

Proyecto Luz Verde UPRM Progress Report

GridEd 2021 Student Design Award

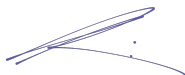
Proyecto Luz Verde UPRM has been an initiative carried out by IEEE Power and Energy Society at the UPRM since October 2019. What started off as a napkin drawing has turned into a project of community transformation and impact. In general, it consists of 3 elements: energy consumption awareness, renewable energy education and the design of a functional PV system in the UPRM campus to serve the community need of charging phones, tablets and computers while providing a new and innovative study space. Since receiving the award in 2022, the Proyecto Luz Verde team has been working in defining all the details in terms of structural design and solar PV system design and performance simulation needed for the fulfillment among other things to bring exposure to the initiative. This has involved:

- Publishing an IEEE paper titled “Proyecto Luz Verde UPRM” in December 2022 following participation in the 2022 Resilience Week Conference to showcase initiative
- Performing 4 different shading analyses with the Solar Pathfinder to justify best location for system in UPRM campus
- Approval and continuous support from UPRM Administration for the implementation
- Development of formal construction drawings (electrical system and wiring plan, architectural drawings, structural drawings, topography drawings)
- Defining the structural details with assistance from a licensed structural engineer and architect to guarantee the resistance of the structure UPRM to hurricanes and earthquakes
- Hosting educational Proyecto Luz Verde workshops in communities of Culebra, PR, Maricao, PR, and UPRM campus
- Improvement of educational workshops and brochures
- Lighting design and drawings review
- Addition of Surveying and Topography students to study grounds
- Approach to Structural companies to seek donation of materials

In the following section we include an appendix with some of the drawings developed as well as images of some of the educational materials we have prepared

We as a team and this project has come a long way since its first inception. We are excited to share that we are ready to start construction this semester. We appreciate your patience and trust in our initiative to achieve our goals!

Kind regards,



Dr. Eduardo Ortiz Rivera

Proyecto Luz Verde UPRM Team Mentor

IEEE PES WPR Section President 2022-23



Javier Moscoso Cabrera

Proyecto Luz Verde UPRM Team Leader

IEEE PES UPRM Student Branch Chapter President 2022-23

Appendix:

Series of Educational Workshops



Electrical Drawings

ONE LINE DIAGRAM

LOCATION PLAN

SITE PLAN

COMPONENTS	DESCRIPTION	QUANTITY
PV MODULES	CONEXION SOLAR 400 WATT 60 CELLS PER MODULE POLYCRYSTALLINE MONOCRYSTALLINE	4
CHARGE CONTROLLER	SPIDER TRACKER WITH MPPT 40A/20V DC/12V	1
BATTERY	RENOVO AGM 12 V 200 AH	4
INVERTER	ABSO POWER PURE SINE WAVE 2400VA/120VAC 1200 W	1

NOTAS GENERALES:

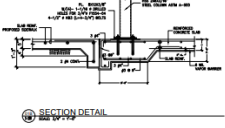
SYSTEM NOTES:

TABLES:

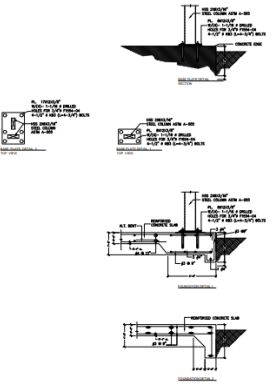
MODEL	MANUFACTURER	QUANTITY	POWER (WATT)	VOLTAGE (V)	CURRENT (A)	TEMP. COEFF. (1/°C)	EFFICIENCY (%)
CONEXION SOLAR	CONEXION SOLAR	4	380	17.1	22.2	-0.38	18.12

MODEL	MANUFACTURER	QUANTITY	NOMINAL VOLTAGE (V)	RATED CURRENT (A)
SPIDER TRACKER	SPIDER	1	24 DC	40 A

MODEL	MANUFACTURER	QUANTITY	BATTERY VOLTAGE (V)	BATTERY CAPACITY (AH)	ARRAY VOLTAGE (V)	MAX. LOAD EFFICIENCY (%)
RENOVO-AGM-1200-20	RENOVO	4	12.0 DC	200 AH	240 V AC	90.2%



SECTION DETAIL 01

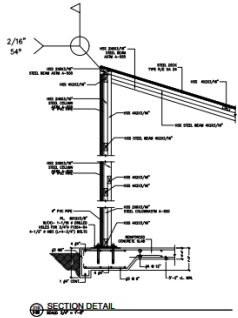


SECTION DETAIL 02

STEEL STRUCTURES

SIZE	STANDARD HOLE	MINIMUM HOLE	MAXIMUM HOLE
1/2"	1/2"	1/2"	1/2"
3/8"	3/8"	3/8"	3/8"
1/4"	1/4"	1/4"	1/4"
1/8"	1/8"	1/8"	1/8"
1/16"	1/16"	1/16"	1/16"

MINIMUM EDGE DISTANCE TO CENTER OF HOLE	MINIMUM EDGE DISTANCE TO CENTER OF HOLE
1/2"	1/2"
3/8"	3/8"
1/4"	1/4"
1/8"	1/8"
1/16"	1/16"



SECTION DETAIL 03

INFORMACION IMPORTANTE

CONSULTORES:

REVISIONES:

PROYECTO LUZ VERDE

INGENIERO: DR. J. L. VAQUEZ SANTOS

16 ENERO 2023

PLANOS ESTRUCTURALES

S-2.0

Architectural Drawings

LUZ VERDE
MAYAGUEZ, PUERTO RICO



PERSPECTIVA DEL PROYECTO

ÍNDICE DE DIBUJOS

- A-1.00 REGLA TITULO
- A-1.10 PLANO DE UBICACION
- A-1.20 PLANO DE MENSURADO
- A-1.30 SO DE ESTRUCTURA
- A-1.40 PLANOS DE CONSTRUCCION (PLANTAS)
- A-1.50 PLANOS DE CONSTRUCCION (ELEVACIONES)

INFORMACION IMPORTANTE

CONSULTORES:

REVISIONES:

PROYECTO LUZ VERDE

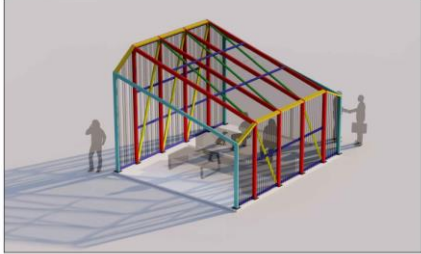
INGENIERO: DR. J. L. VAQUEZ SANTOS

7 DICIEMBRE 2022

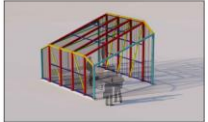
PLANO DE ESTRUCTURA

A.0.0

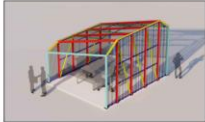
LUZ VERDE
MAYAGUEZ, PUERTO RICO



SO ESTRUCTURA 01



SO ESTRUCTURA 02



SO ESTRUCTURA 03

INFORMACION IMPORTANTE

CONSULTORES:

REVISIONES:

PROYECTO LUZ VERDE

INGENIERO: DR. J. L. VAQUEZ SANTOS

7 DICIEMBRE 2022

SO DE ESTRUCTURA

A.3.0

