CHAPTER 14 IMPLEMENTATION PLAN

CHAPTER 14 IMPLEMENTATION PLAN

14.1 General

The implementation of the OCH project has been shown to be feasible and well justified in the previous chapters of this report. It therefore will clearly provide a valuable addition to the Colombo and CMR transport infrastructure. The cost, however, could be somewhat of a strain on the finances of the Government of Sri Lanka, therefore requiring foreign financing. Two funding sources should be investigated.

- ① Annual budgeted expenditures
- ② Soft loans

Other issues, such as the availability of land, possibilities for cost reduction, and effective construction staging must be also considered. Below, those issues are estimated from the viewpoint of generating other possible solutions.

14.2 Cost Reduction Options

The options below have been identified by this Study as possible cost reduction measures. These options touch upon the roles and concept of the OCH, as well as on matters of RDA policy, and therefore require careful consideration prior to implementation. Note that the costs indicated in the tables in this section exclude Part 1(Southern Highway Project portion).

(1) Number of Lanes

The most likely scenario is the construction of a 4-lane dual carriageway with an upgrade to a 6-lane dual carriageway sometime around 2020 between Kottawa and the Colombo-Katunayake Expressway in order to satisfy future traffic demand. Two more possible options are the construction of 6 or 4 lanes from the beginning with no future upgrade. A comparison of the construction costs for these different scenarios are shown in the table below.

Tab.14.1 Comparison of Construction Costs for Different Lane Number Scenarios

	Base Case	Option I	Option II
	4 Lanes Initially with Upgrade to 6 Lanes	6 Lanes Only	4 Lanes Only
Engineering &	million Rs.	million Rs.	million Rs.
Construction Cost	9,438	9,903	8,477
Land Acquisition etc	1,162	1,162	816
Tax and Duty	2,522	2,647	2,273
Total	13,122	13,712	11,566

(2) Frontage Road

The frontage road plays two major functional roles. These are:

- To provide access to residents whose previous travel routes or properties have been severed by the proposed OCH highway.
- To provide access from proposed interchanges to residential, commercial, and industrial areas and to development areas (such as a free-trade zone or other growth center).

Minimum requirements for ensuring the functioning of the frontage road have been taken into account in this feasibility study. For comparative purposes, the option of no frontage is shown in the table below, assuming the construction of 4 lanes initially with the provision for an up grade to 6 lanes later.

Tab.14.2 Comparison of Construction Costs With and Without a Frontage Road

	Construction of Frontage Road*	No Frontage Road		
Engineering &	million Rs.	million Rs.		
Construction Cost	9,438	9,228		
Land Acquisition etc.	1,162	1,013		
Tax and duty	2,522	2,462		
Total	13,122	12,703		

^{*} land acquired at beginning of project

(3) At-Grade and Grade-Separated Crossings

A role of the OCH is to provide quick and easy access within Colombo. As Tab. 14.3 shows below, a partially-controlled facility with levels of service between an arterial road and an expressway would have the functions needed to provide the access required together with sufficient travel speeds for the people of the CMR. To ensure that travel speeds are maintained at acceptable levels, the OCH should have grade-separated crossings.

Tab. 14.3 The OCH Types of Urban Roads and Their Functions

	Type Of Road	Access Function	Traffic Function	Spatial Function	Design Speed
Ì	Freeway (fully-controlled facility)	×	0	0	High Speed
	(runy-controlled facility)				
	Partially-controlled facility	Ο	0	0	
١	Arterial	0	©	©	
	Collector Road	©		· · · · · · · · · · · · · · · · · · ·	
	Local Street	• • • • • • • • • • • • • • • • • • •	O		Low Speed

Source: Adapted from The Planning & Design of Urban Roads, Traffic Engineering Society, Tokyo, 1988.

O,O,× indicates the level of importance in that order.

However, at-grade crossings at existing collector roads, as an option to reduce construction cost, are also a possibility. The effect on construction costs for grade-separated and at-grade crossings are shown in Tab. 14.4, assuming the construction of 4 lanes initially with the provision for an up grade to 6 lanes later.

Tab.14.4 Comparison of Construction Costs by Type of Crossing

	Grade-Separated Crossings	At-Grade Crossings		
Engineering &	million Rs.	million Rs.		
Construction Cost	9,438	8,003		
Land Acquisition etc.	1,162	1,162		
Tax and duty	2,522	2,153		
Total	13,122	11,318		

(4) Bridge for River Crossing and Railway Crossing

The most likely scenario is to construct the superstructure of bridges for a 4-lane carriageway and then to upgrade this around the year 2020 to 6 lanes when future traffic demand requires it for the section between Kottawa and Colombo-Katunayake Expressway. There are approximately 15 bridges in this section. However, it is possible to consider having the superstructure of the bridges built for 6 lanes from the beginning, since this would avoid the difficulties associated with the construction required for widening later on.

Tab.14.5 Comparison of Construction Cost Bridge Widening

	4 Lanes Initially with 6 Lane Upgrade	6 Lanes Only		
Engineering &	million Rs.	million Rs.		
Construction Cost	9,438	9,226		
Land Acquisition etc.	1,162	1,162		
Tax and duty	2,522	2,467		
Total	13,122	12,855		

(5) Right-of-Way

Land acquisition and right-of-way demarcation should allow for a possible improvement to 6 lanes. The width required for this is 60-70m in general. However, another possibility is to defer the construction of traffic lanes. According to the forecast, two lanes (plus shoulders) in each direction will be sufficient in the initial stages, meaning that a right-of-way 60 meters in width would be sufficient. A comparison of construction cost as a result of the different width in right-of-way is shown in Tab. 14.6

Tab.14.6 Comparison of Construction Cost for Different Right-of-Way

	4 Lanes Initially with 6 Lane Upgrade	4 Lanes Only
Engineering &	million Rs.	million Rs.
Construction Cost	9,438	8,477
Land Acquisition etc.	1,162	817
Tax and duty	2,522	2,273
Total	13,122	11,566

14.3 Staging of Implementation

(1) Financial Viability and Economic Feasibility

Staging the implementation of a project permits the financially most viable portion of the project to be built first and eliminates the need for large annual expenditures that can have an adverse impact on project finances and feasibility.

The southern portion of the OCH has already been launched and the RDA has called for tenders for the design as a part of the Southern Transport Corridor, which is to be funded by the Japan Bank for International Cooperation (JBIC). The construction of this section will commence in the middle of 2001 and will be in service by the middle of 2005.

However, as shown in the table below, the OCH project would produce the greatest returns

and have the largest net worth with the additional implementation of Part 2, which would extend from Rt. A4 to the crossing with the Colombo – Kandy Road (i.e., Rt. A1). It therefore goes without saying that the construction of the OCH should extend to Rt. A1 at a minimum and that the next appropriate staging should be the implementation of Part 2.

Tab. 14.7 Benefit/Cost Ratio and Net Present Worth for the 4 Options of the OCH

Option	Benefit/Cost Ratio	Benefits-Costs
Option 1		
(Construction of Part 1 only)	2.17	Rs.4,767 million
Option 2		
(Construction of Part 1 & 2)	3.23	Rs.13,869 million
Option 3		
(Construction of Part 1,2,3)	1.93	Rs.8,826 million
Option 4		
(Construction of entire OCH)	1.74	Rs.7,713 million

As for Part 3, its addition to Parts 1 and 2 (i.e., Option 3) would still result in a very attractive EIRR of 20.06% in comparison to the 26.35% for Option 2. In addition, from a road network viewpoint, it is crucial in the Study Team's opinion that the CKE and the Southern Highway be connected to each other via the OCH. Therefore, the portion between A1 and the proposed Colombo – Katunayake Expressway at Kerawalapitiya should be built taking into consideration the progress of the CKE Project.

As for the section between the proposed Southern Transport Corridor junction and the Colombo – Galle Road (Road A2), this would be built last. According to the sensitivity analysis in Chapter 13, the EIRR of including Part 4 drops to around 16%, which is usually the borderline for a project being desirable, with a 10% decline in benefits and a 10% increase in costs. Given this, an exmination of traffic volumes as well as a reexamination of the benefits and costs of this portion might be necessary prior to actual implementation.

The staging of implementation is shown in Fig.14.1

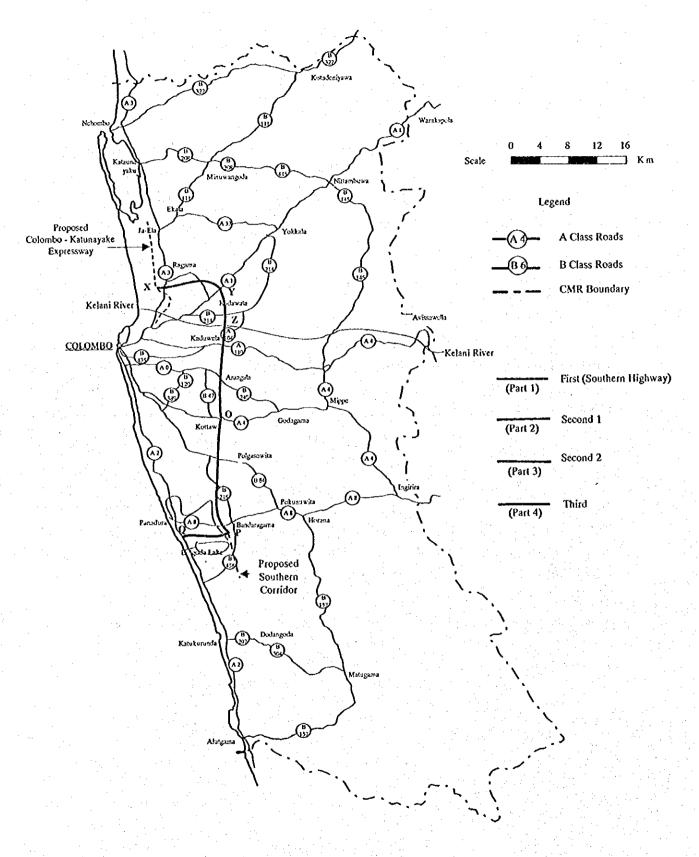


Fig 14.1 Staging of Implementation

(2) Recommendations

Having considered various factors as stated previously, the recommendations are as follows:

- If sufficient Government funds are available, it is worthwhile to implement the entire
 Outer Circular Highway project immediately, with construction to begin soon after
 the completion of the Southern Transport Corridor. This can be carried out with
 existing revenue sources together with soft loans.
- 2. If the approach in 1 cannot be implemented, optional staging of the project should be considered. The alternative to improve financial viability is to divide the Outer Circular Highway Project into four parts as follows:

Part 1 Bandaragama – Kottawa

This section will be implemented as a part of the on-going Southern Transport Corridor Project and will extend to Kottawa (Rt. A4). This is to be funded by JBIC.

Part 2 Kottawa - Kadawata

This section extends from the north end of the Southern Transport Corridor at Kottawa to the Road A1 (Colombo – Kandy Road) should be constructed in parallel with Part 1.

Part 3 Kadawata - CKE (Colombo - Katunayake Expressway)

This section also should be constructed immediately after Part 1. However, the construction schedule should be determined based on the progress with the CKE Project.

Part 4 Bandaragama - Panadura

This section can be deferred until the economic situation of the country has improved and the Government has enough funds for construction.

Traffic forecasts indicate that by the year 2020, the most distant forecast year used in this Study, that the OCH may require three lanes per direction as shown below.

Tab.14.8 Number of Lanes

Part Part	Lanes/Direction Year 2010	Lanes/Direction Year 2020
Part 1 Bandaragama – Kottawa	2	3
Part 2 Kottawa - Kadawata	2	3
Part 3 Kadawata-CKE (Colombo- Katunayake	2	3
Expressway)		
Part 4 Bandaragama – Panadura	2	2

On the other hand, as shown in Tab. 14.8, three lanes (per direction) are not required throughout the length of the OCH. It is recommended to build a four-lane dual carriageway initially and then to widen this to six lanes when circumstances require it.

Initial construction is to consist of a 4-lane dual carriageway with grade-separated interchanges, with provision for subsequent widening to 6 lanes. The widening should be constructed when traffic volumes reach critical thresholds. It is anticipated that traffic volumes of the OCH will reach 55,000 PCU by about 2020 (i.e.10 years after opening), indicating that widening at this time would be warranted.

It is also recommended that Part 1 and Part 4, which the Southern Transport Corridor Project has already committed to be separated from the OCH project cost. That is, it should be treated as a sunk cost not subject to financing.

14.4 Implementation Schedule

A project implementation schedule should be consistent with the technical realities of a project and should ensure the proper sequencing of activities, taking into account institutional capabilities and the availability of resources for construction. The suggested project implementation is shown in the bar chart in Fig.14.2.

It should also be noted that project construction should be divided into work packages that would be attractive to and manageable by international contractors, but not so large as to limit the numbers likely to bid. Each of these packages will be scheduled for completion in a period of about 2.0-3.0 years.

It is suggested that the commencement of construction would begin at the end of the rainy season. The construction of first stage should commence around the end of 2003 and be completed by the middle of 2006.

The schedule is subjected to a number of events occurring, including the following:

Loan Processing

A request by the Sri Lankan Government by September 2000 for a project loan. Nine months is required for the processing of the loan.

Engineering Services

The final alignment based on the trace of the feasibility study should be established at the preliminary design stage prior to the detailed design. Eighteen months is required for the preliminary and detailed design.

Right-of-way Acquisition and Resettlement

The legal process and resettlement actions required should be undertaken in parallel with the detailed design, All land should have been acquired and cleared prior to the award of the construction contracts.

Utility Relocation

Utilities, such as high-voltage lines, local electricity distribution facilities, water mains, telephone lines, etc., must be identified at the early stage of the detailed engineering and be relocated. The relocations should be undertaken in parallel with the detailed design.

Access Limitation Legislation

The project requires that the constructed facility be access controlled. There is therefore a need to strengthen legal powers to restrict access and evict those found to be trespassing. Legislation should be in place prior to the award of the construction contracts.

Pre-construction and Supervision Consultant Selection

The consultant for pre-construction services and supervision services should be selected prior to the pre-qualification of the contractor.

Contractor Selection

Nine months is required prior to the commencement of construction for contractor prequalification, tendering, and the evaluation and award of the contract.

Construction Specification

The initial construction should be carried out as a 4-lane dual carriageway with gradeseparated interchanges, with the provision for subsequent widening to 6 lanes. Widening should be carried out around 2020. The construction should be divided into 4 parts and implemented as mentioned in Chapter 11.5.

FINAL REPORT PROJECT IMPLEMENTATION SCHEDULE 2005 Fig. 14.2 Constrcution Stage: Total Road Length 51.26km Southern Highway-Route A4 invitation Documents prepared/approved and Supervision Consultant Selection RDA acquires First Stage of Alignment Bidding Document prepared/approved Part 4 : Southern Highway-Route A2 6.82km RDA's Resettlement Plan Complete Part 1: A Part of Southern Highway Vegotiates Contract and approved and Acquisition and Resettement Selects Consultant / approved Detailed Measurement Survey : Route A1-Colombo Construction Procurement 16.32km Preliminary Engineering Part 2 : Route A4- A1 19.99km 8.13km Negotiations /Pledge Engineering Services Detailed Engineering Bidding and Award -Construciton Stage Select Consultant Exchange of Note Contract signed Contract signed reconstruction Prequalification oan signed -egislation Appraisal Request Part 3

OUTER CIRCULAR HIGHWAY TO THE CITY OF COLOMBO PAGE 14-11

JICA STUDY TEAM ORIENTAL CONSULTANTS CO.,LTD.

14.5 Disbursement Schedule

Based on the above-mentioned implementation schedule, the disbursement program for 30 years after the completion of the project is established in Tab.14.8 and Tab.14.9 below. Initial construction cost, subsequent widening construction cost, maintenance and operation cost are summarized.

Tab.14.8 Disbursement Schedule of Project Cost in 1999 Prices (Part2~Part4) (million Rs.)

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Part3&4	8	595.9	621.8	211.8	117.5	59.6	62.2	16.8	7.8		18.5
Part3	7	781.4	823.1	277.8	155.6	78.1	82.3	22.1	10.3		16.
Part2&3	6	702.5	672.2	249.7	127.0	70.3	67.2	19.8	8.4		10.0
Part2	5	884.0	795.7	314.2	150.4	88.4	79.6	25.0	9.9		
Part2	4	884.0	795.7	314.2	150.4	88.4	79.6	25.0	9.9	500.5	
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Tab.14.9 Disbursement Schedule of Project Cost in 1999 Prices (Part 1~Part4) (million Rs.)

		Tab.14.9 D	isbursemen	t Schedule	of Project C	ost in 1999	Prices (Par		(million	KS.)	
	-	Construc		TAX & IMP	ORT DUTY ction Cost	F/S & B			ORT DUTY & BID	Land Acquisition	Operation &
Operated	Year	(including C	ontingency)		ontingency)	(inclu.Cor	ntingency)	Assit.(inclu.	contingency)	Acquisition &	α Maintenance
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, , ,	2000				_,					572.0	
Part 1		800.5	725.2	284.5	137.1	80.1	72.5	22.6	9.1	580.9	
Part1		600.4	543.9	213.4	102.8	60.0	54.4	17.0	6.8	580.9	
Part1&2	4	1,484.4	1,339.6	527.6	253.2	148.4	134.0	41.9	16.7		
Part2	5	884.0	795.7	314.2	150.4	88.4	79.6	25.0	9.9		15.0
Part2&3	6		672.2	249.7	127.0	70.3	67.2	19.8	8.4		25.0
Part3	7	781.4	823.1	277.8	155.6	78.1	82.3	22.1	10.3		30.0
Part3&4	8		621.8	211.8	117.5	59.6	62.2	16.8	7.8		32.0
Part4	9	503.2	521.1	178.9	98.5	50.3	52.1	14.2	- 6.5	l	35.0
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CHAPTER 15 MAINTENANCE AND OPERATION PLAN

CHAPTER 15 MAINTENANCE AND OPERATION PLAN

15.1 Maintenance

A 20 year design life shall be considered for the pavement of the proposed OCH. The maintenance for highway is basically programmed in three different categories.

(1) Routine

This is required to maintain the entire facility annually.

- · repairs to road surface crack sealing and pothole patching
- · cleaning of drainage ditches culverts -desilting
- repairs to road facilities repainting signs, repairing guardrail and fencing etc.
- repairs to bridge painting of metal, cleaning of expansion joints and repairing concrete parapets etc.
- general upkeep in the right of way weeding, clearing and cleaning etc.

The costs is estimated on a per-kilometre basis as Rs.0.6 million per-kilometre for 4 lanes which is extracted from the RDA's past record for the expenditure.

(2) Periodic

This is required to maintain the road at some interval.

- payement overlay the work consists of restriping
 - timing should be based on traffic volume
 - the timing is estimated as a five year interval
- pavement marking it should be replaced when it wears off the pavement
 - the timing is estimated as a five year interval

Each overlay is estimated to be 50mm thick and the cost is Rs8.28 million per kilometre for 4 lanes which is extracted from the RDA's past record for the expenditure.

(3) Emergency

This is an indeterminable nature and scope and therefore not quantifiable and estimated.

- · accident damage to roads and structures
- · flood damage

15.2 Operation

Generally in Sri Lanka, the traffic management measures shall be adopted to improve traffic flow including the designation of bus stops off the main carriageway, restriction of on – street parking, control of frontage activity and encroachment, and provision of facilities for pedestrians (e.g. footways, footbridges and designated crossing points).

Legislation is required to define and enforce the necessary restriction on vehicles allowed to use the OCH and frontage road from adjacent land.

Access to the OCH should be limited to designated points and certain classed of road user, e.g. cyclist, pedestrians, animal drawn vehicles, motor cycles and three-wheelers are prohibited. The right-of-way should be fenced throughout to inhibit illegal access and to prevent unauthorized access to and from adjacent properties.

The expenditure covering the personnel expenses, electric charges, etc., is required to operate the OCH keeping a partially-controlled facility with levels of the service.

Legislation of Highway

It is recommended that new highway be designated as an 'expressway'. The term 'expressway' should also be given a specific legal definition and clauses introduced into the new 'National Highways Act' to specify:

- ① special procedure for developing an expressway, e.g. land acquisition and resettlement:
- ② limitation on the use of the expressway by specified users, e.g. cyclist, pedestrians, animal drawn vehicles, motor cycles and three-wheelers: and
- ③ controls on the rights of access from adjacent land-owners and occupiers. Such legislation should be in place prior to the construction of the highway.

Bus Bays

Sri Lankan driver behavior at the present time is very much different to that of other developed countries. The operating speed of vehicles is obliged to be significantly low, mainly because of the interruptions made by public and private bus drivers. Although bus bays are provided in the city, buses stop at any location to load passenger without giving any regards to other vehicles.

Therefore, it is suggested that no busses or coaches should be allowed to stop within the OCH except the designated bus stops those are established at certain interval on the OCH and the interchanges outside the main highway.

APPENDIX A1

CONSTRUCTION QUANTITY SHEETS

APPENDIX A1 CONSTRUCTION QUANTITY SHEETS

1.1 Summary of Quantity Sheets

1.1.1 Main Part

Tab.A.1.1 and Tab.A.1.2 show the summary of quantity lists for main part at initial and final stages. The lists show the Southern Highway(SH) portion and the Outer Circular Highway(OCH) Project Portion.

1.1.2 Interchange (IC) and Junction (JCT)

Tab.A.1.3 shows the summary of quantity list for interchange and junction. The list shows the SH portion, the OCH portion and the Colombo Katunayake Expressway (CKE) portion.

1.2 Detail of Quantity Sheets

1.2.1 Detail of Quantity for Main Part

Detail of quantities are shown in Tab.A.1.4.1 \sim Tab.A.1.11.

List

Tab.A.1. $4.1\sim4$: PAVEMENT & KERB (INITIAL STAGE) Tab.A.1. $5.1\sim3$: PAVEMENT & KERB (FINAL STAGE)

Tab.A.1. 6.1~7 : FRONTAGE ROAD

Tab.A.1. 7.1~2 : BRIDGE & VIADUCT(INITIAL & FINAL STAGE)

Tab.A.1. 8.1~3 : OVERPASS
Tab.A.1. 9.1~4 : BOX CULVERT
Tab.A.1.10.1~4 : PIPE CULVERT

Tab.A.1.11 : SHIFTED CHANNEL

1.2.2 Detail of Quantity for Interchange (IC) and Junction (JCT)

Detail of quantities are shown in Tab.A.1.12.1 \sim Tab.A.1.19. Regarding CKE junction, construction portion is divided, as follows.

CKE Junction ⇒ CKE1(CKE Portion) and CKE2(Part3 in OCH)

List

Tab.A.1.12.1 \sim 2 : TOTAL LENGTH Tab.A.1.13.1 \sim 10 : EARTH WORKS

Tab.A.1.14.1 \sim 3 : SLOPE PROTECTION

Tab.A.1.15 : RETAINING WALL

Tab.A.1.16.1 \sim 6: PAVEMENT

Tab.A.1.17. : BRIDGE & VIADUCT

Tab.A.1.18 : BOX CULVERT
Tab.A.1.19 : INTERCHANGE AT ROAD A2

TOTAL LENGTH FEARTH WORKS CUTTING EMBANKMENT-1 EMBANKMENT-2 EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	km m3 m3 m3 m3	HIGHWAY PART I (41 ANES) 16.32 634,615.0 66,165.0 312,855.0	PART 2 (41ANES) 19.99 1,122,772.0	PART 3 (4LANES) 8.13 814,576.0	ULAR HIG PART 4 (4LANES) 6.82	TOTAL 34.94	REMARKS Excavation, Loading
FARTH WORKS CUTTING EMBANKMENT-1 EMBANKMENT-2 EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	m3 m3 m3 m3 m3	16.32 634,615.0 66,165.0	19.99 1,122,772.0	8.13 814,576.0	6.82	34.94	Excavation, Loading
FARTH WORKS CUTTING EMBANKMENT-1 EMBANKMENT-2 EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	m3 m3 m3 m3 m3	634,615.0 66,165.0	1,122,772.0	814,576.0			Excavation, Loading
EMBANKMENT-1 EMBANKMENT-2 EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	m3 m3 m3 m2	66,165.0			12,320.0	1,949,668.0	Excavation, Loading
EMBANKMENT-2 EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	ൻ ൻ m2		73,038.0	00.000.5	,		
EMBANKMENT-2 EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	m3 m2			20,088.0	11,112.0	104,238.0	Excavation, Loading, Spreading, Compaction
EMBANKMENT-3 FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	m3 m2	3128550	1		1		Compaction Borrow, Excavation, Loading, Spreading
FOUNDATION STABILIZER SLOPE PROTECTION RETAINING WALL	m2	V. C. V. V. V		0.0	669,089.0	669.089.0	Compaction
SLOPE PROTECTION RETAINING WALL		634,615.0		584,535.0	12,320.0	1,587,988.0	Spreading Compaction
RETAINING WALL	1	0.0 235,664.0	0.0 377,190.0	50,000.0 187,095.0	0.0 81,443.0		Sand Blanket (t=1.0m),Sta 17~27 Turfing
	m2	233,004.0	377,190.0	107,033.0	61,445.0	043,720.0	Mansonry type along milk factory, in
SPOAD WORKS	m	0.0	0.0	6,529.0	0.0	6,529.0	Part-3.
IIRITALI WIIKKN	 						
WEARING COURSE(t=40mm)	m2	302,435.1	368,820.1	148,734.2	115,566.2	633,120.5	
BINDER COURSE(t=60mm)	m2	388,152.0				815,148.6	
BASE COURSE(t=200mm)	m2	401,090.4		197,251.8		841,568.4	See Tab.A.1.4.1~A.1.4.4
SUBBASE COURSE(t=200mm)	m2	414,732.6		203,897.6		875,365.4	
CENTER MEDIAN	m	0.0				6,720.0	
KERB	<u>m</u>	64,692.0		31,814.8 53,965.0		124,146.8	See Tab.A.1.6.1~A.1.6.7
FRONTAGE ROAD	m2	114,605.0	202,667.0	0.000,00	17,102.0	£13,134.U	000 100.W1.0.1 *W1.0./
ii)BRIDGE & VIADUCT	†	 			- -		·····
(a)BRIDGE	T		7.			<u> </u>	
LENGTH>50m	00	0.0	0.0	0.0	0.0	0.0	
LENGTH<50m	DO	, 1.0	0.0	0.0	0.0	0.0	See Tab.A.1.7.1
KELANI GANGA CROSSING	DO.	0.0	1.0	0.0	0.0	1.0	000
BOLGODA GANGA CROSSING	00	0.0	0.0	0.0	1.0	1.0	
(b)YIADUCT		 			-		
LENGTH>50m	on	0.0	0.0	1.0	0.0	1.0	0
LENGTH<50m	no	5.0		3.0	0.0	6.0	See Tab A.1.7.1
				1		1 1 2 2 1 2	A A A A A A A A A A A A A A A A A A A
(c)OVERPASS	—			1.0	0.0	1.0	
LENGTH>50m LENGTH<50m	DO DO	3.0 14.0			4.0	10.0	See Tab.A.1.8.1~A.1.8.3
LEMOTHONA	100	14.0		0.0	7.0	10.0	
iv)UNDERPASS	 	1					
BOX CULVERT	m	355.0	551.0	230.0	84.0	865.0	
			.		1 1 4 5 5 T		
v)INTERCHANGE & JUNCTION		L		<u> </u>			
INTERCHANGE	100	2.0 0.0	S		1.0 1.0	6.0 2.0	See Tab.A.1.3
JUNCTION	ea	0.0	0.0	1.0	1.0	2.0	The second second second second
VI)DRAINAGE WORKS	-	 					
PIPE CULVERT(Φ1,500mm)	m	1,059.0	1,209.0	183.0	155.0		See Tab.A.1.10.1~A.1.10.4
BOX CULVERT	m	116.0			191.0		See Tab.A.1.9.1~A.1.9.4
ROAD SURFACE DRAINAGE	m	16,173.0	19,723.0	7,953.7	6,720.0	34,396.7	(Total Length) - (Bridge Length)
VII)SHIFTED CHANNEL	+-	 	1111				
BOX CULVERT	m	63.0		0.0	0.0	0.0	0. 0.1 4 4 4 4
UDITCH	m	750.0				240.0	See Tab.A.1.11
						2 2 2 2 2 2	
(viii)MISCELLANEOUS				* ; *			
TEMPORARY BOAR	1	١.,		10	1.0	30	(CUTTING + EMBANKMENT-1,2,3 + BRIDGE&VIADUCT WORKS) × 3.0%
TEMPORARY ROAD	Ls.	1.0	1.0	1.0		3.0	(CUTTING + EMBANKMENT-1,2,3 +
TEMPORARY CONSTRUCTION FACILITY	Y Ls.	1.0	1.0	1.0	1.0	3.0	BRIDGE&VIADUCT WORKS) × 1.09
TRAFFIC SKIN BOARD & SAFETY CONTROL FACILIT		16,173.0	-				(Total Length) - (Bridge Length)
TRAFFIC ILLUMINATION	60	392.0					Found at Intervals of 84.0m (Both sid
ACCESS CONTROL FACILITY (GUARD RAIL)	m	55,000.0					((Total Length)-(Ramp's Length)) X
LANE MARKING	m	97,038.0			40,320.0		((Total Length) - (Bridge Length)) ×
FENCING & km POST	m	32,346.0			13,440.0		((Total Length) - (Bridge Length)) ×
TRAFFIC SIGNAL	100	0.0					(Catal Lange) (Bridge Lange)
ROADSIDE PLANTING PIPE WORKS FOR COMMUNICATION CABLE	m	16,173.0					(Total Length) - (Bridge Length) (Total Length) - (Bridge Length)
PIPE MINER LINE PRIMITALISMO ATTORNO AND P	m	16,173.0	19,723.0	1,355.1	0,720.0	34,390.7	1 total renktil - (Ditoge renktil)
THE HUNKSTON COMMUNICATION CABLL				 		*********	
THE HUNKSTON COMMUNICATION CABLE	1	1	B 41 1 1	1 1 1			
THE HUNDSTON COMMUNICATION CABL			 		2.55	<u> </u>	
THE TOTAL TOTAL CONTINUE CABU					1		
THE TOTAL TOTAL CONTINUE CABU							
THE TOTAL TOTAL CONTINUE CABU					1		

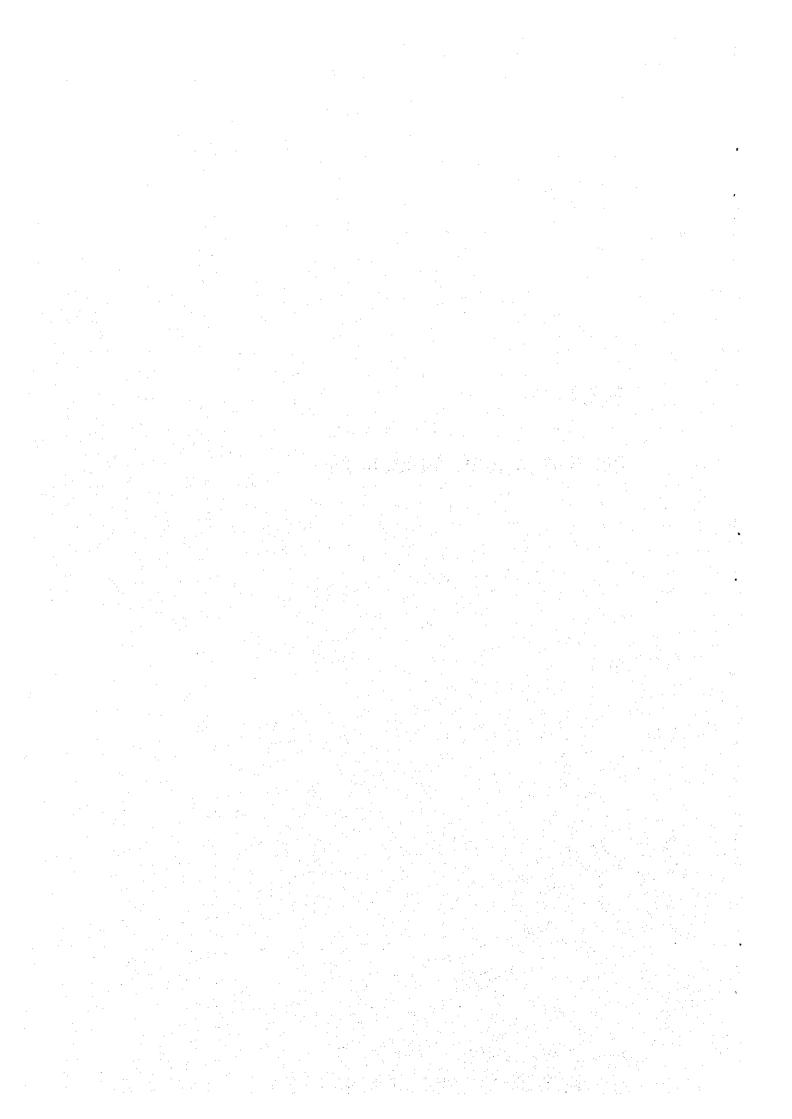
Tab.A.1.2 SUMMARY OF QUANTITY (FINAL STAGE)										
		SOUTHERN	ου	TER CIRC	ULAR HIC	GHWAY				
nem	UNIT	PART 1	PART 2	PART 3	PART 4		REMARKS			
		(6LANES)				TOTAL				
TOTALIENGTH	km	16.32	19.99	8.13	6.82	34.94				
(i)EARTH WORKS						- 10				
CUTTING	m3	634,615.0	1,122,772.0	814,576.0	12,320.0	1,949,668.0	Excavation, Loading			
					1 14		Excavation, Loading, Spreading,			
EMBANKMENT-1	m3	66,165.0	73,038.0	20,088.0	11,112.0	104,238.0	Compaction			
EMBANKMENT-2	m3	312,855.0	0.0	0.0	669,089.0	669,089.0	Borrow, Excavation, Loading, Spreading			
EMBANKMENT-3	m3	634,615.0	991,133.0	584,535.0	12,320.0		Spreading, Compaction			
FOUNDATION STABILIZER	m2	0.0	0.0	50,000.0	0.0		Sand Blanket (t=1.0m),Sta.17~27			
SLOPE PROTECTION	m2	235,664.0	377,190.0	187,095.0	81,443.0	615,728.0				
The second secon	1			100			Mansonry type along milk factory, in			
RETAINING WALL	m	0.0	0.0	6,529.0	0.0	6,529.0	Part-3.			
(ii)ROAD WORKS			170 072 4			7.5.7.7.7				
WEARING COURSE(t=40mm)	m2	391,386.6	477,253.4	192,443.7	115,566.2	785,263.3				
BINDER COURSE(t=60mm)	m2	476,650.3	581,179.7	234,313.9	150,907.8	966,401.4				
BASE COURSE(t=200mm)	m2	487,775.9		239,538.9	155,186.2	989,260.8	See Tab.A.1.5.1~A.1.5.3			
SUBBASE COURSE(t=200mm)	m2	510,812.2		251,355.1	166,579.4	1,040,493.1				
CENTER MEDIAN	m	16,173.0	19,723.0	7,954.7	6,720.0	34,397.7				
KERB	m	32,346.0	39,446.0	15,907.4	13,440.0	68,793.4	C- T-1 A 1 6 10 A 1 6 7			
FRONTAGE ROAD	m	114,605.0	202,667.0	53,965.0	19,162.0	213,194.0	See Tab A 1.6.1~A.1.6.7			
CORRIDGE & WARRIOT	ļ					1.00				
(iii)BRIDGE & VIADUCT		 								
(a)BRIDGE LENGTH>50m		0.0	0.0	0.0	0.0	0.0				
	00	1.0	0.0	0.0	0.0	0.0				
LENGTH<50m KELANI GANGA CROSSING	100	0.0	1.0	0.0	0.0	1.0	See Tab.A.1.7.2			
BOLGODA GANGA CROSSING	60	0.0	0.0	0.0	1.0	1.0				
BOLOODA GANGA CROSSING	100		0.0	0.0	1,0	1.0	The second second second second second			
(b)VIADUCT			5 /- 1		1 7 7		the state of the s			
LENGTH>50m	ρο	0.0	0.0	1.0	0.0	1.0	0 01 1100			
LENGTH<50m	no	5.0	3.0	3.0	0.0	6.0	See Tab. A.1.7.2			
Ection Com	``	l	3 5 5							
(c)OVERPASS						1.4.4				
LENGTH>50m	no	3.0	0.0	1.0	0.0	1.0	See Tab.A.1.8.1~A.1.8.3			
LENGTH<50m	no	14.0	0.0	6.0	4.0	10.0	SC6 120.A.1.6.1 "A.1.6.3			
			40.0			that is the				
(iv)UNDERPASS				* * * * * * * * * * * * * * * * * * *						
BOX CULVERT	m	355.0	\$51.0	230.0	84.0	865.0	See Tab.A.1.9.1~A.1.9.4			
The Republication of the Artificial Section of the		1								
(v)INTERCHANGE & JUNCTION										
INTERCHANGE	ρò	2.0	4.0	1.0	1.0	6.0	See Tab.A.1.3			
JUNCTION	100	0,0	0.0	1.0	1.0	2.0				
					.: .					
(vi)DRAINAGE WORKS					455.0	16420	0.814404.45404			
PIPE CULVERT(Φ1,500mm)	m	1,059.0	1,209.0	183.0	155.0		See Tab. A.1.10.1~A.1.10.4			
BOX CULVERT	m	116.0	118.0	0.0	191.0		See Tab.A.1.9.1~A.1.9.4			
ROAD SURFACE DRAINAGE	m	16,173.0	19,723.0	7,953.7	6,720.0	34,390.7	(Total Length) - (Bridge Length)			
Contrary Children	1.0									
(vii)SHIFTED CHANNEL		610	0.0	~~~~~	0.0					
BOX CULVERT	m	63.0 750.0	0.0	240.0	0.0	240.0	See Tab.A.1.11			
U DITCH	m	,00.0	0.0	210.0		240.0	The state of the s			
(viii)MISCELLANEOUS	 		100							
(MII)MISCELLANEOUS				1000			(CUTTING + EMBANKMENT-1,2,3 +			
TEMPÔRARY ROAD	Ls.	1.0	1.0	1.0	1.0	3.0	BRIDGE&VIADUCT WORKS) × 3.0%			
TEMPORAR I ROAD	1.3.	1.0	1.0	1.0	1.0		(CUTTING + EMBANKMENT-1,2,3 +			
1EMPORARY CONSTRUCTION FACILITY	Ls.	1.0	1.0	1.0	1.0	3.0	BRIDGE&VIADUCT WORKS) × 1.0%			
TRAFFIC SIGN BOARD & SAFETY CONTROL FACILITY	m	16,173.0	19,723.0	7,953.7	6,720.0		(Total Length) - (Bridge Length)			
TRAFFIC ILLUMINATION	100	392.0	478.0	196.0	166.0		Found at Intervals of 42.0m			
ACCESS CONTROL FACILITY (GUARD RAIL)	m	23,000.0		11,000.0	13,000.0	51,000.0	((Total Length)-(Ramp's Length))×2			
LANE MARKING	m	129,384.0		63,629.6	40,320.0	261,733.6	((Total Length) - (Bridge Length))×6			
FENCING & km POST	m	32,346.0	39,446.0	15,907.4	13,440.0	68,793.4	((Total Length) - (Bridge Length))×2			
TRAFFIC SIGNAL	.00	0.0		0.0	0.0	0.0				
ROADSIDE PLANTING	m	16,173.0		7,953.7	6,720.0		(Total Length) - (Bridge Length)			
PIPE WORKS FOR COMMUNICATION CABLE	m	16,173.0	19,723.0	7,953.7	6,720.0	34,396.7	(Total Length) - (Bridge Length)			
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REMARKS			Sec Tab.A.1.13.1~A.1.13.11		7 1 ∞ 4 1 14 3	(5			Sec Tab. A.1.16.1~A.1.16.7			Total Length) - (Bridge Length)									18				7,121.0 (Total Length) - (Bridge Length)		(CUTITING + EMBANKMENT-1,2,3 + BRIDGE&YIADUCT WORKS) × 3,0%	(CUTTING + EMBANKMENT-1,2,3 +	S.O. BRIDGERVIADUCT WORKS) x 1.0%	Found at Intervals of 42.0m	h) - (Bridge Length)) × 2	14,209.0]((Total Length) - (Bridge Length)) X2		mond Type.						
		0.0	See Tab.A.1.	Q	0.	600.0 Sec Tab.A.1.15		0	O Sec 7ab A.1.	a lo	0.0	.0](Total Length	0.0			1.0 Sec Tab A.1.17			2.0 Sec Tab.A.1.17		30.0 See Tab A. 1.1			0.0	.0 (Total Length		8.0 BRIDGE&Y	(CUTTING+)	S.O. BKIDGERVI	99.01 Found at Inte	.0 ((Total Lengt	O((Total Lengt	0.0	O Found at Dian	0.0				-	
TOTAL		0.0	0.040	0.0			_	162.69 0.	24,200.0 99,531.0 S	25.53	0	0.0 7.121.0(0:0			0.0		0.0			Ш	0.0 7.121		1.0		200		•				0.0			_		
PARTA CT A2 IC								0 24 200	0 24,200	0 24 200	0.0					0.0		0			00		_				1.0		200						0.0			-		
		0.0	0 20 00 10	0	0.0	0.09 60.0		0 18,995	0 18,995.0	200	0	2,00	0.0				4				0.0			0.0 0.0			1.0		0.1		1	4.12								
OUTER CIRCULAR HIGHWAY PART3 C A4 IC CKE2 A3 IC 3 0 1 1095 0 1222 0 782 0				000		0.025			0.889.0			7			V 0			0.0							0 782.0		1.0				۴	1			000					
TRCUTAR PAS CKE2		0.0	76.6	0.0		0.0		0 14.697	13,478.0 14,697.0	14.697	0.0	1:13	L_L			0.0			0.0		30.0		-		F					16.0		2,3			0.0	П				
SUTTER CI			000	0.00.0		0.025,51,0		0 13.478	0 13,478	13,478	0.0	1,05	0.0			1.0			000		0				105		1.0		2 0	ľ		2,10	_							
A110 I	11	O	0.0	0.00		0.0		•	4,359.0			3 403.0	Н			0.0			200						3 403.0		1.0		ı	L	806.0				0.0					
' -	Ш			0.0		0.0		1	3.547.0	- 1	,	287.0	Ц			0.0			00		00				287.0		1.0	١.		L	574.0	l			0.0					
				9		0.0		12.567.0		12.567.0	0.0	1.33	0:0			0.0			0:0						133		1.0	L		丄	2,712.0				0.0					
N HIGHWAY				0.0		30		19.898.0		19,898.0						0.0			000		0.0			0.0			2.0		710			3,928.0	LJ		000					
AS IC				<u> </u>		0.0		8	8	- 1	9	8				0.0			200		0.0			0.0			1.0		i		\E.	1.93			0.0	-				
PARTI(SOUTHER B84 IC AS IC			0.0	0.0	П	000		10.068.0	10,068.0	0.890,01	0.0	ď	0.0			0.0		9.0			0.0				0.666		1.0		- 4		1.998.0			20						
CKE	7	0.0	0.0	0.0	0.0	36,619.0		19 93 7.0	19.937.0	19.937.0	0.0	1,166.0	0.0		X	0.0		90	1.0		0.55	2010		0.0	1,166.0		1.0	~ •	3.1 1.0	15.0	2,365.0	2.365.0	0.0	0.0	0.0					
TEND		m3	Ê	5/5	m ₂	- 1		, m2	ш2	12 C	E E			-		6 6		1	2		Ε			\perp	13		Ţ.s.								8 8			1	L	
MEM TANGET		JITING	MBANKMENT-1	MBANKMENT-3	NUNDATION STABILIZER	SLOPE PROTECTION RETAINING WALL	II)ROAD WORKS	FARING COURSE/(#40)mm	BINDER COURSE(t=60mm)	ASE COURSE(t=200mm)	ENTER MEDIAN	ERB	KONTAGE ROAD	(ii)BRIDGE & VIADUCT	BRIDGE	LENGTH<50m		(b)VIADUCT	NGTH 50m		(W)UNDERPASS		NAME AND A CENTRAL	PIPE CULVERT(Ф1,500mm)	DAD SURFACE DRAINAG	(vii)MISCELLANEOUS	TEMPORARY ROAD		SAMPOKAKY CONSTRUCTION	SAFFICITIONINATION	CESS CONTROL PACILLY (CUARD	ANE MARKING	NCING & km POST	TRAFFIC SIGNAL	RUADS LIDE FLAM LENG FIFE WORKS FOR COMMUNICATION CA					
<u> </u> <u>E</u>	-1 F	_{O 	<u>ω</u> [ί	<u> </u>	Œ.	∾l≪	1	-l≊ 	[co]	α	δ Ü	 3	[正]	_E		100	_	<u>ව</u> ැ	- 1	17.	⊃kë 	} ∐	_K		, 11 h	47			- F	F	· ×	H	<u>.</u>	⊢ jê	∠ E		Ц —	1	ا -	<u></u>
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Detail of Quantity for Main Part



Tab.A.1.4.1 QUANTITIES OF PAVEMENT & KERB(INITIAL STAGE) PAVEMENT WORKS

PART 1(SOUTHERN HIGHWAY)	

		בטד		ند ر	EMBANKMENT		8	CUT/EMBANKMENT		`	
	MIDTH	LENGTH	AREA	WIDTH	LENGTH	AREA	HLCIM	HIGNAI	AREA	SUB TOTAL-1	REMARKS
	Ê	Œ	Î	æ	Œ	Ê	(E)	(m)	(H)	(m)	
WEARING	1 1 1 1 1 1 1 1 1	1					7		:		asphalt con, 40mm
COURSE	18,700	3,994.000	74,687.80		18.700 11.205.000	209,533.50	18.700	974.000	18,213.80		302,435.10 including tack coat
BINDER	:										asphalt con. 60mm
COURSE	24.000	3,994,000	95,856.00	24.000	11,205.000	268,920.00	24,000	974,000	23,376.00		388,152,00 including prime coet
BASE							1,				
COURSE	24.800	3,994,000	99,051.20	24.800	11,205,000	277.884.00	24.800	974,000	24,155,20	401,090.40 t=200mm	t=200mm
SUBBASE											
COURSE	24.796	3,994,000	99,035,22	25.960	11,205.000	290,881.80	25.478	974.000	24.815.57	414,732.60 t=200mm	t=200mm

WEARING	-:		
COURSE	0.200	0.000	
BINDER			
COURSE	0.300	0.000	
BASE			
COURSE	0.700	0000	
SUBBASE			
4000			

REMARKS

TOTAL (m)

SUB TOTAL-2 (m)

AREA (m)

CENTER MEDIAN (CURVE LINE) LENGTH (m)

WIDTH (m)

AREA (m)

CENTER MEDIAN
(STRAIGHT LINE)
LENGTH
(m)

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302,435.10 388,152,00 401,090.40 414,732.60

		CUT			EMBANKMENT		8	CUT/EMBANKMENT	—— 与		
	UNIT LENG	TH ROAD LENGTH	KERB LENGTH	UNIT LENGTH	KERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	TOTAL	REMARKS
ASPHALT	(m)	(un)	(II)	0	Œ.	(E)	E	(E)	Œ)	(E)	
KERB	4.000	3,994,000	15.976,000		4.000 11,205.000 44,820,000	44.820.000	4,000	974.000	3,896.000	64,692.000	-
CONCRETE					- 1 - 2 - 1 - 1 - 1						

Tab.A.1.4.2 QUANTITIES OF PAVEMENT & KERB(INITIAL STAGE) PAVEMENT WORKS

HIGHWAY	
CIRCULAR	
XOUTER	
ART 2	İ

	7	150		щ	EMBANKMENT		CO	CUT/EMBANKMENT	T.		च्या चर्च
10 T	HLCIM	LENGTH	AREA (m)	HTCIW (m)	LENGTH (m)	AREA	HLCIM (m)	LENGTH (m)	AREA (m)	SUB TOTAL-1	REMARKS
WEARING											asphalt con, 40mm
COURSE	18.700	5.370.000	100,419.00	18.700	12,548,000	234,647.60	18,700	1,805,000	33,753.50		368,820,10 including tack cost
BINDER								•			esphalt con, 60mm
COURSE	24.000	5,370,000	128,880.00	24.000	12.548.000	301,152.00	24.000	1,805.000	43,320.00		473,352.00 including prime coat
BASE							4.				
COURSE	24.800	5,370,000	133,176,00	24.800	12,548,000	311,190,40	12,548,000 311,190,40 24,800	1.805.000	- 1	44,764.00 489,130.40 t=200mm	t=200mm
SUBBASE										٠	
COURSE	24.796	5,370,000	133,154,52	25.960	12,548,000	325,746.08	25 478	1.805.000		45,987.79 504,888.39 t=200mm	t=200mm

	U	CENTER MEDIAN	7	Ö	CENTER MEDIAN	7					
1 1 2 2 3		STRAIGHT LINE		-	(CURVE LINE)	The second second	1000	the same of the second			
	MIDTH	LENGTH	AREA	WIDTH	LENGTH		AREA SUB TOTAL-2			TOTAL	REMARKS
	(E)	(E)	(H	(a)	(m)	(m)	(m)	Comments of the Comments of		(m)	
WEARING											
COURSE	0,200	0000	000	0,200	0.000	0.00	00:0			368,820.10	
BINDER											
COURSE	0300	0000	000	0.250	0.000	000	00.0		and the same and	473,352.00	
BASE		_									
COURSE	0.700	0000	00.0	0.450	0000	00.0	00.0			489,130.40	
SUBBASE											
COURSE	1.280	0000	0000	1.740	0.000	0.00	0.00			504,888.39	,

Tab.A.1.4.3 QUANTITIES OF PAVEMENT & KERB(INITIAL STAGE)
PART 3(OUTER CIRCULAR HIGHWAY)

		(11,11)									
					-						
		CUT		ш	EMBANKMENT		5	CUT/EMBANKMENT	ī		
	мтам	HISNET	AREA	HLGIM	LENGTH	AREA	WIDTH	LENGTH		SUB TOTAL-1	REMARKS
	(a)	Œ	(H)	(E)	(m)	Œ	(E)	(E)	(m)	(m)	
WEARING		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									asphalt con, 40m
COURSE	18.700	1,985.000	37,119,50	18.700	5,408.700	101,142.69	18.700	260.000	10,472.00	148,734.19	148,734.19 including tack or
BINDER			•								asphalt con, 60m
COURSE	24.000	1,985,000	47,640.00	24.000	5,408.700	129,808.80	24,000	\$60,000	13,440.00	190,888.80	190,888.80 including prime a
BASE											
COURSE	24.800	1,985,000	49,228,00	24.800	5,408.700	134,135,76	24.800	\$60,000	13,888.00	197,251,76 t=200mm	t=200mm
SUBBASE											
COURSE	24.796	1,985,000	49,220.06	25.960	5.408.700	140,409,85	25.478	560.000	14,267.68	14,267.68 203,897.59 t=200mm	t=200mm

	Ú	CENTER MEDIAN	- T-	₀	CENTER MEDIAN	z	,			
1 1 1 1	S)	STRAIGHT LINE)	(· (CURVELINE)					
· - -	WIDTH	LENGTH	AREA	HICIM	LENGTH	AREA	SUB TOTAL-2		TOTAL	REMARKS
	(m)	(E)	E	Ê	Ê	Ê	Ê		E	
WEARING										
COURSE	0.200	0000	000	0.200	0.000	0.00	000		148.734.19	
BINDER										
JRSE	0.300	0000	00.0	0.250	0.000	0.00	000		190.888.80	:
BASE										
JRSE	0.700	0000	0.00	0.450	0000	000	000		197,251,761	:
SUBBASE										
COURSE	1.280	0000	0.00	1.740	0.000	000	00.0		203 807 50	:

		CUT			EMBANKMENT		Đ	CUT/EMBANKMENT	Ę.		
	UNIT LENGTH	INIT LENGTH ROAD LENGTH	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	UB LENGTH		REMARKS
ASPHALT						ji)	(11)	(m)	(III)	(m)	
KERB	4.000	1,985.000	7,940.000		5,408,700	4.000 5,408,700 21,634,800	4.000	260.000	2,240,000	2,240,000 31,814,800	
CONCRETE											

Tab.A.1.4.4 QUANTITIES OF PAVEMENT & KERB(INITIAL STAGE) PAVEMENT WORKS PART 4(OUTER CIRCULAR HIGHWAY)

		F S			EMBANKMENT		CC	CUT/EMBANKMENT			
	WIDTH	LENGTH	AREA	HJJCIM	LENGTH	AREA	WIDTH	LENGTH	مد	SUB TOTAL-1 REMARKS	REMARKS
	Œ	Œ	(m)	(E)	(m)	(m)	(m)	(E)	Ê	(H)	
WEARING					-			·-·			asphalt con. 40mm
COURSE	17.000	210.000	3.570.00	17.000	6,430,000	109,310,00	17.000	80.000	1.360.00		114,240.00 including tack coat
BINDER											asphalt con. 60mm
COURSE	22.200	210.000	4,662.00	22.200	6,430,000	142,746.00	22.200	80.000	1.776.00	.	149,184.00 including prime coat
BASE			-								
COURSE	22.600	210.000	4,746.00	22.600	6,430,000	145,318,00	22.600	80.000	1,808.00	151,872,00 t=200mm	t=200mm
SUBBASE								<u></u>			
COURSE	22.698	210.000	4,766.58	23.180	6,430,000	6,430,000 149,047,40	22.939	80.000	1.835.12	155,649.10 t=200mm	t=200mm

		REMARKS						,			
		TOTAL	(m)		115,566.20		150,907.80		155,186.20		166,579,38
	and introduced to an error		Control of the Control						The second of the second		
	The second second		The second second second								
	and the second of the second	SUB TOTAL-2	(m)		1.326.20		1,723.80		2,389.50 3,314,20		10,930.28
		AREA	(m)		1.062.00		1,327.50		2,389.50	,	9,239,40
CENTER MEDIAN	(CURVE LINE)	LENGIH	(m)		5,310,000		5,310.000		5,310.000		5,310.000
ฮ)	HLCIM	(m)		0.200		0.250		0.450		1.740
:		AREA	(EE)		264.20		396.30		924.70		1,690.88
CENTER MEDIAN	(STRAIGHT LINE)	LENGTH	Œ		1,321,000		1,321,000		1,321,000		1,321,000
បី	S	HIGIM	(m)		0.200		0.300		0.700		1.280
				WEARING	COURSE	BINDER	COURSE	BASE	COURSE	SUBBASE	COURSE

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		T.D			EMBANKMENT		5	CUT/EMBANKMENT	Ļ		
	UNIT LENGTH	ROAD LENGTH	KOERB LENGTH	UNIT LENGTH (m)	ROAD LENGTH	KERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH (m) (m) (m) (m) (m)	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	TOTAL (m)	REMARKS
ASPHALT											
KERB	2.000	210.000	420.000	2.000	-	6,430,000 12,860,000	2,000	80.000	160.000	160.000 13,440.000	
CONCRETE											

Tab.A.1.5.1 QUANTITIES OF PAVEMENT & KERB(FINAL STAGE) PAVEMENT WORKS

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10001	TO THOM I WOULD TO THE										
		CUT		ш	EMBANKMENT		5	CUT/EMBANKMENT			
	HLCIM (H)	LENGTH (m)	AREA (m)	HLCIM (m)	LENGTH (m)	AREA (m)	HLCIW (m)	LENGTH (m)	AREA (m)	SUB TOTAL-1	REMARKS
WEARING COURSE	24.000	3,994,000	95,856.00	24.000	11,205.000	268,920.00	24.000	974.000	23,376.00	,	asphalt con. 40mm 388,152,00 including tack cost
BINDER	29.200	3,994,000	116,624.80	29,200	11,205.000	327,186.00	29.200	974.000	28,440.80		asphalt con. 60mm 472,251.60 including prime coet
BASE COURSE		29,600 3,994,000	118,222.40	29.600	11,205.000	331,668,00	29.600	974,000 28,830.40	28,830.40		1=200mm
SUBBASE COURSE	29.698	3,994,000	118,613.81	30.180	11,205,000	338,166.90	29.939		29,160.59		t=200mm

CENTER MEDIAN			NAICEM GETTAGO	NATION MEDIAN		ŀ					
	(CURVE LINE)	(CURVE LINE)	:	:	:						
MIDITH LENGTH	AREA WIDTH LENGTH	WIDITH LENGTH	LENGTH	_	AREA	_	AREA SUB TOTAL 2			TOTAL	REMARKS
(m) (m) (m) (m)	(m) (m) (m)	(m)	ê	3	E		E	*		9	
0.200 7,109,000 1,421,80 0.200 9,064,000 1,812,80	7,109,000	1,421,80 0.200 0.064,000 1,812,80	0200 9.064.000 1.812.80	9.064.000 1.812.80	1,812.80		3,234,60	A	100	391.386.60	
0.300 7.109.000 2.132.70 0.250 0.054.000 7.256.00		2.132.70 0.250 9.064.000 3.266.00	00 84 C 000 BAD 9 075 0	9 064 000	00 996 6		4 208 70			476 ASO 20	
										2000	
0.700 7.109.000 4.976.30 0.450 9.064.000 4.078.80	4.976.30 0.450 9.064.000	0.450 9.064.000	9.064.000	9.064.000			9.055.10			487.775.90	1
						-	-				
1.280 7,109,000 9,099.52 1,740 9,064,000 15,771.36 24,870.88	9.099.52 1.740	1.740			15,771.30	V 2	24,870.88			510.812.18	

		£			EMBANKMENT		ð	CUT/EMBANKMENT	Ę		
	UNIT LENGTH (m)	ROAD LENGTH	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	ERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH (m) (m) (m) (m) (m)	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	TOTAL (T)	REMARKS
ASPHALT										(31)	
KERB	2.000	3,994.000	7,988.00	2.000	2.000 11,205,000	22,410.00	2,000	974.000		1.948.000 32.346.000	
CONCRETE		22 22 2								:	

Tab.A.1.5.2 QUANTITIES OF PAVEMENT & KERB(FINAL STAGE)

WAY)	
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STAR!	
S S S	
OUTER	
PART 2(

		ş		ш	EMBANKMENT		to Co	CUT/EMBANKMENT			
	HTCUW (m)	LENGTH (m)	AREA (m)	WIDTH (m)	LENGTH (m)	AREA (m)	HLCIM (m)	LENGTH (m)	AREA (m)	SUB TOTAL-1	REMARKS
WEARING	24,000 5,370	5,370,000	128,880.00	24.000	12,548,000	301.152.00	24.000	1,805.000	43.320.00	,	asphalt con. 40mm 473,352,00 including tack coat
BINDER COURSE	29.200	5,370,000	156.804.00	29.200	12,548,000	366,401.60	29.200	1,805.000	52,706.00	\$75,911.60	syphalt con. 60mm 575,911.60 including prime cost
BASE	29,600	5.370.000	158,952.00	29,600	12,548,000	371,420.80	29.600	1,805.000	53,428.00	583,800.80 t=200mr	t=200mm
SUBBASE COURSE	29.698	5.370.000	159,478.26	30.180	12.548.000	378,698.64	29.939	1,805.000	\$4,039.90	592,216.80 t=200mm	t=200mm

		CENTER MEDIAN	7	O	CENTER MEDIAN	7	-	•			
	_	STRAIGHT LINE			(CURVE LINE)		The second secon				
	WIDTH	LENGTH	AREA	HTCIM	LENGTH	AREA	SUB TOTAL-2			TOTAL	REMARKS
	Œ	æ	(m)	(E)	(m)	(m)	(m)			(H)	
EARING											
COURSE	0.200	7.827.000	1,565.40	0.200	0.200 11,680,000		2,336,00 3,901,40	e desperado e esperado		477,253,40	
INDER					:						
COURSE	0.300	7.827.000	2,348,10	0.250	0.250 11,680,000 2,920,00	2,920.00	5,268.10	A TOTAL OF THE STATE OF	A CONTRACTOR OF THE PARTY OF TH	581,179.70	
BASE						1					
OURSE	0.700	7.827.000	5,478,90	0.450	0.450 11,680.000 5,256.00 10,734.90	5,256.00	10,734.90	The second of the second	and the same of the	594,535,70	
SUBBASE											
COURSE	1.280	7.827.000	10.018.56	1.740	10.018.56 1.740 11.680.000	20.323.20		30.341.76		622.558.56	

							\$1				
		כטז			EMBANKMENT		8	CUT/EMBANKMENT	L.		
	UNIT LENGTH	nit length (road length) kerb le	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	ENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH UNIT LENGTH ROAD LENGTH KERB LENGTH TOTAL	TOTAL	REMARKS
	(B)	Œ	Œ	(m)	(m)	(£)	(H)	(m)	(m)	(m)	
ASPHALT											
KERB	2.000	5.370.000	10,740,000		12,548,000	2.000 25,096,000 25,096,000	٠,	1,805.000	2.000 1,805.000 3,610.000 39,446.000	39,446.000	
CONCRETE		* 1								5	

Tab.A.I.S.3 QUANTITIES OF PAYEMENT & KERB(FINAL STAGE) PAYEMENT WORKS

CANA SICOIEN	FARL SILVITER CIRCULAR BIODWAY)	חיימו									
		CUT		7	EMBANKMENT		B	CUTIEMBANKMENT			
	HIGIM	TENCIH	AREA	HIGIM	LENGTH	AREA	HIQIM	LENGTH	AREA	SUB TOTAL-1	REMARKS
	(m)	(m)	(m)	Œ	(w)	(H)	(E)	(x)	(m)	(m)	
WEARING											asphals con. 40mm
COURSE	24.000	1,985.000	47,640.00	24.000	5,408,700	5,408,700 129,808.80	24.000		560.000 13,440.00		190,888.80 including tack coat
BINDER			į.	1							asphalt con, 60mm
COURSE	29.200	1,985.000	57.962.00	29.200	5,408.700 157,934.04	157,934.04	29.200	260.000	560.000 16,352.00		232,248.04 Including prime coat
BASE										ı	
COURSE	29.600	1.985.000	58.756.00	29.600	5,408.700 160,097.52	160,097.52	29.600	260.000	16.576.00	560.000 16,576.00 235,429.52 t=200mm	t=200mm
SUBBASE											
COURSE		29.698 1,985.000	58.950.53	30.780		5,408,700 163,234.57	29.939	260.000	560.000 16,765.84	238,950,94 t=200mm	t=200mm

**	_	CENTER MEDIAN	>	U	CENTER MEDIAN					
7		(STRAIGHT LINE)	,	-	(CURVE LINE)					
	HIZOLM	HISN37	AREA	HIGIM	LENGTH	AREA SUB TOTAL-2	SUB TOTAL-2		TOTAL	REMARKS
	(m)	(w)	(E)	Œ)	Œ)	(m)	3		(H)	
WEARING	0000	2 473 000	0,000	000						
aguna	0.200	ł	400.00	0.200	3,331.700	1.000.34	1,000.34 1,554,94		192,445.74	:
COURSE	0 300	2 443 000	733 00	0300	700 100 3				***	
RACE			2000	007.0	ı	7,356.75	2,003.03		794,315,07	e e
COURSE	0.700	2,443.000	1.710.10	0.450	5.337.700	2,300,27	4 100 37		230 538 80	
SUBBASE					l					
COURSE	1.280	2,443.000	3,127.04	1.740	5,337,700	9.277.16	12.404.20		251.355.13	

RB LENGTH TOTAL (m) (m) 1.120,000 15,907.400			CUT			EMBANKMENT	EMBANKMENT	CUTIEMBANKMENT	TIEMBANKMEI	<u>.</u>		
2.000 1,985.000 3,970.000 2.000 5,408.700 10,817.400 2.000 560.000		UNIT LENGTH (m)	ROAD LENGTH (m)	KERB LENCTH	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	UNIT LENGTH	ROAD LENGTH	KERB LENGTH	TOTAL	REMARKS
2.000 1.985.000 3.970.000 2.000 5.408.700 10.817.400 2.000 560.000	ASPHALT								,,,,), m	(111)	
	KERB	2.000	1,985,000	3,970.000	2.000		10.817.400	2.000		1.120.000	15 007 400	
	CONCRETE	-										

Tab. A.1.6.1 QUANTITIES FOR FRONTAGE ROAD

PART 1(SOUTHERN HIGHWAY	(1/2)					
STAGE	L-R	WIDTH	LENGTH	ARFA	RATE	COST
SINGE	171	(m)	(m)	(m)	(Rs.)	(x10^sRs.)
274 +70 ~ 277 +80	L	5.5	310.0	1,705.0	571.83	974.97
					<u>.</u>	
279 +10 ~ 293 +60	R	5.5	1,450.0	7,975.0	571.83	4,560.34
					\$ \\ \frac{1}{4} \cdot \(\text{1} \)	
279 +80 ~ 305 +60	L	5.5	2,580.0	14,190.0	571.83	8,114.27
	:					
305 +60 ~ 326 +10	L	5.5	2,050.0	11,275.0	571.83	6,447.38
308 +24	L	4.0	130.0	520.0	571.83	297.35
308 +24	R	4.0	75.0	300.0	571.83	171.55
	1.7					
315 +55	R	4.0	20.0	80.0	571.83	45.75
一种人物 医皮肤						
323 +05 ~ 336 +75	R	5.5	1,370.0	7,535.0	571.83	4,308.74
338 +80 ~ 360 +50	L	5.5	2,170.0	11,935.0	571.83	6,824.79
	100					
338 +80 ~ 355 +50	R	5.5	1,670.0	9,185.0	571.83	5,252.26
355 +70	L	4.0	50.0	200.0	571.83	114.37
355 +70	R	4.0	100.0	400.0	571.83	228.73
355 +70 ~ 356 +10	R	5.5	110.0	605.0	571.83	345.96
360 +70	L	4.0	70.0	280.0	571.83	160.11
360 +70	R	4.0	90.0	360.0	571.83	205.86
370 +20 ~ 371 +10	R	4.0	125.0	500.0	571.83	285.92
371 +10 ~ 372 +30	L	4.0	140.0	560.0	571.83	320.22
						anran.
380 +60 ~ 405 +96	L	5.5	2,530.0	13,915.0	571.83	7,957.01
380 +00 ~ 405 +90	R	5.5	2,590.0	14,245.0	571.83	8,145.72
SUB TOTAL-1	<u></u>	L	17,630.0	95,765.0		54,761.30

Tab. A.1.6.2 QUANTITIES FOR FRONTAGE ROAD

PART I(SOUTHERN HIGHWAY) (2/	2)			* * * *	
	MIDAN	LENGTH	AREA	RATE	COST
STAGE L	R (m)	(m)	(m)	(Rs.)	(x10^sRs.)
					:
405 +90 ~ 428 +80 1	. 5.5	2,290.0	12,595.0	571.83	7,202.2
					1 1
405 +90 ~ 410 +60 F	5.5	450.0	2,475.0	571.83	1,415.2
410 +40 ~ I	R 4.0	70.0	280.0	571.83	160.1
410 +40 ~ I	₹ 4.0	80.0	320.0	571.83	182.9
李四位,心神心 能 。					
423 +90 427 +10 I	. 5.5	370.0	2,035.0	571.83	1,163.6
		+ + + + + + + + + + + + + + + + + + +		** *** *** ***	
414 +60 416 +30 E	5.5	170.0	935.0	571.83	534,6
428 +40 F	4.0	50.0	200.0	571.83	114.3
		\$ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.		
金 化双子基 医乳头点 1 个					
	3-1				
	P. 1 . 1				
	1		18 24 28		376 (4)
		1.0			
SUB TOTAL-2		3,480.0	18,840.0		10,773.28
SUB TOTAL-1		17,630.0	95,765.0		54,761.30
TOTAL		21,110.0	114,605.0		65,534.58

Tab. A.1.6.3 QUANTITIES FOR FRONTAGE ROAD

PART 2(C	OUTER CIP	RCULA	R HIC	HWAY)	(1/3)				
	STAGE			L-R	WIDTH	LENGTH	ARFA	RATE	COST
	SIAGE	-		D.K	(m)	(m)	(m)	(Rs.)	(x10°sRs.)
		-				•			
74	+80 ∼	81	+30	L	5.5	700.0	3,850.0	571.83	2,201.55
74	+80 ∼	81	+30	R	5.5	620.0	3,410.0	571.83	1,949.94
							;		
89	+60 ~	87	+60	L	5.5	620.0	3,410.0	571.83	1,949.94
							h,		
81	+60 ~	87	+30	R	5.5	560.0	3,080.0	571.83	1,761.24
01	100	- 0,	130			300.0			2,102151
90	+20 ∼	92	+20	L	5.5	200.0	1,100.0	571.83	629.01
30	720		- 720			200.0	1,100.0	371.63	023.01
0.7			. 20		5.5	470.0	2 505 0	571.02	1,478.18
87	+60 ~	92	+30	R	3.3	470.0	2,585.0	571.83	1,470.10
				,		500.0	0.466.0	571.00	1.051.00
95	+10 ~	101	+40	L	5.5	630.0	3,465.0	571.83	1,981.39
3.5			3 13	3 1 .					
101	+50 ~	111	+60	L	5.5	1,010.0	5,555.0	571.83	3,176.52
111	+70 ~	124	+20	L	5.5	1,250.0	6,875.0	571.83	3,931.33
124	+30 ~	131	+80	L	5.5	880.0	4,840.0	571.83	2,767.66
1111			4 ft (
95	+00 ~	100	+80	R	5.5	570.0	3,135.0	571.83	1,792.69
See Sa									
100	+90 ∼	. 111	+40	R	5.5	1,050.0	5,775.0	571.83	3,302.32
7	1.11		+ 1	1 7 45					and a later
111	+50 ~	115	+30	R	5.5	380.0	2,090.0	571.83	1,195.12
							The state of the s	40 7 7 7	
124	+20 ~	132	+00	R	5.5	780.0	4,290.0	571.83	2,453.15
132	+00			L	4.0	120.0	480.0	571.83	274.48
	. : :						1		
132	+00	100		R	4.0	80.0	320.0	571.83	182.99
		7.5							
132	+40 ~	159	+80	L	5.5	2,740.0	15,070.0	571.83	8,617.48
}					l				3,1
132	+15 ~	159	+80	R	5.5	2,765.0	15,207.5	571.83	8,696.10
132	113		100	K	ļ	2,,03.0	10,007,3	3,1.03	3,0,0,10
163	+00 ~	175	+20	L	5.5	1,220.0	6,710.0	571.83	3,836.98
103	T00	173	720		 	1,220.0	0,710.0	371.03	5,050.50
CLUB SIG	T			in distribution of the second		16.645.0	01.047.5		63 170 07
SUB TO	IALI	· ·		L	L	16,645.0	91,247.5		52,178.06

Tab. A.1.6.4 QUANTITIES FOR FRONTAGE ROAD

PART 2(OUTER CIRCULAR HIGHWAY)(2/3) WIDTH LENGTH ARFA RATE COST STAGE (m) (x10"sRs.) (m) (m) +00 ~ 175 +00 1,200.0 6,600.0 571.83 3,774.08 163 R 5.5 10,615.0 571.83 6,069.98 194 +60 5.5 1,930.0 175 +30 ~ 571.83 194 +60 5.5 1,950.0 10,725.0 6,132.88 175 +10 ~ R 571.83 660.0 3,630.0 2,075.74 +70 ~ 201 +30 5.5 194 720.0 3,960.0 571.83 2,264.45 194 +70 ~ 201 +90 R 5.5 201 +40 ~ 206 +10 5.5 470.0 2,585.0 571.83 1,478.18 ±00 ∼ 206 +10 R 5.5 410.0 2,255.0 571.83 1,289.48 202 +20 ~ 224 +60 5.5 1,840.0 10,120.0 571.83 5,786.92 206 1,840.0 5.5 10,120.0 571.83 5,786.92 206 +30 ∼ 224 +70 R 5.5 2,030.0 571.83 6,384.48 224 +70 ~ 245 +00 L 11,165.0 2,260.0 +80 ~ 247 +40 R 5.5 12,430.0 571.83 7,107.85 224 571.83 90.0 495.0 283.06 247 5.5 246 +50 ~ +40 571.83 247 +50 ~ 260 +05 5.5 1,255.0 6,902.5 3,947.06 3,522.47 1,120.0 6,160.0 571.83 258 +00 5.5 247 +50 ~ R 485.0 2,667.5 571.83 1,525,36 260 +15 ~ 264 +00 L 5.5 +30 ~ 380.0 2,090.0 571.83 1,195.12 260 264 +10 R 5.5 571.83 +00 ~ 268 +00 5.5 400.0 2,200.0 1,258.03 264 L 571.83 +20 ~ 267 +90 R 5.5 370.0 2,035.0 1,163.67 264 4.0 110.0 440.0 571.83 251.61 L +15 264 107,195.0 SUB TOTAL-2 19,520.0 57,523.24

Tab. A.1.6.5 QUANTITIES FOR FRONTAGE ROAD

PART 2(OUTER CIRCULAR HIG STAGE	LR	WIDTH (m)	LENGTH (m)	AREA (m)	RATE (Rs.)	COST (x10°sRs.)
268 +10 ~ 270 +30	L	5.5	310.0	1,705.0	571.83	974.97
254 +50 255 +15	L	4.0	440.0	1,760.0	571.83	1,006.42
255 +15	R	4.0	110.0	440.0	571.83	251.61
260 +15	.,t. : L	4.0	80.0	320.0	571.83	182.99
SUB TOTAL-3			940.0	4,225.0	1 A.A.	2,415.98
		5 (1) 3 (1)				
		4				
				. A	da k	
		3 71 Y			Average of	
	19 (3) 14			- 3		
			1 4 4		78 - 30	
SUB TOTAL-1			16,645.0	91,247.5		52,178.00
SUB TOTAL-2	<u> </u>		19,520.0	107,195.0		57,523.24
TOTAL.			37,105.0	202,667.5		112,117.2

Tab. A.1.6.6 QUANTITIES FOR FRONTAGE ROAD

PART 3(0	OUTER CIRC	CULA	R HIC	HWAY)		,	· · · · · · · · · · · · · · · · · · ·		
	STAGE	•		L-R	WIDTH	LENGTH	AREA	RATE	COST
	SINGS .				(m)	(m)	(m)	(Rs.)	(x10°sRs.)
				1.	+ 1			, .	100
9	+40 ~	14	+50	L	5.5	510.0	2,805.0	571.83	1,603.98
				1					
9	+40 ~	14	+50	R	5.5	510.0	2,805.0	571.83	1,603,98
				77.	4.73.43			111	100000
28	+80 ∼	44	+80	L	5.5	1,600.0	8,800.0	571.83	5,032.10
7.1			17.5				- 1 .		
28	+60 ~	57	+30	R	5,5	2,870.0	15,785.0	571.83	9,026.34
	V 1		7.7						
45	+80 ~	57	+30	L	5.5	1,150.0	6,325,0	571.83	3,616.82
						-,			
57	+50 ~	63	+60	L	5.5	610.0	3,355.0	571.83	1,918.49
	150		,00			010.0		2.1.03	1,710,17
37	+10 ~	:		Ĺ	4.0	70.0	280.0	571.83	160.11
	110	. :				75.5	200.0	377.00	
37	+10 ~	į.		R	4,0	100.0	400.0	571.83	228.73
- 3,	- TIU	: .			7,0	100.0	100.0	377.03	20.73
36	+80 ~	10.			4.0	60.0	240.0	571.83	137.24
30	100			L	7,0	00.0	240,0	371,03	137.64
22	+20 ~	:		L	4.0	60.0	240.0	571.83	137.24
37	+20	7		L	4.0	00.0	240.0	371.63	137.24
27	-00 -			_	4.0	1100	440.0	(71.02	251.61
37	+00 ~			R	4.0	110.0	440.0	571.83	251.61
		6				1100	440.0	car or	051.61
37	+30 ~			R	4.0	110.0	440.0	571.83	251.61
		-1.	2.1						
57	+30 ~			L	10.0	50.0	500.0	571,83	285.92
57	+30 ~	- : -		R	10.0	110.0	1,100.0	571.83	629.01
						÷			
57	+30 ~	74	+80	R	5.5	1,750.0	9,625.0	571.83	5,503.86
1	1-1	. 1.2		1					
73	+30 ~	74	+80	L	5.5	150.0	825.0	571.83	471.76
. (:	• •	:					
	<u> </u>					1 .			
	god said		10	1.4	Sa E				
1,1,1		<u>:</u> .				.3 1			
		i		2		Well english			1.
100		:			18 6 6 1				
		:							
TOTAL						9,820.0	53,965.0		30,858.81

Tab. A.1.6.7 QUANTITIES FOR FRONTAGE ROAD

PART 4(OUTER CIP	CULAR HIC	HWAY)					
	STAGE		LR	WIDTH	LENGTH	AREA	RATE	COST
	1 1 1 44			(m)	(m)	(m)	(Rs.)	(x10°sRs.)
174	A 1888			1. 1.				<u> </u>
458	+45 ~		L	5.5	90.0	495.0	571.83	283.06
				1500				
458	+45 ~		R	5.5	60.0	330.0	571.83	188.70
	- Mizari III					17.		* * *
471	+40 ~	472 +90	L	5.5	150.0	825.0	571.83	471.76
					• • • • •	005.0	*****	151.51
471	+60 ~	473 +00	R	5.5	150.0	825.0	571.83	471.76
		ine en			540.0	0.070.0	£41.00	1.609.24
481	+10 ~	486 +50	L	5.5	540.0	2,970.0	571.83	1,698.34
406	· • • • • • • • • • • • • • • • • • • •		R	5.5	150.0	825.0	571.83	471.76
486	+50 ~			3.3	150.0	823.0	371.83	471.70
492	+90 ∼	501 +90	L	5.5	940.0	5,170.0	571.83	2,956.36
472	170	301 190	- 17	3.5	210.0	3,170.0	371.03	2,750.50
492	+80 ~	506 +14	R	5.5	1,404.0	7,722.0	571.83	4,415.67
7/2				0.0	2,101.0			
			- 1	1 7 %				7,11
							1 .	
100	and the second	\$	5.3		4	1.		a view
	1					4 1		
				141. Tes	75.8			<i>e</i> 1
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								1,141,14
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	<u> </u>	: 'e						12 34 4542
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							3	
····								
		* 4.5						
				}	<u> </u>			
			1 1 1			10.400	1 1	10.000
TOTAL	1.0		1	1	3,484.0	19,162.0	1.00	10,957.41

Tab.A.1.7.1 QUANTITIES OF BRIDGE&VIADUCT (MAIN PART) (DVITIAL STAGE)

	UNIT COST	(/m^2)	Raymi	79,736	127,641	110,384	111,463	64,673	928.09	127,641	771,821	112.575	114,437	116,916	111,463	127.641	127.641	\$6,565				
	TEND	٠,	.2	12	:			<u>×</u>	98	8	2	:	3	8			8	8		_		8
	TOTAL COST	INCLU. OVERVÆAD	K10"3RL	165,452	70,203	110,384	83,597	48,505	299,568	70,203	57,680	126,647	137,324	73,073	83,597	70.203	70.203	144.242				1,610,880
	TOTAL	ACTUAL	x10^3Rs.	143,872	61,046	986'56	72,693	42,178	260,494	61,046	50,156	110,128	119,412	63,542	72,693	61.046	61.046	125,428				1,400,765
		TOTAL	x10"3Ra.	74.824	42,744	42,744	42,744	12,229	96,610	42.744	42,744	42,744	42.744	42,744	42,744	42,744	42.744	83,424				
		CONCRETE	PTTCHING (x10°3Ra)	710	710	710	710	710	710	01.7	710	710	017	710	710	710	017	710	-			
			TOTAL (x10"3Ra.)	32,080	0	0	٥	ō	53,866	0	0	0	0	6	o	0	0	40,680				
	w	PIER	FOUNDATION TYPE COST	21,424	0	0	6	0	29,763	0	0	0	0	ō	0	0	0	37,180				
	SUBSTRUCTURE	ď	FOUNT	Pile • 1000	-				Caisson				1,					Pile Ф1000	·			
	SUBST		BODY (x10*3Rt.)	10,656	٥	0	0	0	24,103	•	0	0	٥	0	0	°	0	3,500				
	1.0		TOTAL (x10°3Re.)	42,034	42,034	42.034	42,034	915,11	42,034	42,034	42,034	42,034	42,034	42,034	42,034		- 22					
		ABUTMENT	FOUNDATION TYPE COST	31.564	31,564	31.564	31,564	0	31,564	31,564	31,564	31.564	31,564	31.564	31,564	31.564	31.564	31.564	1.7			10 to
	1	ABG	POUNT	Pile 41000	Pile Φ10 00	Pile Ф1000	Pile	SPREAD	Pile 0 1000	Pile 01000	Pile © 1000	Pile © 1000	Pile © 1000	Pile @ 1000		Pile 01000	Pile 0 1000				1.	
			BODY (x10°3Re.)	10,470	10,470	10,470	10,470	915,11	10,470	10,470	10,470	10,470	10,470	10,470	10,470	10,470	10,470	10,470				
ישטאיאס די	RUCTURE	COST	x10"3Re.	69,048	18,302	53,242	29,949	29,949	163,884	18,302	7.412	67,384	26,668	20,798	29,949	18,302	18,302	42,004	QV.			7.
(C TWALKE	SUPERSTRUC	TIND	Rs/m	33,276	33,276	53,242	39,932	39,932	33,276	33,276	16,472	59.897	63,890	33,276	39,932	33,276	33,276	16,472	PARTE-MOUTER CIRCULAR BIGHWAY			
3	SUP	200		P.C.	ρÇ	δ	PC	ည့	Ž.	PC	PC	PC	χ	ည	ည့	ñ	δ	Ď	CIRCUL	4 F		
		NO.OF SPAN		4	; pr	` .	1	1 .	8	1	, ,	1	1	1	1	-	+4	9	DUTER	ADUCT		
		AREA	(m)	2,075.0	550.0	1,000.0	750.0	750.0	4,925.0	550.0	450.0	1,125.0	1,200.0	625.0	750.0	550.0	550.0	2,550,0	PART 40	NO. OF BRIDGE:		
	î		ENGTH(m)	83.0	22.0	40.0	30.0	30.0	197.0	22.0	18.0	45.0	48.0	25.0	30.0	20.27	22.0	102.0				
	(ш)ндсім		NET I	25.0 /	25.0 /	25.0 /	25.0 /	25.0 /	25.0	25.0 /	25.0 /	25.0 /	25.0 /	25.0 /	25.0 /	25.0 /	70.25	25.0 /	Я			
	1 T	TYPE		VIADUCT	VIADUCT	VIADUCT	VIADUCT	viabuci	DRIDGE	VADUCT	vacce	VADUCT	Viabuct	viabucr	viaduct	BRIDGE	LOOGVIA	BRIDGE	CHAV		<i>3</i> 4	
PART 1-4		STATION		0 -61.000	2 +89,000	9 +12,000	28 +27.000	81 +32,000 81 +62,000		52 +89,000 53 +11,000	- 1		276 +15.000 276 +63.000		57 +82,000 58 +12,000	56 +94,000 57 +16,000	23 +57.000	442 +70.000 443 +72.000	PARTI (SOUTHERN HIGHWAY)	NO. OF BRIDGE: 1 NO. OF VIADUCT: 5		TOTAL
		22 SEC	CKO	CKES	CKES	εV	IIA9	IV	2 159 E 161		ПАЯ	۶V	۶V	ROPIN	1881 13. 33.	366 26 367	8 423 423	PERSONAL	KTT (SO	NO. OF BRIDGE NO. OF VIADUC		<u>٩</u>
		TAA9	-	£ ·	ε	٤	ε	7	7	3	t	Ī	ŧ	I	Ţ	1	Į	7	죄	žž		

Tab.A.1.7.2 QUANTITIES OF BRIDGE&VIADUCT (MAIN PART)
(FINAL STAGE)

(~	L ISO	(m,2)	Reduit	61.895	94,956	87.166	25.162	52.873	88.844	94,956	91,858	150,09	92,160	87.554	28.18	94,956	94,956	49.187		T		
L	£8 7	-	ź	i		ı	- 1	1				- 1	2		٠ [٠, ا	·	-	-		- g
	zost Z	NCLU. OVERVEAD	x10°3Rs.	186,098	75,675	126.303	25.22	57,459	348,570	75,675	59,896	146,795	160.748	79,291	92.552	75,675	75,675	144,242				1,796,705
	TOTALCOST	ACTUAL	×10*38&	161,824	65.804	109,829	80,480	49,965	303,104	508.80	52.084	127.648	139,346	68,949	80,480	\$08,804	65,804	125,428	:			1.562.352
		TOTAL	x10"3Rs.	74.824	42,744	42,744	42,744	12,229	96,610	42,744	42.744	42,744	42,744	42,744	42,744	42.744	42,744	83,424		#** 		
		CONCRETE	PITCHING (AJO")(A.)	710	710	710	710	710	01,5	710	710	710	710	710	710	710	017	710	, i			
		0	TOTAL I		o	0	0	0	53.866		٥	0	0	0	0	0	o	40,680				
			\vdash	1 4	- 6	0	-	0	29.763	-0	0	0	0	0	0	0	0	37.180		2 		
	CTURE	PIER	FOUNDATION TYPE COST					1	Cuisson					.*				Pile Ф1000		\$ 2		
	SUBSTRUCTURE		1 15		0	0	0	-0	24.103	0		Ó	0	0	٥	0	0	3,500	:	-		-,
			TOTAL BODY	42,034	42,034	42,034	42,034	912,11	42,034	42,034	42,034	42,034	42,034	42.034	42,034	42.034	42.034	42.034	 -	1		
		FX.	h.	1-4	31.564	31,564	31.564	6	31.564	31.564	31.564	31,564	31,564	31,564	31,564	31.564	31,564	31,564	4 21 113	- 1		
		ABUTMENT	FOUNDATION				Pile Ф1000	SPREAD	Pile Ф1000	Pile Ф1000	Pile Ф 1000	Pile • 1000	Pile Ф 1000	Pile Ф1000	Pile Ф1000	Pile • 1000	Pile Ф 1000	Pile Ф1000	- 4 - 2	the same of		
			BODY 1		10,470 Ф	10,470 Ф	10,470 Φ	S 612,11	10,470 Ф	10,470 Φ	10,470	10,470 ©	10,470 Ф	10,470 ¢	10.470 €	10,470	10,470	10,470 G	1	<u>L :</u>	-	
ŀ	ш.	cost	x10*3%. B	87,000		67,045	37.736	37,736	206,494	23,060	9,340	84,904	96,602	26,205	37.736	23,060	33,060	42,004				:
	SUPERSTRUCTURE	\vdash	<u>ــــــــــــــــــــــــــــــــــــ</u>				39,932	39,932	33,276 2	33,276	16,472	:	63,890		39,932	33,276	33,276	16,472	RKICHWAY			
	SUPERST	TIND		+	ļ		-			33	PC 16	S S	PC 63	33	39	33	2	χ 2				
	*.		TYTE	<u>δ</u>	-	-	አ	ا گ	გ	ā	- I		ď.		ď.		,5 .5	9	ERCIR	3E :2		,
	- 1				·	1,260.0	945.0	945.0	6,205.5	693.0	867.0	1,417.5	1,512.0	787.5	945.0	693.0	693.0	2.550.0	PART -4/OUTER CIRCULA	NO. OF BRIDGE : 2 NO. OF VIADUCT: 7		
ı	1	AREA	<u> </u>			1.	30.0	30.0		22.0	18,0	45.0 1.4	48.0 1.5	25.0	30.0	22.0	, 100 130	10	PAR	NO.0		
	WIDTH(m)			El	Ŀ			<u> </u>	0.761 /8		31.5/ 18		L_	45"		31.5/2	31.5/	25.0 / 10.	1 1 1 1 1 1 1 1 1			
	<u>§</u>	DI.		7 7			31.5/	31.51/		31.5/	L	31.5/	ист 31.5 /	31.5/	ucri 31.5 /	L		L	544	}		
7		TYPE	4. 1 - 1 - 14. 2	o vivouci	NADUC S	N VIABUCT	S VADUCT	NAMPUCT NAMPUCT	DO BRUDCE	NADUCT	WADUCT	WANDUCT 00	NADUCT 00 00 00 00 00 00 00 00 00 00 00 00 00	W VADUCE	WANDUCT	OO BRIDGE	00 VIADUCT	90 BRIDGE	V HIGH	2	- 1	
PART 14		NOTTATI		0 -61.000		9 +12,000	28 +27.000		9 +82,000	162 +89.000	0 +19.000	6 +5.000		1 .		366 +94,000 367 +16,000			I THE	WDGE Abuch:		TOTAL
	NOI	· .	KOSS	1	CKES	ξA	RAIL	≅ ≅ 1∀ z	2 52 151 161	2 8 %	S SS	± 276 276 276	\$ 22 1V	12 22 12 22 13 22 14 22 15 22 16 22	1 1 1 1 1 1 1 1	100.2M	8A 23 23	4 3	CAWACIHERN HICHWAY	NO. OF BRIDGE: 1 NO. OF VIABUCT: 5		Ω.
1		-41				سنسا				<u> </u>			سسيا	—	—		L				ب ۱۰۰۰	

Tab.A.1.8.1 QUANTITIES OF OVERPASS

	HAS S	(/m/2)	Reviel	62,140	62,140	62,140	62,140		70,228	62.140	27.70	, v. sy		ſ	62.140	62.140	62.140	\$2,294	57.759		
	cost	DICELLI. OVERHEAD	x10"3Rs.	13,953	13,953	13,953	13,953	13,953	005'61	13 951	5	20.784	13.953	13.953	13.953	13.953	13.953	23.153	54.799	19.521	305,191
	TOTAL COST	ACTUAL	x10"3Rc	12,133	12,133	12,133	12,133	12,133	16,956	12.133	:	18.0%	12.133	12.133	12.133	12.133	12.133	20,133	47.651	16,975	265.383
		TOTAL	x10^3Ra.	8,922	8,923	28,8		1	25.	1	1				8922	8.922	8922	"			
		CONCRETE	PTCHING (AIP*3Ra.)		1,010	1,010		1	1,010	1	ı			ı							l ·
	Course one of		TOTAL (x10°33kt)	2,440	2,440	5. 044	2,440	2,440	2,440	246	2.5.6	2 440	2440	2.440	2,440	2,440	2,440	7,320	14,640	2,440	
		PIER	FOUNDATION YPE COST	1,900	1,900	1,900	1,900	1,900	1,900	8		200	1.900	1,900	1,900	1,900	1,900	5,700	11,400	1,900	
	CITURE .	1d.	TYPE	Pije 9 600	Pile 0600	Pile 0600		1	Pile 0600	,	1	1 .	1		!	i .		Pile 0600	Pile 9 600		
	SUBSTRUCTURE		BODY (x10°3)R _b .)	540	35	048	3,40	3 5	S.S.	3	(2)	9	98	\$40	3	\$40	\$40	1,620	3,240	8,0	
SQ.		:	TOTAL (x10°3%s.)	5,472	5,472	5,472	5,472	5,472	5.472	5.47	Ę	2.472	5.472	5.472	5,472	5.472	5,472	5,472	16,414	5,472	
OVER		TNI	COST	4,1%0	4.180	4,180	4,180	4,180	4,180	. 81	801.4	87.4	81.4	4,180	4,180	4,180	4,180	4,180	12,540	081,4	
TES O	A to the second	ABUTMENT	FOUNDATION TYPE COST	Pile 0-600	Pile Ф600	Pile 0000	Pile Ф600	Pile Ф600	Pile • 600	Pile 660	aig e	Pile 600	Pile • 600	Pile 009	Pile 9600	9 8 600	Pile 0 600	Pile 0600	Pile 0000	9 Pile 000	
INDALLOLI COMMILLES OF OVERFASS	4		BODY (x10"3Rk)	1,292	1 292	1,292	1,292	1,292	1,292	1 202	,00	1 202	1,292	1.292	1,292	1,292	1,292	1,292	3.874	1,2%	
10.7-1-0.1	URE	cost	x10"3RE	3,211	3,211	3,211	3,211	3,211	8,034	3233	1.62	9.151	3,211	3,211	3,211	3,211	3,211	6,331	13,567	8,053	
7	ERSTRUCTURE	TAND		16,445	16,445	16,445	16,445	16,445	33,276	16.448	16 445	33.276	16,445	16,445	16,445	16,445	16,445	16,445	16,445	33.276	
	SUPER	aavu	, , ,	ا	νς	ပ္	2	δ	ñ	J _C	ړ	ű	Ϋ́	ភ	ပ္	ပ္	2	SC	ည္	'nC	
c	1	NO OF SEASON	3.	3	۲.	3	2	2	2	.,	L		1	77	2	2	. 23	4	3	2	
GHWA)	1	25 26 27	(£	195.3	195.3	195.3	195.3	195.3	241.5	195.3				195.3	195.3	195.3	195.3	385.0	823.0	242.0	
PART 1(SOUTHERN HIGHWAY)	/(w) _F		LENGTHIM	/ 35.5	7 35.5	, 35.5	35.5	35.5	43.9	35.5			35.5	, 35.5	35.5	35.5	35.5	/ 70.0	/ 55.0	/ 44.0	
SOUTH	WIDTH(m)			5.5	5.5/	5.5 /	5.5	5.5	5.5 /	5.5		<u> </u>	\$5.	55/	5.5	5.5	55/	, 5.5 /	15.0	5.5/	
PART 1(1.00	STATION		+50,000	+46.000	+23.000	+54.000	0.000	+73,000	+66.000	+10.000		i I	+51,000	+0.000	+40.000	+37.000	+50.000	+15.000	436 +65.000	TOTAL
		ON		1 3%	2 292	3 308	4 315	5 350	355	360	8 37	9 384	10 391	11 395	12 403	13 410	14 423	15 378	16 380	17 436	۲ ا

Tab.A.1.8.2 QUANTITIES OF OVERPASS

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	LINS ENTE	(\B\)	16		\$5,423	62,140	69.324	73,839	62,140	62,140	72,929								_:				
	cosr	DVC.U. OVERHEAD	x10"3Ra.		18,579	13,953	187,61	27,173	13.953	13,953	37,741												145,083
	TOTAL COST	ACTUAL	x10~3K4	1	16,156	12,133	17,15K	23,62X	12,133	12,133	32,818												126,159
-		TOTAL	x10"3Ra.	╁	11,362	x,922	8,922	12,980	8,922	8,922	24,77			1	-								
		STOCK		(X10-3)(D)	1,010	1,010	1,010	1,470	1,010	010,1	ļ	ŀ			-					-	*	:	
				(310.5)(1)	4, KX	2,440	2,440	3,550	2,440	2,440	4.880					4							=
			Т	+	3,800	1,900	1,900	2,764	1,900	1,900	8				-		,						
	TURE	PIER	FOUNDATION	27.5	9 6 8 60 9 7	Pile Ф600	Pile Ф 600	Pile 4 600	र्थार ө	Pile 4 600								•					
	SUBSTRUCTURE		вору	(x10*3Ra.)	1,0%	540	075	786	ş	3	200												
	v			(x10*3Rn.)	5.472	5,472	5,472	7,960	5,472	\$472	10.04						3						
	-	ENT	╁┰	COST	4,180	4,180	4,1%0	000.9	4.180	0X1.4	35		-	1		· .							*
		ABUTMENT	ΙΔL	_	Pile Ф600	Pile Ф600	9 Pik	312 6 088	Pile 600	의전 668	2 8 2 8	3			•			N					· ·
				(x10"3Rs.)	1,292	1,292	1.392	1,880	8	202	200		1			- 1		ÿ.					
	핊	COST	x10"3Ra	-4	4,794	3211	8.236	10 64X	3.211	11.00	140					-			77				
	PERSTRUCTURE	UNIT	1	Rs/m	16,445	16.445	33.276	77.67	16.445	34.44		077.00									7.		
	SUPER		TYPE		δ	ပ္ရ	٤	٤	۲	<u> </u>	2 8	2	1	,		1				1	1 1 1 1 1	1 2 3 4	
HWAY		SPAS.					1	1			1												
AR HIC		AREA		(£)	291.5	105.3	247 5	000	106	3		4500		9		.*						7	
CIRCUI	(au	<u></u>	1	LENGTHIM	53.0			+				ĝ	1	12									
UTER	(w)rlata		;	/ LENC	5.5 /	Š	V	3	Ž	3				×	7.								
PART MOUTER CIRCULAR HIGHWAY)		STATION			+10,000		80 31					2000				7				1			TOTAL
		1 11	-			- 3			1-	+		P _		:	<u> </u>			_	_			_	۱۶
, !	L	ON			L	.64,		13	_ ~	<u> </u>	1				L	ــــــــــــــــــــــــــــــــــــــ	—	<u> </u>	ــــ	ــــــــــــــــــــــــــــــــــــــ	Ц.,	<u> </u>	Ь

Taball 8.3 QUANTITIES OF OVERPASS

ķţ	(m ²)	Ž	70,518	73,364	73,364	73.384														
5 {	r	2	ļ			ı	1		ļ			<u> </u>	ļ	ļ		ļ	<u> </u>		ļ	4
COST	DOZU. OVERHEAD	x10"3Ke.	13,381				,													
TOTAL COST	ACTUAL	x10"3%s.	11,635	11,500	11.500	31.500	grade framework in											:		Ì
	TOTAL .	x10*3Rs.	8.922	8,922	8,922	8,922				1						-				+
A A C	CONCRETE TO		· :	010,1	1,010	0101	(: . : .			:	-	<u> </u>	-		 			7	t
	8ª	TOTAL PITCHING (x10"384.)	2,440	2,440		1											-			$\frac{1}{1}$
		 		1,900		.	1				_					<u> </u>		ļ. 		-
;+ i	PLER	FOUNDATION TYPE COST	1,5		. 5	Ŀ			:			:						_		
SUBSTRUCTURE		├		Pile 540 \$600		1		7	:									_	<u> </u>	
SUBSTR		BODY (x10"3KL)	540				:			-								1		
		TOTAL (x10"384.)	5,472	5,472	5,472	5,472											1			Ī
	(ENT	├ ┰╧	4,180	4,180	4,180	4,180					-									1
	ABUTMENT	FOUNDATION TYPE COST		Pile © 600	Pile 9600	9116 9600				<u> </u>										l
		BODY (x10*384.)	1,292	1,292				1.5			* . *				·		2 2 2			1
ä	COST	x10°386. I	2,713	2,578	2.578	2.578			-		1 44 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1								l
PERSTRUCTURE	UNIT CO	L	16,445	16,445	١, ا							:		-						-
SUPERST	5 5		73	PC I(PC 1.	Š Ž				1. T		- 1 - 1 - 1								-
	NO.OF SPAN		ξ1 <u>Φ</u>	2	č.	رن و														
	AREA	(m)	165.0	156.8	156.8	156.8										:				-
$\overline{}$		LENGTH(m)	30.0	28.5	28.5	28.5									· //.					
WIDIW WIDIW	_	LENC	5.5 /	5.5 /	55/	5.5 /							· ·				-:-			
	STATION		458 +40.000	486 +50,000	493 +90.000	500 +80.000														
	ON	•	-4	(1 4	3 45	4 32														Ι΄

Tab. A.1.9.1 QUANTITIES FOR BOX CULVERT

PART 1(SOUTHERN HIGHWAY)

	SHAI	E		WHOLE	SECTION	QUANTITY			
STATION	W(m)* H(m)	INNER SECTION (m^2)	LENGTH(m)	SECTION (m^2)	OF CONCRETE (m^2)	OF CONCRETE (m^3)	RATE(Rs.)	COST (x10°3Rs.)	REMARKS
278 +90.000	8.00 * 6.00	48.00	41.00	63.00	15.00	1230.00	30,000	59,040	UNDERPAS
300 +50.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPAS
334 +50.000	6,00 * 6.00	36.00	76.00	49.00	13.00	988.00	30,000	82,080	UNDERPAS
340 +80.000	6.00 * 5.00	30.00	15.00	42.00	12.00	180.00	30,000	13,500	UNDERPAS
343 +30.000	6.00 * 4.00	24.00	66.00	35.00	11.00	726,00	34,500	54,648	DRAINAG
411 +73.000	3.00 * 2.00	6.00	50.00	12.00	6.00	300.00	34,500	10,350	DRAINAG
416 +30.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	ÚNDERPAS
419 +22.000	5.00 * 5.00	25.00	6.00	36.00	11.00	66.00	30,000	4,500	UNDERPAS
420 +00.000	6.00 * 5.00	30.00	59.00	42.00	12.00	708.00	30,000	53,100	UNDERPAS
431 +42.000	4.00 * 2.00	8.00	92.00	15.00	7.00	644.00	30,000	22,080	UNDERPAS
			71.5						
					1.54		4 (1 t 1 t 1 t 1 t 1 t 1 t 1 t 1 t 1 t 1		
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						3.0			
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	. 12								
TOTAL		UNDERPAS	355.00			1.5		283,800	
TOTAL		DRAINAG	116.00)				64,998	

Tab. A.1.9.2 QUANTITIES FOR BOX CULVERT

PART 2(OUTER CIRCULAR HIGHWAY)

STATION	SHA! W(m)* H(m)	INNER SECTION (m^2)	I.ENGTH(m)	WHOLE SECTION (m^2)	SECTION OF CONCRETE (m^2)	QUANTITY OF CONCRETE (m^3)	RATE(Rs.)	COST (x10^3Rs.)	REMARKS
77 +00.000	6.00 * 5.00	30.00	74.00	42.00	12.00	888.00	30,000	66,600	UNDERPASS
87 +45.000	6.00 * 0.50	3.00	35.00	10.50	7.50	262.50	30,000	3,150	UNDERPASS
104 +30.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
107 +55.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
138 +55.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
156 +00.000	6.00 * 5.00	30.00	37.00	42.00	12.00	444.00	30,000	33,300	UNDERPASS
157 +20.000	7.00 * 3.00	21.00	118.00	32.00	11.00	1298.00	34,500	85,491	DRAINAGE
167 +00.000	6.00 * 5.00	30.00	40.00	42.00	12.00	480.00	30,000	36,000	UNDERPASS
189 +50.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,7 50	UNDERPASS
211 +30.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
220 +00.000	5.00 * 5.00	25.00	33.00	36.00	11.00	1230.00	30,000	24,750	UNDERPASS
224 +75.000	8.00 * 6.00	48.00	35.00	63.00	15.00	525.00	30,000	50,400	UNDERPASS
233 +80.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
236 +50.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
244 +40.000	5.00 * 5.00	25.00	33.00	36.00	11.00	363.00	30,000	24,750	UNDERPASS
268 +00.000	6.00 * 6.00	36.00	33.00	49.00	13.00	429.00	30,000	35,640	UNDERPASS
			• ;		· · · · · · · · · · · · · · · · · · ·				
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			**************************************	•					
TOTAL		UNDREPASS	551.00	* * *				447,840	
		DRAINAGE	118.00			1.0	1141	85,491	

Tab. A.1.9.3 QUANTITIES FOR BOX CULVERT

PART 3(OUTER CIRCULAR HIGHWAY)

		SILA	PE		WHOLE	SECTION	QUANTITY	100		
ST	MOITA	W(m)* H(m)	INNER SECTION (m^2)	LENGTH(m)	SECTION (m*2)	OF CONCRETE (m^2)	OF CONCRETE (m^3)	RATE(Rs.)	COST (x10°3Rs.)	REMARKS
0	+90.000	6.00 * 5.00	30.00	79.00	42.00	12.00	948.00	30,000	71,100	UNDERPAS
13	+85.000	6.00 * 5.00	30.00	64.00	42.00	12.00	768.00	30,000	57,600	UNDERPASS
16	+52.000	8.00 * 6.00	48.00	37.00	63.00	15.00	555.00	30,000	53,280	UNDERPASS
33	+60.000	6.00 * 3.00	18.00	50.00	28.00	10.00	500.00	30,000	27,000	UNDERPASS
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j.,										
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	14 J. S.			per de s		i dyfy	30.84			
										Associated A
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			- 7.					1		•
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	ror.		UNDERPAS	230.00		1.0		11/2	208,980	
1	TOTAL		DRAINAGE	0.00		7		Set all a	0.00	

Tab. A.1.9.4 QUANTITIES FOR BOX CULVERT

PART 4(OUTER CIRCULAR HIGHWAY)

SHA			PE		WHOLE	SECTION	QUANTITY					
STATION		W(m), H(m)	INNER SECTION (m^2)	LENGTH(m)	SECTION (m^2)	OF CONCRETE (m^2)	OF CONCRETE (m^3)	RATE(Rs.)	COST (x10°3Rs.)	REMARKS		
438	+53.000	4.00 * 2.00	8.00	60.00	15.00	7.00	420.00	34,500	16,560	DRAINAGE		
440	+80.000	4.00 * 2.00	8.00	78.00	15.00	7.00	546.00	34,500	21,528	DRAINAGE		
450	+85.000	6.00 * 6.00	36.00	30.00	49.00	13.00	390.00	30,000	32,400	UNDERPASS		
463	+85.000	5.00 * 3.00	15.00	26.00	24.00	9.00	234.00	30,000	11,700	UNDERPASS		
471	+45.000	5.00 * 5.00	25.00	28.00	36.00	11.00	308.00	30,000	21,000	UNDERPASS		
480	+40.000	10.00 * 4.00	40.00	26.00	55.00	15.00	390.00	34,500	35,880	DRAINAGE		
489	+50.000	5.00 * 3.00	15.00	27.00	24.00	9.00	243.00	34,500	13,973	DRAINAGE		
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		3										
·	OTAL		UNDERPASS	84.00				<u> </u>	65,100			
	OTAL		DRAINAGE	191.00					87,941			

Tab.A.1.10.1 QUANTITIES OF PIPE CULVERT

PART 1(SOUTHERN HIGHWAY)

STATION	DIAMETER (m)	LENGTH (m)	RATE (Rs.)	COST (x10^3Rs.)	REMARKS
277 +80.000	φ1.5	80.00	37,500	3,000	
285 +64,000	φ1.5	50.00	37,500	1,875	
291 +20.000	φ1.5	55.00	37,500	2,063	
294 +53.000	φ1.5	45.00	37,500	1,688	
309 +05.000	φ1.5	50.00	37,500	1,875	
312 +75.000	ф 1.5	50.00	37,500	1,875	
327 +95.000	φ1.5	80.00	37,500	3,000	
348 +82.000	φ1.5	66.00	37,500	2,475	
352 +25.000	φ1.5	60.00	37,500	2,250	
356 +48.000	ф 1.5	50.00	37,500	1,875	
371 +75.000	ф1.5	53.00	37,500	1,988	
387 +85.000	ф1.5	55.00	37,500	2,063	
400 +26.000	φ1.5	48.00	37,500	1,800	
407 +25.000	φ1.5	60.00	37,500	2,250	
413 +05.000	φ1.5	60.00	37,500	2,250	
416 +60.000	φ1.5	65.00	37,500	2,438	
419 +20.000	φ1.5	70.00	37,500	2,625	
426 +27.000	φ1.5	62.00	37,500	2,625	
		1 1	1	# 1	
TOTAL		1059.00		40,013	

Tab.A.1.10.2 QUANTITIES OF PIPE CULVERT

PART 2(OUTER CIRCULAR HIGHWAY)

STATION	DIAMETER (m)	LENGTH (m)	RATE (Rs.)	COST (x10^3Rs.)	REMARKS
88 +50.000	φ1.5	100.00	37,500	3,750	#** ***
96 +25.000	φ1.5	80.00	37,500	3,000	
119 +20.000	φ1.5	50.00	37,500	1,875	
122 +65.000	ф 1.5	50.00	37,500	1,875	
130 +40.000	φ1.5	60.00	37,500	2,250	:
134 +50.000	φ1.5	58.00	37, 500	2,175	
148 +50.000	φ1.5	70.00	37,500	2,625	
178 +20.000	φ1.5	50.00	37,500	1,875	
180 +10.000	φ1.5	65.00	37,500	2,438	
198 +37.000	φ1.5	66.00	37,500	2,475	
207 +60.000	φ1.5	55.00	37,500	2,063	
213 +40.000	φ1.5	66.00	37,500	2,475	
223 +60.000	φ1.5	80.00	37,500	3,000	
225 +77.000	φ1.5	77.00	37,500	2,888	
241 +93.000	φ1.5	60.00	37,500	2,250	
257 +90.000	φ1.5	50.00	37,500	1,875	:
261 +85.000	ф 1.5	52.00	37,500	1,950	-
265 +30.000	φ1.5	55.00	37,500	2,063	
331 +25.000	φ1.5	65.00	37,500	2,438	
					V
				7	
TOTAL		1209.00	er er til er. Historia	45,338	

Tab.A.1.10.3 QUANTITIES OF PIPE CULVERT

PART 3(OUTER CIRCULAR HIGHWAY)

STATION	DIAMETER (m)	LENGTH (m)	RATE (Rs.)	COST (x10^3Rs.)	REMARKS			
49 +45.000	φ1.5	60.00	37,500	2,250				
53 +60.000	φ1.5	60.00	37,500	2,250				
58 +10.000	φ1.5	63.00	37,500	2,363				
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			1,431					
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TOTAL		183.00		6,863				

Tab.A.1.10.4 QUANTITIES OF PIPE CULVERT

PART 4(OUTER CIRCULAR HIGHWAY)

STATION	DIAMETER (m)	LENGTH (m)	RATE (Rs.)	COST (x10*3Rs.)	REMARKS
455 +40.000	φ1.5	40.00	37,500	1,500	
467 +77.000	φ1.5	65.00	37,500	2,438	4 12 E E
498 +50.000	φ1.5	50.00	37,500	1,875	
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		\$ 5 \$			
	10 (1) 10				
TOTAL		155.00		5,813	

Tab.A.1.11 QUANTITIES FOR SHIFTED CHANNEL

								7	:	·							:					-
REMARKS					· :										- 1						-	
GY						3	4.4						Apparent of the second of									
COST (x10/3Rs.)	5,520.00	17 388.00	5,865.00	14,490.00	144,900.00												-			17,388	0	144,900
RATE (8,/m/3)	34.500.00	00 000 324	34.500.00	34,500.00	603,750.00																	
VOLUME	320.00	8	340.00	840.00	5760.00)- 	100	1. T										
HEIGHT))	5	001	1.00	4.00																	
HLGIM					90'9	32 miles											100 mm 1					
LENGTH	(E)		0.00	420.0	240.0											* · · · · · · · · · · · · · · · · · · ·		1			0.0	240.0
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