

PUBLIC

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

CHILE

SOUTHERN ROUTE I STAGE

(CH0126)

LOAN PROPOSAL

DECEMBER 1984

Datos Socioeconómicos Básicos de Chile

1. Datos Generales

Población total estimada a mitad de año (mlles) 1983	11.682,3
Porcentaje de población urbana	82,1
Extensión territorial (Km2) miles	756.626,0
Densidad-habitantes por Km2 (1983)	15,4
Tasa de crecimiento demográfico (1970-82) %	
Todo el país	1,7
Región metropolitana de Santiago	2,5
Producto interno bruto/hab (US dólares de 1980) 1980	1.591,0
Tasa de natalidad por mil habitantes (1981)	23,4
Tasa de mortalidad por mil habitantes (1981)	6,2
Tasa de mortalidad infantil por mil nacidos vivos (1981)	27,0
Años de expectativa de vida al nacer (1975-80)	65,7
Población con acceso a agua potable 1980 (%)	84,0
Habitantes por médico (1980)	
Todo el país	1.120,0
Santiago	621,0
Alfabetismo % (1979)	94,0
Consumo de energía per cápita en Kwh. (1976)	880,0
Tasa de cambio (pesos por US\$ dolar, promedio dic., 1982)	72,39

Fuerza de Trabajo a/

Total (miles de personas) (todo el país)	
(julio-setiembre, 1983)	3.704,0
Gran Santiago (abril-junio, 1983)	1.455,4

Empleo (todo el país, julio-setiembre, 1983) (miles de personas)

Ocupados	3.053,7
Desocupados	650,3
Censantes	516,9
Buscan trabajo por primera vez	133,4

Composición de la Población Ocupada por Actividad Económica (Todo el país) (% de la fuerza de trabajo)

Agricultura, caza, silvicultura y pesca	18,2
Canteras y minas	1,9
Industrias manufactureras	12,6
Construcción	2,6
Comercio	17,4
Servicio de gobierno y financieros	13,2
Servicios personales y de los hogares	13,2
Servicios comunales y sociales	11,9
Transporte, almacenaje y comunicaciones	6,6
Actividades no bien especificadas	2,4
Tasa de desocupación (promedio nacional	
julio-setiembre 1983) (%)	17,6
Tasa de desocupación Gran Santiago (abril-junio 1983) (%)	19,5

a/ Personas de 12 años de edad y más. Excluye estudiantes, dueñas de casa, incapacitados, jubilados y otros dependientes que no desean trabajar.

2. Cuentas Nacionales	1976	1978	1979	1980	1981	1982	1983	*	
PIB (millones de pesos corrientes)	128.676,1	487.506,4	772.200,9	1.075.269,0	1.288.902,0	1.228.700,0	1.550.000,0		
PIB (millones de pesos de 1977)	261.945,1	311.417,3	337.207,5	363.446,0	384.232,0	329.155,0	326.401,0		
	Composición a/			Tasa anual de crecimiento b/					
	1974	1979	1980	1976-78	1979	1980*	1981	1982	1983*
Producto interno bruto	100,0	100,0	100,0	7,2	8,3	7,5	5,3	-14,3	-1,0
<u>Por Gasto</u>									-6,6 c/
Consumo	82,0	81,8	84,5	6,8	8,0	4,0	12,2	-13,5	-5,8
Privado	66,3	69,3	72,2	8,1	6,5	6,5	14,2	-14,4	-5,8
Público	15,7	12,5	12,3	1,6	-9,2	-5,9	0,3	-7,8	-5,8
Inversión interna bruta	17,3	21,3	18,0	14,0	30,8	-0,2	5,7	-65,4	15,3
Inversión fija	16,9	15,3	17,2	6,0	16,8	24,4	14,7	-37,1	-14,4
Variación de existencias	0,4	6,0	0,8	99,7	144,6	-80,9	-19,7	-179,6	79,3
Exportaciones de bienes y servicios	20,4	23,3	21,1	15,8	14,1	12,7	-5,3	10,9	1,4
Importaciones de bienes y servicios	19,7	26,4	23,6	17,9	22,7	18,7	14,7	-32,9	-9,5
<u>Por Origen</u>									
Agricultura y silvicultura	5,3	6,7	6,9	0,9	5,6	1,8	5,3	-2,3	-0,9
Pesca	0,4	0,6	0,5	22,3	14,3	7,5	13,6	8,4	n.d.
Minería	12,0	9,8	8,7	5,5	5,4	5,9	8,0	5,6	-2,0
Manufactura	29,5	21,2	21,5	7,9	7,9	6,2	2,6	-21,6	3,0
Construcción	6,1	4,3	5,3	-6,1	23,9	25,7	21,1	-29,0	0,2
Electricidad, gas y agua	1,1	2,0	2,1	6,1	6,8	5,9	2,1	-0,2	3,7
Transporte, almacenaje y comunicaciones	5,7	5,2	4,8	8,0	9,0	11,1	1,1	-9,9	-3,1
Comercio	14,1	16,7	16,1	15,8	11,1	10,8	6,6	-17,8	-4,1
Otros	25,8	33,5	34,1	11,1	7,9	6,6	3,4	-13,6	1,0

a/ Calculado con cifras corrientes.

b/ Calculado con cifras constantes de 1977.

c/ Primer semestre.

* Estimado.

Fuente: ODEPLAN

7-VI-84

3. Comercio Exterior	(En millones de US\$ dólares)					Tasas de crecimiento anual				
	1975	1980	1981	1982	1983 *	1976-78	1980	1981	1982	1983*
<u>Exportaciones de Bienes</u>										
(FOB)	1.552	4.705	3.906	3.706	3.851	17,1	22,7	-17,0	-5,1	3,9
Tradicional	1.161	3.114	—	—	—	13,3	27,3	—	—	—
No tradicional	391	1.591	—	—	—	28,4	14,5	—	—	—
Agricultura	86	340	365	375	325	33,4	28,8	7,4	2,7	-13,3
Manufactura	391	1.751	1.280	1.207	1.193	26,1	25,2	-26,9	-5,7	-1,2
Mínimo	1.075	2.615	2.261	2.124	2.332	12,1	20,4	-13,5	-6,1	9,8
<u>Importaciones de Bienes</u>										
(CIF) a/	1.708	5.124	7.368	4.023	3.178	22,4	30,5	43,8	-45,4	-21,0
Consumo	325	1.226	1.907	949	497	23,8	56,1	55,5	-50,2	-47,6
Intermedios	904	2.913	3.208	1.996	1.758	27,6	15,0	10,1	-12,0	-12,0
Capital	479	985	1.249	584	399	25,0	44,9	26,8	-53,2	-31,7

a/ Excluye importaciones realizadas por zonas francas.

* Preliminar.

Fuente: Banco Central de Chile.

4. Balanza de Pagos	Millones de US dólares						
	1975	1978	1979	1980	1981	1982	1983 a/
I. <u>Saldo en Cuenta Corriente</u>	-578	-888	-1.189	-1.971	-4.814	-2.245	-1.068
Exportaciones FOB	1.552	2.456	3.835	4.705	3.960	3.578	3.851
Importaciones FOB	1.708 b/	3.158	4.190	5.469	6.558	3.373	2.837
Balanza Comercial c/	-156	-702	-355	-764	-2.598	205	1.014
Servicios netos	-432	-243	-914	-1.320	-2.316	-2.544	-2.174
Transferencias netas	10	57	80	113	100	94	92
II. <u>Cuenta de Capital</u>	50	1.582	2.247	3.165	4.830	1.060	n.d.
Sector público (neto)	58	607	421	85	272	156	n.d.
Sector privado (neto)	233	746	1.803	2.865	4.497	589	n.d.
Otros	107	230	23	215	61	315	n.d.
III. <u>Errores y Omissiones</u>	21	-71	-11	50	115	-77	n.d.
IV. <u>Cambios en Reservas Internacionales Netas</u>							
(-aumentos)	275	-624	-1.047	-1.217	—	—	—
Banco Central de Chile	344	-712	-1.047	-1.217	-139	1.263	541
Reservas internacionales netas (saldo) d/	-388	851	1.898	4.073	3.775	2.577,5	2.023
Tipo de cambio (pesos por US\$)	4,90	31,67	37,25	39,0	39,0	50,91	78,8
Saldo en cuenta corriente/PIB %	13,8	5,8	5,8	6,3	14,6	9,1	6,6

a/ Estimaciones preliminares.

b/ Valor CIF

5. Finanzas Públicas

	Gobierno Central (% PIB)					Sector público (% PIB) a/					
	1975	1979	1980	1981	1982	1975	1978	1979	1980	1981	1982
Ingresos corrientes	24,7	23,9	26,0	26,7	30,5	65,3	69,2	70,3	—	—	—
(ingresos tributarios)	(24,2)	(22,9)	(24,1)	(23,1)	(26,5)	(32,2)	(26,1)	(29,1)	—	—	—
Gastos corrientes	19,7	17,5	19,5	21,9	26,9	58,8	60,3	60,5	—	—	—
Cuenta corriente, déficit (-)											
surplus (+)	5,0	6,1	6,5	4,8	3,6	6,5	8,9	9,8	10,6	5,5	0,2
Gastos de capital	4,8	1,7	1,4	1,0	2,0	1,7	1,6	3,4	7,3	7,9	7,2
Déficit (-) superávit (+) global	0,2	4,4	5,0	3,2	1,6	4,8	7,3	6,4	5,5	1,1	-2,7

a/ Incluye Institutos Seguridad Social, Corfo, Corvi, etc., municipalidades y otros.

Fuente: Ministerio de Hacienda, Dirección de Presupuesto.

6. Dinero y Crédito

<u>Dinero y Crédito</u>	(millones de pesos)					Tasa de crecimiento anual (%)				
	al 31 de diciembre									
<u>Sistema Monetario</u>	1980	1981	1982	1983 b/		1979	1980 b/	1981	1982	1983 b/
<u>Dinero del Sector Privado (M₁)</u>	75.942	82.513	75.048	86.730		—	—	8,7	-9,1	15,6
Moneda en circulación	32.580	39.296	36.908	41.210		11,7	50,7	20,6	-6,0	11,7
Depósitos a la vista	43.362	43.216	38.140	45.520		6,9	3,8	-0,3	-11,7	19,3
Depósitos a plazo	124.146	225.210	245.376	205.670		86,7	79,0	81,4	9,0	-16,6
Dinero sector privado más depósitos a plazo (M ₂)	200.088	307.722	320.424	292.400		41,7	77,1	53,8	4,1	-8,7
<u>Sistema Financiero c/</u>										
Colocaciones en moneda nacional	324.780	529.945	536.989	n.d.		81,8	66,5	63,2	1,3	—
Colocaciones en moneda extranjera (millones de US\$)	5.614	7.954	6.442	n.d.		104,6	69,7	41,7	-19,0	—
<u>Relaciones con el PIB</u>										
M ₁ (%)	5,6	6,0	5,5	n.d.		—	—	—	—	—
M ₂ (%)	15,5	19,3	23,7	n.d.		—	—	—	—	—

a/ Incluye Banco Central de Chile, Banco del Estado y Bancos Comerciales

b/ A noviembre.

c/ Incluye el sistema monetario y otras instituciones financieras.

Fuente: Banco Central de Chile, Gerencia de Estudios.

7. Precios	Promedio anual %						Diciembre a diciembre (%)						
	1975	1978	1979	1980	1981	1982	1975	1978	1979	1980	1981	1982	1983
Consumidor	375,0	40,1	33,4	35,1	19,7	9,9	340,7	30,3	38,9	31,2	9,5	20,7	23,1
Mayorista	482,0	42,9	49,4	39,6	9,1	7,2	410,9	38,9	58,3	28,1	-3,9	39,6	25,2
Deflactor en el PIB	486,1	56,5	44,4	28,8	13,7	20,7	—	—	—	—	—	—	—
Cobre b/	55,94	61,89	89,83	99,17	78,95	67,08 c/	—	—	—	—	—	—	—

a/ Preliminar.

b/ Bolsa de Metales de Londres. Centavos de dólar por libra.

c/ Noviembre.

Fuente: Instituto Nacional de Estadística y Banco Central de Chile.

8. <u>Deuda Pública Externa</u>	(millones de US dólares al final del período)					Composición	
	<u>1975</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1982</u>	
<u>Total Comprometido</u>	4.389,3	5.538,2	5.160,4 a/	5.014,1	5.941,0	100,0	
Desembolsado	3.732,4	4.812,1	4.721,8	4.495,0	5.238,7	88,2	
Proveedores	769,1	564,0	495,3	400,0	469,2	7,9	
Bancos	503,7	2.767,8	2.692,7	2.705,5	3.609,1	60,7	
Bonos y otros	459,2	232,1	249,4	200,9	160,9	2,7	
Organismos internacionales	377,3	495,9	522,0	692,8	835,6	14,1	
BID	(177,2)	(263,3)	(224,8)	(389,4)	(549,2)	(9,2)	
Bilateral	2.280,0	1.478,4	1.200,9	1.015,0	866,2	14,6	
Deuda externa privada a/	1.476,0	3.421,0	6.021,0	10.077,0	10.493,0		
Deuda pública externa/PIB (%)	52,3	23,3	18,6	20,9			
Deuda externa privada/PIB (%) a/	20,4	16,5	22,0	30,5	43,8		
Créditos liquidados Art. 14 b/	—	1.221,4	2.476,8	4.505,9	1.755,5		
Spread promedio anual (%)	—	1,40	1,16	1,07	1,02		
<u>Servicio de la Deuda Externa Total</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984*</u>
Servicio (amortización + intereses) (en millones de US dólares)	1.322,7	1.914,9	2.360,9	3.214,9	3.187,7	2.405,0	2.096,0
Servicio/exportación de bienes y servicios no factoriales %	44,6	41,2	40,4	58,4	63,6	47,5 c/	n.d.

a/ Deuda del sector privado estimada por el Banco Central de Chile.

b/ De la Ley de Cambios Internacionales. Total bruto acumulado en el año.

c/ Después de la Renegociación de la Deuda Externa.

* Proyección.

Fuente: Banco Mundial.

9. <u>Préstamos Aprobados por BID desde 1961 hasta 31 de diciembre de 1983</u>	<u>Millones de US\$</u>	<u>Composición por ciento</u>	<u>Desembolsado (Millones de US\$)</u>	<u>% sobre total comprometido</u>
<u>Total Comprometido</u>	<u>1.552,2</u>	<u>100,0</u>	<u>761,7</u>	<u>49,1</u>
Capital Ordinario	268,5	17,0		
Capital Interregional	1.037,0	66,8		
Fondo para Operaciones Especiales	203,3	13,1		
Fondo Fiduciario de Progreso Social	34,3	2,2		
Otros fondos	9,1	0,6		
<u>Por Sector</u>				
Agricultura y pesca	218,8	14,1		
Industria y minería	442,0	28,5		
Transporte y comunicaciones	256,1	16,5		
Energía	362,0	23,3		
Salud pública	115,4	7,4		
Desarrollo urbano	93,9	6,0		
Educación	28,8	1,9		
Financiamiento de exportaciones	3,8	0,2		
Preinversión	3,4	0,2		
Turismo	28,0	1,9		

Fuente: BID.

7-VI-84

RG2CH/

DATA-CH

CHILE

Ministry of Public Works (MOP)

Southern Road Network Project - First Stage
(CH-0126)

Loan Proposal

I. BASIC DATA OF THE OPERATION

- 1.01 Objectives and Description: The basic objective of the project is to make the necessary investments for achieving the road integration of an extensive area of great economic potential located in the southern region of Chile. This region is at present disconnected from the rest of the national territory because of the lack of overland communications. The objective would be achieved through the construction and upgrading of all-weather roads and sections, both longitudinal and transversal, that would permit road traffic between the important cities of the X and XI regions. It would also promote better integration of these regions with Argentina through transversal roads that unite them at various border posts. In addition, in a second stage that is not the subject matter of this financing, the X and XI regions would be linked to the city of Puerto Montt and the rest of the country by roads. The physical goals of this first stage of the project are the construction of a total of 320 km of roads and sections, the upgrading (consolidation) of 245 km, the paving of 76 km, and the construction of 50 bridges with a total length of 2,235 m.
- 1.02 Total Cost of the Project: US\$102,000,000.
- 1.03 Amount of the Loan: It is recommended that a loan for US\$35,700,000 from the Interregional Capital resources (IC) be granted.
- 1.04 Borrower and Executing Agency: The borrower would be the Republic of Chile and the executing agency, the Ministry of Public Works (MOP) through its Directorate of Roads.
- 1.05 Proposed Terms and Conditions: The terms and conditions of the loan would be as follows:
- | | |
|-----------------------------------|--|
| - Amortization period: | 20 years |
| - Disbursement period: | 4 years |
| - Grace period: | 4 years |
| - Interest: | In accordance with the interest rates in force at the time of each disbursement. |
| - Credit fee: | 1-1/4% annually. |
| - Inspection and Supervision fee: | 1% |

II. EXECUTION OF PREVIOUS LOANS

2.01 The Bank has granted five loans to the Republic of Chile for four highway projects and programs of the Directorate of Roads of the Ministry of Public Works. They are summarized below:

(US\$ millions equivalent)

	<u>Amount</u>	<u>Contract</u>	<u>Disbursed (30/IX/84)</u>	<u>Purpose</u>
98/SF-CH	15,000,000	Oct. 1966	100%	Upgrading Trans-Andean Highway Cost: US\$28,900,000
231/SF-CH	6,500,000	Jan. 1970	100%	Feeder Roads Cost: US\$13,000,000
341/SF-CH	24,500,000	Apr. 1978	100%	Replacement of bridges Cost: US\$49,000,000
78/IC-CH	126,000,000	Oct. 1981	61%	Rehabilitation of
79/IC-CH <u>1/</u>	35,000,000	Oct. 1981	100%	the longitudinal highway Cost: US\$360,000,000

2.02 Loans 78/SF-CH and 231/SF-CH were evaluated in document PR-1179 of June 19, 1981. For their part, loans 341/SF-CH, 78/IC-CH and 79/IC-CH are evaluated in the project report for this operation.

2.03 The evaluation of the last two road programs shows that, given these earlier experiences, the local counterpart contribution for the proposed project will be available. In addition, sufficient allocations have been planned for the maintenance of the roads subsequent to their construction. Furthermore, in accordance with the analysis of the structured system of the Directorate of Roads for meeting maintenance needs, which is based on contracting enterprises for the principal maintenance work, that Directorate is considered satisfactory for carrying out this aspect. Given the importance of this activity and in accordance with the pertinent policy of the Bank, it is recommended that the loan conditions include the necessary stipulations for ensuring that maintenance not only in the sections that are the subject matter of the project, but also in those transversal sections and other roads connected with the construction, consolidation and paving of the first mentioned. 2/ The Directorate will continue, to the satisfaction of the

1/ Complementary Financing.

2/ See Appendix 2 Recommendations and Appendix 3, Annex A of the Loan Contract.

Bank, to appropriately inspect the works through firms contracted for that purpose, except where the Directorate otherwise justifies it. Finally, it is concluded that the MOP has rapidly, economically and efficiently executed the earlier programs financed out of IDB resources.

III. FRAME OF REFERENCE 1/

A. Background

- 3.01 As shown in the map on page 5, the area of influence of the southern road network project covers, running from north to south, a substantial part of the provinces of Llanquihue and Palena located in the southern part of the X region and all of the XI region. The sector of the X region affected by the project is the "mainland" sector. The area of influence of the project measures 137,000 km², of which 108,000 km² are in the XI region and 29,000 km² in the sectors of the X region served by it. The topography of the area of influence is similar throughout the zone and is substantially different from that of the rest of the country.
- 3.02 Communications in the southern zone have been traditionally limited by the topography of the region, which has led to a relative dispersion of the population in small settlements and has kept the rural population, most of which are settlers, extremely isolated. The rural population has historically depended on makeshift systems of sea and air transportation whose coverage is insufficient because of the large geographical area they must serve and both topographical and climatic difficulties.
- 3.03 Regional transportation, both of goods and of passengers, has been increasing; there was a reversal of this trend only in 1982, which was due to the serious recession in that year. However, the growth of the product of the transportation sector has been higher than the overall growth of the regional economy. The growth in the level of activity is primarily due to the incorporation and construction of new means and infrastructure that permit greater dynamism in transportation; the construction of road sections in the case of road infrastructure; and in the case of services, the incorporation of ferries and new airlines. The growth of transportation has occurred for the most part in areas that are relatively well developed but not in remote areas.
- 3.04 The area of influence of the project has a road network of 2375 km, which represents an increase of 50% relative to the network in 1978. The total length of bridges is 5,000 m, an increase of 28.6% with effect from 1978.

1/ Recent economic trends in the Republic of Chile are presented in Annex III-1 of the Project Report.

B. Regional Transportation in the Area of Influence of the Project

- 3.05 The means of transportation used in the region exhibit special features as regards technology and types of service, which are characteristic of areas with difficult topography like the area of influence of the project. For the transportation of passengers, air and sea transportation are most used. For the transportation of goods, the most frequently used types of transportation are sea or lake transportation or a combination thereof. However, it is difficult to make an exhaustive separation in this regard since in isolated areas air transportation is intensively used for transporting goods. To analyze the means of transportation, a definition of geographical areas within the area of influence of the project, by level of economic activity and most frequently used means of transportation, may be adopted and it will be found that there are three areas: one central, another northern and finally one southern and island area. 1/

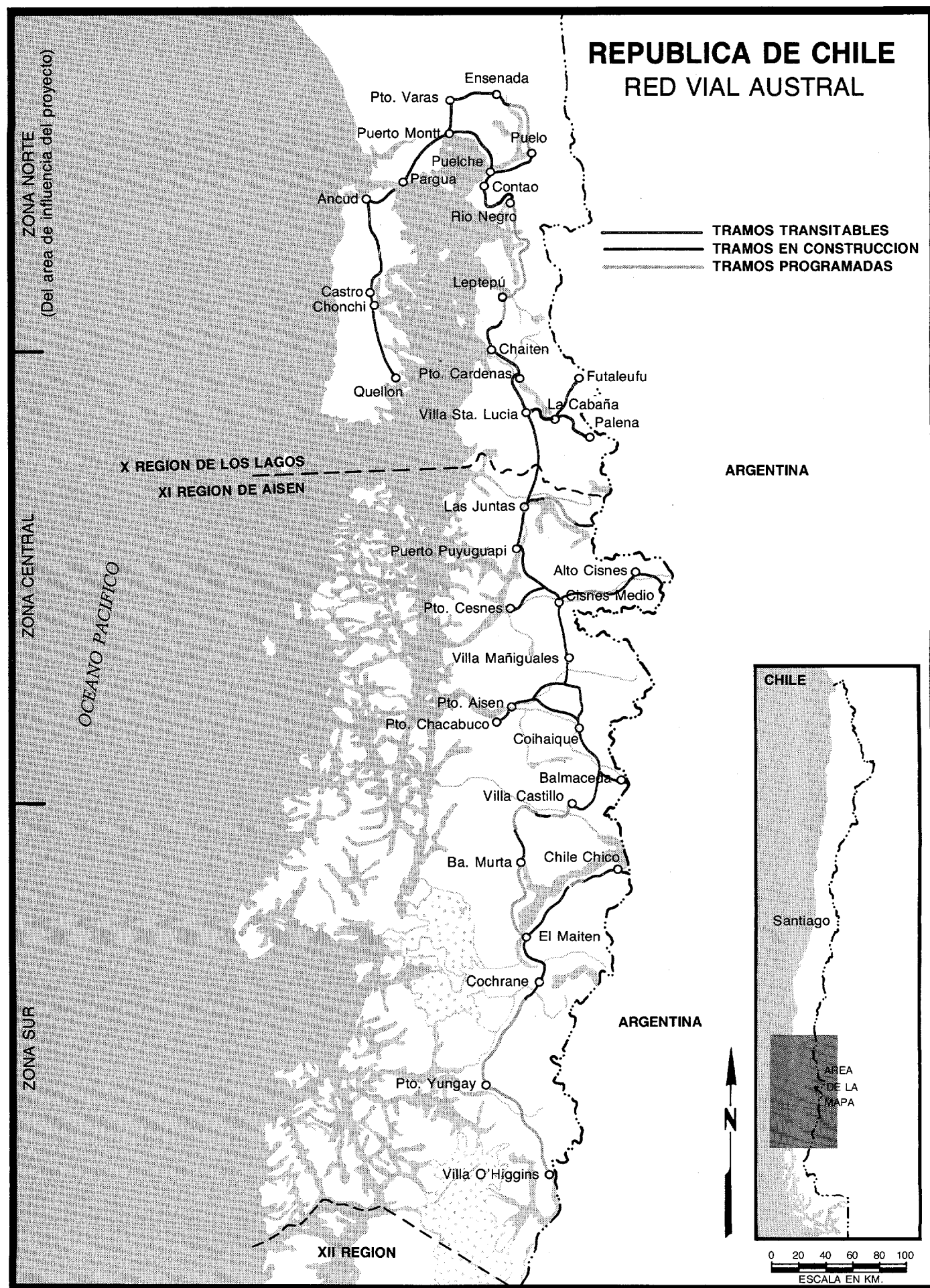
1. Central area

- 3.06 The central part of the area of influence of the project contains most of the services, all the mining activity, and a large part of regional commerce. It also contains most of the population affected by the project and the larger urban centers. The means of transportation most used is overland transportation, since it is the only area in the region that is united longitudinally and transversally by roads. Most of the journeys, the origin or destination of which is extraregional, are concentrated in the central area. In addition, Puerto Chacabuco is located in this area; it is the only port capable of receiving deep draught vessels. There are also two airports that receive all the extraregional air traffic.
- 3.07 The sea traffic in the central area is primarily through Puerto Chacabuco, through a commercial port and a ramp that serves ferries. In practice, all the port movement is coastal trade, but this situation is beginning to change because of the impetus to exports given by mining activity in the region.
- 3.08 The principal destination of interregional air transportation is also the central area where the Balmaceda airport is located. It has a runway of 2,100 m. and can serve aircraft of the Boeing 727 type. The second airport of importance, Teniente Vidal, which also serves the city of Coyhaique, is used by small aircraft and has a gravel runway 1,500 m long. This airport is used for both regional and interregional flights. The air traffic is substantial and at present the interregional service is provided by many small air companies that undoubtedly constitute an important logistic support for the development of both the southern road network and the activities this project will make possible in the future.

1/ See map on the following page.

REPUBLICA DE CHILE

RED VIAL AUSTRAL



- 3.09 As already stated, extraregional overland traffic has traditionally been carried by roads on the Argentine side, although recently this traffic has begun to compete with the Chilean maritime transportation, both traditional and by ferry.

2. Northern area

- 3.10 The northern part of the area of influence of the project, which is located in the X region, is at present being integrated longitudinally to the center of the XI region through the construction of a road that links Chaitén to Coyhaique. In so doing it, connects the townships of Cisnes, Puyuhuapi and Las Juntas, which are thus integrated into the extraregional communications through the central area. The effect of this road has already made itself felt in these localities, which show substantial population growth rates. The continuation of this road towards the north between Chaitén and Ralún, which would be constructed as part of the second stage of the project, will complete the overland connection with the rest of the country.
- 3.11 Maritime transportation in the northern area, through small ports, is provided by small vessels and ferries.
- 3.12 Air transportation in this area, used by small aircraft carrying 4-10 passengers, is supported by a network of airports that play an important role in the communications of the zone and provide essential services to a large number of isolated population centers.

3. Southern area

- 3.13 The southern and insular part of the area of influence of the project covers the area of Lago General Carrera, including the communes of Villa Castillo, Bahía Murta, Chile Chico, Puerto Tranquilo and el Maitén.
- 3.14 Its population is approximately 8,000 persons. The main economic activity is stock raising, which is practised at the subsistence level and extensively.
- 3.15 The area is that to which access is the most difficult and it has the worst communications, given the lack of infrastructure and the distances that must be covered on horseback or on foot to obtain essential products, bring out its production, or obtain essential services. It has only 144.2 km of roads. For passengers the connection with the central area is by air through a regular subsidized service between Coyhaique-Chile Chico-Cochrane-Villa O'Higgins and Tortel. There is also barge transportation between Puerto Ibáñez and Chile Chico.
- 3.16 The road center of the southern area is located in the locality of Cochrane and from there is connected to Puerto Bertrand on the Baker river, Puerto Guadal on the Lago General Carrera, and the border crossing point of Roballos. There is also a road that runs along the southern bank of the Lago General Carrera between Guadal and Chile Chico; only a section between Mallín Grande and Fachinal (20 km) and two bridges are lacking.

C. Conclusion

- 3.17 It is believed that the execution of the southern road network will be an important step towards promoting the integration and economic development of the region as a result of the construction of the project and that it will eliminate its continuing isolation and help promote settlement and increase the population numbers. When the efficiency of the services and social programs carried out in the region as a result of the project is increased, the population will become more dense and stable and it will be provided with a link and access to services essential to the welfare of inhabitants and will consequently improve their living, educational, and employment expectations and, in general, their possibilities of overcoming the underdevelopment of the southern region.
- 3.18 The execution of the project would lead to an increase in the output of the productive sectors and their modernization since they will be able to count on overland transportation, which is an efficient means of providing those sectors with machinery and equipment, raw materials, and manpower, as well as for the marketing of their production, which has been restricted and technically depressed because of the lack of local markets and geographical isolation. It is believed that the sectors that would primarily benefit would be the forestry, stockraising, agriculture, mining and fishery sectors. The impetus of these sectors would give the population the necessary economic stimulus to forego migration to the north of the country and abroad.

IV. THE PROJECT

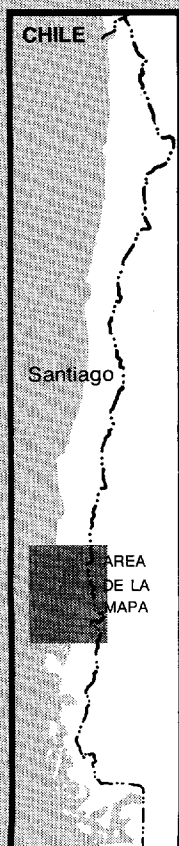
A. Objectives of the Project

- 4.01 The basic purpose of the project is to make the necessary investments for the road integration of an extensive region of great economic potential located in the southern area of Chile. This region is now disconnected from the rest of the national territory because of the lack of overland means of communication. This purpose would be achieved through the construction and improvement of all weather roads and sections, both longitudinal and transversal, that would permit overland traffic between the important cities of the X and XI region. It would also promote better integration of this area with Argentina through transversal roads that would connect them at different border points. In addition, in a second stage of the project the X and XI regions would be connected with the city of Puerto Montt and the rest of the country by road. 1/

1/ See map on the following page.

REPUBLICA DE CHILE RED VIAL AUSTRAL

OCEANO PACIFICO



X REGION DE LOS LAGOS
XI REGION DE AISEN

- CAMINOS CON PAVIMENTO SUPERIOR
- - - - - CAMINOS CON AGREGADO PETREO
- CAMINOS DE TIERRA
- CAMINOS CONSOLIDAR O PAVIMENTAR
- - - - - CAMINOS POR CONSTRUIR
- □ □ □ CAMINOS PROGRAMADOS

0 10 20 30 40 50
ESCALA EN KM.

ARGENTINA

ARGENTINA

LIMITE



REPUBLICA DE CHILE RED VIAL AUSTRAL

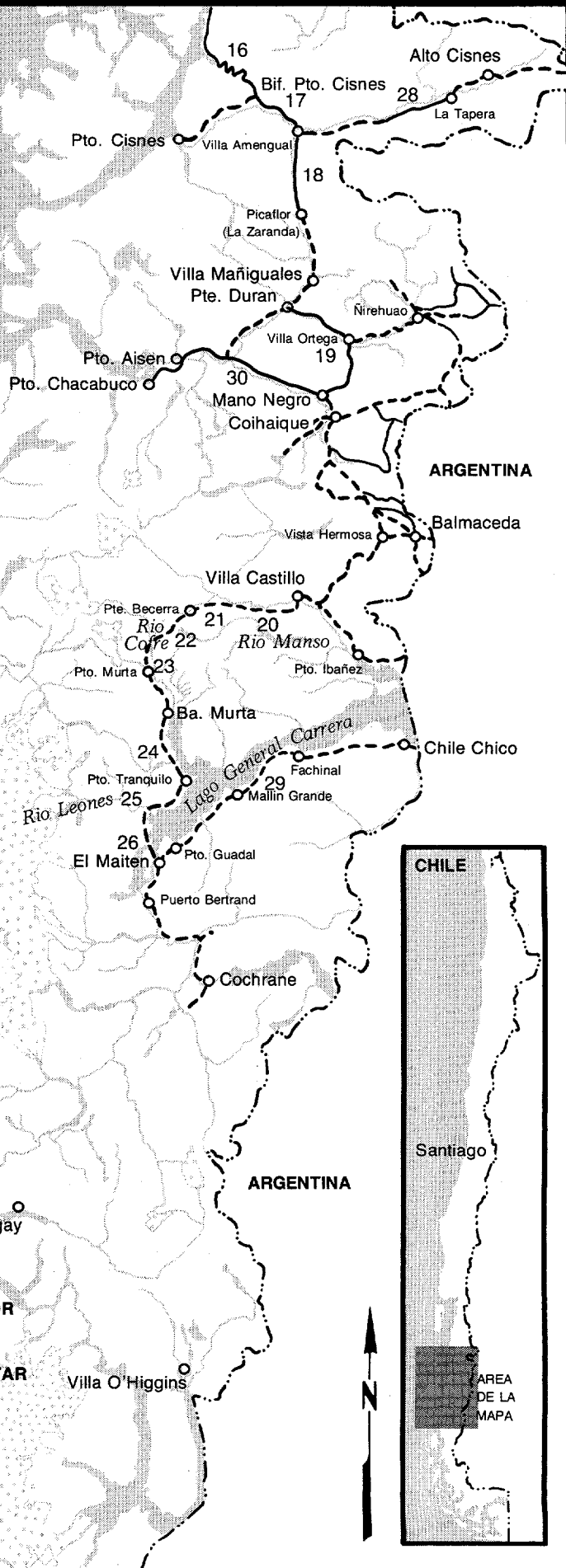
OCEANO PACIFICO

- CAMINOS CON PAVIMENTO SUPERIOR
- CAMINOS CON AGREGADO PETREO
- CAMINOS DE TIERRA
- CAMINOS CONSOLIDAR O PAVIMENTAR
- CAMINOS POR CONSTRUIR
- □ □ □ CAMINOS PROGRAMADOS

XI REGION
DE AISEN

XII REGION

0 10 20 30 40 50
ESCALA EN KM.



B. Description of the Project

4.02 The first stage of the project that is the subject matter of this financing consists in the construction of a total of 320 km of roads and sections, the upgrading (consolidation) of 245 km, and the paving of 76 km, as well as the construction of 50 bridges totalling 2,235 m in length.

1. Physical goals of the project

4.03 The works to be financed in this first stage of the project are described below:

- (a) Construction of 12 sections of penetration roads, 241 km in length, with 33 reinforced concrete bridges totaling 1,690 m in length.
- (b) Consolidation of 223 km of various sections of the existing southern road network. This item includes the construction of 4 reinforced concrete bridges totaling 100 m.
- (c) Construction of the two outstanding sections of the existing transversal roads, with a total length of 79 km. This construction includes 9 reinforced concrete bridges totaling 260 m in length.
- (d) Consolidation of a section of transversal road 2, 21.6 km in length, and the construction of four bridges totaling 185 m.
- (e) Paving of the road between Puerto Chacabuco and Coyhaique, with a total length of 76 km. This work includes the construction of a tunnel 210 m in length.

4.04 All the sections or roads to be constructed or upgraded will join up with roads of identical or better specifications and will serve large populations in the area of influence of the project.

SOUTHERN ROAD NETWORK
Project Summary

		Type of Construction	Length of Construction km	No. Bridges	Total Length Bridges m	Total Cost US\$000
1	Ralun-Cochamó	Penetration	7.0	5	348	2,788
2	Cochamó-Poica	Penetration	31.1	4	305	7,174
4	Puerto Montt-Cta.La Arena	Consolidation	21.2	-	-	304
5	Cta.Manzano-Río Negro	Consolidation	14.0	-	-	311
6	Río Negro-Cholgo	Penetration	25.0	5	181	3,995
11	Río Refihue-Río Los Alerces	Penetration	19.0	6	210	5,194
12	Río Los Alerces-Río Rayas	Penetration	28.8	3	95	4,761

		Type of Construction	Length of Construction km	No. Bridges	Total Length Bridges m	Total Cost US\$000
13	Chaitén-Santa Lucía	Consolidation	42.0	-	-	653
14	Límite-Las Juntas	Consolidation	38.0	-	-	628
15	Las Juntas-Lago Risopatrón	Consolidation	27.0	1	22	369
16	Puerto Puyuhapi- Puerto Cisnes Fork	Consolidation	25.0	-	-	358
17	Puerto Cisnes Fork Villa Amengual	Consolidation	31.0	-	-	444
18	Villa Amengual-Picaflor	Consolidation	13.0	-	-	186
19	Puerto Durán-Mano Negra	Consolidation	12.0	3	75	745
20	Villa Castillo-Río Manso	Penetration	18.9	-	-	1,227
21	Río Manso-Pte. Becerra	Penetration	10.3	2	77	1,270
22	Puerto Becerra-Río Cofre	Penetration	15.8	-	-	1,605
23	Río-Cofre-Puerto Murta	Penetration	13.5	-	-	2,464
24	Puerto Murta-Puerto Tranquilo	Penetration	21.2	6	295	3,953
25	Puerto Tranquilo-Río Leones	Penetration	30.0	1	60	2,097
26	Río Leones-El Maitén	Penetration	21.2	1	120	2,570
27	Trans. No. 1, Las Juntas-Border	Penetration	49.2	6	156	5,922
28	Trans. No. 2, Villa Amengual-Border	Consolidation	21.6	4	185	1,470
29	Trans. No. 3, El Maitén- Border	Penetration	29.8	3	104	4,610
30	Chacabuco-Coyhaique	Paving	76.0	Tunnel	210	9,729

2. Studies and designs

- 4.05 In addition, this first stage of the project includes the financing out of the local contribution of the studies and designs for the works that will make up the second stage of the project, in addition to a few studies and designs for this first stage that are outstanding.
- 4.06 The studies and designs for the construction works of the penetration roads of this second stage are being prepared by consulting firms and are scheduled to be completed in June 1985. These studies and designs will have the same specifications and details as the subprojects of the first stage.

C. Design Standards

- 4.07 The structural design standards used for the plans and specifications of this first stage comply with accepted engineering practices and are based on standards recognized as adequate for projects of this type. The guidelines for the projects are based on specifications issued by:
- (a) the Ministry of Public Works of Chile, through its Directorate of

Roads; (b) the American Association of State Highway Officials (AASHTO); (c) the American Society of Testing Materials (ASTM); (d) the American Concrete Institute (ACI); and (e) the Asphalt Institute (AI).

D. Total Cost of the Project

4.08 The total cost of the project has been estimated at the equivalent of US\$102,000,000, broken down as follows:

(In US\$ thousands)

	<u>IDB</u>	<u>Local Contribution</u>	<u>Total</u>	<u>%</u>
1. <u>Engineering and Administration</u>	20	5,600	5,620	5.5
1.1 Supervision	20	2,770	2,770	
1.2 Administration	-	2,830	2,850	
2. <u>Direct Cost</u>	20,900	43,927	64,827	63.6
2.1 Construction	15,338	34,292	49,630	
2.2 Consolidation	1,926	3,542	5,468	
2.3 Paving	3,636	6,093	9,729	
3. <u>Associated Costs</u>	-	2,130	2,130	2.1
3.1 Land Acquisition	-	350	350	
3.2 Studies and Designs	-	1,780	1,780	
4. <u>Finance Charges</u>	8,067	704	8,771	8.6
5.1 Interest	7,710	-	7,710	
5.2 Credit Fee	-	704	704	
5.3 Inspection and Supervision - IDB	357	-	357	
5. <u>Unallocated</u>	6,713	13,939	20,652	20.2
4.1 Contingencies	3,352	7,410	10,762	
4.2 Cost Escalation	3,361	6,529	9,890	
Total	35,700	66,300	102,000	
	=====	=====	=====	
Percentage	35.0	65.0	100.0	

E. Bases for Calculating Project Costs

4.09 The estimated costs of the project were obtained by means of calculations made by the Directorate of Roads of the MOP using unit prices based on the construction designs and plans of roads and bridges that made up the project and the experience gained in executing other programs and projects for roads and highways in the country that are under construction. These calculations have been adjusted to update them to August 1984 current prices, and details of them appear in paragraph 3.22-3.25 of the project report.

F. Project Financing

1. IDB financing

- 4.10 IDB financing will consist in the grant of a foreign exchange loan from Interregional Capital in the amount of US\$35,700,000 equivalent. The foreign exchange resources of the IDB loan would be used to finance: (a) the purchase of a microcomputer and corresponding software for facilitating the administration of the project; (b) part of the direct construction cost; (c) part of the item for contingencies and escalation; (d) interest during execution of the project and (e) inspection and supervision costs.
- 4.11 The foreign exchange financing from the IDB loan would amount to 35% of the total estimated cost of the project, which is consistent with the guidelines set forth in document FP-33-1, since Chile belongs to the group B countries and the project is for the transportation and communications sector.

2. Local contribution

- 4.12 The amount of the local contribution will be the equivalent of US\$66,300,000 or 65% of the total cost of the project. This contribution would be provided by the Government through budgetary appropriations for MOP.

G. Second Stage of the Project

- 4.13 The program for the development of the southern road network provides for a second stage that would include works whose designs and economic studies are at present being prepared. These works include in particular the following four consecutive sections that together represent the final link in connecting the southern region with the rest of the country towards the north:

Río Cholgo-Quintupeu Fiordo	- 10 km
Quintupeu Fiordo-Huinay	- 27 km with one bridge
Huinay-Río Vodudáhue	- 15 km with two bridges
Río Vodudáhur-Río Renihue	- 32 km with four bridges

- 4.14 It is important to point out, as indicated in Chapter VI, Section D, on the socioeconomic justification of the first stage of the project, that the rate of return of the southern road network, particularly the Río Negro-Río Cholgo section, will be adversely affected if the preceding sections are not built on a timely basis. 1/ Accordingly, it is recommended that the prospective loan contract include a condition that ensures that the Government of Chile will begin the construction of those sections within two years from the date of that contract and will

1/ The 38 km Poica-Puelche section, which is not however crucial to the rest of the network, would be included in a second stage.

complete them not later than 6 years from that date. ^{1/} The financing of the final designs and economic studies for these sections is included in this project. In addition, the tentative program of operations agreed upon in the program exercises with Chile in 1984 includes the pipeline of projects for possible financing by the Bank of the above-mentioned second stage of the project during the 1985-1987 period. It should also be noted that, if financing is received from the Bank, the above-mentioned additional sections may be completed in a shorter period than the above-mentioned 6 years.

V. PROJECT EXECUTION

A. Borrower and Executing Agency

- 5.01 The borrower would be the Republic of Chile and the executing agency, the Ministry of Public Works (MOP), through the National Directorate of Roads. That Directorate is a unit of the General Public Works Directorate within the structure of the Ministry of Public Works. Its functions and organization are set forth in Law 15840 of November 2, 1964. The Directorate of Roads is responsible for preparing studies, road construction and maintenance, road signs, bridges and their appurtenant works.

B. The Executing Agency

- 5.02 It is planned to establish a special unit to administer the southern road network project, which will be known as the Project Executing Unit (PEU) and will be headquartered in Santiago. The specific functions of the executing unit will be to plan, program, direct, supervise, coordinate, administer and evaluate the achievement of the objectives of the project.
- 5.03 To ensure the efficient performance of the functions indicated, the executing unit will come under the authority of the Directorate of Roads through the Construction Department, and will be functionally related to all the units of that Directorate. The executing unit will have to establish and maintain permanent coordination with all the other services of the MOP with which it is necessary.
- 5.04 The executing unit will receive permanent advisory assistance from a consulting office, the purpose of which will be to support it in its administration and coordination functions as well as works inspection advisory assistance in field supervision. In addition, project engineers and private advisory assistance, respectively, will be contracted for completing the engineering designs in progress and for the inspection of certain works.

^{1/} See Appendix 2 (Recommendations) and Appendix 3 (Annex A of the Loan Contract).

- 5.05 It is recommended that, before the first disbursement, the MOP present evidence to the satisfaction of the Bank that the project executing unit has been established and that it has the necessary consultants and sufficient personnel, as mentioned in paragraph 4.09 of the project report, for executing, supervising and administering the project. 1/

C. Status of Studies and Designs

- 5.06 The construction subprojects with a total length of 320 km consist of 12 longitudinal subprojects and two transversal subprojects.
- 5.07 of the 14 subprojects mentioned, 13 already have complete designs, specifications and construction plans. In the case of the other subproject (number 25) the studies and field work have been completed; the advance of their designs and plans is 50% and they are scheduled to be completed in December 1984. The state of advance of the studies and designs for this subproject is sufficient to determine its construction costs.
- 5.08 The consolidation subprojects, with a total length of 244.8 km, consist of nine subprojects for longitudinal roads and one for a transversal road and, for them as a whole, 78% of the designs and construction plans are completed. Five of the subprojects, including the transversal road, have complete designs and plans whereas for the remaining five 60% of the plans are completed and the totality is scheduled for completion by November 1984.
- 5.09 Since the purpose of the execution of the consolidation subprojects is only the upgrading of the roads, while their present alignment will be maintained, the designs are simple and similar and therefore the percentage advance of plans and designs makes it possible to calculate the cost of the works.
- 5.10 For the subproject for the paving of the Puerto Chacabuco-Coyhaique road all the designs and plans are completed.
- 5.11 Of the 50 bridges included in the project, 41 have designs and plans totally completed while the remaining 9 have completed field studies and foundation projects.

D. Execution Procedures

- 5.12 Two procedures will be used in executing the project: one by means of contracts awarded through public tenders and the other through the force account system by the Cuerpo Militar de Trabajo (CMT).
- 5.13 All the project works executed by private contractors will be awarded on the basis of public tenders, in accordance with procedures acceptable to the Bank, which will appear as an Annex to the Loan Contract.

1/ See Proposed Resolution.

1. Execution by private contractors

- 5.14 All the project works executed by contract have been and will be tendered in accordance with the "lump sum" system whereby the price of the contract is fixed by the total amount indicated by the bidder in his bid. This amount must represent all the permanent or temporary works necessary for executing the entire subproject concerned, in accordance with special administrative bases, plans and designs, technical specifications and other contract documents. In the case of this project, the plans, specifications, designs, and documents of the subprojects are very complete.
- 5.15 In contracting the works financed in whole or in part out of IDB resources, the international public bidding system will be used, in accordance with the rules of the Bank, in all cases in which the value of those purchases or contracts exceeds the equivalent of US\$100,000. When the contracts or procurements of goods are financed exclusively in local currency, the tenders may be limited to the national sphere.

2. Works on force account

- 5.16 As stated earlier, part of the project works will be executed on force account by the Cuerpo Militar del Trabajo. The CMT is a unit belonging to the Army Corps of Engineers and its permanent staff includes officers and non commissioned officers with technical qualifications in road engineering as well as civil engineers. Most of the manual workers are civilians.
- 5.17 The CMT has been present in the southern region for more than 20 years and its work has been aimed at road construction, including in the 1960's, in particular, the road between Chaitén and Palena, with a ferry on lake Yelcho.
- 5.18 The CMT constructed road sections in the southern region, located between the following towns, in 1976-1983:

	<u>Km</u>
Ralún-Chaitén	25
Chaitén-Coyhaique	67
Villa Castillo-El Maitén	28
Pto. Montt-Río Negro	83
Villa Santa Lucía-	
Pto. Piedra	12
Pto. Ramírez-Futaleufú	<u>41</u>
Total	<u>256</u>

- 5.19 The participation of the CMT in this project for the construction of the southern road network is clearly defined; the sections have been assigned, their length determined, and their costs estimated.

- 5.20 The technical supervision of the works is the responsibility of the Directorate of Roads, which appoints field inspectors for this purpose in accordance with the legislation in force. The works are usually constructed in accordance with projects provided by the Directorate of Roads. When the execution of the works is completed, a taking-over committee, consisting of the Director of the Directorate of Roads, the Chief Engineer of the Studies Department, and the Chief of the Executing Unit PRVA, is established. This procedure is stipulated in the agreement between the MOP and the CMT. The CMT must render its accounts to the Office of the Comptroller General of the Republic, which periodically inspects the documents and thus fulfills its auditing function. In addition, the CMT must render monthly accounts to the Accounting and Finance Directorate, in accordance with the provisions of the 1984 Budget Law. The procedures for quality control, verification of quantities and corresponding payment for work done are similar to those used for construction work carried out by private contractors. In conclusion, the only difference from the normal procedures of the Bank in the matter of contracts is that public tenders are not put out for awarding contracts.
- 5.21 The roads constructed earlier by CMT are of high technical quality and therefore it is concluded that the CMT has broad experience and capacity to execute the works incumbent upon it in this project within the deadline specified. In addition, it should be mentioned that the participation of the CMT in the region in actual fact makes possible the eventual entry of private contractors, who initially were limited by access difficulties. For these reasons, it is recommended that an exception be permitted to the normal bidding procedures of the Bank for the execution on force account of certain project works which would be 100% financed out of the local counterpart contribution as well as to recognize the expenses already incurred for this purpose and chargeable to the above-mentioned counterpart contribution with effect from the date of the loan application (October 31, 1983). 1/

E. Contracting Schedule

- 5.22 For the purpose of contracting them, the projects have been divided into 8 series. For that purpose certain technical and construction aspects relating to the various geographical areas of the projects as well as the nature and size of the works to be constructed were taken into account. In August 1984 the first series was awarded, as was 70% of the second. The remainder of the second series and the third series are being tendered for (see paragraphs 4.50 and 4.51 in the project report).

F. Works in Progress

- 5.23 In view of the high priority assigned to the project by the Government of Chile, the project works have already been begun and the following works have already been contracted out to private construction firms:

1/ See Proposed Resolution.

	<u>Contract Date</u>	<u>Delivery Date</u>	<u>Total Cost US\$000</u>
(20) Villa Castillo-Río Manso	June 18/84	July 13/85	1,227
(21) Río Manso-Puente Becerra	June 18/84	July 13/85	643
(27) Río Rosselot-Km.24 (Trans. 1)	June 18/84	Oct. 1/85	1,747
(13) Chaitén-Santa Lucía	July 16/84	Mar. 13/85	653
(14) Límite-Las Juntas	July 16/84	Mar. 13/85	628
4 Bridges (Traihuanca, Murta, Egaño, San Martín)	Aug. 7/84	Sept.30/85	1,633
5 Bridges (Risopatrón, P.A. Cerde, Rodríguez, Canelo, Vado Ancho)	Aug. 7/84	Sept.30/85	1,290
			<u>7,821</u> 1/
			=====

5.24 For the above-mentioned works as well as for the construction of the remaining works that make up the project, the requirements of the Bank relating to tenders have been complied with. In addition, a public tender has been put out for the execution of the works for the first sector of paving of the Puerto Chacabuco-Coyhaique road.

5.25 Furthermore, on January 19, 1984, the Government issued a decree authorizing the CMT to execute on force account the following six works of which five are under construction:

<u>Subproject</u>	<u>Contract Date</u>	<u>Delivery Date-</u>	<u>Total Cost US\$000</u>
(5) Manzano-Río Negro	Jan./84	Jan./85	311
(12) Río Los Alerces-Río Rayas	Jan./84	Jan./87	3,951
(1) Ralún-Cochamó	Jan./84	Jan./85	358
(2) Cochamó-Poica	Jan./85	Dec./86	4,862
(23) Río Cobre-Pto. Murta	Jan./84	Dec./86	2,464
(24) Pto. Murta-Pto. Tranquillo	Jan./84	Dec./85	1,946
Total			<u>13,892</u> 1/

5.26 The total approximate cost of the works to be constructed by the CMT is US\$18,000,000 equivalent, including contingencies and escalation; of that amount, it is estimated that up to the equivalent of US\$6,000,000 will be spent before the end of this year. The remaining works, up to approximately US\$12,000,000, will be constructed by the CMT during the

1/ Does not include contingencies or escalation.

course of the execution of the project. 1/ The Bank has examined the plans and designs and the unit and overall costs of the subproject and found that they are similar to the estimated costs of the works to be executed by private contractors.

G. Recognition of Expenses 2/

- 5.27 As stated in Section G above, the MOP requested the Bank to recognize expenses chargeable to the local contribution up to a total of approximately US\$16,000,000 equivalent; of that amount, approximately US\$6,000,000 equivalent would be executed on force account by the CMT and the remaining works amounting to the equivalent of US\$10,000,000 would be constructed by private contractors. In addition, the last-mentioned figure includes expenses in the amount of US\$1,250,000 for the preparation of designs and plans primarily for the second stage of the project. These totals include contingencies and cost escalation. It is recommended that the Bank recognize that amount chargeable to the local contribution insofar as the above-mentioned amount is for the investment envisaged between the date of the loan application, October 31, 1983, and the date on which it is planned to present this operation to the Board of Executive Directors of the Bank, namely November/December 1984.

H. Disbursement Schedule

- 5.28 According to the works execution schedule, the following tentative disbursement schedule of both the resources of the proposed loan and of those representing the local contribution has been estimated:

(in US\$ millions or equivalent)

<u>Year</u>		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>		
IDB/IC	-	12,225	11,420	7,297	4,758	35,700	35.0
Government of Chile (MOP)	16,600	17,002	16,185	10,343	6,740	66,300	65.0
Total	16,600	29,227	27,605	17,640	11,498	102,000	100.0
	=====	=====	=====	=====	=====	=====	=====
Percentage	15.6	28.6	27.1	17.2	11.3	100.0	

- 5.29 As may be seen, the largest investments during the execution of the project will be made during the first and second year of execution; they represent approximately 28.6% and 27.8% of the total cost respectively.

1/ See Proposed Resolution.

2/ See Recommendations.

I. Advance of Funds

- 5.30 The nature of the project and the expected pace of the works makes it advisable to establish a revolving fund equivalent to 15% of the loan for financing the actual payment items for a period of 120 days, which will make for a speedy and timely system of payments to the contractors and prevent delays in paying obligations. 1/

J. Rights of Way

- 5.31 For all the consolidation works the right of way is already available. It is expected to be necessary to widen it in only very few cases. In the projects for the construction of the penetration roads, it will be necessary to acquire the corresponding strip of land, which is 20 m wide, although most of the land in the area of influence of the project belongs to the State.

K. Maintenance 2/

- 5.32 The Directorate of Roads, through its Maintenance Department, is the agency responsible for the maintenance of the national road network.
- 5.33 In accordance with the general policy of the state of reducing its direct participation and delegating to private enterprises all activities in which that can be done, the Ministry of Public Works has divided its maintenance operations into two parts:
- (a) Routine maintenance, which is carried out directly through the Maintenance Department of the Directorate of Roads, insofar as these activities are difficult to contract out since there is no unit of measure;
 - (b) Paving works, upgradings, repairs, replacement of gravel layers, etc., which it contracts with construction enterprises and carries out through the Works Department of the Directorate of Roads.
- 5.34 Both routine maintenance and contract works are directly administered through the regional offices. All these maintenance operations, which will be executed directly, satisfy the need for routine minimum maintenance.
- 5.35 As a result of the analysis of the subprojects and of visits to the area of influence of the project by the Bank's analysis mission, it is concluded that the road network in the X and XI regions is satisfactorily maintained.

1/ See Proposed Resolution.

2/ Appendix 2 - Recommendations and Appendix 3 - Annex A of the loan contract - contains the maintenance clauses corresponding to this project.

- 5.36 In view of the importance of this aspect, it is recommended that the loan contract include the maintenance conditions normally applied by the Bank in this area. 1/

L. Ex-post Evaluation

- 5.37 For the purpose of carrying out the ex-post evaluation within the period of 18 months from the effective date of the prospective loan contract, the MOP must submit to the Bank: (a) the initial basic data, the categories of which would be set forth in Annex A of the loan contract; and (b) a description of the system for compiling and processing the data that will be used to make the annual comparisons with the initial basic data (see Recommendations).
- 5.38 With effect from the second year from the date of the final disbursement, the MOP will submit to the Bank the annual comparative data mentioned in the preceding paragraph. Finally, the MOP will submit to the Bank at the end of the third year from the date of the final disbursement of the financing, an ex-post evaluation report on the results of the project, based on the methodology and guidelines agreed upon with the Bank. 2/

VI. JUSTIFICATION OF THE PROJECT

A. Technical Viability

- 6.01 The conclusion to be drawn from the analysis made is that the execution of the project as recommended would be technically feasible and, in addition, would be the best possible alternative. The principal technical and operating considerations, which have made it possible to reach a positive conclusion concerning the technical viability of the project, are summarized below:
1. In the design of the parts of the project adequate standards and methods consistent with good engineering practice were used; in addition, the level at which the studies, designs, plans, specifications, construction schedule and other bidding documents have been completed is very satisfactory.
 2. The estimated cost of the project is reasonable and was prepared on the basis of estimates of construction costs of volumes of work derived from final designs and unit prices that were duly analyzed and comparable with those of recent contracts for the construction of similar works.

1/ See Appendix 2 - Recommendations - and Appendix 3 - Annex A of the loan contract.

2/ See Recommendations and Appendix 3 (Annex A to the loan contract).

3. The project works would be constructed on the basis of contracts awarded to contracting firms through international bidding procedures in accordance with the requirements of the Bank.
4. All aspects of the design of the project reasonably meet the present and expected traffic requirements.
5. The construction of the project would not require the use of sophisticated techniques and consequently no technical problems that could critically affect the timely execution of the project are expected.
6. The MOP has adequate technical personnel in a institutional framework for the execution of the project. In addition, it will receive assistance from consultants in supervising the construction, all of which would ensure both the timely execution of the project and its good technical quality.
7. The MOP has executed the projects and programs financed by the Bank satisfactorily, especially from a technical point of view and in accordance with the execution schedules provided for.

B. Institutional Viability

- 6.02 The administration of the counterpart funds would be vested in the Directorate of Roads, which has both experience and personnel for the proper administration of these resources, as shown by the execution of the four road projects financed by the Bank. The administrative and internal control procedures are adequate and the Directorate of Roads is in turn subject to the controls of the Office of the General Comptroller of the Republic, which in addition will audit the financial statements of the project.

C. Financial Feasibility

- 6.03 The necessary resources for providing the local contribution to the project would come from delivery of the resources appropriated annually in the budget of the nation for the Directorate of Roads. The financial projection shows that for the projected period the Directorate of Roads would invest in the execution of its work program an amount equivalent to US\$683.8 million, of which 96% would be used in projects or programs financed in part by international agencies.
- 6.04 Furthermore, the local contribution to the project in the amount of US\$66,300,000 equivalent is secured. In relation to the total local contributions to the work program of the Directorate of Roads financed by international agencies, this contribution represents an average of approximately 18.4% in the period 1984-1988. This percentage is considered to be viable and would not represent an excessive financial burden for the Ministry of Public Works (MOP).

D. Socio-economic Justification

1. Methodology

- 6.05 The economic analysis was based on traditional methods in which the sources of benefits are primarily derived from savings in the cost of operating vehicles and in increases in the output of the area.
- 6.06 The increases in forest production have been calculated solely for the sections in which there is at present no access and where the execution of the project will make it possible to log the forest resources.
- 6.07 The principal sources of benefits are: increases in forest and stockraising production, reduction in the operating cost of vehicles, and benefits derived from the deviation of goods and passengers from the maritime transportation to overland transportation.
- 6.08 Accordingly, the source of benefits varies according to the section; in some the principal source of benefits is logging; in others it is reduction in transportation costs. As a rule, the stockraising benefits are secondary. These benefits relate primarily to the incorporation into stockraising activity of lands suitable for grazing land that are at present covered by forest, an improvement in livestock numbers in the areas which, because of their isolation, are being exploited in a rudimentary fashion, and a better price due to a reduction in the cost of transporting livestock to the regional market of Osorno.

2. Results

- 6.09 The economic indicators of the evaluation are presented below:

	<u>Section</u> <u>Consolidation</u>	<u>IRR</u> <u>%</u>	<u>NPV</u> <u>(US\$ 000)</u>
(4)	a. Puerto Montt-Caleta La Arena	13.8	38.4
(5)	b. El Manzano-Río Negro	13.6	39.8
(13)	c. Chaitén-Límite Regional	53.9	2,679.5
(14)	d. Límite Regional-La Junta	31.2	1,155.3
(15)	e. La Junta-Lago Risopatrón	37.5	916.8
(16)	f. Puyuhuapi-Puerto Cisne	46.2	1,146.4
(18)	g. Bif Tapera-La Zaranda (Villa Amengual - Pica Flor)	45.4	580.6
(17)	h. Puerto Cisne-Villa Amengual	48.8	1,543.8
(19)	i. Pte. Durán-Mano Negra	16.7	245.8
(28)	j. Villa Amengual-Frontera	48.9	9,797.9

Construction

(1 & 2)	k.	Ralún-Poica	13.5	1,047.6
(6)	l.	Río Negro-Cholgo	18.0	2,183.3
(10, 11, & 12)	m.	Vodudahue-Río Rayas ^{1/}	20.3	9,770.6
(27)	n.	La Junta-Frontera	29.0	8,757.6
(20 to 26)	o.	Villa Castillo-El Maitén	15.8	4,757.9
(29)	p.	El Maitén-Frontera	12.8	218.4

Paving

30	q.	Chacabuco-Puerto Aysen	50.4	3,110.8
30	r.	Puerto Aysen-Mañihuales Fork	42.2	4,458.4
30	s.	Mañihuales Fork	21.3	3,311.9
30	t.	Villa Ortego-Coyhaique	16.9	695.0

3. Sensitivity

- 6.10 Even though the most reliable assumptions and estimates of the variables and parameters governing cost and benefit flows were incorporated in the socioeconomic appraisal, a sensitivity analysis was made at higher costs of investment and lower project benefits. Time-savings benefits were excluded from the benefits calculated in this sensitivity analysis.
- 6.11 On the basis of the sensitivity analysis it was concluded that most of the sections have sound rates of return at variations in costs and benefits. The Puerto Montt-Caleta La Arena, El Manzano-Río Negro, Ralún-Poica and El Maitén-Frontera sections are the weakest. However, given the fact that they have designs and final costs available, it is unlikely that their investment costs would increase substantially. ^{2/} Considering that their basic IRR's are over 12%, these sections have been included in the project.

4. Distribution of benefits

- 6.12 The benefits considered are derived from the stockraising, forestry, and transportation sectors. The groups primarily affected are unskilled labor, low-income owners, transport operators and users, the Government, and other productive sectors. It is estimated that 16.9% of the benefits of the project will go directly to these groups.

^{1/} Only the Río-Reñihué-Río Los Alerces - Río Rayas subsections are included in this stage (11 & 12)

^{2/} See paragraph 6.44 of the Project Report.

PROPOSED RESOLUTION 1/

CHILE. LOAN /IC-CH TO THE REPUBLICA DE CHILE
(Southern Road Network. First Stage)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the República de Chile, as borrower, for the purpose of granting it a loan to cooperate in the execution of a project consisting of the first stage of the Southern Road Network. This financing shall be subject substantially to the following conditions:

1. Amount and Currencies: Up to US\$35,700,000, or its equivalent in other currencies which are part of the interregional capital resources of the Bank, to pay for goods and services acquired through international competition in the member countries of the Bank and for such other purposes as may be specified in the loan contract. Payments of amortization and interest shall be made in the currency or currencies specified by the Bank, in a quantity equivalent to the corresponding amount owed, calculated in units of account in terms of dollars of the United States of America, in accordance with provisions to be included in the loan contract.
2. Source of Funds: The interregional capital resources of the Bank.
3. Guarantee: The general responsibility of the Borrower.
4. Credit Fee: 1-1/4% per annum on the undisbursed portion of the financing, commencing to accrue 60 days after the date of the loan contract and payable in dollars of the United States of America on the same dates as the interest.

1/ The provisions contained in this Appendix I shall only be final when the Board of Executive Directors has approved the proposed loan proposal.

5. Amortization: The Borrower shall amortize the loan in a period of 20 years from the date of the loan contract, by means of semiannual, consecutive and, insofar as possible, equal installments. The first installment shall be paid six months after the date scheduled for the last disbursement of the financing. The Bank may credit the amortization installments proportionally to the outstanding balance of each of the portions of the loan which accrue different rates of interest.
6. Interest: The Borrower shall pay interest semiannually on the outstanding balances of the loan. The first payment shall be made six months after the date of the loan contract. During the disbursement period, the Bank: (a) shall determine the rate of interest to be applied as of the first day of each January and for the life of the loan to any amount disbursed during the ensuing year, and (b) may modify the interest rate, in accordance with the policy of the Bank, to be applied to disbursements of the loan made during the second half of the year. At the request of the Borrower, resources of the financing may be used to pay interest during the period of disbursement thereof.
7. Disbursement: The term for disbursement of the financing shall expire 4 years after the effective date of the loan contract.
8. Special Conditions:
 - (a) The resources of the loan shall be utilized in their entirety by the borrower, through the Dirección de Vialidad Nacional of the Ministerio de Obras Públicas (hereinafter called Executing Agency). If modifications in the legal provisions or the basic regulations concerning the borrower and/or the Executing Agency, are approved which, in the opinion of the Bank, may substantially affect the project, the Bank shall have the right to require the Borrower and/or the Executing Agency to provide explanatory and detailed information in order to determine whether such modification or modifications may have an adverse impact on the execution of the project. Only after hearing the Borrower and/or the Executing Agency and assessing its information and clarifications, may the Bank take such measures as it deems appropriate in accordance with provisions to be set forth in the loan contract.
 - (b) The resources of the loan shall be used to participate in the execution of a project estimated at the equivalent of US\$102,000,000. Consequently, the loan contract shall contain such provisions as the Bank deems appropriate to ensure that such national resources as may be necessary, in addition to the loan, for the complete execution of the project shall be duly provided, in an amount estimated at the equivalent of US\$66,300,000, in accordance with a schedule of investments satisfactory to the Bank.

- (c) Prior to the first disbursement of the financing, the Borrower, through the Executing Agency, shall demonstrate to the Bank that the Executing Unit for the project has been created and that it has sufficient personnel for administering, executing and supervising the works of the project.
- (d) In the acquisition of machinery, equipment and other materials for the project, and in the awarding of construction contracts, the system of public bidding shall be followed in each case in which the value of such acquisitions or contracts exceeds the equivalent of US\$100,000. The bidding shall be subject to the procedures to be attached as an annex to the loan contract.
- (e) Notwithstanding the provisions of paragraph (d) above, the borrower may use local counterpart resources to execute works by force account, for up to an amount equivalent to US\$12,000,000, provided that such works have been previously approved by the Bank.
- (f) The Bank shall establish such inspection procedures as it deems necessary to assure the satisfactory execution of the project, and the borrower shall extend all cooperation which is required for the most effective accomplishment of this purpose. From the amount of the financing the sum of US\$357,000 shall be allocated for credit to the income accounts of the Bank to meet expenses of general inspection and supervision.

9. Conditional Provision:

This resolution shall enter into force only when the Board of Executive Directors shall have determined by means of a resolution that the Bank has sufficient resources in the interregional capital to cover the loan authorized pursuant to this resolution.

RECOMMENDATIONS

- A. It is recommended that the following conditions, to be fulfilled to the satisfaction of the Bank, be included in the loan contract in addition to the conditions set forth in the proposed resolution:
1. Prior to each call for bids, or prior to the construction of works executed by force account, the borrower, through the Executing Agency, shall present to the Bank:
 - (a) the general plans, specifications, budgets, specific bidding requirements and any other documents necessary for the call for bids; and
 - (b) in the case of works, evidence that it has legal possession of the lands for construction of the respective works and/or the easements or other pertinent rights.
 2. The borrower shall undertake that the works executed under the project, as well as the existing roads related to those works, shall be maintained in compliance with generally accepted technical standards and that for the first ten years following the completion of the works and, within the first quarter of each calendar year, the borrower shall submit for the consideration of the Bank, through the Executing Agency, a report on the status of preservation of those works, in accordance with the provisions of Appendix 3 (The Project).
 3. To evaluate the results obtained from the execution of the project, the borrower, through the Executing Agency, shall present to the Bank within 18 months from the effective date of the loan contract: (i) the baseline data using the categories outlined in paragraph VI of Appendix 3; and (ii) the description of the system for compiling and processing the data to be used to make the annual comparisons with the initial baseline data of the first quarter.
 4. At the end of the second year from the date of the last disbursement of the financing, the borrower, through the Executing Agency, shall present to the Bank the annual comparative data referred to in paragraph 3 above.
 5. At the end of the third year from the date of the last disbursement of the financing, the borrower, through the Executing Agency, shall present to the Bank an ex post report of the results of the project on the basis of the methodology and guidelines agreed upon with the Bank.
 6. The borrower shall undertake to initiate, within a period of no more than two years from the effective date of the loan contract, the construction of the additional roads of the Southern highway referred to in paragraph 4.01 of Annex A and to finish it within six years from the same date.

7. The Bank may recognize, as part of the local contribution to the project, expenditures up to the equivalent of US\$16,000,000 made prior the date of Resolution DE- /84, but after October 31, 1983. Of said amount, the equivalent of US\$6,000,000 corresponds to works executed by force account and the equivalent of US\$10,000,000 to supervision and administration and works contracted by the borrower during that period, in accordance with procedures satisfactory to the Bank and provided that requirements substantially similar to those set forth in the loan contract have been fulfilled.
8. Upon fulfillment of the pertinent requirements set forth in the loan contract, the Bank may make an advance of funds of up to 15% of the amount of the financing.
9. The financial statements of the project, during its execution, shall be presented annually to the Bank duly audited by the Contraloría General de la República.
- B. The Loan contract shall include an Annex substantially similar in content to Appendix 3 (the Project).

THE PROJECT
(Annex A to the Loan Contract)

I. Objectives

- 1.01 The objective of the Project is to contribute to the improvement of the Southern Road Network of Chile by means of the construction, consolidation and paving of various sections between the communities known as Puerto Montt and El Maitén, as well as some transversal sections.

II. Description

- 2.01 The project consists of the execution of works grouped within three components as follows:

- A. A Construction Component, which will be executed in the following areas:

	<u>Km.</u> (Approx.)
Ralún-Cochamó with approx. 5 bridges	7.0
Cochamó-Poica with approx. 4 bridges	31.1
Río Negro-Río Cholgo with approx. 5 bridges	25.0
Río Reñihue-Río Los Alerces with approx. 6 bridges	19.0
Río Los Alerces-Lago Río Negro-Río Rayas with approx. 3 bridges	28.8
Villa Castillo-Río Manso with approx. 1 bridge	18.9
Río Manso-Pte. Becerra with approx. 1 bridge	10.3
Pte. Becerra-Río Cofre	15.8
Río Cofre-Pto. Murta with approx. 3 bridges	13.5
Pto. Murta-Pto. Tranquilo with approx. 3 bridges	21.2
Transversal No. 1, La Junta-Lago Verde-Frontera with approx. 6 bridges	49.2
Transversal No. 3, El Maitén-Chile Chico-Frontera with approx. 3 bridges	29.8
Puerto Tranquilo-Río Leones with approx. 1 bridge	30.0
Río Leones-El Maitén with approx. 1 bridge	21.2

- B. A Consolidation Component, which will be executed in the following areas:

Pto. Montt-Cta. La Arena	21.2
Cta. Manzano-Río Negro	14.0
Chaitén-Santa Lucía	42.0
Límite-Las Juntas	38.0
Las Juntas-Lago Risopatrón with approx. 1 bridge	27.0

	Km. (Approx.)
Pto. Puyuhaupi-Bif. Pto. Cisnes	25.0
Bif. Pto. Cisnes-Villa Amengual	31.0
Villa Amengual-Picaflor (Bif. La Tapera-La Zaranda)	13.0
Pto. Durán-Mano Negra with approx. 3 bridges	12.0
Transversal No. 2, Cisne Medio-Tapera-Frontera with approx. 4 bridges	21.6

C. Paving Component, which will be executed in

Puerto Chacabuco - Coyhaique including one tunnel	76.0
---	------

III. Total Cost and Financing of the Project

3.01 The total cost of the Project is estimated at the equivalent of US\$102,000,000, which will be assigned approximately as follows:

	Bank	Local Contribution	Total	%
1. <u>Engineering and Administration</u>	20	5,600	5,620	5.5
1.1 Supervision	-	2,770	2,770	
1.2 Administration	20	2,830	2,850	
2. <u>Direct Cost</u>	20,900	43,927	64,827	63.6
2.1 Penetration Roads	13,338	34,292	49,630	
2.2 Consolidation	1,926	3,542	5,468	
2.3 Paving	3,636	6,093	9,729	
3. <u>Concurrent Costs -</u>	-	2,130	2,130	2.1
3.1 Acquisition of Land		350	350	
3.2 Studies and Designs		1,780	1,780	
4. <u>No Specific Allocation</u>	6,713	13,939	20,652	20.2
4.1 Contingencies	3,352	7,410	10,762	
4.2 Cost Escalation	3,361	6,529	9,890	
5. <u>Financial Costs</u>	8,067	704	8,771	8.6
5.1 Interest	7,710	-	7,710	
5.2 Credit Fee	-	704	704	
5.3 FIV/IDB	357	-	357	
TOTAL	35,700 =====	66,300 =====	102,000 =====	
Percentages	35.0	65.0	100.0	

IV Construction of Additional roads

- 4.01 In order to comply with the provisions of paragraph 6 of the Recommendations, the borrower shall finish the construction of the following roads additional to the project:

	Km. (Approx.)
Río Cholgo-Fiordo Quintupeu	10.0
Fiordo Quintupeu-Huinay - with approx. one bridge	27.0
Huinay-Río Vodudáhue - with approx. two bridges	15.0
Río Vodudáhue-Río Renihue - with approx. four bridges	32.0

V. Procurement

- 5.01 Whenever the goods or services to be procured are financed totally or partially by foreign exchange from the loan, the the procedures and specific guidelines governing the bidding shall allow for the competition of goods and services, including those relating to whatever means of transportation, originating from member countries of the Bank. Consequently, those procedures and specific bases shall include no conditions that impede or restrict the supply of goods or services or the participation of contractors from those countries.

VI. Maintenance

- 6.01 The basic purpose of the maintenance of the Southern Road Network between Puerto Montt and Cochrane will be: (i) to maintain the roads within the project and others constructed outside the project in substantially the same condition as they were in at the time of their completion; and (ii) to maintain in substantially the same conditions existing road sections related with such works as are not to be constructed or improved.
- 6.02 The annual maintenance plan shall be presented to the Bank no later than three (3) months before the beginning of each fiscal year, commencing with the one corresponding to fiscal year 1985, and shall include, as a minimum:
- (a) A description of the organism responsible for maintenance, with an indication of the personnel in charge of the maintenance; the tasks to be executed directly by the organism and the frequency of their performance during the year; the number, type and condition of the equipment to be used in that work; the location, dimension and condition of the workshop, warehouses or depots; the maintenance camp; the tasks to be contracted with private firms, as well as their volume and location; the controls to be used to limit the size and weight of vehicles; and the length in kilometers and location of the sections assigned to each maintenance unit.
 - (b) An indication of the funds allocated for the maintenance of the highway, with details on amounts budgeted and actually utilized or expected to be utilized, as the case may be. This indication must

be supplied for the current year, the previous year and the following year (that is, the year covered by the plan). In all three cases the resources assigned for improvement operations shall be counted separately from those to cover maintenance costs.

- (c) A detailed budget, by principal sections of road, for each of the maintenance tasks to be carried out, with a separation between tasks to be performed directly and those to be contracted.
- (d) A report on current maintenance conditions, such report to be based on an adequacy evaluation system previously submitted to and approved by the Bank. The system shall be structured to provide an overall rating of the maintenance condition of the roads, which should be based on a numerical evaluation of the various components such as pavement, shoulders, culverts, drainage structures and signals.

6.03 The Bank shall have the right to inspect the project work periodically. Should it be determined from such inspection or from the reports received by the Bank that the maintenance is being conducted below the agreed-upon standards, the borrower shall take the necessary steps for full correction of any deficiencies noted.

VII. Ex Post Evaluation

7.01 For purposes of the ex post evaluation of the effects of the Project, the Executing Agency shall, from the time of commencement of the construction, perform traffic counts and origin-and-destination surveys. The counts shall be quarterly and shall be taken at appropriate times of the year to reflect seasonal variations, and their duration shall be seven days. In the last year of such counts and on two of the seven days' duration of each count, origin-and-destination and traffic surveys shall be made.

7.02 The ex post evaluation report referred to in Recommendation 5 (Appendix II) shall cover the following topics:

- (a) Economic costs. Construction and maintenance costs shall be estimated explicitly, with financial, tax and other transfers eliminated. Fuel and transportation costs shall be adjusted taking in consideration the pertinent opportunity costs.
- (b) Benefits from savings in vehicle operating costs. Which will revise the bases of the costs and the traffic forecast on the basis of the results of the traffic volume counts.
- (c) Economic savings to passengers from reduction of travel times. Which will be determined on the basis of the results of the origin-and-destination survey, as to the purposes for which passengers in light vehicles, buses and trucks traveled. Emphasis should be placed on having the origin-and-destination surveys include passengers and not only drivers. The benefits under this heading shall be determined in accordance with the results of those surveys and the average yearly incomes for the various types of passengers.

- (d) Distribution of benefits and costs. Which will analyze the redistributive impact in accordance with the guidelines agreed upon with the Bank.
- (e) Economic indicators. Which will estimate the internal rate of return and the net present value.