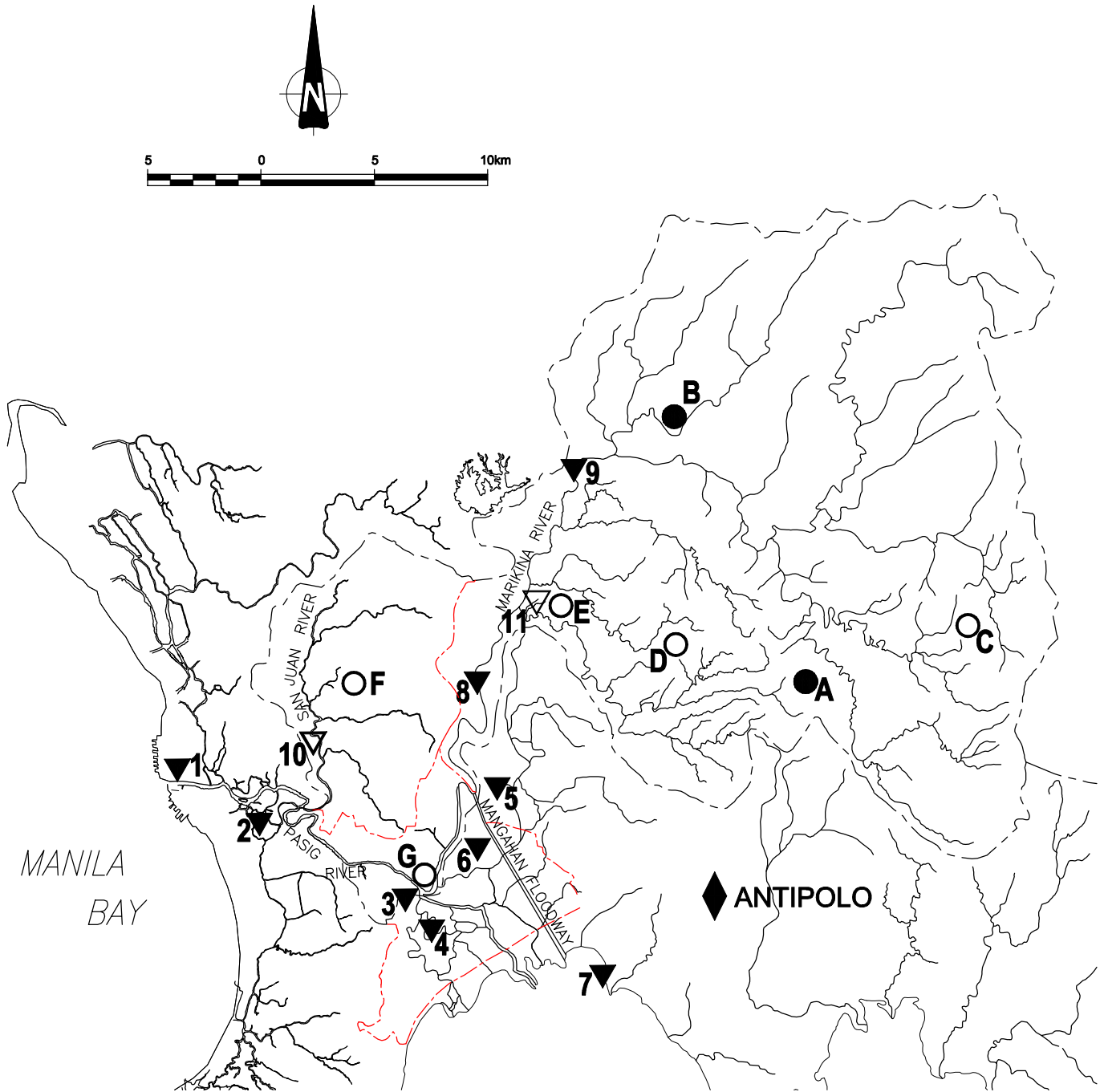


図 面 集

- 図 3-1 テレメーター水文観測所位置図
- 図 3-2 既設水文観測所位置図
- 図 3-3 マニラ首都圏排水系統・ポンプ場位置図
- 図 3-4 オロ山とボソボソの時間雨量の相関解析
- 図 3-5 3時間雨量の相関解析
- 図 3-6 台風ロシン時のラグナ湖観測水位
- 図 3-7 台風ロシンの経路 (1995年10月30日～11月4日)
- 図 3-8 水防警報伝達系統図
- 図 3-9 洪水予警報統合システム構成図
- 図 3-10 電気通信システム構成図
- 図 3-11 メトロマニラ洪水警報システム基本構成図
- 図 3-12 多重無線システムチャンネルプラン計画
- 図 3-13 緊急無線通信網システム構成図
- 図 3-14 データ処理システムハードウェア構成
- 図 3-15 ソフトウェア関連図
- 図 3-16 アリス雨量観測所配置計画図
- 図 3-17 カンパナ山雨量観測所配置計画図
- 図 3-18 サイエンスガーデン雨量観測所配置計画図
- 図 3-19 ナピンダン雨量計配置計画図
- 図 3-20 サンファン水位観測所配置計画図
- 図 3-21 ナンカ水位・雨量観測所配置計画図
- 図 3-22 NCR 中継鉄塔配置計画図
- 図 3-23 雨量観測所建築計画図
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- 図 3-26 NCR 中継鉄塔標準図
- 図 3-27 護岸・排水構造物標準断面図
- 図 3-28 公共事業道路省組織図
- 図 3-29 マニラ首都圏局組織図
- 図 3-30 EFCOS 組織図
- 図 4-1 機材搬入道路網図

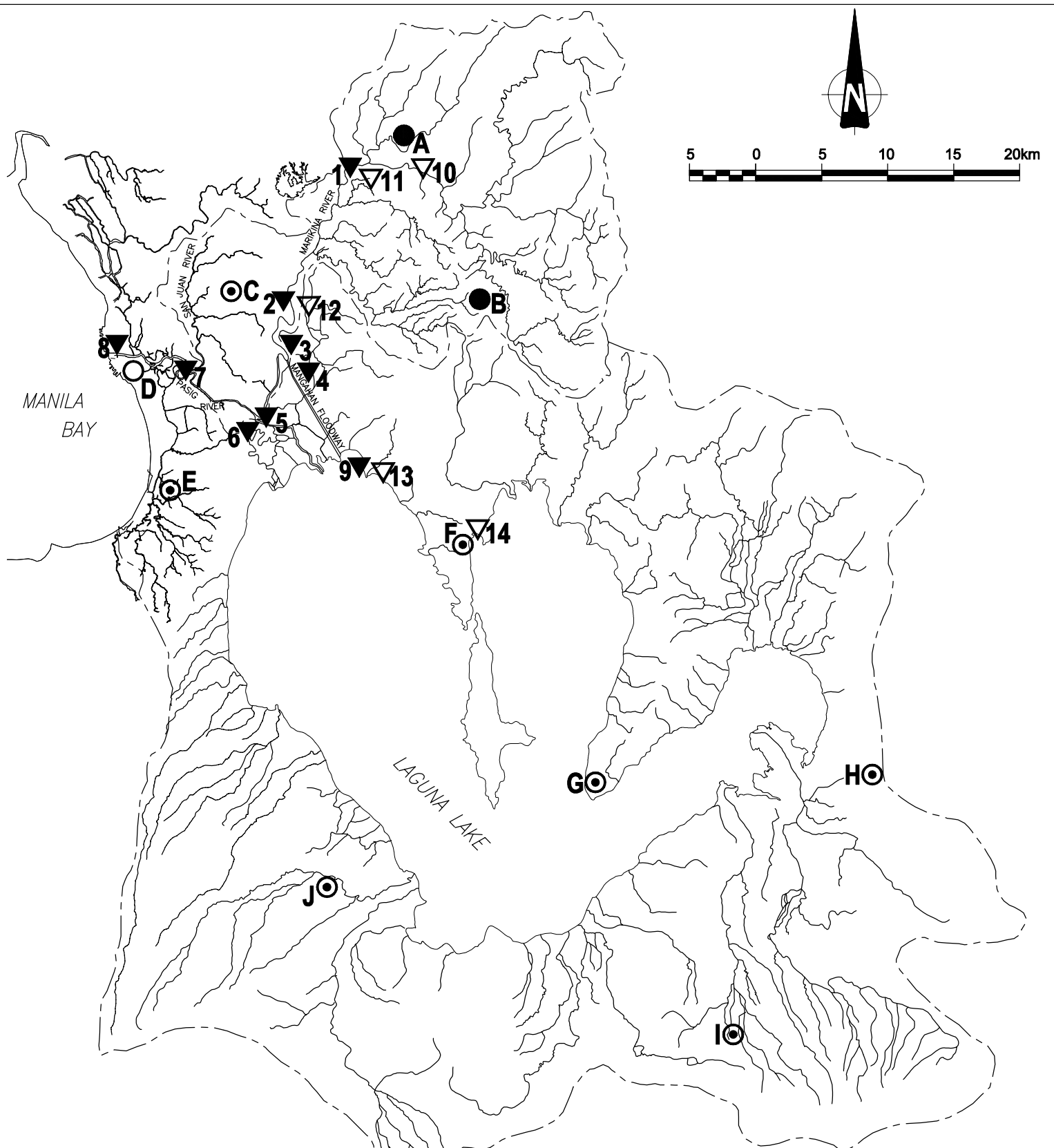


LEGEND

- EXISTING RAINFALL GAUGING STATION
- ▼ EXISTING WATER LEVEL GAUGING STATION
- ◆ EXISTING RELAY STATION
- PROPOSED RAINFALL GAUGING STATION
- ▽ PROPOSED WATER LEVEL GAUGING STATION

EXISTING		PROPOSED	
WATER LEVEL	RAINFALL	WATER LEVEL	RAINFALL
1: Fort Santiago	A: Boso Boso	10: San Juan	C: Mt. Campana
2: Pandacan	B: Mt. Oro	11: Nangka	D: Aries
3: Napindan HCS JS			E: Nangka
4: Napindan HCS LS			F: Science Garden
5: Rosario Weir JS			G: Napindan HCS
6: Rosario Weir LS			
7: Angono			
8: Sto. Nino			
9: Montalban			

図3-1 テレメータ水文観測所位置図



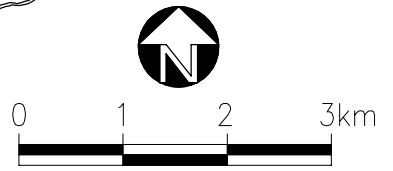
LEGEND

- ▼ Telemeterized Automatic Water Level Recorder
- ▽ Staff Gauge
- Telemeterized Automatic Rainfall Gauge
- ⊙ Automatic Rainfall Gauge
- Manual Rainfall Gauge

Water Level Station				Rainfall Station			
No.	Name	Operated by	Remarks	No.	Name	Operated by	Remarks
1	Montalban	EFCOS,DPWH		A	Mt. Oro	EFCOS,DPWH	
2	Sto.Nino	EFCOS,DPWH		B	Boso Boso	EFCOS,DPWH	
3	Rosario JS	EFCOS,DPWH		C	Science Garden	PAGASA	
4	Rosario LS	EFCOS,DPWH		D	Port Area	PAGASA	
5	Napindan JS	EFCOS,DPWH		E	NAIA	PAGASA	
6	Napindan LS	EFCOS,DPWH		F	Looc	LLDA	Operational since Dec., '98
7	Pandacan	EFCOS,DPWH		G	Punta	LLDA	Operational since Dec., '98
8	Ft. Santiago	EFCOS,DPWH		H	Caliraya	LLDA	Operational since Dec., '98
9	Angono	EFCOS,DPWH		I	Liliw	LLDA	Operational since Dec., '98
10	Wawa	NCR,DPWH	Discharge Measurement	J	Matang-Tubig	LLDA	Operational since Dec., '98
11	San Jose	NCR,DPWH	Discharge Measurement				
12	Sto.Nino	NCR,DPWH	Discharge Measurement				
13	Angono	NCR,DPWH					
14	Looc	LLDA					

図 3-2 既設水文観測所位置図

MANILA
BY



LEGEND

- (P) 1 BINONDO
- 2 QUIAPO
- 3 AVILES
- 4 VALENCIA
- 5 PACO
- 6 PANDACAN

- 8 STA. CLARA
- 9 MAKATI
- 10 LIBERTAD
- 11 TRIPA DE GALLINA
- 12 BALUT
- 13 VITAS
- 14 SAN ANDRES
- 15 BALETE

- 1 BLUMENTRITT INTERCEPTOR
- 2 SOLIS-TECSON
- 3 PACHECO
- 4 LAKANDULA
- 5 ZURBARAN
- 6 SEVERINO REYES
- 7 LEPANTO-JOSEFINA
- 8 ECONOMIA
- 9 WASHINGTON-FYI-MARGAL
- 10 VISAYAS
- 11 I

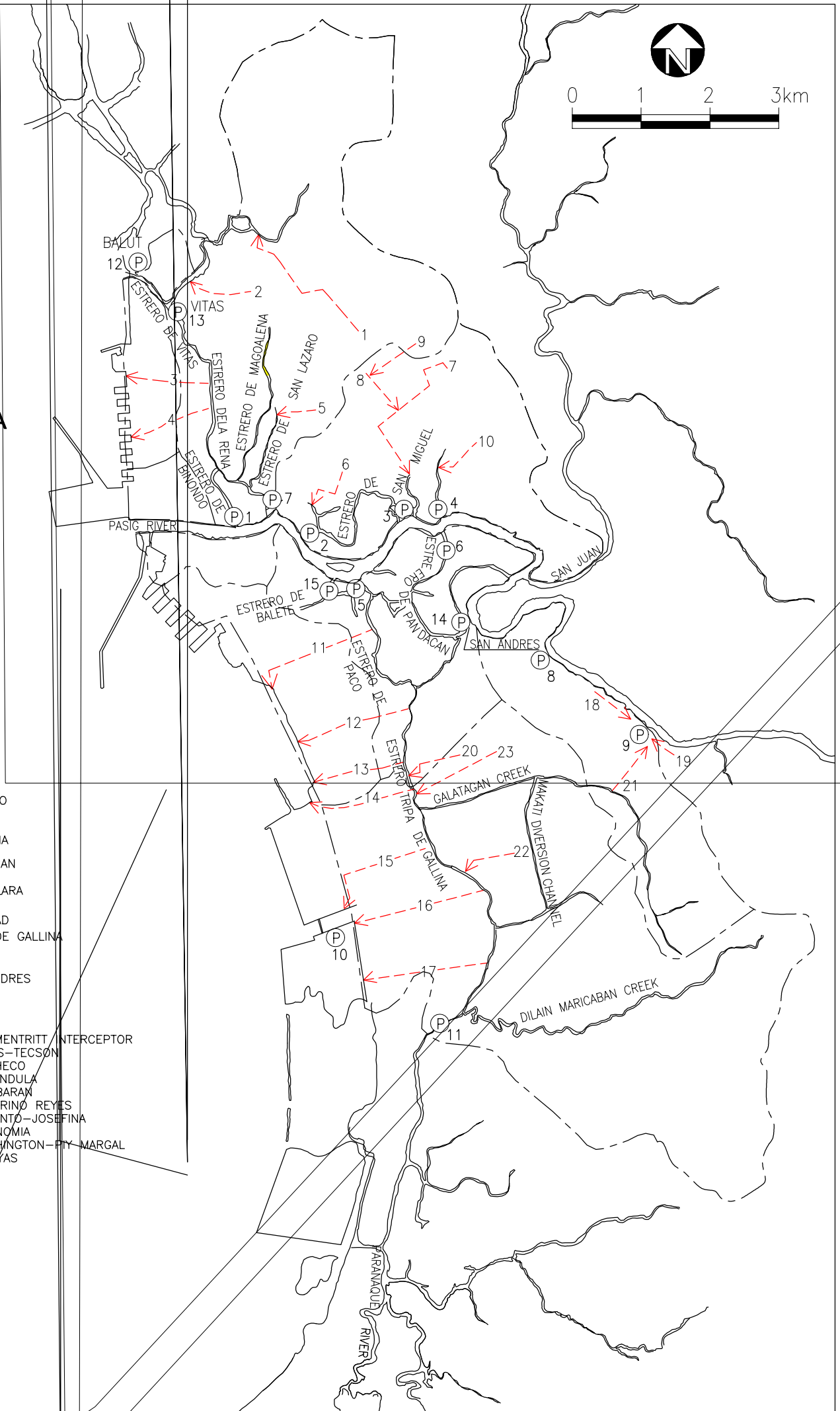
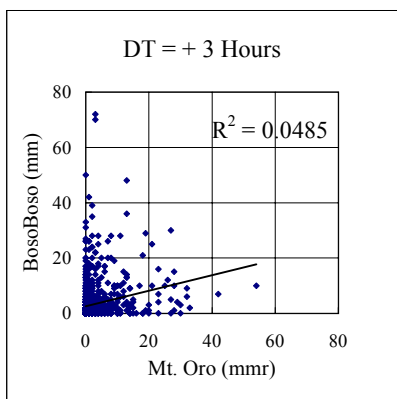
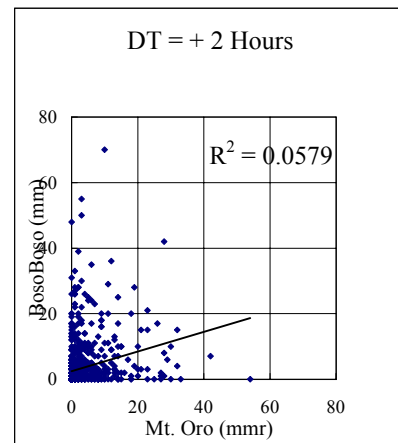
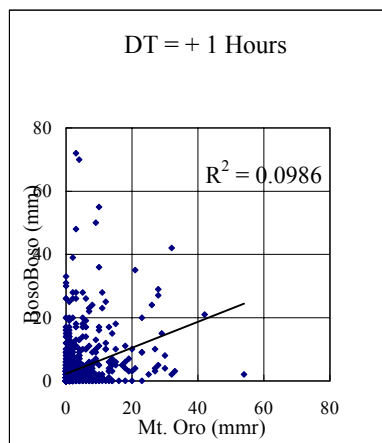
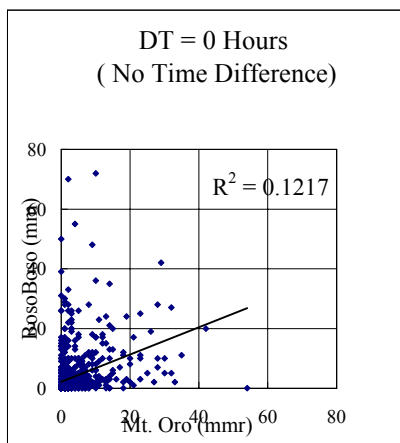
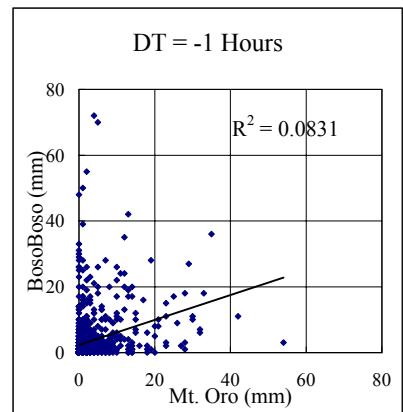
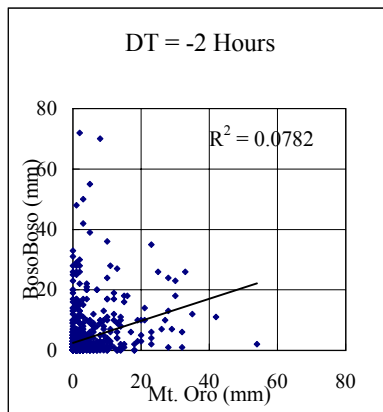
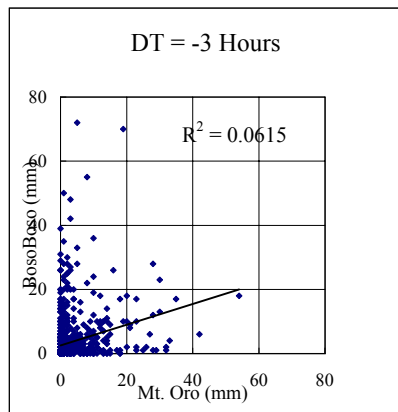


図 3-3 マニラ首都圏排水系統・ポンプ場位置図



Note:
 DT means time difference between hourly rainfall data of Mt. Oro and Bosoboso for the regression analysis. If DT=+2 hours, Mt. Oro is 2 hours ahead of Bosoboso.

図 3-4 オロ山とボソボソの時間雨量相関解析

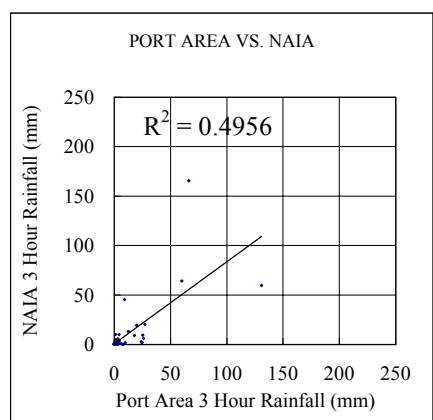
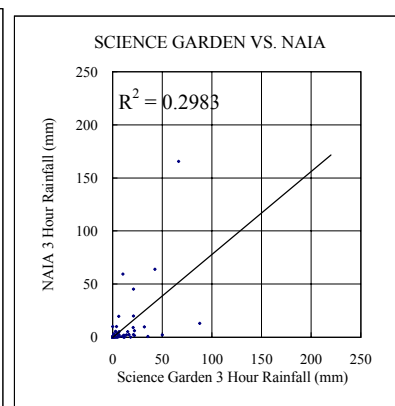
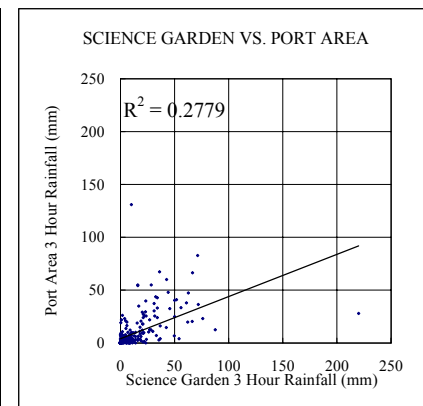
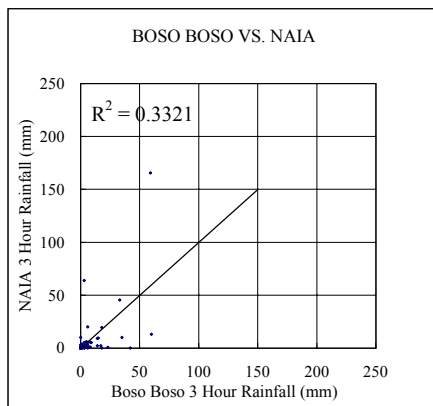
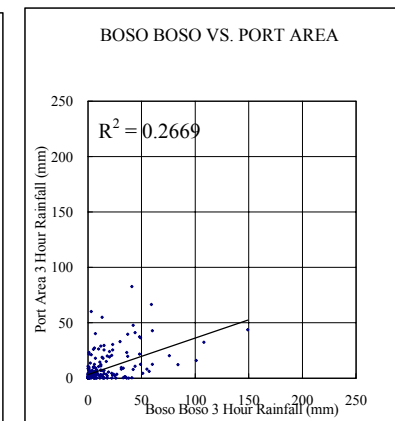
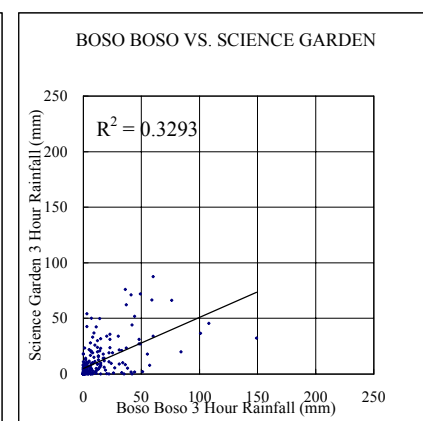
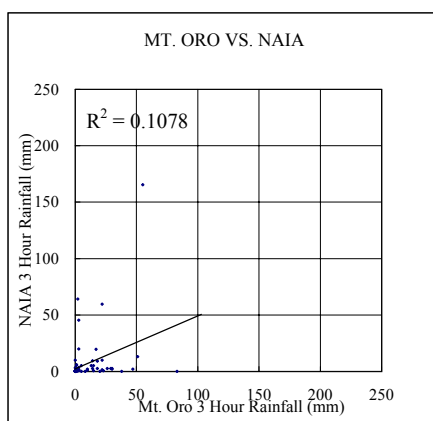
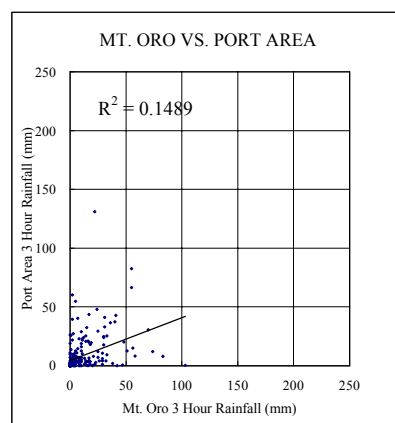
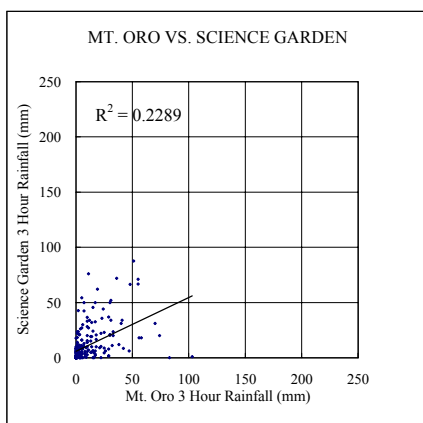
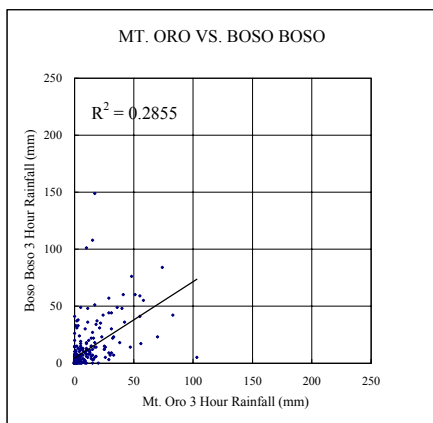


図 3-5 3時間雨量の相関解析

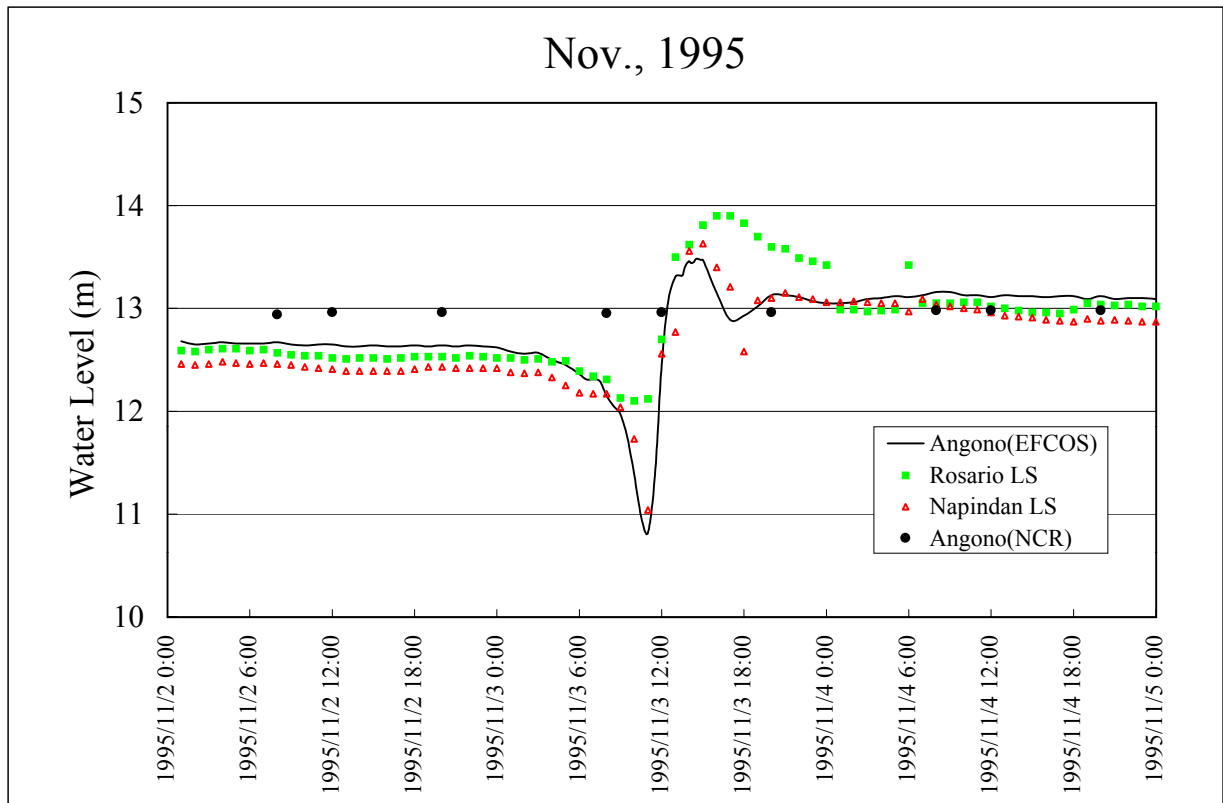


図 3-6 台風ロシン時のラグナ湖観測水位

T. ROSING (Angela) - Oct. 30 - Nov. 04, 1995

Republic of the Philippines
Department of Science and Technology
PHILIPPINE ATMOSPHERIC, GEOPHYSICAL AND
ASTRONOMICAL SERVICES ADMINISTRATION (PAGASA)

T. ROSING - Oct. 30-Nov. 04, 1995 (ANGELA-9520)

NO/PAY/HR	STATUS	COORDINATES		INTENSITY	
		LAT	LONG	MSLP (hPa)	RWS (kph)
10303800*	TS	11.8	134.8	980	110
330000	TY	12.0	133.7	967	140
0600	TY	12.3	132.8	967	140
1200	TY	12.5	131.9	947	140
1800	TY	12.7	130.5	943	150
11010000	TY	12.8	129.7	934	165
0600	TY	13.3	129.0	943	185
1200	TY	14.0	128.2	943	185
1800	TY	14.2	126.8	933	205
020000	TY	14.2	125.1	933	205
0600	TY	14.2	125.1	933	205
1200	TY	13.0	124.3	919	225
1800	TY	14.2	123.0	935	200
030000	TY	14.3	123.6	935	200
0600	TY	14.4	120.3	951	170
1200	TY	14.6	118.8	951	170
1800	TY	14.7	118.0	951	170
040000	TY	14.7	117.4	951	170
0600	TY	15.0	116.2	951	170
1200**	TY	15.3	114.9	951	170

NOTE:
PAGASA
* -Initial Warning
** -Final Warning

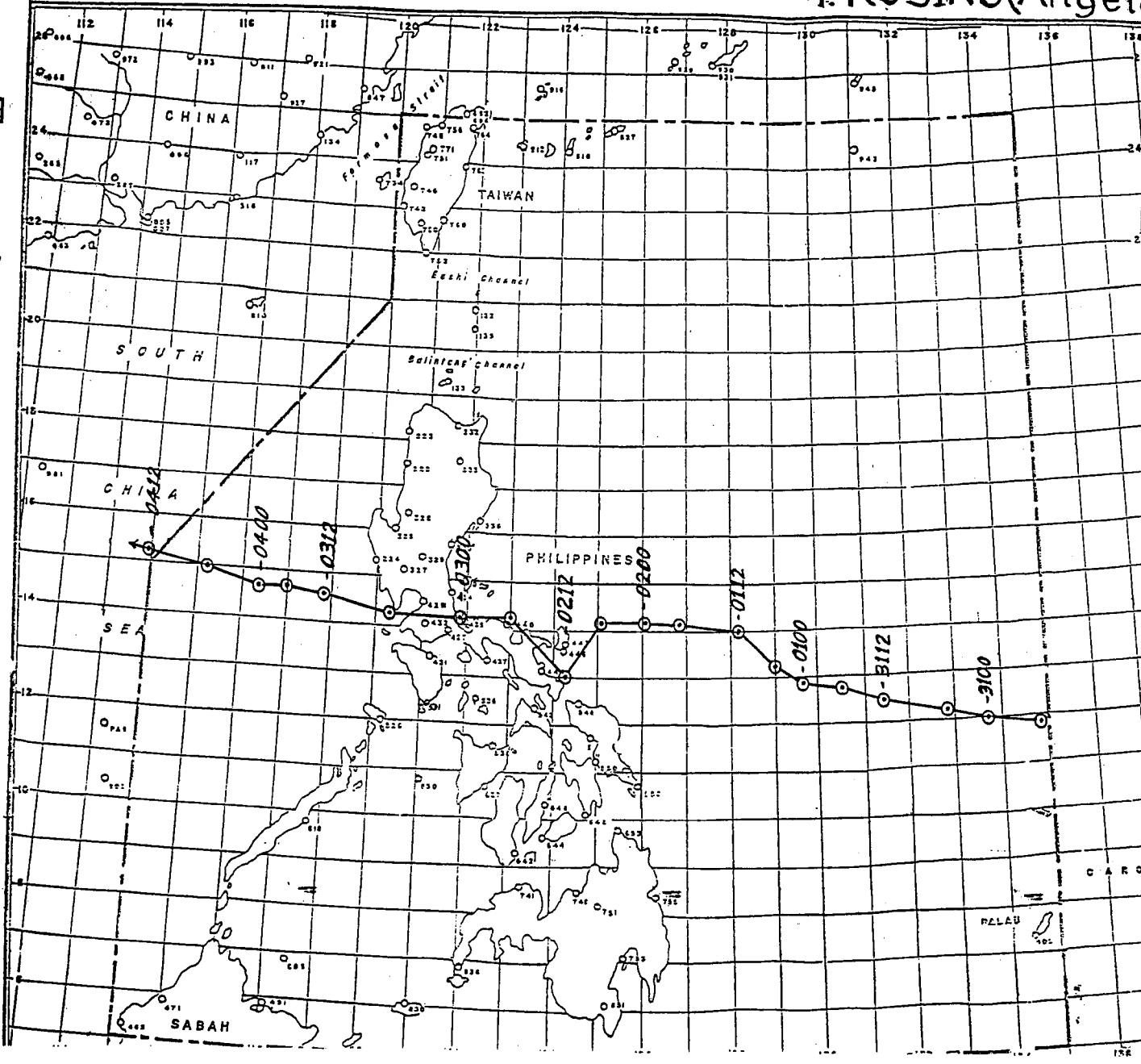


図 3-7 台風ロシンの経路(1995年10月30日~11月4日)

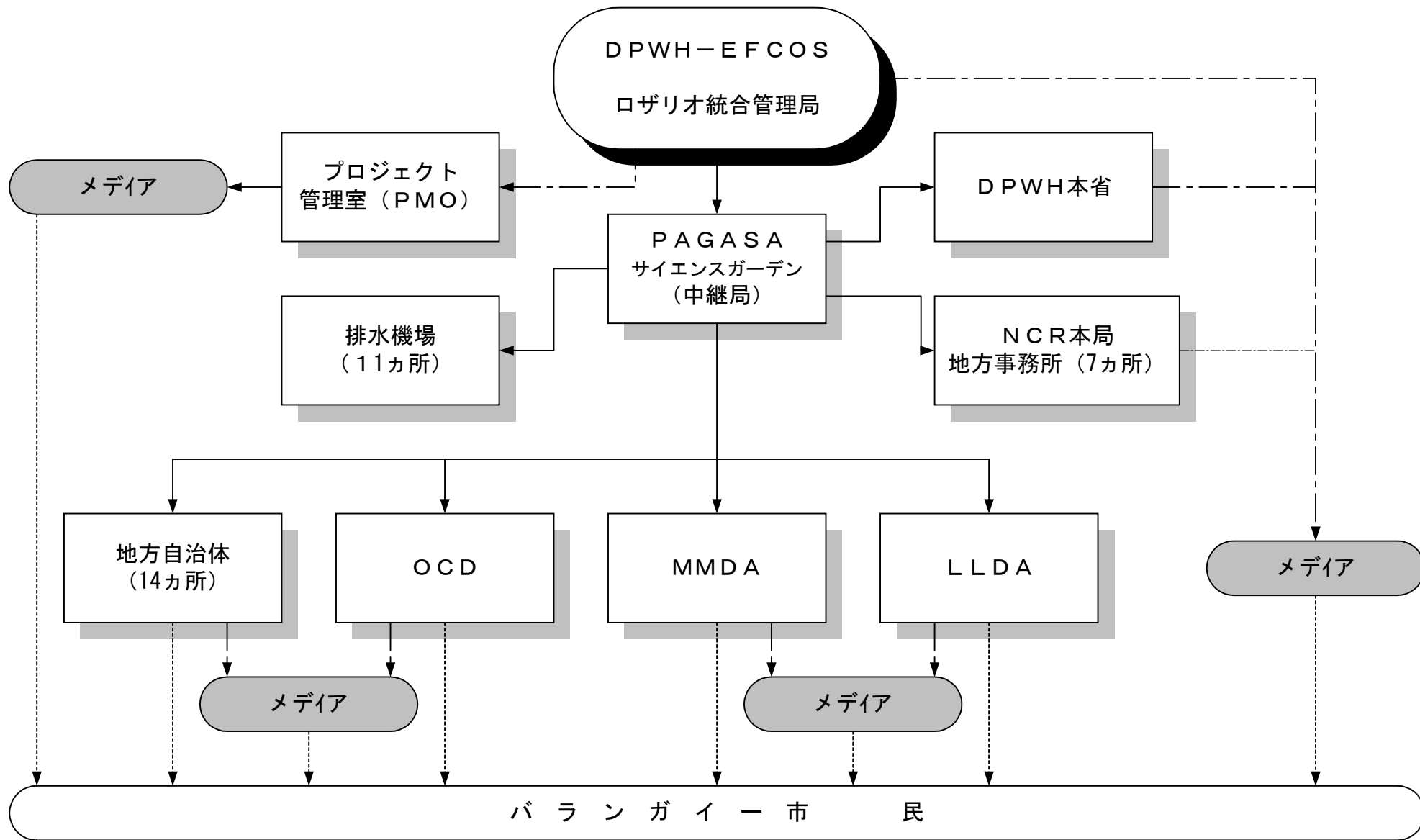


図 3-8 水防警報伝達系統図

- ▶ 緊急無線連絡
- - - -▶ 電話またはファックス
-▶ 新聞・ラジオ・テレビ

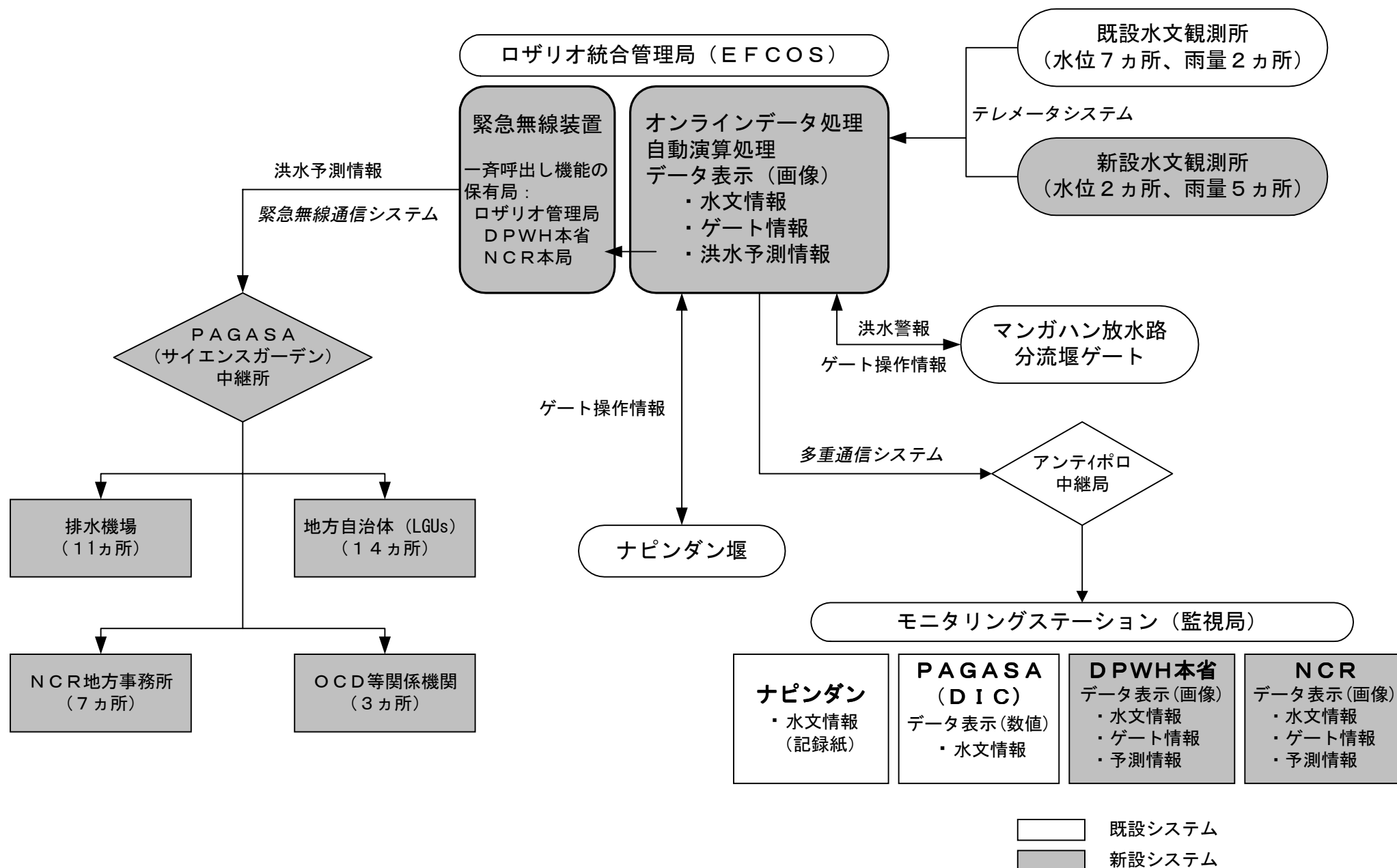
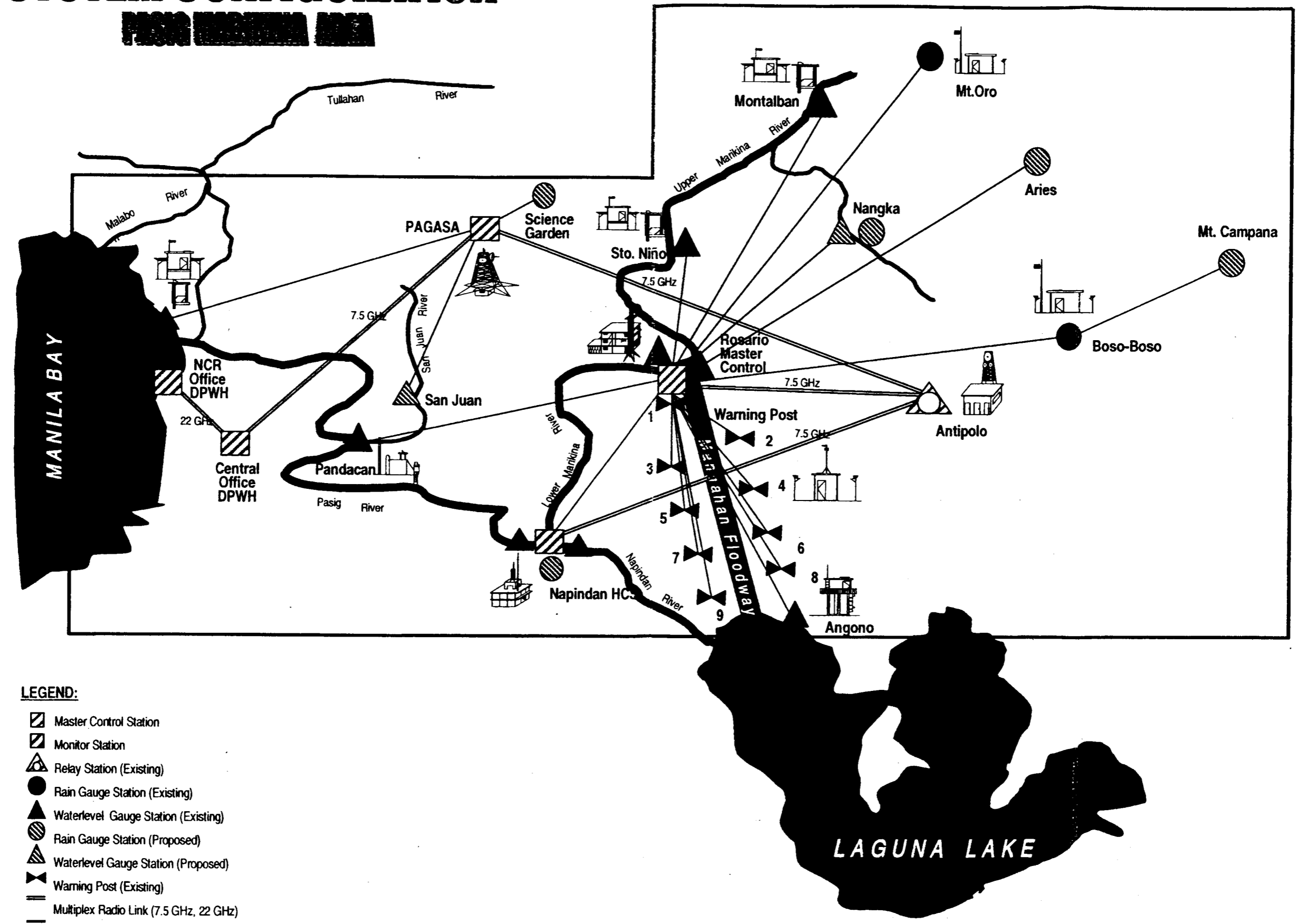


図 3-9 洪水予警報統合システム構成図

SYSTEM CONFIGURATION

PASIG MARINA AREA



- LEGEND:**
- ▣ Master Control Station
 - ▣ Monitor Station
 - △ Relay Station (Existing)
 - Rain Gauge Station (Existing)
 - ▲ Waterlevel Gauge Station (Existing)
 - ◐ Rain Gauge Station (Proposed)
 - ◑ Waterlevel Gauge Station (Proposed)
 - ⚡ Warning Post (Existing)
 - == Multiplex Radio Link (7.5 GHz, 22 GHz)
 - Simplex Radio Link (424.75 MHz for Telemetry)
(424.90 MHz for Warning)

図 3-10 電気通信システム構成図

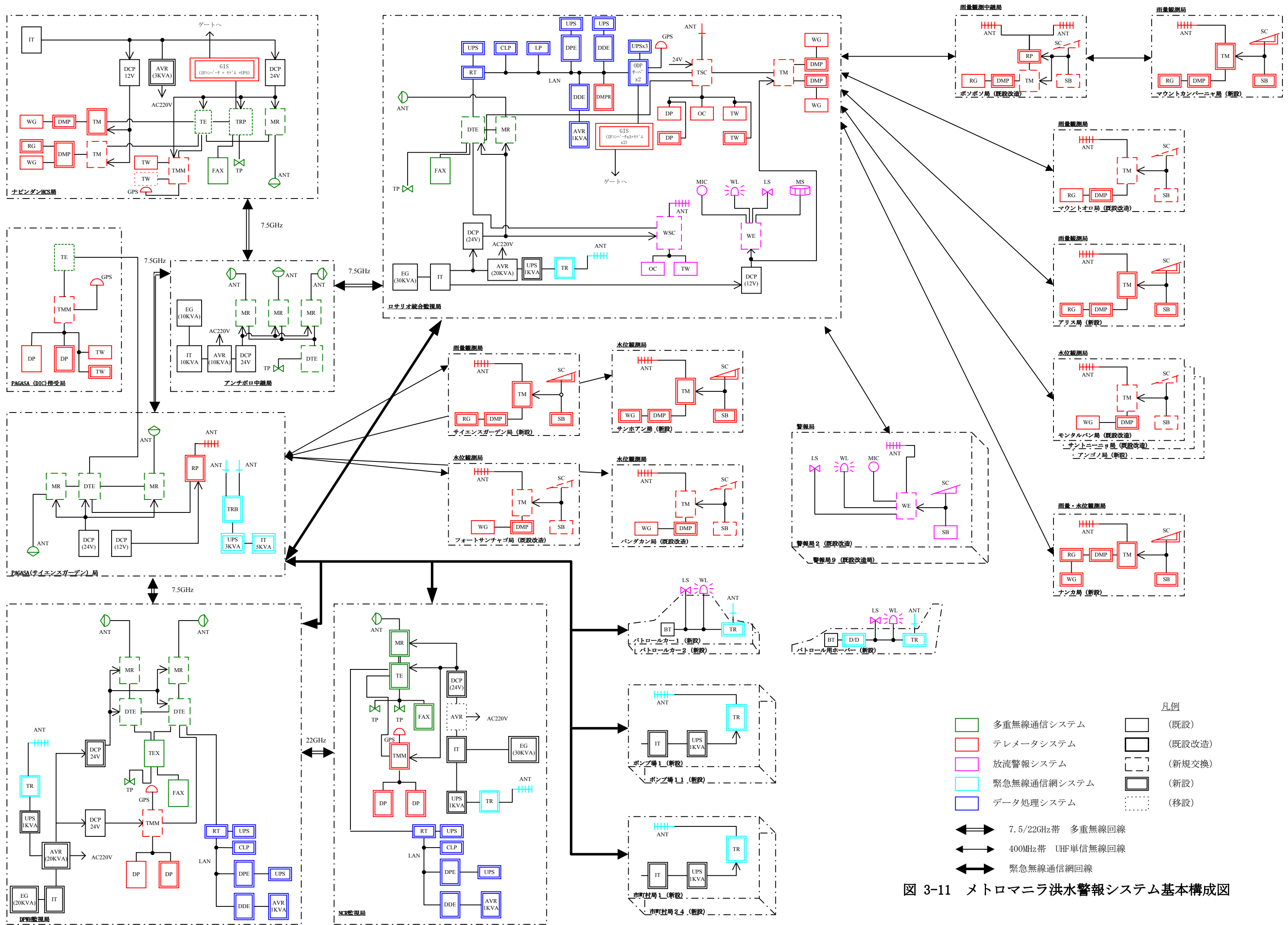


図 3-11 メトロマニラ洪水警報システム基本構成図

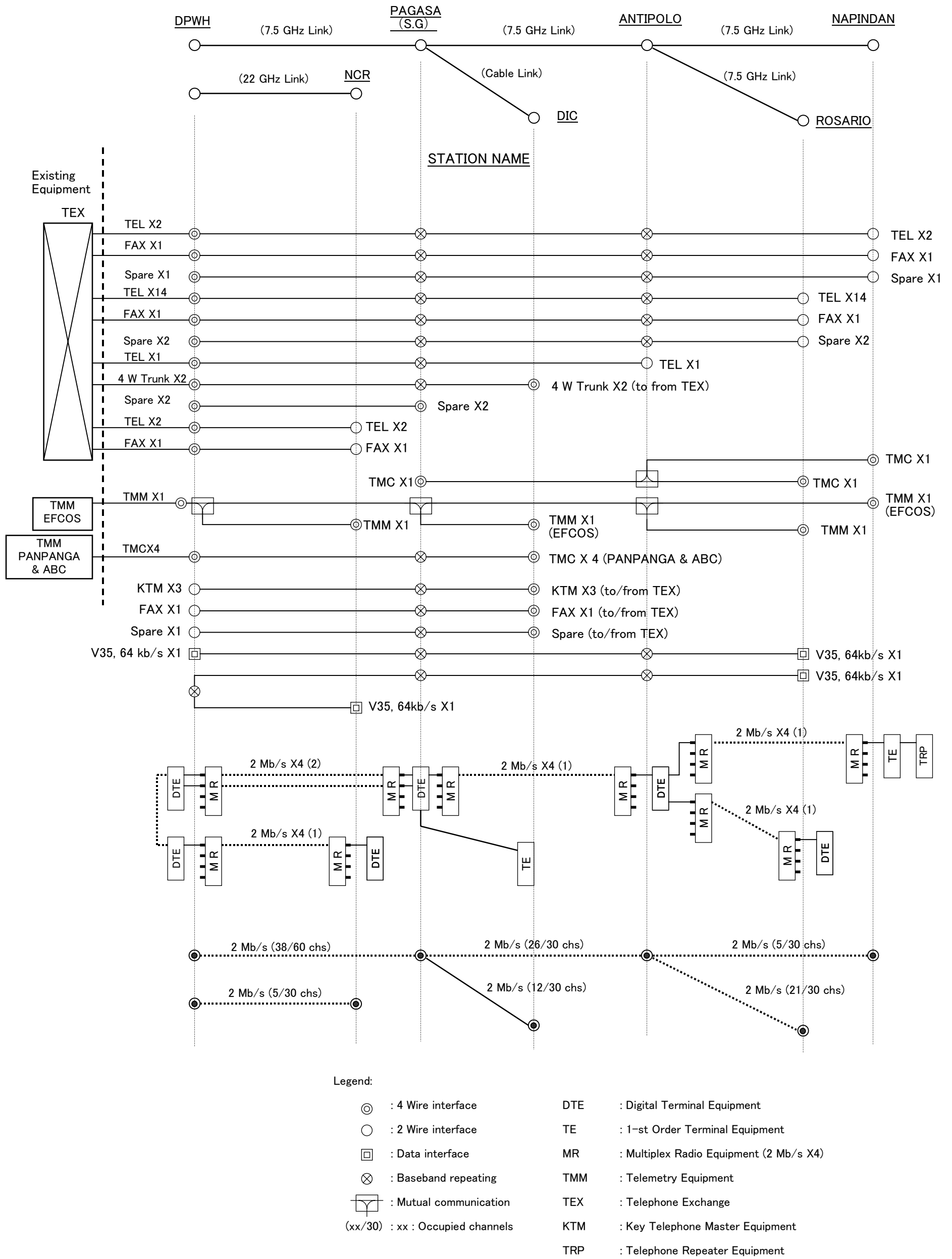


図 3-12 多重無線システムチャンネルプラン計画

図3-13 緊急無線通信システム構成図

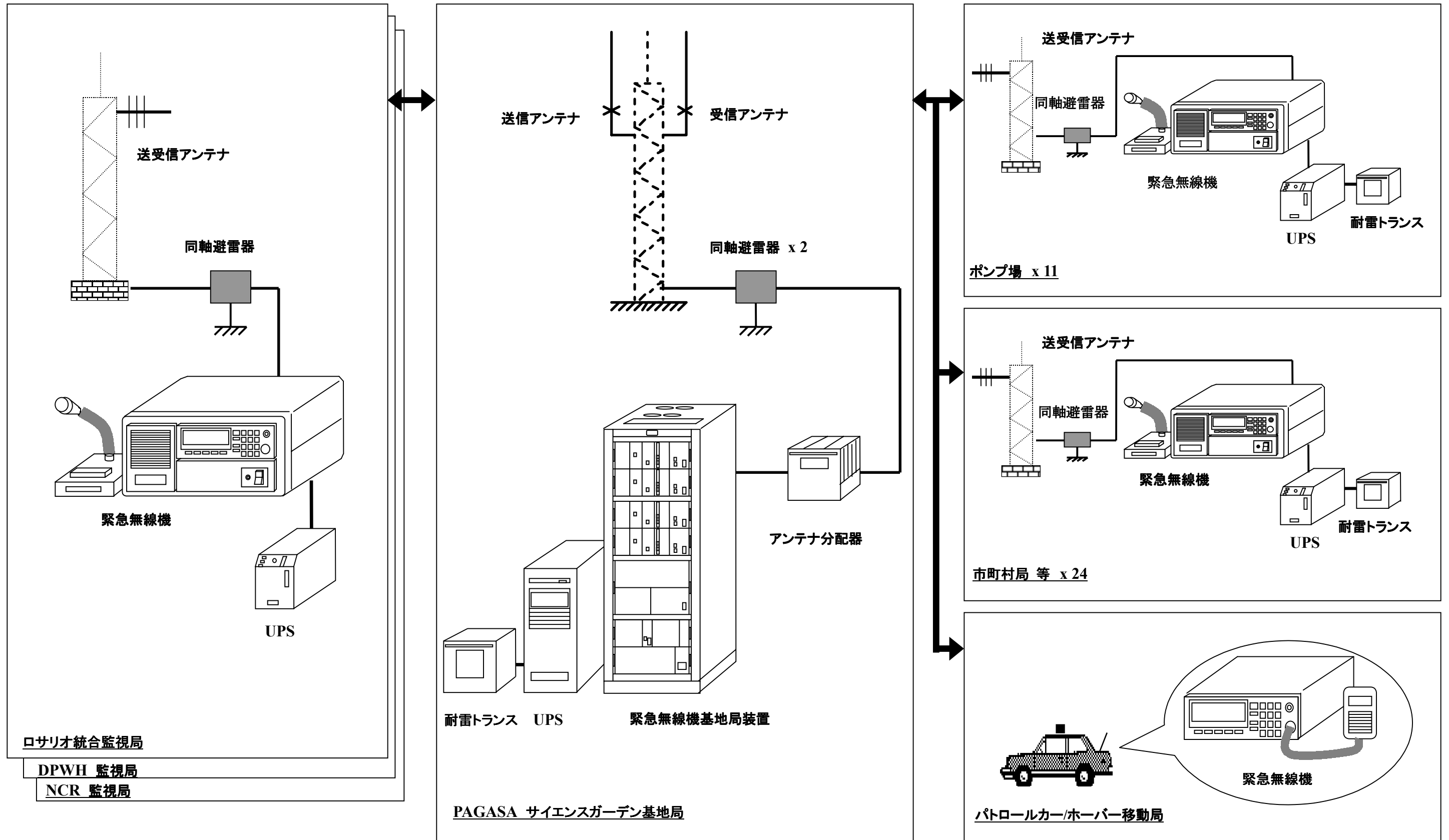


図 3-14 データ処理システムハードウェア構成図

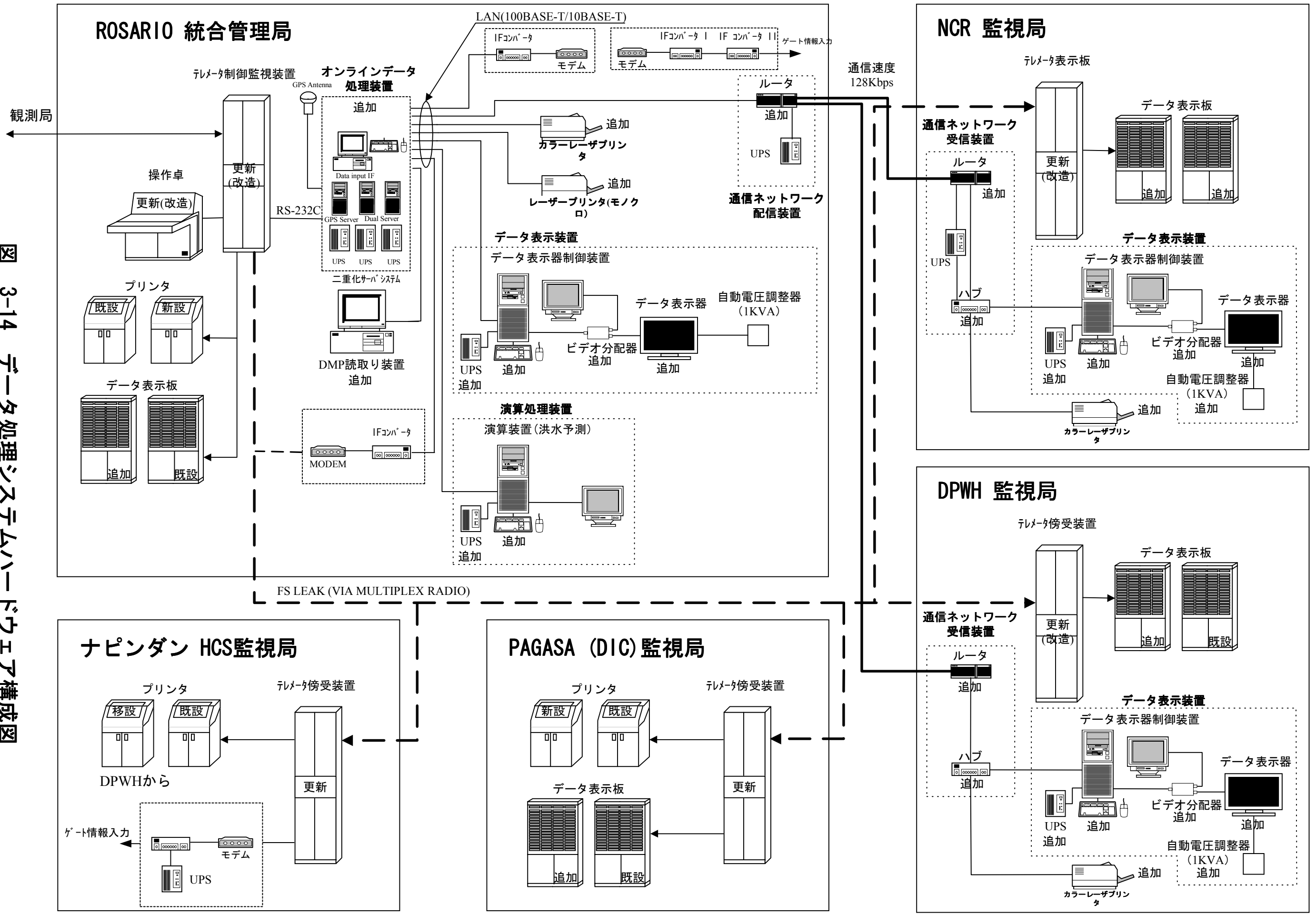
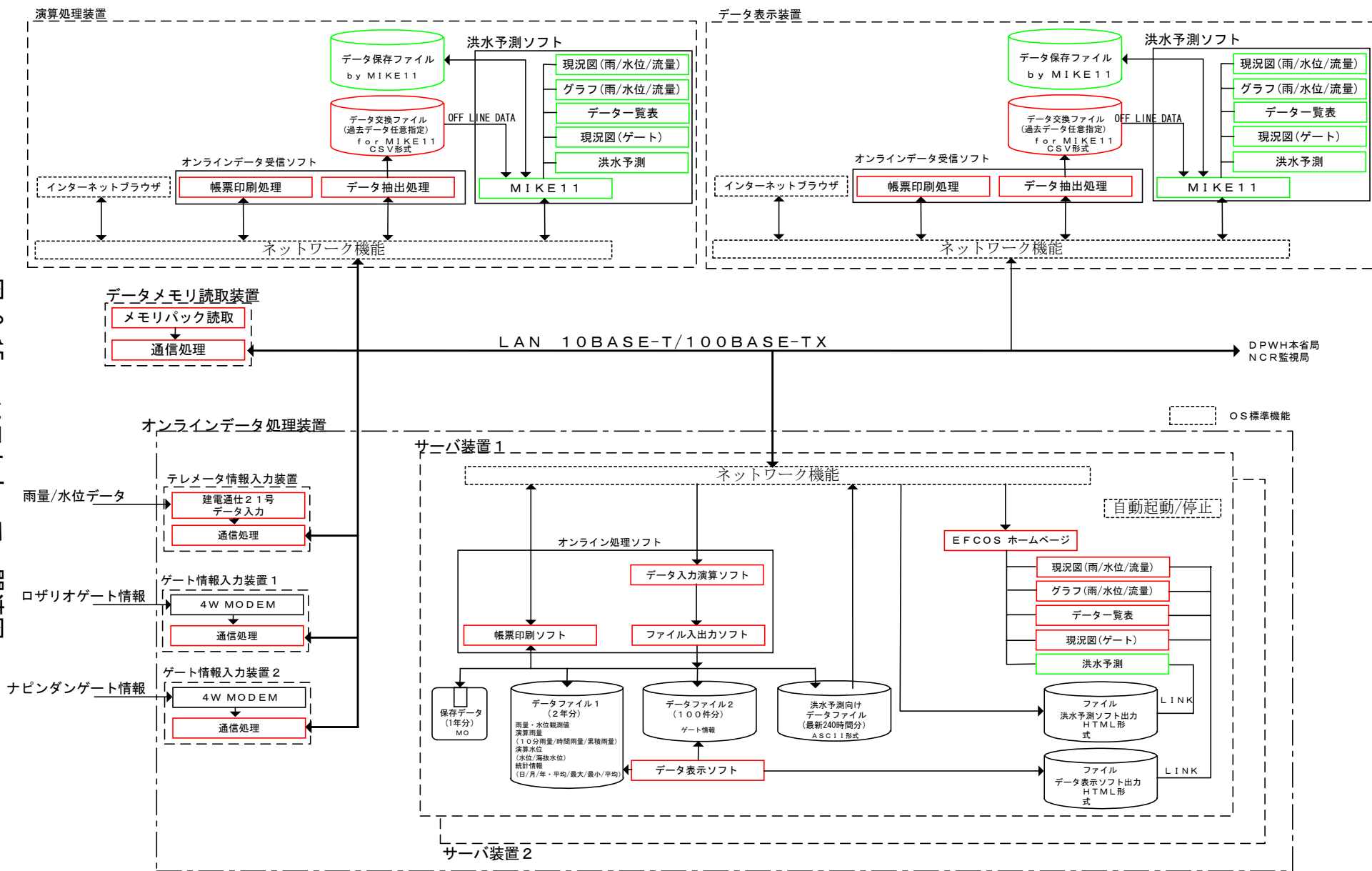
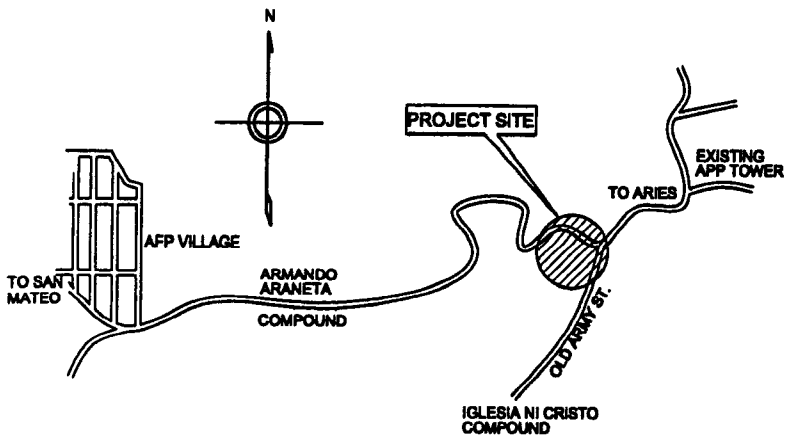


図 3-15 ソフトウェア関連図

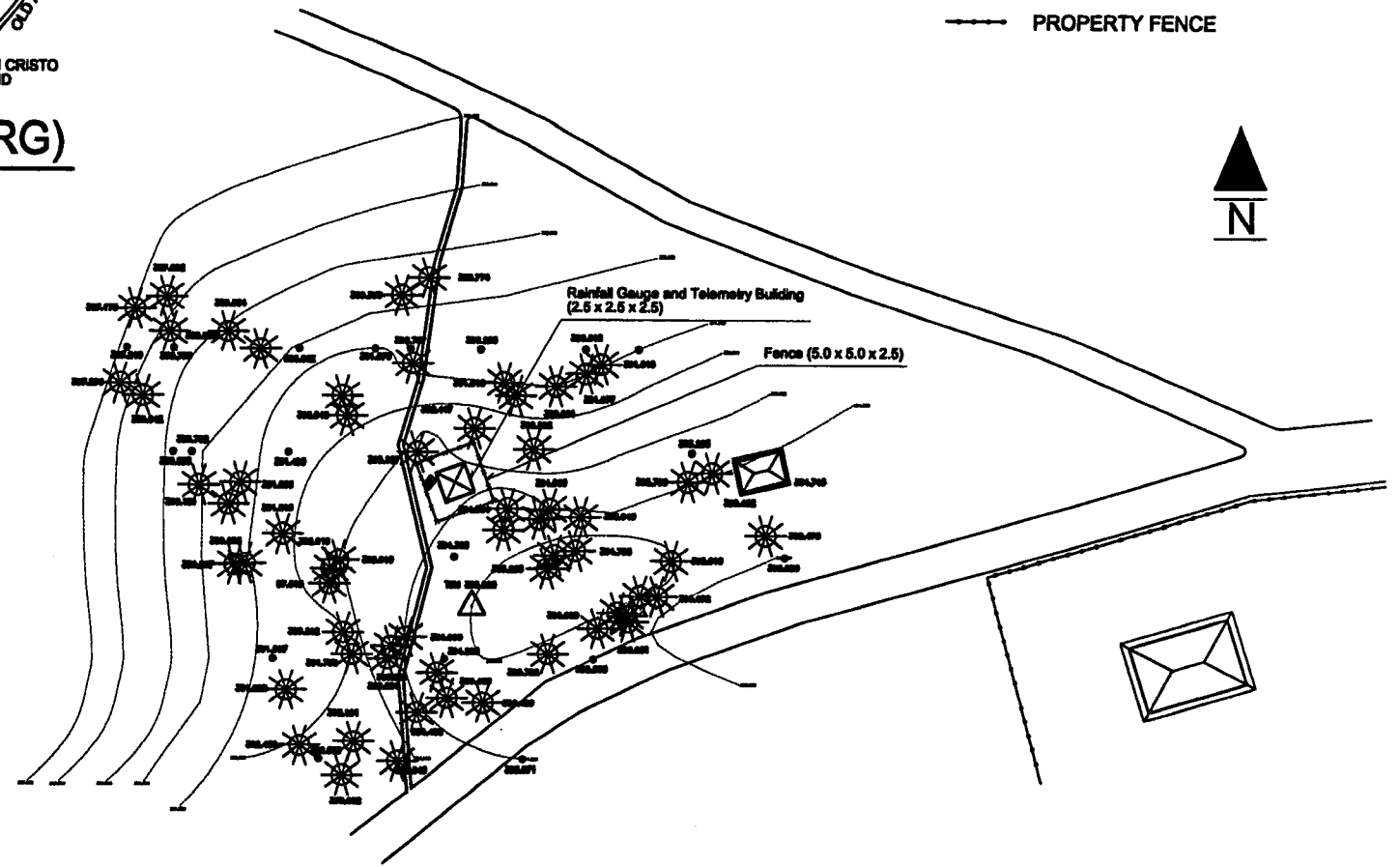




LEGEND:

- EXISTING TREE
- CONTOUR LINE
- EXISTING HOUSE
- SPOT ELEVATION
- TEMPORARY BENCH MARK
- ROAD LAYOUT
- PROPERTY FENCE

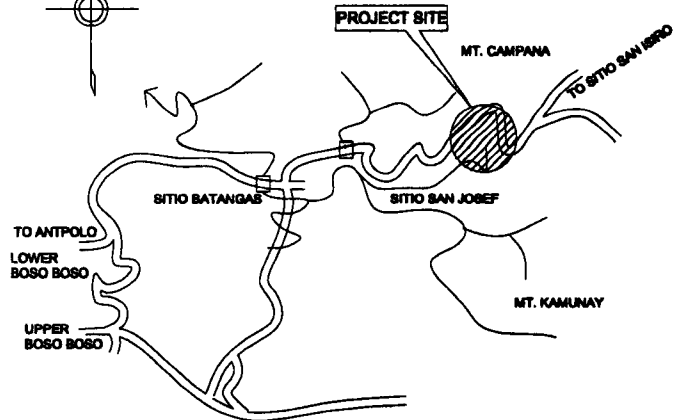
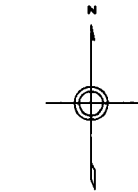
VICINITY MAP (ARIES RG)
(NO SCALE)



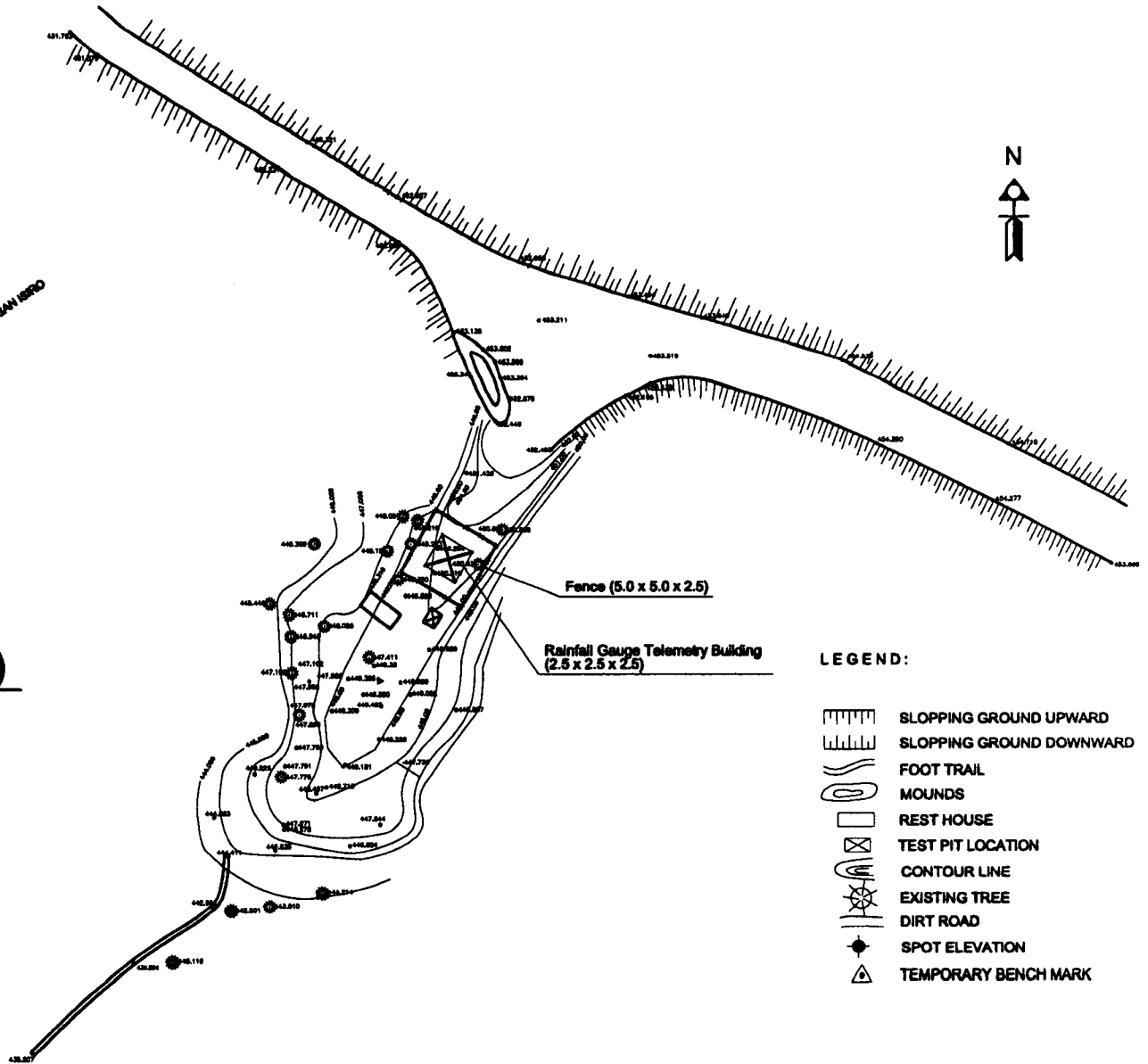
TOPOGRAPHY AT MT. ARIES
(NO SCALE)

図 3-16 アリス雨量観測所配置計画図

CONSULTANTS		PROJECT TITLE	DRAWING NO.
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		SUBMITTED BY:	THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.
		SURVEYED BY:	
		DESIGNED BY:	
		CHECKED BY:	
		SUBMITTED BY: C.V. ABALOS, JR. SURVEYED BY: C.V. ABALOS, JR. DESIGNED BY: P.T. CENTENO CHECKED BY:	MT. ARIES PLAN 5-01



VICINITY MAP (MT. CAMPANA)
(NO SCALE)



LEGEND:

- SLOPPING GROUND UPWARD
- SLOPPING GROUND DOWNWARD
- FOOT TRAIL
- MOUNDS
- REST HOUSE
- TEST PIT LOCATION
- CONTOUR LINE
- EXISTING TREE
- DIRT ROAD
- SPOT ELEVATION
- TEMPORARY BENCH MARK

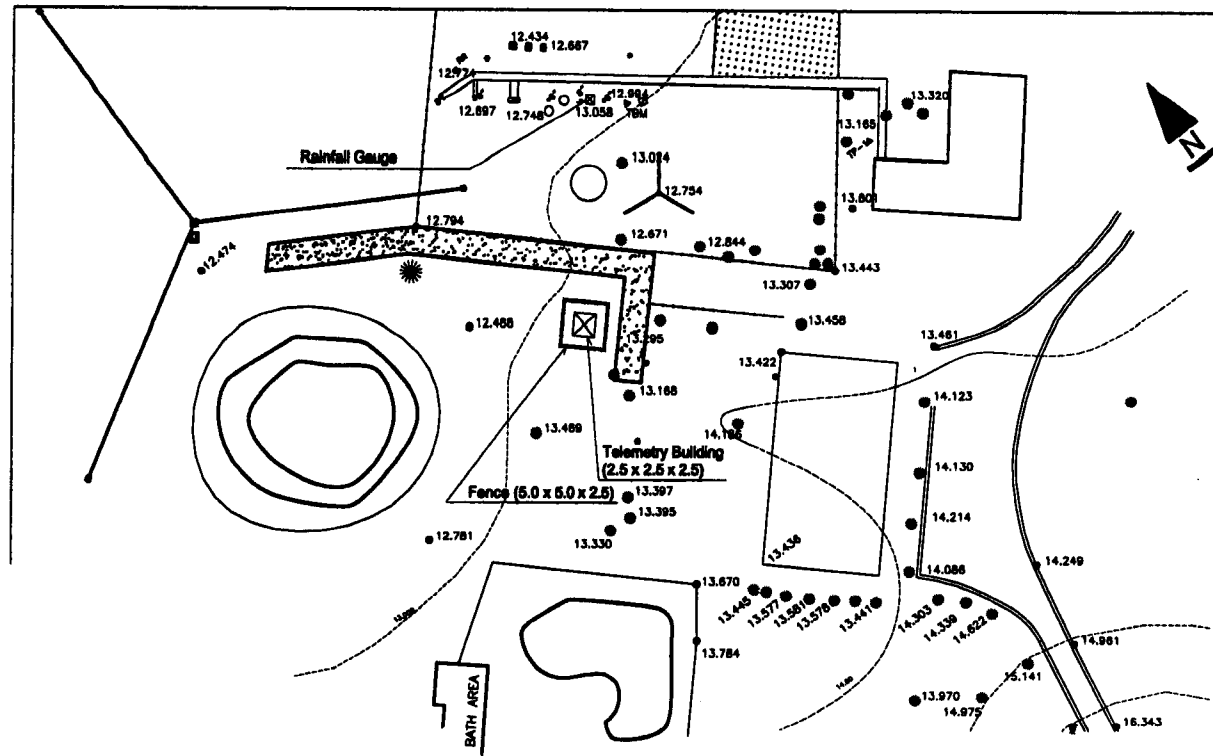
TOPOGRAPHY OF MT. CAMPANA
(NO SCALE)

図 3-17 カンパナ山雨量観測所配置計画図

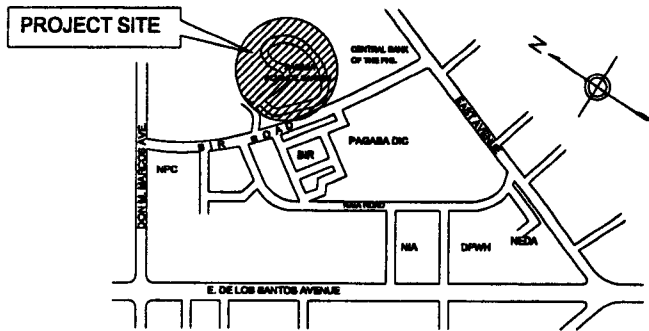
CONSULTANTS		PROJECT TITLE	DRAWING NO.
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		SUBMITTED BY: C.V. ABALOS, JR.	MT. CAMPANA PLAN 4-01
		SURVEYED BY: C.V. ABALOS, JR.	
		DRAWN BY: P.T. CENTENO	
		CHECKED BY:	
		THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.	

LEGEND :

- EXISTING POND
- ANTENNA WITH GUY WIRE
- OFFICE BUILDING
- BASKETBALL COURT
- TURNING POINT
- BENCH MARK
- TOWER TRANSMISSION
- ROAD LAYOUT
- SWIMMING POOL
- LANDSCAPE STONE
- EXISTING TREE
- CYCLONE WIRE FENCE
- GARDEN AREA
- PATH WALK
- 8° STD. RAIN GAUGE
- RAIN RECORDER
- RAIN GAUGE METER
- EVAPORATION BASIN
- WIND VANE
- ELECTRIC POST
- CONTROL PANEL
- PROPERTY WALL
- SPOT ELEVATION
- TEST PIT LOCATION
- EXISTING MOUND
- EXISTING ASPHALT ROAD
- EXISTING FOUNDATION



TOPOGRAPHY OF SCIENCE GARDEN
(NO SCALE)

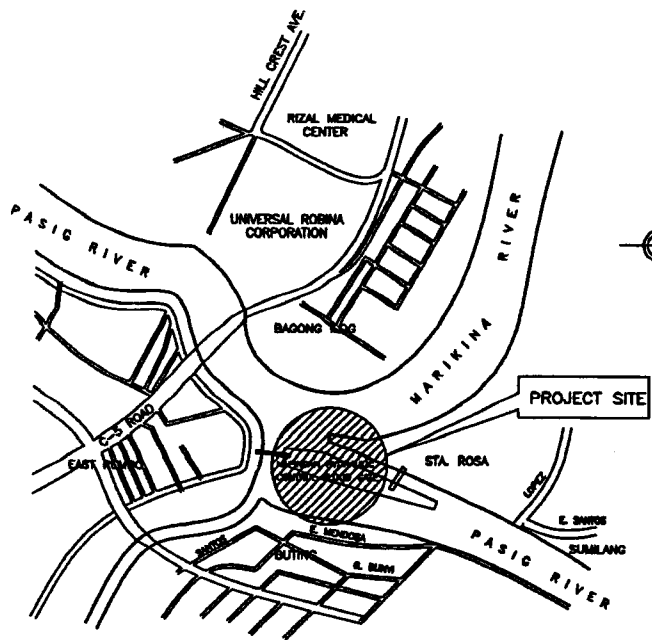


VICINITY MAP (SCIENCE GARDEN RG)

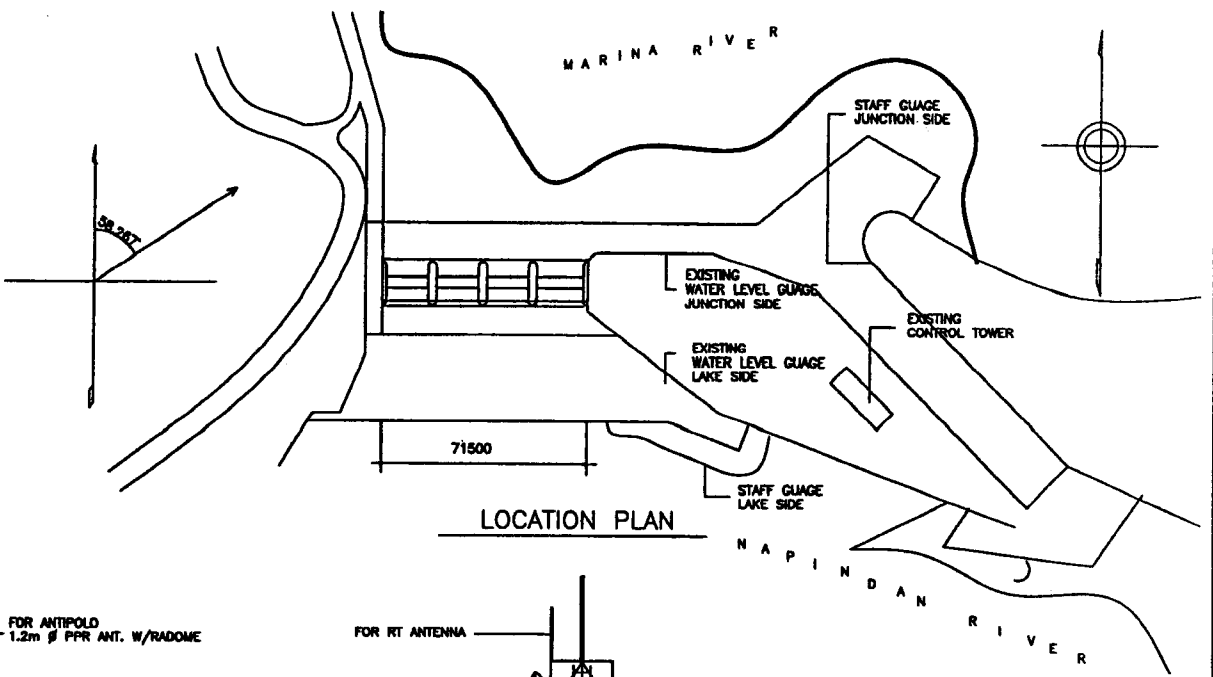
(NO SCALE)

図 3-18 サイエンスガーデン雨量観測所配置計画図

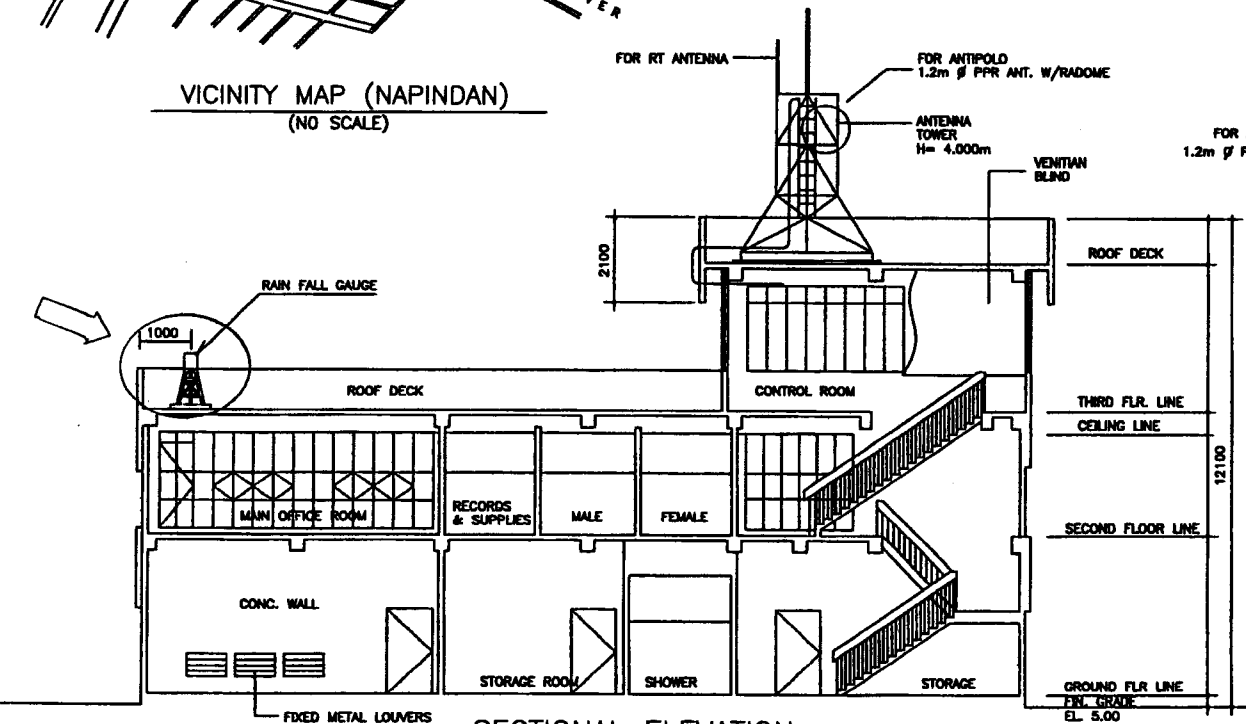
CONSULTANTS		PROJECT TITLE	DRAWING NO.
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		SUBMITTED BY:	THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.
		SURVEYED BY:	
		DRAWN BY:	
		CHECKED BY:	
		C. V. ABALOS, JR. C. V. ABALOS, JR. C. V. ABALOS, JR.	SC. GARDEN PLAN 3 - 01



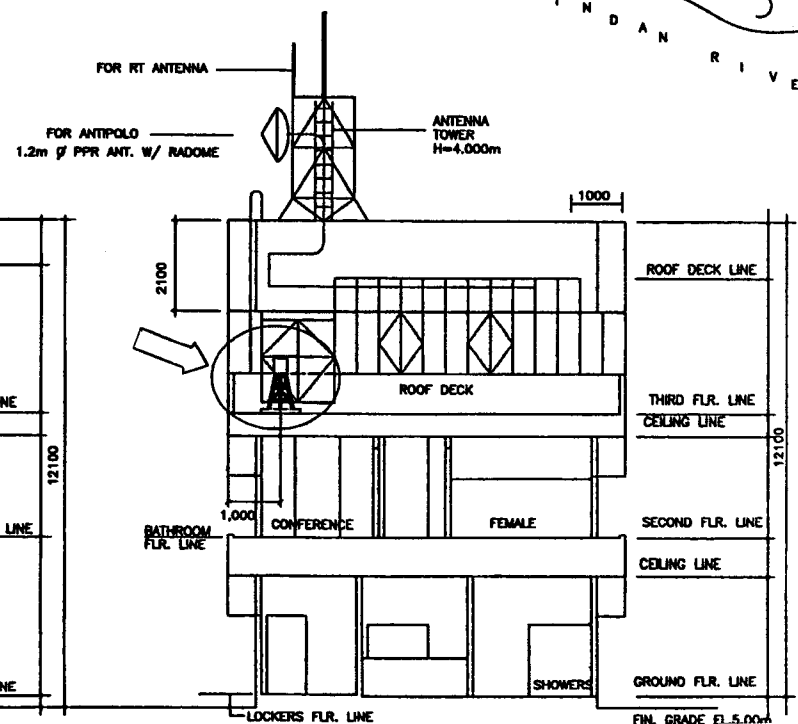
VICINITY MAP (NAPINDAN)
(NO SCALE)



LOCATION PLAN



SECTIONAL ELEVATION
(NO SCALE)

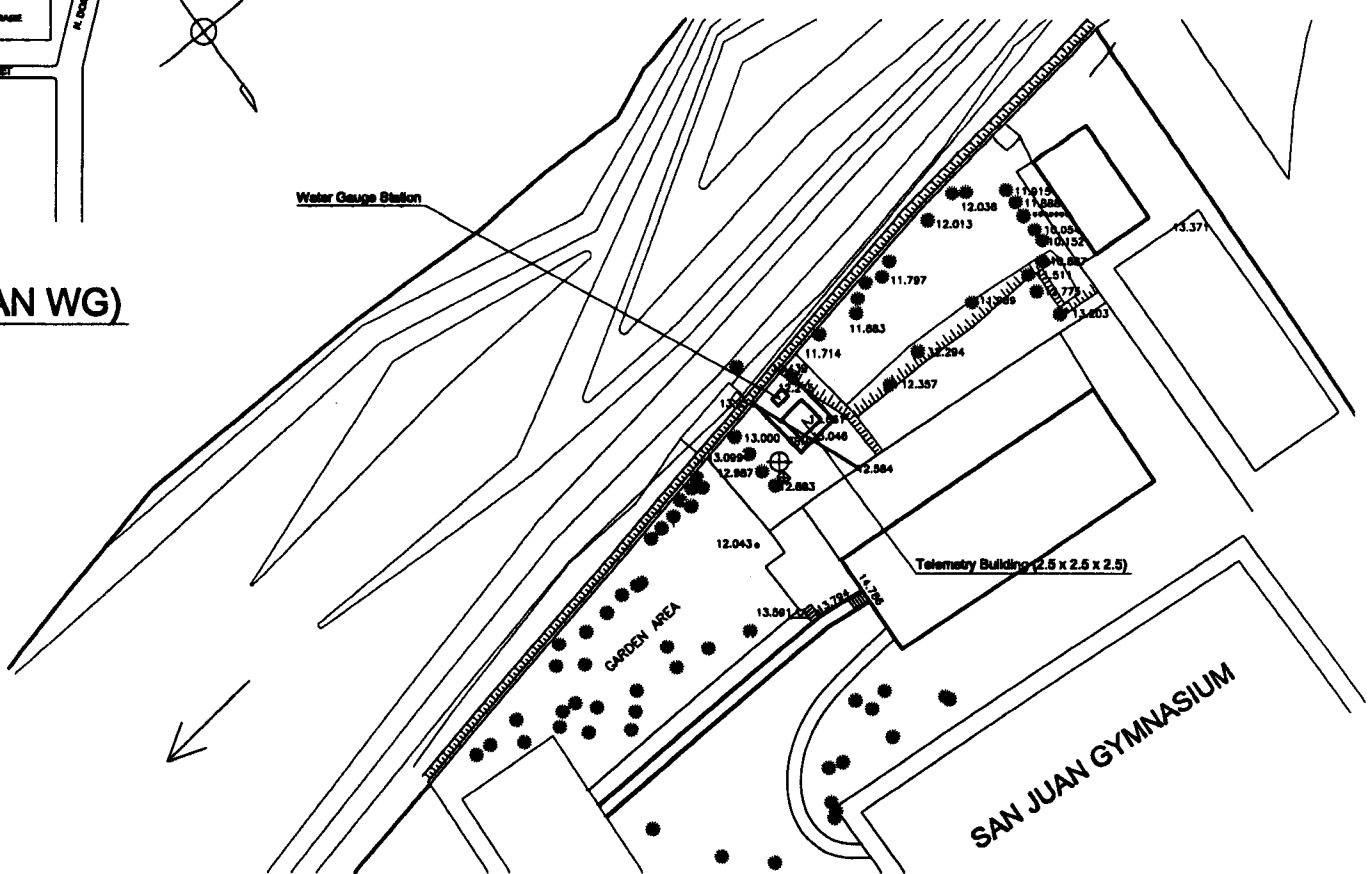
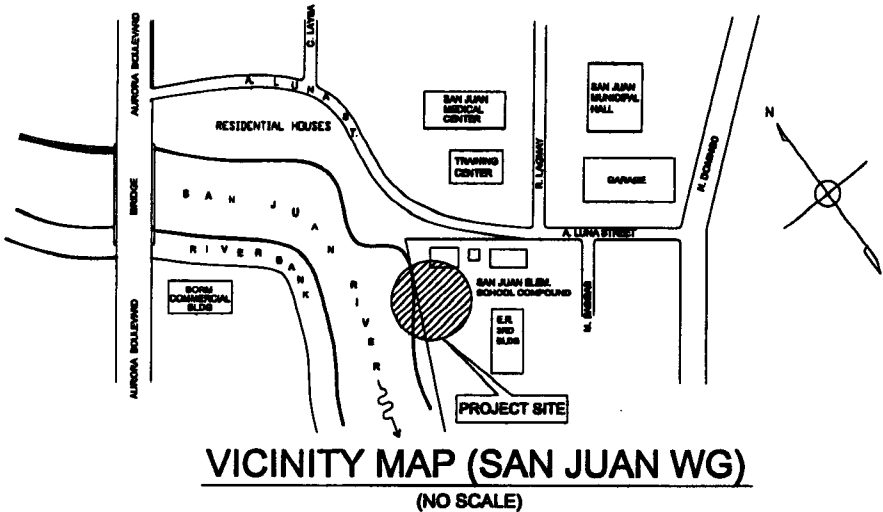


FIN. GRADE EL. 5.00

図 3-19 ナピンダン雨量計配置計画図

CONSULTANTS		PROJECT TITLE		DRAWING NO.	
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		SUBMITTED BY:	C.V. ABALOS, JR.		THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.
		SURVEYED BY:	C.V. ABALOS, JR.		
		DRAWN BY:	P.T. CENTENO		
		CHECKED BY:			
				NAPINDAN PLAN 7-01	

TOPOGRAPHY AT SAN JUAN STATION (NO SCALE)



LEGEND:

- SLOPING GROUND UPWARD
- ROAD / PATH WALK
- SCHOOL BUILDING
- GARDEN AREA
- RIVER FLOW
- TEST PIT LOCATION
- CONTOUR LINE
- HIGH WATER LEVEL MARK
- EXISTING CONCRETE REVETMENT
- SPOT ELEVATION
- BOREHOLE LOCATION
- CONTOUR LINE
- CONCRETE WALL
- CONCRETE STAIR

図 3-20 サンファン水位観測所配置計画図

CONSULTANTS		PROJECT TITLE		DRAWING NO.
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		SUBMITTED BY:	C.V. ABALOS, JR.	
		SURVEYED BY:	C.V. ABALOS, JR.	
		DRAWN BY:	P.T. CENTENO	
		CHECKED BY:		
		THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.		SAN JUAN PLAN 2-01

- LEGEND:
- GUARD RAIL
 - SLOPING GROUND UPWARD
 - BRIDGE
 - ADOBE RIP RAP AND WALL
 - REINFORCED CONCRETE PIPE
 - PROPERTY WALL
 - RIVER FLOW
 - TEST PIT LOCATION
 - BOREHOLE LOCATION
 - SPOT ELEVATION
 - REVETMENT WALL
 - BOX CULVERT SPILLWAY
 - BENCH MARK
 - RESIDENTIAL HOUSE
 - BROKEN BRIDGE
 - EXISTING TREE

TOPOGRAPHY AT NANGKA STATION (NO SCALE)

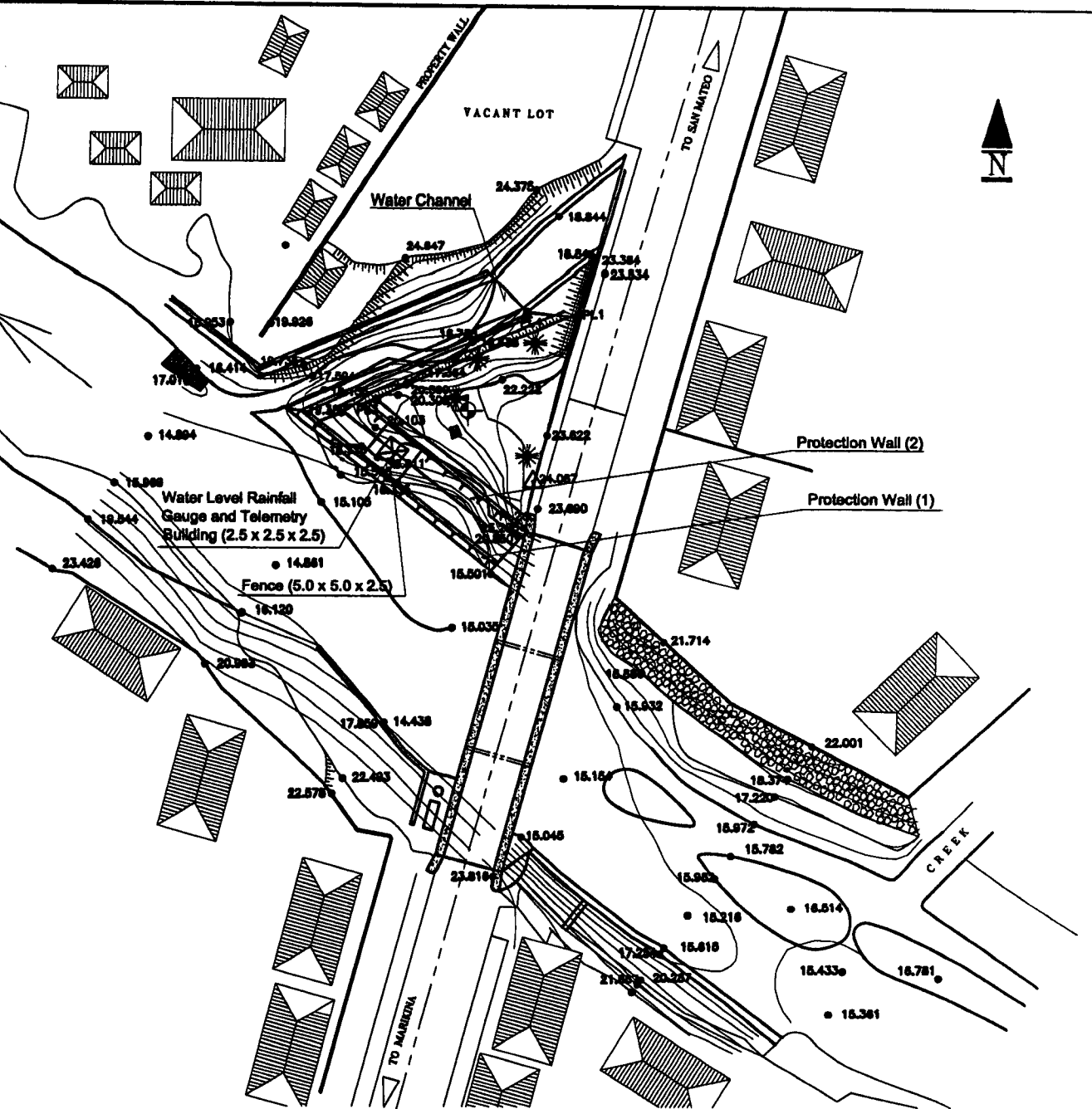
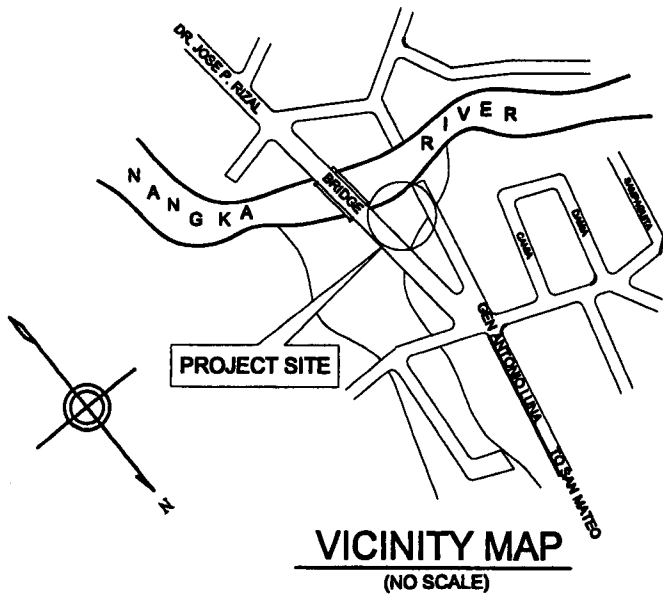
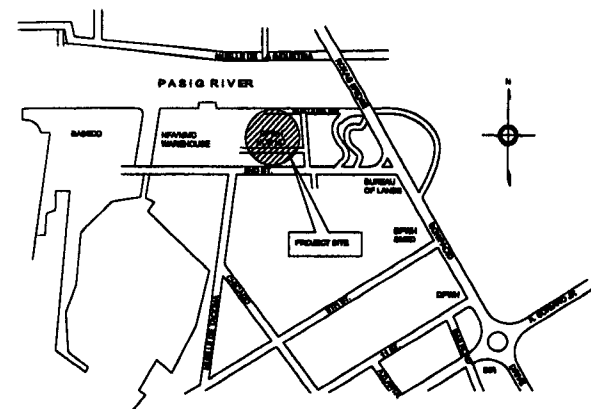
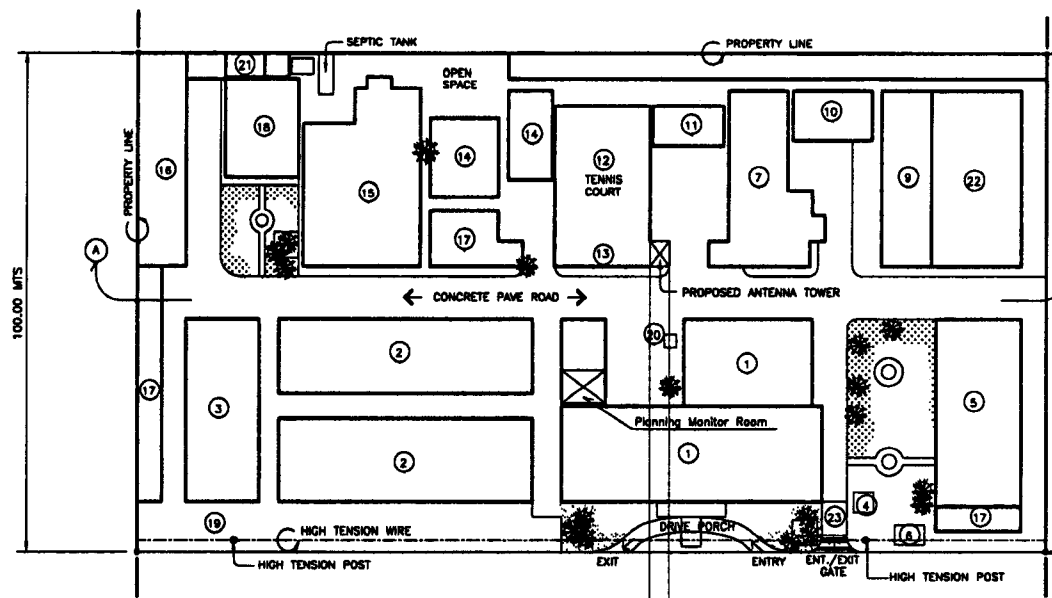


図 3-21 ナンカ水位・雨量観測所配置計画図

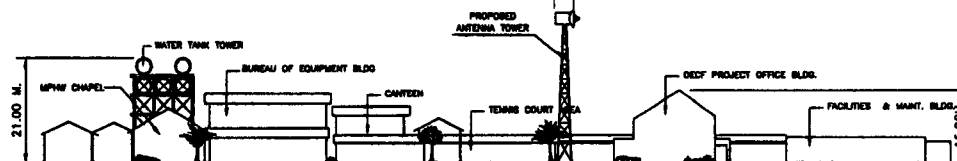
CONSULTANTS		PROJECT TITLE	DRAWING NO.
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.	NANGKA PLAN 1-01
SUBMITTED BY:	C.V. Abalos, Jr.		
SURVEYED BY:	C.V. Abalos, Jr.		
DRAWN BY:	C.V. Abalos, Jr.		
CHECKED BY:	C.V. Abalos, Jr.		



VICINITY MAP- NCR AREA
(NO SCALE)



- LEGEND:
- ① NCR BUILDING
 - ② BUREAU OF MAINTENANCE
 - ③ SOLID WASTE BUILDING
 - ④ GUARD HOUSE
 - ⑤ GYMNASIUM
 - ⑥ RESIDENTIAL BUILDING
 - ⑦ OECF OFFICE BUILDING
 - ⑧ MESHALL
 - ⑨ DACEL BUILDING
 - ⑩ MEDICAL BLDG
 - ⑪ TENNIS COURT
 - ⑫ PMO BUILDING
 - ⑬ IBRD PMO BLDG
 - ⑭ BUREAU OF EQUIPMENTS
 - ⑮ ADB PROJECTS
 - ⑯ CANTEN
 - ⑰ MPWH CHAPEL
 - ⑱ HIGH TENSION WIRE
 - ⑳ EXISTING ANTENNA
 - ㉑ WATER TANK
 - ㉒ FACILITIES & MAINT. BLDG.
 - ㉓ ENTRANCE GATE



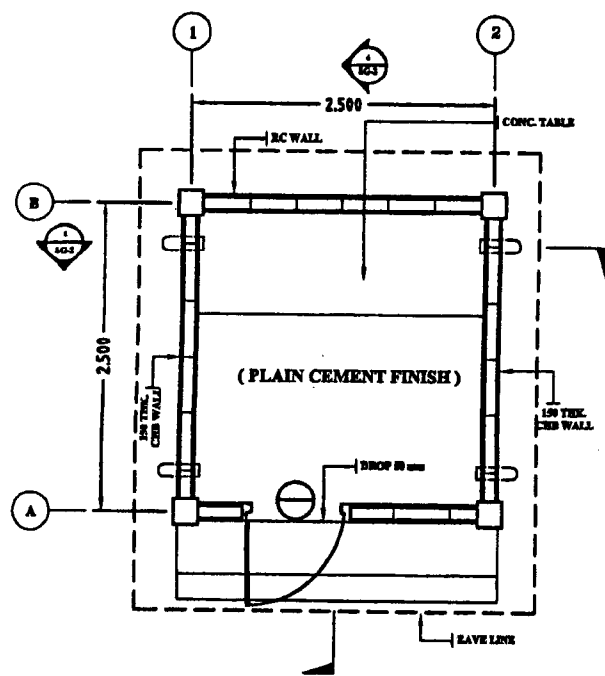
FRONT ELEVATION (A - A)

DPWH-NCR COMPOUND PLAN
(NO SCALE)

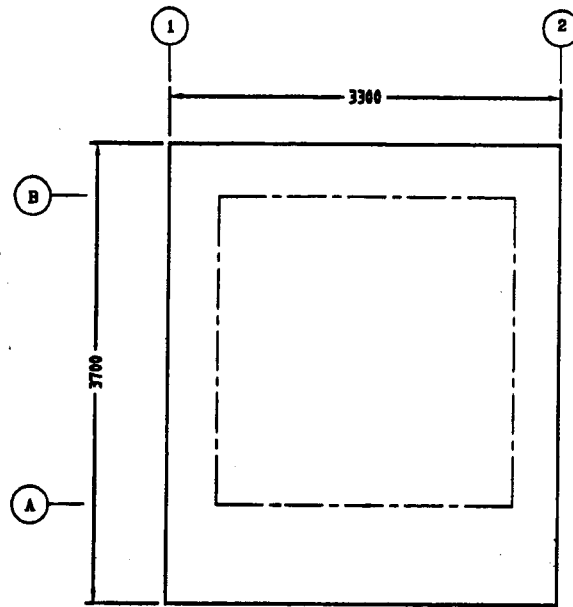
图 3-22 NCR中繼鉄塔配置計画图

CONSULTANTS		PROJECT TITLE	DRAWING NO.	
CTI ENGINEERING INTERNATIONAL CO., LTD IN ASSOCIATION WITH WOODFIELDS CONSULTANTS, INC.		SUBMITTED BY:	THE BASIC DESIGN STUDY ON THE PROJECT FOR REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA.	NCR PLAN 6-01
		SURVEYED BY:		
		DRAWN BY:		
		CHECKED BY:		
		C.V. ABALOS, JR. C.V. ABALOS, JR. P.T. CENTENO		

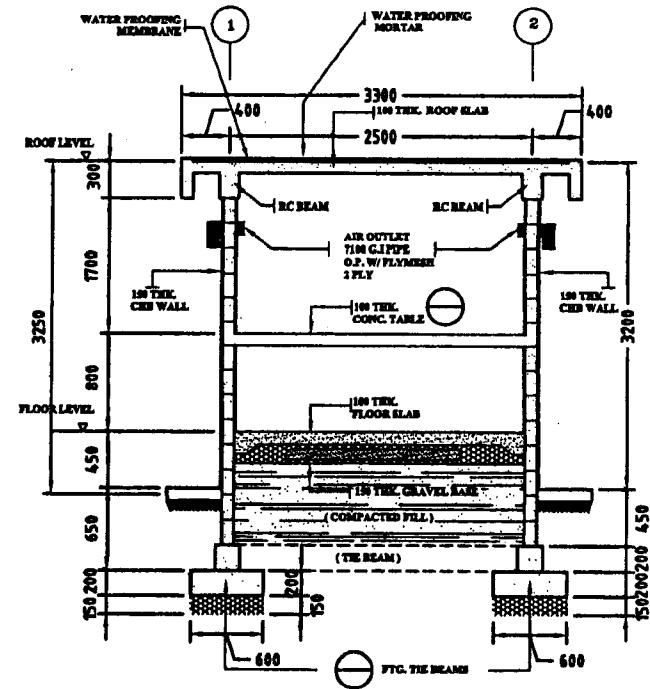
Mt. Campana, Mt. Aries & Science Garden Rain Gauge Station



1
SG-2
FLOOR PLAN
SCALE 1:30 METERS



2
SG-2
ROOF PLAN
SCALE 1:30 METERS

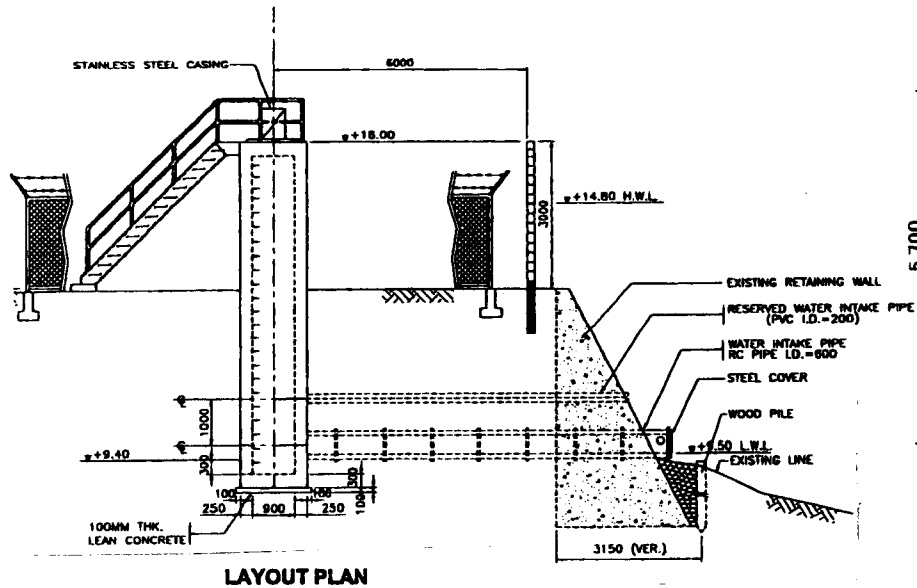


3
SG-2
SECTION
SCALE 1:30 METERS

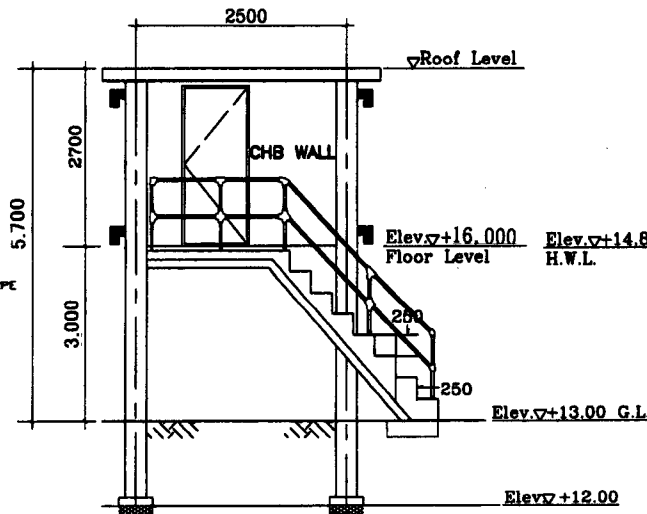
Hydrology Observation Facilities Standard Plan I

图 3-23 雨量观测所建筑计画图

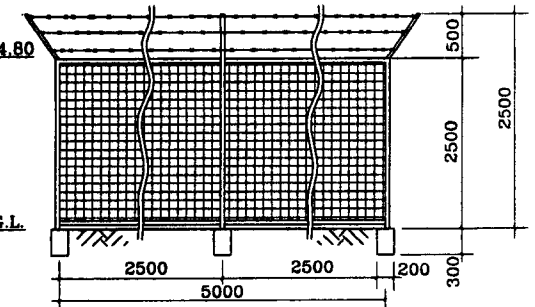
San Juan Water Level Gauge Station



1 SECTIONAL ELEV. OF WATER LEVEL GAUGE
SCALE 1:300 MTS



2 SECTIONAL ELEV. OF RAINGAUGE STATION
SCALE 1:300 MTS.

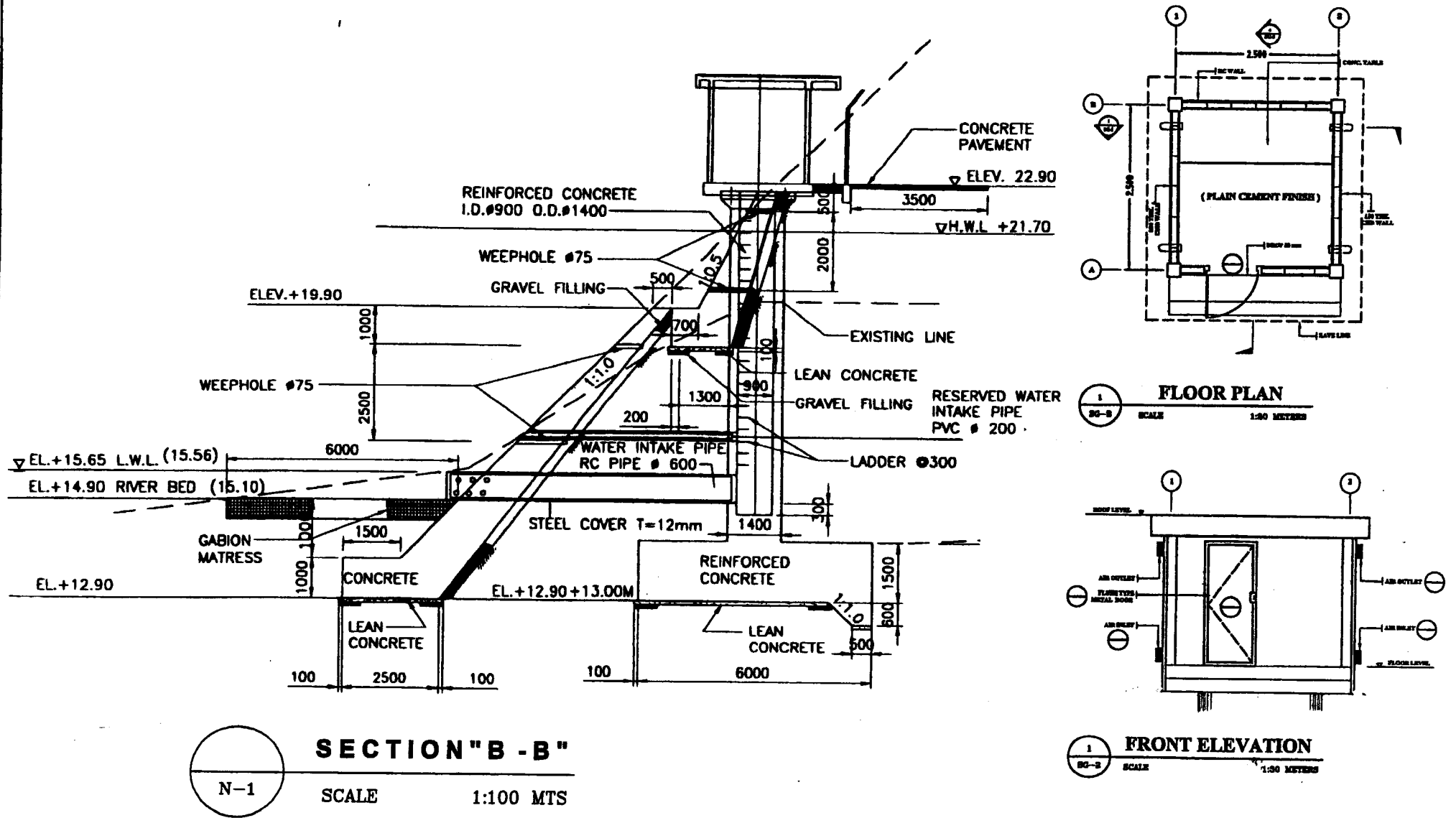


3 SECTIONAL ELEV. OF FENCE
SCALE 1:300 MTS.

Hydrology Observation Facilities Standard Plan II

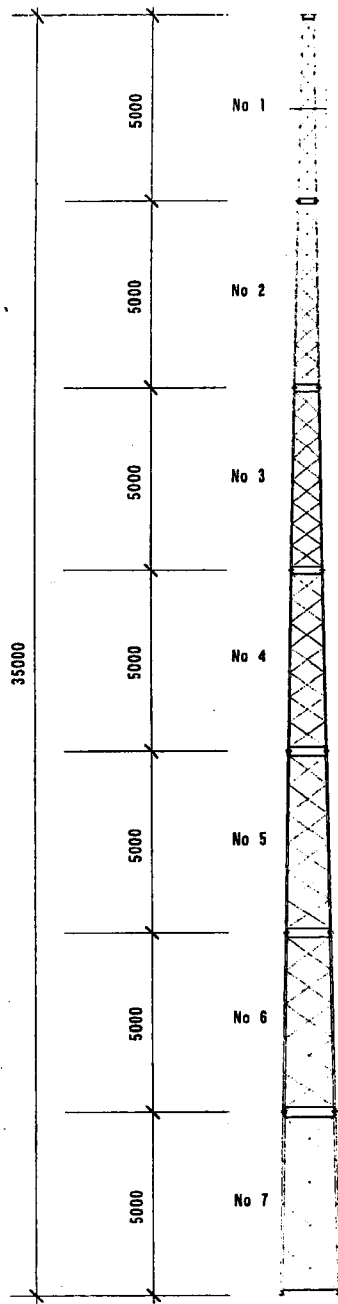
図 3-24 サンファン水位観測所建築計画図

Nangka Water Level Gauge Station

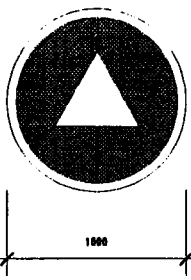
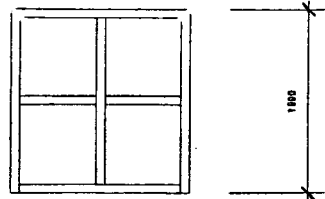


Hydrology Observation Facilities Standard Plan III

图 3-25 ナンカ水位・雨量観測所建築計画図

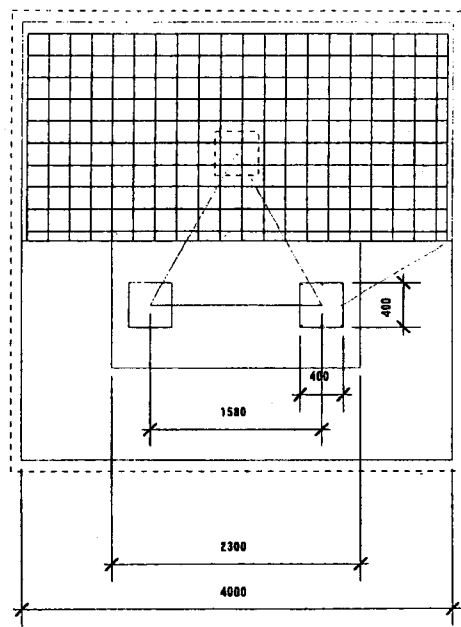


- No 1 MAIN BAR (ROUND 28 φ)
LATTICE BAR (ROUND 13 φ)
LATTICE PITCH (485x10)
- No 2 MAIN BAR (ROUND 32 φ)
LATTICE BAR (ROUND 13 φ)
LATTICE PITCH (538x 9)
- No 3 MAIN BAR (ROUND 38 φ)
LATTICE BAR (ROUND 16 φ)
LATTICE PITCH (601x 8)
- No 4 MAIN BAR (ROUND 44 φ)
LATTICE BAR (ROUND 19 φ)
LATTICE PITCH (684x 7)
- No 5 MAIN BAR (ROUND 50 φ)
LATTICE BAR (ROUND 22 φ)
LATTICE PITCH (792x 6)
- No 6 MAIN BAR (ROUND 55 φ)
LATTICE BAR (ROUND 22 φ)
LATTICE PITCH (948x 5)
- No 7 MAIN BAR (ROUND 65 φ)
LATTICE BAR (ROUND 25 φ)
LATTICE PITCH (1176x4)



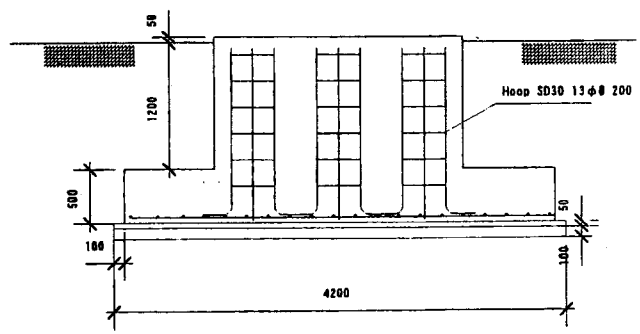
PLATFORM
S 1/30

35m TRIANGULAR TOWER
S 1/150



SD 295A
16 φ @200

SD295A
22 φ x 8

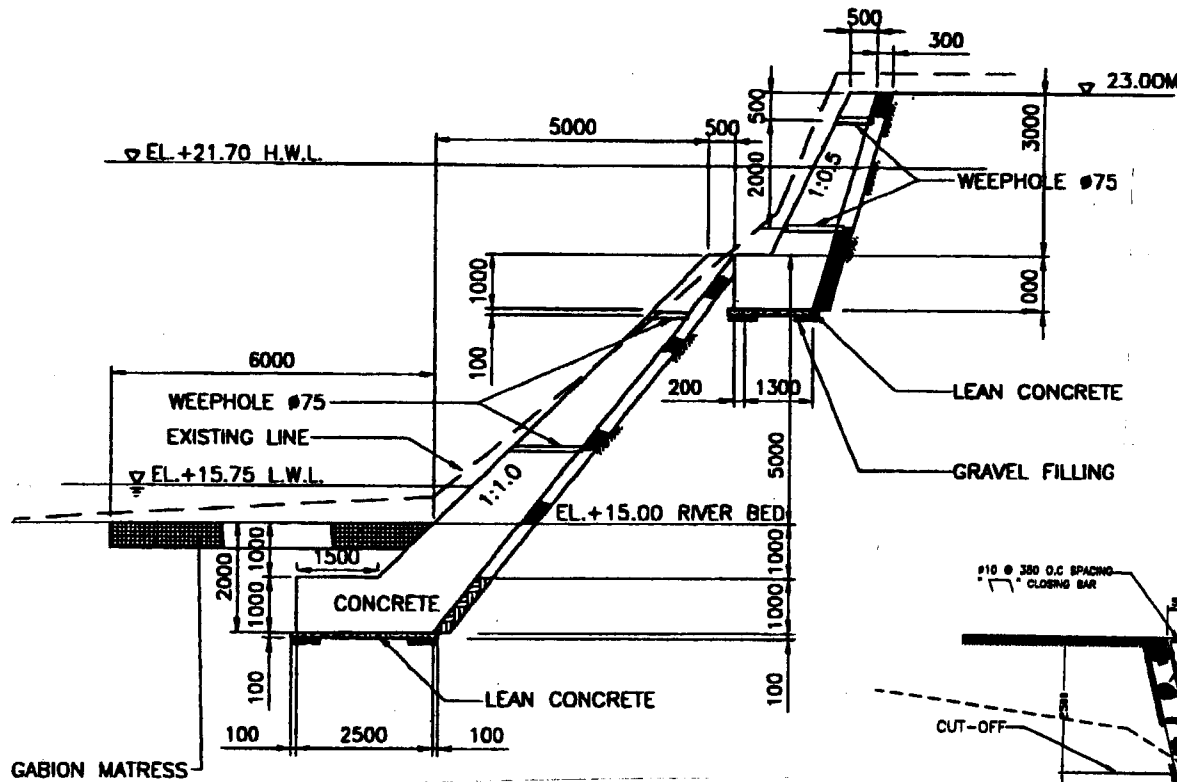


TOWER FOUNDATION
S 1/50

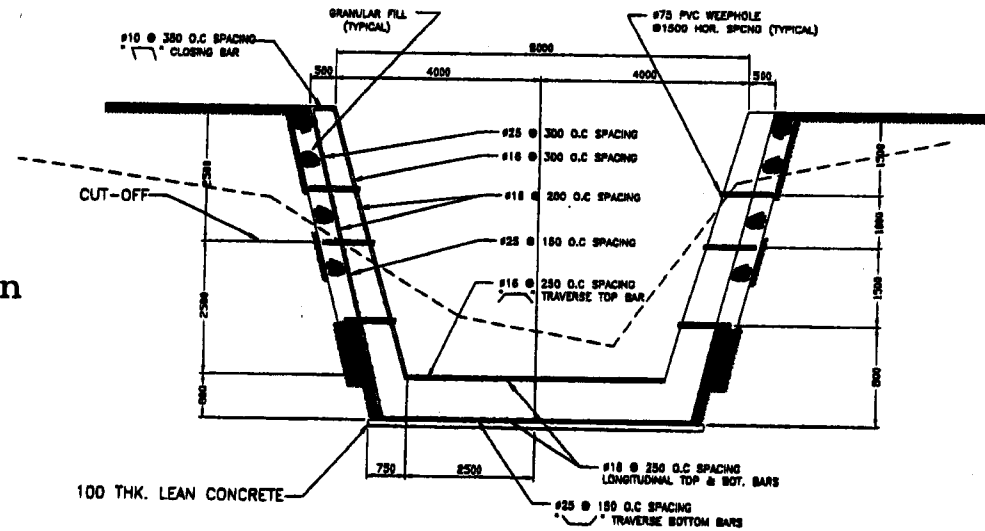
图 3-26 NCR中繼鉄塔標準図

CONTRACTOR		CONSULTANTS		REPUBLIC OF THE PHILIPPINES		REHABILITATION OF THE FLOOD CONTROL OPERATION AND WARNING SYSTEM IN METRO MANILA	SHEET CONTENTS :	SCALE
PREPARED :	SUBMITTED :	RECOMMENDING APPROVAL :	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	APPROVED :	NCR HEAD OFFICE		SHEET NO.	
DATE :	DATE :	DATE :	PROJECT MANAGEMENT OFFICE FOR MAJOR FLOOD CONTROL PROJECTS	DATE :	35m TRIANGULAR TOWER		49	
							DRAWING NO. : T-NC-4	

River protection structure Standard D.W.G

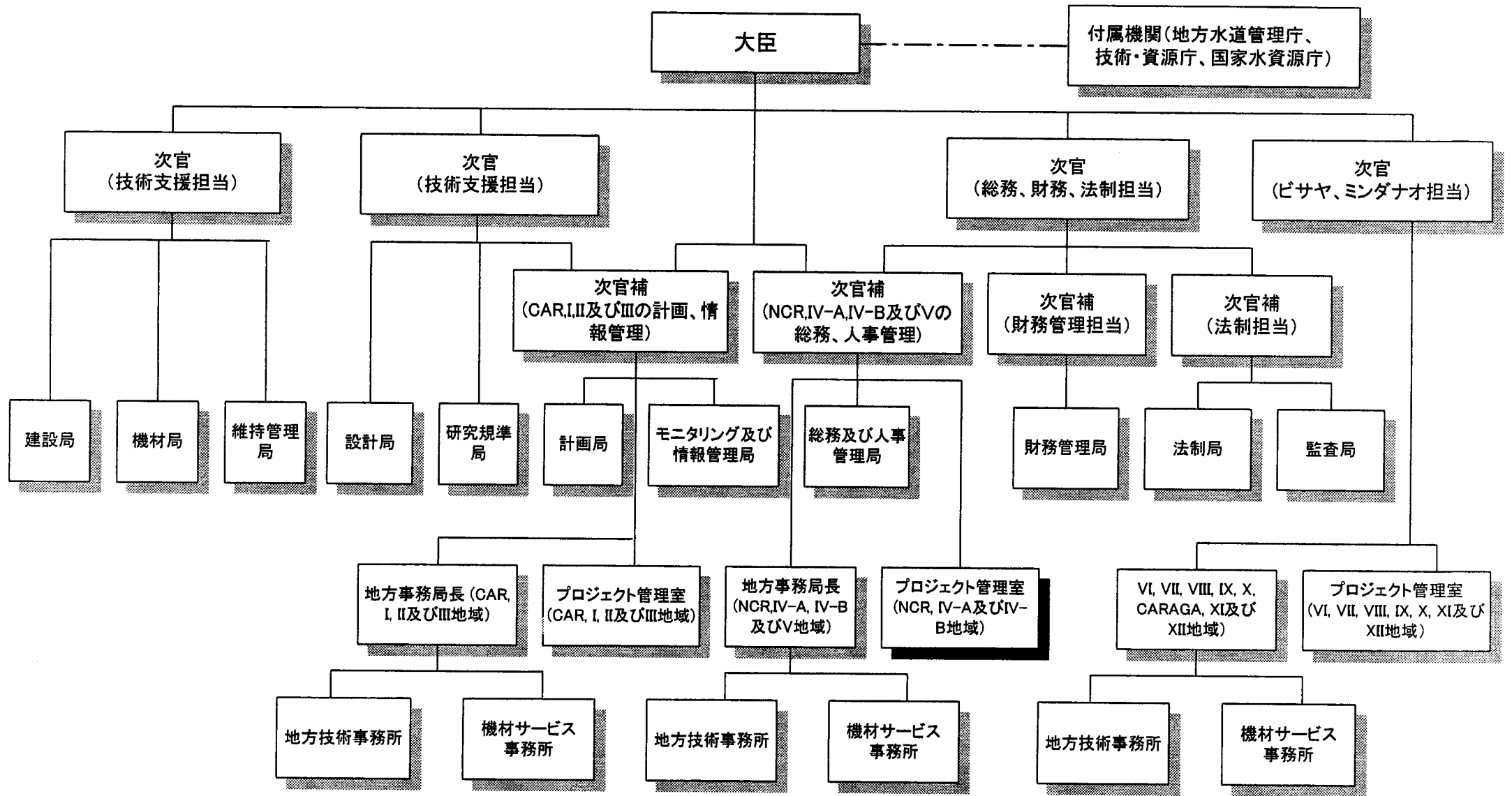


Retaining Wall Standard Section



Drainage Wall Standard Section

图 3-27 護岸·排水構造物標準断面图



CAR: Cordillera Autonomous Region(山岳自治区)

図 3-28 公共事業道路省組織図

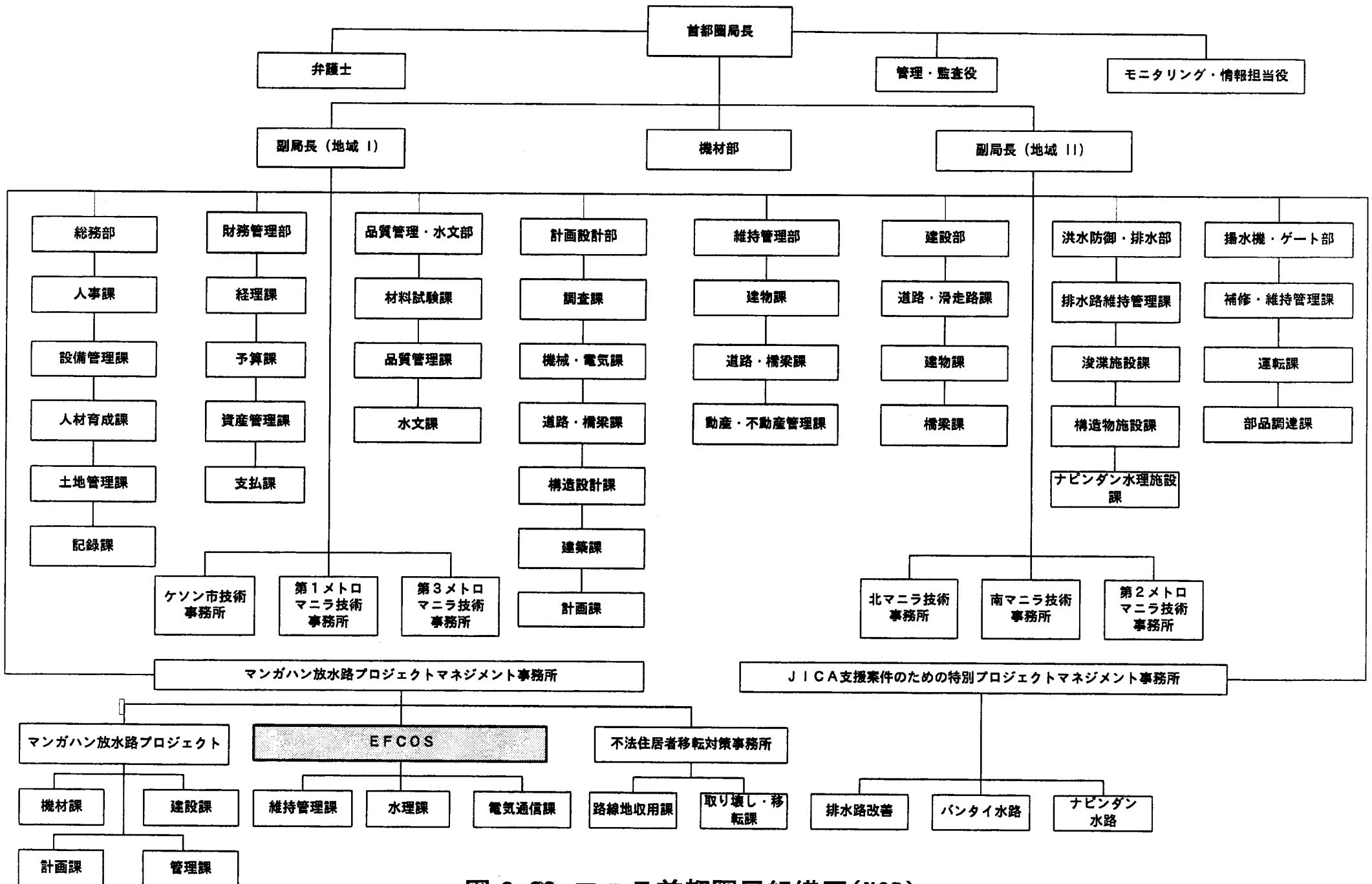


図 3-29 マニラ首都圏局組織図(NCR)

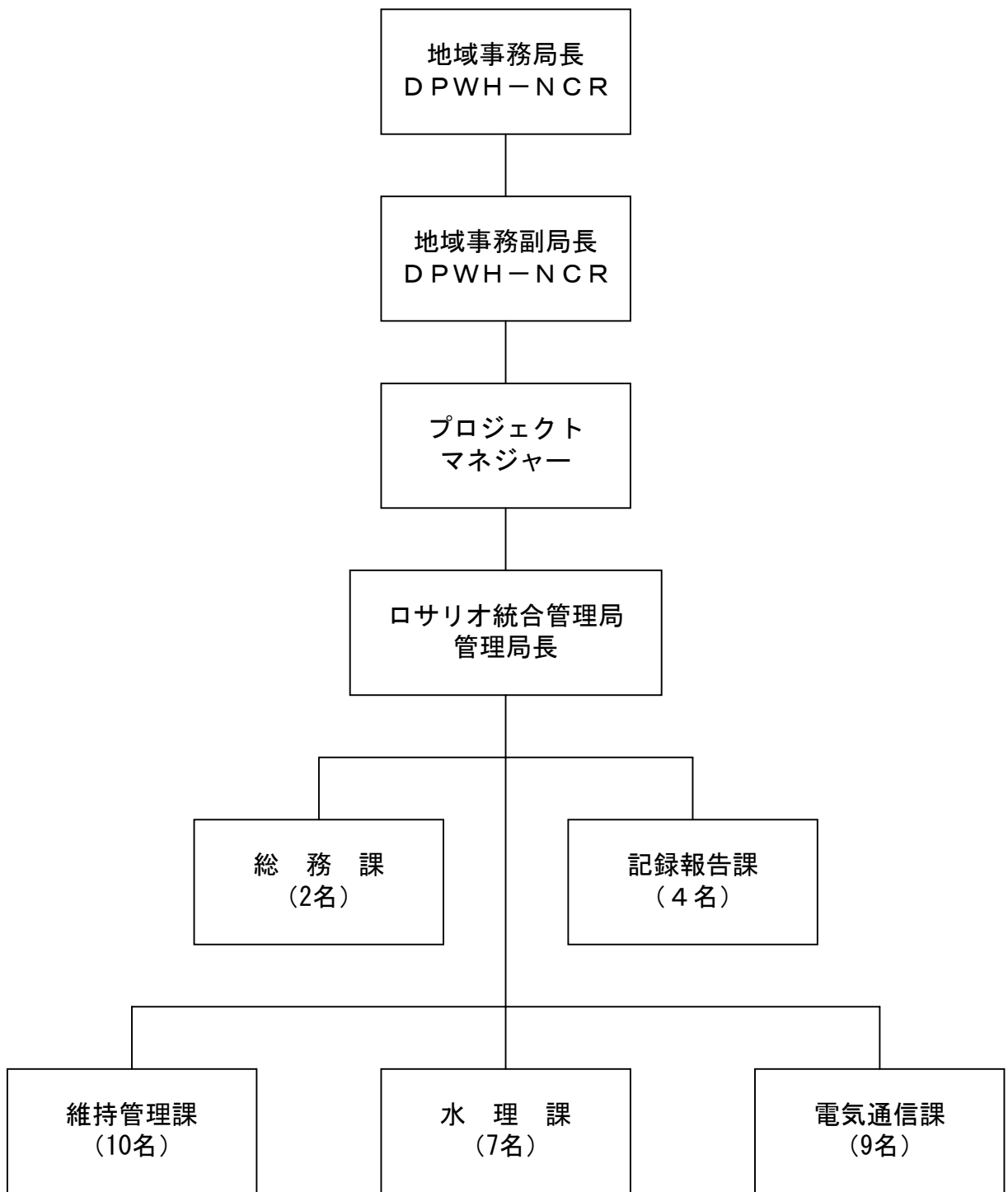


図 3-30 EFCOS 組織図

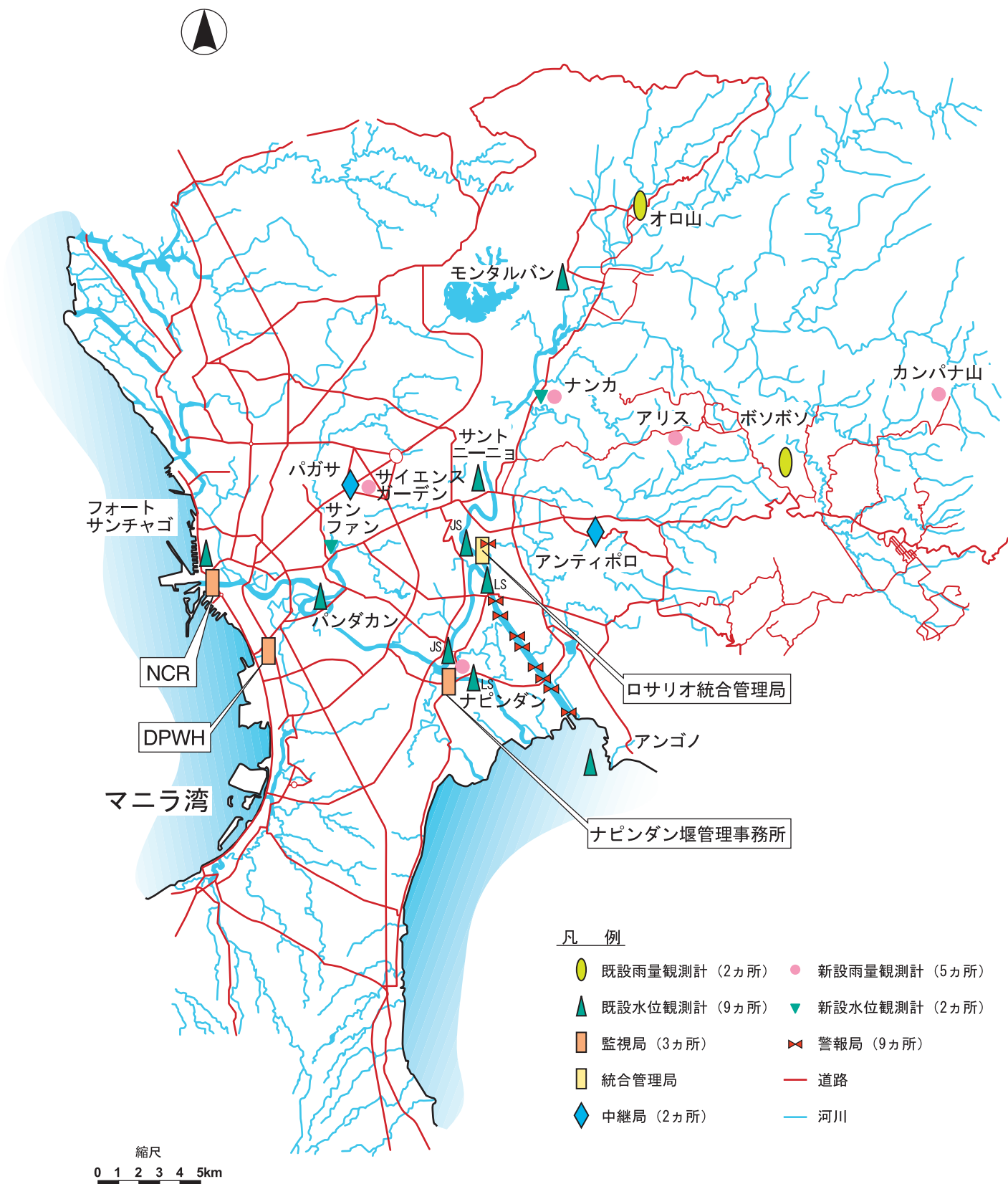


図4-1 機材搬入道路網図