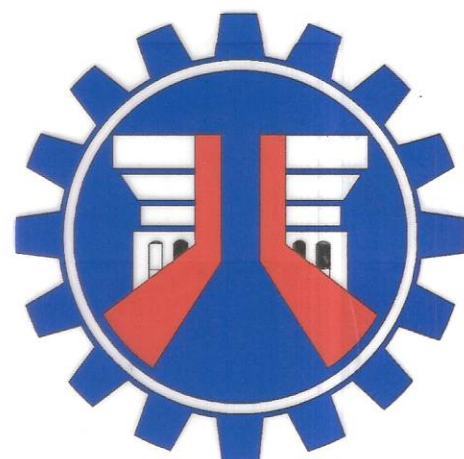




REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGION IV-B, MIMAROPA
OFFICE OF THE DISTRICT ENGINEER
BOAC, MARINDUQUE

C.Y. 2023 PROJECT

DETAILED ENGINEERING DESIGN PLAN FOR
CONSTRUCTION(COMPLETION) OF WATER SUPPLY SYSTEM,
BARANGAY BACONGBACONG, GASAN, MARINDUQUE

GASAN, MARINDUQUE

SUBMITTED:


FERNAN S. DIAZ
CHIEF, PLANNING AND DESIGN SECTION

DATE:

RECOMMENDED:


VACANT

DATE:

APPROVED:


EVELYN R. PUERTOLLANO
DISTRICT ENGINEER

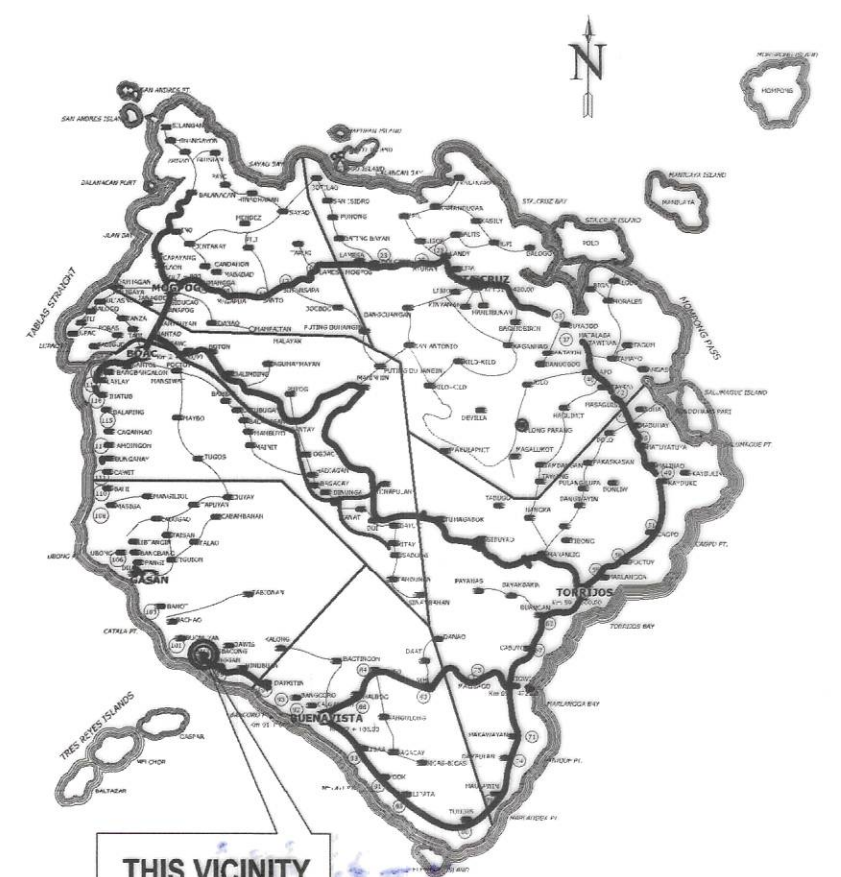
DATE:

INDEX OF SHEET		
CATEGORY	DESCRIPTION	SHEET NO.
GENERAL	FRONT PAGE	1
	INDEX OF SHEET & SUMMARY OF QUANTITIES	2
	KEY MAP & LOCATION MAP	
	LOCATION PLAN	3 - 6
	TYPICAL DRAWINGS	7 - 12

SUMMARY OF QUANTITIES				
ITEM NO.	DESCRIPTION	ORIGINAL QUANTITY	UNIT	REMARKS
PART I:	FACILITIES FOR THE ENGINEER			
A.1.1(8)	PROVISION OF FIELD OFFICE FOR THE ENGINEER (RENTAL BASIS)	2.67	mos.	
PART II:	OTHER GENERAL REQUIREMENTS			
A.1.2(4)	PROVISION OF FIELD 4x2 PICK UP TYPE SERVICE VEHICLE FOR THE ENGINEER ON BARE RENTAL BASIS	2.67	mos.	
B.5	PROJECT BILLBOARD / SIGNBOARD	1.00	each	DPWH Standard Billboard
B.7(2)	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	1.00	LS	Includes Personal Protective Equipment (PPE), Safety Signages and Health Program
B.4(10)	MISCELLANEOUS SURVEY AND STAKING	1.00	LS	Staked Plan To be submitted by the contractor
B.9	MOBILIZATION / DEMOBILIZATION	1.00	LS	
PART A:	EARTHWORKS			
803(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	16.01	m³	For Foundation and Pipelines
804(4)	GRAVEL FILL	2.12	m³	For Concrete Foundation
PART B:	PLAIN AND REINFORCED CONCRETE WORKS			
900(1)c2	STRUCTURAL CONCRETE FOR FOOTING AND SLAB ON FILL (CLASS A, 28 DAYS)	16.10	m³	For Conc. Water Tank & Pump Motor House
902(1)a	REINFORCING STEEL (DEFORMED), GRADE 40	1,510.60	kgs	For Conc. Water Tank & Pump Motor House
903(2)	FORMWORKS AND FALSEWORKS	97.16	m²	For Conc. Water Tank & Pump Motor House
PART C:	FINISHING WORKS			
1027(1)	CEMENT PLASTER FINISH	72.80	m²	For Conc. Water Tank & Pump Motor House
1046(2)a1	100MM CHB NON-LOAD BEARING (INCLUDING REINFORCING STEEL)	15.20	m²	For Conc. Water Tank & Pump Motor House
1032(1)a	PAINTING WORKS (MASONRY CONCRETE)	72.80	m²	For Conc. Water Tank & Pump Motor House
1032(1)c	PAINTING WORKS (STEEL)	3.00	m²	For Conc. Water Tank & Pump Motor House
1018(1)	GLAZED TILES AND TRIMS	45.00	m²	For Conc. Water Tank & Pump Motor House
1047(1)	STRUCTURAL STEEL	1.00	LS	For Conc. Water Tank & Pump Motor House
PART D:	PLUMBING WORKS			
1201(1)	WATER PUMPING SYSTEM	1.00	LS	For Distribution Line & Conc. Water Tank
1001(10)	PIPES WITH FITTINGS CONNECTION	1.00	LS	For Distribution Line & Conc. Water Tank
1602(5)	POLYETHYLENE PLASTIC PIPE (HDPE)	1.00	LS	For Distribution Line & Conc. Water Tank
1603(1)	VALVE	1.00	LS	For Distribution Line & Conc. Water Tank
PART E:	ELECTRICAL WORKS			
1100(10)	CONDUIT, BOXES, AND FITTINGS (CONDUIT WORKS/CONDUIT ROUGH-IN)	1.00	LS	For Pump Motor House
1101(33)	WIRES AND WIRING DEVICES	1.00	LS	For Pump Motor House
1102(1)	PANEL BOARD WITH MAIN & BRANCHES BREAKERS	1.00	LS	For Pump Motor House
1103(1)	LIGHTING FIXTURES AND LAMPS	1.00	LS	For Pump Motor House



KEY MAP

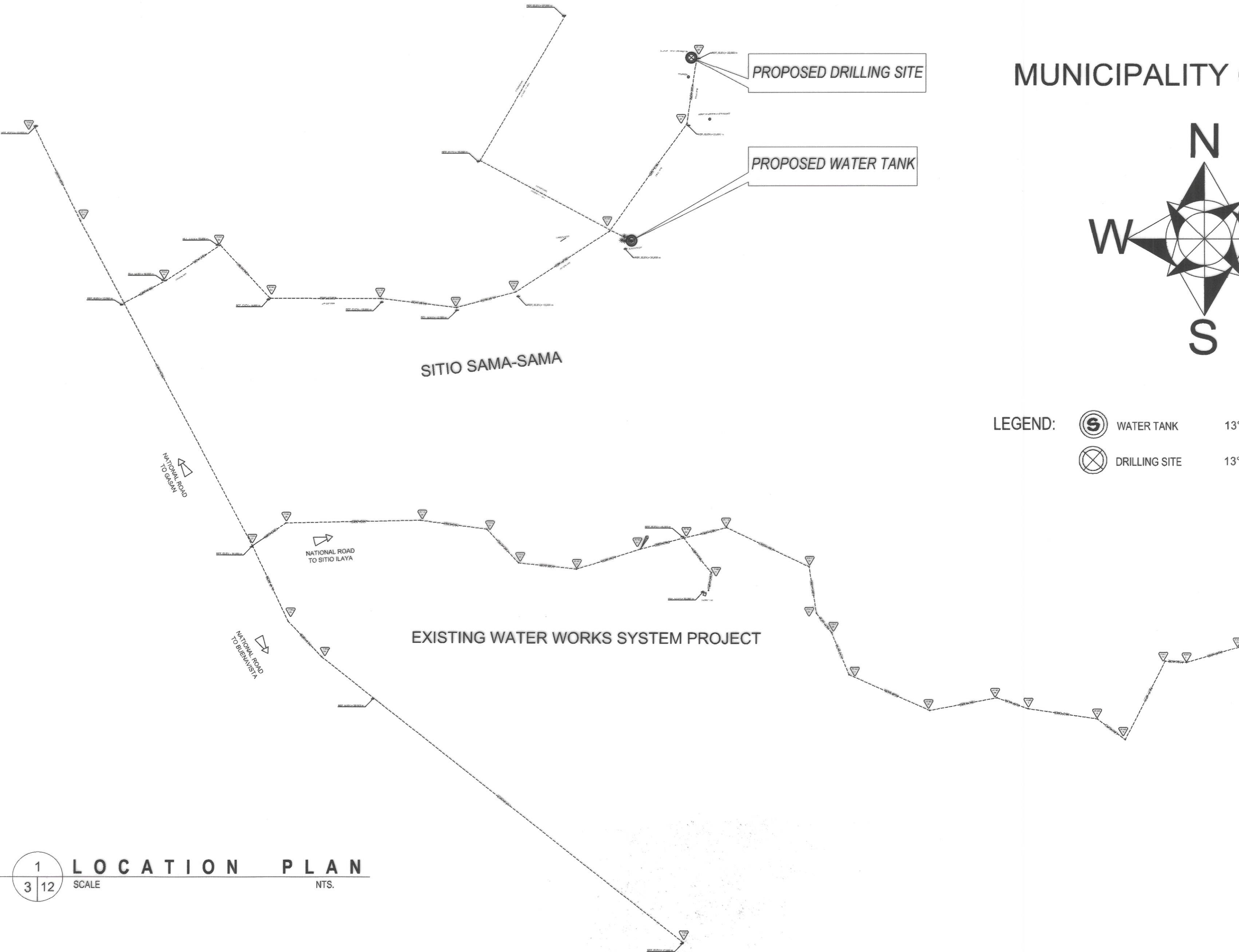
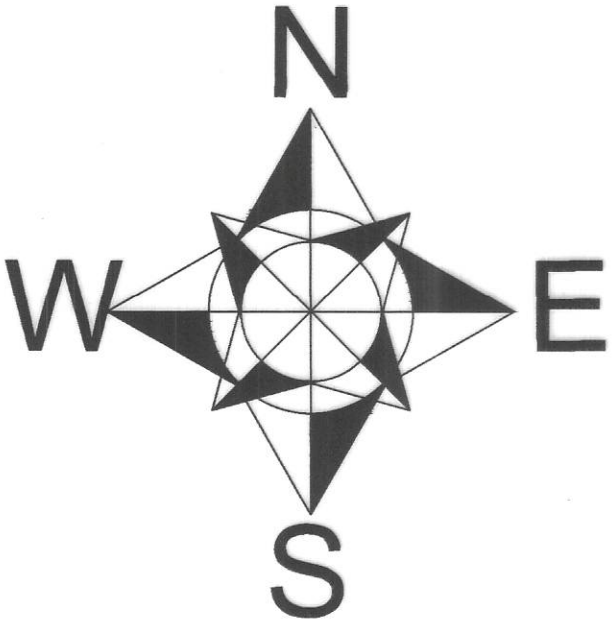


THIS VICINITY

LOCATION MAP

	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGION IV - B, MIMAROPA OFFICE OF THE DISTRICT ENGINEER BOAC, MARINDUQUE	PROJECT NAME AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHEET NO.
		CONSTRUCTION(COMPLETION) OF WATER SUPPLY SYSTEM, BARANGAY BACONGBACONG, GASAN, MARINDUQUE GASAN, MARINDUQUE	INDEX OF SHEETS SUMMARY OF QUANTITIES KEY MAP LOCATION MAP	PREPARED : ARTHUR M. SARGOLEZA ENGINEERING ASSISTANT MICHAEL P. MALITO ENGINEER II	JERSON O. MONTERA ENGINEER II DATE :	FERNAN S. DIAZ CHIEF, PLANNING AND DESIGN SECTION DATE :	VACANT DATE :	EVELYN R. PUERTOLLANO DISTRICT ENGINEER DATE :	DPWH REGION IV-B CY - 2023 MQ	2 12

MUNICIPALITY OF GASAN

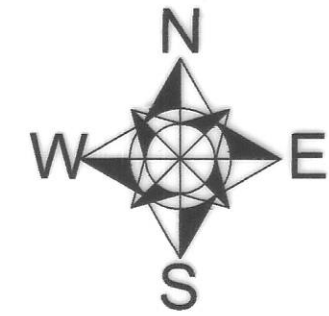


LEGEND:

	WATER TANK	13° 17' 23.90" N 121° 52' 10.32" E
	DRILLING SITE	13° 17' 28.71" N 121° 52' 11.55" E

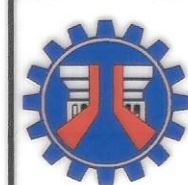
1 LOCATION PLAN
3 12 SCALE NTS.

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGION IV - B, MIMAROPA OFFICE OF THE DISTRICT ENGINEER BOAC, MARINDUQUE	PROJECT NAME AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHEET NO.
	CONSTRUCTION(COMPLETION) OF WATER SUPPLY SYSTEM, BARANGAY BACONGBACONG, GASAN, MARINDUQUE	LOCATION PLAN	ARTHUR M. JAYDELEZA ENGINEERING ASSISTANT	JERSON O. MONTERA ENGINEER II	FERNAN S. DIAZ CHIEF, PLANNING AND DESIGN SECTION	VACANT	EVELYN R. PUERTOLLANO DISTRICT ENGINEER	3	12



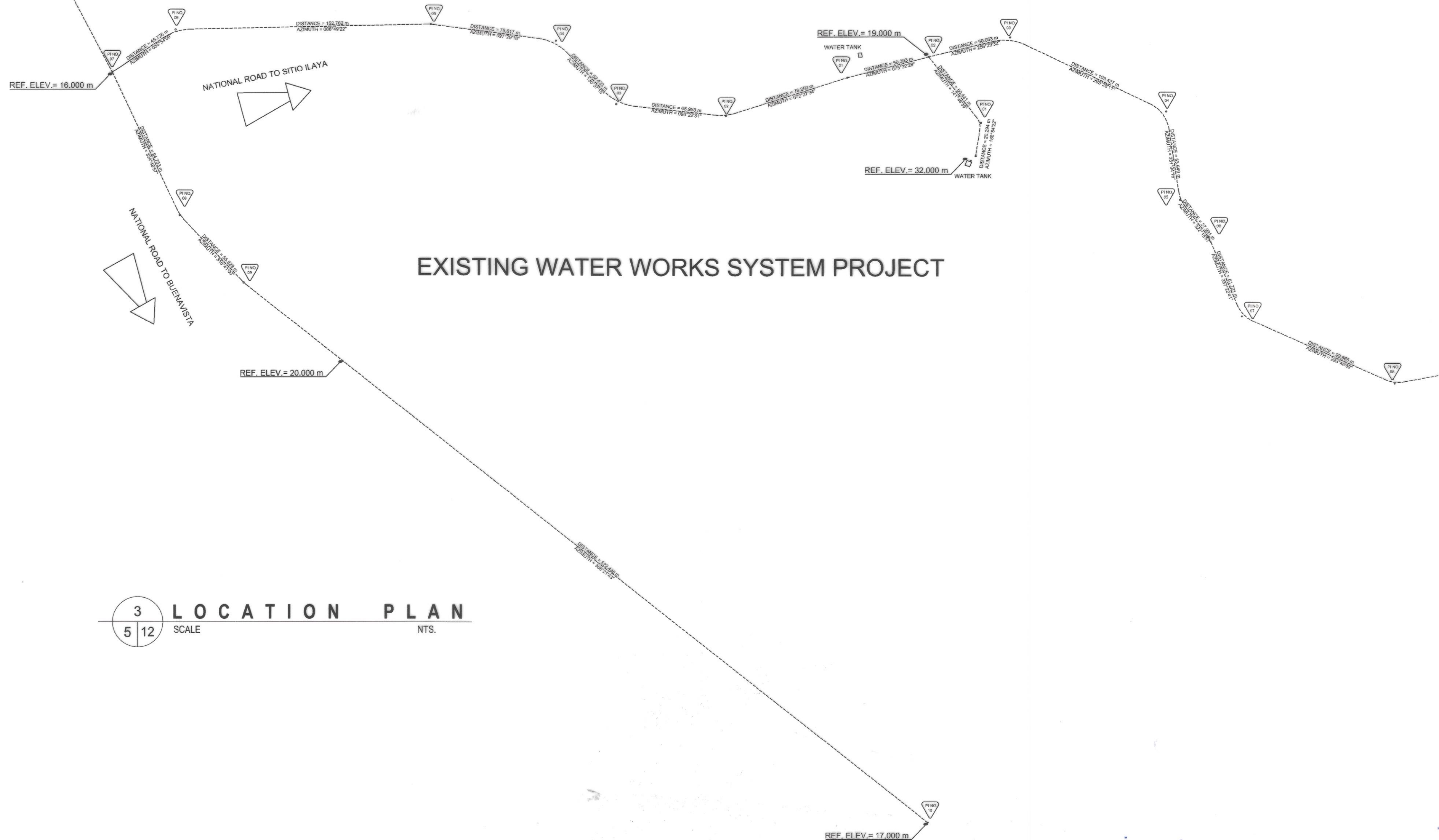
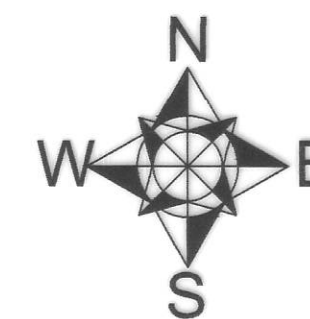
2 LOCATION PLAN
4 12 SCALE NTS.

EXISTING WATER WORKS SYSTEM PROJECT



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGION IV - B, MIMAROPA
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BOAC, MARINDUQUE

PROJECT NAME AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHEET NO.
CONSTRUCTION (COMPLETION) OF WATER SUPPLY SYSTEM, BARANGAY BACONGBACONG, GASAN, MARINDUQUE	LOCATION PLAN	ARTHUR M. ZARDELEZA ENGINEERING ASSISTANT	JERSON O. MONTERA ENGINEER II	FERNAN S. DIAZ CHIEF, PLANNING AND DESIGN SECTION	VACANT	EVELYN R. PUERTOLLANO DISTRICT ENGINEER	4	12
GASAN, MARINDUQUE		MICHAEL B. MALTIBAO ENGINEER II	DATE :	DATE :	DATE :	DATE :		



3 LOCATION PLAN
5 12 SCALE NTS.



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGION IV - B, MIMAROPA
OFFICE OF THE DISTRICT ENGINEER
BOAC, MARINDUQUE

PROJECT NAME AND LOCATION :
CONSTRUCTION (COMPLETION) OF WATER SUPPLY SYSTEM,
BARANGAY BACONGBACONG, GASAN, MARINDUQUE
GASAN, MARINDUQUE

SHEET CONTENTS :
LOCATION PLAN

DRAFTED :
ARTHUR M. CARBELEZA
ENGINEERING ASSISTANT
PREPARED :
MICHAEL P. MALITAO
ENGINEER II

REVIEWED :
JERSON O. MONTERA
ENGINEER II
DATE :

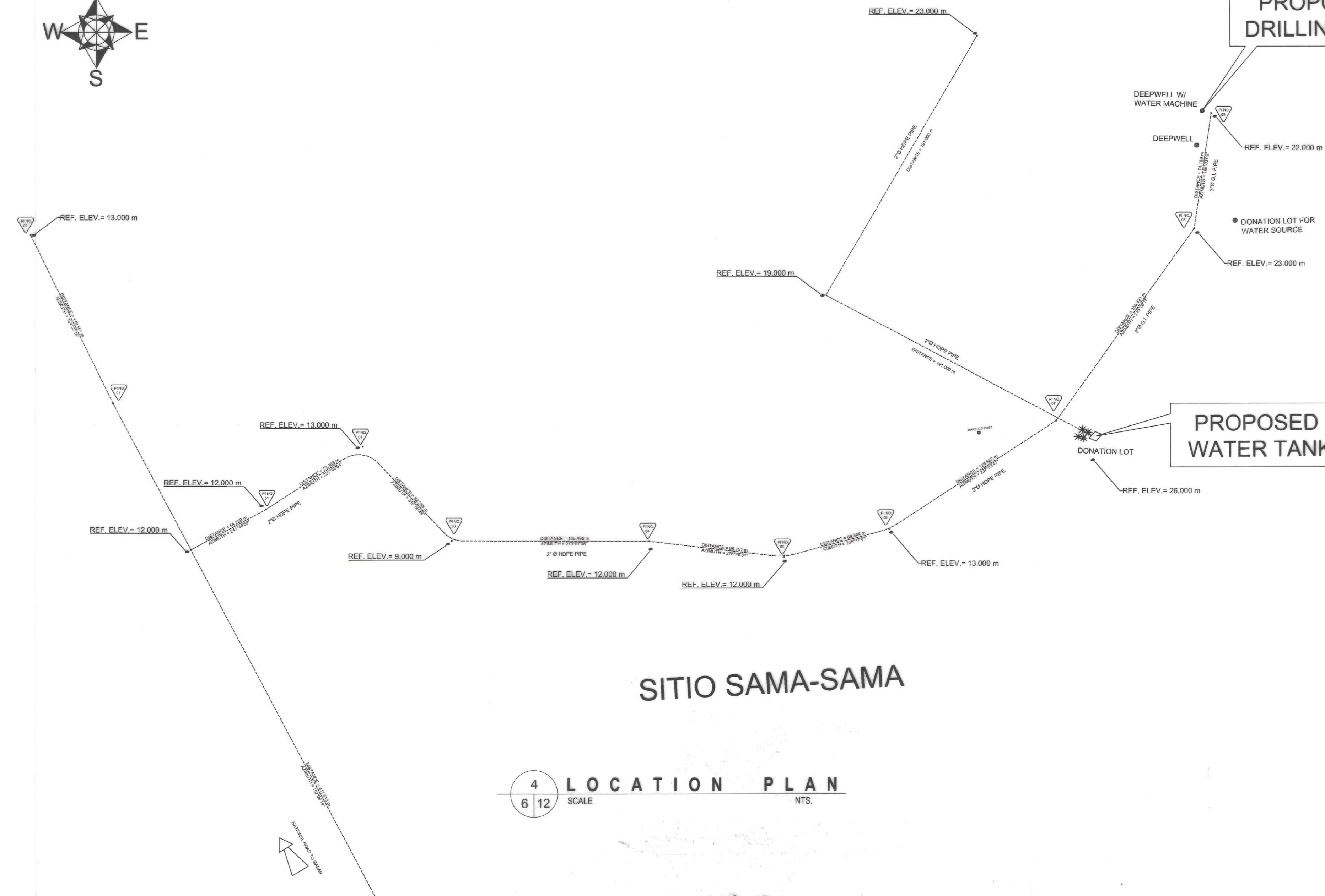
SUBMITTED :
FERNAN S. DIAZ
CHIEF, PLANNING AND DESIGN SECTION
DATE :

RECOMMENDED :
VACANT
DATE :

APPROVED :
EVELYN R. PUERTOLLANO
DISTRICT ENGINEER
DATE :

SET NO.
OPWH
REGION IV-B
CY-2023
MQ

SHEET NO.
5
12



SITIO SAMA-SAMA

4 LOCATION PLAN
6 12 SCALE NTS.



REPUBLIC OF THE PHILIPPINES
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REGION IV - B, MIMAROPA
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BOAC, MARINDUQUE

PROJECT NAME AND LOCATION :
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BARANGAY BACONGBACONG, GASAN, MARINDUQUE
GASAN, MARINDUQUE

SHEET CONTENTS :
LOCATION PLAN

DRAFTED :
ARTHUR M. JARDELEZA
ENGINEERING ASSISTANT
PREPARED :
MICHAEL P. MALHAG
ENGINEER II

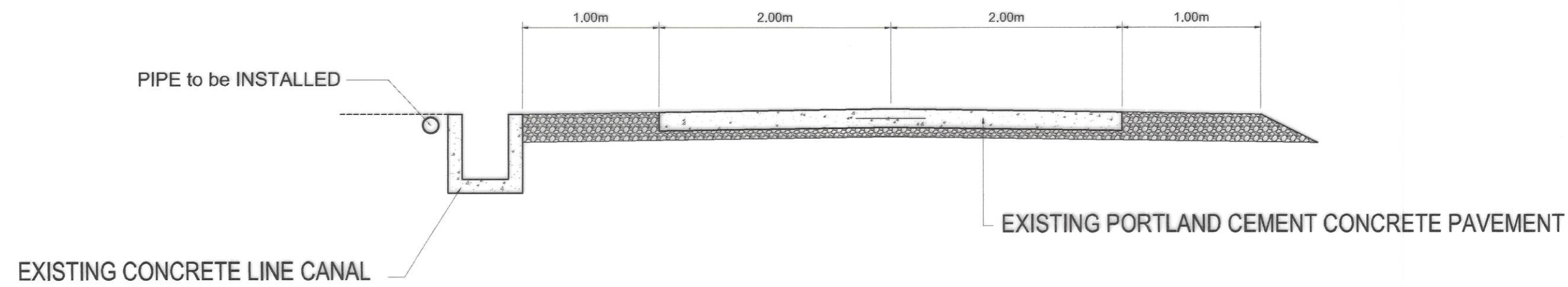
REVIEWED :
JERSON O. MONTERA
ENGINEER II
DATE :

SUBMITTED :
FERNAN S. DIAZ
CHIEF, PLANNING AND DESIGN SECTION
DATE :

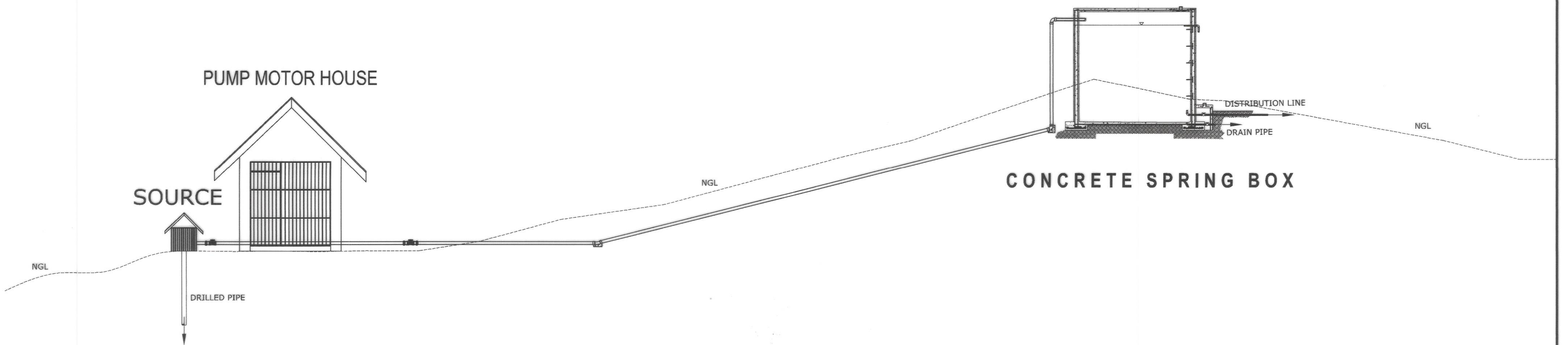
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VACANT
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EVELYN R. PUERTOLLANO
DISTRICT ENGINEER
DATE :

SET NO. SHEET NO.
6 12

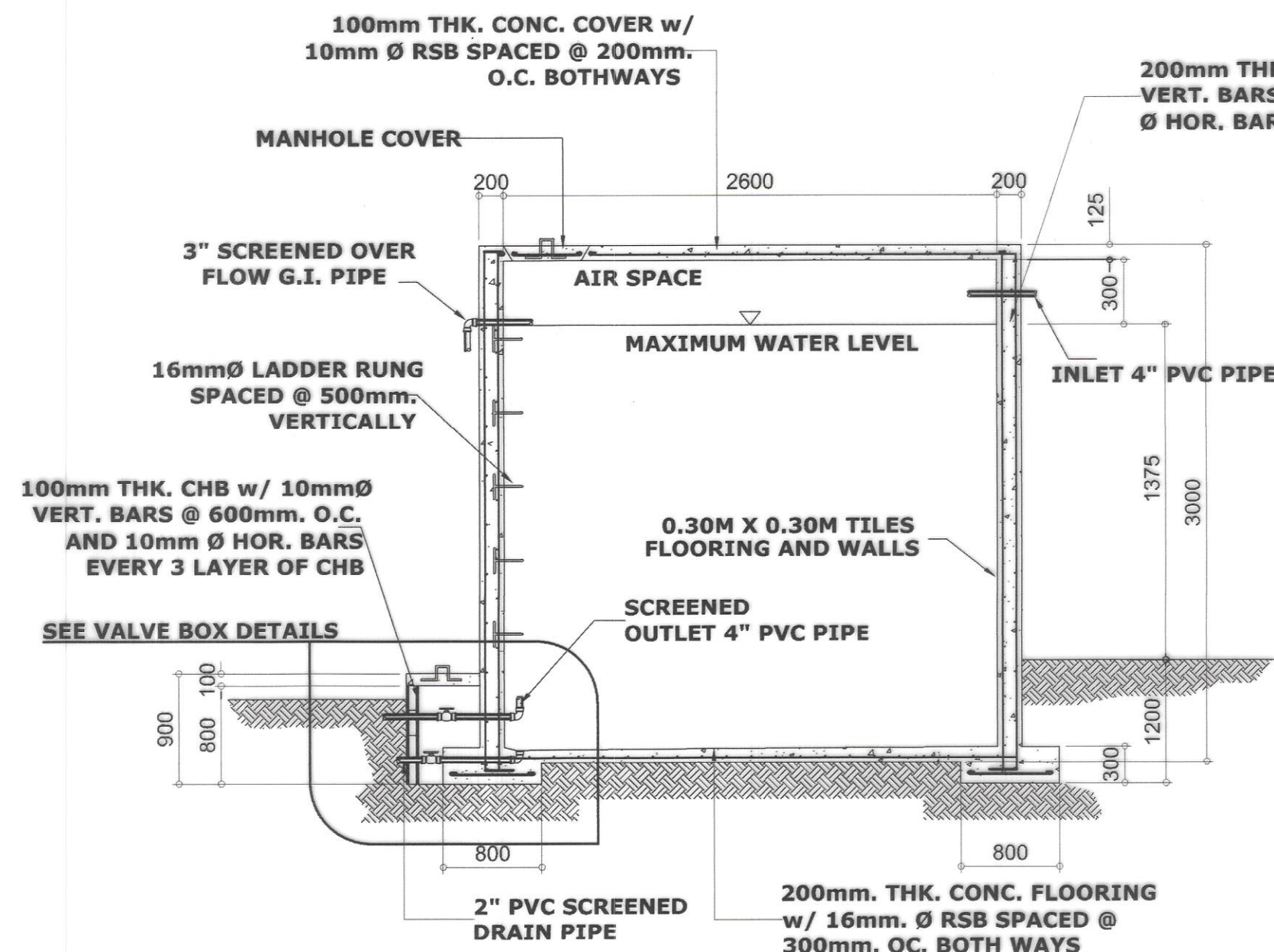


1
7 12
SECTION THRU FARM TO MARKET ROAD
SCALE 1:50m



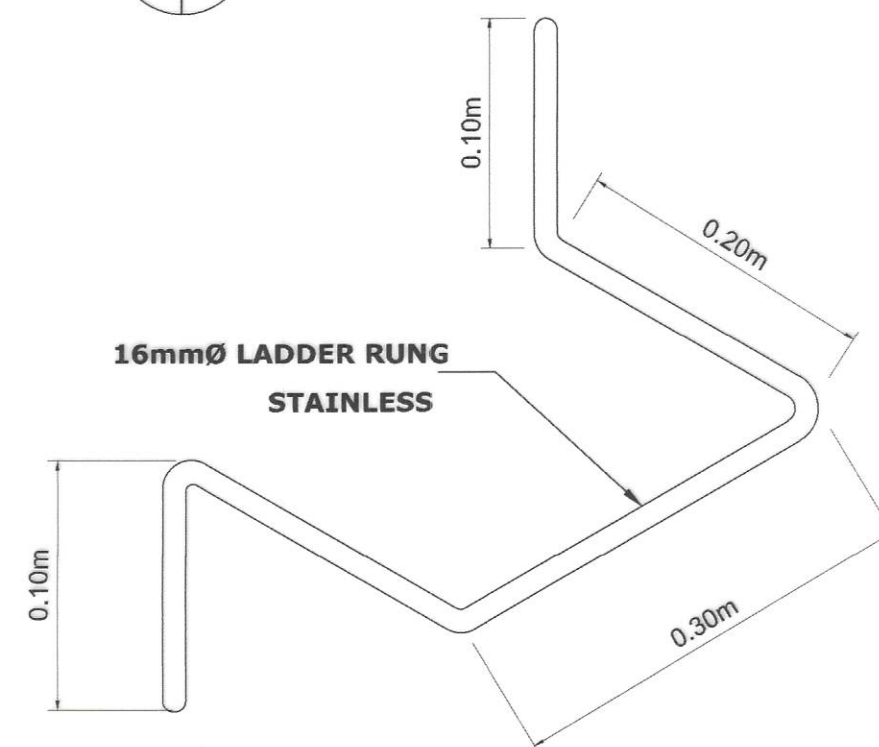
2
7 12
P L A N
SCALE NTS

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGION IV - B, MIMAROPA OFFICE OF THE DISTRICT ENGINEER BOAC, MARINDUQUE	PROJECT NAME AND LOCATION : CONSTRUCTION (COMPLETION) OF WATER SUPPLY SYSTEM, BARANGAY BACONGBACONG, GASAN, MARINDUQUE	SHEET CONTENTS : TYPICAL DRAWINGS	DRAFTED : ARTURO M. DELEZA ENGINEERING ASSISTANT PREPARED : MICHAEL P. MALITAO ENGINEER II	REVIEWED : JERSON O. MONTERA ENGINEER II DATE :	SUBMITTED : FERNAN S. DIAZ CHIEF, PLANNING AND DESIGN SECTION DATE :	RECOMMENDED : VACANT DATE :	APPROVED : EVELYN R. PUERTOLLANO DISTRICT ENGINEER DATE :	SET NO. DPWH REGION IV-B 01-2023 MQ	SHEET NO. 7 12
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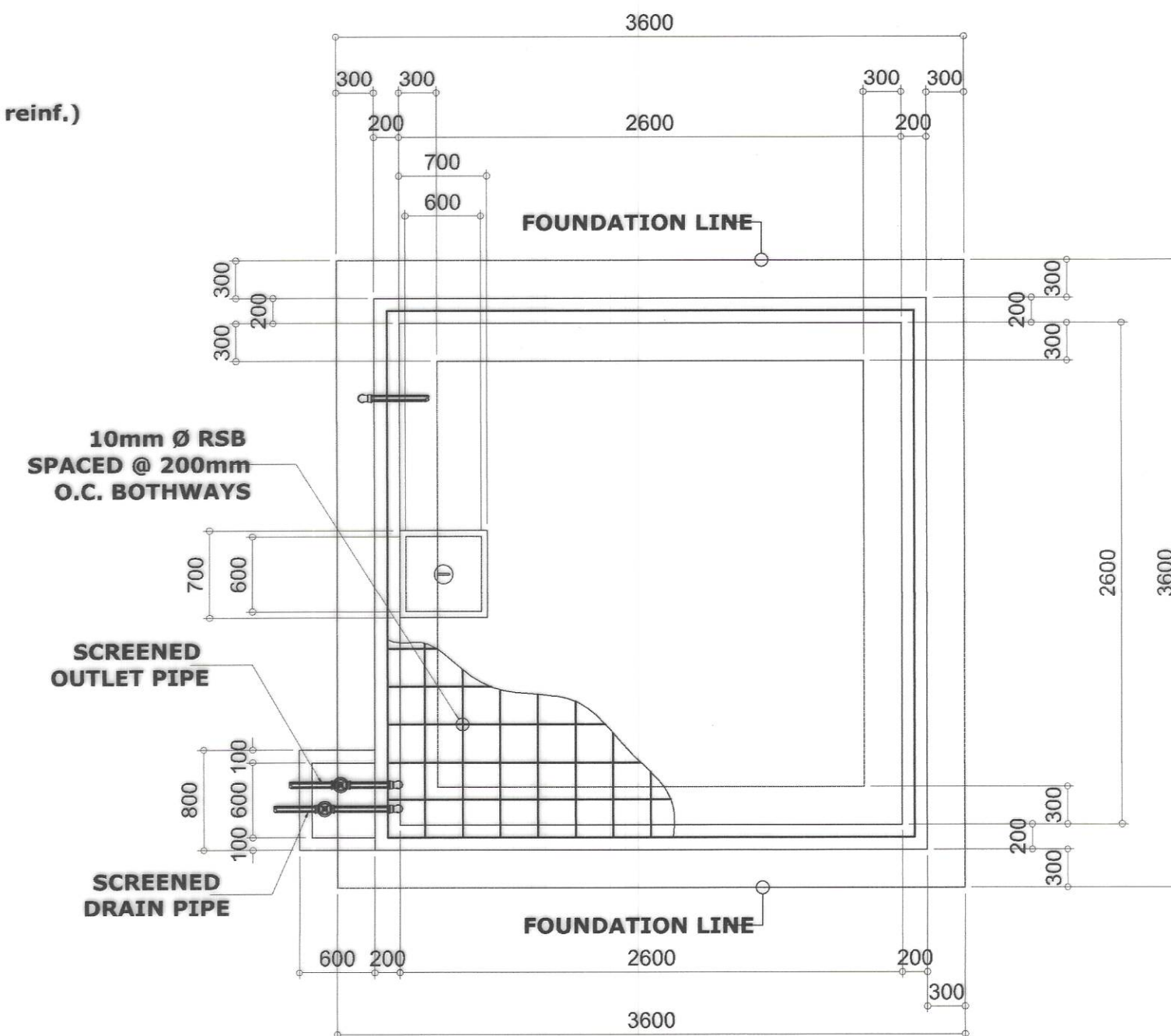


SECTION

1
8 12 SCALE NTS
CONCRETE SPRING BOX

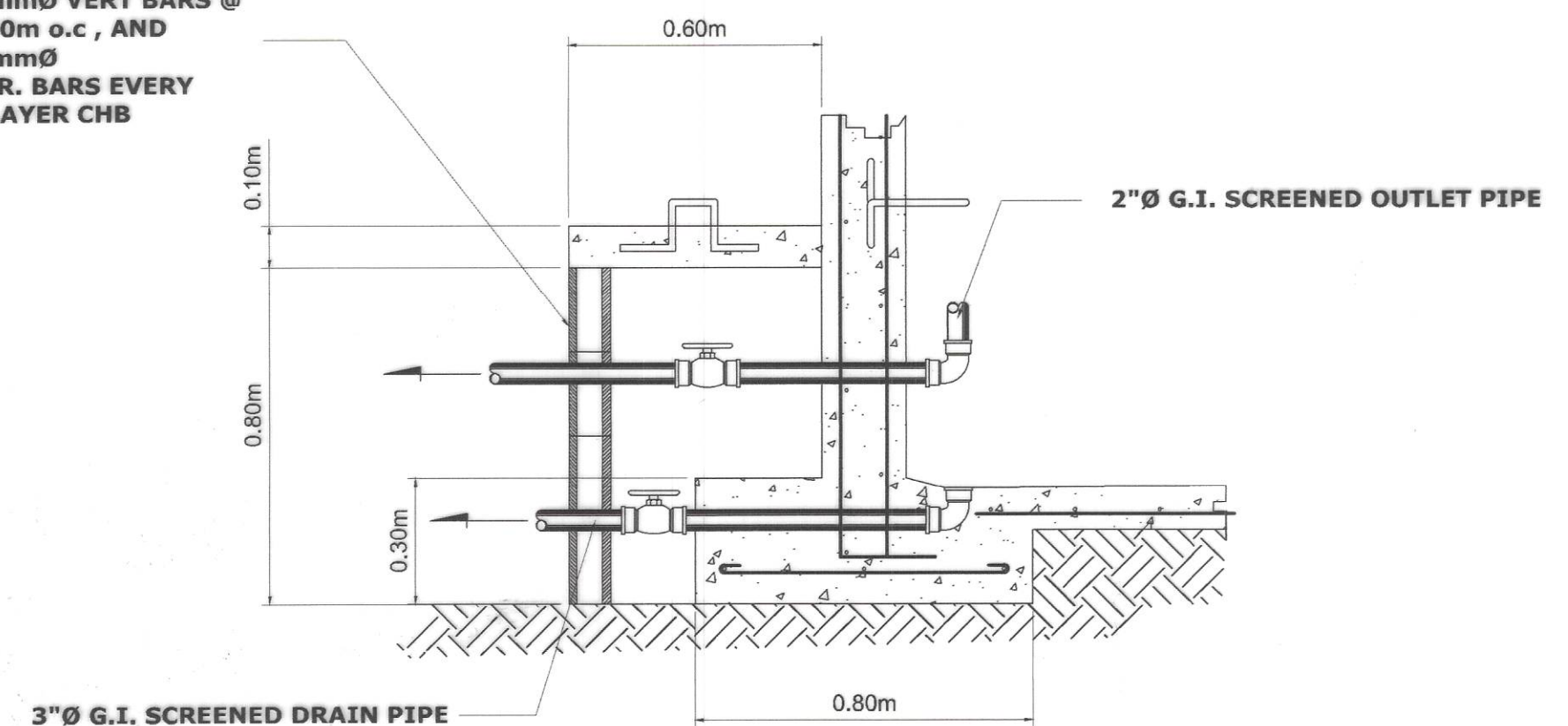


2
8 12 SCALE NTS
DETAIL OF LADDER RUNG



PLAN

100mm THK CHB W/
10mmØ VERT BARS @
0.60m o.c , AND
10mmØ
HOR. BARS EVERY
3-LAYER CHB



3
8 12 SCALE NTS
VALVE BOX



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CONSTRUCTION (COMPLETION) OF WATER SUPPLY SYSTEM,
BARANGAY BACONGBACONG, GASAN, MARINDUQUE
GASAN, MARINDUQUE

SHEET CONTENTS :
CONCRETE SPRING BOX
TYPICAL DRAWINGS

DRAFTED :
ARTHUR M. MARCELEZA
ENGINEERING ASSISTANT
PREPARED :
MICHAEL P. MALITAO
ENGINEER II

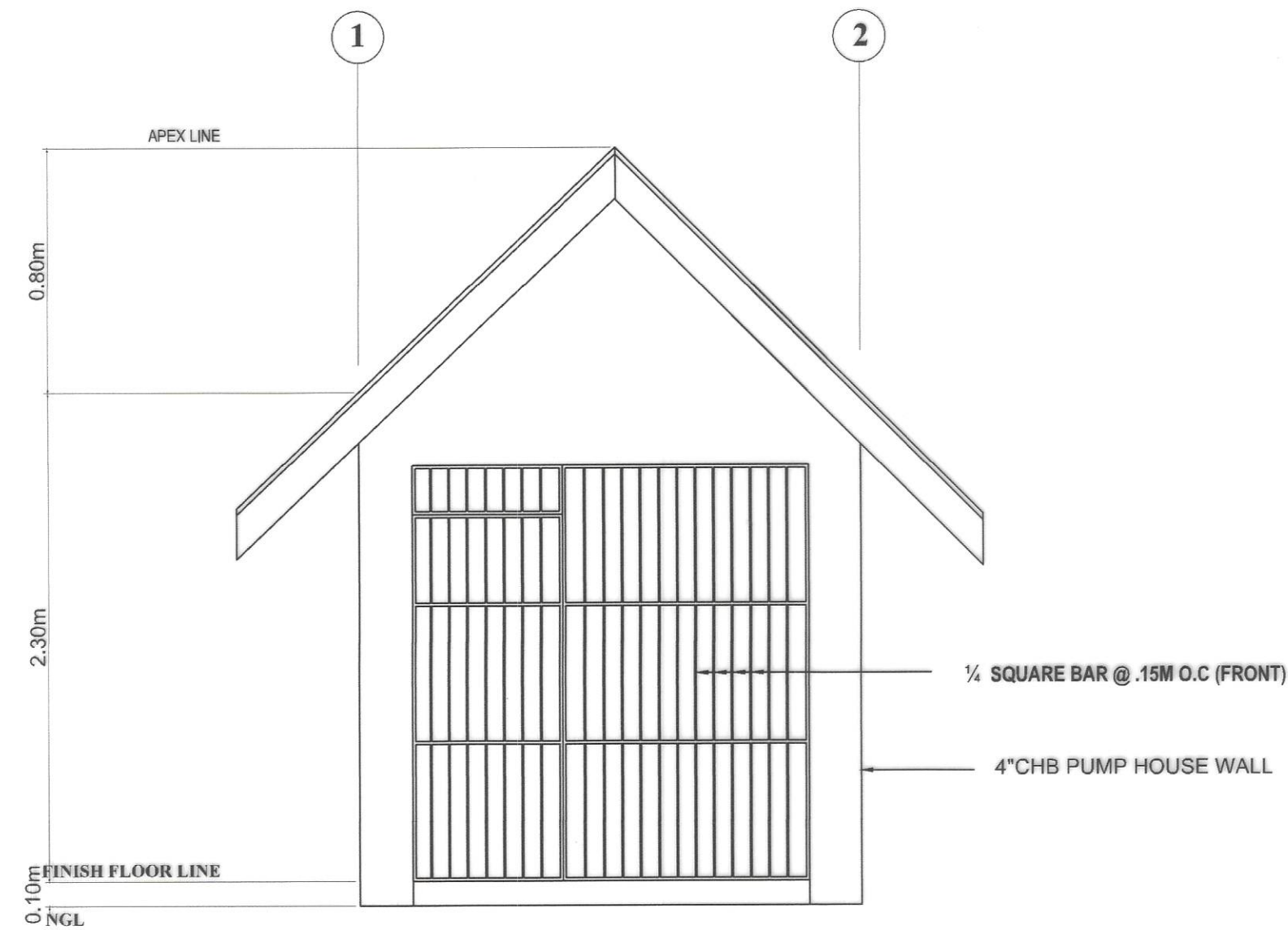
REVIEWED :
JERSON O. MONTERA
ENGINEER II
DATE :

SUBMITTED :
FERNAN S. DIAZ
CHIEF, PLANNING AND DESIGN SECTION
DATE :

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APPROVED :
EVELYN R. PUERTOLLANO
DISTRICT ENGINEER
DATE :

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REGION IV-B
CY-2023
MQ
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12

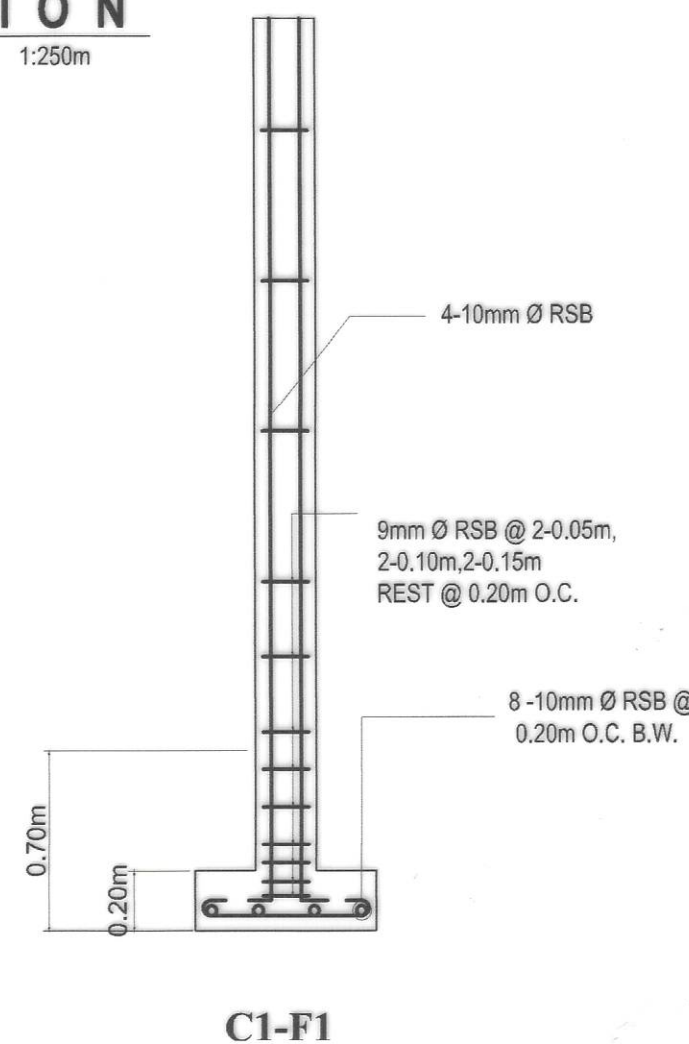
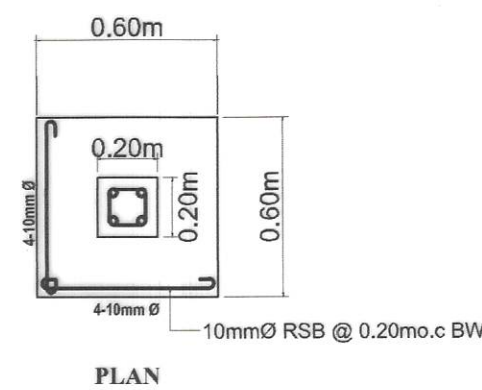


1
9 12

FRONT ELEVATION

SCALE

1:250m

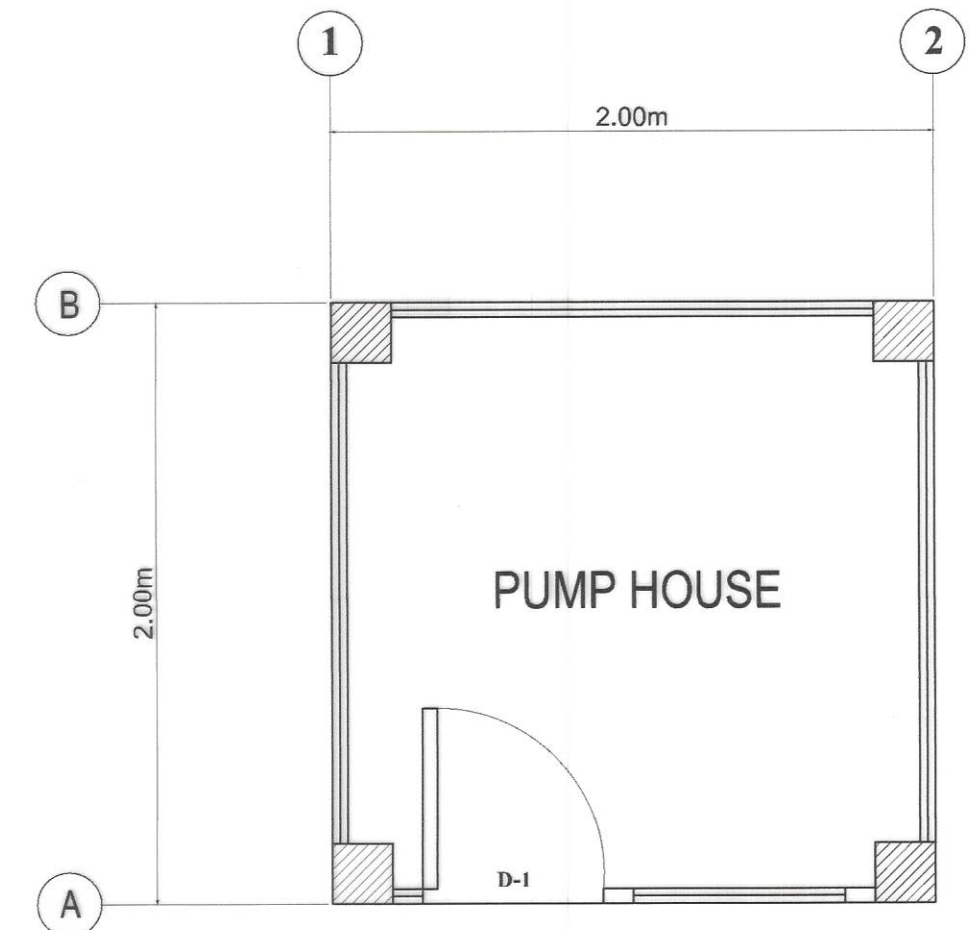


3
9 12

DETAIL OF C1-F1

SCALE

1:20m

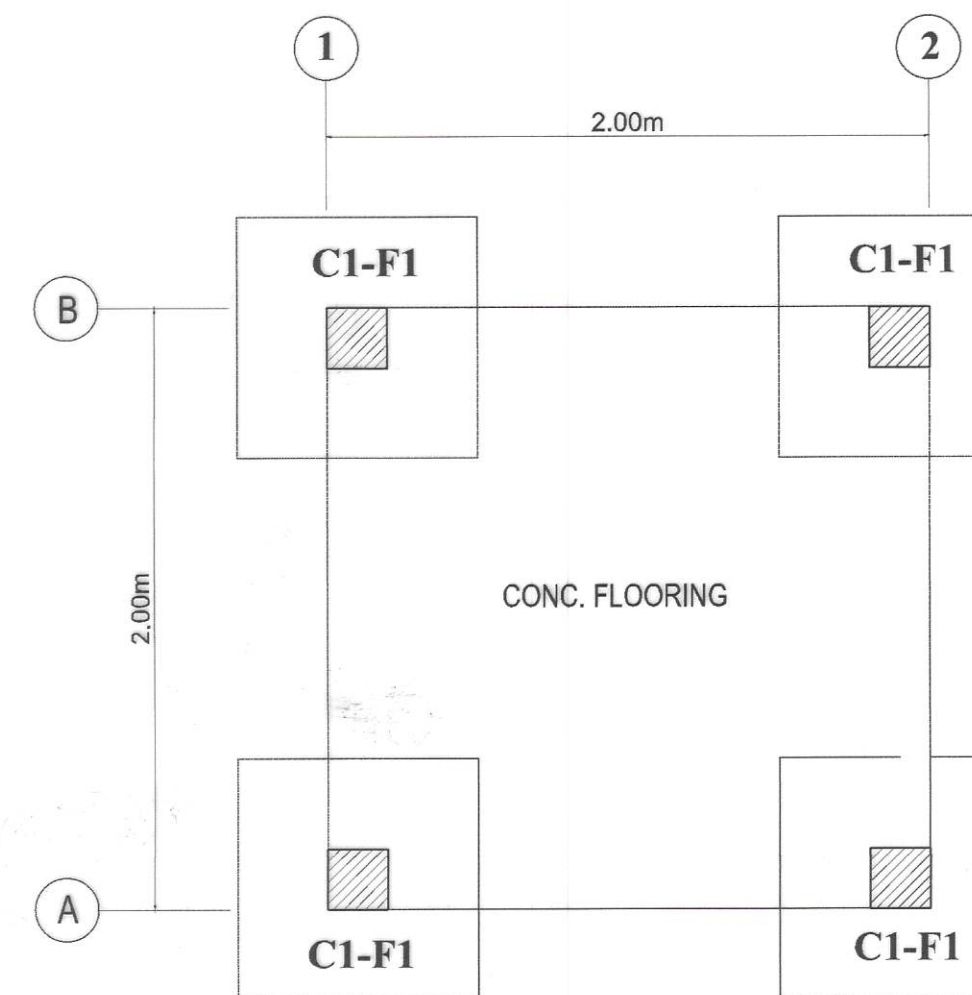


2
9 12

FLOOR PLAN

SCALE

1:250m



4
9 12

FOUNDATION PLAN

SCALE

1:250m



REPUBLIC OF THE PHILIPPINES
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CONSTRUCTION (COMPLETION) OF WATER SUPPLY SYSTEM,
BARANGAY BACONGBACONG, GASAN, MARINDUQUE
GASAN, MARINDUQUE

SHEET CONTENTS :
PUMP HOUSE
TYPICAL DRAWINGS

DRAFTED :
ARTHUR M. BARDELEZA
ENGINEERING ASSISTANT
PREPARED :
MICHAEL P. MALITAO
ENGINEER II

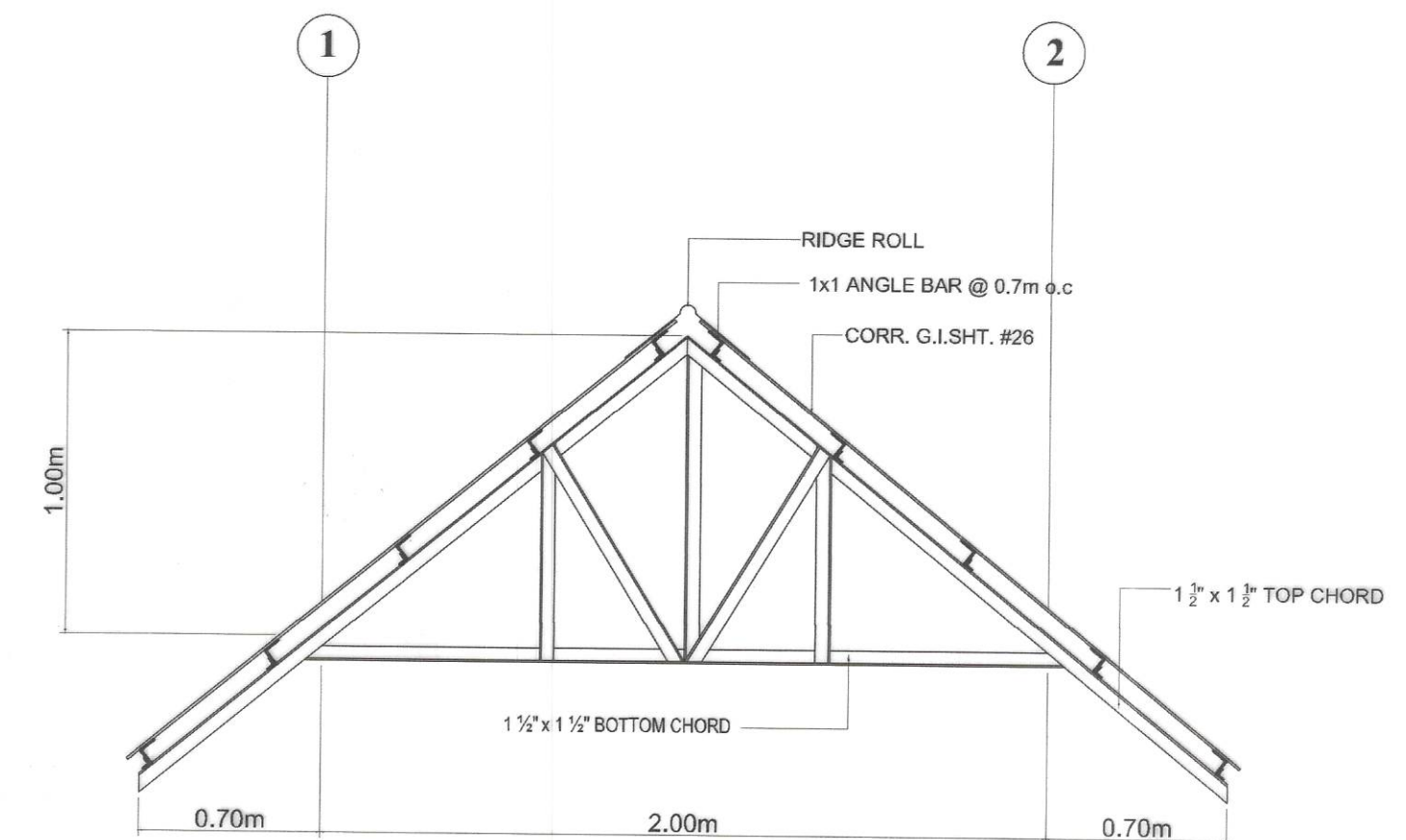
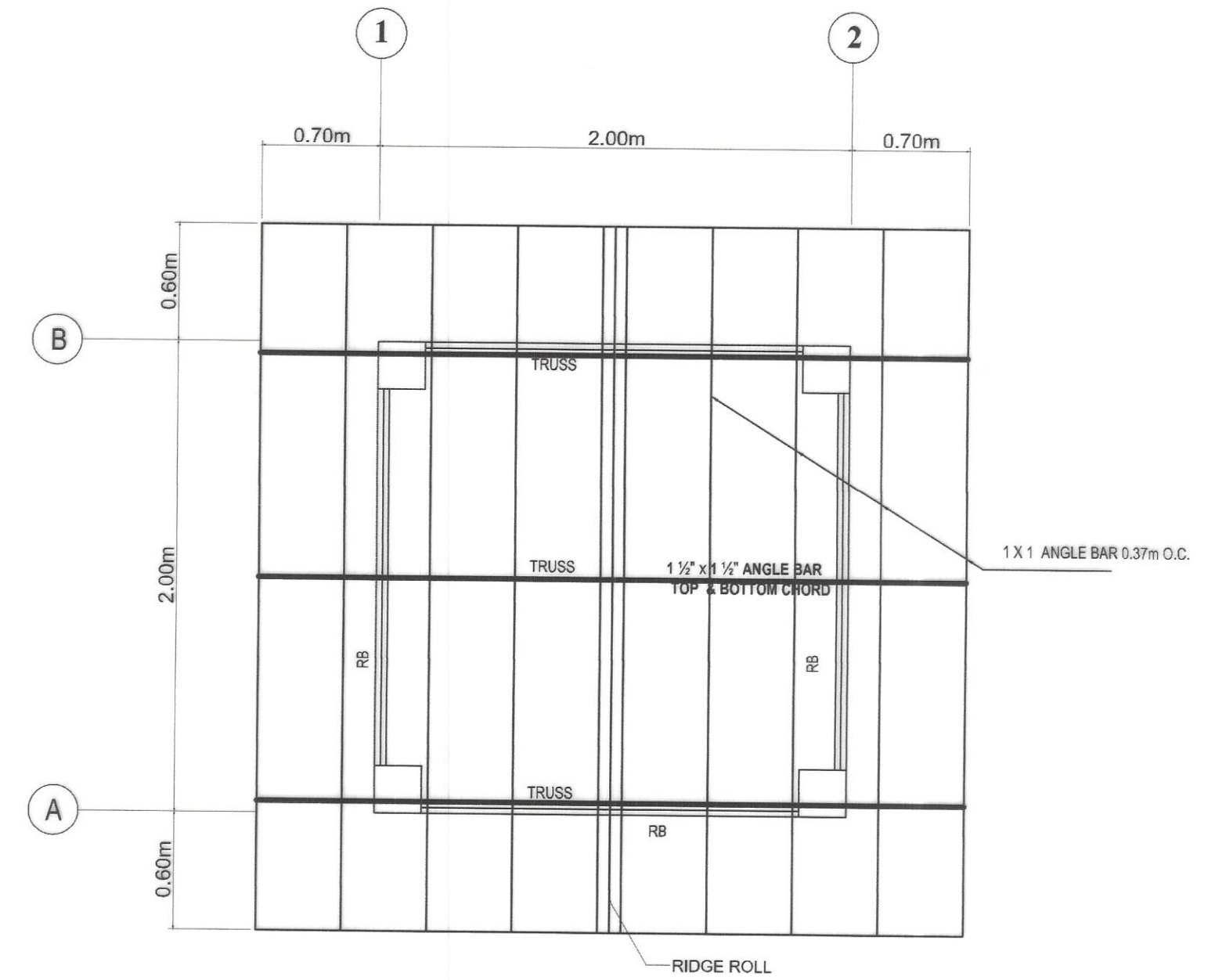
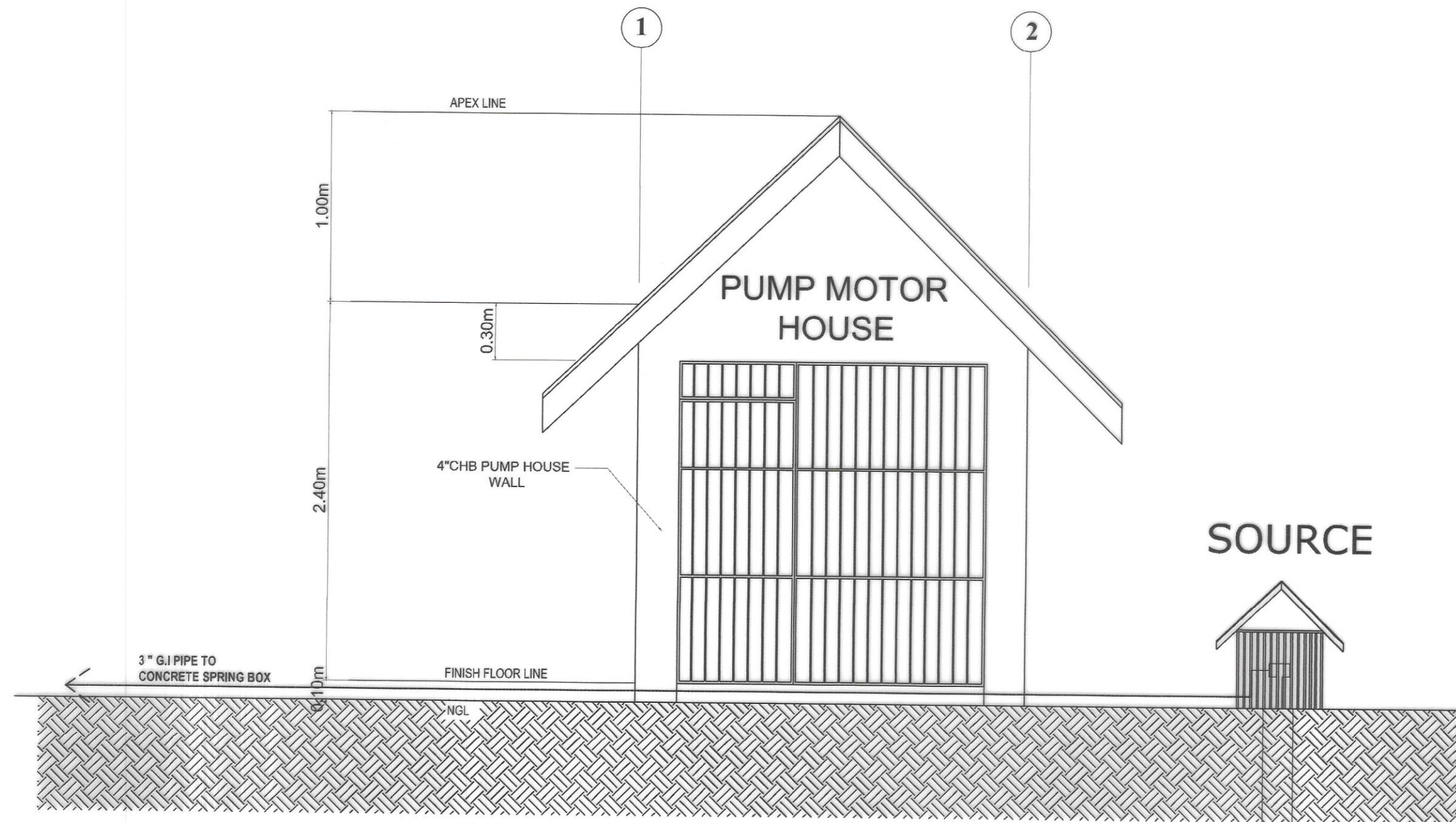
REVIEWED :
JERSON O. MONTERA
ENGINEER II
DATE :

SUBMITTED :
FERNAN S. DIAZ
CHIEF, PLANNING AND DESIGN SECTION
DATE :

RECOMMENDED :
VACANT
DATE :

APPROVED :
EVELYN R. PUERTOLLANO
DISTRICT ENGINEER
DATE :

SET NO.
SHEET NO.
9
12



REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGION IV - B, MIMAROPA OFFICE OF THE DISTRICT ENGINEER BOAC, MARINDUQUE	PROJECT NAME AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHEET NO.
	CONSTRUCTION (COMPLETION) OF WATER SUPPLY SYSTEM, BARANGAY BACONGBACONG, GASAN, MARINDUQUE	PUMP HOUSE TYPICAL DRAWINGS	ARTHUR M. JARDELEZA ENGINEERING ASSISTANT PREPARED : <i>[Signature]</i> MICHAEL R. MALITAO ENGINEER II	JERSON O. MONTERA ENGINEER II DATE :	FERNAN S. DIAZ CHIEF, PLANNING AND DESIGN SECTION DATE :	VACANT	EVELYN R. PUERTOLLANO DISTRICT ENGINEER DATE :	DPWH REGION IV-B CY - 2023 MQ	10 12

SCHEDULE OF LOADS																						
CIRCUIT NUMBER	LOAD DESCRIPTION	HP	OUTLETS				SWITCHES				VOLT. AMP.	AMP.	VOLTS	OCPD BOLT-ON				CONDUCTORS		CONDUIT	AREA SERVED	
			O.L.	MOTOR	C.O.	L.O.	S	S2	S3	S3W				AF	P	AT	KAIC	THHN CU STRANDED				
1	LIGHTING POINTS AND CONVENIENCE OUTLET							1			380	1.652	230V	50	2	20	10	2 # 3.5 mm ² 1 # 3.5 mm ² (G)	20 MMØ	PUMP HOUSE		
2	WATER PUMP	3HP		1							3910	17.0	230V	50	2	40	10	2 # 3.5 mm ² 1 # 3.5 mm ² (G)	25 MMØ	PUMP HOUSE		
3	SPARE										1500	6.26	230V	50	2	20	10	2 # 8.0 mm ² 1 # 5.5 mm ²		SPARE		
4	SPARE										1500	6.26	230V	50	2	20	10			SPARE		
TOTAL											7290											
MAXIMUM DEMAND IN KVA:			7,290		O . C . P . D										SERVICE ENTRANCE CONDUCTOR:						2 # 14MM ² THHN WIRE	
MAXIMUM DEMAND IN AMP:			57.19		BREAKER		QTY.	TYPE	AT	AF	P	KAIC	GROUNDING CONDUCTOR:								1 # 8.0MM ² TW WIRE	
					MAIN		1	MCCB	60	100	2	10	MAIN CONDUIT:								25MMØ RSC CONDUIT	
					BRANCHES		1	MCB	40	50	2	10										
								3	MCB	20	50	2	10									

COMPUTATONS

FOR MAIN SERVICE ENTRANCE CONDUCTOR

$$I_T = \frac{7,290VA + (3910VA \times 0.25)}{230V}$$
$$= 35.94A$$

USE 2NOS. 14.0mm² THHN WIRE
1NO. 8.0mm² TW WIRE (G)
IN 1Ø 25mm²

COMPUTATONS

FOR MAIN DISCONNECTION EQUIPMENT

$$I_T = \frac{7,290VA + (3910VA \times 1.50)}{230V}$$
$$= 57.19A$$

USE ONE 60AT, 100AF, 2P, 230V, MCCB
WITH GROUND BUS AND
BRANCHES:
1NO-40AT, 50AF, 2P

LEGEND :

➤ SERVICE ENTRANCE

⊕ THREE GANG CONVINIENCE OUTLET

⊗ CEILING LIGHT OUTLET WITH 9W LED BULB

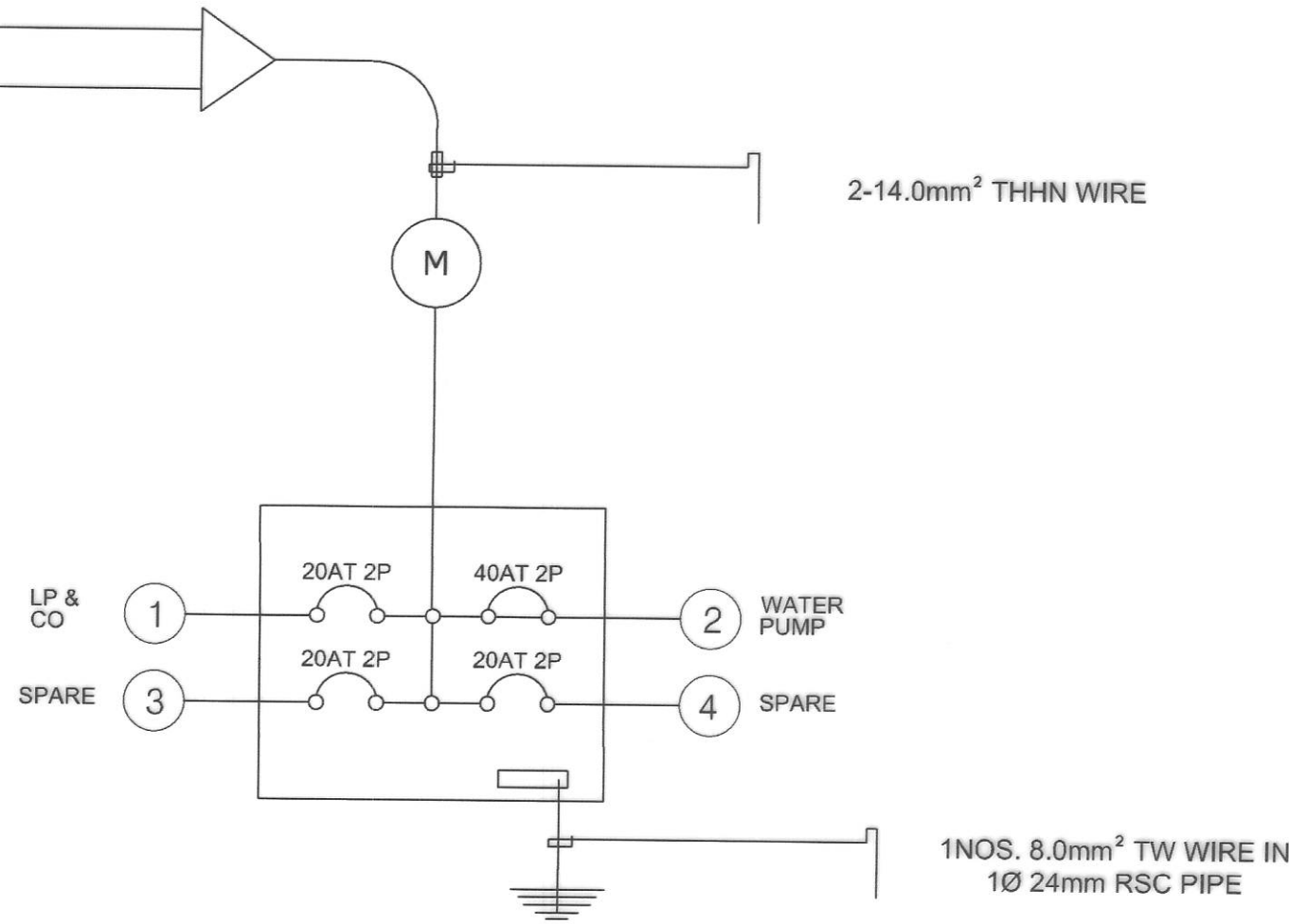
MC MOTOR CONTROL

▮ PANEL BOARD

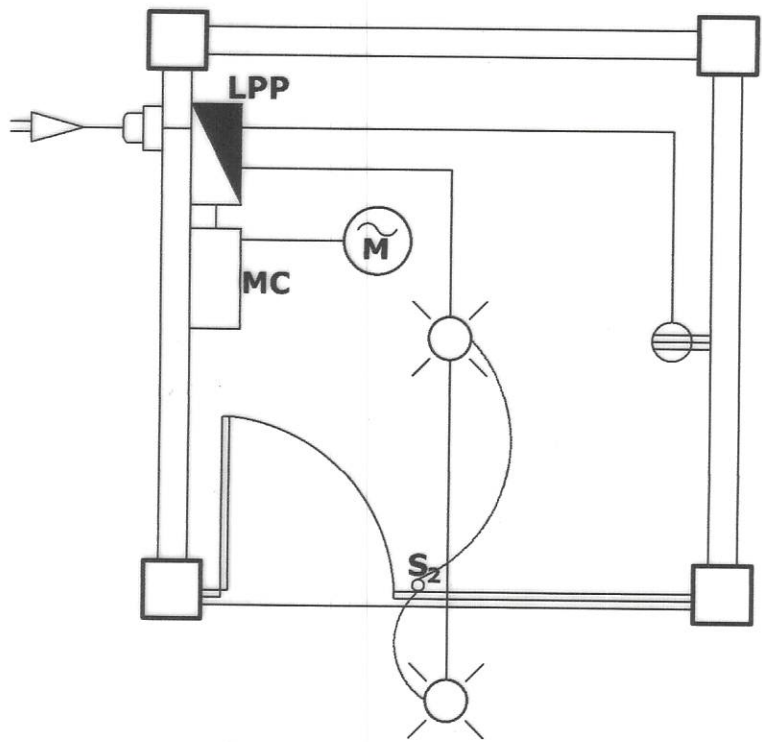
⏏ KWHR METER

Ⓜ 3HP, 230V, 60HZ, 1PHASE WATER PUMP MOTOR

S₂ TWO WAY SWITCH



1 SINGLE LINE DIAGRAM
11 12 SCALE NTS



2 P U M P H O U S E
11 12 SCALE NTS



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CONSTRUCTION(COMPLETION) OF WATER SUPPLY SYSTEM,
BARANGAY BACONGBACONG, GASAN, MARINDUQUE
GASAN, MARINDUQUE

SHEET CONTENTS :
SCHEDULE OF LOADS - PUMP HOUSE
ELECTRICAL - PUMP HOUSE
TYPICAL DRAWING

DRAFTED :
ARTHUR M. JARDELEZA
ENGINEERING ASSISTANT
PREPARED :
ADRIAN V. LOZANO
ENGINEER II

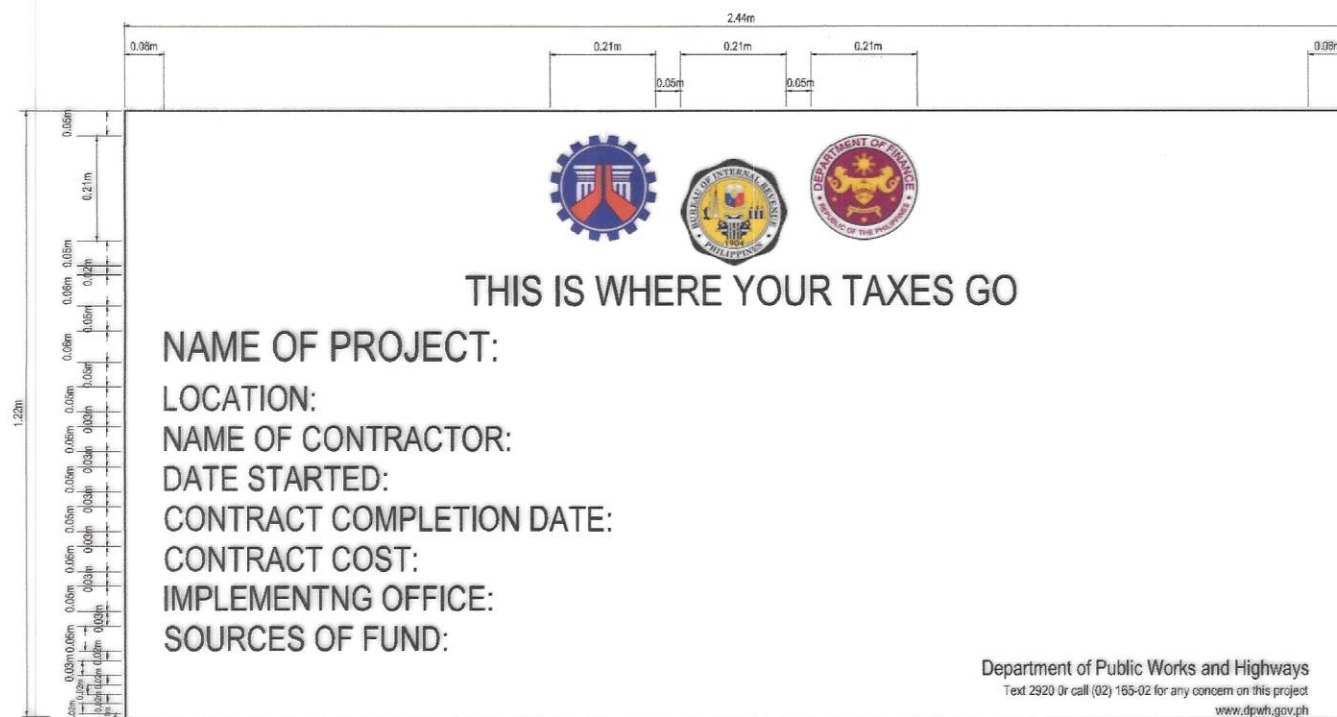
REVIEWED :
MICHAEL P. MALITAO
ENGINEER II
DATE :

SUBMITTED :
FERNAN S. DIAZ
CHIEF, PLANNING AND DESIGN SECTION
DATE :

RECOMMENDED :
VACANT
DATE :

APPROVED :
EVELYN R. HUERTOLLANO
DISTRICT ENGINEER
DATE :

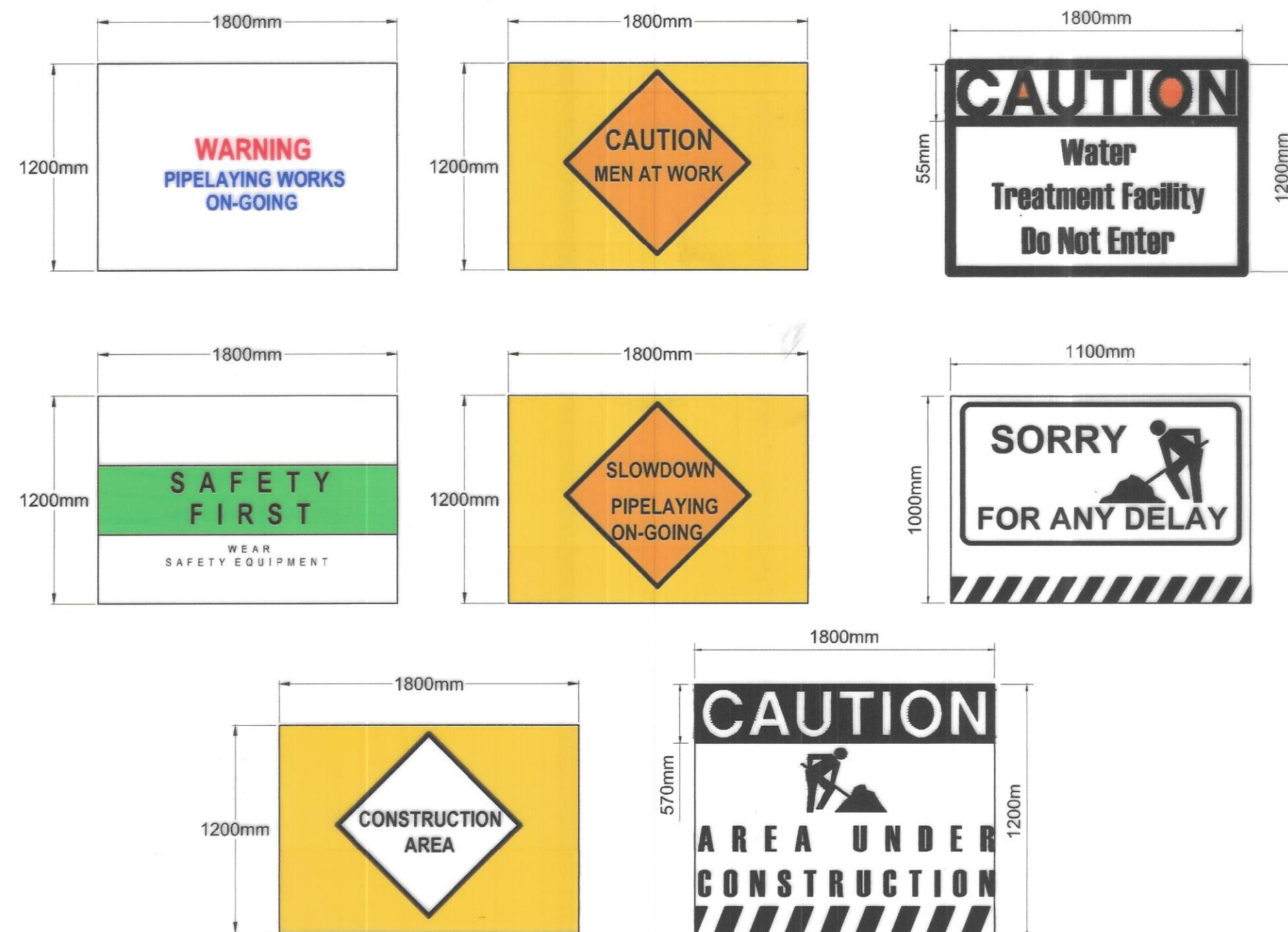
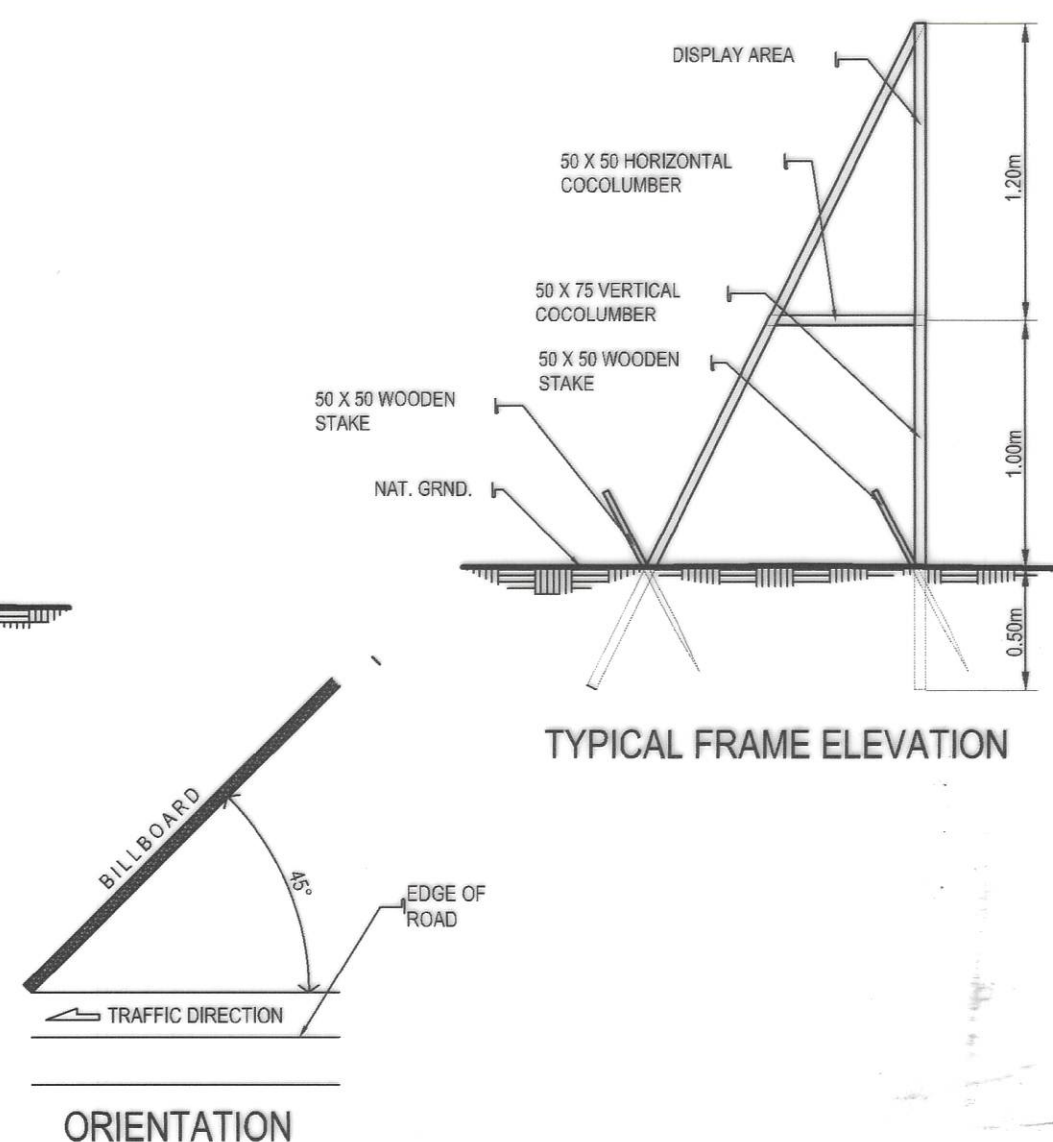
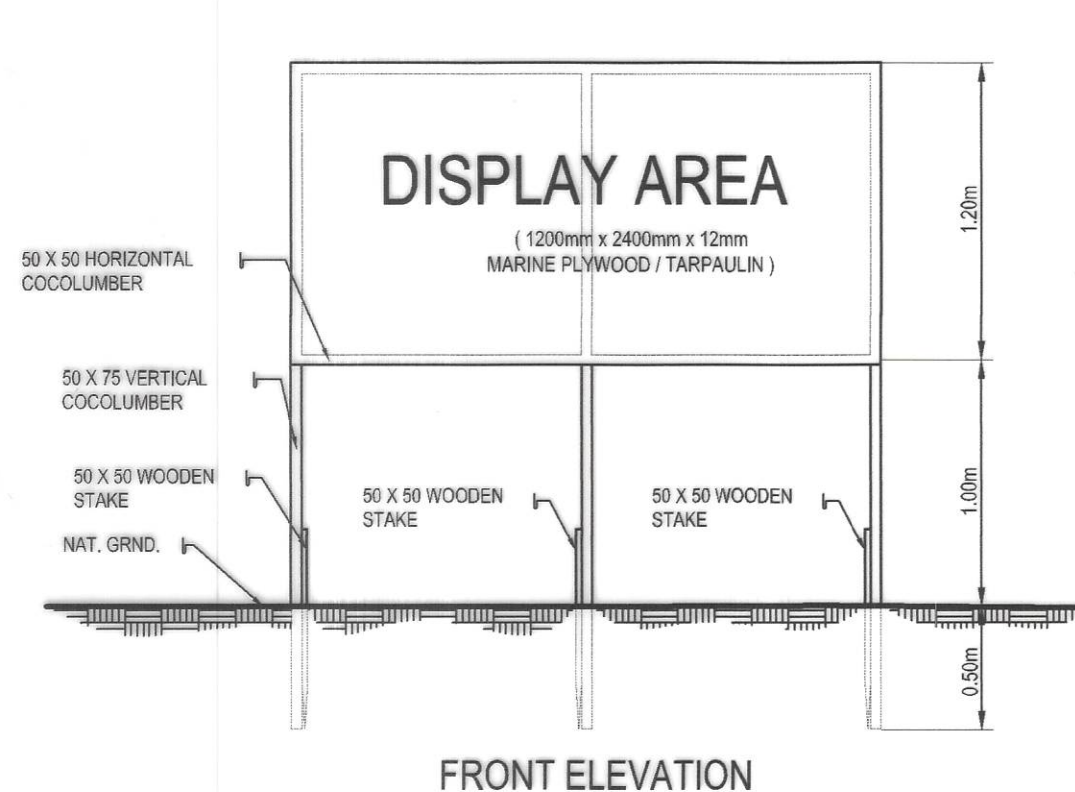
SET NO.
SHEET NO.
11
12



1
12 12
DETAIL OF BILLBOARD

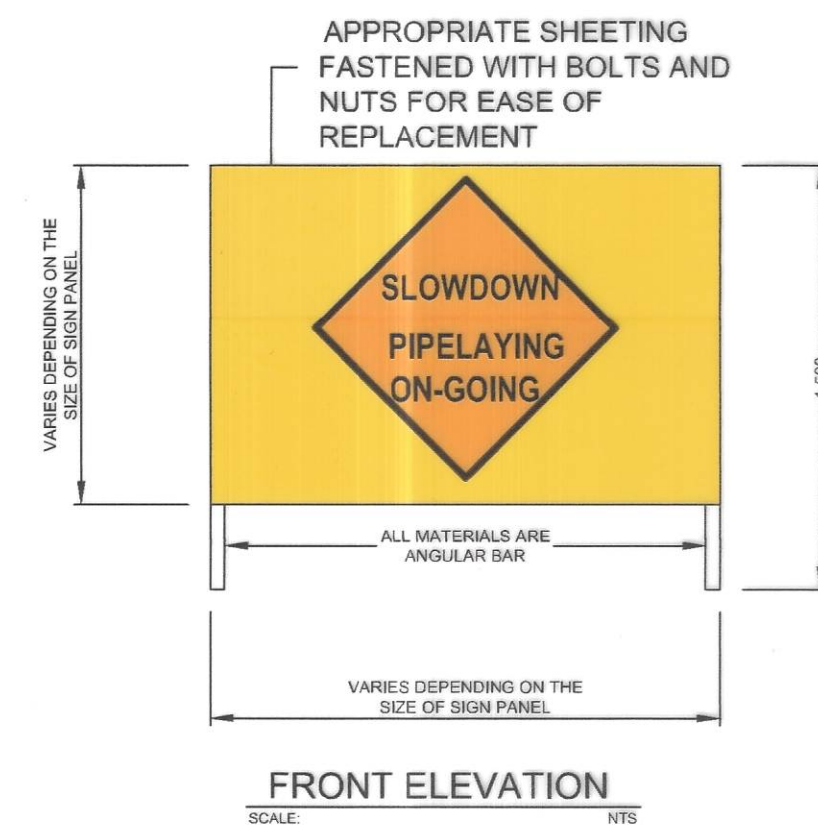
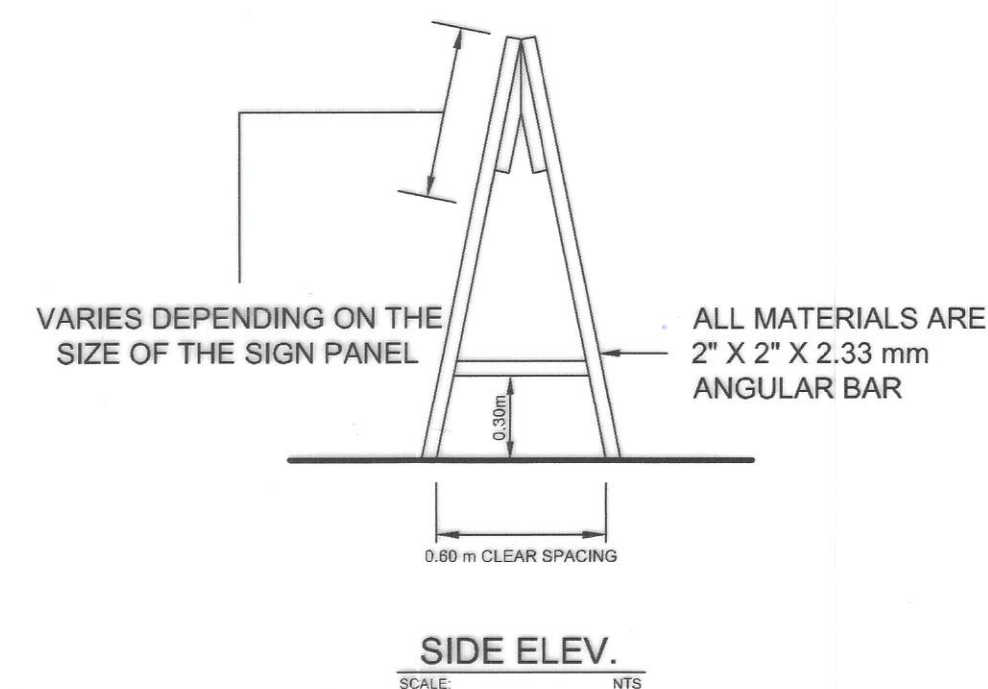
NOTES :

1. THE INSTALLATION OF THE REQUIRED STANDARD BILLBOARD SIZE (1200MM X 2400MM / 4 FT. X 8FT.) FOR ALL PROJECTS SHALL BE STRICTLY ENFORCED.
2. NO POLITICAL BILLBOARDS SHALL BE ALLOWED TO BE INSTALLED 100 METERS BEFORE AND 100 METERS AFTER ALL DPWH PROJECTS AND IN BETWEEN THE PROJECT LIMITS OR WITHIN THE ROAD RIGHT OF WAY.
3. DPWH CONTRACTORS SHALL NOT BE ALLOWED TO PLACE NAMES OF POLITICIANS ON THEIR EQUIPMENT OR CARRY POLITICAL BILLBOARD ON THEIR EQUIPMENT.



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12 12
WATERWORKS CONSTRUCTION SIGNAGE

NOTE: SIGNS SHALL BE MADE FROM RETROFLECTIVE SIGN FACE MATERIAL AS PER DO 13 SERIES OF 2018



SIGNAGE INSTALLATION DETAIL
 SCALE: NTS

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGION IV - B, MIMAROPA OFFICE OF THE DISTRICT ENGINEER BOAC, MARINDUQUE	PROJECT NAME AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHEET NO.
	CONSTRUCTION(COMPLETION) OF WATER SUPPLY SYSTEM, BARANGAY BACONGBACONG, GASAN, MARINDUQUE GASAN, MARINDUQUE	TYPICAL DRAWINGS	DRAFTED : ARTHUR M. JARDELEZA ENGINEERING ASSISTANT PREPARED : MICHAEL P. MALITAO ENGINEER II	REVIEWED : JERSON O. MONTERA ENGINEER II DATE :	SUBMITTED : FERNAN S. DIAZ CHIEF, PLANNING AND DESIGN SECTION DATE :	RECOMMENDED : VACANT DATE :	APPROVED : EVELYN R. PUERTOLLANO DISTRICT ENGINEER DATE :	DPWH REGION IV-B CY-2023 MQ	12 12