

PROJECT NC-5

RT. 4/406 SHORT CUT ROUTE

CHANGWAT: SONGKHLA

2) ROUTE MAP

3.5 Short Cut Route 4 / 406 (NC-5)

1) Summary

The aim of the project is to improve accessibility from Satun to the regional urban center of Hat Yai/Songkhla as well as to Hat Yai International Airport. The project contribute to shorten the distance between Satun and Hat Yai/Songkhla by about 10 kilometers.

"S3" standard is applied to the project with asphaltic concrete carriageway of 6.0 meter width and soil aggregate shoulders of 2.0 meters on both sides.

The proposed short cut route connect Route 4 with Route 406 over a distance of 17.3 kilometers: new construction for 14.3 kilometers; and reconstruction of the existing PWD road for 3.0 kilometers. Most of the new construction section is located at the foot of mountain and frequently come across with small rivers approximately at one kilometer interval. Due to the locational conditions, it is likely that mud flow and flood will strike the route. Disaster prevention measures, drainage facilities in particular, are very important in this project.

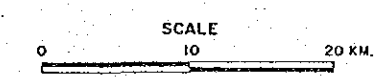
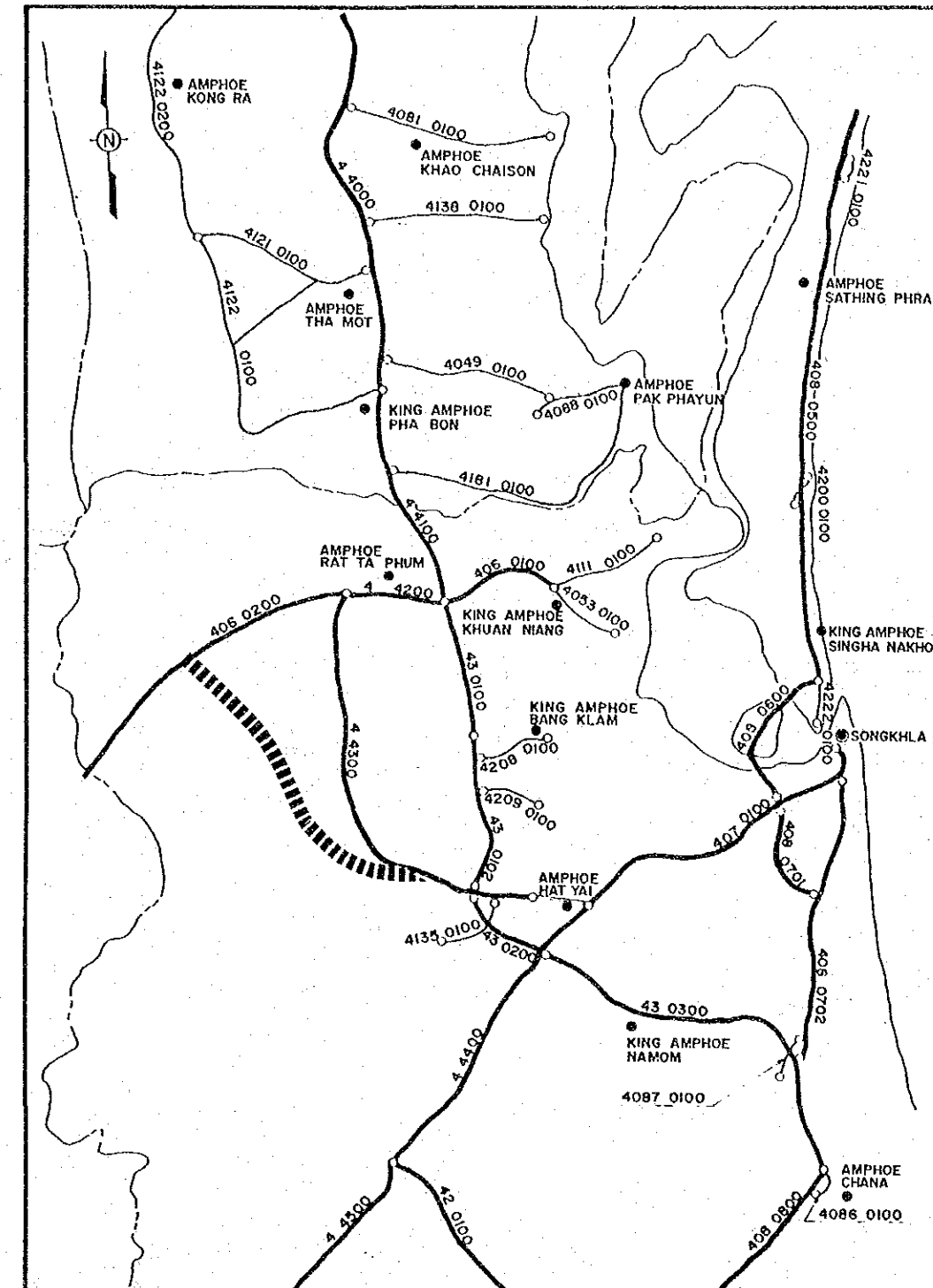
The EIRR is calculated at 53.8 % because of the combined benefit of the shortened travel distance and capacity increase to the traffic between Satun and Hat Yai.

NC-5	Description
Changwat	: Songkhla
Name or Location	: RT.4/406 Short Cut Route (4 - 406)
Road Class	: S3
Cross Section (m)	: 2.00+6.00+2.00 (6.00:PWD)
Surface Type	: SA /ASC / SA
Length: Total	: 17.3 km
DOH Road	: 14.3 km:New
Others	: 3.0 km:PWD

AADT<'96/'01/'06>	: 3,200 / 5,300 / 8,500

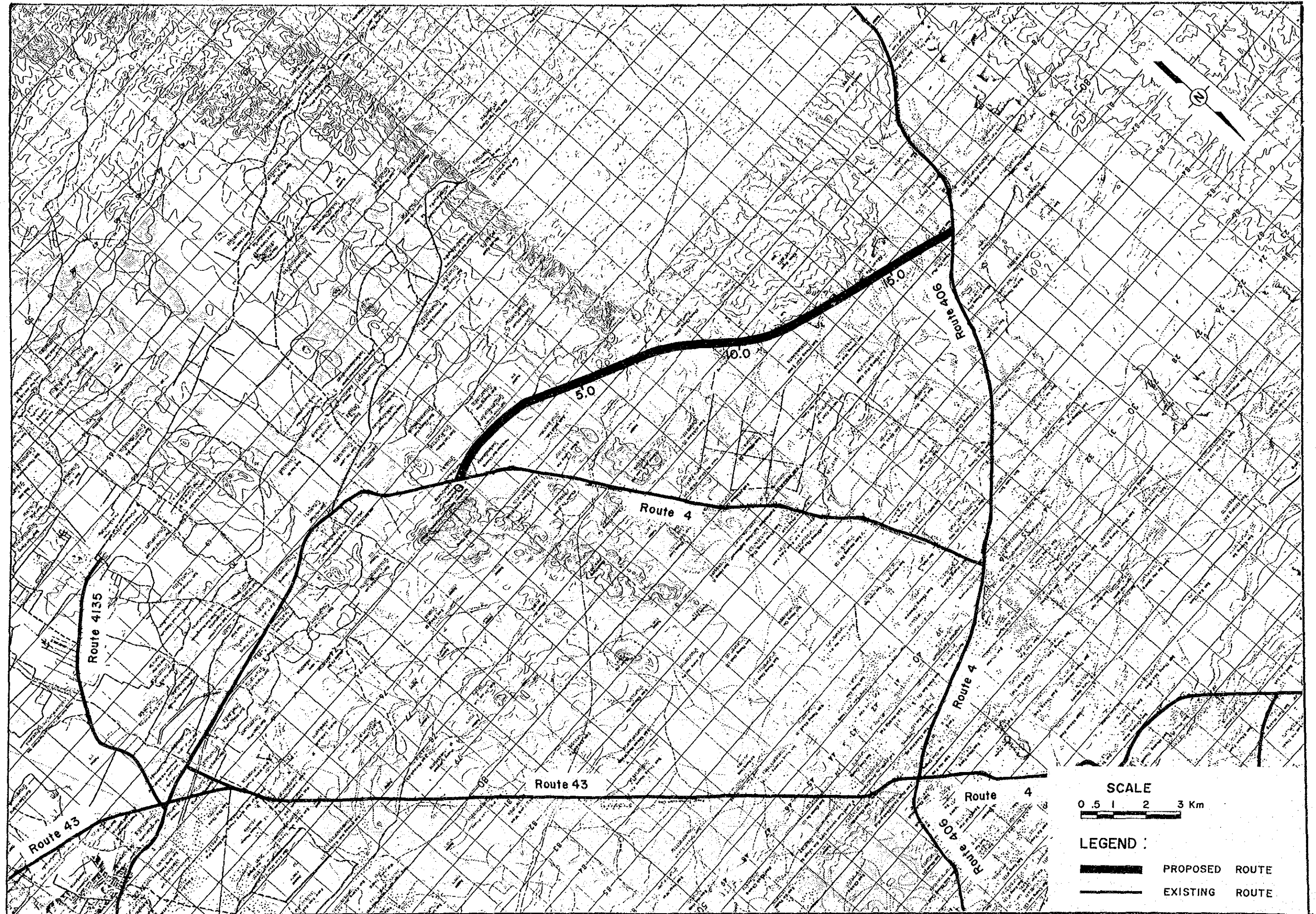
Financial Cost	: 140.2 million baht
NPV	: 726 million baht (12% discount rate)
B/C	: 11.3 (12% discount rate)
EIRR	: 53.8 %

(): Existing Condition or Value	



LEGEND :

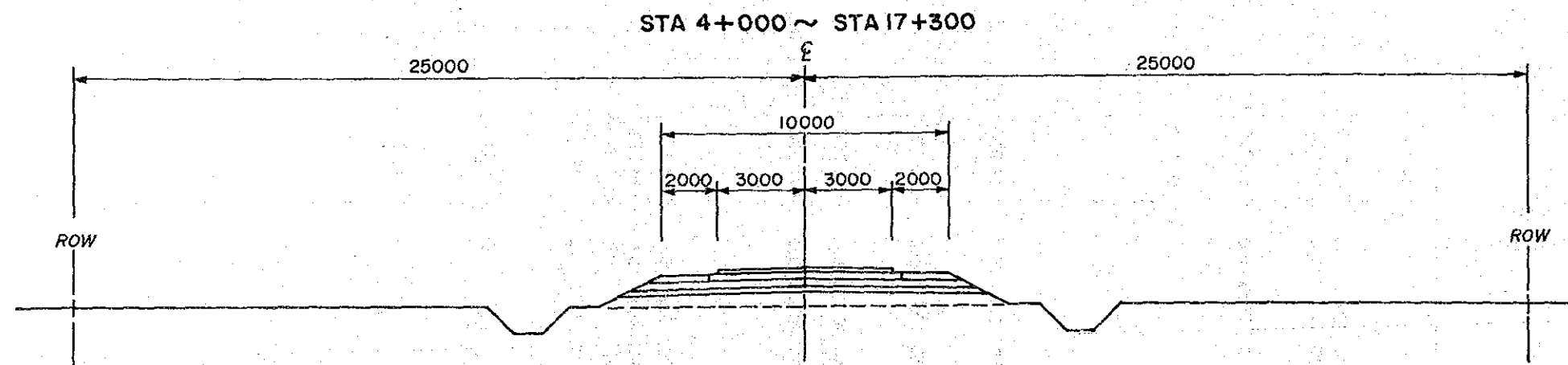
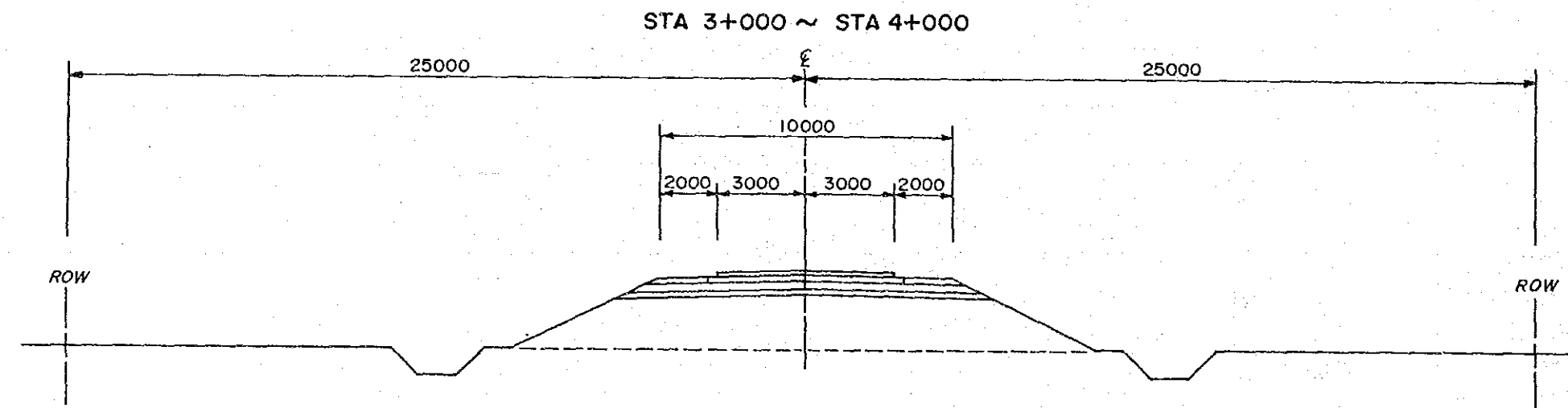
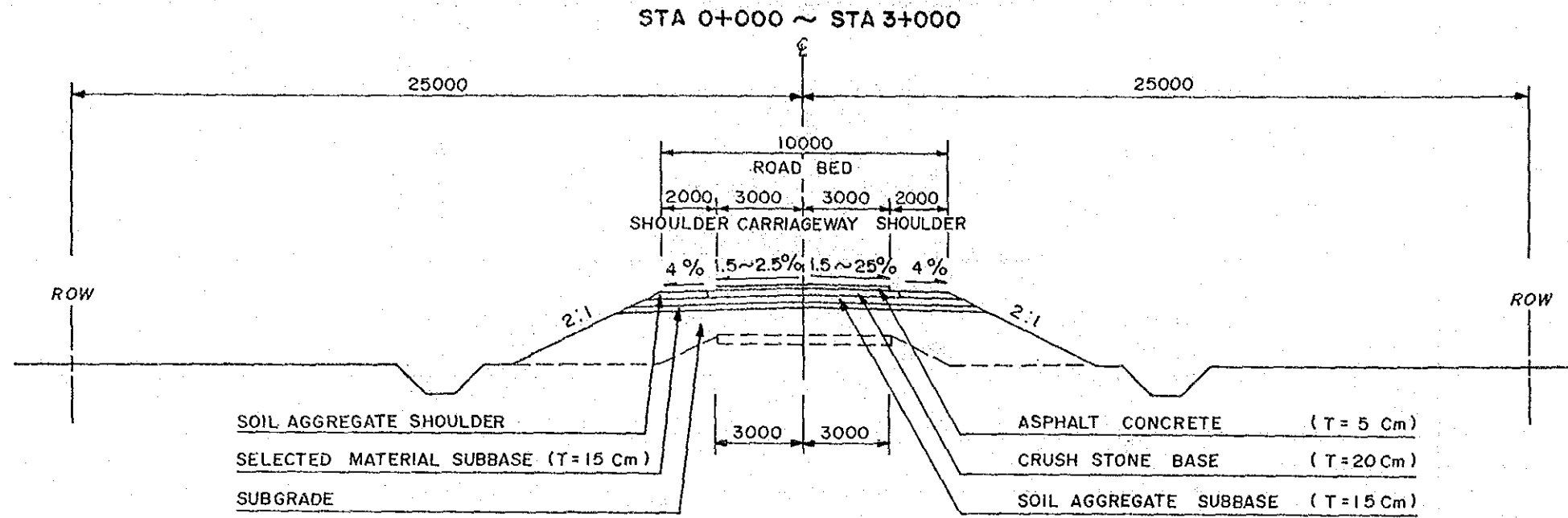
	PROJECT ROUTE		PROVINCIAL HIGHWAYS
	DIVIDED HIGHWAYS		CHANGWAT , AMPHOE
	NATIONAL HIGHWAYS		



4) PROFILE OF PROJECT
PROJECT NO. NC-5: SHORT CUT ROUTE 4~406

STATION (KM)		0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30										
VILLAGE ROAD INTERSECTION		<div style="display: flex; justify-content: space-between;"> J. Rt. 4 KHAO WANG J. Rt. 406 </div>										
LAND USE		PLANTATION										
TERRAIN		FLAT				ROLLING						
FLOODING LENGTH												
EXISTING CONDITIONS	RIGHT OF WAY	9.00 M										
	ALIGNMENT	HOR.	STRAIGHT									
		VER.										
	CROSS SECTION	6.00 M (PWD)										
	SURFACE	SA										
BRIDGES AND (Type - Width - Length (m))	<div style="display: flex; justify-content: space-around;"> 1+200 1+400 2+700 </div>											
BOX CULVERTS (Width - Height - Length (m))	<div style="display: flex; justify-content: space-around;"> RC 6.0 x 10.0 RC 6.0 x 10.0 RC 6.0 x 15.0 </div>											
PROPOSED CONDITIONS	CROSS SECTION	RC, S3 R/W = 50.00 M		NC, S3, 2.0(SA) + 6.0(ASC) + 2.0(SA) = 10.00M, R/W = 50.00M								
	EMBANKMENT / CUT (Height (m))	<div style="display: flex; justify-content: space-around;"> 2.5(E) 2.5(C) 2.5(E) </div>										
	BRIDGES (Type - Width - Length (m))	<div style="display: flex; justify-content: space-around;"> 0+000 1+200 1+400 2+700 4+000 7+000 8+400 9+700 10+500 12+700 13+200 13+700 14+200 15+900 17+300 </div>										
		<div style="display: flex; justify-content: space-around;"> RC 10.0 x 10.0 RC 10.0 x 10.0 RC 10.0 x 15.0 RC 10.0 x 20.0 RC 10.0 x 10.0 RC 10.0 x 15.0 RC 10.0 x 10.0 RC 10.0 x 10.0 RC 10.0 x 10.0 RC 10.0 x 10.0 RC 10.0 x 10.0 </div>										

5) TYPICAL CROSS SECTION



7) Construction Schedule

Project NC-5 Short Cut Route (4-406)

year and Month	First Year												Second Year												Third Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Work Items																																				
Land Acquisition	=====																																			
Preparatory Works	=====																																			
Earth Works													=====																							
Pavement Works																									=====											
Bridge Works													=====																							
Miscellaneous Works													=====												=====											
Clearing -Up																									=====											
Percentage Of Disbursement (%)	36 %												40 %												24 %											

8) Economic Evaluation

Project NC-5 Short Cut Route (4-406)

(unit ; 1000 Baht)

Year	Conct- ruction Cost	Mainte- nance Cost	Total Cost	VOC Saving	Time Saving	Balance	Sensi. Analysis 0.8 Benefit= Cost= 1.2
1990	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0
1993	56,730	0	56,730	0	0	(56,730)	(68,076)
1994	43,253	0	43,253	0	0	(43,253)	(51,904)
1995	18,812	0	18,812	0	0	(18,812)	(22,574)
1996	0	189	189	44,284	21,256	65,351	52,205
1997	0	189	189	48,599	42,709	91,119	72,820
1998	0	189	189	52,914	64,162	116,887	93,434
1999	0	189	189	57,230	85,614	142,655	114,048
2000	0	189	189	61,545	107,067	168,423	134,663
2001	0	189	189	65,860	128,520	194,191	155,277
2002	0	189	189	67,874	184,714	252,399	201,843
2003	0	189	189	69,888	240,908	310,607	248,410
2004	0	189	189	71,902	297,101	368,814	294,976
2005	0	189	189	73,916	353,295	427,022	341,542
2006	0	189	189	75,930	409,489	485,230	388,108
2007	0	189	189	75,930	409,489	485,230	388,108
2008	0	189	189	75,930	409,489	485,230	388,108
2009	0	189	189	75,930	409,489	485,230	388,108
2010	0	189	189	75,930	409,489	485,230	388,108
Total	118,795	2,835	121,630	993,662	3,572,791	4,444,823	3,507,207
				IRR =		53.78%	43.84%
				NPV (i;12%) =		726,340	
				B/C (i;12%) =		11.26	

PROJECT NC-6

YALA BYPASS

CHANGWAT: YALA

2) ROUTE MAP

3.6 Yala Bypass (NC-6)

1) Summary

The aim of the project is to ease the traffic congestions in the municipal area of Yala city which is caused by the confluence of through traffic on Route 410 with urban traffic in the city center.

"S1" standard is applied to the project with asphaltic concrete carriageway of 7.0 meter width and soil aggregate shoulders of 2.5 meters on both sides.

The bypass diverts from Route 410, 7 kilometers north of the city center of Yala, and joins again to Route 410, 5 kilometers south of the city center. The length of the project is 16.7 kilometers comprising reconstruction of the existing PWD road of 6.5 kilometers and new construction of 10.2 kilometers. Two long bridges are required to cross the Pattani River. Since most part of the project is in flood prone area of the Pattani river basin, height of embankment is planned at three meters to keep the traffic free from flooding disturbance.

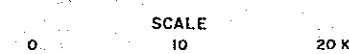
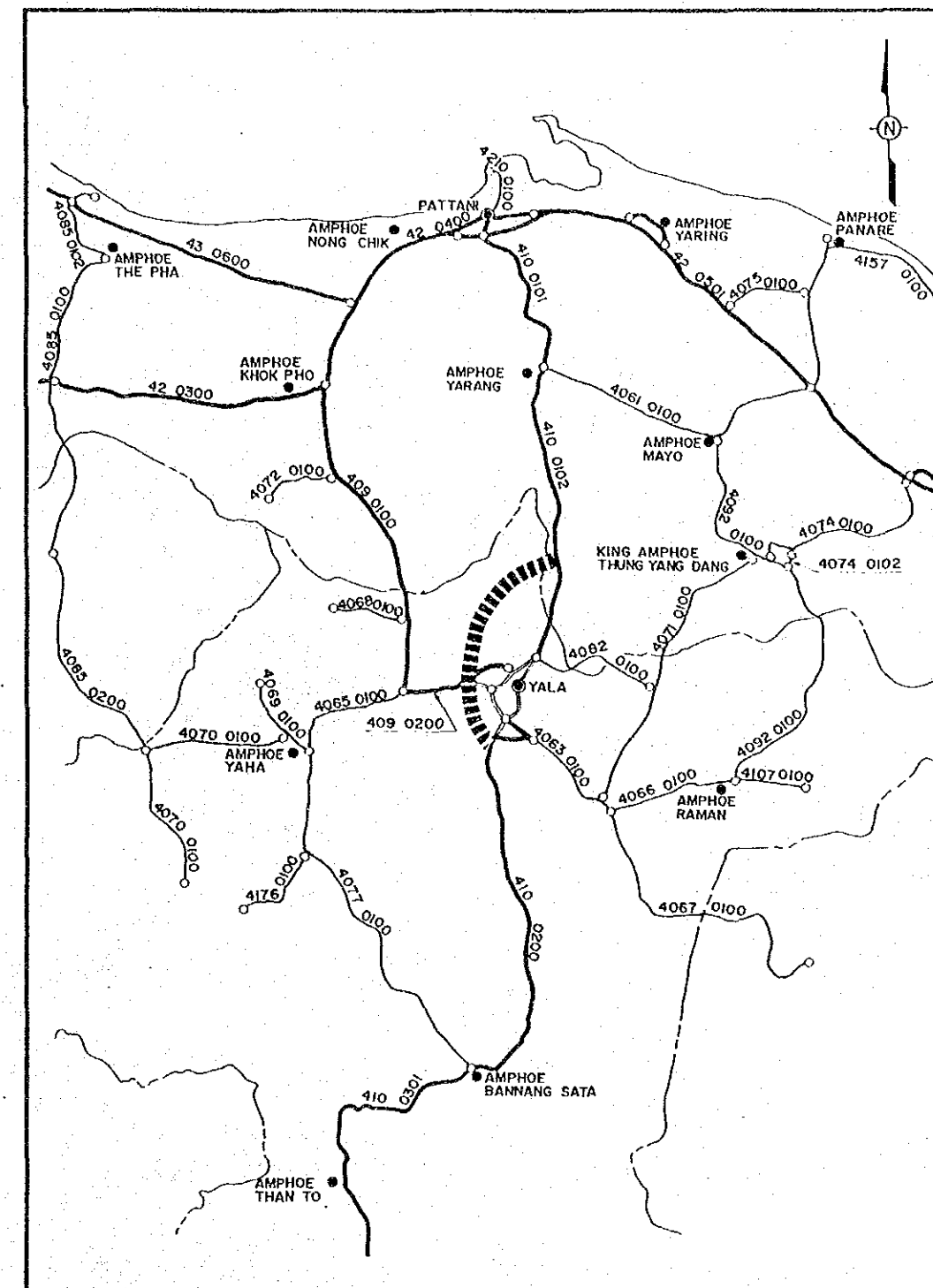
The EIRR is calculated at as low as 4.1 % because of the high cost incurred by reconstruction of the existing bridge.

NC-6	Description
Changwat	: Yala
Name or Location	: Yala Bypass
Road Class	: S1
Cross Section (m)	: 2.50+7.00+2.50 (6.00:PWD)
Surface Type	: SA /ASC / SA
Length: Total	: 16.7 km
DOH Road	: 10.2 km:New
Others	: 6.5 km:PWD

AADT<'96/'01/'06>	: 1,100 / 2,100 / 3,100

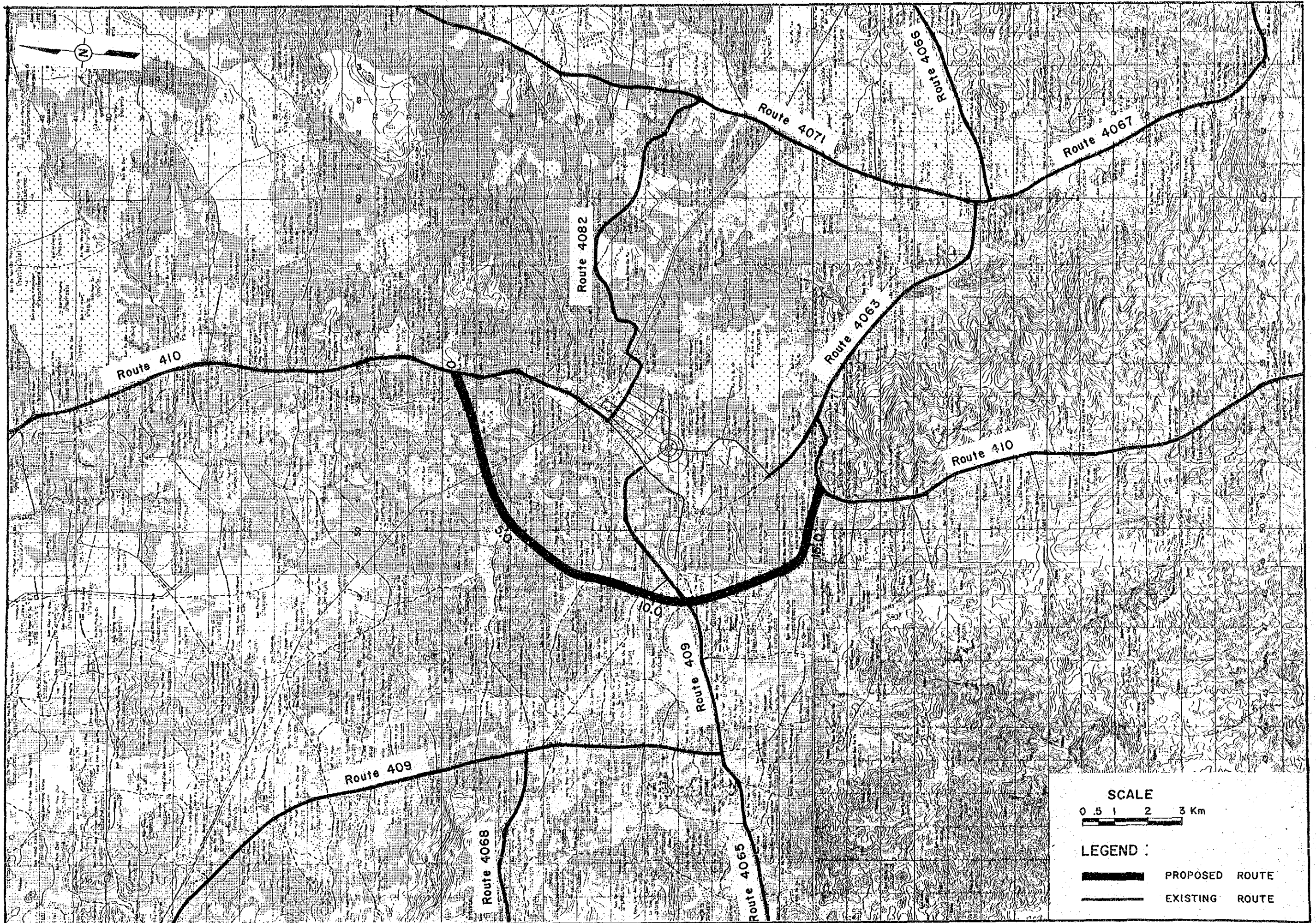
Financial Cost	: 342.3 million baht
NPV	: -99.0 million baht (12% discount rate)
B/C	: 0.4 (12% discount rate)
EIRR	: 4.1 %

(): Existing Condition or Value



LEGEND :

	PROJECT ROUTE		PROVINCIAL HIGHWAYS
	DIVIDED HIGHWAYS		CHANGWAT , AMPHOE
	NATIONAL HIGHWAYS		



4) PROFILE OF PROJECT

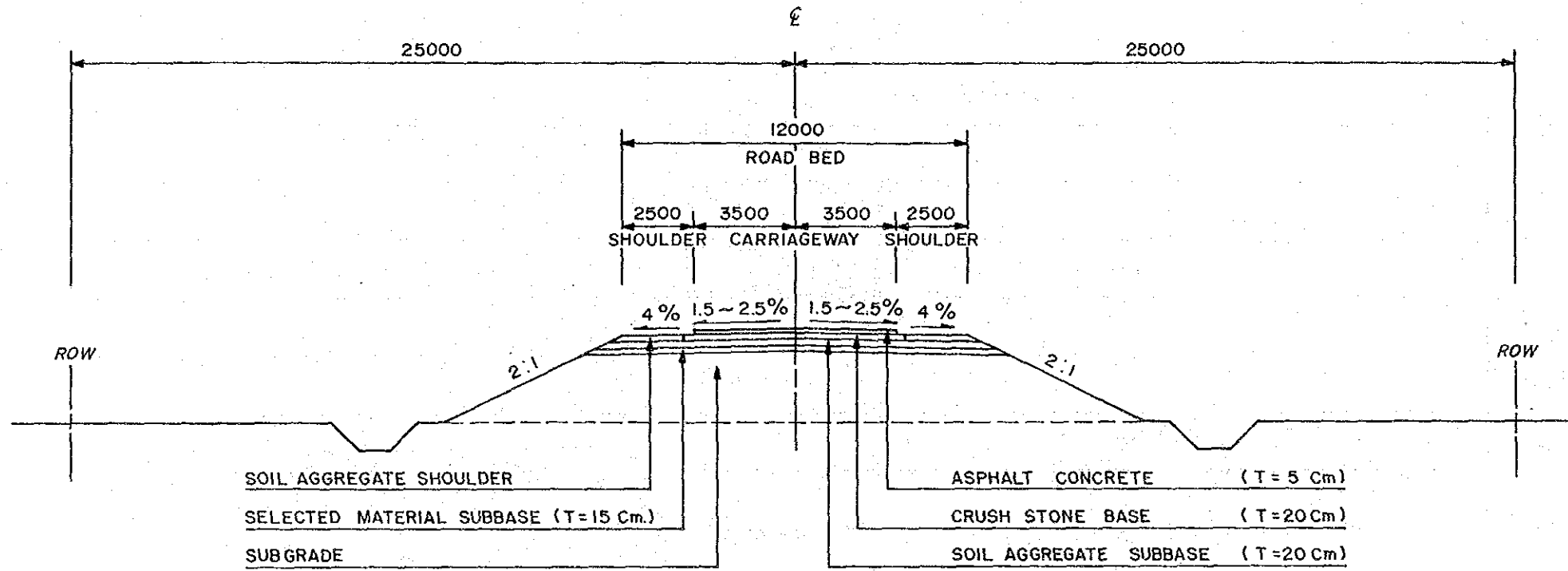
PROJECT NO. NC-6: YALA BYPASS

STATION (KM)		0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30									
VILLAGE ROAD INTERSECTION		J. Rt. 410 9+500 J. Rt. 409 10+800 J. Rt. 410 16+700									
LAND USE		PLANTATION									
TERRAIN		FLAT									
FLOODING LENGTH											
EXISTING CONDITIONS	RIGHT OF WAY	9.00 M									
	ALIGNMENT	HOR. VER.									
	CROSS SECTION	6.00 M (PWD)									
	SURFACE	SA									
	BRIDGES AND (Type - Width - Length (m))										
	BOX CULVERTS (Width - Height - Length (m))	5+800 7+700 RC 6.0 x 10.0 RC 6.0 x 20.0									
PROPOSED CONDITIONS	CROSS SECTION	NC, SI R/W = 50.00M		RC, SI R/W = 50.00M				NC, SI, 2.5(SA) + 7.0(ASC) + 2.5(SA) = 12.0M R/W = 50.00M			
	EMBANKMENT / CUT (Height (m))	3.0 (E)									
	BRIDGES (Type - Width - Length (m))	0+000 0+600 2+500 3+000 5+800 7+700 9+500 13+700 16+700 PC 10.0 x 250.0 (PATTANI RIVER) RC 10.0 x 20.0 RC 10.0 x 10.0 RC 10.0 x 20.0 RC 10.0 x 30.0 PC 10.0 x 250.0 (PATTANI RIVER)									

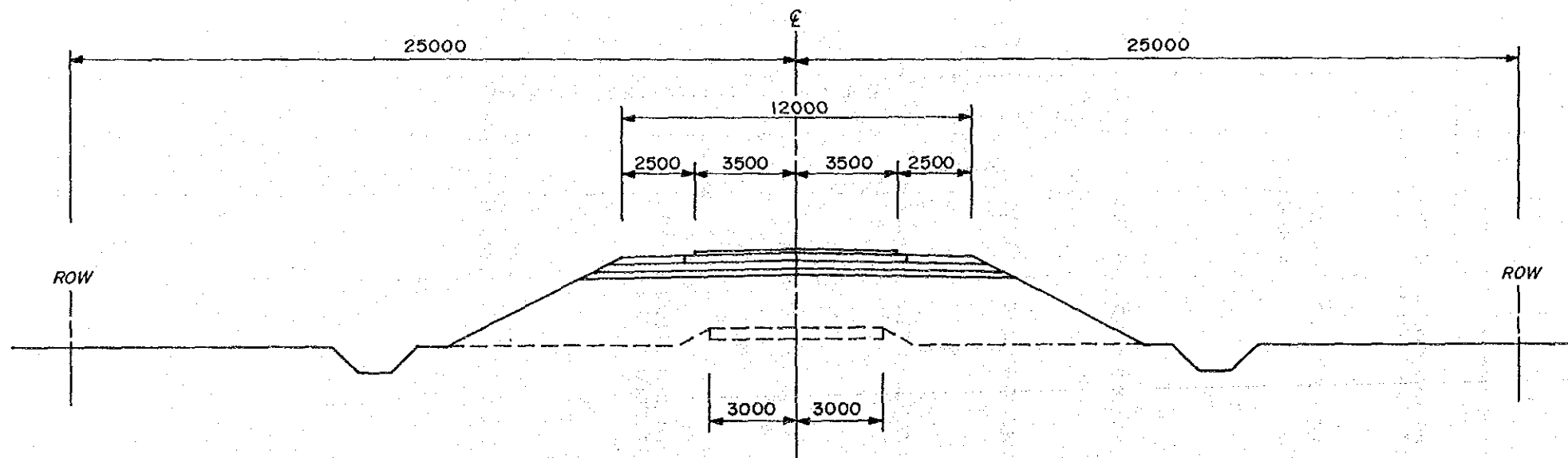
5) TYPICAL CROSS SECTION

STA 0+000 ~ STA 3+000

STA 9+500 ~ STA 16+700



STA 3+000 ~ STA 9+500



7) Construction Schedule

Project NC-6 Yala Bypass

year and Month	First Year												Second Year												Third Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Land Acquisition	=====																																			
Preparatory Works	=====																																			
Earth Works													=====												=====											
Pavement Works																									=====											
Bridge Works													=====												=====											
Miscellaneous Works													=====												=====											
Clearing -Up																									=====											
Percentage of Disbursement (%)	34 %												38 %												27 %											

8) Economic Evaluation

Project NC-6 Yala Bypass

(unit : 1000 Baht)

Year	Const- ruction Cost	Mainte- nance Cost	Total Cost	VOC Saving	Time Saving	Balance Benefit= Cost=	Sensi. Analysis 0.8 1.2
1990	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0
1993	137,941	0	137,941	0	0	(137,941)	(165,529)
1994	80,273	0	80,273	0	0	(80,273)	(96,327)
1995	79,611	0	79,611	0	0	(79,611)	(95,534)
1996	0	186	186	612	1,416	1,842	1,399
1997	0	186	186	1,128	2,611	3,553	2,768
1998	0	186	186	1,644	3,806	5,264	4,136
1999	0	186	186	2,160	5,000	6,974	5,505
2000	0	186	186	2,676	6,195	8,685	6,874
2001	0	186	186	3,192	7,390	10,396	8,242
2002	0	186	186	6,268	14,510	20,592	16,399
2003	0	186	186	9,343	21,630	30,788	24,556
2004	0	186	186	12,419	28,751	40,983	32,712
2005	0	186	186	15,494	35,871	51,179	40,869
2006	0	186	186	18,570	42,991	61,375	49,026
2007	0	186	186	18,570	42,991	61,375	49,026
2008	0	186	186	18,570	42,991	61,375	49,026
2009	0	186	186	18,570	42,991	61,375	49,026
2010	0	186	186	18,570	42,991	61,375	49,026
Total	297,825	2,790	300,615	147,786	342,135	189,307	31,199
						EIRR = 4.13%	0.68%
						NPV (i;12) (99,025)	
						B/C (i;12) 0.43	