



**SUPPLEMENTAL / BID BULLETIN (SBB)**  
**ADDENDUM NO. 01**

This SBB Addendum No. 02 dated 27 September 2021, for the Project: “Modernization of Engineering Laboratory Equipment to Cope-Up with the Global Challenge” is issued to clarify, modify or amend items in the Bidding Documents. Accordingly, this shall form an integral part of said Documents (Note: For this SBB and a better understanding of its contents, the following rules shall apply: (a) ~~Double Strike-out~~ – denotes deletion, and (b) Underline with yellow highlights – implies inclusion or new item/requirement).

PARTICULARS	CLARIFICATION / AMENDMENT																				
<p>Based on the Discussion during the Pre-bid Conference and upon confirmation by the Technical Working Group and the End-User Unit conducted last 25 November 2021 @ 10:00 am for this Project, the following are the additional revisions:</p>																					
<p>1. On Class “A” Legal Documents, under Technical Component Envelope on the Checklist for Technical Documents, Section VIII and page 36 of the published bidding documents, the following is the revision:</p>																					
<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 30%;">ITEM NO.</th> <th style="width: 40%;">REQUIREMENTS</th> <th style="width: 15%;">PASSED</th> <th style="width: 15%;">FAILED</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;"><b>I. TECHNICAL COMPONENT ENVELOPE</b></td> </tr> <tr> <td colspan="4" style="text-align: center;"><i>Class “A” Documents</i></td> </tr> <tr> <td colspan="4" style="text-align: center;"><u>Legal Documents</u></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td> <p>A. [ ] Valid PhilGEPS Registration Certificate (Platinum Membership) (all Pages);  or <u>and</u></p> <p>[ ] Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; and</p> <p>[ ] Mayor’s or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; and</p> <p>[ ] Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</p> </td> <td></td> <td></td> </tr> </tbody> </table>	ITEM NO.	REQUIREMENTS	PASSED	FAILED	<b>I. TECHNICAL COMPONENT ENVELOPE</b>				<i>Class “A” Documents</i>				<u>Legal Documents</u>				<input type="checkbox"/>	<p>A. [ ] Valid PhilGEPS Registration Certificate (Platinum Membership) (all Pages);  or <u>and</u></p> <p>[ ] Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; and</p> <p>[ ] Mayor’s or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; and</p> <p>[ ] Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</p>			
ITEM NO.	REQUIREMENTS	PASSED	FAILED																		
<b>I. TECHNICAL COMPONENT ENVELOPE</b>																					
<i>Class “A” Documents</i>																					
<u>Legal Documents</u>																					
<input type="checkbox"/>	<p>A. [ ] Valid PhilGEPS Registration Certificate (Platinum Membership) (all Pages);  or <u>and</u></p> <p>[ ] Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; and</p> <p>[ ] Mayor’s or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; and</p> <p>[ ] Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</p>																				
<p>2. With reference to the Delivery Period as stated in Paragraph No. 2 of the Invitation to Bid, Section I, page 6, and Section VI- Schedule of Requirements, page 20 of the Bidding Documents, the following are the revisions:</p> <p>Paragraph 2:</p> <p>The <b>Kalinga State University</b> now invites bids for the above Procurement Project. Delivery of the Goods is required by <del>thirty (30)</del> <u>ninety (90)</u> calendar days upon receipt of the Purchase Order. Bidders should have completed, within <b>five (5) years</b> from the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly in Section II (Instructions to Bidders).</p> <p>Section VI. Schedule of Requirements:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 5%;">No.</th> <th style="width: 55%;">Lot and Reference</th> <th style="width: 10%;">Qty</th> <th style="width: 10%;">Unit</th> <th style="width: 20%;">Delivered (Weeks/Months)</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">1</td> <td>Engineering Laboratory Equipment to Cope-Up with the Global Challenge</td> <td rowspan="3" style="text-align: center;">1</td> <td rowspan="3" style="text-align: center;">lot</td> <td rowspan="3">           Delivery and/or Installation service shall be completed within <del>THIRTY (30)</del> <u>NINETY (90)</u> CALENDAR DAYS upon acceptance of the Purchase Order         </td> </tr> <tr> <td>Small Scale Structural Behaviour Laboratory (Delivery, Installation, Configuration and Training)</td> </tr> <tr> <td>Subsonic wind tunnel 305*305mm with Versatile data acquisition (Delivery, Installation, Configuration and Training)</td> </tr> </tbody> </table>		No.	Lot and Reference	Qty	Unit	Delivered (Weeks/Months)	1	Engineering Laboratory Equipment to Cope-Up with the Global Challenge	1	lot	Delivery and/or Installation service shall be completed within <del>THIRTY (30)</del> <u>NINETY (90)</u> CALENDAR DAYS upon acceptance of the Purchase Order	Small Scale Structural Behaviour Laboratory (Delivery, Installation, Configuration and Training)	Subsonic wind tunnel 305*305mm with Versatile data acquisition (Delivery, Installation, Configuration and Training)								
No.	Lot and Reference	Qty	Unit	Delivered (Weeks/Months)																	
1	Engineering Laboratory Equipment to Cope-Up with the Global Challenge	1	lot	Delivery and/or Installation service shall be completed within <del>THIRTY (30)</del> <u>NINETY (90)</u> CALENDAR DAYS upon acceptance of the Purchase Order																	
	Small Scale Structural Behaviour Laboratory (Delivery, Installation, Configuration and Training)																				
	Subsonic wind tunnel 305*305mm with Versatile data acquisition (Delivery, Installation, Configuration and Training)																				



Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111

PARTICULARS		CLARIFICATION / AMENDMENT		
3. On Section VII- Technical Specifications, page 22-29 of the Bidding Documents, the following are the revised technical specifications:				
ITEM NO	ITEM AND DESCRIPTION	QTY	UNIT	Statement of Compliance
				[Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the Equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of Specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.]
<b>Engineering Laboratory Equipment</b>				
1	<b>Understanding Structural Behaviour</b> > Intuitive design providing great touch and feel > Carbon fibre elements provide exaggerated response for enhanced visualization > Carbon fibre elements also provide negligible plastic deformation for long life and repeatability > Fully integrated hardware and software display > Includes eight standard projects including cantilevers, beams and portal frames > Wide range of additional structures can be constructed from simple components > Compare computer simulations with actual responses > Sensor and instrumentation package > Supplied with the textbook <i>Understanding Structural Analysis</i> by Dr. David Brohn  <b>Structural hardware</b> This is a set of components enabling a wide variety of 2D structures to be assembled and understood. It comprises a transparent backboard on which the structure is assembled with 32 potential mounting positions configured as an 80x80mm grid. A variety of different nodes and joints are available. The fixed nodes attach to the baseboard via a simple peg-mounting system.	1	Lot	



Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167

PARTICULARS	CLARIFICATION / AMENDMENT		
<p>A number of elements are provided in different lengths. These elements are manufactured of carbon fibre and are designed to flex easily in one dimension to demonstrate the movement of the structure. Element lengths available: 1U, 2U, 3U, 4U, 4U+ (U= unit length)</p> <p>Supports available:            Fixed rigid            Fixed pinned            Simple slide support            End slide            Horizontal slide anchor</p> <p>Joints available:            Rigid right angle            Pinned right angle            Inline pinned</p> <p>The transparent backboard is mounted on a 32" wide-screen display, with the computer running the display and visualization software</p> <p>Functions of the software:            – Display the structure to be evaluated to aid correct assembly            – Display the structure in diagrammatic form and as typical pictorial implementation of the structure. This has been proven to be a powerful aid to student understanding            – Give a graphical representation of bending moments, shear, deflection and reaction in response to simulated loads</p> <p>Two new structures introduced            – Cantilever beam            – Simply supported beam</p> <p>These two basic structures offer an introductory level to the teaching of structural engineering, and can be used to introduce basic concepts of reactions, shear forces and moments.</p> <p><b>Display and visualization software</b>            This software is a fundamental part of the Understanding Structural Behaviour concept, and works in conjunction with the hardware to demonstrate and help that understanding.            For a number of predefined structures it is possible to perform an immediate interactive simulation of the effect of loading on the structure. Loads can be simulated using the computer mouse and the shear force diagrams, moment diagrams, deflections and reactions are shown graphically and updated continually as the load is varied.</p>			



Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
**Bids and Awards Committee**



168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223

PARTICULARS	CLARIFICATION / AMENDMENT
<p>Scaling of displays            The deflection diagrams, moment diagrams and shear force diagrams can now be individually scaled.            This allows the data to be displayed more clearly for a wide range of different conditions. For example, large deflections can be scaled down at the same time as small moment forces being scaled up.</p> <p><b>Functions of the software:</b></p> <ul style="list-style-type: none"> <li>- Contains presentations to introduce the concepts of bending moment, shear, deflections and reactions and their associated graphical representation on the structure diagram</li> <li>- When used in conjunction with the instrumentation hardware, the software controls the actuators and displays the outputs from the various sensors</li> <li>- In this mode the displayed diagrams relate to the actual load applied by the actuator, rather than a simulated load</li> <li>- Provides calibration for the sensors and screen</li> </ul> <p>Understanding Structural Behaviour</p> <p>Comprises:</p> <ul style="list-style-type: none"> <li>• Backboard</li> <li>• Set of elements, supports and joints for the above range of structures to be implemented (Many others can also be implemented)</li> <li>• 32" high-definition display with HDMI interface</li> <li>• Display and visualization software</li> <li>• RISA 2D models</li> <li>• Book <i>Understanding Structural Analysis</i> by Dr David Brohn</li> <li>- Includes demo version of QSE analysis software</li> <li>• Storage facility for all components</li> </ul> <p><b>Instrumentation Package for use with base unit</b></p> <p>Comprises:</p> <ul style="list-style-type: none"> <li>• Deflection sensor</li> <li>• Linear actuator</li> <li>• Three-component rigid support sensor</li> <li>• Two-component pinned support sensor</li> <li>• Simple support sensor</li> <li>• Interface unit plus power supply and interconnecting cables</li> <li>• Software for control and instrumentation functions is supplied with base unit</li> </ul>	



Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279

PARTICULARS	CLARIFICATION / AMENDMENT		
<p><b>Subsonic wind tunnel 305*305mm (minimum) with Versatile data acquisition</b></p> <p>A compact, free-standing open-circuit suction subsonic wind tunnel with a working section of 305 mm by 305 mm and 600 mm long <b>as minimum measurement</b>, allowing students to perform advanced study such as analysing boundary layers, performing flow visualisation and observing velocity in the wake, offering extensive teaching and research functionality</p> <p><b>Specification</b></p> <p><b>Space needed:</b> Solid, level floor – allow at least 2 m of free space around the inlet and 4 m at the outlet</p> <p><b>Working section:</b> 305 mm x 305 mm, and 600 mm long (<b>as minimum measurement</b>) Air velocity: 0 to 36 m.s<sup>-1</sup> <b>min</b></p> <p><b>Noise levels:</b> 80 dB(A) at operators ear level.</p> <p><b>Electrical supply (three phase):</b> 200 VAC to 240 VAC 50 Hz/60 Hz (20 A)</p> <p><b>Key Features</b></p> <ul style="list-style-type: none"> <li>• A wind tunnel for conducting experiments in aerodynamics</li> <li>• Safe, compact, open-circuit suction wind tunnel – a cost effective solution when compared to full-sale wind tunnels</li> <li>• Safe, compact, open-circuit suction wind tunnel – a cost effective solution when compared to full-sale wind tunnels</li> <li>• The optional ancillaries work with Versatile Data Acquisition System</li> <li>• Additional models and instruments available to extend the range of experiments</li> <li>• Wind tunnel controls mount on a separate, free-standing instrument frame for ease of use</li> <li>• The wind tunnel has wheels for easy mobility</li> <li>• Also available as a starter set with a basic lift and drag balance and a set of models</li> </ul> <p><b>Description</b></p> <p>Air enters the tunnel through an aerodynamically designed effuser (cone) that accelerates the air linearly. It then enters the working section and passes through a grille before moving through a diffuser and then to a variable-speed axial fan. The grille protects the fan from damage by loose objects. The air leaves the fan, passes through a silencer unit and then back out to the atmosphere.</p> <p>A separate control and instrumentation unit controls the speed of the axial fan (and the air velocity in the working section). The control and instrumentation unit also includes manometers and electrical outlets to supply electrical power to other optional instruments.</p>	1	Lot	





Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335

PARTICULARS	CLARIFICATION / AMENDMENT		
<p>A metal frame supports the wind tunnel. The frame includes lockable castors for convenient mobility.</p> <p><b>Working Section</b>            The working section of the tunnel is a square section with a clear roof, sides and floor. The sides are removable. The floor and each side panel has a special position to support the optional wind tunnel models. Supplied with the wind tunnel are a protractor and a model holder to support and accurately adjust the angle of any models fitted.            Two traversing probes fit on the working section. One is a Pitot-static tube and the other a standard Pitot tube. They fit upstream and downstream of any models and connect to the manometers on the instrumentation unit (or other optional instruments) to show pressure.</p> <p><b>Includes:</b>  <b>Model Holder</b>            The model holder is supplied to hold a model if a balance is not used. It is designed to hold a shaft of diameter 11.95 ±0.015 mm (diameter) and 215 ±1.25 mm (length) mounting stem <b>as minimum measurement.</b></p> <p><b>Protractor</b>            The protractor fits on to the shaft of a model when a Balance is not being used. It can be used when setting up models and rotating them during experiments</p> <p><b>Includes instrumentation:</b>  <b>Three Component Balance</b>            The Three-Component Balance provides an easy-to-use support system for wind tunnel models. It measures lift, drag and pitching moment exerted on the model.            The balance comprises a mounting plate secured to the wind tunnel working section. A triangular force plate is held on the mounting plate by a mechanism that constrains it to move in a plane parallel to the mounting plate only, while leaving it free to rotate about a horizontal axis. This arrangement provides the necessary three degrees of freedom.</p> <p>Models for use with the balance are available. Other models used with the equipment will need a mounting stem. The forces acting on the model are transmitted by cables to three strain gauged load cells. The output from each load cell is taken via an amplifier to a display module. The display module mounts onto the wind tunnel control and instrumentation frame and includes a digital display to show the lift, drag and pitching moment directly.</p> <p>The equipment is fully compatible with Versatile Data Acquisition System and can quickly and conveniently connect to the interface unit.            The model support of the balance can be rotated by 360 degrees. This allows adjustment of the angle of incidence of the model to the direction of air flow. The model support is locked in the required position by a simple clamp after adjustment</p>			



Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391

PARTICULARS	CLARIFICATION / AMENDMENT			
	<p><b>Balance Angle Feedback Unit</b>            The Balance Angle Feedback Unit is for use with the Three-Component Balance (see above) to measure the angular position of models mounted on the balance in the wind tunnel.            The Angle Feedback Unit mounts on the Three-Component Balance attached to the wind tunnel. It then transmits the rotational angle of the model to Data Acquisition System. The angle of the model is logged on a suitable computer along with the other captured experimental data.</p> <p><b>32-Way Pressure Display Unit</b>            The 32-Way Pressure Display Unit measures and displays up to 32 different pressures from models, Pitot-static tubes and other measuring instruments fitted to a wind tunnel. It is ideally suited in applications where multiple pressure measurements are required, for example in boundary layer and tapped aerofoil model investigations.              The unit mounts onto the control and instrumentation frame of the wind tunnel. The unit contains 32 calibrated pressure transducers. Input connection to each is via quick-release pressure inputs mounted on the front panel of the unit. This allows easy and quick connection between the unit and an experiment mounted in a wind tunnel. All pressures are measured with respect to atmosphere. The unit has an integral liquid crystal display with a scroll switch that allows all 32 channels to be viewed in groups of four at any time.              When the 32- Way Pressure Display Unit is used with the system it allows laboratory time to be used more efficiently because data can be captured and processed much more quickly than when using manual techniques. The facility in the software to average data to remove the fluctuations inherent in wind tunnel measurements, enhances the quality of the results by making their interpretation much easier. This option provides significant experimental advantages over conventional instruments such as manometers.</p> <p><b>Differential Pressure Unit</b>            The Differential Pressure Transducer and readout is an optional ancillary to Subsonic Wind Tunnel. It measures and displays pressures in Pitot-static tubes and other pressure-sensing devices fitted to a wind tunnel, with respect to the atmosphere or differential pressures.              The control and instrumentation panel of the wind tunnel includes a location for mounting up to two Differential Pressure Transducer modules. Each module contains a calibrated pressure transducer. The unit has an integral liquid crystal display that allows the user to read pressure directly.</p>			



Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447

PARTICULARS	CLARIFICATION / AMENDMENT		
<p>When the Differential Pressure Transducer is used with the automatic data acquisition unit it provides a significant advantage over conventional instruments such as manometers. Many readings can be taken and the user may use a suitable spreadsheet software package to obtain a more accurate overview of pressure distributions.</p> <p><b>Pitot Static Traverse (300mm)</b>            A Pitot-static tube that mount in the working section of the wind tunnel, either upstream of the position of the test model or on the fore-aft traverse. This allows students to do 'wake' traverses, of a model. The vertical position of the tube, which is adjustable, is displayed on a digital indicator.</p> <p>The digital indicator position can be set to zero in any position. This allows the datum or starting point of an experiment to be defined by the user.</p> <p><b>Includes model:</b></p> <ul style="list-style-type: none"> <li>• Cylinder model</li> <li>• Set of two NACA 0012 aerofoils</li> <li>• Flat plate drag model</li> <li>• Three dimensional drag models</li> <li>• S1210 Aerofoil</li> </ul> <p>NACA 0012 aerofoil with tappings</p> <p><b>Versatile Data Acquisition System</b>            For both individual student use or for lecturers demonstrating experiments to a whole class, Data Acquisition System gives real-time calculation, recording and charting with fast data export. This makes efficient, productive and effective use of time for both students and lecturers.</p> <p>The digital inputs on the interface connect directly to the instrumentation on suitable products. These inputs are non-specific, for easy experiment setup and reduced connection errors. The mostly digital communications circuits make the equipment more resistant to electrical noise than purely analogue systems.</p> <p>The interface units also have two analogue inputs. These are for fast-moving (transient) signals from some products or for transducers and sensors. These may include displacement or pressure measuring sensors and flow meters. Data Acquisition System can display the analogue signals in real-time as traces on a computer screen. This allows Data Acquisition System to work as a user- friendly alternative to an oscilloscope on selected products.</p> <p>The output from the interface unit connects to a computer running the software. The software has extra features that allow the addition of derivative traces and reference traces, based on each of the two analogue input signals. It is possible to adjust software filtering and smoothing of each signal trace, and scale the traces to best fit the trace area.</p>			





Republic of the Philippines  
**KALINGA STATE UNIVERSITY**  
 Tabuk City, Kalinga 3800  
*Bids and Awards Committee*



448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503

PARTICULARS	CLARIFICATION / AMENDMENT
<p>The software is intuitive and easy to use, with clear and convenient data display options. The software looks similar and works in a similar way for each compliant product. This saves time as students do not have to learn to use new software when changing experiments.</p> <p><b>Learning outcomes</b></p> <ul style="list-style-type: none"> <li>• Flow past bluff and streamlined bodies with pressure and velocity observations in the wake</li> <li>• Investigations into boundary layer development</li> <li>• Influence of aspect ratio on aerofoil performance</li> <li>• Performance of an aerofoil with flap, influence of flap angle on lift, drag and stall</li> <li>• Pressure distribution around a cylinder under sub and super-critical flow conditions</li> <li>• Study of characteristics of models involving basic measurement of lift and drag forces</li> <li>• Study of the characteristics of three-dimensional aerofoils involving measurement of lift, drag and pitching moment</li> <li>• Study of the pressure distribution around an aerofoil model to derive the lift and comparison with direct measurements of lift</li> <li>• Flow visualization</li> </ul> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. The other requirements stated at the end of the technical specifications which contained the Other Requirements on Bidders' Qualifications and After Sales, are retained.</li> <li>2. The items and its technical specifications are the original proposal submitted and approved by CHED and as required by the concerned engineering program.</li> <li>3. By lot offer and awarding for this project which is set as "one lot" are remained unchanged due to compatibility and liquidation issues.</li> <li>4. The applicable prices of each item and accessories are required to be indicated at the Schedule of Prices Form for inventory purposes.</li> <li>5. The end-user may request additional photocopies of the operational manual of the equipment for accreditation purposes to the winning supplier.</li> </ol>	

For guidance and information of all concerned

**SIGNATURE REDACTED**  
**EDNA P. YUMOL, CPA, PhD**  
 BAC Chairperson

Date Issued: **November 29, 2021**  
 Copy furnished: **Prospective Bidders**