ABSTRACT

Announcement Schemes for the year 2021 - 2022 – Purchase of 5 High Resolution Computers with Geographic Information Technology software and 50 Laptops for the Engineer- in Chief and Regional Chief Engineers offices, Purchase of 50 modern computers and software for the Institute of Hydraulics and Hydrology, Poondi and Purchase of test equipments designed with modern technology for Soil Mechanics and Research Division, Chennai – Administrative and Financial Sanction – Accorded – Orders – Issued.

Water Resources (ISpl-1) Department

G.O.(Ms) No.198 **Dated 15.12.2021**
பிலவ, கார்த்திகை 29
திருவள்ளுவர் ஆண்டு 2052

Read:-

From the Chief Engineer, Plan Formulation, Water Resources Department, Chennai-5 Letter No.B2 / Announcement 2021-2022 / Computers and Software / AE5 / OT2 , dated 29.09.2021.

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ORDER:

During the Water Resources Department Budget session 2021 - 2022, the Hon'ble Minister for Water Resources announced in the floor of assembly on 23.08.2021 that " Purchase of 5 High Resolution Computers with Geographic Information Technology software and 50 Laptops for the Engineer- in Chief and Regional Chief Engineers offices, Purchase of 50 modern computers and software for the Institute of Hydraulics and Hydrology, Poondi and Purchase of test equipments designed with modern technology for Soil Mechanics and Reasearch Division, Chennai " will be carried out at an estimated cost of Rs. 3.37 crore.

2. Based on the above announcement the Chief Engineer, Plan Formulation, Water Resources Department, Chennai-5 has sent the following estimates:-

Sl. No.	NAME OF WORK	ESTIMATE AMOUNT (Rs. in Lakhs)
1.	Procurement of High Resolution Computers with GIS Software for offices of Engineer-in-Chief, Water Resources Department and Regional Chief Engineers.	53.00
2.	Procurement of High configuration laptops with peripherals for office of Engineer-in-Chief , Water Resources Department and Regional Chief Engineers	68.70

Sl. No.	NAME OF WORK	ESTIMATE AMOUNT (Rs. in Lakhs)
3	i) Procurement of High configuration computers and peripherals for Designs circle and its divisions, Water Resource Department, Chennai	55.00
	ii) Procurement of High configuration computers with peripherals for office of Chief Engineer, Design Research and Construction Support and Institute of Hydraulics and Hydrology (IHH), Poondi, Thiruvallur	43.50
4.	Procurement of numerical modelling software for Institute of Hydraulics and Hydrology (IHH), Poondi, Thiruvallur	40.00
5.	Integrated System for Design and Drawings of Hydraulic structures for Irrigation (ISyDDHI) Phase I (Pilot Project)	50.00
6.	Strengthening and Modernisation of Concrete Research laboratory and Soil Mechanics Research Laboratory, Tharmani of Soil Mechanics and Research Division, Chennai	100.00
	Total	**410.20**

This proposal is formulated with the intension to improve the use of information technology in Planning, Designing and Monitoring for various projects and also to improve the research capabilities in the field of Hydraulics and Hydrology. This will improve the efficiency of the department for speedy preparation of proposals with efficient designing for the construction of water structures and to improve the monitoring considerably.

3. The Chief Engineer, Plan Formulation, Water Resources Department has stated as follows:-

1. Procurement of High Resolution Computers with GIS Software for offices of Engineer-in-Chief, Water Resources Department and Regional Chief Engineers.

In order to modernize the activities of Water Resources Department, the Hon'ble Minister for Water Resources Department has made Announcement Sl.No. (7) in the floor of Assembly during the Budget session – Demand for Grant for Water Resources Department, on 23.08.2021, inter alia, that "5 High resolution computers with GIS software for offices of Engineer-in-Chief, Water Resources Department and Regional Chief Engineers". This estimate proposal is being prepared to contemplate financial provisions for the procurement of High resolution computer & Arc-GIS software for the office of the Engineer-in-Chief, Water Resources Department and Regional Chief Engineers-5 nos.

The Officers working in the Engineer-in-Chief, Water Resources Department and Regional Chief Engineer Offices are frequently attending the online meetings personally and virtually conducted in the Secretariat, Collectorate and all important Government Organizations and updating of data related to all the schemes, Court Case Monitoring System, Ungal Thogithiyil Muthalamaichar, Announcements, Assembly Questions, Power point presentation, shape files and sharing of spatial data to the Government,for more than 100 crore projects and database maintenance of all water bodies, etc., Hence, for effective functioning of the office, computers with high resolution are absolutely necessary. Hence, now it is proposed to purchase 5 nos. of computers of high resolution & Arc-GIS software for the officers working in the Engineer-in-Chief, Water Resources Department and Regional Chief Engineers.

Considering the requirement of High resolution computers & ARC-GIS software the following configuration has been envisaged for the proposed procurement.

HIGH RESOLUTION COMPUTERS:

Supply of Desktop Computers with the following configuration:

Intel core i7 Processor with preloaded Windows 10 Professional operating system -Intel Core i7 9700 Processor (3-GHz, 12-MB cache), 16-GB DDR4 SDRAM @ 2666-MHz, upgradable upto 64-GB , 4/1 DIMM slots, Motherboard Chipset Intel Q Series, Chipset number Intel Q 370, Dedicated / Discrete graphics AMD Radeon 520, Size of memory in case of Dedicated Graphics is 2 GB, 10/100/1000 on board integrated gigabit ethernet port , 6 number of USB Version 3 point 0 / 3 point 1, Gen 1 Ports, 2 number of USB Version 3 point 1, Gen 2 Ports, 1 numbers of Serial Ports,1 number of Type C ports and 1 number of VGA Ports; Thinkvision 23.8 inch IPS LED HD backlit colour Display Resolution 1920x1080,1000 GB HDD with a capacity of 1000@ 7200 rpm, Optical Scroll Wired Mouse, Standard with Rupee Symbol Keyboard, Power supply Capacity 250 Watt, OS Compability- Windows 10 Professional, complete complying with Standard Specifications.

ARC-GIS SOFTWARE(STANDARD):

Procurement of Arc-GIS AGIS Desktop Std 10.8 with following configuration:

Desktop GIS with Perpetual License, Desktop based Platform, OEM - Unlimited updation Product for Patches and Bug fixes within maintenance & support period, Unlimited upgradation of version within support period, 2 days training in OEM Training Centre / Virtual, GIS Features - Use map templates to standardize maps, Create / manage / use spatial bookmarks, Support creation of layers or shortcuts to geographic data that store Symbology for Displaying features, Image classification like thematic classes, Individual band settings, Color maps, Contrast, Brightness, Image Exporting capability, Image Management capability, Re-sampling, Geo-reference Imagery, Support 2D and 3D simultaneous view, Spatial Analysis capability, Proximity Analysis, Overlay Analysis, Classification and Clustering and Electronic License Delivery Mode.

ARC-GIS SOFTWARE (ADVANCED):

Procurement of AGIS Desktop Advanced 10.8 with following configuration:

Desktop GIS, Perpetual License, Per Named User / User Licensing policy, Desktop based Platform, OEM - Unlimited updation for Patches and Bug fixes within maintenance & support period, Unlimited upgradation of version within support period,2 days training in OEM Training Centre / Virtual, GIS Features - Use map templates to standardize maps , Support creation of layers or shortcuts to geographic data that store Symbology for Displaying features, Create / manage / use spatial bookmarks, Image classification like thematic classes, Individual band settings, Color maps, Contrast, Brightness, Image Exporting capability, Image Management capability, Re-sampling, Geo-reference Imagery, 3D Analysis Features -Support 2D and 3D simultaneous view, Spatial Analysis Features - Spatial Analysis capability, Proximity Analysis, Overlay Analysis.

The above equipments are proposed to purchase as per the GeM portal rates and the quotation copies are enclosed in the estimate. The rate for the ArcGIS software is not available in the GeM. Hence, necessary quotations are obtained from various firms and the same is enclosed in the estimate. The estimate cost works out to Rs 53.00 Lakhs.

2. Procurement of High configuration laptops with peripherals for office of Engineer–in-Chief, Water Resources Department and Regional Chief Engineers

In order to modernize the activities of Water Resources Department, the Hon'ble Minister for Water Resources Department has made Announcement Sl.No. (7) in the floor of Assembly during the Budget session – Demand for Grant for Water Resources Department, on 23.08.2021, inter alia, that "50 Laptops for offices of Engineer-in-Chief, Water Resources Department and Regional Chief Engineer". This estimate proposal is being prepared to contemplate financial provisions for the procurement of High configuration Laptops for the office of the Engineer-in-Chief, Water Resources Department and Regional Chief Engineer-50 nos.

The Officers working in the Engineer-in-Chief, Water Resources Department and Regional Chief Engineer Offices are frequently attending the meetings personally and virtually conducted in the Secretariat, Collectorate and all important Government organisations. For attending the meetings Laptops of High configuration are absolutely necessary. Hence, now it is proposed to purchase 50 nos of Laptops of high configuration, 5 nos. of laser mono printers, 5 nos of A3 printers, and 5 nos. of A4 colour printer for the officers working in the Engineer-in-Chief, Water Resources Department and Regional Chief Engineer.

Considering the requirement, the following configuration has been envisaged for the proposed procurement.

1) High configuration Laptops:

Intel core i7 Processor with preloaded Windows 10 Professional operating system -Intel Core i7 8565U Processor (1.8-GHz, 8-MB cache), 16-GB DDR4 SDRAM @ 2400-MHz, upgradable upto 32-GB , 2/1 DIMM slots, Integrated graphics UHD 620, Size of VRAM in case of Integrated Graphics is 128 MB, Intel10/100/1000

on board integrated gigabit ethernet port , 2 number of USB Version 3 point 0 / 3 point 1, Gen 1 Ports, 1 numbers of Serial Ports,1 number of Type C and HDMI ports ; Wi-Fi 802.11ac ; 15.6 inch LED HD backlit colour display Resolution 1920x1080, Touch Display, Webcam integrated with Display, 1000 GB HDD with a capacity of 1000@ 7200 rpm, 256 GB Total SSD Capacity, DVD Writer, Touchpad with multi-touch gestures enabled, Li - ion Battery with Battery Capacity of 48 Watt Hour, OS Combability - Windows 10 Professional, complete complying with Standard Specifications.

Printers:

1) Laser Mono Computer Printer:

A4 25 ppm mono with composite cartridge technology and network with 1 year warranty. Print Technology - Laser, print speed - Min 20ppm, Resolution - Min. 1200 x 1200 dpi, Memory - 128 MB, Duplex- Automatic, Network - Ethernet 10/100Mbps. paper supply - 250 sheets in main paper tray with 1 number of main paper tray Media sizes - A4 Duty Cycle - 30000 pages per month, Interface Toner cartridge (with drum) - Yield - yield of minimum 1500pages for B/W or equivalent configuration, complete complying with Standard Specifications.

2) Canon Multifunction Machines:

A4 25ppm, A3- 15ppm or above Digital Copier cum printer/Scanner-ND RADF/DADF with 3 year warranty. Type - Floor mounted(Laser), Minimum speed per minute - A4 25ppm, A3 -15 ppm; original document feeder -50 number; paper supply -4 number of main paper tray and capacity 550 number for each tray and bypass facility, RAM 2048 MB, Bypass tray- 100 sheets; With 10/100/1000 ethernet network feature and Wi-Fi availability; Duplexing feature; Operating system Requirement- Linux and windows; Scanning facility-Scan to PC, Scan to Email; Toner yield of minimum 30000 pages for B/W. Duty cycle- 80000 pages; Duplex; RADF/DADF and complete complying with Standard Specifications.

3) Laser Colour Computer Printer

A4 18 ppm with composite cartridge technology; with ethernet 10/100/1000 network and wi-fi connectivity, 1 year warranty. Print Technology - Laser, print speed - Min 18ppm, Resolution - Min. 600 x 600 dpi, Memory - 1024 MB; paper supply - 250 sheets in main paper tray with 1 number of main paper tray and a bypass tray; Media sizes - A4, Duty Cycle - 30000 pages per month; Interface Toner cartridge (with drum) - Yield - yield of minimum 900 pages for B/W and 690 pages for Colour, complete complying with Standard Specifications.

This estimate is prepared based on the GeM portal rates and the same is enclosed in the estimate. The estimate cost works out Rs. 68.70 lakhs.

3. i) Procurement of High configuration computers and peripherals for Designs Circle and its Divisions, Water Resources Department, Chennai.

Designs Circle is a Central Design organization for designing various irrigation and hydraulic structures of Tamil Nadu Water Resources Department. The Designs

Circle is functioning under the Chief Engineer, Design Research and Construction Support, Water Resources Department, Chepauk, Chennai-5 and has the following offices functioning under it.

1. Designs Circle Office
2. Designs Division
3. Special Designs Division
4. Soil Mechanics & Research Division

The Engineers in the Designs Circle office and the offices of the Special Designs Division and Designs Division have to perform their day today activities only through Computers based on the software/programs developed within the organization. Further, recently more virtual meetings are conducted by the Superintending Engineer, Deputy Superintending Engineer and Executive Engineers. After implementation of the IFHRMS, the administrative staffs also require computers with adequate and latest configuration.

The availability of computers and printers is inadequate. The old computers now being used are frequently under repair and causes high maintenance cost. Therefore the old computers are to be replaced with new ones. high configuration computers and peripherals to run with updated softwares are required for effectively evolving technically feasible, safe and economical designs for various irrigation and hydraulic structures constructed by the Tamil Nadu Water Resources Department and for the effective functioning of the Division offices.

Provisions in the estimate

The following provisions are made in the estimate:

1. Supply of computer with the following configuration and installation as directed by the Departmental Officers: Desktop Computer Intel core i9 Processor with preloaded Windows 10 Professional operating system - Intel core i9 - 10900 Processor (2.8-GHz, 20-MB cache), 16-GB DDR4 SDRAM @ 2666-MHz, upgradable upto 128-GB , 4/1 DIMM slots, Intel Q series Mother Board, Dedicated / Discrete type AMD Radeon RX 550X, 4 GB Graphics card, Intel10/100/1000 on integrated Newtwork Port for vPRO ethernet port, 2 number of USB version 2 point 0 ports, 4 numbers of USB version 3 point 0/3 point 1, Gen 1 port, 4 numbers of USB version 3 point 1, Gen 2 ports, 1 number of Type C and HDMI ports, 2 number of DP ports; 27 inch LED backlit colour Monitor Resolution 1920x1080, 1000 GB HDD with a capacity of 1000@ 7200 rpm, with tower cabinet, DVD Writer, wired Keyboard, wired Optical scroll Mouse, 3 internal Bays, 1 number of 2 point 5 inches internal bay, 2 number of 3 point 5 inches internal bay OS Compatibility - Windows 10 Professional
2. 1.0 KVA UPS with 30 minutes back up.
3. Supply of Laser Mono Computer Printer - A4 40 ppm mono with separate toner and drum cartridge technology and network with 3 year warranty. Print

Technology - Laser, print speed - Min 40ppm, Resolution - Min. 1200 x 1200 dpi, Memory - 512 MB, Duplex- Automatic, Network - Ethernet 10/100Mbps paper supply - 250 sheets in main paper tray with 1 number of main paper tray Media sizes - A4 Duty Cycle - 50000 pages per month, Yield - yield of minimum 8000pages for B/W.

4. Supply of Laser computer printer/ Scanner/ Copier - A3- 15ppm or above A4 25ppm, Separate drum and toner (Mono component) Cartridge technology. Scanner- RADF/DADF with 3 year warranty. Type – Multi function machine(Laser), Minimum speed per minute - A4 25ppm, A3 -15 ppm, original document feeder -50 number, paper supply -4 number of main paper tray and capacity 550 number for each tray and bypass facility, RAM 2048 MB, Bypass tray- 100 sheets; With 10/100/1000 ethernet network feature and Wi-fi availability; Duplexing feature; Operating system Requirement- Linux and windows, Scanning feature ;Toner yield of minimum 30000 pages for B/W. Duty cycle- 80000 pages; Duplex; RADF/DADF.

5. Supply of Laser Computer Printer/Scanner - A4 20 ppm; with wi-fi connectivity, Type : Multifunction machine with 1 year warranty. Print Technology - Laser , print speed - Min 20 ppm, RAM - 64 MB; paper supply - 150 sheets in main paper tray; Duty Cycle - 20000 pages; Separate drum and toner (Mono component) cartridge technology - Yield - yield of minimum 5000 pages for B/W.

6. Supply of Laser Colour Computer Printer - A4 18 ppm with composite cartridge technology; with ethernet 10/100/1000 network and wi-fi connectivity, 1 year warranty. Print Technology - Laser , print speed - Min 18ppm, Resolution - Min. 600 x 600 dpi, Memory - 1024 MB; paper supply - 250 sheets in main paper tray with 1 number of main paper tray and a bypass tray; Media sizes - A4, Duty Cycle - 30000 pages per month; Yield - yield of minimum 900 pages for B/W and 690 pages for colour.

7. Lump sum provisions have been made towards Networking charges, Electrical Wiring Charges.

8. Escalation charges @ 5%.

This estimate is prepared based on the GeM portal rates and the same is enclosed in the estimate. The estimate cost works out to Rs 55.00 Lakhs.

ii) Procurement of High configuration computers with peripherals for office of Chief Engineer, DRCS and Institute of Hydraulics and Hydrology (IHH), Poondi, Thiruvallur

The computers available in the office of the Chief Engineer are more than ten years old and are of outdated configuration. As Chief Engineer, Design Research and Construction Support is the nodal officer for Coastal Protection works, RRR works, Desilting of tanks and reservoirs, Kudimaramath works, etc., requirement of High end computers are highly essential. Hence office of the Chief Engineer, Design Research and Construction Support requires 10 nos. of High configuration

computers 10 nos. of UPS and laser mono printers, 1 nos. of A3 printers, and 3 nos. of A4 colour printer

The Institute of Hydraulics and Hydrology, Poondi is being modernized by procurement of latest Numerical Modelling softwares for Hydraulic Model study purpose and further the coastal process data are being collected by using RTK-GPS equipment which requires softwares for transfer and subsequent analysis of data using High end computer systems. Hence Institute of Hydraulics and Hydrology Poondi requires – 12 nos. of High configuration computers, 12 nos. of UPS and Laser mono printers, and 2 nos. of A4 laser colour printer.

PROPOSED PROCUREMENT OF HIGH CONFIGURATION COMPUTERS AND PERIPHERALS

Considering the requirement of High configuration Computers the following configuration has been envisaged for the proposed procurement.

High configuration computers:

Intel core i9 Processor with preloaded Windows 10 Professional operating system - Intel core i9 - 10900 Processor (2.8GHz, 20MB cache), 16GB DDR4 SDRAM @ 2666MHz, upgradable upto 128 GB, 4/1 DIMM slots, Intel Q series Mother Board, Dedicated/Discrete type AMD Radeon RX 550X, 4 GB Graphics card, Intel10/100/1000 on board integrated gigabit ethernet port , 2 number of USB version 2 point ports, 4 numbers of USB version 3 point 0/3 point1, Gen 1 port, 4 numbers of USB version 3 point 1/Gen 2 ports,1 number of Type C and HDMI ports, 2 number of DP ports ; 27 inch LED backlit colour Monitor Resolution 1920x1080, 1000 GB HDD with a capacity of 1000@ 7200 rpm, with tower cabinet ,DVD Writer, wired Keyboard, wired Optical scroll Mouse, 3 internal Bays, 1 number of 2 point 5 inches internal bay ,2 number of 3 point 5 inches internal bay OS Compatibility- Windows 10 Professional.

UPS:

1KVA UPS 30 minutes back up.

Printers:

2) Laser Mono Computer Printer:

A4 25 ppm mono with composite cartridge technology and network with 1 year warranty. Print Technology - Laser, print speed - Min 20ppm, Resolution - Min. 1200 x 1200 dpi, Memory - 128 MB, Duplex- Automatic, Network - Ethernet 10/100Mbps. paper supply - 250 sheets in main paper tray with 1 number of main paper tray Media sizes - A4 Duty Cycle - 30000 pages per month, Interface Toner cartridge (with drum) - Yield - yield of minimum 1500pages for B/W or equivalent configuration.

3) Canon Multifunction Machines Mfm:

A4 25ppm, A3- 15-ppm or above Digital Copier cum printer / Scanner-ND RADF / DADF with 3 year warranty. Type - Floor mounted(Laser), Minimum speed per

minute - A4 25ppm, A3 -15 ppm; original document feeder - 50 number, paper supply -4 number of main paper tray and capacity 550 number for each tray and bypass facility, RAM 2048 MB, Bypass tray- 100 sheets; With 10/100/1000 ethernet network feature and Wi-Fi availability; Duplexing feature; Operating system Requirement- Linux and windows; Scanning facility-Scan to PC, Scan to Email; Toner yield of minimum 30000 pages for B/W. Duty cycle- 80000 pages; Duplex; RADF/DADF.

4) Laser Colour Computer Printer

A4 18 ppm with composite cartridge technology; with ethernet 10/100/1000 network and wi-fi connectivity, 1 year warranty. Print Technology - Laser, print speed - Min 18ppm, Resolution - Min. 600 x 600 dpi, Memory - 1024 MB; paper supply - 250 sheets in main paper tray with 1 number of main paper tray and a bypass tray; Media sizes - A4, Duty Cycle - 30000 pages per month; Interface Toner cartridge (with drum) - Yield - yield of minimum 900 pages for B/W and 690 pages for Colour.

This estimate is prepared based on the GeM portal rates and the same is enclosed in the estimate. The estimate cost works out to Rs. 43.50 Lakhs.

4. Procurement of numerical modelling software for Institute of Hydraulics and Hydrology (IHH), Poondi, Thiruvallur

In Hydraulic engineering there is certain uncertainty as to whether a new design will actually do what is desired. A Model is often used as a part of the product design process to allow Engineers and Designers the ability to explore design alternatives, test theories and confirm performance prior to execution. A Model provides valuable data on geometrical configuration, force, velocity and pressure distribution, performance, capacity, etc., Model analysis involve creation of small scale replica of the actual structure which help in testing alternate plans and modifications within a relatively short time. Many of the hydraulic structures like Dams, Canals, Tunnels, etc., require lot of investment and time for construction. However a scale down Model is tested under simulated conditions to determine its performance which saves considerable time and resources. If the Model fails it will not put any financial pressure on the investors on the other hand it can be easily improved and redesigning can be done if required. Institute of Hydraulics and Hydrology, Poondi is equipped with adequate infrastructures for conducting Hydraulic Model studies viz., Availability of continuous water supply due to proximity to Poondi reservoir, Network of water conveyance Flumes and channels, Model sheds housing Model trays, etc., With these infrastructures Model studies for Hydraulic and Coastal protection structures are being carried out as per client's requirement. Nowadays Physical model studies are correlated with the findings of Mathematical/Numerical Modelling tools which are created using computer softwares involving complex mathematical equations that can simulate physical model testing characteristics. At present IHH Poondi is engaging Centre for Water resources, Anna University for carrying out Numerical model study and to compare the same with the outputs of physical model studies. If Numerical Modelling softwares are available in IHH Poondi itself, then the need for outsourcing for numerical model studies will be avoided and further will speed up the Model study.

lowest

In this context considering the software requirements of Institute of Hydraulics and Hydrology Poondi the Hon'ble Minister for Water Resources has made Announcements inter alia in the floor of Assembly during the Budget session – Demand for Grant for Water Resources Department, on 23.08.2021, that "Procurement of Softwares for Modernizing the Department will be carried out" which has been mentioned in Announcement Sl. No. (7).

Hence this estimate proposal is prepared for obtaining Administrative sanction of the Government for an amount of Rs.40 lakhs contemplating financial provisions for the following procurement of Numerical Modelling software.

1. Flow 3D software and

2. GEO HECRAS software

Both Flow3D and GEO HECRAS are US based softwares and the same is being marketed in India through their authorized dealers. Hence quotation obtained from the dealers of FLOW3D – M/s.Kaushiks International, Bangalore & for GEOHECRAS –M/s.Trinetrix Technologies Pvt. ltd., NOIDA, New Delhi has been obtained and the same is enclosed in the estimate.

The rates for the items are taken based on quotations and necessary quotations obtained from various firms are enclosed in the estimate. The estimate cost works out to Rs 40.00 Lakhs.

5. Integrated System for Design and Drawings of Hydraulic structures for Irrigation (ISyDDHI) Phase I (Pilot Project)

At present the hydraulic designs are prepared in the design wing of Design Research and Construction Support, Water Resources Department using in-house Excel based worksheets. The drawings are prepared through AUTOCAD after manually feeding the inputs. This current practice has to be improved/ upgraded. There is no integrated software available for design and drawing of Hydraulic structures. There is no custom made integrated software available in the market for this purpose.

Therefore, it is proposed to engage consultancy services from a software firm with expertise in providing Engineering solutions/software development to evolve "INTEGRATED SYSTEM FOR DESIGN AND DRAWINGS OF HYDRAULIC STRUCTURES FOR IRRIGATION (ISyDDHI) Phase I (Pilot project)" using the latest software applications. This system shall link field particulars as inputs, analysis and design calculations and drawings to make user friendly application. The ownership of this system shall be with Design Research and Construction Support Tamil Nadu Water Resources Department and the consultant is to be employed only for evolving software system.

In phase I, it is proposed to develop a software system for the design and drawing of (1) Checkdam / Anicut (2) Regulators (3) Tank Weirs / sluices / bunds / spillways for various hydraulic and soil conditions. Later in phase II, the rest of the hydraulic structures can be considered for inclusion in the software system based on the performance of software in Phase I.

The estimate includes (i) Charges for consultancy services based on the lowest of the three latest quotations obtained from software firms with engineering design background The consultancy charges include the GST (ii) Lump sum provisions for Digitisation of reference technical literature, codes and previously approved hard copy drawings for records, (iii) Tender advertisement charges and (iv) Contingencies and Unforeseen items.

The rates for the items are taken based on quotations and necessary quotations obtained from various firms are enclosed in the estimate The estimate cost works out to Rs 50.00 Lakhs.

6. Strengthening and modernisation of Concrete Research laboratory and Soil Mechanics Research Laboratory, Tharmani of Soil Mechanics and Research Division, Chennai

The Soil Mechanics and Research (SM&R) Division, Chepauk, Chennai is functioning under the administrative control of Designs Circle, Water Resources Department of the Design Research and Construction Support (DRCS) Wing, Water Resources Department. The Soil Mechanics and Research Division has been functioning since 1949 and is the only division in Water Resources Department which deals with site and laboratory investigations regarding the issues in Geotechnical engineering, Concrete technology, testing of construction materials including Crushed Stone Sand (M-Sand), reservoir water quality monitoring and lime leaching of selected dams besides carrying out research in the field of soil mechanics and construction materials. Many Central & State government agencies and private companies involved in the field of construction and infrastructure development are the beneficiaries of services delivered by Soil Mechanics and Research Division, that include Technical consultancy services, field and laboratory services

Functions of labs of Soil Mechanics and Research Division

Some of the important functions of the laboratory are,

- To conduct laboratory tests to find the index and engineering properties of the disturbed and undisturbed samples of soil collected from the site
- To determine the suitability of soil as a construction material, in the formation of bunds / embankments
- To carryout distress / failure analysis and diagnostic studies in case of earthen embankments of reservoir and canal.
- To arrive at appropriate proportion of mixes by conducting concrete mix design according to BIS codal provisions by performing trial mixes, on the construction materials supplied by the client.
- To conduct special tests on aggregate, concrete, soil etc.
- To conduct lime leaching studies and water quality monitoring of 23 reservoirs of Water Resources Department.

- To determine the chemical properties of construction materials with reference to civil engineering applications

As the existing machineries in the labs are getting older, less efficient and outdated, there is a need to bring in latest advanced equipments to cater the requirements of investigations for the newly proposed irrigation infrastructure as well as for the modernization of the existing irrigation structures. The advanced modern equipments not only will ensure reliable and accurate test results but also save considerable time and manpower boosting up the Research activities.

Hence, it is proposed to procure the following equipments to supplement the existing facilities available in the Concrete and Soil Research Laboratories.

Package – I: Strengthening and Modernisation of Concrete Research Laboratory, Tharamani of Soil Mechanics and Research Division, WRD, Chennai

1. Computer controlled Compressive Testing Machine - 3000kN capacity
2. Water Impermeability Test Apparatus (for testing durability of concrete)
3. Computer controlled Rapid Chloride Penetration Test Apparatus (for testing durability of concrete)

Package – II: Strengthening and Modernisation of Soil Research Laboratory, Tharamani of Soil Mechanics and Research Division, WRD, Chennai

1. Computer controlled Multiple sample station for determination of saturation & consolidation (for simultaneous testing of soil specimens in the existing Triaxial Shear test apparatus)
2. Computer controlled Automatic consolidation System (for determining the swell parameter of soil)
3. Computer controlled Soil Laboratory scale load test Apparatus (for determining bearing capacity of soil, displacement etc)

Beside, lump sum provision has been made in this estimate towards the following:

a) Provision for GST @ 18% of the cost of above items.

b) Advertisement Charges

c) Provision for unforeseen items

Sl. No.	Name of work	Amount (Rs. in lakh)
1	**Package – I :** Strengthening and Modernisation of **Concrete Research Laboratory,** Tharamani of Soil Mechanics and Research Division, Water Resources Department, Chennai	23.80
2	**Package – II :** Strengthening and Modernisation of **Soil Research Laboratory,** Tharamani of Soil Mechanics and Research Division, Water Resources Department, Chennai	76.20
	Total	**100.00**

The rates for the items are taken based on quotations and necessary quotations obtained from various firms are enclosed in the estimate. The estimate cost works out to Rs.100.00 lakhs.

4. He has stated that the total estimate cost of all the above estimates works out to Rs.4.1020 crore against the original announcement amount of Rs.3.37 crore and he has informed that under this announcement heading, an estimate for an amount of Rs.8.58 crore for 69 drones was sent, against the announcement amount of Rs.27.60 crore which results saving of Rs.19.02 crore.

5. The Chief Engineer, Plan Formulation, Water Resources Department, Chennai has therefore requested the Government to accord administrative sanction for an amount of Rs.4.1020 crore for Purchase of 5 High Resolution Computers with Geographic Information Technology software and 50 Laptops for the Engineer- in Chief and Regional Chief Engineers offices, Purchase of 50 modern computers and softwares for the Institute of Hydraulics and Hydrology, Poondi and Purchase of test equipments designed with modern technology for Soil Mechanics and Research Division, Chennai under State Fund.

6. The Government after careful consideration decided to accept the proposal of the Chief Engineer, Plan Formulation, Water Resources Department, Chennai and accord administrative and financial sanction for an amount of Rs.4,10,20,000/- (Rupees four crore ten lakh and twenty thousand only) for Purchase of 5 High Resolution Computers with Geographic Information Technology software and 50 Laptops for the Engineer- in Chief and Regional Chief Engineers offices, Purchase of 50 modern computers and software for the Institute of Hydraulics and Hydrology, Poondi and Purchase of test equipments designed with modern technology for Soil Mechanics and Research Division, Chennai under State Fund.

7. The expenditure sanctioned at para 6 above shall be debited to the following Head of Account.

2701 – MEDIUM IRRIGATION 80 – General 001 – Direction and administration State's Expenditure AA – Chief Engineer (Water Resources Department) 376 – Computer and Accessories 01 purchase.

(IFHRMS DPC: 2701 80 001 AA 376 01)

8. The expenditure sanctioned in para 6 above shall constitutes an item of "New Instrument of Services" and the approval of the Legislature will be obtained in due course. Pending approval of legislature, the expenditure will be met by drawl of an advance from the Contingency Fund. The Engineer-in-Chief and Chief Engineer (General), Water Resources Department, Chennai is directed to send necessary proposals to Government in Finance (BG-I) Department directly in Form 'A' appended to the Tamil Nadu Contingency Fund Rules, 1963 with a copy of this order for sanction of an advance from the Contingency Fund. Orders regarding which will be issued by Finance (BG-I) Department separately. He is also directed to send necessary explanatory notes for inclusion of the above expenditure in the Supplementary Estimate 2021-22 to Finance (PW-II / BG-I) Department at an appropriate time without fail.

9. This order issues with the concurrence of Finance Department vide its U.O. No. 53645 / PW-II / 21, dated 13.12.2021 with Additional Sanction Ledger No. 1136 (One thousand and one hundred and thirty six)

(By Order of the Governor)

Sandeep Saxena
Additional Chief Secretary to Government

To
The Engineer-in-Chief and Chief Engineer (General),
Water Resources Department, Chennai-5.
The Chief Engineer, Plan Formulation,
Water Resources Department, Chennai-5.
The Pay and Accounts Officer (East), Chennai-8.
The Principal Accountant General (A&E) / (Audit – I) Chennai-18.
Copy to:-
The Chief Minister Office, Chennai-9.
The Finance (P.W.II / BG-I / BG-II / W&M-I), Chennai-9.
The Resident Audit Officer,
O/o. the Principal Accountant General
(General and Social Sector Audit),
Chennai – 9.
Stock File / Spare Copy.

//Forwarded by order//

16.12.2021.
Section Officer
16.12.21