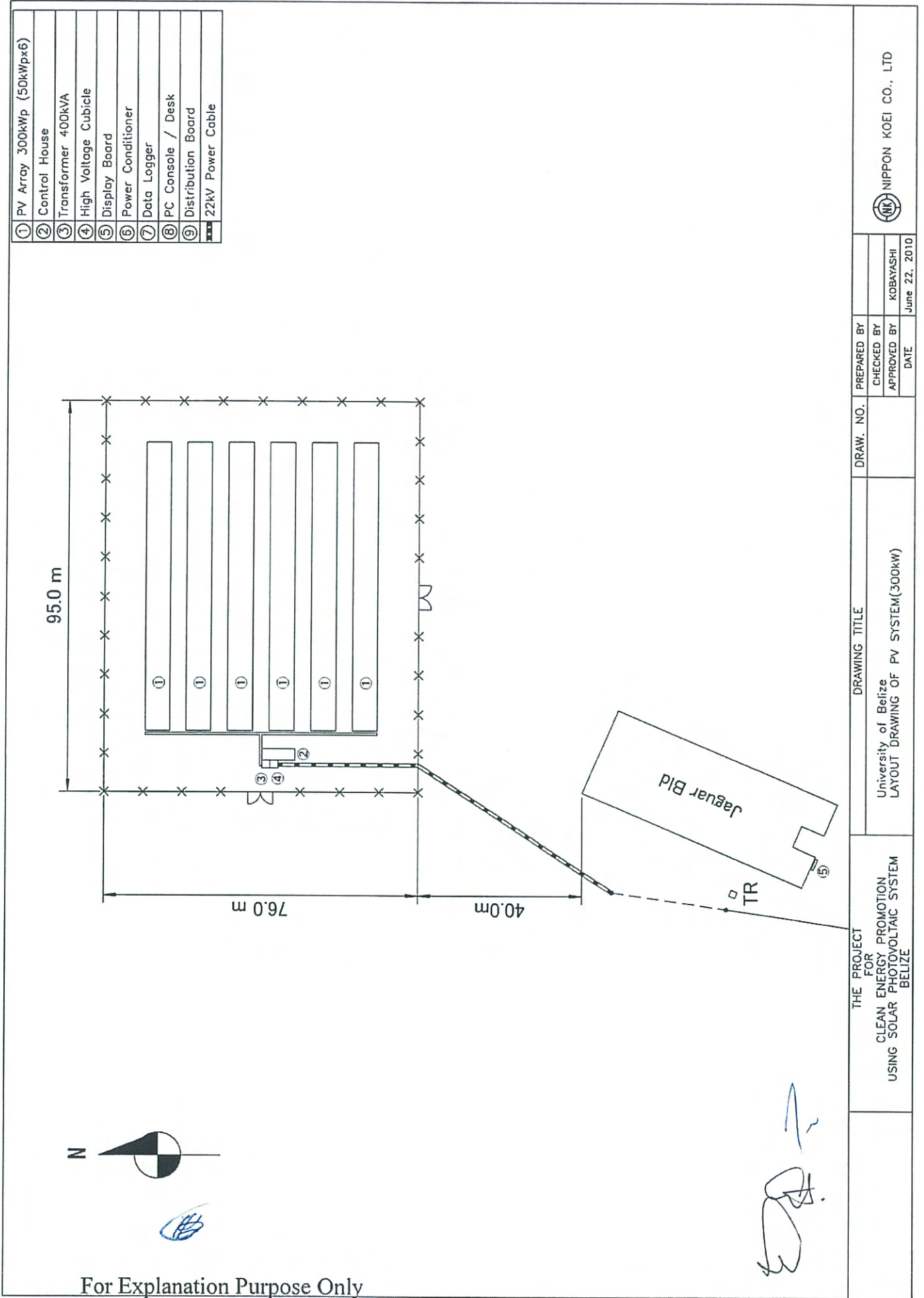


(ANNEX-4)



| | | | | |
|--|---|--|-------------------------|-------------|
| THE PROJECT FOR CLEAN ENERGY PROMOTION USING SOLAR PHOTOVOLTAIC SYSTEM BELIZE | DRAWING TITLE University of Belize LAYOUT DRAWING OF PV SYSTEM(300KW) | | DRAW. NO. | PREPARED BY |
| | DATE June 22, 2010 | | CHECKED BY KOBAYASHI | APPROVED BY |
| NIPPON KOEI CO., LTD | | | | |

(ANNEX-5)

Technical Specification of PV System

1. PV Module

- (1) Type : Crystalline
- (2) Capacity : Rated capacity of PV module is specified by manufacturer
- (3) Performance : The modules supplied are required to be tested at Standard Test Condition (STC). The copy should be supplied with the modules.

The following data should be available in the module report.

- maximum power
- open circuit voltage
- short circuit current
- maximum power voltage / current

(STC: Surface temp.:25 degree Celsius, Air mass:1.5, Radiation 1000W/m²)

2. PV Array

(1) Tilting Angle and Azimuth Direction

- : The tilting angle is 20 degrees
- : The azimuth direction is the South

(2) Layout

Sufficient number of modules in series and parallel will be used to obtain the required PV array current, voltage and power output. The designed total capacity of the PV array shall not less than 300kWp.

(3) Lightning Surge Protection

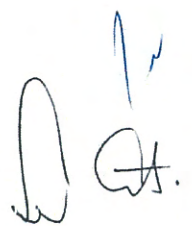
: Lightning surge protection must be provided for the PV array.

3. Structure

The frame of support structure of PV array shall be hot dip galvanized steel. The bolts and nuts for the support structure shall be stainless steel. The structure must be designed to withstand wind speed at 60 meters per second.

4. Junction Box

- (1) A diode for reverse power protection shall be provided for each DC input circuit.
- (2) The protection system for induced lightning shall be provided in the junction box.
- (3) The box shall be both waterproof and dustproof



5. Power Conditioner

- (1) Capacity : 300kW
- (2) DC Input : Specified by manufacturer.
- (3) AC Output : AC 400V
- (4) Power Factor : Over 90%
- (5) Conversion Efficiency : Over 90%

(6) Protection System

The protection system must be provided the following functions.

- > Monitoring function of voltage and frequency
- > Control function of output voltage
- > Islanding operation prevent function
- > Control function of automatic voltage

(7) Protection Device

The protection device must be provided the following relays.

- > Over Voltage Relay (OVR) , Under Voltage Relay (UVR)
- > Under Frequency Relay (UFR) , Over Frequency Relay (OFR)
- > Island operation detector (IOD)

6. Insulating Transformer

AC400V/AC400V with contact preventing plate

7. Data Logging System

(1) Personal Computer

Monitor, Hard disk, Data logger, UPS

(2) Meteorological data

Solar irradiation, Ambient temperature

(3) System data

Power output (kW), DC current / voltage, AC current / voltage

8. Monitoring Display Panel

Display: Solar irradiation (kW/m^2), Power output (kW), Temperature (degree Celsius)

Solar power generation (kWh/Day), Amount of reduction value of CO₂ (kg-C)

