

PUBLIC

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**CHILE**

**PROGRAM FOR RECONSTRUCTION OF MAIN NORTH- SOUTH HIGHWAY**

**(CH-0114)**

**LOAN PROPOSAL**

**JULY 1981**

# CHILE

## Basic Data

### 1. General Data

Area (in thousands/km2)	756,626.0
Total population estimated at mid-year (millions)	
1980	11,104.0
1981	11,294.0
1985	12,075.0
Population density (inhabitants km2)	14.7
Urban population (%)	81.1
Population growth rate (1970-80) %	
Chile	1.7
Greater Santiago	2.5
Low-income threshold (IDB) in pesos (May 1979)	
Per capita	13,585.0
Per family (5 members)	67,925.0
Gross product per capita (1980 US dollars) (1980)	1,591.0
Birth rate per thousand (1979)	21.5
Death rate per thousand (1979)	6.8
Infant mortality rate per thousand live births (1979)	37.9
Life expectancy after birth (1975-80)	65.7
Literacy %	94.0
Energy consumption per capita in Kwh (1976)	880.0

### Employment

	<u>1979</u>	<u>1980</u>
	(October	December)
Work force <sup>1/</sup> classified by economic activity		
<u>Total</u> (thousands of persons)	<u>1,268.8</u>	<u>1,331.4</u>
Percentage composition (Greater Santiago)		
Agriculture	0.8	0.7
Mining	0.4	0.6
Industry	23.7	23.5
Electricity, gas and water	0.9	0.8
Construction	5.6	5.5
Commerce	20.8	21.2
Transportation	6.2	6.0
Government	5.8	6.0
Other services		
Unspecified activities	0.1	0.2
In job market first time	2.7	2.4
Employed in work force (thousands)	1,101.6	1,197.4
Unemployed (thousands)	166.2	134.0
Unemployment rate (%) (Greater Santiago)	13.1	10.1
Unemployment rate (%) (national average)	13.6	10.2

<sup>1/</sup> Persons 12 years and over employed or unemployed.

## 2. National accounts

GDP (millions of current pesos)  
GDP (millions of 1977 pesos)

1981 AA

1980 A

1979

1978

1976

Annual Growth Rate a/

Composition

1976 1977 1978 1979 1980

Gross domestic product  
by type of expenditure

Consumption  
Private  
Public

Gross domestic investment  
Fixed investment  
Change of inventories

Exports of goods and services  
Imports of goods and services  
Internal demand

Gross domestic product by  
sector (current)

Agriculture and forest products  
Fishing  
Mining  
Manufacturing  
Construction  
Electricity, gas and water  
Transportation, storage and  
communications  
Commerce  
Others

A Estimated

AA Projected

a/ Constant 1977 figures

Source: ODEPLAN

## 3. Foreign trade

Exports of goods (FOB)

Traditional  
Non traditional

Agriculture  
Manufacturing  
Others

Imports of goods (CIF)  
Consumer products  
Intermediate products  
Capital goods and others

(US\$ millions)

Annual Growth Rate

1975 1976 1977 1978 1979 1980

Source: Banco Central de Chile

#### 4. Balance of payments

	1975	1976	1977	1978	1979	1980 *	1981A	(US\$ millions)
I. Current account								
Exports (FOB)	-578	151	531	-888	-1,189	-1,597	2,240	
Imports (CIF)	1,552	2,083	2,190	2,456	3,815	4,722	5,460	
Net services	1,708	1,655	2,264	3,158	4,190	4,722	5,142	a/
Transfers	-432	-285	-552	-261	914	-1,277	-1,580	6,240 a/
	10	10	75	57	80	100	120	
II. Public sector (net)								
Private sector (net)	58	-116	-81	607	444	1,582	2,282	2,940
Others	233	227	260	746	1,803	2,592	-	
III. Errors and omissions	107	207	285	210	30	30	-	
IV. (-) Increases								
Central Bank	275	-455	6	-624	-1,087	-1,244	-700	b/
Net international reserves (balance) b/	346	-414	-113	-712	-1,087	-1,244	-700	
Rate of exchange (pesos per US\$)		8.5	13.05	21.54	31.67	37.25	1,919	3,881
							39.0	39.0

a/ FOB figures, new IMF methodology. CIF value of imports (US\$ millions) was 4,708 in 1979 and 5,777 in 1980. Projected to be 7,010 in 1981.

b/ Central Bank of Chile reserves.

\* Estimated

A. Projected

/ Not available

Source: Banco Central de Chile

#### 5. Public finances

	1975	1976	1977	1978	1979	1980	1975	1976	1977	1978	1979	1980
Current Income	24.7	24.4	21.9	22.9	24.8	25.4	65.1	81.2	66.3	69.2	70.3	
(Less revenues)	(24.2)	(21.6)	(21.3)	(21.7)	(21.8)	(21.6)	(12.2)	(21.6)	(21.8)	(26.1)	(29.1)	
Current expenditures	19.7	19.7	20.2	19.6	18.5	19.1	58.8	70.8	56.6	60.1	60.5	
Current account deficit (-)												
on surplus (+)	5.0	4.6	1.7	1.4	6.3	6.3	6.5	10.4	7.7	8.9	9.8	
Capital expenditures	4.8	3.2	1.8	1.8	1.8	1.4	1.7	3.7	0.4	1.6	1.6	
Overall deficit (-) or surplus (+)	0.2	1.4	-0.1	1.6	4.5	4.9	4.8	6.7	7.3	7.3	6.4	

a/ Includes social security institutions, CORFO, CORVI, SERENA, etc., municipalities and others.

/ Not available.

Source: Ministry of Finance, Bureau of the Budget.

# 6. Money and credit

(millions of pesos end year)

## Monetary system a/

	1975	1978	1979	1980 b/	1979	Annual Growth Rate 1980 b/
Net foreign assets	-9,591	-12,975	16,235	4,911		-65.4
Net internal credit	22,166	299,661	316,461	468,004	45.8	19.9
Public sector	19,091	117,588	125,657	179,121	6.9	7.9
Private sector	3,075	111,853	208,806	118,681	86.7	62.2
Money supply (M <sub>1</sub> )	4,716	56,141	79,827	141,171	41.7	77.1
Money supply (M <sub>2</sub> )	2,963	64,375	116,959	170,287	81.8	46.0
Quasi money supply	1,754	52,349	107,115	164,598	106.6	51.6
Chilean pesos	1,229	11,976	9,874	6,189	-18.0	-37.0
Foreign currencies	7,699	120,666	196,786	112,160	61.1	58.6
Monetary liabilities (M <sub>1</sub> M <sub>2</sub> )						
Relationship to GDP						
M <sub>1</sub>	13.3	11.6	10.5	12.0		
M <sub>1</sub> M <sub>2</sub>	21.7	26.7	25.8	28.5		

a/ Includes Banco Central de Chile, Banco del Estado and commercial banks.

b/ Preliminary

c/ Not available

Source: Banco Central de Chile

## 7. Prices

	1975	1976	1977	1978	1979	1980
Consumer	175.0	212.0	91.7	40.1	11.4	35.1
Wholesale	482.0	221.2	86.0	42.9	69.6	39.6
Wages a/	411.3	289.9	185.7	66.5	49.1	48.9
Deflator in GDP	486.1	250.7	101.7	56.6	46.5	35.1

a/ April of each year

b/ Not available

Source: Instituto Nacional de Estadística

## 8. Public external debt

	1975	1976	1977	1978	1979	Disbursed as % of committed
Total committed	6,187.8	6,208.9	6,641.0	5,618.5	5,460.9	
Disbursed	1,710.9	3,588.9	3,662.4	4,351.5	4,767.0	
Suppliers	796.1	790.1	641.3	666.2	560.6	87.3
Banks	503.7	671.6	1,206.2	2,196.7	2,699.8	93.7
Others	459.2	367.0	278.9	212.8	217.1	87.0
International organizations	177.1	655.0	699.7	695.8	695.9	100.0
IMB	(177.2)	(299.6)	(211.6)	(256.6)	(261.3)	
Bilateral	2,278.5	2,205.6	2,015.6	1,827.0	1,672.7	65.2
						56.9
						91.0

a/ Not applicable.

Source: IRRD

Debt service

	1978	1979	1980
Total service (US\$ millions)	1,215.6	1,257.6	1,188.4
Ratio to exports of goods and services (%)	38.8	26.8	20.8

	US\$ millions	Composition %	Disbur- (US\$ mil)
<u>Approved IDB loans 1961-80</u>			
<u>Total</u>	<u>581.6</u>	<u>100.0</u>	<u>494.4</u>
Ordinary Capital	291.8	50.2	241.6
Inter-regional Capital	41.4	7.1	12.6
Fund for Special Operations	204.3	35.1	195.7
Social Progress Trust Fund	34.4	5.9	34.4
Other funds	9.5	1.7	10.5

Sectors

Agriculture and fishing	115.5	19.9
Industry and mining	147.3	25.3
Transport and communications	68.7	11.8
Energy	87.9	15.1
Health	70.7	12.2
Urban development	53.4	9.2
Education	29.0	4.9
Export financing	3.8	0.6
Pre-investment	3.4	0.6
Tourism	1.7	0.4

Source:

IDB

CHILE

PROGRAM FOR RECONSTRUCTION OF MAIN NORTH-SOUTH HIGHWAY

MINISTRY OF PUBLIC WORKS

BUREAU OF HIGHWAYS

Loan Proposal

I. THE PROGRAM

A. Background

1. Recent developments in the Chilean economy

- 1.01 The Chilean economy continued to expand in 1980, though more slowly than before. Gross domestic product grew 6.5%, compared to 8.2% in 1979 and an average of 9% in 1977 and 1978. There were surpluses in the national budget and balance of payments. International reserves grew despite an increase of current account deficit which followed an expansion of external debt. Wholesale prices increased 39.6%, compared to 49.4% in 1979. Cost of living rose 31.2% December-to-December, down from 33.4% in 1979. Unemployment declined to 10.2% from 13.6% in 1979.
- 1.02 The Government has restricted progressively its role in economic activity, eliminating subsidies and promoting the private sector. The goal is to arrive at complete - or nearly complete - absence of government support in sectors where market-determined prices are possible. Transition to a free market economy has resulted in transfer of activities to the private sector and lowering of barriers to trade and capital flows between Chile and other countries.
- 1.03 Exposure to the international market is contributing to a reallocation of resources to activities with greater comparative advantage. There is a shift from traditional grain and vegetable crops to fruit, market garden, forest and livestock production. Production of food, wood, paper and chemical items, as well as electric appliances and materials for construction and transport, has grown at the expense of textiles, clothing, footwear and leather and rubber products. Exports of items with high natural resources content have become a dynamic element of economic growth.

- 1.04 Growth of consumption slowed in 1980 and investments stabilized. Internal demand grew 4.7%, down from 10.6% in 1979 and an average 11.5% in 1977 and 1978. The share of the government in total consumption decreased from 16% average in 1977 and 1978 to 14% in 1979 and 11% in 1980 as activities were to be transferred to the private sector.
- 1.05 Production grew less in 1980 than the year before. Two-thirds of the growth of gross domestic product was in services, especially financial, business and personal. Industrial production grew 5%, down from 7% in 1979 and an average of 8% in 1976-78. Instability of copper prices since 1975 has held back any large expansion of the mining sector. Stimulated by overall expansion of the economy and improvement of mortgage rates, construction continued its strong recovery, growing 17%, following 23% in 1979 and an average decline of 3% each year in 1976-78.
- 1.06 Fiscal policy in 1980 was guided by the continuing aim to maintain a budget surplus, shift economic activity to the private sector and decentralize administrative functions. The budget surplus in 1980 was 4.9% of gross national product, up from 4.5% in 1979.
- 1.07 The Central Bank has controlled domestic credit firmly, at the same time giving commercial banks access to foreign short-term credit. As a result there has been an increase of external debt. Growth of money supply in 1980 produced a fall in interest rates. Net internal credit expanded 40%, compared to 46% in 1976. Ninety-seven per cent of the expansion went to the private sector, especially construction and commerce (32%) and manufacturing and agriculture (24%). Demand for credit in the public sector continued to decrease.
- 1.08 Exports grew in 1980 at near the 11% annual rate of recent years and reached 23% of gross domestic product. Copper exports increased 13%, almost entirely from price increases. Non-traditional exports grew 31%, less than the 68% of 1979. The share of copper in total exports was 45% at the end of 1980, down from 49% in 1979 and 75% in 1977. Imports grew faster than exports. Capital goods imports grew 41%, the largest component being machinery and transport equipment. Consumer imports increased 38%.
- 1.09 The trade deficit was US\$420,000,000 in 1980, 18% above the year before. Combined with the traditional deficit on service account, this resulted in a current account deficit of US\$1,597,000,000, equivalent to about 6% of gross domestic product. The deficit on service account originated in large part from a substantial growth of net interest payments on foreign debt. These were US\$947,000,000 in 1980, compared to US\$675,000,000 in 1979.



- 1.10 As in the two preceding years, current account deficit was more than covered by a net capital inflow. International reserves increased by US\$1,240,000,000 to US\$3,180,000,000 at the end of 1980. The private sector expanded its foreign borrowing, particularly medium-and long-term.
- 1.11 Public external debt was US\$5,460,000,000 at the end of 1979. Of this amount 60% was with commercial banks and suppliers, 28% with governments, 7% with international lending institutions and the rest in bonds or obligations related to expropriations. Public external debt is estimated to have grown by only 3.6% in 1980, made possible by the budget surplus. Total external debt nevertheless grew by 32% as a consequence of the sharp expansion of foreign loans to the private sector (US\$8,462,000,000 at the end of 1979). In 1979, debt service payments totaled US\$1,257,600,000, an increase of 3.5% over the year before. The proportion of payments to exports of non-factor goods and services dropped to 27% from 39% in 1978, owing to the strong increase of exports in 1980. Public debt service payments in 1980 are estimated to have decreased to around US\$1,190,000,000, equivalent to 21% of predicted exports.

## 2. Outlook

- 1.12 Estimated real growth of the economy in 1981 is 6%. Growth is expected to occur mainly in investment and private consumption, with construction and services benefiting from particularly significant expansions. Inflation is expected to continue its decline. In the first four months of the year accumulated inflation was 4%.
- 1.13 The budget of the Government for 1981 shows a surplus equivalent to 2.3% of gross domestic product, smaller than in recent years. This drop comes mainly from increased budget outlays for several elements of structural change. These are: (i) the transfer of responsibility for school and health services to municipalities; (ii) social security reform, entailing assumption by the Government of financial obligations heretofore belonging to a diversity of agencies; and (iii) larger allocations for education, health, social security, care of minors, housing and welfare, as the program to eradicate extreme poverty gets under way.
- 1.14 Current account deficit of the balance of payments is forecast at around US\$2,250,000,000 in 1981, with the ratio to gross domestic product staying about the same as in 1980. The deficit is expected to result from a continued tendency for exports to grow more slowly than imports. Capital inflow, largely in the form of medium- and long-term loans, is expected to cover the current account deficit and increase net international reserves by US\$700,000,000, about half the increase in 1980, bringing total reserves to the equivalent of around five months of imported goods and non-financial services.

### 3. Transport sector

- 1.15 In 1979, about 40% of freight transport in Chile was by highway and 35% by rail. The balance was by coastal shipping (18%) and pipeline (7%). Inter-urban passenger transport in the same year was mainly by bus (82%), up from 36% in 1974.
- 1.16 Private companies predominate in the transport of freight, particularly by truck and coastal ship. Almost all of rail, and some of ship, air, and urban transport, is carried out by state-owned agencies. The policy of the Government is to make growth of transport respond to growth of production, population and income; and to provide service at the least possible cost commensurate with an adequate margin of reliability. Rates are to be determined through free competition. Railways and airlines are slated to become self-supporting, as is most of the port infrastructure.
- 1.17 Except for a few lines operated by mining companies, railways in Chile are under the state-owned Empresas de los Ferrocarriles de Chile (FFCCE), which has 8,000 km of track and carries 97% of rail freight. Historically, FFCCE has received substantial subsidies. In 1973, these were 54% of income. Beginning that year, measures were taken to rationalize operations. By 1980, the company had almost eliminated deficits. It is to become self-supporting in the near future.
- 1.18 Coastal shipping is carried out by 16 companies with about 65 ships, totaling 900,000 deadweight tons. These do not meet demand. In recent years foreign lines have accounted for from 20% to 75% of freight transported.
- 1.19 The transport network, which should be adequate for the country's needs, is deteriorated in many places. There is concern that this will push up fuel and vehicle maintenance costs and hinder the benefits expected from exercise of free competition. Demand for transport increased 6% between 1977 and 1978 and 17% between 1978 and 1979. It is urgent to begin reconstruction.
- 1.20 The Ministry of Public Works is responsible for building and maintaining highways, ports and airports. The Bureau of Highways of the Ministry (Dirección de Vialidad) would be executing agency for the program under consideration to reconstruct the main north-south highway between La Serena and Puerto Montt.

### 4. Highway system

- 1.21 There are a little over 60,000 km of highway in Chile plus 15,000 km of seasonal trails. Sixteen per cent of the highway network is paved, 61% is gravel and 23% is dirt. The 3,118 km long north-south highway, paved over its entire length, is the backbone of the highway system.

- 1.22 The number of motor vehicles in Chile grew at an average rate of 7% per annum between 1968 and 1978, including a 9% annual average for light vehicles and 5% average for trucks and buses. In the last few years, deregulation and availability of financing have stimulated growth of the truck fleet and helped lower rates. Ninety-three percent of the fleet is composed of small companies with one or two vehicles in strong competition with one another. Virtually all of the increase of passenger transport in recent years has gone to buses instead of trains. Here also there is a high degree of competition, with good service.
- 1.23 The Bureau of Highways has responsibility for design, construction and maintenance of the highway system. Most of highway funds in Chile come from public sources. Additional funds come from tolls and a smaller amount comes from foreign borrowing, mainly from IDB and the World Bank.
- 1.24 The years of economic depression in the early-1970's produced a drop in road traffic. The low point was reached in 1975, when traffic and fuel consumption fell to 69% and 79%, respectively, of 1971 figures. In 1976, traffic began increasing again, though in 1979 it had not yet regained the levels of 1971. During the 1970's, there was a steady growth of passenger transport by buses (12% of traffic at toll stations as compared to 9% in 1971) and an increase of the average size of trucks.
- 1.25 Difficult economic conditions of the early 1970's, followed in the later years of the decade by a tight rein of public expenditures to diminish inflation, resulted in lower budget allocations for new construction and maintenance than would have been desirable to ensure continued efficiency of the highway system, considering that much of it is thirty years old and was designed for lighter traffic conditions than those now prevailing. Deterioration of the system has progressed to the point where there is excessive wear and tear of vehicles. This is becoming a decisive factor in the economy of transport companies.
- 1.26 The Government is increasing allocations to the highway sector once again, in order to counter the effects of previous funding shortages. The benefits will be sizeable. Given the competitiveness of road transport in Chile today, it is likely that improved roads, making possible greater speeds and less damage to vehicles and cargo, will lead operators to pass on benefits to users in the form of reduced rates and better service.
- 1.27 The part of the highway system with greatest traffic and deterioration is the section of the north-south highway between La Serena and Puerto Montt. This region has 93% of the population of the country and generates 95% of gross national product. The program under consideration, together with that of the World Bank, is designed to arrest the deterioration and bring the highway up to standards compatible with the rapidly developing economy.

B. Program objective and description

- 1.28 The purpose of the program is to ensure fluid traffic movement on the main north-south highway between La Serena and Puerto Montt. To do this, a number of sections totaling about 410 km will be reconstructed. The north-south highway is the main artery of the country and is vital for the economy and national integration.
- 1.29 The heavily traveled section between La Serena and Puerto Montt links the main producing and consuming centers of the country. Parts of it are badly deteriorated and beyond recuperation even with intensive maintenance. The highway was built 15 to 30 years ago for lower traffic density and lighter vehicles than those of today. Execution of the program will reduce transport costs and avert the virtual severing of the highway that will occur in only a few more years in a number of places, if something is not done.
- 1.30 Construction work will be mainly repaving and strengthening of pavement base, coupled with widening of shoulders as necessary and improvement of drainage. There will also be construction of by-passes where needed. Construction will begin in November 1981 and be completed in 1985.
- 1.31 It is estimated that about 25 sections of highway will be covered by the program. To be included, sections must show an economic rate of return of at least 12%, using designs and prices of winning bids, and be designed to meet foreseen traffic conditions. A sample of highway segments totaling 287 km, or 70% of the estimated length to be included in the program, and for which designs and economic feasibility studies are available, was used for appraisal.
- 1.32 The program is part of a larger series of reconstruction works covering approximately 920 km needing reconstruction at this time out of the total of 1,600 km between La Serena and Puerto Montt. The Highway Department has already completed reconstruction of 260 km of this figure. A further 250 km will be reconstructed between 1981 and 1984 with the help of World Bank loan 1927-CH of US\$42,000,000 of April 1981. The balance will be covered by the new IDB program under consideration.

C. Borrower and executing agent

- 1.33 Borrower of the IDB loan and complementary financing would be the Chilean Government. The program would be carried out by the Bureau of Highways of the Ministry of Public Works. The Bureau is responsible for highway construction and maintenance in all of Chile. Its structure and functions were established in Law 15,840 of 1964. It has been executing agent for three other Bank loans (para. 5.01).

## II. COST AND FINANCING

### A. Cost and financial plan

2.01 Total estimated cost of the program is US\$360,000,000 equivalent. The following table shows the break-down of cost and the proposed financial plan:

Estimated Program Cost  
(US\$ thousands equivalent)

	IDB			Total	%
	IC loan	Complem. financing	Local contrib.		
<u>Engineering and administration</u>	-	-	19,200	19,200	5.3
Bureau of Highways supervision	-	-	2,000	2,000	0.6
Coordinating consultants - preparatory phase	-	-	100	100	0.0
Coordinating consultants - execution phase	-	-	2,100	2,100	0.6
Consultants for inspection	-	-	15,000	15,000	4.1
<u>Direct costs</u>	124,740	35,000	141,460	301,200	83.7
Construction	124,740	35,000	141,460	301,200	83.7
<u>Financial costs</u>	1,260	-	38,340	39,600	11.0
Credit commission (IC loan)	-	-	2,610	2,610	0.7
Credit commission (compl. fin.)	-	-	240	240	0.1
Interest during construction (IC loan)	-	-	25,050	25,050	7.0
Interest during construction (compl. fin.)	-	-	10,440	10,440	2.8
IDB inspection and supervision	1,260	-	-	1,260	0.4
Total	126,000	35,000	199,000	360,000	100.0
	=====	=====	=====	=====	=====
%	35.0	9.7	55.3	100.0	

2.02 Construction costs have been estimated as of March 1981 on the basis of designs for about 80% of the 410 km to be reconstructed. Where such designs did not exist, ones for similar highway sections were used. Unit costs were obtained from recent contract awards and were increased by 20% to cover contingencies and the additional costs and risks assumed by contractors under the new bidding system (paras. 3.08 ff). Costs were escalated during the construction period using 18% in the first year and 15% in each of the remaining ones.

- 2.03 The proposed loan of US\$126,000,000 equivalent from inter-regional capital resources, all in foreign exchange, would cover 35% of total cost, which is the proportion set for Bank financing of projects in the transport sector in Category B countries. In addition, at the request of the Chilean Government, the Bank would provide complementary financing of US\$35,000,000 equivalent.

B. Loan terms

- 2.04 The proposed loan from inter-regional capital resources would carry annual interest of 9.25% and a credit commission of 1.25% and would be amortized in 20 years, including a non-payment period of 4 1/2 years corresponding to a construction period of four years. There would be a US\$1,260,000 commission for Bank supervision and inspection.

C. Use of Bank financing

- 2.05 All of the proposed IC loan would be used for direct construction costs, except for US\$1,260,000 to finance the cost of Bank inspection and supervision. The complementary financing could be used for any program expenditures, though the table shows application to direct construction costs for indicative purposes. The requirements for bidding and origin of goods and services attaching to the IC loan would not apply to the complementary financing. The local contribution would cover the remainder of construction costs, all of engineering and administration, including consulting firms, and all of the financial costs except IDB inspection and supervision.

III. PROGRAM EXECUTION

A. Schedule

- 3.01 Construction will begin in November 1981, shortly after the start of the dry season. Completion is scheduled for 1985. Material initiation of all sections should be required within two and a half years from the date of the loan contract (Appendix 1, para. 7).

B. Executing unit

- 3.02 The Bureau of Highways will set up a unit in its Roads Construction Department to be responsible for execution of the program and compliance with supervision, disbursement and reporting requirements of the Bank. The unit should be set up to the satisfaction of the Bank before first disbursement of the loan (Appendix 1, 8(c)).
- 3.03 In line with its policy of decentralization, the Government has begun to assign to regional offices of the Ministry of Public Works

many of the activities traditionally administered from Santiago headquarters. This includes activities of the Bureau of Highways. Though this policy will have benefits in the long run, regional offices may not be fully prepared yet to handle the tasks of this large and complex program. Administration of it should therefore be kept in Santiago unless delegation to the regions is justified to the satisfaction of the Bank in special cases (Appendix 3, para. A.2).

C. Consulting firms

- 3.04 During the preparatory phase of the program, which began in the last quarter of 1980, the Bureau was assisted by a consulting firm to prepare bid documents and carry out the first prequalifications and calls to bid. This contract will soon end. The selection of a second consulting firm to help in the execution phase, comprising the remaining calls to bid, awards and coordination of the program, was recently completed and a contract signed, after review by Management. As construction work begins, specialized firms will be hired to be in charge of technical supervision and inspection. There will be at least five such firms, one for each series of contracts (para. 3.07). Work should not begin on any section before the firm to be in charge of its supervision and inspection has been hired. The Bureau would like to be able to use its own technical staff for supervision and inspection in certain cases. This should occur only if properly justified to the Bank (Appendix 3, para. A.3).
- 3.05 In view of the importance of supervision and inspection for proper execution of the program under the new bidding system (para. 3.16), selection of consulting firms for this function should be carried out in accordance with procedures acceptable to the Bank.

D. Selection criteria

- 3.06 Selection of sections of the highway to be included in the program will be made on the basis of economic rate of return, which should be at least 12%, based on designs and prices of winning bids, and design, which should foresee possible future uses, including adaptability to urban transit needs where necessary. These criteria should be met to the satisfaction of the Bank before call to bid for each section proposed for inclusion in the program (Appendix 3, para. A.1).

E. Bidding

- 3.07 Construction contracts have been grouped in five series. Bidding on the first two series, totaling 180 km of highway, is already taking place, with awards scheduled to be made in the last quarter of the year. Management reviewed bid documents and prequalification of

contractors before the call for bids. The third and fourth series, comprising another 175 km, will be let to tender in the third quarter of 1981 and awarded in the second quarter of 1982. Bidding on the final 55 km of the fifth series will take place in the second quarter of 1982, with awards in the last quarter of the same year. Preliminary designs, specifications and bid documents should be presented to the satisfaction of the Bank before call to bid for any of the sections to be included in the program (Appendix 3, para. A.1).

- 3.08 The bidding system for the program follows new guidelines established by the Ministry of Public Works at the beginning of 1981 for all works contracts within its jurisdiction. These are a departure from usual practice, not only in Chile but in other countries as well. The aim of the system is to achieve better design, lower final cost and more timely execution of contracts.
- 3.09 Usual practice is to ask for bids on the basis of designs completed beforehand. With the volume of construction work thus established, bid prices derive from unit prices for work to be done. In the new system, the Bureau will not provide designs, but will limit itself to setting deadlines for completion and specifying technical parameters, such as geometry, maximum axle weight, traffic volume and drainage standards. It will stipulate that contractors are responsible for design within these parameters and that bids must contain a single price lumping design and construction. Contractors will be at liberty to submit whatever designs they wish to within these parameters and to propose deadlines earlier than the ones set by the Bureau. Any variation of designs considered necessary after awards have been made will be at the risk and cost of contractors. Contractors will be expected furthermore to negotiate and purchase rights of way at their own cost and without reimbursement by the Government, calling on the Government to carry out expropriation procedures only where they can prove this to be necessary, and then without any extension of deadlines for construction.
- 3.10 The prices tendered by winning contractors will be allowed to escalate by the cost of living index up to the time of contract deadlines. Payments to contractors will be made as and when pre-defined stages of the works have been completed and inspected, rather than monthly on the basis of volume of work completed, as is usual practice. Payments for stages completed will be pre-defined percentages of accepted bid prices.
- 3.11 Before the new bidding system was introduced, the Bureau had made designs for 80% of the total length to be included in the program, on the assumption that the former system would still be used. These



designs will be made available to bidders, as an exception to the rule that designs will be developed in the course of the bidding process. Bidders will be able to adopt them, alter them or substitute new designs, assuming full responsibility in each case.

- 3.12 Each bid will be made in two sealed envelopes: one for the technical proposal and one for the price. Technical proposals will be opened first and evaluated on the basis of quality of design, proposed construction periods and planning and organization of construction. Quality of design will consider such factors as geometry, technical specifications, structural design, soil mechanics, topographical design and accessory works, each given a specified weight. Technical evaluations will be translated into discounts to be applied to prices. Price envelopes will then be opened and awards made by comparing discounted prices.
- 3.13 The Bureau of Highways anticipates that use of the new system, by passing responsibility for proper design to contractors, will avoid negotiations to alter designs once work is under way, on grounds of unforeseen occurrences, which in the past often have delayed completion beyond dates first agreed and increased costs over those originally established.
- 3.14 Contractors are likely to bid somewhat higher prices under the new system than under the usual one, in order to cover the risk incurred in assuming responsibility for design and also the additional cost of longer intervals between payments, purchase of right of way, etc. However, the Bureau expects that over the period of construction there will be off-setting price reductions from: (i) submission of designs incorporating the particular experience and equipment of individual contractors; (ii) elimination of renegotiation of costs owing to unforeseen design changes; and (iii) avoidance of delays which might increase the costs of contractors above already fixed contract prices.
- 3.15 The proposed bidding system thus far has been applied in Chile only in the housing sector, where it has been considered to be successful. Because of the lack of experience with it, Management has studied it thoroughly. In its judgement, the system provides adequate guarantees that works will be carried out at a reasonable cost and to good standards of quality. It complies well with the fundamental Bank rule that there should be no restrictions on competitive international bidding. Finally, it would seem to encourage firms with experience and good technical resources to develop thoughtful, competitive proposals.
- 3.16 Supervision and inspection will be an important function in the program, since special care will have to be taken to ensure that construction is up to specifications at all times. Under the previous system, contractors could sometimes negotiate changes necessary to meet specifications and be paid for them by the Bureau

of Highways. This no longer will be possible, since the cost of changes will have to be absorbed by contractors. This is an additional justification for the use of specialized firms for supervision and inspection, and for careful selection of them in accordance with procedures acceptable to the Bank (para. 3.05).

F. Maintenance

- 3.17 Highway maintenance in Chile is improving, as explained in para. 5.11, but is still deficient in some respects. The usual maintenance requirements of the Bank should be applied to the full 1,600 km length of the north-south highway from Puerto Montt to La Serena - not just to the sections reconstructed under the program - and should be effective from the beginning of the program (Appendix 3, para. 5). The reason for this is that the object of the program is to ensure fluid movement of traffic on the whole length of highway mentioned. Should maintenance on sections not included in the program be deficient, there would be a loss of benefits from reconstruction of those that were. Such a requirement would be consistent with maintenance provisions of the bridge reconstruction program (341/OC-CH), which cover not only the bridges but also the road circuits in which they are located; and the provisions of World Bank loan 1927-CH of this year, which refer to the maintenance program of the Bureau of Highways in all of Chile.

IV. PROGRAM JUSTIFICATION

A. Technical feasibility

- 4.01 Design parameters of the program are in accord with good engineering practice and will meet the object of the program to restore the main north-south highway between La Serena and Puerto Montt to its former usefulness and put it into condition to meet the heavier traffic requirements of today and some twenty years into the future. The time-frame selected for execution of the program is considered appropriate for the nature of the work and resource mobilization constraints.
- 4.02 Cost estimates have been made on the basis of full designs for about 80% of the sections (para. 3.11). Estimates include appropriate amounts to cover physical contingencies and reflect the risks and additional costs incurred by shifting responsibility to contractors.
- 4.03 The proposed contracting system, being new, has been studied carefully and is considered capable of ensuring competition as required by the Bank and also optimum design, reasonable cost and timely completion of works.

- 4.04 Conditions for an adequate maintenance program have improved, owing principally to better availability of funds, transfer of substantial maintenance responsibilities to the regional and local levels and increased reliance on contracting. Exercise of standard Bank maintenance provisions, extended to the entire section of the main north-south highway between La Serena and Puerto Montt, should provide a suitable framework for monitoring this activity and furthering the goal of the program to improve traffic conditions and lower transport costs.

B. Institutional and financial feasibility

- 4.05 The Bureau of Highways is adequately organized and staffed to carry out the program. An executing unit will be set up which has the right structure and staff, with the help of a consulting firm hired to assist it, to coordinate the activities of the Bureau, consulting firms and contractors, so as to make possible satisfactory execution of the program and compliance with reporting requirements of the Bank.
- 4.06 Several consulting firms will be hired by the Bureau to assist the executing unit in supervision and inspection works. A single firm has been hired to advise the unit in coordination of these firms and contracting of works. This system is judged to be adequate for the needs of the program. An acceptable procedure for selecting firms has been agreed with the Bureau.
- 4.07 A projection of federal budget allocations required each year until 1985, in addition to toll collections and disbursements from IDB and World Bank loans, in order to cover work programs of the Bureau of Highways foreseen as of April 1981, shows that an increase of 55%, to US\$115,000,000, is needed in 1981 over the amount allocated in 1980, first year of execution. Though a large increase, this amount is feasible because of the end of construction of the Santiago subway in 1980, and in fact has been appropriated already. Annual amounts needed in the remainder of the execution period are of the same order of magnitude. In view of the regular execution of Bureau budgets at near 100% in recent years and the high priority accorded to the program by the Government, funds are expected to be available for execution as scheduled.

C. Economic justification

- 4.08 Economic feasibility studies are available for 287 km of highway, representing ten of the sections to be reconstructed. Using this 70% sample, management has made test calculations which show satisfactory internal rates of return ranging from 19% to 68% and benefit/cost ratios from 1.6 to 7.9. Economic rate of return is above 12% in all cases. With a 25% increase of cost over the original estimate or a 40% decrease of the rate of growth of gross domestic product the rates of return are still over 12%.

- 4.09 The percentage of program benefits going to low income groups, using the ceiling derived from application of the methodology of the Bank, is 24%, or US\$30,200,000 of the US\$126,000,000 loan that has been proposed.

V. PREVIOUS MULTILATERAL FINANCING OF HIGHWAY PROJECTS IN CHILE

A. IDB loans

- 5.01 The Bank has made three previous loans for projects of the Bureau of Highways:

(US\$ equivalent)

	<u>Amount</u>	<u>Contract</u>	<u>Disbursement</u>	<u>Purpose</u>
			(4.30.81)	
98/SF-CH	15,000,000	October 1966	100%	Trans-Andean Highway Cost: 28,900,000
231/SF-CH	6,500,000	January 1970	100%	Feeder roads Cost: 13,000,000
341/OC-CH	24,500,000	April 1978	49%	Bridge reconstruction Cost: 49,000,000

1. Loan 98/SF-CH

- 5.02 This loan was for improvement of the highway from Valparaiso to the border with Argentina, in order to increase permissible volume and weight of road traffic between the two countries. The project experienced delays in local funding and major changes of scope. Two parts were eliminated: (i) reconstruction of the tunnel leading from Caracoles in Chile to Las Cuevas in Argentina, after failure to reach agreement on rail vs. highway use (the tunnel was built later outside the project); and (ii) the section of the highway from Valparaiso to Viña del Mar, after it became apparent that local authorities wanted to make of that section a shore boulevard beyond the scope considered necessary for the project. In addition, the Bank and the Chilean Government agreed to divert approximately US\$1,000,000 of loan funds to reconstruction work following the 1971 earthquake. Final cost of the project after these reductions was about the same as the original estimated total cost. The changes, together with delays in local funding, made it necessary to extend the deadline for final disbursement from July 1970 to June 1975. Other than this slippage, compliance with contractual clauses was acceptable, as was the quality of highway construction finally carried out under the project.

2. Loan 231/SF-CH

- 5.03 Execution of the program financed by loan 231/SF-CH saw important modifications of the original objective, which was to build or improve about 2,000 km of feeder roads in five southern provinces. A first event was the decision of the Government to improve the geometry, drainage and base of the roads - and hence increase their cost - over those established for the original program. A second one was the 1971 earthquake, which led to an agreement with the Bank to divert US\$2,000,000 of the loan to road reconstruction in the earthquake zones and to delay the program as the Government gave priority to relief activities. This compounded the delay already produced by the economic problems of that period and the consequent shortfall of local counterpart funds. A further delay came from the slow procurement and contracting procedures of the Highway Department in that period. The combined effect was to extend the period of execution, increase the cost of the program and reduce the final total of roads built or improved to 756 km.
- 5.04 The Department completed the last of the reduced target of roads in 1978. Cost of the program rose from the US\$13,000,000 originally estimated to US\$20,400,000. The increase was financed entirely with government funds. The quality of the roads completed under the program was acceptable.
- 5.05 Compliance with contract requirements was satisfactory in general, although reporting was sometimes behind schedule. The main shortcoming of the program has been failure since completion to meet fully the contractual requirements regarding maintenance of the roads built. This has been attributable more to budget restrictions, as the Government has sought to reduce inflation, than to poor execution by the Highway Department. Government allocations for maintenance are now increasing again.

3. Loan 341/OC-CH

- 5.06 This loan is for partial financing of a program, still in execution, designed to: (i) reconstruct about 4,200 m of bridges in feeder roads in southern provinces; (ii) acquire vehicles and equipment for inspection; (iii) acquire 130 m of temporary bridge to sustain traffic while construction is under way; and (iv) contract consultant services for supervision. The bridges being reconstructed are generally aging wooden ones which have become bottlenecks as volume of traffic and weight of vehicles have increased in response to a rise in economic activity.
- 5.07 The Highway Department has hired firms for the separate functions of design, construction and supervision in each of the several bid packages. In addition it has hired a single firm to supervise and

coordinate the work of the other firms. This system and better availability of local funds are producing a marked improvement in quality and timeliness of execution. While it is not yet sure that the program will be completed within the period foreseen, it is likely that any slippage will be minor in comparison to what occurred in the previous two programs and in the ones financed with World Bank loans (para. 5.12).

- 5.08 Physical advance of the program in April 1981 was about 60%, two or three months behind schedule. This represents a substantial catching up from an initial delay in finishing preparatory work and hiring firms that necessitated extending the period of completion of groundwork by ten months to August 20, 1980; and extending the period for material initiation of all works by one year to April 20, 1981. Such delays as have been experienced can be attributed primarily to residual slowness of the Bureau of Highways in evaluating bids and in finalizing contracts with firms hired for design, construction and supervision.
- 5.09 Construction costs have been higher than originally estimated, bringing total estimated cost to US\$53,000,000, largely because the rate of exchange of the peso to the US dollar has been kept stable while domestic inflation has been in the order of 30% p.a. As a result it is likely that only some 3,100 km of bridges will be built under the program, rather than the 4,200 km which was the original goal.
- 5.10 Compliance with contractual conditions has been good in general, aside from the relatively minor delays. Supervision and reporting - both technical and financial - have been good. Increased allocations for maintenance mean that a problem is not likely to develop in this area, in contrast to what happened in the 231/SF-CH program. All considered, execution of the program is demonstrating that the shortcomings of former programs have been removed to a large degree and should not be a problem for the new one.

#### 4. Conclusions

- 5.11 The 98/SF-CH and 231/SF-CH programs were seriously affected by shortages of local funding. After their execution it became apparent that this shortage extended to maintenance, which still today has not been brought up to an adequate level. Execution of the 341/OC-CH program is demonstrating that shortage of local funds is no longer the problem it was. Moreover, the new structure for maintenance, consisting basically of contracting out major jobs and passing much of the responsibility to the regional level, appears satisfactory to carry out a good conservation program. Notwithstanding this, in the light of past experience a new loan should incorporate requirements for maintenance and adequate funding thereof.

B. World Bank highway financing in Chile

- 5.12 The World Bank has participated in the financing of four highway projects in Chile between 1961 and the present:

	<u>Amount</u> (US\$)	<u>Contract</u>	<u>Disbursement</u>	<u>Purpose</u>
4-CH (IDA) and 287-CH	25,000,000	June 1961	100%	First Highway Construction and Maintenance Project Cost: US\$56,000,000
558-CH	13,200,000	September 1968	100%	Second Highway Main- tenance Project Cost: US\$25,800,000
688-CH	10,800,000	June 1970	100%	Second Highway Cons- truction Project Cost: US\$24,100,000
1927-CH	42,000,000	April 1981		Highway Reconstruction Project Cost: US\$91,700,000

- 5.13 The three first projects were for construction, upgrading or rehabilitation of a total of about 4,000 km of roads; reinforcement of maintenance capacity through technical cooperation and purchase of equipment; and study of further road projects. All projects experienced significant delays and changes of scope, leading to revision of cost estimates and reduction of total kilometers financed to around half the original goal. Some of the maintenance equipment purchased could not be utilized fully because of shortage of local funds for maintenance operations. Among the problems affecting the outcome of the projects, aside from changes of scope and the floods of 1965-6 which set back the first project, were repeated un-successful bidding and delays in hiring consultants, completing engineering designs and procuring equipment.

- 5.14 Despite the failure to meet original goals in terms of total length of highway constructed and installation of a full-scale maintenance program, the loan did succeed in preparing the ground for the maintenance provisions of the loan of April 1981, which will participate in the reconstruction of several segments of the main north-south highway, totaling about 250 km, complementary to the program under consideration by the IDB. The provisions are preparation of a maintenance program in the first half of this year and commencement of implementation in the second half with the cooperation of consultants satisfactory to the World Bank. There is also a provision for weight control.

VI. SPECIAL ASPECT

- 6.01 The program will employ a bidding procedure that is an innovation for highway works contracts in that responsibility for design will be with contractors instead of the highway agency. This shift of responsibility is intended to preclude initiatives by contractors to secure alteration of designs and be paid for the resulting cost increases. These have been a cause of delays and cost over-runs in the past.
- 6.02 The Bureau of Highways is aware that assumption of responsibility for designs may lead contractors to bid higher prices than formerly, in order to cover the increased risk. However, these prices will be fixed - except for variation with the cost of living - and the expectation is that as a consequence the program could be cheaper in the long run than it would be under the traditional bidding procedure. The possibility of such a favorable result is enhanced by the nature of the program, which consists mainly of repaving, a construction activity that is less vulnerable than some others to circumstances which might open the door to design changes after contracts have been signed.
- 6.03 The Bureau of Highways has established minimum design standards for bids. This ensures the incorporation of satisfactory technical features in design proposals.



PROPOSED RESOLUTION \*

CHILE. LOAN /IC-CH TO THE REPUBLIC OF CHILE  
(Program for Reconstruction of the  
Main North-South Highway)

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 Republic of Chile for the purpose of granting it financing to cooperate in the execution of a program for reconstruction and improvement of various sections of the main North-South highway. This financing shall be subject substantially to the following conditions:

1. Amount and Currencies: Up to US\$126,000,000 or the equivalent in other currencies (except that of Chile) which are part of the inter-regional 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 currencies disbursed.
2. Source of Funds: The inter-regional 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 contract and payable in dollars of the United States of America on the same dates as the interest.
5. Amortization: The borrower shall amortize the loan in a period of 20 years from the date of the 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 provisions contained in this Appendix 1 and in the following appendices shall be final only when the Board of Executive Directors has approved the loan proposal.

6. Interest: 9-1/4% per annum, payable semiannually on principal amounts outstanding. The first payment shall be made six months after the date of the contract.
7. Physical Initiation and Disbursement: The term for physical initiation of the work on all the sections included in the program shall expire 2-1/2 years after the effective date of the contract, and the term for disbursement of the financing shall expire 4 years after the same date.
8. Special Conditions:
  - (a) The resources of the loan shall be utilized in their entirety by the Ministry of Public Works (MOP), through the Bureau of Highways. If modifications in the legal provisions or the basic regulations concerning the MOP are approved which, in the opinion of the Bank, may substantially affect the program, the Bank may 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, together with those of Loan /IC-CH, shall be used to participate in the execution of the program the cost of which is estimated at the equivalent of US\$360,000,000. Consequently, the loan contracts shall contain appropriate provisions to ensure that such resources as may be required, in addition to the two loans, for the complete execution of the program shall be duly provided, in a total amount estimated at the equivalent of US\$199,000,000, in accordance with a schedule of investments satisfactory to the Bank.
  - (c) Prior to the first disbursement of the financing, the MOP shall establish the Executing Unit for the program and provide it with the necessary staff to perform its duties.
  - (d) In the acquisition of machinery, equipment and other materials for the program and in the awarding of construction contracts, the system of public bids shall be used 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 set forth as an annex to the loan contract.
  - (e) The Bank shall establish such inspection procedures as it deems necessary to ensure the satisfactory execution of the program, 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\$1,260,000 shall be allocated for credit to the accounts of the Bank to meet expenses of general inspection and supervision.

PROPOSED RESOLUTION \*

CHILE. COMPLEMENTARY FINANCING /IC-CH  
TO THE REPUBLIC OF CHILE

(Program for Reconstruction of the Main North-South Highway)

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 to grant complementary financing to the Republic of Chile. This financing shall be utilized by the Republic of Chile to the extent necessary to complement the financial arrangements provided for in Resolution DE- /81 which authorizes the financing to cooperate in a program for reconstruction and improvement of various sections of the Main North-South Highway.

I. This complementary financing shall be subject substantially to the following conditions:

1. Amount: Up to US\$35,000,000 which are part of the inter-regional capital resources of the Bank and which have been acquired by the Bank through the sale of participations to commercial banks.
2. Source of Funds: The inter-regional capital resources of the Bank obtained through the sale of participations.
3. Credit Fee: \_\_\_\_ % per annum on the unutilized portion of the complementary financing, commencing to accrue \_\_\_\_ days after the date of the contract and payable semianually in \_\_\_\_.
4. Management Fee: \_\_\_\_ % of the amount of the complementary financing, payable in its entirety in \_\_\_\_ (currency) \_\_\_\_ (number) days after the date of the contract or on the date of the first disbursement, whichever occurs first.
5. Guarantee: The general responsibility of the borrower.

\* The provisions contained in this Appendix 2 and in the following appendixes shall be final only when the Board of Executive Directors has approved the loan proposal.

6. Disbursement: All disbursements shall be for at least US\$ \_\_\_\_\_ or multiples thereof, and no disbursement shall be made later than \_\_\_\_\_ months after the date of the contract.

7. Special Conditions:

- (a) The Bank shall enter into one or more agreements with participating commercial banks whereby the latter undertake to acquire participations in amounts equal in the aggregate to the total amount of the complementary financing of up to the equivalent of US\$35,000,000, in the understanding that such amounts will be transferred to the Bank at the times and in the amounts required for making disbursements to the borrower. The sums received by the Bank on account of credit and management fees, principal and interest will be transferred to the participating commercial banks.
- (b) The borrower, through the Ministry of Public Works, shall present evidence to the satisfaction of the Bank, within six months after the date of each disbursement, that the resources disbursed have been utilized by it for the execution of the program.
- (c) The complementary financing shall be subject also to the special conditions set forth in paragraph 8 of Resolution DE- /81, except for the provisions pertaining to international competition, the area of eligibility for the utilization of the funds and to the payment to meet the Bank's expenses of general inspection and supervision.
- (d) The first disbursement of resources of the complementary financing shall be subject to prior fulfillment of the conditions precedent to the first disbursement of the financing authorized by Resolution DE- /81.
- (e) All purchases and contracts to be financed with resources of this complementary financing shall be made in such a way that reasonable prices may be obtained with consideration given to factors of quality, experience and efficiency.

II. Conditions pertaining to the service of amounts disbursed under the complementary financing:

- 1. Currency: The complementary financing shall be disbursed in \_\_\_\_\_. Payments of amortization and interest shall be made in the currency disbursed.
- 2. Amortization: The borrower shall amortize the complementary financing within \_\_\_\_\_ months from the date of the contract by means of equal and consecutive semiannual installments. The first installment shall be paid \_\_\_\_\_ years from said date.

3. Interest:     points above the six-month "London Interbank Offered Rate (LIBOR)" for dollars quoted in the London market, payable semi-annually on principal amounts outstanding.

RECOMMENDATIONS

- A. It is recommended that the following conditions, to be fulfilled to the Bank's satisfaction, be included in the loan contracts in addition to the conditions set forth in the proposed resolutions:
1. Unless the Bank may otherwise agree, prior to issuing each call for public bids, the borrower, through MOP, shall present to the Bank the preliminary plans, specifications, specific bidding requirements, any other documents necessary for such call and studies demonstrating that the work in question meets the eligibility requirements set forth in paragraph 2.02 of Appendix 4.
  2. The MOP shall manage the program in a centralized way through the Executing Unit of the Bureau of Highways referred to in clause 8 (c) of Resolution DE- /81, which shall have available throughout the execution of the program the advisory services of a consulting firm for coordination of the program. However, with the prior consent of the Bank, it may delegate some of its responsibilities to the regional units of MOP at the work sites, to the extent that it proves to the Bank that such units have adequate technical and administrative capacity and that the execution of the program will not be impaired as a result of such delegation.
  3. Prior to the physical initiation of each section, the MOP shall contract the services of specialized consulting firms to be responsible for the technical inspection of the work involved and for advising the Fiscal Inspector in the supervision of such works. The MOP may substitute regular staff of the Bureau of Highways to perform all or any of the functions that would otherwise be discharged by one or more of such firms, provided that it satisfies the Bank that such staff is qualified to do the work in question and that the technical inspection of the work will not be adversely affected.
  4. The Bank may recognize as part of the local contribution to the program, the cost of consulting services for the program, up to a total amount equivalent to US\$400,000, incurred by the MOP before the date of the resolution, but after November 7, 1980, provided that requirements substantially similar to those set forth in the resolution and in the loan contracts have been fulfilled.
  5. Beginning in the first year of effectiveness of the loan contracts and continuing until 10 years after completion of the works in the program, the MOP shall maintain the main North-South Highway between la Serena and Puerto Montt, including the branch road to Concepción, according to generally accepted technical standards and through the execution of annual maintenance plans consistent with the provisions set forth in Chapter VI of Appendix 4.

6. Beginning in the first year after the effective date of the loan contracts and continuing annually until the end of the fourth year after the date of the last disbursement of the financings, the MOP shall present evidence to the Bank of having made the traffic count and survey referred to in paragraph 7.01 of Appendix 4.
  7. At the end of the fourth year from the date of the last disbursement of the financings, the borrower, through the MOP, shall present to the Bank an ex post evaluation report on the results of the program, following the methodology and guidelines agreed upon with the Bank and including the information specified in Chapter VII of Appendix 4.
  8. The financial statements of the program, during its execution, shall be presented annually to the Bank audited by the Contraloría General de la República. The first financial statements shall be those pertaining to the fiscal year in which the execution of the program begins.
- B. An annex substantially similar in content to Appendix 4 (The Program) shall be included in each of the loan contracts.

THE PROGRAM  
(Annex A to the Loan Contract)

I. Purpose

- 1.01 The purpose of the Program is to assure smooth and efficient traffic flow on the main North-South Highway and its by-pass to the city of Concepción.

II. Description

- 2.01 The Program calls for reconstruction and improvement of approximately 410 kilometers of the main North-South Highway between La Serena and Puerto Montt, including the by-pass to the city of Concepción. Among the improvements to be built are all by-passes which are justified and necessary.
- 2.02 Works will be done on approximately 25 sections of the highway. To be included in the program, a project must meet the following eligibility requirements:
- (i) The project must be supported by an internal rate of return of not less than 12% calculated according to methodologies acceptable to both parties. In each case, the design proposed and the price bid by the bidder to whom MOP intends to award the contract, must be taken into consideration, among other factors.
  - (ii) The proposed work on the section must also be supported by designs calling for and/or design standards requiring the bidders to provide: (1) the necessary works for adequate adaptation and control of traffic, which will either be included in the program or contemplated for the future; (2) in the case of sections in urbanized areas or areas where urbanization may be foreseen as feasible in the near future, characteristics consistent with those of an urban road and permitting adequate adaptation of the highway to urban traffic conditions.

III. Total Cost and Financing of the Program

- 3.01 The total estimated cost of the Program amounts to the equivalent of US\$360,000,000, which will be financed approximately as follows:



ESTIMATED COST OF THE PROGRAM  
(in US\$ thousands or equivalent)

	B A N K		Local Contrib.	Total	%
	Loan /IC-CH	Complem. Financ.			
1. <u>Engineering and Administration</u>	-	-	19,200	19,200	5.3
1.1 Fiscal inspection	-	-	2,000	2,000	0.6
1.2 Advisory services 1	-	-	100	100	0.0
1.3 Advisory services 2	-	-	2,100	2,100	0.6
1.4 Advisory services 3	-	-	15,000	15,000	4.1
2. <u>Direct Costs</u>	124,740	35,000	141,460	301,200	83.7
2.1 Construction	124,740	35,000	141,460	301,200	83.7
3. <u>Financial Costs</u>	1,260	-	38,340	39,600	11.0
3.1 Credit Comision (Loan No. /IC-CH)	-	-	2,610	2,610	0.7
3.2 Credit Comision (CF)	-	-	240	240	0.1
3.3 Interest during construction (Loan No. /IC-CH)	-	-	25,050	25,050	7.0
3.4 Interest during construc- tion (CF)	-	-	10,440	10,440	2.8
3.5 Inspection and supervision (Loan No. /IC-CH)	1,260	-	-	1,260	0.4
T O T A L S	126,000 =====	35,000 =====	199,000 =====	360,000 =====	100.0 =====
Percentages	(35.0)	(9.7)	(55.3)	(100.0)	

1/ The resources of the complementary financing (Loan /IC-CH) may be utilized in any of the investment categories shown in this table, and the application shown is merely indicative.

IV. Consulting Services

- 4.01 The selection and contracting of firms for the consulting services required for execution of the Program shall be carried out in accordance with procedures acceptable to both parties.

V. Bidding

- 5.01 When goods to be acquired or services to be contracted through public bidding are to be financed in whole or in part with foreign exchange from Loan /IC-CH, the bidding procedures and specific bidding requirements shall permit unrestricted participation of suppliers and contractors from member countries of the Bank. Consequently, no conditions that would preclude or restrict the offer of goods or the participation of suppliers or contractors from such countries shall be established in such procedures and/or specific requirements.

VI. Maintenance

- 6.01 The basic purpose of the maintenance of the Main North-South Highway between La Serena and Puerto Montt will be: (i) to keep the works of the Program in substantially the same condition as they may be at the time of their completion; and (ii) to keep the sections of the highway not subject to reconstruction or improvement in substantially the same condition as they presently are.
- 6.02 The annual maintenance plan shall be submitted to the Bank at least three months before the start of each fiscal year, beginning with the 1982 fiscal year, and shall include, as a minimum:
- (a) a description of the organization responsible for the maintenance, with an indication of the staff in charge of the maintenance; the activities to be carried out directly by the organization, and the number of times a year they are to be carried out; the number, type and condition of the equipment to be used for this work; the location, size and condition of the workshops, warehouses or depots; maintenance camps; the works to be contracted out to private firms, as well as their quantities 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 amount of funds assigned for maintenance of the highway in the sections mentioned above, with details on the amounts allocated in the budget, the amounts actually spent and the estimated amount to be spent, as the case may be. Such indication must be submitted for the corresponding current year, the previous year and the next year (i.e. the year corresponding to the Plan). In each of these three cases, the funds assigned for improvement operations shall be shown separately from those to cover maintenance costs;

- (c) a detailed budget, by principal sections of road, for each of the maintenance activities planned to be carried out, with the activities to be executed directly segregated from those to be contracted out; and
  - (d) a report on the maintenance conditions, such report to be based on a system of adequacy evaluation, which shall be previously submitted to and approved by the Bank. This system shall be so structured as to provide an overall rating of maintenance conditions of the road, based on a numerical evaluation of the various components, such as pavements, shoulders, culverts, drainage structures and signals.
- 6.03 The Bank shall have the right to perform periodic inspections of the highway. Should it be determined from such inspection or from reports received by the Bank that the maintenance is 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 use in the ex-post evaluation of the effects of the Program, the MOP shall, from the start of the works, make traffic counts and surveys of origin and destination in two sections of the highway. The traffic counts shall be made quarterly at appropriate times of the year to reflect seasonal variations, and shall be carried out over a period of seven days. In the last year of such counts, and during two of the seven days of each, surveys of origin and destination of traffic shall be conducted.
- 7.02 The ex-post evaluation report to which reference is made in Recommendation A.7 (Appendix 3) (Clause 6.0\_\_ of the Special Conditions) shall cover the following items:
- (a) Economic Costs. The construction and maintenance cost shall be estimated explicitly, with financial, tax and other transfers eliminated. The prices of fuels and transport shall be corrected on the basis of their opportunity cost.
  - (b) Benefits from Savings in Vehicle Operating Costs. The bases of the costs and the traffic forecasts shall be revised on the basis of the results of the traffic counts, with special emphasis given to variations and velocities.
  - (c) Economic Savings to Passengers as a Result of Reduced Travel Times. Based on the results of the survey of origin and destination, the purposes of travel of passengers in light vehicles, buses and trucks will be determined. Emphasis should be placed on including the passengers, not only the drivers, in the surveys of origin and

destination. The benefits under this heading will be determined on the basis of the results of those surveys and the average yearly incomes for the different types of passengers.

- (d) Distribution of the Benefits and Costs. The analysis of the redistributive impact will be analyzed in accordance with the guidelines agreed upon with the Bank.
- (e) Economic Indicators. The internal rate of return and present net value will be estimated.