

CSIR-Institute of Genomics & Integrative Biology

Delhi University Campus, Mall Road,

Delhi - 110007

Tender Document

Name of the work: **Supply, Installation, Testing Commissioning of One No. 200TR Screw type Water chilling machine and other associated works at CSIR-IGIB, Mall Road, Delhi-110007.**

Sale of Tender: upto 07-12-2015

Submission of Tender: 10-12-2015 up to 3.00P.M

Date of Opening of Technical Bid : 10-12-2015 at 3.30 PM

Tender Submission at

Office of the SO (W&S)

CSIR-Institute of Genomics & Integrative Biology

Mall Road, Delhi – 110007

CSIR-INSTITUTE OF GENOMICS AND INTEGRATIVE BIOLOGY

Near Jubilee Hall, University Campus

Mall Road, Delhi - 110007.

NOTICE INVITING TENDER

Director CSIR-IGIB invites sealed item rate tenders in two part bid system with separate Technical cum commercial & Price bid in the prescribed format from eligible contractors having valid registration with appropriate class of CPWD, Railways, MES, Post and Telegraph Deptt and /or those who have worked for CSIR /Govt./Semi. Govt Organisation and have successfully carried out similar works as illustrated below. The application for tender documents should be accompanied by documentary proof of the following: (a) completion certificate issued by the competent authority which shows the name of work, awarded value, completion cost, time of completion, actual time of completion and (b) WCT registration with sales Tax Deptt. The tender form (non-transferable) can be purchased upto 07-12-2015 from the office of **SO (W&S)**, CSIR-IGIB, Mall Road, Delhi – 110007 during office hours on payment of tender fees of Rs 1,000/- (Non refundable) in the form of demand draft or pay order of a shedule Bank and drawn in favour of Director, IGIB, Mall Road Delhi-110007 payable at Delhi.

Sr. No.	Name of Work	Estimated Cost in Lacs	Tender Fee in Rs.	Earnest Money In Rs.	Completion period	Work Experience
1.	Supply, Installation, Testing, commissioning of One No. 200TR Screw Type water chilling Machine and other associated works at IGIB, Mall Road, Delhi-110007	79.85 Lacs	1000.00	1,60,000.00	4months	Atleast 1/2similar works amounting to 80%/60% of estimated value carried out during the last five years

The filled tenders will be received upto **3.00 PM** on 10-12-2015 and Technical bid shall be opened at **3.30 PM** on the same day. **Director, I.G.I.B. reserves the right to reject any or all tenders without assigning any reason.** Details of Tender document with all Terms & conditions of contract can also be seen at our website <http://www.igib.res.in>.

Head (W&S)

**CSIR-INSTITUTE OF GENOMICS & INTEGRATIVE
BIOLOGY**

Mall Road, Delhi-110007

NAME OF WORK: Supply, Installation, Testing, Commissioning of One No. 200TR Screw type Water chilling machine and other associated works at CSIR-IGIB, Mall Road, Delhi-110007.

CONTENTS

S.NO.	DESCRIPTION	NO. OF PAGES
	Part –I, Technical Cum Commercial Bid	
1.	Contents	3
2.	Notice Inviting Tenders	4 – 6
3.	Scope of work	7
4	Schedule of Quantity	8 – 13
5.	List of approved makes	14
6.	Technical Specification	15 – 17
7.	Special terms and conditions	18 - 22
8.	General Conditions of Contract	23-44
	Part-II, Financial Bid	
1.	Abstract of Cost	45
2.	Shedule of Quantity for Financial Bid	46 - 51

NOTE: Tenderer should confirm that they have received all the above papers/documents. Crossed Demand Draft No. _____ Dated _____ for Rs. _____ in favour of Director, IGIB, mall Road, Delhi drawn on (Name of Bank) _____ towards tender fee is enclosed.

Tender issued to:

M/s _____

_____ TELEPHONE NO: _____ (IF ANY)

Signature of the officer issuing tenders

Part –I, Technical cum commercial Bid

CSIR-INSTITUTE OF GENOMICS & INTEGRATIVE BIOLOGY

Near Jubilee Hall, Delhi University Campus,
Mall Road, Delhi-110007

NOTICE INVITING TENDERS

1. Tenders in two part bid system are hereby invited for the work **Supply, Installation, Testing, commissioning of One No. 200TR Screw Type Water chilling machine and other associated works at IGIB, Mall Road, Delhi-110007** from the contractors of appropriate class working with CPWD, Railways, MES, Post & Telegraph Department, State PWDs, Semi Government Organization and /or those who have worked for CSIR /Govt./Semi. Govt Organisation and have successfully carried out atleast 1 or 2 similar works amounting to 80% or 60% respectively, of the estimated value carried out during the last five years.
The tenderers are required to produce proof of fulfilling above conditions along with attested copies of **WCT registered under Sales Tax Act of Govt. Department and Works completion certificates**, while making request for issue of tender document.
2. Estimated Cost is **Rs. 79.85 lacs (Rupees Seventy Nine Lacs Eighty Five Thousand Only)** based on prevailing market rates.
3. Time for carrying out the work shall be **4 months** and the date of commencement shall be reckoned from the tenth day of issue of work award letter.
4. Complete Contract documents to be complied with by the tenderer whose tender may be accepted can be seen at the office of the **Head (W&S)**, IGIB, Mall Road, Delhi – 110007.
5. Tenders documents, consisting of two parts i.e. technical cum commercial bid & financial bid, would be issued **upto 07-12-2015** From the office of **SO (W&S), IGIB Mall Road, Delhi - 110 007** during office hours on payment of **Rs. 1000/- (Rupees One Thousand Only)** through Demand Draft in favour of **Director IGIB, Delhi (Non-refundable)**.
6. Tenders should be submitted with the documents as per NIT along-with the Earnest Money in double sealed covers super scribed with the name of the work, date and time of opening written both on the inner and outer envelopes. These will be received up to **3.00 P.M. on 10-12-2015** and only technical com commercial bid will be opened at **3.30 PM** on the same day in the office of the **SO(W&S), IGIB, Mall Road, Delhi - 110007**. Tender should be dropped in the tender box before the closing date and time indicated. In case these are sent by post these should be sent by Registered post/Speed post addressed to the **Section Officer (W&S), IGIB, Mall Road, Delhi- 110 007**. Tenderers are to ensure that they post the tender well in advance so as to reach before the closing time and date indicated. This office will not be responsible for postal or any other delay. Tenders/offers sent by fax/e-mail will not be entertained and be rejected.
7. The earnest money amounting to Rs. 1,60,000.00 (Rupees One Lac Sixty Thousand Only) as demand draft or pay order of a schedule Bank and drawn in favour of Director, IGIB, Mall Road Delhi-110007 payable at Delhi should accompany the tender. Tenders received without earnest money will be invalid.
8. **Technical cum commercial bid, EMD & price bid shall be placed in separate sealed envelopes each marked Technical cum commercial bid, EMD and Price bid respectively. All the three envelops shall be submitted together in another sealed envelope. The envelop marked " Technical Bid" of only those bidders shall be opened whose EMD found in order.**
9. The Employer does not bind himself to accept the lowest or any tender and reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted.
10. Canvassing in connection with the tenders is prohibited and the tenders submitted by the contractor who resort to canvassing are liable for rejection.
11. The tenderer shall not be permitted to tender for works in the concerned unit of CSIR in which a relative is posted in the grade between Controller of Administration and Junior Engineer. (Both

inclusive) He shall also intimate the names of persons who are working with him in any capacity or subsequently employed by him and whom relatives are as mentioned above.

NOTE: A person shall be deemed to be a relative of another if, and only if, (a) they are members of a Hindu undivided family; or (b) they are husband and wife; or (c) the one is related to the other in the following manner: Father, Mother (including step mother), Son (including step son), Son's wife, Daughter (including step daughter), Father's father, Son's son, Son's son's wife, Son's daughter, Son's daughter's husband, Daughter's husband, Daughter's son, Daughter's son's wife, Daughter's daughter, Daughter's daughter's husband, Brother (including step brother), Brother's wife, Sister (including step sister), Sister's husband.

12. Tender submitted shall remain valid for 90 days from the date of opening for the purpose of acceptance and award of work, validity beyond 90 days from the date of opening shall be by mutual consent.
13. The tenderer shall quote rates both in figures and words. He shall also workout the amount for each item of work and writes in both figures and words. On check if there are differences between the rates quoted by the tenderer in words and in figures or in the amount worked out by him, the following procedure shall be followed:
 - i) When there is a difference between the rates in figures and in words, the rates, which correspond to the amounts worked out by the tenderer, shall be taken as correct.
 - ii) When the tenderer does not work out the amount of an item or it does not correspond with the rate written either in figures or in words, the rate quoted by the tenderer in words shall be taken as correct.
 - iii) When the rate quoted by the tenderer in figures and in words tallies but the amount is not worked out correctly the rate quoted by the tenderer shall be taken as correct and not the amount.
14. The tenderer should see drawings and in case of doubt obtain required particulars, which may in any way influence his tender from the Engineer as no Claim whatsoever will be entertained for any alleged ignorance thereof.
15. Before tendering, the tenderer shall inspect the site to fully acquaint himself about the condition in regard to accessibility of site, nature and extent of ground, working condition of site and locality including stacking of materials, installations of tools and plants (T&P) etc., conditions affecting accommodations and movement of labour etc. required for the satisfactory execution of the work contract. No claim whatsoever on such account shall be entertained by the employer in any circumstances.
16. Earnest money will be fully forfeited if the contractor fails to commence the work as per letter of award. If any tenderer with draws this tender within the validity period or makes any modification in terms and conditions of the tender which are not acceptable to the Department, then CSIR shall without prejudice to any right or remedy, be at liberty to forfeit 50 % (fifty percent) of the Earnest Money absolutely.
17. Except writing rates and amount, the tenderer should not write any conditions or make any changes, additions, alterations and modifications in the printed form of tenders. Tenderers who are desirous to offer rebate the same should be brought out separately in the covering letter and submitted along-with the tender. Conditional tenders shall be rejected out rightly all the way.
18. Some of the provisions of General Conditions of Contract are given below. Interpretation however shall be as given in the General Conditions of Contract.
 - a). **DEFECTS LIABILITY PERIOD | 24 months(Two year) from the date of completion as certified by the employer.**
 - b). **MINIMUM VALUE OF WORK FOR THE INTERMEDIATE CERTIFICATE | Rs 10,000,00/- (Rupees ten lacs only).** Intermediate certificate for a Lesser amount can be admitted for payment at the discretion of the Engineer.
 - c). **SECURITY DEPOSIT:** A sum @ 10% of the bill shall be deducted from each running bill of the contractor till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the tender value of the work. In addition, the contractor shall be required to deposit an amount equal to 5% of the tendered value of the contract as performance Security within the period prescribed for commencement of work in the letter of award issued to him.
 - d) **COMPENSATION |** Contractor shall pay as compensation an amount equal to one percent or such smaller amount as the **Employer** (whose decision in writing shall be final) may decide on the cost of the whole work as shown in the agreement for every week that the work remains uncommenced or unfinished or due quantity of work remains incomplete after the proper dates. Compensation to be paid shall not exceed ten percent of the estimated cost of the work as shown in the agreement.
19. Opening of price Bids
 - i) The price bid of only those bidders who shall be technically qualified to undertake the job, shall be opened.

- ii) The price bids of the technically qualified bidders shall be opened in the presence of their authorized representatives on a specified date, time and venue as decided by the competent authority.
- 20. No material will be issued by the department for this work, however, power and water supply shall be provided by department free of cost for execution of the work.
- 21. Clauses No. 28 of conditions of contract i.e. "ESCALATION" will not be applicable in this contract since the duration of contract is less than 18 months.
- 22. The contractor shall have to dispose of all the building rubbish (malba) accumulated during execution suitably outside the campus of IGIB.
- 23. Deduction of work contract tax & Income Tax at the prevailing rate shall be made from their running and final bills for the works.

SCOPE OF WORK

The work " **Supply, Installation, Testing commissioning of One No. 200TR Screw type Water Chilling Machine and other associated works at IGIB, Mall Road, Delhi-110007.**" includes SITC of new items, dismantling and removing of existing chilling machine, condenser and chiller pumps along with piping, valves, power cables with termination to existing main L.T. panel as required. The related civil works i.e. preparation of foundation as recommended by OEM for chilling machine, pumps, access/ opening in the walls for the lifting and shifting of machines, repairing of walls or any kind of repair needed to other damages occurring during execution of work shall be carried out by the bidder. Providing of suitable supports to pipe lines of condenser and chiller shall be carried out as required.

The brief description of the items has been mentioned in the Schedule of Quantity. Any omission in the description of the items shall not absolve the contractor for his responsibility to complete the work in satisfactory manner. The work shall have to be executed in accordance with the relevant specifications. The firm should quote their rates taking all aspects into consideration. Any discrepancy / omission observed in the tender in order to complete the job in satisfactory manner, the bidder must bring out such items with rates, quantities and specifications in a separate letter along with their tender itself since nothing extra will be payable against any item on this account after award of work. Technical literature of the chilling machine is to be furnished along with the technical bid, Detail drawings, data sheet etc. are to be submitted after award of work.

As IGIB is a functional institute thus for early completion of project, the work may have to be carried out on 24 Hr. basis including holidays without interruption to the existing services and any extra claim. Contractor has to take prior permission from the concerned authority to carry out any work beyond normal office hours and on holidays.

SCHEDULE OF QUANTITY

Name of Work:- Supply, Installation, Testing commissioning of One No. 200TR Screw type Water Chilling Machine and other associated works at IGIB, Mall Road, Delhi-110007.

Sub Head- I					
S.No.	Item Description				
		Qty.	Unit	Unit Rate (Rs.)	Amount (Rs.)
1	Supply, Installation, Testing and Commissioning of AHRI certified Screw Type water Chilling Machine Operating on Refrigerant R-134a having an actual capacity of 200 TR, complete as per specification with semi- hermetic screw compressor only , initial/first charge of refrigerant and compressor oil, motor, water cooled condenser, insulated chiller, water flow switches, thermostats (for interlocking), water drain and air purge gate valve etc. where ever required, integral refrigerant piping, fitting, valves wiring and accessories as required and called for automatic and safety controls, mounted in central microprocessor based control console, suction line and chiller insulation with minimum 19mm thick polyvinyl nitrile rubber insulation complete as required, all mounted on steel frame complete with anti -vibration pads/spring on RCC/CC foundation for chilling Machine. Compressor motor shall be Refrigerant Cooled type suitable to work on 415 Volts +/- 10%. 50 Hz, 3 Phase AC Supply, and to be supplied complete with electrical panel and close transition type automatic solid state starter as required. Preparation of suitable RCC/CC foundation for the machine as required. The evaporator and condenser shall be even passing to match the existing plant room piping layout. Technical parameters required are as under.				
	I. Actual cooling capacity : 200TR				
	II. Chiller water in Temperature : 12.2 deg C				
	III. Chiller water out temperature : 6.7 deg C				
	IV. Chiller FF (MKS) : 0.0001				
	V. Water Pressure Drop in evaporator : ≤ 13.3 ft				
	VI. Condenser FF(MKS) : 0.0002				
	VII. Water Pressure Drop in Condenser : ≤ 19.6 ft				

	Metre				
	VIII. Maximum input IKW per TR : 0.65				
	IX. Minimum COP : 5.4				
	Condenser water temperature to be considered				
	a. Condenser water in Temperature : 32.2 deg C				
	b. Condenser water out Temperature : 36.4 deg C	1	Each		
2	Dismantling of the following existing equipments along with the CC foundation, shifting of equipments from AC Plant Room to the Place as Directed by Engineers in Charge including debris removal as required:				
	I. 200 TR centrifugal chilling machine	1	each		
	II. CDWP	3	each		
	III. CHWP	3	each		
	IV. Non Return valves	3	each		
	V. Butterfly Valves of condenser and chiller water lines	16	each		
	VI. M.S. Pipe of condenser water- one lot	25	metre		
	VII. M.S. pipe of chilled water- one lot	25	metre		
3	Supply, installation , testing and commissioning of condenser water pump sets (2 working+ 1 standby) each capable of delivering specified flow rate, each comprising the following items as per specifications & complete as required. 1) 1 No. end suction , horizontal split casing, centrifugal pump for supplying the water at flow rate 764 GPM at a head of 24 meters 2) 1 No. suitable HP TEFC induction motor with class 'F' insulation operating on 415 + 10% Volts, 3 Phase , 50 cycles AC supply. The above item also includes: (i)Flexible spacer coupling (ii)Suitable Heavy duty M.S. Base (iii)Vibration pads (iv)Mechanical seal (v) Pressure gauges suction and Discharge (vi) New RCC/Concrete floating foundation etc as required.	3	Each		

4	<p>Supply, installation , testing and commissioning of chilled water pump sets (2 working + 1 Standby) each capable of delivering specified flow rate as per specifications each comprising the following as required.</p> <p>1) 1 No. end suction , horizontal split casing, centrifugal pumps for supplying the water at flow rate 480 GPM at a head of 30 meters</p> <p>2) 1 No. suitable HP TEFC induction motor with class 'F' insulation operating on 415 + 10% Volts, 3 Phase , 50 cycles AC supply</p> <p>The above item also includes:</p> <p>(i)flexible spacer coupling (ii)Suitable Heavy duty M.S. Base (iii)Vibration pads (iv)Mechanical seal (v) pressure gauges suction and Discharge (vi) new RCC/Concrete floating foundation etc as required.</p>	3	Each		
5	<p>Supplying, Laying, fixing, Testing and Commissioning of following nominal sizes of chilled water pipelines duly insulated with 20kg cubic metre density and 50mm thick expanded polystyrene (TF Quality) in pipe section form covered with polythene sheet as vapour barrier , GI wire mesh netting and Finally applying sand cement plaster of proper thickness, providing of suitable supports to pipe lines of chiller/pumps etc as required as per following specifications and to be painted with 2 coat of enamel paint as required</p>				
(a)	150mm dia Pipe MS C Class	30	RMT		
(b)	40mm dia GI Pipe B Class	6	RMT		
6	<p>Supplying, Laying, fixing, Testing and commissioning of following valves at the chiller and chilled water pumps inlet/outlet, (confirming to PN 10) duly insulated with 20kg/Cu mtrs density and 50mm thick expanded polystyrene (TF Quality) to the same specification as the connected piping and adequately supported as per specification and as required</p>				
	a) 150mm dia butterfly valve	8	Nos		
	b) 150mm dia balancing valve	1	Nos		
	c) 150mm dia NRV Valve	3	Nos		

	d) 150mm dia Y-Strainer	3	Nos		
	e) 40mm dia Gate valve	1	Nos		
7	Supplying, Fixing testing and commissioning of following condenser water pipeline, providing of suitable supports to pipe lines of condenser/pumps as required. as per following specifications and to be painted with 2 coat red oxide and 2 coat of enamel paint as required				
	a) 200mm dia MS Pipe 6.35mm thick	30	RMT		
	b) 40mm dia GI Pipe B Class	6	RMT		
8	supplying, Fixing testing and commissioning of valve for condenser water pipe lines (confirming to PN 10) as per specification and as required				
	a) 200mm dia Butterfly valve	8	Nos.		
	b)200mm dia Balancing valve	1	Nos.		
	c) 200mm dia NRV valve	3	Nos.		
	d) 200mm dia Y-strainer	3	Nos.		
	e) 40mm dia Gate valve	1	Nos.		
9	SITC of 1.1 XLPE, insulated armoured cable with aluminium conductor of following sizes for electrical supply from main panel in plant room to chilling machine including making end termination (4 Nos) with brass compression gland and aluminium conductor cable complete as required.				
	3.5 X150 sq.mm (4 Nos. terminations)	90	Mtr.		
	3 X 16 sq.mm(4 termination per pump)	120	Mtr.		
10	Supply and installation of Pressure gauges with SS syphon and valve including welding of socket on pipe	16	set		
11	Supply and installation of Industrial Glass Thermometer including welding of socket on pipe	4	set		
12	Supply and installation of Flow switches, Size - 1" BSPTM, S.S leafs, including welding of socket on pipe.	2	set		
13	Complete control wiring with copper conductor PVC Insulated Multicore 1.5 sq.mm stranded flexible cable including supplying of cable, tray, clamps, etc of chilling Machine as required	1	Set		

14	Automatic air vent valve of Size 25mm NB at Chiller inlet/out let pipes with manual S.S. ball valves and fittings including welding of socket on pipe.	2	Set		
15	Condensor descaling valve of Size 25mm NB at condenser inlet/out let pipes with manual S.S. ball valves and fittings including welding of socket on pipe.	2	set		
Total					

Sub Head-II: Salvage Value of Chilling Unit					
	Buy- Back of Old Equipment				
	Salvage value of the following old and unserviceable items for taking away which are discarded after dismantling of item no. 2 of schedule of quantity Sub Head -I on the " As is where is basis". 1- 200TR Centrifugal chilling machine-One No, make : Train Utility, 2- Chiller Water Pump- 3 Nos . 3- Chiller Water Pump- 3 Nos . 4- Butterfly valves-16 Nos 5- Non return Valves-3 Nos 6- M.S.pipes of condenser water 7- M.S. pipe of chilled water	1	Lot		
Total					

Sub Head -III:- Comprehensive maintenance of Chilling M/C

S.No.	Item Description	Qty.	Unit	Unit Rate (Rs.)	Amount (Rs.)
1	comprehensive maintenance (routine, preventive, break down) charges i.e. all inclusive of consumable materials, spare parts, refrigerant, compressor oil Tool and plants , descaling of condenser/ chiller as required ,man power skilled/unskilled as required for above mentioned chilling machine complete as per service/maintenance manual of the manufacturer for a period of 3 years after completion of two years defect liability period. (The running operation charges of chilling unit need not to be considered)				
	I. 1st Year	1	Each		
	II. 2nd Year	1	Each		
	III. 3rd Year	1	Each		
	Total				

List of Approved Makes

S No.	Item	Approved makes
1-	200 TR Screw Type Water Chilling Machine	TRANE, DAIKIN, YORK
2-	MS Pipes/G.I.Pipe	TATA, Jindal (hisar)
3-	Balancing Valve	Audco, Advance
4-	Gate valve	Leader, Rapid Control
5-	Butterfly Valve	Audco, L&T
6-	NRV	Audco, L&T
7-	Expanded Polysterene	Beardsell, Styrene Packing
8-	Temperature meter	H.Guru, Emerald
9-	Pressure Guage	H.Guru, Emerald
10-	Cable	Havells, Gloster, Nicco, ICC
11-	MCCB	Siemens,ABB,L&T
12-	Cable gland	Dowells,Comet
13-	Cable lugs	Dowells
14-	Pumps	Kirlosker/Beacon
15-	Motors	Kirlosker/Siemens/ABB/Crompton

Note: 1-The items for which no makes are specified above, only ISI marked duly approved by Engineer In-charge shall be used.

2-Manuals and Maintenance Chart:

The technical manual, service manual, maintenance chart for Chilling Machine and standard tool kit (if provided by manufacturer) as recommended by the manufacturer shall be provided along-with the supply of the Chilling Machine.

TECHNICAL Specifications FOR Major Equipments of One No. 200TR Screw type Water Chilling Machine:

The bidders shall provide the following particular in **Technical cum commercial document** with all other particulars:

A- TECHNICAL SPECIFICATION FOR R134a FLOODED WATER COOLED CHILLER

COMPRESSOR:

1. Manufacturer
2. Model
3. Type
4. (a) Refrigerant
(b) Weight of refrigerant per unit
5. Operating speed (RPM)
6. Type of drive
7. Power consumption:
 - Input KW/TR (up to 2nd decimal place)
 - 100% load
 - 75% load
 - 60% load
 - 50% load
 - 40% load
 - 25% load
8. Type of capacity control
9. Capacity control range
10. Type of lubrication
11. Compressor motor
 - (i) Make
 - (ii) Rated output
 - (iii) Working voltage range
 - (a) Type of enclosure
 - (b) Class of insulation
 - (c) Speed
 - (d) Full load current
 - (e) Starting current
 - (f) Efficiency

- (g) Power factor
 - (h) Temperature rise over ambient of 45 deg. C.
13. List of Safeties provided in the chiller unit (whether provided)
- (i) Motor over current
 - (ii) Over voltage
 - (iii) Under voltage
 - (iv) Single cycle dropout / intermittent power loss
 - (v) Baring oil high temperature
 - (vi) Low evaporator refrigerant pressure
 - (vii) High condenser refrigerant pressure
 - (viii) High motor temperature
 - (ix) Prolonged surge in compressor
 - (x) Compressor starter faults
 - (xi) Start-to-start and stop to stop timers for motor protection against rapid recycling
 - (xii) Low lubricating oil pressure

Condenser:

- 1-Manufacturer/make/model
- 2-Type
- 3-Fouling factor(MKS)
- 4-Water flow (USGPM/LPM) (Max/Min)
- 5-Water velocity (MKS)
- 6-Pressure drop (Ft of water and shall be less than 20 ft)
- 7-Water temperature IN/OUT (Deg F/Deg C)
- 8-Actual capacity of condenser at above conditions (TR)
- 9-Water pressure drop in condenser.

Chiller

- 1- Manufacturer/make/model
- 2- Type
- 3- Fouling factor(MKS)
- 4- Water flow (USGPM/LPM) (Max/Min)
- 5- Water velocity (MKS)

- 6- Pressure drop(Ft of water and shall be less than 14 fts)
- 7- Overall heat transfer area
- 8- Water temperature IN/OUT (Deg F/Deg C)
- 9-Actual capacity of chiller at above conditions (TR)
- 10-Water pressure drop in Chiller/Evaporator

Microprocessor console control panel included

Indicate point wise display system, set points etc. Details of all the functions of Microprocessor control system are to be enclosed. Whether enclosed – Yes / No.

General

a- Overall dimension (M)

Length

Breadth

Height

b- Operating weight (Kg)

c- Service clearance required (in Mtr) on all side (furnish a layout plan) for the following:

i- condenser & chiller descaling etc..

Special Terms And Conditions

Section-1

- 1.0 The rates for all items of work, unless clearly specified otherwise, shall include the cost of all labour, materials, and other inputs involved in the execution of the items.
- 2.0 The work shall be carried out in such manner so as not to interfere or affect or disturb other works, being executed by other agencies, if any. He shall arrange his work with that of the other in an acceptable and coordinated manner and shall perform it, in proper sequence to the complete satisfaction of the Engineer-in-Charge. Any damage done by the contractor to any existing work/infrastructure shall be made good by him at his own cost. Otherwise the same shall be got done at his risk and cost.
- 3.0 The contractor shall be responsible to arrange at his own cost all necessary tools and plants required for execution of this work. Tools, plant and machinery required shall be brought to the site to maintain the progress as per schedule of work and also as and when required by the Engineer-in-Charge and same shall not be removed without the consent of the Engineer-in-Charge.
- 4.0 No foreign exchange shall be made available by IGIB for the purpose of procurement of equipment, plants, machinery, materials of any kind or any other items required to be carried out in execution of work. Neither any foreign exchange variation shall be accepted by IGIB.
- 5.0 The contractor or his authorized representative should always be available at the site of work to take instructions from Engineer in charge, and ensure proper execution of work.
- 6.0 No payment will be made to the contractor for damage caused by rains, or other natural calamity or other unforeseen reasons during the execution of the works and no such claim on this account will be entertained by IGIB.
- 7.0 Contractor shall give the progress report of work done to Engineer-in-charge on daily basis because the time is the essence of the contract and the work should be completed with in stipulated time of completion period.
- 8.0 The work shall be executed and measured as per metric dimensions given in the Schedule of Quantities, drawings etc. (FPS units wherever indicated are for guidance only).
- 9.0 A detailed program in the form of precedence network diagram/ bar chart is to be submitted to the Engineer-in-Charge within 10 days of commencement of work.
- 10.0 The approval by the Engineer-in-Charge of detailed programs or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibility under the contract. This is without prejudice to the right of the Engineer-in-Charge to take action against contractor as per terms and condition of the agreement.
- 11.0 In order to adhere to the program, the work may have to be carried out in more than one shift and no claim on this account shall be entertained. Contractor will give advance notice in writing to Engineer-in-Charge for doing any work in odd hour.

12.0 **Power Supply and Water Supply**

Power Supply

- (i) Unless otherwise specified, 3 phase, 415 volts, 50Hz power shall be provided by the department free of charge to the contractor at one point for installation at site suitable for 10KW load. Termination switchgear, however, shall be provided by the contractor. Further extension, if required, shall be done by the contractor.
- (ii) The contractor shall not use the power supply for any other purpose than that for which it is intended for. No major fabrication work shall be done at site. Power shall be used only of welding/cutting works. The power supply shall be disconnected incase of such default and the contractor shall then have to arrange the required power supply at his cost.

Water Supply

Water supply shall be made available to the contractor by the Department free of charge at one point.

13.0 **INSPECTION AND TESTNG AT SITE**

Final Inspection & testing will be done by the Engineer-in-charge or his representative at the site after completion of installation of and running of the chilling machine.

14.0 **RUNNING IN PERIOD & DATE OF ACCEPTANCE**

- i. After the installation work has been completed by the contractor, he will conduct required tests and make adjustments as may be necessary to satisfy him. There after he will offer to the department a running-in period of 7 days subject to a minimum aggregate of 120 hrs. at his cost.. The plant will be operated and a log of all parameters will be maintained during this period.. The contractor will be free to carry out necessary adjustments etc. during this period.. The plant will be said to have successfully completed the running –in-period. After this the plant will be made available for beneficial use. After the plant has operated without any trouble for the above specified running in period, it shall be taken over by the department subject to guarantee clause mentioned below. This date of taking over of plant after trouble fee operation during the running in period shall be the date of acceptance.
- ii. Any loss of refrigerant or oil during the running in period shall be made good by the contractor free of charge.
- iii. Capacity test of the chilling unit shall be carried out as and when conditions become stabilized as per details given under Appendix 'G' of CPWD specification for HVAC works, 2004.

When the test cannot be carried out on commissioning of the installation due to any reason not attributable to the contractor, the installation will be handed over to the IGIB for beneficial use after completion of successful running in test of seven days subject to a minimum aggregate of 120 hours..

15.0 GUARANTEE

- i. All equipments shall be guaranteed for a period of 24 months from the date of acceptance and taking over of the installation by the Department against unsatisfactory performance and/or breakdown due to defective design, material, manufacturer, workmanship or installation. The equipment or component or any part thereof so found defective during the guarantee period shall be repaired or replaced free of cost to the satisfaction of the competent authority. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk & cost of the contractor. The decision of competent authority in this regard shall be final.
- ii. Any leakage of refrigerant and/or oil due to defective design, manufacture, workmanship or installation during the guarantee period shall be made good by the contractor free of charge during defect liability period.

16.0 Completion Documents

- a) Chilling Plant installation drawings giving complete details of all the equipments, including their foundations,
- b) Control wiring drawings with all control components and sequence of operations to explain the operation of control circuits.
- c) Manufacturer's technical catalogues of all equipments and accessories.
- d) Operation and maintenance manual of all major equipments, detailing all adjustments, operation and maintenance procedure.

17.0 COMPREHENSIVE MAINTENANCE

The contractor shall undertake comprehensive Annual Maintenance Contract of screw chilling machine for a period of three years from the date of expiry of defect liability period of Two year. If the contractor is not an OEM he shall enter into back to back agreement with OEM supplier for chilling unit. The documentary evidence for the same shall be furnished to IGIB. A separate rider agreement will be signed by the tenderer before commencement of AMC the payment towards comprehensive AMC shall be made quarterly after submitting the bill by the tenderer at the end of each quarter against work done satisfactorily.

18.0 Payment Terms:

The following percentage of contract shall be payable against the stages of work shown herein:

S. No.	Stage of work	Machinery & Equipment
i.	After delivery & initial inspection and installation at site in good condition on pro-rata basis.	70%
ii.	On completion of installation pro-rata basis	15%
iii.	On commissioning and completion of successful running in period testing	5%
iv.	On completion of capacity test at site	10%

19. The security deposit against the main contract of SITC of Screw Water Chilling Machine 'Make-York' shall be released on sliding scale basis as below:

At the end of	1 st year	10% (After date of completion)
	2 nd year	15%
	3 rd year	20%
	4 th year	25%
	5 th year	30%

The technical manual, service manual, maintenance chart for Chilling Machine as recommended by the manufacturer shall be provided along-with the supply of the Chilling Machine.

20.0 **Painting:**

The Contractor shall paint all exposed metal parts/insulated pipelines, supports, base of pumps etc with two coats of primer paint and two coats of synthetic enamel paint of approved colour.

21.0 **MOST IPMPORTANT :**

- I. The bidders participating in the tendering, should have their office/service centre in Delhi/NCR necessarily. If the bidder does not have office/service centers in Delhi their tender will be rejected summarily.**
- II. Bidders are advised to visit site to familiarize themselves with site conditions and the old chilling machine before submission of tender documents.**
- III. Unserviceable Machine will be allowed to take out from IGIB premises only after supply and inspection of new Screw Type water chilling machine at IGIB mall Road Delhi.**

Section-2

Water Cooled Chilling Units **(Screw Type)**

1 General

- 1.1 The water cooled screw type water chilling unit shall be packaged type factory assembled and tested and complete in all respects and shall be as per CPWD general specification 2004, (CHAPTER-5 Page No. 32 to 45) except the following:
- 1.2 The shell & tube thickness of the condenser & chiller shall be as per manufacturer standards.

2 Starter for compressor motor

- 2.1 The starter for the motor shall be automatic close automatic solid state (soft starter).
- 2.2 The starter include all necessary safety devices i.e. Overload relays, under voltage release and single phase preventing device etc.

3 Type of refrigerant

- 3.1 In view of Montreal convention on CFC, units using R-134a shall only be offered.

4 AHRI Certification

- 4.1 The chilling unit shall be AHRI certified as per AHRI 550/590. All supplier shall furnish computer printouts along with technical bids, giving details of capacity output at design conditions as given in tender shall be submitted by bidder which shall be got certified by AHRI.**

5 Power Consumption Loading

- 5.1 The water chilling unit should be selected for the duty as specified in section. The water chilling unit should be selected for maximum power consumption of 0.65 IKW/TR at 100% load at operating conditions. The reduction in price at the time of evaluation stage shall be done at the rate of Rs. 1.0 lakh per chilling machine for every reduction of 0.01 IKW/TR at 100% load in machine IKW than the offered machine IKW by the bidder. Water chilling machine with power consumption of more 0.65 IKW/TR at design conditions shall not be accepted.**

6 Accessories

- 6.1 Each unit shall include the following as part of unit price.
- 6.2 Ribbed rubber isolation pads to eliminate transmission of vibrations.
- 6.3 Full charge of refrigerant gas and required quantity of lubrication oil.
- 6.4 Other valves as required for cleaning of condenser and drain of water.

General Condition Of Contract

1. INTERPRETATION

a) In construing these conditions, the Specifications, the Schedule of Quantities, Tender, Special Conditions and Agreement, the following words shall have the meanings herein assigned to them except where the subject or context otherwise requires.

b) This contract shall comprise of the Articles of Agreement, General Conditions of Contract, Special Conditions, Additional Special Conditions, the Schedule of Quantities, Specifications, letter of acceptance of tender and other documents mentioned in the contents sheet attached hereto and including those to which only reference is made herein.

WORK OR WORKS

shall mean all work or works defined in schedule of quantities, specifications and such other work or works as the contractor may be entrusted with for carrying out under this contract.

EMPLOYER: - shall mean Director General, CSIR or any officer authorized by Director General for the purpose.

ENGINEER: - shall mean the Engineer designated by the Employer to superintend and perform other duties as indicated in the contract.

CONTRACTOR: - shall mean the individual or Firm or Company, whether incorporated or not, under- taking the work and shall include the legal personal representative or such individual or the persons composing such Firm or Company or the successors of such Firm or Company and the permitted assignees of such individual or Firm or Firms or Company.

SITE: - shall mean the site of the contract works including any buildings and erections thereon and any other land adjoining thereto (inclusive) as aforesaid allotted by the Employer or the Engineer for the contractor's use.

COMPENSATION: - shall mean all sums payable by way of compensation under any of the conditions shall be considered as reasonable compensation without reference to the actual loss or damage sustained and whether or not any damage sustained, and whether or not any damage shall have been sustained.

Words imputing persons include firms and corporations; words imputing the singular only also include the plural and vice versa where the context so required .

The headings are given to the clauses for convenience and they will not limit the meaning or scope of the clauses in any way.

2. DRAWINGS AND SPECIFICATIOIS

The contractor shall execute whole and every part of the work in the most substantial and workmanlike manner both as regards material and otherwise in every respect in accordance with the specifications. The contractor shall also conform exactly and faithfully to the design, drawings and instructions given in the respect of the work by Engineer. The contractor shall be furnished free of charge one copy of such specifications and all such designs, drawings and instructions as are not included in the printed publications.

3. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

a) The contractor shall provide at his own cost all materials including cement & steel, plants, tools, appliances, implements, ladders, scaffolding, temporary works, etc. requisite or proper for the execution of the work whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or which may be necessary for the purpose of satisfying or complying to the requirements of Engineer, as to any manner as to which under these conditions he is entitled to be satisfied together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Engineer at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract and / or from his Security Deposit.

b) The contractor shall provide himself with requisite quantity and quality of water for carrying out the works at this own cost. If, however, piped water is supplied by the Employer, the contractor shall pay for the water at one per cent of the total cost of the work done except on Electrical work, Air- conditioning work and Furniture work. The contractor shall make his own arrangement for water connection and laying of further pipelines from the source of

supply of the Employer. It should be clearly understood that the Employer does not guarantee to maintain an – interrupted supply of water and it will be incumbent on the part of the contractor to make alternative arrangement for water at his own cost in the event of any temporary break-down in the water mains so that the progress of work is not held up for want of water. No claim as damages or refund of water charges will be entertained on account of such break-downs. However, if the contractor is permitted to make his own arrangement to draw water from a well, hand – pump, or natural river or pond of the Employer, no charges will be made for the water drawn from the same, but the contractor will make good any damage done to the installation and ensure that the quality of water used in the work is confirming to BIS codes and provide for any treatment at his won cost.

c) The contractor shall be allowed to construct temporary wells in Employers' land for taking water for construction purpose only after he has permission of the Employer in writing. This will be subject to the position that NOC for the purpose has been obtained by the contractor from statutory authorities. No charges shall be recovered from the contractor on this account but the contractor shall be required to provide necessary safety arrangement to avoid any accident or damage to adjacent buildings, roads and service lines. He shall be responsible for any accident or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.

d) The Employer on no account shall be responsible for the expenses incurred by the contractor for hired ground or water obtained from elsewhere.

e) Subject to availability the Employer may supply power at only one point from where the Contractor shall make his own cost. These shall be in the custody of the Employer. If there is any hindrance caused to other works the contractor shall reroute or remove such temporary lines without any extra cost. Such temporary lines shall be removed after the completion of work. The cost of power consumed by the contractor shall be payable to the employer at rates fixed by the Employer, which would be deducted from the running account bills. However, the Employer does not guarantee the supply of power and no compensation for any failure or short supply of power shall be entertained.

4. AUTHORITIES, NOTICES & PATENTS

a) The contractor shall conform to any regulation and bye-laws of any corporation and of any electricity supply company and authorities with whose systems the structure is proposed to be connected, and shall before making any variations from the drawing and specifications that may be necessitated for so conforming by giving written notice to the Engineer specifying the variations proposed to be made, the reasons for making it and apply for instructions thereon. If the compliance with this clause involves any extra work not included in this contract, he shall specify these items of work and the allowance of extra payment required on their account.

b) The contractor shall give all notices required by the said regulations or bye-laws to be given to any Authority and pay to such Authority or to any public office all fees that may be chargeable in respect of the works and lodge the receipts with the bill to the Engineer for reimbursement.

5. RATES TO INCLUDE ALL TAXES

a) Rates quoted by the contractor shall include sales tax, duties, octroi, toll tax, royalties and all other taxes in respect of this contract and the Employer shall not entertain any claim whatsoever in this respect. Tendered rates are inclusive of all taxes and levies payable under the respective statutes. However pursuant to the Constitution (Forty Sixth Amendment) Act, 1982 if any further tax or levy is imposed by Statutes, after the date of receipt of tenders and the contractor thereupon necessarily and properly pays such taxes / levies the contractor shall be reimbursed the amount as per the rules on producing proof of payment so made provided such payments, if any, is not in the opinion of the Employer (whose decision shall be final and binding) attributable to delay in executing of work within the control of the contractor.

b) The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the Employer and further shall furnish such other information and documents as the Employer may require.

c) The contractor shall within a period of thirty days of imposition of any further tax or levy pursuant to the Constitution (Forty Sixth Amendment) Act, 1982 give a written notice thereof to the Employer that the same is given pursuant to this condition together with all necessary information relating thereto.

d) SUFFICIENCY OF TENDER

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of the tender for the works and the rates and the prices quoted in the schedule of items, which rates and the prices shall, except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the works.

6. MATERIALS

a) If the specification of schedule of items provide for the use of any material to be supplied by the Employer's stores or if it is required that the contractor shall use certain stores to be provided by the Employer as shown in the schedule of materials hereto annexed, the contractor shall be bound to procure and shall be supplied such materials and stores as are from time required to be used by him for the purpose of the contract only and value of the materials us supplied at the rates specified in the said schedule of materials and of the quantities incorporated in the work may be set off or deducted from any sums then due, or thereafter to become due to the contractor under the contract or otherwise or against or from the Security deposit. All materials so supplied to the contractor by the Employer shall remain the absolute property of the Employer and the contractor shall be the trustee of the materials so supplied / procured and the said materials shall not be removed / disposed off from the site of the work on any account and shall be at all times open for inspection by the Engineer of Employer. The contractor shall bear all incidental charges for cartage, storage and safe custody of all materials and against damage due to dampness, rain, sun, fire and theft and be fully responsible for their storage and maintenance. Any such material unused and in perfectly good condition in the opinion of the Employer at the time of the completion of work or termination of the contract, or earlier shall be returned to the Employer at a place directed by Engineer at contractor's cost and at rates stipulated in the said schedule but in case the Employer decides not to take back the materials the contractor shall have no claim for compensation on account of any such materials supplied to him as aforesaid being unused by him or for any wastage or damage to any such materials.

b) If for any reason there is delay or non-supply of material as shown in the schedule, the contractor shall procure the same and complete the work in time after due intimation and approval of the Employer. The difference in price (between his procurement price and price shown in the schedule) shall be paid to the contractor. However in case approval of the Employer is not given, only suitable extension of time would be considered and no other claim of compensation / damages shall be payable by the Employer.

c) After completion of the work or on determination / termination of the contract, the theoretical quantity of cement to be used in work shall be calculated on the basis of statement showing quantity of cement to be used in different items of work provided in current Schedule for the purpose printed by CPWD. In case any item is executed for which the standard constants for the consumption of cement are not available in the above mentioned statement or cannot be derived from this statement, the same shall be calculated on the basis of standard formula to be laid down by the Engineer. Over this theoretical quantity of cement, shall be allowed a variation up to 3% plus/minus for works estimated cost of which as put to tender is more including authorized variation, if not returned by the contractor, shall be recovered at twice the issue rate, without prejudice to the provision of other conditions regarding return of materials governing the contract. In the event of its being discovered that the quantity of cement which is less than the quantity ascertained as herein before provided (along with variation on minus side as stipulated above) the cost of quantity of cement not so used, shall be recovered from the contractor on the basis of stipulated issue rates and cartage to site.

d) The provision of foregoing sub-clause shall apply Mutatis-Mutandis in the case of steel reinforcement or structural steel sections (each diameter/section or category shall be considered separately) except that the theoretical quantity of the steel shall be taken as the quantity required as per design or as authorized by the Engineer, including lappages, plus 3% wastage due to cutting into pieces. Over this theoretical quantity 2% plus/minus shall be allowed as variation due to wastage.

e) The provision of foregoing sub-clause shall apply Mutatis – Mutandis in the case of cables (other than under – ground cables), wires, conduits / GI pipes, GI/MS sheets used in various items of work shall be calculated on the basis of measurements recorded in the measurement books for the purpose of payment and for assessing the consumption of materials used in the works. Over this quantity a variation of 5% plus shall be allowed for wastage of materials during execution in case of cables (other than under – ground cables), wires, conduits/GI pipes, and 10% plus in case of GI/MS sheets.

f) The provisions made above are without prejudice to the right of the Employer to take action against the contractor under the conditions under the contract for not doing the work according to the prescribed

specifications.

g) In case of easy availability of approved quality of cement and steel in the open market it will be Employer's discretion to make these items as contractor's supply.

7. TESTING OF MATERIALS

The contractor shall provide assistance, instruments, materials, labour and any other arrangement normally required for testing, checking of materials and workmanship as stipulated in the specifications and by statutory authority at his own cost. The Employer has the right to appoint the testing authorities. In case Engineer desires testing of materials from the testing authorities the contractor shall arrange for the same. The testing fee of the testing authorities shall be borne by the Department, if the tested materials are found to be conforming to laid down specifications. In case after testing the materials are not found as per specifications then the testing fee shall be borne by the contractor. Failing his so doing, the same shall be provided by the Engineer at the expense of the contractor and the expenses shall be deducted from any money due to the contractor under the contract and / or from the Security Deposit or proceeds thereof or of a sufficient portion thereof.

8. CONTRACTOR'S ENGINEERS / FOREMAN & WORKMEN

a) The contractor shall give all necessary personal superintendence during the execution of the work and as long as thereafter as the Engineer may consider necessary until the expiration of the Defects Liability Period. The contractor shall employ competent Site Engineer/ Foreman as detailed in "special conditions" and as approved by the Engineer whose qualification must conform to be requirement specified by the Engineer who shall be constantly in attendance of the work while the men are at work. Any directions, explanations, instructions or notices given by the Engineer to such Site-Engineer or Foreman or any other authorized agent shall be held to be given to the contractor. In case contractor fail to provide engineering personnel as given in special conditions, the Employer shall have right to appoint the necessary engineering personnel requisite staff needed for proper Superintendence of work at the cost of contractor for the period of currency of contract inclusive of defect liability period.

b) The contractor shall on the request of the Engineer immediately dismiss from the works any person employed thereon who may in the opinion to the Engineer be unsuitable or incompetent or who may in the opinion of the Employer misconduct himself.

9. ACCESS

a) The Engineer, and the Employer or its representative shall at all reasonable time have free access to the works and / or workshops, factories or other places the material are being prepared or constructed for the contract and also to any place where the materials are lying or from which they are being obtained and the contractor shall give every facility to them for inspection. Except the representatives of statutory authorities and those mentioned above no other person shall be allowed on the works at any time without the permission of the Engineer.

b) If any work is to be done at a place other than the site of works, contractor shall obtain written permission of the Engineer.

10. VARIATION & PRICE FOR VARIATION

a) The Engineer with the approval of the Employer shall have power to make any alteration / omissions / additions and / or substitutions from the original specifications, drawings, designs, and written instructions and such alterations, omissions, additions, substitutions shall not invalidate the contract and any altered, additional, or substituted work which the contractor may be directed to do in the manner specified above as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work subject to the variation limits prescribed hereunder. In case deviations of agreement quantities exceed the prescribed limits, then the rates for quantities exceeding the prescribed limits shall be determined on market rate basis. The rates for such altered, additional or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order!.

b) If the rates for the altered, additional, or substituted work are specified in the contract for the work, the

contractor is bound to carry out the altered, additional, or substituted work at the same rates as are specified in the contract for the work.

- c) If the rates for the altered, additional, or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- d) If the rates for the altered, additional, or substituted work cannot be determined in the manner specified in sub-clause (b) and (c) above, then the contractor shall, within 10 working days from the date of receipt of the order to carry out the work through notice in writing, inform the Engineer of the rate which it is his intention to charge for such class of work, supported by analysis of the rate claimed which shall be based on actual cost of work plus 10% as contractor's profit and over – heads except in case of departmental materials for which contractors profit and over- heads shall be 2.5 %. When such notice has been given, the Engineer with the consent of the Employer may agree to such a rate but if the Engineer does not agree to the contractor's rate the Engineer may cancel his order to carry out such class of work and arrange to carry out in such a manner as he may consider advisable.
- e) Under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates of items falling under the clause.
- f) Variation limits prescribed is as under:

(i)	Building work	30%
(ii)	Maintenance / Emergency works	50%
(iii)	Foundations works	100%
(iv)	Services works	30%

11. FAULTY MATERIALS, WORKMANSHIP & DEFECTS AFTER COMPLETION

- a) The Engineer shall have powers to require the removal from the site of all materials and work which in his opinion are not in accordance with specifications and in case of default, the Engineer shall be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials to be substituted thereof and in case of default the Engineer may cause the same to be supplied and all costs which may attend such removal and / or substitution are to be borne by the contractor.
- b) If it shall appear to the Engineer or to the Employer based on audit / technical examination that any work has been executed with unsound, imperfect, or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, any defects, shrinkage or other faults which may appear within the defects liability period of twelve months from the date of completion arising in the opinion of the Engineer, the contractor shall on demand in writing which shall be made within twelve months of the completion of the work from the Engineer specifying the work, materials, articles defects or other faults complained of notwithstanding that the same may have been passed, certified and paid for, forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own cost. In case of any such failure, the Engineer may rectify or remove or re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and cost in all respects of the contractor.
- c) In lieu of rectifying the work not done in accordance with the contract, the Employer may, allow such work to remain, and in that case make allowance for the difference in value, together with such further reduction as in his opinion may be reasonable. However, this will not cover those works which are not technically acceptable.
- d) Provided always that nothing in this clause shall relieve the contractor from his liability to execute the works in all respects in accordance with the terms and conditions of this contract, or from his liability to make good all defects.

12. WORKS TO BE OPEN FOR INSPECTION

a) All work during course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer and the contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer to visit the works shall have been given to the contractor, either himself be present to receive order and instruction or have a responsible agent duly accredited in writing present for that purpose and shall made all arrangements inclusive of excavation & dismantling, if required.

b) The contractor shall give not less than seven days notice in writing to the Engineer before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up and place beyond the reach of measurement, any work without the consent in writing of the Engineer and the Engineer shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or the Engineer's constant obtained the same shall be uncovered at the contractors expense or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

13. ASSIGNMENT OR SUB-LETTING

a) The contract shall not be assigned or sublet without the written approval of the Employer. And if the contractor shall assign or sub-let his contract or attempt to do so or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so or if any bribe, gratuity or gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor or any of his servants or agents to any person in the employment of the Employer in any way directly or indirectly interested in the contract, the Employer shall have the power to adopt any of the courses specified under clause – 23 as may be best suited to the interest of the Employer and in the event of any of the courses being adopted the consequences specified in the said clause shall ensure.

b) Where the contractor is a partnership firm, the approval in writing of the Employer shall be obtained before any changes in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement hereunder the partnership firm would have the right to carry out the work be deemed to have been assigned or sublet in contravention of clause 13 (a) and the same action may be taken and the same consequences shall ensue as provided in the said clause 13 (a).

14. INDEMNIFYING AGAINST DAMAGES TO PERSONS, PROPERTY & STATUTES

The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights, and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part. No hinderance shall be caused to traffic during the execution of work.

a) The contractor shall be responsible for all injury to persons, animals or things, and for all damage, whether such injury or damage arises from carelessness or accident in any way connected therewith. This clause shall be held to include interlia any damage due to causes as aforesaid to work, building (whether immediately adjacent or otherwise) and to roads, streets, foot paths, bridges or ways as well as all damage caused to the buildings and works forming the subject of this contract by inclemency of weather. The contractor indemnifies the Employer and holds him harmless in respect of all expenses arising from such injury or damages as aforesaid and also in respect of any award of compensation or damage consequent upon such claim including legal costs.

b) The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contracted works complete and perfect in every respect and so as to make good and otherwise satisfy all claims for damage as aforesaid to the property of third parties.

c) The contractor also indemnifies the Employer against all claim which may be made upon the Employer for acts during the currency of this contract by any employee or representative of an employee of the contractor or any sub-contractors, employed by him, for any injury to or loss or life, of such employees, or for compensation

payable under any law for the time being in force to any workmen or to the representative of any deceased or incapacitated workmen.

d) The contractor also indemnifies the Employer against all claims which may be made upon the Employer for acts during the currency of this contract by the Central / State Government or local Municipal authorities for the noncompliance of any laws, regulations, rules pertaining to wages act, safety act in force and any amendments thereof in respect of all labour and apprentices directly or indirectly employed in the work under this contract.

e) The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation costs, charges and / or expenses arising or accruing from or in respect of any such claim and / or damages as aforesaid from any sum or sums due to become due to the contractor or security deposit.

f) The contractor shall indemnify the Employer against any action, claim or proceedings relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against the Employer in respect of any such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise therefore. Provided that the contractor shall not be liable to indemnify the Employer if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the said Employer or his authorized representative.

15. LIEN IN RESPECT OF CLAIM IN OTHER CONTRACTS

a) Any sum of money due and payable to the contractor including the security deposit under the contract may be withheld or retained by way of lien by the Employer or Government or any other contracting person or persons against any claim of the Employer or Government or such other persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Employer or Government or with such other persons.

b) It is agreed term of the contract that the sum of money so withheld or retained under this clause by the Employer will be kept withheld or retained as such by the Employer or till his claim arising out of in the same contract or any other contract is either mutually settled or determined by the Arbitrator if the contract is governed by arbitration clause or by the competent court as the case may be, and that the contractor shall have no claim for interest or damages whatsoever on this account or any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

16. WITHHOLDING & LIEN IN RESPECT OF SUMS CLAIMED

a) Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the Employer shall be entitled to withhold and also have a lien no retain such by or sums in whole or in part from the security deposit, if any furnished as the case may be and also have a lien over the lien over the same pending finalization or adjudication of any such claim. In the event of the security deposit being insufficient to cover the claimed amount or amounts or if no security deposit has been taken from the contractor, the Employer shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which at any time thereafter may become payable to the contractor under the same or any other contract, with the Employer or any contracting person pending finalization or adjudication of any such claim.

It is an agreed term of the contract that the sum of money so withheld or retained under the lien referred above, by the Employer will be kept withheld or retained as such by the Employer till the claim arising out of or under the contract is determined by the Arbitrator (if the contractor is governed by the arbitration clause) or by the competent court as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited amount or amounts in whole or in part from any sum payable to any Partner / Limited company as the case may be, whether in his individual capacity or otherwise.

b) The Employer shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been over paid in respect of any work done by the contractor under the contract or any work claimed by him to have been done by him under the contract and found not to have been executed the contractor shall be liable to refund the manner prescribed in

sub-clause (a) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under-payment shall be duly by the Employer to the contractor. Provided that the Employer shall not be entitled to recover any sum over-paid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Employer on the one hand and the contractor on the other hand, under any term of contract permitting payment for work after assessment by the Employer.

17. IN-CASE OF DEATH OF CONTRACTOR

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Employer shall have the option of terminating the contract without compensation to the contractor.

18. SUB-CONTRACTORS

The Employer reserves the right to use the premises and any portion of the site for the execution of any work not included in the contract. The contractor is to afford all reasonable facilities to all sub-contractors, specialists, merchants, tradesman and others who may at any time be appointed by the Employer for executing any work or supplying any goods relating to the constructions, servicing, equipping or furnishing of the work under this contract.

19. COMPLIANCE TO LABOUR LAWS & APPRENTICE ACT

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, Contract Labour (Regulation and Abolition) Act, 1970, and rules and orders framed there under and other labour laws affecting contract labour and Apprentice Act, 1961 and rules and orders framed there under that may be in force or brought into force from time to time. Contractor shall obtain a valid licence under Contract Labour (R & A) Act 1970 and Contract Labour (R & A) Central Rules 1971 before commencing work and which should be valid till the completion.

20. LIQUIDATED DAMAGES AND COMPENSATION FOR DELAY

a) The time for carrying out the work as entered in the tender shall be strictly observed by the contractor and shall be deemed to be the essence of the contract on the part of the contractor. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and the contractor shall pay as compensation an amount equal to half per cent or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the amount of the whole work as shown in the agreement, for every week that the work remains uncompleted or unfinished after the proper dates subject to a maximum of 10% of the contract value.

b) And further to ensure good progress during the execution of the work, the contractor shall be bound in all cases in which the time allowed for any work exceeds one month (save for special jobs) to complete one – eight of the whole of the work before one-fourth of the whole time allowed under the contract has elapsed; three-eighths of the work before one-half of such time has elapsed, and three-fourths of the work before three – fourths of such time has elapsed. However for special jobs if a time schedule has been submitted by the contractor and the same has been accepted by the Employer, the contractor shall comply with the said time schedule. In the event of the contractor failing to comply with this condition, he shall be liable to pay as compensation an amount equal to half per cent or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the said cost of the work for every week that the due quantity of work remains incomplete. Provided that the entire compensation to be paid under the provisions of this clause shall not exceed ten per cent on the cost of the work as shown in the agreement.

Contractor shall pay as compensation an amount equal to half percent (0.50%) or such smaller amount as the Employer (whose decision in writing shall be final) may decide on the cost of the whole work as shown in the agreement, for every week the work remains uncompleted or unfinished or due quantity of work remains incomplete after the proper dates. Compensation to be paid shall not exceed ten per cent of the cost of the work as shown in the agreement.

21. DAMAGE TO WORKS IN CONSEQUENCE OF HOSTILITIES OR WAR – LIKE OPERATIONS

a) The work (whether fully constructed or not) and all materials, tools, and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the Employer and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or war-

like operation, the contractor shall, when ordered in writing by the Employer, remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking, removal of serviceable materials and for the reconstruction of all works ordered by the Employer such payment being in addition to compensation up to the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for the compensation shall be assessed by the Employer. The contractor shall be paid for the damage / destruction suffered and for restoring the material at the rates based on the analysis of rates tendered for in accordance with the provision of this agreement. The certificate of the Employer regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on the contractor.

b) Provided always that no compensation shall be payable for any loss in consequence of hostilities or war-like operation (i) unless the contractor had taken all such precautions against Air Raid as are deemed necessary by the A.R.P. Officers or the Employer, (ii) for any materials etc., not on the site of the work or for any tools and plant, machinery, scaffolding, temporary buildings and other things not intended for the work.

c) In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Employer.

22. EXTENSION OF TIME

a) If the contractor shall desire an extension of time for the completion of the work on the grounds of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the Employer within thirty days of the date of hindrance on account of which he desires extension as aforesaid, and the Employer shall, if in his opinion (which shall be final) reasonable grounds shown therefore, authorize such extension of time if any, which may, in this opinion, be necessary or proper.

b) In the event, the value of work exceeds the value of the Bill of Quantities owing to variations the contractor shall be entitled to ask for extension of time in proportion to the increased value of work.

c) In case of performance security forming part of security deposit which are permissible in the form of bank guarantee then the contractor make a request for extension of time only after the firm has got validity of Bank Guarantee extended suitably.

23. SUSPENSION OF WORK BY CONTRACTOR

The Employer may without prejudice to his right against the contractor in respect of any delay or inferior workmanship or otherwise or to any claims for damages in respect of any breaches of the contract and without prejudice to any rights or remedies under any of the provisions of this contract or otherwise and whether the date for completion has or has not elapsed by notice absolutely determine the contract in any of the following cases:

- (i) If the contractor having been given by the Engineer a notice to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or unworkman - like manner shall omit to comply with the requirements or such notice for a period of seven days thereafter or if the contractor shall delay or suspend the execution of the work so that in the judgment of the Employer (which shall be final and binding) he will be unable to ensure completion of the work by date for completion or he has already failed to complete the work by that date.
- (ii) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall be wound up or if a receiver or a manager on behalf of a creditor shall a appointed or if circumstances shall arise which entitle the court of creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
- (iii) If the contractor commits breach of any of the terms and conditions of this contract.
- (iv) If the contractor commits any acts mentioned in Clause – 13 hereof.

When the contractor has made himself liable for action under any of the cases aforesaid, the Employer shall have the following powers:

- (i) To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of the Employer shall be conclusive evidence). Upon such determination or

rescission the security deposit of the contractor shall be liable to be forfeited and shall be absolutely at the disposal of the Employer.

- (ii) The Engineer may employ labour paid by the Employer and to supply materials to carry out the work or any part of the work debiting the contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer shall be final and conclusive against the contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of his contract. The certificate of the Engineer as to the value of the work done shall be final and conclusive against the contractor, provided always that action under the sub-clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the Employer are less than the amount payable to the contractor at his agreement rates, the difference should not be paid to the contractor.
- (iii) After giving notice to the contractor to measure up the work of the contractor and to take such part thereof as shall be unexecuted out of his hands and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which exceed the certificate in writing of the Engineer shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the Employer under his contract or any other account whatsoever or from his security deposit.
- (iv) In the event any one or more of the above courses being adopted by the Employer the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken sum for any work thereof or actually performed under this contract unless and until the Engineer has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

24. SECURED ADVANCE

The contractor on signing an indenture in the form specified by the Employer during the progress of the execution of the work may be paid if agreed by the Employer up to 75 per cent of the estimated value which shall take into account the market value and contractor's tendered rates for the finished item of any material which in the opinion of the Engineer is likely to be incorporated in the work within next three months, are non-perishable and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which advance has been made under this clause are incorporated in the work the amount of such advance shall be deducted from the next payment made under any of the clause or clauses of this contract.

25. MOBILIZATION ADVANCE

In specialized and Capital intensive works costing not less than Rs.2 crores, mobilization advance limited to a maximum of 10% of the tendered value of Rs. 1 crore whichever is less is payable in two equal installments at 10% simple interest.

If Mobilization advance should be given, it should expressly stated in the NIT/Bid documents, indicating the amount, rate of interest and submission of Bank Guarantee of equivalent amount. The advance payment may be released in stages depending upon the progress of the work and mobilization of required equipment etc. There should be a provision in the contract for adjustment of advance progressively even as the bills are cleared for payment.

The recovery of mobilization should start when 10% of the work is executed and recovery of total advance should be completed by the time 80% of the original contract price is executed.

26. CERTIFICATES & PAYMENTS

a) No payments shall be made for a work estimated to cost Rupees ten thousand or less till the whole of the work shall have been completed and certificate of completion given. But in the case of a work estimated to cost more than Rupees ten thousand, the contractor shall, on submitting the bill be entitled to receive a monthly payment proportionate to the part of work executed, and to the satisfaction of the Engineer, whose certificate of the sum so payable shall be final and conclusive against the contractor, provided the amount of work done is as per the value of intermediate certificate or for a lesser amount at the discretion of the Engineer as mentioned in the NIT. All such intermediate payments for work actually done and completed and shall not preclude the requiring of bad,

unsound, imperfect or unskilled work to be removed and taken away and reconstructed, or rejected or be considered as an admission of the due performance of the contract, of any part thereof in any respect or the accruing of any claim nor shall it conclude, determine, or affect in any way the powers of the Employer under these conditions or any of them as to the final bill shall be submitted by the contractor within two months of the date fixed for the completion of work or of the date of the certificate of completion furnished by the Employer and payment shall be made within three months if the value of the completed works is up to Rs. Two lakhs and in six months if the same exceeds Rs. Two lakhs of the submission of such bill. If there shall be any dispute about any item or items of the work then the undisputed item or items only shall be paid within the said period of three months or six months as the case may be.

b) Whenever there is likely to be delay in recording detailed measurements for making a running payment, advance payment without detailed measurement for work done worked out at 75 per cent of the tendered rates for assessed quantities may be made in running account bills by the employer on the basis of a certificate from the Engineer. The advance payments so allowed shall be adjusted in the subsequent running bills by taking detailed measurements thereof. Final payments shall be made only on the basis of detailed measurements.

c) A bill shall be submitted by the contractor each month on or before the date fixed by the Engineer on printed forms obtainable from the Engineer's office. The Engineer shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim, as far as admissible, adjusted as far as possible, before the expiry of ten days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid the Engineer may cause action within seven days of the date fixed as aforesaid, an authorized representative to measure up the said work in the presence of the contractor whose signature to the measurement will be sufficient warrant and the Engineer may prepare the bill from such measurements.

d) Before taking any measurement of any work the Engineer or his authorized representative deputed by him shall give reasonable notice to the contractor. If the contractor fails to attend such notice or fails to sign or to record the difference within a week from the date of measurement in the manner required by the Engineer then in any such event the measurement taken by the Engineer or by the authorized representative deputed by him as the case may be, shall be final and binding on the contractor and the contractor shall have no right to dispute the same.

e) The charges in the bills shall always be entered at the rates specified in the agreement or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the agreement at the rate determined as per clause – 10. However in case or partially executed items of work, the Employer at his discretion allows proportionate rates for such items as determined by the Engineer whose certificate of the sum so payable shall be final and conclusive against the contractor.

27. SECURITY DEPOSIT

a) A sum @ 10% of the gross amount of the bill shall be deducted from each running bill of the contractor till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the tendered value of the work. In addition, the contractor shall be required to deposit an amount equal to 5% of the tendered value of the contract as Performance Security within the period prescribed for commencement of work in the letter of award issued to him.

b) In case a fixed deposit receipt of any scheduled bank is furnished by the contractor to the Employer as part of the security deposit and the bank goes into liquidation or for any reasons is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security deposit, provided always that the Employer for this purpose shall be entitled to recover the said percentage of the amount from each running bill till the balance of the amount of security deposit is realized. All compensation or the other sums of money payable by the contractor under the terms of this contract may be deducted from the security deposit or from the interest arising there from or from any sums which may be due to or may become due to the contractor by the Employer on any account whatsoever and in the event of his security deposit being reduced by reason of any such deductions aforesaid, the contractor shall within ten days make good in cash or further fixed deposit receipt pledged in favour of the Employer. The security deposit shall be collected from the running bills of the contractor at the rates mentioned above and the earnest money if deposit at the time of tenders will be treated as part of the security deposit.

c) The contractor if he so desires may furnish fixed deposit receipt in advance towards the security deposit. Such fixed deposit receipt shall be of a minimum value of Rs 25000/- each (The last such fixed deposit receipt could be of a lower value on the basis of the amount). In case any recovery is affected from running account bills, such recovered amount shall not be replaced with fixed deposit receipt. It is in the contractor's interest to keep a watch about the adequacy of the fixed deposit receipt submitted.

d) No partial refund of security deposit shall be made during the defect liability period. In case the final bill is not settled within stipulated period for reasons beyond control and the Employer is satisfied that the security deposit is not required for adjustment of Employers dues or whatsoever dues either in this or any other contract then this security deposit either in full or in part could be refunded at the sole discretion of the Employer. However, release of security deposit would be only after written clearance of Labour Officer regarding no dues or claims is received.

e) In case of termination of contract, this security deposit shall be forfeited and amount necessary to make up this amount shall be recovered from money due to the contractor under this contract, or any other contract with the Employer.

f) PERFORMANCE SECURITY

i) The contract shall be required to deposit an amount equal to 5% of the tendered value of the contract as Performance Security within the period prescribed for commencement of work in the Letter of Award issued to him. Performance security may be accepted as Bank Guarantee of Scheduled Banks and State Bank of India or in cash or in the form of Fixed deposit Receipts pledges in favour of the Employer.

ii) The contractor shall submit an irrevocable PERFORMANCE GUARANTEE of 5% (five percent) of the tendered amount in addition to the Security Deposit of 5% (Five percent) for his proper performance of the contract agreement (not with standing and/or without prejudice to any other provisions in the contract) within in the period prescribed for commencement of work in the Letter of Award issued to him.

This guarantee shall be in the form of fixed deposit receipts pledges in favour of the Employer or Bank guarantee of Scheduled Banks or State Bank of India in accordance with the Proforma attached. In case fixed deposit receipts of any bank are furnished by the contractor to Employer as part of the Performance Security and Bank is unable to make payment against the said Fixed Deposit receipts, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Employer to make good the deficit.

iii) The contractor will be allowed to start the work unless the Performance Security/Guarantee is submitted by him. In case of failure by the contractor to furnish the Performance Security/ Guarantee within specified period, Employer shall without prejudice to any other right or remedy available in law, be at liability to forfeit the Earnest Money absolutely.

iv) The Performance security shall be initially valid upto 60 days after recording of satisfactorily completion of work by the Employer. In case the time of completion of work gets and enlarge, the contractor shall get the validity of Performance Security extended to cover such enlarge time for completion of work on 60 days of recording of satisfactory completion of work by the Employer, the Performance Security shall be returned to the Contractor, without any interest.

v) The Employer shall not make a claim under the Performance Guarantee except for amounts to which the Employer is entitled under the contract (notwithstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

- a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Employer may claim the full amount of the Performance Guarantee.
- b) Failure by the contractor to pay the Employer any amount due, either as agreed by the contractor or determined under any of the clause/ conditions of the agreement, within 30 days of the service of notice to this effect by the Employer.
- c) In the event of the contract being determined or rescinded under provisions of any of the clause/ condition of the agreement, the Performance Guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Employer.

28. COMPLETION CERTIFICATE

With in ten days of the completion of the work, the contractor shall give notice of such completion to the Employer and within days of the Engineer shall inspect the work. It there is no defect in the work the Employer shall furnish the contractor with a certificate of completion otherwise a certificate of completion indicating defects shall be issued but the work shall not be considered to be completed until the contractor shall have removed from the premises on which the work shall be executed all the scaffolding, surplus material, rubbish, and all huts and sanitary arrangements required for his work, people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor and cleaned of the dirt, splashes, droppings of finishing items from all wood work, doors, windows, walls, floors or other parts of any building, in, upon or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof. It the

contractor shall fail to comply with requirements of this clause on or before the date fixed for the completion of the work, the Employer may at the risk and cost of the contractor take action as he may think fit and the contractor take action as he may think fit and the contractor shall have no claim except for any sum actually realized by the sale thereof.

29. ESCALATION

a) If the price of materials (not being materials supplied or services rendered at fix prices by the Department and / or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contractor shall accordingly by varied, subject to the condition that compensation for escalation in prices shall be available only for the work done during the stipulated period of the contract including such period for which the contract is validly extended under the provisions of Clause - 5 of Contract without any action under Clause – 2 and also subject to the conditions that no such compensation shall be payable for a work for which the stipulated period of completion is eighteen months or less. Such compensation for escalation in the prices of materials and labour when due, shall be worked out based on the following provisions.

- (i) The base date for working out such escalation shall be the last date of receipt of tender including extension, if any. .
- (ii) The cost of work on which escalation will be payable shall be reckoned as 85% the cost of the work as per the bills, running or final, and from this amount the value of material supplied by the Employer and proposed to be recovered in the particular bill shall be deducted before the amount of compensation for escalation is worked out. In case of materials brought to site for which secured advance is included in the bill full value of such materials as assessed by the Engineer in charge (and not the reduced amount for which secured advance has been paid), shall be included in the cost of work done for operation of this clause. Similarly, when such materials are incorporated in the work, the secured advance is deducted from the bill the full assessed value of the materials originally considered for operation of this clause shall be deducted from the cost of work shown in the bill running or final. Further the cost of work shall not include any work for which payment is made for any item at prevailing market rates. The cost work on which the escalation will be payable shall reckoned as below:

- a. Gross value of work done upto this quarter
- b. Gross value of work done upto the last quarter
- c. Gross value of work done since previous quarter (a-b)
- d. Full assessed value of Secured Advance fresh paid in this quarter
- e. Full assessed value of Secured Advance recovered in this quarter
- f. Full assessed value of Secured Advance for which escalation is payable in this quarter (d-e)
- g. Advance payment made during this quarter
- h. Advance payment recovered during this quarter
- i. Advance payment for which escalation is payable in this quarter (g-h)
- j. Extra item paid as per clause 12 & 12 (A) based on prevailing market rate during this quarter:

Then,

$$X=C+F+I-J$$

$$Y+0.85 X$$

- k. Less cost of material supplied by the Department as per clause – 10 and recovered during the quarter:
- l. Less cost of services rendered at fixed charges as per clause-34 and recovered during the quarter:

Cost of work for which escalation is applicable:

$$W=Y-(K+L)$$

- (iii) The compensation for escalation for materials & labour shall be worked out as per the formula given below:

$$VM= W^A / 100 \times (MI-MIO) / MIO$$

VM- Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W-Cost of work done worked out as indicated in sub Para (ii) above.

A-Component of materials expressed as per cent of the total value of work and is predetermined as 75.

MI- Index numbers of Wholesale prices in India for all commodities published by the Reserve Bank of India for the period under reckoning.

Mio- Index numbers of Wholesale prices in India for all commodities published by the Reserve Bank of India on the date of receipt of tenders.

$$VL = W \times B/100 \times \frac{(LI - Llo)}{Llo}$$

VL- Variation in labour cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W- Value of work done, worked out as indicated in sub para (ii) above.

B- Component of labour expressed as per cent of the total value of work and is predetermined as 25.

LI- Minimum wages for industrial workers published by the Reserve Bank of India for the period under reckoning as for the period under consideration.

Llo- Minimum wages for industrial workers published by the Reserve Bank of India and valid on the stipulated date of receipt of tenders.

b) The following principle shall be followed while working out indices mentioned in sub Para (iii) above.

- (i) The compensation for escalation shall be worked out at half yearly intervals and shall be with respect to the cost of work done during the six calendar months of the said work. The first such payment shall be made at the end of the eighteen months after the month (excluding) in which the tender was accepted and thereafter at six monthly interval. At the time of completion of work, the last period for payment might become less than six months, depending on the actual date of completion.
- (ii) The index (MI or LI) relevant to any six months for which such compensation is paid shall be the arithmetical average of the indices relevant to the six calendar months. If the period up to date of completion after the eighteen months covered by the last such installment of payment is less than six months, the index MI or LI shall be the average of the indices for the months falling within that period.
- (iii) The base index (Mio or Llo) shall be the one relating to the month in which the tender was stipulated to be received.

c) In the event the price of materials and / or wages of labour required for execution of the work decreases there shall be downward adjustment of the cost of work so that the price of materials and / or wages of labour shall be deductible from the cost of work under this contract and in this regard formula herein before stated under this clause shall mutates mutandis apply, provided that no such adjustment for the decrease in the prices of materials and / or wages of labour aforementioned would be made in case of contracts in which the stipulated period of completion of the work is eighteen months or less.

d) Employer shall have the discretion to permit the IEEMA (India Electrical & Electronics Manufacturers' Association) clause for escalation in case of specialized works e.g. lifts and electrical and mechanical installations etc. where the price variation is not similar to building works.

30. ARBITRATION

a) Except where otherwise provided in the contract, all questions and disputes relating to the interpretation of the specifications, design ns, drawings and instructions herein before mentioned, and as to the quality or workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, specifications, estimates, instructions, orders on these conditions or otherwise concerning the works, or the execution or failure to execute the same, whether arising during the progress of the work or after the completion or abandonment thereof, shall be referred to the sole arbitration of the person appointed by the Director – General, Council of Scientific & Industrial Research. The arbitrator shall be appointed within 30 any party. The arbitrator to whom the matter is originally referred, being unwilling or unable to act for any reason, the Director – General shall appoint another person to act as arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. The arbitrator shall give a speaking award. The award of the Arbitrator shall be final and binding on the parties. The cost of the Arbitrator shall be borne equally by both the parties.

b) It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such

dispute.

c) It is also a term of the contract that if the contractor does not make any demand for arbitration in respect of any claim in writing within 90 days of receiving the intimation from the Employer that the final bill is ready for payment, the claim of the contractor will be deemed to have been waived and absolutely barred and the Employer shall be discharged and released of all liabilities under the contract in respect of these claims.

d) The Arbitrator may from time to time with consent of parties enlarge the time for making publishing the award.

e) Subject as aforesaid the provisions of the Arbitration and Conciliation Act, 1996, or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration reference under this clause.

30. DISMANTLED MATERIAL

The contractor shall treat all material obtained during dismantling of a structure, services sub systems / installations, excavation of the site for a work etc., as employer's property and such material shall be disposed of to the best advantage of the Employer according to the instructions issued in writing by the Engineer.

31. PERFORMANCE GUARANTEE

Performance Guarantee may be taken from the Contractor before the award of work, by the officer authorized to award the contract, if and where considered necessary, to ensure that a part or whole of the contract is completed by the contractor. In case of non-performance, this guarantee could be encashed.

*****SPECIAL CONDITIONS*****

1) These special conditions are meant to amplify the general specifications and general conditions of contract.

2) Work shall be done as per CPWD specification with latest correction slips

3) In case of any discrepancy, the order of precedence in interpretation shall be as under:-

- (i) Schedule of quantities
- (ii) Drawings
- (iii) Special conditions
- (iv) General conditions of contract
- (v) Special Specifications (if any)
- (vi) CPWD latest Civil and Electrical specifications
- (vii) IS codes
- (viii) BS and International codes
- (ix) Best Engineering practice

4.) The structural and architectural drawings shall at all time be properly correlated before executing any work. However, in case of any discrepancy in the item given in the schedule of quantities appended with the tender and drawings related to the relevant item the former shall prevail unless and otherwise given in writing by the Engineer.

No payment shall be made to the contractor for any damage caused by rain, snowfall, floods or any other natural cause whatsoever during the execution of work. The damage to work will be made good by the contractor at his own cost, and no claim on this account shall be entertained.

All materials used shall be as per the specifications and ISI mark wherever applicable. ISI marking referred relate to latest BIS Code as published Bureau of Indian Standard upto 30 days before the date of opening of tender.

The contractor shall give a performance test of the entire installations as per standard specifications and/or as directed by the Engineer and will also submit test certificate as are required by Municipal/ Electrical authority or any other authority. Nothing extra shall be payable for the same other than fees paid to such authorities, which shall be reimbursed on production of receipts.

5) CEMENT

- i) The contractor shall procure 33 grade (conforming to IS:269) or 43 grade (conforming to IS:8112) ordinary port land cement, as required in the work, from reputed manufacturers of cement, having a production-capacity of one million tones per annum or more, such as ACC, L & T, J.P. Rewa, Vikram, Shri Cement, Birla Jute and Cement Corporation of India etc., and holding license to use ISI certification mark for their product whose name shall be got approved from Engineer-in-charge. Supply of cement shall be taken in 50 Kg. bags bearing manufacturer's name and ISI marking, samples of cement arranged by the contractor shall be taken by the Engineer-in-charge and got tested in accordance with provisions of relevant BIS codes. In case test results indicate that the cement arranged by contractor does not conform to the relevant BIS codes, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer-in-charge to do so.
- ii) The cement shall be brought at site in bulk supply of approximately 50 tones or as decided by the Engineer-in-charge.
- iii) The cement godown of the capacity to store a minimum of 2000 bags of cement shall be constructed by the contractor at site of work for which no extra payment shall be made. Double lock provisions shall be made to the door of the cement godown. The keys of one lock shall remain with the Engineer-in-charge or his authorized representative and the key of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-charge at any time.
- iv) The contractor shall supply free of charge the cement required for testing. The cost of tests shall be borne by the Department if the results are as per specifications. If the test results found the properties

of cement not as per specification then the contractor will bear the cost of testing.

- v) After completion of the work or on determination / termination of the contract, the theoretical quantity of cement to be used in work shall be calculated on the basis of statement showing quantity of cement to be used in different items of work provided in current Schedule for the purpose printed by CPWD. In case any item is executed for which the standard constants for the consumption of cement are not available in the above mentioned statement or cannot be derived from this statement, the same shall be calculated on the basis of standard formula to be laid down by the Engineer. Over this theoretical quantity of cement, shall be allowed a variation up to 3% plus/minus for works estimated cost of which as put to tender is not more than Rs.10. Lakh and upto 2% plus/minus for works estimated cost of which as put to tender is more than Rs. 10 Lakh. The difference in the quantity actually issued to the contractor and the theoretical quantity including authorized variation, if not returned by the contractor, shall be recovered at twice the issue rate, without prejudice to the provision of other conditions regarding return of materials governing the contract. In the event of its being discovered that the quantity of cement which is less than the quantity ascertained as herein before provided (allowing variation on minus side as stipulated above) the cost of quantity of cement not so used, shall be recovered from the contractor on the basis of stipulated issue rates and cartage to site.
- vi) Cement brought to site and cement remaining unused after completion of work shall not be removed from site without written permission of the Engineer-in-charge.

6.) STEEL

- i) The contractor shall procure steel reinforcement bars conforming to relevant BIS codes from reputed manufacturers as approved by the Engineer-in-charge. The contractor shall have to obtain and furnish test certificates to the Engineer-in-charge in respect of all supplies of steel brought by him to the site of work. Samples shall also be taken and got tested by the Engineer-in-charge as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to BIS codes, the same shall stand rejected and shall be removed from the site of work by the contractor at his own cost within a week's time from written orders from the Engineer-in-charge to do so.
- ii) The steel reinforcement shall be brought to the site in bulk supply of 10 tonnes or more as decided by the Engineer-in-charge.
- iii) The steel reinforcement shall be stored by the contractor at site of work in such a way as to prevent distortion and corrosion and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.
- iv) For checking nominal mass, tensile strength, bend test, re-bend test etc., specimen of sufficient length shall be cut from each size of the bar at random at frequency not less than that specified below:

<i>Size of bar</i>	<i>For consignment below 100 tones</i>	<i>For consignment over 100 tones</i>
<i>Under 10 mm dia</i>	<i>One sample for each 25 tones or part thereof.</i>	<i>One sample for each 40 tones or part thereof.</i>
<i>10 mm to 16 mm dia</i>	<i>One sample for each 35 tones or part thereof</i>	<i>One sample for each 45 tones or part thereof.</i>
<i>Over 16 mm dia</i>	<i>One sample for each 45 tones or part thereof</i>	<i>One sample for each 50 tones or part thereof.</i>

- v) The contractor shall supply free of charge the steel required for testing. The cost of tests shall be

borne by the department if the results are as per specifications. If the test results found the properties of steel not as per specifications then the contractor will bear the cost of testing.

- vi) The provision of Para 4(v) of Special Conditions shall apply Mutatis-Mutandis in the case of steel reinforcement or structural steel sections (each diameter/section or category shall be considered separately) except that the theoretical quantity of the steel shall be taken as the quantity required as per design or as authorized by the Engineer, including lappages, plus 3% wastage due to cutting into pieces. Over this theoretical quantity 2% plus/minus shall be allowed as variation due to wastage.
- vii) Steel brought to site and steel remaining unused shall not be removed from site without the written permission of the Engineer-in-charge.

7) ELECTRICAL WORK

The provision of para 5(v) of Special Conditions shall apply Mutatis–Mutandis in the case of cables (other than under – ground cables), wires, conduits / GI pipes, GI/MS sheets used in various items of work shall be calculated on the basis of measurements recorded in the measurement books for the purpose of payment and for assessing the consumption of materials used in the works. Over this quantity a variation of 5% plus shall be allowed for wastage of materials during execution in case of cables (other than under – ground cables), wires, conduits/GI pipes, and 10% plus in case of GI/MS sheets.

8.) Unless otherwise provided in the schedule of quantities the rates tendered by the contractor shall apply for all heights, lifts, leads and depths of the work and nothing extra shall be payable on this account.

9.) The surplus excavated earth which is beyond the requirement of the Employer's work may be allowed by the Employer to be disposed off by the contractor on his own or sell the surplus excavated earth to private parties at his discretion but nothing extra will be paid for the carriage or disposal of surplus earth if the same is not required on any other work of the Employer.

10.) CPWD mode of measurement shall be followed.

11.) Engineering staff/ technical staff required to be provided by Contractor for Superintendence of work
Staff to be employed by contractor on works: The contractor shall employ the following technical staff during execution of works :-

- (a) For building and road works
 - (i) One Graduate Engineer, when the tendered cost of work exceeds Rs 10 lakhs.
 - (ii) One qualified Diploma holder (overseer) with experience not less than 3 years when the tendered cost of work exceeds Rs. 5 lakhs but is less than Rs 10 lakhs.
 - (iii) One qualified Diploma holder when the tendered cost of work is more than Rs 2 lakhs but less than Rs 5 lakhs.
- (b) For sanitary and water supply works One qualified diploma holder with experience of not less than 5 year, out of which one year should be in sanitary and water supply works when the tendered cost of work is more than Rs 50,000.
- (c) For electrical works
 - (i) One qualified Graduate Engineer possessing Degree in Electrical Engineering from recognized university with an experience of not less than 3 years or a Diploma holder in Electrical Engineering with an experience of not less than 7 years when the tendered cost of the work is not less than Rs 1.5 lakhs.
 - (ii) One Graduate Electrical Engineer with two years experience or a Diploma holder in Electrical Engineering with experience of not less than 3 years, when the tendered cost of the work is more than Rs 75,000 but less than Rs 1.5 lakhs.
 - (iii) One Diploma holder in Electrical Engineering with experience of not less than 3 years when tendered cost of work is more than Rs 37,000, but less than Rs. 75,000.
 - (iv) One licensed Supervisor with experience of not less than 3 years when the tendered cost of work is more than Rs 7,500 and less than Rs 37,000.
- (d) In case the contractor fails to employ the technical staff as aforesaid, he shall be liable to pay reasonable amount not exceeding the amount shown below for each month of default.
 - (i) In case when a Graduate Engineer is to be employed.
....Rs. 15,000/-
 - (ii) In case when a qualified Diploma holder is required to be employed.

...Rs. 10,000/-

(iii) In case when a technical Supervisor is required to be employed.

...Rs 7000/-

(e) The department also reserves the right to appoint an Engineer for supervising the work at the site & cost of the contractor.

INDENTURE FOR SECURED ADVANCE

This indenture made the _____ day of _____ 200 between _____ (hereinafter called the contractor which expression shall where the context so admits or implies be deemed to include his heirs, executors, administrators and permitted assignees) of the one part and Council of Scientific & Industrial Research, New Delhi, a Society registered under the Societies Registration Act 1860 (hereinafter called the Employer which expression shall include its successors and assignees and authorized officers of the Society) of the other part.

WHEREAS by an agreement dated _____ (hereinafter called the said agreement) the contractor has agreed AND WHEREAS the contractor has applied to the Employer that he may be allowed advances on the security of materials absolutely belonging to him and brought by him to the site of the works the subject of the said agreement for use in the construction of such of the works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charges) AND WHEREAS the Employer has agreed to advance to the contractor the sum of Rs. _____ (Rupees _____) on the security of materials the quantities and other particulars of which are detailed in accounts of secured advances attached to the running account Bill for the said works signed agreement and in consideration of the sum of Rs. _____ on or before the execution of these presents paid to the contractor by Employer (the receipt whereof the contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as aforesaid the contractor doth hereby covenant and agree with the Employer and declare as follows:-

1. That the said sum of Rs. _____ advanced by the Employer to the contractor as aforesaid and all or any further sum or sums advanced as aforesaid shall be employed by the contractor in or towards expediting the execution of the said works and for no other purpose whatsoever.
2. That the materials detailed in the said account of secured advance which have been offered to and accepted by the Employer as security are absolutely the contractor's own property and free from encumbrances of any kind and the contractor will not make any application for or receive a further advance on the security for materials which are not absolutely his own property and free from encumbrances of any kind and the contractor indemnifies the Employer against all claims to any materials in respect of which and advance has been made to him as aforesaid.
3. That the materials detailed in the said account of secured advances and all other materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereinafter called the said materials) shall be used by the contractor solely in the execution of the said works in accordance with the directions of the Engineer and in the term of the said agreement.
4. That the contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protections against all risks of the said materials and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the contractor's custody and on his own responsibility and shall at all times be open to inspection by the Employer or any officer authorized by him. In the event of the said materials or any part thereof being stolen, destroyed or damaged or becoming deteriorated in a greater degree than is due to reasonable use and wear thereof the contractor will forthwith replace the same with other materials of like quality or repair and make good the same as required by the Engineer.
5. That the said materials shall not on any account be removed from the site of the said works except with the written permission of the Employer or any officer authorized by him on that behalf.
6. That the advances shall be repayable in full when or before the contractor receives payments from the Employer of the price payable to him for the said works under the terms and provisions of the said agreement. However, if any intermediate payments are made to the contractor on account of work done then on the occasion of each such payment the Employer will be at liberty to make a recovery from the contractor's bill for such payment by deducting there from the value of the said materials then actually used in the construction and in respect of which recovery has not been made previously, the value for this purpose being determined in respect of each description of materials at the rates at which the amounts of the advances made under these presents were calculated.
7. That if the contractor shall at any time make any default in the performance or observance in any respect of any of the terms or provisions of the said agreement or of these presents the total amount of the advance of advances that may still be owing to the Employer shall immediately on the happening of such default be

repayable by the contractor to the Employer together with interest thereon at twelve per cent per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs charges, damages, and expenses incurred by the Employer in or for the recovery thereof or the enforcement of this security or otherwise by reason of the default of the contractor and the contractor hereby covenants and agrees with the Employer to repay and pay the same respectively to him accordingly.

8. That the contractor hereby charges all the said materials with the repayments of the Employer of the said sum of Rs. _____ and any further sum or sums advanced as aforesaid and all costs charges, damages and expenses payable under these presents PROVIDED ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and whenever the covenant for payment and repayment herein before contained shall become enforceable and the money owing shall not be paid in accordance therewith the Employer may at any time thereafter adopt all or any of the following courses as he may deem best :-
- a. Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the contractor in accordance with the provisions in that behalf contained in the said agreement debiting the contractor with the actual cost of effecting such completion and amount due in respect of advances under these presents and crediting the contractor with the value of work done as if he had carried it out in accordance with the said agreement and at the rates thereby provided. If the balance is against the contractor he is to pay same to the Employer on demand.
 - b. Removed and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale retain all the sums aforesaid repayable or payable to the Employer under these presents and pay over the surplus (if any) to the contractor.
 - c. Deduct all or any part of the moneys owing out of the security deposit or any sum due to the contractor under the said agreement.
9. That except in the event of such default on the part of the contractor as aforesaid interest on the said advance shall not be payable.

In witness whereof the said _____ and _____ by the order and under the direction of the Employer have hereunto set their respective hands the day and year first above written.

Signed sealed and delivered by the said contractor : _____
In the presence of
Signature: _____
Address : _____

Signed by : _____

By the order and direction of the Employer : _____

In the presence of
Signature : _____
Name : _____
Address : _____

PERFORMANCE GUARANTEE

To

Council of Scientific & Industrial Research

In consideration of Council of Scientific & Industrial Research (hereinafter) called "The Council" having awarded to M/s. _____ a

Company registered under the Companies Act 1956 (hereinafter) called the Contractor, a contract for (hereinafter) called the said contract under the terms and conditions of an Agreement No.

For the work

dated _____ made between the Council and the Contractor hereinafter called the said agreement and Council agreed to accept a Deed of Guarantee as hereinafter provided for Rs. _____ (Rupees _____ only) from a Scheduled Bank towards due performance of the contract by the Contractor as per the terms and conditions of the contract on the condition that the Bank on demand from the Council and without demur pay to the Council the aforesaid amount.

2. We, _____ Bank Ltd., (hereinafter) referred to as the 'bank' do hereby undertake to pay to the Council an amount not exceeding Rs. _____ against loss or damage caused to or suffered or would be caused to or suffered by the Council by reasons of any breach or breaches of any of the terms or conditions of the said agreement by the said contractor.
3. We, _____ Bank Ltd., do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on a demand from the Council by stating the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Council for reasons of any breach by the said contractor(s) of any of the terms & conditions contained in the said Agreement or by reason of the contractor(s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.
4. This guarantee shall come into force immediately and continue in force and remain valid till six months after the completion of all works under the said contract which according to the terms of the said contract should be six months from the probable date of completion viz., the _____ day of _____. If, however, the period of the completion of the works under the said contract is for any reason extended and upon such extension if the Contractor fails, before the terms of this guarantee expires, to furnish a fresh or renewed guarantee for the extended period, the Bank shall pay to Council the said sum of Rs. _____ or such lesser sum as Council may demand.
5. This guarantee shall not be affected by any change in the constitution of the Bank or of the Contractor.
6. Notwithstanding anything hereinbefore contained, the liability of the Bank under this guarantee is restricted to Rs. _____ (Rupees _____ only) and claim or demand under this guarantee is presented to the Bank within six months from that date all the rights of Council under this guarantee shall be forfeited and the Bank shall be released and discharged from all obligations hereunder.

SCHEDULE OF QUANTITY FOR FINANCIAL BID

Name of Work:- **Supply, Installation, Testing commissioning of One No. 200TR Screw type Water Chilling Machine and other associated works at IGIB, Mall Road, Delhi-110007.**

<u>Sub Head- I</u>					
S.No.	Item Description				
		Qty.	Unit	Unit Rate (Rs.)	Amount (Rs.)
1	Supply, Installation, Testing and Commissioning of AHRI certified Screw Type water Chilling Machine Operating on Refrigerant R-134a having an actual capacity of 200 TR, complete as per specification with semi- hermetic screw compressor only , initial/first charge of refrigerant and compressor oil, motor, water cooled condenser, insulated chiller, water flow switches, thermostats (for interlocking), water drain and air purge gate valve etc. where ever required, integral refrigerant piping, fitting, valves wiring and accessories as required and called for automatic and safety controls, mounted in central microprocessor based control console, suction line and chiller insulation with minimum 19mm thick polyvinyl nitrile rubber insulation complete as required, all mounted on steel frame complete with anti -vibration pads/spring on RCC/CC foundation for chilling Machine. Compressor motor shall be Refrigerant Cooled type suitable to work on 415 Volts +/- 10%. 50 Hz, 3 Phase AC Supply, and to be supplied complete with electrical panel and close transition type automatic solid state starter as required. Preparation of suitable RCC/CC foundation for the machine as required. The evaporator and condenser shall be even passing to match the existing plant room piping layout. Technical parameters required are as under.				
	I. Actual cooling capacity : 200TR				
	II. Chiller water in Temperature : 12.2 deg C				
	III. Chiller water out temperature : 6.7 deg C				
	IV. Chiller FF (MKS) : 0.0001				
	V. Water Pressure Drop in evaporator : ≤ 13.3 ft				
	VI. Condenser FF(MKS) : 0.0002				
	VII. Water Pressure Drop in Condenser : ≤ 19.6 ft Metre				

	VIII. Maximum input IKW per TR : 0.65				
	IX. Minimum COP : 5.4				
	Condenser water temperature to be considered				
	a. Condenser water in Temperature : 32.2 deg C				
	b. Condenser water out Temperature : 36.4 deg C	1	Each		
2	Dismantling of the following existing equipments along with the CC foundation, shifting of equipments from AC Plant Room to the Place as Directed by Engineers in Charge including debris removal as required:				
	I. 200 TR centrifugal chilling machine	1	each		
	II. CDWP	3	each		
	III. CHWP	3	each		
	IV. Non Return valves	3	each		
	V. Butterfly Valves of condenser and chiller water lines	16	each		
	VI. M.S. Pipe of condenser water- one lot	25	metre		
	VII. M.S. pipe of chilled water- one lot	25	metre		
3	Supply, installation , testing and commissioning of condenser water pump sets (2 working+ 1 standby) each capable of delivering specified flow rate, each comprising the following items as per specifications & complete as required. 1) 1 No. end suction , horizontal split casing, centrifugal pump for supplying the water at flow rate 764 GPM at a head of 24 meters 2) 1 No. suitable HP TEFC induction motor with class 'F' insulation operating on 415 + 10% Volts, 3 Phase , 50 cycles AC supply. The above item also includes: (i)Flexible spacer coupling (ii)Suitable Heavy duty M.S. Base (iii)Vibration pads (iv)Mechanical seal (v) Pressure gauges suction and Discharge (vi) New RCC/Concrete floating foundation etc as required.	3	Each		

4	<p>Supply, installation , testing and commissioning of chilled water pump sets (2 working + 1 Standby) each capable of delivering specified flow rate as per specifications each comprising the following as required.</p> <p>1) 1 No. end suction , horizontal split casing, centrifugal pumps for supplying the water at flow rate 480 GPM at a head of 30 meters</p> <p>2) 1 No. suitable HP TEFC induction motor with class 'F' insulation operating on 415 + 10% Volts, 3 Phase , 50 cycles AC supply</p> <p>The above item also includes:</p> <p>(i)flexible spacer coupling (ii)Suitable Heavy duty M.S. Base (iii)Vibration pads (iv)Mechanical seal (v) pressure gauges suction and Discharge (vi) new RCC/Concrete floating foundation etc as required.</p>	3	Each		
5	<p>Supplying, Laying, fixing, Testing and Commissioning of following nominal sizes of chilled water pipelines duly insulated with 20kg cubic metre density and 50mm thick expanded polystyrene (TF Quality) in pipe section form covered with polythene sheet as vapour barrier , GI wire mesh netting and Finally applying sand cement plaster of proper thickness, providing of suitable supports to pipe lines of chiller/pumps etc as required as per following specifications and to be painted with 2 coat of enamel paint as required</p>				
(a)	150mm dia Pipe MS C Class	30	RMT		
(b)	40mm dia GI Pipe B Class	6	RMT		
6	<p>Supplying, Laying, fixing, Testing and commissioning of following valves at the chiller and chilled water pumps inlet/outlet, (confirming to PN 10) duly insulated with 20kg/Cu mtrs density and 50mm thick expanded polystyrene (TF Quality) to the same specification as the connected piping and adequately supported as per specification and as required</p>				
	a) 150mm dia butterfly valve	8	Nos		
	b) 150mm dia balancing valve	1	Nos		
	c) 150mm dia NRV Valve	3	Nos		

	d) 150mm dia Y-Strainer	3	Nos		
	e) 40mm dia Gate valve	1	Nos		
7	Supplying, Fixing testing and commissioning of following condenser water pipeline, providing of suitable supports to pipe lines of condenser/pumps as required. as per following specifications and to be painted with 2 coat red oxide and 2 coat of enamel paint as required				
	a) 200mm dia MS Pipe 6.35mm thick	30	RMT		
	b) 40mm dia GI Pipe B Class	6	RMT		
8	supplying, Fixing testing and commissioning of valve for condenser water pipe lines (confirming to PN 10) as per specification and as required				
	a) 200mm dia Butterfly valve	8	Nos.		
	b)200mm dia Balancing valve	1	Nos.		
	c) 200mm dia NRV valve	3	Nos.		
	d) 200mm dia Y-strainer	3	Nos.		
	e) 40mm dia Gate valve	1	Nos.		
9	SITC of 1.1 XLPE, insulated armoured cable with aluminium conductor of following sizes for electrical supply from main panel in plant room to chilling machine including making end termination (4 Nos) with brass compression gland and aluminium conductor cable complete as required.				
	3.5 X150 sq.mm (4 Nos. terminations)	90	Mtr.		
	3 X 16 sq.mm(4 termination per pump)	120	Mtr.		
10	Supply and installation of Pressure gauges with SS syphon and valve including welding of socket on pipe	16	set		
11	Supply and installation of Industrial Glass Thermometer including welding of socket on pipe	4	set		
12	Supply and installation of Flow switches, Size - 1" BSPTM, S.S leaves, including welding of socket on pipe.	2	set		
13	Complete control wiring with copper conductor PVC Insulated Multicore 1.5 sq.mm stranded flexible cable including supplying of cable, tray, clamps, etc of chilling Machine as required	1	Set		

14	Automatic air vent valve of Size 25mm NB at Chiller inlet/out let pipes with manual S.S. ball valves and fittings including welding of socket on pipe.	2	Set		
15	Condensor descaling valve of Size 25mm NB at condenser inlet/out let pipes with manual S.S. ball valves and fittings including welding of socket on pipe.	2	set		
Total					

Sub Head-II: Salvage Value of Chilling Unit					
	Buy- Back of Old Equipment				
	Salvage value of the following old and unserviceable items for taking away which are discarded after dismantling of item no. 2 of schedule of quantity Sub Head -I on the " As is where is basis". 1- 200TR Centrifugal chilling machine-One No, make : Trane Utility, 2- Chiller Water Pump- 3 Nos . 3- Chiller Water Pump- 3 Nos . 4- Butterfly valves-16 Nos 5- Non return Valves-3 Nos 6- M.S.pipes of condenser water 7- M.S. pipe of chilled water	1	Lot		
Total					

Sub Head -III:- Comprehensive maintenance of Chilling M/C

S.No.	Item Description	Qty.	Unit	Unit Rate (Rs.)	Amount (Rs.)
1	comprehensive maintenance (routine, preventive, break down) charges i.e. all inclusive of consumable materials, spare parts, refrigerant, compressor oil Tool and plants , descaling of condenser/ chiller as required ,man power skilled/unskilled as required for above mentioned chilling machine complete as per service/maintenance manual of the manufacturer for a period of 3 years after completion of two years defect liability period. (The running operation charges of chilling unit need not to be considered)				
	I. 1st Year	1	Each		
	II. 2nd Year	1	Each		
	III. 3rd Year	1	Each		
	Total				