education. As of September 15, 1993, 578 schools have been completed, educational materials have been sent to 490 schools, and experimental equipment has been sent to 222 schools. The Project is to be completed in 1994.

2) Australian International Development Assistance Bureau's (AIDAB's) Philippine-Australia Science and Mathematics Education Project (PASMEP)

To improve the quality of science and mathematics education by providing teacher education, curriculum improvement, management support, and science education equipment, the Government of Australia initiated this 5-year project under its grant aid cooperation program.

Education equipment for mathematics, physics and chemistry are supplied free of charge to a total of 377 schools in Project core areas, Regions II, VII, X (255 schools) and other areas (122 schools).

3) Schoolbuilding Construction and Educational Equipment Supply Project by the United States' Assistance for International Development and Economic Support Fund (USAID and ESF).

This project is to construct schoolbuildings and provide educational equipment with grant aid cooperation from the United States. The project was terminated August 31, 1992 due to the withdrawal of U.S. Forces from the Philippines. A total of 306 secondary schools were constructed throughout the country.

4) Deutche Gesellshaft fur Technische Zusammenarbeit's (GTZ's) Science and Mathematics Educational Equipment Improvement Plan

This plan intends to improve science and mathematics education by developing science and mathematics textbooks, standardization of textbooks and experimental methods, establishment of production and supply system of textbooks, and providing teacher training.

The Philippine Government constructed the National Science and Mathematics Educational Material Center in Cebu in November 1992.

The government will run the center and GTZ will supply part of the educational material production equipment at no charge.

The plan also includes sending specialists and for the training of teachers.

5) Japanese Grant Aid Projects

The Government of Japan has provided the Philippines' educational fields with financial and technical assistance on numerous occasions in the form of general grant aid and cultural grant aid for individual projects.

Henceforth, the Government of Japan intends to extend the comprehensive cooperation that covers the Philippine high level organizations to the local level, ie., from the development project level to the dissemination program level, for the improvement of the science and mathematics education at elementary and secondary schools.

The Minutes of Discussions on the package cooperation for the development of elementary and secondary science and mathematics education in the Philippines were signed by the Government of Japan and the Government of the Philippines on March 25, 1992.

This Project for the Improvement of the Educational Facilities (Phase II) is placed as a part of the package cooperation.

Grant aid projects related to the package cooperation are as follows:

1) The Project for Constructing the National Learning Resource Center for Teacher Training in Science and Mathematics Education

The grant aid cooperation was provided for the construction of the center for the re-education and training of elementary and secondary school science and mathematics teachers, and for the installation of equipment units to be used in conducting experiments and training.

(The Exchange of Notes for the project was signed by both governments in October 1988 and 2.04 billion yen was granted by the Government of

Japan. The project was completed in March 1990).

2) The Project for Constructing Primary and Secondary Schoolbuildings (Phase 1-5)

The purpose of this project is to construct the schoolbuildings for the elementary and secondary schools that were damaged by large typhoons in 1986 and 1987. The buildings are to be typhoon-resistant prefabricated structures.

An outline of the five phases of the project is as follows:

	Project Area	Exchange of Notes Signed Date	Grant Aid Amount (billion Yen)	Construction Completion Date
Phase I	Region V	Oct. 24, 1988	2,576	Feb. 18, 1990
Phase II	Region VIII	Jul. 13, 1990	2,659	Sep. 25, 1991
Phase III	Regions II & IV	Aug. 21, 1991	2,745	Oct. 15, 1992
Phase IV	Regions VI & X	Aug. 7, 1992	2,795	Nov. 3, 1993
Phase V	Regions I & III	Jul. 15, 1993	2,920	Exp. Nov. 1994

3) The Project for Assistance to Secondary Education Instructional Equipment Program

This project is for the installation of equipment for science, biology, physics, chemistry, engineering, and home economics classes in 210 secondary schools in Regions V and VIII as the Phase I Project and in 241 secondary schools in Regions II, IV, and X as the Phase II Project. (The Exchange of Notes for the Phase I Project was signed by both governments in April 1991 and 540 million yen was granted by the Government of Japan. The Phase I Project was completed in March 1992. The Exchange of Notes for the Phase II Project was signed by both governments in April 1992 and 598 million yen was granted by the Government of Japan. The Project was completed in December 1992).

3-2-4 Evaluation of Requested Facilities and Equipment

The Project facilities requested by the Government of the Philippines include classrooms and toilets for elementary schools, and classrooms, science laboratories, and toilets for secondary schools. First priority will be given to the construction of classrooms to alleviate the country's chronic classroom shortage. Thus, it is thought the Project facilities are appropriate.

According to the request, the number of classrooms per one schoolbuilding is to be more than 3 classrooms. Since the number of inadequate classrooms vary according to the school, four types -- 3 classrooms (Type A), 4 classrooms (Type B), 5 classrooms (Type C), and 6 classrooms (Type D; two-storied) will be arranged and the appropriate one will be selected for each school.

The equipment units requested are the minimum education necessities, such as desks and chairs for the teachers and the pupils, blackboards, shelves in the classrooms, and demonstration tables, workbenches, stools, storage cabinets, blackboards, bulletin boards, side shelves, and steel shelves for the science laboratories. It is also planned to provide basic experimental instruments for the effective use of the science laboratories. However, if the project schools already have science labs and science experiment tools through previous aid from Japan or other countries, then those contents will be eliminated.

3-2-5 Evaluation of the Appropriateness of the Project Area and the Project Schools

(1) Evaluation of the Appropriateness of the Project Area

The regions selected for the Project are: Region V (Southern Luzon Island, Masbate Island, Catanduanes Island, Burias Island, Ticao Island), and Regions XI, XII and ARMM (Mindanao Island). Thus, the Project covers six islands.

As mentioned in Section 2-3 "Outline of the Project Regions," the conditions in each Region differ, they have various educational problems, and improvements to school facilities are necessary. Thus, the construction of the schools in Phase II Project is thought to be appropriate. However, among the 120 project schools, only two have been selected in Burias Island and four in Ticao Island. Furthermore, the main bridge in Ticao has been damaged, splitting the area into two separate districts. There are problems in economic efficiency and management also; therefore, these two islands should be omitted from the Project.

(2) Evaluation of the Appropriateness of the Project Schools

DECS requested that the recipient schools for this Project to be selected from 148 schools (117 Project candidate schools and 31 alternative schools). These schools have different educational activities, different site conditions, and different infrastructure improvement condition.

From November 15 through November 22, 1993, the Study Team that consisted of nine groups conducted site investigation surveys of these schools. The results of the site investigation surveys are given in Table 3-5.

Table 3-5 Size and Site Condition of Each Project School (1)

SCHOOL NAMES	SCHOOL DATA					SITE CONDITION			WATER SUPPLY								ELECTRICAL SUPPLY AVAILABLE
	ENROLMENT		NO. OF CLASSES	NO. OF ACADEMIC TEACHERS	NO. OF EXIST. USABLE CLASS ROOMS	APPROX. AREA	SITE LEVEL-LING RE-QUIRED	SITE CREA-TION	CITY/MUNICIPAL LINE				WELL			OTHER SOURCE	
									INSIDE SCHOOL SITE			ADJACENT SCHOOL SITE	EXISTING WELL	TYPE	AUXIL. FACILITY		
	1993 -94	1994 -95 expect				(sqm)		(Min.) (Ext.)	EXISTING PIPELINE	TYPE OF PUMP	AUXIL. FACILITY	distance (m)	(Not Func-tional)	depth (m)		SOURCE depth [m] distance (m)	distance (m)
☐ELEMENTARY SCHOOL																	
REGION V																	
E- 1. MALINAO ES	885	925	19	24	14	2,500	None	Fill/E	Yes	None	None	-	No	-	-	Spring 500	Inside
E- 2. MALILIPOT ES	828	950	24	34	12	33,500	None	Fill	Yes	None	None	-	No	-	-	-	Inside
E- 3. TIBANG ES	241	250	6	7	3	10,000	Slight	None	No	-	-	-	No	-	-	Well [9] 20	Adj. 10
E- 4. J. ZURVITO ES	3,030	3,333	78	105	62	24,000	Slight	Fill	No	-	-	-	(Yes)	Deep 24	None	-	Inside
E- 5. R. PAJES CES	1,349	1,450	28	28	18	6,000	None	Fill	No	-	-	400	No	-	-	Well [6] 20	Inside
E- 6. DIMASALANG ES	1,285	1,413	43	52	24	40,300	Much	None	No	-	-	-	Yes	Shallow 6	None	-	Inside
E- 7. C. INOCENCIO ES	903	993	25	35	13	40,400	Slight	Fill/M	No	-	-	-	Yes	Shallow 6	None	-	No 21k
E- 8. BATUAN CES	497	514	14	21	9	19,600	None	None	No	-	-	50	Yes	Deep 18	None	-	Adj. 10
E- 9. RECODO ES	475	480	10	10	6	10,000	Much	Fill/M	Yes	None	None	-	Yes	Dug 6	None	Well 50	No 60k
E- 10. MILAGROS WEST CES	703	800	19	26	13	21,700	Much	None	No	-	-	-	(Yes)	Deep 18	None	-	Inside
E- 11. MONREAL CS	899	962	20	33	18	20,000	Much	None	No	-	-	-	Yes	Deep 24	None	Well 4	Adj. 10
E- 12. CABITAN ES	700	770	15	17	10	20,000	Slight	Fill/M	No	-	-	-	(Yes)	Shallow	None	Well [1] 10	No 60k
E- 13. CLAVERIA CES	1,134	1,186	28	28	24	10,000	None	None	No	-	-	-	No	-	-	Well [12]100	No
E- 14. ARMENIA ES	568	625	14	17	8	11,700	None	None	No	-	-	20	No	-	-	Well [5] 40	Adj. 10
E- 15. SAN PASCUAL CES	753	778	23	31	12	30,400	Slight	None	Yes	None	Cistern	-	No	-	-	Spring 400	No
E- 16. BALUD CS	714	750	17	25	15	21,600	Much	None	No	-	-	-	Yes	Shallow 9	None	-	No 54k
E- 17. BUYO ES	345	500	12	14	5	18,000	Slight	None	No	-	-	-	No	-	-	Well [18] 15	Adj. 20
E- 18. PALANAS CS	721	757	25	40	14	22,600	Much	None	No	-	-	-	Yes	Shallow 6	None	-	Inside
E- 19. TANQUE ES	400	440	11	13	9	10,000	Much	None	No	-	-	-	Yes	Shallow 6	None	-	No 18k
E- 20. PAWICAN ES	478	502	15	15	10	16,000	Slight	C&F/M	No	-	-	-	Yes	Deep 18	None	Spring 3000	Adj. 40
E- 21. MOBO CS	748	926	20	28	16	15,400	Much	None	No	-	-	-	Yes	Deep 18	None	-	Adj. 10
E- 22. BALENO CS	1,033	1,133	28	38	22	26,000	Slight	Fill/M	No	-	-	10	Yes	Shallow 6	None	-	Inside
E- 23. P. CONAG ES	527	560	14	19	10	10,000	None	None	No	-	-	25	No	-	-	Spring 25	Adj. 41
E- 24. LEONARDO BARRUN ES	641	705	20	26	14	11,500	Much	Fill/E	No	-	-	-	Yes	Deep 24	None	-	Adj. 8
E- 25. MERCEDES CS	2,340	2,390	52	63	50	16,900	None	None	Yes	None	None	-	Yes	Shallow 12	None	-	Inside
E- 26. PARACALE CES	2,559	3,344	51	60	34	10,100	None	None	Yes	None	None	-	(Yes)	Dug 2	None	-	Inside
E- 27. TALISAY ES	1,114	1,203	27	34	21	14,400	Much	None	Yes	None	None	-	No	-	-	River 50	Inside
E- 28. LABO ES	2,261	2,500	51	62	52	43,000	Much	None	Yes	None	None	-	(Yes)	Deep 24	EWT	River 50	Inside
E- 29. M. HEBRADO ES	920	966	18	21	15	10,500	None	None	Yes	Well	EWT	-	Yes	Shallow 6	None	Well	Inside
E- 30. LIBORO ES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E- 31. OCAMPO CS	1,803	1,980	37	45	30	22,000	Slight	Fill/E	Yes	None	None	-	Yes	Shallow 6	None	-	Inside
E- 32. PASACAO CS	2,035	2,063	38	50	36	38,000	Slight	None	Yes	None	None	-	No	-	-	Well 40	Inside
E- 33. CANAMAN CS	1,153	1,272	28	35	25	10,000	Slight	Fill	Yes	None	None	-	(Yes)	Deep 18	None	-	Inside
E- 34. SAN JOSE CS	1,291	1,335	30	42	29	28,000	Slight	Fill	No	-	-	-	Yes	Deep 18	EWT	-	Inside
E- 35. CALAGBANGAN ES	411	432	11	11	8	18,000	None	None	No	-	-	-	(Yes)	Deep 18	None	Well 10	Inside
E- 36. PANDAN ES	396	436	9	10	6	10,000	None	Fill	No	-	-	8	(Yes)	Shallow 6	None	-	Inside
E- 37. ANTIPOLO ES	758	798	18	16	14	20,000	Slight	Fill	No	-	-	-	Yes	Shallow 12	None	-	Inside
E- 38. BAAO WEST ES	874	975	24	29	17	10,300	None	Fill	Yes	None	None	-	(Yes)	Shallow 12	None	-	Inside
E- 39. GOA ES	2,616	2,696	57	71	49	3,100	Slight	Fill	Yes	Well	Cistern	-	Yes	Shallow 12	None	-	Inside
E- 40. BINANHUAN ES	212	250	7	7	2	3,300	None	Fill	No	-	-	-	Yes	Deep 31	None	-	Inside

Size and Site Condition of Each Project School (2)

SCHOOL NAMES	SCHOOL DATA					SITE CONDITION			WATER SUPPLY								ELECTRICAL SUPPLY AVAILABLE
	ENROLMENT		NO. OF CLASSES	NO. OF ACADEMIC TEACHERS	NO. OF EXIST. USABLE CLASS ROOMS	APPROX. AREA	SITE LEVELLING REQUIRED	SITE CREATION	CITY/MUNICIPAL LINE				WELL			OTHER SOURCE	
									INSIDE SCHOOL SITE			ADJACENT SCHOOL SITE	EXISTING WELL	TYPE	AUXIL. FACILITY		
	1993 -94	1994 -95 expect				(sqm)		(Min.) (Ext.)	EXISTING PIPELINE	TYPE OF PUMP	AUXIL. FACILITY	distance (m)	(Not Functional)	depth (m)		SOURCE depth [m] distance (m)	distance (m)
E- 41. SAGNAY ES	1,139	1,195	27	33	26	22,900	None	Fill	Yes	None	None	-	Yes	Deep 37	None	- -	Inside
E- 42. STA. LUCIA ES	504	560	13	14	11	4,000	Slight	None	Yes	None	None	-	Yes	-	-	-	Inside
E- 43. MATINOG CS	1,269	1,469	33	41	28	10,000	Slight	None	Yes	Well	None	-	Yes	Free Flow	EWT&E.P.	-	Inside
E- 44. EDUARDO LEE CHAN MS	735	770	19	24	15	20,000	Slight	None	Yes	None	None	-	(Yes)	Shallow 9	None	-	Inside
E- 45. IROSIN CES	2,284	2,320	57	73	58	33,500	Slight	None	Yes	None	None	-	Yes	Shallow 15	None	River 100	Inside
E- 46. ALINDOGAN CES	997	1,000	24	28	20	17,000	Slight	None	No	-	-	-	Yes	Shallow 12	None	-	Adj. 15
E- 47. CUMADCAD ES	759	770	29	24	15	13,000	Slight	Fill	Yes	None	None	-	Yes	Deep 18	None	-	Inside
REGION XI																	
E- 48. PANABO CES	2,505	2,655	44	65	25	20,000	Much	Cut/M	No	-	-	-	Yes	Shallow 6	None	-	Inside
E- 49. MACO HEIGHTS CES	1,554	1,674	42	52	21	70,000	Slight	Fill/M	Yes	Well	Cistern	-	No	-	-	-	Inside
E- 50. COMPOSTELA CES	2,832	3,428	57	68	58	157,800	None	None	Yes	None	None	-	No	-	-	-	Inside
E- 51. CARMEN CES	1,593	1,643	40	33	27	41,200	Much	Fill/M	No	-	-	-	(Yes)	Deep 24	None	River 100	Inside
E- 52. NABUNTURAN CES	2,516	2,600	60	70	53	40,000	None	None	Yes	None	None	-	No	-	-	River 30	Inside
E- 53. CADUNAN ES	475	528	13	13	2	10,000	None	Fill/M	No	-	-	-	Yes	Shallow 6	None	Well 50	Inside
E- 54. NEW CORELLA ES	1,610	1,679	31	37	23	79,500	None	None	Yes	None	EWT	-	No	-	-	River 10	Inside
E- 55. LINOAN ES	400	424	8	9	3	32,300	None	None	Yes	None	None	-	Yes	Shallow 8	None	-	Inside
E- 56. MAWAB CES	1,338	1,655	32	39	30	48,500	None	None	Yes	None	None	-	Yes	Free Flow	-	River 30	Inside
E- 57. STA. CRUZ ES	2,352	2,430	56	64	52	32,000	Much	None	Yes	None	Cistern	-	Yes	Deep 55	None	-	Inside
E- 58. MATTI ES	620	650	14	18	12	19,000	Slight	None	No	-	-	-	Yes	Deep 49	None	-	Inside
E- 59. MATANAO CES	967	1,020	24	35	20	170,000	Slight	Fill	Yes	None	None	-	No	-	-	River 100	Inside
E- 60. PADADA SOUTH ES	444	487	13	15	8	9,700	None	None	Yes	None	None	-	No	-	-	-	Inside
E- 61. MCKINLEY ES	234	300	6	8	4	15,000	Slight	None	No	-	-	-	(Yes)	Deep 31	None	Well 500	Inside
E- 62. I. CALMA ES	509	542	12	13	9	50,000	Slight	Cut	No	-	-	-	No	-	-	Well [49] 16	No
E- 63. KORONADAL II CES	1,989	2,049	41	50	38	38,600	Slight	None	Yes	Well	None	-	Yes	Deep 31	EWT&E.P.	-	Inside
E- 64. CROSSING RUBBER ES	474	500	12	13	9	9,300	Slight	Fill/M	No	-	-	-	Yes	Shallow 9	None	-	Inside
E- 65. LAMBONTONG ES	435	480	10	10	7	40,600	Slight	Fill/M	Yes	Submers.	EWT	-	No	-	-	-	Inside
E- 66. ALABEL CES	2,441	2,539	52	58	34	47,500	Slight	Fill/M	No	-	-	-	Yes	Deep 24	None	-	Inside
E- 67. MAA ES	2,043	2,186	43	43	28	30,400	Slight	Fill	Yes	None	None	-	Yes	Deep 55	None	River 1500	Inside
E- 68. DON JUAN DELA CRUZ ES	2,933	3,021	60	74	56	15,000	Slight	None	Yes	None	Cistern	-	Yes	Deep 37	None	Spring	Inside
E- 69. BASTIDA ES	1,154	1,232	27	33	26	10,000	None	None	Yes	None	None	-	No	-	-	-	Inside
E- 70. DADIANGAS WEST CES	3,813	4,034	62	75	59	17,000	Slight	Fill/M	No	-	-	-	Yes	Deep 12	EWT&E.P.	-	Inside
E- 71. CAHILSOT ES	2,693	2,937	40	47	40	60,000	None	None	Yes	Well	EWT	-	No	-	-	-	Inside
E- 72. F. ORINGO ES	528	762	12	13	6	5,000	None	Fill/M	No	-	-	-	Yes	Deep 18	EWT&E.P.	-	Inside
E- 73. BALUNTO ES	886	1,300	15	18	8	10,000	Slight	Cut/M	No	-	-	-	Yes	Shallow 9	None	-	Adj. 15
E- 74. SAAVEDRA SAWAY ES	1,516	1,645	28	32	29	15,000	Slight	Fill/M	No	-	-	-	Yes	Deep 15	None	-	Inside
ARMM																	
E- 75. SIMUAY JUNCITON CES	924	1,292	19	19	11	10,000	Slight	Cut/M	No	-	-	-	Yes	Deep 34	None	-	Inside
E- 76. SARMIENT CES	1,470	1,497	35	42	21	40,800	None	None	No	-	-	-	(Yes)	Deep 35	None	Wel 3000	Inside
E- 77. DALICAN PILOT ES	1,978	2,176	39	46	28	21,500	Slight	None	No	-	-	-	No	-	-	Spring 700	Adj. 20
E- 78. PARANG CES	2,030	2,050	46	59	45	39,400	Exten.	C&F	Yes	None	None	-	No	-	-	Well 200	Inside
E- 79. MAGUINDANAOAN ES	1,121	1,130	21	25	20	3,300	None	None	No	-	-	-	(Yes)	Shallow 6	None	Well 300	Adj. 5
E- 80. TENORIO ES	551	650	12	14	5	17,000	Slight	C&F/M	Yes	None	None	-	(Yes)	Deep 14	None	Well 1000	Inside

Size and Site Condition of Each Project School (3)

SCHOOL NAMES	SCHOOL DATA					SITE CONDITION			WATER SUPPLY								ELECTRICAL SUPPLY AVAILABLE
	ENROLMENT		NO. OF CLASSES	NO. OF ACADEMIC TEACHERS	NO. OF EXIST. USABLE CLASS ROOMS	APPROX. AREA	SITE LEVELLING REQUIRED	SITE CREATION	CITY/MUNICIPAL LINE				WELL			OTHER SOURCE	
									INSIDE SCHOOL SITE			ADJACENT SCHOOL SITE	EXISTING WELL	TYPE	AUXIL. FACILITY		
	1993 -94	1994 -95 expect				(sqm)		(Min.) (Ext.)	EXISTING PIPELINE	TYPE OF PUMP	AUXIL. FACILITY	distance (m)	(Not Functional)	depth (m)		SOURCE depth [m] distance (m)	distance (m)
REGION XII																	
E- 81. COTABATO CITY ES	6,227	6,538	122	150	103	39,700	Slight	None	Yes	Well	EWT&Cis.	-	No	-	-	-	Inside
E- 82. J. MARZUEZ ES	1,106	1,300	25	24	15	8,400	Exten.	Fill/E	Yes	None	None	-	No	-	-	-	Inside
E- 83. NOTRE DAME VILLAGE ES	1,054	1,154	21	27	18	27,000	Exten.	C&F/M	Yes	None	None	-	Yes	Shallow 15	None	-	Inside
E- 84. SERO CES	2,698	2,806	62	78	53	10,000	Exten.	Fill/E	Yes	Well	P. Tank	-	No	-	-	-	Inside
□SECONDARY SCHOOL																	
REGION V																	
S- 85. CATANDUANES NHS (MAIN)	3,115	3,550	63	106	47	35,000	None	None	Yes	None	None	-	Yes	Shallow 9	None	River 300	Inside
S- 86. SAN MIGUEL RURAL HS	809	907	16	29	11	5,900	Slight	Cut	No	-	-	250	No	-	-	Spring 250	Inside
S- 87. BARAS RURAL HS	658	686	15	27	9	46,000	Slight	Cut	No	-	-	50	Yes	Shallow 12	None	-	Inside
S- 88. BAGAMANOC HS	545	594	14	27	5	9,600	Slight	Fill/E	Yes	None	Cistern		Yes	Shallow 6	None	-	Adj. 29
S- 89. CARAMORAN RURAL HS	502	530	13	24	7	27,400	Slight	Cut	No	-	-	-	(Yes)	Deep 18	None	-	Adj. 15
S- 90. BATO RURAL HS	901	955	17	33	16	25,500	Slight	Fill/M	Yes	None	None	-	Yes	Shallow 12	None	River 600	Inside
S- 91. GIGMOTO RURAL HS	467	550	10	15	6	7,100	Slight	None	No	-	-	300	Yes	Shallow 12	None	River 41	Inside
S- 92. TABUGOC NATIONAL HS	300	315	8	11	5	20,000	Slight	None	No	-	-	10	No	-	-	River[18] 36	Adj. 5
S- 93. VIGA RURAL HS	557	650	18	31	14	10,000	None	None	Yes	None	EWT&Cis.	-	Yes	Shallow 37	EWT&E.P.	-	Inside
S- 94. PANGANIBAN NHS	122	200	4	6	0	5,000	Exten.	Fill/E	No	-	-	150	No	-	-	Well [12]100	Adj. 75
S- 95. LARAP ES	450	500	9	13	4	18,800	None	None	No	-	-	-	(Yes)	Shallow 6	None	Well 50	Inside
S- 96. TAPAYAS HS	316	350	7	10	0	10,000	None	C&F	No	-	-	-	No	-	-	Well [37]100	Adj. 5
S- 97. GATBO NHS	263	300	7	7	4	10,000	Slight	C&F/E	No	-	-	-	Yes	Deep		-	Inside
S- 98. BARCELONA NHS	1,079	1,100	20	34	15	40,000	None	None	Yes	-	-	-	Yes	Deep 23	None	-	Inside
S- 99. STO. NINO NHS	454	520	10	13	6	10,800	Exten.	Cut	No	-	-	10	Yes	Shallow 12	None	-	Inside
S-100. DAVAO NHS	2,802	4,903	32	56	18	11,300	None	None	Yes	None	None	-	No	-	-	-	Inside
REGION XI																	
S-101. MONKAYO NHS	2,060	2,266	31	52	24	34,900	None	None	No	-	-	50	Yes	Deep 24	EWT&Cis.	-	Inside
S-102. BONGABONG NHS	467	520	8	12	0	17,800	Slight	C&F/M	No	-	-	-	Yes	Deep 21	None	Well	Adj. 10
S-103. ASUNCION NHS	1,482	1,605	21	32	21	71,900	Slight	Fill/M	No	-	-	-	Yes	Shallow 8	None	River 1000	Inside
S-104. HAGONOY NHS	1,588	1,700	25	39	26	26,500	Slight	None	No	-	-	-	Yes	Deep 61	None	-	Inside
S-105. MARBER NHS	600	1,000	10	8	6	20,000	Slight	Fill	No	-	-	-	No	(est. 46)	-	Spring 50	Adj. 30
S-106. BANGA HS	930	1,320	14	22	8	23,000	Slight	Fill/M	No	-	-	-	Yes	Shallow 12	None	Well 200	Inside
S-107. TANTANGAN NHS	672	1,000	11	10	11	18,100	None	None	No	-	-	-	Yes	Shallow 18	None	-	Adj. 15
S-108. MALTANA HS	599	649	11	14	8	22,600	None	None	No	-	-	-	Yes	Shallow 18	None	-	Inside
S-109. SAN MIGUEL NHS	353	420	8	11	6	18,100	Slight	Fill/M	No	-	-	-	Yes	Shallow 12	None	-	Inside
S-110. MABINI NHS	670	737	13	16	7	5,500	Slight	Fill/E	Yes	None	None	-	No	-	-	-	Inside
S-111. BUSTAMANTE NHS	1,400	2,000	24	32	10	10,000	Slight	Fill/E	No	-	-	-	No	-	-	Well [55] 85	Inside
S-112. SAN JUAN NHS	974	1,050	16	25	0	10,000	Exten.	Fill/E	No	-	-	-	No	(est. 6)	-	-	Adj. 50
S-113. LAGAO NHS	3,597	4,208	57	111	32	20,000	None	Fill/M	No	-	-	-	(Yes)	Deep 24	P. Tank	-	Inside
S-114. LABANGAL NHS	693	1,400	12	17	0	13,500	None	None	No	-	-	-	Yes	Deep 31	None	-	Adj. 15
ARMM																	
S-115. PARANG HS (ANNEX)	906	937	14	16	3	10,000	Slight	C&F/M	No	-	-	-	No	-	-	Well [27]400	Inside
S-116. CAMP SIONGCO HS	694	763	10	17	6	27,000	Slight	C&F/M	Yes	None	None	-	No	-	-	Well 300	Inside
S-117. SOUTH COTABATO HS (MAIN)	3,513	4,171	80	156	6	15,000	Slight	C&F/M	Yes	None	None	-	No	-	-	Well 200	Inside

Size and Site Condition of Each Project School (4)

SCHOOL NAMES	SCHOOL DATA					SITE CONDITION			WATER SUPPLY								ELECTRICAL SUPPLY AVAILABLE
	ENROLMENT		NO. OF CLASSES	NO. OF ACADEMIC TEACHERS	NO. OF EXIST. USABLE CLASS ROOMS	APPROX. AREA	SITE LEVELLING REQUIRED	SITE CREATION	CITY/MUNICIPAL LINE				WELL			OTHER SOURCE	
									INSIDE SCHOOL SITE			ADJACENT SCHOOL SITE	EXISTING WELL	TYPE	AUXIL. FACILITY		
	1993 -94	1994 -95 expect				(sqm)		(Min.) (Ext.)	EXISTING PIPELINE	TYPE OF PUMP	AUXIL. FACILITY	distance (m)	(Not Functional)	depth (m)		SOURCE depth [m] distance (m)	distance (m)
☐ELEMENTARY SCHOOL : ALTERNATIVE																	
REGION V																	
AE- 1. PANIQUE ES	869	956	17	18	13	13,000	None	None	Yes	Well	None	-	Yes	Shallow 6	None	-	Adj. 3
AE- 2. BALOCAWE ES	463	488	13	15	3	10,000	Slight	Fill/M	No	-	-	-	Yes	Dug 2	-	-	Adj. 100
AE- 3. NURSERY ES	580	700	14	17	9	10,000	None	None	No	-	-	-	Yes	Deep 27	None	-	Adj. 30
AE- 4. MANDAON CS	964	1,100	24	34	16	30,500	Slight	C&F/M	No	-	-	-	Yes	Dug 1	-	-	No 20k
AE- 5. P. V. CORPUZ ES	577	623	19	32	13	30,000	Much	None	No	-	-	-	Yes	Shallow 9	None	-	Adj. 10
AE- 6. UMABAY INT. ES	333	366	9	10	5	10,000	Much	Fill/E	No	-	-	50	Yes	Deep 37	None	-	No 1k
AE- 7. DIVISORIA CS	534	587	13	15	9	10,000	None	None	No	-	-	-	No	-	-	Well [12] 50	No 65k
AE- 8. STA. ELENA ES	1,295	1,360	31	31	31	16,200	None	None	No	-	-	-	Yes	Shallow 6	Cistern	-	Inside
AE- 9. MAANGAS ES	631	700	13	13	11	13,300	None	None	No	-	-	-	Yes	Shallow 12	None	-	Inside
AE-10. PURO ES	426	495	12	14	9	-	None	None	No	-	-	-	Yes	Shallow 12	Cistern	-	Inside
AE-11. BOMBON ES	785	790	21	24	19	-	None	Fill	-	-	-	-	-	-	-	-	
AE-12. MAGALLANES NORTH CS	762	779	21	28	15	7,700	Slight	None	Yes	None	None	-	No	-	-	-	Inside
REGION XI																	
AE-13. KINGKING CES	1,481	1,612	33	40	32	160,000	None	None	No	-	-	-	No	-	-	Well [7] 75	Adj. 30
AE-14. RUPARAN ES	508	600	13	14	10	50,000	Slight	None	Yes	Submers.	EWT	-	No	-	-	-	Adj. 15
AE-15. KORONADAL I CES	1,852	2,225	42	56	42	38,600	Slight	None	Yes	Well	EWT	-	Yes	Deep 37	None	-	Inside
AE-16. UPPER TAMBLER ES	1,633	1,850	27	32	26	80,700	Slight	Cut/M	Yes	Submers.	EWT	-	No	-	-	-	Inside
AE-17. ROMANA ACHARON ES	1,904	2,089	42	42	34	60,000	Slight	Cut/M	No	-	-	-	Yes	Deep 61	EWT&Cis.	-	Inside
AE-18. FATIMA ES	928	1,200	15	15	11	59,900	Slight	Cut/M	No	-	-	700	No	-	-	Well [55]700	No 600
AE-19. P. ACHARON SR. ES	2,974	3,066	52	70	50	16,900	None	None	No	-	-	-	Yes	Deep 31	EWT&Cis.	-	Inside
AE-20. BANISIL ES	619	867	11	12	9	32,200	None	None	No	-	-	-	Yes	Deep 37	None	-	Inside
☐SECONDARY SCHOOL : ALTERNATIVE																	
REGION V																	
AS-21. KATANDUANES NHS (ANNEX)	398	400	8	13	1	7,600	Slight	None	No	-	-	10	Yes	Deep 18	None	River 2,000	Adj. 10
AS-22. MOBO HS	683	751	14	18	10	10,000	None	None	No	-	-	-	Yes	Deep 31	None	Spring 200	Inside
AS-23. BALENO NATIONAL HS	300	400	6	6	3	15,000	None	Fill	No	-	-	60	No	(est. 5)	-	Spring 30	Adj. 50
AS-24. BALUD NATIONAL HS	321	471	5	6	5	10,000	Slight	Cut/M	No	-	-	-	Yes	Dug 4	None	-	No 54k
AS-25. PERPETUAL HELP HS	575	615	13	17	8	10,000	Exten.	Cut	No	-	-	-	No	(est. 32)	-	-	Inside
REGION XI																	
AS-26. MANAT NHS	800	880	12	20	10	15,900	None	None	No	-	-	-	Yes	Shallow 11	None	Well 50	Inside
AS-27. IHAN HS	320	350	5	6	4	17,000	Slight	Fill	No	-	-	-	Yes	Deep 43	None	-	No
AS-28. ALABEL NHS	1,101	1,266	19	26	16	20,600	Slight	Cut/M	No	-	-	15	(Yes)	Deep 24	None	Well 15	Inside
AS-29. CONEL NHS	486	631	10	15	10	20,000	Slight	Cut	Yes	Submers.	EWT	-	Yes	Shallow 12	None	-	Inside
REGION XII																	
AS-30. COTABATO CITY HS (ANNEX)	1,876	2,064	35	83	11	4,300	Much	None	Yes	None	None	-	No	(unable)	-	-	Inside
AS-31. COTABATO CITY HS(TOMANTAKA)	374	450	8	16	0	10,000	Slight	C&F/M	No	-	-	-	No	(est. 6)	-	Well 800	No 700

Notes) EWT: Elevated Water Tank, Cis.: Cistern, E.P.: Electric Pump, P.T.: Pressure Tank, C&F: Cut & Fill, Ext.: Extensive, Adj.: Adjacent

As there may have been schools that were inappropriate for the project, the following criteria were decided upon through meetings with DECS regarding the selection of schools:

1. Schools located in areas maintaining good peace and order situations.
2. Schools with at least three (3) classroom shortage.
3. Schools having sufficient space to build on.
4. Schools having buildable areas which require minimal site preparation.
5. Schools which can secure enough academic teachers to hold classes on the additional schoolbuildings to be given.
6. Schools with acceptable site ownership.
7. Schools having adequate access roads for the transportation of building materials and progress monitoring.
8. Schools with another foreign assisted schoolbuilding project shall be rejected except if the said schoolbuilding is already turned-over and in use by the students.

The site study was conducted at 147 school sites of the 148 schools (117 candidate schools and 31 alternative schools) that were requested by DECS -- one school was canceled due to the access problem.

Through the site study it became clear that some schools had certain conditions that did not meet the above selection standards. As a result, it was decided upon to include 117 schools in the Project by excluding 31 unsuitable schools from the 148 requested schools. The 31 schools excluded and the reasons for their exclusion are listed in Table 3-6.

As a result of the avobe examination, those schools that were evaluated as adequate and appropriate for the Project are listed in Table 3-7.

Table 3-6 Proposed Schools to be Excluded from the Project

School No. Name	Problem
E- 1. Malinao ES	· A secondary school is using the 12 classrooms. Three of them will be in excess when the secondary school will move out. As the proposed construction site is presently farmland, landfill work would be required.
E- 8. Batuan Central ES	· The school is located on Ticao Island and it would be extremely difficult to consrtuct the schoolbuilding on schedule.
E- 11. Monreal Central School	· The school is located on Ticao Island and it would be extremely difficult to consrtuct the schoolbuilding on schedule.
E- 13. Claveria Central ES	· The school is located on Brias Island and it would be extremely difficult to consrtuct the schoolbuilding on schedule.
E- 15. San Pascual Central ES	· The school is located on Brias Island and it would be extremely difficult to consrtuct the schoolbuilding on schedule.
E- 17. Buyo Elementary School	· The school is located on Ticao Island and it would be extremely difficult to consrtuct the schoolbuilding on schedule.
E- 19. Tanque ES	· Only one classroom is lacking. There is an access road problem.
E- 20. Pawican ES	· Only two classrooms are lacking.
E- 23. P. Conag ES	· The foundation of the bridge on the access road to the site is on the verge of collapsing.
E- 24. Leonardo Barrun ES	· The school is located on Ticao Island and it would be extremely difficult to consrtuct the schoolbuilding on schedule.
E- 30. Liboro ES	· The vehicle could not gain access into the site during the site investigation; thus, the investigation was not conducted.
E- 31. Ocampo Central School	· The proposed site is located on a wetland along a river and it has a potential for flooding.
E- 42. Sta. Lucia ES	· Only two classrooms are lacking. There is no space for new classroom construction.
E- 45. Irosin Central ES	· There is no classroom shortage.
E- 49. Maco Heights CES	· There is no space for new classroom construction. Further the school site is located on reclaimed land on a hill. It has the potential to become a natural hazard.
E- 56. Mawab Central ES	· A schoolbuilding was removed because an existing spring was under the building's floor. It would be dangerous to construct a new building on the site.
E- 61. Mckinley ES	· Only two classrooms are lacking.
E- 62. I. Calma ES	· A bridge on the site's access road is badly deteriorated. It would be dangerous to transport construction materials over it.
E- 73. Balunto ES	· Part of the school site has been eroded by a river. It would be dangerous to construct new classrooms here.
E- 79. Maguindanaon ES	· There is no space for new classroom construction.
E- 82. J. Marquez ES	· The site is located on a wetland. Its supporting ground is very weak. To construct classrooms would require extensive land development work.
S- 93. Viga Rural HS	· There is no classroom shortage.
S- 94. Panganiban National HS	· The proposed site is presently a rice paddy. Extensive land development work would be required.
S- 97. Gatbo National HS	· The proposed site is located on a hill. Extensive land development work would be required.
S-112. San Juan National HS	· The site is located on the reclaimed land along the seacoast and it would be dangerous to construct classroom there.
AE- 5. P.V.Corpuz ES	· Only two classrooms are lacking. There is an access road problem.
AE- 8. Sta. Elena ES	· Only two classrooms are lacking.
AE- 10. Puro ES	· Only two classrooms are lacking.
AE- 11. Bombon ES	· Only one classroom is lacking.
AS- 27. Ihan National HS	· A bridge on the site's access road is badly deteriorated. It would dangerous to transport construction materials over it.
AS- 30. Cotabato City HS, Annex	· The site is too small to construct classrooms on. Furthermore, no schoolyard exists.

Table 3-7 List of Recipient Schools (1)

School No.	Name	Location
□ELEMENTARY SCHOOL		
REGION V		
E- 2.	MALILIPOT ELEMENTARY SCHOOL	Albay, Malinao
E- 3.	TIBANG ELEMENTARY SCHOOL	Catanduanes, San Andres
E- 4.	J. ZURBITO ELEMENTARY SCHOOL	Masbate, Masbate
E- 5.	R. PAJES CENTRAL ELEMENTARY SCHOOL	Masbate, Aroroy
E- 6.	DIMASALANG ELEMENTARY SCHOOL	Masbate, Dimasalang
E- 7.	C. INOCENCIO ELEMENTARY SCHOOL	Masbate, Placer
E- 9.	RECODO ELEMENTARY SCHOOL	Masbate, Cawayan
E- 10.	MILAGROS WEST CENTRAL SCHOOL	Masbate, Milagros
E- 12.	CABITAN ELEMENTARY SCHOOL	Masbate, Mandaon
E- 14.	ARMENIA ELEMENTARY SCHOOL	Masbate, Uson
E- 16.	BALUD CENTRAL SCHOOL	Masbate, Balud
E- 18.	PALANAS CENTRAL SCHOOL	Masbate, Palanas
E- 21.	MOBO CENTRAL SCHOOL	Masbate, Mobo
E- 22.	BALENO CENTRAL SCHOOL	Masbate, Baleno
E- 25.	MERCEDES CENTRAL SCHOOL	Camarines Norte, Mercedes
E- 26.	PARACALE CENTRAL ELEMENTARY SCHOOL	Camarines Norte, Paracale
E- 27.	TALISAY ELEMENTARY SCHOOL	Camarines Norte, Talisay
E- 28.	LABO ELEMENTARY SCHOOL	Camarines Norte, Labo
E- 29.	M. HEBRADO ELEMENTARY SCHOOL	Camarines Norte, Sta. Elena
E- 32.	PASACAO CENTRAL SCHOOL	Camarines Sur, Pasacao
E- 33.	CANAMAN CENTRAL SCHOOL	Camarines Sur, Canaman
E- 34.	SAN JOSE CENTRAL SCHOOL	Camarines Sur, San Jose
E- 35.	CALAGBANGAN ELEMENTARY SCHOOL	Camarines Sur, Sipcot
E- 36.	PANDAN ELEMENTARY SCHOOL	Camarines Sur, Cabusao
E- 37.	ANTIPOLO ELEMENTARY SCHOOL	Camarines Sur, Minalabac
E- 38.	BAAO WEST ELEMENTARY SCHOOL	Camarines Sur, Baao
E- 39.	BOA ELEMENTARY SCHOOL	Camarines Sur, Goa
E- 40.	BINANHUAN ELEMENTARY SCHOOL	Camarines Sur, Lagonoy
E- 41.	SAGNAY ELEMENTARY SCHOOL	Camarines Sur, Sagnoy
E- 43.	MATNOG CENTRAL SCHOOL	Sorsogon, Matnog
E- 44.	EDUARDO LEE CHAN MEMORIAL SCHOOL	Sorsogon, Magallanes
E- 46.	ALINDOGAN CENTRAL ELEMENTARY SCHOOL	Sorsogon, Juban
E- 47.	CUMADCAD ELEMENTARY SCHOOL	Sorsogon, Castilla
AE- 1.	PANIQUE ELEMENTARY SCHOOL	Masbate, Aroroy
AE- 2.	BOLACAWE ELEMENTARY SCHOOL	Masbate, Dimasalang
AE- 3.	NURSERY ELEMENTARY SCHOOL	Masbate, Masbate
AE- 4.	MANDAON CENTRAL SCHOOL	Masbate, Mandaon
AE- 6.	UMABAY INT. ELEMENTARY SCHOOL	Masbate, P.V. Corpuz
AE- 7.	DIVISORIA CENTRAL SCHOOL	Masbate, Cawayan
AE- 9.	MAANAGAS ELEMENTARY SCHOOL	Camarines Sur, Presentacion
AE-12.	MAGALLANES NORTH CENTRAL SCHOOL	Sorsogon, Magallanes
REGION XI		
E- 48.	PANABO CENTRAL ELEMENTARY SCHOOL	Davao del Norte, Panabo
E- 50.	COMPOSTELA CENTRAL ELEMENTARY SCHOOL	Davao del Norte, Compostela
E- 51.	CARMEN CENTRAL ELEMENTARY SCHOOL	Davao del Norte, Carmen
E- 52.	NABUNTURAN CENTRAL ELEMENTARY SCHOOL	Davao del Norte, Nabunturan
E- 53.	CADUNAN ELEMENTARY SCHOOL	Davao del Norte, Mabini
E- 54.	NEW CORELLA ELEMENTARY SCHOOL	Davao del Norte, New Corella
E- 55.	LINOAN ELEMENTARY SCHOOL	Davao del Norte, Montevista
E- 57.	STA. CRUZ ELEMENTARY SCHOOL	Davao del Sur, Sta. Cruz
E- 58.	MATTI ELEMENTARY SCHOOL	Davao del Sur, Digos
E- 59.	MATANAO CENTRAL ELEMENTARY SCHOOL	Davao del Sur, Matanao
E- 60.	PADADA SOUTH ELEMENTARY SCHOOL	Davao del Sur, Padada
E- 63.	KORONADAL II CENTRAL ELEMENTARY SCHOOL	Davao del Sur, Koronadal
E- 64.	CROSSING RUBBER ELEMENTARY SCHOOL	Davao del Sur, Tupi
E- 65.	LAMBUNTONG ELEMENTARY SCHOOL	Davao del Sur, Surallah
E- 66.	ALABEL CENTRAL ELEMENTARY SCHOOL	Sarangani, Alabel
E- 67.	MAA ELEMENTARY SCHOOL	Davao City, Davao City
E- 68.	DON JUAN DELA CRUZ ELEMENTARY SCHOOL	Davao City, Davao City (Daliaon)
E- 69.	BASTIDA ELEMENTARY SCHOOL	Davao City, Davao City
E- 70.	DADIANGAS WEST CENTRAL ELEM. SCHOOL	General Santos City, General Santos City

List of Recipient Schools (2)

School No.	Name	Location
E- 71.	CAHILSOT ELEMENTARY SCHOOL	General Santos City, General Santos City
E- 72.	F. ORINGO ELEMENTARY SCHOOL	General Santos City, General Santos City
E- 74.	SAAVEDRA SAWAY ELEMENTARY SCHOOL	General Santos City, General Santos City
AE-13.	KINGKING CENTRAL ELEMENTARY SCHOOL	Davao del Norte, Pantukan
AE-14.	RUPARAN ELEMETNTARY SCHOOL	Davao del Sur, Digos
AE-15.	KORONADAL I CENTRAL ELEMENTARY SCHOOL	South Cotabato, Koronadal
AE-16.	UPPER TAMBLER ELEMENTARY SCHOOL	General Santos City, General Santos City
AE-17.	ROMANA ACHARON ELEMENTARYA SCHOOL	General Santos City, General Santos City
AE-18.	FATIMA ELEMENTARY SCHOOL	General Santos City, General Santos City
AE-19.	P. ACHARON SR. ELEMENTARY SCHOOL	General Santos City, General Santos City
AE-20.	BANISIL ELEMENTARY SCHOOL	General Santos City, General Santos City
ARMM		
E- 75.	SIMUAY JUNCTION CENTRAL ELEM. SCHOOL	Maguindanao, Sultan Kudarat
E- 76.	SARMIENTO CENTRAL SCHOOL	Maguindanao, Parang
E- 77.	DALICAN PILOT ELEMENTARY SCHOOL	Maguindanao, Dinaig
E- 78.	PARANG CENTRAL SCHOOL	Maguindanao, Parang
E- 80.	TENORIO ELEMENTARY SCHOOL	Maguindanao, Dinaig
REGION XII		
E- 81.	COTABATO CITY ELEM. SCH., Poblacion V	Cotabato City, Cotabato City
E- 83.	NOTRE DAME VILLAGE ELEM. SCH., Pob. VII	Cotabato City, Cotabato City
E- 84.	SERO CENTRAL ES., Rosary Heights IV	Cotabato City, Cotabato City
□SECONDARY SCHOOL		
REGION V		
S- 85.	CATANDUANES NATIONAL HIGH SCHOOL(Main)	Catanduanes, Virac
S- 86.	SAN MIGUEL RURAL HIGH SCHOOL	Catanduanes, San Miguel
S- 87.	BARAS RURAL HIGH SCHOOL	Catanduanes, Baras
S- 88.	BAGAMANOC HIGH SCHOOL	Catanduanes, Bagamanoc
S- 89.	CARAMORAN RURAL HIGH SCHOOL	Catanduanes, Caramoran
S- 90.	BATO RURAL HIGH SCHOOL	Catanduanes, Bato
S- 91.	GIGMOTO RURAL HIGH SCHOOL	Catanduanes, Gigmoto
S- 92.	TABUGOC NATIONAL HIGH SCHOOL	Catanduanes, Pandan
S- 95.	LARAP NATIONAL HIGH SCHOOL	Camarines Norte, Panganiban
S- 96.	TAPAYAS HIGH SCHOOL	Camarines Sur, Balatan
S- 98.	BARCELONA NATIONAL HIGH SCHOOL	Sorsogon, Barcelona
S- 99.	STO. NINO NATIONAL HIGH SCHOOL	Iriga City, Iriga City
AS-21.	CATANDUANES NATIONAL HIGH SCHOOL(Annex)	Catanduanes, Virac
AS-22.	MOBO HIGH SCHOOL	Masbate, Mobo
AS-23.	BALENO NATIONAL HIGH SCHOOL	Masbate, Baleno
AS-24.	BALUD NATIONAL HIGH SCHOOL	Masbate, Balud
AS-25.	PERPETUAL HELP HIGH SCHOOL	Iriga City, Iriga City
REGION XI		
S-100.	DAVAO NATIONAL HIGH SCHOOL	Davao del Norte, Tagum
S-101.	MONKAYO NATIONAL HIGH SCHOOL	Davao del Norte, Monkayo
S-102.	BONGABONG NATIONAL HIGH SCHOOL	Davao del Norte, Pantukan
S-103.	ASUNCION NATIONAL HIGH SCHOOL	Davao del Norte, Asuncion
S-104.	HAGONOY NATIONAL HIGH SCHOOL	Davao del Sur, Hagonoy
S-105.	MARBER NATIONAL HIGH SCHOOL	Davao del Sur, Bansalan
S-106.	BANGA HIGH SCHOOL	South Cotabato, Banga
S-107.	TANTANGAN NATIONAL HIGH SCHOOL	South Cotabato, Tantangan
S-108.	MALTANA HIGH SCHOOL	Sarangani, Tampakan
S-109.	SAN MIGUEL NATIONAL HIGH SCHOOL	Sarangani, Norala
S-110.	MABINI NATIONAL HIGH SCHOOL	Davao City, Davao City (Bangkal)
S-111.	BUSTAMANTE NATIONAL HIGH SCHOOL	Davao City, Davao City
S-113.	LAGAO NATIONAL HIGH SCHOOL	General Santos City, General Santos City
S-114.	LABANGAL NATIONAL HIGH SCHOOL	General Santos City, General Santos City
AS-26.	MANAT NATIONAL HIGH SCHOOL	Davao del Norte, Nabunturan
AS-28.	ALABEL NATIONAL HIGH SCHOOL	Sarangani, Alabel
AS-29.	CONEL NATIONAL HIGH SCHOOL	General Santos City, General Santos City
ARMM		
S-115.	PARANG HIGH SCHOOL (Annex)	Maguindanao, Parang
S-116.	CAMP SIONGCO HIGH SCHOOL	Maguindanao, Dinaig
AS-31.	COTABATO CITY HIGH SCHOOL (Tamontaka)	Cotabato City, Cotabato City

3-2-6 Basic Cooperation Policies

In view of the avobe evaluations, the effects, reality, and the country's capability to put the Project into operation have been confirmed.

As the effects of the Project comply with the grant aid system, it has been judged that the Project may be undertaken in accordance with the grant aid cooperation program of the Government of Japan. With this grant aid cooperation program in mind, a basic design study will be carried out after evaluating the contents of the Project.

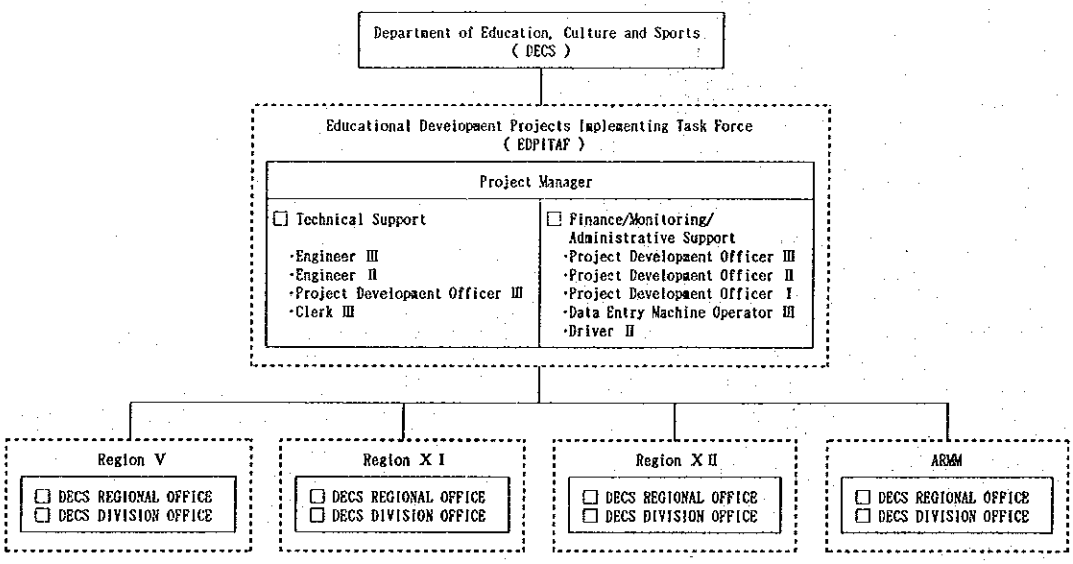
3-3 Project Description

3-3-1 Executing Agency and Operational System

The Project will be implemented under the supervision of EDPITAF of DECS, with the cooperation of the DECS Regional Offices in Regions V, XI, XII and ARMM, and under the overall guidance of DECS.

EDPITAF will establish a management office for the JICA Project. It will consists of a project manager, two engineers, four project management personnel, one level III clerk, one level III operator, and one driver. The management office will be responsible for Project supervision and will provide the guidance for the management of the Project facilities once the Project is completed. The organization of the Project executing agency is shown in Fig. 3-1

Figure 3-1 Project Implementation Organization



3-3-2 Project Area Locations and Conditions

The Project Area includes Region V (the southern area of Luzon Island, Masbate Island and Catanduanes Island) and, Region XI, XII and ARMM (Mindanao Island). The Project Area is spread over four islands. In a north-south direction it is 910 km. In an east-west direction it is 360 km. 117 schools (79 elementary and 38 secondary) are to be built in the area.

Site conditions vary greatly as mentioned in Section 2-6 "Evaluation of the Appropriateness of the Project Schools," and some schools that were thought to be inappropriate were excluded from the Project. The infrastructure also varies according to the site as mentioned below.

Electricity: The power at each site is 220V of the 117 project schools, 87 have electricity, 20 have power lines within 100 m and 10 do not have any.

Water: 47 schools have water supply facilities, 54 have spring water or wells, etc. on their sites. Of these schools, 11 have non-functioning water supply facilities because of damaged pumps, etc.. At 16 schools, water has to be taken from nearby wells, springs and rivers, etc..

Drainage: There are no drainage facilities at any of the schools.

3-3-3 Outline of Facilities and Equipment

1) Outline of Facilities

An appropriate number of classrooms were chosen from the four types according to the number of students, site conditions and condition of each elementary and secondary school. In the Autonomous Muslim Region, the number of Project schools were reduced because of poor security in the area. However, the improvement of educational facilities in this area is the most urgently needed in the Philippines.

The Government of the Philippines requested the building of as many classrooms as possible under the Project. Thus, a higher priority is given to building many classrooms in the four Project schools in the Autonomous Muslim

Region that seriously lack them. Table 3-8 shows the outline of schoolbuilding types. Table 3-9 shows the allotment according to classroom needs.

Table 3-8 Outline of Schoolbuilding Types

	Building Type	Number of Classrooms	Total Floor Area
Elementary School	A Type	3 + Toilet	239.45 m²
	B Type	4 + Toilet	305.95 m²
	C Type	5 + Toilet	372.45 m²
	D Type (2 stories)	6 + Toilet	611.15 m²
	C+A Type	8 + Toilet	571.95 m²
	C+B Type	9 + Toilet	638.45 m²
Secondary School	A Type	3 + Science + Toilet	350.27 m²
	B Type	4 + Science + Toilet	416.77 m²
	C Type	5 + Science + Toilet	483.27 m²
	D Type (2 stories)	6 + Science + Toilet	721.97 m²
	C+A Type	8 + Science + Toilet	682.77 m²
	C+B Type	9 + Science + Toilet	749.27 m²

Note: Floor area includes corridor space.

Table 3-9 Schoolbuilding Type to Meet Classroom Requirement

ELEMENTARY SCHOOL								SECONDARY SCHOOL			
NO. OF ADDNL. CLRMS. NEEDED	SCHOOL NO. NAME	SCHOOL TYPE	REMARKS	NO. OF ADDNL. CLRMS. NEEDED	SCHOOL NO. NAME	SCHOOL TYPE	REMARKS	NO. OF ADDNL. CLRMS. NEEDED	SCHOOL NO. NAME	SCHOOL TYPE	REMARKS
53	E- 81. COTABATO CITY ES	D		7	E- 14. ARMENIA ES	B		82	S-117. KOTABATO CITY HS	[C]	-Recipient of ADB Building
38	E- 48. PANABO CENTRAL ES	C		7	E- 27. TALISAY ES	B		58	S-113. LAGAO NATIONAL HS	C	
37	E- 70. DADIANGAS WEST CENTRAL ES	C		7	E- 55. LINGAN ES	B		52	S-100. DAVAO NATIONAL HS	D	-Limited Buildable Space
30	E- 26. PARACALE CENTRAL ES	C		7	E- 57. STA. CRUZ ES	B		31	S- 85. CATANDUANES NATIONAL HS	C	
28	E- 71. CANILASOT ES	C		6	E- 9. RECODO ES	B		28	S-101. MONKAYO NATIONAL HS	C	
27	E- 56. ALABEL CENTRAL ES	C		6	AE- 3. NURSERY ES	B		25	S-111. BUSTAMANTE NATIONAL HS	C	
25	AE-19. P. ACHARON SR. ES	C		6	AE-20. BANISIL ES	B		20	S-115. PARANG HS (Annex)	*C+B	
23	E- 67. MAA ES	C		6	E- 78. PARANG CENTRAL SCHOOL	B		18	S-114. LABANGAL NATIONAL HS	B	-Limited Buildable Space
22	E- 77. DALICAN PILOT ES	*C+B		5	E- 10. MILAGROS WEST CS	B		16	S-103. ASUNCION NATIONAL HS	C	
18	E- 54. NEW CORELLA ES	C		5	E- 28. LABO ES	B		16	S-106. BANGA HS	C	
18	E- 68. DON JUAN DELA CRUZ ES	C		5	E- 37. ANTIPOLO ES	B		14	S-104. MAGONOY NATIONAL HS	C	
17	E- 39. GOA ES	B	-Limited Buildable Space	5	E- 38. BAAO WEST ES	B		12	S- 98. BARCELONA NATIONAL HS	C	
16	E- 5. R. PAJES CENTRAL ES	C		5	E- 46. ALINDOGAN CENTRAL ES	B		12	S-102. BONGABONG NATIONAL HS	C	
16	E- 76. SARMIENTO CENTRAL SCHOOL	*C+A		5	AE- 7. DIVISORIA CENTRAL SCHOOL	B		12	AS-28. ALABEL NATIONAL HS	C	
15	E- 32. PASACAO CENTRAL SCHOOL	C		5	AE- 9. MAANGAS ES	B		12	S-116. CAMP SIONGCO HS	*C+A	
15	AE-16. UPPER TAMBLER ES	C		5	E- 59. MATANAO CENTRAL ES	B		10	S- 86. SAN MIGUEL RURAL HS	C	
15	E- 84. SERO CENTRAL ES	C		5	AE-13. KINGKING CENTRAL ES	B		10	S-110. MABINI NATIONAL HS	C	
14	E- 4. J. ZUBBITO ES	C		5	AE-15. KORONADAL I CENTRAL ES	B		10	AS-26. MANAT NATIONAL HS	C	
14	AE-17. ROMANA ACHARON ES	C		4	E- 18. PALAKAS CENTRAL SCHOOL	A		10	AS-31. COTABATO CITY HS	C	
13	E- 50. COMPOSTELA CENTRAL ES	C		4	E- 22. BALENO CENTRAL SCHOOL	A		9	S- 88. BAGAMAROC HS	C	
13	E- 51. CARMEN CENTRAL ES	C		4	E- 33. CANAMAN CENTRAL SCHOOL	A		9	AS-21. CATANDUANES NATIONAL HS	C	
12	AE-18. FATIMA ES	C		4	E- 34. SAN JOSE CENTRAL SCHOOL	A		9	S-105. MARBER NATIONAL HS	C	
12	E- 75. SINUAY JUNCTION CENTRAL ES	B	-Limited Buildable Space	4	E- 36. PANDAN ES	A		8	S- 87. BARAS RURAL HS	B	
12	E- 63. KORONADAL II CENTRAL ES	C		4	E- 40. BINANHUAN ES	A		8	S- 95. LARAP NATIONAL HS	B	
10	E- 7. C. INOCENCIO ES	C		4	E- 43. MATNOG CENTRAL SCHOOL	A		8	S- 96. TAPAYAS HS	B	
10	E- 52. NABUNTURAN CENTRAL ES	C		4	E- 44. EDUARDO LEE CHAN MEMORIAL	A		7	S- 90. BATO RURAL HS	B	
10	E- 53. CADUNAN ES	C		4	E- 47. CUMADCAD ES	A		7	AS-22. MOBO HS	B	
9	E- 2. MALILIPOT ES	C		4	AE- 6. UMABAY INT. ES	A		7	AS-25. PERPETUAL HELP HS	B	
9	E- 8. DIMASALANG ES	C		4	AE-12. MAGALLANES NORTH CENTRAL	A		7	S-108. MALTANA HS	B	
9	E- 25. MERCEDES CENTRAL SCHOOL	C		4	E- 58. MATTI ES	A		6	S- 89. CARAMORAN RURAL HS	B	
9	AE- 1. PANIQUE ES	C		4	E- 60. PADADA SOUTH ES	A		6	S- 91. GIGMOTO RURAL HS	B	
9	AE- 2. BOLACAWE ES	C		4	E- 65. LAMUNTONG ES	A		6	S- 99. STO. NINO NATIONAL HS	B	
9	AE- 4. MANDAON CENTRAL SCHOOL	C		3	E- 3. TIBANG ES	A		6	S-107. TANTANGAN NATIONAL HS	B	
9	E- 74. SAAVEDRA SAWAY ES	A	-Limited Buildable Space	3	E- 16. BALUD CENTRAL SCHOOL	A		4	AS-23. BALENO NATIONAL HS	A	
9	E- 80. TENORIO ES	C		3	E- 21. MOBO CENTRAL SCHOOL	A		3	S- 92. TABUGOC NATIONAL HS	A	
9	E- 83. NOTRE DAME VILLAGE ES	C		3	E- 35. CALAGBANGAN ES	A		3	AS-24. BALUD NATIONAL HS	A	
8	E- 12. CABITAN ES	B		3	E- 41. SAGNAY ES	A		3	S-109. SAN MIGUEL NATIONAL HS	A	
8	E- 29. M. HEBRADO ES	B		3	E- 64. CROSSING RUBBER ES	A		3	AS-29. COWEL NATIONAL HS	[A]	-Recipient of ADB Building
8	E- 72. F. ORINGO ES	B		3	E- 69. BASTIDA ES	A					
				3	AE-14. RUPARAN ES	A					

Note) Schoolbuilding Type: A(3 classrooms), B(4 classrooms), C(5 classrooms), D(6 classrooms/2 stories)
[ ]: indicates a school whose science laboratory will not be built under the Project. The science laboratory for the school was already built by ADB's aid.
* : indicates a school located in the Autonomous Muslim Region and given a priority to have more classrooms.

3-3-4 Maintenance and Management Plan

After Project facility construction and delivery, the maintenance and management of the facilities will be undertaken by each Region's local office of the Department of Public Works and Highways (DPWH). The costs will be allotted by DECS.

Since 1980, DECS has been able to secure funds for the Maintenance and Other Operating Expenditures (MOOE) for simple repair work, and for the Capital Outlay (CO) for repair and construction work. DECS has been conducting repair work at various schools under the guidance of DPWH.

When repair or maintenance work becomes necessary, a request is made by the school principal and it is submitted to DECS' local office for evaluation. After being evaluated, the request is sent to DECS' central office. DPWH's central office is then notified of the costs. After being approved by the Department of Budget and Management (DBM), the final budget is decided upon.

Based on the budget, DECS' central office determines the amount to be allocated to each school. Then DPWH's engineering section will prepare the maintenance and repair program. Each school principal will be notified of the program.

The construction contractors will be selected by DPWH's engineering section. The maintenance and repair work will be conducted under the supervision of DECS and DPWH.

In order to systemize the maintenance and management of the school facilities, the system will be changed from June 1994. The operation fee which had been allotted to each school after complicated procedures will now be allotted from DECS to each school through the regional office according to the size of the school. Table 3-10 shows the present flow of maintenance and repair work.

Table 3-10 The Present Flow of Maintenance and Repair Work

Responsible Department	Work Flow Order and Content
DECS	1. Examine the necessity of repair work requested by each school's principal and submit necessary budget and work proposal to DECS's local office.
DECS	2. DECS's local office examines the proposal and submits to DECS's Central Office a list of the schools needing repair work.
DECS	3. DECS's Central Office notifies DPWH of DECS's budget.
DPWH	4. DPWH's Central Office submits a proposal to DBM's Infrastructure Program.
DBM	5. Examine the submitted proposal and budget request and notifies DPWH the limit of available budgetary funds.
DPWH	6. DPWH's Central Office notifies DECS's Central Office of the amount of the budget.
DECS	7. Determine amount of money to be allocated to each school according to the needs of the school and the priority and notifies DPWH.
DPWH	8. DPWH's Central Office delivers the budget document to its Engineering Section.
DPWH	9. DPWH's Engineering Section sets up the repair and maintenance program according to the budget document and notifies each school principal of the program.
DECS	10. Notify each school of the repair and maintenance program.
DECS	11. Manage overall repair and maintenance work.
DPWH	12. Manage repair and maintenace work until its completion.
DPWH	13. Deliver repaired or maintained school facilities to DECS.
DECS	14. Accept repaired or maintained school facilities from DPWH.

By adding new school facilities it will become necessary to secure teachers and staff personnel to operate and maintain them. It will also be necessary to obtain the funds to cover maintenance and management costs.

There will be no need to increase the number of teachers for the Project because the purpose of the Project is to solve the classroom shortages at existing schools that either conduct classes outdoors, are under temporary repair, or are utilizing rented facilities by providing them with permanent classrooms. In reality, however, two or three-shift classes are being conducted at these schools to solve classroom shortages. To eliminate these two or three-shift classes, an increase in the number of teachers may be required.

In 1991, there was a shortage of about 17,500 teachers throughout the country. To overcome this problem, DECS is taking action to increase the number of students per teacher, increase teachers' hours, and mobilize non-teaching personnel to perform actual teaching work.

As stated in the Minutes of Discussions for this Project, DECS has promised to give priority to providing teachers to project schools, and to secure the number of teachers required to cope with the number of classrooms newly added by this project.

The average annual income of a teacher is 40,000 Pesos (200,000 Yen). There will be a total of 510 classrooms added by this project. If teachers are provided to each of the classrooms, 510 teachers will be needed and the necessary budget will be 20.40 million Pesos. This represents 0.06% of DECS's budget for 1992 and is within the range of budget allotment.

Project school facilities and equipment have been selected with a view at keeping maintenance and repair work costs low. However, as wooden doors, jalousies, fluorescent lights, gutters etc. will only last for several years, they will have to be inspected periodically. Also, from an aesthetic point of view, the floors should be waxed and the walls and ceilings painted every so often even if the work is not absolutely necessary for building maintenance purposes.

The average annual maintenance and management costs for an average size "B" type elementary schoolbuilding having well water and electric supply are as shown in Table 3-11.

Table 3-11 Operation, Management and Maintenance Annual Costs for One Schoolbuilding

Item	Material Costs (pesos)	Labor Costs (pesos)	Maintenance Frequency	Annual Costs (converted) (Pesos)	Remarks
Wooden Doors & Jalousies	3,260	1,380	Once every other year	2,320	Requires painting and repair work
Toilet Tiles	410	1,060	Once every three years	490	Requires repair or replacement of broken tiles
Gutters	2,500	320	Once every six years	470	Requires repair or replacement of broken gutters
Fluorescent Lamps	660	210	Once every year	870	Replacement is required periodically
Electric Fee	250/month			3,000	
Water Fee	220/month			2,640	
Total				9,790	

CHAPTER 4. BASIC DESIGN

CHAPTER 4 BASIC DESIGN

4-1 Design Policies

The Project is to alleviate the classroom shortages in the existing elementary and secondary schools scattered around Regions V, XI, XII and ARMM by providing the basic educational equipment and adding school facilities. Based on the contents of the request from the Government of the Philippines and the series of discussions held during the site study, the Basic Design will be set up according to the following policies:

(1) Design Policies for Natural Conditions:

As shown in Table 4-1, the climate of the Philippines is a tropical one, with hot temperatures and high humidity. Thus, ventilation and heat control must be taken into account to provide a comfortable school environment. As the facilities will also be used as places of refuge for the local people during times of natural disasters, such as annual typhoons, they must be sufficiently strong to withstand those elements.

Table 4-1 Climate in the Project Area (1961-1990 annual average)

	Province	Maximum Temperature (℃)	Minimum Temperature (℃)	Annual Rainfall [Max.～Min. Month] (mm)
Region V	Legazpi City	28.6～32.4	22.3～24.3	3,321.3 [150.4～479.9]
	Catanduanes	29.3～32.2	21.6～23.9	2,727.6 [99.3～447.1]
	Masbate	29.7～33.3	22.3～25.3	1,956.0 [52.4～255.1]
Region X I	Davao City	31.0～33.1	22.2～28.1	1,771.2 [87.9～196.3]
	Gen. Santos City	31.3～34.1	21.9～23.0	930.7 [42.0～109.8]

(2) Design Policies for Social Condition:

In designing the facility, the schoolbuilding standards of the Philippines and the living mode of the people must be respected. As the school facilities may be used as places of refuge during natural calamities, and as double-shift classes or night classes for non-formal education, the design should be such as to accommodate these conditions. Furthermore, in compliance with the Accessibility Law of the Philippines

(BATAS PAMBANSA BILANG 344), the facilities must be able to accommodate physically handicapped students.

3) Design Policies for Local Construction Field Situations

There is a National Building Code in the Philippines that corresponds to the Building Design Standards in Japan. Similar to Japan, it is mandatory to submit formal applications to obtain the various permits needed to start construction.

As for the domestic construction contractors and consultants concerned, their engineering skills are generally high. It is believed that they can be used for the Project. But, prior to hiring them, careful screening would be necessary.

There are a number of highly skilled construction workers available in the Philippines. However, it would be necessary to hire qualified workers based on the type of work and the construction schedule.

4) Policies for Using Local Firms, and Local Equipment and Materials

There are no problems with regard to the local construction contractors and local consultant firms. Thus, they may work under the guidance of Japanese engineers and receive the transfer of technology. The quality of local products and the level of engineering are thought to be satisfactory. However, for those materials, such as concrete, where the strength is affected by the accuracy of the construction, a durability test will be conducted.

5) Design Policies for the Project Implementing Agency's Maintenance and Management Capabilities

By taking into consideration the financial difficulties being experienced by the Government of the Philippines, school facilities shall be planned by placing top priority on easy, minimum cost maintenance and management work once facility construction has been completed. In addition, consideration shall be given to the use of domestic materials for effecting simple repairs to damaged or deteriorated facilities.

6) Design Policies for the Scope and Level of Project Facilities and the Equipment to be Provided

The contents of the Project include the construction of classrooms and toilets for elementary schools, and classrooms, science laboratories, and toilets for secondary schools, and for the furnishing of associated basic education equipment. The facilities and equipment will provide the basic necessities for education and they should be planned so as to allow comfortable daily classroom activities.

For facility design, emphasis shall be placed not only on classroom use for study purposes but also for multipurpose use, such as places of refuge during natural calamities.

The equipment plan shall be made so as to provide basic units that are necessary for class activities, such as blackboards and furniture. In view of maintenance and management, these units shall be procured locally.

The quality of locally made science laboratory instruments are generally poor; thus, they shall be procured in Japan. Further, a Japanese specialist shall be dispatched to provide guidance in the use of the instruments once they are turned over to the Philippine side.

7) Design Policies for the Project Construction Period

The purpose of the Project is to construct within a short period of time 117 elementary and secondary schools scattered on four islands of Southern Luzon, Masbate, Catanduanes and Mindanao, covering 910 km north-south and 360 km east-west. As many schoolbuildings will be built simultaneously, construction bases will be set up in 4 places: Naga, Legazpi, Davao and General Santos. These bases will supervise the construction work and prepare an effective construction plan in order that the project is completed within the time limit.

4-2 Examination of Design Criteria

To meet the various site conditions and the size and classroom shortage situation at each Project school, four types of Project schoolbuildings were

designed for elementary school and secondary schools. The type adopted depended on each school's condition.

The optimum classroom sizes were decided upon by respecting the new design standards of the Philippines. The size decided upon for classrooms was 8 m X 7 m (56 m^2). For the science laboratory it was 8 m X 10.5 m (84 m^2). By comparing with Japanese standards and by taking into account the furniture arrangements, these sizes are thought to be appropriate.

Taking the heat factor into consideration, a classroom will be 3.07m high. Toilets and science laboratories that require water supply and drainage facilities will be planned to be separeate from classrooms and the plan will consider effective measures for odors and drainage. Toilet facilities will include 2 toilet bowls and 1 (1.7m) urinal in the men's room and 3 toilet bowls in the girls' toilet. A special toilet for the physically handicapped will also be set up.

As two of the schools already had science laboratories built through aid from the Asian Development Bank, the science laboratories were omitted from their plan.

Table 4-2 shows the comparison between the applicable laws and the sizes adopted in the Project. Tables 4-3 and 4-4 show the size of the facility according to the type and the entire scale of the Project.

Table 4-2 Comparison between Philippine Construction Standards and the Adopted Sizes

The National Building Code (1992 Edition)	Project Facilities
Section 805. Ceiling Heights Rooms with a natural ventilation shall have ceiling heights not less than 2.70 meters.	Ceiling Heights: 3.07m
Section 807. Air Space Requirements in Determining the Size of Rooms School rooms - 3.00m^3 with 1.00m^2 of floor area per person of mimimum air space shall be provided.	Elementary School: 4.30m^3 with 1.40m^2 of floor area per person Secondary School: 4.10m^3 with 1.30m^2 of floor area per person

Table 4-3 Facility Size

Building Type		No. of Stories	No. of Class-rooms	Room Area (m²)	Open Corridor (m²)	Area (m²)	Number of Students
Elementary Schools							
Classroom	A Type	1	3	168.00	31.50	199.50	120
	B Type	1	4	224.00	42.00	266.00	160
	C Type	1	5	280.00	52.50	332.50	200
	D Type	2	6	336.00	235.20	571.20	240
Toilet		1	-	26.03	13.92	39.95	-
Secondary Schools							
Classroom	A Type	1	3	168.00	31.50	199.50	126
	B Type	1	4	224.00	42.00	266.00	168
	C Type	1	5	280.00	52.50	332.50	210
	D Type	2	6	336.00	235.20	607.70	252
Science Laboratory, Toilet		1	1	84.00+26.46	40.31	150.77	42

Table 4-4 Scale of Entire Project

Building Type/Room Name		One Unit of Schoolbuilding/s				No. of School	Total		
		No. of Class-rooms	No. of Students	Room Area (m²)	Subtotal Area (m²)		No. of Class-rooms	No. of Students	Total Area (m²)
Elementary Schools									
A Type	Classrooms	3	120	199.50	239.45	23	69	2,760	5,507.35
	Toilet			39.95					
B Type	Classrooms	4	160	266.00	305.95	22	88	3,520	6,730.90
	Toilet			39.95					
C Type	Classrooms	5	200	332.50	372.45	32	160	6,400	11,918.40
	Toilet			39.95					
D Type	Classrooms	6	240	571.20	611.15	1	6	240	611.15
	Toilet			39.95					
C+A Type	Classrooms	8	320	532.00	571.95	1	8	320	571.95
	Toilet			39.95					
C+B Type	Classrooms	9	360	598.50	638.45	1	9	360	638.45
	Toilet			39.95					
Subtotal						78	323	12,920	24,767.80
Secondary Schools									
A Type	Classrooms	3	126	199.50	350.27	4	12	504	1,401.08
	Science Laboratory			150.77					
	Toilet								
A Type w/o S	Classrooms	3	126	199.50	239.45	1	3	126	239.45
	Toilet			39.95					
B Type	Classrooms	4	168	266.00	416.77	12	48	2,016	5,001.24
	Science Laboratory			150.77					
	Toilet								
C Type	Classrooms	5	210	332.50	483.27	19	95	3,990	9,182.13
	Science Laboratory			150.77					
	Toilet								
C Type w/o S	Classrooms	5	210	332.50	372.45	1	5	210	372.45
	Toilet			39.95					
D Type	Classrooms	6	252	571.20	721.97	1	6	252	721.97
	Science Laboratory			150.77					
	Toilet								
C+A Type	Classrooms	8	336	532.00	682.77	1	8	336	682.77
	Science Laboratory			150.77					
	Toilet								
C+B Type	Classrooms	9	378	598.50	749.27	1	9	378	749.27
	Science Laboratory			150.77					
	Toilet								
Subtotal						38	169	7,098	16,918.32
Total						116	492	20,018	41,686.12

4-3 Basic Plan

4-3-1 Site and Layout Plan

As the site conditions vary from school to school, the most adequate layout plan for each Project school shall be prepared after examining the school site configuration, infrastructure development conditions, and the existing building arrangement.

The main layout-plan policies are as follows:

1) The arrangement of existing school facilities must be taken into consideration and the new buildings to be constructed shall be arranged to match them.

2) A new building shall be arranged on flat land if at all possible. Dipped areas are to be avoided in view of the structural safety of the building foundation.

3) By considering the prevailing wind directions and thereby utilize natural ventilation to the maximum extent, a new building shall be arranged far enough away from existing ones to allow wind gusts to pass between.

4) A location that is liable to receive damage during typhoons or floods should be avoided.

5) A new building shall be arranged so as not to adversely affect existing facilities. The building shall be arranged to allow for the economical and easy installation of water supply and drainage facilities and electrical supply lines. Especially where there is no water supply, the location of the toilet and science laboratory should be carefully reconsidered with regard to the location of the well to be drilled by the Philippine side.

6) Plans shall be made for the toilet and science laboratory to be in a separate wing to the classrooms.

4-3-2 Architectural Design

The contents of the Project are basically the same as those for the Phase I project. However, based on the results of the discussions held with the Philippine side, the following item differed from the Phase I project:

- To make the water distribution system efficient, cisterns were designed instead of elevated water tanks, and the toilets and science laboratories were designed to be in the same buildings.

- Manual water supply was designed to meet such an emergency cases as when the piped water supply or well water supply does not function. The system for collecting rainwater from the toilet and science laboratory buildings was also designed to provide an emergency water supply.

- To reduce construction costs, the height of classroom ceilings was lowered from 3.47m to 3.07m.

- For easier maintenance and reduced cost, the interior walls of classrooms were changed from the paint on plywood type to the mortar paint type.

- Because of the difficulty in obtaining wooden products, steel door frames replaced wooden ones.

- To ventilate toilets efficiently, toilet walls will be partially made of ventilated concrete blocks.

a. Floor Plan

For the Project, the adopted room sizes were 8m X 7m for classrooms and 8m X 10.5 m for science laboratories. The minimum size of the module unit was 8m X 3.5m (two units for classrooms and 3 units for science laboratories).

By arranging the concrete columns on the outer walls, the classroom will be rectangular in shape with no protrusions, allowing easy arrangement of furniture.

Four types of the 8m X 7m classroom wing will be proposed for the elementary and secondary schools: Type A (3 classrooms); Type B (4 classrooms); Type C (5 classrooms); Type D (6 classrooms). A type will be selected according to the conditions and necessity of the Project School.

For multipurpose use of the classrooms, each type will have movable partitions (walls). The science laboratories will have work counters below the windows and 5 sinks. For secondary schools, science laboratories and toilets will be located next to each other. The water to the laboratory will be supplied by the cistern for the toilet.

To be prepared for wet seasons, a 1.5m wide outer corridor will be built on each facility. A slope and a special toilet will be set up for physically handicapped people.

Table 4-5 shows the comparison of project facility features to those having Philippine standards.

Table 4-5 Comparison of Project Facility Features to Those Having Philippine Standards

Structure	Type	Year Constructed	Size/Clrm. (mxm)
Wood/Timber	Gabaldon Type	1910	7.00x9.00
	Army Type	1950 to 1960	6.00x7.00
	Magsaysay Type	1950	6.00x7.00
Steel	Marcos Pre-Fab.	early 1970's	6.00x7.30
	Typhoon Resistant Schoolbuilding Projet I-V	1989 to 1994	6.75x8.00
	FVR Type	1993	7.00x8.00
Concrete	R.P./U.S. Bayanihan (funded by USAID)	1973	6.00x7.35
	Bagong Lipunan Type I-III	1970 to 1984	6.00x8.00
	Imelda Type	1983	6.00x8.00
	ESF (funded by USAID)	1982	6.00x8.00
	Pagcor/PMS (President's Social Fund)	1988 to present	6.00x8.00
	SEDP (funded by ADB)	1988 to 1995	7.20x8.00
	The Project for the Improvement of Educational Facilities	1993 to 1994	7.00x8.00
	LGIF (Local Government Infrastructure Fund)	1994 (planning)	7.00x8.00
	The Project for the Improvement of Educational Facilities (Phase II)	1994	7.00x8.00

b. Section Plan

As the Philippines is located in the tropical climate zone, the section plan was prepared so that classroom activities could be conducted comfortably. An air vent will be installed in the loft to ease temperature rises.

Insulation will be installed to prevent heat from being transmitted into the classroom. Large windows will be provided to allow natural ventilation.

Eave lengths were examined from the viewpoint of intercepting direct sunshine, rain and wind. As a result, it was decided to have the eave lengths to be 2.5m (1.5m from the building walls to the center of the corridor columns and 1.00m to the tip of the eaves). On the other side of the building, the eaves are to be 1.45m. Considering the heat in the classrooms, the ceiling height will be 3.07m.

The standard section is shown in Fig. 4-1. To allow odors to escape from the toilets, ventilation blocks will be installed in the walls.

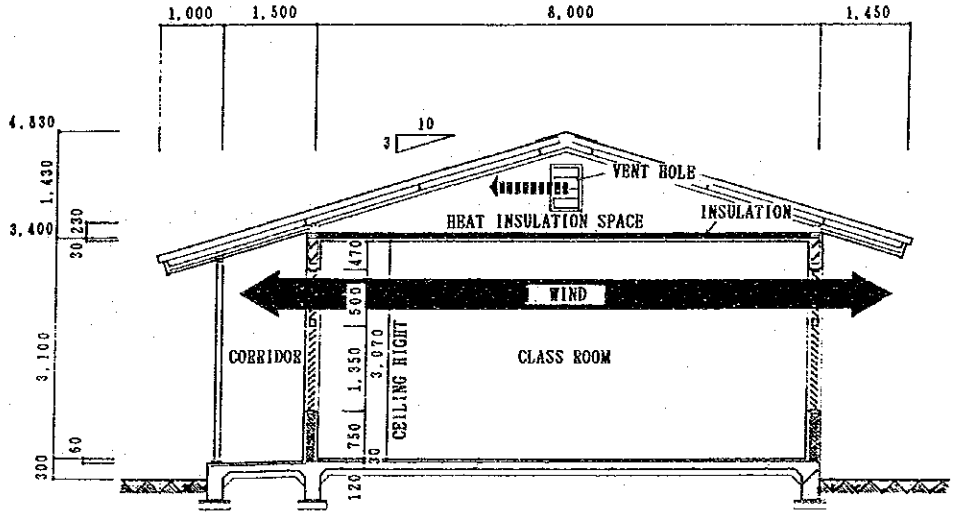


Fig. 4-1 Standard Section of Project Buildings

c. Structure Plan

1. Construction Method:

The structures will be built employing Philippine construction methods and will have reinforced-concrete columns and beams with trussed roofs. Local construction materials are not of uniform quality and the working conditions of the laborers in the Philippines are different from they are in Japan. Thus, the structure plan shall be made by adding extra allowance for these factors.

2. Design Loads and External Forces:

As a general principle, the National Structural Code of the Philippines was adopted for the design loads and external forces of Project schoolbuildings. Also, the wind forces in the hardest hit areas indicated in the Code were used for the structure design by taking into account the typhoon damage conditions in the Project Area.

The following design loads were used for the structure design:

a. Uniform Loads:

Roof :		61.2 Kg/m²	(600 pa)
Floor:	(Classroom)	204.1 Kg/m²	(2,000 pa)
	(Corridor)	490.0 Kg/m²	(4,800 pa)

b. Wind Forces: (obtained by $W=CO \cdot Qs \cdot I$)

40 PSF Qs = 2,000 pa (greatest wind pressure in the country, basic wind speed - 200 km/h)

c. Seismic Forces: (obtained by $V=Z \cdot I \cdot C/Rw$)

Z = 0.4 (regional coefficient, greatest in the country)

3. Building Structure Plan:

The vertical forces of the fixed loads and the live loads on roofs and the lifting forces on the roof by the wind loads will be absorbed by the buildings' 8 m span steel-trusses and reinforced-concrete columns.

Horizontal direction wind and seismic forces will be resisted by the rigidity of the reinforced concrete columns and their foundations in the longitudinal direction of the building and by the rigidity of the frame structure of the columns and beams of the building in the cross sectional direction.

As site conditions vary from school to school, the soil bearing capacity of 75 KN/m² (7.35 t/m²) was used for building foundation

design. The wind force coefficients during structural calculation are shown in Fig. 4-2

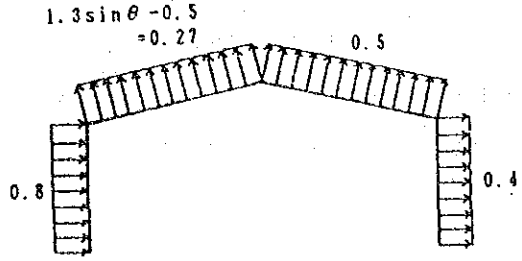


Fig. 4-2 Wind Force Coefficients

4. Structure Member Material

Two types of materials, wood and steel frames, can be used for the roof's steel frame trusses. As lumber products are difficult to procure in the Philippines, it was decided upon to adopt steel frames. The most commonly used equal angle section bars will be used.

As the quality of reinforcing bars and concrete may differ according to the region, quality control must be carefully conducted.

Materials to be used for the Project must have the following strengths:

a)	Concrete:	Fe = 180 Kg/cm	2,500 PSI(1 story bldg.)
			3,000 PSI(2 story bldg.)
b)	Reinforcing Bars:	Fy = 2,376 Kg/cm	33,000 PSI
c)	Steel Frames:	Fy = 2,592 Kg/mm	36,000 PSI

d. Facility Plan

(1) Electrical Facility Plan:

Project schoolbuildings will not only be used for ordinary classroom activities but also for non-formal education and as meeting places for area residents. It is assumed that the schoolbuildings will be used at night times. Thus, electrical facilities are planned to be installed in all Project schoolbuildings. All materials for the electrical facilities will be procured in the Philippines. The installation of lighting fixtures, outlets, and ceiling fans is planned.

Electrical wiring and switches for ceiling fans is planned under the Project by taking into consideration the Philippine side's plan for future ceiling fan installation.

Electricity is not supplied to some of the Project schools. However, electrical conduit will be installed to those schools to handle a future supply of electricity.

The number of fluorescent lighting fixtures, ceiling fans, switches, and outlets per room are shown in Table 4-6. The lighting and outlet wiring diagram are shown in Fig. 4-3.

Table 4-6 The Designed Number of Fluorescent and Incandescent Lighting Fixtures, Ceiling Fans, Switches and Outlets for Each Room

Type of Room	Fluorescent Lighting Fixtures	Incandescent Lighting Fixtures	Ceiling Fans	Switches	Outlets
Classroom	4	0	2	2	2
Science Laboratory	6	0	3	3	4
Corridor	0	2	0	1	0
Toilets (Males)	2	0	0	1	0
Toilets (Females)	2	0	0	1	0
Toilet (Handicapped)	1	0	0	1	0

(2) Water Supply Facility Plan:

As the water supply facility varies according to each project school, the cistern for the toilet and science laboratory will be used to meet the various conditions. Considering the water supply conditions in the Philippines, there may be cutoffs of city water and breakdowns of wells. Thus, it is planned to supply water manually in emergency cases. The height of the cistern will be set near ground level. Rainfall on the toilet and science laboratory building will be collected in the cistern as the emergency water supply source.

As for wells, the types of pumps may not be selected if the depth of the wells is unknown. As there is no data available from the Philippine

side concerning this matter, they will be responsible for boring the wells and obtaining the pumps.

Cistern: Reinforced concrete Volume: 1.16 m³ (elementary school)
1.20 m³ (secondary school)

Water Sapply Piping: PVC pipes
Gutter : PVC gutter
Down spout : PVC pipes

(3) Sewerage Facility Plan:

It will be necessary to install sewage treatment facilities for sewage toilet wash basins, urinals, and water closets, and waste water from science laboratory sinks.

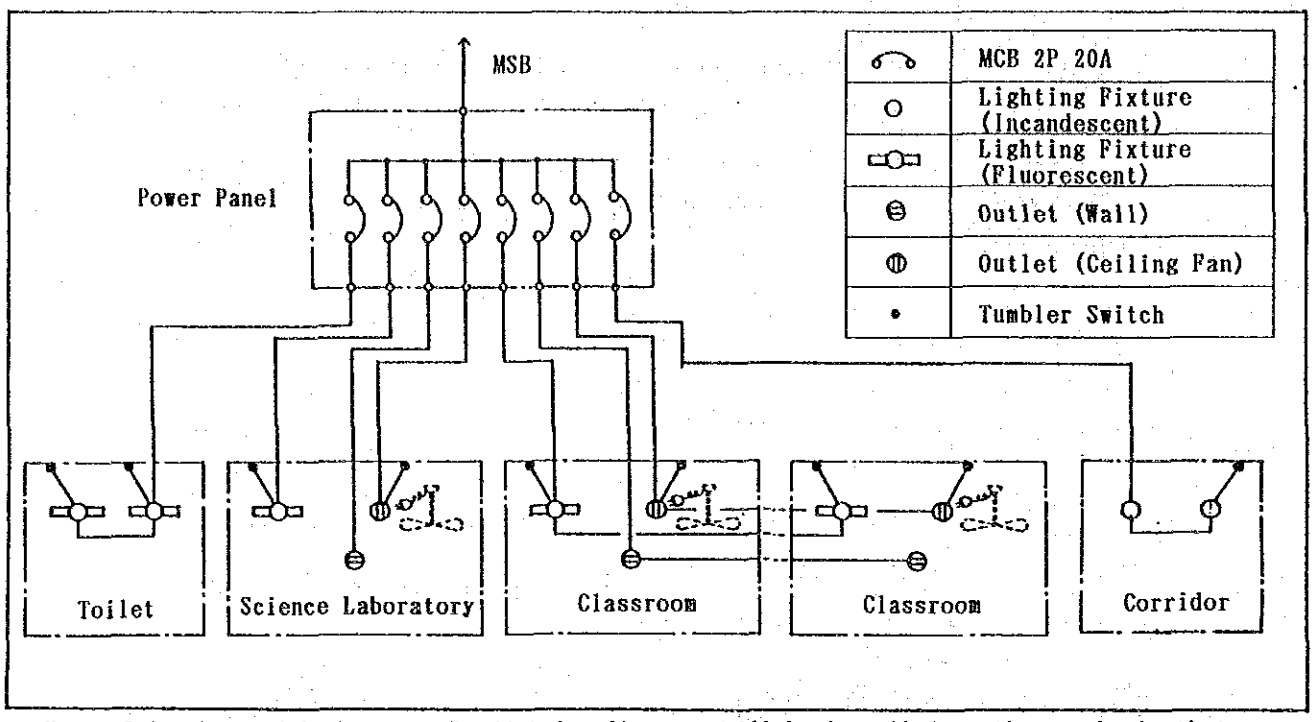
It is planned to treat sewage and waste water using the combined system of simple infiltration and septic tanks commonly used in the Philippines.

The water supply and sewerage system is as shown in Fig. 4-4.

The sewerage facility includes the following items:

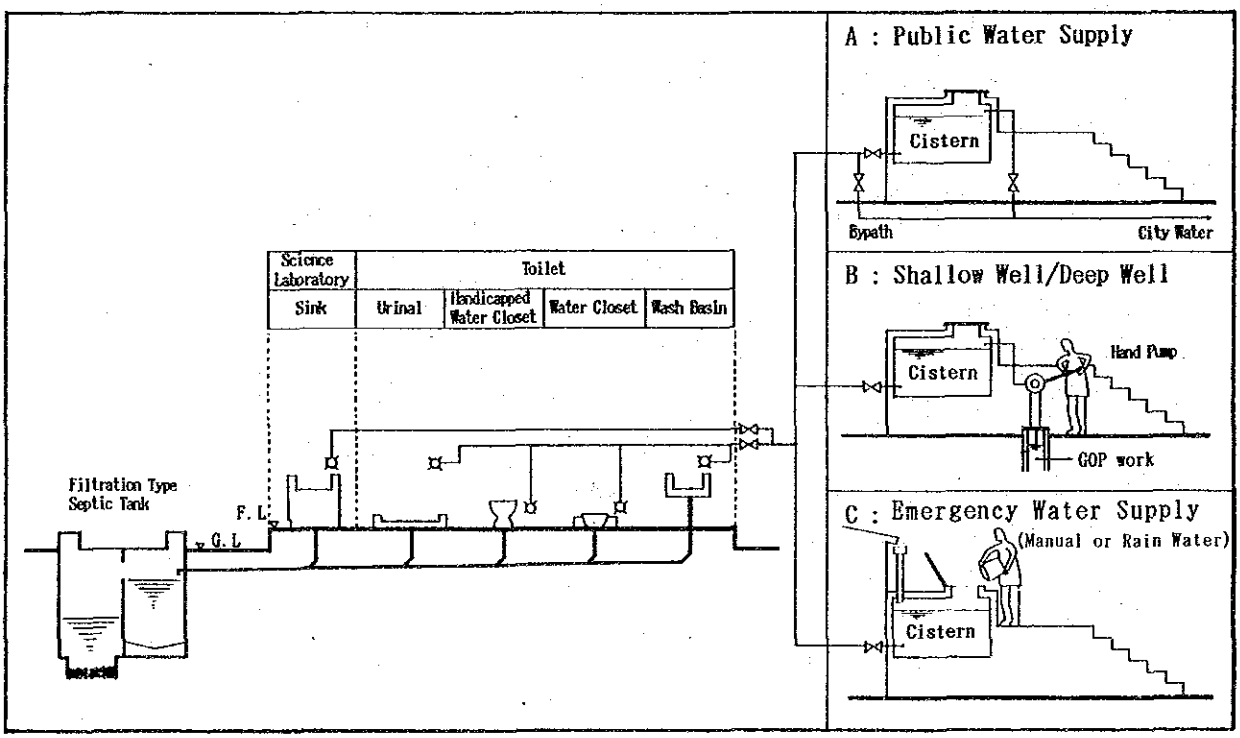
- Water Closets: Squat type (2 in the men's toilet; 3 in the women's toilet)
  Western type (1) (for handicapped pupils)
- Urinals: Multiple unit type, partially tiles (1.7m)
- Wash Basins: Reinforced-concrete and tiled.
  Ready-made units will be used for handicapped pupils.
- Piping Material: PVC pipe
- Septic Tanks: Reinforced-concrete made; infiltration type

Figure 4-3 Lighting and Outlet Wiring Diagram



Note: Only the conduit but not the lighting fixtures will be installed to those schools that not having power supplies.

Figure 4-4 Water Supply and Sewerage System Diagram



e. Schoolbuilding Material Plan

1. Basic Requirements:

In the Project, almost all building construction materials shall be procured on the local market to keep construction costs low so that it will be possible to build many classrooms with the same amount of funds as well as to simplify the completed buildings maintenance and management work.

2. Major Materials to be Used:

a) Structure Material

The reinforced concrete that is commonly used in the Philippines shall be used for foundations, columns and beams. As the quality of cement and aggregate material differ according to locality, quality control must be carefully conducted. As for truss structures to support roofs, wooden trusses are widely used throughout the country. However, as lumber is difficult to obtain in the Philippines, steel frame trusses shall be used for the Project.

b) Roofing Material

In the Philippines, most of the schools are roofed with zinc plated steel sheets; thus, leakage is occurring as a result of corrosion. For the Project, aluminum-zinc alloy plated steel sheets are to be used because some of the sites are along the coast and the sea water where corrosion is prevalent.

c) Windows - Doors

Wooden jalousies are most commonly used in the Philippines and they agree with the country's climate. Jalousies shall be adopted for the Project. However, some Project schools presently are without power supplies; therefore, glass jalousies shall be installed to efficiently utilize natural lighting. By taking into account glass protection and security, steel-bar frames will be installed to each

jalousie.

As for doors, only the frames shall be made of steel. The main body shall be made of wood to allow for easy opening and closing.

d) Floors, Walls, and Ceilings

Reinforced concrete shall be used for floors by taking into account its durability. The floors shall be finished with colored cement mortar.

Concrete blocks shall be used for exterior walls in view of their insulation capability. Mortar shall be placed on the walls and painted. The inside partition walls (including some movable walls) and ceilings shall be made of painted plywood on lightweight steel frames. Ceilings shall be painted plywood on wooden foundations.

The major materials to be used for Project schoolbuildings are shown in Table 4-7.

Table 4-7 Finish Materials to be Used for Project Schoolbuildings

	Portion	Philippine Method	This Project's Method	Reason for Adoption
Exterior Finish	Roofs	Zinc plated corrugated steel sheets	Aluminum-zinc alloy plated steel sheets	Stronger anticorrosion resistance
	Underside of Eaves	Plywood	Marine Plywood with S.O.P. coating	Easy maintenance and durability
	Walls	Concrete blocks, mortar finish	Concrete blocks coated with E.P.	Insulating effect and durability
	Windows	Wooden jalousies coated with S.O.P.	Glass jalousies (aluminum frame)	Effective natural lighting
	Doors	Wooden doors	Wooden doors coated with S.O.P. finish (steel frame)	Durability and easy maintenance
	Baseboards	Cement mortar steel trowel finish	Cement mortar steel trowel finish	Durability and easy maintenance
	Corridor Floors	Cement mortar steel trowel finish	Cement mortar steel trowel finish	Durability and easy maintenance
	Septic Tanks	Reinforced concrete partially made of concerete blocks	Reinforced concrete and concrete block made (inside and outside tank tops are to be waterproof mortar steel trowel finish)	Durability and easy construction
Interior Finish	Classrooms and Science Laboratories			
	Floors	Reinforced concrete, mortar finish	Reinforced concrete, Colored cement mortar steel trowel finish	Durability
	Walls	Concrete blocks, mortar finish	Concrete blocks mortar finish with E.P., Plywood coated with O.P. (partition)	Easy maintenance and construction
	Ceilings	Plywood	Plywood coated with O.P. and insulation	Insulating effect
	Other Parts		Work benches with sinks Ceramic tile finish (science laboratories only)	Easy maintenance and accurate finish work
	Toilets			
	Floors	Mortar finish	Mosaic tile	Easy maintenance
	Walls	Concrete blocks laying with E.P. finish	Concrete blocks laying, Mortar steel trowel finish with E.P. finish and partially decorative blocks	Easy maintenance
	Ceiling	No ceiling, O.S. finish	Plywood with O.P. finish	Insulating effect

4-3-3 Equipment Plan

In order to fulfill the education activities after the Project facilities are opened, proper accommodations must be provided. Upon completion of the classrooms and science laboratories in the Project schools, various types of equipment will be used.

Based on the contents of the request made by the Government of the Philippines for the Project and the results of the field surveys, the basic education equipment and science laboratory instruments will be provided as a part of the Project.

(1) Educational Equipment:

The selection of educational equipment was made by taking into consideration the standard types used in the elementary and secondary schools in the Philippines as well as the following aspects;

1) The desks and chairs for elementary school classrooms should be the double-seated types. Three different sizes of desks and chairs should be provided to suite the various body sizes of the students.

2) The desk-chair type for use by one person that is generally used in the Philippines should be furnished to secondary school classrooms.

3) For the science laboratories, three-person type tables for the students and a demonstration workbench for the teacher (one workbench per room) should be installed.

4) The storage cabinets to be installed in the science labs should have sufficient capacity to store the laboratory instruments.

As the equipment and instruments are to be installed in elementary and secondary schools, it was planned to provide types that are practical and strong -- elaborate types were avoided.

Equipment units are to be procured in the Philippines. By taking into consideration the domestic manufacturing technologies, easy procurement, and the quality of the material, steel and plywood made equipment are to be adopted.

The types of equipment and the number of units to be provided for each Project school classroom and science lab are listed in Table 4-8. The types of equipment and the number of units to be provided for each different size Project school are shown in Table 4-9.

Table 4-8 Equipment Types and Number of Units to be Provided for Each Project School Classroom

	Name of Room	Name of Item	No. of Units for One Room
Elementary Schools	Classroom	・Teacher's desk	1
		・Teacher's chair	1
		・Teacher's filing cabinet	1
		・Student's chair-desks (large size)	8
		・Student's chair-desks (medium size)	8
		・Student's chair-desks (small size)	8
		・Student's closets	8
		・Blackboard	1
		・Bulletin board	1
Secondary Schools	Classroom	・Teacher's desk	1
		・Teacher's chair	1
		・Teacher's filing cabinet	1
		・Student's chair-desks	42
		・Student's closets	8
		・Blackboard	1
		・Bulletin board	1
	Science Laboratory	・Experiment workbenches	14
		・Student's closets	5
		・Demonstration table	1
		・Stools (1 for Teacher, 42 for Students)	43
		・Blackboard	1
		・Bulletin board	1
		・Storage shelve	1
		・Steel shelve	1

Table 4-9 Equipment Types and Number of Units to be Provided for Each Different Size Project School

Furniture	Elementary Schools													Secondary Schools													Grand Total of All Project Schools
	A Type Three Classrooms (23 schools)		B Type Four Classrooms (23 schools)		C Type Five Classrooms (30 schools)		D Type Six Classrooms (1 school)		C+A Type Eight Classrooms (1 school)		C+B Type Nine Classrooms (1 school)		Total	A Type Three Classrooms (1 school)		B Type Four Classrooms and Science Laboratory (12 schools)		C Type Five Classrooms and Science Laboratory (17 schools)		C Type Five Classrooms (1 school)		D Type Six Classrooms and Science Laboratory (1 school)		C+A Type Eight Classrooms and Science Laboratory (1 school)		C+B Type Nine Classrooms and Science Laboratory (1 school)		Total	
	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total		For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total	For one school	Sub-total		
Teacher's desk	3	69	4	92	5	150	6	6	8	8	9	9	334	3	3	4	48	5	85	5	5	6	6	8	8	9	9	176	510
Teacher's chair	3	69	4	92	5	150	6	6	8	8	9	9	334	3	3	4	48	5	85	5	5	6	6	8	8	9	9	176	510
Teacher's filing cabinet	3	69	4	92	5	150	6	6	8	8	9	9	334	3	3	4	48	5	85	5	5	6	6	8	8	9	9	176	510
Student's chair (Large)	24	552	32	736	40	1200	48	48	64	64	72	72	2672																2672
Student's chair (Medium)	24	552	32	736	40	1200	48	48	64	64	72	72	2672																2672
Student's chair (Small)	24	552	32	736	40	1200	48	48	64	64	72	72	2672																2672
Armchair														126	126	168	2016	210	3570	210	210	252	252	336	336	378	378	7392	7392
Student's closet	24	552	32	736	40	1200	48	48	64	64	72	72	2672	29	29	37	444	45	765	45	45	53	53	69	69	77	77	1582	4260
Experiment Workbench														14	14	14	168	14	238	14	14	14	14	14	14	14	14	504	504
Demonstration Table														1	1	1	12	1	17	1	1	1	1	1	1	1	1	36	36
Stool														43	43	43	516	43	731	43	43	43	43	43	43	43	43	1548	1548
Blackboard	3	69	4	92	5	150	6	6	8	8	9	9	334	4	4	5	60	6	102	6	6	7	7	9	9	10	10	212	546
Bulletin board	3	69	4	92	5	150	6	6	8	8	9	9	334	4	4	5	60	6	102	6	6	7	7	9	9	10	10	212	546
Storage shelf														1	1	1	12	1	17	1	1	1	1	1	1	1	1	36	36
Steel shelf														1	1	1	12	1	17	1	1	1	1	1	1	1	1	36	36

(2) Science Laboratory Instruments:

The following aspects were taken into consideration when selecting the science laboratory instruments to be provided:

1) Instrument types shall be selected from the standard laboratory instrument list requested based on the new secondary school curricula that were established by the secondary education development program.

2) Instruments shall be selected by carefully studying and examining facility conditions of the Project schools.

3) To effectively use the science labs to be constructed by the Project, basic packaged instruments for ordinary science and physics class use should be provided.

4) Instruments that require electrical facilities or chemicals that are hard to obtain shall be avoided.

There are some problems with the science laboratory instruments manufactured in the Philippines. Thus, all other instruments to be provided under the Project are to be procured in Japan.

As 12 of the 38 Project secondary schools are already included in the Secondary Education Instructional Equipment Program (Phase I) under Japanese grant aid cooperation and the SEDP under ADB loan and, as they have been equipped with science laboratory instruments, they will not be supplied. Thus, there will be 26 schools receiving science laboratory equipment in this Project.

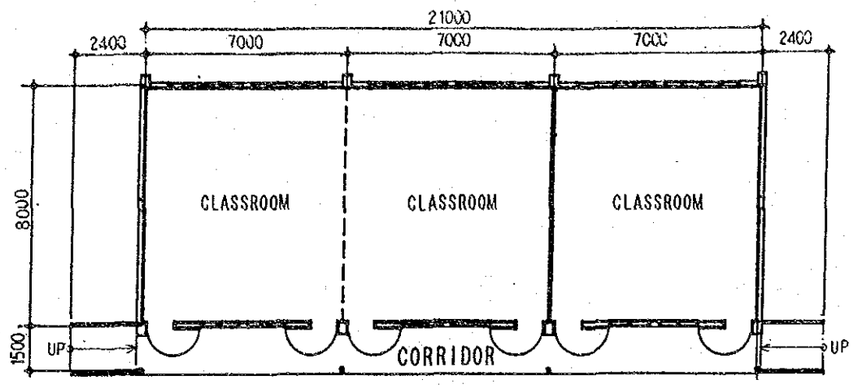
Table 4-10 List of Science Laboratory Instruments to be Provided to Each School

Class Name	Standard Instrument List No.	Instrument Name	Quantity
General Science	1	Platform Balance	1
	2	Anemometer	1
	3	Hand Lens	4
	4	Magnetic Compass	4
	5	Stop Watch (Digital)	4
	6	Mercury Thermometer (-5℃ to 105℃)	4
Biology	1	Compound Microscope (with cleaning set)	4
	2	Slide Glass (50 pieces in a box)	8
	3	Cover Glass (22mm x 22mm, 100 pieces in a box)	4
Chemistry	1	Triple Beam Balance	1
Physics	1	Convex and Concave Mirrors	4
	2	Demonstration Lens set	1
	3	Spring Balance (Newton)	8
	4	Dynamic Carts (two pulleys & one test bench)	2
	5	Electroscope	1
	6	Prism Set (Equilateral)	4
	7	Magnet (U-shape)	4
	8	Magnet (Alcomax)	4
	9	Magnet (bar)	4
	10	Multi-tester (analog)	4
	11	Logic Gates (for teacher)	1
		Logic Gates (for students)	12
	12	Set of Tuning Fork	2
	13	Resonance Apparatus	1
	14	Electric Motor Generator	4
	15	Free Fall Apparatus	1
	16	Scientific Calculator	8
	17	Boncave and Bonvex Lens Set	1
	18	Lead Line with Alligator Clip Attached	4
	19	Mercury Manometer	1
	20	Electric Circuit Experimental Apparatus	4
Total			110

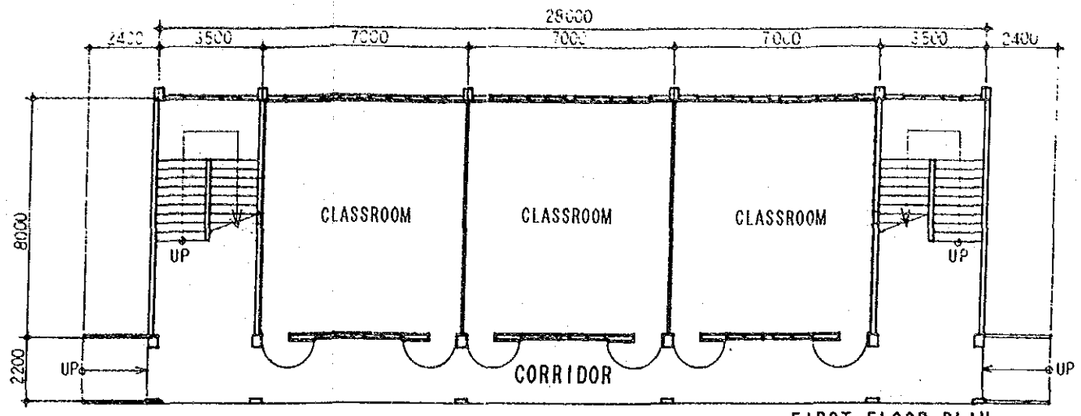
4-3-4 Basic Design Drawings

Drawing List

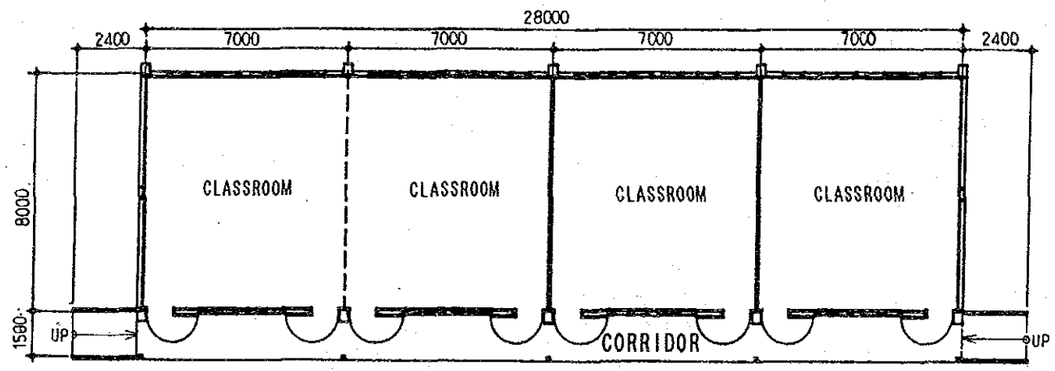
No.	Title
01	Elementary/Secondary School A, B, C and D Types, Plans
02	Elementary/Secondary School C and D Types, Elevations and Sections
03	Secondary School Science Laboratory and Toilet, Elementary School Toilet, Plans, Elevations and Sections
04	Elementary/Secondary School, Equipment Arrangement



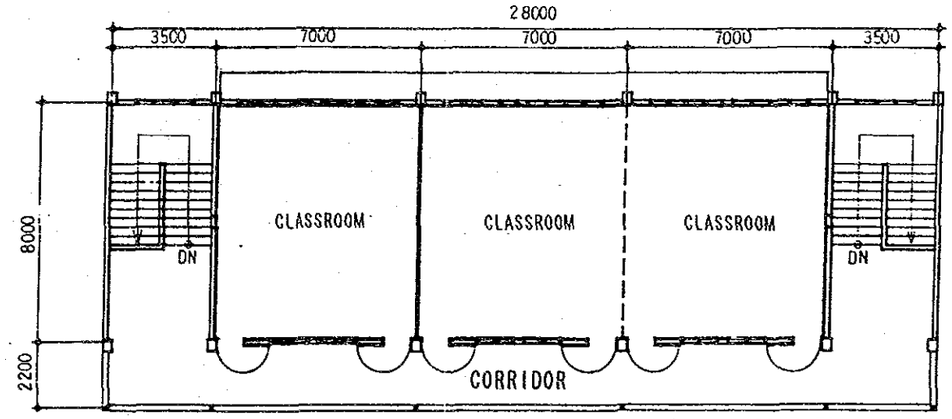
ELEMENTARY•SECONDARY SCHOOL A-TYPE PLAN



FIRST FLOOR PLAN

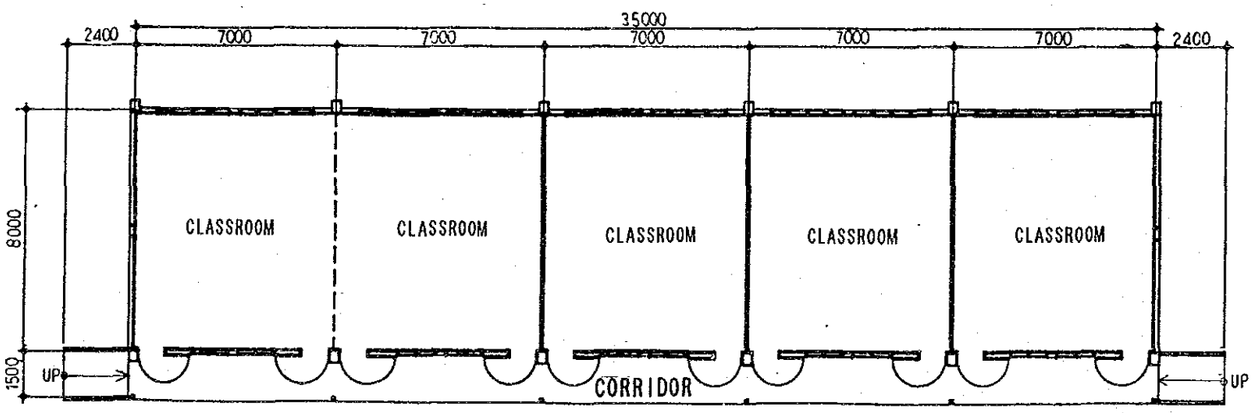


ELEMENTARY• SECONDARY SCHOOL B-TYPE PLAN



SECOND FLOOR PLAN

ELEMENTARY•SECONDARY SCHOOL D-TYPE PLAN



ELEMENTARY• SECONDARY SCHOOL C-TYPE PLAN

---------- REMOVABLE PARTITION WALL

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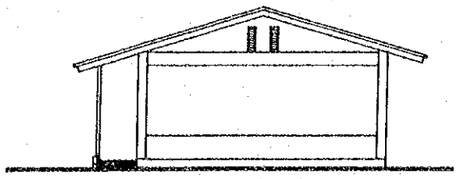
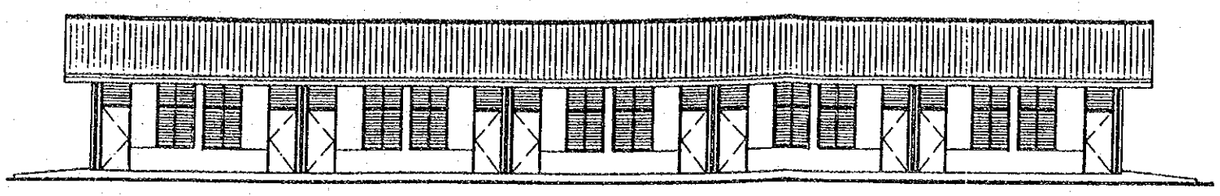
ELEMENTARY· SECONDARY SCHOOL A • B • C • D-TYPE PLAN



ELEVATION



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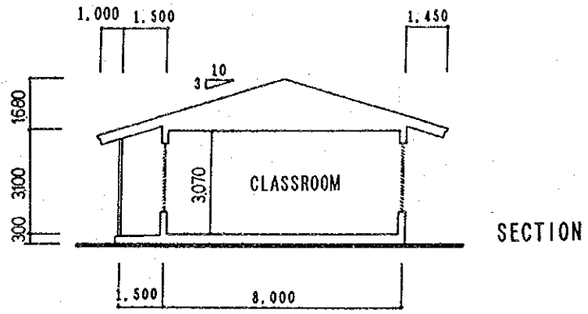
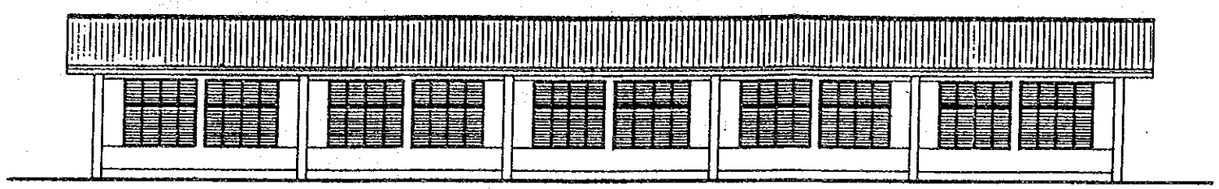


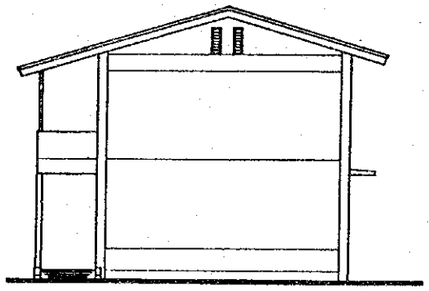
SECTION



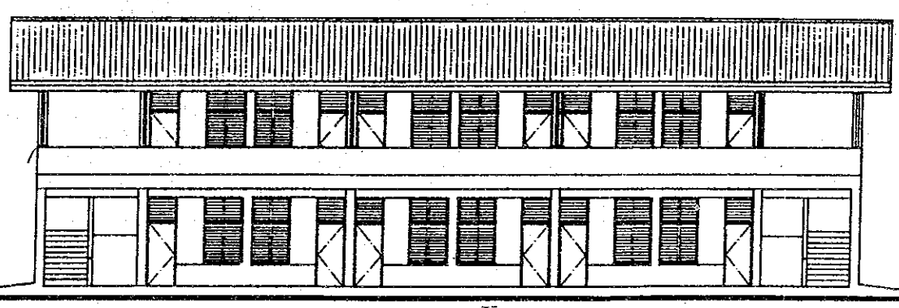
ELEVATION

ELEMENTARY • SECONDARY SCHOOL C-TYPE

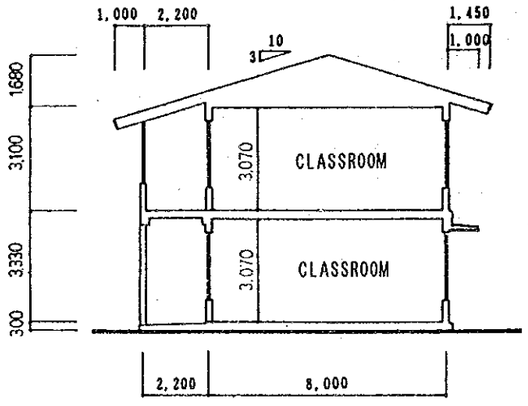
ELEMENTARY • SECONDARY SCHOOL D-TYPE



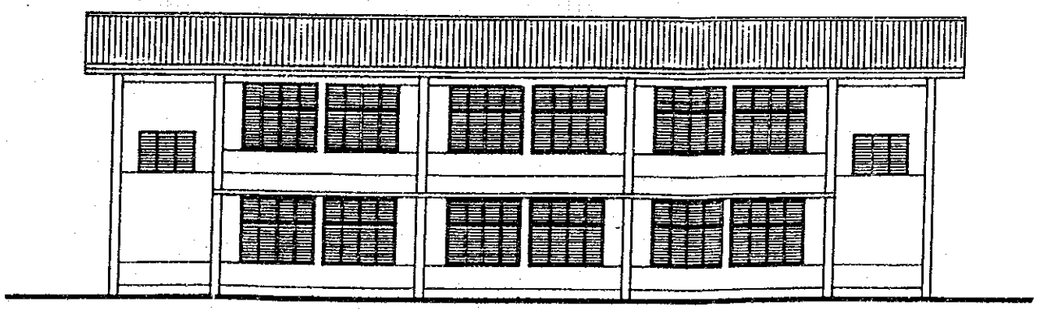
ELEVATION



ELEVATION



SECTION



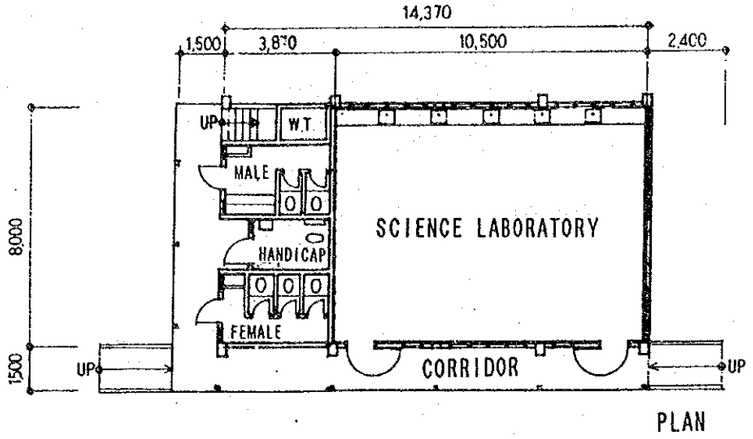
ELEVATION

THE PROJECT FOR THE IMPROVEMENT OF THE EDUCATIONAL FACILITIES (PHASE II)

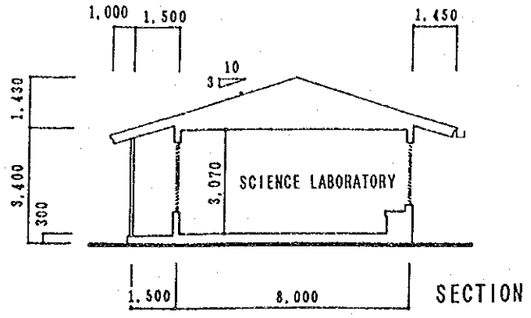
0 1 5 10 20m

ELEMENTARY · SECONDARY SCHOOL C • D-TYPE ELEVATION SECTION

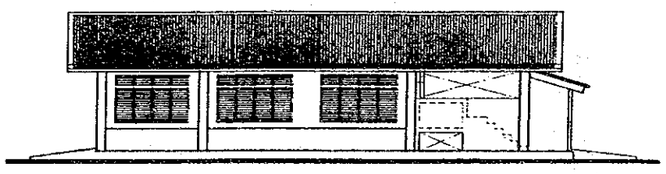
02



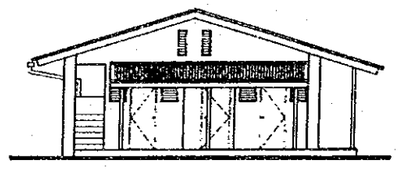
PLAN



SECTION



ELEVATION



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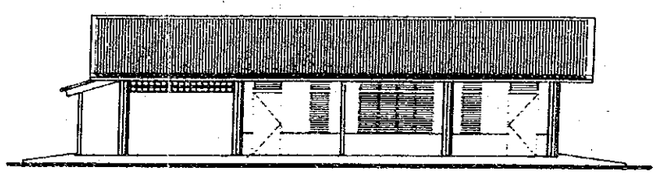
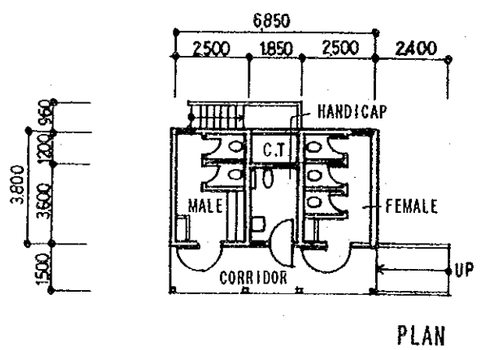


ELEVATION

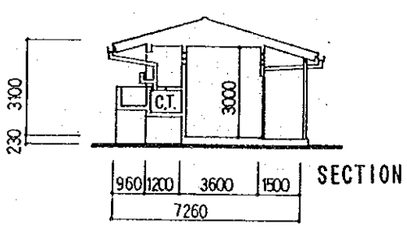
Note:For those secondary schools already having science laboratories constructed by ADB's aid, same toilets as Project elementary schools will be built.

SECONDARY SCHOOL SCIENCE LABORATORY-TOILET

ELEMENTARAY SCHOOL TOILET



PLAN



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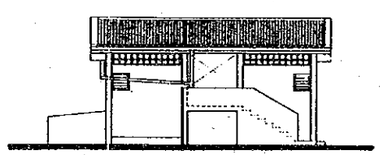

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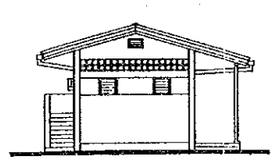

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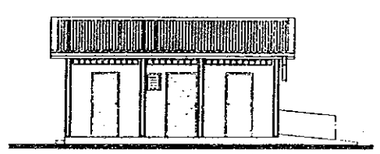
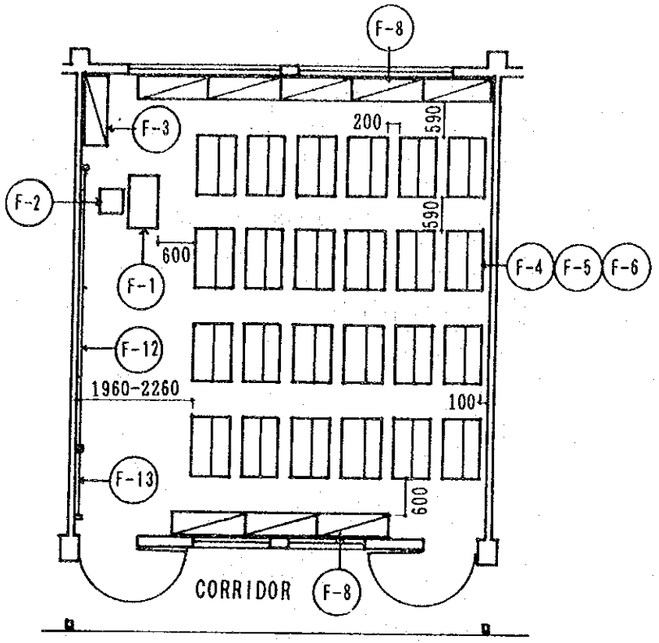
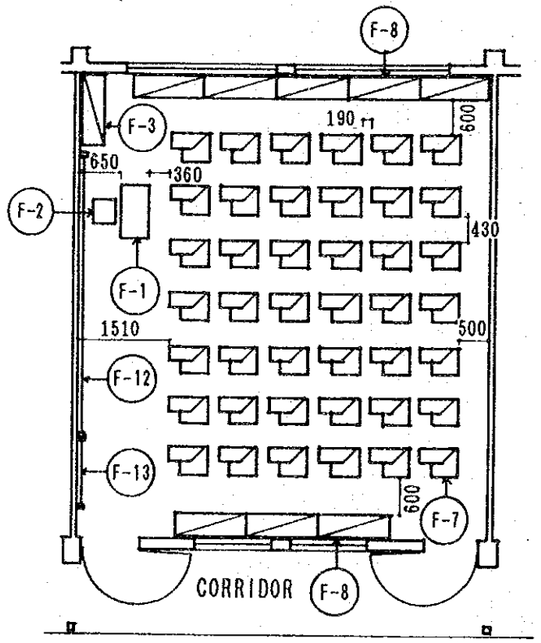


ELEVATION

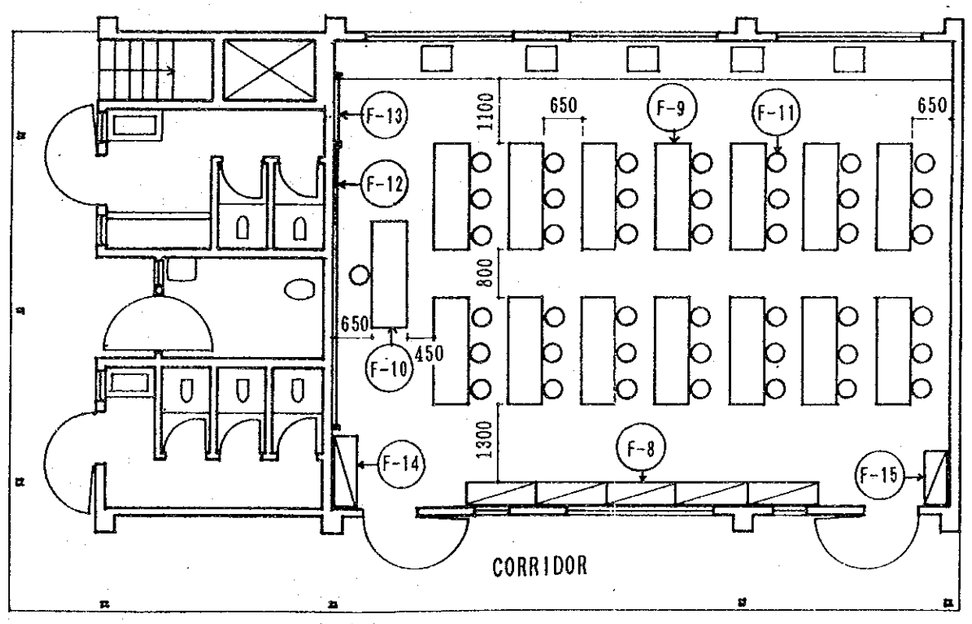


ELEMENTARY SCHOOL CLASSROOM EQUIPMENT PLAN

No.	ITEM	DIMENSION(WxDxH)
F- 1	TEACHER'S DESK	900x500x760
F- 2	TEACHER'S CHAIR	410x410x860
F- 3	TEACHER'S FILLING CABINET	1200x400x1800
F- 4	STUDENT'S CHAIR-DESK(SMALL)	1010x595x577
F- 5	STUDENT'S CHAIR-DESK(MEDIUM)	1010x615x617
F- 6	STUDENT'S CHAIR-DESK(LARGE)	1010x635x661
F- 7	STUDENT'S ARMCHAIR	460x635x800
F- 8	STUDENT'S CLOSET	1200x400x650
F- 9	EXPERIMENT TABLE	1800x600x850
F-10	DEMONSTRATION TABLE	1800x600x850
F-11	STOOL	ϕ 330x600
F-12	BLACKBOARD	4800x1200
F-13	BULLETIN BOARD	1200x1200
F-14	STORAGE SHELF	1200x400x1800
F-15	STEEL SHELF	900x400x1830



SECONDARY SCHOOL CLASSROOM EQUIPMENT PLAN



SECONDARY SCHOOL SCIENCE LABORATORY-TOILET EQUIPMENT PLAN

4-4 Implementation Plan

4-4-1 Implementation Policies

The purpose of the Project is to construct many schoolbuildings during a short period of time on the four islands that stretch some 910 km in a north-south direction and 360 km in an east-west direction in Regions V, XI, XII and ARMM. An adequate implementation plan must be prepared by fully understanding the area conditions.

The major policies for the implementation plan are as follows:

1) The Project Area shall be divided into four parts. Construction bases will be set up in Legazpi and Davao. Sub-bases will be set up in Naga and General Santos -- Approximately 30 schools will be constructed in each Project Area.

2) Project construction work will be undertaken in the existing school complexes. Thus, construction work must be carried out so as not to interfere with daily school activities and by paying special attention to the safety of students.

3) As many schoolbuildings will be built simultaneously, each engineer in charge of each school site must maintain close communications with each other for the smooth progress of the construction work.

4) Some Project schools do not have electricity. At these schools, portable generators shall be used for construction work.

   As a water supply is available at each Project school or nearby area, city or well water can be used for construction work.

5) Throughout the entire construction period, it will be necessary to establish a security system for each construction site.

6) For successful Project construction, cooperation with local contractors is absolutely necessary. The work boundary between a prime contractor and its subcontractors must be clarified and a construction team consisting of adequate personnel must be organized

for the smooth construction supervision work.

7) Science laboratory instruments to be procured in Japan must be carefully inspected for their quality and manufacturing to avoid any future problems.

As the quality of reinforced concrete work will be greatly affected by the quality control to be conducted at each construction site, careful construction management must be carried out by local consultants under the guidance of Japanese consultant personnel.

Local contractors who are fully familiar with the procurement of construction materials and the laborers are to be used.

As for the instruments to be installed in the science laboratories, a Japanese specialist shall be dispatched to provide instructions and guidance concerning their use once they are turned over to the Philippine side.

Because many schoolbuildings have to be constructed simulataneously, the approval of construction drawings, samples, etc. and the construction progress inspection at each construction stage shall be strictly conducted by the conultants and the results shall be reported to DECS periodically to ensure the smooth progress of Project construction.

Accomplishment of the undertaking to be borne by the Philippine side (refer to 4-4-4, (1)) is essential for the smooth implementation of the Project. In particular, without obtaining water sources by drilling wells, the toilets and science laboratories to be built by the Project will not function. Thus, well drilling and hand punp installation must be completed on schedule by the Philippine side. The Japanese side will assist the Philippine side with the well drilling work by providing technical guidance and well drilling specifications. Also, the land clearing work at schoolbuilding construction sites must be properly conducted and completed on schedule by the Philippine side. Delay of this work may jeopardize the commencement of Project construction.

4-4-2 Construction Management System

As the Project Area is divided into two large areas (Region V, containing 2 solitary islands, and Regions XI, XII and ARMM), careful consideration must be given to the construction management system in order to carry out the construction schedule and perform the equality control smoothly.

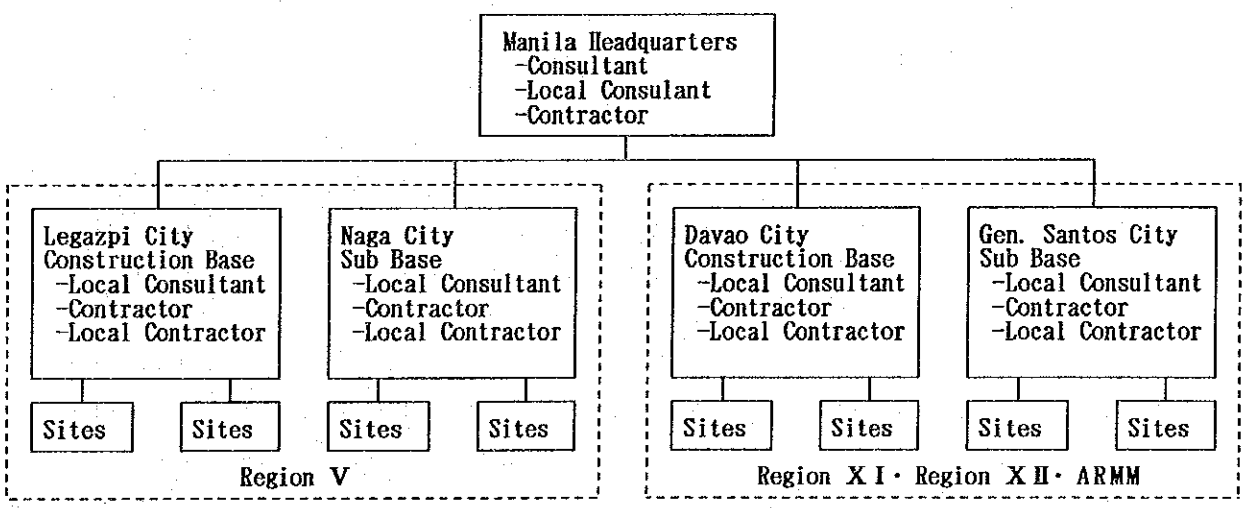
To control the overall construction management, the consultants and contractors shall establish their own management headquarters in Manila. Under these headquarters, a management base for Region V will be set up in Legazpi with a sub-base in Naga. The management base for Regions XI, XII and ARMM will be set up in Davao with a sub-base in General Santos.

The bases and sub-bases in Legazpi, Naga, Davao and General Santos will be each be responsible for the construction of approximatelly 30 schools and for the transportation of construction materials and equipment.

Careful construction management will be conducted by the consultants, local consultants, contractors and local engineers.

The Project construction management organization structure is shown in Table 4-11.

Table 4-11 Project Construction Management Organization Chart



4-4-3 Equipment and Material Procurement Plan

(1) Equipment and Material Procurement Policies

For easy maintenance and management of Project facilities after turning them over to the Philippine side, all construction material and equipment, including furniture shall be procured in the Philippines. Most of the material is obtainable in the major cities; however, for those that can only be obtained in Manila or those that are inferior in quality, will be delivered by road or sea from Manila. As science laboratory instruments manufactured in the Philippines have various problems, they will be procured in Japan.

A shipping plan for the science laboratory instruments to be procured shall be prepared by taking into account the procurement schedule in Japan and the work progress at each project school. This is to provide effective and smooth delivery to each school after schoolbuilding construction.

(2) Shipping and Storage Plan

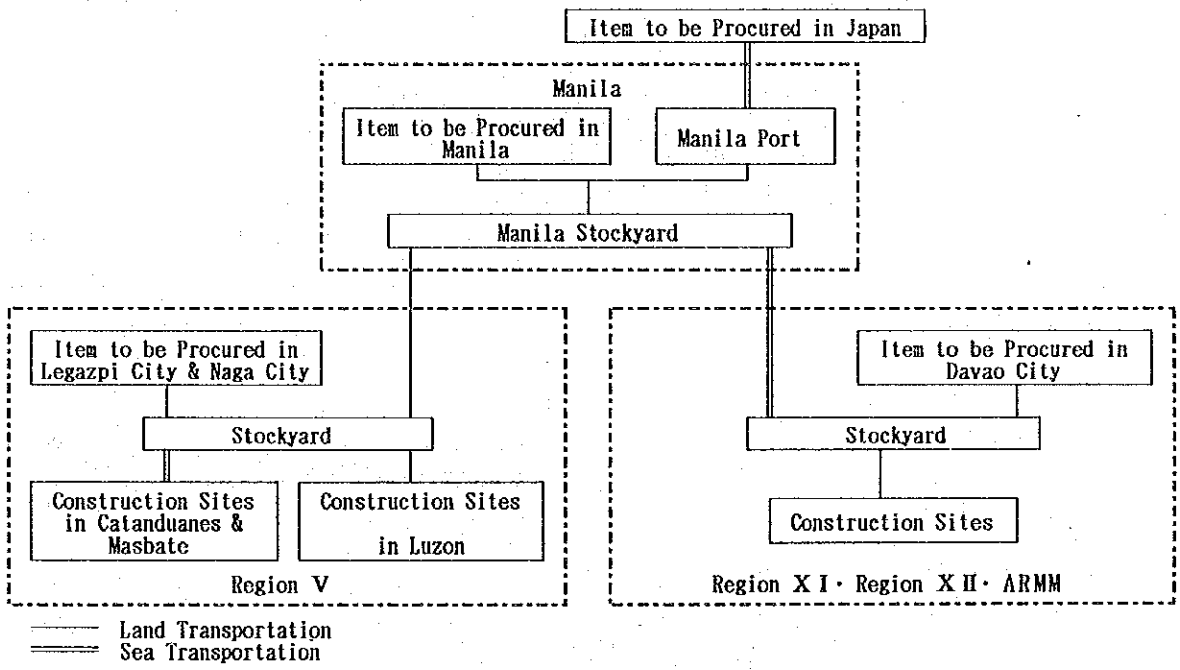
Science laboratory instruments that are procured in Japan will be disembarked at Manila International Port. After customs inspection, the instruments will be stored temporarily at the material and equipment storage base in Manila together with the material and equipment procured in Manila. They will then be shipped by boats, together with the material and equipment procured in Manila, to each Project area's stockyard. They will be delivered over road to the Region V storage base where they will later be delivered to the construction site in Luzon via road or to Catanduanes and Masbate by ship.

As for Regions XI, XII and ARMM, the material will be shipped from Manila to ports at Davao and General Santos where they will be stored temporarily at each region's storage base for later delivery via road to the construction sites.

Major roads are well maintained. However, the access roads to Project construction sites have various problems, such as insufficient bridge capacities or narrow road widths. As the project may be affected by damaged bridges during the wet season, alternative access routes must be examined and a careful shipping plan must be prepared.

The transportation plan for procured equipment and materials is shown in Table 4-12.

Table 4-12 Transportation Plan for Procured Equipment and Materials



4-4-4 Implementation Schedule

(1) Project Construction boundaries

The construction boundaries to be undertaken by the Japanese and Philippine sides are shown in Table 4-13.

Table 4-13 Project Construction Boundaries to be Undertaken by the Japanese and Philippine Sides

Work Item	Japanese Side	Philippine Side
1. Securing of Project sites.		○
2. Site clearing prior to commencing Project construction work.		○
3. Incidental work, such as gardening and fencing.		○
4. Construction of access roads to Project sites prior to the commencement of Project construction work.		○
5. Installation of facilities for distribution of electricity, water supply, drainage and other incidental facilities to Project sites when needed.		○
6. Obtaining building, occupancy and all necessary permits for the Project with respect to the laws and regulations of the Philippine Government.		○
7. Securing the necessary budget and personnel for the proper and effective maintenance of Project school-buildings and equipment.		○
8. Procurement of Project use equipment and materials in Japan and their shipment to Project sites in the Philippines.	○	
9. Procurement of Project use equipment, materials and labour in the Philippines and their transportation to Project sites.	○	
10. Construction of Project facilities.	○	
11. Exempting Taxes and all other levies and duties and ensuring prompt unloading and customs clearances at the port of disembarkation in the Philippines for Project use materials and equipment.		○
12. Exempting Japanese nationals involved in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in the Philippines with respect to the supply of the equipment and services under the verified contracts.		○
13. According Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts for their entry into the Philippines and stay therein for the execution of the Projects.		○
14. Bearing of commissions to the Japanese foreign exchange bank for the banking services based on the Banking Arrangement in accordance with the standard grant procedure.		○
15. Bearing all expenses other than those to be borne by the Grant, necessary for the construction of the schoolbuildings as well as for the transprotation and installation of the equipment.		○
16. Effective operation and management of the facilities and equipment to be provided under the Grant Aid.		○

(2) Implementation Schedule

The preparation of the Project implementation schedule shall be based on the premise that the measures to be taken by the Philippine and Japanese governments will be conducted smoothly in accordance with procedures established by the Grant Aid Program of the Government of Japan.

Project implementation will commence when the Exchange of Notes is signed by both governments. Then, the preparation of the detailed design, the tendering for the construction work, the procurement of construction materials, equipment, and instruments, the shipping of the materials, equipment, and instruments, and the facility construction work will follow in five steps.

Detailed Design:
After the confirmation of the consultant contract agreement by the Government of Japan, the consultant will prepare the tender documents based on the Basic Design Study Report. The specifications and detailed items for Project facilities should be decided upon as a result of discussions to be held with the actual users, or their representatives, of the facilities.

As for the boundaries between the measures to be undertaken by the Philippine and Japanese governments for the Project under the Grant Aid Program of the Government of Japan, they must be clarified during the early stage of the detailed design period based on the Exchange of Notes.

Both governments will take the necessary steps to promote the formation of the organization structure of the Project implementing agency, and to secure the necessary funds to enable the Project to meet the requirements of the Grant Aid Program which is based on the single fiscal year system. It will take about two months to prepare the detailed design.

Tendering for Project Construction Work:
The tender period is the time required for the tender announcement, the pre-qualification evaluation of tenders, the tender opening, and the

tender evaluation for reaching contract agreement.

The methods for tendering and for reaching contract agreement must be carefully decided upon after discussions are held with representatives from both governments. About forty days will be needed for the tender period.

Material and Equipment Procurement and Shipping:

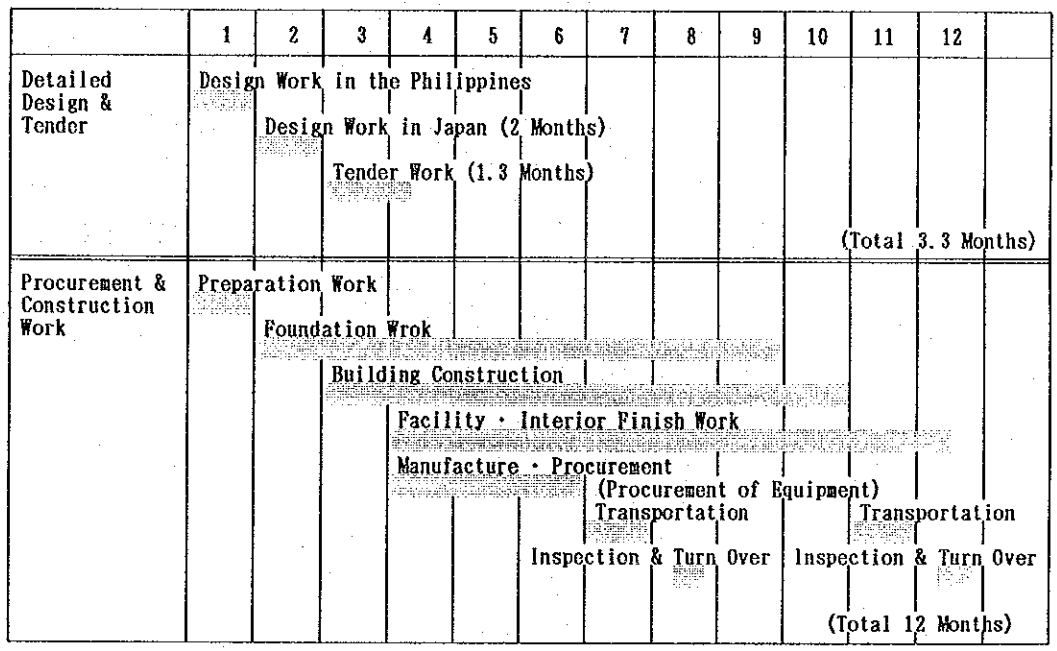
After the construction contract agreement is made, the shop drawings will be prepared. Once the drawings are approved, material and equipment procurement will start. The first shipment of the procured material and equipment will arrive at Project construction sites about thirty days after the construction contract agreement is made.

Construction:

After the construction agreement, the building foundation construction work will begin approximately thirty days after the site preparation work.

The four construction bases and their sub-bases will each be responsible for the construction of approximately 30 schools. Basically, 10 groups in each base will be responsible for 3 schools. Approximately 12 months will be required to construct all Project schoolbuildings. The Project implementation schedule is shown in Table 4-14.

Table 4-14 The Project Implementation Schedule



4-4-5 Construction Costs to be Borne by the Philippine Side

Project construction costs to be borne by the Philippine side is estimated to be 11.98 million pesos. The cost breakdown is as follows:

(1)	Land Clearance:	3.13 million pesos
(2)	Removal of Existing Buildings:	1.30 million pesos
(3)	Water Supply Work:	4.69 million pesos
(4)	Power Supply Work:	2.86 million pesos
	TOTAL	11.98 million pesos

CHAPTER 5. PROJECT EVALUATION AND CONCLUSION

CHAPTER 5 PROJECT EVALUATION AND CONCLUSION

The Government of the Philippines acknowledges the importance of upgrading the qualities of education, and improving and building educational facilities. It has been making an effort to establish the foundation for manpower development. However, due to the financial difficulties being experienced by the Government, the country's educational facilities and associated equipment are still inadequate. Furthermore, due to chronic natural hazards, such as typhoon damage inflicted on school facilities every year, and the country's high annual population increase rate, the classroom shortage situation has become a serious problem. Thus, the construction of school facilities is a very important subject for the Government of the Philippines.

(1) Project Effects

In view of the above background, the construction of schoolbuildings for 117 elementary and secondary schools in Regions V, XI, XII and ARMM under the Project will have the following effects:

(a) Increased Opportunities for Children to Attend School

The project is to construct 334 classrooms for elementary schools and 212 (including 36 science laboratory rooms) for secondary schools. The classrooms will be able to accommodate 20,752 students. Thus, the Project will represent a meaningful contribution towards increasing the opportunities for children to attend school.

(b) Contribution to Area Residents

The school facilities to be built under the Project will not only be used for ordinary classroom activities (including the classes that will be conducted in two or three shifts), they will be used for non-formal education as well as places of refuge for area residents during periods of natural calamities and as meeting places.

This additional use of the school facilities will be a beneficial contribution to the area residents.

(c) Activation of Rural Economies

The construction of many schoolbuildings in the rural areas of the Philippines will provide employment opportunities for area residents. The local procurement of construction materials and epuipment other than science laboratory instruments will make a substantial contribution towards stimulating the rural economies of the Philippines.

(d) Transfer of Architectural Technologies

As a part of the construction management work under the Project, construction schedule management and quality control management on-the-job training will be provided to the local consultants and to the architectural engineers of the subontractors. As a result of this training, Project construction will contribute immensely to the transfer of technology to the Philippine architectural engineers.

2) Conclusion

The chronic shortage of school facilities in the Philippines is a serious problem facing the country. Further, the problem has been compounded by the damage inflicted on school facilities by typhoons and by the high annual school-age population increase of 3.0%.

In the Medium-term Philippine Development Plan, the National Economic and Development Authority indicated that the improvement of school education is one of the important mainstays for the development of the country's manpower resource, and that it is of utmost importance to determine the best way for improving the quality of education while, at the same time, promoting industrial development and economic growth.

It is believed that the implementation of the Project will be absolutely essential for the achievement of the country's Education Development Plan; it will contribute greatly to the promotion of the National Development Plan.

The contents of the Project is such that it will not create any problems for the maintenance and management of the Project's school facilities. Thus, the construction of the school facilities will alleviate the chronic school

facility shortage thereby enabling many children to receive a proper education which, in turn, will contribute to the improvement of the country's education conditions. Therefore, it is considered to be appropriate to implement the Project under the Grant Aid Program of the Government of Japan.

(3) Recommendations

(a) The Project shall be implemented with the cooperation of both Japan and the Philippines. Thus, it will be of great importance that the construction work to be borne by the Philippine side must be carried out for successful Project implementation. In particular, without the Philippine side obtaining water sources by drilling wells and installing hand pumps, the toilets and science laboratories to be built by the Project will not function appropriately. Also, the land clearing work at schoolbuilding construction sites must be properly conducted and completed on schedule.

(b) Although the school facilities were designed after thoroughly examining the principles of minimum maintenance and management costs, it would be desirable to give more consideration to the management system. For example, it is recommended that a system utilizing the students to clean the facilities and to pump water into the cisterns be established as part of the school's education program.

APPENDICES

Appendices

1. Area Photographs

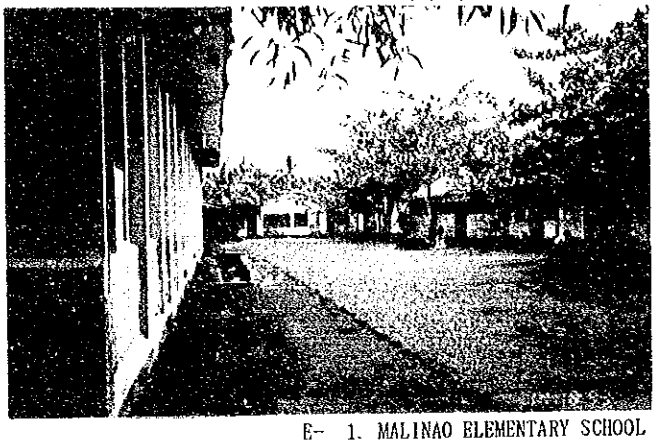
2. Member List of the Basic Design Study Team

3. Itinerary of the Study Team

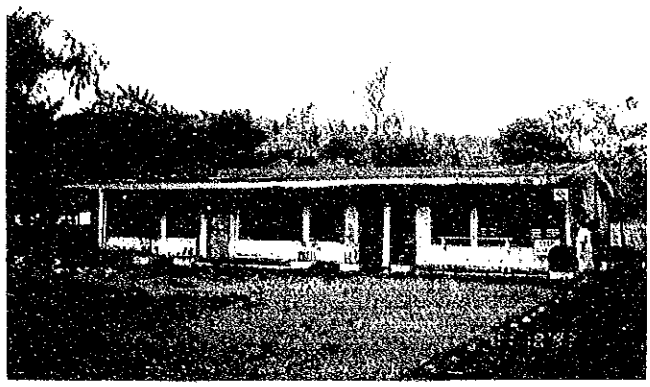
4. List of Personnel Interviewed

5. Minutes of Discussions

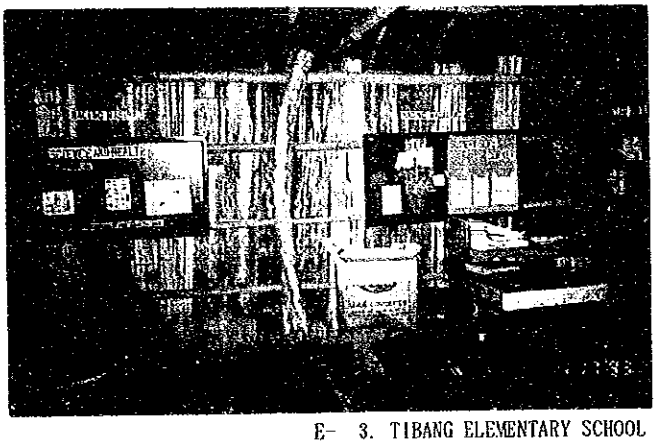
APPENDIX 1. AREA PHOTOGRAPHS



E- 1. MALINAO ELEMENTARY SCHOOL

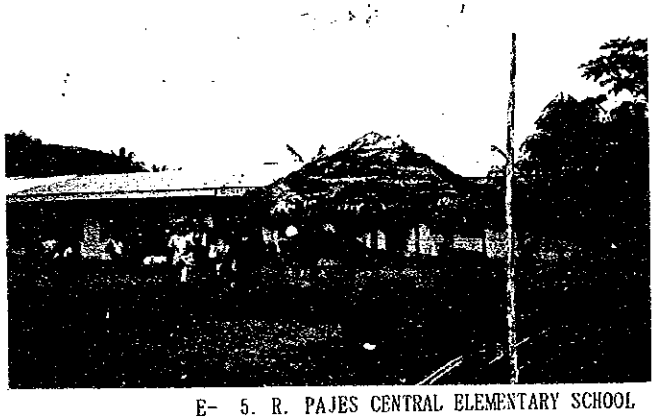


E- 2. MALILIPOT ELEMENTARY SCHOOL

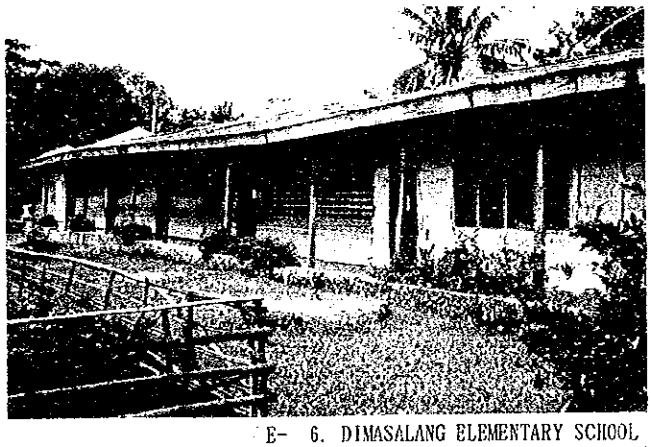


E- 3. TIBANG ELEMENTARY SCHOOL

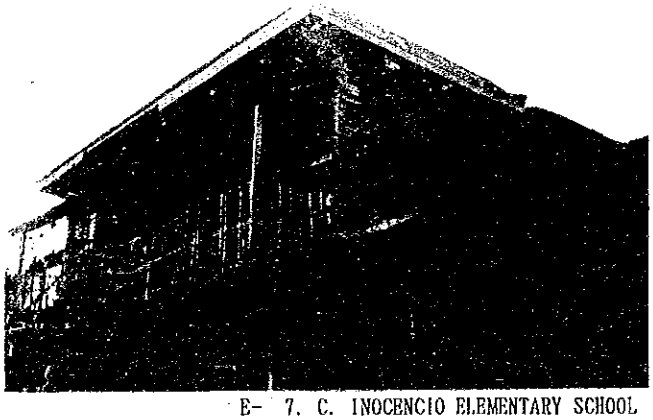
E- 4. J. ZURBITO ELEMENTARY SCHOOL



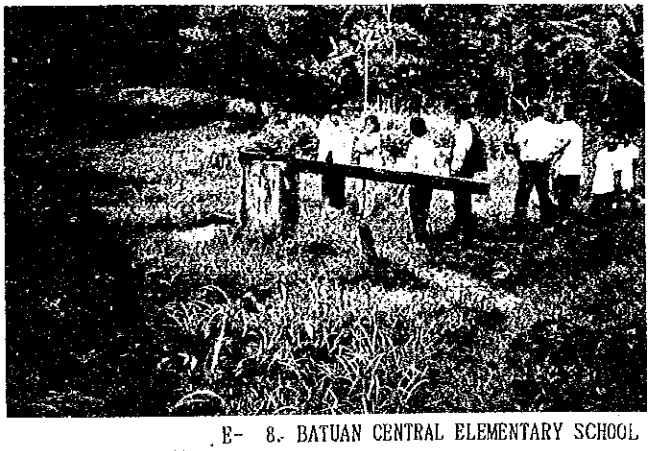
E- 5. R. PAJES CENTRAL ELEMENTARY SCHOOL



E- 6. DIMASALANG ELEMENTARY SCHOOL



E- 7. C. INOCENCIO ELEMENTARY SCHOOL

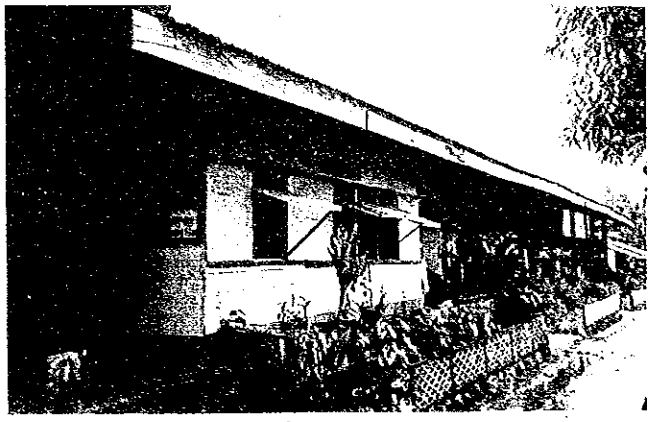


E- 8. BATUAN CENTRAL ELEMENTARY SCHOOL

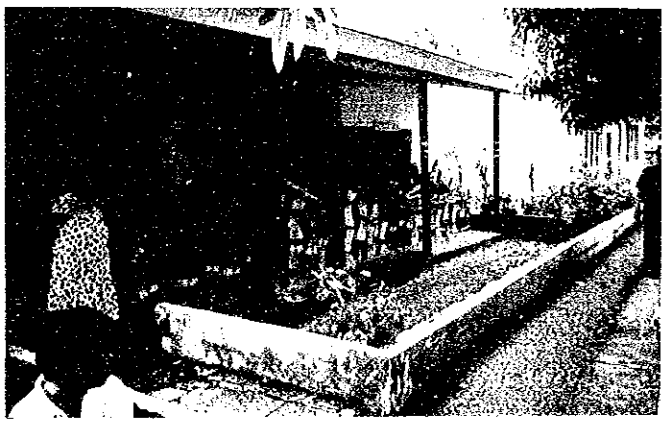
E- 9. RECODO ELEMENTARY SCHOOL

E- 10. MILAGROS WEST CENTRAL SCHOOL

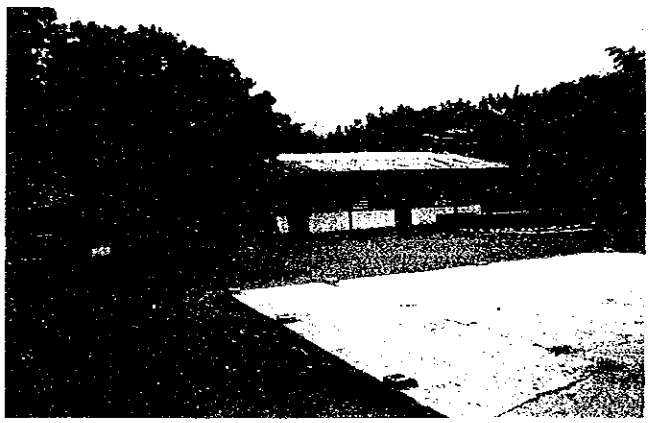
E- 11. MONREAL CENTRAL SCHOOL



E- 12. CABITAN ELEMENTARY SCHOOL



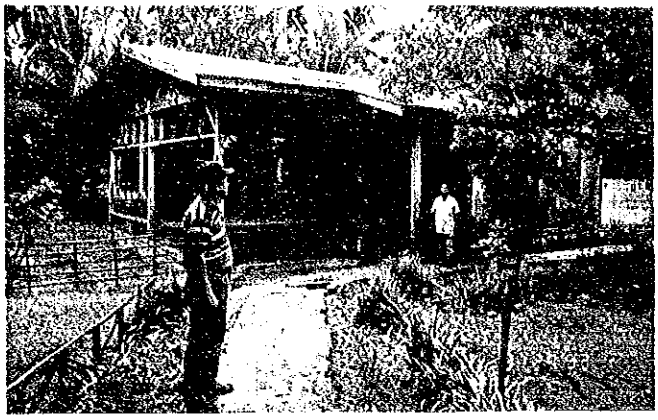
E- 13. CLAVERIA CENTRAL ELEMENTARY SCHOOL



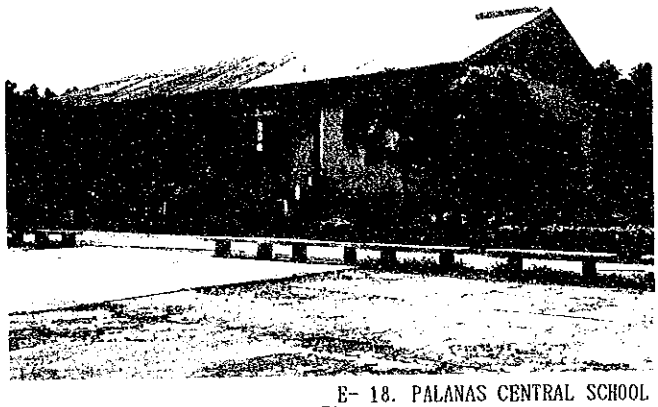
E- 14. ARMENIA ELEMENTARY SCHOOL

E- 15. SAN PACUAL CENTRAL ELEMENTARY SCHOOL

E- 16. BALUD CENTRAL SCHOOL



E- 17. BUYO ELEMENTARY SCHOOL

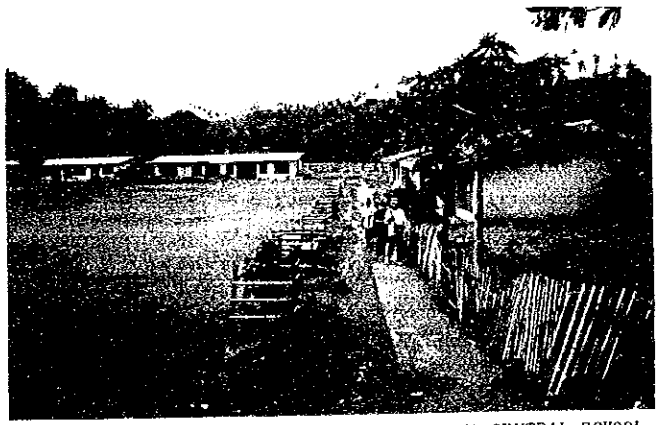


E- 18. PALANAS CENTRAL SCHOOL

E- 19. TANQUE ELEMENTARY SCHOOL

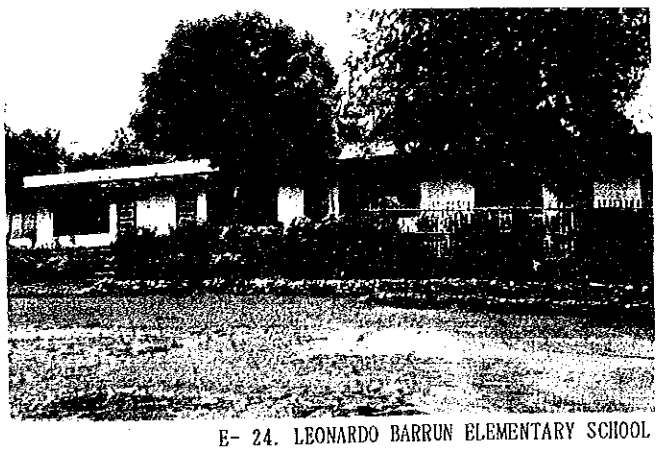
E- 20. PAWICAN ELEMENTARY SCHOOL

E- 21. MOBO CENTRAL SCHOOL

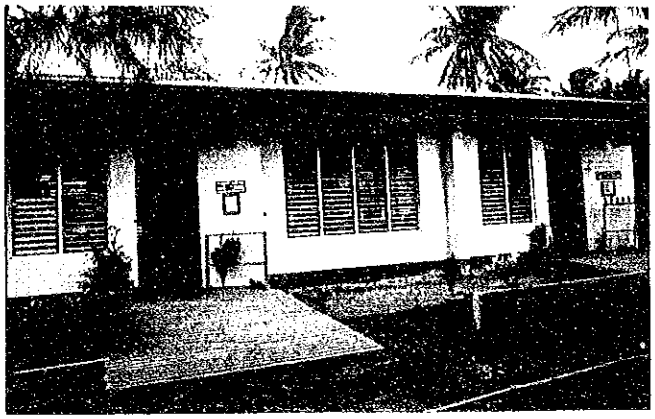


E- 22. BALENO CENTRAL SCHOOL

E- 23. P. CONAG ELEMENTARY SCHOOL



E- 24. LEONARDO BARRUN ELEMENTARY SCHOOL



E- 25. MERCEDES CENTRAL SCHOOL

E- 26. PARACALE CENTRAL ELEMENTARY SCHOOL

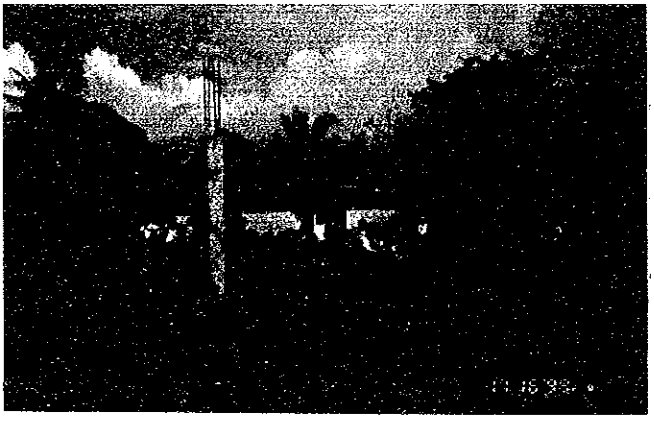
E- 27. TALISAY ELEMENTARY SCHOOL

E- 28. LABO ELEMENTARY SCHOOL

E- 29. M. HERRADO ELEMENTARY SCHOOL

Site survey was cancelled
due to the access problem.

E- 30. LIBORO ELEMENTARY SCHOOL



E- 31. OCAMPO CENTRAL SCHOOL

E- 32. PASACAO CENTRAL SCHOOL