



ASTI-FM 03-11
REV 0/2 APR 2018

**DOST-ASTI Bids and Awards Committee
Invitation to Bid (Public Bidding)**

ITB No:	19-07-2574	Date:	July-16-2019
PR No:	EPIIC P2-19-01-7163	Date:	January-09-2019
Source of Funds:			
Total ABC:		Php 16,176,027.50	
Time, Date & Venue of Pre-bid Conference:		July 25, 2019, 1:30 PM at DOST-ASTI	
Time and Date of Submission of Bids:		August 06, 2019, 12:00 PM	
Time, Date & Venue of Opening Bids:		August 06, 2019, 1:30 PM at DOST-ASTI	
Date of availability of Complete Set of Documents:		July 17, 2019	
Deadline of Potential Bidder's Clarifications:		August 27, 2019	
Deadline of ASTI's Supplemental Bid Bulletin:		July 30, 2019	
Delivery Schedule:			

The Advanced Science and Technology Institute (ASTI), through its Bids and Awards Committee (BAC), hereby invites all interested bidders to submit their bids for the item(s) listed below. Guidelines regarding the format, eligibility, technical and financial documents needed are described in the Instruction to Bidders of the Philippine Bidding Documents

Bidding will be conducted through open competitive bidding procedures using a non discretionary "pass/fail" criterion as specified in the 2016 R-IRR of RA 9184.

A complete set of Bidding Documents may be purchased by interested bidders upon payment of a fee for the Bidding Documents. It is also downloadable for free of charge at DOST-ASTI's website - www.asti.dost.gov.ph

For further inquiries, contact ASTI's BAC Secretariat via email at bac-sec@asti.dost.gov.ph. Interested bidders may also call the number - (632)-426-7423 and look for ASTI's BAC Secretariat.

Respectfully,

PEDRITO B. MANGAHAS
Chairperson, BAC-1

NO.	TECHNICAL SPECIFICATIONS	QTY	UNIT	UNIT PRICE(Php)	TOTAL PRICE(Php)
1	<p>Supply and Delivery of One (1) Lot Rapid Prototyping Upgrade</p> <p>Supply, Delivery and Installation of One (1) lot of Integrated Wet Process PCB FABRICATION SYSTEM and Accessories</p> <p>I. General Description (A) This purchase requisition is for the supply, installation and commissioning of a PCB fabrication system, PCB production with photoresist, galvanic through hole plating (PTH), green solder mask and silkscreen components printing. It should be capable of fine-line technology of industrial quality. The system should have multilayer PCB capability, wastewater treatment and surface finishing. It should be an integrated system, designed, built and supported by the manufacturer to work as one.</p>	1	lot	16000000.00	16,000,000.00

(B) The PCB fabrication system should be setup as flexible as possible. Should the End User decide to upgrade the system in the near future, integration of new machines should conform to the current process that is in place, with minimal disruption.

(C) The External Provider will supply the necessary support on the design and layout of the PCB fabrication system, on the desired equipment layouts, location of water and other utility lines to provide an efficient workflow consistent with the available space and structure of the EPDC building.

(D) The supplied equipment should comply with applicable and existing safety and quality standards that are implemented in the Philippines including but not limited to, ISO, RoHS, and IPC standards.

(E) The External Provider must be able to provide a turnkey solution for a complete wet PCB production setup. As the End User wishes to be assured that the equipment work together as one, and have operated safely and consistently through the years, the Original Equipment Manufacturer (OEM) of the equipment shall have been in the PCB fabrication business for at least 25 years.

(F) The External Provider must have been supplying, maintaining PCB Fabrication equipment, and providing PCB Fabrication consumables and related services for two or more years in the Philippines.

(G) Bid price should be inclusive of all costs necessary including but not limited to permits, taxes and duties (DDP). DDP will be based on the rules of Incoterms 2010.

(H) The Bid shall be for the entire Lot (PCB production system). It shall be equal to or better than the specifications listed below in order to fully comply with the specifications as stated.

II. Progress payment terms:

1. Supply, delivery, and installation of the PCB production system: Sixty (60) percent
2. Commissioning of PCB production system: Thirty (30) percent
3. Completion of PCB production system Training and Site Acceptance Test (SAT): Ten (10) percent

Note: Although the Bid will be for one (1) lot, we will be requiring that the External Provider should still indicate the prices of each item individually (for future reference).

III. After Sales Service & Maintenance:

The External Provider (Principal) shall have a local service, with an office address based in the Philippines

for diagnosis, maintenance or repair of the system components.

IV. Warranty:

During the Warranty period, the External Provider upon proper notification of the End User shall:

- (1) Send representatives within two (2) working days to verify and troubleshoot the issue. Experts shall arrive within seven (7) calendar days at the site where the defect(s) of Supplies is (are) found to repair or replace;
- (2) Bear all expenses arising from this repair/replacement;
- (3) Must immediately notify the End User, in case the problem cannot be resolved on site;
- (4) Notify the End User estimated time for repair/replacement but the period for repair/replacement shall not be longer than five (5) weeks from the dispatch date of the defective and/or damaged items;
- (5) Bear all costs arising from or in connection with the repair and/or replacement, including but not limited to customs duties, taxes and transportation fees;
- (6) Bear all costs arising from and/or in connection with this delay in case the items dispatched for repair/replacement cannot be returned within the stipulated time;
- (7) Extend the warranty period in days, from the day the issue has been reported to the day the repair/replacement has been successfully made, after the verification of the issue.

Note: Any replacement or repair provided under warranty period shall be warranted by the External Provider for at least another three (3) months on top of the remaining warranty period from the date of finishing repair and/or installation of replaced items. Extended warranty shall only cover the repaired part of the equipment.

Warranty: Three (3) Years [For Year 1, free parts and labor warranty and onsite support. For years 2 and 3, free labor warranty and onsite support.]

Delivery Date: On or before November 30, 2019 (delivery beyond this date will be subject to availability of funds)

V. Duties and Responsibilities of the Supplier:

1. Supply complete turnkey system with the specifications equal to or better than as shown below.
2. Conduct training for at least ten (10) ASTI and EPDC personnel after installation and commissioning of the Turnkey system.
3. Provide at least three (3) copies of the operations, training, and service manual/documentation for the Turnkey system in printed (hard copy) and two copies of electronic or softcopy formats.
4. Provide free technical support, equipment and service warranty for the first year, and free labor

support for the next two (2) years.

VI. Responsibilities of ASTI and EPDC Project Team:

1. Reject any unit or any part thereof that fail to pass any test and/or inspection or do not conform to specifications. The External Provider shall either rectify or replace such rejected unit or parts thereof or make corrections necessary to meet the specifications at no cost to DOST-ASTI and shall repeat the test and/or inspection at no cost to DOST-ASTI.

VII. Others:

1. Customer concerns shall have response within two (2) days upon receipt of notification and expert technical assistance within one (1) week.

VIII. Technical Specifications:

1. The PCB fabrication system should be supplied with all the necessary accessories including, but not limited to, power cables, user manuals, troubleshooting guides, quick-start guides, and schematics, and will operate in the EPDC operations environment with a 230VAC single phase supply except when explicitly indicated and agreed upon by End User.
2. With negative resist, galvanic through hole plating (PTH), green solder mask, and blue components printing.
3. Able to handle board size of up to 300 x 400 mm.
4. Multilayer capability.
5. Fine line resolution of 0.150 mm or better.
6. Maximum capacity of not less than 3 sqm. per 8-hour shift.
7. Wastewater filtration with drain water recirculation.
8. Environment-friendly Tin surface finishing.
9. Nickel-Gold surface finish.
10. Startup consumables for each machine.
11. Year 1- free parts and labor warranty onsite support, free labor warranty and onsite support for years 2 and 3.
12. On-site training at EPDC Building.
13. Training and support for disposal/recycling or reuse of filter elements for the wastewater treatment equipment.
14. Training and support on disposal of chemicals used in etching, developing, and stripping.
15. Provide implementation plan for the installation/commissioning of the equipment, training and other activities needed to complete the project.
16. Although this is a manual production system, the end users are open to receiving an improved or mechanized/automated system. The End User reserves the right to accept or reject any proposal for upgrades based on this document.

A. PCB Production System, Wet Process

1) Two (2) units Board Cutter:

- a. Ability to cut PCBs up to 3.0 mm in thickness or aluminum up to 1.5 mm. If desired, cutting of steel sheets up to 1 mm or plastic up to 5 mm is possible as well as cutting of film sheet material or paper.
- b. Cutting width of 500 mm
- c. Angle and scale tolerance of 0.1 mm
- d. Adjustable cutting angle and clearance
- e. Cutting width max. 530 mm
- f. Two blades made of hardened and ground steel
- g. Spring loaded built-in clamping unit in the front (removable)
- h. Bedstop with metric scale in the right front
- i. Fully adjustable back stop with metric scale for batch work (0...300 mm)
- j. Durable full steel construction
- k. All important parts angular adjustable
- l. Simple exchange of blades
- m. Adjustable clearance

2) One (1) unit CNC-drilling and Contour Routing:

- a. This is a computer controlled drilling machine with Automatic Tool Change (ATC)
- b. Allows direct processing of Excellon / Sieb & Meyer drill data or HP/GL route data for producing PCBs (drilling, cut-out-routing, isolation milling) or routing/engraving plastics, aluminum and other metals.
- c. With automatic 16-slot tool changer
- d. Can handle 19 inch rack boards
- e. Integrated mechanical milling depth limiter and pressure foot
- f. Includes driver software for milling and routing (Compatible with Windows 7 - Windows 10, 64-bit)
- g. 500-2000 watt vacuum cleaner + start adapter for vacuum cleaner
- h. Manual, USB serial adapter, set of Allen keys
- i. ATC air hose
- j. Can handle 300 x 400 mm PCBs
- k. Tool change, can hold: at least 16 automatic / semi-automatic 99 tools
- l. Power supply: 220 - 240 V~, 50 - 60 Hz, 1P. + vacuum cleaner (1500W)
- m. Range of RPM: 3,000 - 63,000
- n. Traveling speed: 1 - 9,000 mm/min
- o. Software resolution: 0.00001mm (0.01µm)
- p. Mechanical resolution: step resolution: Software selectable: 1 mil, ½ mil, ¼ mil (= 3.175 µm)
- q. Tool diameter: 0.1 mm - 3.175 mm
- r. Position accuracy: 20 ppm (0.002%) over the entire workspace
- s. Maximum position speed per axis: 9,000mm/min (=150 mm/s)
- t. Maximum working speed per axis: 9,000mm/min (=150 mm/s), individual setting on a per-tool basis, independent from position speed
- u. Drill speed: 5 holes/s (= 18,000 holes/h= 300 holes/min)
- v. Includes full software/driver package support for drilling and milling
- w. Board fixation: span fixing, clamp fixing, reference pin system, stack processing possible

- x. Accessory: vacuum fixation
 - y. Has a large work space 325x495mm
- 3) One (1) unit Brush Cleaning:
- a. Simple brush exchange via quick change fitting
 - b. Precise parallel brush adjustment with hand wheel
 - c. Digital readout for board thickness and power consumption
 - d. Adjustable pressure with digital readout for upper and lower rollers
 - e. Full scale squeeze-off and hot air drying compartment
 - f. Working width: 300 mm
 - g. Board thickness (rigid boards only): 0.3 – 3mm
 - h. Board sizes max.: 300 mm x endless
 - i. Brushing speed: 1360 rpm
 - j. Conveyor speed: 0.2 – 2 m/min
 - k. Oscillation stroke: 10 mm
 - l. Oscillation frequency: 10 – 110 l/min
 - m. Rinsing system water consumption: 6.8 l/min
 - n. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P
 - o. Closed loop water management with filtration
 - p. Stand alone with rack and integrated water tank
- 4) One (1) unit Through Hole Plating:
- a. Accommodate board size up to 300 x 400 mm
 - b. DC gear motor with step-less variable stroke speed adjustment for bath agitation
 - c. Treatment tank capacity: 20 L
 - d. Galvanic copper tank capacity: 60 L
 - e. Integrated air injection and stepless regulated rectifier for the galvanic plating tank
 - f. Total of five (5) treatment tanks (cleaning, pre-dip, catalyst, intensifier, reserve tank) and a separate galvanic plating tank
 - g. Two treatment tanks equipped with thermostatically controlled Teflon heater
 - h. Heaters: 2 x 800 W
 - i. Rectifier: 2 x 6 V, 80 A
 - j. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P
- 5) Two (2) units Dry Film Laminator:
- a. Mountable resist rollers of nearly all coil diameters
 - b. Detachable inlet table for easy access to low resist roll
 - c. Adjustable laminating speed: 0.2-1.2 m/min
 - d. Electrically heated lamination rollers with uniform temperature distribution
 - e. Separate transport rollers for non-creasing laminate transport
 - f. Digital setting and read out of lamination temperature
 - g. Manually adjustable lamination pressure for all common dry film resists with 3 and 5 inch core diameter
 - h. Suitable for solder mask application
 - i. Lamination width max.: 400 mm
 - j. Transport width max.: 440 mm
 - k. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P
 - l. Resist tension: Adjustable
 - m. Lamination pressure: adjustable

- n. Roller temperature: Adjustable
- o. Temperature range: 20 – 120 °C

6) One (1) unit Developing Machine:

- a. Maximum capacity of not less than 3 sqm/ 8-hr shift
- b. Working width of 400 mm
- c. Line resolution of 0.150 mm or better
- d. Maintenance-free magnetic centrifugal pump for developer circulation
- e. Integrated rinsing zone with drip off holder
- f. Transparent top with security switch
- g. Maintenance free design and easy disassembly and full access to all inner parts without special tools
- h. In-built 1000W quartz heater
- i. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P
- j. Tank capacity: > 30 L

7) One (1) unit Etching Machine:

- a. Maximum capacity of not less than 3 sqm/ 8-hr shift.
- b. Working width of 400 mm
- c. Line resolution of 0.150 mm or better
- d. Foot-activated fresh water spray zone with splash protection
- e. Magnetic centrifugal pump for developer circulation
- f. Integrated mechanical squeeze dryer
- g. Transparent top with security switch
- h. Maintenance free design and easy disassembly and full access to all inner parts without special tools
- i. In-built 1000W quartz heater
- j. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P

8) One (1) unit Stripping Machine:

- a. Maximum capacity of not less than 3 sqm/ 8-hr shift
- b. Working width of 400 mm
- c. Line resolution of 0.150 mm or better
- d. Foot-activated fresh water spray zone with splash protection
- e. Magnetic centrifugal pump for developer circulation
- f. Integrated mechanical squeeze dryer
- g. Transparent top with security switch
- h. Maintenance free design and easy disassembly and full access to all inner parts without special tools
- i. In-built 1000W quartz heater
- j. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P

9) One (1) unit Exposure Unit:

- a. Two (2) Banks of 1 x 7 super-actinic UV tubes (20 W each)
- b. Independent controls for top and bottom UV light banks
- c. Suitable for exposing and curing solder mask
- d. Suitable for fine-line PCBs
- e. Maintenance free vacuum with gauge display (1380 l/hour)
- f. Digital countdown timer (1 sec. to 9 min 59 sec.) with auto-reset and beeper, ammeter, and cooling fans for extended exposure time
- g. Minimum exposure area of 300 x 400 mm
- h. Power supply: 220 – 240 V~, 50 – 60Hz, 1P
- i. Special reflectors for minimum undercut

- j. Analogue light emission display
- k. Lower exposure surface from 8 mm special glass
- l. Upper exposure area from structured Mylar foil in a sturdy frame
- m. Working area 570 x 300 mm
- n. Built in cooling fan allows long time exposure or baking processes
- o. Separate choice of upper/low exposure possible
- p. Sturdy steel housing

10) One (1) unit Photoplotter:

- a. Stand alone unit – no separate PC required
- b. Includes full software package for additional functionalities such as film arrangement, print preview, aperture editing, negative plotting, and image mirroring. (Compatible with Windows 7 - Windows 10, 64-bit)
- c. Output resolution of 16256 x 12700 dpi
- d. Plotting speed of 7 mm of film width per minute
- e. Source light: Laser diode (670 nm - red)
- f. Data input format: Gerber (RS 274D, RS 274X), high resolution BMP
- g. Data transfer thru USB stick or via USB cable
- h. Changeable plot speeds (at least three settings)
- i. Can support board size of 300 x 400 mm
- j. Power supply: 220 – 240 V~, 50 – 60Hz, 1P

11) One (1) unit PCB Multilayer Press:

- a. Accommodate board size of up to 300 x 400 mm
- b. Adjustable temperature setting up to 250 °C
- c. Power supply: 400V~, 50 – 60 Hz, 3P
- d. More than 24 tons compression
- e. Plates should have a minimum lift of 35 mm
- f. A compact and floor standing aluminum rack contains all parts of the unit including pressure supply, press plates and heaters
- g. The unit is controlled by two digital and adjustable thermostats, one digital timer as well as a pressure valve with pressure meter
- h. Four strong air ventilators are activated automatically during cooling cycle
- i. Security switch protection for the loading door
- j. Compressor

12) One (1) unit Recirculating Wastewater Treatment:

- a. Rinsing waste water treatment using ion exchange technology. Should decrease chemical oxygen demand with post treatment of etching and galvanic rinsing water.
- b. Filter arrangement: a cotton pre-filter, two cation filters, and a pH neutraliser
- c. Storage sump tank capacity: 220 L
- d. Cleaning capacity: 20 l/hour
- e. Lower and upper sump control switches
- f. Built-in hose pump
- g. In-built pH meter
- h. Integrated cotton filter candle 10 µm (active carbon filter)
- i. Power supply: 220 – 240 V~, 50 – 60 Hz, 1P
- j. Can additionally do PH neutralization and discharge to the drain, if desired

- k. Includes drain water recirculation
- l. Regeneration of ion exchange resins by External Provider or by user at little cost
- m. Drain water quality should be in accordance with Philippine regulations including but not limited to, RA 9275 - Clean Water Act, RA 1364 - Sanitary Engineering Law, and DENR AO 35 - Revised Effluent Regulations of 1990.

13) One (1) unit Surface Finish (Chemical Tin):

- a. Immersion tin for chemical tin plating of copper surfaces, deposits pure tin
- b. Up to 50% longer service life of the tin bath
- c. Completely planar surface finish for surface-mounted devices
- d. Minimum deposit thickness: 0.08 μ m
- e. High storage capacity of bare printed circuit boards
- f. Suitable for horizontal production line and basket systems
- g. Simple control and monitoring of the finishing process
- h. Can support boards up to 300 x 400 mm
- i. Environment friendly
- j. Rating: 4 hours ageing 155 degrees C, 3 x reflow, 1 x Shaft
- k. Can process all common solder and assembly print varnishes
- l. Has 5 pools for microetch, combined spray and static rinse, organic metal, chemical tinning, hot rinse
- m. Power supply: 220 - 240 V~, 50 - 60 Hz, 1P

14) One (1) unit Surface Finish Chemical Nickel and Gold (ENIG):

- a. Suitable for lead-free soldering, contact switches, AL-wire bonding, and high aspect ratio boards.
- b. Can support board size of up to 300 x 400 mm
- c. Completely planar surface finish for surface-mounted devices
- d. E-Test compatible
- e. Produces PCBs with long storage time, as long as 12 months, and excellent resistance to ageing
- f. 5 PVC tanks, 2 PP tanks all about 10 liters, 3 Teflon radiators all with thermostatic, 5 Digital Timer, bath movement (adjustable), all tanks with ball valve drain
- g. With spray rinse with foot switch
- h. With adjustable flushing pressure.
- i. Stand-alone machine.
- j. Power supply: 220 - 240 V~, 50 - 60 Hz, 1P

B. Required Accessories

1) One (1) set Film Punch:

- a. Additional accessory for the Photoplotter
- b. Can support films for board size up to 300 x 400 mm
- c. In-built magnifier for layout position control
- d. X and Y axes adjustment with handwheel
- e. LED light for the punch bush
- f. Includes pins for fixing the layout with reference holes

- 2) Dark Room:
 - a. Portable and easy to disassemble
 - b. Provide total blackout
 - c. Additional accessory for the Photoplotter
 - d. One tank each for developing, fixing, and rinsing
 - e. Tank accessories such as covers and hoses for emptying
 - f. External dimensions: 200 x 120 x 120 cm

- 3) One (1) set Photoplotter Film Processing Unit:
 - a. Additional accessory for the Photoplotter
 - b. One tank each for developing, fixing, and rinsing
 - c. Tank accessories such as covers and hoses for emptying

- 4) One (1) set CNC/Milling:
 - a. Depth limiter
 - b. Pressure foot
 - c. USB Camera
 - d. Enhanced dust extraction system
 - e. Vacuum table
 - f. Protective hood and rack
 - g. Calibration board
 - h. Tool boxes

C. Start up Consumables

- 1) One (1) set:
 - a. FR4 (1 and 2 layer) Laminates:
 - a.1.10 PCBs FR4 (35 μ m, 1.5 mm thick, 1 side)
 - a.2.10 PCBs FR4 (35 μ m, 1.5 mm thick, 2 sides)
 - b. Multilayer consumables:
 - b.1. 100 Topboards FR4 350x450x0.3mm 18/00
 - b.2. 100 Prepregs 250 x 350 x 0.2 mm
 - b.3. 50 FR4 300 x 400 x 0.3 mm 18/00
 - b.4. 50 FR4 300 x 400 x 0.5 mm 35/35
 - b.5. 6 Press Sheets
 - b.6. 10 tedlar Separation foil 360x460mm
 - b.7. Dry Film Photoresist
- 2) One (1) set Drills/Routers:
 - a. 40 PCB tungsten routers starter set
 - b. 40 Tungsten carbide drills starter set
 - c. 100 Reference pins 3 x 5,4mm starter set
 - d. 3pc Scrub blocks for PCB cleaning
 - e. 1 roll Adhesive tape
 - f. PCB starter set:
 - f.1. 10 FR4 300x400 x 1,5mm 35/0 copper unc.
 - f.2. 10 FR4 300 x 400 x 1,5mm 35/35 copper unc.
 - g. 5pcs MDF drill underlay board 245 x 330 x 6mm starter set
- 3) One (1) set Chemicals and etchants:
 - a. Stripper for negative photoresists (10x250g bags)
 - b. Ferric Chloride (2x25 liter jerry can)
 - c. Stain Remover (25x1 kg bag)
 - d. Black out spray (5 spray bottles - 150ml each)
 - e. And other local supplies needed for this operation

- 4) One (1) set Plating consumables:
 - a. Through hole plating machine consumables starter set
 - b. Laminating starter set
 - c. Tenting Photoresist starter set
 - d. Solder Mask starter set
 - e. Activator (Catalyst)
 - f. Cleaner / Conditioner
 - g. Pre-Dip
 - h. Intensifier (Salt Remover)
 - i. Copper Plating

- 5) One (1) set Wastewater Treatment Supplies:
 - a. One (1) cotton pre-filter
 - b. Two (2) cation filter
 - c. One (1) pH neutraliser
 - d. Active carbon filter candle
 - e. Anion exchange resin
 - f. Kation exchange resin

- 6) One (1) set Laser Photoplotter / Layout film:
 - a. Film starter set, 50 sheets film
 - b. Developer, 30 liters
 - c. Fixer, 30 liters
 - d. Special-tape
 - e. Drying tissue

- 7) One (1) pair Cutting Blades:
 - a. Additional pair of cutting blades for the board cutter
- 8) Seven (7) units Super-actinic tubes

D. Other Requirements:

1) Site Acceptance Test at EPDC (SAT)

- SAT of equipment shall cover the following fields:
quantity, marking, origin, technical specifications,
operation under applied standards.

- a. Testing and setup of equipment would be carried out by External Provider as part of SAT.
- b. During SAT, EPP Training must be provided to at least ten (10) participants from ASTI and EPDC.
- c. Training should be a minimum of five (5) days and may be extended as needed to ensure maximum retention.
- d. External Provider and Representative shall sign on the Certificate.
- e. If Representative fails to sign the Certificate of Acceptance upon completion of the tests, the aforementioned shall immediately notify the External Provider in writing the reasons for the failure.

2) Training

- a. Training schedule upon project integration completion (after award of tender) shall be agreed upon by both the External Provider and End User. Training should cover the following aspects:
 - a.1. Overview of EPP standards (Generic & Product Standards)
 - a.2. Overview of wet PCB process in EPP Lab.

	<p>a.3. Actual systems test using dummy boards in EPP Lab.</p> <p>a.4. Work instruction manuals for dummy boards (to be provided by the External Provider).</p> <p>a.5. System maintenance and troubleshooting procedures including machine schematics and parts list.</p> <p>b. Training and support for disposal/recycling or reuse of used up filter elements for the wastewater treatment equipment.</p> <p>c. External Provider shall issue a certificate of completion of system training to the representatives at the end of the program.</p> <p>d. Costs for the training (food, venue, training materials, etc.) shall be borne by the External Provider.</p> <p>3) Documentation</p> <p>- The External Provider is required to provide the following list of documents:</p> <p>a. Technical Literature of instruments listed in offer.</p> <p>a.1. Product Datasheets</p> <p>a.2. User Handbook/Operators Manual/Quick-start Guide (after award of tender)</p> <p>a.3. Technical Manuals (after award of tender)</p> <p>b. Plan-view layout of wet process area, dark room, and other accessories with clear indication of positioning and dimensions for equipment and storage space based on Annex A.</p> <p>c. List of project references in Asia of similar project scale.</p> <p>d. Implementation schedule of project, stating clearly milestones and stages. Joint events requiring involvement of the End-user to be highlighted.</p> <p>e. Provide a comprehensive checklist of equipment and accessories prior to the actual fit-out.</p> <p>4) Delivery: Must be delivered to EPDC Bldg., MIRDC Compound, Bicutan, Taguig City</p> <p>a. All equipment should come in separate boxes irrespective of size and weight.</p> <p>b. Equipment and starter chemicals shall be shipped separately.</p> <p>c. Startup supplies should be sufficient to support commissioning and turnover test, and initial production run for the entire system.</p> <p>d. Final delivery and acceptance covering commissioning, testing, training, and test production is on or before November 30, 2019 (delivery beyond this date will be subject to availability of funds).</p> <p>E. Site Layout</p> <p>Note: Please refer to the attached document for the PCB Laboratory Floor Layout. (Annex A - PCB Laboratory Plan-view Layout, 1 page)</p>				
2	<p>Supply and Delivery of One (1) lot 3D Printer Kit with upgrade and accessories</p> <p>Includes:</p> <p>I. One (1) unit of 3D Printer Kit with the following specifications:</p>	1	lot	176027.50	176,027.50

A. Basic specifications:

1. Build volume: 11,025 cm³ (25 x 21 x 21 cm or 9.84 x 8.3 x 8.3 in)
2. Integrated LCD and SD card controller (8GB included)
3. 0.4mm nozzle (easily changeable) for 1.75 mm filament
4. Layer height from 0.05 mm
5. Automatic mesh bed levelling
6. Heatbed with cold corners compensation – for warless 3D printing from any material
7. Automatic skew axes compensation
8. Supported materials: PLA, ABS, PET, HIPS, Flex PP, Ninjaflex, Laywood, Laybrick, Nylon, Bamboofill, Bronzefill, ASA, T-Glase, Carbon-fibers enhanced filaments, Polycarbonates
9. Multicolor printing based on layer height
10. includes 1 kg (2 lbs) silver PLA filament
11. Kit box dimensions: 11 kg, 42x43x24 cm; 16.5x16.9x9.5 in (LxHxW)
12. Printer dimensions (without spool): 7 kg, 50x55x40 cm; 19.6x21.6x15.7 in (LxHxW)
13. Power consumption: PLA settings (80W) / ABS settings (120W)

B. Key Features:

1. with removable Magnetic HeatBed that holds a replaceable alloy spring steel sheet with a smooth PEI surface
2. Motherboard similar to or better than Einsy Rambo
3. Silent Trinamic drivers with 256 microstepping
4. Printing speed: 200+ mm/s
5. Sensorless homing for X and Y axes
6. Detection and recovery of shifted layers
7. Frame rigidity with aluminium extrusions
8. Power loss detection and recovery
9. Optional WIFI with Octoprint interface or similar included
10. Extruder drive - filament is driven from both sides
11. IR filament sensor
12. Automatic loading of filament when filament is inserted
13. Both extruder cooling fan and print cooling fan detect RPM. When extruder fan is blocked, the printer will stop to prevent damage of extruder. Same applies for the print cooling fan.
14. Silent fan
15. Includes proximity sensor probe with embedded thermistor for faster temperature calibration
16. Room ambient temperature sensor

ii. One (1) unit of Multi Material Upgrade

1. Enables 3D printer to print with up to 5 filaments at the same time.
2. Redesigned body and a new filament loading mechanism which uses direct-drive feed and a single PTFE tube to lead the selected filament to the extruder
 - 2.a. Less sensitive to filament quality
 - 2.b. With filament sensor compatible to this upgrade
 - 2.c. Motorized selector head with filament cutter
 - 2.d. Power loss detection and recovery

2.e. Smart software with features similar to but not limited to the ff. : Smart wipe tower, Wipe to infill, and Wipe into object

2.f. Works in two modes: Multi-Material Mode and Single Mode.

2.g. Includes a Filament Buffer - a device designed to prevent filament tangling

3. Material Compatibility:

3.a. PLA

3.b. ABS

3.c. PETG

3.d. Soluble Materials (BVOH, PVA)

III. Accessories & Consumables:

1. Two (2) units of Replacement PEI sheet

2. One (1) unit of Stepper Motor

3. One (1) unit of Nozzle

4. One (1) unit of Extruder Hobbed Pulley

5. One (1) unit of PTFE Tubing for hotend

6. One (1) unit of Hardened Steel Nozzle

7. Four (4) rolls of ABS (1.75) filament 1kg (black, red, white and blue)

8. Five (5) rolls of PLA (1.75) filament 1kg (black, red, white, blue and yellow)

9. One (1) roll of Nylon (1.75) clear

10. One (1) roll of TPU (1.75) clear

Note: The Bidder shall supply all items with the specifications equal to or better than as shown above.

Inclusive of all taxes and duties.

Delivery Period: 60 days upon receipt of NTP

Must be delivered to ASTI Bldg., UP Technology Park Complex, C.P. Garcia Ave., Diliman, Quezon City

TOTAL APPROVED BUDGET FOR THE CONTRACT (ABC):

Php 16,176,027.50

RESERVATION CLAUSE

The Advanced Science and Technology Institute reserves the right to accept or reject any proposal, to annul the bidding process, and to reject all proposals at any time prior to contract award, without thereby incurring any liability to the affected proponent or proponents.