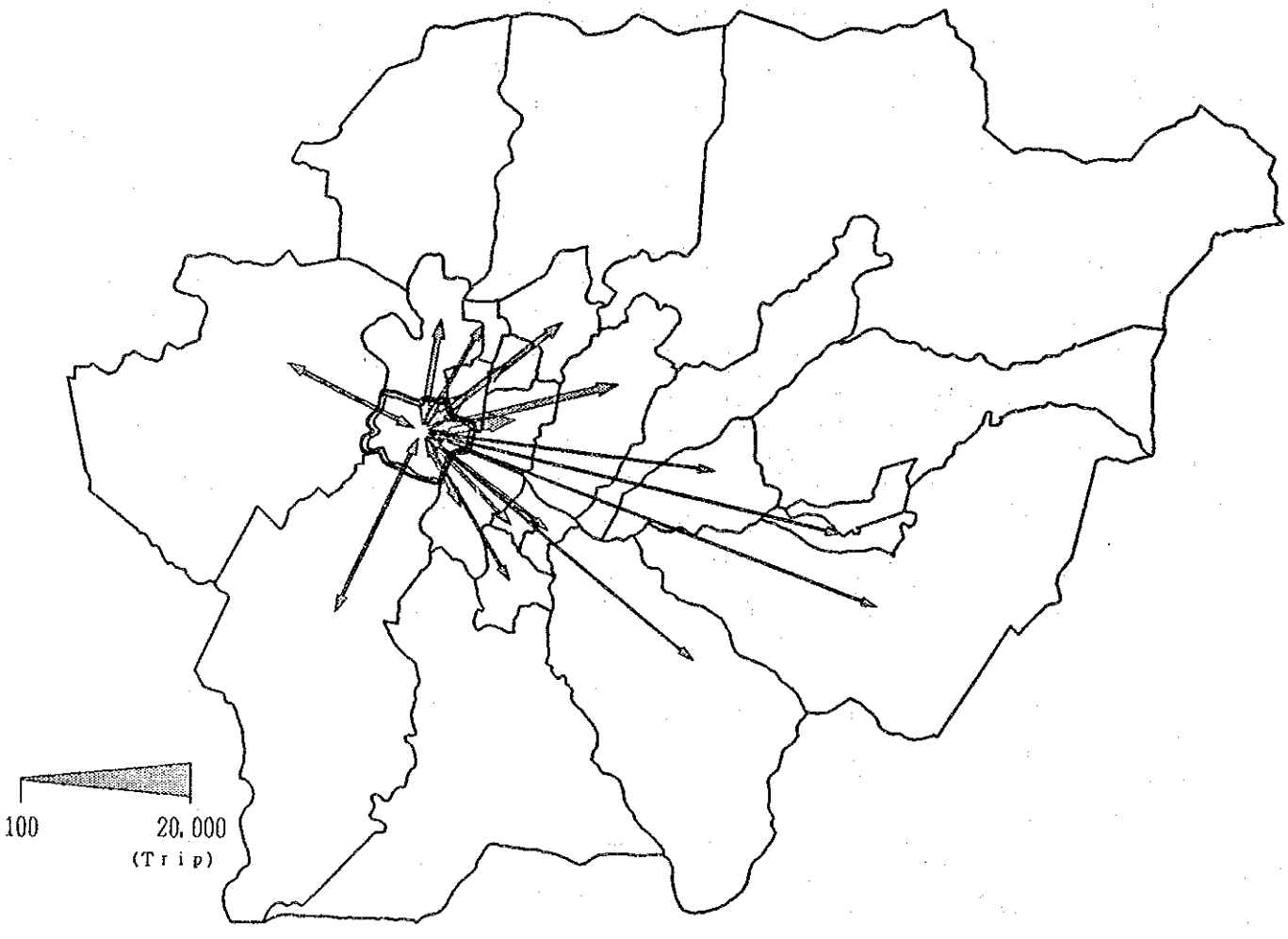
(Vehicle) Excluding Bicycle (ZONE3)



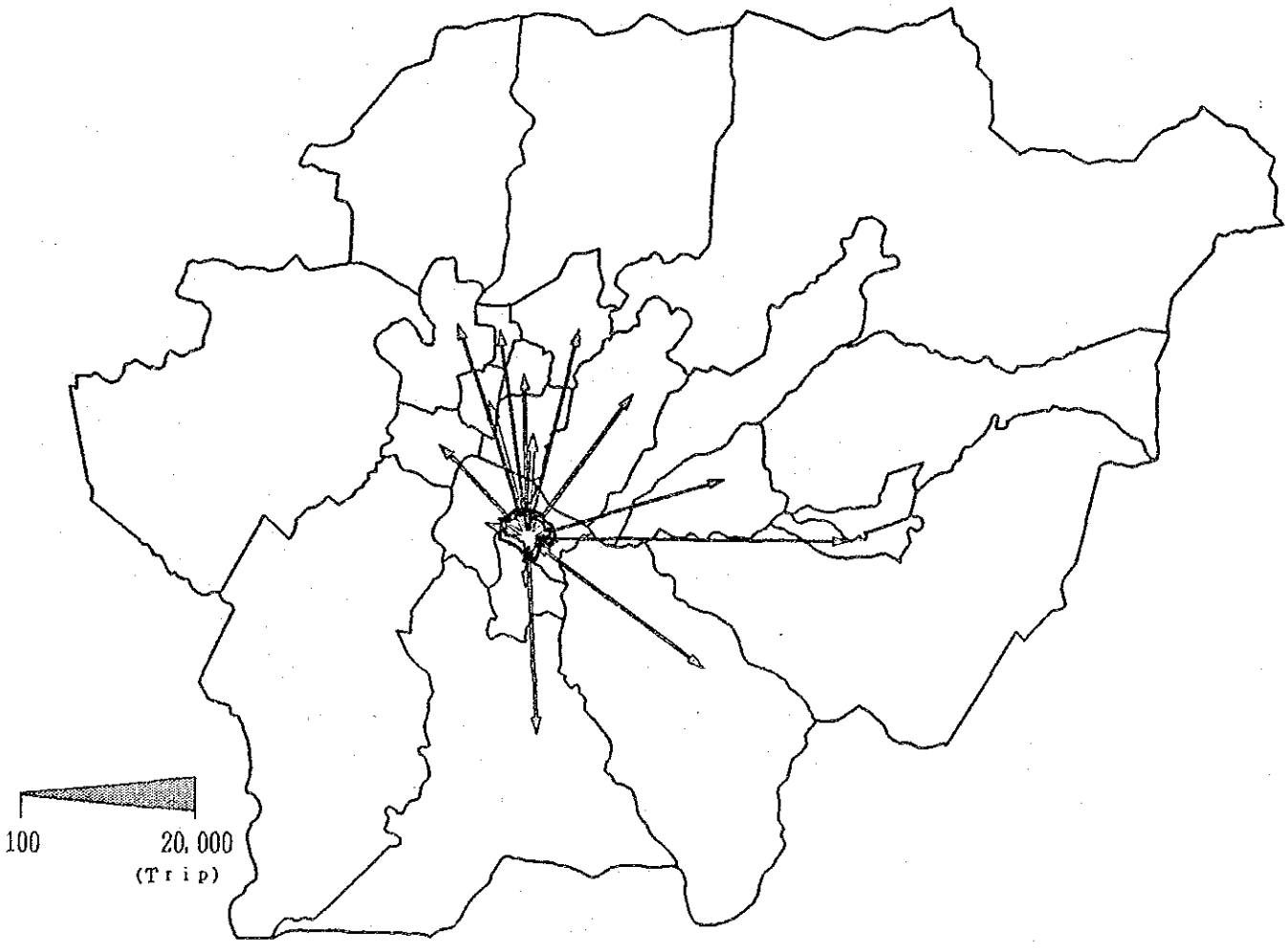
(Vehicle) Excluding Bicycle (ZONE4)



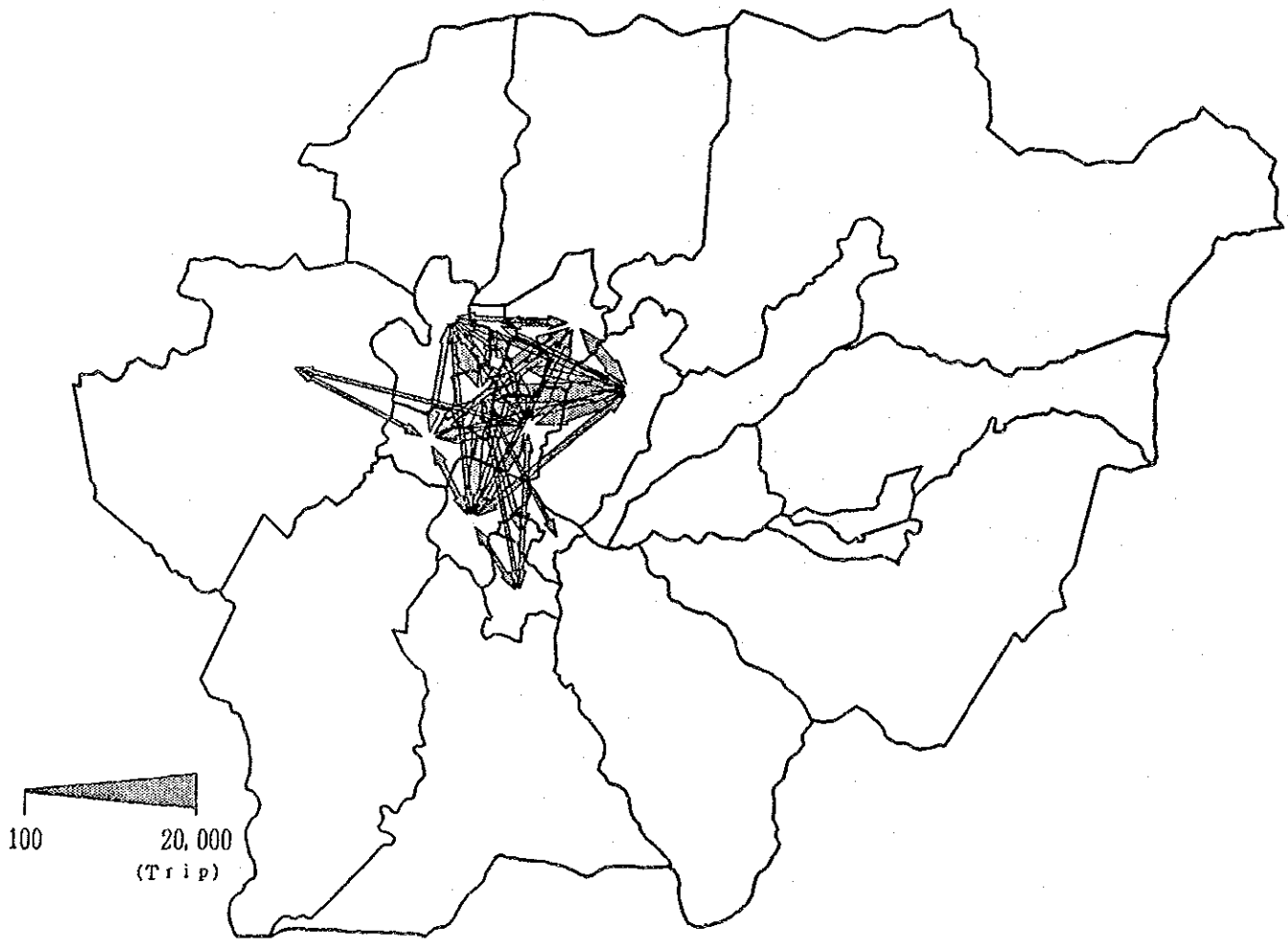
(Vehicle) Excluding Bicycle (ZONE5)



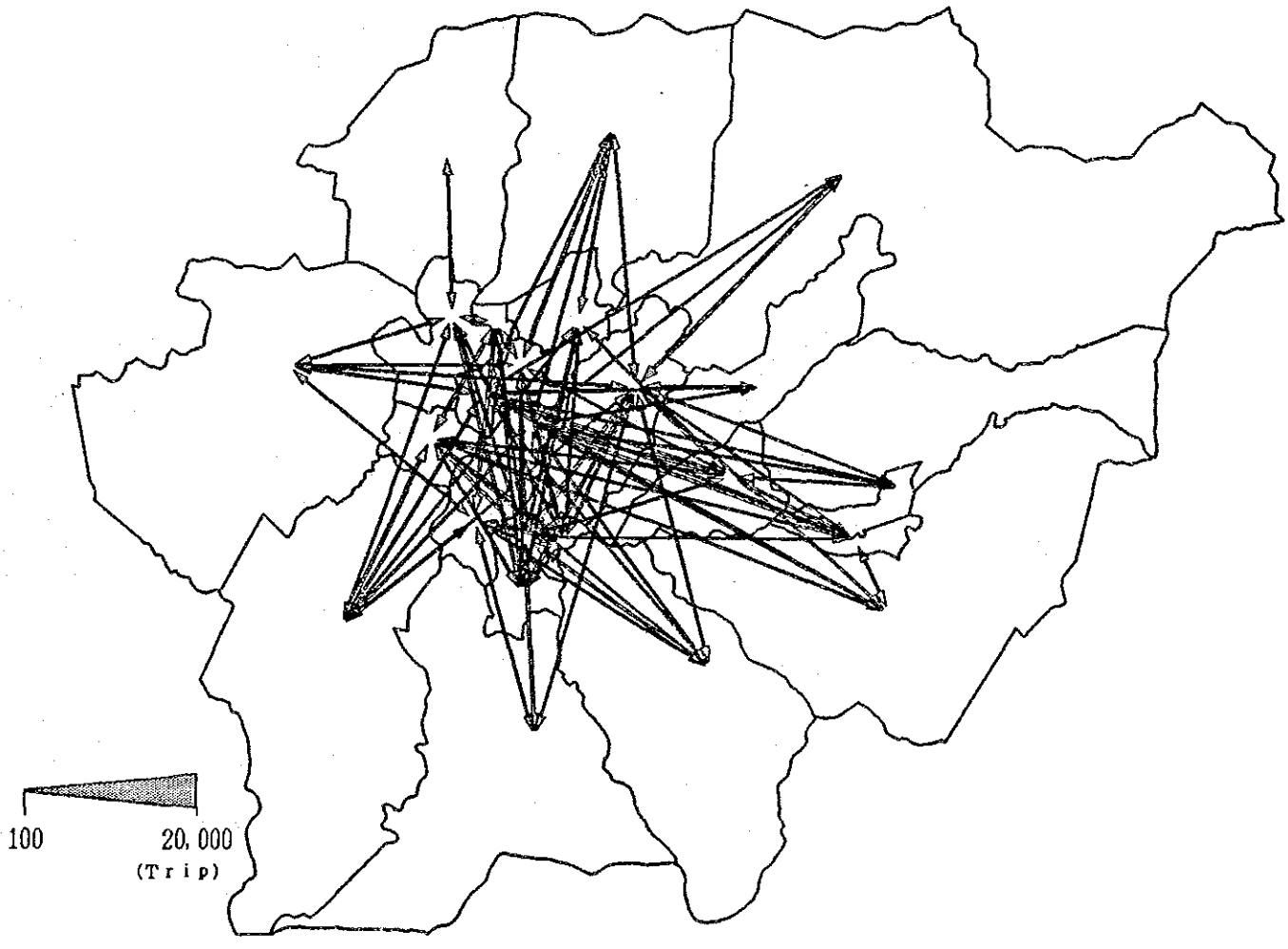
(Vehicle) Excluding Bicycle (ZONE9)



(Vehicle) Excluding Bicycle (1000~20000)

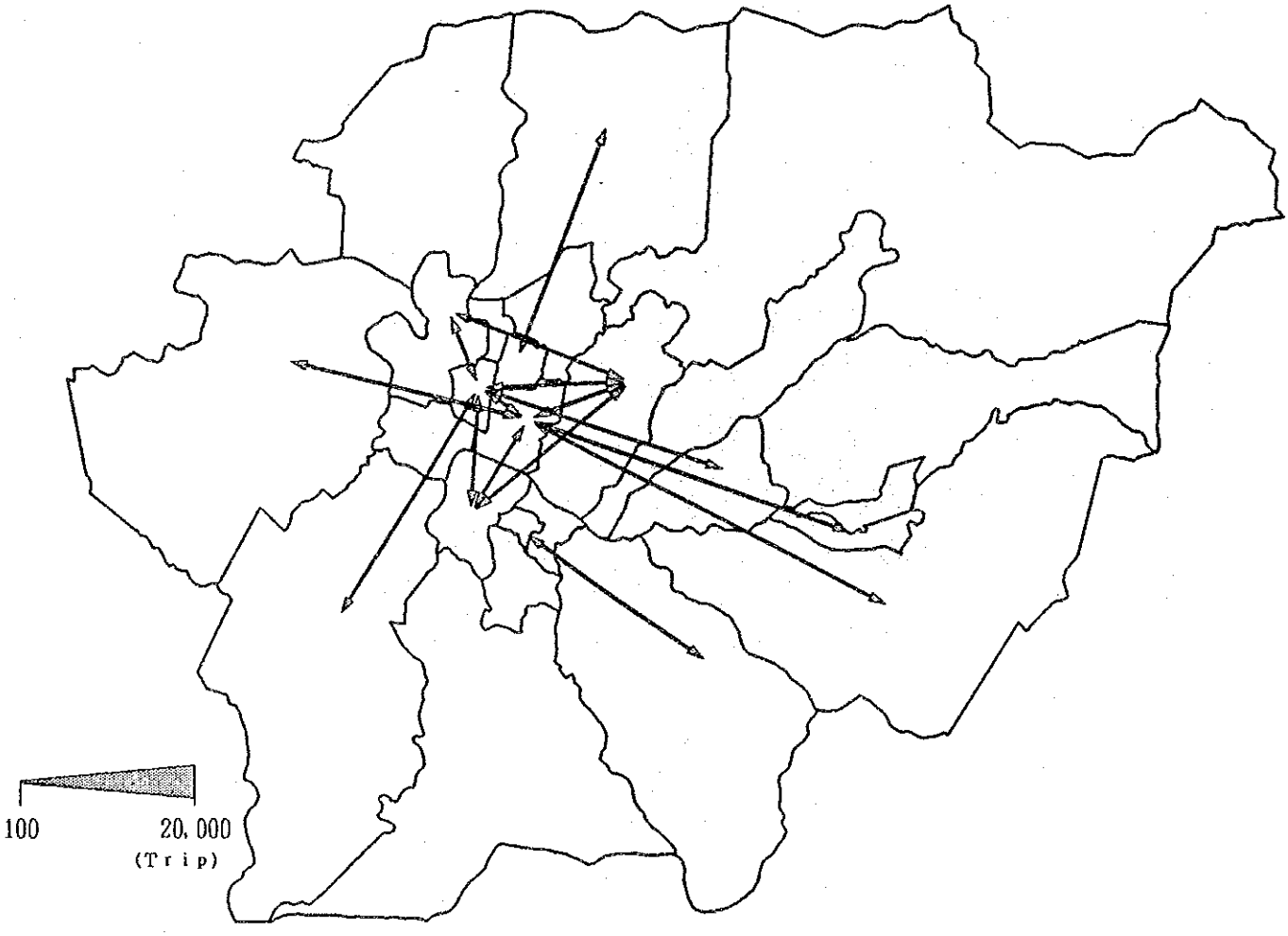


(Vehicle) Excluding Bicycle (100~1000)



(Vehicle)

Bus+Minibus



## APPENDIX 4-2 PRESENT DEGREE OF SATURATION AT INTERSECTIOI

Point C1 10:00 - 11:00

| Direction | | 1 + 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Lane | | Through Left | Through | Left | Right | Left |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 2,000 | 1,800 | 1,800 | 1,800 |
| Adjustment Factor | Lane Width (m) | 1.00 (4.0) | 1.00 (3.5) | 1.00 (3.5) | 1.00 (3.5) | 1.00 (3.5) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 0.99 (1.0) | 1.00 (0.3) | 0.98 (2.9) | 0.97 (5.1) | 1.00 (0.0) |
| | Right Turns (%) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Left Turns (%) | 0.68 (52.2) | 1.00 | 0.56 | 1.00 | 0.56 |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,351 | 1,996 | 988 | 1,738 | 1,008 |
| Traffic Volume (vehicle/h)* | | 1,134 | 297 | 520 | 316 | 727 |
| Normalized Volume | | 0.84 | 0.15 | 0.53 | 0.11 | 0.72 |
| Degree of Saturation by Phase | Phase 1 | 0.84 | | | 0.11 | 0.72 |
| | Phase 2 | | 0.15 | 0.53 | | |
| | Phase 3 | | | | | |
| Degree of Saturation | | 1.37 | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C1 16:00 - 17:00

| Direction | | 1 + 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Lane | | Through Left | Through | Left | Right | Left |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 2,000 | 1,800 | 1,800 | 1,800 |
| Adjustment Factor | Lane Width (m) | 1.00 (4.0) | 1.00 (3.5) | 1.00 (3.5) | 1.00 (3.5) | 1.00 (3.5) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 0.99 (1.5) | 1.00 (0.0) | 0.98 (3.5) | 0.92 (12.3) | 1.00 (0.0) |
| | Right Turns (%) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Left Turns (%) | 0.70 (46.1) | 1.00 | 0.56 | 1.00 | 0.56 |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,385 | 2,000 | 984 | 1,657 | 1,008 |
| Traffic Volume (vehicle/h)* | | 1,090 | 339 | 405 | 357 | 886 |
| Normalized Volume | | 0.79 | 0.17 | 0.41 | 0.13 | 0.88 |
| Degree of Saturation by Phase | Phase 1 | 0.79 | | | 0.13 | 0.88 |
| | Phase 2 | | 0.17 | 0.41 | | |
| | Phase 3 | | | | | |
| Degree of Saturation | | 1.29 | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C3 10:00 - 11:00

| Direction | | 1 + 2+3 |
|---|---|---|
| Lane | | Through<br>Left,Right |
| Number of Lanes | | 2 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 4,000 |
| Adjustment Factor | Lane Width (m) | 1.00<br>(5.0) |
| | Approach Grade (%) | 1.00<br>(0.0) |
| | Heavy Vehicles (%) | 0.98<br>(3.1) |
| | Right Turns (%) | 0.76<br>(30.4) |
| | Left Turns (%) | 0.96<br>(4.3) |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 2,856 |
| Traffic Volume (vehicle/h)* | | 2,140 |
| Normalized Volume | | 0.75 |
| Degree of Saturation by Phase | Phase 1 | 0.75 |
| | Phase 2 | |
| | Phase 3 | |
| Degree of Saturation | | 0.75 |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C3 16:00 - 17:00

| Direction | | 1 + 2+3 |
|---|---|---|
| Lane | | Through<br>Left,Right |
| Number of Lanes | | 2 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 4,000 |
| Adjustment Factor | Lane Width (m) | 1.00<br>(5.0) |
| | Approach Grade (%) | 1.00<br>(0.0) |
| | Heavy Vehicles (%) | 0.98<br>(2.6) |
| | Right Turns (%) | 0.74<br>(33.3) |
| | Left Turns (%) | 0.97<br>(3.5) |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 2,820 |
| Traffic Volume (vehicle/h)* | | 2,348 |
| Normalized Volume | | 0.83 |
| Degree of Saturation by Phase | Phase 1 | 0.83 |
| | Phase 2 | |
| | Phase 3 | |
| Degree of Saturation | | 0.83 |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C4 10:00 - 11:00

| Direction | | 1 + 2 | 3 | 4+5+6 | 7+8 | 9 | 10+11+12 |
|---|---|---|---|---|---|---|---|
| Lane | | Through Right | Left | Through Left,Right | Through Right | Left | Through Left,Right |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 1,800 | 2,000 | 2,000 | 1,800 | 2,000 |
| Adjustment Factor | Lane Width (m) | 1.00 (3.3) | 1.00 (3.2) | 1.00 (5.0) | 1.00 (3.3) | 1.00 (3.2) | 1.00 (5.0) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 1.00 (0.7) | 0.99 (0.8) | 1.00 (0.4) | 0.99 (0.9) | 0.98 (2.3) | 1.00 (0.6) |
| | Right Turns (%) | 0.89 (10.1) | 1.00 | 0.79 (17.8) | 0.85 (12.5) | 1.00 | 0.75 (43.1) |
| | Left Turns (%) | 1.00 | 0.88 | 0.93 (23.5) | 1.00 | 0.88 | 0.91 (31.4) |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,771 | 1,575 | 1,465 | 1,689 | 1,559 | 1,359 |
| Traffic Volume (vehicle/h)* | | 575 | 132 | 510 | 535 | 577 | 885 |
| Normalized Volume | | 0.32 | 0.08 | 0.35 | 0.32 | 0.37 | 0.65 |
| Degree of Saturation by Phase | Phase 1 | 0.32 | 0.08 | | 0.32 | 0.37 | |
| | Phase 2 | | | 0.35 | | | 0.65 |
| | Phase 3 | | | | | | |
| Degree of Saturation | | 1.02 | | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C4 16:00 - 17:00

| Direction | | 1 + 2 | 3 | 4+5+6 | 7+8 | 9 | 10+11+12 |
|---|---|---|---|---|---|---|---|
| Lane | | Through Right | Left | Through Left,Right | Through Right | Left | Through Left,Right |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 1,800 | 2,000 | 2,000 | 1,800 | 2,000 |
| Adjustment Factor | Lane Width (m) | 1.00 (3.3) | 1.00 (3.2) | 1.00 (5.0) | 1.00 (3.3) | 1.00 (3.2) | 1.00 (5.0) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 0.99 (1.0) | 0.99 (0.9) | 1.00 (0.2) | 0.99 (0.9) | 0.98 (2.2) | 1.00 (0.5) |
| | Right Turns (%) | 0.95 (5.9) | 1.00 | 0.79 (17.7) | 0.54 (12.0) | 1.00 | 0.72 (48.5) |
| | Left Turns (%) | 1.00 | 0.88 | 0.96 (15.8) | 1.00 | 0.88 | 0.91 (30.6) |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,887 | 1,574 | 1,515 | 1,073 | 1,560 | 1,306 |
| Traffic Volume (vehicle/h)* | | 1,046 | 112 | 430 | 425 | 455 | 849 |
| Normalized Volume | | 0.55 | 0.07 | 0.28 | 0.40 | 0.29 | 0.65 |
| Degree of Saturation by Phase | Phase 1 | 0.55 | 0.07 | | 0.40 | 0.29 | |
| | Phase 2 | | | 0.28 | | | 0.65 |
| | Phase 3 | | | | | | |
| Degree of Saturation | | 1.20 | | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C6 10:00 - 11:00

| Direction | | 1 | 2 | 3 | 4 | 5+6 | 7 |
|---|---|---|---|---|---|---|---|
| Lane | | Through | Left | Right | Through | Trough Right | Left |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 1,800 | 1,800 | 2,000 | 2,000 | 1,800 |
| Adjustment Factor | Lane Width (m) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.5) | 1.00 (3.5) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 1.00 (0.6) | 0.98 (2.9) | 1.00 (0.0) | 1.00 (0.7) | 1.00 (0.7) | 0.99 (0.9) |
| | Right Turns (%) | 1.00 | 1.00 | 1.00 | 1.00 | 0.76 (43.4) | 1.00 |
| | Left Turns (%) | 1.00 | 0.60 | 1.00 | 1.00 | 1.00 | 0.60 |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,992 | 1,059 | 1,800 | 1,990 | 1,513 | 1,073 |
| Traffic Volume (vehicle/h)* | | 535 | 102 | 123 | 549 | 304 | 331 |
| Normalized Volume | | 0.27 | 0.10 | 0.01 | 0.28 | 0.20 | 0.31 |
| Degree of Saturation by Phase | Phase 1 | 0.27 | 0.10 | 0.01 | 0.28 | | |
| | Phase 2 | | | | | 0.20 | 0.31 |
| | Phase 3 | | | | | | |
| Degree of Saturation | | 0.59 | | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C6 16:00 - 17:00

| Direction | | 1 | 2 | 3 | 4 | 5+6 | 7 |
|---|---|---|---|---|---|---|---|
| Lane | | Through | Left | Right | Through | Trough Right | Left |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 1,800 | 1,800 | 2,000 | 2,000 | 1,800 |
| Adjustment Factor | Lane Width (m) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.5) | 1.00 (3.5) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 1.00 (0.6) | 0.98 (2.8) | 1.00 (0.0) | 0.99 (1.2) | 0.99 (0.8) | 1.00 (0.7) |
| | Right Turns (%) | 1.00 | 1.00 | 1.00 | 1.00 | 0.82 (28.9) | 1.00 |
| | Left Turns (%) | 1.00 | 0.60 | 1.00 | 1.00 | 1.00 | 0.60 |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,992 | 1,059 | 1,800 | 1,983 | 1,631 | 1,075 |
| Traffic Volume (vehicle/h)* | | 676 | 107 | 65 | 481 | 363 | 281 |
| Normalized Volume | | 0.34 | 0.10 | 0.00 | 0.24 | 0.22 | 0.26 |
| Degree of Saturation by Phase | Phase 1 | 0.34 | 0.10 | 0.00 | 0.24 | | |
| | Phase 2 | | | | | 0.22 | 0.26 |
| | Phase 3 | | | | | | |
| Degree of Saturation | | 0.60 | | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C7 10:00 - 11:00

| Direction | | 1 + 2 | 3 | 4+5 | 6 | 7+8 | 9 | 10+11+12 |
|---|---|---|---|---|---|---|---|---|
| Lane | | Through Right | Left | Through Right | Left | Through Right | Left | Through Left,Right |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 1,800 | 2,000 | 1,800 | 2,000 | 1,800 | 2,000 |
| Adjustment Factor | Lane Width (m) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.8) | 1.00 (3.7) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (4.0) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 1.00 (0.4) | 0.93 (11.4) | 0.95 (7.8) | 0.98 (2.2) | 0.98 (2.4) | 1.00 (0.0) | 1.00 (0.0) |
| | Right Turns (%) | 0.74 (10.9) | 1.00 | 0.95 (93.3) | 1.00 | 0.70 (16.2) | 1.00 | 0.73 (32.5) |
| | Left Turns (%) | 1.00 | 0.54 | 1.00 | 0.54 | 1.00 | 0.54 | 0.73 (35.1) |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,476 | 900 | 1,802 | 957 | 1,377 | 972 | 1,066 |
| Traffic Volume (vehicle/h)* | | 751 | 429 | 524 | 46 | 820 | 125 | 114 |
| Normalized Volume | | 0.51 | 0.48 | 0.29 | 0.05 | 0.60 | 0.13 | 0.11 |
| Degree of Saturation by Phase | Phase 1 | 0.51 | 0.48 | | | 0.60 | 0.13 | |
| | Phase 2 | | | 0.29 | 0.05 | | | 0.11 |
| | Phase 3 | | | | | | | |
| Degree of Saturation | | 0.89 | | | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

Point C7 16:00 - 17:00

| Direction | | 1 + 2 | 3 | 4+5 | 6 | 7+8 | 9 | 10+11+12 |
|---|---|---|---|---|---|---|---|---|
| Lane | | Through Right | Left | Through Right | Left | Through Right | Left | Through Left,Right |
| Number of Lanes | | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ideal Saturation Flow Rate (pcu/h(effective green time)) | | 2,000 | 1,800 | 2,000 | 1,800 | 2,000 | 1,800 | 2,000 |
| Adjustment Factor | Lane Width (m) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (3.8) | 1.00 (3.7) | 1.00 (3.3) | 1.00 (3.3) | 1.00 (4.0) |
| | Approach Grade (%) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) | 1.00 (0.0) |
| | Heavy Vehicles (%) | 0.99 (1.2) | 0.93 (11.5) | 0.94 (9.6) | 1.00 (0.0) | 0.97 (3.9) | 1.00 (0.0) | 0.99 (0.8) |
| | Right Turns (%) | 0.95 (1.9) | 1.00 | 0.90 (98.2) | 1.00 | 0.93 (3.9) | 1.00 | 0.72 (29.5) |
| | Left Turns (%) | 1.00 | 0.54 | 1.00 | 0.54 | 1.00 | 0.54 | 0.72 (36.5) |
| Saturation Flow Rate (vehicle/h(effective green time)) | | 1,884 | 900 | 1,687 | 972 | 1,811 | 972 | 1,031 |
| Traffic Volume (vehicle/h)* | | 671 | 364 | 544 | 40 | 802 | 34 | 241 |
| Normalized Volume | | 0.36 | 0.40 | 0.32 | 0.04 | 0.44 | 0.03 | 0.23 |
| Degree of Saturation by Phase | Phase 1 | 0.36 | 0.40 | | | 0.44 | 0.03 | |
| | Phase 2 | | | 0.32 | 0.04 | | | 0.23 |
| | Phase 3 | | | | | | | |
| Degree of Saturation | | 0.76 | | | | | | |

* : Passenger Car Equivalent of Motorcycle = 0.5

# CHAPTER 6 ROAD DEVELOPMENT PLAN

Appendix 6-1 Estimation of Present Vehicle OD Matrices

Appendix 6-2 OD Matrices

Appendix 6-3 Road Network for Traffic Assignment

Appendix 6-4 Results of Traffic Assignment

## APPENDIX 6-1 ESTIMATION OF PRESENT VEHICLE OD MATRICES

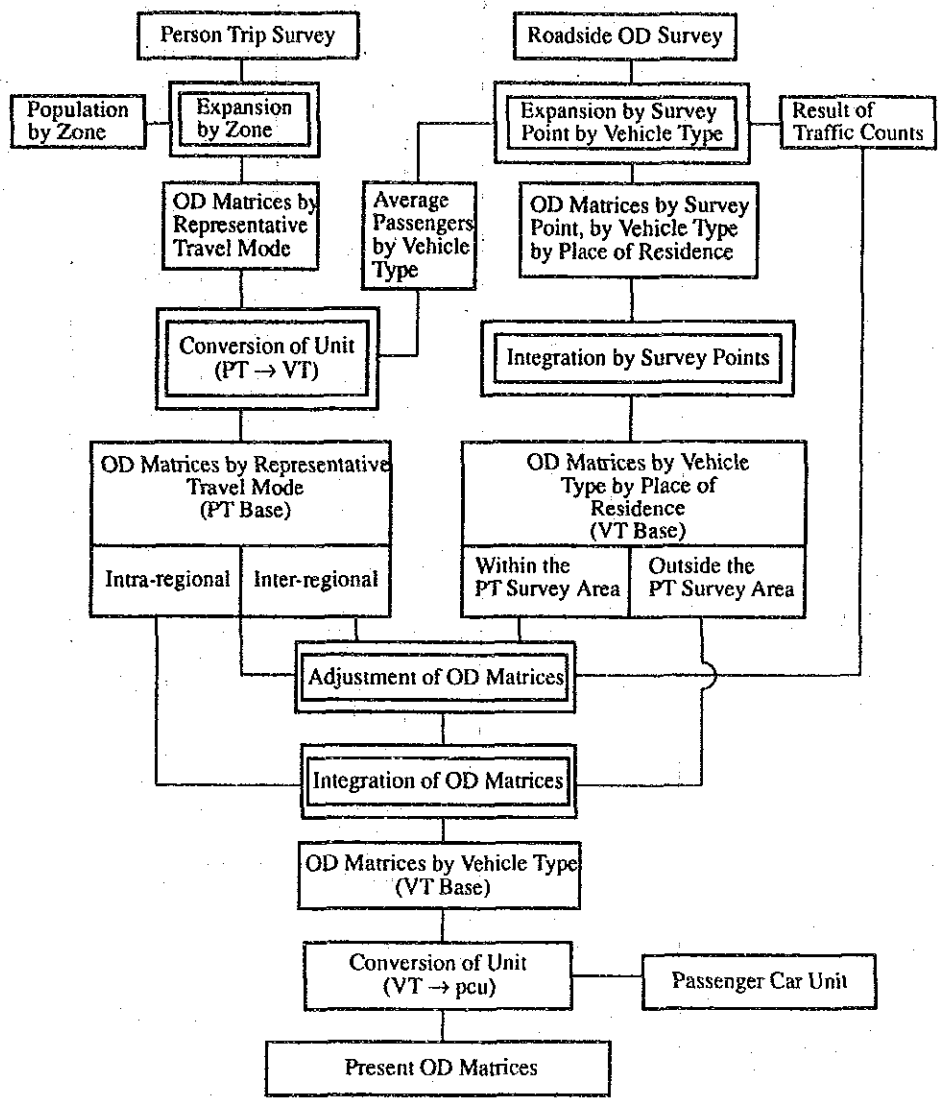



FIG. A-6-1 PROCESS OF ESTIMATION OF PRESENT VEHICLE OD MATRICES

Parameters applied in the above process are given in Table A-6-1 to A-6-5.

TABLE A-6-1 EXPANSION FACTOR (PERSON TRIP SURVEY)

| Zone | Number of Sample | Population | Population of five and above | Expansion Factor |
|---|---|---|---|---|
| 101 | 362 | 6,691 | 5,687 | 16 |
| 102 | 203 | 8,288 | 7,045 | 35 |
| 103 | 1,292 | 29,749 | 25,287 | 20 |
| 104 | 320 | 8,592 | 7,303 | 23 |
| 105 | 1,363 | 37,380 | 31,773 | 23 |
| 106 | 772 | 24,831 | 21,106 | 27 |
| 107 | 1,426 | 41,213 | 35,031 | 25 |
| 108 | 343 | 9,983 | 8,486 | 25 |
| 109 | 724 | 20,329 | 17,280 | 24 |
| 110 | 1,237 | 30,074 | 25,563 | 21 |
| 111 | 643 | 19,491 | 16,567 | 26 |
| 112 | 674 | 20,281 | 17,239 | 26 |
| 113 | 843 | 28,813 | 24,491 | 29 |
| 114 | 1,445 | 45,330 | 38,531 | 27 |
| 115 | 561 | 19,190 | 16,312 | 29 |
| 116 | 795 | 19,208 | 16,327 | 21 |
| 117 | 385 | 12,753 | 10,840 | 28 |
| 118 | 735 | 32,068 | 27,258 | 37 |
| Kathmandu City | 14,123 | 414,264 | 352,126 | 25 |
| 201 | 896 | 25,925 | 22,036 | 25 |
| 202 | 394 | 11,757 | 9,993 | 25 |
| 203 | 656 | 15,300 | 13,005 | 20 |
| 204 | 1,284 | 28,019 | 23,816 | 19 |
| 205 | 705 | 15,856 | 13,478 | 19 |
| 206 | 702 | 20,346 | 17,294 | 25 |
| Lalitpur City | 4,637 | 117,203 | 99,621 | 21 |
| 301 | 425 | 16,099 | 13,684 | 32 |
| 302 | 360 | 9,794 | 8,325 | 23 |
| 303 | 627 | 18,752 | 15,939 | 25 |
| 304 | 453 | 16,477 | 14,005 | 31 |
| Bhaktapur City | 1,865 | 61,122 | 51,953 | 28 |
| Person Trip Survey Area Total | 20,625 | 592,589 | 503,701 | 24 |

# TABLE A-6-2 EXPANSION FACTOR (ROADSIDE OD SURVEY)

| Point | | Bicycle | Motor-cycle | Tempo | Taxi | Mini-Bus | Bus | Passen-ger Car | Light Truck | Heavy Truck | Others | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | TV [1] | 955 | 425 | 620 | 196 | 124 | 45 | 327 | 71 | 49 | 125 | 2,938 |
| | VS [2] | 271 | 129 | 219 | 59 | 42 | 13 | 110 | 27 | 27 | 26 | 923 |
| | EF [3] | 3.52 | 3.29 | 2.83 | 3.32 | 2.95 | 3.54 | 2.97 | 2.63 | 1.81 | 4.81 | 3.18 |
| A2 | TV | 1,441 | 496 | 324 | 99 | 160 | 52 | 264 | 93 | 126 | 143 | 3,198 |
| | VS | 410 | 178 | 119 | 37 | 71 | 16 | 92 | 29 | 43 | 48 | 1,043 |
| | EF | 3.51 | 2.79 | 2.72 | 2.68 | 2.25 | 3.25 | 2.87 | 3.21 | 2.93 | 2.98 | 3.07 |
| A3 | TV | 1,411 | 2,312 | 518 | 594 | 1,067 | 482 | 841 | 304 | 746 | 524 | 8,799 |
| | VS | 334 | 755 | 163 | 227 | 373 | 188 | 234 | 126 | 259 | 143 | 3,800 |
| | EF | 4.22 | 3.06 | 3.18 | 2.62 | 2.85 | 2.59 | 3.59 | 2.41 | 2.88 | 3.66 | 3.14 |
| A4 | TV | 2,197 | 492 | 149 | 107 | 60 | 19 | 90 | 70 | 220 | 126 | 3,530 |
| | VS | 404 | 221 | 88 | 71 | 39 | 4 | 103 | 36 | 146 | 39 | 1,151 |
| | EF | 5.44 | 2.23 | 1.69 | 1.51 | 1.54 | 4.75 | 0.87 | 1.94 | 1.51 | 3.23 | 3.07 |
| A5 | TV | 1,937 | 799 | 236 | 179 | 155 | 42 | 444 | 78 | 346 | 93 | 4,309 |
| | VS | 510 | 279 | 88 | 78 | 52 | 18 | 161 | 23 | 151 | 27 | 1,397 |
| | EF | 3.80 | 2.88 | 2.68 | 1.51 | 2.50 | 2.33 | 2.76 | 3.39 | 2.29 | 3.44 | 3.08 |
| A6 | TV | 1,683 | 556 | 95 | 383 | 47 | 28 | 139 | 29 | 127 | 162 | 3,243 |
| | VS | 424 | 194 | 99 | 163 | 24 | 8 | 81 | 14 | 53 | 40 | 1,040 |
| | EF | 3.97 | 2.87 | 2.44 | 2.35 | 1.96 | 3.50 | 1.72 | 2.07 | 2.40 | 4.05 | 3.12 |
| A7 | TV | 1,064 | 955 | 209 | 257 | 326 | 120 | 461 | 127 | 323 | 168 | 4,010 |
| | VS | 284 | 301 | 77 | 112 | 114 | 35 | 163 | 44 | 123 | 49 | 1,303 |
| | EF | 3.75 | 3.17 | 2.71 | 2.29 | 2.86 | 3.33 | 2.83 | 2.89 | 2.63 | 3.43 | 3.08 |
| A8 | TV | 575 | 619 | 875 | 237 | 286 | 375 | 385 | 153 | 1,041 | 212 | 4,758 |
| | VS | 137 | 172 | 295 | 83 | 87 | 135 | 88 | 58 | 307 | 78 | 1,450 |
| | EF | 4.20 | 3.60 | 2.97 | 2.85 | 3.29 | 2.78 | 4.38 | 2.25 | 3.39 | 2.72 | 3.28 |
| A9 | TV | 1,353 | 333 | 55 | 98 | 69 | 17 | 125 | 56 | 30 | 129 | 2,265 |
| | VS | 285 | 158 | 26 | 46 | 44 | 11 | 60 | 27 | 20 | 43 | 720 |
| | EF | 4.75 | 2.11 | 2.12 | 2.13 | 1.57 | 1.55 | 2.08 | 2.07 | 1.50 | 3.00 | 3.15 |
| A10 | TV | 240 | 64 | 17 | 35 | 47 | 24 | 55 | 8 | 41 | 37 | 568 |
| | VS | 57 | 24 | 5 | 13 | 19 | 13 | 24 | 3 | 23 | 6 | 187 |
| | EF | 4.21 | 2.57 | 3.40 | 2.69 | 2.47 | 1.85 | 2.29 | 2.67 | 1.78 | 6.17 | 2.04 |
| A11 | TV | 520 | 1,194 | 168 | 279 | 658 | 484 | 520 | 174 | 327 | 262 | 4,585 |
| | VS | 108 | 397 | 45 | 88 | 228 | 156 | 175 | 45 | 3.27 | 66 | 1,403 |
| | EF | 4.81 | 3.01 | 3.73 | 3.17 | 2.89 | 3.10 | 2.97 | 3.87 | | 3.97 | 3.26 |
| A12 | TV | 467 | 182 | 24 | 43 | 203 | 20 | 51 | 11 | 51 | 102 | 1,154 |
| | VS | 107 | 75 | 15 | 18 | 81 | 5 | 11 | 3 | 23 | 25 | 363 |
| | EF | 4.36 | 2.43 | 1.60 | 2.39 | 2.51 | 4.00 | 4.64 | 3.67 | 2.22 | 4.08 | 3.18 |
| A13 | TV | 1,161 | 118 | 19 | 31 | 40 | 9 | 73 | 15 | 7 | 79 | 1,552 |
| | VS | 323 | 57 | 4 | 16 | 18 | 5 | 24 | 9 | 5 | 41 | 502 |
| | EF | 3.59 | 2.07 | 4.75 | 1.94 | 2.22 | 1.80 | 3.04 | 1.57 | 1.40 | 1.93 | 3.09 |
| A14 | TV | 285 | 343 | 30 | 85 | 247 | 137 | 193 | 45 | 145 | 103 | 1,514 |
| | VS | 45 | 121 | 8 | 39 | 89 | 70 | 57 | 23 | 54 | 26 | 542 |
| | EF | 5.33 | 2.83 | 3.75 | 2.18 | 2.78 | 1.96 | 2.88 | 1.96 | 2.70 | 3.96 | 2.98 |
| A15 | TV | 77 | 152 | 97 | 71 | 270 | 360 | 163 | 96 | 847 | 136 | 2,219 |
| | VS | 7 | 28 | 19 | 33 | 82 | 162 | 68 | 16 | 273 | 27 | 715 |
| | EF | 11.00 | 5.43 | 5.11 | 2.15 | 2.68 | 2.22 | 2.40 | 6.00 | 3.10 | 5.04 | 3.10 |

1) TV : Traffic Volume
2) VS : Number of Valid Sample
3) EF : Expansion factor

TABLE A-6-3 AVERAGE NUMBER OF PASSENGERS BY VEHICLE TYPE

| | |
|---|---|
| Bicycle | 1.096 |
| Motorcycle | 1.512 |
| Taxi | 4.416 |
| Mini-Bus | 27.183 |
| Bus | 46.788 |
| Passenger Car | 3.683 |
| Truck | 4.215 |

TABLE A-6-4 PASSENGER CAR UNIT IN NEPAL

| | |
|---|---|
| Bicycle | 0.5 |
| Motorcycle | 0.5 |
| Taxi | 1.0 |
| Mini-Bus | 3.0 |
| Bus | 4.0 |
| Passenger Car | 1.0 |
| Light Truck | 1.5 |
| Heavy Truck | 4.0 |

# TABLE OD MATRICES BY VEHICLE TYPE (1991)

1991 UNIT: VEHICLE

MODE: MOTORCYCLE

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 42543 | 5975 | 343 | 1182 | 303 | 519 | 155 | 0 | 51020 |
| PATAN CITY | 5886 | 2858 | 60 | 151 | 345 | 77 | 22 | 0 | 9399 |
| BHAKTAPAR CITY | 320 | 54 | 845 | 3 | 3 | 136 | 18 | 0 | 1379 |
| KATHMANDU RURAL | 1156 | 154 | 6 | 131 | 10 | 9 | 0 | 0 | 1466 |
| PATAN RURAL | 257 | 320 | 0 | 12 | 14 | 15 | 6 | 0 | 624 |
| BHAKTAPAR RURAL | 468 | 63 | 110 | 3 | 13 | 17 | 14 | 0 | 688 |
| OUTSIDE OF SURVE | 107 | 18 | 22 | 0 | 0 | 8 | 0 | 0 | 155 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 50737 | 9442 | 1386 | 1482 | 688 | 781 | 215 | 0 | 64731 |

1991 UNIT: VEHICLE

MODE: TAXI

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 71873 | 7084 | 177 | 1489 | 141 | 192 | 56 | 0 | 81012 |
| PATAN CITY | 6332 | 2033 | 21 | 59 | 363 | 35 | 6 | 0 | 8849 |
| BHAKTAPAR CITY | 170 | 28 | 136 | 6 | 0 | 21 | 7 | 0 | 368 |
| KATHMANDU RURAL | 1337 | 39 | 3 | 57 | 2 | 3 | 0 | 0 | 1441 |
| PATAN RURAL | 62 | 369 | 0 | 1 | 1 | 0 | 0 | 0 | 433 |
| BHAKTAPAR RURAL | 221 | 21 | 32 | 3 | 4 | 1 | 2 | 0 | 284 |
| OUTSIDE OF SURVE | 54 | 4 | 9 | 4 | 0 | 0 | 0 | 0 | 71 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 80049 | 9578 | 378 | 1619 | 511 | 252 | 71 | 0 | 92458 |

# TABLE OD MATRICES BY VEHICLE TYPE (1991)

1991 UNIT: VEHICLE

MODE : BUS

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 2604 | 685 | 329 | 547 | 24 | 245 | 414 | 0 | 4848 |
| PATAN CITY | 704 | 221 | 36 | 39 | 116 | 36 | 12 | 0 | 1164 |
| BHAKTAPAR CITY | 343 | 26 | 93 | 0 | 0 | 62 | 6 | 0 | 530 |
| KATHMANDU RURAL | 451 | 19 | 3 | 27 | 2 | 12 | 0 | 0 | 514 |
| PATAN RURAL | 27 | 118 | 0 | 3 | 2 | 2 | 2 | 0 | 154 |
| BHAKTAPAR RURAL | 143 | 14 | 51 | 3 | 3 | 7 | 6 | 0 | 227 |
| OUTSIDE OF SURVE | 364 | 8 | 0 | 3 | 0 | 2 | 0 | 0 | 377 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 4636 | 1091 | 512 | 622 | 147 | 366 | 440 | 0 | 7814 |

1991 UNIT: VEHICLE

MODE : PASSENGER CAR

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 25187 | 3928 | 150 | 582 | 112 | 200 | 164 | 0 | 30323 |
| PATAN CITY | 4024 | 2017 | 17 | 78 | 84 | 32 | 31 | 0 | 6283 |
| BHAKTAPAR CITY | 148 | 12 | 143 | 0 | 0 | 18 | 12 | 0 | 333 |
| KATHMANDU RURAL | 548 | 63 | 0 | 44 | 6 | 8 | 3 | 0 | 672 |
| PATAN RURAL | 126 | 73 | 0 | 1 | 2 | 0 | 0 | 0 | 202 |
| BHAKTAPAR RURAL | 117 | 18 | 35 | 8 | 0 | 6 | 6 | 0 | 190 |
| OUTSIDE OF SURVE | 98 | 14 | 6 | 0 | 0 | 0 | 1 | 0 | 119 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 30248 | 6125 | 351 | 713 | 204 | 264 | 217 | 0 | 38122 |

# TABLE OD MATRICES BY VEHICLE TYPE (1991)

1991 UNIT: VEHICLE

MODE | TRUCK

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 6815 | 728 | 172 | 755 | 229 | 234 | 508 | 0 | 9441 |
| PATAN CITY | 1016 | 303 | 20 | 92 | 259 | 31 | 52 | 0 | 1773 |
| BHAKTAPAR CITY | 157 | 24 | 1588 | 22 | 0 | 137 | 31 | 0 | 1959 |
| KATHMANDU RURAL | 761 | 88 | 37 | 163 | 19 | 28 | 34 | 0 | 1130 |
| PATAN RURAL | 177 | 194 | 0 | 25 | 18 | 10 | 11 | 0 | 435 |
| BHAKTAPAR RURAL | 253 | 37 | 106 | 17 | 41 | 16 | 18 | 0 | 488 |
| OUTSIDE OF SURVE | 448 | 54 | 26 | 27 | 14 | 9 | 16 | 0 | 594 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 9627 | 1428 | 1949 | 1101 | 580 | 465 | 670 | 0 | 15820 |

1991 UNIT: VEHICLE

MODE | TOTAL

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 149022 | 18400 | 1171 | 4555 | 809 | 1390 | 1297 | 0 | 176644 |
| PATAN CITY | 17962 | 7432 | 154 | 419 | 1167 | 211 | 123 | 0 | 27468 |
| BHAKTAPAR CITY | 1138 | 144 | 2805 | 31 | 3 | 374 | 74 | 0 | 4569 |
| KATHMANDU RURAL | 4253 | 363 | 49 | 422 | 39 | 60 | 37 | 0 | 5223 |
| PATAN RURAL | 649 | 1074 | 0 | 42 | 37 | 27 | 19 | 0 | 1848 |
| BHAKTAPAR RURAL | 1202 | 153 | 334 | 34 | 61 | 47 | 46 | 0 | 1877 |
| OUTSIDE OF SURVE | 1071 | 98 | 63 | 34 | 14 | 19 | 17 | 0 | 1316 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 175297 | 27664 | 4576 | 5537 | 2130 | 2128 | 1613 | 0 | 218945 |

# TABLE OD MARTICES BY VEHICLE TYPE(1997)

1997 UNIT: VEHICLE

| MODE | MOTORCYCLE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
| KATHMANDU CITY | 62446 | 10038 | 623 | 1979 | 472 | 820 | 205 | 0 | 76583 |
| PATAN CITY | 9916 | 5463 | 109 | 268 | 521 | 125 | 25 | 0 | 16427 |
| BHAKTAPAR CITY | 612 | 116 | 2250 | 3 | 2 | 131 | 15 | 0 | 3129 |
| KATHMANDU RURAL | 2007 | 253 | 6 | 130 | 9 | 7 | 0 | 0 | 2412 |
| PATAN RURAL | 443 | 537 | 0 | 12 | 13 | 12 | 4 | 0 | 1021 |
| BHAKTAPAR RURAL | 844 | 109 | 123 | 4 | 10 | 16 | 10 | 0 | 1116 |
| OUTSIDE OF SURVE | 196 | 34 | 24 | 0 | 0 | 7 | 0 | 0 | 261 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 76464 | 16550 | 3135 | 2396 | 1027 | 1118 | 259 | 0 | 100949 |



1997 UNIT: VEHICLE

| MODE | TAXI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
| KATHMANDU CITY | 73496 | 7114 | 243 | 1654 | 143 | 280 | 81 | 0 | 83011 |
| PATAN CITY | 6347 | 2033 | 26 | 61 | 381 | 51 | 4 | 0 | 8903 |
| BHAKTAPAR CITY | 241 | 34 | 136 | 0 | 0 | 9 | 2 | 0 | 422 |
| KATHMANDU RURAL | 1669 | 44 | 0 | 17 | 0 | 0 | 0 | 0 | 1730 |
| PATAN RURAL | 107 | 414 | 0 | 0 | 0 | 0 | 0 | 0 | 521 |
| BHAKTAPAR RURAL | 301 | 32 | 10 | 0 | 1 | 1 | 1 | 0 | 346 |
| OUTSIDE OF SURVE | 80 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 88 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 82241 | 9676 | 417 | 1733 | 525 | 341 | 88 | 0 | 95021 |

# TABLE OD MARTICES BY VEHICLE TYPE(1997)

1997 UNIT: VEHICLE

MODE | BUS |

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 6400 | 1514 | 476 | 570 | 39 | 222 | 465 | 0 | 9686 |
| PATAN CITY | 1537 | 530 | 38 | 36 | 147 | 27 | 0 | 0 | 2315 |
| BHAKTAPAR CITY | 488 | 41 | 62 | 0 | 0 | 11 | 0 | 0 | 602 |
| KATHMANDU RURAL | 573 | 24 | 1 | 8 | 0 | 2 | 0 | 0 | 608 |
| PATAN RURAL | 31 | 149 | 0 | 0 | 1 | 0 | 0 | 0 | 181 |
| BHAKTAPAR RURAL | 212 | 21 | 27 | 1 | 1 | 6 | 0 | 0 | 268 |
| OUTSIDE OF SURVE | 462 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 462 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 9703 | 2279 | 604 | 615 | 188 | 268 | 465 | 0 | 14122 |



1997 UNIT: VEHICLE

MODE | PASSENGER CAR |

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 40983 | 6052 | 339 | 1266 | 252 | 330 | 206 | 0 | 49428 |
| PATAN CITY | 6380 | 5992 | 45 | 148 | 181 | 58 | 42 | 0 | 12846 |
| BHAKTAPAR CITY | 362 | 34 | 1184 | 0 | 0 | 6 | 2 | 0 | 1588 |
| KATHMANDU RURAL | 1236 | 167 | 0 | 10 | 0 | 1 | 0 | 0 | 1414 |
| PATAN RURAL | 256 | 171 | 0 | 0 | 0 | 0 | 0 | 0 | 427 |
| BHAKTAPAR RURAL | 305 | 68 | 18 | 2 | 0 | 2 | 0 | 0 | 395 |
| OUTSIDE OF SURVE | 222 | 34 | 1 | 0 | 0 | 0 | 0 | 0 | 257 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 49744 | 12518 | 1587 | 1426 | 433 | 397 | 250 | 0 | 66355 |

# TABLE OD MARTICES BY VEHICLE TYPE(1997)

1997 UNIT: VEHICLE

MODE : TRUCK

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 8049 | 893 | 304 | 1226 | 268 | 417 | 736 | 0 | 11893 |
| PATAN CITY | 1241 | 364 | 43 | 154 | 309 | 73 | 73 | 0 | 2257 |
| BHAKTAPAR CITY | 305 | 46 | 1875 | 20 | 0 | 154 | 34 | 0 | 2434 |
| KATHMANDU RURAL | 1233 | 130 | 47 | 194 | 15 | 29 | 32 | 0 | 1680 |
| PATAN RURAL | 278 | 320 | 0 | 23 | 12 | 12 | 8 | 0 | 653 |
| BHAKTAPAR RURAL | 439 | 66 | 132 | 17 | 30 | 18 | 19 | 0 | 721 |
| OUTSIDE OF SURVE | 736 | 85 | 28 | 33 | 11 | 12 | 14 | 0 | 919 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 12281 | 1904 | 2429 | 1667 | 645 | 715 | 916 | 0 | 20557 |



1997 UNIT: VEHICLE

MODE : TOTAL

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 191374 | 25611 | 1985 | 6695 | 1174 | 2069 | 1693 | 0 | 230601 |
| PATAN CITY | 25421 | 14382 | 261 | 667 | 1539 | 334 | 144 | 0 | 42748 |
| BHAKTAPAR CITY | 2008 | 271 | 5507 | 23 | 2 | 311 | 53 | 0 | 8175 |
| KATHMANDU RURAL | 6718 | 618 | 54 | 359 | 24 | 39 | 32 | 0 | 7844 |
| PATAN RURAL | 1115 | 1591 | 0 | 35 | 26 | 24 | 12 | 0 | 2803 |
| BHAKTAPAR RURAL | 2101 | 296 | 310 | 24 | 42 | 43 | 30 | 0 | 2846 |
| OUTSIDE OF SURVE | 1696 | 158 | 55 | 34 | 11 | 19 | 14 | 0 | 1987 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 230433 | 42927 | 8172 | 7837 | 2818 | 2839 | 1978 | 0 | 297004 |

# TABLE OD MARTICES BY VEHICLE TYPE(2015)

2015 UNIT: VEHICLE

| MODE | MOTORCYCLE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
| KATHMANDU CITY | 123754 | 18045 | 758 | 4491 | 1215 | 1432 | 348 | 0 | 150043 |
| PATAN CITY | 17836 | 10250 | 109 | 547 | 964 | 174 | 38 | 0 | 29918 |
| BHAKTAPAR CITY | 751 | 120 | 3702 | 11 | 11 | 402 | 51 | 0 | 5048 |
| KATHMANDU RURAL | 4569 | 494 | 24 | 728 | 67 | 42 | 0 | 0 | 5924 |
| PATAN RURAL | 1066 | 1032 | 0 | 115 | 128 | 78 | 29 | 0 | 2448 |
| BHAKTAPAR RURAL | 1515 | 144 | 375 | 13 | 65 | 61 | 47 | 0 | 2220 |
| OUTSIDE OF SURVE | 347 | 49 | 83 | 0 | 0 | 33 | 0 | 0 | 512 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 149838 | 30134 | 5051 | 5905 | 2450 | 2222 | 513 | 0 | 196113 |

2015 UNIT: VEHICLE

| MODE | TAXI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
| KATHMANDU CITY | 73230 | 6920 | 225 | 2880 | 406 | 416 | 102 | 0 | 84179 |
| PATAN CITY | 6135 | 1961 | 17 | 79 | 521 | 42 | 6 | 0 | 8761 |
| BHAKTAPAR CITY | 244 | 33 | 125 | 7 | 0 | 70 | 19 | 0 | 498 |
| KATHMANDU RURAL | 2913 | 67 | 5 | 303 | 5 | 12 | 0 | 0 | 3305 |
| PATAN RURAL | 379 | 536 | 0 | 44 | 36 | 0 | 0 | 0 | 995 |
| BHAKTAPAR RURAL | 412 | 31 | 81 | 7 | 20 | 7 | 9 | 0 | 567 |
| OUTSIDE OF SURVE | 110 | 6 | 14 | 10 | 0 | 0 | 0 | 0 | 140 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 83423 | 9554 | 467 | 3330 | 988 | 547 | 136 | 0 | 98445 |

# TABLE OD MARTICES BY VEHICLE TYPE(2015)

2015 UNIT: VEHICLE

MODE | BUS

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 10851 | 2295 | 541 | 918 | 110 | 261 | 683 | 0 | 15659 |
| PATAN CITY | 2321 | 787 | 18 | 58 | 197 | 19 | 0 | 0 | 3400 |
| BHAKTAPAR CITY | 541 | 20 | 78 | 0 | 0 | 81 | 0 | 0 | 720 |
| KATHMANDU RURAL | 927 | 29 | 8 | 120 | 4 | 28 | 0 | 0 | 1116 |
| PATAN RURAL | 98 | 202 | 0 | 7 | 17 | 5 | 0 | 0 | 329 |
| BHAKTAPAR RURAL | 263 | 13 | 85 | 14 | 10 | 10 | 0 | 0 | 395 |
| OUTSIDE OF SURVE | 687 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 687 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 15688 | 3346 | 730 | 1117 | 338 | 404 | 683 | 0 | 22306 |

2015 UNIT: VEHICLE

MODE | PASSENGER CAR

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 121381 | 17626 | 585 | 4002 | 917 | 814 | 519 | 0 | 145844 |
| PATAN CITY | 18394 | 14581 | 86 | 464 | 474 | 162 | 101 | 0 | 34262 |
| BHAKTAPAR CITY | 696 | 61 | 3115 | 0 | 0 | 68 | 29 | 0 | 3969 |
| KATHMANDU RURAL | 3904 | 498 | 0 | 360 | 46 | 28 | 11 | 0 | 4847 |
| PATAN RURAL | 946 | 495 | 0 | 8 | 12 | 0 | 0 | 0 | 1461 |
| BHAKTAPAR RURAL | 722 | 165 | 144 | 39 | 0 | 17 | 15 | 0 | 1102 |
| OUTSIDE OF SURVE | 609 | 73 | 19 | 0 | 0 | 0 | 3 | 0 | 704 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 146652 | 33499 | 3949 | 4873 | 1449 | 1089 | 678 | 0 | 192189 |

# TABLE OD MARTICES BY VEHICLE TYPE(2015)

2015 UNIT: VEHICLE

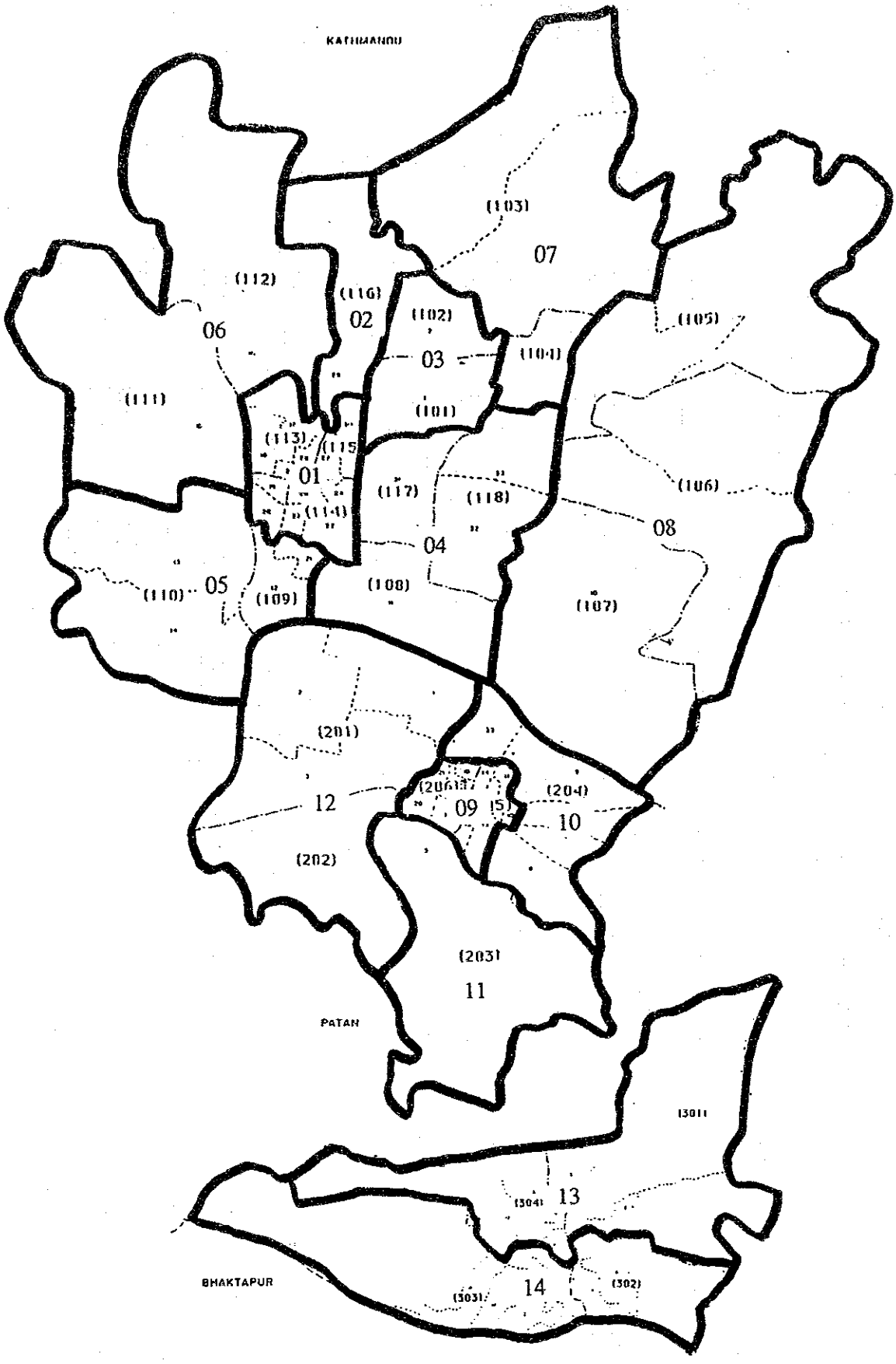
MODE : TRUCK

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 25523 | 2715 | 687 | 4586 | 1230 | 1331 | 2331 | 0 | 38403 |
| PATAN CITY | 3799 | 1096 | 64 | 460 | 856 | 169 | 162 | 0 | 6606 |
| BHAKTAPAR CITY | 689 | 73 | 5985 | 95 | 0 | 510 | 104 | 0 | 7456 |
| KATHMANDU RURAL | 4626 | 384 | 197 | 1104 | 112 | 154 | 166 | 0 | 6743 |
| PATAN RURAL | 1214 | 925 | 0 | 189 | 105 | 78 | 59 | 0 | 2570 |
| BHAKTAPAR RURAL | 1364 | 145 | 426 | 102 | 193 | 74 | 77 | 0 | 2381 |
| OUTSIDE OF SURVE | 2370 | 177 | 84 | 180 | 63 | 56 | 61 | 0 | 2991 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 39585 | 5515 | 7443 | 6716 | 2559 | 2372 | 2960 | 0 | 67150 |

2015 UNIT: VEHICLE

MODE : TOTAL

| DESTINATION / ORIGIN | KATHMANDU CITY | PATAN CITY | BHAKTAPAR CITY | KATHMANDU RURAL | PATAN RURAL | BHAKTAPAR RURAL | OUTSIDE OF SURVE | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| KATHMANDU CITY | 354739 | 47601 | 2796 | 16877 | 3878 | 4254 | 3983 | 0 | 434128 |
| PATAN CITY | 48485 | 28675 | 294 | 1608 | 3012 | 566 | 307 | 0 | 82947 |
| BHAKTAPAR CITY | 2921 | 307 | 13005 | 113 | 11 | 1131 | 203 | 0 | 17691 |
| KATHMANDU RURAL | 16939 | 1472 | 234 | 2615 | 234 | 264 | 177 | 0 | 21935 |
| PATAN RURAL | 3703 | 3190 | 0 | 363 | 298 | 161 | 88 | 0 | 7803 |
| BHAKTAPAR RURAL | 4276 | 498 | 1111 | 175 | 288 | 169 | 148 | 0 | 6665 |
| OUTSIDE OF SURVE | 4123 | 305 | 200 | 190 | 63 | 89 | 64 | 0 | 5034 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 435186 | 82048 | 17640 | 21941 | 7784 | 6634 | 4970 | 0 | 576203 |




CONSOLIDATED TRAFFIC ZONE

CONSOLIDATED TRAFFIC ZONE CORRESPONDING TABLE

| Consolidated Zone No. | Traffic Zone |
|---|---|
| 01 | 113, 114, 115 |
| 02 | 116 |
| 03 | 101, 102 |
| 04 | 108,117,118 |
| 05 | 109, 110 |
| 06 | 111, 112 |
| 07 | 103, 104 |
| 08 | 105, 106, 107 |
| 09 | 205, 206 |
| 10 | 204 |
| 11 | 203 |
| 12 | 201, 202 |
| 13 | 301, 304 |
| 14 | 302, 303 |
| 15 | 601 |
| 16 | 401, 402 |
| 17 | 604 |
| 18 | 602, 603, 720 |
| 19 | 503, 504 |
| 20 | 501, 502 |
| 21 | 409, 410 |
| 22 | 407, 408, 740, 750 |
| 23 | 406, 730 |
| 24 | 405 |
| 25 | 403, 404 |

# TABLE OD MATRICES OF ALL VEHICLE TYPE (CONSOLIDATED ZONE - 1991)

1991 UNIT: PCU

MODE TOTAL

| DESTINATION / ORIGIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4106 | 1067 | 3658 | 4268 | 3713 | 4659 | 5847 | 5340 | 1401 | 470 |
| 2 | 1044 | 279 | 327 | 1116 | 336 | 490 | 1149 | 555 | 70 | 17 |
| 3 | 3697 | 283 | 1614 | 2020 | 1083 | 1043 | 2044 | 1819 | 192 | 128 |
| 4 | 4308 | 1032 | 1845 | 4406 | 2848 | 1761 | 3815 | 4340 | 761 | 435 |
| 5 | 3613 | 410 | 1193 | 2877 | 2538 | 1051 | 933 | 1329 | 357 | 156 |
| 6 | 4881 | 425 | 744 | 1732 | 1953 | 4462 | 899 | 1666 | 130 | 49 |
| 7 | 6049 | 1124 | 2169 | 4457 | 1191 | 761 | 3309 | 2704 | 385 | 302 |
| 8 | 4976 | 513 | 1719 | 4606 | 1321 | 1682 | 2403 | 5885 | 395 | 134 |
| 9 | 1798 | 70 | 118 | 736 | 289 | 212 | 370 | 464 | 389 | 392 |
| 10 | 380 | 44 | 142 | 407 | 174 | 86 | 302 | 85 | 392 | 143 |
| 11 | 819 | 106 | 85 | 615 | 250 | 190 | 107 | 297 | 147 | 137 |
| 12 | 2736 | 401 | 925 | 2877 | 1099 | 688 | 762 | 1825 | 397 | 125 |
| 13 | 108 | 50 | 55 | 196 | 60 | 35 | 4 | 120 | 18 | 14 |
| 14 | 210 | 18 | 46 | 918 | 95 | 51 | 32 | 224 | 118 | 18 |
| 15 | 352 | 37 | 59 | 305 | 150 | 64 | 106 | 617 | 136 | 27 |
| 16 | 122 | 2 | 44 | 83 | 29 | 51 | 14 | 309 | 42 | 20 |
| 17 | 8 | 12 | 14 | 4 | 8 | 5 | 0 | 34 | 7 | 0 |
| 18 | 138 | 16 | 39 | 596 | 119 | 33 | 41 | 171 | 23 | 12 |
| 19 | 126 | 16 | 65 | 114 | 75 | 132 | 64 | 184 | 714 | 75 |
| 20 | 62 | 10 | 6 | 54 | 13 | 6 | 9 | 97 | 485 | 79 |
| 21 | 616 | 35 | 44 | 224 | 687 | 140 | 152 | 131 | 35 | 39 |
| 22 | 318 | 57 | 149 | 1076 | 1190 | 238 | 122 | 261 | 120 | 13 |
| 23 | 25 | 17 | 34 | 0 | 14 | 211 | 23 | 17 | 8 | 0 |
| 24 | 59 | 46 | 515 | 56 | 53 | 71 | 184 | 144 | 0 | 11 |
| 25 | 191 | 15 | 49 | 35 | 47 | 47 | 20 | 621 | 0 | 24 |
| OTHER | 0 | 0 | 0 | 7 | 0 | 0 | 11 | 7 | 4 | 0 |
| TOTAL | 40742 | 6085 | 15658 | 33785 | 19335 | 18169 | 22722 | 29246 | 6726 | 2820 |

# TABLE OD MATRICES OF ALL VEHICLE TYPE (CONSOLIDATED ZONE - 1991)

1991 UNIT: PCU

MODE TOTAL

| DESTINATION / ORIGIN | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 690 | 3596 | 83 | 298 | 467 | 101 | 6 | 164 | 81 | 46 |
| 2 | 60 | 428 | 40 | 29 | 81 | 20 | 7 | 18 | 24 | 3 |
| 3 | 158 | 802 | 64 | 75 | 158 | 80 | 20 | 19 | 51 | 40 |
| 4 | 539 | 2637 | 237 | 713 | 344 | 103 | 59 | 520 | 126 | 62 |
| 5 | 166 | 927 | 38 | 104 | 153 | 55 | 52 | 100 | 156 | 104 |
| 6 | 196 | 855 | 35 | 50 | 66 | 41 | 53 | 9 | 118 | 56 |
| 7 | 114 | 708 | 11 | 45 | 57 | 16 | 18 | 10 | 47 | 16 |
| 8 | 359 | 1501 | 139 | 251 | 517 | 463 | 15 | 202 | 241 | 111 |
| 9 | 180 | 337 | 16 | 133 | 155 | 57 | 4 | 26 | 724 | 703 |
| 10 | 103 | 130 | 18 | 30 | 70 | 9 | 0 | 9 | 117 | 62 |
| 11 | 826 | 673 | 0 | 2 | 16 | 0 | 0 | 3 | 56 | 45 |
| 12 | 661 | 2327 | 21 | 31 | 61 | 4 | 2 | 20 | 102 | 86 |
| 13 | 2 | 23 | 2649 | 393 | 100 | 24 | 101 | 69 | 0 | 0 |
| 14 | 0 | 43 | 743 | 2621 | 404 | 28 | 78 | 172 | 2 | 0 |
| 15 | 0 | 64 | 120 | 314 | 22 | 0 | 13 | 42 | 118 | 33 |
| 16 | 2 | 56 | 14 | 61 | 2 | 7 | 0 | 0 | 8 | 12 |
| 17 | 0 | 4 | 77 | 101 | 23 | 0 | 10 | 23 | 11 | 0 |
| 18 | 2 | 19 | 38 | 105 | 41 | 0 | 8 | 2 | 0 | 17 |
| 19 | 66 | 101 | 0 | 0 | 48 | 21 | 0 | 4 | 17 | 42 |
| 20 | 32 | 96 | 0 | 0 | 2 | 8 | 0 | 15 | 20 | 3 |
| 21 | 21 | 160 | 2 | 3 | 9 | 35 | 11 | 31 | 31 | 4 |
| 22 | 0 | 156 | 0 | 46 | 39 | 6 | 0 | 46 | 26 | 6 |
| 23 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 9 | 0 | 16 | 2 | 1 | 0 | 3 | 4 | 4 |
| 25 | 0 | 29 | 0 | 24 | 53 | 74 | 11 | 24 | 18 | 2 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 |
| TOTAL | 4177 | 15685 | 4345 | 5445 | 2890 | 1153 | 468 | 1531 | 2105 | 1457 |

# TABLE OD MATRICES OF ALL VEHICLE TYPE (CONSOLIDATED ZONE - 1991)

1991 UNIT: PCU

MODE I TOTAL

| DESTINATION / ORIGIN | 21 | 22 | 23 | 24 | 25 | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|
| 1 | 614 | 422 | 7 | 136 | 137 | 0 | 41377 |
| 2 | 68 | 69 | 0 | 62 | 16 | 0 | 6308 |
| 3 | 31 | 157 | 11 | 560 | 81 | 0 | 16230 |
| 4 | 287 | 1694 | 25 | 93 | 89 | 0 | 33079 |
| 5 | 755 | 1332 | 17 | 48 | 87 | 0 | 18551 |
| 6 | 112 | 222 | 153 | 36 | 49 | 0 | 18992 |
| 7 | 54 | 86 | 14 | 259 | 41 | 0 | 23947 |
| 8 | 103 | 325 | 13 | 149 | 453 | 7 | 28483 |
| 9 | 120 | 111 | 0 | 4 | 14 | 67 | 7489 |
| 10 | 30 | 4 | 0 | 25 | 1 | 0 | 2763 |
| 11 | 20 | 1 | 0 | 0 | 0 | 0 | 4395 |
| 12 | 209 | 149 | 5 | 43 | 17 | 7 | 15580 |
| 13 | 0 | 3 | 0 | 0 | 0 | 0 | 4024 |
| 14 | 3 | 2 | 0 | 24 | 0 | 0 | 5850 |
| 15 | 32 | 59 | 0 | 0 | 30 | 0 | 2700 |
| 16 | 26 | 0 | 0 | 0 | 57 | 0 | 961 |
| 17 | 0 | 0 | 0 | 0 | 2 | 0 | 343 |
| 18 | 32 | 21 | 0 | 9 | 2 | 0 | 1484 |
| 19 | 9 | 22 | 0 | 7 | 27 | 11 | 1940 |
| 20 | 15 | 6 | 0 | 1 | 13 | 0 | 1032 |
| 21 | 0 | 33 | 0 | 10 | 10 | 0 | 2463 |
| 22 | 45 | 103 | 5 | 11 | 39 | 0 | 4072 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 353 |
| 24 | 10 | 35 | 0 | 2 | 23 | 0 | 1248 |
| 25 | 11 | 15 | 0 | 4 | 413 | 0 | 1727 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| TOTAL | 2586 | 4871 | 250 | 1483 | 1601 | 92 | 245427 |

# TABLE OD MATRICES OF ALL VEHICLE TYPE (CONSOLIDATED ZONE - 1997)

1997 UNIT: PCU

MODE TOTAL

| DESTINATION / ORIGIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5850 | 1539 | 4131 | 5879 | 5144 | 5811 | 6479 | 7266 | 1743 | 962 |
| 2 | 1552 | 333 | 465 | 1409 | 477 | 589 | 1279 | 713 | 84 | 31 |
| 3 | 4163 | 433 | 1345 | 3598 | 1185 | 1455 | 2132 | 2464 | 278 | 413 |
| 4 | 5911 | 1303 | 3670 | 5378 | 3502 | 2826 | 4267 | 6590 | 1122 | 964 |
| 5 | 5063 | 525 | 1240 | 3639 | 3256 | 1278 | 1120 | 1730 | 482 | 230 |
| 6 | 5953 | 520 | 1232 | 2690 | 2348 | 5895 | 1204 | 2126 | 260 | 97 |
| 7 | 6748 | 1237 | 2234 | 4931 | 1327 | 981 | 3346 | 3393 | 462 | 413 |
| 8 | 6789 | 688 | 2499 | 6947 | 1799 | 2124 | 3141 | 7918 | 625 | 252 |
| 9 | 2261 | 84 | 215 | 1083 | 379 | 339 | 442 | 734 | 2752 | 525 |
| 10 | 790 | 54 | 418 | 938 | 245 | 134 | 413 | 192 | 525 | 593 |
| 11 | 1396 | 140 | 143 | 1268 | 359 | 256 | 163 | 495 | 311 | 510 |
| 12 | 3619 | 517 | 866 | 3668 | 1258 | 907 | 905 | 2523 | 687 | 326 |
| 13 | 167 | 86 | 87 | 345 | 134 | 59 | 7 | 196 | 33 | 16 |
| 14 | 315 | 41 | 104 | 1373 | 212 | 91 | 59 | 376 | 218 | 34 |
| 15 | 514 | 73 | 111 | 558 | 332 | 111 | 167 | 995 | 249 | 49 |
| 16 | 150 | 3 | 65 | 184 | 61 | 90 | 23 | 456 | 75 | 34 |
| 17 | 13 | 34 | 26 | 7 | 43 | 7 | 0 | 67 | 10 | 0 |
| 18 | 144 | 26 | 1173 | 150 | 432 | 97 | 79 | 252 | 83 | 23 |
| 19 | 173 | 32 | 100 | 240 | 146 | 207 | 87 | 267 | 1057 | 120 |
| 20 | 78 | 22 | 14 | 105 | 26 | 13 | 11 | 147 | 706 | 136 |
| 21 | 722 | 61 | 62 | 403 | 1266 | 220 | 199 | 180 | 66 | 56 |
| 22 | 343 | 59 | 557 | 947 | 1622 | 306 | 119 | 312 | 136 | 19 |
| 23 | 26 | 5 | 192 | 0 | 24 | 199 | 28 | 14 | 3 | 0 |
| 24 | 77 | 84 | 652 | 124 | 135 | 132 | 299 | 227 | 0 | 21 |
| 25 | 306 | 39 | 89 | 92 | 120 | 96 | 43 | 1020 | 0 | 34 |
| OTHER | 0 | 0 | 0 | 24 | 0 | 0 | 4 | 14 | 5 | 0 |
| TOTAL | 53123 | 7938 | 21690 | 45980 | 25832 | 24223 | 26016 | 40667 | 11972 | 5858 |

# TABLE OD MATRICES OF ALL VEHICLE TYPE (CONSOLIDATED ZONE - 1997)

1997 UNIT: PCU

MODE TOTAL

| DESTINATION / ORIGIN | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1174 | 4328 | 127 | 406 | 514 | 126 | 8 | 170 | 113 | 45 |
| 2 | 85 | 501 | 54 | 51 | 128 | 12 | 15 | 27 | 40 | 5 |
| 3 | 203 | 801 | 100 | 119 | 240 | 42 | 42 | 1180 | 74 | 33 |
| 4 | 1120 | 3313 | 385 | 1127 | 513 | 141 | 59 | 191 | 234 | 77 |
| 5 | 278 | 1101 | 57 | 211 | 273 | 86 | 80 | 347 | 194 | 106 |
| 6 | 267 | 1111 | 56 | 99 | 132 | 84 | 62 | 59 | 185 | 57 |
| 7 | 173 | 893 | 22 | 98 | 104 | 14 | 25 | 25 | 77 | 18 |
| 8 | 587 | 2093 | 239 | 446 | 837 | 608 | 13 | 354 | 313 | 131 |
| 9 | 357 | 605 | 19 | 204 | 208 | 70 | 12 | 47 | 1012 | 747 |
| 10 | 476 | 337 | 32 | 50 | 121 | 10 | 0 | 14 | 164 | 60 |
| 11 | 1097 | 1137 | 0 | 6 | 36 | 0 | 0 | 4 | 102 | 48 |
| 12 | 1124 | 2462 | 36 | 62 | 111 | 5 | 3 | 44 | 153 | 103 |
| 13 | 3 | 56 | 3426 | 540 | 81 | 24 | 58 | 51 | 0 | 0 |
| 14 | 0 | 70 | 935 | 4142 | 412 | 24 | 42 | 135 | 1 | 0 |
| 15 | 0 | 130 | 125 | 279 | 26 | 0 | 9 | 39 | 88 | 19 |
| 16 | 2 | 80 | 17 | 73 | 1 | 7 | 0 | 0 | 6 | 8 |
| 17 | 0 | 8 | 79 | 88 | 26 | 0 | 10 | 21 | 7 | 0 |
| 18 | 2 | 42 | 52 | 113 | 44 | 0 | 5 | 9 | 4 | 11 |
| 19 | 116 | 145 | 0 | 0 | 48 | 18 | 0 | 6 | 13 | 24 |
| 20 | 60 | 122 | 0 | 0 | 1 | 7 | 0 | 7 | 17 | 2 |
| 21 | 45 | 215 | 2 | 0 | 0 | 28 | 4 | 31 | 21 | 0 |
| 22 | 0 | 189 | 0 | 49 | 45 | 7 | 0 | 47 | 18 | 0 |
| 23 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 20 | 0 | 16 | 1 | 1 | 0 | 7 | 4 | 4 |
| 25 | 0 | 80 | 0 | 28 | 39 | 87 | 7 | 14 | 18 | 0 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 |
| TOTAL | 7169 | 19846 | 5763 | 8207 | 3941 | 1401 | 454 | 2829 | 2865 | 1498 |

# TABLE OD MATRICES OF ALL VEHICLE TYPE (CONSOLIDATED ZONE - 1997)

1997

UNIT: PCU

MODE | TOTAL

DESTINATION

| ORIGIN | 21 | 22 | 23 | 24 | 25 | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|
| 1 | 725 | 311 | 7 | 176 | 279 | 0 | 53313 |
| 2 | 98 | 35 | 0 | 70 | 38 | 0 | 8091 |
| 3 | 43 | 496 | 160 | 585 | 127 | 0 | 21711 |
| 4 | 363 | 958 | 60 | 148 | 173 | 0 | 44395 |
| 5 | 1232 | 1737 | 36 | 70 | 177 | 0 | 24548 |
| 6 | 199 | 295 | 170 | 72 | 111 | 0 | 25284 |
| 7 | 100 | 131 | 33 | 390 | 98 | 0 | 27273 |
| 8 | 145 | 358 | 29 | 199 | 859 | 7 | 40000 |
| 9 | 168 | 116 | 0 | 4 | 20 | 36 | 12439 |
| 10 | 39 | 5 | 0 | 40 | 2 | 0 | 5652 |
| 11 | 33 | 0 | 0 | 0 | 0 | 0 | 7504 |
| 12 | 347 | 211 | 7 | 75 | 33 | 7 | 20059 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 5369 |
| 14 | 0 | 2 | 0 | 21 | 0 | 0 | 8607 |
| 15 | 25 | 36 | 0 | 0 | 28 | 0 | 3963 |
| 16 | 23 | 0 | 0 | 0 | 54 | 0 | 1412 |
| 17 | 0 | 0 | 0 | 0 | 2 | 0 | 448 |
| 18 | 31 | 21 | 0 | 0 | 8 | 0 | 2801 |
| 19 | 9 | 14 | 0 | 4 | 27 | 4 | 2857 |
| 20 | 12 | 0 | 0 | 0 | 13 | 0 | 1499 |
| 21 | 0 | 23 | 0 | 2 | 8 | 0 | 3614 |
| 22 | 30 | 91 | 4 | 15 | 32 | 0 | 4947 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 498 |
| 24 | 8 | 28 | 0 | 0 | 23 | 0 | 1863 |
| 25 | 8 | 14 | 0 | 0 | 440 | 0 | 2574 |
| OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 54 |
| TOTAL | 3638 | 4882 | 506 | 1871 | 2552 | 54 | 330775 |