

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

PROJECT TITLE

P R O P O S E D :

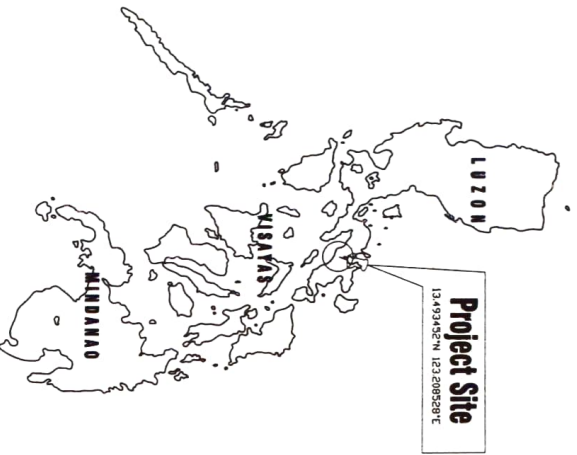
**SUPPLY, DELIVERY, INSTALLATION
AND COMMISSIONING OF SAN JOSE SOLAR
POWERED IRRIGATION SYSTEM (SPIS)**

LOCATION: BRGY. SAN JOSE, MMALBAC, CAMARINES SUR

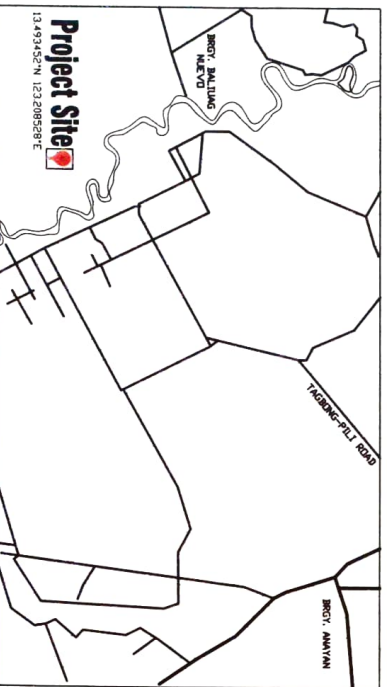
PREPARED BY:
RAED OFFICE



SHEET CONTENT :



LOCATION MAP



VICINITY MAP

1	LOCATION & VICINITY MAP SHEET CONTENT
2	SITE DEVELOPMENT PLAN
3	TOPOGRAPHIC MAP AND FARM PLAN
4	PROFILE OF SOLAR POWERED IRRIGATION SYSTEM PLAN OF PUMP SUMP, HOUSE AND INTAKE STRUCTURE DETAIL OF PUMP HOUSE
5	DETAIL OF INTAKE STRUCTURE DETAIL OF PUMP SUMP
6	PLAN OF SOLAR MOUNTING STRUCTURE FACING SOUTH ELEVATION
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<p>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRICULTURE REGIONAL FIELD UNIT NO. 5 SAN AGUSTIN, PILLI, CAMARINES SUR</p>		<p>Prepared by: BEL JOSEPH D. BRONTO Engineer I</p>	<p>Checked by: APRILIE H. MIRA Engineer II</p>	<p>Reviewed by: JERRY A. EBONA PESS, Engr. III</p>	<p>Submitted by: NILDUT ALIBANO Chf. Engr.</p>	<p>Recommending Approval: LUZ R. MARCELINO KTD for Operations and Extension</p>	<p>Approved by: RODEL P. TORNILLA, MABE Regional Executive Director</p>	<p>Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPS</p>	<p>Location: Brgy. San Jose, Minalaba, Camarines Sur</p>	<p>Scale: AS SHOWN</p>	<p>DATE: 08/20/2021</p>	<p>01/15</p>
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TOPOGRAPHIC MAP AND FARM PLAN

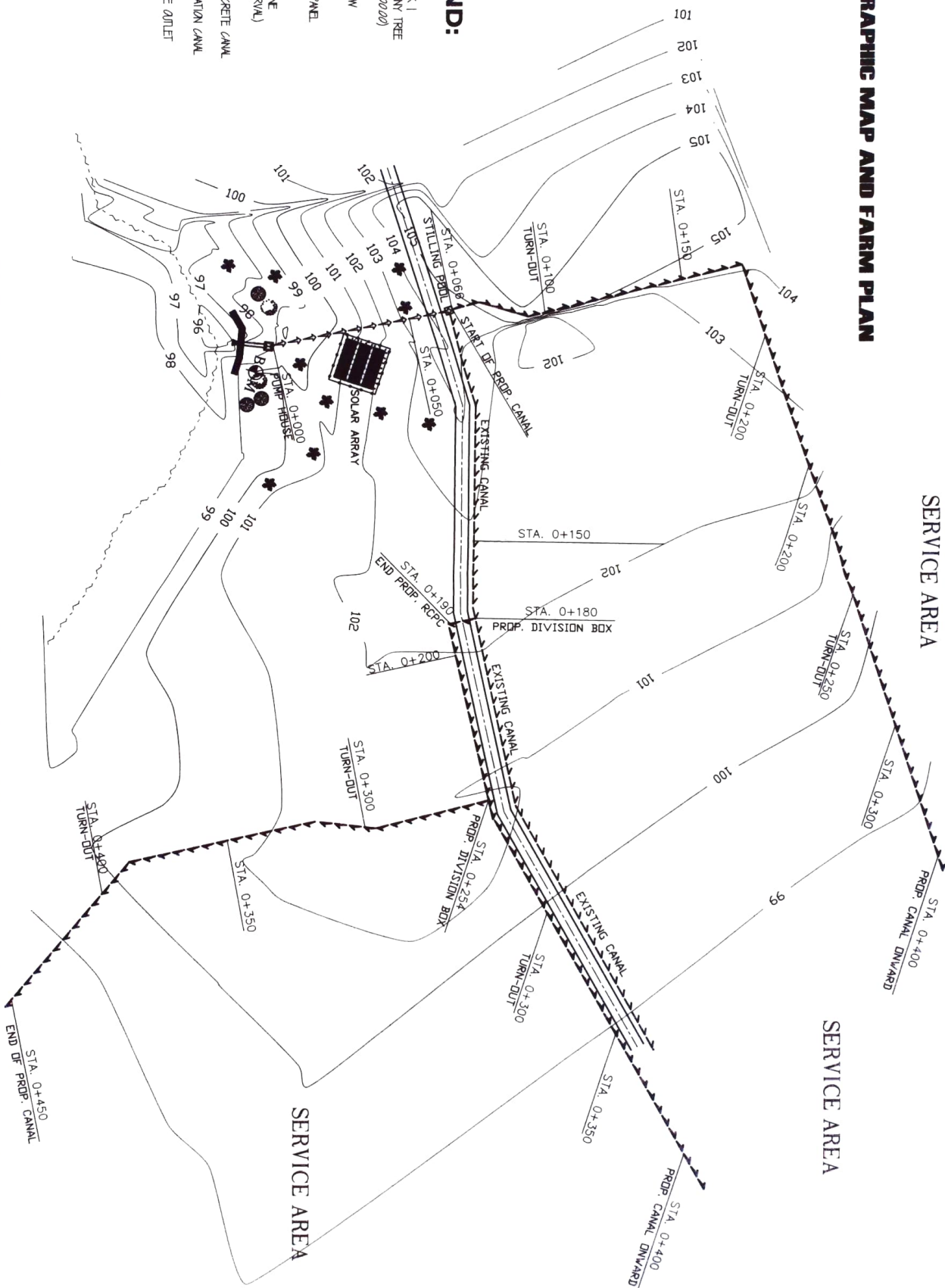
SERVICE AREA

SERVICE AREA



LEGEND:

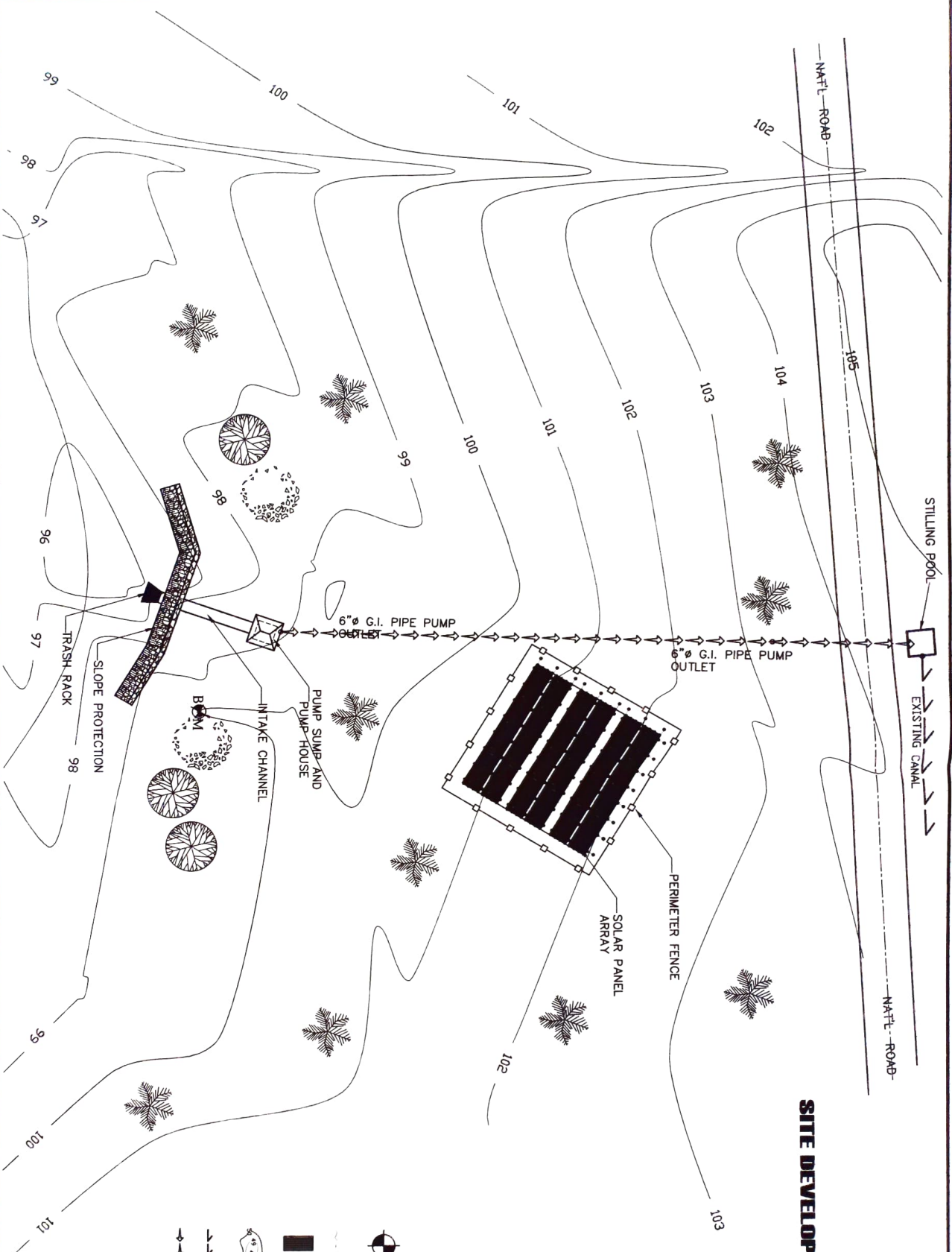
- BENCH MARK 1
- FOOT OF MANGROVE TREE (ELEVATION = 10000)
- STREAM FLOW
- 1/2 m SQUARE PANEL
- CONTOUR LINE (1 METER INTERVAL)
- PROPOSED CONCRETE CANAL
- EXISTING IRRIGATION CANAL
- 6" RMP PIPE OUTLET



Prepared By:	Checked By:	Reviewed By:	Submitted By:	Recommending Approval:	Approved By:	Name of Project:
BEL JOSEPH D. ROMULO Engineer I	MATHIEK R. MIRA Engineer II	JERRY A. EBONIA District Engineer III	NILDA T. ALBAÑO Chief Road	LUIZ R. MARCELIANO ICED for Operation and Extension	RODEL P. KRIVILLA, JR. Regional Executive Engineer	Supply, Delivery, Installation & Commissioning of San Jose SPIS
						Location:
						Brgy. San Jose, Minalabac, Camarines Sur
						Sheet Contents:
						AS SHOWN
						Scale:
						1:1000
						Date:
						02/15



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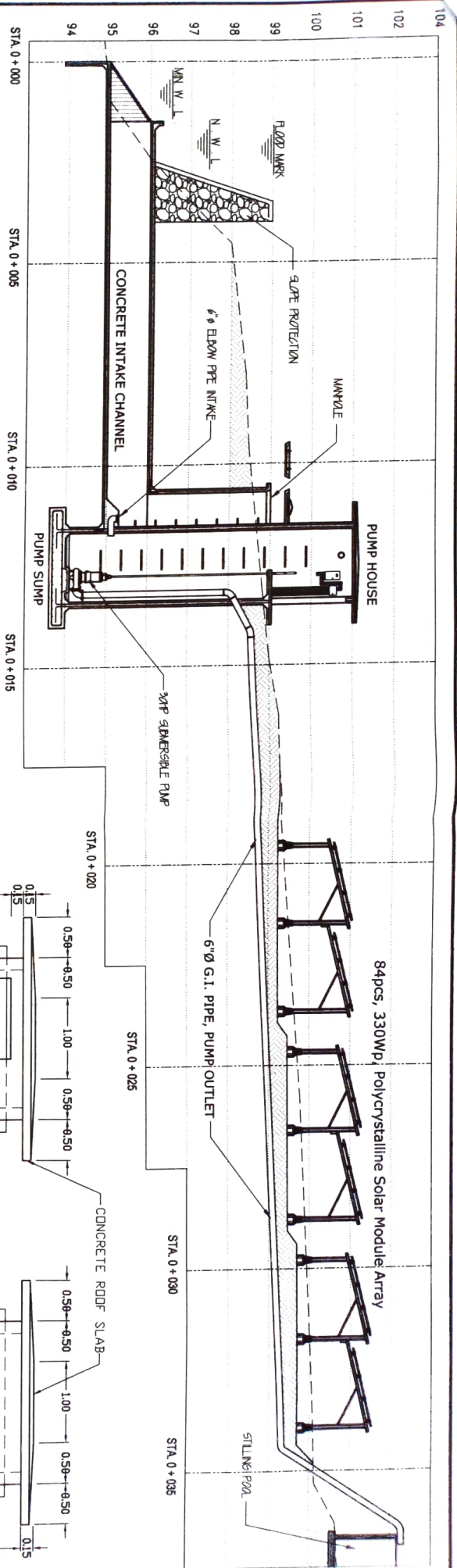
SITE DEVELOPMENT PLAN



LEGEND:

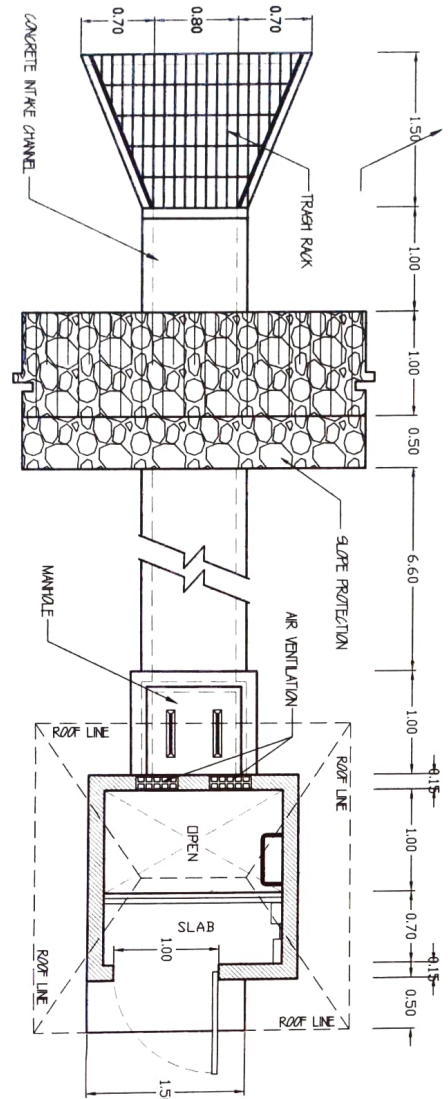
- BENCH MARK | FOOT OF MARGANY TREE (ELEVATION = 10000)
- STREAM FLOW
- 1x2 m SOLAR PANEL
- CONTOUR LINE (1 METER INTERVAL)
- EXISTING REGULATION CANAL
- 6" G.I. PIPE PUMP OUTLET

Prepared by: BEN JOSEPH D. RONITO Engineer	Checked by: ARTHUR B. MIRA Engineer II	Reviewed by: JHONY A. BROÑA Project Team Lead III	Submitted by: NILDA V. ALMANO Civil Engineer	Recommending Approval: LUZ R. MARCELINO KTO for Operation and Estimates	Approved by: RODEL P. ROSNITA Regional Executive Director
Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS					
Location: Brgy. San Jose, Mandalake, Camarines Sur					
Sheet Contents: AS SHOWN					
Scale: 1:1000	Date: 03/15	Drawn by: [Blank]			



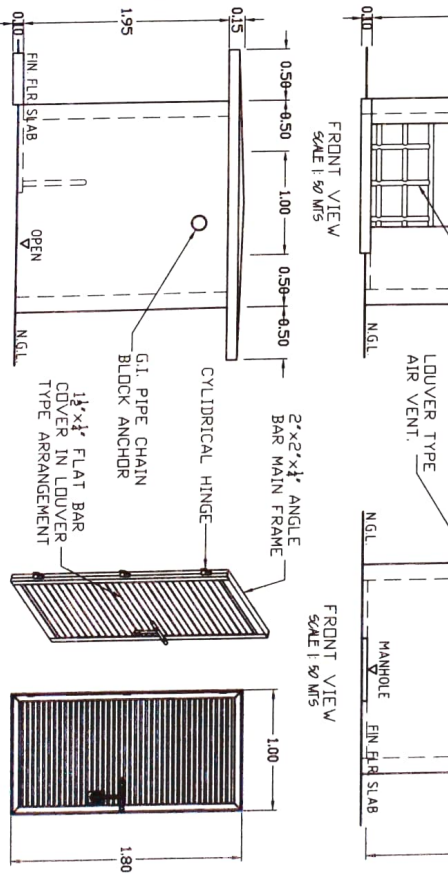
PROFILE ALONG CENTERLINE OF SPIS
SCALE 1:100 MTS.


PLAN OF PUMP SUMP & INTAKE STRUCTURE
SCALE 1:50 MTS.





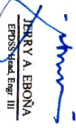



R-SIDE VIEW
SCALE 1:50 MTS

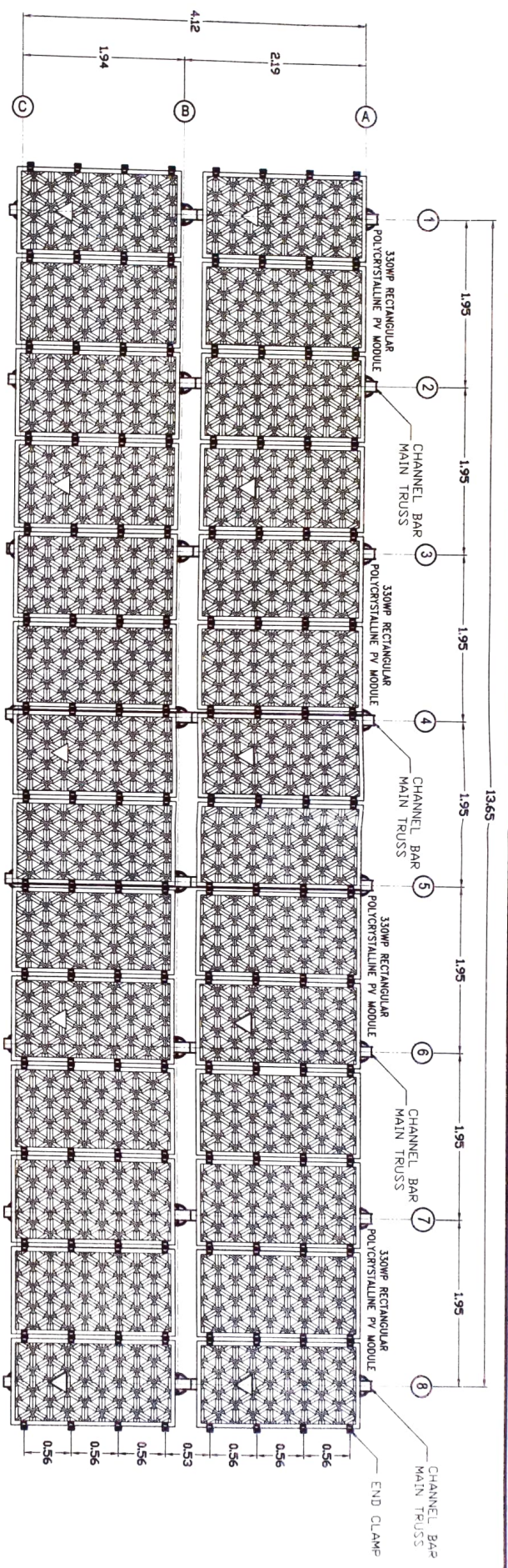
DETAIL OF PUMP HOUSE
SCALE AS SHOWN



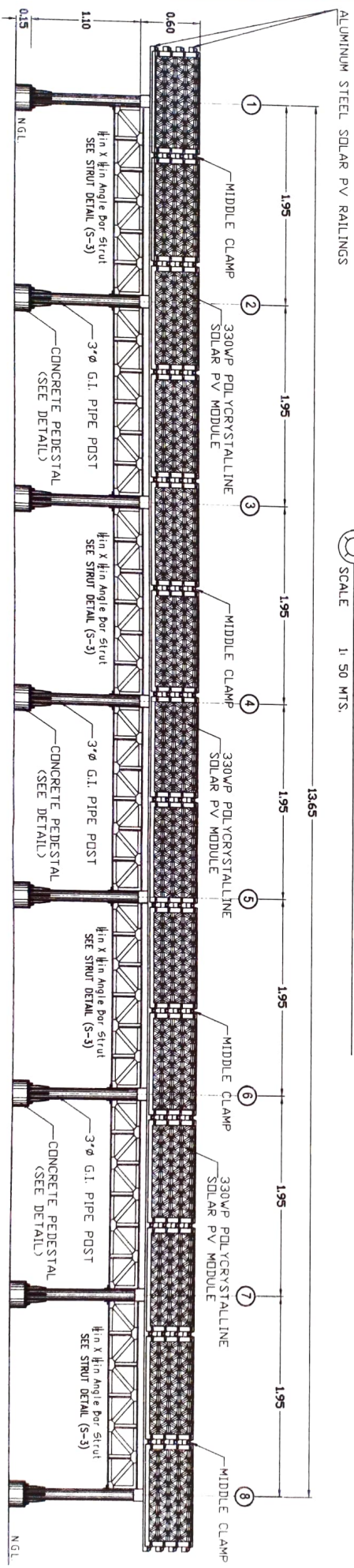


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Prepared by:		Checked by:		Reviewed by:		Submitted by:		Recommending Approval:		Approved by:	
Bel Joseph D. Panto Engineer I		Arnel B. Miro Engineer II		Jerry A. Borja Professional Engineer III		Nilda Albano Senior Field		Rudy Macalino MTO for Operations and Extension		Rodri Fornal Regional Director	
Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS Location: Brgy. San Jose, Minalaba, Camarines Sur Date: 04/15											

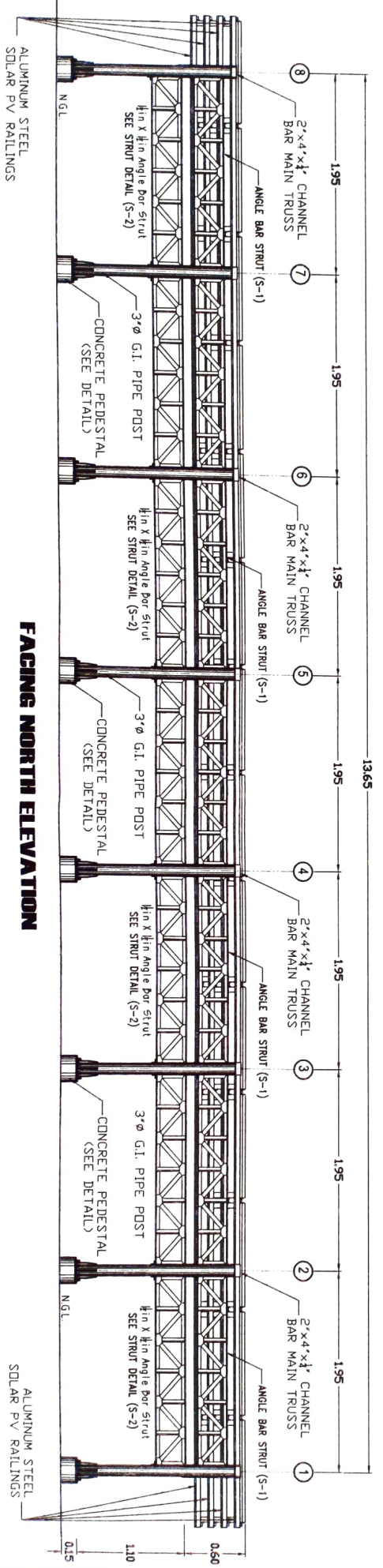
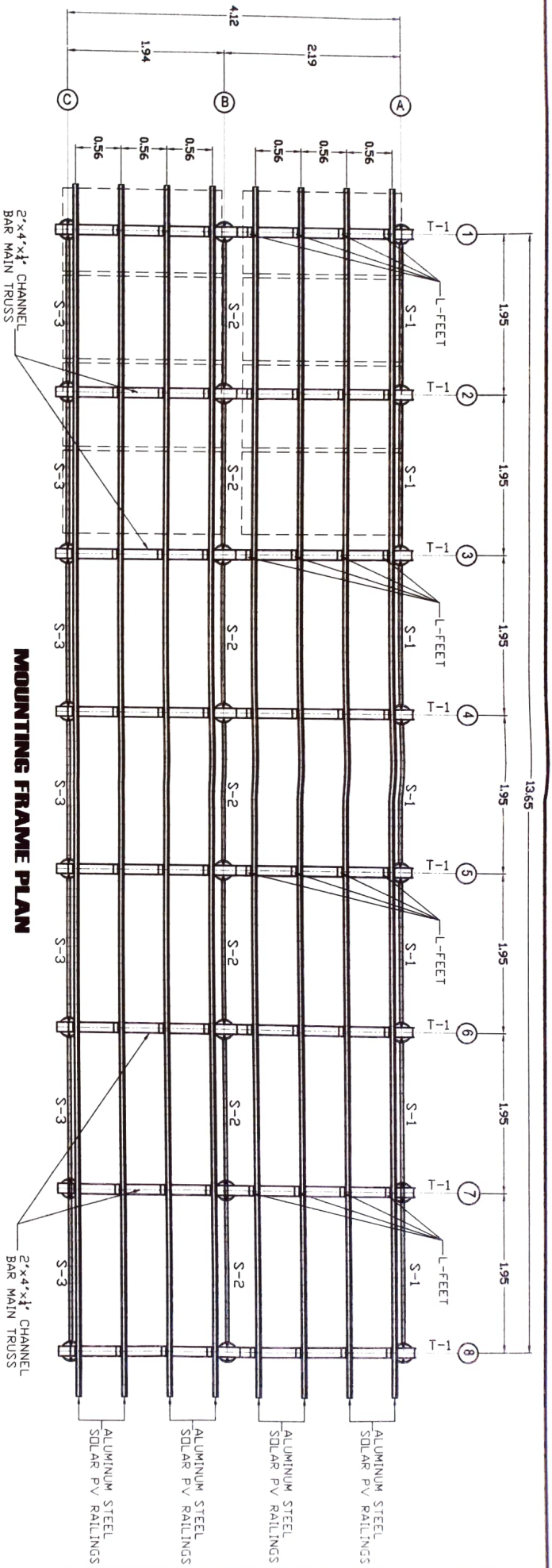


PLAN OF SOLAR MOUNTING STRUCTURE
SCALE 1: 50 MTS.



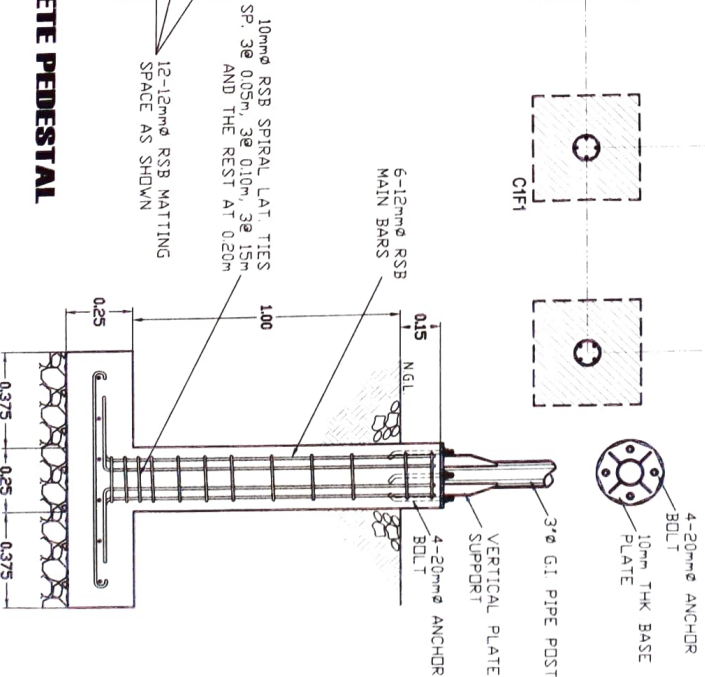
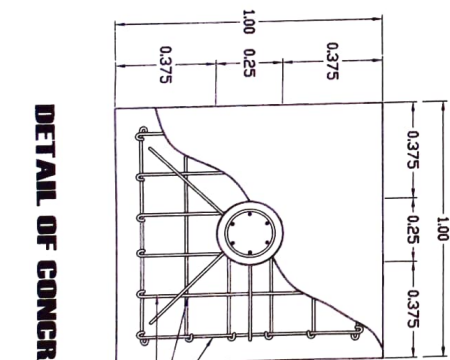
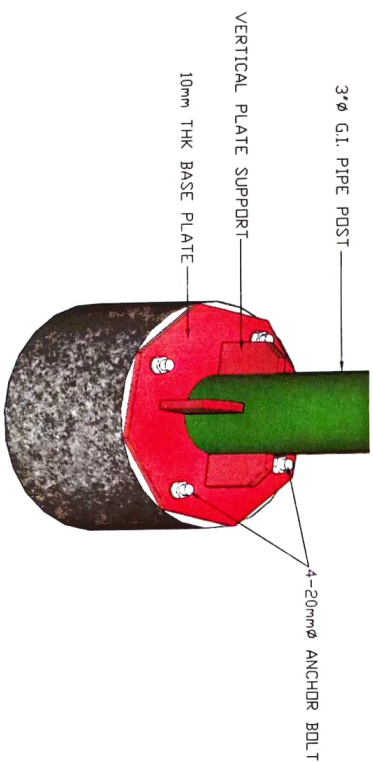
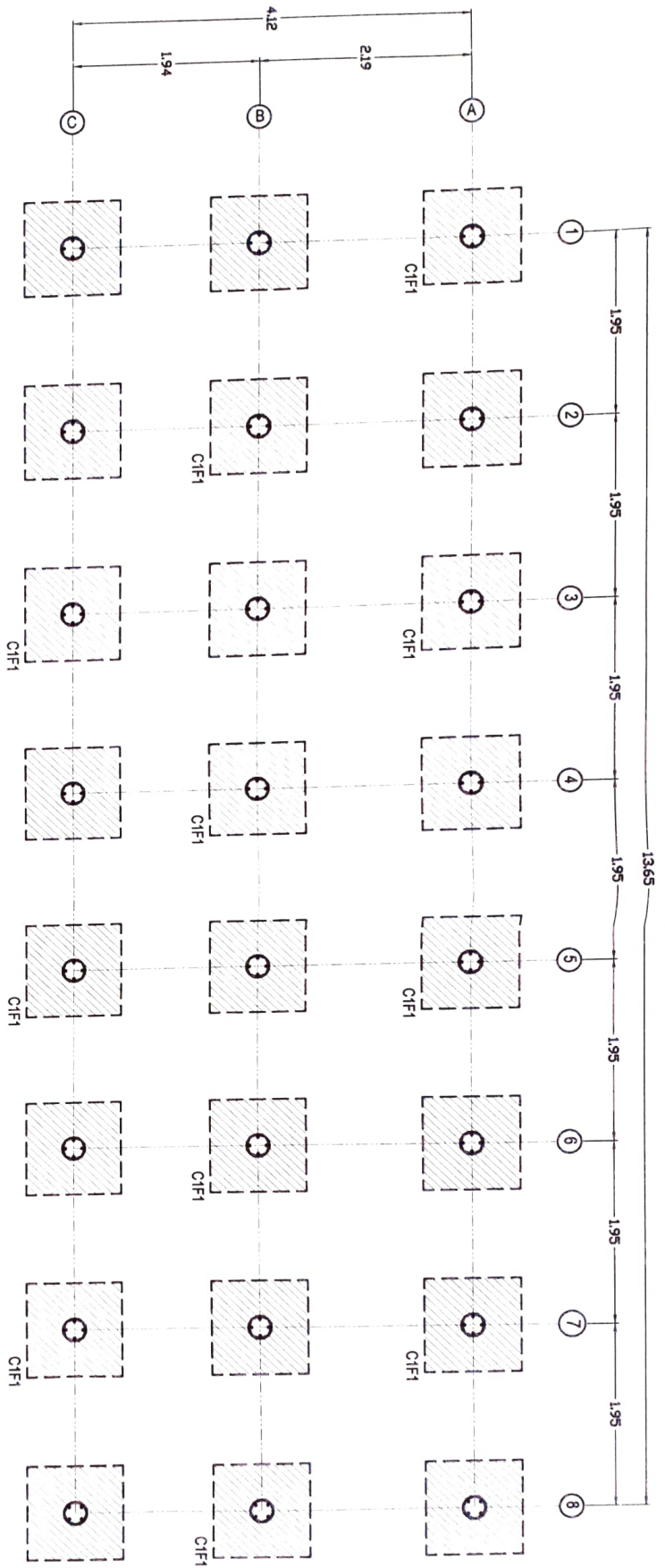
FACING SOUTH ELEVATION
SCALE 1: 40 MTS.

Requested by: <i>Bel Joseph D. Benito</i> Engineer I	Checked by: <i>Akhtar B. Mima</i> Engineer II	Reviewed by: <i>Jenny A. Ebrona</i> EPPS Field Sup III	Submitted by: <i>Nina M. ...</i> Civil Engr	Recommending Approval: <i>Liz M. ...</i> ASST. to Operations and Extension	Approved by: <i>Rodel P. ...</i> Regional Extension Director
Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS					
Location: Brgy. San Jose, Minalabac, Camarines Sur					
Sheet Count: AS SHOWN					
DATE: 06/15	DATE: 06/15	DATE: 06/15	DATE: 06/15	DATE: 06/15	DATE: 06/15



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Prepared by: BEL YSSEPH D. BONTINO Engineer I	Checked by: ANTHONY B. MIRA Engineer II	Reviewed by: JIMMY A. BENOJA EPSS Field Eng. III	Submitted by: NINYO C. MARIANO Chief, RUD	Recommending Approval: LUZ R. MARCELIANO ATD for Operations and Supervision	Approved by: RODEL PRODRONJA M. MABE Regional Engineer
Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPS Location: BRV, San Jose, Minalabac, Cagaianes Sur Special Comments: AS SHOWN					
DATE: 07/15					



FOUNDATION PLAN OF CONG. PEDESTAL

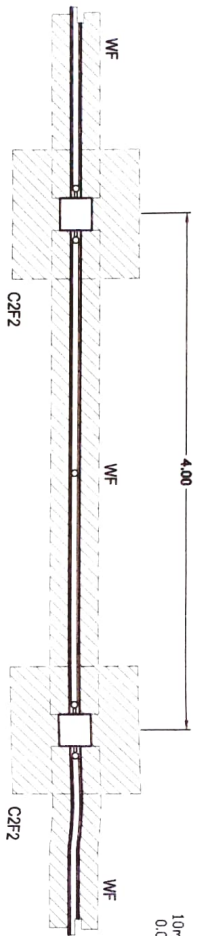
DETAIL OF CONCRETE PEDESTAL

SPOT DETAIL 'B'

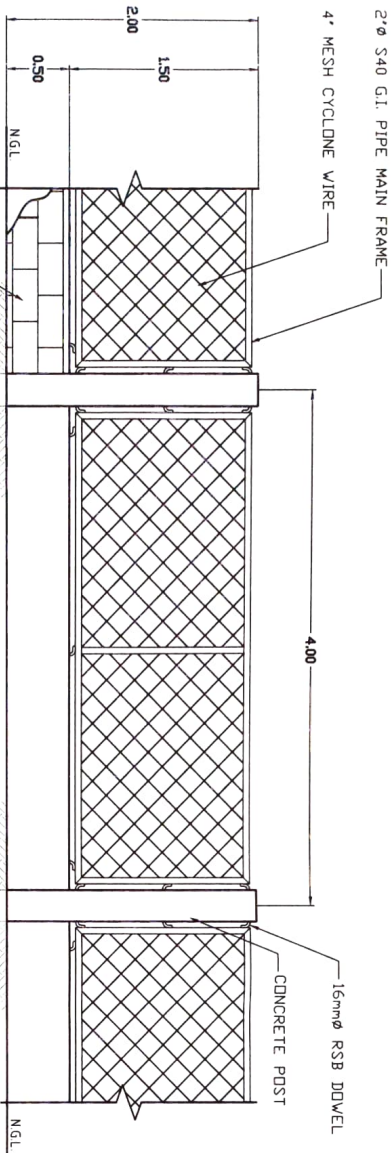


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REGIONAL FIELD UNIT NO. 5
SAN AGUSTIN, P.I.L., CAGARIRES SUR

Prepared by: <i>[Signature]</i> BENJAMIN HONTO Engineer I	Checked by: <i>[Signature]</i> ARHIEB MIRA Engineer II	Reviewed by: <i>[Signature]</i> JERRY A. EBONA EES-Field Eng. III	Submitted by: <i>[Signature]</i> NINERY ORTENO Chief (ASD)	Recommending Approval: <i>[Signature]</i> LUZ R. MARDELINO TTO for Operations and Extension	Approved by: <i>[Signature]</i> RODEL TORRALBA MABE Regional Engineer	Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS	Location: Brgy. San Jose, Minalabac, Camarines Sur	Sheet Count: AS SHOWN	DATE: 09/15
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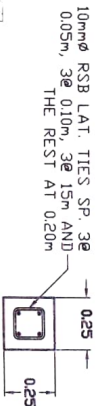


PLAN

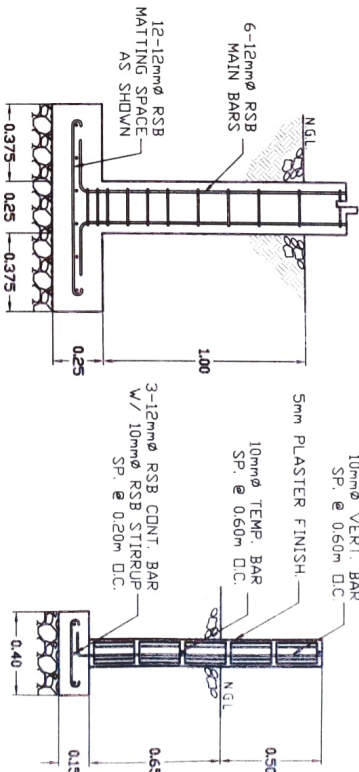
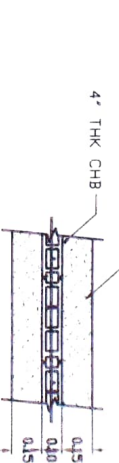


ELEVATION

DETAIL OF PERIMETER FENCE

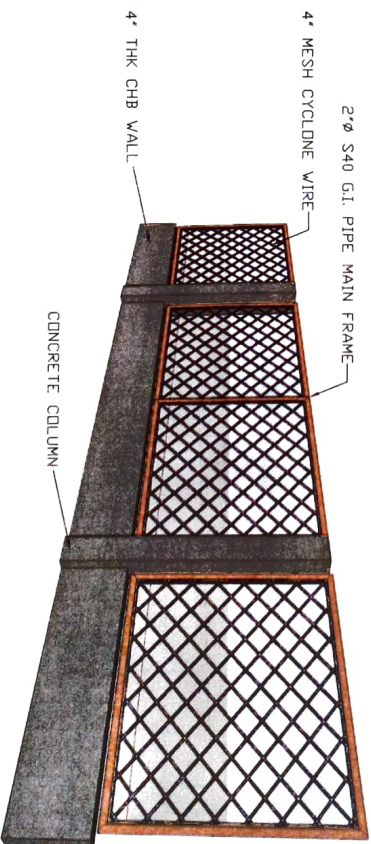


CLASS 4" WALL FOOTING



DETAIL OF C2F2

DETAIL OF WALL



ISOMETRIC

4" THK CHB WALL W/
CEMENT PLASTER
FINISH ON BOTH FACE

SEE DETAIL

SEE DETAIL

4" THK CHB WALL

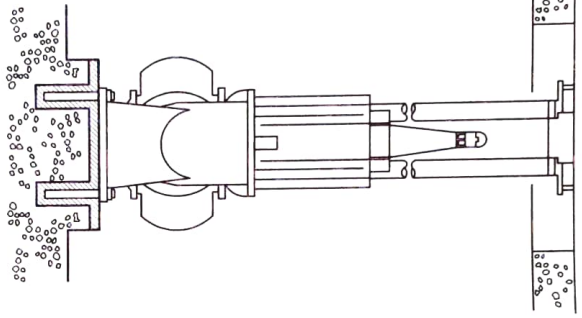
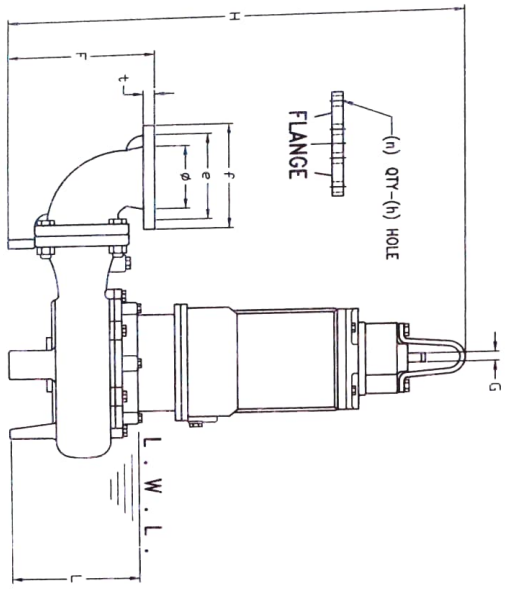
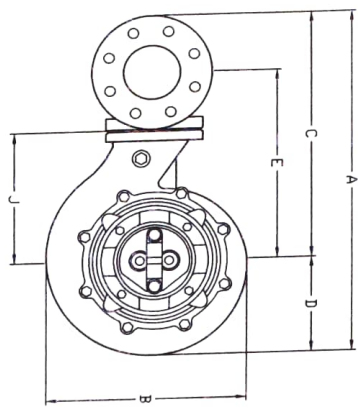
4" MESH CYCLONE WIRE

2" Ø S40 GI PIPE MAIN FRAME

CONCRETE COLUMN

Prepared by: REL JOSEPH D. BERNINO Engineer I	Checked by: ARTHUR B. MIRA Engineer II	Reviewed by: JIMMY A. BARRERA Engineer III	Submitted by: NILDA M. ALVARADO Sr. Asst. Engr.	Recommending Approval: LIZ R. MARCELANO RFD for Operations and Extension	Approved by: RODOLFO P. TORRES, Sr. Engineer in Charge	Office of the District Engineer San Jose Agustin, Pili, Camarines Sur	AS SHOWN
Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS Location: Brgy. San Jose Minalabac, Camarines Sur Date: 10/15/15							AS SHOWN

PHASE	SIZE	OUTPUT		PUMP AND MOTOR								FLANGE (ANSI 125 PSI F.F.)								UNIT
		KW	HP	A	B	C	D	E	F	G	H	J	L	Ø	e	f	t	n	h	
THREE	6	22	30	35.188	20.563	24.875	10.313	18.125	26.188	0.313	57.5	14.188	18.5	6	9.50	11	1	8	0.875	
	150			895	522	632	262	461	665	8	1375	360	470	150	241	279	25	8	22	



DESIGN PARAMETER

Computed Water Duty	1910 cum/day/ha - 1591 l/sec/ha
Target Rice Area	25 hectares
Pump Flow Requirement (5hrs solar pump operation)	95 liters/sec - 306 cum/hr
Total Dynamic Head	15.10 meters
Total pipe length	10 meters
Total static head	1250 meters
Friction loss	1444 m/100 m pipe length
Motor Rating	22 KW (3-460V, 40A)
Inverter Size	95 KW, 360V-700V DC INVERT
No. of Solar PV Module	84pcs, 390Wp (98.10 Vmp, 8.64 Imp)

LOAD SCHEDULE & COMPUTATIONS

O.K.T. NO.	LOAD DESCRIPTION	VOLT	CURRENT	CIRCUIT BREAKER			CONDUCTOR		CONDUIT (mm)
				AT	POLE	NO. OF C	SIZE	INSULATOR	
1	OFF GRID SOURCE -6 STRING- (38.2V, 8.64A)	535	8.64	15	1	6	3.5 mm ²	THHW	25 mm ^Ø
2	INVERTER DC Input: 360V-700V	535	51.84	65	2	2	22.0 mm ²	THHW	50 mm ^Ø
3	22KW MOTOR	460	40	120	3	3	30.0 mm ²	THHW	50 mm ^Ø

COMPUTATIONS :

IF = 8.64A/6
= 51.84 AMPS
FOR PV PROTECTOR

IF = 51.84x1.25(SF)
= 64.80 AMPS
FROM INVERTER

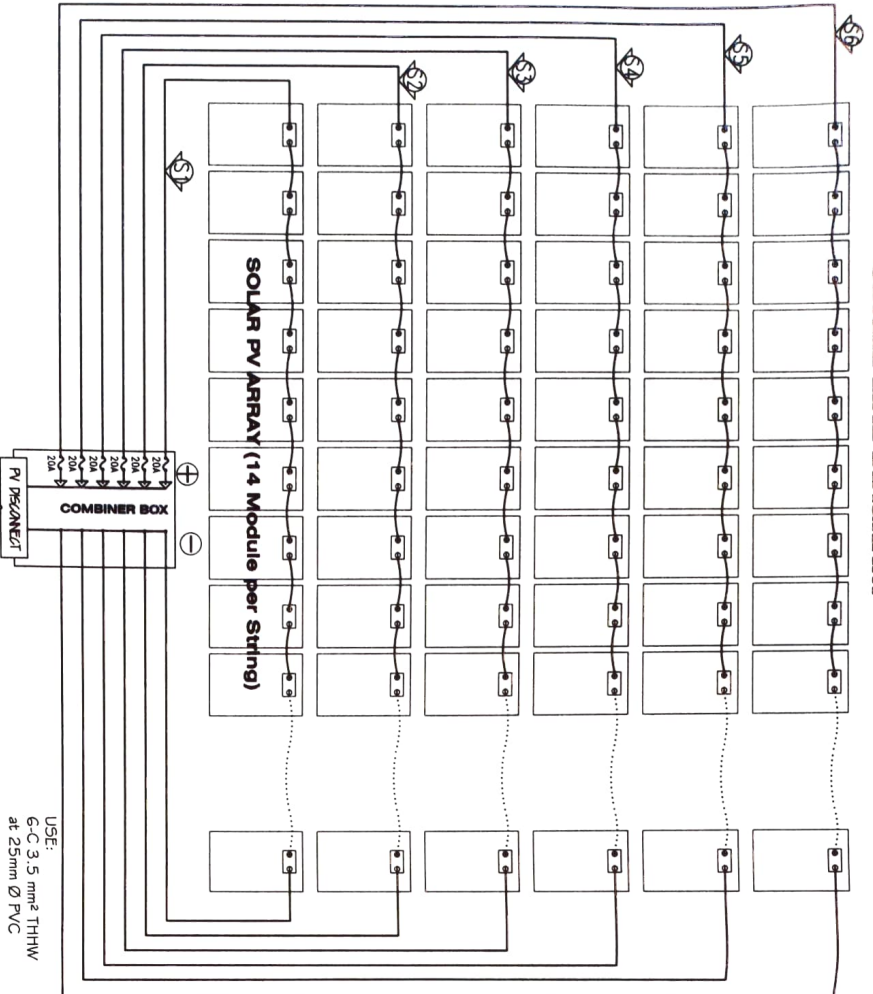
IF = 40x2.5(SF)
= 100 AMPS
FOR MOTOR

USE : #4-22mm² THHW
#2-30mm² THHW IN SOME PVC
120A.T. 3P. 460V. OCT BREAKER

SUBMERSIBLE PUMP DETAIL

		Prepared by:		Checked by:		Reviewed by:		Submitted by:		Recommending Approval:		Approved by:		Name of District: _____	
BEL JOSEPH D. BRNITO Engineer I		ARTURO B. MIRA Engineer II		JERRY A. BORNA Engineer III		NILDA T. MADANO Chief/CTD		LUZ R. MARCELINO CTD for Operations and Extension		RODIEL P. ZORBU Regional Electrical Engineer		Supply, Delivery, Installation & Commissioning of San Jose SPIS		Date: _____	
Location: _____		Brgy: San Jose Minalabac, Camarines Sur		Sheet Count: _____		AS SHOWN		Scale: _____		Date: _____		No. _____		_____	

SINGLE LINE DIAGRAM



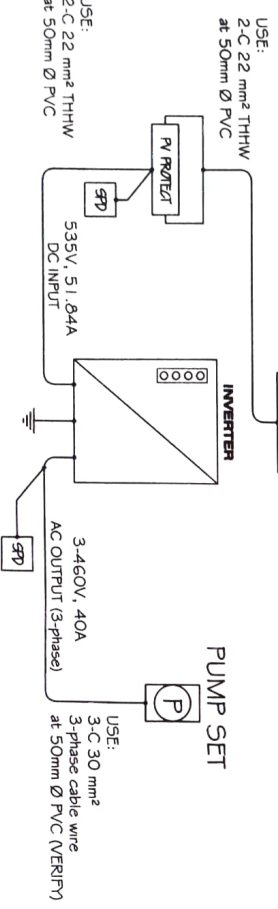
GENERAL NOTE:

- A solar photovoltaic system shall be permitted to supply a building or other structure in addition to any service(s) of another electricity supply system (s)
- 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.
- 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.
- Inverters or motor generators shall be identified for use in solar photovoltaic systems.
- All photovoltaic source and output circuits shall be provided with a ground-fault protection device or system.

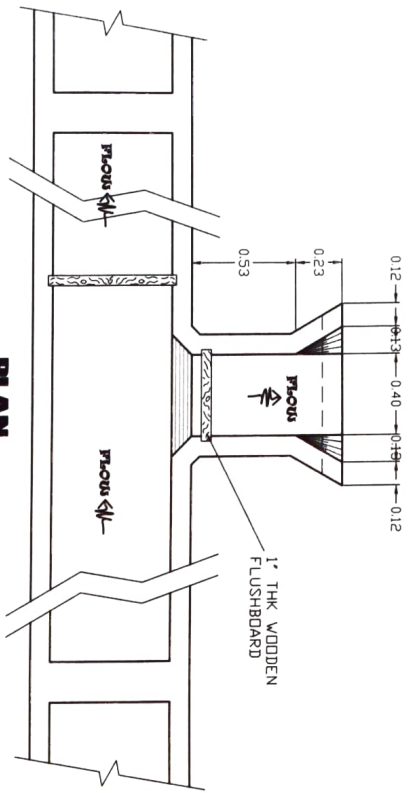
- All raceway and cable wiring methods included in this Code and other wiring systems and fittings specifically intended and identified for use on photovoltaic arrays shall be permitted. Where wiring devices with integral enclosures are used, sufficient length of cable shall be provided to facilitate replacement.
- 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.
- Junction, pull, and outlet boxes located behind modules or panels shall be installed so that the wiring confined 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.
- 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.
- 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:

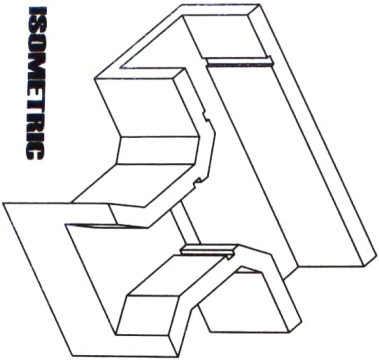
- ~ DC WIRE
- ⊕ GROUND PROTECTIVE DEVICE
- ⊖ SOLAR PUMP INVERTER
- ⊞ PUMP SET
- ⊟ SOLAR PV MODULE
- NO. OF STRINGS (14 MODULE PER STRING)
- ⤴ PLOTTING PAGE



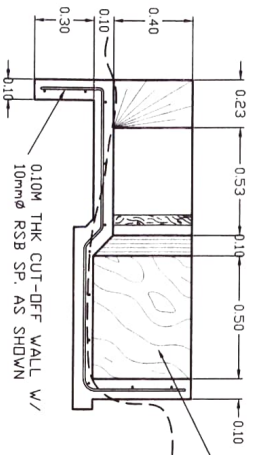
Prepared by: BEL JESHER D. BONITO Engineer I	Checked by: ARTHUR B. MIRA Engineer II	Reviewed by: JERRY A. EBONA EPSS Team Lead III	Submitted by: NILDA MARRANO Chief, E&E	Recommending Approval: LUZ R. MARCELENO TID for Operations and Extension	Approved by: RODEL P. ROSNILLAN Region 5 Executive Director	Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPS	Location: Brgy. San Jose, Minalabac, Camarines Sur	Drawn by: AS SHOWN	DATE: 12/15
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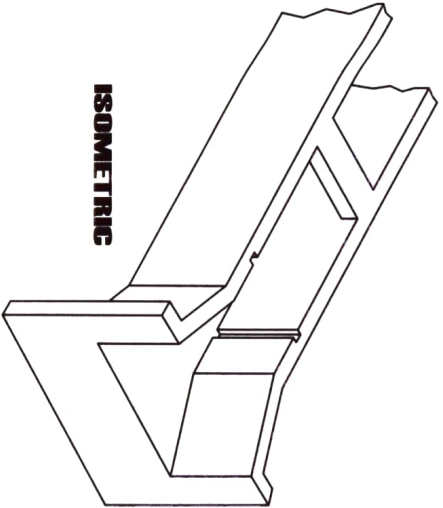
PLAN



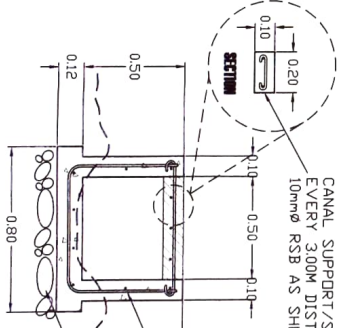
ISOMETRIC



SECTION



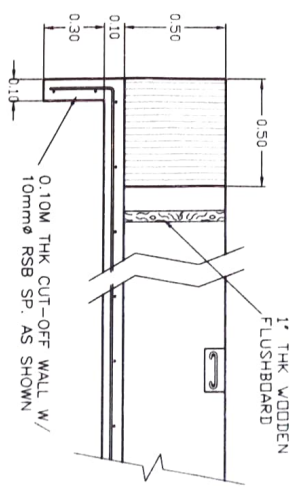
ISOMETRIC



CLASS 'B' CONCRETE CANAL W/ 12mm Ø U-BARS SPACED @ 0.60M & 8-10mm Ø LONGITUDINAL BARS SPACED AS SHOWN

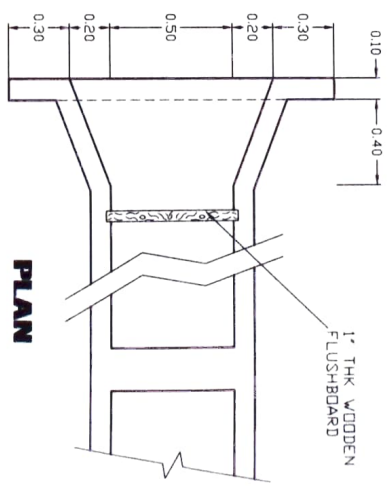
0.10M THK LEVELLING COURSE

NGL



SECTION

DETAIL OF END CHECK



PLAN

DETAIL OF TURN-OUT

DETAIL OF CONG. CANAL

[CL = 4810 LM]

Prepared by: BEL ROBERTO BERNITO Engineer I	Checked by: ARTHUR B. MIRA Engineer II	Reviewed by: JERRY A. BERNIA Project Team Lead III	Submitted by: NINFA M. MANSO Civil Engineer	Recommending Approval: LIZ & MARCELINE RTD for Operation and Extension	Approved by: RODEL H. JOYANTA Regional Extension Director	Nature of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS	DATE: 13/15
Location: Brgy. San Jose, Mandalac, Camarines Sur						Sheet Count: AS SHOWN	DATE: 13/15



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Prepared by:
BEN JESPER D. BONITO
Engineer I

Checked by:
ANGELICA MIRA
Engineer II

Reviewed by:
JERRY A. BORDA
District Eng. III

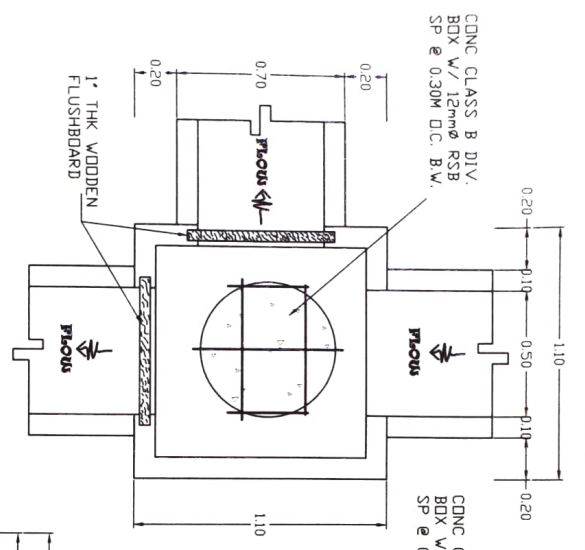
Submitted by:
NILDA ALBANO
Chief RABD

Recommending Approval:
LIZ RIVARDO
RFO for Operation and Extension

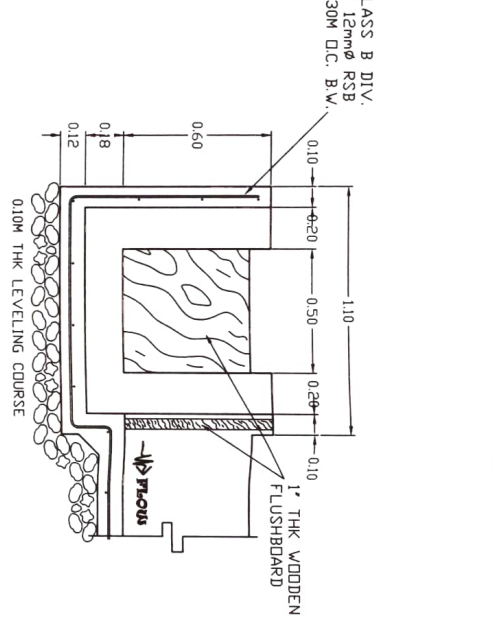
Approved by:
RODEL P. JONILLO
Regional Executive Director

Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS
Location: Brgy. San Jose, Minalaha, Camarines Sur
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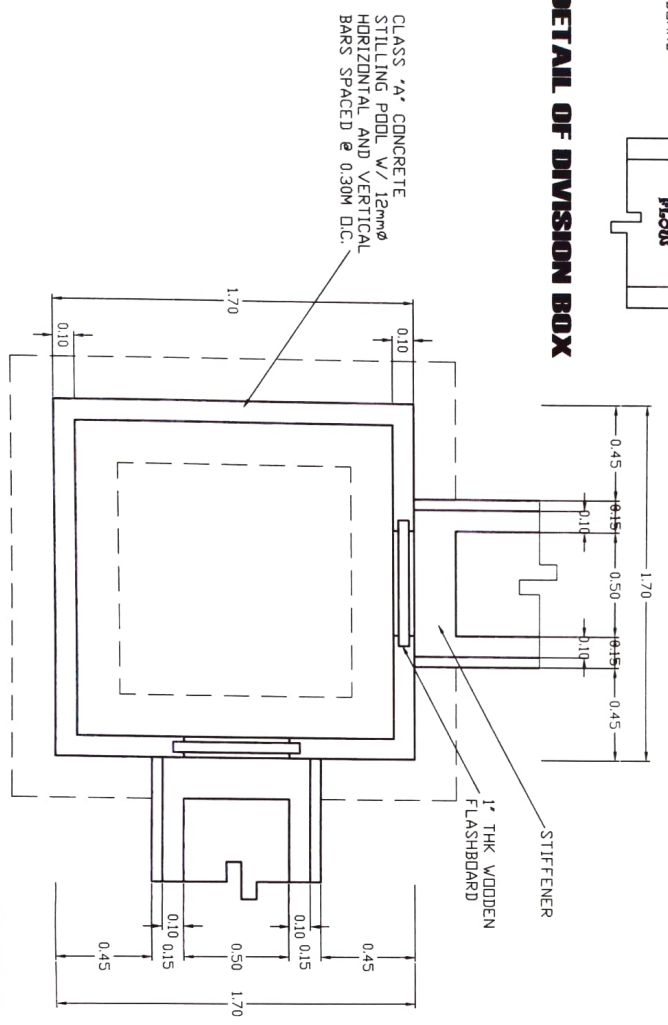
DATE: 14/15



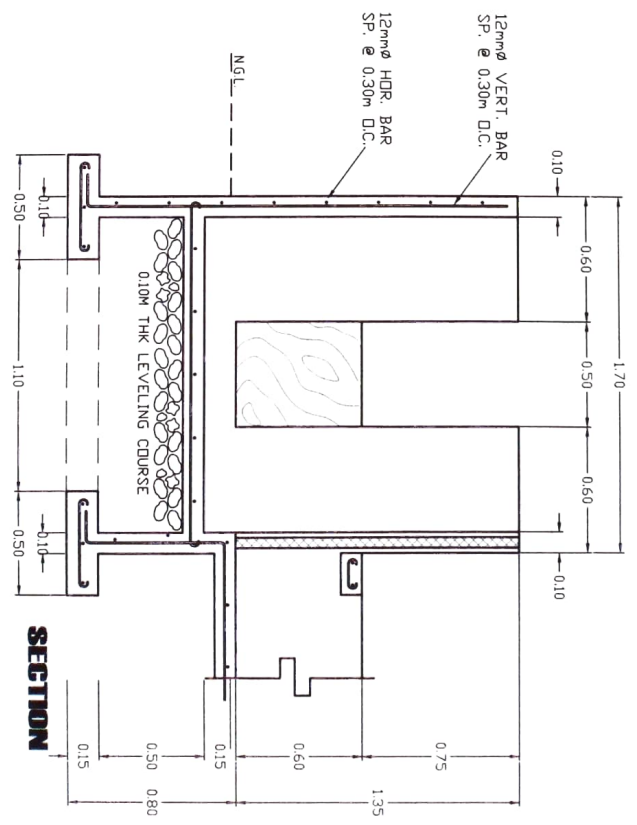
DETAIL OF DIVISION BOX



ISOMETRIC



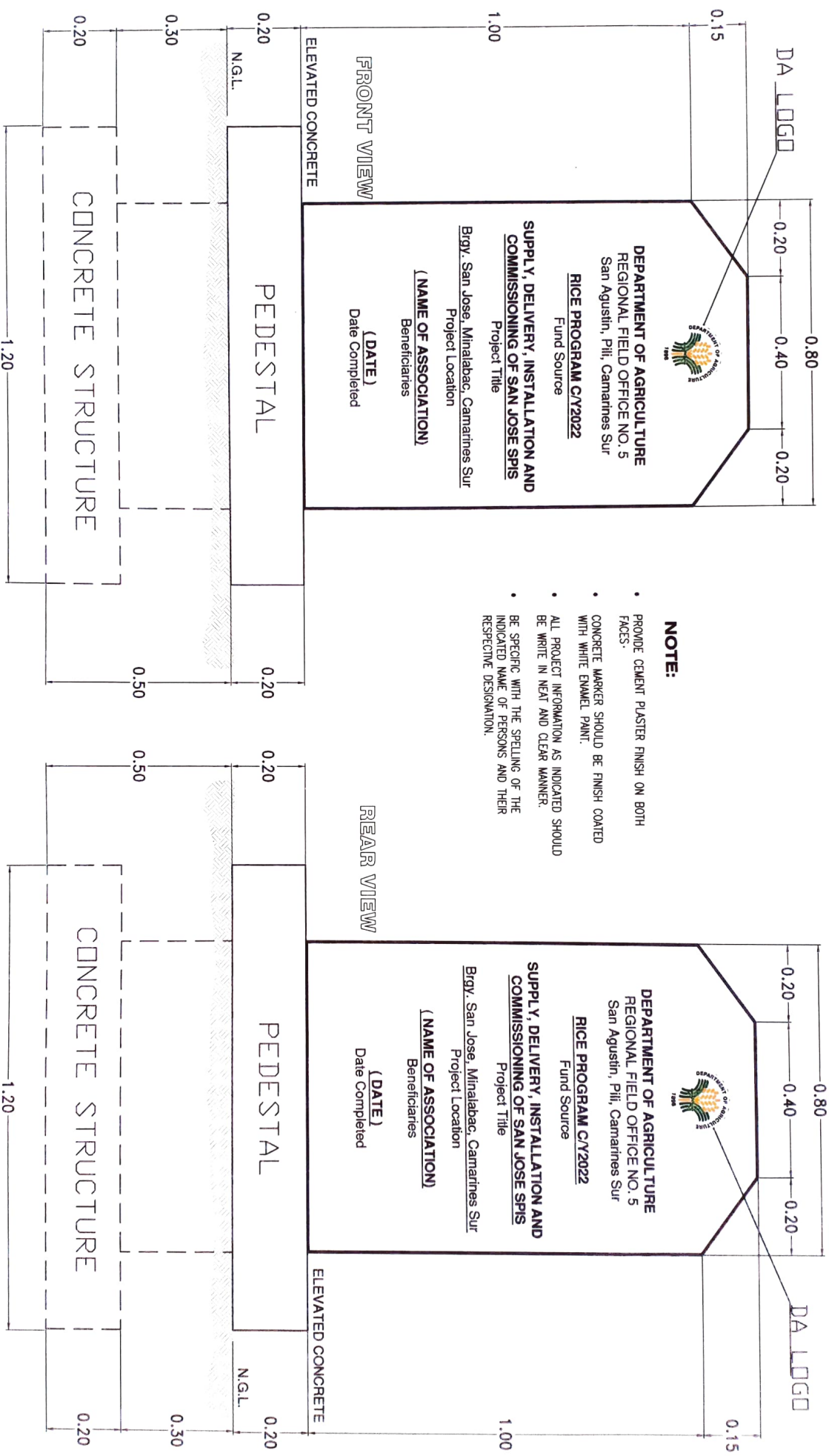
PLAN



SECTION


DETAIL OF STILLING POOL

NEW CONCRETE MARKER OF RICE PROGRAM PROJECT
SCALE: 1:10m.




NOTE:



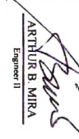
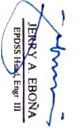

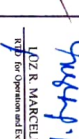
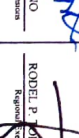
- PROVIDE CEMENT PLASTER FINISH ON BOTH FACES.
- CONCRETE MARKER SHOULD BE FINISH COATED WITH WHITE ENAMEL PAINT.
- ALL PROJECT INFORMATION AS INDICATED SHOULD BE WRITE IN NEAT AND CLEAR MANNER.
- BE SPECIFIC WITH THE SPELLING OF THE INDICATED NAME OF PERSONS AND THEIR RESPECTIVE DESIGNATION.


DEPARTMENT OF AGRICULTURE
 REGIONAL FIELD OFFICE NO. 5
 San Agustin, Pili, Camarines Sur
RICE PROGRAM C/Y2022
 Fund Source

SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF SAN JOSE SPIS
 Project Title
 Brig. San Jose, Minalabac, Camarines Sur
 Project Location
 Beneficiaries
 (NAME OF ASSOCIATION)
 Date Completed


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 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRICULTURE REGIONAL FIELD UNIT NO. 5 SAN AGUSTIN, PILI, CAMARINES SUR	Prepared by:	Checked by:	Reviewed by:	Submitted by:	Recommending Approval:	Approved by:	Name of Project:	Date:
	 BEL JOSEPH D. BANDO Engineer I	 ARTHUR B. MIRA Engineer II	 JENCY A. ERONA Engineer III	 J. MARIANO Civil Engineer	 LIZ R. MARCELINO Chief for Operation and Extension	 RODEL P. ROSUL Regional Accountant	Supply, Delivery, Installation & Commissioning of San Jose SPIS Location: Brig. San Jose, Minalabac, Camarines Sur Sheet Content: AS SHOWN	15 / 15