REPUBLIC OF THE PHILIPPINES

DEPARTMENT OF AGRICULTURE

REGIONAL FIELD UNIT NO.5

SAN AGUSTIN, PILI, CAMARINES SUR.

PROJECT TITLE

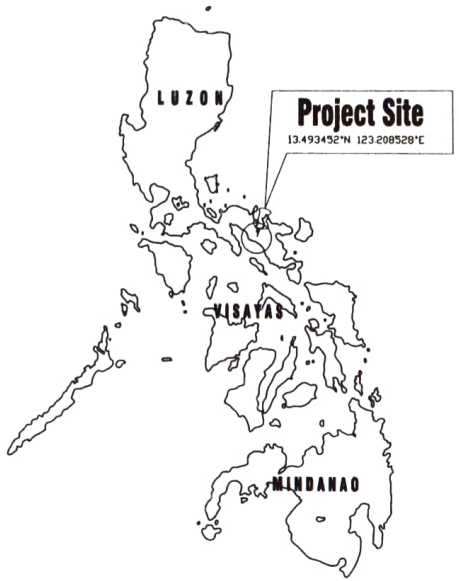
P R O P O S E D :

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

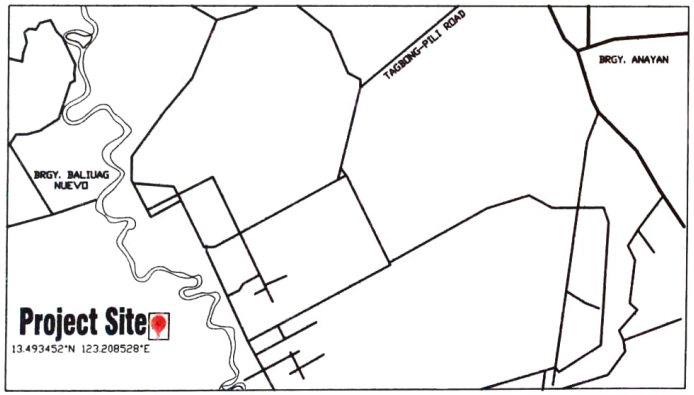
LOCATION: BRGY. SAN JOSE, MINALABAC, CAMARINES SUR

PREPARED BY:

RAED OFFICE



LOCATION MAP



VICINITY MAP

SHEET CONTENT :

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Name of Project:
Supply, Delivery, Installation & Commissioning of San Jose SPIS

Location:
Brgy. San Jose, Minalabac, Camarines Sur

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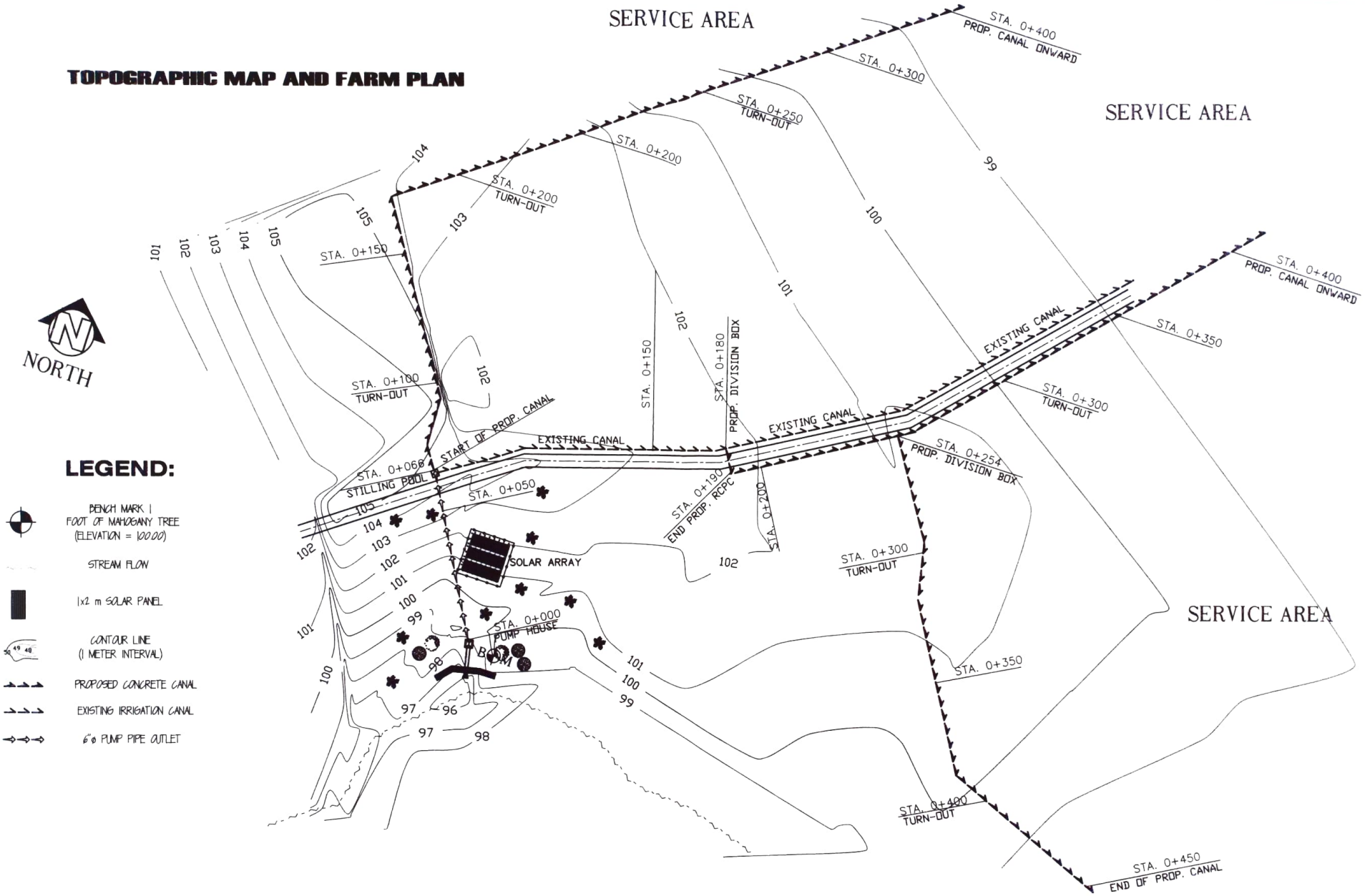
TOPOGRAPHIC MAP AND FARM PLAN



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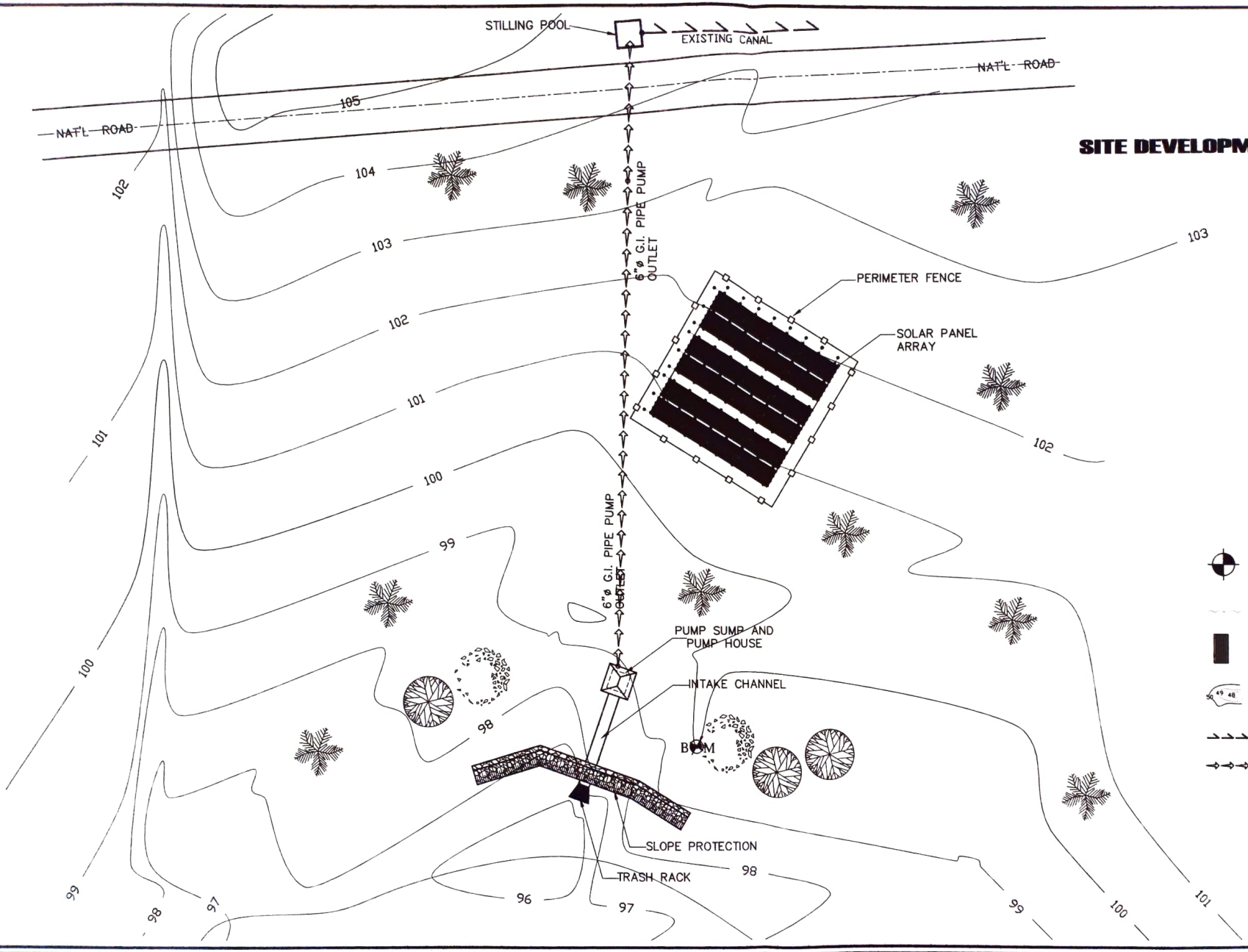
SITE DEVELOPMENT PLAN



LEGEND:

- BENCH MARK I FOOT OF MAHOGANY TREE (ELEVATION = 100.00)
- STREAM FLOW
- 1x2 m SOLAR PANEL
- CONTOUR LINE (1 METER INTERVAL)
- EXISTING IRRIGATION CANAL
- 6"ø PUMP PIPE OUTLET

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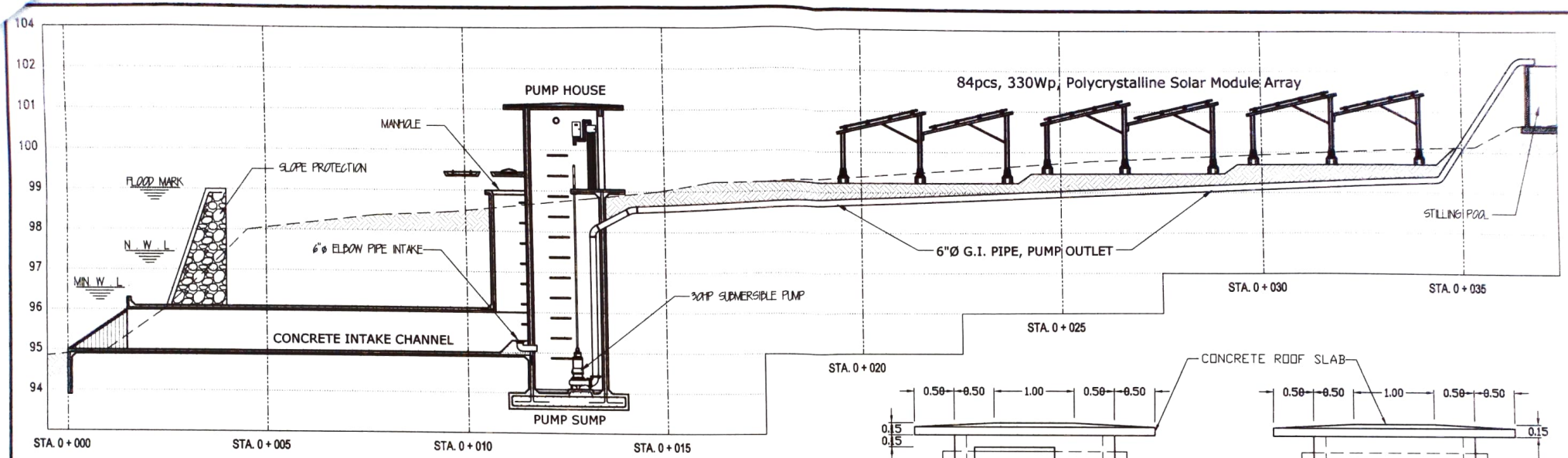
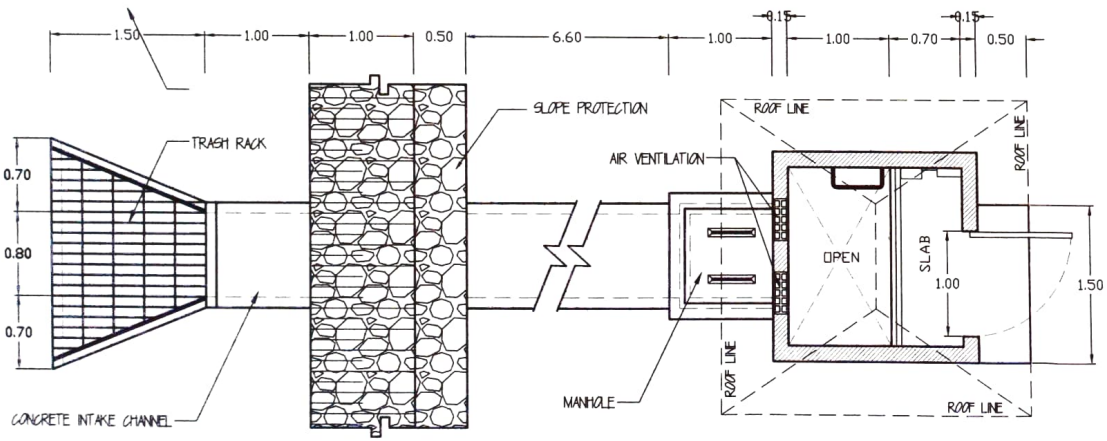


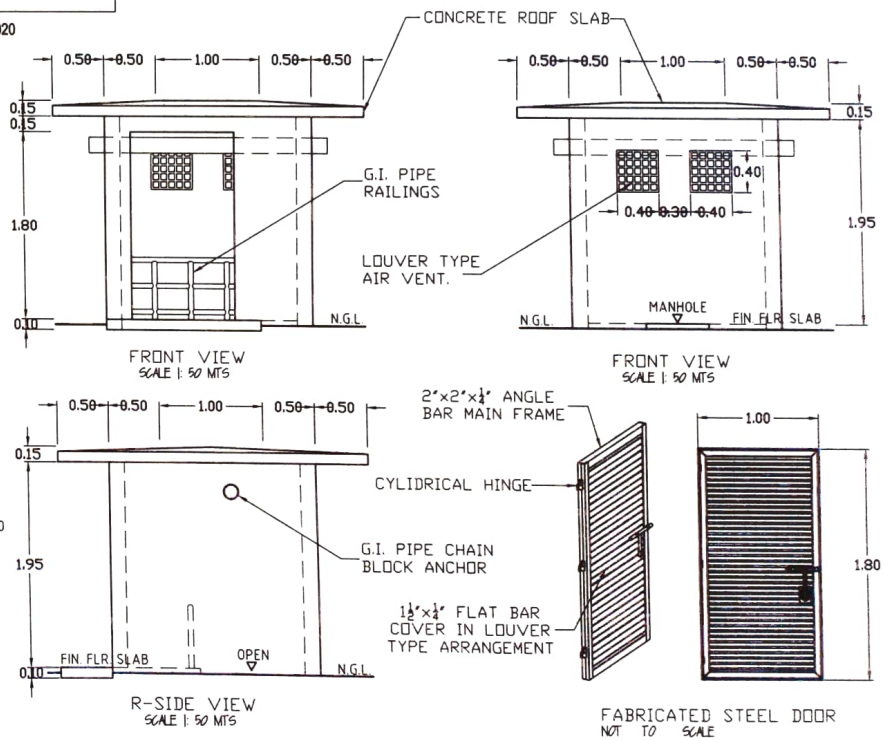
PROFILE ALONG CENTERLINE OF SPIS

SCALE 1: 100 MTS.



PLAN OF PUMP SUMP & INTAKE STRUCTURE

SCALE 1: 50 MTS.



DETAIL OF PUMP HOUSE

SCALE AS SHOWN

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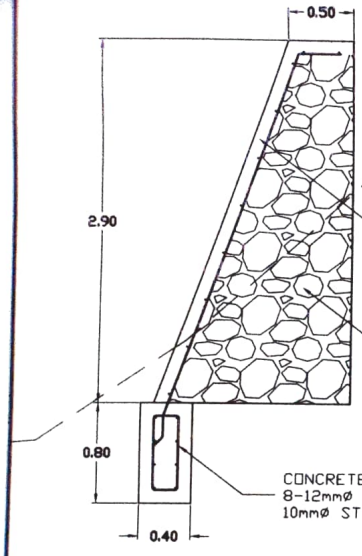
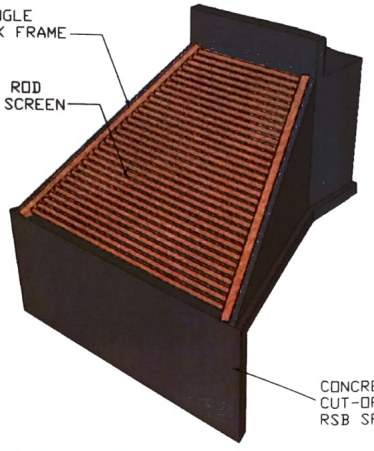


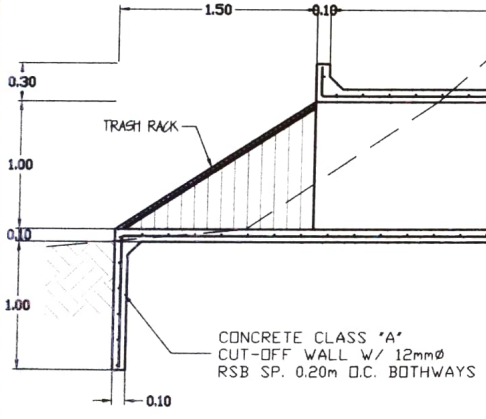
DETAIL OF SLOPE PROTECTION

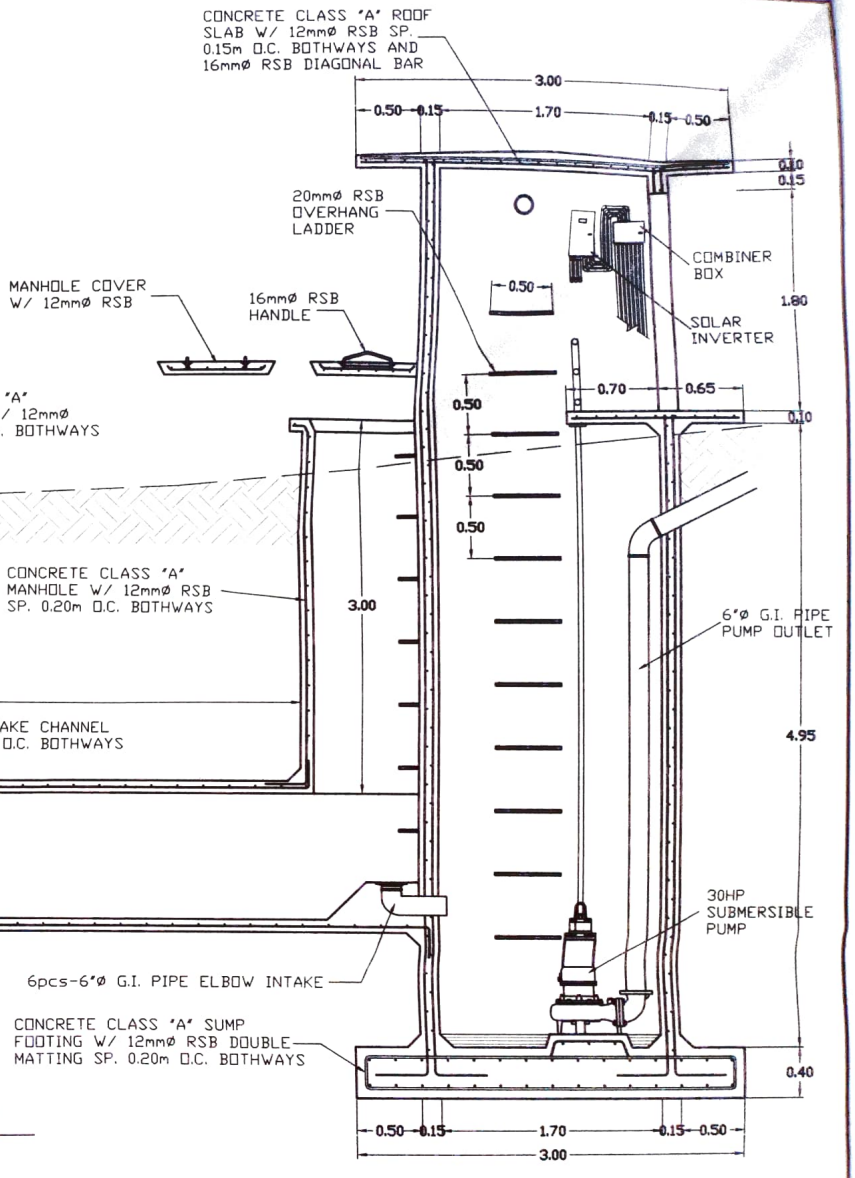
SCALE 1: 40 MTS.



DETAIL OF TRASH RACK

NOT TO SCALE





DETAIL OF INTAKE CHANNEL & PUMP SUMP

SCALE 1: 40 MTS.

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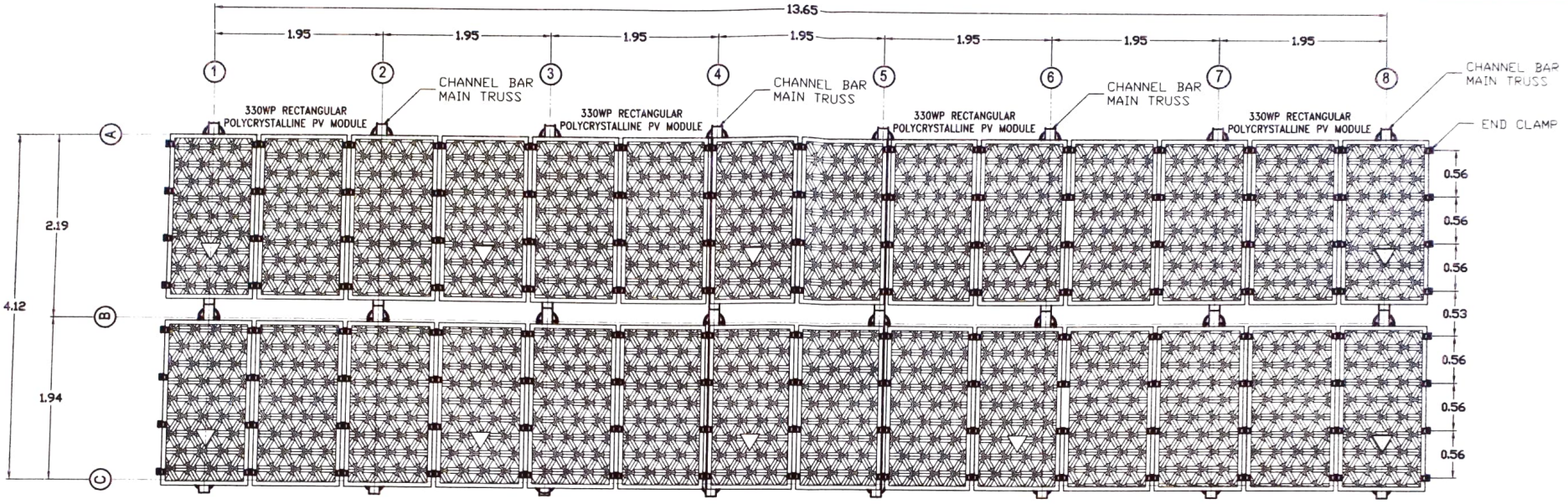
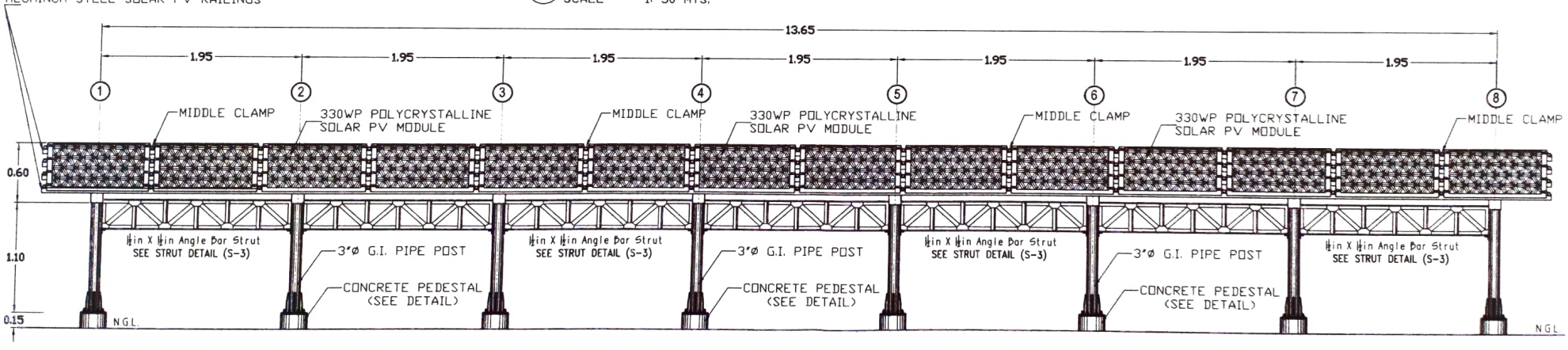


PLAN OF SOLAR MOUNTING STRUCTURE

SCALE 1: 50 MTS.



FACING SOUTH ELEVATION

SCALE 1: 40 MTS.

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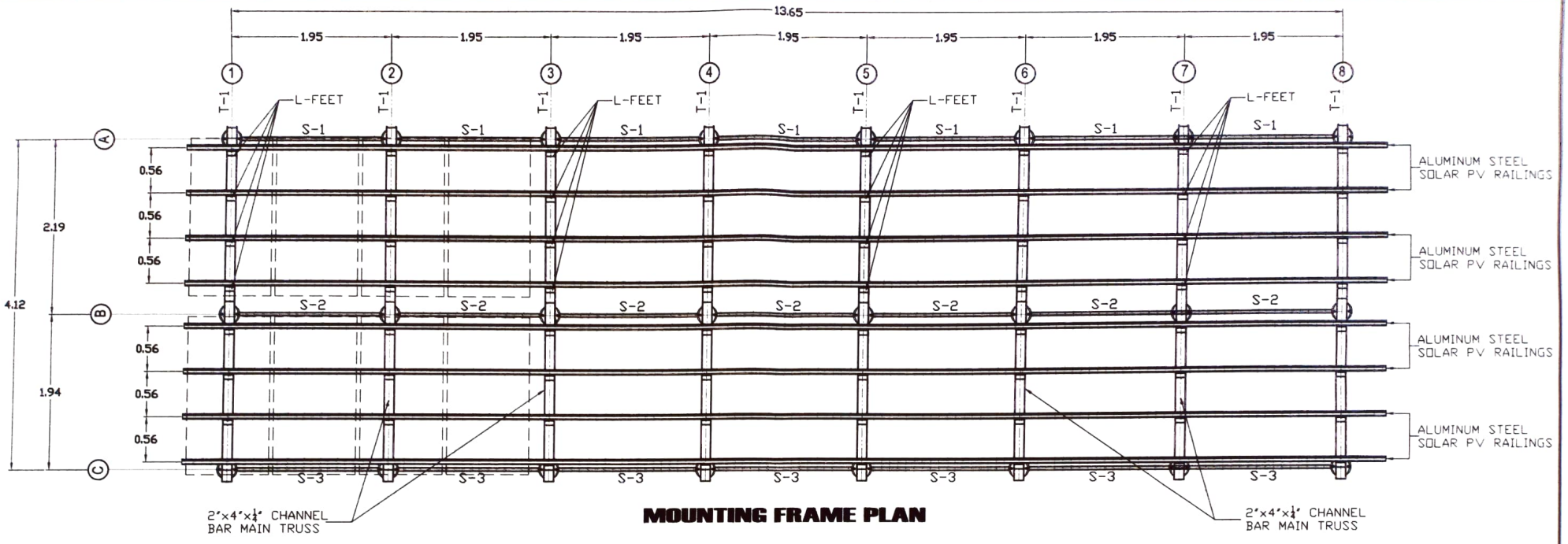
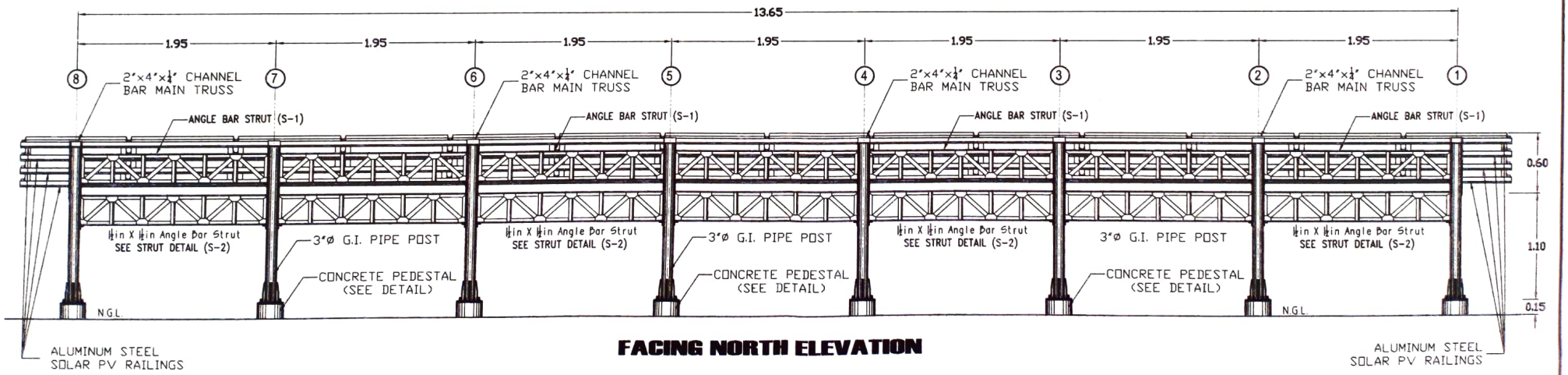


MOUNTING FRAME PLAN



FACING NORTH ELEVATION

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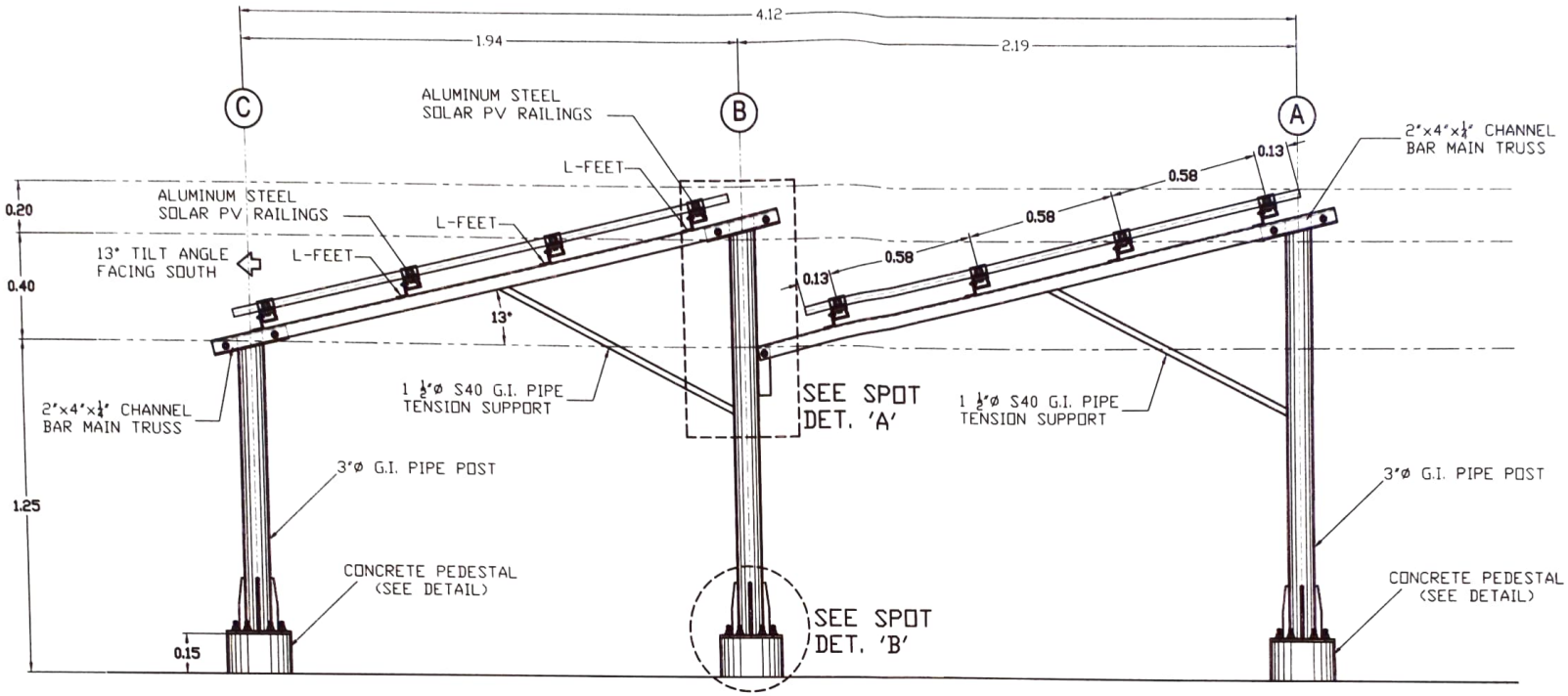
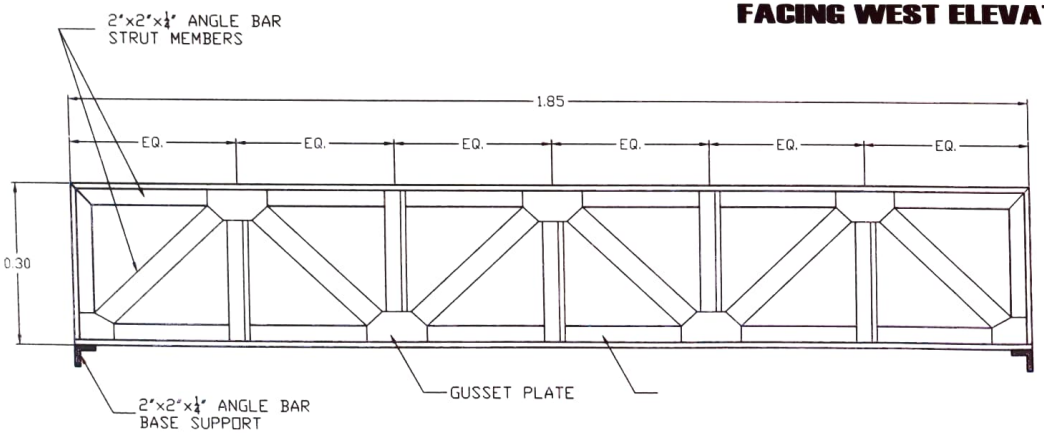
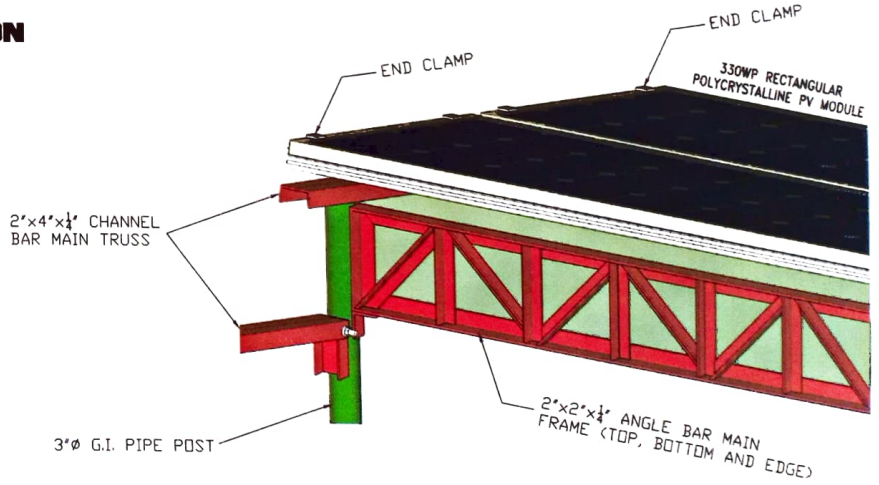


FACING WEST ELEVATION



DETAIL OF STRUT (S-1, S-2, S-3)



SPOT DETAIL 'A'

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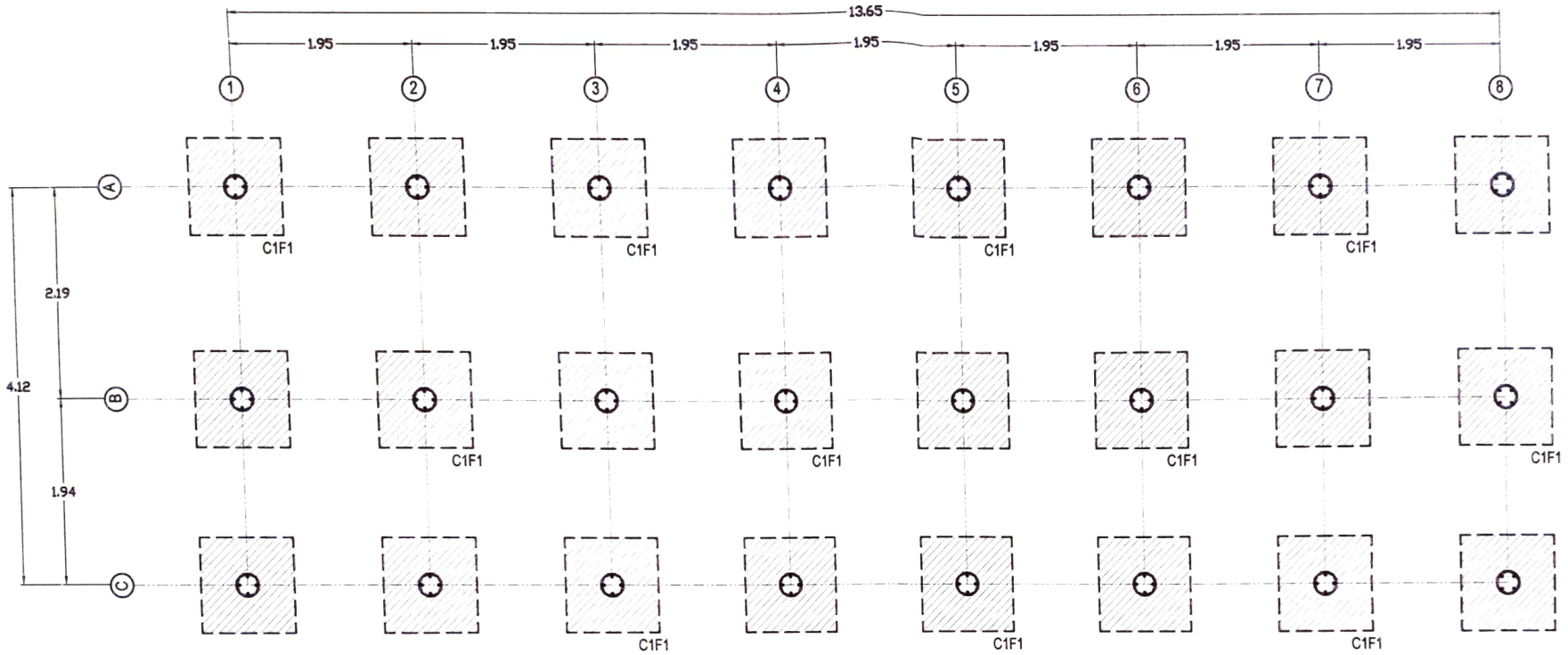
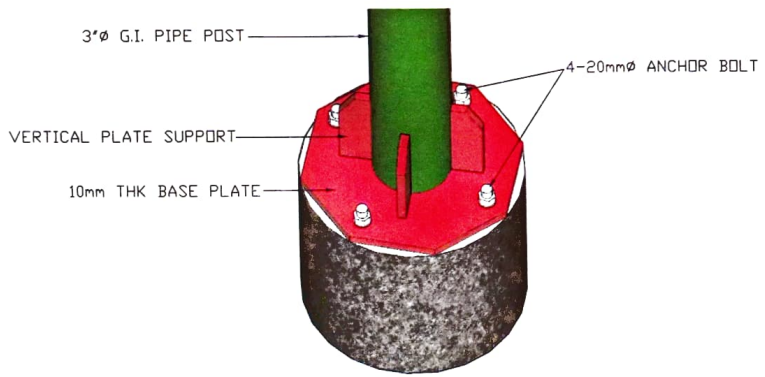
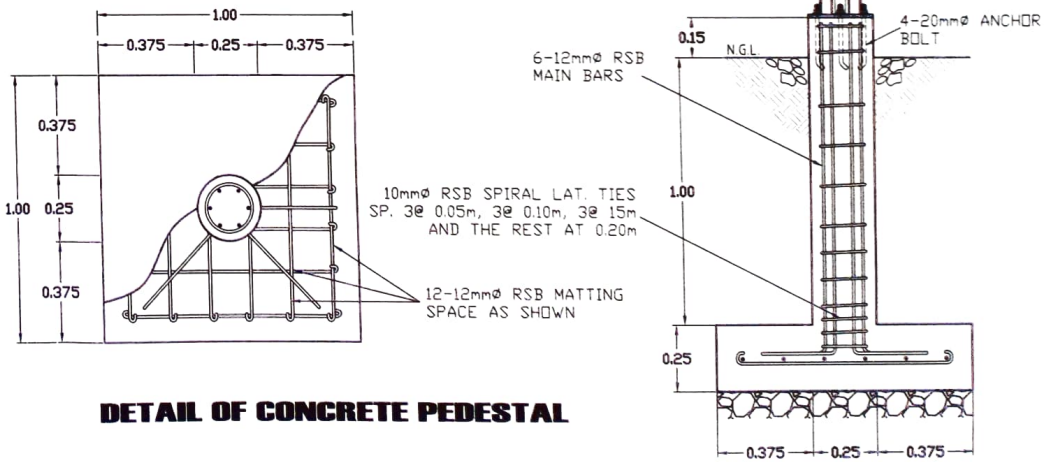


FOUNDATION PLAN OF CONC. PEDESTAL



SPOT DETAIL 'B'



DETAIL OF CONCRETE PEDESTAL

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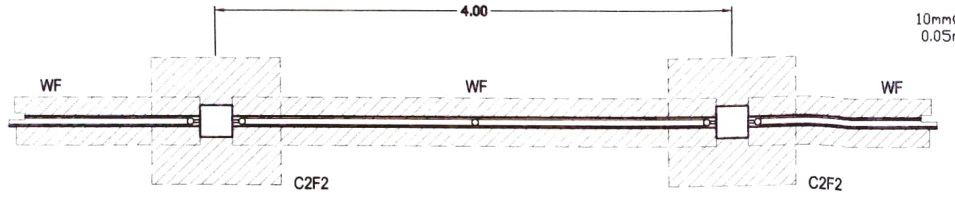
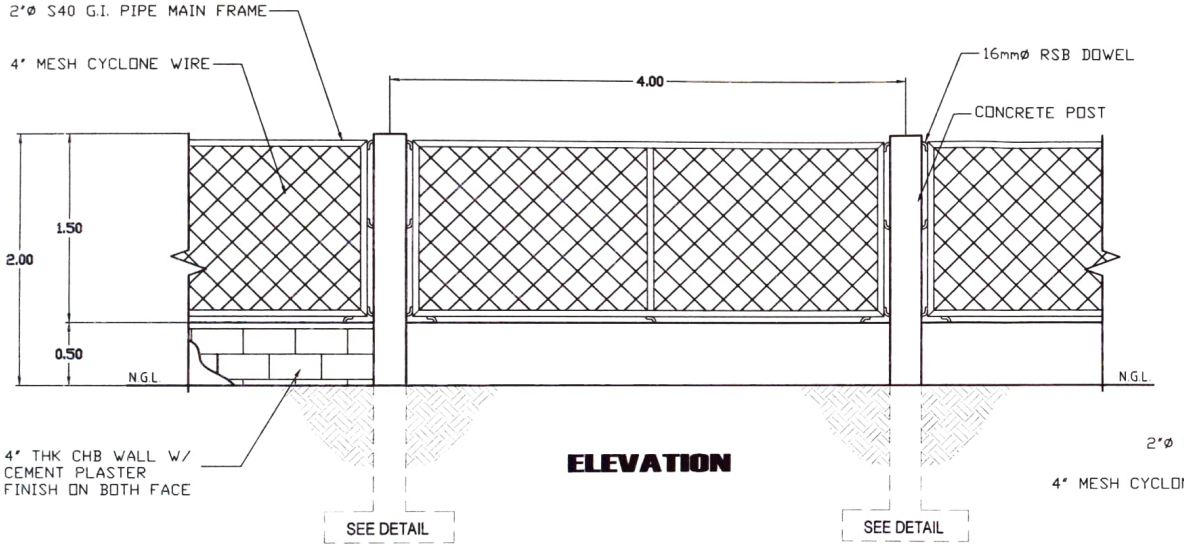
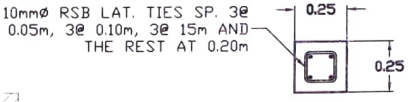


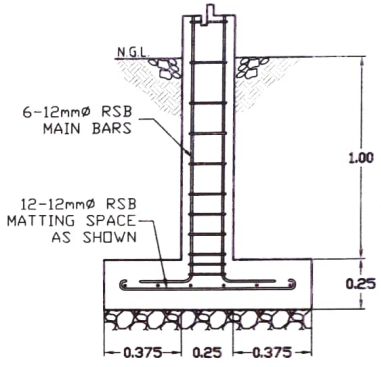
PLAN



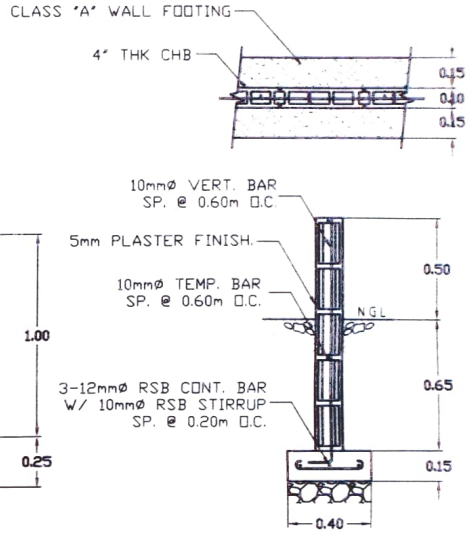
ELEVATION

DETAIL OF PERIMETER FENCE

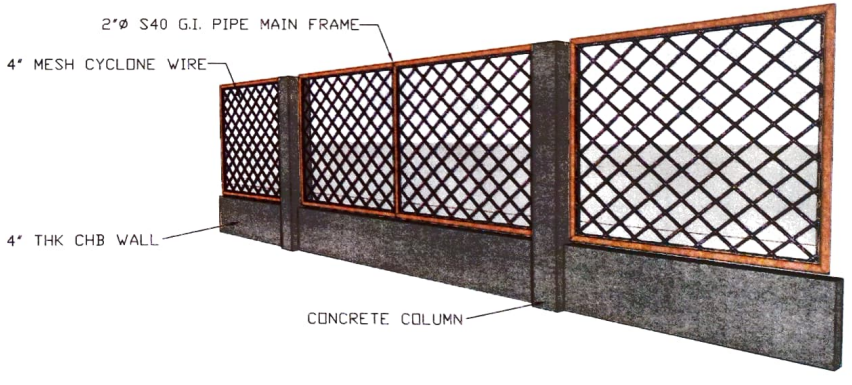




DETAIL OF C2F2



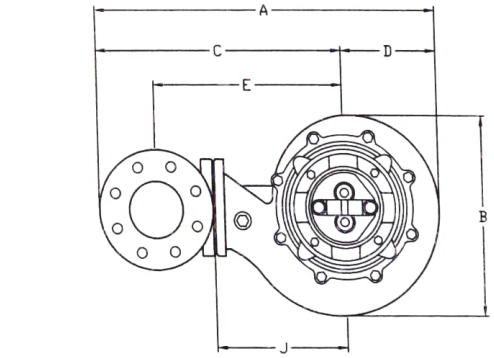
DETAIL OF WALL

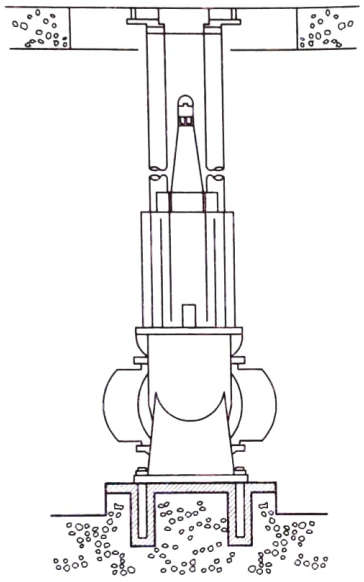


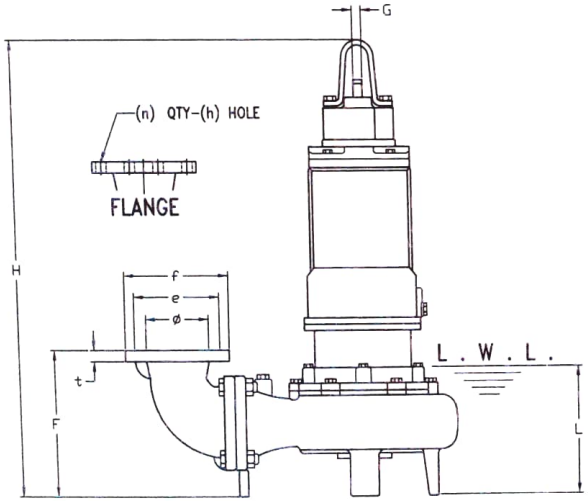
ISOMETRIC

REPUBLIC OF THE PHILPPINES DEPARTMENT OF AGRICULTURE REGIONAL FIELD UNIT NO.5 SAN AGUSTIN, PILI, CAMARINES SUR	Prepared by: BEL JOSEPH D. BONITO Engineer I	Checked by: ARTHUR B. MIRA Engineer II	Reviewed by: JERRY A. EBOÑA EPDSS Head, Engr. III	Submitted by: NILDA T. ALBAÑO Chief, RAED	Recommending Approval: LUZ R. MARCELINO RTD for Operation and Extensions	Approved by: RODEL P. TORNILLA, MABE Regional Executive Director	Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS Location: Brgy. San Jose, Minalabac, Camarines Sur Sheet Contents: AS SHOWN	CAD by: DATE Sheet No. 10/15

PHASE	SIZE ø	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	(inch)
	150			895	522	632	262	461	665	8	1375	360	470	150	241	279	25	8	22	(mm)







SUBMERSIBLE PUMP DETAIL

DESIGN PARAMETER

Computed Water Duty	137.0 cum/day/ha – 159 l i/sec/ha
Target Rice Area	25 hectares
Pump Flow Requirement (5hrs solar pump operation)	85 liters/sec – 306 cum/hr
Total Dynamic Head Total pipe length 70 meters Total static head 12.50 meters Friction loss 1.444 m/100 m pipe length	15.70 meters
Motor Rating	22 KW (3-460V, 40A)
Inverter Size	35 KW, 360V-700V DC INPUT
No. of Solar PV Module	84pcs., 330Wp-(38.20 Vmp, 8.64 Imp)

LOAD SCHEDULE & COMPUTATIONS

CKT. 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 mm²	THHW	25 mmø
2	INVERTER DC Input: 360V-700V	535	51.84	65	2	2	22.0 mm²	THHW	50 mmø
3	22KW MOTOR	460	40	120	3	3	30.0 mm²	THHW	50 mmø

COMPUTATIONS :

IF = 8.64Ax6 = 51.84 AMPS FOR PV PROTECTOR

IF = 51.84Ax1.25(SF) = 64.80 AMPS FROM INVERTER

IF = 40Ax250% = 100 AMPS FOR MOTOR

USE : #4-22mm² THHW
#2-30mm² THHW IN 50mmø PVC
120AT, 3P, 460V, CKT BREAKER

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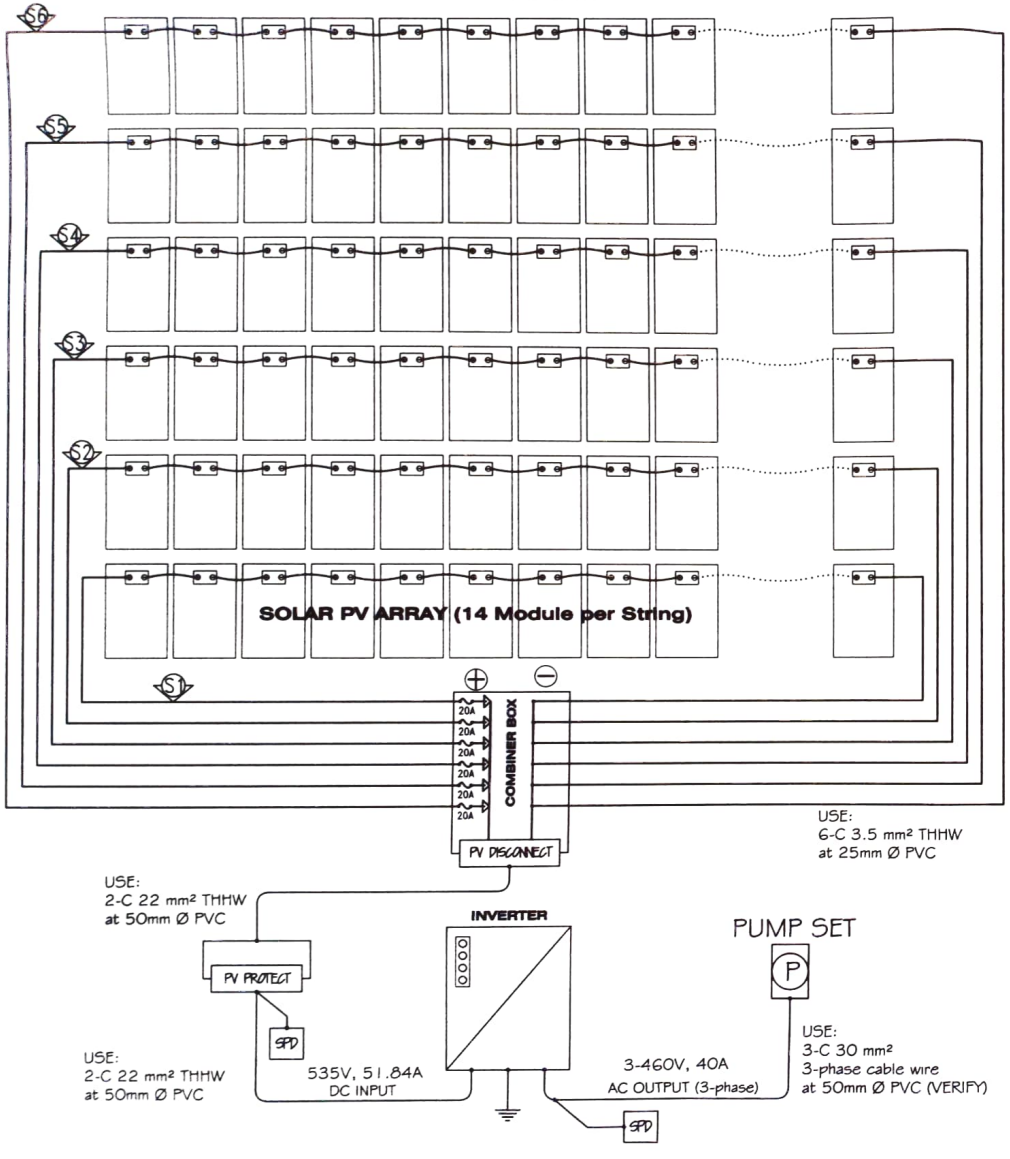
SINGLE LINE DIAGRAM



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 electricity 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, wyeconnected 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 FUSE
- SURGE PROTECTIVE DEVICE
- SOLAR PUMP INVERTER
- PUMP SET
- SOLAR PV MODULE
- NO. OF STRING (14 MODULE PER STRING)
- BLOCKING DIODE

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

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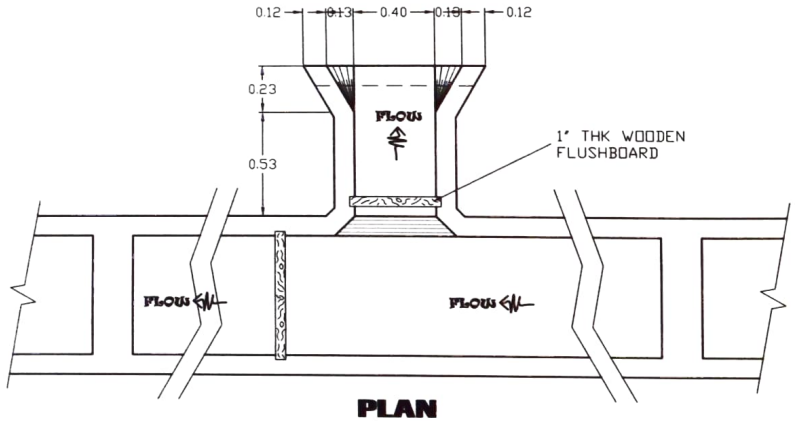
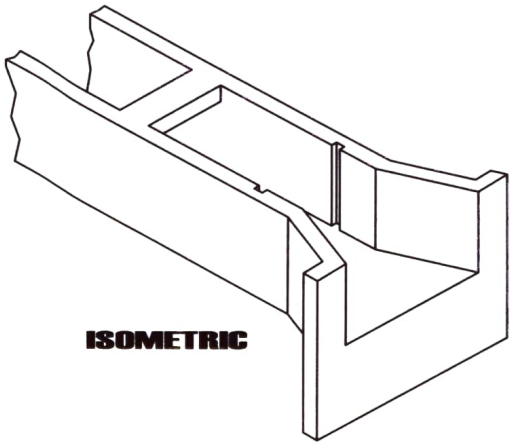
BEL JOSEPH D. BONITO, Engineer I	ARTHUR B. MIRA, Engineer II	JERRY A. EBOÑA, EPDSS Head, Engr. III	NILDA T. ALBAÑO, Chief, RAED	LUZ R. MARCELINO, ATD for Operation and Extensions	RODEL P. CORNILLA MABE, Regional Executive Director

Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS
Location: Brgy. San Jose, Minalabac, Camarines Sur
Sheet Contents: AS SHOWN

CAD by: Kuu_Bal
DATE: 08-2021
Sheet No. 12/15



PLAN



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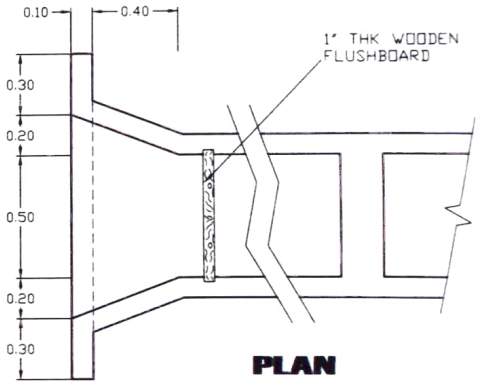

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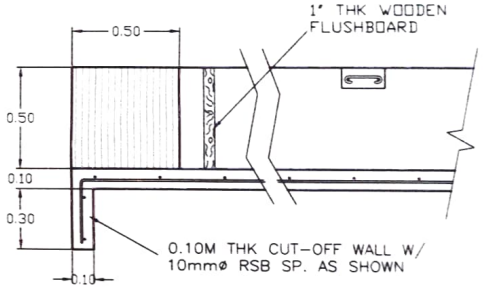
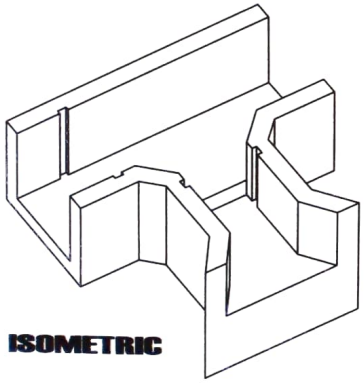


SECTION

DETAIL OF END CHECK



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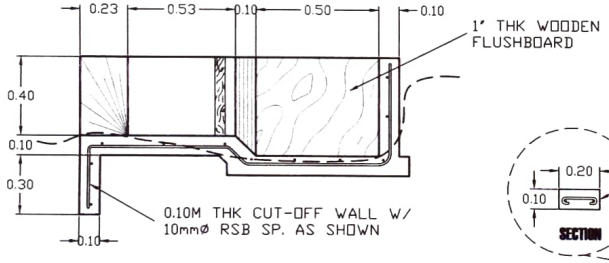
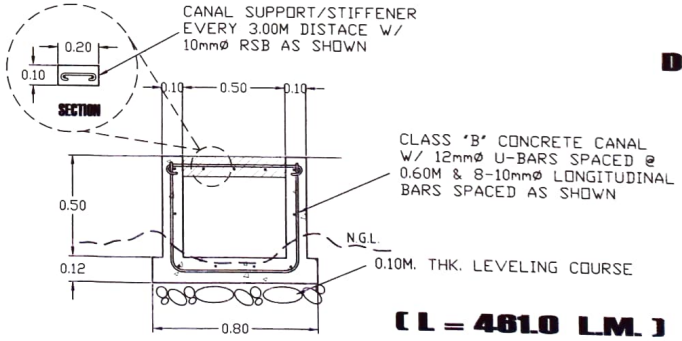


SECTION

DETAIL OF TURN-OUT



(L = 461.0 L.M.)

DETAIL OF CONC. CANAL

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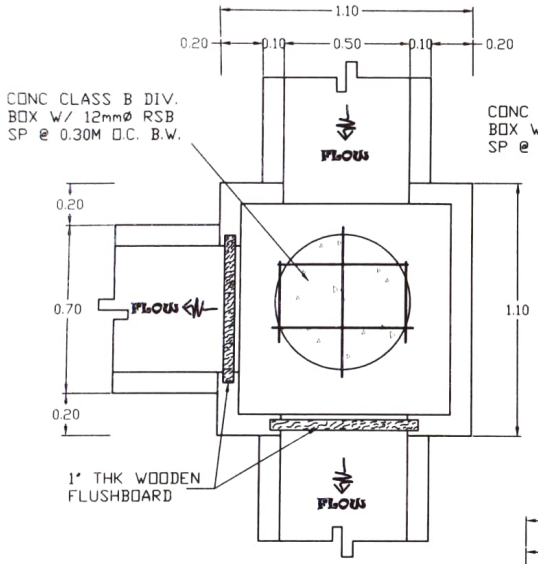
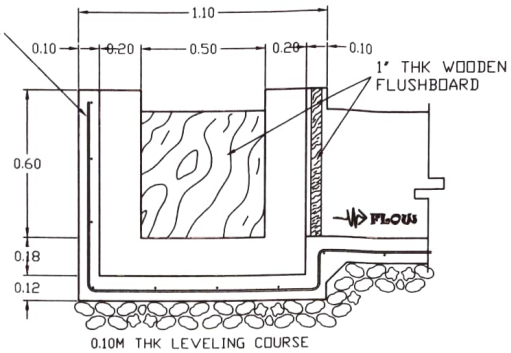
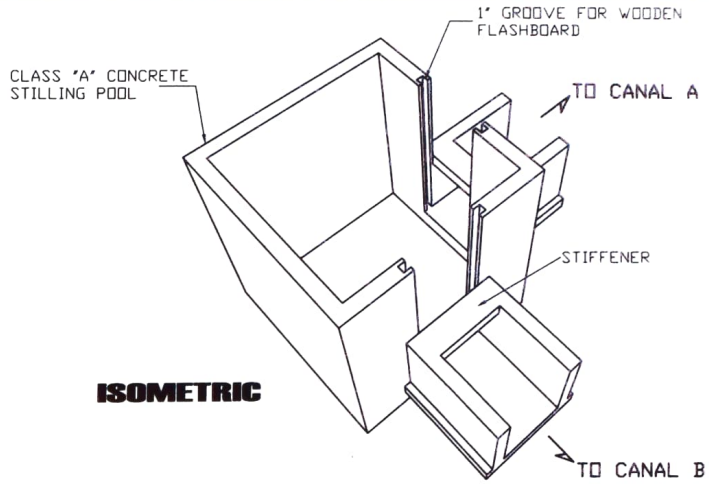


DETAIL OF DIVISION BOX





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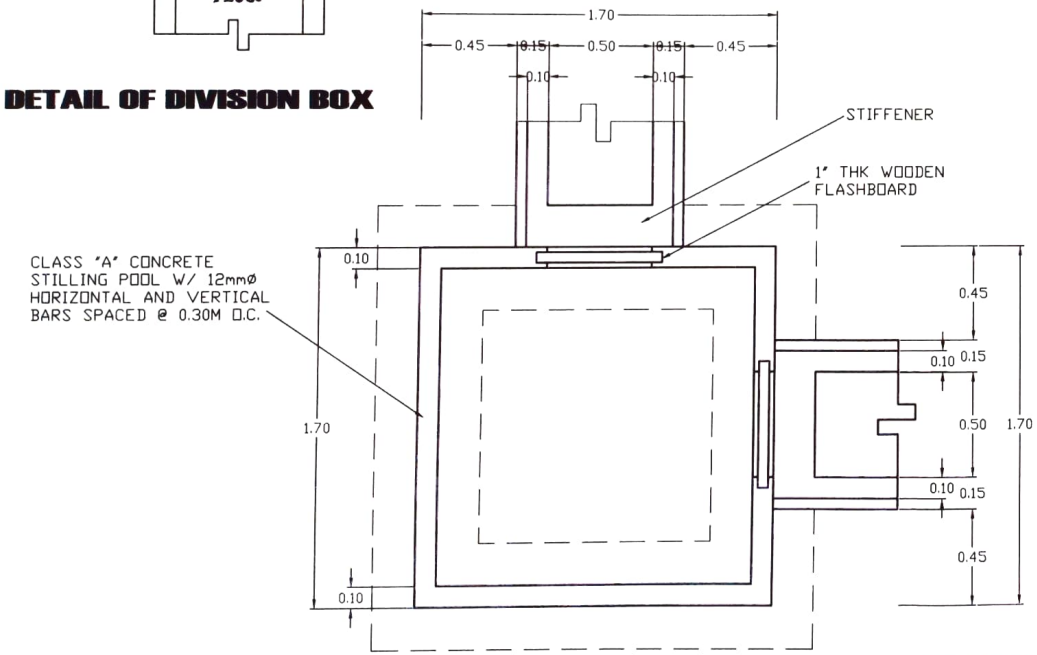

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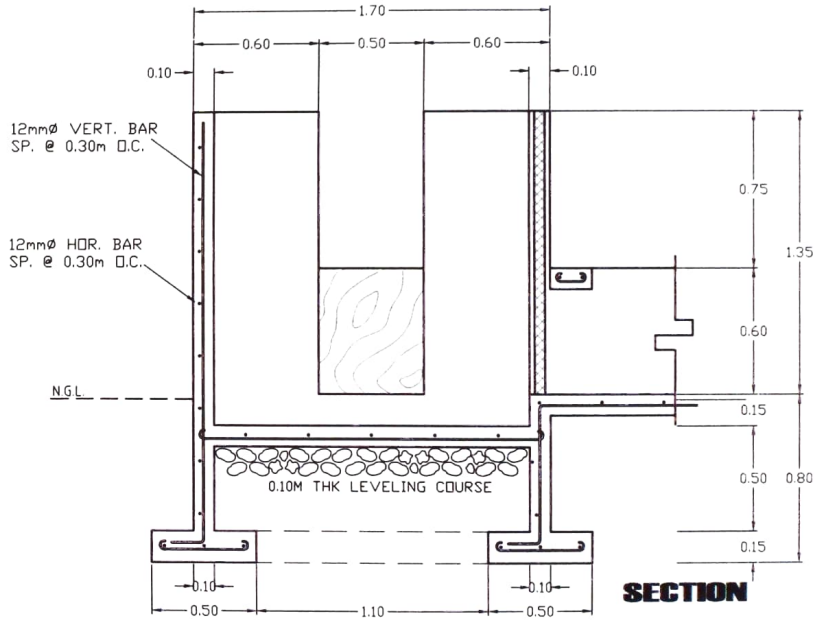

SECTION

DETAIL OF STILLING POOL

REPUBLIC OF THE PHILPPINES
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SAN AGUSTIN, PILI, CAMARINES SUR

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Name of Project: Supply, Delivery, Installation & Commissioning of San Jose SPIS
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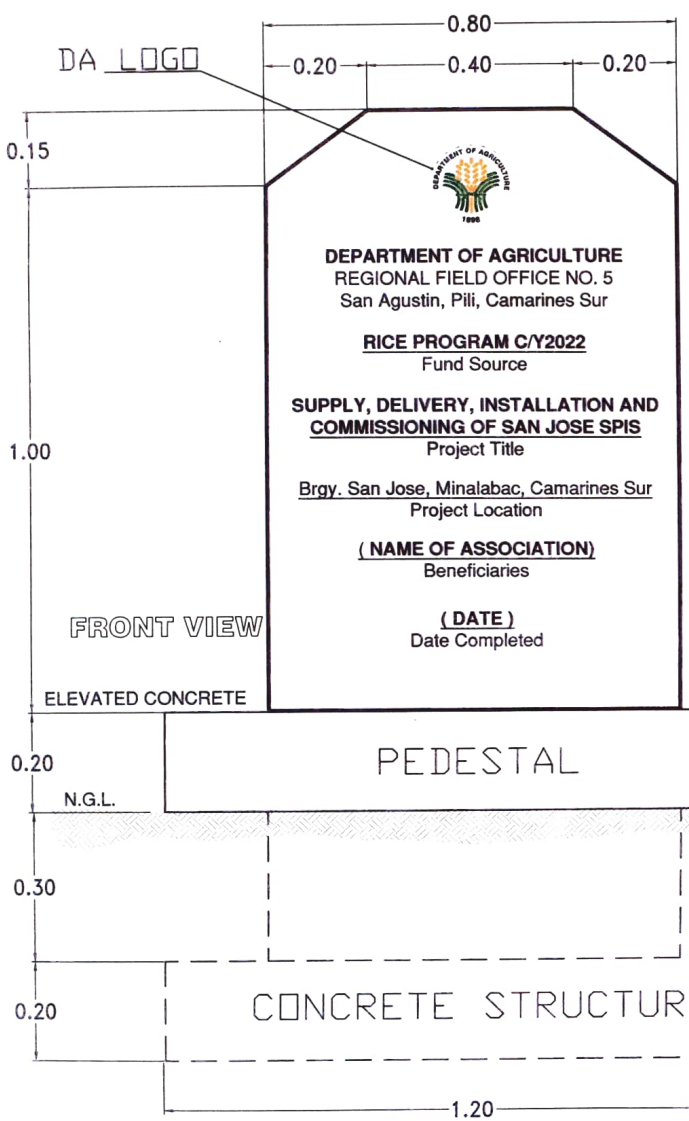
CAD by: Kuu, Biel
DATE: 03-2021
Sheet No. 14/15

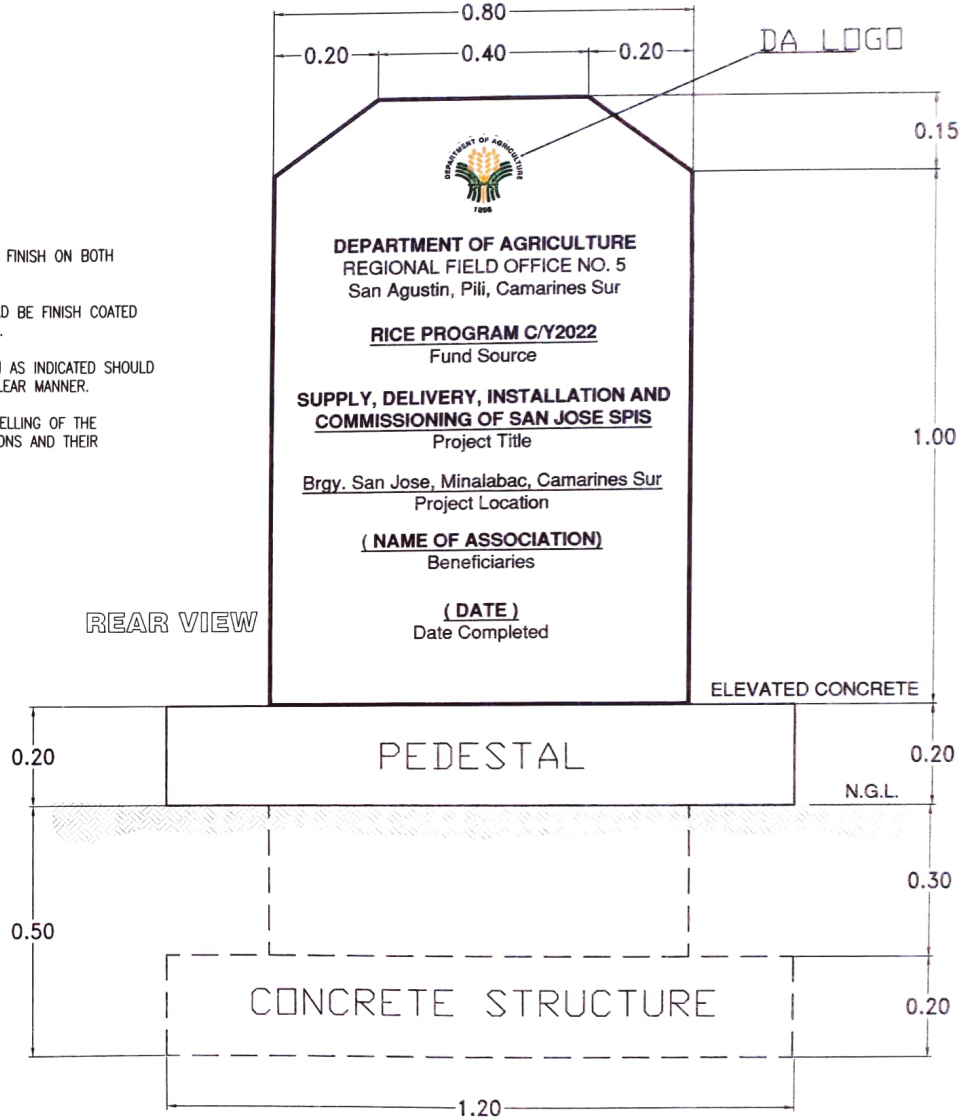
NEW CONCRETE MARKER OF RICE PROGRAM PROJECT

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.



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