

**Department of Civil Engineering  
Indian Institute of Engineering Science and Technology, Shibpur  
Howrah-711 103**

28 February 2018

**NOTICE INVITING QUOTATION**

**(CE/CPDA/SDC-P1/2018)**

Sealed tenders are invited by the Civil Engineering Department, Indian Institute of Engineering Science and Technology, Shibpur, Howrah-711103 for the supply of one equipment in Environmental Engineering Laboratory under CPDA Grant-in-aid (2014-2017) of Prof. Debabrata Mazumder.

Tender Documents containing details of the items and terms and conditions may be downloaded from the institute website and completed bidding documents are to be submitted to the **Head, Department of Civil Engineering, Indian Institute of Engineering Science and Technology, Shibpur; Howrah-711103** or dropped into the Tender Box kept in the Department **within 7 March 2018 (4:00 pm)**.

The intended vendors/manufacturers are requested to submit technical and financial bid in sealed envelopes within stipulated time.

For further clarification, please contact Prof. Sandip Chakraborty (9830733143, 26684561 Extn 711).

Enclosed:       **Section-I: General conditions and Important Instructions for Bidders.**

**Section-II: Specification of the Items.**

*Prof. SudipKumay Roy  
Professor and Head,  
Department of Civil Engineering  
IEST Shibpur*

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Name of Product:

- 1) **Drone Camera**
- 2) **Intelligent Flight Battery for Phantom 4Pro Drone Camera**

## **SECTION-I: General Conditions and Important Instructions for Bidders**

1. Interested parties/vendors are to download the tender documents with detailed specifications from the institute website ([www.iiests.ac.in](http://www.iiests.ac.in))
2. It is necessary to submit the original tender documents along with technical/price bids in sealed envelopes to the **Head, Department of Civil Engineering, Indian Institute of Engineering Science and Technology (IEST), Shibpur; Howrah-711103.**
3. Bidders are to abide by the terms and condition and submit this tender document in original duly signed with acceptance of the terms and conditions.
4. Last date of receipt of tender is **7 March 2018 (11:00 am)**. Tenders received at late will not be accepted under any circumstances. Tenders will be opened in the Seminar Hall or in any other place of the Civil Engineering Department, on the same day at 12:15 pm. In case the Institute remains closed on the said date, tenders will be received and opened on next working day at same time.
5. The Price Bid must clearly mention the price including the following:
  - Delivery charges up to IEST, Shibpur, Howrah, including loading and unloading charges.
  - All taxes (especially GST), duties, levies applicable.
6. DGS&D rate contract price will be preferred wherever applicable. The Bidders must have a GST Number.
7. The equipment is to be supplied at the Department of Civil Engineering, Indian Institute of Engineering Science and Technology between 11.00 am and 4.00 pm from Monday to Friday except holidays. The bidders will be responsible for any breakage, damage or defect in the equipment detected subsequently.
8. Period of delivery of equipment should be within 3 days from date of issue of work order. If the supply is not completed within the stipulated period as indicated in the Purchase Order a Liquidated Damage @0.5% per week will be imposed on the value of purchase order subject to maximum of 5% of the value of work order.
9. Bills in triplicate should be presented for payment within 7 days of supply of the equipment. No advance is paid for execution of the order. The Purchase Order No. is to be noted on both Challan and Bill. All bills are to be accompanied by order copies and Challan receipt.
10. Payment will be made on submission of Proper Bills, Challans etc, by A/C Payee Cheque and no cash payment will be made under any circumstances.
11. All payments are subjected to statutory deductions as and when applicable.
12. Tender is to be kept valid for acceptance for 3 months with effect from the last date of issue of the tender without any modifications in its terms and conditions.
13. Documents mandatory to be submitted with the tender:
  - ✓ Tender Documents, General Conditions and Important Instruction in original duly signed by the Proprietor/ Partner/ Director of the company as a token of acceptance of Terms and Conditions of Tender.
  - ✓ Latest Income Tax, Sales Tax, Professional Tax clearance certificates and copy of valid Trade License
  - ✓ Bid according to specifications.
  - ✓ Certificates and Literature in support of the item.
  - ✓ Bid according to specifications.
  - ✓ Certificates and Literature in support of the item.
  - ✓ GST No. and copy of the relevant documents
14. Submission of tender will indicate acceptance of all terms and conditions mentioned here.
15. Authority reserves all rights to accept/reject any/all quotation without showing any reason.
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## Section-II: Specification of the Equipment

### Item 1 Drone Camera

MAKE: DJI  
MODEL: PHANTOM 4 PRO

#### SPECIFICATIONS:

##### 1. AIRCRAFT

Max Ascent Speed	S-mode: 6 m/s, P-mode: 5 m/s
Max Descent Speed	S-mode: 4 m/s, P-mode: 3 m/s
Max Speed	S-mode: 45 mph (72 kph); A-mode: 36 mph (58 kph) P-mode: 31 mph (50 kph)
Max Tilt Angle	S-mode: 42°; A-mode: 35°; P-mode: 25°
Max Angular Speed	S-mode: 250°/s; A-mode: 150°/s
Max Service Ceiling Above Sea Level	19685 feet (6000 m)
Max Wind Speed Resistance	10 m/s
Max Flight Time	Approx. 30 minutes
Operating Temperature Range	32° to 104°F (0° to 40°C)
Satellite Positioning Systems	GPS/GLONASS
Hover Accuracy Range	Vertical: ±0.1 m (with Vision Positioning), ±0.5 m (with GPS Positioning) Horizontal: ±0.3 m (with Vision Positioning), ±1.5 m (with GPS Positioning)

##### 2. VISION SYSTEM

Vision System	Forward, Backward, and Downward Vision System
Velocity Range	≤31 mph (50 kph) at 6.6 ft (2 m) above ground
Altitude and Operating Range	0 - 33 feet (0 - 10 m), 0 - 33 feet (0 - 10 m)
Obstacle Sensory Range	2 - 98 feet (0.7 - 30 m)
FOV	Forward: 60°(Horizontal), ±27°(Vertical) Backward: 60°(Horizontal), ±27°(Vertical) Downward: 70°(Front and Rear), 50°(Left and Right)
Measuring Frequency	Forward: 10 Hz, Backward: 10 Hz, Downward: 20 Hz
Operating Environment	Surface with clear pattern and adequate lighting (lux>15)

##### 3. CAMERA

Sensor	1'' CMOS; Effective pixels: 20M
Lens	FOV 84° 8.8 mm/24 mm (35 mm format equivalent) f/2.8 - f/11 auto focus at 1 m - ∞

ISO Range	Video:100 - 3200 (Auto); 100 - 6400 (Manual) Photo:100 - 3200 (Auto); 100- 12800 (Manual)
Mechanical Shutter Speed	8 - 1/2000 s
Electronic Shutter Speed	8 - 1/8000 s
Image Size	3:2 Aspect Ratio: 5472 × 3648; 4:3 Aspect Ratio: 4864 × 3648 16:9 Aspect Ratio: 5472 × 3078
PIV Image Size	4096×2160(4096×2160 24/25/30/48/50p) 3840×2160(3840×2160 24/25/30/48/50/60p) 2720×1530(2720×1530 24/25/30/48/50/60p) 1920×1080(1920×1080 24/25/30/48/50/60/120p) 1280×720(1280×720 24/25/30/48/50/60/120p)
Still Photography Modes	Single Shot; Burst Shooting: 3/5/7/10/14 frames, Auto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7 EV Bias; Interval: 2/3/5/7/10/15/20/30/60 s
Video Recording Modes	H.265 and H.264 C4K:4096×2160 24/25/30p @100Mbps 4K:3840×2160 24/25/30p @100Mbps 2.7K:2720×1530 24/25/30p @65Mbps 2.7K:2720×1530 48/50/60p @80Mbps FHD:1920×1080 24/25/30p @50Mbps FHD:1920×1080 48/50/60p @65Mbps FHD:1920×1080 120p @100Mbps HD:1280×720 24/25/30p @25Mbps HD:1280×720 48/50/60p @35Mbps HD:1280×720 120p @60Mbps
Max Video Bitrate	100 Mbps
Supported File Systems	FAT32 (≤32 GB); exFAT (>32 GB)
Photo	JPEG, DNG (RAW), JPEG + DNG
Video	MP4/MOV (AVC/H.264; HEVC/H.265)
Supported SD Cards	Micro SD; Max Capacity: 128GB Write speed ≥15MB/s, Class 10 or UHS-1 rating required
Operating Temperature Range	32° to 104°F (0° to 40°C)
<b>4. CHARGER</b>	
Voltage, Rated Power	17.4 V, 100 W
<b>5. APP / LIVE VIEW</b>	
Mobile App	DJI GO 4
Live View Working Frequency	2.4 GHz ISM, 5.8 GHz ISM
Live View Quality	720P @ 30fps
Latency	Phantom 4 Pro: 220 ms (depending on conditions and mobile device); Phantom 4 Pro <sup>+</sup> : 160 - 180 ms
Required Operating Systems	iOS 9.0 or later, Android 4.4.0 or later

## 6. GIMBAL

Stabilization	3-axis (pitch, roll, yaw)
Controllable Range	Pitch: -90° to +30°
Max Controllable Angular Speed	Pitch: 90°/s
Angular Control Accuracy	±0.02°

## 7. INFRARED SENSING SYSTEM

Obstacle Sensory Range, FOV	0.6 - 23 feet (0.2 - 7 m), 70° (Horizontal), ±10° (Vertical)
Measuring Frequency	10 Hz
Operating Environment	Surface with diffuse reflection material, and reflectivity > 8% (such as wall, trees, humans, etc.)

## 8. REMOTE CONTROLLER

Operating Frequency	2.400 - 2.483 GHz and 5.725 - 5.825 GHz
Max Transmission Distance	2.400 - 2.483 GHz (Unobstructed, free of interference) FCC: 4.3 mi (7 km); CE: 2.2 mi (3.5 km); SRRC: 2.5 mi (4 km) 5.725 - 5.825 GHz (Unobstructed, free of interference) FCC: 4.3 mi (7 km); CE: 1.2 mi (2 km); SRRC: 3.1 mi (5 km)
Battery; Operating Temperature Range	6000 mAhLiPo 2S; 32° to 104°F (0° to 40°C)
Transmitter Power (EIRP)	2.400 - 2.483 GHz; FCC: 26 dBm; CE: 17 dBm; SRRC: 20 dBm; MIC: 17 dBm; 5.725 - 5.825 GHz; FCC: 28 dBm; CE: 14 dBm; SRRC: 20 dBm
Operating Current/Voltage	1.2 A@7.4 V
Video Output Port	GL300E: HDMI; GL300F: USB
Mobile Device Holder	GL300E: Built-in display device (5.5 inch screen, 1920×1080, 1000 cd/m <sup>2</sup> , Android system, 4 GB RAM + 16 GB ROM) GL300F: Tablets and smart phones

## 9. INTELLIGENT FLIGHT BATTERY

Battery Type, Capacity, Voltage	LiPo 4S, 5870 mAh; 15.2 V
Energy, Max Charging Power	89.2 Wh, 160 W
Charging Temperature Range	41° to 104°F (5° to 40°C)

### Item 2 Intelligent Flight Battery for Phantom 4Pro Drone Camera

Battery Type, Capacity, Voltage	LiPo 4S, 5870 mAh; 15.2 V
Energy, Max Charging Power	89.2 Wh, 160 W
Charging Temperature Range	41° to 104°F (5° to 40°C)