


ELECTRICAL SCOPE OF WORKS

for

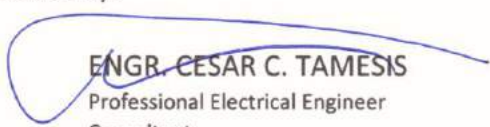
RESEARCH AND DEVELOPMENT COMPLEX; SOIL, PLANT and WATER LABORATORY BENGUET STATE UNIVERSITY – LA TRINIDAD CAMPUS



Prepared by:


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Received



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"ELECTRICAL ENHANCEMENT OF LABORATORY ROOMS "
@ THE RESEARCH & DEVELOPMENT COMPLEX BUILDING
BENGUET STATE UNIVERSITY



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A. BRIEF INTRODUCTION

The Research and Development Complex is a facility with chain of laboratories established to cater the research needs of the Cordillera in terms of soil, plant and water. During the initial planning and construction of the building structure, the said laboratories were not taken into consideration whereas, the equipment procured for laboratory use were not included in the original electrical load design. Instantaneous with the establishment of the laboratories, the university decided to reinforce and enhance the electrical load design of the building in consideration with the procured equipment and future equipment for laboratory use. This so, the Electrical Scope of Works herein mentioned was established to be commissioned to be fully operational.

B. SPECIAL PREAMBLE

In the prosecution of the project only Electrical Contractors with qualified experience shall only be allowed to participate in the bidding process.

The Electrical Contractor Bidder shall practice due diligence in pricing this Bid Form indicating the Bill of Quantities (BOQ) moreover, the Bidder shall guarantee his quantities and it is his responsibility to check the description provided for in this BOQ against the issued Tender Plans and Specifications and in the Pre - Tender Meetings and Bulletins.

The Electrical Contractor shall supply, deliver and install new materials of approved quality by the owner through its technical representative.

The Electrical Contractor shall provide all manpower, tools and equipment required and necessary for the smooth prosecution of the specified Electrical Scope of Works.

C. ELECTRICAL SCOPE OF WORKS

- i. Service Line
- ii. Grounding System
- iii. Main Distribution System
- iv. Crop Protection Laboratory – PP1
- v. Soil, Plant and Water Laboratory A – PP2
- vi. Soil, Plant and Water Laboratory B – PP3
- vii. Biotech Lab – PP4
- viii. Fire Pump – PP5

D. TESTING AND COMMISSIONING

The Electrical Contractor Bidder shall conduct testing and commissioning for all of the Scope of Works indicated above with the presence of the Professional Electrical Consultant (PEE). The Electrical Contractor shall submit report for all the tests conducted prior to the issuance of the Certificate of Completion, Certificate of Turnover and Acceptance for the processing of its final billing.

E. CONTRACT DURATION

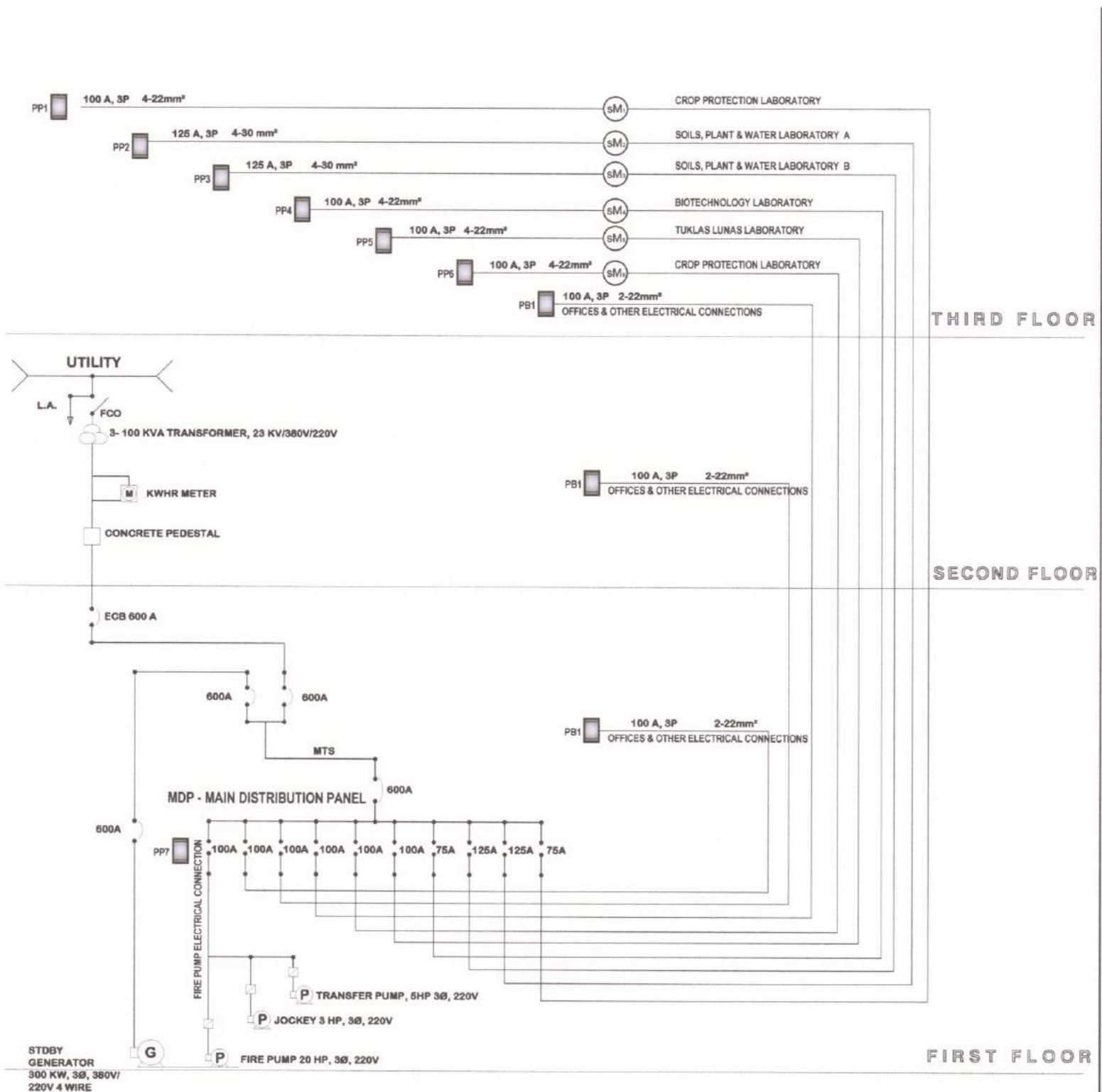
The Scope of Works shall be implemented within sixty (60) calendar days.

F. APPROVED BUDGET FOR THE CONTRACT

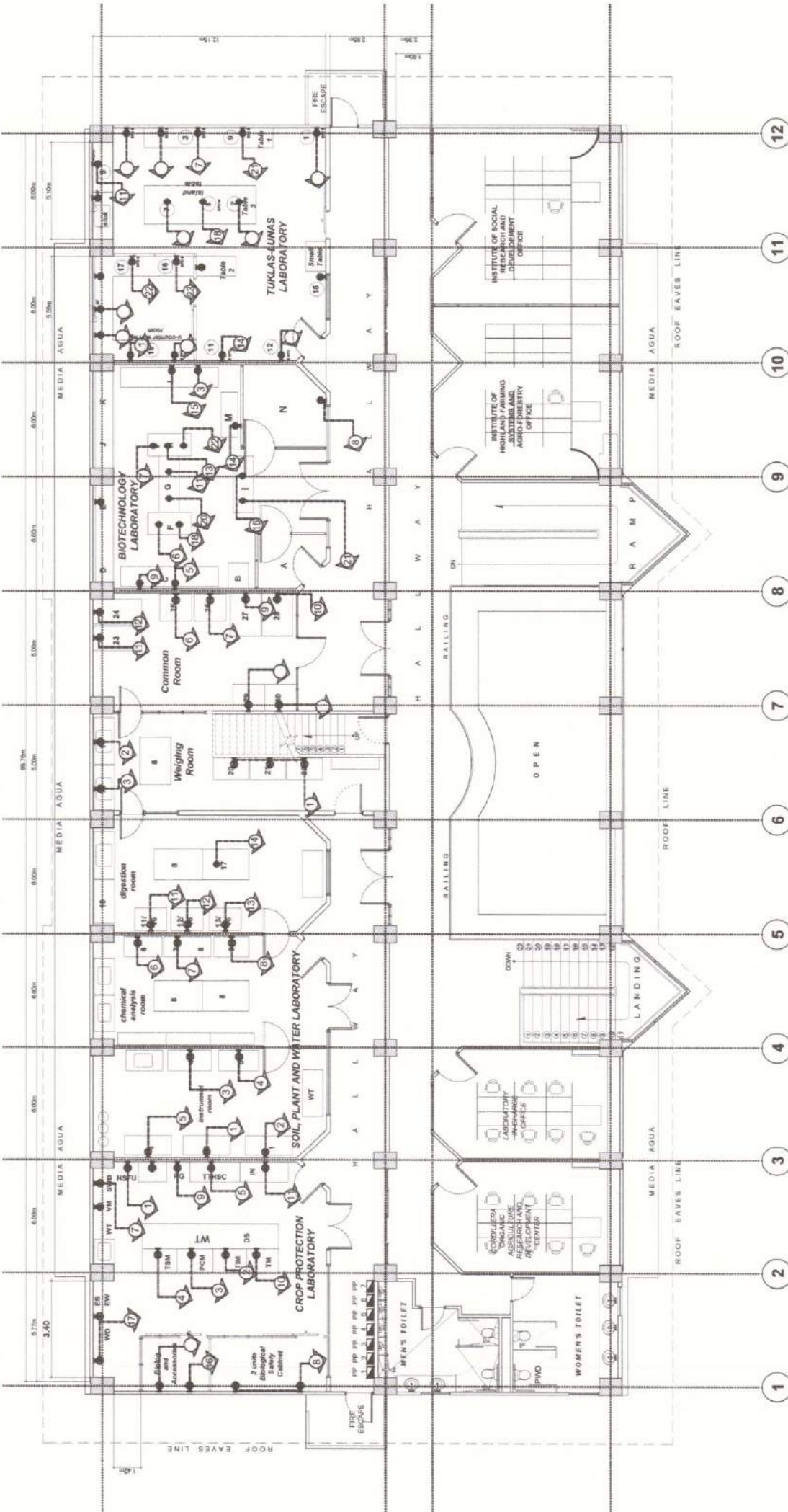
One Million, Four Hundred Ninety Seven, Forty Five Pesos and Seventy Six Centavos
(Php 1,497,045.76)

G. TECHNICAL PERSONNEL REQUIRED

- i. Registered Electrical Engineer (REE)/ Registered Master Electrician (RME)
- ii. Safety Officer




POWER SINGLE LINE DIAGRAM
 NOT TO SCALE



- CROP PROTECTION LABORATORY**

LEGEND

 - 1- AAS
 - 2- GS-AES
 - 3- ICP-AES
 - 4- Flame Photometer
 - 5- UV-Vis
 - 6- Spectrophotometer
 - 7- Centrifuge
 - 8- Blender
 - 9- pH Meter
 - 10- Incubator
 - 11- Fume Hood
 - 12- Fume Hood
 - 13- Fume Hood
 - 14- K. Distillation Unit
 - 15- K. Distillation Unit
 - 16- K. Distillation Unit
 - 17- K. Distillation Unit
 - 18- K. Distillation Unit
- SOIL PLANT AND WATER LABORATORY**

LEGEND

 - 1- AAS
 - 2- GS-AES
 - 3- ICP-AES
 - 4- Flame Photometer
 - 5- UV-Vis
 - 6- Spectrophotometer
 - 7- Centrifuge
 - 8- Blender
 - 9- pH Meter
 - 10- Incubator
 - 11- Fume Hood
 - 12- Fume Hood
 - 13- Fume Hood
 - 14- K. Distillation Unit
 - 15- K. Distillation Unit
 - 16- K. Distillation Unit
 - 17- K. Distillation Unit
 - 18- K. Distillation Unit
- BIOTECHNOLOGY LABORATORY**

LEGEND

 - 1- Bioreactor
 - 2- Bioreactor
 - 3- Bioreactor
 - 4- Bioreactor
 - 5- Bioreactor
 - 6- Bioreactor
 - 7- Bioreactor
 - 8- Bioreactor
 - 9- Bioreactor
 - 10- Bioreactor
 - 11- Bioreactor
 - 12- Bioreactor
 - 13- Bioreactor
 - 14- Bioreactor
 - 15- Bioreactor
 - 16- Bioreactor
 - 17- Bioreactor
 - 18- Bioreactor
- TUKAS-LUNAS LABORATORY**

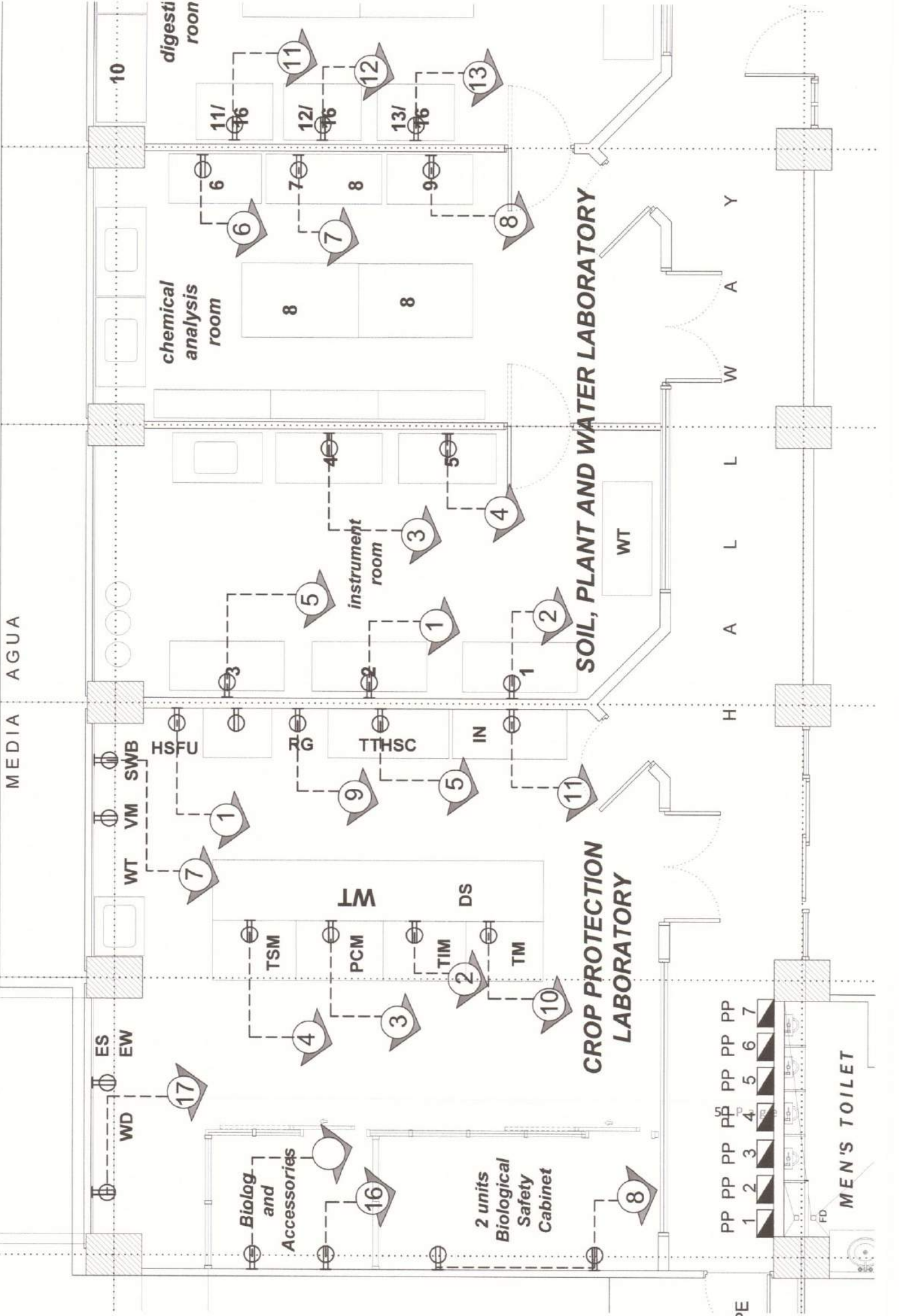
LEGEND

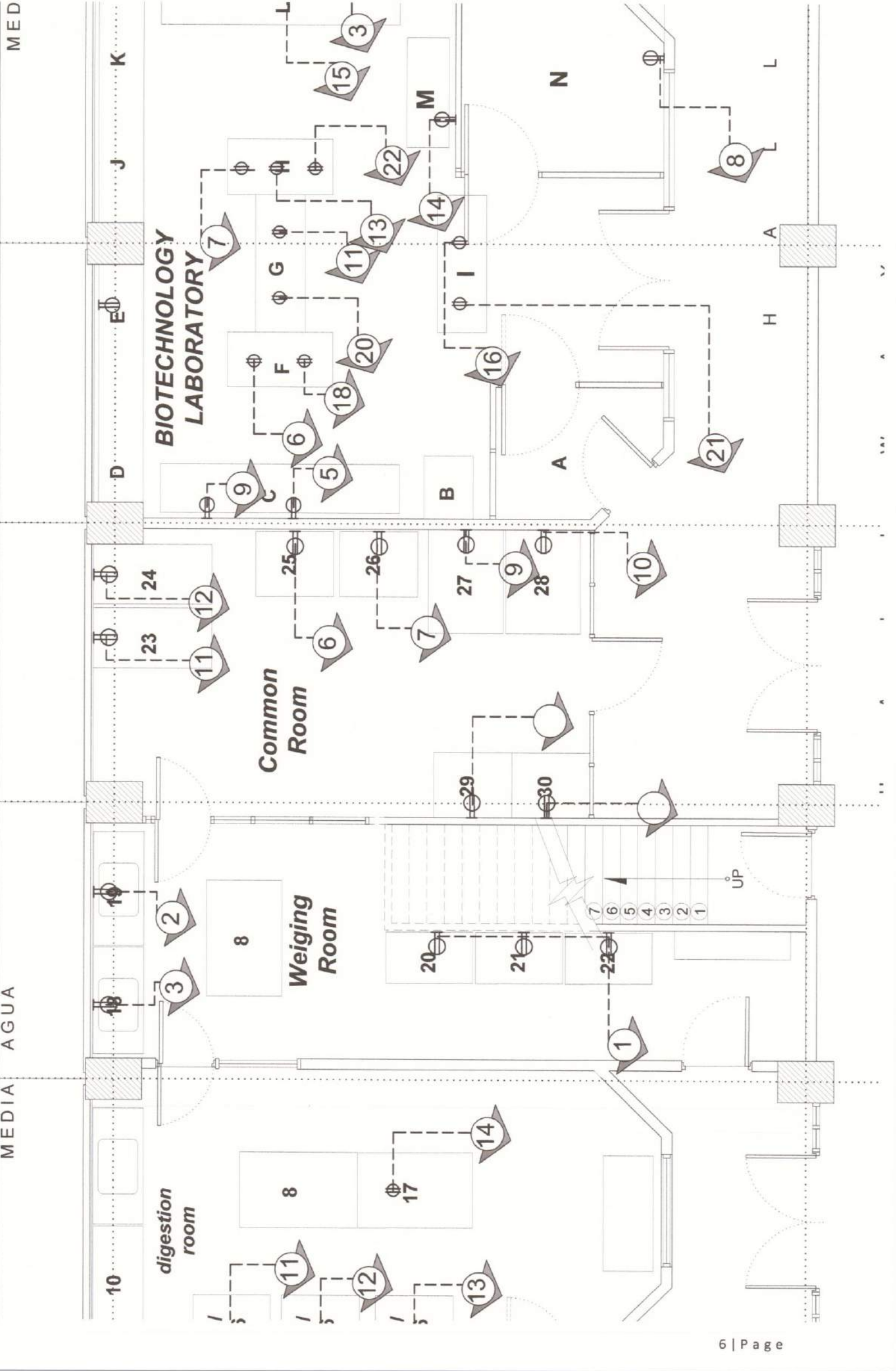
 - 1- Centrifuge
 - 2- V.C. (2 units)
 - 3- Rotavap (2 units)
 - 4- Distilling Set-up
 - 5- Distilling Set-up
 - 6- Distilling Set-up
 - 7- Distilling Set-up
 - 8- Distilling Set-up
 - 9- Oven
 - 10- HPLC
 - 11- HPLC
 - 12- HPLC
 - 13- HPLC
 - 14- HPLC
 - 15- HPLC
 - 16- HPLC
 - 17- HPLC
 - 18- HPLC

1 THIRD FLOOR ELECTRICAL POWER LAYOUT (ADDITIONAL CONVENIENCE OUTLETS)

E 9 SCALE

1: 100 MTS





BILL OF QUANTITIES

Project Title: ELECTRICAL ENHANCEMENT OF LABORATORY ROOMS
Location: BENGUET STATE UNIVERSITY
RESEARCH and DEVELOPMENT BUILDING
Km.6, Betag, La Trinidad, Benguet
End-user: Dr. RUTH BATANI
VP - Research and Extension

BID FORM								
item	description/ particulars	qty.	unit	unit price (Php)				amount
				1	2	3	4	
				material	labor	tools (rental)	total (1+2+3)	
I. SERVICE LINE								
Supply, delivery, installation/ mounting of Service Line; including all of the necessary installation and mounting accessories as per plan and specifications.								
	150mm² THHN	300	lm					
	spool insulator	3	pcs.					
	3-spool insulator secondary rack	1	unit					
	16mm machine bolts w/ lock nuts & plain washers	6	sets					
	Total Direct Cost (1 + 2 + 3)					-		
	OCM (OVERHEAD, CONTINGENCIES & MISCELLANEOUS EXPENSES)				% of item 4	-		
	Contractor's Profit				% of item 4	-		
	Tax				7 % of item 4 + 5 + 6	-		
	Total Item Cost (4 + 5 + 6 + 7)				Php			-
***Allow for other items that are not shown in this Bill of Quantities, but are necessary to carry out/ prosecute & complete the specified scope of works. Bidders shall provide details.								
II. GROUNDING SYSTEM (to include lightning protection)								
Supply, delivery, installation/ mounting of Grounding System; including all of the necessary installation and mounting accessories as per plan and specifications.								
	50mm² Bare Copper Wire	185	m					
	20mmØ Copper Clad Ground Rod	8	pcs.					
	Isothermic Connection (powder & cadwelding)	12	sets					
	Lighting Protection (Pulsar 30); assembly	1	set					
	Consumables (5% of the materials cost)	1	lot					
	Total Direct Cost (1 + 2 + 3)					-		
	OCM (OVERHEAD, CONTINGENCIES & MISCELLANEOUS EXPENSES)				% of item 4	-		
	Contractor's Profit				% of item 4	-		
	Tax				7 % of item 4 + 5 + 6	-		
	Total Item Cost (4 + 5 + 6 + 7)				Php			-
***Allow for other items that are not shown in this Bill of Quantities, but are necessary to carry out/ prosecute & complete the specified scope of works. Bidders shall provide details.								
III. MAIN DISTRIBUTION SYSTEM								
Supply, delivery, installation/ mounting of Main Distribution System; including all of the necessary assembly, installation and mounting accessories as per plan and specifications.								
	MDP (Main Distribution Panel) 600A, NEMA1 - complete w/ circuit breakers	1	unit					
	Circuit Breaker(main) - 600A, bolt-on	1	unit					
	25mmØ EMT	100	m					
	25mmØ PVC	30	m					
	pre-fabricated meter center, G.I. with 5 units digital electronic 60amp. submeter	1	set					
	Consumables (5% of the materials cost)	1	lot					
	Total Direct Cost (1 + 2 + 3)					-		
	OCM (OVERHEAD, CONTINGENCIES & MISCELLANEOUS EXPENSES)				% of item 4	-		
	Contractor's Profit				% of item 4	-		
	Tax				7 % of item 4 + 5 + 6	-		
	Total Item Cost (4 + 5 + 6 + 7)				Php			-
***Allow for other items that are not shown in this Bill of Quantities, but are necessary to carry out/ prosecute & complete the specified scope of works. Bidders shall provide details.								
IV. CROP PROTECTION LABORATORY - PP1								
Supply, delivery, installation/ mounting of Electrical Wiring System; including all of the necessary assembly, installation and mounting accessories as per plan and specifications.								
	Panel Box; 3pole, 20 Branches, bolt-on, NEMA1	1	unit					
	Circuit Breaker (main) - 100A, bolt-on	1	unit					
	Circuit Breaker, 60A, bolt-on	18	units					
	25mmØ PVC conduit (from MDP to PB)	15	m					
	20mmØ PVC conduit (from PB to CO)	240	m					
	conduit fittings, elbow	1	lot					
	22mm² THHN (from MDP to PB)	68	m					
	3.5mm² THHN (from PB to CO)	480	m					

3-prong, universal duplex convenience outlet w/ ground, (2P Ground Fault Circuit Interrupter), 60A	15 pcs.						
surface type utility box w/ cover	20 pcs.						
surface type junction box w/ cover	5 pcs.						
square box	5 pcs.						
Consumables (5% of the materials cost)	1 lot						
Total Direct Cost (1 + 2 + 3)					-		
OCM (OVERHEAD, CONTINGENCIES & MISCELLANEOUS EXPENSES)				% of item 4	-		
Contractor's Profit				% of item 4	-		
Tax			7	% of item 4 + 5 + 6	-		
Total Item Cost (4 + 5 + 6 + 7)			Php				-
***Allow for other items that are not shown in this Bill of Quantities, but are necessary to carry out/ prosecute & complete the specified scope of works. Bidders shall provide details.							
V. SOIL, PLANT & WATER LABORATORY - A - PP2							
Supply, delivery, installation/ mounting of Electrical Wiring System; including all of the necessary assembly, installation and mounting accessories as per plan and specifications.							
Circuit Breaker (main) - 125A, bolt-on	1 unit						
Circuit Breaker - 60A, bolt-on	18 units						
25mmØ PVC conduit (from MDP to PB)	25 m						
20mmØ PVC conduit (from PB to CO)	204 m						
conduit fittings, elbow	1 lot						
30mm² THHN (from MDP to PB)	84 m						
3.5mm² THHN (from PB to CO)	408 m						
3-prong, universal duplex convenience outlet w/ ground, (2P Ground Fault Circuit Interrupter), 60A	17 pcs.						
surface type utility box w/ cover	20 pcs.						
surface type junction box w/ cover	5 pcs.						
square box	3 pcs.						
Consumables (5% of the materials cost)	1 lot						
Total Direct Cost (1 + 2 + 3)					-		
OCM (OVERHEAD, CONTINGENCIES & MISCELLANEOUS EXPENSES)				% of item 4	-		
Contractor's Profit				% of item 4	-		
Tax			7	% of item 4 + 5 + 6	-		
Total Item Cost (4 + 5 + 6 + 7)			Php				-
***Allow for other items that are not shown in this Bill of Quantities, but are necessary to carry out/ prosecute & complete the specified scope of works. Bidders shall provide details.							
VI. SOIL, PLANT & WATER LABORATORY - B - PP3							
Supply, delivery, installation/ mounting of Electrical Wiring System; including all of the necessary assembly, installation and mounting accessories as per plan and specifications.							
Circuit Breaker (main) - 125A, bolt-on	1 unit						
Circuit Breaker - 60A, bolt-on	18 units						
25mmØ PVC conduit (from MDP to PB)	37 m						
20mmØ PVC conduit (from PB to CO)	61 m						
conduit fittings, elbow	1 lot						
30mm² THHN (from MDP to PB)	100 m						
3.5mm² THHN (from PB to CO)	672 m						
3-prong, universal duplex convenience outlet w/ ground, (2P Ground Fault Circuit Interrupter), 60A	14 pcs.						
surface type utility box w/ cover	20 pcs.						
surface type junction box w/ cover	5 pcs.						
square box	3 pcs.						
Consumables (5% of the materials cost)	1 lot						
Total Direct Cost (1 + 2 + 3)					-		
OCM (OVERHEAD, CONTINGENCIES & MISCELLANEOUS EXPENSES)				% of item 4	-		
Contractor's Profit				% of item 4	-		
Tax			7	% of item 4 + 5 + 6	-		
Total Item Cost (4 + 5 + 6 + 7)			Php				-
***Allow for other items that are not shown in this Bill of Quantities, but are necessary to carry out/ prosecute & complete the specified scope of works. Bidders shall provide details.							
VII. BIOTECH LAB - PP4							
Supply, delivery, installation/ mounting of Electrical Wiring System; including all of the necessary assembly, installation and mounting accessories as per plan and specifications.							
Circuit Breaker (main) - 100A, bolt-on	1 unit						
Circuit Breaker - 60A, bolt-on	18 units						
25mmØ PVC conduit (from MDP to PB)	45 m						
20mmØ PVC conduit (from PB to CO)	168 m						
conduit fittings, elbow	1 lot						
22mm² THHN (from MDP to PB)	180 m						
3.5mm² THHN (from PB to CO)	436 m						