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APPENDIX A

INPUT DATA APPLIED TO THE STUDY

PROJECT NAME: FDM APPLICATION

DATE: APRIL 1, 1969

CURRENCY

INPLT CCSTS ENTERED IN THAI. BATHS
OUTPLT CCSTS GIVEN IN THAI. BATHS
CONVERSION FACTOR = 1.000 THAI. BATHS TO THAI. BATHS

ANALYSIS PERIOD: 1981-1997

LINK NAMES

LINK UP01 : MADUK TO RANGY01 12.5 KM.
LINK UP02 : RANGY01 TO SFITP 13.0 KM.

GROUP NAMES

GROUP PRDS : LATERITE SURFACE 30.5 KM.
LINKS : LP01 LP02

GROUP ALTERNATIVES

GROUP PRCS : ALT1 MAINT BY PCLCY01
 ALT2 MAINT BY PCLCY01
 ALT3 MAINT BY PCLCY02
 ALT4 MAINT BY PCLCY03

ACCELERATED DETERIORATION OPTION

ASPHALT STRENGTH FACTOR : 0.700
SUB-LAYER STRENGTH FACTOR : 0.500

ROAD SYSTEM: FDM APPLICATION

LINK CHARACTERISTICS - EXISTING

LINK UP01: MADUK TO RANGYCI 12.5 KM

SECTION NUMBER 101

TERRAIN
ALTITUDE (M) 64.SOIL
SUBGRADE CBR 0.0WEATHER
ANNUAL RAINFALL (MM) 1100.
SEAS LENGTHS (MCS)
DRY 6.0
WET 6.0
REGIONAL FACTOR 0.0ROAD GEOMETRICS
LENGTH (KM) 12.5
SURFACE WIDTH (M) 7.4
SHOULDER WIDTH (M) 0.0
ROAD RISE/FALL (M/KM) 3.3
CURVATURE (DEG/KM) 20.9SURFACING
SURFACE STANDARD LATR
SURF THICKNESS (MM) 100.
STRUCTURAL NUMBER 0.0
MOD STRUCT NUMBER 0.0
ROUGHNESS (MM/KM)
DRY 0.
WET 0.
RUT DEPTH (MM)
DRY 0.
WET 0.
LOOSENESS (MM)
DRY 0.
WET 0.
MOISTURE CONTENT (%)
DRY 0.0
WET 5.0
CRACKING (SQ M/KM) 0.0
SERV INDEX (PSI) 0.0
SURFACE HISTORY
YEARS SINCE:
CONSTRUCTION 3
LAST CHIP SEAL 0

DETERIORATION MODL LATRGRVL

ROAD SYSTEM: HDM APPLICATION

LINK CHARACTERISTICS - EXISTING

LINK UP02: RANGYCI TO SRITP 18.0 KM

SECTION NUMBER 201

TERRAIN
ALTITUDE (M) 72.SOIL
SUBGRADE CBR 0.0WEATHER
ANNUAL RAINFALL (MM) 1100.
SEAS LENGTHS (MCS)
 DRY 6.0
 WET 6.0
REGIONAL FACTOR 0.0ROAD GEOMETRICS
LENGTH (KM) 18.0
SURFACE WIDTH (M) 6.0
SHOULDER WIDTH (M) 0.0
ROAD RISE/FALL (M/KM) 3.4
CURVATURE (DEG/KM) 4.0SURFACING
SURFACE STANDARD LATR
SURF THICKNESS (MM) 100.
STRUCTURAL NUMBER 0.0
MOD STRUCT NUMBER 0.0
ROUGHNESS (MM/KM)
 DRY 0.
 WET 0.
RUT DEPTH (MM)
 DRY 0.
 WET 0.
LOOSENESS (MM)
 DRY 0.
 WET 0.
MOISTURE CONTENT (%)
 DRY 0.0
 WET 5.0
CRACKING (SQ M/KM) 0.0
SEEV INDEX (PSI) 0.0
SURFACE HISTORY
YEARS SINCE:
 CONSTRUCTION 3
 LAST CHIP SEAL 0

DETERIORATION MODL LATRGRVL

ROAD SYSTEM: FCM APPLICATION

LINK DESIGN OPTICN PRJ1 : UPOL - MADUK TO RANGYOI

PAGE 1

PROJECT: OPTICN PRJ1, WIDEN AC GEOMET.

ON LINK: UPCI, MADUK TO RANGYOI, OF LENGTH 12.5 KM.

WITH GENERATED TRAFFIC SET GEN1.

SECTION NUMBER 101
SURFACE STANDARD LATR
TYPE OF IMPROVEMENT NEW CONSTRUCTION

ALIGNMENT

SURFACE WIDTH (M) 9.0
SHOULDER WIDTH (M) 0.0
LENGTH (KM) 12.5
ROAD RISE/FALL (M/KM) 3.9
CURVATURE (DEG/KM) 20.9

SURFACING

SURF THICKNESS (MM) 150.
SUBGRADE CBR 3.0
STRUCTURAL NUMBER 0.0
MOD STRUCT NUMBER 0.05
ROUGHNESS (MM/KM) 3250.
SEEV INDEX (PSI) 0.0

DETERIORATION MODEL LATROVAL

CONSTRUCTION COST ESTIMATE IS LUMP SUM COST

CONSTRUCTION PERIOD: 1 YEARS; EFFECTIVE CONSTRUCTION COMPLETION IN 1 YEARS

DISTRIBUTION OF COSTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	SALVAGE VALUE
% FINANCIAL	100.0	0.0	0.0	0.0	0.0	10.0
ANNUAL FINANCIAL COSTS (MILLION THAI. BAHS)	15.400	0.0	0.0	0.0	0.0	1.540
% ECONOMIC OF FINANCIAL	90.0	0.0	0.0	0.0	0.0	10.0
% FOREIGN OF ECONOMIC	0.0	0.0	0.0	0.0	0.0	0.0

ROAD SYSTEM: HCM APPLICATION

LINK DESIGN OPTION PRJ2 : UPCI - MADUK IG RANGYOI

PAGE 2

PROJECT: OPTION PRJ2, PAVE AND WIDEN.

ON LINK: UPCI, MADUK TO RANGYOI, OF LENGTH 12.5 KM.

WITH GENERATED TRAFFIC SET GEN1.

SECTION NUMBER 101
SURFACE STANDARD DBST
TYPE OF IMPROVEMENT NEW CONC
TRUCTION

ALIGNMENT
SURFACE WIDTH (M) 5.5
SHOULDER WIDTH (M) 1.8
LENGTH (KM) 12.5
ROAD RISE/FALL (M/KM) 3.9
CURVATURE (DEG/KM) 20.9

SURFACING
SURF THICKNESS (MM) 25.
SUBGRADE CBR 3.0
STRUCTURAL NUMBER 1.65
MOD STRUCT NUMBER 1.70
ROUGHNESS (MM/KM) 2500.
SERV INDEX (PSI) 0.0

DETERIORATION MODL TRALCOST

CONSTRUCTION COST ESTIMATE IS LUMP SUM COST

CONSTRUCTION PERIOD: 1 YEARS; EFFECTIVE CONSTRUCTION COMPLETION IN 1 YEARS

DISTRIBUTION OF COSTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	SALVAGE VALUE
% FINANCIAL	100.0	0.0	0.0	0.0	0.0	10.0
ANNUAL FINANCIAL COSTS (MILLION THAI. BAHS)	24.200	0.0	0.0	0.0	0.0	2.420
% ECONOMIC OF FINANCIAL	91.0	0.0	0.0	0.0	0.0	10.0
% FOREIGN OF ECONOMIC	0.0	0.0	0.0	0.0	0.0	0.0

ROAD SYSTEM: HCM APPLICATION

LINK DESIGN OPTION PART 1 : LPC2 - RANGYCI TO SRITP

PAGE 3

PROJECT: OPTION PART 1, WIDEN AND IMPROVE.

ON LINK: LPC2, RANGYCI TO SRITP, OF LENGTH 18.0 KM.

WITH GENERATED TRAFFIC SET GIVEN.

SECTION NUMBER 201
SURFACE STANDARD LAIR
TYPE OF IMPROVEMENT NEW CONS
TRUCTION

ALIGNMENT
SURFACE WIDTH (M) 9.0
SHOULDER WIDTH (M) 0.0
LENGTH (KM) 18.0
ROAD RISE/FALL (M/KM) 3.4
CURVATURE (CEG/KM) 4.0

SURFACING
SURF THICKNESS (MM) 150.
SUBGRADE CBP 3.3
STRUCTURAL NUMBER 0.0
MOD STRUCT NUMBER 0.16
ROUGHNESS (MM/KM) 3250.
SEPV INDEX (PSI) 0.0

DETERIORATION MODEL LATERAL

CONSTRUCTION COST ESTIMATE IS LUMP SUM COST

CONSTRUCTION PERIOD: 1 YEARS; EFFECTIVE CONSTRUCTION COMPLETION IN 1 YEARS

DISTRIBUTION OF COSTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	SALVAGE VALUE
% FINANCIAL	100.0	0.0	0.0	0.0	0.0	10.0
ANNUAL FINANCIAL COSTS (MILLION THAI. BATHS)	20.400	0.0	0.0	0.0	0.0	2.040
% ECONOMIC OF FINANCIAL	90.0	0.0	0.0	0.0	0.0	10.0
% PERCENT OF ECONOMIC	0.0	0.0	0.0	0.0	0.0	0.0

ROAD SYSTEM: FDM APPLICATION

LINK DESIGN OPTION PART 2 : UPO2 - RANGYCI TO SRITP

PAGE 4

PROJECT: OPTION PART 2, PAVE AND WIDEN.

ON LINK: UPO2, RANGYCI TO SRITP, OF LENGTH 18.0 KM.

WITH GENERATED TRAFFIC SET CCEN.

SECTION NUMBER 201
SURFACE STANDARD DBST
TYPE OF IMPROVEMENT NEW CCAS
TRUCTION

ALIGNMENT
SURFACE WIDTH (M) 5.5
SHOULDER WIDTH (M) 1.8
LENGTH (KM) 18.0
ROAD RISE/FALL (M/KM) 3.4
CURVATURE (DEG/KM) 4.0

SURFACING
SUFF THICKNESS (MM) 25.
SUBGRADE CBM 3.3
STRUCTURAL NUMBER 1.65
MOD STRUCT NUMBER 1.81
ROUGHNESS (MM/KM) 2500.
SERV INDEX (PSI) 3.0

DETERIORATION MODL TRFLDBST

CONSTRUCTION COST ESTIMATE IS LUMP SUM COST

CONSTRUCTION PERIOD: 1 YEARS; EFFECTIVE CONSTRUCTION COMPLETION IN 1 YEARS

DISTRIBUTION OF COSTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	SALVAGE VALUE
% FINANCIAL	100.0	0.0	0.0	0.0	0.0	10.0
ANNUAL FINANCIAL COSTS (MILLION THAI. BATHS)	33.130	0.0	0.0	0.0	0.0	3.313
% ECONOMIC OF FINANCIAL	92.0	0.0	0.0	0.0	0.0	10.0
& FOREIGN LF ECONOMIC	0.0	0.0	0.0	0.0	0.0	0.0

MAINTENANCE UNIT COST REPORT

PAGE 1

COSTS PER APPLICATION (NOT ANNUAL COSTS)

MAINTENANCE OPERATION		MAINTENANCE UNIT COSTS IN THAI. BAHS						
NO.	DESCRIPTION	UNIT	COST TYPE	LABOR	EQUIPMENT	MATERIALS	OVERHEAD	TOTAL
1	DRY SEASON GRADING - UNPAVED ROAD	KM	FINANCIAL	0.0	0.0	C.C	C.C	1572.00
			ECONOMIC	0.0	0.0	C.C	C.C	1778.00
			FOREIGN X	0.0	0.0	C.C	C.C	C.C
2	WET SEASON GRADING - UNPAVED ROAD	KM	FINANCIAL	0.0	0.0	C.C	C.C	1572.00
			ECONOMIC	0.0	0.0	C.C	C.C	1778.00
			FOREIGN X	C.C	0.0	C.C	C.C	C.C
3	SPCT REGRAVELLING	CU.M	FINANCIAL	0.0	0.0	C.C	C.C	77.00
			ECONOMIC	0.0	0.0	C.C	C.C	69.00
			FOREIGN X	0.0	0.0	C.C	C.C	C.C
4	GRAVEL RESURFACING	CU.M	FINANCIAL	0.0	0.0	C.C	C.C	52.00
			ECONOMIC	0.0	0.0	C.C	C.C	48.00
			FOREIGN X	0.0	0.0	C.C	C.C	C.C
5	ROUTINE MAINTENANCE - UNPAVED ROAD	KM	FINANCIAL	0.0	0.0	C.C	C.C	14765.00
			ECONOMIC	0.0	0.0	C.C	C.C	13333.00
			FOREIGN X	0.0	0.0	C.C	C.C	C.C
6	PATCHING	SQ.M	FINANCIAL	0.0	0.0	C.C	C.C	23.00
			ECONOMIC	0.0	0.0	C.C	C.C	20.70
			FOREIGN X	C.C	0.0	C.C	C.C	C.C
7	SURFACE DRESSING	SQ.M	FINANCIAL	0.0	0.0	C.C	C.C	44.00
			ECONOMIC	C.C	0.0	C.C	C.C	41.40
			FOREIGN X	0.0	0.0	C.C	C.C	C.C
8	OVERLAYING	CU.M	FINANCIAL	0.0	0.0	C.C	C.C	2760.00
			ECONOMIC	C.C	0.0	C.C	C.C	2608.00
			FOREIGN X	0.0	0.0	C.C	C.C	C.C
10	ROUTINE MAINTENANCE - PAVED ROAD	KM	FINANCIAL	0.0	0.0	C.C	C.C	17595.00
			ECONOMIC	0.0	0.0	C.C	C.C	16008.00
			FOREIGN X	0.0	0.0	C.C	C.C	C.C

MAINTENANCE STANDARDS REPORT

PAGE 2

STANDARD ID: LATC

SURFACE TYPE: LATR
THIS STANDARD APPLIES TO TRAFFIC RANGE

0 TO 100000 ACT.

NO.	MAINTENANCE ACTIVITY	UNIT	STANDARD	COST ADJUSTMENT FACTOR
1	DRY SEASON GRADING - UNPAVED ROAD	KM	GRADE EVERY 30. DAYS TO 4000. MM/KM INITIAL ROUGHNESS	1.00
2	WET SEASON GRADING - UNPAVED ROAD	KM	GRADE EVERY 30. DAYS TO 4000. MM/KM INITIAL ROUGHNESS	1.00
3	SPOT REGRAVELLING	CU.M	REPLACE 50.0 CU.M/KM/YR	1.00
4	GRAVEL RESURFACING	CU.M	RESURFACE EVERY 3. YEARS BUT NOT AFTER ANALYSIS YEAR 16 USING LATR GRAVEL TO A RESTORED THICKNESS OF 160. MM	1.00
5	ROUTINE MAINTENANCE - UNPAVED ROAD	KM	INCLUDES DRAINAGE, VEGETATION, SHOULDER, AND MISCELLANEOUS ACTIVITIES	1.00

MAINTENANCE STANDARDS REPORT

PAGE 3

STANDARD ID: LCH1

SURFACE TYPE: CBST.
THIS STANDARD APPLIES TO TRAFFIC RANGE 0 TO 100000 A.D.T.

NO.	MAINTENANCE ACTIVITY	UNIT	STANDARD	COST ADJUSTMENT FACTOR
6	PATCHING	SQ.M	PATCH 313. SQ.M/KM/YR BUT NOT BEYOND 7000. MM/KM ROUGHNESS	1.00
7	SURFACE DRESSING	SQ.M	SURFACE DRESS EVERY 5. YEARS BUT NOT AFTER ANALYSIS YEAR 16 BUT NOT BEYOND 7000. MM/KM ROUGHNESS	1.00
10	ROUTINE MAINTENANCE - PAVED ROAD	KM	INCLUDES DRAINAGE, VEGETATION, SHOULDER, AND MISCELLANEOUS ACTIVITIES	1.00

MAINTENANCE STANDARDS REPORT

PAGE 4

STANDARD ID: LBG1

SURFACE TYPE: DBST
THIS STANDARD APPLIES TO TRAFFIC RANGE

0 TO 100000 ADT.

NO.	MAINTENANCE ACTIVITY	UNIT	STANDARD	COST ADJUSTMENT FACTOR
6	PATCHING	SC.M	PATCH 313. SC.M/KM/YR BUT NOT BEYOND 7000. MM/KM ROUGHNESS	1.00
7	SURFACE DRESSING	SC.M	SURFACE DRESS EVERY 5. YEARS BUT NOT AFTER ANALYSIS YEAR 16 BUT NOT BEYOND 7000. MM/KM ROUGHNESS	1.00
8	OVERLAYING	CU.M	OVERLAY EVERY 7. YEARS BUT NOT AFTER ANALYSIS YEAR 15 USING ASPH PAVING OF 30. MM TO 1500. MM/KM INITIAL ROUGHNESS	1.00
10	ROUTINE MAINTENANCE - PAVED ROAD	KM	INCLUDES DRAINAGE, VEGETATION, SHOULDER, AND MISCELLANEOUS ACTIVITIES	1.00

MAINTENANCE STANDARDS REPORT

PAGE 5

STANDARD ID: LBG2

SURFACE TYPE: CBST
THIS STANDARD APPLIES TO TRAFFIC RANGE 0 TO 100000 ADT.

NO.	MAINTENANCE ACTIVITY	UNIT	STANDARD	COST ADJUSTMENT FACTOR
6	PATCHING	SQ.M	PATCH 100. % OF UNPATCHED CRACKS BUT NOT MORE THAN 313. SQ.M/KM/YR BUT NOT BEYOND 7000. MM/KM ROUGHNESS	1.00
7	SURFACE DRESSING	SQ.M	SURFACE DRESS WHEN UNPATCHED CRACKS EXCEED 25. % ROAD SURFACE AREA BUT NOT MORE FREQUENTLY THAN EVERY 3. YEARS BUT NOT LESS FREQUENTLY THAN EVERY 5. YEARS BUT NOT AFTER ANALYSIS YEAR 10 BUT NOT BEYOND 7000. MM/KM ROUGHNESS	1.00
8	OVERLAYING	CU.M	OVERLAY WHEN ROUGHNESS EXCEEDS 5500. MM/KM BUT NOT MORE FREQUENTLY THAN EVERY 2. YEARS BUT NOT LESS FREQUENTLY THAN EVERY 4. YEARS BUT NOT AFTER ANALYSIS YEAR 10 USING ASPHALT PAVING OF 50. MM TO 1500. MM/KM INITIAL ROUGHNESS	1.00
10	ROUTINE MAINTENANCE - PAVED ROAD	KM	INCLUDES DRAINAGE, VEGETATION, SHOULDER, AND MISCELLANEOUS ACTIVITIES	1.00

MAINTENANCE POLICIES

	POLICY ID	STANDARD ID	SURFACE TYPE	TRAFFIC RANGE (ACF)	
				MINIMUM	MAXIMUM
POLICY :	PCL1	LATC CGH1	LATR CBST	0 0	100000 100000
POLICY :	PCL2	LBG1	CBST	0	100000
POLICY :	PCL3	LBG2	CBST	0	100000

VEHICLE CHARACTERISTICS AND COSTS

COSTS IN THAI. BATHS

	PASS CAR	LT BUS	HV BUS	LT TRUCK	MD TRUCK	FV TRUCK
A. VEHICLE DESCRIPTIONS						
VEHICLE TYPE CODE	1	3	5	4	5	5
FUEL TYPE	GASOLINE	GASOLINE	DIESEL	DIESEL	DIESEL	DIESEL
BRAKE HOPSEPOWER	90.CC	77.00	133.CC	77.00	133.00	133.CC
GROSS VEH WGT (METRIC TONS)	1.CC	2.CC	12.23	2.00	13.71	20.83
AXLE EQUIVALENCY FACTOR	0.0	0.C	0.70	0.0	1.37	1.41
B. FINANCIAL COSTS						
NEW VEHICLE	178000.00	116250.00	700000.00	112250.00	359400.00	430000.00
COST/TIRE	455.CC	896.CC	3387.00	896.00	2278.00	2278.CC
MAINTENANCE LABCR COST/HR	45.CC	45.CC	45.CC	45.00	45.00	45.CC
CREW COST/HR	0.C	18.91	23.07	8.34	18.75	23.67
VALUE OF TIME/HR	17.68	6.20	5.25	9.46	9.71	0.C
ANNUAL OVERHEAD COSTS (TOT)	0.C	0.C	0.C	0.0	0.0	0.C
ANNUAL OVERHEAD COSTS % OF OPERATING COSTS.	0.C	0.0	7.30	0.0	5.00	5.CC
INTEREST RATE (%)	15.CC	15.CC	15.CC	15.00	15.00	15.CC
FUEL & LUBRICANTS (COST/LITRE)	PETROL =	5.35	DIESEL FUEL =	3.03	ENGINE OIL =	25.CC
C. ECONOMIC COSTS						
NEW VEHICLE	80920.CC	96410.CC	597480.00	93210.00	288360.00	338550.CC
COST/TIRE	415.CC	817.CC	3088.CC	817.00	2077.00	2077.CC
MAINTENANCE LABCR COST/HR	45.CC	45.00	45.CC	45.00	45.00	45.CC
CREW COST/HR	0.C	18.99	23.07	8.34	18.75	23.67
VALUE OF TIME/HR	17.68	6.20	5.25	9.46	9.71	0.C
ANNUAL OVERHEAD COSTS (TOT)	0.0	0.0	0.C	0.0	0.0	0.C
ANNUAL OVERHEAD COSTS % OF OPERATING COSTS.	0.C	0.0	7.30	0.0	5.00	5.CC
INTEREST RATE (%)	12.CC	12.00	12.00	12.00	12.00	12.CC
FUEL & LUBRICANTS (COST/LITRE)	PETROL =	3.58	DIESEL FUEL =	2.67	ENGINE OIL =	22.20
D. FOREIGN EXCHANGE COSTS						
NEW VEHICLE	0.C	0.C	0.0	0.0	0.0	0.C
COST/TIRE	0.C	0.C	0.C	0.0	0.0	0.C
MAINTENANCE LABCR COST/HR	0.0	0.0	0.C	0.0	0.0	0.C
CREW COST/HR	0.C	0.C	0.C	0.0	0.0	0.C
VALUE OF TIME/HR	0.0	0.C	0.C	0.0	0.0	0.C
ANNUAL OVERHEAD COSTS (TOT)	0.0	0.C	0.C	0.0	0.0	0.C
ANNUAL OVERHEAD COSTS % OF OPERATING COSTS.	0.C	0.C	0.C	0.0	0.0	0.C
INTEREST RATE (%)	0.0	0.C	0.C	0.0	0.C	0.C
FUEL & LUBRICANTS (COST/LITRE)	PETROL =	0.C	DIESEL FUEL =	0.0	ENGINE OIL =	0.C

VEHICLE CHARACTERISTICS AND COSTS

COSTS IN THAI. BATHS

	<u>PASS CAR</u>	<u>LT BUS</u>	<u>HV BUS</u>	<u>LT TRUCK</u>	<u>MD TRUCK</u>	<u>FV TRUCK</u>
<u>E. VEHICLE UTILIZATION</u>						
AVERAGE NUMBER OF PASSENGERS PER VEHICLE	2	9	33	2	2	0
ANNUAL OPERATING HOURS	322.	625.	1429.	446.	661.	840.
ANNUAL KILOMETERS DRIVEN	18000.	35000.	80000.	25000.	37000.	47000.
AV VEHICLE LIFE (YEARS)	10.	7.	6.	10.	13.	12.
VEHICLE DEPRECIATION CODE	2	2	1	2	1	1
VEHICLE UTILIZATION CODE	1	2	3	2	3	3

1. VEHICLE TYPE CODES

- 1 = PASSENGER CAR
- 2 = LIGHT PICK-UP
- 3 = MEDIUM SIZE BUS
- 4 = GOODS VEHICLE UNDER 8.5 TONNES
- 5 = GOODS VEHICLE OVER 8.5 TONNES OR LARGE BUS

2. VEHICLE DEPRECIATION CODES

- 1 = IRRL-KENYA RELATIONSHIPS
- 2 = DEWELLES VARYING VEHICLE LIFE
- 3 = CONSTANT VEHICLE LIFE

3. VEHICLE UTILIZATION CODES

- 1 = CONSTANT ANNUAL KILOMETERAGE
- 2 = CONSTANT ANNUAL HOURLY UTILIZATION
- 3 = ADJUSTED UTILIZATION

**** CHESHER FUEL CONSUMPTION SWITCH IS ON ****

VEHICLE AGE DISTRIBUTION

VEHICLE TYPE

AGE (YRS)	CARS	LIGHT COMMERCIAL	BUSES	HEAVY GOODS
1	18.2	18.2	15.4	15.4
2	16.4	16.4	14.1	14.1
3	14.5	14.5	12.8	12.8
4	12.7	12.7	11.5	11.5
5	10.9	10.9	10.3	10.3
6	9.1	9.1	9.0	9.0
7	7.3	7.3	7.7	7.7
8	5.5	5.5	6.4	6.4
9	3.6	3.6	5.1	5.1
10	1.8	1.8	3.8	3.8
11	0.0	0.0	2.6	2.6
12	0.0	0.0	1.3	1.3
13	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0
NATIONAL VEHICLE FLEET GROWTH RATE (%)	4.0	4.0	4.0	4.0

TRAFFIC DATA SET: NCR1 : NCRP FOR LNKUP01

BASE YEAR: 1978
 INITIAL ADT: 262
 APPLICABLE CN LINKS: UPC1,

	PASS CAR	LT BUS	HV BUS	LT TRUCK	MD TRUCK	HV TRUCK
EXISTING TRAFFIC (ACT)	25	162	47	22	4	2
EQUIVALENT STANDARD AXLES PER LANE	0.0	0.0	16.4	0.0	2.7	1.4
ANNUAL TRAFFIC GROWTH						
1978-1983 (PERCENTAGE)	3.0	1.1	2.4	4.9	17.6	20.1
1984-1989 (PERCENTAGE)	1.6	1.7	1.8	6.6	7.6	8.1
1990-1997 (PERCENTAGE)	1.5	1.6	1.4	4.6	4.6	4.1

TRAFFIC DATA SET: NCR2 : NCRP FOR LNKJPC2

BASE YEAR: 1978
 INITIAL ACT: 203
 APPLICABLE CN LINKS: LPC2,

	PASS CAR	LT BUS	HV BUS	LT TRUCK	MD TRUCK	HV TRUCK
EXISTING TRAFFIC (ACT)	21	135	40	5	1	1
EQUIVALENT STANDARD AXLES PER LANE	0.0	0.0	14.0	0.0	0.7	0.7
ANNUAL TRAFFIC GROWTH						
1978-1983 (PERCENTAGE)	2.7	0.7	1.5	9.8	24.6	14.5
1984-1989 (PERCENTAGE)	2.0	1.7	1.8	9.8	8.9	0.0
1990-1997 (PERCENTAGE)	1.3	1.6	1.7	4.6	4.3	5.1

TRAFFIC DATA SET: GEN1 : GENR FOR LNKUP01

APPLICABLE CN LINKS: LPC1,

GENERATED TRAFFIC GROWTH	PASS CAR	LT BUS	HV BUS	LT TRUCK	MD TRUCK	HV TRUCK
(YEARS SINCE SCHEDULING)						
0 - 2 (PERCENT-EXISTING)	10.0	10.0	10.0	0.0	0.0	0.0
3 - 8 (INCREMENT-VEHICLES)	1	7	1	2	1	1
9 - 16 (INCREMENT-VEHICLES)	0	0	0	0	0	0

TRAFFIC DATA SET: GGEN : GENF FOR LNKUPO2

APPLICABLE CN LINKS: UPC2,

GENERATED TRAFFIC GROWTH

PASS CAR LT BUS HV BUS LT TRUCK MD. TRUCK HV TRUCK

(YEARS SINCE SCHEDULING)

0 - 2 (PERCENT-EXISTING)

10.0

11.0

13.0

0.0

0.0

0.0

3 - 8 (INCREMENT-VEHICLES)

1

5

1

1

1

1

9 - 16 (INCREMENT-VEHICLES)

0

0

0

0

0

0

OTHER COSTS AND BENEFITS DATA SET: ACDV - VALUE ADD BENEFIT

(MILLION THAI. BATHS)

APPLICABLE CN LINK: UP01

	FINANCIAL COSTS	ECONOMIC COSTS	FOREIGN EXCHANGE COSTS
EXISTING COSTS (AMOUNT/YEAR)	0.0	0.0	0.0
EXISTING BENEFITS (AMOUNT/YEAR)	0.0	0.0	0.0
ANNUAL BENEFITS (YEARS SINCE SCHEDULING)			
1981-1982 (AMOUNT/YEAR)	1.200000	1.200000	0.0
1983-1984 (AMOUNT/YEAR)	1.555555	1.555555	0.0
1985-1986 (AMOUNT/YEAR)	2.650000	2.650000	0.0
1990-1997 (AMOUNT/YEAR)	3.845555	3.845555	0.0

OTHER COSTS AND BENEFITS DATA SET: VADD - VALUE AD BENEFIT

(MILLION THAI. BATHS)

APPLICABLE CN LINK: UP02

	FINANCIAL COSTS	ECONOMIC COSTS	FOREIGN EXCHANGE COSTS
EXISTING COSTS (AMOUNT/YEAR)	0.0	0.0	0.0
EXISTING BENEFITS (AMOUNT/YEAR)	0.0	0.0	0.0
ANNUAL BENEFITS (YEARS SINCE SCHEDULING)			
1981-1982 (AMOUNT/YEAR)	1.750000	1.750000	0.0
1983-1984 (INCREMENT-AMOUNT)	0.600000	0.600000	0.0
1985-1986 (INCREMENT-AMOUNT)	0.720000	0.720000	0.0
1987-1989 (INCREMENT-AMOUNT)	1.345555	1.345555	0.0
1990-1997 (INCREMENT-AMOUNT)	0.240000	0.240000	0.0

DESCRIPTION OF ALTERNATIVES: GROUP PRDS - ALT1

LINK	YEAR	DESIGN	MAINTENANCE	TRAFFIC	OTHER C/B	CAPITAL (IN MILLION THAI. BATHS)		
						FINANCIAL	ECONOMIC	FOREIGN
LINK UF01 - ALTERN. ALT1	1981	PRJ1	POL1	NCR1 GEN1	ACDV			
	1982							
LINK UF02 - ALTERN. ALT1	1981	PRT1	POL1	NCR2 CGEN	VADD			
	1982							

DESCRIPTION OF ALTERNATIVES: GROUP PRDS - ALT2

LINK	YEAR	DESIGN	MAINTENANCE	TRAFFIC	OTHER C/B	CAPITAL (IN MILLION THAI. BATHS)		
						FINANCIAL	ECONOMIC	FOREIGN
LINK UF01 - ALTERN. ALT2	1981	PRJ2	POL1	NCR1 GEN1	ACDV			
	1982							
LINK UF02 - ALTERN. ALT2	1981	PRT2	POL1	NCR2 CGEN	VADD			
	1982							

DESCRIPTION OF ALTERNATIVES: GROUP PRDS - ALT3

LINK	YEAR	DESIGN	MAINTENANCE	TRAFFIC	OTHER C/B	CAPITAL (IN MILLION THAI. BATHS)		
						FINANCIAL	ECONOMIC	FOREIGN
LINK UF01 - ALTERN. ALT3	1981	PRJ2	POL2	NCR1 GEN1	ADVV			
	1982							
LINK UF02 - ALTERN. ALT3	1981	PRT2	POL2	NCR2 CGEN	VADD			
	1982							



DESCRIPTION OF ALTERNATIVES: GROUP PRDS - ALT4

	YEAR	DESIGN	MAINTENANCE	TRAFFIC	OTHER C/B	CAPITAL	
						(IN MILLION FINANCIAL)	(THAI. BATHS ECONOMIC)
LINK U001 - ALTERN. ALT4	1981 1982	PRJ2	POL3	NCR1 CGEN	ACDV		
LINK U002 - ALTERN. ALT4	1981 1982	PRT2	POL3	NCR2 CGEN	VADD		

SENSITIVITY RUNS DATA

STUDY NAME: BASE

GROUP	ALTERNATIVE	VS.	ALTERNATIVE
PRDS	ALT2	VS.	ALT1
PRDS	ALT3	VS.	ALT1
PRDS	ALT4	VS.	ALT1

DISCOUNT RATES: 9.0% 10.0% 12.0% 14.0% 16.0%

SENSITIVITY RUNS DATA

STUDY NAME: CSCH

GROUP	ALTERNATIVE	VS.	ALTERNATIVE
PRDS	ALT2	VS.	ALT1
PRDS	ALT3	VS.	ALT1
PRDS	ALT4	VS.	ALT1

DISCOUNT RATES: 8.0% 10.0% 12.0% 14.0% 16.0%

SENSITIVITY PARAMETERS - PERCENT CHANGE OVER BASE RUN DATA

GROUP	ALTERNATIVE	CONSTRUCTION COSTS	MAINTENANCE COSTS	OTHER COSTS	VEHICLE OPERATING COSTS	TRAVEL TIME COSTS
PRDS	ALT1	15.0	0.0	0.0	0.0	0.0
PRDS	ALT2	15.0	0.0	0.0	0.0	0.0
PRDS	ALT3	15.0	0.0	0.0	0.0	0.0
PRDS	ALT4	15.0	0.0	0.0	0.0	0.0

SENSITIVITY RUNS DATA

STUDY NAME: CCHG

GROUP ALTERNATIVE
 PRDS ALT2
 PRDS ALT3
 PRDS ALT4

VS. ALTERNATIVE
 VS. ALT1
 VS. ALT1

DISCOUNT RATES: 8.0% 10.0% 12.0% 14.0% 16.0%

SENSITIVITY PARAMETERS - PERCENT CHANGE OVER BASE RUN DATA

GROUP	ALTERNATIVE	CONSTRUCTION COSTS	MAINTENANCE COSTS	OTHER COSTS	VEHICLE OPERATING COSTS	TRAVEL TIME COSTS
PRDS	ALT1	-15.0	0.0	0.0	0.0	0.0
PRDS	ALT2	-15.0	0.0	0.0	0.0	0.0
PRDS	ALT3	-15.0	0.0	0.0	0.0	0.0
PRDS	ALT4	-15.0	0.0	0.0	0.0	0.0

SENSITIVITY RUNS DATA

STUDY NAME: CECH

GROUP ALTERNATIVE
 PRDS ALT2
 PRDS ALT3
 PRDS ALT4

VS. ALTERNATIVE
 VS. ALT1
 VS. ALT1

DISCOUNT RATES: 8.0% 10.0% 12.0% 14.0% 16.0%

SENSITIVITY PARAMETERS - PERCENT CHANGE OVER BASE RUN DATA

GROUP	ALTERNATIVE	CONSTRUCTION COSTS	MAINTENANCE COSTS	OTHER COSTS	VEHICLE OPERATING COSTS	TRAVEL TIME COSTS
PRDS	ALT1	-15.0	0.0	20.0	0.0	0.0
PRDS	ALT2	-15.0	0.0	20.0	0.0	0.0
PRDS	ALT3	-15.0	0.0	20.0	0.0	0.0
PRDS	ALT4	-15.0	0.0	20.0	0.0	0.0

SENSITIVITY RUNS DATA

STUDY NAME: ECF

GROUP	ALTERNATIVE		ALTERNATIVE
PRDS	ALT2	VS.	ALT1
PRDS	ALT3	VS.	ALT1
PRDS	ALT4	VS.	ALT1

DISCOUNT RATES: 8.0% 10.0% 12.0% 14.0% 16.0%

SENSITIVITY PARAMETERS - PERCENT CHANGE C/EF BASE RUN DATA

GROUP	ALTERNATIVE	CONSTRUCTION COSTS	MAINTENANCE COSTS	OTHER COSTS	VEHICLE OPERATING COSTS	TRAVEL TIME COSTS
PRDS	ALT1	15.0	0.0	-20.0	0.0	0.0
PRDS	ALT2	15.0	0.0	-20.0	0.0	0.0
PRDS	ALT3	15.0	0.0	-20.0	0.0	0.0
PRDS	ALT4	15.0	0.0	-20.0	0.0	0.0

APPENDIX B

ANALYSIS RESULTS SUMMARY

ECCNOMIC COSTS OF ALTERNATIVES FOR BASE RUN DATA

(IN MILLION THAI. BATHS)

GROUP PDS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALTI

YEAR	CAPITAL/ CONSTRUCTION COSTS	ROAD MAINTENANCE COSTS	EXISTING VEHICLE OPERATING COSTS	GENERATED VEHICLE OPERATING COSTS	EXISTING VEHICLE TRAVEL TIME COSTS	GENERATED VEHICLE TRAVEL TIME COSTS	NET EXCESSIVE COSTS	TOTAL ECCNOMIC COSTS	TOTAL FOREIGN EXCHANGE COSTS
1981	32.220	0.0	7.945	0.0	3.719	0.0	-2.950	40.534	0.0
1982	0.0	1.162	7.539	0.761	3.672	0.400	-2.950	10.584	0.0
1983	0.0	1.162	7.675	0.768	3.731	0.406	-3.950	5.751	0.0
1984	0.0	1.711	7.823	1.127	3.800	0.529	-4.550	10.441	0.0
1985	0.0	1.162	7.983	1.486	3.871	0.655	-6.320	8.835	0.0
1986	0.0	1.162	8.150	1.842	3.944	0.777	-7.040	8.634	0.0
1987	0.0	1.638	8.324	2.197	4.018	0.900	-8.350	9.687	0.0
1988	0.0	1.162	8.504	2.549	4.094	1.024	-9.740	7.553	0.0
1989	0.0	1.162	8.697	2.902	4.172	1.148	-11.050	6.551	0.0
1990	0.0	1.698	8.847	2.895	4.240	1.147	-12.530	6.297	0.0
1991	0.0	1.162	8.999	2.887	4.309	1.147	-12.770	5.733	0.0
1992	0.0	1.162	9.153	2.878	4.379	1.146	-13.010	5.705	0.0
1993	0.0	1.724	9.312	2.870	4.451	1.146	-13.250	5.253	0.0
1994	0.0	1.162	9.475	2.862	4.524	1.146	-13.450	5.678	0.0
1995	0.0	1.162	9.643	2.854	4.598	1.145	-13.720	5.673	0.0
1996	0.0	1.746	9.817	2.847	4.674	1.145	-13.970	6.255	0.0
1997	-3.222	1.162	9.996	2.840	4.751	1.145	-14.210	2.462	0.0

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

ECCNOMIC:	28.998	21.255	147.863	36.564	70.947	15.003	-163.540	156.752	0.0
FOREIGN:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DISCOUNTED
ECCNOMIC COSTS
AT:

8.0 %	31.279	11.696	83.034	17.953	39.890	7.490	-80.285	111.053	0.0
10.0 %	31.519	10.319	73.855	15.378	35.490	6.446	-88.850	104.120	0.0
12.0 %	31.694	9.180	66.316	13.282	31.971	5.595	-99.660	98.278	0.0
14.0 %	31.824	8.231	60.059	11.563	28.808	4.890	-112.128	93.312	0.0
16.0 %	31.920	7.432	54.824	10.141	26.354	4.316	-125.550	89.058	0.0

ECONOMIC COSTS OF ALTERNATIVES FOR BASE RUN DATA

(IN MILLION THAI. BATHS)

GROUP PRCS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALT2

YEAR	CAPITAL/ CONSTRUCTION COSTS	ROAD MAINTENANCE COSTS	EXISTING VEHICLE OPERATING COSTS	GENERATED VEHICLE OPERATING COSTS	EXISTING VEHICLE TRAVEL TIME COSTS	GENERATED VEHICLE TRAVEL TIME COSTS	NET EXCESSIVE COSTS	TOTAL ECONOMIC COSTS	TOTAL FOREIGN EXCHANGE COSTS
1981	52.502	C.C	7.945	0.0	3.719	0.0	-2.950	61.216	C.C
1982	0.0	C.525	7.357	0.739	3.259	0.355	-2.950	9.285	C.C
1983	0.0	C.488	9.166	0.917	3.478	0.379	-3.550	10.478	C.C
1984	0.0	C.488	5.853	1.428	3.593	0.501	-4.550	11.314	C.C
1985	0.0	C.488	10.054	1.879	3.660	0.617	-6.320	10.377	C.C
1986	0.0	C.488	10.262	2.327	3.727	0.733	-7.640	10.457	C.C
1987	0.0	C.488	10.478	2.773	3.797	0.849	-8.350	9.995	C.C
1988	0.0	C.488	10.703	3.216	3.868	0.964	-9.740	9.459	C.C
1989	0.0	C.488	10.941	3.659	3.941	1.080	-11.050	9.015	C.C
1990	0.0	C.488	11.132	3.651	4.005	1.079	-12.520	7.825	C.C
1991	0.0	C.488	11.326	3.642	4.070	1.079	-12.770	7.825	C.C
1992	0.0	C.488	11.523	3.633	4.136	1.078	-13.010	7.845	C.C
1993	0.0	C.488	11.726	3.624	4.203	1.078	-13.250	7.870	C.C
1994	0.0	C.488	11.934	3.616	4.272	1.077	-13.450	7.857	C.C
1995	0.0	C.488	12.148	3.607	4.342	1.077	-13.720	7.922	C.C
1996	0.0	C.488	12.369	3.599	4.413	1.076	-13.970	7.976	C.C
1997	-5.250	C.488	12.597	3.592	4.486	1.076	-14.210	2.775	C.C

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

ECONOMIC:	47.251	7.849	181.515	45.903	66.966	14.039	-163.940	155.643	
FOREIGN:	0.0	C.0	C.0	C.C	0.0	0.0	C.C		C.C

DISCOUNTED
ECONOMIC COSTS
AT:

8.0 %	50.969	4.356	100.084	22.421	37.656	7.031	-80.285	142.228	C.C
10.0 %	51.359	3.853	88.582	19.175	33.505	6.049	-68.850	133.634	C.C
12.0 %	51.645	2.438	75.134	16.533	30.092	5.249	-59.660	126.430	C.C
14.0 %	51.856	3.091	71.303	14.367	27.260	4.591	-52.128	120.241	C.C
16.0 %	52.013	2.799	64.758	12.577	24.889	4.040	-45.920	115.151	C.C

ECONOMIC COSTS OF ALTERNATIVES FOR BASE RUN DATA

(IN MILLION THAI. BATHS)

GROUP PRDS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALT3

YEAR	CAPITAL/ CONSTRUCTION CCSTS	ROAD MAINTENANCE CCSTS	EXISTING VEHICLE OPERATING CCSTS	GENERATED VEHICLE OPERATING CCSTS	EXISTING VEHICLE TRAVEL TIME CCSTS	GENERATED VEHICLE TRAVEL TIME CCSTS	NET EXGENCLS- CCSTS	TOTAL ECONOMIC CCSTS	TOTAL FOREIGN EXCHANGE CCSTS
1981	52.502	0.0	7.945	0.0	3.719	0.0	-2.950	61.218	C.C
1982	C.C	0.525	7.357	0.739	3.259	0.355	-2.950	9.285	C.C
1983	C.C	0.488	9.166	0.917	3.478	0.379	-3.950	10.478	C.C
1984	C.C	0.488	9.853	1.428	3.593	0.501	-4.550	11.214	C.C
1985	C.C	0.488	10.054	1.879	3.660	0.617	-6.320	10.377	C.C
1986	C.C	0.488	10.262	2.327	3.727	0.733	-7.040	10.457	C.C
1987	C.C	0.488	10.478	2.773	3.797	0.849	-8.350	9.595	C.C
1988	C.C	13.613	10.703	3.216	3.868	0.964	-9.740	22.623	C.C
1989	0.0	0.552	6.720	2.237	3.530	0.963	-11.050	2.911	C.C
1990	C.C	0.553	7.151	2.326	3.616	0.970	-12.530	2.066	C.C
1991	C.C	0.554	7.597	2.414	3.705	0.977	-12.770	2.477	C.C
1992	C.C	0.555	8.058	2.502	3.797	0.985	-13.010	2.886	C.C
1993	C.C	7.433	8.536	2.591	3.891	0.992	-13.250	10.153	C.C
1994	C.C	0.520	9.048	2.684	3.989	1.000	-13.490	3.751	C.C
1995	C.C	0.520	9.623	2.790	4.093	1.009	-13.730	4.305	C.C
1996	C.C	0.521	10.210	2.893	4.200	1.018	-13.970	4.871	C.C
1997	-5.250	0.521	10.458	2.906	4.274	1.019	-14.210	-0.262	C.C

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

ECONOMIC:	47.251	28.307	153.216	36.621	64.195	13.331	-163.940	178.983	C.C
FOREIGN:	C.C	C.C	C.C	C.C	C.C	C.C	C.C	C.C	C.C

DISCOUNTED
ECONOMIC COSTS

AT:	9.0 %	50.959	14.935	88.105	18.482	36.484	6.705	-30.285	125.355	C.C
	10.0 %	51.359	12.939	78.772	15.547	32.546	5.782	-68.350	128.455	C.C
	12.0 %	51.645	11.271	71.055	13.874	29.302	5.029	-59.600	122.516	C.C
	14.0 %	51.856	9.872	64.617	12.164	26.606	4.409	-52.128	117.257	C.C
	16.0 %	52.013	8.692	59.156	10.743	24.345	3.894	-45.930	112.952	C.C

ECONOMIC COSTS OF ALTERNATIVES FOR BASE RUN DATA

(IN MILLION THAI. BATHS)

GROUP PRDS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALT4

YEAR	CAPITAL/ CONSTRUCTION COSTS	ROAD MAINTENANCE COSTS	EXISTING VEHICLE OPERATING COSTS	GENERATED VEHICLE OPERATING COSTS	EXISTING VEHICLE TRAVEL TIME COSTS	GENERATED VEHICLE TRAVEL TIME COSTS	NET EXCESSIVE COSTS	TOTAL ECONOMIC COSTS	TOTAL FOREIGN EXCHANGE COSTS
1981	52.502	C.C	7.945	C.C	3.719	0.0	-2.950	61.216	C.C
1982	C.C	C.525	7.357	0.739	3.259	0.355	-2.950	9.285	C.C
1983	C.C	22.363	9.166	0.917	3.478	0.379	-3.950	32.353	C.C
1984	C.C	C.511	5.946	0.853	3.209	0.446	-4.550	6.416	C.C
1985	C.C	C.513	6.073	1.127	3.269	0.549	-6.320	5.212	C.C
1986	0.0	C.515	6.207	1.401	3.330	0.652	-7.040	5.066	C.C
1987	C.C	22.363	6.348	1.673	3.393	0.755	-8.350	26.142	C.C
1988	C.C	C.494	6.426	1.925	3.451	0.857	-9.740	3.414	C.C
1989	0.0	C.495	6.569	2.191	3.516	0.959	-11.050	2.639	C.C
1990	C.C	C.495	6.678	2.184	3.573	0.959	-12.520	1.355	C.C
1991	C.C	22.363	6.790	2.176	3.630	0.959	-12.770	23.148	C.C
1992	0.0	C.489	6.892	2.164	3.688	0.958	-13.010	1.181	C.C
1993	C.C	C.489	7.006	2.156	3.743	0.957	-13.250	1.108	C.C
1994	C.C	C.489	7.123	2.147	3.800	0.957	-13.490	1.035	C.C
1995	C.C	22.363	7.244	2.139	3.870	0.956	-13.730	22.843	C.C
1996	C.C	C.488	7.365	2.130	3.933	0.956	-13.970	0.503	C.C
1997	-5.250	C.488	7.494	2.123	3.997	0.955	-14.210	-4.402	C.C

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

ECONOMIC:	47.251	95.445	118.628	28.046	60.872	12.611	-103.940	158.514	C.C
FOREIGN:	C.C	C.C	C.C	C.C	C.C	0.0	0.0		

DISCOUNTED
ECONOMIC COSTS

AT:	8.0 %	10.0 %	12.0 %	14.0 %	16.0 %
	50.569	51.359	51.645	51.856	52.013
	54.540	48.534	43.533	39.334	35.774
	69.140	62.085	56.267	51.423	47.356
	13.985	12.033	10.442	9.135	8.052
	34.650	30.930	27.867	25.325	23.195
	6.322	5.448	4.735	4.146	3.662
	-80.285	-68.890	-59.660	-52.128	-45.920
	145.218	141.455	134.825	129.054	124.126
	C.C	C.C	C.C	C.C	C.C

FINANCIAL COSTS OF ALTERNATIVES FOR BASE RUN DATA

(IN MILLION THAI. BATHS)

GROUP PRDS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALT1

YEAR	CAPITAL/ CONSTRUCTION CCSTS	ROAD MAINTENANCE CCSTS	EXISTING VEHICLE OPERATING CCSTS	GENERATED VEHICLE OPERATING CCSTS	EXISTING VEHICLE TRAVEL TIME CCSTS	GENERATED VEHICLE TRAVEL TIME CCSTS	NET EXCESS/LS CCSTS	TOTAL FINANCIAL CCSTS
1981	35.800	0.0	9.802	0.0	3.763	0.0	-2.950	46.415
1982	0.0	1.290	9.314	0.939	3.712	0.404	-2.950	12.705
1983	0.0	1.290	9.481	0.948	3.770	0.410	-3.550	11.945
1984	0.0	1.882	9.659	1.352	3.840	0.535	-4.550	12.758
1985	0.0	1.290	9.853	1.833	3.911	0.661	-6.320	11.228
1986	0.0	1.290	10.055	2.273	3.985	0.786	-7.040	11.345
1987	0.0	1.803	10.265	2.709	4.059	0.912	-8.350	11.358
1988	0.0	1.290	10.483	3.144	4.136	1.037	-9.740	10.250
1989	0.0	1.290	10.716	3.578	4.215	1.162	-11.050	9.872
1990	0.0	1.868	10.697	3.568	4.284	1.162	-12.530	9.249
1991	0.0	1.290	11.080	3.558	4.353	1.161	-12.770	8.672
1992	0.0	1.290	11.267	3.547	4.424	1.161	-13.010	8.678
1993	0.0	1.896	11.458	3.536	4.496	1.160	-13.250	9.255
1994	0.0	1.290	11.654	3.525	4.569	1.160	-13.450	8.708
1995	0.0	1.290	11.856	3.515	4.644	1.159	-13.730	8.124
1996	0.0	1.920	12.065	3.505	4.720	1.159	-13.970	9.258
1997	-3.580	1.290	12.281	3.496	4.793	1.158	-14.210	5.223

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

FINANCIAL:	32.220	23.559	102.186	45.066	71.677	15.186	-163.940	205.554
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DISCOUNTED
FINANCIAL COSTS

AT:	8.0 %	10.0 %	12.0 %	14.0 %	16.0 %			
8.0 %	34.755	12.940	102.358	22.133	40.306	7.580	-80.285	139.752
10.0 %	35.021	11.416	91.060	18.559	35.862	6.524	-68.850	129.553
12.0 %	35.216	10.157	81.771	16.377	32.206	5.663	-59.000	121.128
14.0 %	35.360	9.107	74.005	14.258	29.172	4.955	-52.128	114.785
16.0 %	35.467	8.224	67.616	12.505	26.633	4.300	-45.930	108.883

FINANCIAL COSTS OF ALTERNATIVES FOR BASE RLN DATA

(IN MILLION THAI. BATHS)

GROUP PRCS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALT2

YEAR	CAPITAL/ CONSTRUCTION CCSTS	ROAD MAINTENANCE CCSTS	EXISTING VEHICLE OPERATING CCSTS	GENERATED VEHICLE OPERATING CCSTS	EXISTING VEHICLE TRAVEL TIME CCSTS	GENERATED VEHICLE TRAVEL TIME CCSTS	NET EXCESSIVE CCSTS	TOTAL FINANCIAL CCSTS
1981	57.330	0.0	9.802	0.0	3.763	0.0	-2.950	67.545
1982	0.0	0.577	9.140	0.919	3.299	0.360	-2.950	11.352
1983	0.0	0.537	11.342	1.135	3.531	0.384	-3.550	12.579
1984	0.0	0.537	12.175	1.764	3.651	0.510	-4.550	14.066
1985	0.0	0.537	12.418	2.320	3.718	0.628	-6.320	13.301
1986	0.0	0.537	12.672	2.874	3.786	0.747	-7.040	13.575
1987	0.0	0.537	12.934	3.424	3.856	0.865	-8.350	13.226
1988	0.0	0.537	13.206	3.971	3.928	0.983	-9.740	12.685
1989	0.0	0.537	13.495	4.518	4.002	1.101	-11.050	12.563
1990	0.0	0.537	13.726	4.508	4.067	1.100	-12.530	11.406
1991	0.0	0.537	13.960	4.496	4.133	1.100	-12.770	11.455
1992	0.0	0.537	14.199	4.484	4.200	1.099	-13.010	11.509
1993	0.0	0.537	14.443	4.473	4.268	1.098	-13.250	11.565
1994	0.0	0.537	14.654	4.461	4.337	1.097	-13.490	11.637
1995	0.0	0.537	14.953	4.450	4.408	1.097	-13.730	11.715
1996	0.0	0.537	15.219	4.440	4.480	1.096	-13.970	11.802
1997	-5.733	0.537	15.453	4.430	4.554	1.096	-14.210	6.167

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

FINANCIAL:	51.597	8.627	223.881	56.667	67.981	14.359	-163.540	259.173
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DISCOUNTED
FINANCIAL COSTS

AT:								
9.0 %	55.657	4.738	123.533	27.686	38.218	7.159	-80.285	176.751
10.0 %	56.082	4.236	105.355	23.677	34.003	6.159	-68.850	164.624
12.0 %	56.395	3.779	97.706	20.418	30.537	5.344	-59.660	154.518
14.0 %	56.625	3.398	88.051	17.744	27.661	4.673	-52.128	146.025
16.0 %	56.757	3.077	75.979	15.534	25.254	4.110	-45.520	138.628

FINANCIAL COSTS OF ALTERNATIVES FOR BASE RUN DATA

GROUP PROCS : LATERITE SURFACE 3C.5 KP. (IN MILLION THAI. BATHS)

ALTERNATIVE : ALT3

YEAR	CAPITAL/ CONSTRUCTION COSTS	ROAD MAINTENANCE COSTS	EXISTING VEHICLE OPERATING COSTS	GENERATED VEHICLE OPERATING COSTS	EXISTING VEHICLE TRAVEL TIME COSTS	GENERATED VEHICLE TRAVEL TIME COSTS	NET EXCESS/DEF COSTS	TOTAL FINANCIAL COSTS
1981	57.330	0.0	9.802	0.0	3.763	0.0	-2.950	67.545
1982	C.0	C.577	9.148	C.919	3.299	0.360	-2.950	11.352
1983	C.0	C.537	11.342	1.135	3.531	0.384	-3.950	12.579
1984	C.0	C.537	12.175	1.764	3.651	0.510	-4.550	14.086
1985	C.0	C.537	12.418	2.320	3.718	0.628	-6.320	13.301
1986	C.0	C.537	12.672	2.874	3.796	0.747	-7.040	13.575
1987	C.0	C.537	12.934	3.424	3.856	0.865	-8.390	13.226
1988	C.0	14.426	13.206	3.971	3.928	0.983	-9.740	26.775
1989	C.0	C.607	8.390	2.792	3.560	0.974	-11.050	5.233
1990	C.0	C.608	8.911	2.899	3.649	0.981	-12.530	4.518
1991	C.0	C.609	9.449	3.005	3.741	0.989	-12.770	5.023
1992	C.0	C.611	10.007	3.111	3.835	0.997	-13.010	5.550
1993	C.0	7.918	10.566	3.218	3.932	1.005	-13.250	13.409
1994	C.0	C.572	11.204	3.330	4.033	1.013	-13.490	6.663
1995	C.0	C.572	11.897	3.457	4.141	1.023	-13.720	7.260
1996	C.0	C.573	12.604	3.582	4.251	1.032	-13.970	8.071
1997	-5.733	C.574	12.903	3.596	4.327	1.033	-14.210	2.450

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

FINANCIAL:	51.597	30.330	189.649	45.357	65.000	13.522	-163.940	231.555
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DISCOUNTED
FINANCIAL COSTS
AT:

8.0 %	55.657	16.010	109.043	22.903	36.957	6.804	-80.289	167.084
10.0 %	56.082	13.868	97.488	19.759	32.971	5.868	-68.850	157.147
12.0 %	56.355	12.083	87.935	17.189	29.687	5.104	-59.660	148.732
14.0 %	56.625	10.586	79.963	15.070	26.957	4.475	-52.128	141.549
16.0 %	56.797	9.323	73.251	13.308	24.669	3.953	-45.930	135.270

FINANCIAL COSTS OF ALTERNATIVES FOR BASE ALN DATA

(IN MILLION THAI. BATHS)

GROUP PRCS : LATERITE SURFACE 30.5 KM

ALTERNATIVE : ALT4

YEAR	CAPITAL/ CONSTRUCTION COSTS	ROAD MAINTENANCE COSTS	EXISTING VEHICLE OPERATING COSTS	GENERATED VEHICLE OPERATING COSTS	EXISTING VEHICLE TRAVEL TIME COSTS	GENERATED VEHICLE TRAVEL TIME COSTS	NET EXCESSIVE COSTS	TOTAL FINANCIAL COSTS
1981	57.33C	C.0	5.8C2	C.0	3.763	0.0	-2.95C	67.545
1982	C.0	C.577	5.148	C.919	3.259	0.360	-2.95C	11.352
1983	C.0	23.686	11.342	1.135	3.531	C.384	-3.95C	26.128
1984	C.0	C.562	7.446	1.068	3.237	0.451	-4.55C	8.214
1985	C.0	C.564	7.601	1.410	3.257	0.355	-6.32C	7.108
1986	C.0	C.567	7.766	1.751	3.359	0.559	-7.04C	7.061
1987	C.0	23.686	7.938	2.091	3.422	0.763	-8.35C	29.51C
1988	0.0	C.543	8.035	2.406	3.480	C.866	-9.74C	5.59C
1989	C.0	C.544	8.208	2.736	3.545	0.970	-11.05C	4.513
1990	C.0	C.544	8.343	2.727	3.602	0.969	-12.53C	3.655
1991	C.0	23.686	8.479	2.717	3.660	C.968	-12.77C	26.74C
1992	C.0	C.538	8.603	2.702	3.718	0.967	-13.01C	3.518
1993	C.0	C.538	8.742	2.650	3.778	0.967	-13.25C	3.465
1994	C.0	C.538	8.885	2.679	3.839	0.966	-13.49C	3.417
1995	C.0	23.686	5.032	2.669	3.901	0.966	-13.73C	26.524
1996	C.0	C.537	5.179	2.657	3.963	0.965	-13.97C	3.332
1997	-5.733	C.537	9.336	2.648	4.028	0.964	-14.21C	-2.43C

TOTAL COSTS/BENEFITS - UNDISCOUNTED:

FINANCIAL:	51.597	101.334	147.884	35.005	61.421	12.740	-163.54C	246.04C
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DISCOUNTED
FINANCIAL COSTS
AT:

8.0 %	55.657	57.901	36.127	17.454	34.983	6.308	-60.265	178.215
10.0 %	56.092	51.524	77.322	15.017	31.231	5.505	-68.89C	167.751
12.0 %	56.395	46.214	70.059	13.031	28.143	4.785	-59.66C	158.506
14.0 %	56.625	41.754	64.014	11.397	25.579	4.192	-52.12C	151.438
16.0 %	56.797	37.931	58.937	10.047	23.430	3.701	-45.53C	144.563

VITA

Mr. Suphawat Kaengkhat was born on 12 February 1953 in Chiang Mai. He pregraduated from Yupparaj Wittayalai, Chiang Mai, in 1969 and graduated the Bachelor Degree in Civil Engineering in 1973 from Chiang Mai University. In 1974, he was employed in Accelerated Rural Development Office, Ministry of Interior, for one year. Currently, he has been working as civil engineer for the Productivity Road Office, Department of Highways, Ministry of Communication.

