

INFRASTRUCTURE SURVEY REPORT
FOR
THE DEVELOPMENT OF THE PIONEER IRON MINING
IN THE REPUBLIC OF THE PHILIPPINES

OCTOBER 1979

JAPAN INTERNATIONAL COOPERATION AGENCY

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FORWARD

The Government of Japan decided to execute survey for the development of infrastructure related to the Pioneer Mine in the Republic of the Philippines, and entrusted the Japan International Cooperation Agency (JICA) to act as an executing agency for the surveys.

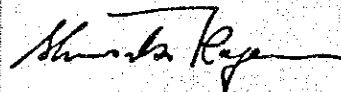
JICA organized a survey team of seven experts headed by Mr. Noboru Murai of Nippon Koei Co., Ltd., and sent them to the Republic of the Philippines for the period from March 26 to June 5, 1979 to carry out the field survey. The results of the field survey were further studied at home office in Tokyo after the return of the survey team, and the report has been compiled and submitted herein.

The surveys and studies were carried out for establishing a new port and improving road/bridges to export the iron ore of the Pioneer Iron Mine. Appropriate plants for such port development and road improvement has been formulated and studied technically and economically.

It would be our great pleasure if the survey results could facilitate the development of the Pioneer Mine and contribute to the socio-economic development of the Republic of the Philippines, as well as to further promote the friendship between the Republic of the Philippines and Japan.

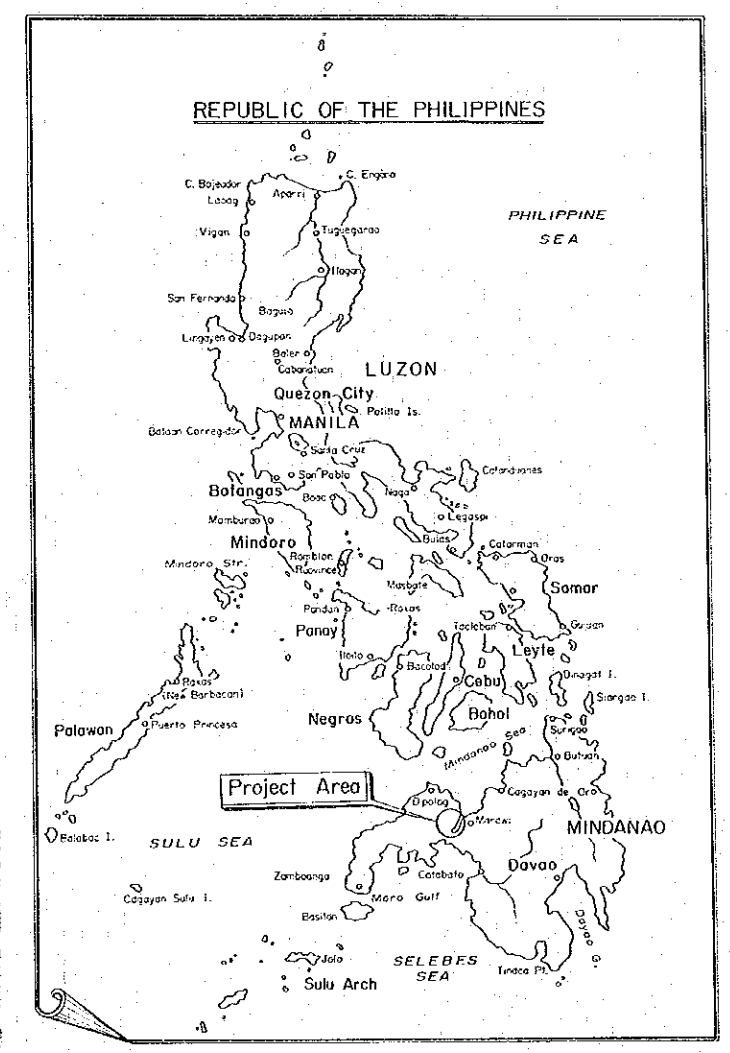
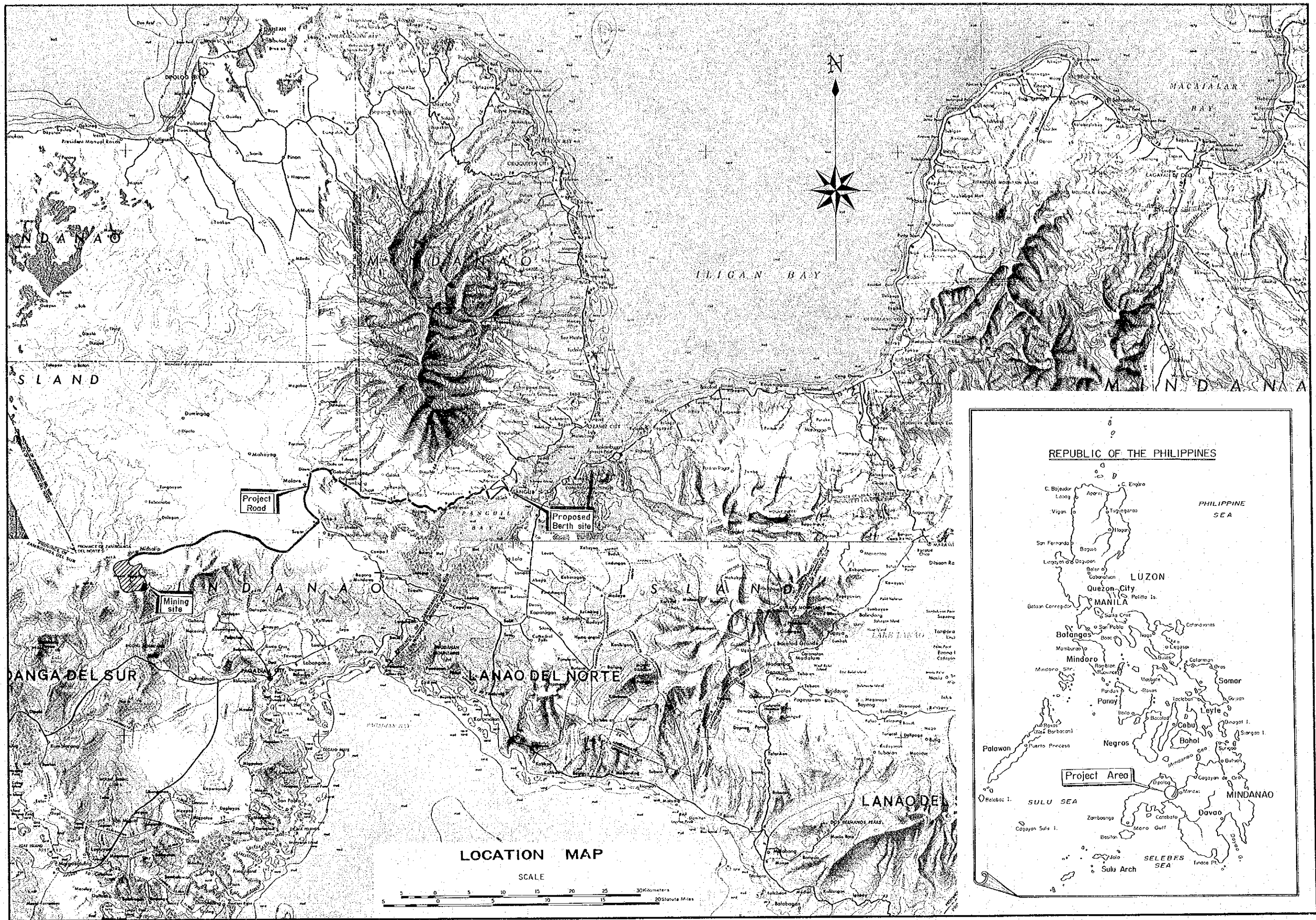
I should like to take this opportunity to express our deepest gratitude to the personnel concerned of the Government of the Republic of the Philippines who extended kind cooperation and assistance to the field survey team, the personnel concerned of the Embassy of Japan in the Philippines, the Ministry of Foreign Affairs and the Ministry of International Trade and Industry of the Japanese Government, and to all other authorities concerned.

October 1979



Shinsaku Hogen
President

JAPAN INTERNATIONAL COOPERATION AGENCY



SUMMARY AND RECOMMENDATION

SUMMARY AND RECOMMENDATION

1. In relation to the development of the Pioneer Mining Project in the province of Zamboanga del Sur, Mindanao, Philippines, the Japan International Cooperation Agency (JICA) decided to cooperate in studies of the improvement and/or development of some infrastructure required for the exploitation of mineral resources. This infrastructure development will not only facilitate iron ore transportation but also bring about benefits from improvement of transport network in Mindanao.
2. The infrastructure studies consist of a new ore loading port (project port) near Tangub city and an ore transportation road (project road) from the Pioneer mine site to the above port site. Of the 78 km-long project road, the 5.9 km between mine site and Midsalip town is a new road to be constructed exclusively for exploitation of mineral resources, and remaining 72.1 km section is the existing road to be improved for iron transportation and general traffic.
3. Iron ore is scheduled to be transported along the project road by 12-ton-class truck on 160 ADT level. The total weight truck inclusive of iron ore loaded is 30 tons. To cater for this heavy traffic, the existing road should be improved and the bridges also should be reinforced or replaced. The existing road from Midsalip to port site, though capable for such transportation in respect of alignment, is

poor in pavement structure. The road section where gravel surfacing was judged "fair" should be improved to form a 15 cm thick base course, while the "bad" road section should be improved to form a combination of 15 cm thick base course and 15 cm thick subbase course. All the wooden bridges shall be replaced by metal bridges of I-Beam-Type, and even R.C. bridges and metal bridges which have bearing capacity of less than 20 ton shall be reinforced by bolting and/or welding steel plates.

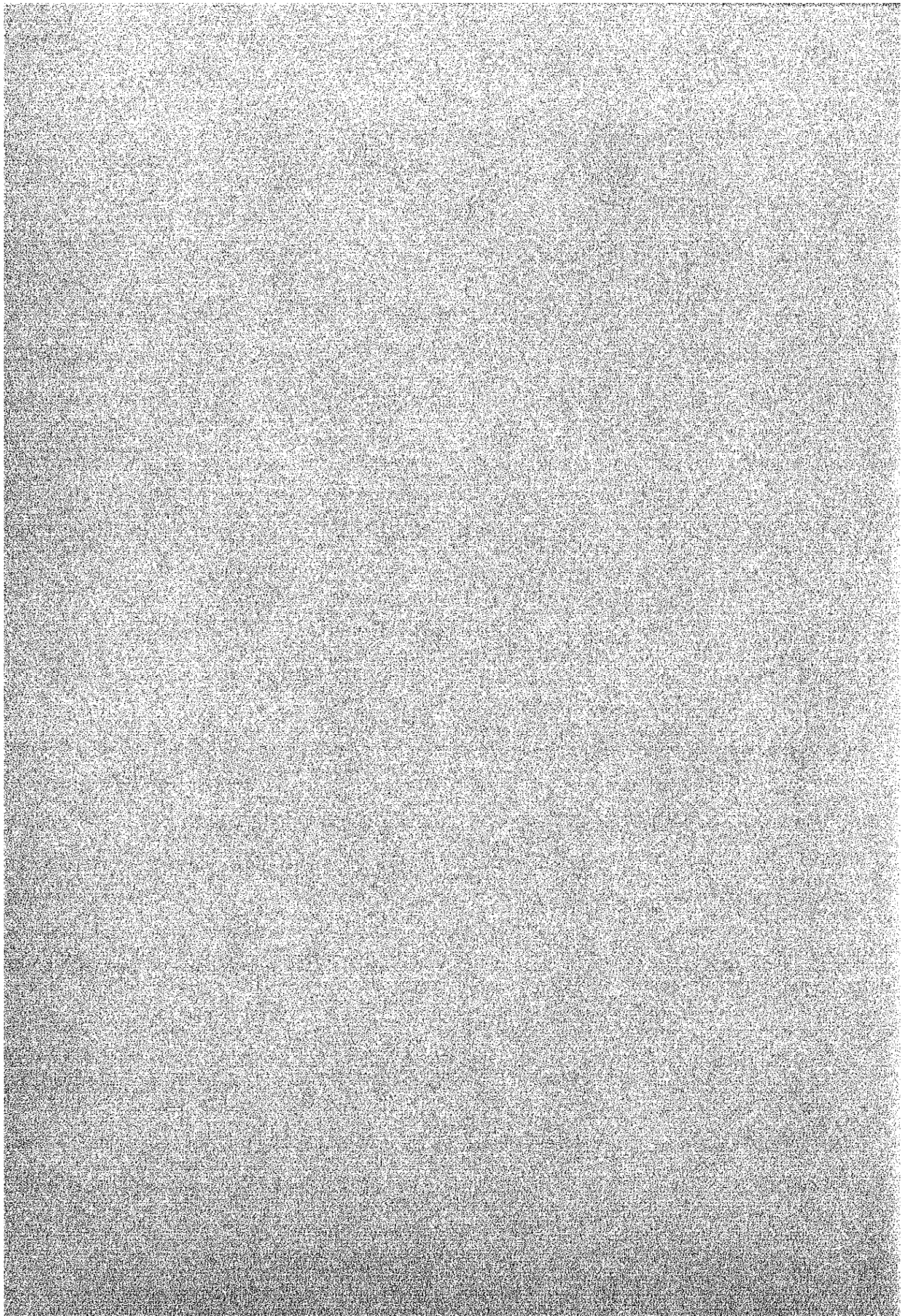
4. The new road section has been designed on the principle that the existing village roads or foot paths shall not be traced but a new road mainly by landcut shall be build. This new road is the gravel road of two lanes with effective carriage way of 6.70 m. Two new metal bridges of I-beam-Type shall be constructed in this section.

5. Iron ore will be transported by dump-truck along the project road and loaded onto 2,000 - 6,000 DWT barges at the project port, and will be carried upto the sintering plant in Cagayan de Oro. Major port facilities are a stockyard, an access causeway, a trestle and a loading pier. To locate these facilities three alternative port sites have been surveyed near Tangub city. These sites are Migcanauay, Solaton and Talabaan. From navigational view-point, Solaton site has been deleted. Since the remaining two sites have no significant difference in construction cost and technical feasibility, Midcanauay site has been selected on the basis of Tangub city's choice.

6. Preliminary cost estimate of road & bridge improvement and port development has been made as follows: (The road and bridge costs are estimated separately for each section.)

(unit: Million peso)			
Project Road	Road	Bridge	Total
Section I (Pioneer - Midsalip)	9.03	0.58	9.61
Section II (Midsalip - Switch)	3.87	3.42	7.29
Section III (Switch - Tangub city)	4.49	11.06	15.55
Section IV (Tangub city - Tangub port)	1.02	0.45	1.47
	18.41	15.51	33.92
Project Port			10.33
	GRAND TOTAL		<u>44.25</u>

7. Transport benefits from the road improvement can be estimated in the form of saving of vehicle operation cost on the project road, while transport benefits from port development can be estimated in the form of saving of transportation cost, because transportation by sea will be used instead of road transportation, between Tangub and Ozamis port.



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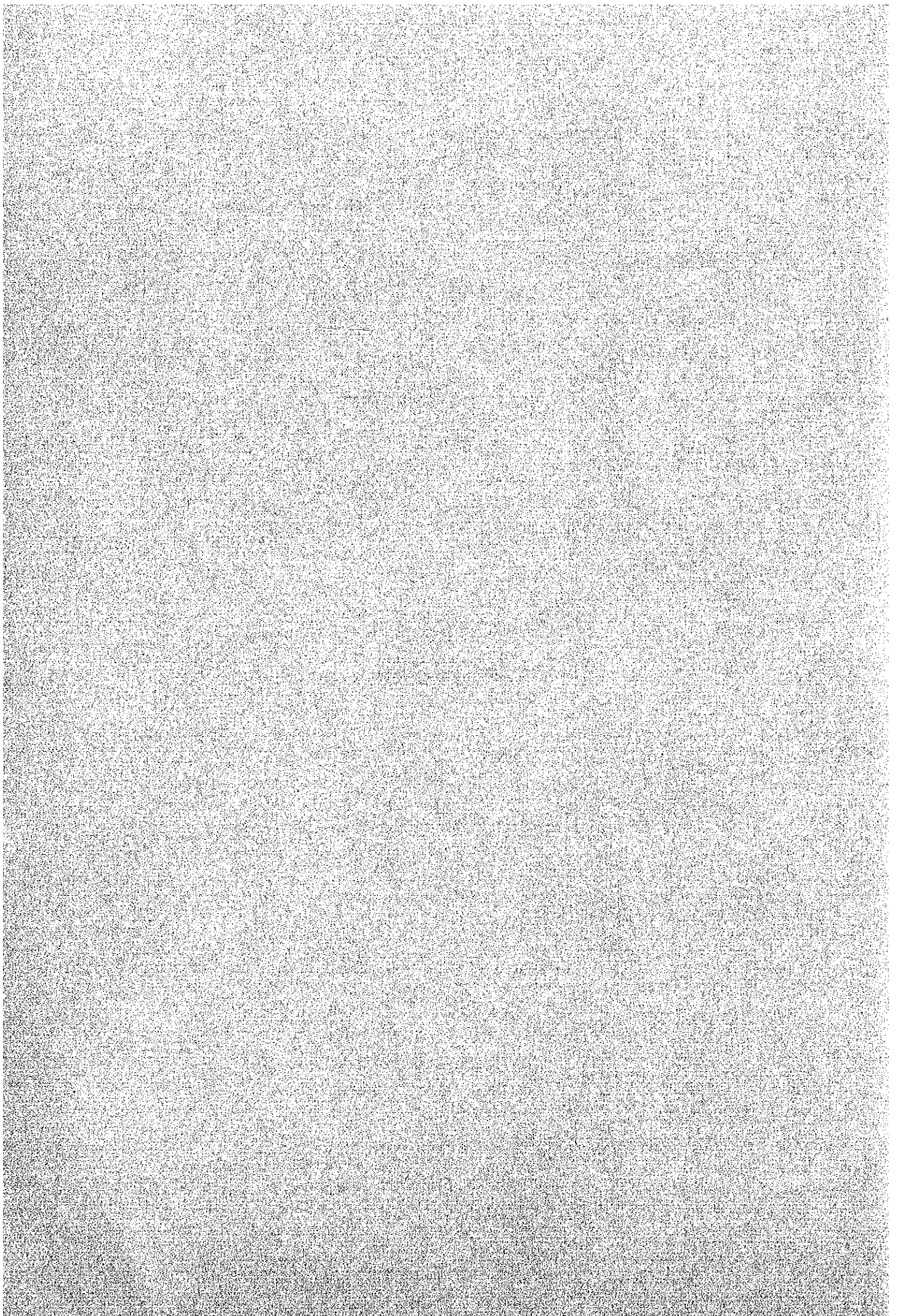
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CHAPTER I

INTRODUCTION



CHAPTER I
INTRODUCTION

1.1 BACKGROUND

The Republic of the Philippines has been placing greater emphasis on industrial development by making use of the abundant natural resources like mineral ores. In order to promote this policy on regional level, the country has been divided into eleven regions by the National Economic Development Authority (NEDA). The South-western part of Mindanao (Project site) belongs to "Region 10". Unlike "market-oriented-development" in Manila and Cebu city, the industrial development in this region is "natural-resources-oriented". The centre city of this region is Cagayan de Oro in the province of Misamis Orientak, where a industrial complex called "PHIVIDEC Industrial Estate" is now in operation. The core industry of this complex is iron ore sintering industry owned by the Philippines Sinter Corporation (P.S.C.), Philippine-Japan enterprise. Most of the iron ore to this plant, at present, is transported a long way from Brazil, Australia and Canada.

On the other hand, in the western part of the "Region 11", numbers of iron ore deposits including the Pioneer Mining project remain undeveloped. As the replacement of expensive foreign ores, P.S.C. contemplates to exploit this Pioneer mine. The mine has deposit of iron ore of more than 4 million tons. The P.S.C. envisions to exploit this iron ore at 300,000 ton/year level.

For the development of the Pioneer mine, it is required to develop various infrastructure facilities including an access road to the mine and a port for ore loading. These infrastructure will not only facilitate the mine development, but also contribute to the socio-economic development of the region.

Under these circumstances, planning and studies on the infrastructure development related to the Pioneer Mining project have been entrusted to the Japan International Cooperation Agency (JICA), which has been acting as an executing agency of the Japanese Government for its technical cooperation programs.

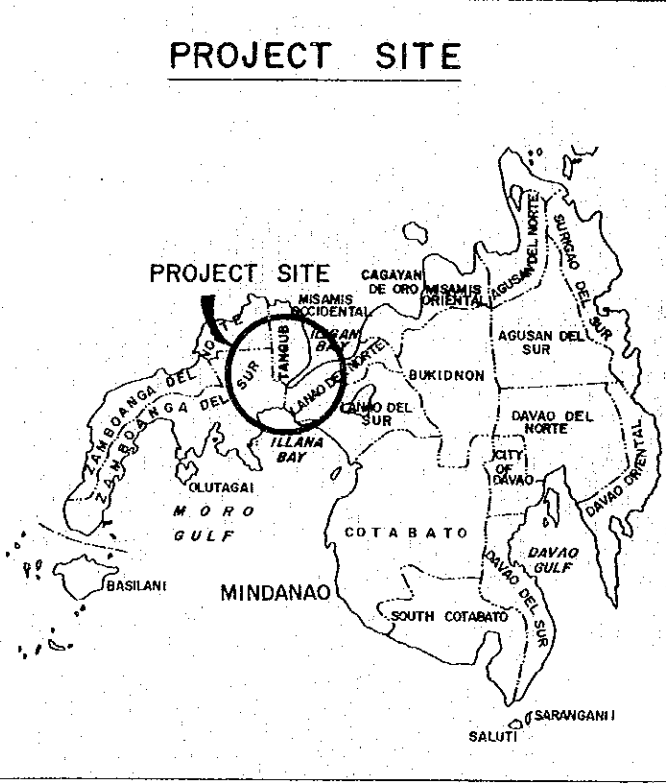
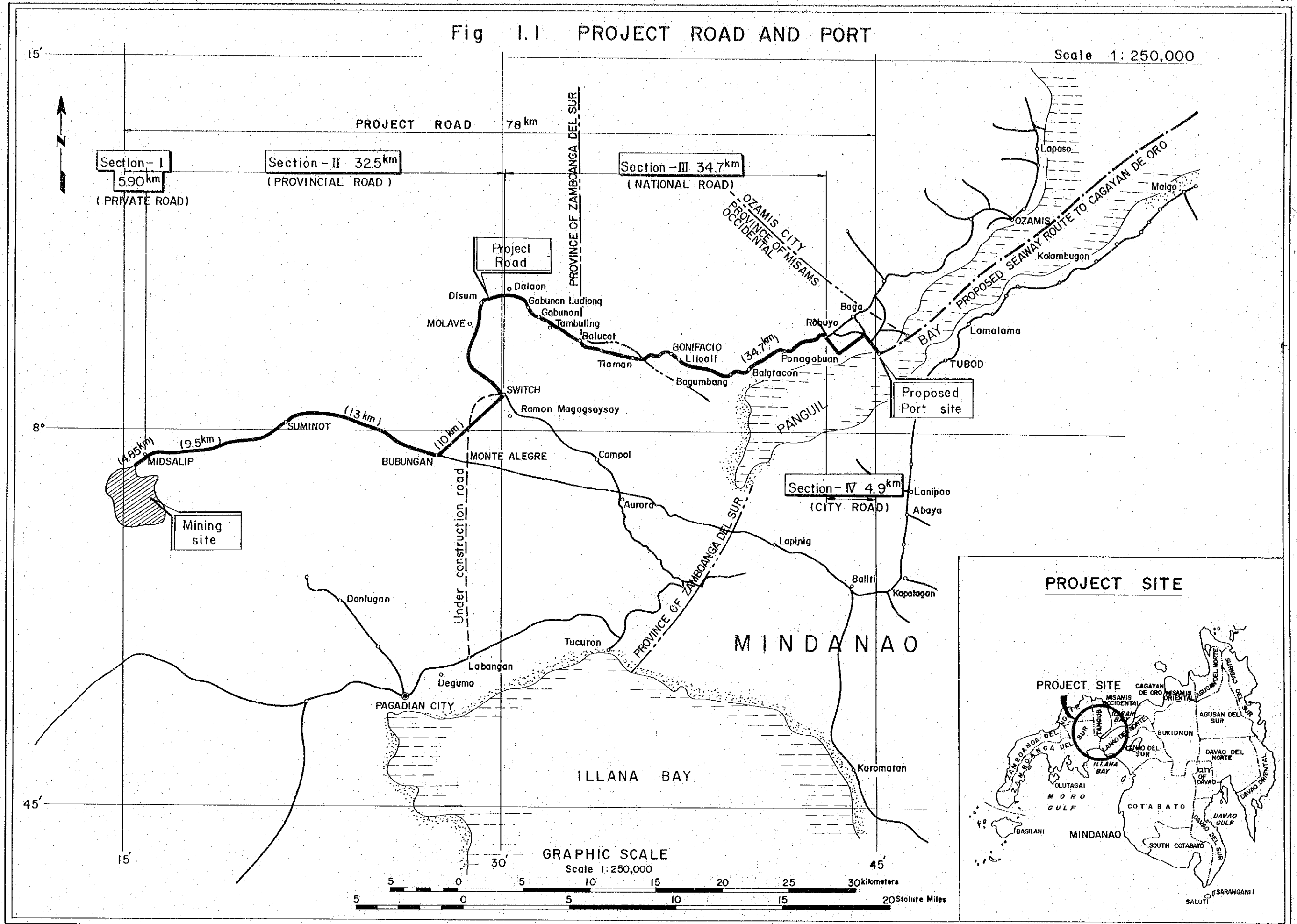
The scope of this study is to investigate the existing natural and economic conditions of the project road and port, to make preliminary plans and to estimate associated costs to be incorporated into overall feasibility study of the Pioneer project.

The field survey, which consisted of marine investigation (hydrographical survey, tidal measurement and beach profile) in Panguil Bay and the inventory survey of road/bridge from Tangub port site to Pioneer Mining Project site, was conducted by the JICA survey team from March 26 to June 5, 1979. The survey team was composed of the experts as follows:

Team Leader	: N. Murai
Road Engineer	: K. Fukurono
Bridge Engineer	: S. Yamashita
Port Engineer	: R. Nishimura
Marine Surveyor	: S. Aramaki
Road/Marine Surveyor	: T. Kaminoda
Marine Surveyor	: S. Shoda

Fig 1.1 PROJECT ROAD AND PORT

Scale 1:250,000



1.2 ORE TRANSPORTATION ROUTE

The iron ore to be exploited at the Pioneer mine will be transported upto a port to be constructed in Panguil Bay, where iron ore will be shipped to barges for Cagayan de Oro. From the Pioneer Mining Project site, the project road runs eastwards travelling on the newly built private road upto Midsalip, then passes the major cities like Suminot and Bubungan. At Bubungan the project road turns northeast and runs through Switch and Molave (coconut plantation area). After passing Molave, the project road again winds eastwards to Bonifacio and Labuyo in Tangub city and terminating at a port site to be proposed in Panguil Bay.

For the project port site, Tangub city area has been selected through this study, as discussed in Chapter V. The total length of the project road is 78 km, of which 5.9 km road between the Pioneer mine site and Midsalip is a new road to be built exclusively for iron ore exploitation, 32.5 km road from Midsalip to Switch via Bubungan is the provincial road, and 34.7 km road upto Tangub city is the national road, and final road section of 4.9 km is the city road between Tangub city and port site. All the project related roads mentioned above are illustrated in Fig. 1.1.