

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRICULTURE
REGIONAL FIELD UNIT NO. 5
SAN AGUSTIN, P.I.L., CAMARINES SUR.

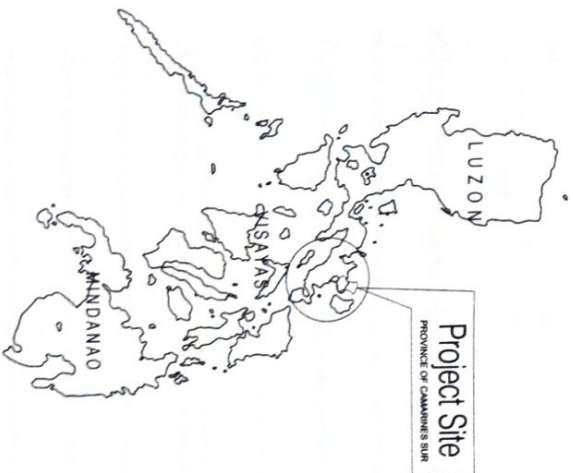
PROJECT TITLE

P R O P O S E D :

**SUPPLY, DELIVERY, INSTALLATION AND
COMMISSIONING OF 1-UNITS SOLAR POWERED
IRRIGATION SYSTEM FOR OAP
LOCATION: PROVINCE OF CAMARINES SUR**

PREPARED BY:
RAED OFFICE





LOCATION MAP

SHEET CONTENT :

1	LOCATION MAP SHEET CONTENT
2	SOLAR PV MODULE ARRAY SOLAR MOUNTING STRUCTURE FRAMING PLAN DETAIL OF STRUT (S-1, S-2)
3	FACING NORTH ELEVATION FACING SOUTH ELEVATION FACING WEST ELEVATION FOUNDATION PLAN OF PEDESTAL (C1F1)
4	DETAIL OF PEDESTAL (C1F1) ISOMETRIC DET. OF SOLAR FRAMING BLOW UP DETAIL OF TRUSS (A,B,C)
5	DETAIL OF ELEVATED TANK STRUCTURE
6	ELECTRICAL PLAN/LAYOUT DETAIL OF SUBMERSIBLE DEEP WELL PUMP
7	GENERAL NOTES
8	DETAIL OF PROJECT MARKER

1.0 PROJECT FACILITIES

SOLAR POWERED IRRIGATION PROJECT (SPIS)

2.0 CONVEYANCE CHANNEL

HDPE PIPE
200 Lx4

3.0 DESIGN SERVICE AREA AND CROPPING PATTERN

CROPPING PATTERN: ORGANIC CROPS
SERVICE AREA (ha): 3.0
PROJECT COST per (ha) (Php): P 850,000.00

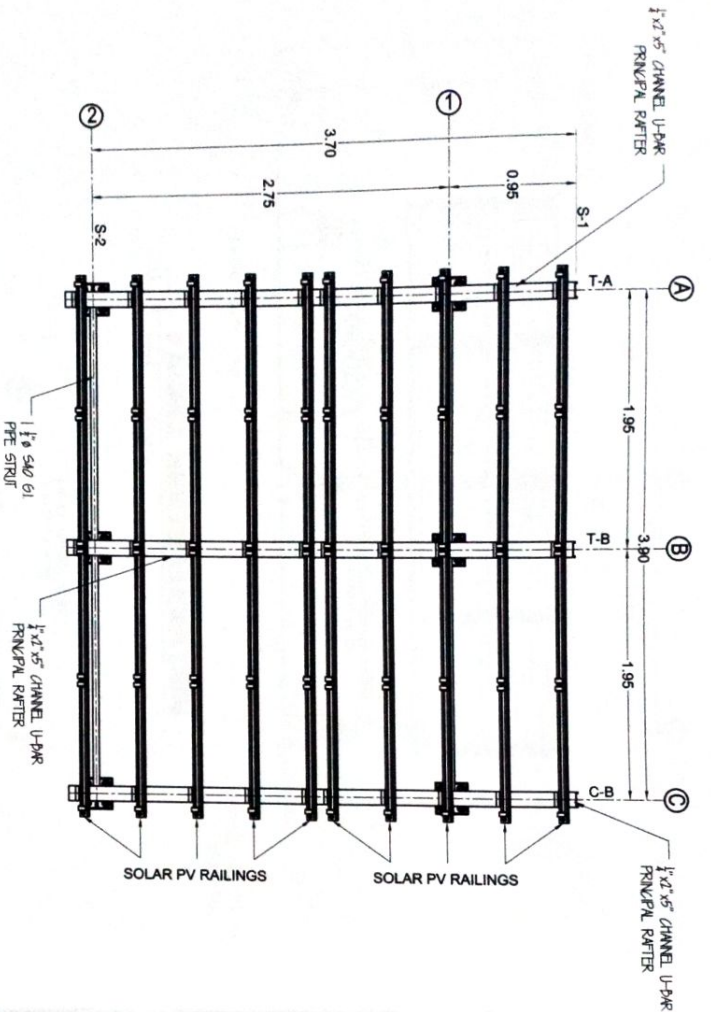
SCOPE OF WORKS

- 1. PUMP OUTLET**
Type: Diameter 30 m
G.I. Pipe 2"
- 2. ELEVATED WATER TANK**
Tank ϕ : Tank Length: Elev. from NGL: 1.20 m 1.80 m 2.10 m
- 3. OUTDOOR CONTROLLER BOX**
Length: Width: Height: 0.30 m 0.30 m 0.60 m
- 4. WELL DEVELOPMENT / DRILLING**
Borehole ϕ : Depth: Chasing ϕ : 4" 18-40 m 4"
- 5. INSTALLATION OF PIPE LINE**
Length: LD: Type: 200 m 0.02 m HDPE-SDR17
- 6. SOLAR ARRAY INSTALLATION**
No. of Module: Watt Peak: No. of String: 800 4500W 100
- 7. SOLAR CONTROLLER AND INVERTER**
Inverter Size: DC Rating: AC Output: 4.0 KW 200 - 450 V 230-415 V
- 8. SUBMERSIBLE WATER PUMP**
Motor Rating: Design Q: Design TDH: 2.2 KW 17.50 m³/hr 30 m

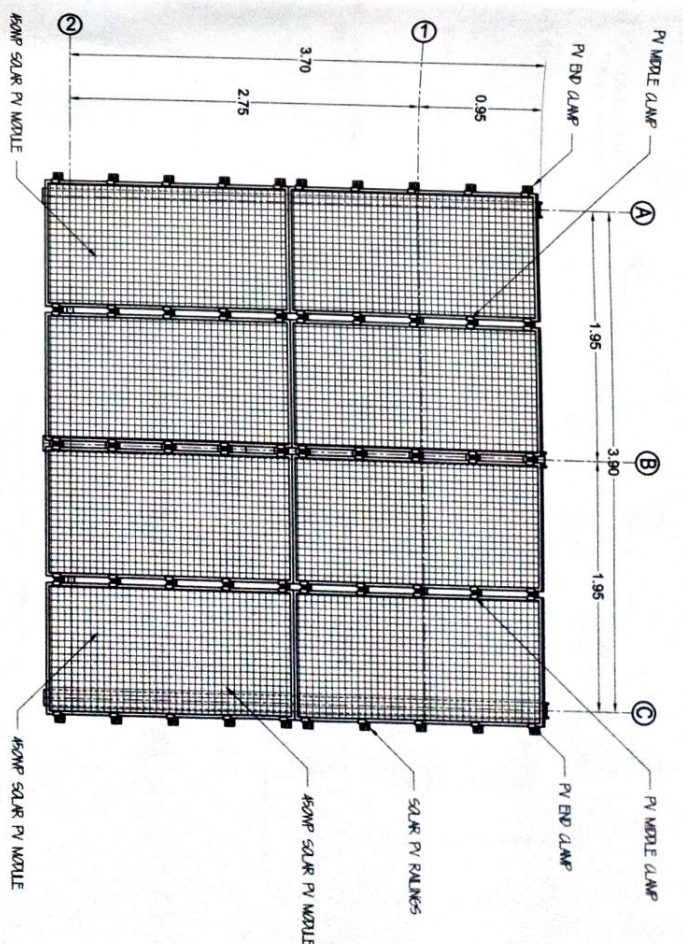


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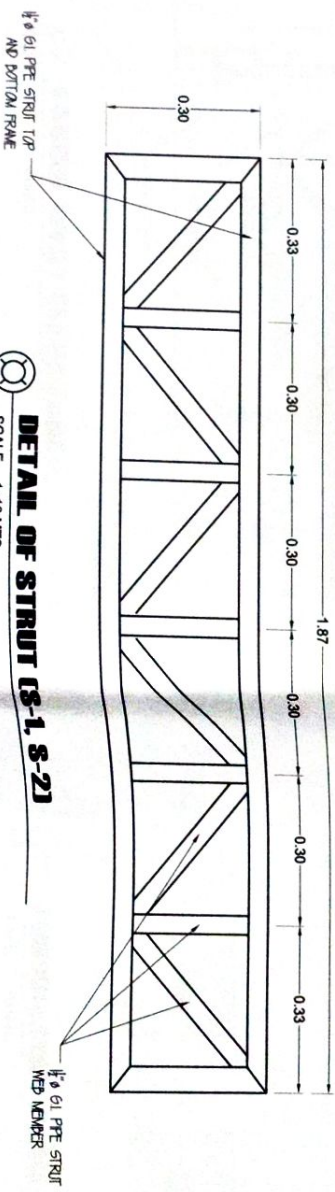
Requested by:	Checked by:	Reviewed by:	Adopted by:	Recommended by:	Approved by:
BEL JOSEPH D. KONTO Engineer	ROSEL L. REBELLON Engineer II	JERON A. BRONA Engineer III	GUILLERMO S. SALCEDO Asst. Engr. III	LUIS M. MACTIANO Engr. III	RODEL P. BERNAL Engr. III
Name of Client: Supply, Delivery, Inst. & Commissioning of 1-Unit SPIS for OAP					
Location: Province of Camarines Sur					
Special Comments: AS SHOWN					



SOLAR MOUNTING STRUCTURE FRAMING PLAN
SCALE 1:40 MTS.



SOLAR PV MODULE ARRAY
SCALE 1:40 MTS.



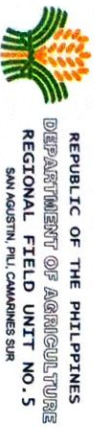
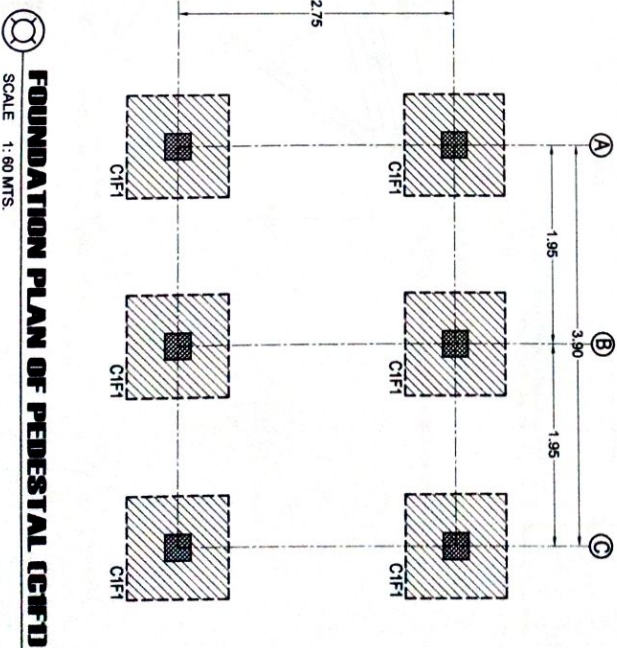
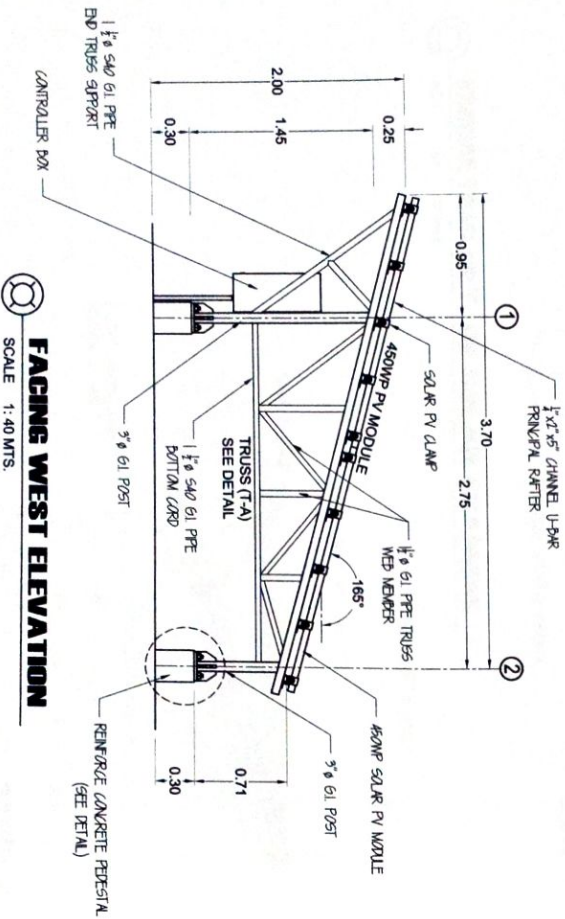
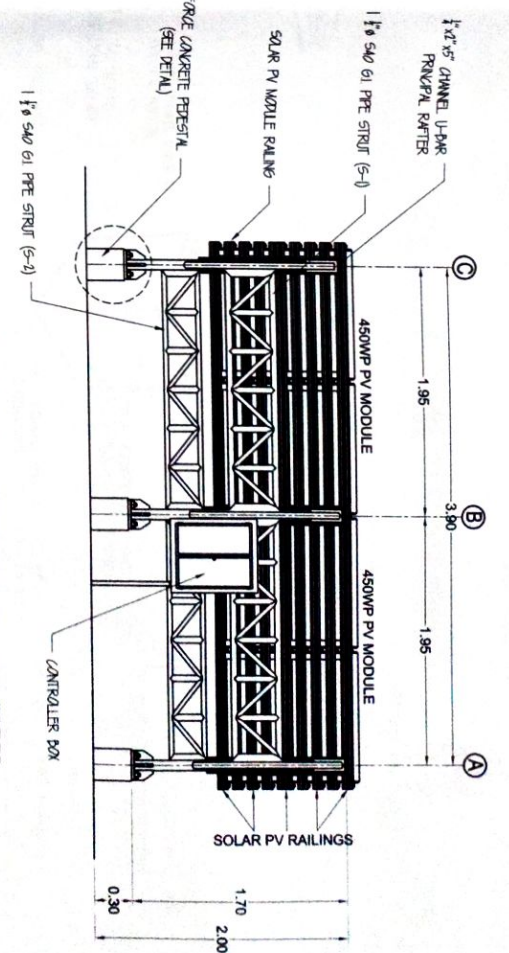
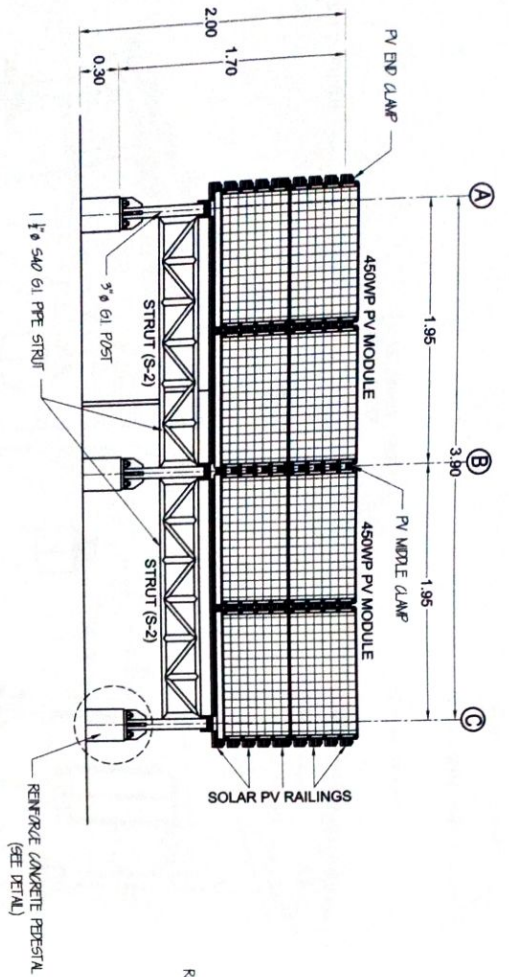
DETAIL OF STRUT (S-1, S-2)
SCALE 1:10 MTS.



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Prepared by:	Checked by:	Reviewed by:	Submitted by:	Recommending Approval:	Approved by:
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
BEL JOSEPH D. IBONTO Assistant I	ROBERTA J. REBELLON Engineer III	JERRY A. BERONA Engr. III	GILBERT S. SALCEDO Off. - Civil Engr.	LUI E. MARCELINO Engr. for Operations and Extension	RODEL B. FORNITA Engr. Supervisor

Name of Project:	Date:
Supply, Delivery, Inst. & Commissioning of 1-Unit SPIS for OAP	2023
Location:	Site No.:
Province of Camarines Sur	AS SHOWN



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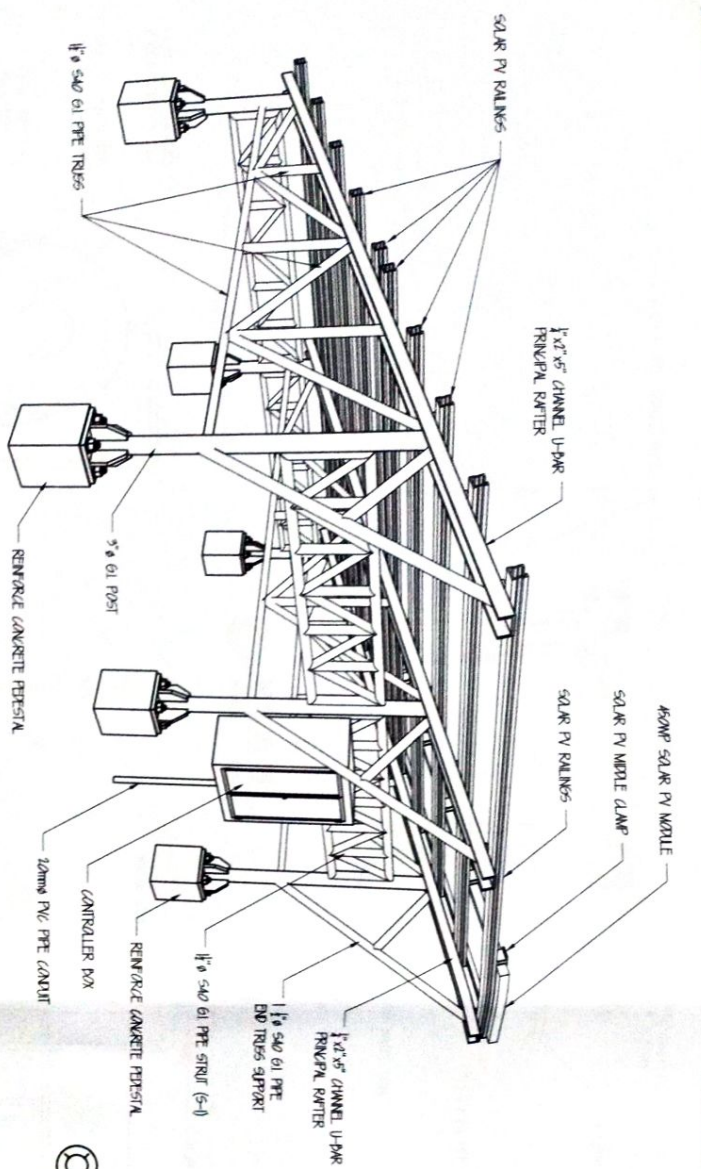
Prepared By: *[Signature]*
Checked By: *[Signature]*
Reviewed By: *[Signature]*

Submitted By: *[Signature]*
Supervising Approval: *[Signature]*

Approved By: *[Signature]*

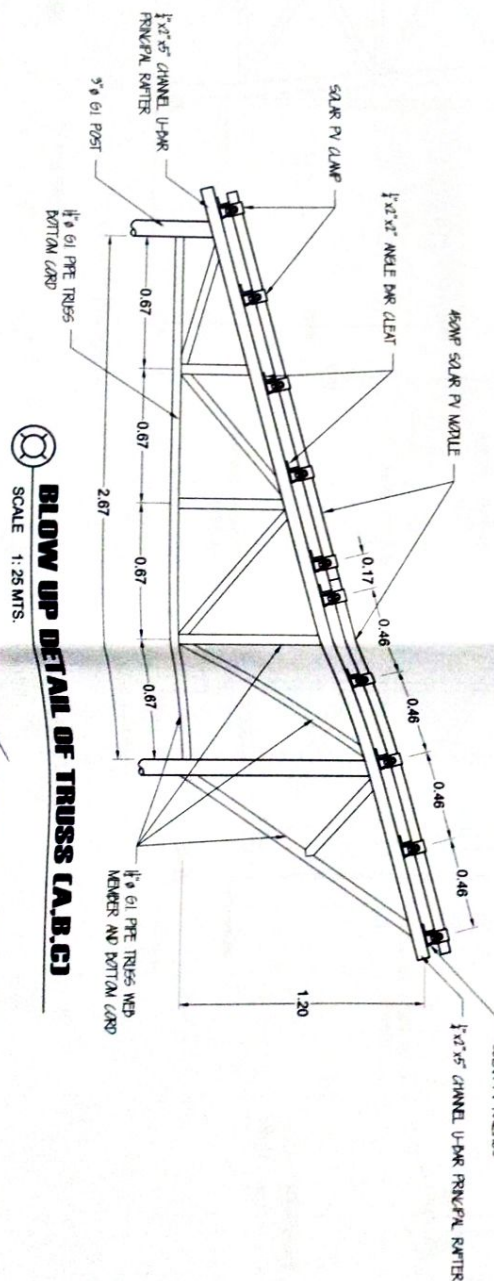
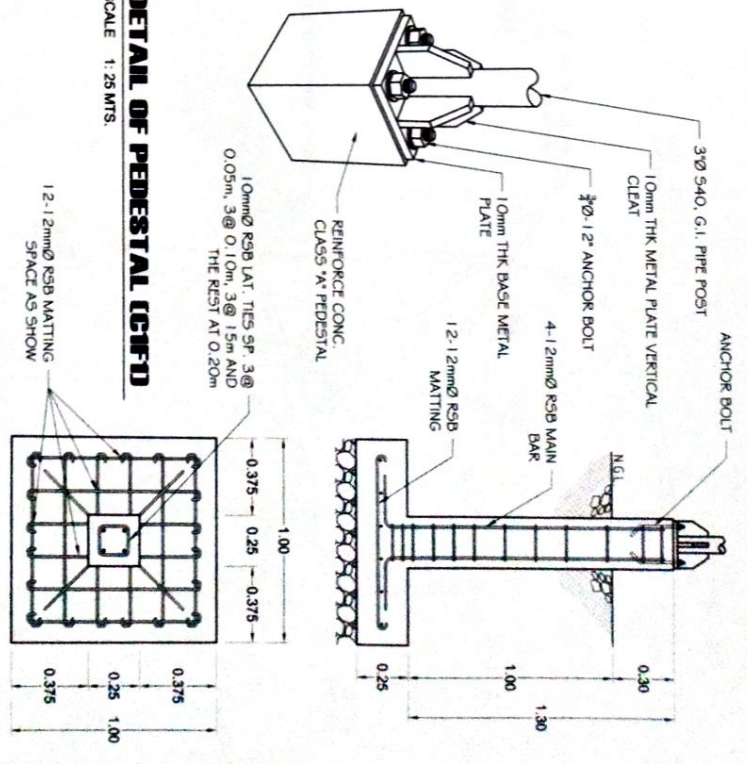
Name of Client:
Supply, Delivery, Inst. & Commissioning of 1-Units SPS for CAP

Province of Camarines Sur
AS SHOWN



ISOMETRIC DET. OF SOLAR FRAMING
 NOT TO SCALE

DETAIL OF PEDESTAL (C/F/D)
 SCALE 1:25 MTS.

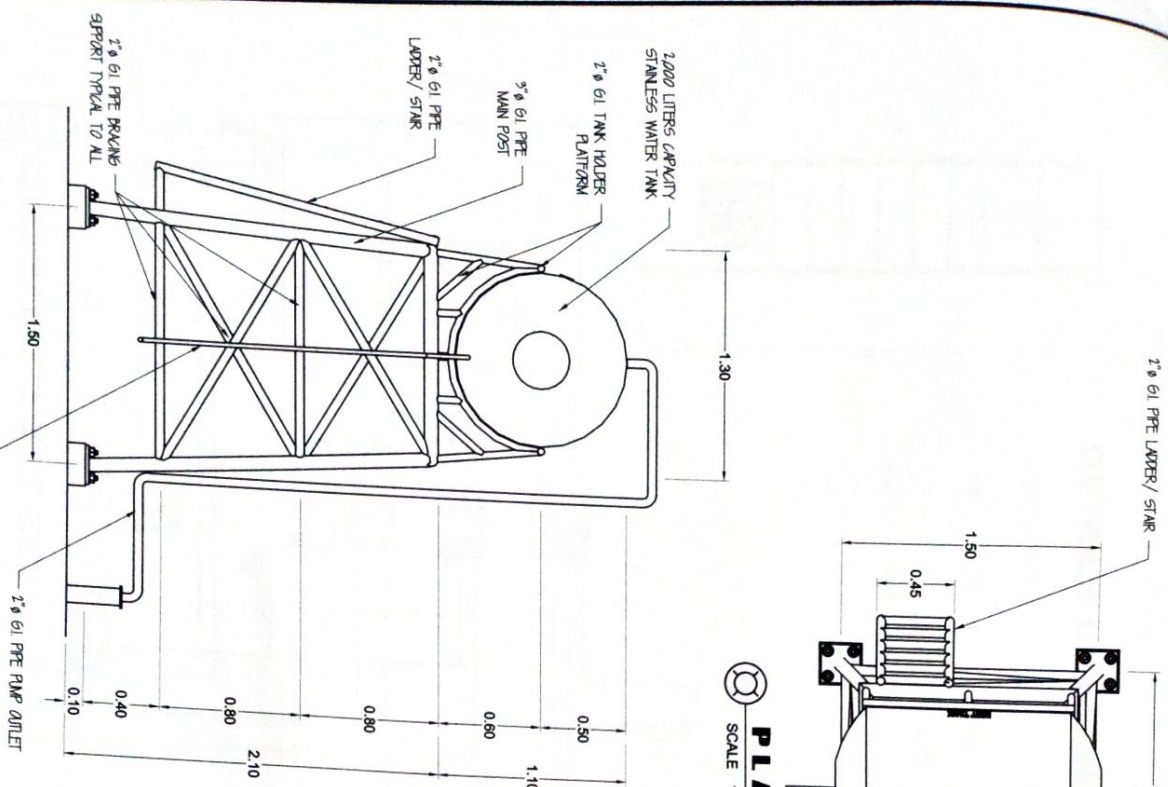


BLOW UP DETAIL OF TRUSS (A,B,C)
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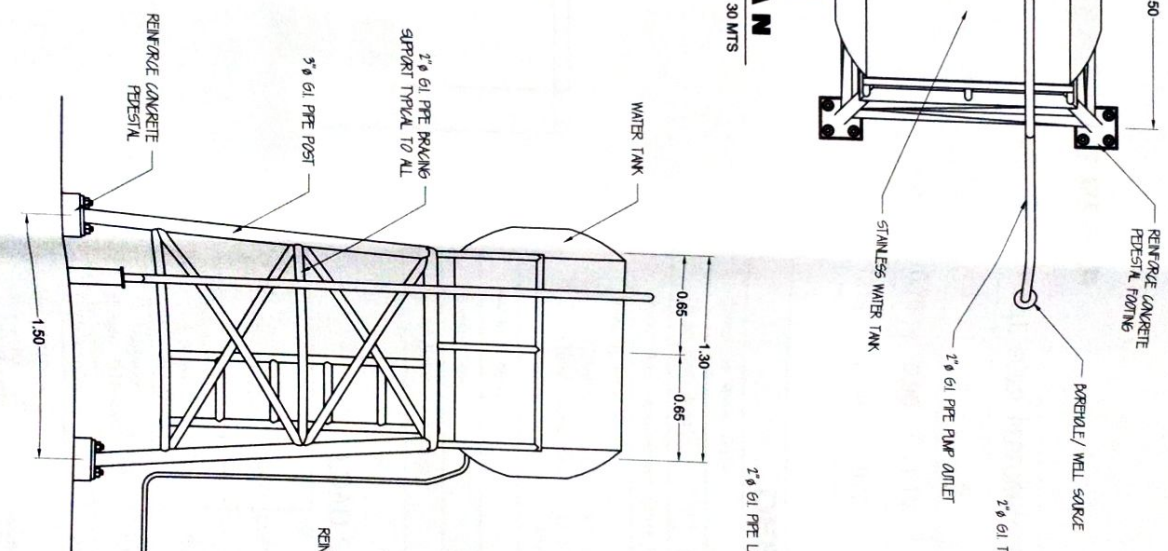


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Prepared By RRL JOSEPH D. BAYONTO	Checked By ROSEL T. REBELLION	Reviewed By JERRY A. BONGSA	Submitted By GILBERT SALLERDO	Approved/Revised/Approved LUC R. MARCELINO	Approved By RODEL TORONDO MAAB
Location Province of Camarines Sur	Supply, Delivery, Inst. & Commissioning of 4-Units SPIS for OAP				
Sheet Count AS SHOWN					

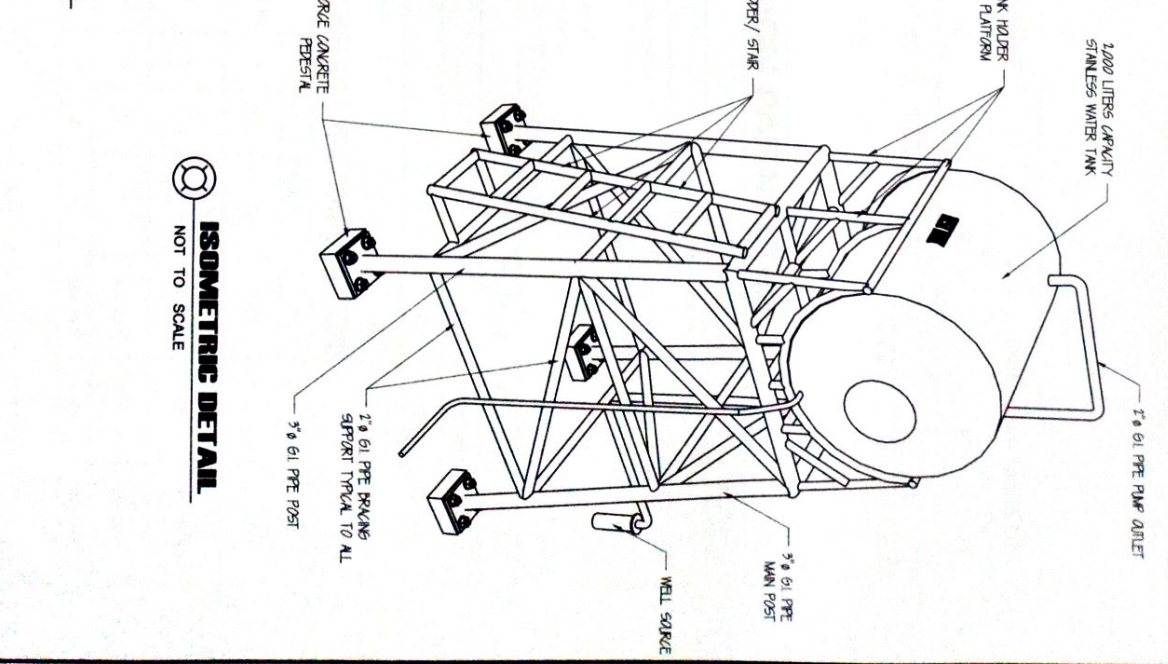


SIDE ELEVATION
SCALE 1:30 MTS



REAR ELEVATION
SCALE 1:30 MTS

PLAN
SCALE 1:30 MTS



ISOMETRIC DETAIL
NOT TO SCALE



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Prepared by:

Checked by:

Reviewed by:

Submitted by:

Recommending Approval:

Approved by:

Material Provided:

Supply, Delivery, Inst. & Commissioning of 1-Units SPIS for OAP

Province of Camarines Sur

BIL. KRISTO DOMITIO
Engineer II

ROSE L. REBOLTON
Engineer II

JERRICA IBONIA
Engineer III

GILBERT S. SALCEDO
Off. - Civil Engr.

LUIZ R. MARCELINEO
EITP for Operations and Extension

RODEL P. TORNILLA MABE
Regional Extension Officer

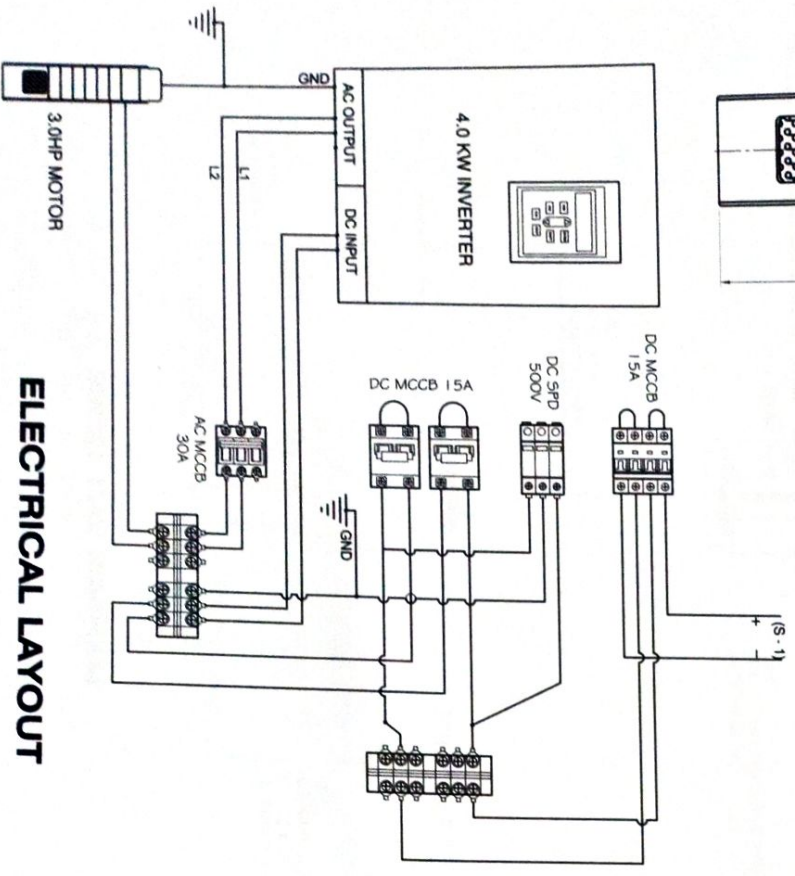
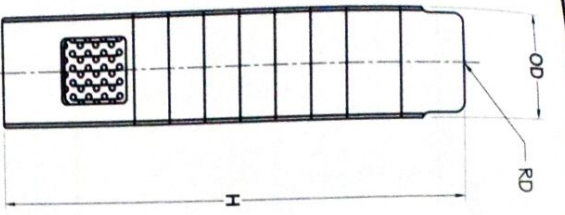
AS SHOWN

AS SHOWN

AS SHOWN

DETAILS OF SUBMERSIBLE PUMP

POWER RATING						DEEP WELL SUBMERSIBLE PUMP PERFORMANCE TABLE						DIMENSION (INCHES)		
KW	HP	GPM	M ³ /HR	HEAD (FEET)								OD	RP	H
2.20	3.0	0	0	1375	1321	1219	1108	977	838	670	477	3.82	2	55.35



ELECTRICAL LAYOUT

DESIGN PARAMETER		Value
Computed Water Duty		70.0 cu.m./day/ha - 0.80 li./sec/ha
Target HVC Area		3.0 hectares
Pump Flow Requirement (Shrs Solar Pump Operation)		4.86 liters/sec - 17.50 cu.m./hr
Total Dynamic Head		30.0 meters
Total pipe length	50 meters	
Total static head	25.0 meters	
Friction loss	1.444 m/100 m pipe length	
Motor Rating		2.2 kW (3.0HP, 1-Phase, 230V, 9.6A)
Inverter Size		4.0 kW, 200V-450V DC INPUT, 25Amp
No. of Solar PV Module		8pcs., 450Wp-(41.00 Vmp, 10.98 Imp)

CKT. NO.	LOAD DESCRIPTION	VOLT	CURRENT	CIRCUIT BREAKER			CONDUCTOR		CONDUIT (mm)
				AT	POLE	NO. OF C	SIZE	INSULATOR	
1	OFF GRID SOURCE - 1 STRING - (41.0V, 10.98A)	328	10.98	15	1	2	3.5 mm ²	THHW	20 mm ^ø
2	INVERTER DC Input: 200V-450V	328	10.98	15	2	2	4.0 mm ²	THHW	20 mm ^ø
3	2.2kW MOTOR	230	9.60	30	2	3	4.0 mm ²	THHW	20 mm ^ø

LOAD SCHEDULE & COMPUTATIONS

COMPUTATIONS:

IF = 10.98A x 1 = 10.98 AMPS FOR PV PROTECTOR

IF = 10.98A x 1.25(SF) = 13.725 AMPS FOR SURGE PROTECTOR

IF = 9.60A x 250% = 23 AMPS FOR MOTOR SPD

USE: Arm^l Cable Wire #12-4mm² AWG IN 20mm^ø PVC 30AT, 2P, 230V, CKT BREAKER



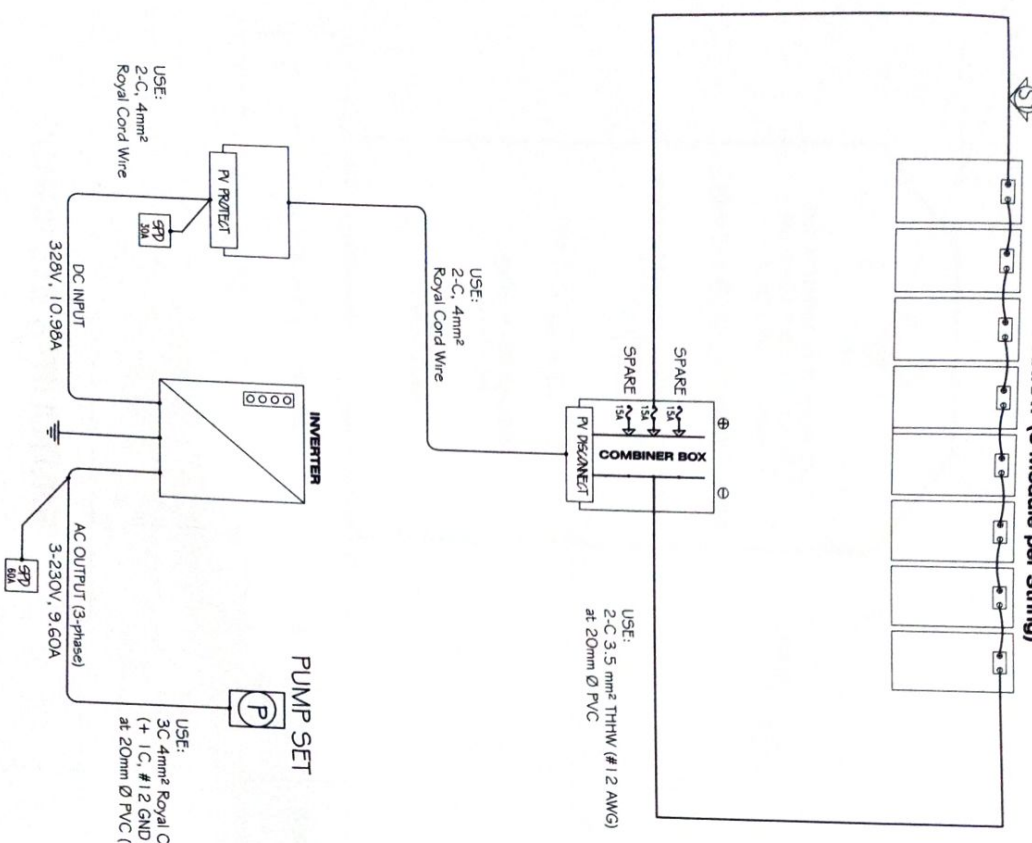
Prepared by: *[Signature]*
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 Reviewed by: *[Signature]*
 Supervised by: *[Signature]*
 Recommended by: *[Signature]*
 Approved by: *[Signature]*

BEL JOSEPH D. BONTITO
 ROBERT L. BEBERLON
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 LIZ X. MARICIANO
 RODEL P. ORJUNA

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 Province of Camarines Sur
 AS SHOWN

SOLAR PV ARRAY (8 Module per String)



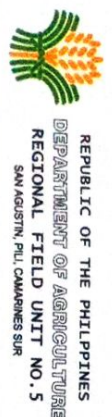
SINGLE LINE DIAGRAM
NOT TO SCALE

GENERAL NOTE:

- (a) A solar photovoltaic system shall be permitted to supply a building or other structure in addition to any service(s) of another electrically supply system (s)
- (b) Photovoltaic source circuits and photovoltaic output circuits shall not be contained in the same raceway, cable tray, cable, outlet box, junction box, or similar fitting as feeders or branch circuits of other systems, unless the conductors of the different systems are separated by a partition or are connected together
- (c) The connections to a module or panel shall be arranged so that removal of a module or panel from a photovoltaic source circuit does not interrupt a grounded conductor to another photovoltaic source circuit. Sets of modules interconnected as systems rated at 50 volts or less, with or without blocking diodes, and having a single overcurrent device shall be considered as a single-source circuit.
- (d) Inverters or motor generators shall be identified for use in solar photovoltaic systems
- (e) All photovoltaic source and output circuits shall be provided with a ground-fault protection device or system
- (f) All raceway and cable wiring methods included in this Code and other wiring systems and fittings specifically intended and identified for use on photovoltaic arrays shall be permitted. Where wiring devices with integral enclosures are used, sufficient length of cable shall be provided to facilitate replacement
- (g) Flexible cords and cables, where used to connect the moving parts of tracking PV modules, shall comply with Article 40 and shall be of a type identified as a hard service cord or portable power cable shall be suitable for extra-hard usage, listed for outdoor use, water resistant, and sunlight resistant
- (h) Junction, pull, and outlet boxes located behind modules or panels shall be installed so that the wiring contained in them can be rendered accessible directly or by displacement of a module(s) or panel(s) secured by removable fasteners and connected by a flexible wiring system
- (i) If a single-phase, 2-wire inverter output is connected to the neutral and one ungrounded conductor (only) of a 3-wire system or of a 3-phase, 4-wire, wye-connected system, the maximum load connected between the neutral and any one ungrounded conductor plus the inverter output rating shall not exceed the ampacity of the neutral conductor.
- (j) All interactive system(s) points of interconnection with other sources shall be marked at an accessible location at the disconnecting means as a power source with the maximum ac output operating current and the operating ac voltage

LEGEND:

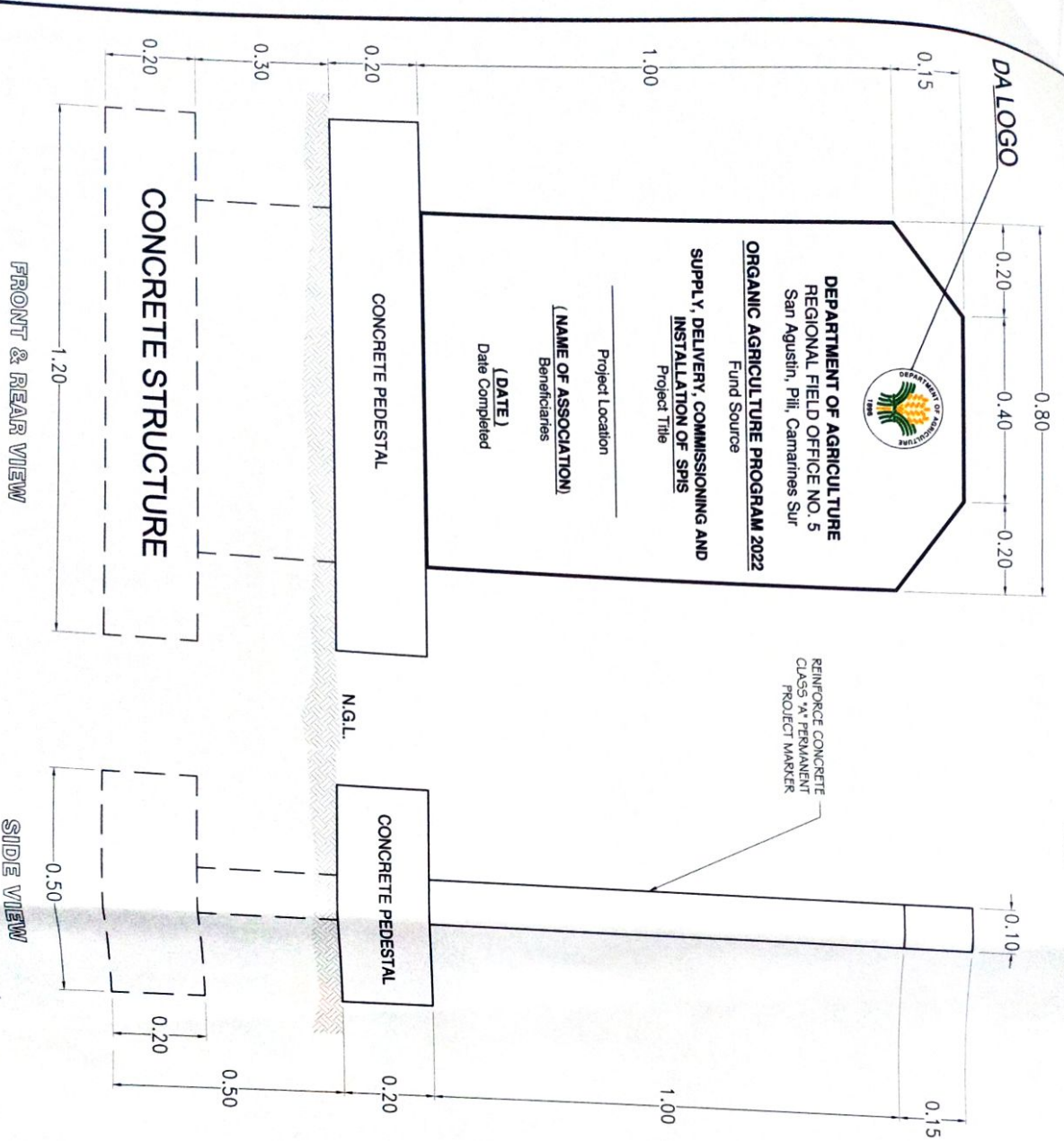
- ~ DC WIRE
- ☐ GROUND PROTECTIVE DEVICE
- ☐ SOLAR PUMP INVERTER
- ☐ PUMP SET
- ☐ SOLAR PV MODULE
- ~ NO. OF STRINGS
- ☐ BLOCKING DIODE



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Proposed by: BEL JOSEPH D. BONITO Engineer I	Checked by: ROBERT L. REBELLON Inspector II	Reviewed by: HENRY A. EBONA District Supervisor III	Submitted by: GILBERT S. CALCEDO Off. - Chief E&E	Supervising Approval: LIZ R. MANABAN NLD in Operations and Extension	Approved by: RODEL T. CORNILLIAGA Regional Extension Supervisor	Name of Project: Supply, Delivery, Inst. & Commissioning of 1-Units SPIS for OAP	Location: Province of Camarines Sur	DATE: AS SHOWN
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NEW CONCRETE MARKER OF RICE PROGRAM PROJECT
SCALE: 1:10m.



- NOTE:**
- PROVIDE CEMENT PLASTER FINISH ON BOTH FACES.
 - CONCRETE MARKER SHOULD BE FINISH COATED WITH WHITE EMERAL PAINT.
 - ALL PROJECT INFORMATION AS INDICATED SHOULD BE WRITEN IN NEAT AND CLEAR MANNER.
 - BE SPECIFIC WITH THE SPELLING OF THE INDICATED NAME OF PERSONS AND THEIR RESPECTIVE DESIGNATION.



FRONT & REAR VIEW

SIDE VIEW

ISOMETRIC VIEW

<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRICULTURE REGIONAL FIELD UNIT NO. 5 SAN AGUSTIN, PILI, CAMARINES SUR</p>		<p>Prepared by: </p>	<p>Checked by: </p>	<p>Reviewed by: </p>	<p>Submitted by: </p>	<p>Accounting Approval: </p>	<p>Approved by: </p>
<p>Supply, Delivery, Inst. & Commissioning of 1-Units SPIS for OAP</p>		<p>Location: _____</p>	<p>Province of Camarines Sur</p>	<p>Special Comments: _____</p>	<p>AS SHOWN</p>	<p>DATE: _____</p>	<p>SCALE: _____</p>