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PROFORMA OF SCHEDULES (Electrical Works)

(Separate Performa for Civil, Elect. & Hort. Works in case of Composite Tenders)
(Operative Schedules to be supplied separately to each intending tenderer)

SCHEDULE 'A'

Schedule of quantities (sheet Attached)

SCHEDULE 'D'

Extra schedule for specific requirements/ document for
the work, if any.

-----NIL-----

SCHEDULE 'E'

Reference to General Conditions of contract. **GCC 2020 for Construction Works** as amended/modified **upto date**.

Name of Work : *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

Estimated cost of the work :

Electrical Items of Work : **Rs. 2,43,94,435/-**

i) Earnest money: : Indicated in schedule F of Civil component

ii) Performance Guarantee: : Same as in civil component

Security Deposit : Same as in civil component

SCHEDULE 'F'

General rules and directions:

Officer inviting tender

Executive Engineer, CPWD, Prayagraj.

Maximum percentage of quantity of items of work to be executed beyond which rates are to be determined in accordance with Clause 12.2.& 12.3

See below

Definitions:

2(v) Engineer-in-Charge

**Executive Engineer (E), CPWD,
Prayagraj**

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2(viii)	Accepting Authority	Same as civil component.
2(x)	Percentage on cost of materials and labour to cover all overheads and profits	15%
2(xi)	Standard Schedule of Rates:	DSR 2022 for electrical works i/c enhanced GST 18% & MR
2(xii)	Department	Central Public Works Department
9(ii)	Standard CPWD contract Form GCC 2020, CPWD Form 7/8 as modified & corrected upto	GCC 2020 for Construction Works, CPWD form 7 as modified & corrected up to last date of submission of tender (Whether correction vide latest circulars are incorporated or not in this document)

Clause 1

- (i) Time allowed for submission of Performance Guarantee, programme chart (Time and progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW welfare board or proof of applying thereof from the date of issue of letter of acceptance **As per civil component**
- (ii) Maximum allowable extension **with late fee @ 0.1% per day of Performance Guarantee amount beyond the period as provided in (i) above** **As per civil component**

Clause 2

Authority for fixing Compensation under Clause 2

**Superintending Engineer,
CPWD, Prayagraj or successor thereof.****Clause 2 A**

Whether Clause 2A shall be applicable

No**Clause 5**

Applicable clause 5/ Clause 5A

As prescribed in civil component

Number of days from the date of issue of letter of acceptance for reckoning date of start Mile stone(s) as per table given below: -

As prescribed in civil component

S. No	Description of mile stone	Time Allowed in days (from date of start)	Amount to be withheld in case of non-achievement of milestone
1	Same as prescribed in civil component.		
2			
3			
4.			

Time allowed for execution of work

06 Months

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Authority to decide

Extension of time

Engineer-in-Charge of civil component of work or successor thereof.Rescheduling of mile stone
Shifting of date of start in case of delay in handling over of site**Superintending Engineer, CPWD, Prayagraj or successor thereof****Superintending Engineer, CPWD, Prayagraj or successor thereof****PROFORMA OF SCHEDULE Clause 5 Schedule of handing over of site**

Part	Portion of site	Description	Time Period for handling over reckoned from date of issue of letter of intent
Part A	Portion without any hindrance	Entirely Available	As prescribed in civil component
Part B	Portions with encumbrances	-	-
Part C	Portions dependent on work of other agencies	-	-

Clause 7

Gross work to be done together with net payment/Adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment

Rs. 40.00 Lakhs**Clause 7A**

Whether Clause 7A shall be applicable

Yes

Clause 10A

List of testing equipment to be provided by the contractor at site lab

As per list

Clause 10B(ii)

Whether clause 10-B(ii) shall be applicable

No

Clause 10C

Component of labour expressed as percentage of value of work

25%

Clause 10CC**As prescribed in civil component**

Schedule of component of other Materials, Labour etc. for price escalation. Component of civil (except materials covered under clause 10CA)/ Electrical construction value of work	
Component of Labour -Expressed as percent of total value of work.	

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Note: Xm.....% should be equal to (100) – (materials covered under clause 10CA i.e. Cement, Steel, POL and material specified in clause 10CA + Component of Labour)

Clause 11

Specification to be followed for execution of work:

As per CPWD Specification for Electrical works Part-I Internal-2013 , Part-IV Sub-Station-2013, Part-II External Electrical works-1994, Part VI Fire Detection and Alarm System –2018, Part-V wet riser & sprinkler system 2020, Part- VII -DG set 2013, General specifications HVAC-2017 all amended up to date.

Clause 12

12.2 & 12.3

Deviation limit beyond which clause 12.2 & 12.3 shall apply for building work

As prescribed in civil component

12.5

(i) Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation work (except items mentioned in earth work subhead in DSR and related items)

As prescribed in civil component

(ii) Deviation Limit for items mentioned in earth work subhead of DSR and related items

As prescribed in civil component

Clause 16

Competent Authority for Deciding reduced rates:

Superintending Engineer, CPWD, Prayagraj or successor thereof

Clause 18

List of mandatory machinery, tools & plants to be deployed by the contractor at site

As per attached

Clause 19C Authority to decide penalty for each default.

Engineer-in -charge or successor thereof

Clause 19D Authority to decide penalty for each default.

Engineer-in -charge or successor thereof

Clause 19G Authority to decide penalty for each default.

Engineer-in -charge or successor thereof

Clause 19K Authority to decide penalty for each default.

Engineer-in -charge or successor thereof

Clause 25

(i)	Conciliator	As prescribed in civil component
(ii)	Arbitrator Appointing Authority	As prescribed in civil component
(iii)	Place (Seat) of Arbitration	As prescribed in civil component

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Clause 32**As prescribed in civil component**

Sl. No	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical/ Technical Representative)	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)	
						Figures	Words
1.	-	-	-	-	-	-	-

Assistant Engineers retired from Government services that are holding Diploma will be treated at par with Graduate Engineers.

Diploma holder with minimum 10 years relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers.

Clause 38

- i) a) Schedule/ statement for determining theoretical quantity of cement & bitumen on the basis of **Delhi Schedule of Rates 2022** printed by CPWD.
- ii) **Variations permissible on theoretical quantities**
- a) Cement for works with estimated cost put to tender not more than Rs. 25 lakhs.
For works with estimated cost put to Tender is more than Rs. 25 lakhs
- b) Bitumen all works
- c) Steel reinforcement and structural steel Sections for diameter, section and category.
- d) All other materials

NA

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ANNEXURE**Clause- 10 –A & 18**

List of mandatory machinery, tools and plants & testing Equipment to be deployed by the contractor at site

1.	<i>Steel/Aluminium Ladder 1.5 m to 8 m.</i>	<i>2 Nos.</i>
2.	<i>Chase cutting machines.</i>	<i>2 Nos.</i>
3.	<i>Electrical wire drawing equipment.</i>	<i>2 Set.</i>
4.	<i>Torque wrench for nut/bolt/screws.</i>	<i>2 Nos.</i>
5.	<i>Conduit die set.</i>	<i>2 Set.</i>
6.	<i>Pipe vice.</i>	<i>1 No.</i>
7.	<i>Bench vice.</i>	<i>1 No.</i>
8.	<i>L.T.Megger 500/1000 volts.</i>	<i>1 No.</i>
9.	<i>Tong Tester.</i>	<i>1 No.</i>
10.	<i>Multimeter.</i>	<i>1 No.</i>
11.	<i>Hydraulically operated & hand operated crimping machine.</i>	<i>1 No.</i>
12.	<i>Earth tester.</i>	<i>1 No.</i>
13.	<i>Portable Ordinary drilling machine.</i>	<i>2 Nos.</i>
14.	<i>Portable Hammer drilling machine.</i>	<i>2 Nos.</i>
15.	<i>Overhead conduit puller.</i>	<i>1 No.</i>

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Eligibility condition for Associate agency for execution of Pdg. E.I., Fans, LT panel & service connection.

1. The tenderer should either himself meet the eligibility conditions for execution of minor component of work i.e. E&M work (i/c specialized E&M) Works or otherwise he will have to associate with agencies, fulfilling the eligibility requirements prescribed in the tender document.
2. In case the main contractor is himself eligible (as per eligibility criteria) for executing all or some components of E&M work and intends doing job himself, he may not be required to associate with another agency for such components of E&M work of work. In such cases the main contractor also has to submit the documents as per eligibility criteria mentioned for associated agency of individual E&M component(s) within one month of award of work or 15 days before start of electrical related work whichever is earlier.
3. In case, the main contractor himself is not eligible (as per eligibility criteria) for executing any of the components of E&M work, he can directly procure the equipment of approved make from OEM and get it installed from authorized agency/service provider of the OEM or specialized agency as per criteria mentioned for associate eligible agency.
4. In case the main contractor himself is not eligible (as per eligibility criteria) and also not willing to directly procure the equipment as per para above, he will have to associate with him eligible agencies for doing such components of E&M work of work. In such cases the main contractor has to submit proposal for approval of associate agency along with documents in support of fulfilling eligibility criteria mentioned for associated agency of individual E&M components within one month of award of work or 15 days before start of electrical related work whichever is earlier.
5. In the event of the associated E&M agency not performing satisfactorily or failure of associate agency to complete the E&M work, the main contractor on written directions of the department, shall remove the Associate agency deployed on the work and shall submit proposal for approval of new associate agency without any loss of time or variation in cost to the department. Such new associate agency shall also give an undertaking along with the main tenderer that both of them shall guarantee for the equipment already supplied for which payment has been released by the department in part. If any equipment supplied for the work, during the currency of the earlier associate agency and paid partly by the department, becomes redundant /not in a position to be installed and commissioned and put to beneficial use due to change in agency for execution of E&M work, the main contractor shall be responsible for replacement of the equipment(s) at no cost to the department. No change of associate agency will be allowed without prior approval of the Engineer-in-charge of the work.
6. The main contractor shall be responsible and liable for proper and complete execution of the Electrical work and ensure coordination and completion of both civil and electrical work.
7. The associate contractor shall attend the inspection of the work by the Engineer-in-charge of E&M works as and when required.

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PROPOSAL FOR ASSOCIATING AGENCY FOR E&M WORKS

I/we hereby propose the following agency for execution of E & M work component mentioned herein. Consent Letter from the proposed associated agency is enclosed.

- (i) **Name of work:** *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*
- (ii) Component of E&M Work :
- (iii) Name of Associated Agency :
- (iv) Details of Enlistment :
- (v) Category and Class of Enlistment :
- (vi) Monetary limit of work in Enlistment :
- (vii) Validity of Enlistment :
- (viii) Copy of Enlistment Order attached : (Yes /No)
- (ix) Copy of electrical contractor license attached: (Yes /No)
- (x) Copy of completion certificates of similar work experience attached: (Yes /No)
- (xi) Copy GST Registration attached : (Yes/No)
- (xii) Copy PAN Card Attached : (Yes/No)
- (xiii) Consent Letter of agency attached : (Yes/No)

Encls: Self Attested photocopies of as stated above

Seal & Signature of the Main Contractor

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Eligibility criteria for main contractor /associated agency for E.I. works:

(C-1)

(Pdg. E.I., Fans, LT panel & service connection.)

1. *The tenderer(s) must associate eligible agencies to execute components of E.I. Works who fulfill the prescribed eligibility criteria given below. However, the contractor shall also be eligible to carry out himself any or all of the components of E.I. Works without associating any specialized agency provided:*

a) *He fulfills the prescribed eligibility criteria respectively for these work(s).*

Or

b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/service provider of the manufacturer or specialized agency as per the eligibility criteria mentioned in subsequent para.*

2. Internal Electrical Installations, External Lighting/Cabling/Earthing & Service Connection:

The associate agency shall be registered/enlisted in CPWD in composite category in appropriate class and should have a valid electrical license.

3. SUBMISSION OF PROPOSAL FOR APPROVAL OF ASSOCIATED AGENCY:

a. *In support of the eligibility conditions of the proposed associated electrical agency, copy of their registration documents, Electrical Contractor's License, PAN Card, GST Registration duly attested by the applicants (Main Contractor) shall be submitted to the Engineer-in-charge of minor component for deciding the eligibility within seven days of receipt of the same. Such associating electrical agency will certify that they are not debarred as on the day of application for sale of tender.*

b. *Proposal for Associating Electrical Agency for the Work shall be submitted in prescribed Proforma along with Willingness Certificate & MOU enclosed herein.*

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Eligibility condition for Associate agency for execution of SITC of Sub-station Equipment (C2).

*The main agency has to associate the specialized agency of **SITC of Sub-station Equipment***

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender with capacity of individual **transformer** being 80% of individual capacity (rounded off to next available higher capacity) of the **transformer** proposed in NIT.*

OR

(ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender with capacity of individual **transformer** being 80% of individual capacity (rounded off to next available higher capacity) of the **transformer** proposed in NIT.*

OR

(iii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender with capacity of individual **transformer** being 80% of individual capacity (rounded off to next available higher capacity) of the **transformer** proposed in NIT.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of “SITC of Sub-station Equipment”.

*The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (**SITC of Sub-station Equipment**) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (**SITC of Sub-station Equipment**). In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (**SITC of Sub-station Equipment**). The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.*

However, the composite category contractor shall also be carry out himself work without associating any specialized agency provided: -

a) *He fulfils the prescribed eligibility criteria respectively for these work(s).*

OR

b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.*

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Eligibility condition for Associate agency for execution of providing DG Set (C-3).

The associate agency shall be registered/enlisted in CPWD in composite category in appropriate class and should have a valid electrical license. The Registration/enlistment shall be valid on the date of MOU entered between main agency and associate agency.

The main contractor/agency has to submit detail of such agency to be associated to the Engineer-in-charge (SITC of DG Set) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (SITC of DG Set). In case the main contractor intends to change associated agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (SITC of DG Set). The new agency/agencies shall also have to satisfy the laid down eligibility criteria mentioned above. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

The associate specialized agency should have successfully completed works, as mentioned under during last 7 years ending previous day of last date of submission of tender.

(ii) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender with capacity of individual **DG set** being 80% of individual capacity (rounded off to next available higher capacity) of the **DG set** proposed in NIT.*

OR

(ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender with capacity of individual **DG set** being 80% of individual capacity (rounded off to next available higher capacity) of the **DG set** proposed in NIT.*

OR

(iii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender with capacity of individual **DG set** being 80% of individual capacity (rounded off to next available higher capacity) of the **DG set** proposed in NIT.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of “SITC of DG Set”.

However, the composite category contractor shall also be carrying out this work himself without associating any agency provided: -

a) *He fulfils the prescribed eligibility criteria respectively for these work(s).*

OR

b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.*

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**Eligibility condition for Associate agency for execution of SITC of Audio, Video & projection System.
(C-4).**

The main agency has to associate the specialized agency of Audio Video & projection System

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.*

OR

(ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.*

OR

(iii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of “SITC of Audio Video & projection System”

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (SITC of Audio, Video & projection System) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (SITC of Audio, Video & projection System). In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (SITC of Audio, Video & projection System). The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

However, the composite category contractor shall also be carry out himself work without associating any specialized agency provided: -

a) *He fulfils the prescribed eligibility criteria respectively for these work(s).*

OR

b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.*

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Eligibility condition for Associate agency for execution of SITC of Stage Lighting Equipments. (C-5)

The associate agency shall be required to fulfill the following Pre-Qualification criteria as detailed below :-

The associate agency should have successfully completed works, as mentioned under during last 7 years ending previous day of last date of submission of tender.

(i) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.*

OR

(ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.*

OR

(ii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar Nature of Work shall mean **“SITC of Stage Lighting Equipments.”**

The main contractor/agency has to submit detail of such agency to be associated to the Engineer-in-charge (SITC of Stage Lighting Equipments) within one month from date of start of work. The associate agency shall be approved by Engineer-in-charge (SITC of Stage Lighting Equipments). In case the main contractor intends to change associated agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (SITC of Stage Lighting Equipments). The new agency/agencies shall also have to satisfy the laid down eligibility criteria mentioned above. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

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Eligibility condition for Associate agency for execution of SITC of VRV/VRF Type AC System (C-6).

The main agency has to associate the specialized agency of SITC of VRV/VRF Type AC System

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.*

OR

(ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.*

OR

(iii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of “SITC of VRV/VRF Type AC System”.

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (SITC of VRV/VRF Type AC System) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (SITC of VRV/VRF Type AC System). In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (SITC of VRV/VRF Type AC System). The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

However, the composite category contractor shall also be carrying out himself work without associating any specialized agency provided: -

a) *He fulfils the prescribed eligibility criteria respectively for these work(s).*

OR

b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.*

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Eligibility condition for Associate agency for execution of SITC of Addressable Fire Alarm System (C-7).

The main agency has to associate the specialized agency of Fire Alarm System

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

(i) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.*

OR

(ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.*

OR

(iii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of “SITC of Fire Alarm System”.

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (SITC of Fire Alarm System) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (SITC of Fire Alarm System). In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (SITC of Fire Alarm System). The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

However, the composite category contractor shall also be carry out himself work without associating any specialized agency provided: -

a) *He fulfils the prescribed eligibility criteria respectively for these work(s).*

OR

b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.*

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Eligibility condition for Associate agency for execution of SITC of Down comer System (C-8).

The main agency has to associate the OEM/specialized agency of fire fighting down comer System.

The associate specialized agency should have successfully completed similar works, as mentioned under during last 7 years ending last day of month previous to one in which tender are invited:

- (i) *Three similar works each costing not less than 40% of estimated cost of relevant subhead put to tender.*
- OR*
- (ii) *Two similar works each costing not less than 60% of estimated cost of relevant subhead put to tender.*
- OR*
- (iii) *One similar works each costing not less than 80% of estimated cost of relevant subhead put to tender.*

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum; calculated from the date of completion to previous day of last date of submission of tender.

Similar work shall mean works of “SITC of down comer System”.

The main contractor/agency has to submit detail of such associate agency to Engineer-in-charge (SITC of fire fighting down comer System) with in fifteen days from date of start of work. The associate agency shall be approved by Engineer-in-charge (SITC of fire fighting down comer System). In case the main contractor intends to change any of the above agency/agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge (SITC of fire fighting down comer System). The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge is not satisfied with the performance of any agency, he can direct the main contractor to change the agency executing such items of work and this shall be binding on the contractor.

However, the composite category contractor shall also be carry out himself work without associating any specialized agency provided: -

- a) *He fulfils the prescribed eligibility criteria respectively for these work(s).*
- OR*
- b) *He directly procures the equipment of approved make from manufacturer and get it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned in the NIT.*

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MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN***C1 - (Pdg. E.I., Fans, LT panel & service connection).***

- 1] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]*

And

- 2] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]*

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- *The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.*
- 2- *All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.*
- 3- *The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.*

SIGNATURE OF MAIN CONTRACTOR

**SIGNATURE OF ASSOCIATED
CONTRACTOR**

*Date
Place*

*Date
Place*

**COUNTERSIGNED
EXECUTIVE ENGINEER (E)**

C=
I=
O } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN***C2- (SITC of Sub Station Equipment)***

- 1] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]*

And

- 2] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]*

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- *The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.*
- 2- *All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.*
- 3- *The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.*

SIGNATURE OF MAIN CONTRACTOR

**SIGNATURE OF ASSOCIATED
CONTRACTOR**

Date

Date

Place

Place

**COUNTERSIGNED
EXECUTIVE ENGINEER (E)**

C=
I=
O= } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN***C-3- (SITC of DG set)***

- 1] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]*

And

- 2] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]*

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- *The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.*
- 2- *All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.*
- 3- *The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.*

SIGNATURE OF MAIN CONTRACTOR

*SIGNATURE OF ASSOCIATED
CONTRACTOR*

Date

Place

Date

Place

*COUNTERSIGNED
EXECUTIVE ENGINEER (E)*

C=
I=
O } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN**C-4- (SITC of Audio, Video & projection System)**

- 1] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]

And

- 2] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]

Name of Work:- Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.
- 2- All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.
- 3- The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.

SIGNATURE OF MAIN CONTRACTOR

SIGNATURE OF ASSOCIATED
CONTRACTOR

Date
Place

Date
Place

COUNTERSIGNED
EXECUTIVE ENGINEER (E)

C=
I=
O } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN***C-5- (SITC of Stage Lighting Equipments.)***

- 1] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]*

And

- 2] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]*

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- *The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.*
- 2- *All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.*
- 3- *The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.*

SIGNATURE OF MAIN CONTRACTOR

*SIGNATURE OF ASSOCIATED
CONTRACTOR*

Date

Place

Date

Place

*COUNTERSIGNED
EXECUTIVE ENGINEER (E)*

C=
I=
O } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN**C6 - (SITC of VRV/VRF Type AC System)**

- 1] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]

And

- 2] M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth, called Associated Contractor]

Name of Work:- Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.
- 2- All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.
- 3- The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.

SIGNATURE OF MAIN CONTRACTOR

SIGNATURE OF ASSOCIATED
CONTRACTOR

Date
Place

Date
Place

COUNTERSIGNED
EXECUTIVE ENGINEER (E)

C=
I=
O } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN***C7 - (SITC of Addressable Fire Alarm system)***

- 1] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:
[Henceforth called the main contractor]*

And

- 2] *M/S [Name of the firm with full address]
Enlistment Status
Valid Upto:*

[Henceforth, called Associated Contractor]

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- *The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.*
- 2- *All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.*
- 3- *The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.*

SIGNATURE OF MAIN CONTRACTOR

**SIGNATURE OF ASSOCIATED
CONTRACTOR**

*Date
Place*

*Date
Place*

**COUNTERSIGNED
EXECUTIVE ENGINEER (E)**

C=
I=
O= } NIL

AE(P)(C)

EE(C)

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN**C8 - (SITC of down comer system)**

1] M/S [Name of the firm with full address]
 Enlistment Status
 Valid Upto:
 [Henceforth called the main contractor]

And

2] M/S [Name of the firm with full address]
 Enlistment Status
 Valid Upto:
 [Henceforth, called Associated Contractor]

Name of Work:- Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.

[Electrical Component only] as per schedule, specifications, terms and conditions of the tender.

We state that M.O.U. between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent of this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits.

We have agreed as under :

- 1- The associated contractor shall be liable for disciplinary action if he failed to discharge the action(s) and other legal action as per agreement besides forfeiture of the security deposit.
- 2- All the material, machinery and equipments, tools and tackles required for execution of the electrical works as per agreement shall be the responsibility of the associated contractor.
- 3- The site staff required for the electrical work shall be arranged by the associated contractor as per terms and conditions of the agreement.

SIGNATURE OF MAIN CONTRACTOR

SIGNATURE OF ASSOCIATED
CONTRACTOR

Date
Place

Date
Place

COUNTERSIGNED
EXECUTIVE ENGINEER (E)

C=
I=
O= } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-1 (Pdg. E.I., Fans, LT panel & service connection).

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

C=
I=
O } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-2 (SITC of Sub Station Equipment)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

C=
I=
O } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-3 (SITC of DG Set)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

C=
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O } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-4 (SITC of Audio, Video & projection System)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

C=
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AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-5- (SITC of Stage Lighting Equipments.)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

C=
I=
O } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-6 (SITC of VRV/VRF Type AC System)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

C=
I=
O } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-7 (SITC of Addressable Fire Alarm system)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date:

Signature of Contractor

C=
I=
O } NIL

AE(P)(C)

EE(C)

WILLINGNESS CERTIFICATE

Name of Work:- *Renovation of Prekshagrih, Shilphaat, Kalavithika and Kala Bhawan of North Central Zone Cultural Centre at Allahabad. (SH: Renovation of Auditorium Hall comprising of Wall Panelling, False Ceiling, Stage Flooring etc. including Electrical Works comprising of Internal EI, Sub-station, DG set, Audio-Video System, Stage Lighting, VRF Air Conditioning Fire Fighting etc.*

C-8 (SITC of Down comer system)

I hereby give my willingness to work as associated contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Date :

Signature of Contractor

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Additional Conditions for E.I. & Fans work. (C-1)

- 1- The work shall be carried out strictly in accordance with CPWD General Specifications for Internal Electrical Works 2013 & External Work-1994 and in accordance with Indian Electricity Rules, 1956, Indian Electricity Act, 2003 as amended upto date and as per instructions of the Engineer-in-Charge including as below and nothing will be paid extra.
- (a) All material shall be got approved from Engineer-in-Charge before use. One sample flat/Bay shall be made for approval of final location of switch boards/ fittings etc. and then only work shall be executed in other flats/bays.
All damages done to the building during execution of Electrical work shall be the responsibility of the contractor and the same will be made good immediately at his own cost to the satisfaction of the Engineer-in-Charge. Any expenditure incurred by the department in this condition shall be recovered from the contractor and decision of the Engineer-in-Charge about recovery shall be final.
- (b) All hardware items such as screws, thimbles, G.I. wires etc. which are essentially required for completing an item as per specifications will be deemed to be included in the item even when the same have not been specifically mentioned. All hardware materials such as nuts/bolts/screws/ washers etc. to be used in the work shall be zinc/cadmium plated iron.
- (c) CONDUIT LAYOUT shall be prepared by contractor and got approved before execution of work. In case contractor does not do so before start of work, recovery @ 2(two)% of tendered amount of I.E.I. works shall be made from the bill. Minimum No.of Junctions to be kept, & if required junctions to be kept underneath the fitting locations in corridor/rooms so that junctions are not visible after fittings are fixed/in position. Drop of conduit shall be well planned w.r.t. location of fitting/D.B. and criss crossing to be avoided. All chases in walls shall be cut using electrical chisels/cutters. For this purpose electricity shall be arranged by contractor. In case contractor fails to do chase cutting by electrical chisels/cutters and resorts to manual methods, a recovery of Rs.50/- per point shall be made from contractor's bill.
- (d) Any conduit which is not to be wired by the contractor shall be provided with GI fish wire for wiring by some other agency subsequently . Nothing extra shall be paid for the same.
Termination of multi-stranded conductors shall be done using crimping type thimbles at both the ends. Nothing extra shall be paid for the same.
- (e) All metal boxes to be applied primer and painted, then only should be installed else recovery @Rs.20/- per point should be made from contractor's bill. Boxes shall have socket arrangement for tightening screws, instead of simple holes in M.S.sheet. Boxes shall be again painted at the time of wiring.

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- (f) For Submain Wiring, Colour Code for different phases and Neutral (R.Y.B. black) to be maintained. While circuit wiring, wiring for fan point, wiring for light point shall be done with different colours for easy identification. Wiring for neutral shall be done with black colour and all connections to fans & fittings wherever visible shall be made with white PVC insulated copper wire or wherever cover sleeve may be provided. At Switch board, Switch shall be fixed in a logical manner w.r.t. fittings layout.
- (g) Unless specifically approved by Executive Engineer (E.), loose wire box, above DB shall not be provided however DB's shall have loose wire box of same make. All connections to MCB's shall be made using thimble/lugs.

All DB's i/c incoming & outgoing MCB's shall be suitably numbered with PAINT for location/circuits. DB shall be fixed in recess suitably (30 mm. approx. projected from unplastered wall) to ease opening of door. Top of DB to match with door frame height as per site conditions.

- (h) Phenolic laminated sheet shall be of Egg white colour, and shall be filed/rounded at edges and of minimum 3mm thick.
- (i) All fittings and fans should be properly earthed through the protective conductor.

Provision of earth bars in main boards, earth terminal block in DB's & earth studs in all metal boxes shall be made, connection to this stud shall be crimped.

A clamp type termination should be made in the termination of earth strips (where provided) to pipe electrodes to provide surface type contact.

- (j) The earthing shall be carried out in the presence of the Engineer-in-charge or his authorized representative.
- (k) The size at switch box for providing Modular Plate type Switch/sockets shall be properly settled to take care of all necessary switches/screws/fan regulators. Blanking plate if required shall also be provided at no extra cost.
- (l) For point wiring in steel conduit all piano type switch or all modular type switches/sockets/telephone outlets/T.V.outlets shall be of only one make.
- (m) Whenever supply items like fans & fittings etc. are also included in the Schedule of work, such items shall be executed only after completion of at least 75% of the wiring items.
- (n) The contractor shall make his own arrangement at his own cost for electrical/ general tools and plants required for the work.
- (o) All LED light fittings should have minimum 5 year warranty, warranty certificate to be submitted by the agency on OEM letter head regarding this.

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- 2- The work shall be carried out according to approved drawings/details which shall be subsequently issued to the successful tenderer for execution of work and as per instructions of the Engineer-in-Charge who will have the right to change the layout as per requirement at site and the contractor shall not have any claim due to change in layout.

The work shall be carried out in engineering like manner. The bad workmanship will not be accepted and defects shall be rectified at contractor's cost to the satisfaction of the Engineer-in-Charge. The programme of electrical works are to be co-ordinated in accordance with the building work and no claim for idle labour will stipulated in the tender, electrical work shall have to be completed alongwith completion of civil work.

All the debris of the electrical works should be removed and the site should be cleared by the contractor immediately after the accruing of debris. Similarly any rejected material should be immediately cleared off from the site by the contractor.

Watch and ward of the material/equipment shall be the responsibility of the contractor till handing over of installation to the department.

The contractor or his representative is bound to sign the site order book as and when required by the Engineer-in-Charge and to comply with the remarks therein.

- 3- The entire installation shall be at the risk and responsibility of the contractor until these are tested and handed over to the department. However if there is any delay in construction from the department side, the installation may be taken over in parts, but the decision on the same shall rest with Engineer-in-Charge which shall be a binding on the contractor.

Some of the items of work, if already executed: on that case the successful tenderer shall have to use these items for completing the work. For wiring, the existing conduit wherever required shall be used by the contractor. The recovery will be made for these items as accepted rate of similar items.

- 4- The secured advance as applicable shall be allowed.
- 5- Test Certificate Test certificate for the work carried out shall also be submitted failing which recovery @1% tendered amount & maximum of Rs.1500/- shall be made from final bill.
- 6- Panels: Drawing of panel shall be submitted for approval within 30 days from award of work and fabrication to be taken up only after approval of such drawing. Before painting proper surface treatment shall be done and then powder coated. These shall be offered for inspection during fabrication.

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EE(C)

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- 7- Quantities indicated in Schedule of work are only tentative, contractor shall consult AE-in-Charge before procurement. Payment shall be made only for the quantities actually executed and measured.
- 8- Time Period: Contractor has to plan his activities, so that electrical work is to be carried out in close co-ordination with CIVIL work and in no case CIVIL work be delayed because of delay in electrical work and the work has to be completed accordingly.
- 9- The makes for items shall be as per list attached.
- 10- **Storage :-** Responsibility for storage space for execution of work shall be of main contractor.
- 11- **Power & Water Supply:-** Responsibility for supply of power & water for execution of work shall be of main contractor.
- 12- Material to be used in the work shall be ISI marked as applicable. The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.
- 13- Contractor shall preserve the copies of invoices, test certificates, gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement, genuine material of specialized works shall rest with the contractor.
- 14- Contractor is advised to visit site before quoting rates for determining site conditions. No claim or argument shall be entertained in this regard at later stage.
- 15- Required repairing and finishing work is to be done by agency after installation of split air conditioners.
- 16- **No inspection out side the country is permissible if required so the same will be deemed to be waived off and necessary test reports shall be submitted before the dispatch of equipment.**

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ADDITIONAL CONDITIONS FOR SUB-STATION (C-2)

- 1- **Specification**:- The work shall be executed as per CPWD's general specification for Electrical Works, Part-I-2013, Part-II-1994 (External) & Part-IV-2013 for Sub-Station. Indian Standards amended up to date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.
- 2- **Location**:- The contractor is advised to visit the site before submission of their tender and ensure that equipment being offered by them shall be accommodated in the spaces available.
3. **Terms of Payments:**
- Following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.
- (i) No advance payment shall be made.
- (ii) 60% after initial inspection at works and delivery at site in good condition on pro-rata basis.
- (iii) 20% after completion of installation in all respect.
- (iv) Balance 20% will be paid after Testing, Commissioning & Handing Over to the department for beneficial use.
- 4- **Rates**:-
- 4.1 The department will not issue Octroi exemption certificate.
- 5- **Completion Period** -:
- The Completion period indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc., arrangement of materials & equipment's, delivery at site including transportation, installation, testing, commissioning and handing over of the entire system to the satisfaction of the Engineer-in-charge.
- 6- **Storage**: - Responsibility for storage space for execution of work shall be of contractor.
- 7- **Power & Water Supply**:- Responsibility for supply of power & water for execution of work shall be of contractor.
- 8- **Indemnity** -:
- The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident

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occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising three from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

9- **Insurance and Storage** -:

All consignments are to be duly insured up to the destination from warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.

11. Losses of the transformers shall be in accordance with CPWD General Specifications for Electrical Works, Part-IV, Sub-station-2013, relevant test certificate has to be produced by agency.
12. The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.
13. Contractor shall preserve the copies of invoices, test certificates; gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement, genuine material of specialized works shall rest with the contractor.
14. No inspection outside the country is permissible if required so the same will be deemed to be waived off and necessary test reports shall be submitted before the dispatch of equipment.
15. Agency has to provide all related diagram and calculation sheet for protection system.
16. Agency has to provide minimum one-year guarantee in written from date of completion, on all equipment supplied and installed by him.

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Additional Conditions for DG Set work (C-3)

- 1- **Specification**:- The work shall be executed as per CPWD's general specification for Electrical Works part-I(2013) & Part-II (1994) and Part-VII (2013) for DG Set Work, IE Rules, Indian Standards amended upto date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations, specifications given along with the tender shall apply.
- 2- **Location**:- The DG sets are to be installed at **NCZCC Prayagraj** and the contractor is advised to visit the site before submission of their tender and ensure that equipment being offered by them shall be accommodated in the spaces available.
- 3- **Inspection by CEA**:- After completion of the work, the contractor will offer the same for inspection of Central Electricity Authority. The contractor will extend all help including test facilities to the representative of Central Electricity Authority. In case the contractor fails to make desired facilities available during inspection, the department reserves the right to provide the same at the risk & cost of the contractor. The observation of Central Electricity Authority which are a part of agreement will be attended by the contractor promptly. The installation will be commissioned only after receiving clearance from Central Electricity Authority. Inspection fees of Central Electricity Authority will be borne by the department.
- 4- **Storage**:- Responsibility for storage space for execution of work shall be of main contractor.
- 5- **Power & Water Supply**:- Responsibility for supply of power & water for execution of work shall be of main contractor.
- 6- The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.
- 7- Contractor shall preserve the copies of invoices, test certificates; gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement, genuine material of specialized works shall rest with the contractor.
- 8- No inspection outside the country is permissible if required so the same will be deemed to be waived off and necessary test reports shall be submitted before the dispatch of equipment.
- 9- **Terms of payment**:- The following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.
 - i) 60% after initial inspection (wherever specified) & delivery at site in good condition on pro-rata basis.
 - ii) 20% after completion of installation in all respects.
 - iii) Balance 20% will be paid after testing, commissioning and handing over to the department for beneficial use.
- 10- **Guarantee**:- All equipments shall be guaranteed for a period of minimum 12 months, from the date of taking over the installation by the department, against unsatisfactory performance and/or break down due to defective design, workmanship or material. The equipments or

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components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in- Charge. 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 and cost of the contractor. The decision of the Engineer-in- charge in this regard shall be final & binding on the contractor.

- 11- **Acceptable makes for different equipments:-** The acceptable makes of various equipments/ components / accessories have been indicated in the List of Acceptable Makes / Manufacturers. The tenderer shall work out the cost of the offer on this basis. Alternate makes are not acceptable and tenders with any other make (s) shall be rejected.
- 12- The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturer's for all items of equipments regarding installation, adjustments, operation and maintenance including preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.
- 13- All the equipments and fabricated items etc. shall be offered for initial inspection at manufacturer's works. The contractor will intimate the date of testing of equipments at the manufacturer's works before dispatch .The successful tenderer shall give advance notice of minimum two weeks regarding the dates proposed for such tests to the Engineer in charge to facilitate his presence during testing. The Engineer in Charge may witness such testing. The cost of Engineers visit to the manufacturer's works will be borne by the Department.

All routine tests conforming to relevant IS shall be carried out in the presence of Engineer-in-Charge or his authorized representative. The department reserves the right to inspect or not to inspect the equipment at the works of the manufacturer. In the later case confirmation in writing will be issued by the department. However, nothing extra shall be paid for conducting routine test in the presence of department's representative.

Copies of all manufacturer's routine and type test certificates of the equipments carried out at the manufacturers premises shall be furnished to the inspecting officer and consignee. After completion of work in all respect, the contractor shall offer the installation for testing and operation.

- 14- All consignments are to be duly insured up to the destination from warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.
- 15- **Technical specifications for DG set work:-**
- (i) The tenderer shall submit detailed schematic diagram for the approval of the Engineer-incharge. Tenderer / Contractor will make sure that the equipment offered shall fulfil the design conditions. All the equipments and their installation shall be suitable for the environmental conditions encountered at the location as indicated in specifications. If any deviations from the Tender specification are contemplated, these shall be clearly brought out in the tender along with the reasons for the same. If the tenderer fails to bring out specific deviations, it will be presumed that the work shall be carried out as per tender specifications.
 - (ii) The tenderer shall submit the de-rating calculations for engine along with supporting manufacture catalogues & model no of Engine & Alternator, offered.
 - (iii) CPCB Norms- The DG Sets shall be meet the requirements of environmental (protection) rules 1986 as laid down by Ministry of Environment & Forests read with

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GSR 771 (E) dtd. 11-12-13 with respect to emission norms of the diesel engine for supplies made on or after 01-07-14 and with respect to noise level GSR 371 (E) dated 17/05/2002 for the DG sets supplies made on or after 01-01-05. The firm need to furnish the certificate of Type approval and certificate of conformity of production issued by the Central Pollution Control Board (CPCB) or any authorised agency as prescribed by MoEF / CPCB in the above law.

- (iv) Scope of work:- The detailed scope of supply, installation, testing and commissioning includes the following:-
- (a) 1 No. Diesel Generating Sets with 320 KVA or better, prime continuous power rating, capacity at 0.8 power factor developing 415 volts 3 phase 4 wire output with the engine and alternator mounted on common base frame complete and all accessories required. The DG Sets shall be capable of delivering desired KVA at 0.8 P.F for the external load after meeting its own requirement for auxiliaries etc. and after accounting for de-rating due to various factors, site conditions.
 - (b) Necessary acoustic enclosure.
 - (c) Necessary piping required for Fuel system, Lubricating oil system and exhaust.
 - (d) Necessary batteries for starting including its cables.
 - (e) Necessary control Panel as per detailed specification.
 - (f) Necessary set of suitable vibration isolation mountings.
 - (g) Minor building work including cutting and making good of openings in wall and floors, grouting etc. as required.
 - (h) All clamps support etc. for all components of the installation as required.
 - (i) Control wiring from D.G. Set up to control panels and MV distribution panels having AMF facilities.
 - (j) Providing & Fixing/ Laying of power cable of various sizes XLPE insulated PVC sheathed 1.1 KV grade armoured cable for connection between generator and panel.

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ADDITIONAL CONDITION FOR AV/ PROJECTION SYSTEM

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1. GENERAL

- 1.1 The scope of this work covers delivery at site, installation, testing and commissioning of Audio-Video & Projection System. The equipment after testing, commissioning and acceptance shall be guaranteed for one year for safe performance.
- 1.2 The instructions of Engineer-in-charge shall be final and binding. If the site or part of it is not available for execution of work for any reasons, the programme of execution shall be modified accordingly and the contractor shall have no claim for any payment of compensation on this account or any compensation on account of idle labour.
- 1.3 The wiring work in general should conform to CPWD specifications of Electrical works Part-I 2013 (Internal) and Part-II 1995 (External) as amended up to date (as applicable) .
- 1.4 All the equipments supplied shall be of brand new/ unused. All equipments shall be delivered with manufacturer's test certificate and technical catalogues, instruction manual, wiring diagram etc. No equipment shall be accepted by the department without manufacturer's test certificate duly filled & stamped as required.
- 1.5 All the materials to be used on the work shall be got approved from Engineer-in-charge before installation. If at any stage during the execution of work, the Engineer-in – charge is not satisfied with the quality of materials brought at the site of work, he shall be at liberty to reject in writing all such materials. The rejected materials shall have to be removed from the site of work immediately.
- 1.6 The contractor shall make his own arrangement for cartage and storage of materials. The watch and ward of materials and installation would be the liability of the contractor until the work is completely handed over to the department. However covered lockable space for storage of materials will be made available to the contractor by department free of charge.
- 1.7 The work shall be carried out in Engineering like manner and bad workmanship shall be summarily rejected for redoing the job for which nothing extra shall be paid.
- 1.8 No materials and T & P shall be issued by the department.
- 1.9 The contractor or his authorized representative will have to sign site order book to acknowledge the instructions issued by Engineer-in-charge or his authorized representative for all matters relating to the execution of the work. The instructions noted in the site order book shall have to be complied with in reasonable time decided by the Engineer-in-charge.

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2. RATES, TAXES AND DUTIES:

- 2.1 The tender is for entering into percentage rate works contract. The rates for various items of works shall be for complete items of work covering materials, labor, cartage, royalties, fees, rent, excise duty, custom duty, work contract tax/GST/sale tax/ service tax/cess, octroi, entry tax, (i.e. all taxes) wages, tools and plant, transportation, insurance, risks, overhead charges general liabilities/ obligation and profits etc. Nothing extra shall be paid. Deduction of Income Tax, Works Contact Tax, Labour Cess, etc as applicable shall be made at source from each running /final bill payment. A certificate of TDS shall be issued by the department to the contractor. NO concession/exemption certificate shall be issued by Department. No form "D" or 31/32 shall be issued by the department. The road permit shall be arranged by the tenderer at his own cost. The tendered rates must be inclusive of all such taxes.
- 2.2 All prices shall be quoted in Indian rupees and shall be firm and final prices. No price variation will be allowed on account of variation in exchange rate for imported component of item.

3. PAYMENT TERMS

No mobilization advance shall be paid for the work. On account payments for part work as assessed by the Engineer-in-charge for the various equipments or assembly of items included in the contract shall be payable at part rates not exceeding the percentage indicated against the stages of work.

STAGE OF WORK CONTRACT	% OF RATE
(a) Delivery of material at site complete with required test Certificates, copy of original invoice, proof of import or excise duty gate pass & on acceptance by the department	60%
(b) On Erection of Equipment	20%
(c) On testing and commissioning and handing over to deptt.	20%

However Security Deposit shall be deducted from the bills as per rules.

4. COMPLETION PLAN (In hard copies & soft copies both)

The contractor shall have to submit completion plans within one month of the completion of work failing which a sum equal to 2.5% of the value of work done subject to the ceiling of Rs. 25,000/- (Rupees Twenty Five Thousand Only) shall be recovered from the contractor.

The Contractor shall also submit two sets of O& M manual, these manual should consist of:

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All Circuit/wiring Diagram
 Catalogues of all Equipments (photocopies)
 Service Centre details
 Guarantee/Warranty certificate photocopies

5. Care of Building and other services:

- 5.1 Care shall be taken by the contractor to avoid damage to the building during execution of the work. He shall also be responsible for repairing all the damages caused during execution of the work and restoring the same to original finish at his cost. He shall also remove all unwanted and waste materials arising out of his work from site at his own cost. As far as possible, cutting of roads, lawns etc should be avoided. Where it becomes inescapable to cut them, these shall be repaired immediately.

6. INFORMATION REQUIRED ON EQUIPMENT

The equipment offered shall conform to internationally accepted standards for electronic equipment and shall meet the latest IEC, BIS Recommendations on the subject. The equipment shall operate on 230V / 50 Hz. AC supply conforming to the laws or regulation regarding electricity, R.F. and E.M.I. The proposed equipment shall be new, in current production, of robust and durable construction. As far as possible, all apparatus must be so constructed that similar parts, spares and replacements are interchangeable and easily fitted.

7. GUARANTEES

- 7.1 The equipment provided by the contractor & the entire installation shall be guaranteed against failure due to quality of material, workmanship, circuit design or any other failure, for a period of at least twelve (12) months from the date of completion and acceptance of the equipment by the Engineer – in –charge.
- 7.2 Any unit or component failing within this period shall be delivered and replaced, free-of-charge by the contractor within seven (7) days after the intimation or notice of the same from the Engineer – in -charge.
- 7.3 Contractors shall warranty that all the equipment and material to be supplied under the contract are new and free from any defects and faults in materials, workmanship and manufacturing and are of the highest grade and consistent with the established and generally accepted standards for the same type of equipment and material and shall perform in full conformity with the specifications and drawings. The contractor shall be responsible for any defects that may develop under the contract conditions and under proper use, arising from faulty materials, design or workmanship such as corrosion, inadequate quantity of material to meet equipment requirement, inadequate

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- contact protection, deficiency in circuit design and / or otherwise and shall remedy such defects at its own cost when called upon to do so by the Engineer-in-charge, who shall state in writing in what respect equipment & installation is faulty. The contractor shall warrant that if system deficiency are noticed in operation of the system for which software function are involved, then the software update for correcting the deficiency shall be supplied free of cost for the purchaser.
- 7.4 Replacement under warranty clause shall be made by the contractor free of all charges at site including freight, insurance and incidental charges.
- 7.5 With respect to parts needed to overcome the troubleshoot and maintain installation after the warranty period, the contractor shall inform CPWD from where the parts can be procured in case contractor is not able to provide.
- 8.1 Contractor shall provide a detailed plan mentioning the activities for completion of whole project so that the entire work gets completed within the stipulated completion period.
- 8.2 Installation will be carried out by the contractor under the supervision, co-ordination of the Engineer-in-charge or his authorized representative. However, the sole responsibility for installation and successful commissioning of the equipment and subsequent handing over of the system to maintenance staff in a fully functional condition within the stipulated period will rest with the contractor. The contractor will impart on-job training to CPWD personnel at installation sites in English language to enable them to install, operate, maintain and trouble shoot the system after commissioning. The complete training documentation shall be in English / Hindi.

9. ACCEPTANCE TEST

After installation and testing of the various equipments, performance measurement shall be carried out to confirm that all the equipments meet the relevant technical specification. The following tests will be done as a part of acceptance test.

- (a) Functional Tests
- (b) Performance Measurements of Various Parameters
- (c) Endurance Tests

Contractor shall ask the manufacturer of Equipment/system to come to site, verify the genuineness of equipments supplied at site & proper performance at site before start of acceptance test.

The satisfactory completion of the acceptance tests of various equipments and systems as a whole to the full satisfaction of the engineer – in -charge and his authorized representative is prerequisite for accepting and taking over of the equipments by the Engineer – in -charge.

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10. ADVERTISING AND PRESS RELEASE

Contractor shall not advertise or otherwise make public any information related to the acceptance or rejection of any tender in any newspaper, magazine or other advertising medium.

11. The contract shall include the following costs also:-

11.1 This is a turnkey installation contract and final satisfactory performance shall be the responsibility of contractor.

11.2 All necessary materials, equipment & wiring as specified complete alongwith electrical wiring to connect to the source of Power Supply.

11.4 Rates to include all items necessary for successful commissioning of Audio Conference System to be integrated with Video System (Not in scope of this work) even if some of the required items are not included in Bill of Quantities. Contractor shall list out such items separately and provided the same at no extra cost

11.5 The contractor shall furnish detailed drawings for cabling, wiring, installation, layout etc. for approval before taking up the work.

11.6 Free operation for first 4 operational days

11.7 Training of personnel of CPWD/Allahabad University.

12. FREE OPERATION FOR 4days: Contractor shall be required to man/operate the system whenever required during the first 4 operational days (in two parts i.e. in first two functions) from the date of completion of work, free of cost.

13. Training:

Once the work is complete, two weeks training for operating the system shall be arranged by contractor, free of cost, for **operating staff of CPWD/ NCZCC staff Prayagraj**. This training can be arranged during free operation period of 4 days.

14. INSTALLATION OF EQUIPMENTS

The layout & installation of equipment shall be planned and carried out conforming to the best engineering and international practices.

The wiring of the entire system shall be neat and conforming to standards.

15. DESCRIPTIVE LITERATURE

The tenderer shall supply a complete list with quantities of major items of equipments together with detailed descriptive literature including photographs and performance characteristics pertaining to the equipments offered.

Manuals and instructions for operation and maintenance of all equipment and systems shall be supplied (4 sets).

16. AMBIENT CONDITIONS

(a) The equipments are required to work with the following A/C power supply

(i) Voltage : 230 V \pm 10%

(ii) Frequency : 50 Hz \pm 4%

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- (b) The equipment should be rated for satisfactory operation at an ambient temp of 10-46° C and 40-80% RH.

17. NAME PLATES

Instruction plate, name plates & labels in English shall be provided before commissioning of all equipment requiring indication of operation.

18. SYSTEM REQUIREMENT AND SYSTEM DESCRIPTION

18.1 INTRODUCTION

The scope of this work covers delivery at site, installation, testing and commissioning of Computerized Digital Conference Facility in the Allahabad University.

CONTRACTOR IS ALSO ADVISED TO STUDY THE SCHEME/DESIGN FOR COMPLETENESS AND EFFECTIVENESS. NO EXTRA ITEM SHALL BE PAID AFTER AWARD OF WORK. HENCE IN CASE SOME ITEM IS MISSING CONTRACTOR MAY BRING OUT THE SAME AT TECHNICAL BID STAGE.

18.2. SYSTEM REQUIREMENT

All the Equipments offered shall be of MODULAR design as well for easy upgrade of system at later date.

The AUDIO system proposed to be provided is to ensure crystal clear audio quality /data from a wide range of sources. The system shall be capable of accepting video/VGA signals from other sources along with their corresponding audio and switch the Video Signal to the projector and corresponding audio signal to the audio mixer/audio amplifier being provided/ already functional at site. The tenderer must visit the site before quoting the rates and must get him acquainted with the existing facilities available at the proposed site of work.

ACCEPTANCE TESTS PROCEDURE

After installation and testing of equipments detailed acceptance tests are to be carried out before handing over the equipments to Engineer- in- charge as detailed below:

1. FUNCTIONAL CHECKS /TESTS

- a) All the equipments will be checked for satisfactory operations in respect of the various functions stipulated in the agreement specifications / manufacturers specifications etc.
- b) The overload functions and protection circuits of the equipments shall be checked individually for satisfactory functioning.
- c) The rack wiring, patch panel and cabling etc. shall be checked for neatness and easy identification.

2. PERFORMANCE MEASUREMENTS

The performance measurements shall be made in the factory by the manufacturer before dispatch and test report from the manufacturer shall be submitted by the

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contractor. After installation and wiring, the complete system will be subjected to subjective viewing and listening test for satisfactory performance.

3. **THE CONTRACTOR HAS TO ARRANGE THE NECESSARY MEASURING EQUIPMENTS FOR CARRYING OUT THE ACCEPTANCE TESTS WITHOUT ANY EXTRA COST.**

4. **ENDURANCE TESTS**

After installation and testing of the system 24 Hrs. endurance test shall be carried out wherein all the equipments are kept on for 24 Hrs.

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GENERAL TERMS AND CONDITIONS (Stage lighting equipment)
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1. GENERAL

The tenderer should in his own interest visit the sites and familiarize himself with the site conditions before tendering.

No T&P shall be issued by the department and nothing extra shall be paid on account of this.

RATES TAXES AND DUTIES:

- 1.1. The work shall be treated as on works contract basis and the rates tendered shall be for complete items of works inclusive of all taxes (including works contract tax), duties, and levies etc. and all charges for items contingent to the work, such as packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site i/c temporary constructional storage, risk, overhead charges, general liabilities/ obligations etc.
- 1.2. Being an indivisible works contract, sales tax, octroi, excise duty etc. are not payable separately.
- 1.3. GST for the work shall be included within the quoted rates for the various items.
- 1.4. All statutory deductions like GST, Building and other construction workers welfare cess etc at applicable rates will be made from the Contractors bill.

2. TERMS OF PAYMENTS

PART A:

2.1. The following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.

- a) 60% after initial inspection and delivery at site in good condition on prorata basis.
- b) 20% after completion of installation in all respects on pro-rata basis.
- c) Balance 20% will be paid after testing, commissioning & handing over to the client department for beneficial use.

(Note:-No foreign exchange shall be made available by the Department for importing (purchase) of equipments, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.)

2.2. SECURITY DEPOSIT:

~~The security deposit shall be deducted from the running bills of the contractor at the rate mentioned below:~~

~~A sum @ 2.5% as specified in Schedule F of the gross amount of the bill shall be deducted from each running bill and final bill till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions will be~~

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~~made and held by Government by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in cash or in the form of Government Securities or fixed deposit receipts or as mentioned in Clause 1A of General Conditions of Contract of CPWD. This is in addition to performance guarantee that the contractor is required to deposit.~~

3. Works to be carried out by CPWD

Unless otherwise mentioned in the tender specifications, the following works shall be carried out by the department.

1.0 Providing space for Stage Lighting equipments in the building.

4. Works to be done by the contractor

Unless and otherwise mentioned in the tender documents, In addition to supply, installation, testing and commissioning of all the equipments, as per schedule of work, and specifications, the following works shall be deemed to be included within the scope of work to be executed by the contractor. Cutting and making good all damages caused during installation and restoring the same to their original finish.

- i) Tools and tackles required for installation of equipments.
- ii) Protection required for the equipments from rain, dust storm etc. during transportation i.e. polythene cover and tarpaulin.
- iii) Sealing of all floor openings provided by him for pipes and cables, from fire safety point of view, after laying of the same.
- iv) Painting at site of all exposed metal surfaces of the installation other than pre-painted items, cubicle etc. Damages to finished surfaces of these items while handling and erection, shall however be rectified to the satisfaction of the Engineer-in-Charge.
- v) Storage space for all equipments, components and materials for the work
- vi) Testing and commissioning of completed installation

5. COMPLETENESS OF TENDER

All sundry equipments, fittings, unit assemblies, accessories, hardware items, foundation, foundation bolts, painting, termination lugs for electrical connections, and all other items which are useful and necessary for efficient assembly and installation of equipment and components of the work shall be deemed to have been included in the tender irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

6. STORAGE AND CUSTODY OF MATERIALS

For storage of materials and erection equipments etc, the agency has to make its own arrangements. No separate storage accommodation shall be provided by the department, however open space at suitable location shall be provided for construction of storage accommodation for contract period. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

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7. CARE OF THE BUILDING

Care shall be taken by the contractor while handling and installing the various equipments and components of the work to avoid damage to the building. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste materials arising out of the installation from the site of work.

8. COMPLETION PERIOD

The completion period indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc., arrangement of materials & equipments, delivery at site including transportation, installation, testing, commissioning and handing over of the entire system to the satisfaction of the Engineer-in-charge.

9. GUARANTEE

All equipments shall be guaranteed for a period of 3 years from the date of taking over the installation by the department, against unsatisfactory performance and/or break down due to defective design, workmanship or material. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in- Charge. 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 and cost of the contractor. The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor.

10. All necessary connectors & accessories etc required for testing & commissioning shall be provided by the agency within the quoted rates &. Nothing will be paid extra.

11. POWER SUPPLY/ WATER SUPPLY

Contractor shall make own arrangements for electricity and water required for execution of the work at his own cost. No overhead power distribution will be allowed within the site premises. Only armored insulated cables shall be used for power distribution.

12. DATA MANUAL AND DRAWINGS TO BE FURNISHED BY THE TENDERER.

After award of work The successful tenderer would be required to submit the following drawings within 7 days of award of work for approval of the department before commencement installations.

- a) General arrangement drawing of the equipments with complete dimensions.
- b) Single line diagram of all equipments.
- (c) Details of foundations for the equipments and the weights of assembled equipments.
- (f) Equipment details proposed to be procured for the execution of the work for the approval of the Engineer-in-charge.
- (h) Any other drawings necessary for the job.

13. The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturer's for all items of equipments regarding installation, adjustments, operation and maintenance including preventive maintenance

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& trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.

14. EXTENT OF WORK

- 14.1 The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning, as may be required by the department. The term complete installation shall not only mean major items of the equipments covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been specifically mentioned in details in the tender document in connection with this contract as this is a turnkey job.
- 14.2 In addition to supply, installation, testing and commissioning of all equipments, following works shall be deemed to be included within the scope of work to be executed by the tenderer as this is a turnkey job.
- a) Minor works necessary for installation of equipments, foundation, making of opening in walls or in floors and restoring them to their original condition/ finish and necessary grouting etc. as reqd.

15. INSPECTION AND TESTING

All the equipments and fabricated items etc. shall be offered for initial inspection at manufacturer's works in India. The contractor will intimate the date of testing of equipments at the manufacturers works before dispatch. The successful tenderer shall give advance notice of minimum two weeks regarding the dates proposed for such tests to the Engineer in charge to facilitate his presence during testing. The Engineer in Charge may witness such testing. The cost of Engineers visit to the manufacturers works will be borne by the Department. All the equipment will be inspected at the manufacturer's authorised dealers premises before dispatch to the site by the contractor if so desired by the Engineer in charge All routine tests conforming to relevant IS as applicable shall be carried out in the presence of Engineer-in-Charge or his authorized representative. The department reserves the right to inspect or not to inspect the equipment at the works of the manufacturer. In the later case confirmation in writing will be issued by the department. However, nothing extra shall be paid for conducting routine test in the presence of department's representative. Copies of all

manufacturer's routine and type test certificates of the equipments carried out at the manufacturers premises shall be furnished to the inspecting officer and consignee. After completion of work in all respect, the contractor shall offer the installation for testing and operation.

If the tests fail, then the cost of the travel, lodging and boarding of the inspection team of the officials of the department (for 2 Nos. officials) shall be borne by the contractor for all subsequent visits till the tests are satisfactorily conducted.

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16. COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS

All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:

- (i) Factories Act.
- (ii) Indian Electricity Rules.
- (iii) B.I.S. & other standards as applicable.
- (iv) Workmen's compensation Act.

16.1 Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

16.2 Successful tenderer shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the tenderer. Failure to provide such safety requirement would make the tenderer liable for penalty of Rs 5000/- (Rs Five Thousand only) for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

17. INDEMNITY

The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian law and regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

18. COOPERATION WITH OTHER AGENCIES

The successful tenderer shall co-ordinate with other contractors and agencies engaged in the construction of buildings and other civil works, if any, and exchange freely all technical information so as to make the execution of this work/contract smooth. No remuneration should be claimed from the department for such technical cooperation. If any unreasonable hindrance is caused to other agencies and any completed portion of the work has to be dismantled and redone for want of cooperation and coordination by the tenderer during the course of work, such expenditure incurred will be recovered from the successful tenderer if the restoration work to the original condition or specification of the dismantled portion of the work was not undertaken by the tenderer himself.

19. MOBILIZATION ADVANCE

No mobilization advance shall be paid to the contractor.

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20. INSURANCE AND STORAGE

All consignments are to be duly insured up to the destination from warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.

21. VERIFICATION OF CORRECTNESS OF EQUIPMENT AT DESTINATION

The contractor shall have to produce all the relevant records to certify that the genuine equipments from the manufacturers has been supplied and erected.

22. PAINTING

This shall include cost of painting of the entire installation. The major equipments shall be factory final finish painted. The agency shall be required to do only touching to the damages caused to the painting during transportation, handling & installation at site, if there is no major damage to the painting. However, hangers, supports and all pipes shall be painted with required shade including painting with two coats of anticorrosive primer paint at site.

23. TRAINING

The scope of works includes one week on job technical training of two persons of department at site. Nothing extra shall be payable on this account.

24. MAINTENANCE

- 24.1 Sufficient trained and experienced staff shall be made available to meet any exigency of work during the guarantee period of 3 years from the handing over of the installation.
- 24.2 The maintenance, routine as well as preventive, for 3 years from the date of taking over the installation as per manufacturer's recommendation shall be carried out on quarterly basis. The work shall cover all routine and breakdown maintenance.
- 24.3 Experienced and Trained Engineer should also be made available as & when required during the guarantee period.

25. INTERPRETING SPECIFICATIONS

In interpreting the specifications, the following order of decreasing importance shall be followed in case of contradictions:

- (a) Schedule of quantities
- (b) Technical specifications
- (c) Drawing (If any)
- (d) General Specifications
- (e) Relevant BIS or other international code in case BIS code is not available

26. Completion plan:

Completion plan drawn to a suitable scale indicating the following duly laminated print in triplicate shall also be submitted.

- (i) General layout of the building.

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(ii) Locations of Stage Lighting equipments

(iii) Position of all controls.

27. Conformity to IE act, IE Rules, and standards:

All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and Indian Electricity Rules, 1956 amended up to date (Date of call of tender unless specified otherwise).

28. Quality of material:

All materials and equipments supplied by the contractor shall be new. They shall be of such design, size and materials as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

29. Inspection of materials and equipments:

29.1 Materials and equipments to be used in the work shall be inspected by the departmental officers. Such inspection will be of following categories:

(i) Inspection of materials / equipments to be witnessed at the Manufacturer's premises in accordance with relevant BIS /Agreement Inspection Procedure.

(ii) To receive materials at site with Manufacturer's Test Certificate(s)

(iii) To inspect materials at the authorized dealer's godown to ensure delivery of genuine materials at site.

(iv) To receive materials after physical inspection at site.

29.2 Adequate care to ensure that only tested and genuine materials of proper quality are used in work shall be ensured by firm. The firm shall ensure that:

(i) Material will be ordered & delivered at site only with the prior approval of the department to ensure timely delivery.

(ii) As and when the order is placed for the equipment/material, its copy shall be endorsed to the CPWD Engineer-in-charge.

(iii) The firm will be required to procure material directly from the manufacturer/ authorized dealers to ensure genuineness & quality and as per the approved makes only. Proof in this regard shall be submitted by the contractor if required by the department. Inspection at factory or at godown of the manufacturer, as required, shall be arranged by the firm for a mutually agreed date.

(iv) Delivery of material shall be taken up only with the consent of department, after clearance of the material.

(vi) Department shall reserve the right to waive inspection in lieu of suitable test certificate, at its discretion.

30. DAMAGE CAUSED BY RAIN, SNOWFALL, FLOOD OR ANY OTHER NATURAL CALAMITY

No payment shall be made for any damage caused by rain, snowfall, flood or any other natural calamity, whatsoever during the execution of the work. The contractor shall be

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fully responsible for any damage to the govt. property and the work for which payment has been advanced to him under the contract and he shall make good the same at his risk and cost. The contractor shall be fully responsible for safety and security of his material, T&P/Machinery brought to the site by him.

31. PROGRAM CHART:

The Contractor shall prepare an integrated program chart within seven days of issue of award letter all activities for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfilment of the program within the stipulated period and submit the same for approval of the Engineer-In-Charge within seven days of the award of the work. These shall be submitted by the contractor through electronic media besides forwarding hard copies of the same. The integrated program chart so submitted should not have any discrepancy with the physical milestones attached in the contract agreement. In case of non compliance/delay in compliance in this, a penalty @ Rs. 500/- per day will be imposed which will be recovered from the immediate next R/A Bill of the Contractor. The submission for approval by the Engineer-In-Charge of such program or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the contract. This is without prejudice to the right of Engineer-In-Charge to take action against the contractor as per terms and conditions of the agreement.

32. CLEANLINESS OF SITE AND INSPECTIONS

- i) The contractor shall take instructions from the Engineer-In-Charge regarding collection and stacking of materials at any place. ii) Senior Officers of CPWD, Dignitaries from Central Ministry / Department, IIM JAMMU Authorities shall be inspecting the on-going work at site at any time with or without prior intimation. The contractor shall, therefore, keep updated the following requirements and detailing.
 - a) Display Board showing detail of work, weekly progress achieved with respect to targets, reason of shortfall, status of manpower, wages being paid for different categories of workers.
 - b) Display layout plan key plan, Building drawings including plans, elevations and sections as reqd.
 - c) Up to date displays of Bar chart, CPM and PERT etc.
 - d) Keep details of quantities executed, balance quantities, deviations, possible Extra item, substituted Item etc.
 - e) Keep plastic / cloth mounted one sets of building drawings.

33. REMOVAL OF REJECTED/SUB-STANDARD MATERIALS

The following procedure shall be followed for the removal of rejected/sub-standard materials from the site of work:

- a. Whenever any material brought by the contractor to the site of work is rejected, entry thereof should invariably be made in the Site Order Book under the signature of the Assistant Engineer, giving the approximate quantity of such materials.

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- b. As soon as the material is removed, a certificate to that effect shall be recorded by the Assistant Engineer against the original entry, giving the date of removal and mode of removal, i.e., whether by truck, carts, or by manual labour. If the removal is by truck, the registration number of the truck should be recorded.

34. Third Party Quality Assurance

In addition to the supervision of work by CPWD engineers, the independent Third Party Quality Assurance agency engaged by CPWD/ IIM Jammu shall also be carrying out regular and periodic inspection of the work and ongoing activities in the work and deficiencies, shortcomings, inferior workmanship pointed out by them shall be communicated by CPWD engineers to the contractor. Upon receipt of instructions from Engineer in Charge these are also to be made good by necessary improvement, rectification, replacement up to his complete satisfaction.

34.1 TESTING PLANS OF TPQA

The testing plan for quality control for major Stage Lighting System as under:-

- (i) To eliminate the possibility of receiving outdated/ old material/ refurbished equipment at site, the material supply against the contract shall be not older more than 6 months from date of receipt at site.
- (ii) To procure the genuine material from suppliers/ authorized dealer etc shall be the responsibility of contractor who shall preserve copies of invoice/ excise gate pass/proof of dispatch and the same shall be submitted to engineer-in-charge for examination/ scrutiny/ verification as deemed fit by him.
- (iii) All items to be used and workmanship shall be thoroughly checked physically and for their performance as per agreement.

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ADDITIONAL TERMS & CONDITIONS (Stage lighting equipment)
(C-5)

1. SCOPE:

The scope of all items under this specification/NIT for Stage Lighting systems is SITC – Supply, Installation, Testing and Commissioning.

Upon awarding of the contract, the Bidder shall provide technical datasheets and specification sheets for approval for all items prior to initiating any supply. If any OEM-specific accessories and options are required especially such, but not limited to items such as additional power supplies, transformers or auto-transformers for voltage levels, mounting arrangement, fixtures, set of proprietary cables and licenses etc., the Bidder shall supply the same without any extra to the client as required with specific makes and models being supplied, irrespective of whether or not explicitly mentioned in the BOQ so as to make the Stage Lighting system operational.

Based on the makes and models intended to be supplied from the acceptable list of makes and prior to the commencement of work, the Bidder shall submit their technical proposal for individual rooms for approval, consisting of the following:

- a. Shop drawings consisting of equipment layouts (furniture and RCP coordinated).
- b. Shop drawings consisting of schematic layouts.
- c. Shop drawings consisting of conduit layouts & cable routing plan.

Upon completion of work and prior to handover, the Bidder shall submit 3 sets of duly laminated as-built drawings and documentation as mentioned below:

- a. Final equipment layouts (furniture and RCP coordinated) – AutoCAD & pdf format.
- b. Final schematic layouts - AutoCAD & pdf format.
- c. Final conduit layouts - AutoCAD & pdf format.
- d. Final cable routing plan – cable schedule, cable IDs, labelling and documentation, type of cable, no. of cables etc. - AutoCAD & pdf format.

The Bidder is advised to inform the Engineer-in-Charge or client, of any specific requirements related to their equipment such as heat dissipation, earthing or grounding, UPS, ventilation or any other required site preconditions, in writing before supply and commencement of work so as to incorporate the same at site by other agencies. The suitable number of new earthing (pipe/plate, copper/GI) of the Stage Lighting system to be provided by the agency as per recommendation of the OEMs and also as per codes and standards. The work shall be carried out as per CPWD specifications. Nothing extra shall be paid on this account. The work of the earthings includes earth strips/wires/earth pits and all other items required on this account.

However, if the input power supply parameters, i.e., voltage levels and frequency required by the supplied equipment are different from those available at site, the Bidder shall take necessary actions at its own cost so as to make the equipment installable, e.g., transformers, stabilizers, autotransformers etc.

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Make of components required to be used by bidder to complete the installation, if not mentioned anywhere, shall be required to be approved from Engineer-in-charge in writing before installation.

At the time of handing over of installation to client, bidder shall provide a week's training to the designated personnel of the client.

The bidder shall depute qualified and well trained engineers for installation and commissioning of the Stage Lighting system as well as for operation and maintenance.

2. Testing Plan and Handing Over

The Bidder shall provide operations manual with sufficient visual information such as screen shots, voice-over for instructions etc. for the installation-specific items of the Stage Lighting system, e.g., but not limited to, wired control panel and other such items. At the time of handing over of installation to the client, for all equipment that are covered under SITC, the Bidder shall transfer all warranties and guaranties from OEM – original equipment manufacturer – to the client. After successful installation of equipment, the Stage Lighting System integrator shall carry out the following tests to the satisfaction of the Engineer-in-charge or his representatives. All required test & measuring instruments shall be deployed by the contractor at their own costs.

Note:-

- 1 After acceptance of tender, the lowest tenderer shall submit along with performance guarantee undertaking from OEMs of all the equipment quoted by him in the tender regarding (Annexure-1):-
 - a) Authorization certificate.
 - b) The OEM shall unconditionally support the lowest tenderer technically throughout the execution of contract as well as for maintenance/comprehensive maintenance contract for useful life of the system.
 - c) OEM shall provide all the spares required for healthy functioning of the system for at least Five years from the date of supply of equipment.
 - d) The PQ bid documents shall be self-attested. Any document if found forged, shall lead to the disqualification & black listing of the Bidder.
 - e) Since these are specialized services, the work should be executed by specialized vendors only.
3. Materials to be used in work are to be ISI marked where available. Prior approval of the Engineer-in-Charge shall be taken for all the materials required to be used on works. Non-standard quality materials will not be acceptable. The Engineer-in-Charge reserves the right to instruct the contractor to remove any material which, in his opinion, is not acceptable and the same shall be removed from the site of work by the contractor at his cost.
4. Bad workmanship shall not be accepted. Such work is liable for rejection and shall be rectified by the contractor at his own cost as per the specifications and directions given by the Engineer-in-Charge.

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5. All repairs and patch works shall be neatly carried out to match with the original finish and to the entire satisfaction of the Engineer –in- Charge.
6. All the debris due to the work shall be removed from the site by the contractor as soon as the work is completed.
7. The quantities given in the schedule are subject to change to suit site conditions.
8. Testing of Equipment: All equipment before installing on the site of work shall be tested and all such results produced to the Engineer-in-Charge. Nothing shall absolve the Contractor from re-performing any tests that the contractor may be called upon specifically by the Engineer-in-Charge or supply company or electrical inspector. All equipment shall be tested jointly with the Engineer-in-Charge as required by various sections of the specifications and test data shall be furnished as required.
9. All expenditure to be incurred for testing of samples e.g. packaging, sealing, transportation, loading, unloading, etc. including testing charges shall be borne by the contractor.
10. Pre-commissioning Tests: On completion of erection, the contractor shall clean all the equipment thoroughly and inspect the entire installation for correctness and shall furnish a report of completion to the Engineer-in- Charge. Pre-commissioning tests shall commence only on the approval of this report by the Engineer-in-Charge.
11. Defect Liability Period: All the equipment shall be guaranteed for a period of 3 years from the date of completion and handing over. During the defect liability period, any defective materials and equipment shall be replaced free of cost within 48 hours at the direction of the Engineer-in-Charge. The contractor has to make alternative arrangements for providing functionality till the defective material be replaced. Failing to which the penalty of Rs. 5000/- per day has to be paid by the contractor.
12. Three years OEM warranty should be availed with advance replacement, by the contractor for Stage Lighting equipments on completion of the work. A letter from the original equipment manufacturer of Stage Lighting equipments in support of the extended warranty and service terms shall be submitted along with the supply of the equipment.

13. COMPLIANCE WITH REGULATIONS

The work shall comply in all respects with this specification and:

- a) The Building Regulations applying to the project including requirements of the National Building Code 2016.
- b) Wiring rules and regulation, requirements of the local electricity supply authority and electrical inspectorate.
- c) Any other regulations that apply directly or indirectly to such installations in the location. Where conflict arise between this specification and any of the applicable acts, codes or standards the highest standard of materials and workmanship shall prevail.
- d) The completed installation shall be offered for inspection by inspectors of the relevant statutory authorities prior to physical completion and the rectifications required by such statutory authorities shall be within the scope of work.

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- e) If the contractor proposes to supply finished goods procured directly or indirectly from vendors, from the countries sharing land border with India, such vendor will be required to be registered with the competent authority under Government of India. Such procurement shall be accepted only on furnishing the details of such registration.

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**ADDITIONAL CONDITIONS FOR AIR CONDITIONING SYSTEM
(VRV/VRF). (C-6)**

- 1- **Specification**:- The work shall be executed as per CPWD's general specification for Electrical Works, Part-I-2013, Heating, Ventilation & Air-Conditioning (HVAC) – 2017, Part-IV-2013 for Sub-Station. Indian Standards amended up to date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations, specifications given along with the tender shall apply.
2. The contractor is advised to visit the site before submission of their tender and ensure that equipment being offered by them shall be accommodated in the spaces available.
- 3- The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.
4. Contractor shall preserve the copies of invoices, test certificates; gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement, genuine material of specialized works shall rest with the contractor.
5. **No inspection outside the country is permissible if required so the same will be deemed to be waived off and necessary test report shall be submitted along with the equipment.**

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COMMERCIAL AND ADDITIONAL CONDITIONS

1. General

This specification covers manufacture, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, final testing commissioning, i/c one-year guarantee period for the following work: -

2. Security Deposit

As per CPWD General Condition of Contract (GCC)-2020 (amended up to date)

3. Performance Guarantee

As per CPWD General Condition of Contract (GCC)-2020(amended up to date)

4. Rates

- 4.1 The rates quoted by the tenderer, shall be firm and inclusive of all taxes (including works contract taxes), duties and levies and all charges for packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc. at site i/c temporary constructional storage, risks, overhead charges general liabilities/obligations and clearance from concerned authorities, Statutory government charge.

5. Completion period

The completion period of indicated in the tender documents is for the entire work of planning, designing, supplying, installation, testing, commissioning and handing over the entire system to the satisfaction of the Engineer-in-charge.

6. Data Manual and Drawings to be furnished by the tenderers:

- 6.1 The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipment regarding installation, adjustments operation and maintenance i/c preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue and workshop procedure for repairs, assembly and adjustment etc. all in triplicate.

7. Extent of work

- 7.1 The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning as may be required by the department. The term complete installation shall not only mean major items of the plant and equipment covered by specifications

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- but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender document in connection with this contract.
- 7.2 Minor building works necessary for installation of equipment, foundation, making of opening in floors and restoring to their original condition, finish and necessary grouting etc. as required.
- 7.3 The work is turnkey project. Any item required for completion of the project but left inadvertently shall be executed with-in the quoted rates.

8. Insurance & Storage:

All consignments are to be duly insured up to the destination from warehouse to warehouse at the cost of the contractor. The insurance cover shall be valid till the equipment from the manufacture has been supplied and erected.

9. Verification of correctness of Equipment at Destination:

The contractor shall have to produce all the relevant records to certify that the genuine equipment from the manufacturers has been supplied and erected.

10. Terms of payment:- The following percentage of contract rates for the various items included in the contract shall be payable against the stage of work shown herein.

- i) 60% after initial inspection (wherever specified) & delivery at site in good condition on pro-rata basis.
- ii) 20% after completion of installation in all respects.
- iii) Balance 20% will be paid after testing, commissioning and handing over to the department for beneficial use.

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Additional Technical specification

1 Heat Load Calculations and Equipment Selection

- i) The tenderer shall give detailed heat load calculations, after award of work, as per Appendix-D' prescribed in CPWD General Specification for HVAC Work-2017 separately for seasons in which, the specified conditions are to be maintained.
- ii) The equipment selection shall be made on the basis of the above heat load calculations, and get it approved by the Engineer-in-charge, before execution of work.

2. GI Duct (Site Fabricated)

The duct shall be fabricated out of galvanized sheet, (Zinc coating 120 gm/m²) as per latest IS 655:2006 amended up to date.

3. Volume Control Device

The opposed blade volume control device shall be made of MS duly black painted. Specially designed blade shall have an overlapping lip, which shall ensure a tight closure.

4. *Governing Standards*

The construction, erection, testing and performance of the ducting system shall conform to the latest CPWD specification & relevant IS Codes.

5. VRV / VRF System

General

- 5.1 The equipment for variable refrigerant volume/flow (VRV/VRF) system shall be air-cooled consisting of Outdoor units and multiple Indoor units for cooling the space in summer and heating in winter (whenever Heat pumps are specified).
- 5.2 The system shall consist of suitable Outdoor units, Indoor units as required, interconnecting refrigerant piping, control cabling and accessories as required.
- 5.3 It shall be possible to connect multiple Indoor units on a single refrigerant circuit. The Indoor units on any circuit may be of different type and should allow individual control.
- 5.4 The minimum length of Refrigerant piping in a branch circuits or all circuits shall be as per chart given later on but the total piping length shall not be more than 300 m.

6. Specifications of Outdoor units:

- (i) Outdoors units of the VRV system shall be compact air-cooled type.

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- (ii) The outdoor unit should comprise of Inverter controlled Twin Rotary Compressor / Scroll Compressor.
- (iii) Each module of outdoor unit must have at least 50 % of Variable compressor which can work on Part load Suitable to operate at heat load proportional to indoor requirement.
- (iv) The ODU must deliver COP of minimum 4.7 at 50 % load.
- (v) The outdoor units must be suitable for up to 225 m refrigerant piping between outdoor unit & the farthest indoor units. Allowable level difference between outdoor unit & indoor units shall be 50 m in case of outdoor unit on top & 40 m in case of outdoor unit at bottom.
- (vi) Allowable level difference between various indoor units connected to one out door unit shall be up to 15 m.
- (vii) The outdoor units shall be suitable to operate within an ambient temperature range of 5 Deg C to 43 Deg C in cooling mode; & -20 Deg C to 15 Deg C in heating mode.
- (viii) The entire operation of outdoor units shall be through independent remotes of indoor units. No separate Start/ Stop function shall be required.
- (ix) Starter for the Outdoor Unit compressor shall be — Direct on Line type. Inverter compressor of the unit shall start first & at the minimum frequency, to reduce the inrush current during starting.
- (x) Complete refrigerant circuit, oil balancing/ equalizing circuit shall be factory assembled & tested.

7. Specifications of Indoor units:

The units include pre-filter, fan section and DX coil section. The housing of units shall be light weight powder coated galvanized steel. Units shall have external casing of ABS Plastic for supply and return air.

i) **4 Way Cassette type indoor units:**

- (a) These units shall be installed between the bottom of finished slab & top of false ceiling.
- (b) Unit shall have provision of connecting fresh air without any special chamber & without increasing the total height of the unit (320 mm maximum).
- (c) The unit must have in built drain pump, suitable for vertical lift of 750 mm.
- (d) Unit must be insulated with sound absorbing thermal insulation material, Polyurethane foam. The sound pressure level of unit at the highest operating level shall not exceed 46 dB (A)
- (e) The unit must have drain pump kit if. The drain pump must be suitable to lift drain up to 1000 mm from the bottom of the unit.

ii) **Concealed duct type units:**

- (a) These units shall be ceiling suspended with suitable supports to take care of operating weight of the unit, without causing any excessive vibration & noise.
- (b) The cold air supplied by these units will be supplied to the area to be air conditioned, through duct system specified in the tender.
- (c) Each indoor unit must have electronic expansion valve operated by microprocessor thermostat-based temperature control to deliver cooling/ heating as per the heat load of the room.
- (d) The Sound Pressure level of unit at the highest operating level shall not exceed 38 dB (A), at a vertical distance of 1.5 m below the units with duct connected to the unit.
- (e) The unit must have provision of adding drain pump kit if required & specified. The drain pump must be suitable to lift drain up to 1000 mm from the bottom of the unit.

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8. Compressor

- 8.1 Each unit shall have single/multiple hermetically sealed scroll compressor.
- 8.2 The scroll compressor shall consist of two spiral discs, where one is fixed and the other rotate. The disc shall be mounted eccentrically to allow orbital movement. This shall permit compression of Refrigerant gas, as it moves up between the eccentric discs.
- 8.3 Both the spiral disc out rotor shall be mounted on a common shaft with antifriction bearing, suitable for handling both radial and axial thrust.
- 8.4 The compressor casing shall be fabricated from mild steel of thickness capable of withstanding the working pressures. The casing shall have built-in oil reservoir with a sump of adequate capacity.
- 8.5 The compressor shall be complete with a suitable High efficiency motor hermetically sealed within the compressor housing.
- 8.6 The compressor housing shall also have oil reservoir for lubrication and suitable means like an oil pump or pressure differential device shall be provided to lubricate all moving parts.
- 8.7 One or more compressor shall be provided with suitable sine wave or equivalent DC Inverter for capacity modulation.

9. Condenser / Heat Exchanger and Fans

- 9.1 The condenser shall be air-cooled type, where heat exchanger shall be fabricated from copper tubes, mechanically bonded to aluminum fins to form a cross fin coil. The aluminum fins shall be given anti-corrosion treatment. This treatment shall be suitable for areas of high pollution, moisture and salt laden air.
- 9.2 The condenser fans shall be with multi blades of aero foil design for low noise level, high efficiency and fitted with a high efficiency fan motor.
- 9.3 The fan outlet shall be protected by a suitable wire guard on the outside.
- 9.4 Suitable devices and heat exchanger means shall be built-in the unit to provide maximum super-cooling of refrigerant to increase system efficiency.
- 9.5 The unit shall be complete with safety controls and suitable microprocessor-based master control module.
- 9.6 The module should be capable of connecting to web or to other devices through common BACnet or LAN networks.
- 9.7 All the above component shall be housed in a compact mild steel cabinet having air Inlet louvers, safety guard on the condenser fan. The ambient shall be mode weather proof using suitable anti corrosion treatment and finishing point.

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10. High Wall Mounted units

- 10.1 The high wall mounted units will be complete with cross flow fan, vertical DX coil, filters, and control units and plastic outer cabinet.
- 10.2 The cross-flow fan should be of generous dia. and length to deliver the required air quantity at high speed and be very quiet with Noise level below 38 db A.
- 10.3 The fan assembly shall be directly mounted on a low noise, high efficiency motor.
- 10.4 The DX evaporator coil and other common features shall be as given under para 5.3
- 10.5 The air filter shall be electrostatic type to remove dust, pollen and other impurities.
- 10.6 The outer casing shall be made of high-grade plastic, complete with return air grille, motorized supply air louvered opening and suitable metallic back panel for mounting all items.

11. Concealed ceiling suspended unit

- 11.1 The concealed units shall be complete with fan assembly, DX evaporator coil, air filter, outer casing and control unit.
- 11.2 The fan shall be centrifugal type with housing and mounted directly on the motor shaft.
- 11.3 The air filter shall be preferably electrostatic type.
- 11.4 The outer casing shall be of heavy gauge G.I. sheet duly treated for long life and shall be complete with 25 mm deep duly insulated drain pan.

12. Ceiling Suspended High Static Unit

- 12.1 The unit shall be complete as described in Para 11, except for the fan section.
- 12.2 The fans shall be selected and designed for highest air static pressure, to allow for at least 5 to 6 m of ducting with grilles.

13. Ceiling Mounted Exposed Unit

- 13.1 The exposed type unit shall be similar to the concealed type as described in Para 11, except for the outer casing.

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- 13.2 The unit shall have a decorative outer casing with built-in supply air grilles and return grilles.
- 13.3 The casing shall be with anti-corrosive treatment and finished with powder coated paint in attractive finish.

14. Floor Standing Units

- 14.1 The floor standing units shall be vertical in design and may be suitable for concealed furred in installation or cabinet type for exposed installation.
- 14.2 The fans shall be centrifugal type mounted directly on the motor shaft.
- 14.3 The air filter shall be cleanable electrostatic type.
- 14.4 The concealed type of vertical unit casing shall be of heavy gauge galvanized sheet with anti-corrosive paint.
- 14.5 It should be complete with deep drawn insulated drain pan and shall permit easy access for filter cleaning and maintenance of coil and fan motor.
- 14.6 The cabinet type of exposed vertical units shall in addition have a decorative cover with built in supply and return air grilles.

15. Ductable Units

- 15.1 The ductable indoor units shall be ceiling suspended type, complete with fan assembly, DX coil, air filters, control units and outer casing.
- 15.2 The fan shall be centrifugal suction type with fan casing and direct driven motor. The fan shall have a minimum external static pressure of 100 Pa.
- 15.3 The air filter shall be cleanable type with mold resistant resin net fixed to an integrally moulded plastic frame. The filter shall be sliding type with frame for ease of insertion and removal.
- 15.4 The outer casing shall be of heavy gauge galvanized duly treated for corrosion resistance and finished with powder coated paint. It should have internal insulation to prevent condensation and absorb fan noise.
- 15.5 There shall be suitable deep drawn insulated drain pan.

16. Indoor Control Unit

- 16.1 All types of indoor unit shall have one of the following controllers:

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16.1.1 Cordless Type

16.2 Unless otherwise specified the controller to be provided shall be as follows:

16.2.1 **Cordless Remote:** Wall units or other units which are located in an enclosed cabin.

16.3. A Computerized DIP control shall be used to maintain room temperature.

16.4 The unit shall be equipped with a self-diagnosis for easy and quick maintenance and service.

16.5 The LCD (Liquid Crystal Display) remote controller shall memorize the latest malfunction code for easy maintenance.

16.6 It shall be able to control up to 16 Indoor units and change fan speed individually in the group.

17. **Refrigerant Piping Capabilities**

17.1 The unit shall be capable of long length of piping and for providing lift of Refrigerant due to level difference between the Outdoor unit and Indoor units at the highest levels.

17.2 The minimum distance capability of the unit shall be as follows:

17.2.1	Total Piping length of system	Max.	300 m.
17.2.2	Actual length in any circuit	Max.	150 m.
17.2.3	Equivalent piping length any circuit	Max.	175 m.
17.2.4	Level difference between ODU and IDU	Max.	50 m.

18. **Refrigerant Piping**

18.1 All refrigerant piping for the VRV/VRF system shall be carried out using hard drawn seamless copper pipe using either soft, half hard or hard pipes as per chart below:

18.1.1 The piping thickness shall be as follows:

OD(Inch)	OD(mm)	Min. Wall Thickness (mm)	Soft	Half Hard or Hard
1/4"	6.35	0.80	√	√
3/8"	9.52	0.80	√	√
1/2"	12.70	0.80	√	√
5/8"	15.88	1.00	√	√

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3/4"	19.05	1.00	√	√
7/8"	22.20	1.00	X	√
1.1/8"	28.58	1.00	X	√
1.3/8"	34.92	1.10	X	√
1.5/8"	41.28	1.25	X	√

18.2 The branching of refrigerant piping from the main line shall be carried out using either specially designed 'Tee' connectors or 'Y' joints. These joints should ensure that each branch receives the required refrigerant flow.

18.3 All pipe sizing shall be on the basis of sizing data of the concerned manufacturer and should ensure adequate oil return back up to the compressor.

19. Pipe Insulation

19.1 Réfrigérant Pipe Insulation

19.1.1 The whole of the liquid and suction refrigerant lines including all fittings, valves and strainer bodies, etc. shall be insulated with 19mm thick Nitrile close cell rubber, so that condensation does not occur.

19.1.2 The joints shall be properly sealed with synthetic glue to ensure proper bonding of the ends.

20. Drain pipe insulation

20.1 Drain pipe carrying condensate water shall be insulated with 6 mm nitrile rubber insulation having K value 0.037 W/°K at a mean temperature of 20°C at min. density of 55 kg./m³.

20.2 The joint shall be properly sealed with synthetic glue to ensure proper bonding of the ends.

21. Centralized Intelligent Touch Remote controller

21.1 A multifunctional compact centralized controller shall be provided with the system.

22.2 The Graphic controller shall act as an advanced air conditioning management system to give complete control of VRV air conditioning equipment. It shall have ease of use for the user through its touch screen. Icon display and colour LCD display.

23.3 It shall be able to control up to 64 groups of Indoor Units with the following functions:

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- 23.3.1 Starting/stopping of air-conditioning as a zone or group of individual units.
- 23.3.2 Temperature setting for each Indoor units of zone.
- 23.3.3 Switching between temperature controls modes, switching of the fan speed and direction of airflow, enabling/disabling of individual remote controller operation.
- 23.3.4 Monitoring of operation status such as operation mode & temperature setting of individual indoor units, maintenance information, troubleshooting information.
- 23.3.5 Display of air conditioner operation history.
- 23.3.6 Daily management automation through yearly schedule function with possibility of varying schedules.
- 23.4 The controller shall have wide screen, user friendly colour LCD display which could be wired by a non-polar 2 wire transmission cable to a distance of 1 km. away from the Indoor unit.

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Additional Conditions for Addressable Fire Alarm System.

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- 1- Specification:- The work shall be executed as per CPWD General Specifications for Electrical Works Part VI Fire Detection and Alarm System – 2018 amended up to date, as per NBC 2016 and as per direction of Engineer-in-charge. The additional specifications are to be read with above and in case of any discrepancy; technical specifications given along with the tender shall apply.
- 2- Location:- The work is to be executed at **NCZCC, Prayagraj**. The contractor is advised to visit the site before submission of their tender and ensure that equipment being offered by them shall be accommodated in the spaces available. The Fire Fighting Pumps (except Terrace Pump) are to be installed in the underground pump house.
- 3- Pre-commissioning test:- Before commissioning of the installation, all tests as per CPWD's specifications and or respective manufacturer's recommendations shall be carried out and result submitted.
- 4- Acceptable make:- The acceptable make of various equipment are indicated in the list attached. Alternative or equivalent make will not be accepted.
- 5- Approval of Drawings: After award of the work, the contractor will have to submit following drawings:- (i) Single Line Diagram of Fire Alarm System. (ii) Drawings of Fire Alarm System. (iii) Any other drawing considered necessary by Engineer-in-Charge. Work will be started after getting the above drawings approved by the Engineer-in-charge.
- 6- Final inspection:- After completion of the work, the contractor will demonstrate trouble free operation of the system to the Engineer-in-Charge. In case any deficiencies are noticed during the demonstration, the same will be attended by the contractor promptly.
- 7- Minor Building Work: Minor building work such as Foundation, making opening in Walls/Slab for passage of pipe, making chases, fixing suspenders in Slab/Walls and furnishing the damages to the building to the satisfaction of Engineer-in-Charge etc. are to be executed by the contractor as a part of the work and nothing extra shall be paid for the same.
- 8- Indemnity: The contractor will be fully responsible for any accident taking place during execution of the work. The department will not take any responsibility for the same.
- 9- Completion Plan/Drawings: After completion of the work the contractor will submit completion plans, wiring drawings of equipment, catalogue etc. which are required for maintenance of the system.
- 10- **Approval from CFO:-** The Contractor shall be required to obtain NOC from Chief Fire Officer, and work shall be deemed to be completed only after receiving NOC from CFO & rectification if any. Statutory fee if any shall be paid by department. However all liasoning work / arranging inspection of CFO shall be the responsibility of contractor.

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- 11- The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.
- 12- Contractor shall preserve the copies of invoices, test certificates, gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement, genuine material of specialized works shall rest with the contractor.
- 13- No inspection outside the country is permissible if required so the same will be deemed to be waived off and necessary test reports shall be submitted before the dispatch of equipment.

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Additional Conditions for providing Fire Fighting down comer system.
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1. **Specification:-** The work shall be executed as per CPWD's general specification for Electrical Works part-I (Internal)-2013, Part-II (External)-1994, Part-IV (Sub-station)-2103, Part-V (Wet Riser System for Fire Fighting Installation)-2020, IE Rules, Indian Standards amended upto date and as per direction of Engineer-in-Charge. The additional specifications are to be read with above and in case of any variations; specifications given along with the tender shall apply.
2. **Location:-** The work is to be executed at **NCZCC, Prayagraj** The Contractor is advised to visit the site before submission of their tender.
3. **Approval from CFO:-** The Contractor shall be required to obtain NOC from Chief Fire Officer and work shall be deemed to be completed only after receiving NOC from CFO & rectification if any. Statutory fee if any shall be paid by department. However, all liasoning work / arranging inspection of CFO shall be the responsibility of contractor.
4. **Storage: -** Responsibility for storage space for execution of work shall be of main contractor.
5. **Power & Water Supply: -** Responsibility for supply of power & water for execution of work shall be of main contractor.
6. The material in required quantity to be used in the work shall be got approved from the Engineer-in-charge before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not as per specifications.
7. Contractor shall preserve the copies of invoices, test certificates; gate passes etc. to prove the genuineness of material/purchases. The responsibility of procurement, genuine material of specialized works shall rest with the contractor.
8. **No inspection outside the country is permissible if required so the same will be deemed to be waived off.**

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TERMS AND CONDITIONS (Internal & External E&M works)

- 1- The work shall be carried out strictly in accordance with CPWD specifications for Electrical Works, Part-I, 2013 (Internal) and Part-II 1994 (External), CPWD specifications for Electrical Works 2013, Part-IV, Sub-station as amended up to date and in accordance with Indian Electricity Rules, 1956, Indian Electricity Act, 1910 as amended up to date and as per instructions of the Engineer-in-Charge.
- 2- So far operation of new sub clause 10 CC of contract if applicable for percentage for material and labour is concerned, it shall be regulated as follows: -
 - (a) In the case of underground cable work the component of material and labour shall be taken as 60% and 40% respectively.
 - (b) In all other case it shall be as per schedule F of electrical component.
- 3- All material to be used on this work by the contractor shall be got approved from the Engineer-in-Charge before installation at site.
- 4- The work shall be carried out according to approved drawings / details which can be seen in the office of the Engineer-in-Charge which shall be subsequently issued to the successful tenderer for execution of work and as per instructions of the Engineer-In-Charge. However, the department reserves the right to change the layout as per requirement at site.
- 5- All damages done to the building during the execution of electrical work shall be responsibility of the electrical contractor and the same will be made good immediately at his own cost to the satisfaction of the Engineer-in-Charge. Any expenditure incurred by the department in this connection shall be recovered from the contractor and decision of Engineer-In-Charge about recover shall be final.
- 6- The bad workmanship will not be accepted and defects shall be rectified at contractor's cost of the satisfaction of the Engineer-in-Charge. The programme of electrical works are to be coordinated in accordance with the building work and no claim for idle labour will stipulated in the tender, electrical work shall have to be completed within 30 days of the completion of civil work.
- 7- All the debris of the electrical works should be removed and the site should be cleared by the contractor immediately after the accruing of debris. Similarly any rejected material should be immediately cleared off from the site by the contractor.
- 8- Issue of material to the contractor wherever stipulated, shall be according to the requirement at site from time to time depending upon the program of work.
- 9- The contractor shall have to return the surplus/unused material supplied by the department for use on work at the place of original supply failing which the recovery shall be made at the recovery rate as given the list stipulated materials.
- 10- Cement for this bonafied work is to be arranged and used by the contractor himself and nothing extra will be paid on this account.
- 11- The contractor shall make his own arrangement for storage, watch and ward of the materials and no claim in respect of any damage, loss or theft shall be entertained by the department. The watch and ward of material issued to the contractor or installed at site shall be the responsibility of the contractor till the installation on completion is finally handed over to the department.

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- 12- The contractor or his representative is bound to sign the site order book as and when required by the Engineer-in-Charge and to comply with the remarks therein.
- 13- The contractor shall make his own arrangement at his own cost for electrical / general tools and plants required for the work.
- 14- The rates of all items of work shall unless clearly specified otherwise, includes the cost of all labour, materials and other input involved in the execution of work.
- 15- Central / State Sales Tax / Contract Tax / Excise Duty, GST etc. should be included in the rates tendered. Statutory deductions of contract tax at source shall be made while releasing payment through running/final bills. A certificate specifying the rate and amount of deduction shall however be issued. No Form 31/32 (road permit) shall be issued by the department. The road permit shall be arranged by the tenderer at his own.
- 16- The entire installation shall be at the risk and responsibility of the contractor until these are tested and handed over to the department. However if there is any delay in construction from the department side, the installation may be taken over in parts, but the decision on the same shall be rest with Engineer-in-Charge which shall be binding on the contractor.
- 17- All U.G. Cable work shall be got inspected and measurements lest checked by the Assistant Engineer in charge of work and his authorized representative before filling up the trenches, failing which work remain subject to 100% recheck at the risk and cost of the contractor.
- 18- All U.G. Cables before laying shall be got tested for continuity in presence of the authorized representative of the Engineer-in-Charge. Note to this effect shall be given in site order book.
- 19- Route of the U.G. Cables shall be got approved from the Engineer-in-Charge or his authorized representative.
- 20- Earthing shall invariably be done in the presence of the Engineer-in-Charge pr his authorized representative.
- 21- Completion Plan & Test Certificate: Contractor shall submit completion plan (for works costing more than Rs.1/- lacs in triplicate before finalization of bill failing which recovery @2.5% subject to maximum of Rs.15000/- shall be made from final bill. Contractor has to submit SLDs & layout plan in triplicate in Dwd.pdf & A0 size hard copies in triplicate duly signed and checked by the concerned JE/AE.
- Test certificate for the work carried out shall also be submitted failing which recovery @1% maximum of Rs.15000/- shall be made from final bill.
- 22- Contractor shall preserve the copies of invoices, test certificates; gate passes etc. to prove the genuineness of material / purchases which are used at site as per agreement
- 23- Notwithstanding the schedule of quantities, all items of interrelated works consider necessary to make the installation complete and operative are deemed to be included shall be provided by the contractor at no extra cost.

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APPROVED MAKES OF MATERIALS FOR E & M

Sl.	Details of Materials/ Equipment	Manufacturer's Name
	I.E.I, MCBDB & MCB, Cables and Wires	
1	MCB, Isolator, Industrial plug Socket, RCCB, RCBO's (ISI Marked/IEC Compliant)	Schneider Electric ACTI-9(N)/ Legrand (DX3)/ Hager/ L&T(Exora)/ ABB (SB200M)/Siemens (Betaguard)/ Indoasian (Optipro)/C&S(Wintrip2)/Anchor by Panasonic/Havells/ Polycab
2	MCBDB & Loose Wire Box	Schneider Electric/ Legrand/ Hager /L&T/ ABB (Elegance)/ Siemens/ Indoasian (Optipro)/ C&S/ Havells
3	Change Over Switch	L&T/ Havells/ HPL/ Hager/ C&S
4	Automatic Transfer Switch (ATS)	Asco/Russel/Socomac/Hager/ABB/ L&T
5	FRLS PVC insulated copper conductor single core cable for wiring. (ISI marked)	Finolex/ RR Kabel/ KEI/ Havells/ Polycab/Paragon (Electron)/ Lapp/Grandley/Plaza cables/Panasonic/ Anchor/Bonton/ HPL/Gloster
6	Armoured/Unarmoured Telephone cable, Coaxial Cable	Delton/ Finolex/ RR Kabel/ Havells/ Grand ley/
7	MS Conduit (ISI marked) with heavy duty MS conduit pipe accessories	BEC/NIC/AKG/RMCON/JPC (Note: The make of accessories shall be same that of conduit pipe and will comply to IS/4768 part 2 2003)
8	PVC conduit (ISI marked) with heavy duty PVC conduit pipe accessories	AKG/ Norpack/BEC/Polypack/Precision/Anchor/ Polycab
9	Modular switches, socket/ telephone socket/ cable TV socket/ data outlet socket/ fan regulator/ GI boxes etc (Wiring accessories)/ regulators etc.	Legrand / Schneider electric / Wipro / Hager / M.K. /Havells / ABB / Polycab/ HPL
10	Selector Switch & Toggle Switch	L&T/ Siemens/ Kaycee/ABB
11	PVC Trunking	MK/ Schneider Electric/ Legrand
12	GI Pipe	Tata/ Jindal (Hissar)/ Prakash Surya
13	Paints	ICI/ Asian/ Berger
14	Terminal Blocks & Connectors	Elmax/Wago/Hensel/Connectwell
15	Phenolic Laminated Sheet/ Bakelite sheet	Hylam/ Formica (P-I Grade)/ Mylam/Greenlam
16	Cat-6 Cable, Co-Axial cables, Telephone Wires & cable	Amp, Avaya/ Beldon/ Legrand/ Molex/ Schneider/ Comscope
	Fans & Fittings	
1	Fluorescent Fittings	Wipro/ Phillips/ Crompton Greaves/ Havells/Osram/Jaquar
2	LED Fittings (ISI Marked/BEE Certified)	Wipro/ Phillips/ Crompton Greaves/ Havells/Osram/Bajaj/ Trilux/Lighting Technology
3	Exhaust fan	Havells/Crompton greaves/USHA/ Almonard/Orient/ Bajaj
4	Ceiling Fan ISI Marked/BEE Certified)	Havells/ Crompton Greaves/ USHA/ Orient/ Bajaj/ Orient Electric
5	Wall Bracket Fitting	Havells/ Crompton Greaves / Decon / Phillips/Lighting Technology/ Luster/ Jaquar/Anchor Panasonic/ Orient Electric/Halonix
6	Lamps / Fluorescent tubes/ T-5 Fluorescent Tubes/ LED lamp	Wipro/Phillips/ Crompton Greaves/ Havells/Osram/Jaquar/Bajaj
7	Geysers (BEE Certified)	Racold/CG/Havells/Usha/Venus/AO Smith/Jaquar/ Bajaj
	Street Lighting	

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1	LED post Top fitting	Wipro/ Phillips/ Crompton Greaves / Havells/ Osram/ Keselec Schreder/ Lighting Technology/ Bajaj
2	LED Street light fitting	Wipro/ Phillips/ Crompton Greaves / Havells/ Osram/ Keselec Schreder/ Lighting Technology
3	LED street lights with inbuilt Solar panel and controller	Wipro/ Phillips/ Crompton greaves/ Havells/ Osram/ Lighting Technology/Bajaj
4	Ornamental MS & G.I pole (factory finish)	Keselec Schreder/Valmont / Wipro/ Phillips/ Crompton greaves/ Bajaj/Paruthi Engineers Pvt. Ltd./ Luster/Twinkle
5	Hot Dipped Galvanized Octagonal Pole (Factory finish)	Valmont/ Wipro/ Phillips/Crompton Greaves/Bajaj/ Paruthi Engineers Pvt. Ltd.
6	Polycarbonate Junction Box/ Enclosure	Hensel/ Spelsberg/ Naptune-Bals
7	XLPE Insulated PVC Sheathed Alum./ Copper Conductor Armored Cable of 1.1KV Grade	Finloex/ RR Kabel /Havells/Polycab/ Paragon (Electron) / Universal/ Nicco/ RPG cables/Grand ley/ Gloster
Sub Station Equipments		
1	LT panel/ Meter Panel Board/ Outdoor Feeder Pillar/APFC panels / Bus ducts	Tricolite Electrical Industries/ C&S/ Sterling & Wilson/ MILESTONE/ Adlec Control System Pvt. Ltd./ Advance Panels & Switchgears Pvt. Ltd./ Indo Asian /Associated Switchgears & Projects Ltd/ Allied Engineers/ HPL/ SPC Electrotech Pvt. Ltd.
2	Air insulated Rising Main/ Bus Trunking	C&S/ L&T/Schneider/Legrand/Godrej
3	Sandwich type bus Trunking/ Rising Main	C&S/ L&T/Schneider/Legrand/Godrej
4	Moulded Case Circuit Breaker (MCCB) Thermal Release/ Microprocessor Based (Ics=Icu=100%)	Schneider electric NSX series/ Legrand (DPX3)/ L&T(D-Sine)/ABB(T-Max)/Siemens(VL series)/C&S(Winbreak-1/2)
5	Power/ Aux. Contactor 3/4 Pole	Schneider Electric/ Legrand/Hager/L&T/ ABB/ Siemens /C&S/BCH
6	Potential transformers/ Current Transformers	Automatic Electric/ Gilbert & Maxwell/ Matrix/ Precise/ L&T/ Kappa
7	LED Type Indicating Lamps/ Push button	Schneider electric /L&T / Siemens/C&S/Vaishno/Syska
8	Over load relays	Schneider Electric/ L&T/ Siemens/C&S/ABB
9	Conventional/Electronic Digital Meters (A/V/PF/Hz/KW/KWH)	Conzerv/ L&T/ Secure/ AE/ C&S
10	Timer	Schneider Electric/ Legrand / Hager / L&T/ABB/Siemens/C&S
11	Fasteners/ GI Clamps	Hilti/ Fisher/ Chillli / GMGR
12	D.W. Corrugated HDPE Pipe (ISI Marked)	REX/ Duraplast/Tripusti/ Duraline/CPE
13	Transformer (Oil/ Dry pipe)	Crompton/ ABB/ Schneider/VOLTAMP
14	HT Panel/ Ring main Unit	Compton/ Siemens/ ABB/ L&T/ Schneider/Coronet Engineers Pvt. Ltd.
15	H.T. Cable (ISI marked)	CCI/Havells/Polycab/Universal/Nicco
16	HT End Termination/Cable Joining Kit	Reychem/ Denson/ Cab Seal/safekei/3M
17	ACBs with Display	Schneider Elecric(Masterpact)/Legrand(DMX3MP4)/L&T (U-Power-OMEGA)/ABB(Emax)PR122/Seimens/C&S (Win Master)
18	Rubber mat	Jyoti/ Deep Jyoti/ Premier (Duly ISI Marked)
19	Ammeter	L&T/AE/C&S
20	Voltmeter	L&T/AE/C&S
21	Fire Extinguishers(ISI Marked)	Minimax/ Safex/ Lifeguard/Kanex/ Omex/Ceasefire/Andex/KalpEX

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22	Capacitor and Reactors /APFC Relay	EPCOS/ L&T/ DUCATI/ ABB/ Siemens/ Schneider
23	XLPE Insulated PVC Sheathed Alum./ Copper Conductor Armored Cable of 1.1KV Grade	Finloex/ RR Kabel /Havells/Polycab/ Paragon (Electron) / Universal/ Nicco/ RPG cables/Grand ley/ Gloster
24	Cable Glands Double Compression With Earthing Links	Baliga Lighting/ Comet/ Cosmos/ Dowells/Gripwell
25	Bimetallic Cable Lug	Comet/ Dowells (Biller India)/ Hex Brass (Copper Alloy India) / Jainson/ Action
26	MS/ GI Cable Tray	Pilco/slotco/pasco/MEM/ BEC/ steelways/ Legrand/ RMcon/True leader/R.P. Controls
27	Programmable Logic Controller (PLC)	Siemens/ Allen Bradley/ L&T/ ABB
28	Compact sub-station	Voltamp/Crompton Greaves/ABB/Siemens/L&T/Schneider electric
	DG Set	
1	Diesel Operated Generating Engine	Cummins India/ Caterpillar/ KOEL/ Volvo Penta/Perkins/ Greaves Cotton Limited
2	Alternator	Stamford/ lerroy sommer/ kirloskar electric/ caterpillar/ Crompton
3	DG Set Canopy/ Enclosure & AMF Panel	As per OEM/OEA of respective DG set manufacturer
4	Alarm Annunciator	Advani Oralikon/ L&T/ Minilec
	CCTV System	
1	BULLET CAMERA	CP PLUS/GLOBUS INFOCOM/PRAMA /INDINATUS/SAMSUNG INDIA/PANASONIC
2	DOVE CAMERA	CP PLUS/GLOBUS INFOCOM/PRAMA /INDINATUS/ SAMSUNG INDIA/PANASONIC
3	PTZ NETWORK DOVE CAMERA	CP PLUS/GLOBUS INFOCOM/PRAMA /INDINATUS/ SAMSUNG INDIA/PANASONIC
4	NETWORK VIDEO RECORDER	CP PLUS/GLOBUS INFOCOM/PRAMA /INDINATUS/ SAMSUNG INDIA/PANASONIC
5	HARD DISK DRIVE	SEAGATE/HITACHI/WD
6	LED MONITOR	SAMSUNG/LG/PANASONIC/SONY
7	NETWORK SWITCH	CISCO/D-LINK/DIGISOL/ZUNIPER/BROCADE
8	MEDIA CONVERTOR	CISCO/D-LINK/DIGISOL/ZUNIPER/BROCADE
9	POWER WIRE/CABLE	POLY CAB/GRANDLAY/FINOLEX/SKYTONE/R R KABEL
10	PVC CONDUIT	AKG/PRECISION/FINOLEX /BEC/VIKAS
11	FIBER CABLE /CAT6 CABLES	AMP/AVAYA/BELDON/LEGRAND/MOLEX/ SCHNEIDER/COMSCOPE
	EPABX System/ IP Based PBX System	
1	EPABX System	Siemens/Cisco/Alcatel/Coral/Panasonic/Avaya
2	Master console phone	Siemens/Cisco/Alcatel/Coral/Panasonic/Avaya
3	Telephone instrument	Beetal/ Tata/ Panasonic/Coral
4	18 SWG sheet (Chrono Box)	Topaz/Coral/Crown
5	Constant voltage transformer	Topaz/Bhurji/Delta/ Servokon
6	Unarmoured telephone wire	Delton/ Finolex/RR Kabel/Havells
7	Cat-6 cable, Wires & Fiber optic cable	Amp/Avaya/Beldon/Legrand/ Molex/Schneider
8	IP Based PBX System	Matrix/Panasonic/NEC/CISCO/Alcatel/Eric sson/Siemens/Tadiran
9	Managed Network Switches	CISCO/Allied Tellies/HP/Netgear/Juniper

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10	Rack (Network/Server)	Netrack/WQ/Panduit/Rittal/Derwiser Emersion/Schneider(APC)/Valrack
11	All other items not covered above	As per approval of the Engineer-in-Charge

Fire Fighting Equipments		
1	MS pipe	Tata/ Jindal (Hisar)/Parkash surya
2	GI Pipe	Tata/ Jindal (Hisar)/Parkash surya
3	Forged Steel Fittings/flanges	Johnsons Industries/ VS Forge/ JK Forging/ True forge
4	Forged Steel Fittings and flanges (for welding joints)	VS Forge/Rohini/kanwal forge/Johnson/ True forge
5	Pipe hangers	Chilli/Hilti/GMGR
6	Gun metal/ Brass Valve (ISI marked) / (Full way Globe valve/Non return valve)	Sant/ Leader/ Advance/ Zoloto/ Kirloskar
7	Butterfly/Sluice (ISI marked)	Audco/ Sant/ Leader/ Advance/ Zoloto/ Kirloskar
8	Check Valve (ISI marked)	Audco/ Sant/ Leader/ Advance/ Zoloto/ Kirloskar
9	Foot Valve (Cast Iron / Gun Metal)	Audco/ Sant/ Leader/ Advance/ Zoloto/ Kirloskar
10	Y- Type Strainer	Audco/ Sant/ Leader/ Zoloto/ Kirloskar
11	Fire/ Sprinkler Pump/ Terrace Fire Pump	Kirloskar/KSB/ Grundfos/ Wilo Mather & Platt
12	Electrical Motor	ABB/ Siemens/ Kirloskar/ Grundfos/ Crompton/ NGEF
13	Diesel Engine for fire pump	Cummins India/Ashok Leyland/ KOEL/ Greaves
14	Couplings (Type-Type)	Lovejoy/ Fenner/ Dunlop
15	Anti Vibration Mounting	Kanwal Industrial Corporation/ Dunlop/ GERB/ Resistoflex
16	Pressure Switch (ISI marked)	System Sensor/Indfoss/Danfoss/Switzer/Honeywell Siemens
17	Pressure Guage (ISI marked)	H Guru/ Fiebig/ Dwyer
18	Double/Single Headed Landing Value (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Padmini/ Omex/ Andex/Suprex
19	Male Female Fire Hose Coupling (SS 304) (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Padmini/ Omex/ Andex/Suprex
20	First Aid Hose Drum/ Fire Hose reels/ Shut off Nozzle (Gunmetal/ ABS) (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Eversafe/ Padmini/ Omex/ Andex/Suprex
21	SS 304/ Gun metal Branch Pipe & Nozzle (ISI marked)	Minimax/ New Age/ Safeguard/ Lifeguard/ Padmini/ Omex/ Andex/Suprex
22	Fireman Axe	Minimax/ New Age/ Safeguard
23	Water Flow Switch (FM/UL listed)	System Sensor/ Rapid Control/ Potter/ Switzer
24	Rust preventive polymeric 4mm thick tape for pipes directly buried in ground pipe protection pypcoat (AW4) wrapping (ISI marked)	Pypcoat/Marphalt/Rustech/Safex
25	Level controller & indicator (water) (ISI marked)	Auto Pump/ Cirrus Engineering/ Techtrol
26	Fire brigade inlet connection (ISI marked)	Minimax/ New Age / Safeguard / Lifeguard/Padmini/ Omex/ Eversafe/Suprex
27	Thermoplastic pipe for first aid hose reel (ISI marked)	New Age / Safeguard/ Lifeguard/Padmini/ Omex / Eversafe/Suprex
28	Fire Sealent	Promat/ Birla 3M/ Hilti
29	Overload relays	Schneider electric / Larsen & Toubro/ Siemens/ C&S / ABB
30	Power/ Aux. Contractor 3 /4 pole	Schneider electric / Legrand/Hager/ L&T/ABB/ Seimens/ C&S/BCH

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31	LED Type Indicating lamps/ Push Button	Schneider electric / L&T/Siemens/C&S/ABB/Syska
32	LT jointing Kit/Termination	Raychem/ denson/ cap seal/ Safekei/ 3M
33	RRL hose pipe (ISI Marked)	New Age/Safeguard/Lifeguard/Padmini/Omex
34	Dry Battery	Exide/ Amar raja/ HBL/ Pulse/Amco
35	Battery Charger	Statcon/Amar raja/CDC/AE/Expofyn/Thycon India
36	Epoxy Paint	ICI/ Asian/Berger/ Nerolac
37	Air release Valve	Rb/ Tbs/Cimbrio/Zoloto
38	Analogue/digital Measuring Instruments (Voltmeter/Ammeter/ Energy Meter/KW/PF/Multi Function Meter)	AE/ L&T/C&S/Conzerve/HPL
39	Aluminium/Copper power Cable/ Control cable(Armoured/Unarmoured)	Finolex/RR Kable/ Havells/ Polycab/ Paragon (Electron)/Universal/ Nicco/RPG Cables/Grand ley/ Gloster
40	Cable gland and Lugs	Comet/Dowells/Hex brass(Copper Alloy India)/Jainson/ Action
41	Solenoid Valve/Spray nozzle	Perker / HD / Tyco/Emersion
42	Sprinkler	HD / Tyco/Reliable /Wormald/Viking
43	Sprinkler head/Water Curtain Nozzle	Tyco/Viking/Omex/Newage/Lifeguard
44	Steel Flexible Extension	Omex/Newage/Tyco /Lifeguard
45	Vibration Eliminator	Resistoflex/D warden/ Kanwal
46	Welding Electrodes	Advani/ESAB/ L&T
47	Deluge Valve	Tyco/Viking/HD
48	Cast Iron Valve	Kirloskar/Kartar/kalpana/Joloto/Audco/Advance
49	Fire survival cables	Bonton
	Fire Alarm System	
1	Addressable Manual call box	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
2	Addressable Type fault isolator	Johnson Control/Honeywell / Siemen/ Bosch/ EST (Edwards)
3	Strobe lights cum hooter	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
4	Addressable control modules for hooter	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
5	Addressable monitor module for flow switch	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
6	Addressable type fire alarm control panel	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
7	Network repeater panel	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
8	Addressable multi sensing fire detector (combination of optical type smoke detector & ROR type heat Detector)	Notifier/Johnson Control/Honeywell/Siemens/Bosch/ EST (Edwards)
9	Cat-6 cable, wires & Fiber optic cable	Amp/Avaya/Belden/Legrand/ Molex/ Schneider/Comscope
10	Response Indicator	Agni devices/Apollo/System Sensor/ Electro quip
11	Fire Extinguisher (ISI marked)	Lifeguard/Ceasefire/Minimax/Omex/Safex/Andex/Kanex
	Water Supply Pump Sets	
1	Mono Submersible Pump Set	KSB/CG/Kirloskar/Grundfoss/Wilo
2	Submersible Pump Set	KSB/CG/Kirloskar/Grundfoss/Wilo
3	GI pipe	Tata/Jindal Hisar/Prakash surya
4	Sluice Valve / Check Valve/ Butterfly valve/ Non Return Valve	Kirloskar/Sant/ Leader/ Joloto/Audco/Advance

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5	Submersible Cable	Fionolex/RR Kable/ Havells/Polycab/Paragon (Electron)/Grand ley
	Stage lighting system	
1	LED Stage light fixtures	Leksa Lighting / Canara Lighting / ASL/ PLS India
2	Digital Lighting Console	Leksa Lighting / Canara Lighting / ASL/ PLS India
3	FRLS 1.1 KV grade copper cable and wires	Polycab / Havells / KEI / RR Kable
4	Main curtain/Mid curtain/Rear curtain	Response / Mayur / Nexgen / Rayan / Ompile / Raymonds
5	Cyclorama screen	Leksa Lighting / Canara Lighting / ASL/ PLS India
6	Power distribution electrical panel, Motor control panel cum remote control	Leksa Lighting / Canara Lighting / ASL/PLS India
7	MCB / MCCB	L&T / Schneider / Siemens/ Legrand
8	Curtain motor	BE / Siemens / Crompton / ABB
9	Cable Tray	Falcon / Belden / Guru Astronics / Polycab / Walna
10	DMX Cable	Falcon / Belden / Guru Astronics / Polycab / Walna
11	DMX splitter unit	Leksa Lighting / Canara Lighting / ASL
12	Smoke Machine/ Haze Machine	Illumitex/ Canara/ Leksa
13	DMX connector/DMX loop junction box / dimming box	Leksa Lighting / Canara Lighting / ASL/ PLS India
14	Any other materials	With the prior approval of engineer-in charge
	Audio, Video SYSTEM	
1	Projector	Panasonic / Christie / Barco / Sony/NEC
2	LED Display	Panasonic / LG / Samsung / Sony
3	SITC of Floor Cart for one 55" Display	Custom designed
4	Digital Podium	AHA/ILS/TECOM/EAPL/ELKO/Liberty
5	Motorised Projection Screen	Draper /Dalite/ MilanLliberty/Logic/Chief/Visico/ Teck/Focus
6	Wall Plate	Atlona / Extron / Lightware/Aurora/Creston
7	Matrix Switcher	Atlona / Extron / Lightware /Aurora/Creston
8	Matrix switcher with USB interface	Atlona / Extron / Lightware/ Aurora/Creston
9	HD BaseT receiver for HDMI with USB	Atlona / Extron / Lightware/Aurora/Creston
10	Transmitter and Recivers	Atlona / Extron / Lightware/ Aurora/Creston
11	Wireless Presentation system	Atlona / Extron / Barco/Creston/Cramer/AMX
12	Goose neck microphone etc. complete as reqd. (on podium)	Audio Technica / Shure / Bayerdynamic
13	wireless Lapel microphone etc. complete as reqd.	Audio Technica / Shure / Bayerdynamic/AKG/ Electrovoice/Senheiser/JBL
14	Handheld wireless microphone with table stand etc. complete as reqd.	Audio Technica / Shure / Bayerdynamic /AKG /Electrovoice/Senheiser/JBL
14	Antenna distribution system etc complete as per tender specification	Audio Technica / Shure / Bayerdynamic/AKG/Electrovoice/Senheiser/JBL
15	Pair of UHF wide-band directional antennas etc complete as per tender specification	Audio Technica / Shure / Bayerdynamic/AKG/ Electrovoice/Senheiser/JBL
16	Speakers	Tannoy / AtlasIED / Community Audio/Bose/Martin Audio/JBL/Electrovoice/Renkus Heinz/Bosch/Sony

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17	Amplifier	Labgruppen / Powersoft / Martin Audio/Bose/Lab Gruppen/Ashly Audio
18	Digital Signal Processor	Klark Teknik / Biamp / Clearone/Ashly Audio/Bose
19	Control System	Atlona / Extron / AMX/Aurora/Creston
20	Touch Control Panel	APPLE/SAMSUNG/AMX
21	Docking station for wireless touch panel	Launch Port / AMX / ViddaBox/SAMSUNG
22	Wi fi access point	Linksys / Netgear / D-Link /CISCO/Allied Tellies /HP /Aruba/Juniper
23	POE Switch	Linksys / Netgear / D-Link /CISCO/Allied Tellies/HP/Aruba/Juniper
24	Cables	Sommer/Gotham/Belden/Panduit/Commscope/Simon /Atlona/Sommer/Klotz/Systimax/Schneider/Molex /Legrand/Extreme/Derwiser/Systimax (Commscope)
25	Connectors	Amphenol ,Neutrik , Switchcraft
26	Rack	Valrack/MIDDLE ATLANTIC/WQ/Netrack/Panduit/Rittal/Emerson/Schneider (APC)/Derwiser
27	Multi Input Recorder	Lumens/Mediapointe/Mediasite/Vbrick
28	PTZ Camera	Lumens/Sony/ Vaddio
29	Camera Control Joystick	Lumens/Sony/ Vaddio
30	Document Camera	Lumens / Elmo / Wolfvision
31	Video conference Codec	Panasonic /Cisco /Polycom
	Uninterrupted Power supply (UPS)	
1	Online/Offline UPS	Numeric/Eaton/APC/Vertiv/Mitsubshi/Toshiba
	HVAC	
1	Split Air conditioner	Mitshubshi Electric/Mitshubshi Heavy Industries/ O General/Daikin/Hitachi, Toshiba
2	Window type Air Conditioner	Mitshubshi Electric/ O General//Hitachi Voltas/ blue star/LG/ Panasonic/Carrier
3	Voltage Stabilizer	V Guard / Blue Bird / Voltas Servokon/Logicstate
4	VRV A.C (Outdoor/Indoor/Remote Control/Y Joint)	Daikin / Hitachi/ Mitshubishi Electric/O General/LG/ Toshiba
5	Copper Refrigerant Piping	Rajco / Mandev / Totaline/Kwality Tubes/Shree Shyam
6	Nitrile Rubber Insulation (For Duct / Drain Pipe / Refrigerant Pipe Insulation)	Armaflex/Aeroflex/K Flex/Eurobatex/Superlon
7	UPVC drain pipe	Supreme/Finolex/Astral/Ashirvad
8	Multicore Copper flexible Cable	Finolex/Polycab/RR Kabel/KEI
9	Two way pressure independent balancing & control valve	Siemens/Danfoss/Belimo
10	Adhesive for insulation	Pidilite/Superlon/Armacell
11	GI/GSS Sheet for ducting	Tata/SAIL/Jindal Hissar/ Asawa insulation
12	Auto air vent	Zoloto/Rapid cool/Emerald/Cimberio
13	Air Handling Unit with coil	Zeco/Edgetech/Waves/Flaktwood/VTS/Systemair
14	Air Washer	Zeco/Edgetech/Waves/Flaktwood/ Humidin/Symphony
15	Axial flow/Centrifugal Fan	Kruger/Greenheck/Wolter/Nicotra/Systemair/ Comefri/ Air flow
16	Balancing Valve	Advance/L&T/Honeywell/Danfoss/Belimo
17	Dash Fasteners	Canon / Fischer /Hilti

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18	<i>Variable Pumping System</i>	<i>Grundfos/Armstrong/Xylem ITT/wilo/Kirloskar</i>
19	<i>Chilled/Hot water circulation and Condenser water pump</i>	<i>Grundfos/Armstrong/Xylem ITT/wilo/Kirloskar</i>
20	<i>Electric Motor</i>	<i>ABB / Siemens / Kirloskar / Grundfos / NGEF / Crompton Greaves</i>
21	<i>CPRX Compound/Tar Felt</i>	<i>Shalimar Tar Product/Asian/Pidilite</i>

Note:- In case make of any equipment or material is not specified in the NIT, the matter shall be referred to the NIT approving authority and obtain the approval. Thereafter the agency can proceed with the supply of material.

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