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資料１　質問票に対する回答（公共事業道路省）

Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila

ANSWER TO QUESTIONAIRE FOR THE PROPOSED ESTABLISHMENT OF FLOOD CONTROL AND SABO CENTER

March 1997

ANSWER TO QUESTIONNAIRE
FOR THE
PROPOSED ESTABLISHMENT OF SABO AND FLOOD CONTROL ENGINEERING CENTER IN THE PHILIPPINES

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1. NATIONAL DEVELOPMENT PLAN

(1) How are disaster prevention policies stated in the "Medium-Term Philippine Development Plan (1993-1998)?

The Philippine Development Plan states the following policies:

Under Item 4.4.4, no. 2e page 4-11:

- *Enhance watershed management, water conservation and erosion and sediment control.*

Under Item 5.4.4, no. 7, page 5-8:

- *Strengthen the disaster coordinating councils at the national, regional and local levels;*
- *Improve community information centers and upgrade their communication facilities to allow for early warning, mobilization, prompt response and feedback in the events of disasters; and*
- *Implement a community-based disaster preparedness training program to increase the local population's capability to cope with disasters.*

Under Item 5.5.2 - Disaster Mitigation, page 5-11:

- *Conduct of flood control/drainage work/dredging and the appropriate public works;*
- *Enhance disaster management through public information drive, assistance for relief and rehabilitation of victims and training on disaster preparedness; and*
- *Conduct of disaster-related studies, i.e. disaster risk mapping, damage assessment and socio-economic impact.*

(2) How are sabo, landslide countermeasures, flood controls and urban drainage implemented in view of those policies?

The DPWH flood control programs will give priority to the major river basins identified by the National Water Resources Board, as they encompass the large tracks of fertile lands.

Critical gaps in river control and flood control system, such as dikes, levees, river walls, and cut-off channels will be completed, and weak or damaged structures rehabilitated or strengthened, while roads and bridges damaged by erosion will be secured. Constricted river mouths and sections will be dredged. Likewise, appropriate flood control and drainage mechanisms shall be pursued in Metro Manila and other highly urbanized centers to uplift their socio-economic development by reducing losses caused by flooding.

To compliment the downstream works, more SWIM and mini-dam projects will be installed to serve as first line of defense against flood as well as to provide water supply for irrigation, hydropower, and fish raising. Debris dams and related works will also be constructed to help check erosion of mountain ranges and watersheds.

To support these engineering schemes, non-structural methods of mitigating flood damages such as flood plain zoning, development regulations, flood forecasting and warning, and reforestation will be undertaken thru the appropriate agencies.

(3) Are there any related plans decided at the governmental level? If yes, what is the progress of those plans?

Aside from the flood control and drainage projects identified and will be implemented in the major river systems in the country, flood control measures for medium and small rivers will be also undertaken by the concerned local government units.

(4) Please provide the fundamental laws, regulations and requirements related to sabo, landslide countermeasures, flood control and urban drainage.

(See Table 1).

2. CONDITIONS OF DISASTER PREVENTION IN THE PHILIPPINES

(1) How are the conditions (e.g. natural disasters which took place in the Philippines, countermeasures taken by the Government, and the ability of the Filipino Engineers) in such field as sabo, landslide countermeasures, flood control and urban drainage?

In 1995, 15 typhoons entered the country, 9 were destructive. From January to September of 1996, 12 tropical cyclones entered the Philippine Area of Responsibility. Typhoon "Huaning" and "Gloring" had caused major floodings and landslide in low lying areas. As of now we have not get fully recovered from the effects of July 1990 earthquake and June 1991 Mt. Pinatubo eruption which ravaged the country. Seasonal landslide, which are rather common in the country, have exerted yearly recurring impacts on the landscape frequently damaging roads and other infrastructures.

Countermeasures taken by the Government

Response task have to be designated to appropriate government departments and other resource organization, major activities of these government agencies are as follows:

Classification		*Major Activities*
Preparedness-		*Planning of disaster countermeasures*
	-	*Establishment and reinforcement of disaster prevention organization*
	-	*Education and training of personnel engaged in disaster prevention activity*
	-	*Preparation of disaster prevention activity guideline*
	-	*Execution of disaster prevention exercise*
	-	*Public Relation for disaster prevention*
	-	*Reservation of emergency goods such as foods and medicines*
	-	*Reinforcement of disaster monitoring and warning network*
Relief	-	*Securing evacuation areas and distribution of exclusive teams for evacuation lead*
	-	*Emergency measures for injured persons, and transportation to medical facilities*
	-	*Rationing of relief goods such as foods and clothes to victims*
	-	*Searching for missing persons*
	-	*Emergency works*
	-	*Examination of damages*
	-	*Securing emergency transportation systems*
Restoration	-	*Recheck of damages*
	-	*Request and supply of relief persons and relief goods necessary for restoration*
	-	*Restoration activities such as restoring works for damaged facilities*

(2) How do you think the above-mentioned conditions can be changed by implementation of this project?

The existing set-up of disaster countermeasures in the country covers all types of disasters not only caused by typhoons, flood, drought but also cause by earthquakes, volcanic eruptions, radiological emergencies and even wars. Because of its wide range of responsibility, various aspects of policy direction, planning, organization and training are not fully in effect when flood control and sabo engineering is concerned.

At present, disaster countermeasures are classified in only three (3) aspects: such as, preparedness, relief and restoration. Training, research and development specifically for flood control and sabo are lacking. Currently, manual, standards, criteria/guidelines in planning and designing, programs for operation and maintenance of flood control and sabo works is not yet fully established because of the unsystematic handling of data and information in different government offices and the lack of experienced engineers and/or technicians to analyze and handle them properly. Hence, the Government thru the Department of Public Works and Highways prepares the proposal for the establishment of flood control and sabo center as a solution to these problems.

With the establishment of this center, the government's goal to improve disaster prevention works in the country will be realized.

(3) How are engineers engaged in disaster prevention trained at the present time in the Philippines? Do you have any specific educational institutes and/or organization for this? If yes, please provide an outline of the institutes and/or organization.

Engineers are trained in disaster prevention through seminar, training/workshop for the duration of one week once a year only. This undertaking is a joint effort of DPWH and JICA through the initiatives of the long term JICA River and Sabo Experts in DPWH.

There is no specific educational institute or academe that offered such training.

(4) How has research or disaster prevention been carried out? Please indicate the organization and/or institutes and outlines of them, which carry out research on disaster prevention.

None

3. YOUR PROPOSAL FOR THIS PROJECT

(1) Activities

a. Please describe the output from the activities in each field of sabo, landslide countermeasures, flood control and urban drainage under the Japanese technical cooperation.

Output 1: *Standards in planning, design, operation and maintenance are provided.*

Project Activity 1

a. *Review and revise of existing manuals through comparison with the conditions of target areas.*

b. *Theoretical verification of revised manuals at UPCOE*

Output 2: *Data operation system is established.*

Project Activity 2

a. *Establishment of a data filing system*

b. *Preparation of a manual for operation of the data network system*

c. *Training for personnel to manage the collected data.*

Output 3: *Training and public information systems are established.*

Project Activity 3

a. *Preparation of training and public information programs*

b. *Preparation of textbooks*

c. *Implementation of training (Professors of UPCOE will take part as lecturers)*

d. *Publication of information*

Output 4: *Results of research are applied to projects.*

Project Activity 4

a. *Identification of specific danger areas*

b. *Identification of locations of potential danger points*

c. *Carrying out planning and design of facilities.*

b. How high are the levels of technical transfer you expect under the project-type technical cooperation?

High level of expectations.

(2) Project purpose, overall goal

Please describe the final goal in the field of disaster prevention to be achieved with Japanese technical cooperation.

Project purpose: *To enhance capability to respond to disasters and sustain it.*

Overall goal : *Effective and low-cost counter measures are properly planned and implemented.*

(3) Target areas

a. Please provide geographic and/or geological maps of the target areas

Pre-identified target areas are the following:

River Control - Pasig-Marikina-Laguna Lake Complex

Sediment/Lahar Flow - Mt. Pinatubo, Mt. Mayon

Erosion and Landslide - Kennon Road, Dalton Pass

Urban Drainage - Metro Manila Drainage System

Note: Target areas may change depending on its changing condition or its urgency.
Please see attachment.

b. What are the conditions of the target areas? Please fill in the blanks of the matrix in Annex 1.

See Annex I

c. Do you have your own plans to develop target areas? If yes, please provide outlines, results and future projections for the plans.

Pasig-Marikina-Laguna Lake Complex

- *Detailed engineering is being proposed on foreign financing. The scope of work does not include Laguna Lake.*

Mt. Pinatubo

- *Feasibility Study of Sacobia-Bamban Rivers is already completed. Detailed design and implementation is proposed for financing. No other studies were undertaken for other rivers around Mt. Pinatubo.*

Mt. Mayon

- *Installation of lahar warning sensors and rainfall gauge stations is on-going. Feasibility study is proposed to be undertaken.*

Kennon Road

- *As a result from the 1990 earthquake consultants from Japan recommended to abandon Kennon Road, for they found out that it is beyond economic repair. This is for further review and in depth study. Research is required.*

Dalton Pass

- *Several studies have been undertaken to provide alternative route instead of passing Dalton Pass, of which tunneling is one of the proposals. Experimental test and modeling are perhaps necessary before effective measures could be determined.*

Metro Manila Drainage

- *Drainage improvement in Metro Manila is a continuing project of DPWH. Ironically, at present, flooding still poses a great problem in metropolis. Something should be done right, in the right place and, in the right time.*

d. Do any third parties and/or international organizations have any plans to develop the target areas? If yes, please provide outlines, results and future projections for those plans.

None

4. FRAMEWORK FOR PROJECT IMPLEMENTATION

(1) Disaster prevention administration

a. Please indicate the organizations and/or institutions related to disaster prevention. What is the function of each organization?

See Table 2 - Primary Organization Related to the Disaster Prevention, Restoration and Relief

Figure 1 - Functions and Organizations System of the Disaster Coordinating Council

(2) Department of Public Works and Highways (DPWH)

a. Please provide an organizational chart of DPWH. What is the role of each section?

See Figure 2 - DPWH Organizational Chart

Table 4 - DPWH Functional Chart

b. What is the condition of staffing in each section?

Appropriate

c. How has budget been allocated for disaster prevention in the last five years?

Minimal - not enough

d. Does DPWH have any attached research institutes related to disaster prevention? If yes, please provide outlines of the attached research institute.

None

e. Does DPWH have any attached educational institutes related to disaster prevention? If yes, please provide the outlines of the attached educational institutes.

None

f. Which sections of DPWH will the center belong to (from the organizations point of view)? Please indicate the position of the center in the organizational chart of DPWH. If not decided, please describe the future plan of the position of the center.

See Figure 2 - DPWH Organizational Chart

g. How many staff will be allocated from the DPWH to the center? How high is the skill of the staff?

To be determine later. There is availability of trainable staff.

(3) Cooperation of the Philippines, College of Engineering

(to be filled-up by UP)

(4) Cooperation between DPWH and UP

a. What kind of cooperation will be formed between DPWH and UP? What is the role of both the DPWH and UP in this cooperation?

DPWH will provide the following:

1.	*Building*	*- Research Laboratory Bldg.* *- Training and Office Bldg.*
2.	*Budget*	*- Annual Operating and Maintenance Cost*
3.	*Staff*	*- Engineers and hiring of other Administrative personnel*

UP will be incharge of the following:

1.	*Land*	*- Area 5,000 square meters*
2.	*Staff*	*- Hydrologist, Technicians, Instructors, Trainors and Researchers*

b. Please describe the relation between the Memorandum from the President, "Government Support to the National Graduate School of Engineering", on April 10, 1996 on this project. Is this project one of cooperation based on this Memorandum? If yes, please show the concrete cooperation plan.

No

(5) Budget Allocation

a. Which agencies will be responsible for allocating operational budget for the project? Is there a plan to allocate an operational budget?

DPWH, yes

(6) Building and facilities for the center

a. Please explain the outline of the construction of the buildings, and provide principal drawings for the buildings.

See Figure 3 - Plan and Estimates of Building Facilities

b. What is the plan for completion of the building? Please provide the process chart for construction of the building.

See Table 3 - Schedule of Activities

c. Which agencies will be responsible for allocating construction budget for the building? How much will this agency share in the cost?

DPWH, Total building cost - P 41 Million

d. To complete the buildings by 1998, have these agencies already allocated construction budgets for buildings?

Yes

5. PROJECTS IN COOPERATION WITH 3RD COUNTRIES AND/OR INTERNATIONAL ORGANIZATION IN THE FIELD OF DISASTER PREVENTION.

(1) Outlines of projects in cooperation with third countries and/or international organizations for the last 5 years. Please fill in the blanks of the matrix in Annex 2

See Annex 2

6. SUSTAINABILITY OF THE CENTER

(1) Please describe the future plans for the center after termination of Japanese technical cooperation.

The center will continually conduct its training programs and researches with perhaps a minimal fee to sustain its operation and maintenance of equipments.

(2) Do you have a plan to allocate budget for the activities of the center after termination of Japanese technical cooperation?

Yes

(3) Do you have any plans to prevent the center staff from going to other organizations and/or institute?

Yes (i.e. contracts, agreements between the center and the staff, incentives, etc.)

7. PARTICIPATION BY PEOPLE IN THE COMMUNITY AND/OR NGOs

(1) We think that many kinds of disaster prevention countermeasures must be integrated in such areas as the surroundings of Mt. Pinatubo and Mt. Mayon. From this point of view, please tell us whether the people in that community and/or NGOs will participate in this project.

For such areas, community-based disaster preparedness program will be undertaken to increase the local population's capability to cope with disasters. Non-government organizational (NGOs) participation is encouraged.

TABLES

Table 1

MAJOR LAWS AND SYSTEMS RELATED TO DISASTER PREVENTION

Item	Name	Purpose
Basic Laws	Presidential Decree No. 1566/1978	Basic laws for disaster countermeasures
Manuals	Calamities and Disaster Prevention Plan 1987	Defines responsibilities of NDCC, DCC and agencies during the disaster (including the war)
	Procedures and Criteria for Recommending the Declaration of a state of Calamity in Disaster-stricken Areas	Defines standards for disaster declaration by the President and execution method of relief activities
	Draft Provincial/City Municipal Disaster Preparedness Plan	Disaster prevention plans of the local and regional DCCs countermeasures against floods, storms, diseases, maritime affairs, aviation disasters, tidal waves (tsunami), drought, etc.
	A Manual of How to Assess Disaster Damage and Impact 1982	Disaster damage examination manuals

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TABLE 2

PRIMARY ORGANIZATIONS RELATED TO THE DISASTER PREVENTION, RESTORATION AND RELIEF

NAME	JURISDICTION
NDCC (National Disaster Coordinating Council)	Disaster prevention, disaster counter measures
OCD (Office of Civil Defense)	Disaster prevention, disaster counter measures, civil defense
DPWH (Department of Public Works and Highways)	Flood countermeasures
PAGASA (Philippine Atmospheric, Geophysical and Astronomical Services Administration)	Disaster monitoring, forecasting and warning (storm and flood)
PHIVOLCS (Philippine Institute of Volcanology and Seismology)	Disaster monitoring, forecasting & warning (volcanic eruption, earthquake, landslides, etc)
Health Intelligence Service	Disaster monitoring , warning (infectious disease)
Philippine Coast Guard	Coast contamination monitoring, salvage and lifesaving
CDRC (Civil Defense Regional Center)	Delivery of information on disaster, restoration and relief
COWS (Committee on Warning System EBS (Emergency Broadcasting Systems)	Issue and delivery of disaster warnings
CDOC (Civil Defense Operation Center) DOC (Disaster Operation Center) * NIAA (Ninoy Aquino International Airport Authority) MRCC (Manila Rescue Coordinating Center) Philippine Military	Relief and restoration
DSWD (Department of Social Welfare and Development) PNRC (Philippine National Red Cross) NGO (Non– Government Organizations)	Delivery of relief goods

*Note : * – Relief organ in the Disaster Coordinating Council (DCC)*

Table 3

SCHEDULE OF ACTIVITIES

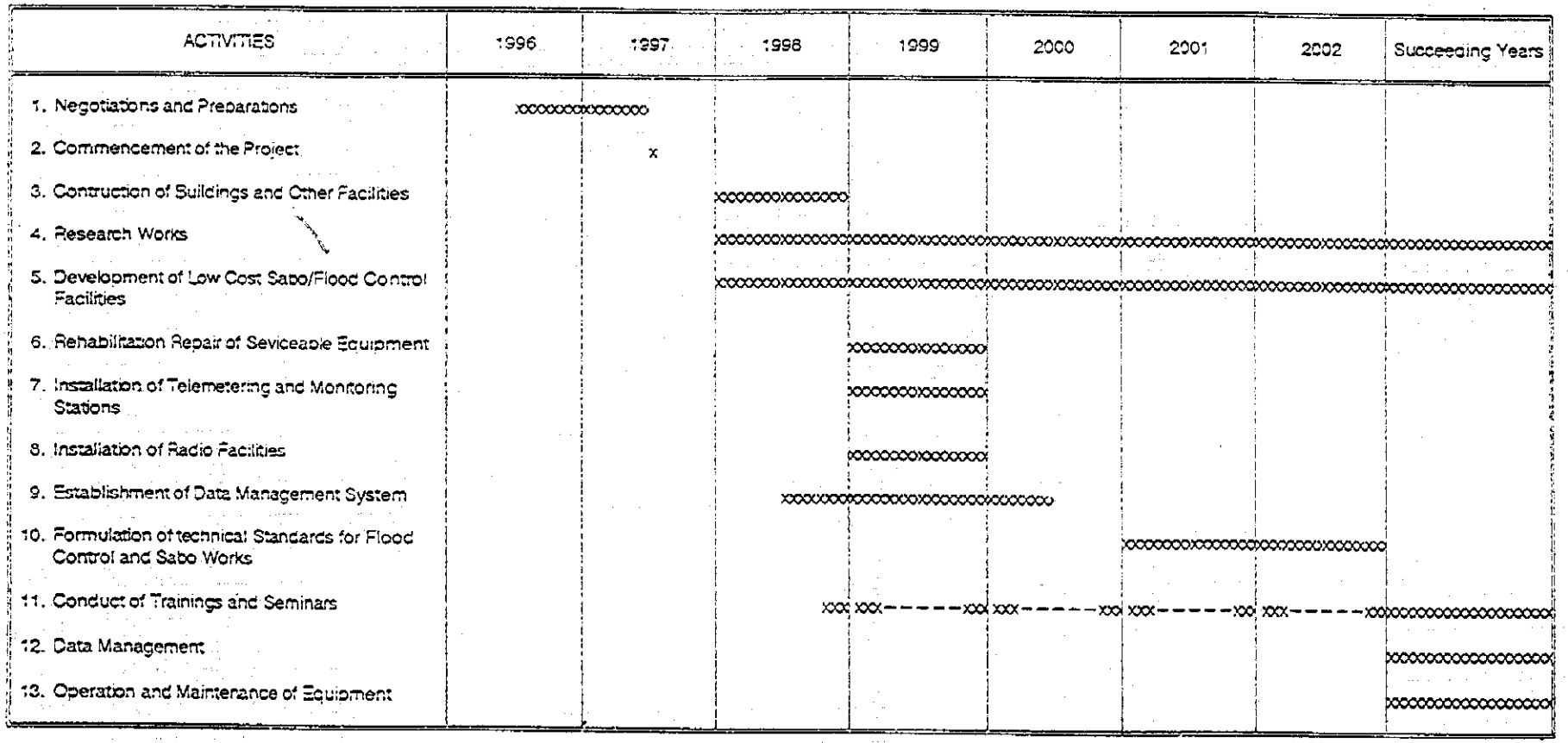


Table 3

SCHEDULE OF ACTIVITIES

ACTIVITIES	1996	1997	1998	1999	2000	2001	2002	Succeeding Years
1. Negotiations and Preparations	xxxxxxx	xxxxxxx						
2. Commencement of the Project		x						
3. Contruction of Buildings and Other Facilities			xxxxxxxxxxxxxx					
4. Research Works			xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx
5. Development of Low Cost Sabo/Flood Control Facilities			xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	xxxxxxxxxxxxxx
6. Rehabilitation Repair of Seviceable Equipment				xxxxxxxxxxxxxx				
7. Installation of Telemetering and Monitoring Stations				xxxxxxxxxxxxxx				
8. Installation of Radio Facilities				xxxxxxxxxxxxxx				
9. Establishment of Data Management System			xxxxxxx	xxxxxxxxxxxxxx	xxxxxxx			
10. Formulation of technical Standards for Flood Control and Sabo Works						xxxxxxxxxxxxxx	xxxxxxxxxxxxxx	
11. Conduct of Trainings and Seminars			xxx	xxx------xxx	xxx------xxx	xxx------xxx	xxx------xx	xxxxxxxxxxxxxx
12. Data Management								xxxxxxxxxxxxxx
13. Operation and Maintenance of Equipment								xxxxxxxxxxxxxx

Table 4

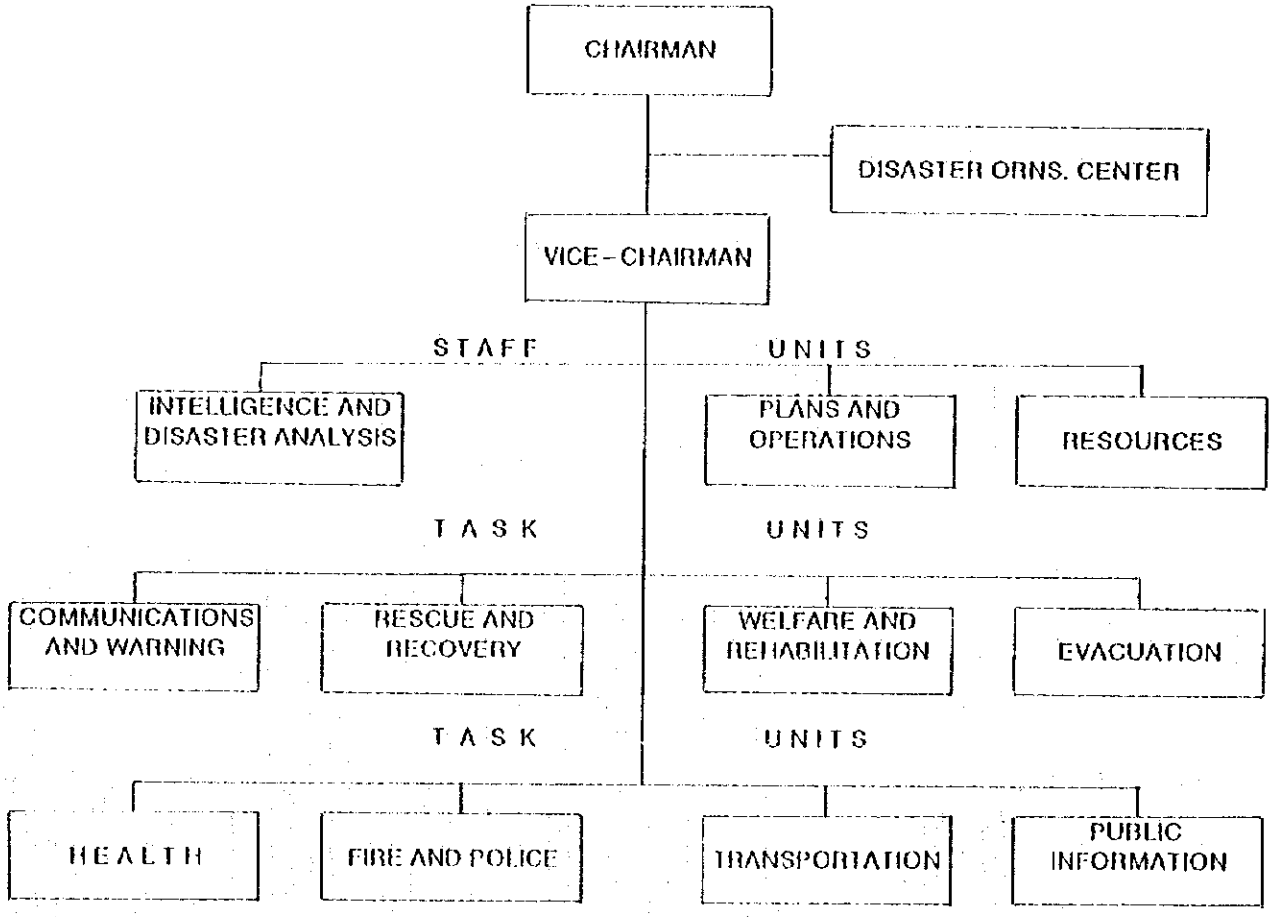
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
FUNCTIONAL CHART

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
1. Provide technical services for the planning, design, construction, maintenance and/or operations of infrastructure facilities;
2. Develop and implement effective codes, standards and reasonable guidelines to ensure the safety of all public and private structures in the country and assure efficiency and proper quality in the construction of public works;
3. Ascertain that all public works plans and project implementation designs are consistent with current standards and guidelines;
4. Identify, plan, secure funding for, program, design, construct or undertake prequalification, bidding and award of contracts of public works projects with the exception only of specialized projects undertaken by Government Corporate entities with established technical capability and as directed by the President of the Philippines or as provided by law;
5. Provide the works supervision function for all public works corporation and ensure that actual construction is done in accordance with approved government plans and specifications;
6. Assist other agencies, including the local government, in determining the most suitable entity to undertake the actual construction of public works projects;
7. Maintain or cause to be maintained all highways, flood control, and other public works throughout the country except those that are the responsibility of other agencies as directed by the President of the Philippines or as provided by law;
8. Provide an integrated planning, flood control and water resource development system and other public works;
9. Delegate to any agency it determines to have the adequate technical capability, any of the foregoing powers and functions.

FIGURES

Figure 1

FUNCTIONS AND ORGANIZATION SYSTEM OF THE DCC

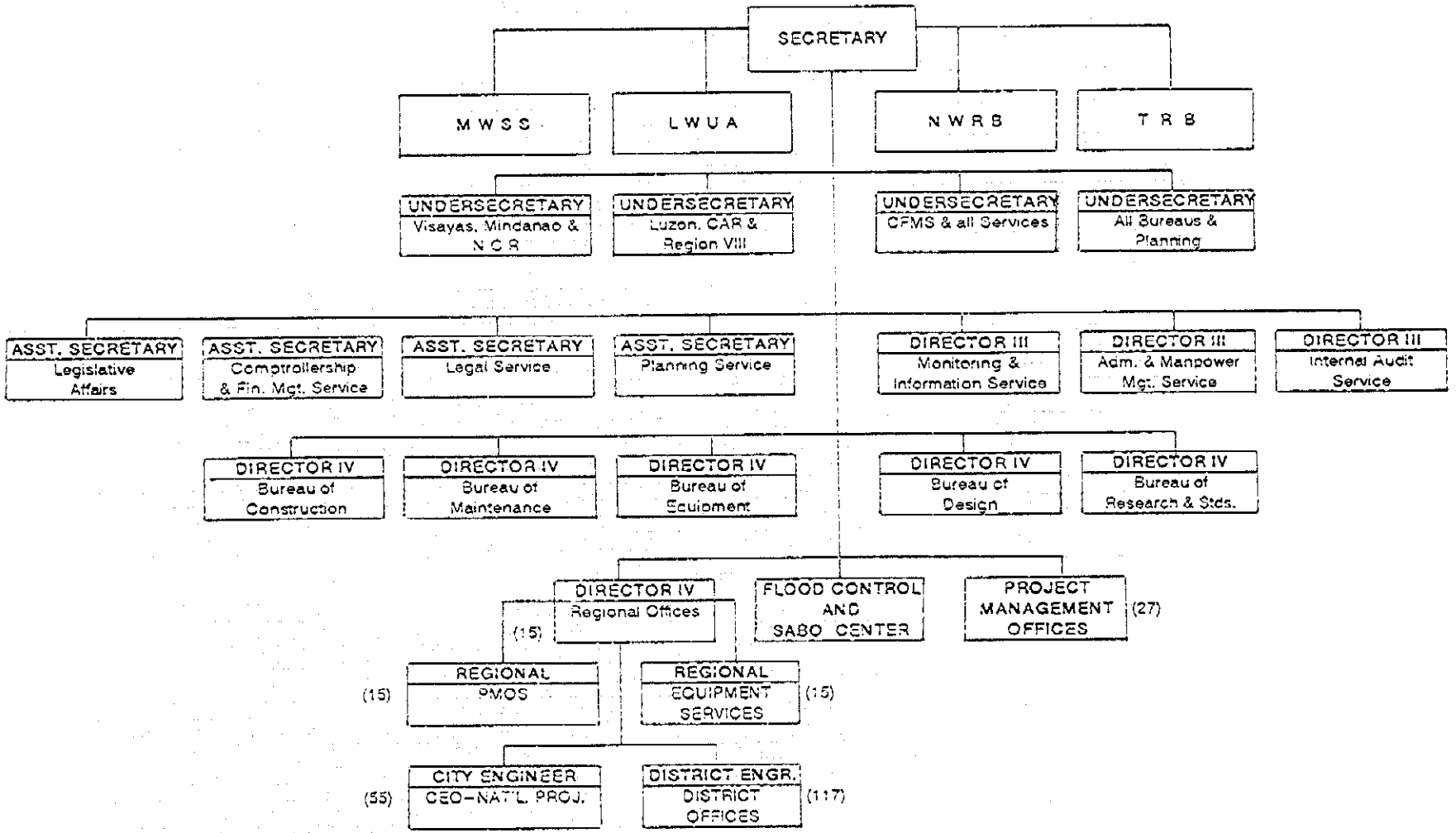


Source: [Report of the Disaster Countermeasures Seminar Vol. 8 "The Current System of Disaster Preparedness and Prevention in the Philippines"], Dec., 1984

FIGUGE 2

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ORGANIZATIONAL CHART



ANNEXES

ANNEX 1

Conditions of the target areas for the project

Name of Target Area	Present Condition	Problem/Difficulty	Condition of past disaster
Metro Manila including Obando, Meycauayan and Marilao. Bulacan	1. Ten (10) pumping stations embankment & drainage gates have been constructed 2. Drainage canals are in-sufficient	1. Malabon, Navotas,Valenzuela Obando, Meycauayan and Marilao are low-lying areas where inundation is both attributed to high tide and flood. 2. Habitual flooding 3. Canals and esteros are in-habited by squatters. 4. Heavy sedimentation 5. Water pollution 6. Pumping stations and drain-age gates in Obando, Mey-cauayan and Marilao are necessary.	1. Major thouroughfares are under water. 2. Caused traffic congestion 3. Clogging of drains

ANNEX 1

Conditions of the target areas for the project

Name of Target Area	Present Condition	Problem/Difficulty	Condition of past disaster
Pasig–Marikina–Laguna Lake Complex	1. Mangahan Floodway, Napindan Hydraulic Control have been constructed 2. Improvement works of Pasig River (river walls) have been completed 3. Telemetering and warning system was already installed	1. Presence of squatters along the river 2. Heavy sedimentation 3. Water pollution 4. Regular annual dredging is necessary	1. Many areas are still flooded by the overflowing of Pasig River. 2. Swelling of Laguna Lake to nearby areas. 3. Inundation lasted for a week

ANNEX 1

Conditions of the target areas for the project

Name of Target Area	Present Condition	Problem/Difficulty	Condition of past disaster
Mt. Pinatubo	1. Pasig–Potrero–Mega dike is constructed along this river but some correction and improvement is still in progress. 2. The Sacobia–Bamban and Abacan Rivers – The Master Plan Study was completed and the start of implementation is on the second quarter of 1997 3. The Bucao, Sto. Tmas, Gumain, Porac and O'Donnel Rivers contineous dredging and repair of damaged dikes is on–going.	1. Repair/improvement of the damaged eastern side of the Mega dike. 2. Evacuation center and re–settlement areas. 3. Huge volume of pyroclastic deposit in the moutain slope.	1. Pyroclastic flow cause heavy damaged to human lives and properties, and lahar deposits in the upper stream likewise posses a great danger to the outlying areas currently used for resident–ial, commercial, etc.

ANNEX 1

Conditions of the target areas for the project

Name of Target Area	Present Condition	Problem/Difficulty	Condition of past disaster
Kennon Road	1. The road is possible but limited to light traffic only with pre-cautioning advice to commuters abouts its dangers especially during rainy season. 2. Regular maintenance is being done to make the road at least passable to light vehicles. 3. Sabo dam and proper maintenance of the river are highly recommended.	1. Torential rains had always caused slides, rock falls shoulder collapse and other forms rendering the road impassable from time to time. 2. High rehabilitation and maintenance costs.	1. There are about 471 disaster spots. 2. Unstable geological formations 3. Sediment problem in Bued River 4. Eroded shoulders, slides numerous tension cracks, unstable slopes and other deteriorations in condition brought about by heavy rains following the earthquake. 5. The road was inaccessible due to massive landslides, embankment failures and rock falls.

ANNEX 1

Conditions of the target areas for the project

Name of Target Area	Present Condition	Problem/Difficulty	Condition of past disaster
Mt. Mayon	1. The installation of the lahar warning system, Phase I was already completed & Phase II is under negotiation and the target date is the 2nd quarter of 1997. 2. Master Plan & pre-feasibility study was already completed thru the assistance of JICA. 3. Contineous dredging and construction of dikes along the major river that drains from Mt. Mayon is being conducted almost every year.	1. There is a need for the construction of dikes and sabo dams or engineering enter-vention along the low-lying areas. 2. Sedimentation and debris flow occur during rainy season. 3. A full blown feasiblity study is being proposed.	1. Lava is deposited in the middle of the volcano during the 1993 eruption which threatens Legaspi City. 2. Large volume of sediments deposited along the rivers around Mt. Mayon.

ANNEX 2

The outline of projects in cooperation with third countries and/or international organizations for the last five years

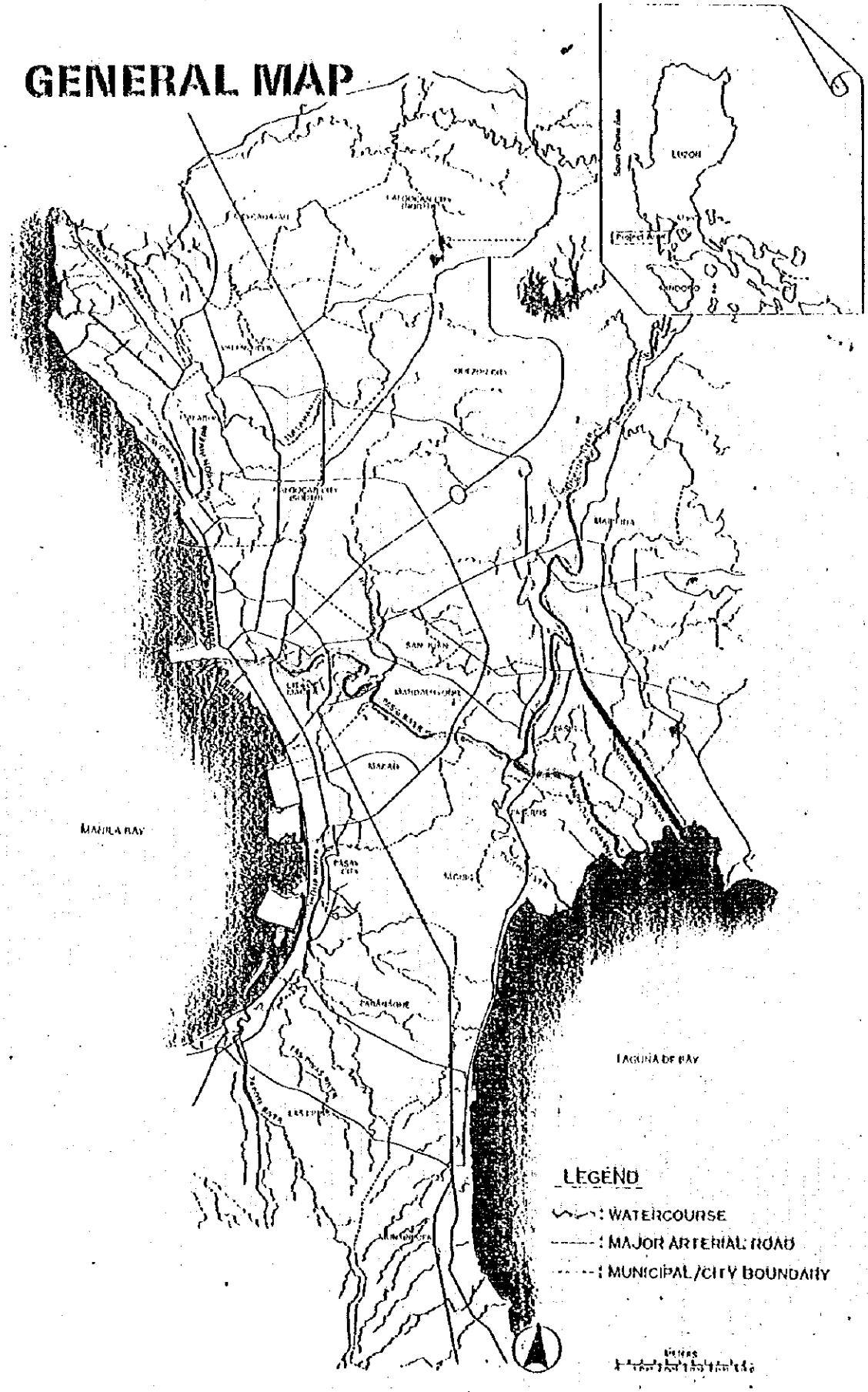
Project Name	Implementing agencies	Donor agencies	Budget		Project site	Outline of project
			Govt. of the Philippines	Donor agencies		
North Laguna Urgent Flood Control Development project.	DPWH	JICA			Metro Manila	Detailed Engineering
Study on Flood Control for Rivers in Selected Urban Centers	DPWH Ormoc City Iloilo City Cebu City	JICA			Ormoc City Iloilo City Cebu City	Detailed Engineering (on-going) Mastr Plan/ Feasibility Study
Study of Agno River Flood Control	DPWH	OECF			Pangasinan	Master Plan
Agno and Allied Rivers Urgent Rehabilitation Project	DPWH	OECF			Pangasinan	Construction (on-going)
Study in Sabo and Flood Control in Laoag River Basin	DPWH	JICA			Laoag City Ilocos Norte	Feasibility Study (on-going)

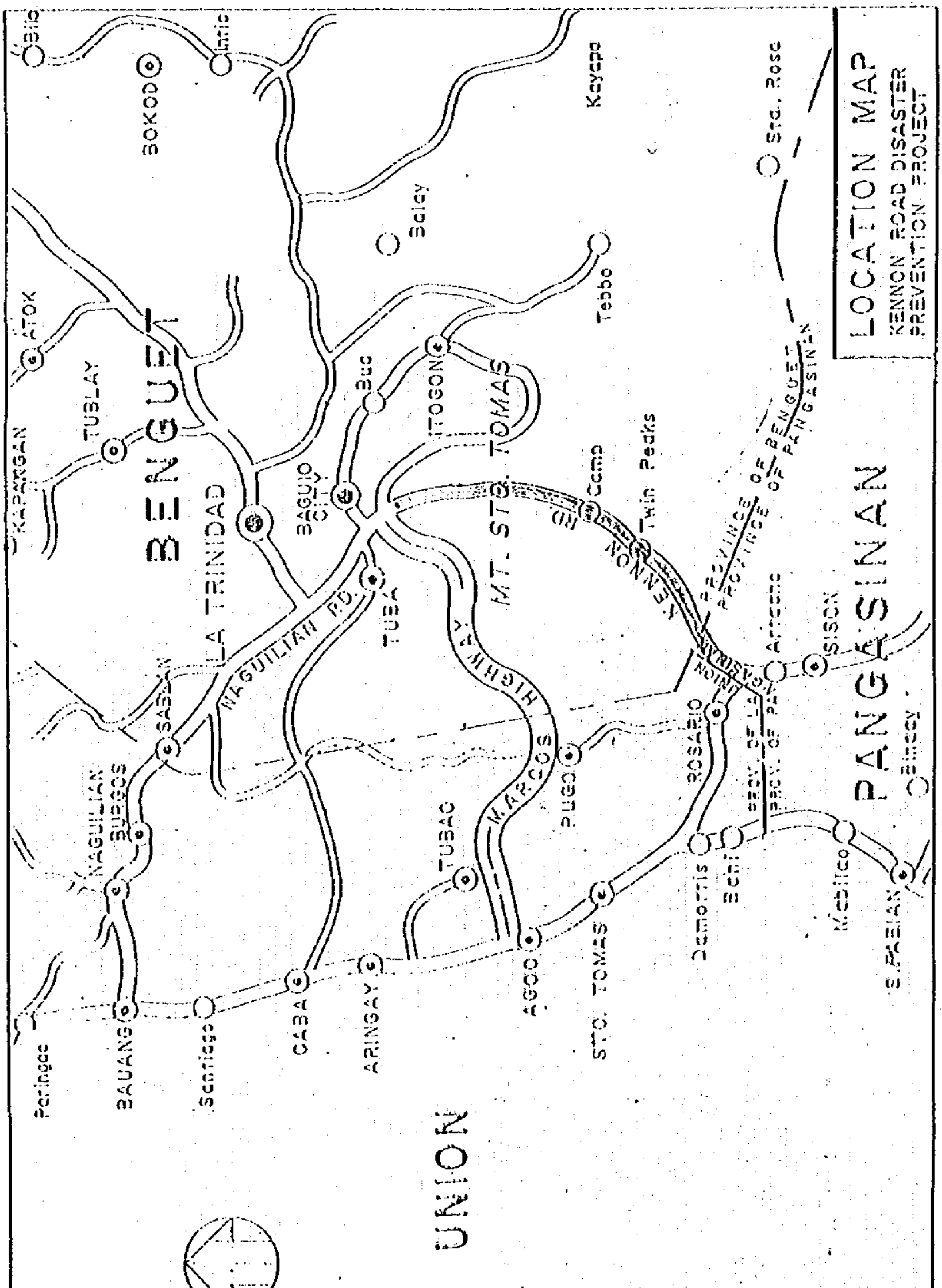
ANNEX 2

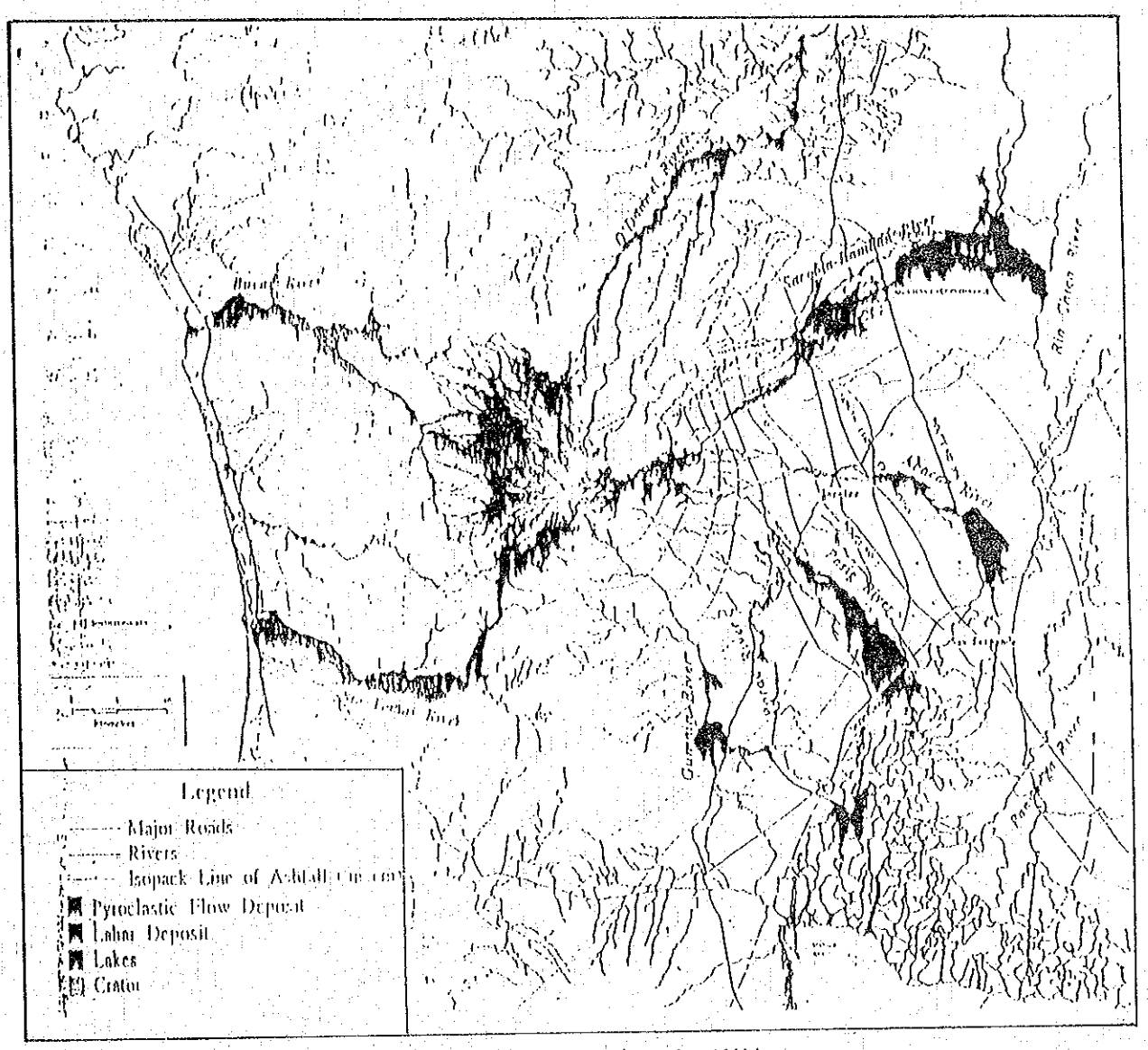
The outline of projects in cooperation with third countries and/or international organizations for the last five years

Project Name	Implementing agencies	Donor agencies	Budget		Project site	Outline of project
			Govt. of the Philippines	Donor agencies		
Lower Agusan Development Project	DPWH	OECF			Agusan del Norte	Construction (on-going)
Small Water Impounding Management Project	DPWH				Bulacan, Tarlac, Nueva Ecija Mindoro Oriental Camarines Sur, Masbate, Antique Capiz, Negros Oriental N. Samar, E. Samar, Zamboanga del Sur Surigao del Norte Bukidnon, Agusan del Norte , Davao del Norte Davao del Sur	
Lahar Warning System in Eastern Side of Mt. Mayon	DPWH, OCD	JICA		Grant Aid	Legaspi City	Installation of Phase I, completed Installation of Phase II -1997
Metro Manila Flood Control Project III	DPWH	JICA			Balut, Vitas and San Andres Pumping Station	On-going
Retival of Flood Prone Area, Phase I	DPWH	JICA			Metro Manila	Completed Phase I On-going Phase II
MANAVA Flood Control Project	DPWH	JICA			Metro Manila	Completed

GENERAL MAP


MANILA BAY
LAGUNA DE BAY
LEGEND
: WATERCOURSE
: MAJOR ARTERIAL ROAD
: MUNICIPAL/CITY BOUNDARY


LOCATION MAP
KENNON ROAD DISASTER
PREVENTION PROJECT
BENGUET
LA UNION
PANGASINAN
LA TRINIDAD
MT. STO. TOMAS
BAGUIO CITY
NAGUILIAN RD.
MARCOS HIGHWAY
KENNON RD.
PROVINCE OF BENGUET
PROVINCE OF PANGASINAN
PROV. OF LA UNION
PROV. OF PANGASINAN
BOKOD
ATOK
TUBLAY
KAPANGAN
Saloy
Kayapa
Tebbo
Sta. Rosa
ITOGON
TUBA
Twin Peaks
Camp
SABLAN
NAGUILIAN
BURGOS
TUBAO
PUGO
ROSARIO
Asingan
SISON
Binday
Damortis
Bahi
Malico
S. FABIAN
BAUANG
Santiago
CABA
ARINGAY
AGOO
STO. TOMAS
Paringao



Pinatubo Disaster Map (November 1991)

Pinatubo Disaster Map (November 1991)

資料２　質問票に対する回答（フィリピン大学）

Responses to Questionnaire Related to Dispatch of JICA's Basic Study Team on Project-type Technical Cooperation for the Establishment of Flood Control and Sabo Engineering Center in the Philippines

(3) The University of the Philippines, College of Engineering (UPCOE)

a. Please indicate the administrative nature of U.P., especially the relationship between the Department of Education, Culture and Sports (DECS). Which agencies does U.P. belong to? Is U.P. an independent organization?

The U.P. is independent of any line agency of the government, including the DECS. It has a charter that can be changed only by a legislation. It is overseen by the Office of the President of the Republic of Philippines through the Commission on Higher Education (CHED). The topmost body of U.P. is its Board of Regents, chaired ex-officio by the Chief Commissioner of CHED. Member regents are appointed by the President of the Republic.

b. Please indicate the organizational charts of:

(a) UP

Please see Attachment "A".

(b) UPCOE

Please see Attachment "B".

(c) University of the Philippines, National Engineering Center (UPNEC)

Please see Attachment "C".

c. How many professors and staff are allocated to each Department of the UPCOE and UPNEC? How many students are studying in each department of UPCOE and UPNEC?

The UPNEC essentially functions as the research and extension arm of the UPCOE. Each of its service groups and major projects is supervised by a Faculty-in-charge. It has the following R&E-line personnel:

Service Group	*No. of Personnel*
Administrative and Financial Staff	*7*
Continuing Engineering Education Services	*5*
Publications and Engineering Information Services	*4*
Research and Development and Special Projects	*4*
Preventive Maintenance Project	*12*

Please see Attachment "E" for the statistics on current student enrollment in the UPCOE. The UPNEC does not have students.

d. Which departments in UP are in charge of teaching Sabo, landslide countermeasures, flood control and urban drainage? How many graduates have those departments produced since its founding?

The Department of Civil Engineering is in charge of teaching these subjects. Since its founding in 1910, it has produced 2,169 Bachelor of Science graduates. The first Master of Science graduated in 1961, and since then, a total of 65 M.S.C.E. graduates.

e. Which section of UP will the Center belong to (from the organizational point of view)? Please indicate the position of the Center in the organizational chart of UP. If not decided, please describe the future plan of the position of the Center.

The Department of Civil Engineering has been proposed to be converted into the U.P. Institute of Civil Engineering, with six academic divisions and would put under its wing, besides the Materials Testing Laboratory which it presently administers, the National Hydraulic Research Center and the National Center for Transportation Studies, unless the latter is itself upgraded to an institute. The Flood Control and Sabo Engineering Center shall become one of the component centers of the Institute of Civil Engineering. Attachment "F" shows the proposed organizational chart. In the event that the creation of the Center predates the Institute, it shall be put under the umbrella of the UPNEC for the meantime.

f. What is the status of the National Hydraulic Research Center (NHRC)? What is the function of NHRC?

The NHRC is a unit of the UP and under the umbrella of the UPNEC. The management of the operations and research projects of the NHRC is a function of the U.P. Engineering Research and Development Foundation, Inc. (UPERDFI) as defined in a Memorandum of Agreement between the UP and the UPERDFI. The main function of NHRC is to satisfy research needs of the water resources sector. It also maintains the academic instruction laboratory of the UPCOE and makes its professional staff available for teaching. Since its creation in 1973, the NHRC has performed research for government agencies such as the DPWH, National Water Resources Board, National Power Corporation, National Irrigation Administration, Metropolitan Waterworks and Sewerage System, Local Water Utilities Administration, and many others. Projects sponsored by these agencies include physical [illegible] model studies, multisectoral social studies, and policy research for various aspects of water resources development.

g. Please indicate such conditions of NHRC as:

(a) scale of institutions, buildings

The NHRC is located at two sites. The first is at the west wing of the UPCOE, where its main office and academic laboratory, in a floor area totalling about 400 square meters, is situated. The second is in the northwest corner of the UP Diliman campus, where its research laboratory building is situated, with an indoor space of 3,000 square meters, and approximately six hectares of outdoor model space. This research laboratory had been made possible through a JICA grant in 1978.

(b) equipment

The NHRC at its main office has computing equipment consisting of 12 late-model personal computers, including two powerful ones.

The academic laboratory contains equipment and instruments that makes it the best equipped laboratory in the country for instruction in hydraulic engineering. It includes two flumes, one tilting wave flume, three pipe analysis assemblies, two wind tunnels, and a water recirculation system powered by one 50-hp., one 10-hp., and one 5-hp. pumps.

The research laboratory has several types of instruments and equipment for physical hydraulic model construction and testing, including a machine shop, a woodworking shop, a darkroom, an indoor payloader, and a water recirculation system with a total pumping capacity of 1.6 cubic meters per second. Pump and pipe rating equipment for both static and bursting tests are also located there, as well as a mini-current meter rating station.

(c) number of professors and staff

One Professor/Director
One Professor/Research Fellow
Two Associate Professors/Research Fellows
One Professorial Lecturer/Research Fellow
Three Senior Lecturers/Supervising Research Engineers
Seven Administrative/Maintenance Support Personnel

(d) chief activities

Physical hydraulic model studies
Mathematical model studies
Policy research for various aspects of water resources development
Laboratory instruction in fluid mechanics

(4) Cooperation between the DPWH and UP

a. What kind of cooperation will be formed between DPWH and UP? What is the role of both DPWH and UP in this cooperation?

A Memorandum of Agreement for the creation of the Center within the premises of the UP campus can form the basis of cooperation. Organizational aspects have to be agreed upon, but a balance must be striked between the operational and research functions, with UP favoring the latter.

b. Please describe the relation between the Memorandum from the President, "Government support to the National Graduate School of Engineering", on April 10, 1996, and this project. Is this project one of cooperation based on this Memorandum? If yes, please show the concrete cooperation plan.

The DPWH support to the National Graduate School of Engineering is in the form of agreements for various research projects which are presently being negotiated. However, the UPCOE has not been informed by the DPWH that the creation of the Center is part of such cooperation. It should be possible to create the Center under the framework of such cooperation.

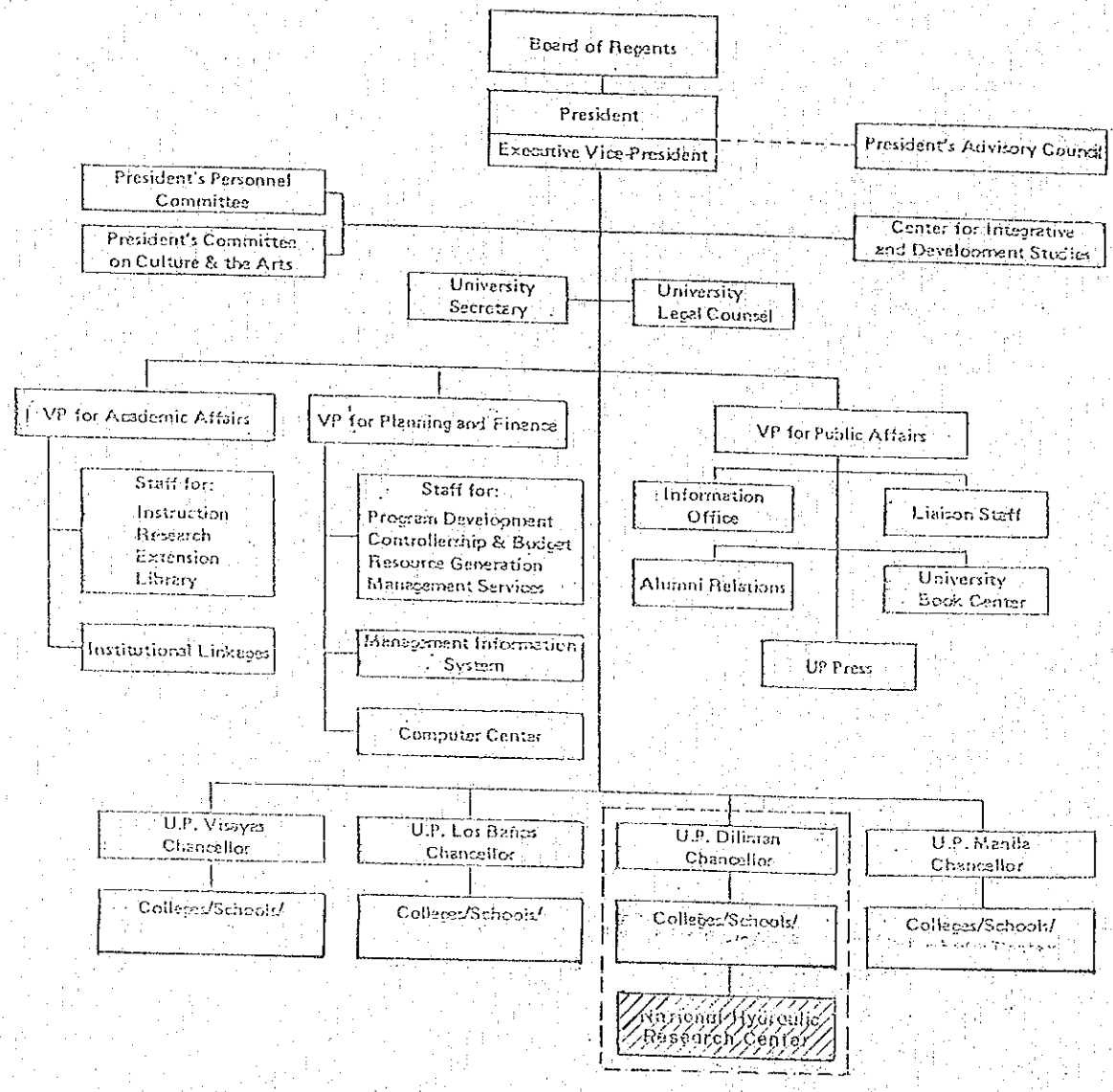
(5) Budget allocation

The UP does not have available budget allocation in its regular appropriations for the Center operations nor is there currently any plan to allocate such.

(6) Building and facilities for the Center

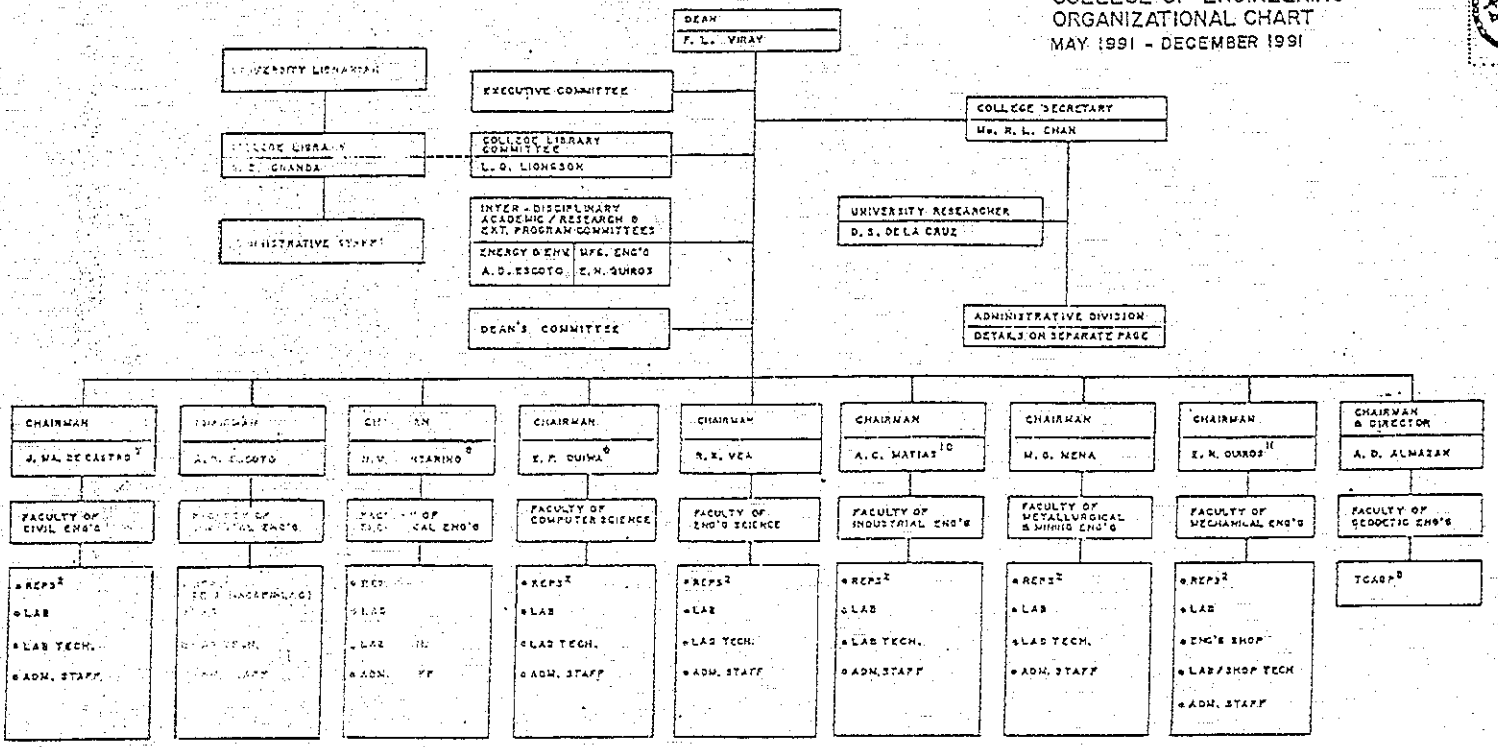
There is sufficient space within the NHRC compound or the allotted UPCOE complex for locating a new building for the Center, and UP Campus authorities are receptive to the idea of locating the Center building there. However, as is the case for any building built within the Campus, the plans and drawings have to referred to the Office of the Campus Architect, UP Diliman, before they are finalized, and the construction budget has to be allocated through UP Diliman. A special budgetary measure is needed since the building is not covered by the UP's regular appropriations.

UNIVERSITY OF THE PHILIPPINES SYSTEM
Organizational Chart

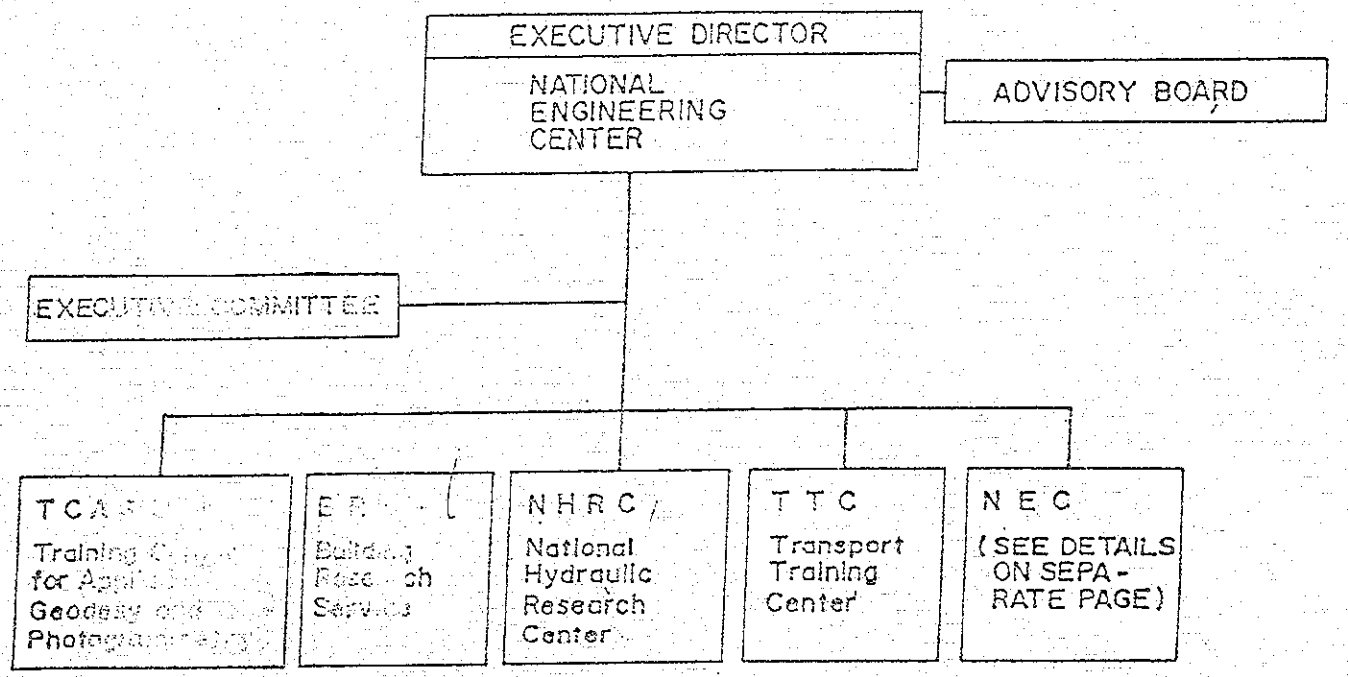


UP ORGANIZATION CHART

COLLEGE OF ENGINEERING
ORGANIZATIONAL CHART
MAY 1991 - DECEMBER 1991

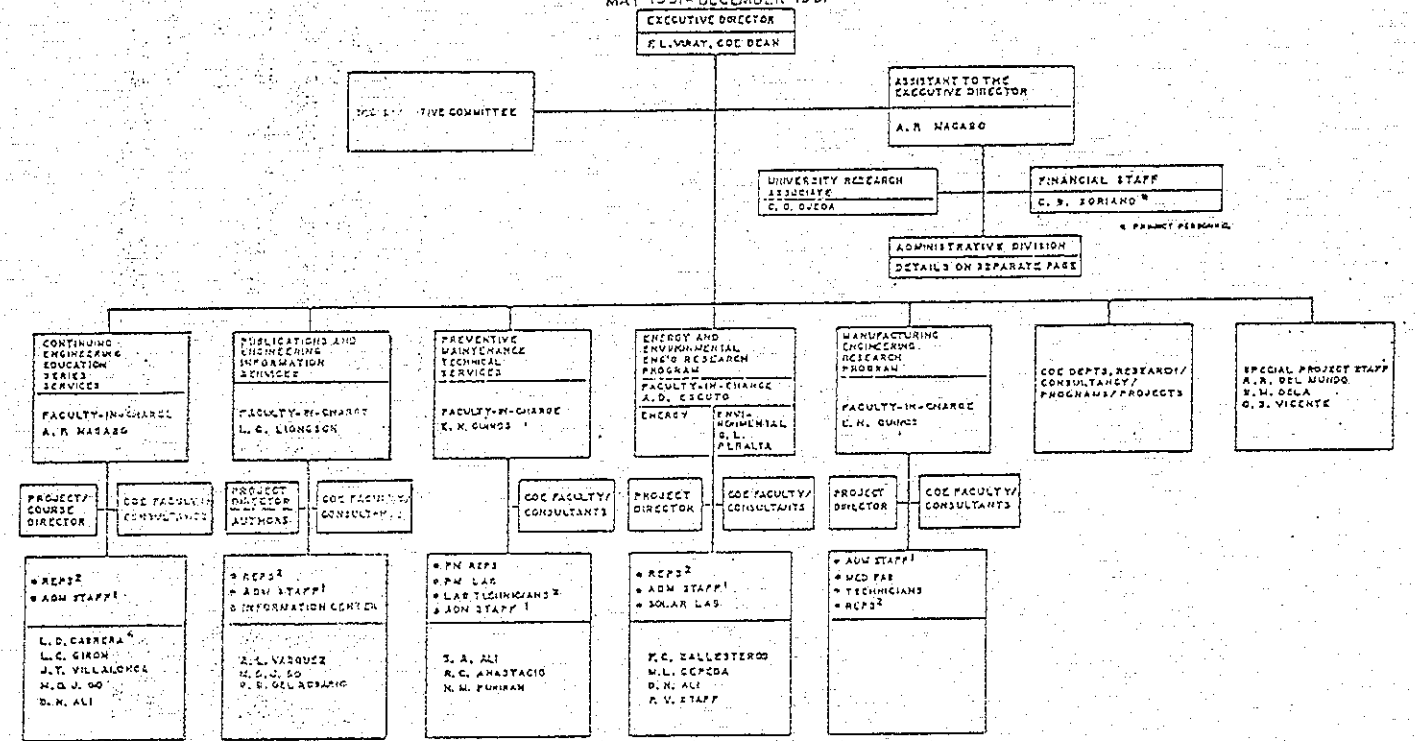


NOTES:
1. ADMINISTRATIVE [illegible] ON COLLEGE [illegible] ON DETAIL FROM POOL OF CLERICAL AND UTILITY WORKERS OF THE ADMINISTRATIVE DIVISION
2. REPS [illegible] AND EXTENSION OF [illegible] CHEL
3. CE LABORATORY [illegible] SOILS AND MAT[illegible]ALS TESTING LABORATORY
4. ChE LABORATORY INCLUDES ENVIRONMENTAL [illegible] INEERING LABORATORY
5. TCAGP [illegible] TRAINING CENTER FOR [illegible] PLIED GEODESY AND PHOTOGRAMMETRY
6. SEE ATTACHED PAGE FOR LIST OF MEMBERS [illegible] UNIC STAFF OF DEPARTMENTS
7. VICE [illegible] WHOSE TERM EXPIRED [illegible] JUNE 1991
8. VICE [illegible] RESIGNED EFFECTIVE [illegible] AUGUST 1991
9. CHAIRMAN [illegible] OF ENGINEERING [illegible] COMPUTER SCIENCES UNTIL IT SPLIT INTO TWO DEPARTMENTS EFFECTIVE 1 OCTOBER
10. VICE [illegible] TERM EXPIRED [illegible] MAY 1991
11. VICE [illegible] TERM EXPIRED [illegible] MAR 1991



* ADMINISTRATION IS FUNCTIONALLY UNDER DEPARTMENT OF GEODETIC ENGINEERING, COE

NATIONAL ENGINEERING CENTER
ORGANIZATIONAL CHART
MAY 1991 - DECEMBER 1991



NOTES:
1. ADMINISTRATIVE STAFF FOR DIFFERENT [illegible] VICES AND PROGRAMS ARE ON DETAIL FROM POOL OF CLERICAL AND [illegible] VISION.
2. REPS HEAD RESEARCH AND EXTENSION [illegible] TONNEL(ON ROTATING ASSIGNMENT)
3. ION DETAIL FROM PROPERTY / MAINTEN- [illegible] SECTION OF ADMINISTRATIVE DIVISION
4. RESIGNED EFFECTIVE 15 NOVEMBER 1991

CHEMICAL ENG'G		REMARKS
Cua, Edwin	BS	
Dalida, Marilou P.	MS	
David, Elsie M.	MS	
De La Cruz, Donato	MS	SLWP
De Leon, Rizalinda L.	MS	SLWP
Espinola, Ma. Luisa	BS	
Escoto, Angela D.	MS	SLWP
Jose, Wilfredo I.	PhD	
Lirag, Rufino C., Jr.	PhD	
Muñoz, Jose	MS	
Peralta, Genandrialin	MS	SLWP
Ballesteros, Florenci	MS	
Salvacion, Jonathan	PhD	
Manuel, Mariquit	BS	SLWP
Rollon, Analiza	MS	SLWP
Europa, Anna Lolita	BS	SLWP
Parco, Gerardo	MS	SLWP

CIVIL ENG'G		REMARKS
Acacio, Alexis A.	MS	
Buensuceso, Benjamin Jr. R.	PhD	
Castro, Peter Paul M.	MS	
De Castro, Jose Ma.	MS	
Germar, Fernando J.	MS	
Ignacio, Ulpiano Jr. P.	MS	
Juinio, Alfredo B., Jr.	MS	
Mena, Marino M.	MS	
Mulingbayan, Mark Tom Q.	MS	
Publico, Andre S.	MS	SLWP
Regidor, Jose Regin	MS	
Sigua, Ricardo G.	PhD	
Tabios, Guillermo	PhD	

COMPUTER SCI.		REMARKS
Aquino, Diosa	BS	
Diaz, Abelardo Jr. C.	BS	
Encarnacion, Mark	PhD	
Estrella, Florida V.	BS	SLWP
Festin, Cedric	BS	SLWP
Gabriel, Grace L.	BS	
Gonzales, Glen	BS	
Ignacio, Lenard R.	BS	
Jamison, Wilfredo	BS	SLWP
Moti, Acmad Rizaldy	BS	
[illegible]	[illegible]	[illegible]
[illegible]		
[illegible], Evangel P.	MS	
Dan Custodio	BS	
Arnold Pulong	BS	
Tayag, Ma. Veronica M.	MS	
Feria, Rommel	BS	

[illegible]		REMARKS
[illegible]	PhD	
Marzan, Genaro T.	PhD	
[illegible], Anselmo D.	PhD	
Lopez, Epifanio D.	MS	
Veracion, Juan G.	MS	
Bustalino, Juanito	MS	
Galeon, Florence A.	MS	
Abellera, Lourdes V.	BS	
Andamon, Mary Lyza	BS	
Aguinaldo, Eduardo M.	MS	

ENG'G SCIENCES		REMARKS
Marcos, Melanie	BS	
Alejandrino, Angel A.	MS	
Vea, Reynaldo B.	PhD	
Zarco, Mark Albert H.	PhD	
Templo, Pedro	PhD	
Ouano, Mary Grace C.	MS	
Sy-Siong, Virgilio K.	BS	
Que, Norbert S.	BS	
Celzo, Ma. Salvacion I.	BS	SLWP
Magpili, Luna Mylene M.	BS	
Samson, Edgardo M.	BS	
Saguil, Exekiel A.	BS	
Santos, Joost R.	BS	
Diokno, Maria Rosa	BS	
Cortes, Arturo B.	PhD	
Umali, Honorio Jr. M.	BS	
Liongson, Leonardo Q.	PhD	
Lagdameo, Leroy	BS	
Fernandez, Michael	BS	SLWP

ELECTRICAL ENG'G		REMARKS
Alarilla, Luis Jr. M.	PhD	
Viray, Francisco	PhD	Spl. Detail
Araneta, Jose C.	PhD	
Abaya, Efren F.	PhD	
Belarmino, Joel	BS	
Dayco, Rolando P.	PhD	
Camacho, Wilfredo Alexei T.	BS	
Echevarria, Antonio N.	MS	
Magabo, Artemio	BS	
Solis, Romeo	MS	Spl. Detail
De Castro, Arnulfo	MS	SLWP
Guevara, Rowena	MS	SLWP
Del Mundo, Rowaldo R.	MS	
Marciano, Joel Joseph Jr. S.	BS	SLWP
Ocampo, Roel	BS	
Alarcon, Louis P.	BS	
Ramos, Manuel	BS	SLWP
Rasco, Kathleen	BS	
Aduana, Gleen	BS	
Joel Noech	BS	
Gilbert Ching		
Sabido, Delfin	BS	SLWP
Mangaser, Ramon A.	MS	SLWP

ChE	3	10	4
CE	3	6	1
CS	[illegible]	2	13
ES	[illegible]	3	12
EEE	[illegible]	[illegible]	[illegible]
GE	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
ME	[illegible]	8	5
Met	4	[illegible]	1
Total	32	43	55

INDUSTRIAL		REMARKS
Gutierrez, Marlene	MS	
Matias, Aura C.	PhD	
De la Pena, Fortunato	MS	Spl. Detail
San Mateo, Amado A.	MS	
Atanacio, Edgardo G.	MS	
Raneses, Nestor O.	MS	
Soriano, Virginia J.	MS	SLWP
Santos-Tankia, Lourdes Kathleen P.	BS	
Ong, Victoria D.	BS	
Leung, Ma. Felicia P.	BS	
Saldivar-Sali, Charisse	BS	
Crisostomo, Catherine Q.	BS	
Aragon, Marnie	BS	
Pinto, Cesar Ariel A.	BS	

MECHANICAL		REMARKS
Garcia, Ruben A.	PhD	
Cruz, Ibarra E.	PhD	
Abis, Leopoldo	PhD	
Guidote, Percival	BS	
Hernandez, Manuel Jr. V.	PhD	
Bautista, Gino T.	PhD	
Paran, Alexander	MS	
Manegdeg, Ferdinand G.	MS	
Santos, Arturo Martin B.	MS	
Cruz, Louis Dexter V.	BS	SLWP
Cariaga, Joselito	BS	SLWP
Bacud, Reymund	BS	
Rodgers, Paul	PhD	
Trespalacioreal, Rey	BS	
Quiros, Edwin N.	PhD	LWOP

MET/MINING		REMARKS
Ordillas, Meliton Jr. U.	PhD	
Mena, Manolo G.	PhD	
Mendoza, Herman D.	PhD	
Amorsolo, Alberto	PhD	
Pamaylaon, Mary Jean E.	BS	SLWP

99

COLLEGE OF ENGINEERING
UNIVERSITY OF THE PHILIPPINES
Diliman, Quezon City

DATA SHEET
1ST SEM, 1996-1997

Reynaldo B. Vea, Ph.D.
Dean

Dr. Jonathan L. Salvacion
College Secretary

Prof. Edgardo G. Atanacio
Associate Dean

Undergraduate Enrollment

Department	Male	Female	Total
Chemical Eng'g			
5th year	35	33	68
4th year	40	24	64
3rd year	35	44	79
2nd year	71	109	180
1st year	66	84	150
Total	247	294	541
Civil Eng'g			
5th year	39	12	51
4th year	27	13	40
3rd year	41	15	56
2nd year	68	42	110
1st year	47	30	77
Total	222	112	334
Computer Science			
5th year			
4th year	44	32	76
3rd year	35	27	62
2nd year	82	64	146
1st year	72	102	174
Total	233	225	458
Electrical Engineering			
Engineering			
5th year	70	4	74
4th year	23	2	25
3rd year	35	5	40
2nd year	46	8	54
1st year	33	7	40
Total	207	26	233
Electronics & Communications			
Engineering			
5th year	7	0	7
4th year	21	6	27
3rd year	62	36	98
2nd year	129	53	182
1st year	97	58	155
Total	316	153	469

Department	Male	Female	Total
Computer Engineering			
5th year	2	0	2
4th year	3	0	3
3rd year	35	40	75
2nd year	100	59	159
1st year	121	64	185
Total	261	163	424
Geodetic Engineering			
5th year	25	8	33
4th year	30	15	45
3rd year	16	6	22
2nd year	30	15	45
1st year	25	8	33
Total	126	52	178
Industrial Engineering			
5th year	47	39	86
4th year	27	30	57
3rd year	24	33	57
2nd year	52	62	114
1st year	34	65	99
Total	184	229	413
Mechanical Engineering			
	[illegible]	[illegible]	[illegible]
4th year	39	0	39
3rd year	31	1	32
2nd year	64	8	72
1st year	35	5	40
Total	248	14	262
Metallurgical Engineering			6
5th year	17	17	34
4th year	11	12	23
3rd year	16	10	25
2nd year	65	41	106
1st year	34	17	51
Total	143	97	240
Mining Engineering			
5th year	5	3	8
4th year	2	1	3
3rd year	4	1	5
2nd year	10	2	12
1st year	5	5	10
Total	26	12	38

REGIONAL DISTRIBUTION OF STUDENTS			
	Male	Female	Total
I. Ilocos Region	85	75	160
II. Cagayan Valley	47	37	84
III. Central Luzon	213	135	348
IV. Southern Tagalog	200	125	325
V. Bicol Region	80	78	158
VI. Western Visayas	53	24	77
VII. Central Visayas	15	17	32
VIII. Eastern Visayas	21	11	32
IX. Western Mindanao	21	9	30
X. Northern Mindanao	46	20	66
XI. Sourthern Mindanao	63	39	102
XII. Central Mindanao	18	17	35
NCR Metro Manila	1317	774	2091
Total:	2179	1361	3540

FOREIGN STUDENTS			
	Male	Female	Total
USA	1	0	1
India	1	1	2
China	3	2	5
Banghladesh	0	1	1
Nepal	1	0	1
Hongkong	1	0	1
Pakistan	2	0	2
Korea	0	1	1
Ethiopia	1	0	1
Canada	0	1	1
Total	10	6	16

GRADUATE ENROLLMENT

PhD			
Course	Male	Female	Total
Chemical Engineering	8	10	18
Energy Engineering	2	1	3
Materials Science & Eng'g	7	4	11
Total	17	15	32
Masters Degree			
Course	Male	Female	Total
Chemical Engineering	14	17	31
Civil Engineering	88	24	112
Electrical Engineering	50	4	54
Environmental Eng'g	29	17	46
Energy Engineering	15	2	17
Industrial Engineering	29	26	55
Mechanical Engineering	22	0	22
Metallurgical Engineering	4	2	6
Water Resources Eng'g.	6	3	9
Materials Science & Eng'g	13	4	17
Computer Science	25	12	37
	31	13	44

Diploma			
Course	Male	Female	Total
Industrial Engineering	12	9	21
Remote Sensing	7	4	11
Total	677	275	952

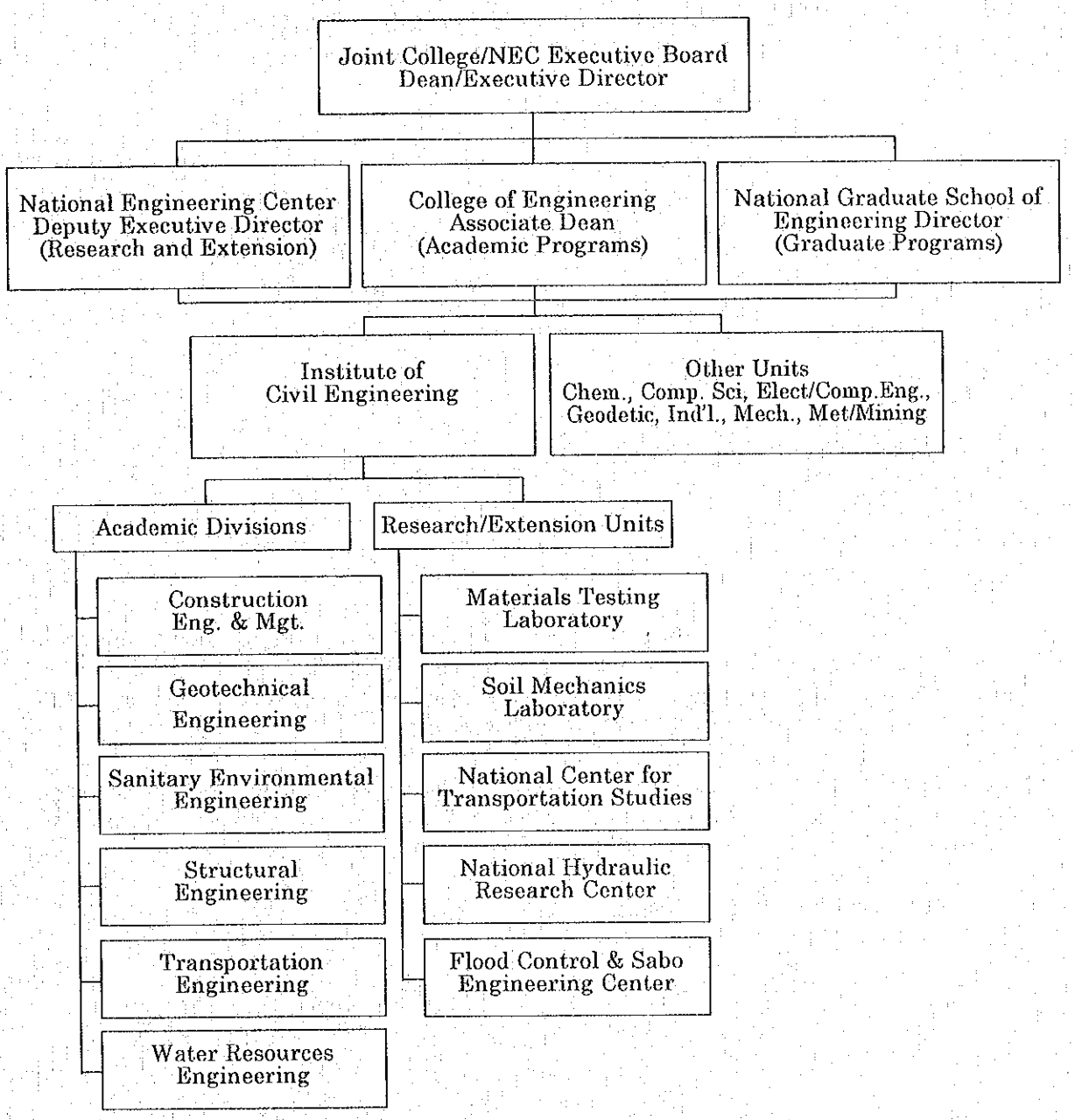
FACULTY DISTRIBUTION
BY DEGREES

Department	BS	MS	Ph.D	Total
Chemical Engineering	4	10	3	17
Civil Engineering	1	9	3	13
Computer Science	13	2	1	16
Engineering Sciences	12	2	5	19
Electrical Engineering	10	6	5	21
Geodetic Engineering	2	5	3	10
Industrial Engineering	7	6	1	14
Mechanical Engineering	5	3	7	15
Metallurgical Engineering	1	-	4	5
Total	55	43	32	130

Department/Center/Unit head	Name	Phone/E-Mail Address
Civil Engineering	Prof. Peter Paul M. Casto	434-3635/pcastro@engg.upd.edu.ph
Chemical Engineering	Prof. Jose C. Muñoz	434-3644joe@engg.upd.edu.ph
ComputerScience	Dr. Mark J. Encarnacion	434-3639/mje@engg.upd.edu.ph
Electrical Engineering	Dr. Rolando P. Dayco	920-6086rpdayco@nicole.upd.edu.ph
Engineering Sciences	Dr. Mark H. Zarco	434-3638/mzarco@engg.upd.edu.ph
Geodetic Engineering	Prof. Epifanio P. Lopez	434-3633/edl@engg.upd.edu.ph
Industrial Engineering	Prof. Edgardo G. Atancio	434-3636/ega@engg/upd.edu.ph
Mechanical Engineering	Prof. Arturo B. Santos	434-3664/art@engg.upd.edu.ph
Metallurgical and Mining Eng'g	Dr. Manolo G. Mena	434-3637/mgmena@engg.upd.edu.ph
National Center for Transportation Studies	Ricardo D. Sigua	929-0494/929-5664
National Hydraulics Research Center	Dr. Angel A. Alejandrino	927-7176/927-7149/927-7190/ aale@engg.upd.edu.ph
Building research Services	Dr. Benjamin R. Buensuceso	434-3635/benjamin@engg.upd.edu.ph
Deputy Executive Director	Dr. Aura C. Matias	922-4714/926-1516/ matias@engg.upd.edu.ph
College Secretary	Dr. Jonathan L. Salvacion	434-3641/434-3645/jonats@engg.upd.edu.ph
Associate Dean	Prof. Edgardo G. Atancio	434-3636/ega@engg.upd.edu.ph
Dean	Dr. Reynaldo B. Vea	434-3641/928-3144/rvea@engg.upd.edu.ph

PROPOSED ORGANIZATIONAL CHART FOR THE ENGINEERING COMPLEX

(Detail for Institute of Civil Engineering, showing Flood Control and Sabo Engineering Center)



Attachment "F"

資料３　先方実施機関が決定した経緯

(１) NEDA→DPWH

PHILIPPINES
NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY
NEDA sa Pasig, Amber Avenue, Pasig, Metro Manila

Cable Address: NEDAPHIL
P.O. Box 419, Greenhills
Tels. 631-09-45 to 64

AUG 0 9 1995

8-15-95

2158

MR. MANUEL M. BONOAN
Assistant Secretary
Department of Public Works and Highways
Port Area, Manila

Dear Asst. Secretary Bonoan:

We are pleased to inform you that your project "Establishment of Flood Control and Sabo Engineering Center" has been favorably evaluated by the NEDA Secretariat (NS). The NS would,however, like to suggest that the project implementation be done in cooperation with the University of the Philippines College of Engineering.

With regard to the funding of the project, we shall include it in our list of projects to be submitted to the Japanese Government (GOJ) under FY 1996 Project Type Technical Cooperation Program (PTTCP) this August.

Thank you and warm regards.

Very truly yours,

AUGUSTO B. SANTOS
Officer-in-Charge, NDO
238-29

cc: Mr. Reiichiro Takahashi, Japanese Embassy
Resident Representative Akihiko Hashimoto, JICA

(2) DPWH→UP

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
MANILA

August 17, 1995

DEAN REYNALDO VEA
College of Engineering
University of the Philippines
Diliman, Quezon City

Sir :

This is with reference to our proposal on the "Establishment of Flood Control and Sabo Engineering Center in the Philippines" copy attached.

We wish to inform you that NEDA Secretariat has been favorably evaluating the said proposal, however, they suggest that the proposed project be implemented in cooperation with the U.P. College of Engineering.

In this regard, we may request your concurrence, comments and/or recommendations to the said proposal at the earliest time possible.

Thank you and regards.

Very truly yours,

MARCIAL M. BONOAN
Assistant Secretary for Planning

RECEIVED BY:

JOSEPH P. CANIMAG
18 August 1995

(3) UP→DPWH

COLLEGE
OF
ENGINEERING
University of the Philippines

Melchor Hall, U.P. Campus, Diliman, Quezon City, Philippines 1101
Tel. Nos. 99-31-44; 97-60-61 to 69; 98-24-70 to 79 Locs. 5260/5509/5265

28 August 1995

Mr. MANUEL M. BONOAN
Assistant Secretary for Planning
Department of Public Works and Highways
Bonifacio Drive, Port Area, Manila

Subject: *Flood Control and Sabo Engineering Center (FCSEC)*

Dear Asst. Sec. Bonoan:

It is with pleasure that we respond to your letter of 17 August 1995. We concur with the idea of establishing said FCSEC and believe the U.P. College of Engineering is in a good position to participate in the undertaking. We are glad that there is this opportunity for interaction of government and the academe, especially on a highly technical level such as the FCSEC. There are, however, some specific observations and recommendations we would like to forward regarding the concept as described in the proposal attached to said letter:

1. The primary output of the undertaking is the formulation of technical standards for flood control and sabo works. Other components are tools or activities in support of producing or disseminating the primary output.

2. Technical standards are commonly the result of research, and the proposal gives little emphasis to this. We are surprised that research comes after the formulation of standards. As an example, methods of field measurements on lahar flow is a research subject by itself.

3. At the end of the five-year setting-up period, the project as conceived will have: a) a data collection and management system (hardware, software, equipment, and instruments); b) personnel trained to operate and maintain this data collection and management system; and, c) phaseout of the JICA experts. Without a strong technical team involved in hands-on research from the onset of the project, the objectives of the project would be extremely difficult to sustain. Technical standards should be subject to frequent review and updating which implies vigorous research during and after the 5-year set-up period.

4. We believe the FCSEC should as a whole be an R&D organization. We suggest that instead of one R&D division, three centerpiece divisions be substituted: Flood Control, Sabo Engineering, and Urban Drainage. Each of these divisions would have sections for surveys, materials testing, and modelling.

The U.P. is presently in the process of upgrading our Department of Civil Engineering. It is expected that by the end of 1995 we will have in its stead an Institute of Civil Engineering geared for the teaching and research tasks well into the next decade. We offer their expertise and are willing to involve them deeply into the research requirements of the FCSEC. There may be some forms of cooperation the DPWH and the U.P. College of Engineering may enter into. We would be glad to discuss further the details on these.

Very truly yours,

REYNALDO B. VEA, Ph.D.
Dean

(4) NEDA→DFA

NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY

NEDA sa Pasig, Amber Avenue, Pasig City

Cable Address: NEDAPHIL
P.O. Box 419, Greenhills
Tels. 631-09-45 to 64

SEP 25 1995

RECEIVED
P322-4282
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AMAPS

HONORABLE DOMINGO L. SIAZON, JR.
Secretary
Department of Foreign Affairs
2330 Roxas Boulevard, Manila

Attention: Office of Asian and Pacific Affairs

Dear Secretary Siazon:

We are pleased to forward herewith, the list of the Government of the Philippines (GOP) six candidate projects (Annex A) for consideration under the Government of Japan's FY 1996 Project Type Technical Cooperation Program (PTTCP). The project documents have been sent in advance to the Japanese Embassy per our letter of even date (copy attached).

The list includes four projects geared towards the acquisition of technology and expertise to contribute to the institutional strengthening of the Departments of: (i) Agriculture - "Establishment of the Veterinary Drugs and Products Assay Laboratory"; (ii) Environment and Natural Resources - "Research and Development for the Propagation of Water Monitor Lizards and the Conservation of Butterflies"; (iii) Science and Technology - "Strengthening of Technical Expertise for the Production and Utilization of New and Clean Sources of Energy for Sustainable Development"; and (iv) Public Works and Highways - "Establishment of Flood Control and Sabo Engineering". The fifth project by the University of the Philippines and the Laguna Lake Development Authority on "Pollution Control and Rehabilitation of Laguna de Bay Through Biotechnology and Ecotechnology" is geared towards the improvement of the environmental condition of the Laguna Lake region. The sixth project by the Department of Energy on "Resource Re-Evaluation of Daklan Geothermal Prospect Area" is proposed to accelerate the exploration and development of indigenous geothermal energy sources.

Your preferential attention on this matter will be highly appreciated. Kindly furnish our office with a copy of the Note Verbale for our reference.

Thank you and warm regards.

Very truly yours,

CIELITO F. HABITO
Secretary of Socio-Economic Planning
and NEDA Director-General

PHILIPPINES 2000

Tulong-tulong sa Pagsulong

(5) NEDA→DFA

REPUBLIC OF THE PHILIPPINES
NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY
NEDA sa Pasig, Amber Avenue, Pasig City

Cable Address: NEDAPHIL
P.O. Box 419, Greenhills
Tels. 631-09-45 to 64

3 September 1996

HONORABLE DOMINGO L. SIAZON, JR.
Secretary
Department of Foreign Affairs
2330 Roxas Boulevard
Manila

Attention: Office of Asian and Pacific Affairs

Dear Secretary Siazon:

We are pleased to forward herewith, for onward transmittal to the Japanese Government (GOJ), two projects for consideration under FY 1997 Project-Type Technical Cooperation Program (PTTCP). The projects are (i) Establishment of a Forest Tree Seed Center of the Ecosystems Research Development Bureau of the Department of Environment and Natural Resources (ERDB-DENR); and (ii) Establishment of Flood Control and Sabo Engineering Center of the Department of Public Works and Highways (DPWH). The project proposals have been forwarded earlier to the Japanese Embassy.

The DENR's project aims to support our efforts to conserve the green environment by providing a proper mechanism for the identification, certification of quality forest tree seeds, clones and other sexually and asexually propagating planting stocks. On the other hand, DPWH's project will strengthen our disaster management programs by identifying specific danger areas prone to lahar flows, erosion, landslides in specific areas within Mt. Pinatubo and Kennon Road as well as by carrying out continuing research on sabo engineering.

Your preferential attention on this matter will be highly appreciated.

Thank you and warm regards.

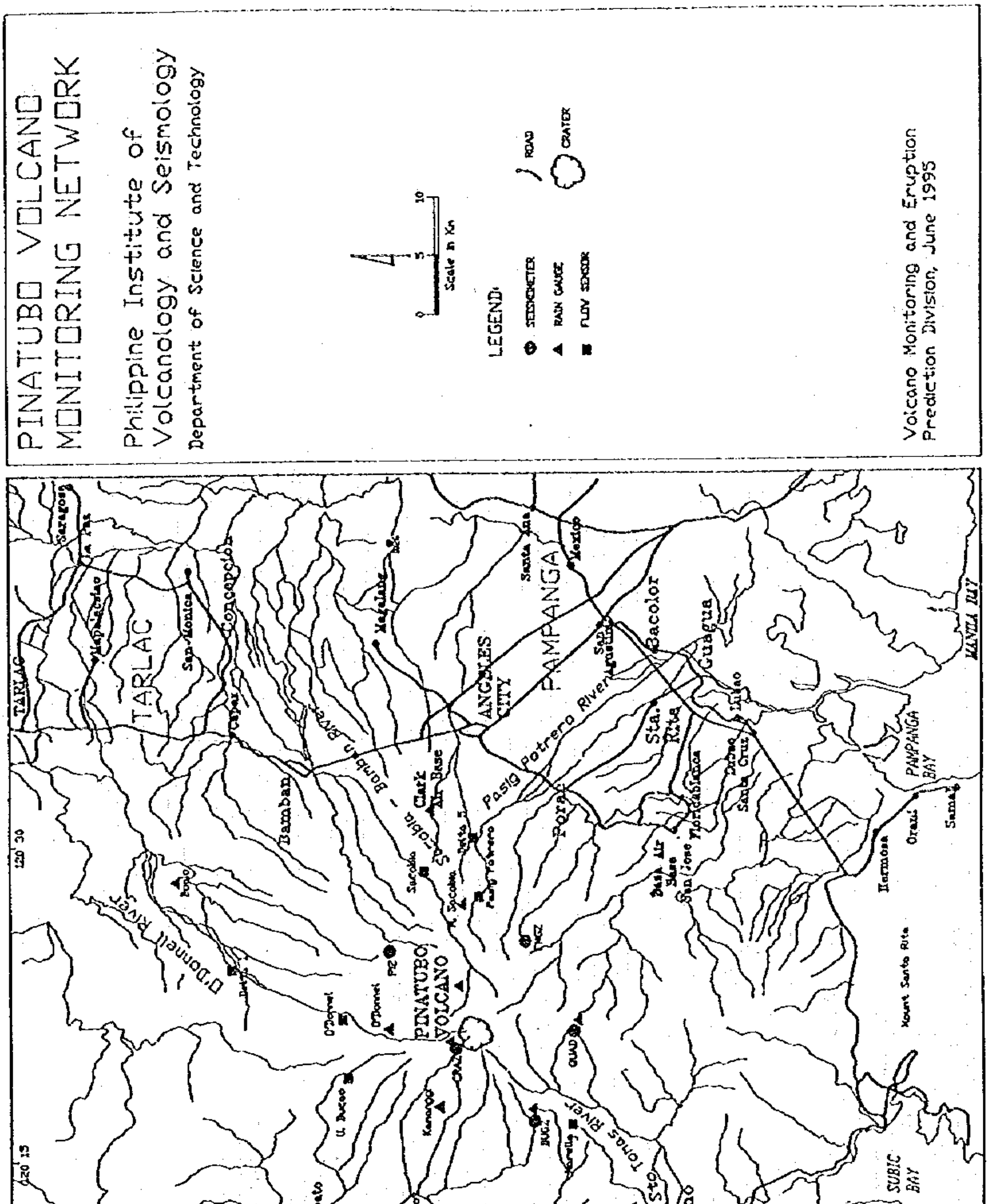
Very truly yours,

CIELITO F. HABITO
Secretary of Socio-Economic Planning
and NEDA Director-General

cc: Secretary Victor Ramos, DENR
Secretary Gregorio Vigilar, DPWH
Assistant Secretary Manuel M. Bonoan, DPWH
Director Celso Diaz, DENR-ERDB
Director Julia Hoidemann, DFA-ASPAC

Tulung-tulong sa Pagsulong

資料４　フィリピン火山地質研究所が保有するピナツボ火山周辺の観測所

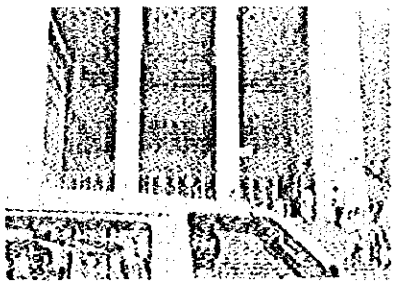
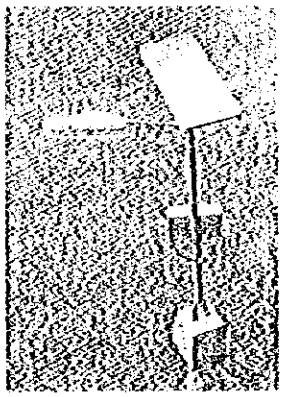


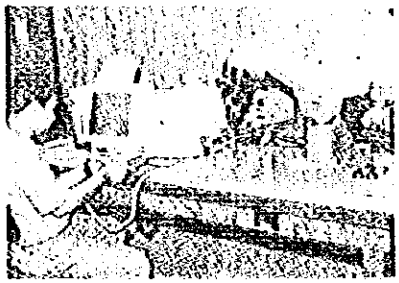
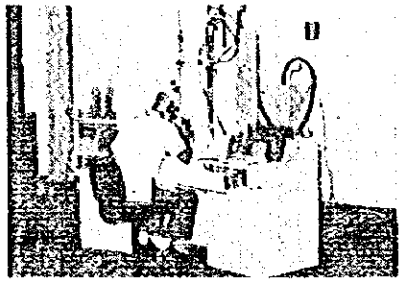
UNIVERSITY OF THE PHILIPPINES

COLLEGE OF ENGINEERING
NATIONAL ENGINEERING CENTER

DEVELOPMENT PLAN 1995-2008



Planning Framework

The Philippines faces immense challenges at the dawn of the 21st century. With an emergent Southeast Asia and with the rapid rise of knowledge-based economies throughout the world, the country cannot afford to be left behind. It has to join the ranks of the world's newly industrialized countries(*NIC's*), and quickly.

In response to this challenge, the U.P. College of Engineering/ National Engineering Center (UPCOE/NEC), for its part, plans to expand and modernize in the coming years. In oder to help local industry survive and prevail in a climate of intense regional and global competition, the UPCOE/NEC shall produce engineers in greater numbers. Moreover, it shall strengthen its capability to generate engineering knowledge and solutions. In the process it hopes to attain unquestioned world class status by 2008, the centennial year of the University.

Ordinary times would have nonetheless required a response to the ever present challenges of economic and social development as the framework for planning. But the Philippines has some serious catching-up to do. This situation colors the nature of the response in terms of both urgency and magnitude.

The Need for Qualified Engineers

The experience of other countries points to the need for a huge number of engineers as a country industrializes. The following are the number of engineering graduates per year in selected countries.

- Japan - 88,000
- USA - 70,000
- Korea - 35,000

The Philippines currently graduates 25,000 engineering students every year. There apparently is a surplus of Filipino engineers at present. But the above cited numbers for the industrialized countries indicate that as we industrialize we probably shall need to produce more engineers per year.

The nagging concern at the moment, however, is quality. If the board examinations were any indication of qualifications of the graduates, then the majority of Filipino engineering graduates are underqualified. Out of the 25,000 graduates every year only about 7000, on average, pass the exams.

The UPCOE shall help improve the quality of local engineering practice by producing more engineers and by expanding its continuing engineering education program. UPCOE graduates only about 250 students every year, 1% of the nationwide total. UP alumni engineers, however, typically end up in positions of leadership and could therefore greatly influence engineering practice. Increasing the number of UPCOE graduates may therefore be reasonably expected to significantly contribute to the improvement of quality in local engineering practice.

The Need for Research & Development Capability

The need to produce more research scientists and engineers also becomes heightened on the road to industrialization. For selected countries the number of research scientists and engineers per 10,000 in the population is as follows:

- Japan - 87
- USA - 77
- Taiwan - 43
- Korea - 33
- Singapore - 28
- Philippines - 1

The percentage of BS degree holders in science and engineering who go on to pursue an MS of PhD in selected countries are as follows:

- Japan - 20.0%
- Singapore - 20.0%
- Australia - 14.0%
- Philippines - 0.2%

The above numbers speak for themselves. They should be our wake up call.

UP COE/NECs RESPONSE

To help change the situation discussed above and in line with the objective of helping the country attain NIC-hood the major goals of the UPCOE/NEC in the coming years shall be to:

- double the total enrolment by the turn of the century
- build a critical mass of PhD holders in engineering by the University's centennial year

To address the specific needs of industrialization in the Philippines the efforts at attaining the above goals shall be focused on the following priority areas:

- manufacturing and process industries
- information technologies
- infrastructure
- materials science and engineering

KEY STRATEGIES

The following key strategies shall be adopted.

- establish a National Graduate School of Engineering
- invest in R & D capability-building
- give prime consideration to faculty development and retention
- move in step with industry and government
- build a stable financial resource base
- forge strong links with the international engineering and business community
- employ information technologies in academic and administrative functions

To attain world class status the single most important thing that the UPCOE/NEC should do is to develop a significant R & D capability. To focus its efforts at building such capability, The UPCOE shall establish a National Graduate School of Engineering (NGSE). With its complement of advanced degree holders, the UPCOE is, at the moment, the only school of engineering in the country capable of successfully offering PhD programs in various fields of engineering. The multiplier effect on the quality of engineering education nationwide cannot be overstated. Furthermore, it shall accelerate the development of R & D in industry.

The main resource of the UPCOE/NEC is engineering expertise. The knowledge must be institutionally generated, acquired, accumulated, applied and transferred. In this process, people are the most important factor. Faculty development therefore remains a prime consideration under any circumstance. Additionally, under the present situation of high faculty turnover due to uncompetitive salaries faculty retention is a special concern as well.

In addressing the particular issue of faculty retention and the general concern about lack of financial resources, the linkage of UPCOE/NEC with industry and government is an important consideration. Overall, as the economic situation improves with the concerted efforts of academe, industry and government the UPCOE/NEC will get more resources as part of the process (contract research and consultancy) and as end result (bigger budget). Initially, however, there has to be heavy investments in capability-building, i.e., in developing the faculty and in providing the capital and equipment requirements.

Globalization and information technologies are two major forces that compel change in today's world. The UPCOE/NEC has to strengthen its links with the international engineering and business community and must master and employ information technologies to keep abreast if not stay ahead of the pack and thus help local industry become competitive.

THE UNDER GRADUATE PROGRAMS

The following is the projected growth in total undergraduate enrolment:

Year	No. of Students
1994	2500
2000	5000
2008	6000

The graph below shows the projected enrolment per degree program:

In terms of the quality of its undergraduate programs, the UPCOE is roughly at par with the best in the world. UPCOE continues to produce graduates who excel in graduate studies in the best schools in North America, Japan, Europe and elsewhere.

While being global in outlook the undergraduate curriculum shall be local in focus. Even as it tries to uphold international standards it has to be relevant to local needs. For this purpose curriculum committees with industry representatives shall be formed at the department level in order to operationalize industry participation in the development and implementation of the curriculum.

- In consonance with the government's emphasis in the development of manufacturing and with the encouragement of industries in the sector, a ***manufacturing engineering*** option for the ME, IE, EEE, ChE, MetE and CS programs shall be instituted by 1996.
- In furtherance of the country's and the University's marine affairs program and in support of the development of the shipbuilding, steel and ancillary industries, a naval architecture option under the ME and CE programs shall be opened in 1996.
- In recognition of growing technology needs in the oil and mining sectors, a petroleum engineering and mineral processing option shall be opened under the EM program in 1997.
- In answer to the need to master a technology identified to be a basic technology now and in the future, materials science and engineering option shall be offered under the MetE program starting in 1998.

THE GRADUATE PROGRAMS

The graduate programs shall be offered through the National Graduate School of Engineering mentioned earlier.

The UPCOE has existing MS programs in almost all fields. In 1995, it shall institute MS programs in computer science (CS) and in electronics and communications engineering (ECE).

The start up of new PhD programs has followed and will follow the schedule shown below:

- 1993 - Materials Science and Engineering
- 1994 - Electrical and Electronics Engineering
  Chemical Engineering
- 1995 - Civil Engineering
- 1998 - Mechanical Engineering
- 1999 - Metallurgical Engineering
- 2000 - Industrial Engineering
  Geodetic Engineering
  Computer Science

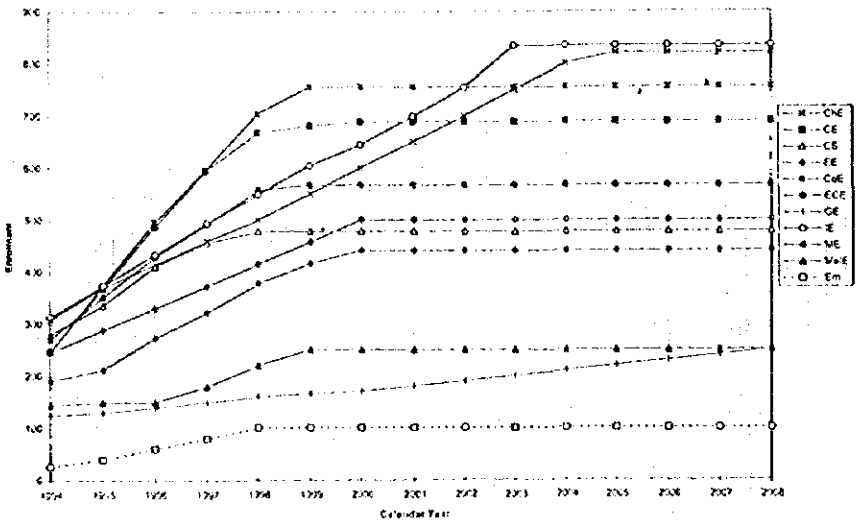


Figure 1: UNDERGRADUATE ENROLMENT BY PROGRAM

The institutionalization of local Ph.D. programs increases the chances of attaining the main goal of building a critical mass of Ph.D. degree holders in engineering. With the exorbitant cost of education in leading universities abroad it is a matter of necessity to institute these local programs.

Enrolment in the PhD programs is projected to increase from the current 12 to 200 by the year 2008. Enrolment in the MS programs is projected to grow from the current 230 to 1000 by 2008. In the diploma programs, enrolment is projected to jump from the current 35 to 200 by the year 2008.

A research agenda shall be formulated in consultation with industry and government. To implement this agenda, research groups shall be established in s departments. Each group shall consist of senior faculty members, junior faculty members, graduate students and selected undergraduate students and research and extension personnel. These groups shall provide support for thesis or dissertation research and shall be the vehicle for contract research, institutional consultancies and continuing engineering education. They shall principally be the *means by which expertise shall be gained and honed in various* areas.

In line with the key strategies outlined earlier, cooperative research programs with industry and government shall be actively sought and links with the international community of engineering researchers shall be strengthened.

CONTINUING ENGINEERING EDUCATION

Thousands of practicing engineers have taken upgrading short courses under the NEC's Continuing Engineering Education Program. Likewise faculty of other engineering schools have undergone training at the NEC. These have had significant effects on industry and on engineering education. Presently NEC holds about 3 or 4 short courses every month. As a response to the requirements of accelerated industrialization, the NEC shall double the number of its offerings in three years, triple it by the turn of the century and quadruple it by the year 2008.

ORGANIZATIONAL THRUSTS

There are two major thrusts organizationally:

- establish a National Graduate School of Engineering
- transform the existing departments into institutes.

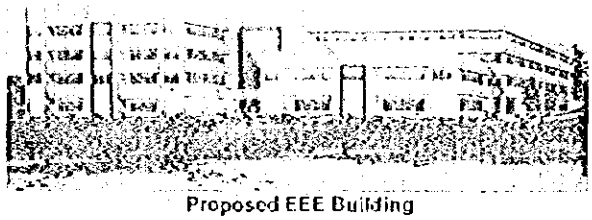
The institutes shall strive to become and be declared as national centers of excellence and thus earn the right to be called national institutes. Faculties in distinct areas of study in a department or institute will be organized into divisions. Research centers will be placed under the wings of divisions in order to place research firmly under the management by the faculty.

The schedule of the establishment of institutes is as follows:

- 1995 - Institute of Civil Engineering
- 1996 - Institute of Electrical & Electronics Engineering
- 2000 - Institute of Materials Processing
  Institute of Geodetic Engineering
  Institute of Computer Science
- 2002 - Institute of Chemical Engineering
- 2005 - Institute of Mechanical Engineering
- 2000 - Institute of Engineering Science

The divisions under some of these institutes are as follows:

- *Civil Engineering:* Construction; Structural; Environmental; Geotechnical; Water Resources; Transportation
- *Electrical and Electronics Engineering :* Computer; Electronics & Communication; Power
- *Chemical Engineering:* Biochemical; Environmental & Energy; Polymers; System Design, Control & Simulation; Unit Operations & Process Control
- *Mechanical Engineering:* Robotics; Machine Design; Power & Energy Conversion; Low-Temperature Applications; Indoor Climate; Fluid Machinery



Proposed EEE Building

FACULTY DEVELOPMENT

The table below shows the faculty development plan. The number of faculty members, presently at 119, will essentially double by the turn of the century and by the year 2008 would be about 2.5 times what it is today.

The ultimate goal is to have an all-PhD faculty which is of sufficient mass for the doctoral programs in the various disciplines to be self-sustaining, for the College to be able to satisfy the needs of industry for knowledge and solutions, and for the College to be able to support the development of graduate programs in other Philippine engineering schools. This building up of a critical mass of PhD's is at the heart of *R & D capability and of quality graduate and undergraduate* education.

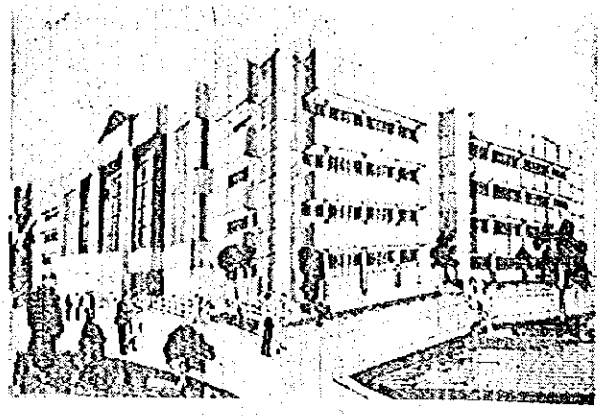
TABLE 3 : FACULTY DEVELOPMENT

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
ACTIVE B.S	34	41	58	61	63	62	53	45	36	26	18	14	12	9	7
ACTIVE M.S	37	39	58	74	83	94	100	103	104	101	95	83	73	63	54
ACTIVE Ph.D	27	32	37	51	56	61	93	104	120	142	160	182	197	215	230
TOTAL ACTIVE	98	112	153	186	202	217	246	252	260	259	273	279	282	287	291
LEAVING FOR STUDY	8	15	16	20	22	20	23	22	24	18	13	10	10	8	8
RETURNING FROM STUDY	0	6	5	10	4	9	12	13	20	22	20	25	21	22	14
TOTAL ON STUDY LEAVE	19	29	55	63	73	84	77	82	95	95	82	69	58	47	37
NEW HIRES	17	50	36	30	34	23	22	14	11	4	4	3	2	2	2
RETIRING/RESIGNING	1	3	5	7	5	3	1	2	0	0	0	1	0	0	0
TOTAL FACULTY	119	172	226	262	292	313	332	337	348	351	352	344	337	332	327

LIBRARY

The library is envisioned to become the national engineering library and information center of world-class stature. It will be a contributor to the global information network. Information technology shall be heavily employed in its operations.

Currently, the library has a book and non-book collection of about 54,000 volumes. It plans to increase its collection to 100,000 volumes by the year 2000 and to 175,000 volumes by 2008. Printed serial subscriptions will be kept at a minimum as the collection of CD-ROMS and downloading via the INTERNET are given priority.



Proposed Library Building

PHYSICAL FACILITIES

The planned rapid expansion of enrolment and setting up of research and computing facilities necessitates the construction of new buildings. The current site is simply inadequate for the requirements. The figure at the back shows the location and layout of the new site for the engineering complex.

WELFARE OF THE CONSTITUENTS

Substantially higher compensation for teaching and non-teaching staff of the UPCOE/NEC can come about only when the country succeeds in attaining NIC status. Thus the best way for the constituents to help themselves attain economic well-being is to successfully implement the very initiatives of this plan. Nevertheless an effort shall be mounted to build up an endowment fund for the welfare of personnel to address the problem of under compensation and of high faculty turnover.

For students, a center shall be built in the new site. Each organization shall have its own room and there will be information, communications, recreation, photoreproduction, food, study, lounging and other facilities.

FUNDING REQUIREMENTS

This expansion and modernization plan requires P 4.5 billion over 14 years - P 2.0 billion for faculty development and P 2.5 billion for buildings and equipment. This shall be raised from external sources.

The annual personnel and MOE costs are to increase from the current P 15 million to P 400 million by the year 2008, allowing for a 10% inflation rate. This shall come from the annual budget of the Philippine Government.

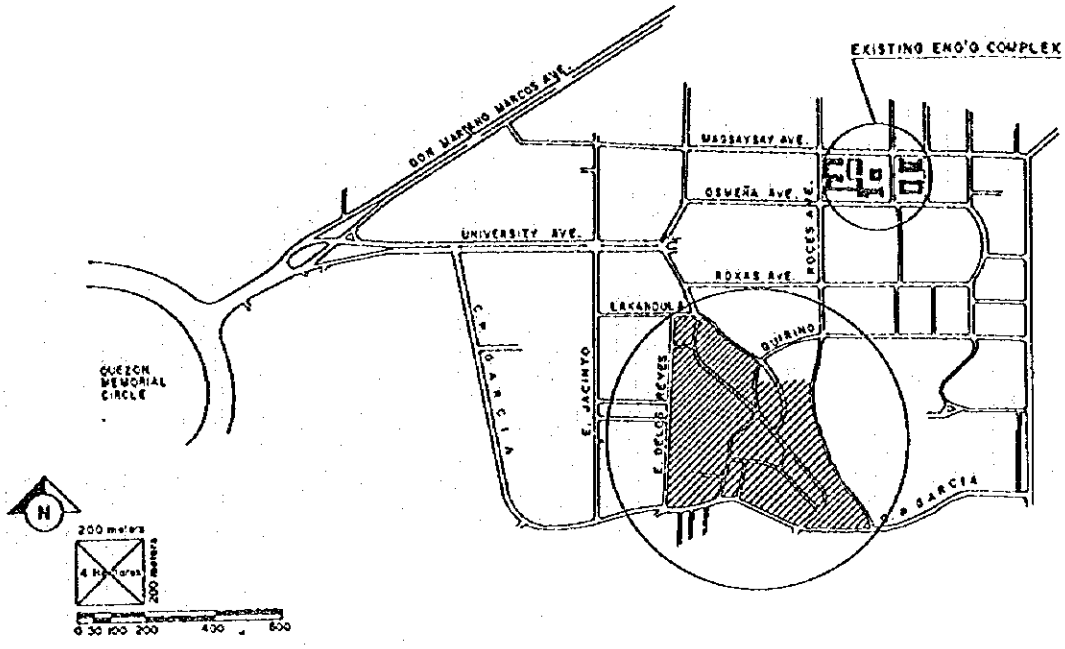
The table below shows the itemized estimate of funding requirements.

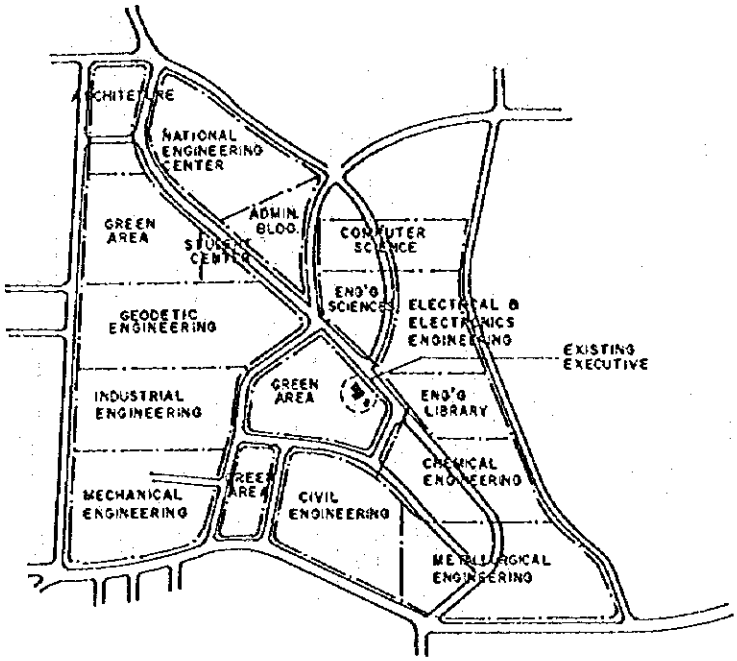
TABLE 4 : SUMMARY OF FUNDING REQUIREMENTS
(IN MILLION OF PESOS)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTAL
PERSONNEL	12.47	21.09	27.57	38.29	46.01	54.48	66.37	76.34	86.52	98.36	110.64	124.10	139.32	157.85	183.11	
MOOE	2.10	20.36	33.05	63.39	79.70	103.98	117.29	126.86	140.67	152.23	164.89	181.29	194.29	210.56	228.54	
SUBTOTAL	14.57	41.45	60.62	101.69	125.71	158.47	183.66	203.20	227.19	250.59	275.54	305.38	333.61	368.40	411.65	
FACULTY DEVT.	12.00	23.70	63.65	85.91	110.24	134.22	142.36	158.10	173.43	179.79	173.86	146.56	129.46	100.63	87.57	1,721
EQUIPMENT	14.03	201.88	108.26	234.89	191.56	260.04	76.75	99.61	61.83	29.40	31.80	60.53	35.38	36.29	35.18	1,480
CAPITAL	0.30	255.52	247.83	124.96	97.87	65.23	84.22	4.04	0.00	0.00	0.50	0.00	0.50	0.96	0.00	881
LIBRARY	2.36	4.06	4.89	5.79	6.55	7.43	8.95	10.13	11.52	13.15	15.56	17.81	20.47	23.62	32.15	184
SUBTOTAL	28.69	485.16	424.63	451.55	406.22	466.92	312.28	271.88	246.78	222.34	221.72	224.88	185.81	160.54	157.90	4,267
TOTAL	43.26	526.61	485.24	553.24	531.93	625.39	495.93	475.08	473.97	472.93	497.26	530.26	519.42	528.93	569.55	

Assume : PhP 12,000 per sq. m (inc A/C and furnishings)
PhP 1 million per year per faculty of study abroad (5 yrs PhD, 2 yrs MS)
10% inflation allowance per year
maintenance cost is 10% of acquisition cost
average faculty salary = Php 65,000 p.a.
average non-academic personnel salary per year = PhP 50,000 p.a.
10% salary increase per year

UP ENGINEERING - PUTTING TIGER STRIPES ON THE PHILIPPINE ECONOMY!
ENGINEERS AND ENGINEERING KNOWLEDGE FOR NIC-HOOD!





PROPOSED SITE OF UP COE/NEC

For Further Information Please Write or Call:

The Dean's Office
College of Engineering
University of the Philippines
Diliman, Quezon City 1101
Philippines

Telefax No.: (632) 99-31-44
Trunk Lines: 920-53-01 to 99
920-54-01 loc. 5126; 5260

資料6　映画「ラハール」を伝える新聞記事

LAHAR OF THE MATTER. Lahar victims Dawn Zulueta and townmates come together for their Sunday obligations.

DIAL M FOR MONEY. Sports star Cuba Gooding keeps Cruise on the line for more moolah.

Of Tragedy and Triumph

BY ERIC T. CABAHUG AND ALEX JIMENEZ

Lahar

It begins to describe how fine *Lahar* is by pointing out what the film is not—a disaster movie. Unlike any of the Hollywood "event" flicks of the genre—from *Jurrasic Park* and *Twister* to *Independence Day* and *Dante's Peak*—and even local ones (Carlo Caparas' *The Pagoda Tragedy*), this latest collaborative effort from director Mel Chionglo and writer Ricky Lee (*Sibak, Playgirl, Selosa*) focuses not on the ordeal, the panic and terror that victims of natural calamities are subjected to during or around the time of their occurrence. Rather, Chionglo and Lee have perceptibly thought it wise to use the lahar tragedy in Pampanga as a backdrop against which they've painted a compelling, colorful vista of the Filipino people coping and living during monumentally difficult, occasionally life-threatening times. Touching, moving, and ultimately inspiring, *Lahar* soars with the way it passionately celebrates the resilience of the Filipino and his tribal spirit.

If the film is not always *that* easy to sit through, it's because Chionglo and Lee have opted to utilize a free-flowing, mock documentary form for their loose narrative. For the most part, the drama unfolds in vignettes as told by a perceptive, observant eight-year-old boy (Tom Taus) who serves as the viewers' personal guide and bridge, as it were, to *Lahar*'s gallery of characters. And it's only in the very last scene where the film's—and the filmmakers'—grand design surfaces for the viewers to make a clear sense of the largely disjointed preceedings. Chionglo and Lee never intended for *Lahar* to tell a story—with a definite beginning and a conclusive end—so much as to present a panorama, a mosaic of the lahar situation, one which ultimately coalesces—into the portrait of the Filipino family at its most fragile, vulnerable and most firm—in the heart.

Of course, it helps enormously that excellent performances abound in the film the way lahar overflows in Pampanga. Tom Taus is, quite simply, superb as the boy-narrator, the fuzzy-warm breeziness of his demeanor and his affecting pleasantness highlighting the balmy air about the film. On the other hand, Dawn Zulueta takes to her part with a quivering intensity and a masterful command of her emotions that breathe so much life into her distraught family breadwinner character. Joelyn Jose is, as always, excellent. And so are Daria Ramirez, as the benevolent matriarch, Sharmaine Arnaiz, as the ambitious, erring sister, and just about everyone else in the cast.

If there's one area where the film falters, it's in the production. In most other films, Chionglo and Rody Lacap's studied, highly polished cinematography might be considered a virtue. But not here, as it robs *Lahar* of the earthiness, the rawness the source material brims over with.

Then again, whoever said *Lahar* is a perfect movie, anyway? It's not perfect. Just great.—ETC